The City of Delray Beach
100 NW 1st Avenue
Delray Beach, FL 33444

PURCHASING AND CONTRACT ADMINISTRATION DIVISION

REQUEST FOR QUALIFICATIONS

RFQ NO.: 2025-006
Project No. 17-047 / Historic Marine Way Seawall, Roadway, Utility, and Drainage Improvements
CONSTRUCTION MANAGER AT RISK

DUE DATE AND TIME: DECEMBER 4, 2024 @ 2:00 P.M., (LOCAL TIME)

INSTRUCTIONS
Sealed Proposals must be received on or before the due date and time (local time). All Proposals will be publicly opened at City Hall, unless otherwise specified.

The City will only accept electronic submittals for this Request for Qualifications (RFQ). RFQ's will be accepted through a secure mailbox at BidNet Direct www.bidnetdirect.com//cityofdelraybeach until the Due Date and Time indicated in this RFQ. Bidnet Direct does not accept electronic Proposals after the Due Date and Time. It is the sole responsibility of the Proposer to ensure its electronic RFQ submission is complete prior to the solicitation Due Date and Time. Electronic submission of Proposals will require the uploading of forms and/or attachments as designated in this RFQ. Electronic submission must include a signed original of the Solicitation Summary form. The submission of forms and attachments containing embedded documents or proprietary file extensions is prohibited.

If the Solicitation Summary form is not included, the City may deem the Proposal non-responsive. Proposals must contain all information required to be included in the submittal, as described in this Solicitation.

BROADCAST
The City of Delray Beach utilizes electronic online services for notification and distribution of its solicitation documents. The City's solicitation information can be obtained from: (a) BidNet Direct www.bidnetdirect.com//cityofdelraybeach (b) Purchasing webpage on the City of Delray Beach https://www.delraybeachfl.gov/government/city-departments/purchasing/current-bids-solicitations; (c) Request via email thompsonc@mydelraybeach.com.

Proposers who obtain solicitations from sources other than those named above are cautioned that the Request for Qualifications package may be incomplete. The City will not evaluate incomplete Proposal packages. Bidnet Direct is an independent entity and is not an agent or representative of the City. . Any technical issues must be submitted to BidNet Direct) by contacting (800) 990-9339 (toll free) or. The City is not responsible for errors and omissions occurring in the transmission or downloading of any documents, addenda, plans, or specifications from these websites.

CONTACT

Any questions regarding the specifications and solicitation process must be submitted in writing through the "Question" feature on www.bidnetdirect.com//cityofdelraybeach. Requests for clarification and additional information must be received prior to the deadline for Submission of Questions on **November 19, 2024 @ 5:00 P.M. (Eastern Time).**

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The City of Delray Beach
100 NW 1st Avenue
Delray Beach, FL 33444

LEGAL ADVERTISEMENT

RFQ NO.: 2025-006
Project No. 17-047 / Historic Marine Way Seawall, Roadway, Utility, and Drainage Improvements
CONSTRUCTION MANAGER AT RISK

The City of Delray Beach, Florida ("City") is seeking Proposals from qualified firms for professional services and construction services related to Historic Marine Way Seawall, Roadway, Utility and Drainage Improvements, in accordance with the terms, conditions, and specifications contained in this Request for Qualifications. **This project includes funding via Florida Department of Environmental Protection. The selected Contractor will be required to comply with all requirements noted in the FDEP Grant 23FRP42 agreement (Exhibits F and F-2.**

Request for Qualifications documents are available beginning November 2, 2024 on the Purchasing and Contract Administration Division's webpage of the City of Delray Beach website at:

https://www.delraybeachfl.gov/government/city-departments/purchasing/current-bids-solicitations

Documents may also be obtained via BidNet Direct www.bidnetdirect.com//cityofdelraybeach, by contacting the City Purchasing and Contract Administration Division at thompsonc@mydelraybeach.com or by phone at (561) 243-7163.

Proposals will be accepted through a secure mailbox at BidNet Direct www.bidnetdirect.com//cityofdelraybeachuntil the Deadline for Submission as indicated in this RFQ. **The Due Date and Time for submission of submittals is DECEMBER 4, 2024 @ 2:00 P.M. (Eastern Time).** Late Proposals will not be accepted. The City will only accept electronic Proposals for this RFQ.

The City will hold a virtual Pre-Proposal Conference. Attendance is not mandatory, although highly recommended, for those firms intending to submit a proposal. The virtual Pre-Proposal Conference will be held on **November 5, 2024 @ 9:00 A.M., (LOCAL TIME)** online via Microsoft Team meeting via the link provided below:

Microsoft Teams Need help?
Join the meeting now
Meeting ID: 285 971 964 098
Passcode: gsxjMX

The City will not conduct a site visit for this solicitation. It is the responsibility of the Proposer to ensure all pages are included in the submission. All Proposers are advised to closely examine the solicitation package. Any questions regarding the completeness or substance of the solicitation package or scope of services must be submitted in writing via BidNet Direct.

The City of Delray Beach is exempt from Federal and State Taxes for tangible personal property tax.

The City of Delray Beach reserves the right to accept or reject any or all Proposals, in whole or in part, with or without cause, to waive any irregularities and/or technicalities, and to award the contract on such coverage and terms it deems will best serve the interests of the City.

CITY OF DELRAY BEACH

SECTION 1: PROJECT OVERVIEW

1.1. INTRODUCTION

The City of Delray Beach is seeking a Construction Manager at Risk (CMAR) firm for the construction of the Historic Marine Way Seawall, Roadway, Utility, and Drainage Improvements**. The project is generally described as an underground utility improvement project which includes, but is not limited to, a new 600-ft long seawall along northern Marine Way, a new stormwater pump station, along with roadway, water, sanitary sewer and drainage improvements.** The City of Delray Beach partnered with WGI, Inc. for engineering design and permitting**.**

The City initiated a conceptual design of Marine Way Seawall and Dock Improvements in Fiscal Year 2017-2018 to replace an existing seawall that has failed along Marine Way, between the Atlantic Avenue Bridge and SE 1st Street. The failure of this seawall allows water from the Intracoastal Waterway to spill onto the roadway, which has eroded the roadway base and caused serious deterioration, creating a public health and safety concern for the residents of Marine Way.

Marine Way, between Atlantic Avenue and SE 1st Street, has been experiencing flooding for at least the past 15 years. The proposed construction project includes installing new seawall with a higher cap elevation, adding a new underground stormwater pump station, upsizing drainage pipes, replacing water and sewer infrastructure, beautifying the area with a new shared-use paver road, resident parking, decorative street lighting, and other amenities along the corridor of Marine Way from the City Marina's dockmaster building (to the south) to Veterans Park (to the north).

The new 600 linear foot seawall along Marine Way will replace the existing rock revetment seawall, which is frequently overtopped by tidal events. The new seawall will provide increased flood protection against a projected 30-year sea level rise and increased protection of local homes and businesses from property damage and revenue loss.

The City is responsible for the maintenance of the roadways, water, sewer, and drainage systems within the Historic Marine Way Neighborhood. Over several years, these roadways have experienced seasonal flooding due to King Tides and Inclement Weather Events. Furthermore, deterioration of the roadways has caused an increase in maintenance costs and has shortened the lifespan of the roadways.

This project includes funding via Florida Department of Environmental Protection. The selected Contractor will be required to comply with all requirements noted in the FDEP Grant 23FRP42 agreement (Exhibits F and F-2).

1.2. SCOPE OF SERVICES

The purpose of this Request for Qualifications is to obtain a CMAR for a Guaranteed Maximum Price (GMP), in accordance with Chapter 255.103 of the Florida Statutes. A governmental entity may select a construction management entity, pursuant to the process provided by S.287.055 (CCNA), which is to be responsible for construction project scheduling and coordination in both pre-construction and construction phases and generally responsible for the successful, timely, and economical completion of the construction project.

The intent of this solicitation is for the City to select a firm capable of providing CMAR services as required for the **Historic Marine Way Seawall, Roadway, Utility, and Drainage Improvements** project. The project has an estimated construction budget of approximately $20,000,000. The project generally consists of underground utility improvements which include, but is not limited to, a new 600-ft long seawall along northern Marine Way, a new stormwater pump station, along with roadway, water, sanitary sewer and drainage improvements.

The selected firm awarded the contract will coordinate and collaborate with the City, the Engineer of Record (WGI, Inc.) the Owner's Representative (To Be Determined), and all applicable permitting and governmental agencies.

Agreements are subject to annual appropriation and the availability of funds.

The City intends to award two (2) separate phases for the CMAR services for the project. The first phase would be for Pre-Construction Services and is identified as Phase I. The second phase would be for Construction Services and is identified as Phase II.

At or before the completion of Phase I and following completion of cost estimating, value engineering and other services, the CMAR firm will tender to the City a written GMP for final completion of the project, based upon bid documents and specifications. The City, at its sole discretion, may decline to accept the CMAR GMP for any Construction Services and thereupon without penalty; the Contract shall terminate according to its terms at the end of the Pre-Construction Services phase of the work under contract. The CMAR firm shall have no recourse from this termination, and the City shall retain ownership of such documents without paying further remuneration. Conditions precedent to a contract amendment for Phase II for any project is the satisfactory final completion of Phase I and an agreed upon GMP. If a GMP is agreed to with the CMAR firm, a contract amendment for Phase II will be entered into between the parties.

1.3. The Method of Award for this solicitation will be to the Proposer with the highest ranking score with whom the City is able to negotiate an acceptable Agreement. The City will enter negotiations with the firm receiving the highest-ranking firm. Should negotiations fail then the City will enter negotiations with the next highest-ranking firm.

1.4. The City intends to contract with a single firm for the project listed in this procurement. The Proposer will provide the following services: (1) Phase I: Pre-Construction Services; and (2) Phase II: Construction Services as outlined in Section 3 of this solicitation.

1.5. The schedule is as follows:

ITEM	EVENT	DATE/TIME
a.	Issue RFQ	November 2 2024
b.	Institute Cone of Silence	November 2, 2024
c.	Deadline for Delivery of Questions	**November 19, 2024 @ 5:00 P.M., (LOCAL TIME)**
d.	Due Date and Time (for delivery of Proposals)	**Decemebr 4, 2024 @ 2:00 P.M., (LOCAL TIME)**
e.	Technical Evaluations Location: TBD	TBD @ TBD
f.	Interviews Location: TBD	TBD @ TBD
g.	Final Evaluations Location: TBD	TBD @ TBD

1.6. Meetings will be held in the City Hall Conference Room, located at 100 NW 1st Avenue, First Floor, Delray Beach, FL 33444, or the Swinton Operations Center (SOC) – Conference or Training Room – located at 434 South Swinton Avenue, Delray Beach, FL 33444.

END OF SECTION 1

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SECTION 2: SPECIAL TERMS AND CONDITIONS

2.1. PURPOSE

The purpose of this Request for Qualifications (RFQ) is to solicit Proposals from qualified firms who can provide Construction Manager at Risk (CMAR) services for the **Historic Marine Way Seawall, Roadway, Utility, and Drainage Improvements** project.

The City expects each Proposer to clearly outline its best and most comprehensive resources in its response, because all services and responsibilities identified in this solicitation may be awarded to the selected Proposer.

2.2. ELIGIBILITY

To be eligible to respond to this RFQ and be considered for award, the Proposer must demonstrate to the satisfaction of the City that it or the principals assigned to the project has successfully provided services, similar in scope and complexity, to a municipality, quasi-governmental organization, or a private organization.

2.3. SEPARATION OF SERVICES

The entity(ies) performing design or owner's representative, and CMAR services may not be the same entity for this Project. Vendors solely providing geotechnical and/or surveying services for the design are exempt from this provision.

2.4. RECORDS, ACCOUNTS, AND STATEMENTS

The successful Proposer shall keep on its premises, or such other place approved by the City, current true, accurate, and complete records and accounts of all services provided to the City and shall give the City or City's representative access during reasonable business hours and upon three (3) business days' notice to examine and audit such records and accounts. Such records shall be maintained at such standard to allow a certified auditor the ability to properly examine the records in order to certify a statement of the successful Proposer's business with the City.

2.5. GENERAL STANDARDS

The successful Proposer shall at all times comply with all rules, regulations, and other governmental agencies having jurisdiction. The successful proposal shall further take all precautions and extreme care to conduct its activities in a safe, professional, and prudent manner with respect to its agents, employees, members, visitors, and participants.

2.5.1. Its most recent certified business financial statements as of a date not earlier than the end of the Proposer's preceding official tax accounting period, together with a statement in writing, signed by a duly authorized representative, stating that the present financial condition is materially the same as that shown on the balance sheet and income statement submitted, or with an explanation for any material change in the financial

condition. A copy of the most recent business income tax return will be accepted if the certificate financial statements are unavailable.

2.5.2. Information concerning any prior or pending litigation, either civil or criminal, involving a governmental agency or which may affect the performance of the services to be rendered herein, in which the Proposer, or any of its employees, is or has been involved in within the last three (3) years.

2.6. DEFAULT

In the event the successful Proposer defaults in the performance of the contract, the city shall have the following options:

2.6.1. The City Manager will give the successful Proposer thirty (30) days' written notice of default. If the problem is not resolved within the thirty (30) days, the City may immediately terminate the contract upon providing written notice of the Proposer's failure to timely cure the default and obtain the services elsewhere.

2.6.2. The City may recover at law any all claims that may be due to the City from the successful Proposer.

2.6.3. The City may perform such work as it deems necessary to cure the default or subsequent default and charge the successful Proposer for the full cost of labor and materials expended, plus thirty percent (30%) of the cost for administrative overhead.

The acceptance of all or part of monies due for any period after a default shall not be deemed as a waiver of any of these options, or a waiver of the default or subsequent default of the same or any other term, covenant, and condition.

The successful Proposer agrees that the City shall not be responsible or have any liability whatsoever for any alleged damages, claim of lost profits, or otherwise in the event the City declares the successful Proposer in default hereunder.

2.7. INSURANCE

The selected Proposer shall not commence any performance pursuant to the terms of this RFQ until certification or proof of insurance has been received and approved by the City's Risk Manager or designee.

The required insurance coverage is to be issued by an insurance company authorized, licensed, and registered to do business in the State of Florida, with the minimum rating of A- VII or better, in accordance with the latest edition of A.M. Best's Insurance Guide. This insurance shall be documented in certificates of insurance which provides that the City of Delray Beach shall be notified at least thirty (30) days in advance of cancellation, non-renewal, or adverse change. The receipt of certificates or other documentation of insurance or policies or copies of policies by the City or by any of its representatives, which indicate less coverage than is required, does not

constitute a waiver of the selected Proposer's obligation to fulfill the insurance requirements herein. Deductibles must be acceptable to the City of Delray Beach.

The selected Proposer must submit a current Certificate of Insurance prior to commencement of the Work. The City, and any other entities that may be required, shall be listed as an Additional Insured on both the comprehensive General Liability and the Automobile Liability Policies. New certificates of insurance are to be provided to the City upon expiration. All renewal or replacement certificates of insurance shall be forwarded to the City Purchasing and Contract Administration Division located at 100 NW 1st Ave., Delray Beach, FL 33444. **For each of the required coverage, a waiver of subrogation is to be provided in favor of the City of Delray Beach**

The selected Proposer shall provide insurance coverage as follows:

2.7.1. WORKERS COMPENSATION – Contractor shall maintain workers' compensation insurance coverage, as required by the laws of the State of Florida, for all employees and subcontractors performing work under this contract during the term of the agreement and up to the date of final acceptance. CONTRACTOR shall defend, indemnify, and save the CITY harmless from any damage resulting to them for failure of either CONTRACTOR or any subcontractor to take out or maintain such insurance. The workers' compensation insurance policy shall include coverage limits that meet or exceed the minimum requirements set forth by Florida law.

2.7.2. EMPLOYER'S LIABILITY – With a limit of not less than One Hundred Thousand Dollars ($100,000) for each accident, One Hundred Thousand Dollars ($100,000) for each occurrence, and Five Hundred Thousand Dollars ($500,000) in the aggregate.

2.7.3. COMPREHENSIVE GENERAL LIABILITY – With limits of not less than One Million Dollars ($1,000,000) per occurrence and Two Million Dollars ($2,000,000) in the aggregate for Bodily Injury and Property Damage.

NOTE – If Comprehensive General Liability limits are less than One Million Dollars ($1,000,000), the sum of Comprehensive General Liability limits and Excess Liability limits must equal no less than One Million Dollars ($1,000,000).

The Comprehensive General Liability insurance policy must include coverage that is not more restrictive than the latest edition of the Comprehensive General Liability Policy, without restrictive endorsements, as filed by the Insurance Services Offices, and the policy must include coverage's for premises and/or operations, independent contractors, products and/or completed operations for contracts, contractual liability, broad form contractual coverage, broad form property damage, products, completed operations, and personal injury. Personal injury coverage shall include coverage that has the Employee and Contractual Exclusions removed.

2.7.4. AUTOMOBILE LIABILITY – Covering all vehicles associated with Proposer's operations to include all owned, non-owned and hired vehicles. The coverage will be written on an occurrence basis with limits of liability not less than One Million Dollars ($1,000,000) combined single limit per occurrence.

2.7.5. PROFESSIONAL LIABILITY – With limits of not less than One Million Dollars ($1,000,000) per occurrence and two million ($2,000,000) in aggregate.

2.7.6. POLLUTION LIABILITY – With a limit of not less than three million dollars ($3,000,000) per occurrence.

2.7.7. EXCESS LIABILITY – With a limit of not less than two million dollars ($2,000,000).

NOTE: ADDITIONAL INSURANCE MAY BE REQUIRED BY FDEP GRANT AGREEMENT.

2.8. PAYMENT AND PERFORMANCE BOND/LETTER OF CREDIT

Required bonds/ letter of credit to be requested from the selected Proposer, applicable to Phase 2 services. Bonds will be determined upon receipt of the GMP and will be included in the amendment for the Construction Phase. The CMAR firm shall, following receipt of the Notice to Proceed with Construction but prior to commencing any work, furnish the City with a Performance Bond and Payment Bond in a form reasonably acceptable to the City, each equal to the amount of the construction cost as defined in the contract.

2.9. LICENSES AND CERTIFICATIONS

Any Proposer which submits an offer in response to this solicitation shall, at the time of such offer, hold all the required licenses, permits, and certifications issued by the State or County Examining Board qualifying the Proposer to perform the services described in this solicitation.

The City may at its option, and in its best interest, allow the Proposer to supply any missing information on certification and licensing during the Proposal Evaluation period.

Proposer must have staff licensed by the Florida Department of Business & Professions Regulation. Provide a screenshot or copy of Proposer's license from the Florida Department of Business & Professions Regulation that confirms Proposer has current licenses to perform the services described in this solicitation.

2.10. METHOD OF PAYMENT – MONTHLY INVOICES

The selected Proposer shall submit an invoice to the City, each month, after the services have been performed and have been received and accepted by the City. The amount charged shall not be in excess of the rates and fees agreed to in the Agreement.

The date of the invoices shall not exceed thirty (30) calendar days from the performance of the work. Under no circumstances shall the invoice be submitted to the City in advance of the performance of the work. The invoice shall contain the following basic information: the selected Proposer's name and address, invoice number, date of invoice, description of the service performed, the contract number, purchase order number, and any discounts.

The City prides itself on paying its vendors promptly and efficiently, and as such requires that vendors accept payment via wire transfer, ACH (direct deposit), or an appropriate electronic payment method. The City is averse to issuing paper checks and seeks to discontinue this practice. All payments shall be made in accordance with the Florida Prompt Payment Act, Section 218.74, Florida Statutes, upon presentation of a proper invoice by the awarded Proposer.

2.11. SUBCONTRACTING

INTENTIONALLY OMITTED

2.12. OTHER FORMS OR DOCUMENTS

If the City is required by the selected Proposer to complete and execute any other forms or documents in relation to this solicitation, the terms, conditions, and requirements in this solicitation shall take precedence to any and all conflicting or modifying terms, conditions or requirements of the selected Proposer's forms or documents.

2.13. MODIFICATION OF SERVICES

The City reserves the right to delete or modify any portion of the contracted services at any time without cause, and if such right is exercised by the City, the rates and fees shall be reduced at the same ratio as the estimated costs of the services deleted relates to the estimated costs of the service originally contracted. If service has already been provided on the portion of the work to be deleted, the selected Proposer will be paid for the deleted portion based on the estimated percentage of the completion of such portion.

If the selected Proposer and the City agree on modifications or revisions to the service elements, after the City has approved performance of a particular task or project, and a budget has been established for that task or project, the selected Proposer shall submit a revised budget to the City for approval prior to proceeding with the task or project.

END OF SECTION 2

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SECTION 3: SCOPE OF SERVICES

3.1 PROJECT HISTORY AND BACKGROUND

The City initiated a conceptual design of Marine Way Seawall and Dock Improvements in Fiscal Year 2017-2018 to replace an existing seawall that has failed along Marine Way, between the Atlantic Avenue Bridge and SE 1st Street. The failure of this seawall allows water from the Intracoastal Waterway to spill onto the roadway, which has eroded the roadway base and caused serious deterioration creating a public health and safety concern for the residents of Marine Way.

Marine Way, between Atlantic Avenue and SE 1st Street, has been experiencing flooding for at least the past 15 years. The proposed construction project includes installing new seawall with a higher cap elevation, adding a new underground stormwater pump station, upsizing drainage pipes, replacing water and sewer infrastructure, beautifying the area with a new shared-use paver road, resident parking, decorative street lighting, and other amenities along the corridor of Marine Way from the City Marina's dockmaster building (to the south) to Veterans Park (to the north).

The new 600 linear foot seawall along Marine Way will replace the existing rock revetment seawall, which is frequently overtopped by tidal events. The new seawall will provide increased flood protection against a projected 30-year sea level rise and increased protection of local homes and businesses from property damage and revenue loss.

The City is responsible for the maintenance of the roadways, water, sewer, and drainage systems within the Historic Marine Way Neighborhood. Over several years, these roadways have experienced seasonal flooding due to King Tides and Inclement Weather Events. Furthermore, deterioration of the roadways has caused an increase in maintenance costs and has shortened the lifespan of the roadways.

This project includes funding via Florida Department of Environmental Protection. The selected Contractor will be required to comply with all requirements noted in the FDEP Grant 23FRP42 agreement (Exhibits F and F-2).

3.2 SUMMARY OF WORK

The selected Proposer shall provide pre-construction and construction services to construct **Historic Marine Way Seawall, Roadway, Utility, and Drainage Improvements**. The Proposer will provide Construction Manager at Risk (CMAR) services in accordance with FDEP grant agreement requirements (Exhibits F and F-2) and City policies, procedures, standards, and requirements for **an underground utility improvement project which includes, but is not limited to, a new 600-ft long seawall along northern Marine Way, a new stormwater pump station, along with roadway, water, sanitary sewer and drainage** improvements.

The City will designate a person, such as City's Project Manager or Owner's Representative, who will be the CMAR coordinating contact point during both the Pre-Construction and Construction Phases. This person or contact will provide day-to-day representation for the City and will be the primary channel of communication to the City and will act as the City's liaison with the CMAR firm. The City

may designate multiple representatives responsible for defined aspects of the Project and may replace or re-designate any or all representatives at the City's sole discretion.

3.3 SCOPE OF SERVICES

CMAR scope of services shall have the following sections, at a minimum, performed in two (2) phases:

3.3.1 Phase I: Pre-Construction Services

3.3.1.1 Review and coordinate the proposed work with the Architect/Engineer of Record and the City.

3.3.1.2 Perform and submit a cost and savings program (Value Engineering) to the Architect/Engineer of Record and the City for consideration.

3.3.1.3 Develop a provisional construction Critical Path Methods (CPM) schedule indicating methods and sequencing of construction.

3.3.1.4 Perform a constructability review of the Construction Documents.

3.3.1.5 Provide analysis of different construction methods in each major trade group for quality control, cost and schedule enhancements and the ability to utilize concurrent activities to expedite time of delivery.

3.3.1.6 Develop a project construction budget/cost model (independent from any similar cost estimates provided by the City) to be maintained throughout design phases and construction.

3.3.1.7 Coordinate competitive bidding and contracting for trade subcontractors.

3.3.1.8 Coordinate with homeowners and governmental agencies having jurisdiction on this project, and all utility companies servicing this area.

3.3.1.9 Calculate and provide a Guaranteed Maximum Price (GMP) for the project at completion of Pre-Construction Services for the City's consideration, review and acceptance.

3.3.1.10 This project includes funding via Florida Department of Environmental Protection. The selected Contractor will be required to comply with all requirements noted in the FDEP Grant 23FRP42 agreement (Exhibits F and F-2).

3.3.2 Phase II: Construction Services

3.3.2.1 Provide Performance and Payment Bonds for the full value of the Guaranteed Maximum Price (GMP) for the project, in addition to ensuring compliance with all insurance requirements.

3.3.2.2 Apply for, obtain, coordinate, and pay for all permits, construction inspections,

and testing.

3.3.2.3 Be responsible for the successful, timely, and economical completion of the projects. Create, maintain, and present an overall construction schedule of activities showing CPM.

3.3.2.4 Coordinate with the City of Delray Beach Department of Public Works, the Architect/Engineer of Record (WGI, Inc.), and Owner's Representative (To Be Determined) for the entire duration of the project.

3.3.2.5 Coordinate with homeowners and governmental agencies having jurisdiction on this project, and all utility companies servicing this area.

3.3.2.6 Maintain a safe and reliable MOT plan, considering corridor activities for weekend and Holidays. No more than one lane of traffic shall be closed at any given time, without prior approval from the City.

3.3.2.7 Maintain quality control and ensure conformity with the Contract Documents. Provide certified (signed and sealed) as-builts drawings (CAD & GIS) at the completion of the project.

3.3.2.8 Coordinate post-completion activities, including the assembly of guarantees, manuals, closeout documents, training, and Final acceptance, delivery and training of O&M Manuals.

3.3.2.9 Warranty Phase - Coordinate and monitor the resolution of Punch List items and warranty complaints to the satisfaction of the Owner during the warranty period.

3.3.2.10 Coordinate Construction Management Services, including but not limited to regular job site meetings, maintaining and updating schedules, overseeing quality assurances, maintaining and providing copies of all contract documents, and ensuring compliance with all safety programs.

3.3.2.11 The CMAR firm manages the construction project for the City, as an open book project. Buyout savings through the subcontractor buyout process will be split by the City and CMAR Firm with City receiving 70% and CMAR Firm receiving 30% by way of Change Order adjusting the GMP.

3.4 ITEMS TO BE FURNISHED BY THE CITY TO THE CMAR FIRM

The City, on an as needed basis, will furnish the following Contract documents for the project:

- Executed Construction Contract
- Construction Plans (developed by Architect/Engineer)
- Technical Specifications (developed by Architect/Engineer)
- Permits
- Environments Reports

- Geotechnical Reports
- City's Approved Material List (if applicable)

These documents may be provided in either paper or electronic format. The City will not provide connection to their Network. The CMAR Firm will furnish and support any software needed to perform their work.

3.5 PUBLIC OUTREACH

The CMAR firm shall provide a public engagement plan and program. CMAR firm shall engage in extensive public outreach during the duration of the Project, to maintain that residents and business owners informed of major activities on the site. The CMAR firm may provide public outreach services to include, but not be limited to:

- Involvement with residents daily to keep the residents well-informed regarding what the CMAR firm is going to do each week.

- Preparation and dissemination of information to the public, elected officials, and the media; with approval from the City's designee; regarding any upcoming events, which will affect traffic flow.

- Production and distribution of publications (letters, door hangers, mail notifications to homeowners (including postage), flyers, brochures, and news releases to the public) necessary for this construction contract. Prior to release, the City's designee will approve all responses, letters, provide drone photography, news releases, and the like.

- Coordination of public information meetings, open houses, and community meetings as directed by the City's representatives. This may also include the development of a webpage, website, and/or mechanisms to quickly respond to the public.

END OF SECTION 3

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SECTION 4: RESPONSE REQUIREMENTS

4.1. SUBMITTAL REQUIREMENTS

Proposers should carefully follow the format and instructions outlined herein. All documents and information must be fully completed and signed as required. Do not password-protect electronic documents.

The Proposal shall be written in sufficient detail to permit the City to conduct a meaningful evaluation of the proposed services. However, overly elaborate responses are not requested or desired.

4.2. REQUIRED INFORMATION AND SUBMITTAL FORMAT

In addition to the information required in Section 3, Scope of Services, Proposers must submit the following information with their Proposal Submittals:

SUBMITTAL FORMAT
To facilitate and expedite review, the City asks that all Proposers follow the response format outlined below. Failure to submit your response in the format requested may result in a delay evaluating your Proposal. To assist you in preparing your response, the City's selection procedures are also described herein. Please abide by all requirements set forth to avoid any risk of disqualification.

The overall package should be no longer than 80 pages total (40 double-sided or 80 single-sided, including AIA Document A305-2020 and all Exhibits). Pages must be numbered to verify quantity. Tab dividers are excluded from the page count.

PROPOSALS SHOULD FOLLOW THE FORMAT BELOW:

4.2.1. TAB 1 – INTRODUCTION

Provide a cover letter no longer than two (2) pages in length. Provide a positive commitment to providing the required services. The table of contents should follow the cover letter.

4.2.2. TAB 2 – TABLE OF CONTENTS

Include a clear identification of the material included in the Proposal by page number.

4.2.3. TAB 3 – MINIMUM QUALIFICATIONS

Proposers must meet the following minimum qualifications; failure to meet the minimum qualifications may result in the Proposer being deemed non-responsible.

A. Proposer must provide an affirmative statement and submission of evidence must be included with the firm's response indicating that the firm and all assigned key professional staff possess all licenses and certifications required to undertake and complete the project.

B. Proposer must have a Florida State General Contractor's license **Provide proof, in the form of a copy of license(s), that the Bidder meets this qualification.**

C. Proposer must have been in business, under the current vendor name, for a minimum of five (5) years prior to the Due Date and Time. **Provide supporting documentation (e.g. state, county, city business license; occupational license) that confirms Proposer has been in business for a minimum of five (5) years prior to the Due Date and Time.**

D. Proposer must have adequate bonding capacity for a single-project, with each payment and performance bonding capability of at least **$20,000,000** with a surety company having a current financial rating (A.M. Best) of **AAA** or better. **Provide documentation of your firm's total and single-project bonding capacity and the name and current A.M. Best rating of the surety company utilized by your firm.**

E. Proposer has no reported conflict of interest in relation to this RFQ.

Disclose the name of any officer, director or agent who is also an employee of the City. Disclose the name of any City employee who owns, directly or indirectly, any interest in the Proposer's firm or any of its branches. If no conflicts of interests are present, Proposer must submit a statement to that affect.

F. Proposer must submit AIA Document A305-2020 and all Exhibits.

Complete and submit AIA Document A305-2020 and all Exhibits.

G. Proposer must be registered with the State of Florida Division of Corporations to do business in Florida.

No documentation is required. The City will verify registration.

H. Proposer is NOT listed on the Florida State Board of Administration, Scrutinized List of Prohibited Companies found at:

https://www.dms.myflorida.com/business_operations/state_purchasing/state_agencyresources/vendor_registration_and_vendor_lists/scrutinized_list_of_prohibited_companies

4.2.4. TAB 4 – PROPOSER'S INFORMATION

A. Legal contracting name including any dba and state of organization or incorporation.

B. Ownership structure of Proposer's company
(e.g., Sole Proprietorship, Partnership, Limited Liability Corporation, Corporation)

C. Provide, in this section, a completed and executed copy of Proposer's W-9 that includes the company federal identification number.

D. Contact information for Proposer's Corporate headquarters and any other office locations include the following:
   i. Address
   ii. City, State, Zip
   iii. Phone

E. Contact information for Proposer's primary and secondary representative during this solicitation process including the following:
   i. Name
   ii. Phone
   iii. Email
   iv. Mailing Address
   v. City, State, Zip

F. Provide details of any ownership changes to Proposer's organization in the past three years or Changes anticipated within six months of the Due Date and Time (e.g., mergers, acquisitions, changes in executive leadership).

G. Provide the names of the persons who are officers or principals of the company.

H. Any additional organizational information that Proposer wishes to supply to augment its Proposal.

I. Provide a letter on your firm's letterhead indicating if your firm has paid liquidated damages and/or if your firm has been terminated for default or is pending legal action. Provide details of these occurrences and the associated projects. If your firm has not paid liquidated damages or been terminated for default include this in a letter on your firm's letterhead.

J. Provide prior or pending litigation, either civil or criminal, involving a governmental agency or which may affect the performance of the services to be rendered herein, in which the Proposer, and of its employees, is or has been involved within the last three (3) years.

K. Its most recent certified business financial statements as of a date not earlier than the end of the Proposer's preceding official tax accounting period, together with a statement in writing, signed by a duly authorized representative, stating that the present financial condition is materially the same as that shown on the balance sheet and income statement submitted, or with an explanation for any material change in the financial condition. A copy of the most recent business income tax return will be accepted if certified financial statements are unavailable.

4.2.5. TAB 5 – EXPERIENCE, ABILITY AND REFERENCES

A. Provide details of Proposer's years of experience in the field construction and acting as a CMAR firm. Include number of projects, construction dollar value, and years of relevant experience.

B. Provide a detailed narrative documenting the Proposer's specific experience including, but not limited to the following:

i. At least three (3) projects of similar scope, budget, size, and complexity. Preferably, these projects will have been completed in the last five (5) years.

Provide the following information for the three (3) qualifying projects:

A. Name of Project Owner
B. Contact Name
C. Contact Email
D. Location / Address of Project
E. Dates of Project (start/end)
F. Brief Description of Project
G. Project's GMP and final construction cost. Attach an explanation for each project where total project cost exceeded GMP OR estimated project cost by greater than 10 percent (10%).
H. List of the components of the project as stated above

ii. Experience with CMAR projects that include construction of roadway improvements working immediately near residential homeowners and the Intracoastal Waterway, underground utility improvement projects which includes, but is not limited to, new seawalls, a new stormwater pump station, along with roadway, water, sanitary sewer and drainage improvements.

NOTE: The City recognizes that it is unlikely that candidates for this solicitation will have all of the similar experience requested in a single project. Experience in each of the different elements is desired, however, it is not required that all types of similar project experience is included in the same project.

iii. Experience with municipal or government agency construction projects.

iv. Experience with projects in Florida, particularly in South Florida and in Palm Beach County.

v. Other types of related experience or information.

C. Submit three (3) client references for whom Proposer has provided CMAR services (similar to those specified in this RFQ) in the past five (5) years and who are agreeable to respond to a request from the City regarding proposer's experience.

Each client reference should include the following:
i. Organization name
ii. Contact name(s)
iii. Contact email address
iv. Address
v. Telephone and fax numbers

vi. Dates of service (start/end)
vii. Scope of work (brief description)

D. Identify the primary contact person, supervisory personnel, and other key personnel who are designated to work on the City's project. Include copies of relevant licenses and certifications relevant to the project.

E. Explain Proposer's ability and commitment to maintain accessibility and availability for meetings, communications, and supervision.

F. Describe any significant or unique awards received or accomplishments in previous, similar projects received by the Team, or by individuals within the Team.

4.2.6. TAB 6 – ORGANIZATIONAL STRUCTURE AND CAPACITY

A. Submit the Team proposed to work on this City project.

B. Submit an organizational chart of the proposed Team.

C. Submit the Team's staffing resources and the location(s) at which services will be provided.

D. Provide a narrative detailing the Team's recent, current, and projected workloads at the time of submission and provide a statement of the Team's commitment of personnel and other resources for the City project.

4.2.7. TAB 7 – METHODOLOGY AND WORK PLAN

A. Provide a detailed narrative description of the proposed approach and methodology for engaging with City representatives while performing the CMAR duties in accordance with the Agreements.

B. Describe in detail Proposer's approach to the CMAR for construction of roadway improvements working immediately near residential homeowners and the Intracoastal Waterway, underground utility improvement projects which includes, but is not limited to, new seawalls, a new stormwater pump station, along with roadway, water, sanitary sewer and drainage improvements.

C. Narrative that demonstrates working knowledge and understanding of the CMAR requirements in the Scope of Services.

D. Provide details of how Proposer intends to meet the detailed time schedule.

E. Specify the location(s), including the complete physical address, where the work for this project will be performed, including work performed by sub-Consultants, if applicable.

F. Proposer shall thoroughly explain:
   i. Its accessibility in the areas of availability for meetings, general communications, coordination, and supervision.
   ii. How the Proposer physically plans on attending pre-scheduled meetings.
   iii. How the Proposer plans on ensuring accessibility and availability during the term of the Agreement.

4.2.8. TAB 8 – ATTACHMENTS

All Attachment/Forms and Affidavits required by this solicitation shall be fully executed by the Proposer and submitted as shown in Section 8 of this solicitation.

END OF SECTION 4

(The remainder of this page is intentionally left blank)

SECTION 5: THE EVALUATION PROCESS

5.1 REVIEW OF PROPOSALS FOR RESPONSIVENESS

Each Proposal will be reviewed to determine if the Proposal is responsive to the submission requirements outlined in this solicitation. A responsive Proposal is one that follows the requirements of this solicitation, includes all documentation, is submitted in the format outlined in this solicitation, is of timely submission, and has the appropriate signatures as required on each document. Failure to comply with these requirements may result in the Proposal being deemed non-responsive.

5.2 REVIEW OF PROPOSALS FOR RESPONSIBILITY

Each Proposer will be reviewed to determine if the Proposer is a responsible Proposer. A responsible Proposer is a Proposer which the City affirmatively determines (prior to the award of a contract) has the ability, capability, and skill to perform under the terms of the contract; can provide the materials or service promptly within the time specified, without delay or interference; has a satisfactory record of integrity and business ethics; and meet the Minimum Qualification requirements in this RFQ.

5.3 EVALUATION CRITERIA

Proposals will be evaluated by a committee who will score and rank Proposals on the criteria listed below. The Evaluation Committee will be comprised of appropriate City personnel and/or members of the community, as deemed necessary, with the appropriate experience and/or knowledge. **The criteria are itemized below with their maximum scores for a maximum total of One Hundred (100) points per proposal, per Committee member.**

CRITERIA	MAX. POINTS
Experience	**25**
➢ Example Projects and Reference Feedback	
Methodology & Work Plan	**50**
➢ Technical Approach & Methodology	
➢ Work Plan & Schedule	
Organizational Structure and Capacity	**25**
➢ Firm Qualifications	
➢ Qualifications of Key Staff	
➢ Adequacy of Staffing/Organization to Accomplish Project scope	
➢ Availability of staff	

5.4 ORAL PRESENTATIONS/INTERVIEWS

Upon initial completion of the criteria evaluation indicated above, rating and ranking, the Evaluation Committee may choose to conduct an oral presentation with the Proposers which the Evaluation Committee deems to warrant further consideration based on, among other considerations, scores in clusters and/or maintaining competition. Upon completion of the oral presentation(s), the Evaluation/ Selection Committee will perform a final evaluation, rating, and ranking of the Proposals. In such circumstances, the initial ranking of the Proposers shall be considered a preliminary ranking only.

5.5 NEGOTIATIONS

If the City and the Proposer(s) cannot reach an agreement on a contract, the City reserves the right to terminate negotiations and may, at the City Manager's or designee's discretion, begin negotiations with the next highest-ranked Proposer(s). This process may continue until a contract acceptable to the City has been executed or all Proposals are rejected. No Proposer shall have any rights against the City arising from such negotiations or termination thereof.

5.6 CONTRACT AWARD

Any contract resulting from this solicitation will be submitted to the City Manager or designee, and the City Commission for approval, as appropriate. Notice will be provided once the City makes an award recommendation. The contract award, if any, shall be made to the Proposer whose Proposal shall be deemed by the City to be in the best interest of the City. Notwithstanding the rights of protest listed herein, the City's decision of whether to make the award and to which Proposer shall be final.

END OF SECTION 5

(The remainder of this page is intentionally left blank)

SECTION 6: PROPOSAL SUBMITTALS

6.1 FORMS

The forms listed below **shall** be completed by an official having legal authorization to contractually bind the company or firm. Each signature represents a binding commitment upon the Proposer to provide the goods and/or services offered to the City if the Proposer is determined to be the most responsive and responsible Proposer. Solicitation forms should be uploaded to: www.bidnetdirect.com//cityofdelraybeach

A. Acknowledgment of Addenda

B. Proposal Submittal Signature Page

C. Conflict of Interest Disclosure Form

D. Notification of Public Entity Crimes Law

E. Notification of Public Records Law

F. Drug-Free Workplace

G. Non-Collusion Affidavit

H. Truth-In-Negotiation Certificate

I. Scrutinized Company

J. Human Trafficking Affidavit

K. Sample Performance Bond Format (not required, intentionally omitted)

L. Sample Payment Bond Format (not required, intentionally omitted)

M. Sample Letter of Credit Format (not required, intentionally omitted)

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ACKNOWLEDGEMENT OF ADDENDA

Please complete Part I or Part II, as applicable

PART I:

List below the dates of issue for each addendum received in connection with this solicitation:

Addendum #1, Dated _____

Addendum #2, Dated _____

Addendum #3, Dated _____

Addendum #4, Dated _____

Addendum #5, Dated _____

Addendum #6, Dated _____

Addendum #7, Dated _____

Addendum #8, Dated _____

Addendum #9, Dated _____

Addendum #10, Dated _____

PART II:

☐ NO ADDENDUM WAS RECEIVED IN CONNECTION WITH THIS SOLICITATION

_____

Firm Name

_____

Signature

_____

Name and Title (Print or Type)

_____

Date

PROPOSAL SUBMITTAL SIGNATURE PAGE

By signing this Proposal, the Proposer certifies that it satisfies all legal requirements as an entity to do business with the City, including all Conflict of Interest and Code of Ethics provisions.

Firm Name:

Street Address:

Mailing Address (if different from Street Address):

Telephone Number(s): _____

Fax Number(s): _____

Email Address: _____

Federal Employer Identification Number: _____

Prompt Payment Terms: _____% _____ days' net _____days

Signature: _____
(Signature of authorized agent)

Print Name: _____

Title: _____

Date: _____

By signing this document, the Proposer agrees to all terms and conditions of this solicitation and the resulting contract/agreement.

THE EXECUTION OF THIS FORM CONSTITUTES THE UNEQUIVOCAL OFFER OF PROPOSER TO BE BOUND BY THE TERMS OF ITS PROPOSAL, FOR NOT LESS THAN ONE HUNDRED AND TWENTY (120) DAYS, AND THE PROPOSER'S UNEQUIVOCAL OFFER TO BE BOUND BY THE TERMS AND CONDITIONS SET FORTH IN THIS SOLICITATION. FAILURE TO SIGN THIS SOLICITATION WHERE INDICATED ABOVE, BY AN AUTHORIZED REPRESENTATIVE, SHALL RENDER THE PROPOSAL NON-RESPONSIVE. THE CITY MAY, HOWEVER, IN ITS SOLE DISCRETION, ACCEPT ANY PROPOSALTHAT INCLUDES AN EXECUTED DOCUMENT WHICH UNEQUIVOCALLY BINDS THE PROPOSER TO THE TERMS OF ITS PROPOSAL.

CONFLICT OF INTEREST DISCLOSURE FORM

The award of this contract is subject to the provisions of Chapter 112, *Florida Statutes*. All Proposers must disclose within their Proposal: the name of any officer, director, or agent who is also an employee of the City of Delray Beach.

Furthermore, all Proposers must disclose the name of any City employee who owns, directly or indirectly, an interest of more than five percent (5%) in the Proposer's firm or any of its branches.

The purpose of this disclosure form is to give the City the information needed to identify potential conflicts of interest for evaluation team members and other key personnel involved in the award of this contract.

The term "conflict of interest" refers to situations in which financial or other personal considerations may adversely affect, or have the appearance of adversely affecting, an employee's professional judgment in exercising any City duty or responsibility in administration, management, instruction, research, or other professional activities.

Please check one of the following statements and attach additional documentation if necessary:

_____ To the best of our knowledge, the undersigned firm has no potential conflict of interest due to any other Cities, Counties, contracts, or property interest for this Proposal.

_____ The undersigned firm, by attachment to this form, submits information which may be a potential conflict of interest due to other Cities, Counties, contracts, or property interest for this Proposal.

Acknowledged by:

_____

Firm Name

_____

Signature

_____

Name and Title (Print or Type)

_____

Date

NOTIFICATION OF PUBLIC ENTITY CRIMES LAW

Pursuant to Section 287.133, *Florida Statutes*, you are hereby notified that a person or affiliate who has been placed on the convicted contractors list following a conviction for a public entity crime may not submit a Proposal on a contract to provide any goods or services to a public entity; may not submit a Proposal on a contract with a public entity for the construction or repair of a public building or public work; may not submit Proposals on leases or real property to a public entity; may not be awarded or perform work as a contractor, supplier, sub-Proposer, or consultant under a contract with any public entity; and may not transact business with any public entity in excess of the threshold amount provided in Section 287.017 [F.S.] for Category Two [$35,000.00] for a period of thirty-six (36) months from the date of being placed on the convicted contractors list.

Acknowledged by:

_____
Firm Name

_____
Signature

_____
Name and Title (Print or Type)

_____
Date

(The remainder of this page is intentionally left blank)

NOTIFICATION OF PUBLIC RECORDS LAW PERTAINING TO PUBLIC CONTRACTS AND REQUESTS FOR CONTRACTOR RECORDS PURSUANT TO CHAPTER 119, *FLORIDA STATUTES*

Pursuant to Chapter 119, *Florida Statutes*, Contractor shall comply with the public records law by keeping and maintaining public records required by the City of Delray Beach in order to perform the service. Upon request from the City of Delray Beach' custodian of public records, contract shall provide the City of Delray Beach with a copy of the requested records or allow the records to be inspected or copied within a reasonable time at a cost that does not exceed the cost provided in Chapter 119, *Florida Statutes* or as otherwise provided by law. Contractor shall ensure that public records that are exempt or confidential and exempt from public records disclosure requirements are not disclosed except as authorized by law for the duration of the contract term and following completion of the contract. If the Contractor does not transfer the records to the City of Delray Beach. Contractor upon completion of the contract, shall transfer, at no cost, to the City of Delray Beach all public records in possession of the Contractor or keep and maintain public records required by the City of Delray Beach in order to perform the service. If the Contractor transfers all public records to the City of Delray Beach upon completion of the contract, the Contractor shall destroy any duplicate public records that are exempt or confidential and exempt from public records disclosure requirements. If the Contractor keeps and maintains public records upon completion of the contract, the Contractor shall meet all applicable requirements for retaining public records. All records stored electronically must be provided to the City of Delray Beach, upon request from the City of Delray Beach' custodian of public records, in a format that is compatible with the information technology systems of the City of Delray Beach.

IF CONTRACTOR HAS QUESTIONS REGARDING THE APPLICATION OF CHAPTER 119, *FLORIDA STATUTES*, TO THE CONTRACTOR'S DUTY TO PROVIDE PUBLIC RECORDS RELATING TO THIS CONTRACT, CONTACT THE CUSTODIAN OF PUBLIC RECORDS AT OFFICE OF THE CITY CLERK LOCATED AT 100 NW 1ST AVENUE, DELRAY BEACH, FLORIDA 33444, PHONE NUMBER (561) 243-7000, EMAIL ADDRESS: JOHNSONK@MYDELRAYBEACH.COM**.**

Acknowledged:

Firm Name

Signature

Name and Title (Print or Type)

Date

DRUG-FREE WORKPLACE

_____is a drug-free workplace and has
(Company Name)
a substance abuse policy in accordance with and pursuant to Section 440.102, *Florida Statutes*.

Acknowledged by:

_____
Firm Name

_____
Signature

_____
Name and Title (Print or Type)

_____
Date

(The remainder of this page is intentionally left blank)

NON-COLLUSION AFFIDAVIT

STATE OF _____
COUNTY OF _____

Before me, the undersigned authority, personally appeared _____, who, after being by me first duly sworn, deposes and says of his/her personal knowledge that:

a. He/She is _____ of _____, the Proposer that has submitted a Proposal to perform work for the following:

RFQ No.: _____ Title: _____

b. He/She is fully informed respecting the preparation and contents of the attached Request for Qualifications, and of all pertinent circumstances respecting such solicitation.

Such Proposal is genuine and is not a collusive or sham Proposal.

c. Neither the said Proposer nor any of its officers, partners, owners, agents, representatives, employees, or parties in interest, including this affiant, has in any way colluded, conspired, connived, or agreed, directly or indirectly, with any other Proposer, firm, or person to submit a collusive or sham Proposal in connection with the solicitation and contract for which the attached Proposal has been submitted or to refrain from proposing in connection with such solicitation and contract, or has in any manner, directly or indirectly, sought by agreement or collusion or communication or conference with any other Proposer, firm, or person to fix the price or prices in the attached Proposal or any other Proposer, or to fix any overhead, profit, or cost element of the Proposal price or the Proposal price of any other Proposer, or to secure through any collusion, conspiracy, connivance, or unlawful agreement any advantage against the City or any person interested in the proposed contract.

d. The price or prices quoted in the attached Proposal are fair and proper and are not tainted by any collusion, conspiracy, connivance, or unlawful agreement on the part of the Proposer or any of its agents, representatives, owners, employees, or parties in interest, including this affiant.

_____
Signature

Subscribed and sworn to (or affirmed) before me this _____ day of _____ 20__, by _____, who is personally known to me or who has produced _____ as identification.

SEAL

Notary Signature_____
Notary Name: _____
Notary Public (State): _____
My Commission No: _____
Expires on: _____

TRUTH – IN – NEGOTIATION CERTIFICATE

The undersigned warrants (i) that it has not employed or retained any company or person, other than bona fide employees working solely for the undersigned, to solicit or secure the Agreement and (ii) that it has not paid or agreed to pay any person, company, corporation, individual, or firm other than its bona fide employees working solely for the undersigned or agreed to pay any fee, commission, percentage, gift, or any other consideration contingent upon or resulting from the award or making of the Agreement.

The undersigned certifies that the wage rates and other factual unit costs used to determine the compensation provided for in the Agreement are accurate, complete, and current as of the date of the Agreement.

Name: _____

Title: _____

Date: _____

Signature: _____

(The remainder of this page is intentionally left blank)

SCRUTINIZED COMPANY CERTIFICATION

This certification is required pursuant to Florida State Statute Section 287.135.

As of July 1, 2011, a company that, at the time of bidding or submitting a proposal for a new contract or renewal of an existing contract, is on the Scrutinized Companies with Activities in Sudan List or the Scrutinized Companies with Activities in the Iran Petroleum Energy Sector List is ineligible for, and may not bid on, submit a proposal for, or enter into or renew a contract with an agency or local governmental entity for goods or services of $1 million or more.

Companies must complete and return this form with its response.

Company: _____ FID or EIN No.: _____

Address:_____

City:_____ State: _____ Zip: _____

I, _____, as a representative of _____ certify and affirm that this company is not on the Scrutinized Companies with Activities in Sudan List or the Scrutinized Companies with Activities in the Iran Petroleum Energy Sector List.

_____ _____
Signature Title

_____ _____
Printed Name Date

The remainder of this page is intentionally left blank)

CITY OF DELRAY BEACH

Affidavit Regarding the Use of Coercion for Labor and Services

Vendor Name: _____

Vendor FEIN: _____

Vendor's
Authorized Representative Name and Title:

_____

Address: _____

City: _____ State: _____ Zip: _____

Phone Number: _____

Email Address: _____

Florida Statute §787.06(13) requires all nongovernmental entities executing, renewing, or extending a contract with a governmental entity to provide an affidavit signed by a officer or representative of the nongovernmental entity under penalty of perjury that the nongovernmental entity does not use coercion for labor or services as defined in that statute. The City of Delray Beach, Florida is a governmental entity for the purposes of this statute.

As the officer or representative of the company, I certify that the company identified above does not:

- Use or threaten to use physical force against any person;
- Restrain, isolate, or confine or threaten to restrain, isolate, or confine any person without lawful authority and against his or her will;
- Use lending or other credit methods to establish a debt by any person when labor or services are pledged as a security for the debt, if the value of the labor or services as reasonably assessed is not applied towards the liquidation of the debt, the length and nature of the labor or services are not respectively limited and defined;
- Destroy, conceal, remove, confiscate, withhold, or possess any actual or purported passport, visa, or other immigration document, or any other actual or purported government identification, of any person;
- Cause or threaten to cause financial harm to any person;
- Entice or lure any person by fraud or deceit;
- Provide controlled substances as outlined in Schedule I or Schedule II of Florida State Statute §893.03 to any person for the purpose of exploitation of that person.

Under penalties of perjury, I declare that I have read the foregoing document and the at the facts stated in it are true.

Signature: _____

(Authorized Signature)

Print Name and Title: _____

Date: _____

SAMPLE PERFORMANCE BOND FORMAT

To be provided following receipt of the Notice to Proceed for Construction

SAMPLE PAYMENT BOND FORMAT

To be provided following receipt of the Notice to Proceed for Construction

SAMPLE LETTER OF CREDIT FORMAT

To be provided following receipt of the Notice to Proceed for Construction

END OF SECTION 6

(The remainder of this page is intentionally left blank)

SECTION 7: SAMPLE AGREEMENT FORMAT

REFER TO EXHIBIT B

END OF SECTION 7

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SECTION 8: EXHIBITS

8.1 EXHIBITS

A. Exhibit A – AIA Document A305-2020 and all Exhibits

B. Exhibit B – Sample Agreement

Exhibit B-1 – Sample Agreement (redline version)
Exhibit B-2 – Sample Agreement (clean version)

C. Exhibit C – Technical Specifications

D. Exhibit D – Construction Plans

E. Exhibit E - Permits for this project are herein incorporated into this solicitation as:

Exhibit E-1 – South Florida Water Management District Environmental Resource Permit
Exhibit E-2 – Palm Beach County Health Department General Use Permits
Exhibit E-3 – U.S. Army Corps of Engineers Permit No. SAJ-2022-03311 (SP-JLM)

The CMAR will be required to obtain additional permits as summarized below:

- City of Delray Beach Building Permit (seawall)
- City of Delray Beach Building Permit (pump station)
- City of Delray Beach Building Permit (generator and generator enclosure)
- City of Delray Beach Building Permit (gazebo reinstallation)
- Fuel Tank Permit

F. Exhibit F – FDEP Grant 23FRP42 Agreement

G. Exhibit F-1 – Notice of Funding Source Change

H. Exhibit F-2 – FDEP Grant 23FRP42 Agreement Amendment 1

I. Exhibit G – City Marina As-Built Drawings

J. Exhibit H – Anticipated Sequence of Construction

K. Exhibit I – City of Delray Beach Hurricane Plan (Public Works)

L. Exhibit J – National Pollution Discharge Elimination System (NPDES) Application Form

END OF SECTION 8

SECTION 9: GENERAL TERMS AND CONDITIONS

1. *DEFINITIONS*
   a. *Proposal: any offer(s) submitted in response to this Request for Proposal.*
   b. *Proposer: person or firm submitting a response to this Request for Proposal.*
   c. *Solicitation or Request for Proposal: this Solicitation documentation, including any and all addenda.*
   d. *Proposal Submittal forms: describes the goods or services to be purchased and must be completed and submitted with the Proposal.*
   e. *City: shall refer to the City of Delray Beach, Florida.*
   f. *Contract or Agreement: Request for Proposal, all addenda issued thereto, all affidavits, the signed agreement, and all related documents that comprise the totality of the contract or agreement between the City and the Proposer.*
   g. *Contractor: selected Proposer that is awarded a contract to provide the goods or services to the City.*
   h. *Purchasing and Contract Administration Division: Purchasing and Contract Administration Division of the City of Delray Beach, Florida.*
   i. *Responsible Proposer: Proposer that has the capability in all respects to perform in full the contract requirements, as stated in the Request for Qualifications, and the integrity and reliability that will assure good-faith performance.*
   j. *Responsive Proposer: Proposer whose Proposal conforms in all material respects to the terms and conditions included in the Request for Qualifications.*

2. *CONE OF SILENCE*
   Pursuant to Section 2-355 of the Palm Beach County Ordinance No. 2011-039, and the purchasing policies of the City of Delray Beach, all Solicitations, once advertised and until the appropriate authority has approved an award recommendation, are under the "Cone of Silence". This limits and requires documentation of communications between potential Proposers and/or Proposers on City Solicitations, the City's professional staff, and the City Council members.

3. *ADDENDUM*
   The Purchasing and Contract Administration Division may issue an addendum in response to any inquiry received, prior to the due date for Proposals, which changes, adds, or clarifies the terms, provisions, or requirements of the Solicitation. The Proposer should not rely on any representation, statement, or explanation, whether written or verbal, other than those made in the Solicitation document or in the addenda issued. Where there appears to be a conflict between the Solicitation and any addenda, the last addendum issued shall prevail. It is the Proposer's responsibility to ensure receipt of all addenda and any accompanying documentation. The Proposer is required to submit with its Proposal a signed "Acknowledgment of Addenda" form, when any addenda have been issued.

4. *LEGAL REQUIREMENTS*
   This Solicitation is subject to all legal requirements contained in the applicable City Ordinances and Resolutions, as well as all applicable City, State, and Federal Statutes. Where conflict exists between this Solicitation and these legal requirements, the authority shall prevail in the following order: Federal, State, and local.

5. *CHANGE OF PROPOSAL*
   Prior to the scheduled due date for Proposals, a Proposer may change its Proposal by submitting a new Proposal (as indicated on the cover page) with a letter on the firm's letterhead, signed by an authorized agent stating that the new Proposal replaces the original Proposal. The new submittal shall contain the letter and all information as required for submitting the original Proposal. No changes to a Proposal will be accepted after Proposals have been opened.

6. *WITHDRAWAL OF PROPOSAL*

A Proposal shall be irrevocable unless the Proposal is withdrawn as provided herein. Only a written letter received by the Purchasing and Contract Administration Division prior to the due date for Proposals may withdraw a Proposal. A Proposal may also be withdrawn ninety (90) days after the Proposal has been opened and prior to award, by submitting a letter to the Purchasing and Contracts Director. The withdrawal letter must be on company letterhead and signed by an authorized agent of the Proposer.

7. *CONFLICTS WITHIN THE SOLICITATION*

Where there appears to be a conflict between the General Terms and Conditions, Special Conditions, the Scope of Services, and/or Description of Items, the Proposal Submittal forms, or any addendum issued, the order of precedence shall be: the last addendum issued, the Proposal Submittal forms, the Scope of Services and/or Description of Items, the Special Conditions, and then the General Terms and Conditions.

8. *PROMPT PAYMENT TERMS*

It is the policy of the City of Delray Beach that payment for all purchases by City departments shall be made in a timely manner. The City will pay the selected Proposer upon receipt and acceptance of the goods or services by a duly authorized representative of the City. In accordance with Florida Statutes, Section 218.74, the time at which payment shall be due from the City shall be forty-five (45) days from receipt of a proper invoice. The time at which payment shall be due to small businesses shall be thirty (30) days from receipt of a proper invoice. Proceedings to resolve disputes for payment of obligations shall be concluded by final written decision of the City Manager or designee, not later than sixty (60) days after the date on which the proper invoice was received by the City.

9. *DISCOUNTS (PROMPT PAYMENTS)*

The Proposer may offer cash discounts for prompt payments; however, such discounts will not be considered in determining the selected Proposer during the evaluation period. Proposers are requested to provide prompt payment terms in the space provided on the Proposal submittal forms signature page of the Solicitation.

10. *PREPARATION OF PROPOSALS*

a. *The Proposal submittal forms define requirements of the services to be performed or the items to be purchased and must be completed and submitted with the Proposal. Use of any other forms will result in the rejection of the Proposal. The Proposal submittal forms must be legible. Proposers shall use typewriter, computer, or ink. All changes must be crossed out and initialed in ink. Failure to comply with these requirements may cause the Proposal to be rejected.*

b. *An authorized agent of the Proposer's firm must sign the Proposal submittal forms where indicated.* ***Failure to sign the Signature Page of the Proposal shall render the Proposal non-responsive.***

c. *The Proposer must identify any exceptions it takes to the terms and conditions of the Solicitation and contract. Exceptions will not automatically result in the Proposer being deemed non-responsive; however, such a determination is at the discretion of the City. Proposers are cautioned that they may be considered non-responsive if Proposals are conditioned to modifications, changes, or revisions to the terms and conditions of this Solicitation.*

d. *The Proposer may submit alternate Proposal(s) for the same Solicitation provided that such offer is allowable under the terms and conditions. The alternate Proposal must meet or exceed the minimum requirements and be submitted as a separate Proposal marked "Alternate Proposal".*

e. When there is a discrepancy between the unit prices and any extended prices, the unit prices will prevail.

f. Late Proposals will not be accepted and will be returned to the sender unopened. It is the Proposer's responsibility to ensure timely delivery by the due date and time, and at the place stated in this Solicitation. No exceptions will be made due to weather, carrier, traffic, illness, or other issues.

11. CANCELLATION OF SOLICITATION

The City of Delray Beach reserves the right to cancel, in whole or in part, any Requests for Proposals when it is in the best interest of the City.

12. AWARD OF CONTRACT

a. This contract may be awarded to the responsive and responsible Proposer meeting all requirements as set forth in the Solicitation. The City reserves the right to reject any and all Proposals, to waive irregularities or technicalities, and to re-advertise for all or any part of this Solicitation as deemed in its best interest. The City shall be the sole judge of its best interest.

b. The City reserves the right to reject any and all Proposals if it is determined that prices are excessive, best offers are determined to be unreasonable, or it is otherwise determined to be in the City's best interest to do so.

c. The Proposer's prior performance as a prime contractor or subcontractor on previous City contracts shall be taken into account in evaluating the Proposal received for this Solicitation.

d. The City will provide a copy of the ranking and scores to all Proposers responding to this Solicitation.

e. Award of this Proposal may be predicated on compliance with and submittal of all required documents as stipulated in the Solicitation.

f. The City reserves the right to request and evaluate additional information from any Proposer after the due date for Proposals, as the City deems necessary.

13. CONTRACT EXTENSION

The City reserves the right to automatically extend any agreement for a maximum period not to exceed one hundred and eighty (180) calendar days in order to provide City departments with continual service and supplies while a new agreement is being solicited, evaluated, and/or successful.

14. WARRANTY

All warranties express and implied shall be made available to the City for goods and services covered by this Solicitation. All goods furnished shall be fully guaranteed by the selected Proposer against factory defects and workmanship. At no expense to the City, the selected Proposer shall correct any and all apparent and latent defects that may occur within the manufacturer's standard warranty.

15. ESTIMATED QUANTITIES

Estimated quantities or dollars are for Proposer's guidance only: (a) estimates are based on the City's anticipated needs and/or usage; and (b) the City may use these estimates to determine the selected Proposer. No guarantee is expressed or implied as to quantities or dollars that will be used during the contract period. The City is not obligated to place any order for the given amount subsequent to the award of this contract.

16. NON-EXCLUSIVITY

It is the intent of the City to enter into an agreement with the selected Proposer that will satisfy its needs as described herein. However, the City reserves the right as deemed in its best interest to perform, or cause to be performed, the work and services, or any portion thereof, herein

described in any manner it sees fit, including but not limited to, award of other contracts, use of any contractor, or perform the work with its own employees.

17. *CONTINUATION OF WORK*
Any work that commences prior to and will extend beyond the expiration date of the current contract period shall, unless terminated by mutual written agreement between the City and the selected Proposer, continue until completion at the same prices, terms, and conditions.

18. *PROTEST*
a. *A recommendation for contract award or rejection of award may be protested by a Proposer. The Proposer may file a written protest with the City Clerk's office. The Proposer shall file its written protest with the City Clerk, Monday through Friday, between the hours of 8:00 a.m. and 5:00 p.m., excluding legal holidays. Protests shall contain the name, address, and phone number of the petitioner, name of the petitioner's representative (if any), and the title and Proposal number of the Solicitation. The protest shall specifically describe the subject matter, facts giving rise to the protest, and the action requested from the City.*

b. *The written protest must be received within three business days from the time of the initial posting of the intended award. Notice of Intent to Award shall be posted in BidNet Direct . Failure to file a timely formal written protest within the time period specified shall constitute a waiver by the Proposer of all rights of protest under this procedure (Purchasing Policies and Procedure Manual).*

c. *The letter of protest shall be accompanied by a non- refundable protest application fee in an amount equal to one percent (1%) of the protestor's bid or five thousand dollars ($5,000.00), whichever is less. The protest application fee must be a cashier's check, a certified check, or an attorney's trust account check made payable to the City of Delray protest application fee must be a cashier's check, a certified check, or an attorney's trust account check made payable to the City of Delray protest. Within seven (7) days (excluding Saturdays, Sundays and legal holidays) of receipt of the formal written protest, the Purchasing Director and the City Attorney shall attempt to settle or resolve the dispute, with or without a hearing at the City Attorney's sole discretion. A decision will be rendered in writing and shall: (1) state the reasons for the action taken; and (2) inform the protestor of its right to appeal as provided herein. A copy of the decision of the Purchasing Director and the City Attorney shall be mailed or otherwise furnished immediately to the protestor.*

19. *LAWS AND REGULATIONS*
The selected Proposer shall comply with all laws and regulations applicable to provide the goods or services specified in this Solicitation. The Proposer shall be familiar with all federal, state, and local laws that may affect the goods and/or services offered.

20. *LICENSES, PERMITS AND FEES*
The selected Proposer shall hold all licenses and/or certifications, obtain and pay for all permits and/or inspections, and comply with all laws, ordinances, regulations, and building code requirements applicable to the work required herein. Damages, penalties, and/or fines imposed on the City or a selected Proposer for failure to obtain and maintain required licenses, certifications, permits, and/or inspections shall be borne by the selected Proposer.

21. *SUBCONTRACTING*
Unless otherwise specified in this Solicitation, the selected Proposer shall not subcontract any portion of the work without the prior written consent of the City. The ability to subcontract may be further limited by the Special Conditions.

Subcontracting without the prior consent of the City shall constitute a material breach of the agreement and may result in termination of the contract for default.

22. *ASSIGNMENT*

The selected Proposer shall not assign, transfer, hypothecate, or otherwise dispose of this contract, including any rights, title, or interest therein, or its power to execute such contract to any person, company, or corporation without the prior written consent of the City. Assignment without the prior consent of the City may result in termination of the contract for default.

23. *SHIPPING TERMS*

Unless otherwise specified in the Solicitation, prices quoted shall be F.O.B. Destination. Freight shall be included in the proposed price.

24. *RESPONSIBILITIES AS EMPLOYER*

The employee(s) of the selected Proposer shall be considered to be at all times its employee(s), and not an employee(s) or agent(s) of the City or any of its departments. The selected Proposer shall provide physically competent employee(s) capable of performing the work as required. The City may require the selected Proposer to remove any employee it deems unacceptable. All employees of the selected Proposer shall wear proper identification.

It is the selected Proposer's responsibility to ensure that all its employees and subcontractors comply with the employment regulations required by the US Department of Homeland Security. The City shall have no responsibility to check or verify the legal immigration status of any employee of the selected Proposer.

25. *INDEMNIFICATION*

The selected Proposer shall indemnify and hold harmless the City and its officers, employees, agents, and instrumentalities from any and all liability, losses, or damages, including attorney's fees and costs of defense, which the City or its officers, employees, agents, or instrumentalities may incur as a result of claims, demands, suits, causes of actions, or proceedings of any kind or nature arising out of, relating to, or resulting from the performance of the agreement by the selected Proposer or its employees, agents, servants, partners, principals, or subcontractors. The selected Proposer shall pay all claims and losses in connection therewith, and shall investigate and defend all claims, suits, or actions of any kind or nature in the name of the City, where applicable, including appellate proceedings, and shall pay all costs, judgments, and attorney's fees which may be incurred thereon. The selected Proposer expressly understands and agrees that any insurance protection required by this contract agreement or otherwise provided by the selected Proposer shall in no way limit the responsibility to indemnify, keep and save harmless, and defend the City or its officers, employees, agents, and instrumentalities as herein provided.

26. *COLLUSION*

A Proposer recommended for award as the result of a competitive Solicitation for any City purchase of supplies, materials, and services (including professional services, other than professional architectural, engineering, and other services subject to Sec. 287.055 Florida Stats.), purchase, lease, permit, concession, or management agreement shall, within five (5) business days of the filing of such recommendation, submit an affidavit under the penalty of perjury, on a form provided by the City stating either that the contractor is not related to any of the other parties proposing in the competitive Solicitation or identifying all related parties; and attesting that the Proposal is genuine and not a sham or collusive or made in the interest or on behalf of any person not therein named, and that the Proposer has not, directly or indirectly, induced or solicited any other Proposer to put in a sham Proposal, or any other person, firm, or corporation to refrain from proposing, and that the Proposer has not in any manner sought by collusion to secure to the Proposer an advantage

over any other Proposer. In the event a recommended Proposer identifies related parties in the competitive Solicitation, its Proposal shall be presumed to be collusive and the recommended Proposer shall be ineligible for award unless that presumption is rebutted to the satisfaction of the City. Any person or entity that fails to submit the required affidavit shall be ineligible for contract award.

27. *MODIFICATION OF CONTRACT*
The contract may be modified by mutual consent, in writing, through the issuance of a modification to the contract, a supplemental agreement, purchase order, or change order, as appropriate.

28. *TERMINATION FOR CONVENIENCE*
The City, at its sole discretion, reserves the right to terminate any contract entered into pursuant to this Request for Qualifications (RFQ) with or without cause immediately upon providing written notice to the selected Proposer. Upon receipt of such notice, the selected Proposer shall not incur any additional costs under the contract. The City shall be liable only for reasonable costs incurred by the selected Proposer prior to the date of the notice of termination. The City shall be the sole judge of "reasonable costs."

29. *TERMINATION FOR DEFAULT*
The City reserves the right to terminate this contract, in part or in whole, or place the vendor on probation in the event the selected Proposer fails to perform in accordance with the terms and conditions stated herein by providing written notice of such failure or default and by specifying a reasonable time period within which the selected Proposer must cure any such failure to perform or default. If the selected Proposer fails to cure the default within the time specified, the City may then terminate the subject contract by providing written notice to the selected Proposer. The City further reserves the right to suspend or debar the selected Proposer in accordance with the appropriate City ordinances, resolutions, and/or policies. The vendor will be notified by letter of the City's intent to terminate. In the event of termination for default, the City may procure the required goods and/or services from any source and use any method deemed in its best interest. All re-procurement costs shall be borne by the incumbent Proposer

30. *FRAUD AND MISREPRESENTATION*
Any individual, corporation, or other entity that attempts to meet its contractual obligations with the City through fraud, misrepresentation, or material misstatement, may be debarred for up to five (5) years. The City, as a further sanction, may terminate or cancel any other contracts with such individual, corporation, or entity. Such individual or entity shall be responsible for all direct or indirect costs associated with termination or cancellation, including attorney's fees.

31. *ACCESS AND AUDIT OF RECORDS*
The City reserves the right to require the selected Proposer to submit to an audit by an auditor of the City's choosing at the selected Proposer's expense. The selected Proposer shall provide access to all of its records, which relate directly or indirectly to this contract, at its place of business during regular business hours. The selected Proposer shall retain all records pertaining to this contract, and upon request, make them available to the City for three (3) years following expiration of the contract. The selected Proposer agrees to provide such assistance as may be necessary to facilitate the review or audit by the City to ensure compliance with applicable accounting and financial standards.

32. *OFFICE OF THE INSPECTOR GENERAL*
Palm Beach County has established the Office of the Inspector General, which is authorized and empowered to review past, present, and proposed County programs, contracts, transactions, accounts and records. The Inspector General (IG) has the power to subpoena witnesses, administer oaths, require the production of records, and monitor existing projects and programs. The

Inspector General may, on a random basis, perform audits on all City contracts.

33. *PRE-AWARD INSPECTION*
The City may conduct a pre-award inspection of the Proposer's premises or hold a pre-award qualification hearing to determine if the Proposer is capable of performing the requirements of this Solicitation.

34. *PROPRIETARY/CONFIDENTIAL INFORMATION*
Proposers are hereby notified that all information submitted as part of, or in support of, Proposal submittals will be available for public inspection after the opening of Proposals in compliance with Chapter 119 of the Florida Statutes; popularly known as the "Public Record Law." The Proposer shall not submit any information in response to this Solicitation that Proposer considers a trade secret, proprietary, or confidential. The submission of any information to the City in connection with this Solicitation shall be deemed conclusively to be a waiver of any trade secret or other protection that would otherwise be available to the Proposer. In the event that the Proposer submits information to the City in violation of this restriction, either inadvertently or intentionally, and clearly identifies that information in the Proposal as protected or confidential, the City may, in its sole discretion, either (a) communicate with the Proposer in writing in an effort to obtain the Proposer's withdrawal of the confidentiality restriction, or (b) endeavor to redact and return that information to the Proposer as quickly as possible, and if appropriate, evaluate the balance of the Proposal. The redaction or return of information pursuant to this clause may render a Proposal non-responsive.

35. *HEALTH INSURANCE PORTABILITY AND ACCOUNTABILITY ACT (HIPAA)*
Any person or entity that performs or assists the City of Delray Beach with a function or activity involving the use or disclosure of "individually identifiable health information (IIHI) and/or Protected Health Information (PHI) shall comply with the Health Insurance Portability and Accountability Act (HIPAA) of 1996. HIPAA mandates for privacy, security, and electronic transfer standards include, but are not limited to:

a. *Use of information only for performing services required by the contract or as required by law;*

b. *Use of appropriate safeguards to prevent non-permitted disclosures;*

c. *Reporting to the City of Delray Beach any non-permitted use or disclosure;*

d. *Assurances that any agents and subcontractors agree to the same restrictions and conditions that apply to the Proposer and reasonable assurances that IIHI/PHI will be held confidential;*

e. *Making Protected Health Information (PHI) available to the customer;*

f. *Making PHI available to the customer for review and amendment, and incorporating any amendments requested by the customer;*

g. *Making PHI available to the City of Delray Beach for an accounting of disclosures; and*

h. *Making internal practices, books, and records related to PHI available to the City of Delray Beach for compliance audits.*

PHI shall maintain its protected status regardless of the form and method of transmission (paper records and/or electronic transfer of data). The selected Proposer must give its customers written notice of its privacy information practices, including specifically, a description of the types of uses and disclosures that would be made with protected health information.

36. ADDITIONAL FEES AND SURCHARGES
Unless provided for in the contract/agreement, the City will not make any additional payments such as fuel surcharges, demurrage fees, or delay-in-delivery charges.

37. COMPLIANCE WITH FEDERAL STANDARDS
All items to be purchased under this contract shall be in accordance with all governmental standards, to include, but not be limited to, those issued by the Occupational Safety and Health Administration (OSHA), the National Institute of Occupational Safety Hazards (NIOSH), and the National Fire Protection Association (NFPA).

38. COMPLIANCE WITH FEDERAL REGULATIONS DUE TO USE OF FEDERAL FUNDING
If the goods or services to be acquired under this Solicitation are to be purchased, in part or in whole, with Federal funding, it is hereby agreed and understood that Section 60-250.4, Section 60-250.5, and Section 60-741.4 of Title 41 of the United States Code, which addresses Affirmative Action requirements for disabled workers, is incorporated into this Solicitation and resultant contract by reference.

39. BINDING EFFECT
All of the terms and provisions of this contract/agreement, whether so expressed or not, shall be binding upon, inure to the benefit of, and be enforceable by the parties and their respective legal representatives, successors, and permitted assigns.

40. SEVERABILITY
In the event any term or provision of any contract or agreement entered into pursuant to this Solicitation is found by a court of competent jurisdiction to be invalid, the remaining terms and provisions shall continue to be effective and shall be interpreted and given meaning to the greatest possible extent in the absence of any severed terms or provisions.

41. GOVERNING LAW AND VENUE
This contract and all transactions contemplated by this agreement shall be governed by and construed and enforced in accordance with the laws of the State of Florida without regard to any contrary conflicts of law principle. Venue of all proceedings in connection herewith shall lie exclusively in Palm Beach County, Florida, and each party hereby waives whatever its respective rights may have been in the selection of venue.

42. ATTORNEY'S FEES
It is hereby understood and agreed that in the event any lawsuit in the judicial system, federal or state, is brought to enforce compliance with this contract or interpret same, or if any administrative proceeding is brought for the same purposes, each party shall pay their own attorney's fees and costs, including appellate fees and costs.

43. EQUAL OPPORTUNITY AND ANTI-DISCRIMINATION
The City of Delray Beach complies with all laws prohibiting discrimination on the basis of age, race, gender, religion, creed, political affiliation, sexual orientation, physical or mental disability, color or national origin, and therefore is committed to assuring equal opportunity in the award of contracts and encourages small, local, minority, and female-owned businesses to participate.

During the performance of this contract, the selected Proposer agrees it will not discriminate or permit discrimination in its hiring practices or in its performance of the contract. The selected Proposer shall strictly adhere to the equal employment opportunity requirements and any applicable requirements established by the State of Florida, Palm Beach County, and the federal government.

The selected Proposer further acknowledges and agrees to provide the City with all information and documentation that may be requested by the City from time to time regarding the Solicitation,

selection, treatment, and payment of subcontractors, suppliers, and Proposers in connection with this contract.

44. *AVAILABILITY OF CONTRACT TO OTHER CITY DEPARTMENTS*
It is agreed and understood that any City department or agency may access this contract and purchase the goods or services successful herein. Each City department will issue a separate purchase order to the selected Proposer for the department's specific purchases.

45. *CRIMINAL HISTORY BACKGROUND CHECKS*
Prior to hiring a contract employee or contracting with a Proposer, the City may conduct a comprehensive criminal background check by accessing any Federal, State, or local law enforcement database available. The contract employee or Proposer will be required to sign an authorization for the City to access criminal background information. The costs for the background checks shall be borne by the City.

46. *LABOR, MATERIALS, AND EQUIPMENT*
Unless specified elsewhere in the Solicitation or resultant contract, all labor, materials, and equipment required for the performance of the requirements of the contract shall be supplied by the selected Proposer.

47. *MINIMUM WAGE REQUIREMENTS*
The selected Proposer shall comply with all minimum wage requirements, such as Living Wage requirements, minimum wages based on Federal Law, minimum wages based on the Davis-Bacon Act, and the provisions of any other employment laws, as may be applicable to this contract.

48. *PACKING SLIP AND DELIVERY TICKET*
A packing slip and/or delivery ticket shall accompany all items delivered to the City. The documents shall include information on the contract number or purchase order, any back-order items, and the number or quantity of items being delivered.

49. *PURCHASE OF OTHER ITEMS*
The City reserves the right to purchase other related goods or services, not listed in the Solicitation, during the contract term. When such requirements are identified, the City may request a price quote from the selected Proposer on the contract. The City, at its sole discretion, will determine if the prices offered are reasonable, and may choose to purchase the goods or services from the selected Proposer, another contract Proposer, or a non-contract Proposer.

50. *PUBLIC RECORDS*
Florida law provides that municipal records shall at all times be available to the public for inspection. Chapter 119, Florida Statutes, the Public Records Law, requires that all material submitted in connection with a Proposal response shall be deemed to be public record subject to public inspection upon award, recommendation for award, or thirty (30) days after Proposal opening, whichever occurs first. Certain exemptions to public disclosure are statutorily provided for in Section 119.07, Florida Statutes. If the Proposer believes any of the information contained in his/her/its Proposal is considered confidential and/or proprietary, inclusive of trade secrets as defined in Section 812.081, Florida Statutes, and is exempt from the Public Records Law, then the Proposer must, in its response, specifically identify the material which is deemed to be exempt and state the legal authority for the exemption. All materials that qualify for exemption from Chapter 119, Florida Statutes or other applicable law must be submitted in a separate envelope, clearly identified as "EXEMPT FROM PUBLIC DISCLOSURE" with the firm's name and the Proposal number clearly marked on the outside. The City will not accept Proposals when the entire Proposal is labeled as exempt from disclosure. The City's determination of whether an exemption applies shall be final, and the Proposer agrees to defend, indemnify, and hold harmless the City and the City's officers, employees, and agents against any loss or damages incurred by any person or entity

as a result of the City's treatment of records as public records.

The selected Proposer(s) shall keep and maintain public records and fully comply with the requirements set forth at Section 119.0701, Florida Statues, as applicable; failure to do so shall constitute a material breach of any and all agreements awarded pursuant to this Solicitation.

51. *CONFLICTS OF INTEREST*
All Proposers must disclose with their Proposal the name of any officer, director, or agent who is also an employee of the City of Delray Beach. Further, all Proposers must disclose the name of any City employee who has any interest, financial or otherwise, direct or indirect, of five percent (5%) or more in the Proposers' firm or any of its branches. Failure to disclose any such affiliation will result in disqualification of the Proposer from this Solicitation and may be grounds for further disqualification from participating in any future Solicitations with the City.

52. *PUBLIC ENTITY CRIMES*
As provided in Section 287.133(2) (a), Florida Statutes, a person or affiliate who has been placed on the convicted Proposers list following a conviction for a public entity crime may not submit a Proposal on a contract to provide any goods or services to a public entity; may not submit a Proposal on a contract with a public entity for the construction or repair of a public building or public work; may not submit Proposals on leases of real property to a public entity; may not be successful or perform work as a contractor, supplier, subcontractor, or consultant under a contract with any public entity.

53. *OTHER GOVERNMENTAL AGENCIES*
If a Proposer is successfully awarded a contract as a result of this Solicitation, the Proposer shall allow other governmental agencies to access this contract and purchase the goods and services under the terms and conditions at the prices awarded.

54. *COMPLETION OF WORK AND DELIVERY*
All work shall be performed and all deliveries made in accordance with good commercial practice. The work schedule and completion dates shall be adhered to by the selected Proposer, except in such cases where the completion date will be delayed due to acts of nature, force majeure, strikes, or other causes beyond the control of the selected Proposer. In these cases, the selected Proposer shall notify the City of the delays in advance of the original completion so that a revised delivery schedule can be appropriately considered by the City.

55. *FAILURE TO DELIVER OR COMPLETE WORK*
Should the selected Proposer fail to deliver or complete the work within the time stated in the contract, it is hereby agreed and understood that the City reserves the authority to cancel the contract with the selected Proposer and secure the services of another Proposer to purchase the items or complete the work. If the City exercises this authority, the City shall be responsible for reimbursing the selected Proposer for work that was completed and items delivered and accepted by the City in accordance with the contract specifications. The City may, at its option, demand payment from the selected Proposer, through an invoice or credit memo, for any additional costs over and beyond the original contract price that were incurred by the City as a result of having to secure the services of another Proposer.

56. *CORRECTING DEFECTS*
The selected Proposer shall be responsible for promptly correcting any deficiency, at no cost to the City, within three (3) calendar days after the City notifies the selected Proposer of such deficiency in writing. If the selected Proposer fails to correct the defect, the City may (a) place the selected Proposer in default of its contract; and/or (b) procure the products or services from another source and charge the selected Proposer for any additional costs that are incurred by the City for this work or items, either through a credit memorandum or through invoicing.

57. ACCIDENT PREVENTION AND BARRICADES

Precautions shall be exercised at all times for the protection of persons and property. All selected Proposers performing services or delivering goods under this contract shall conform to all relevant OSHA, State, and County regulations during the course of such effort. Any fines levied by the above-mentioned authorities for failure to comply with these requirements shall be borne solely by the selected Proposer. Barricades shall be provided by the selected Proposer when work is performed in areas traversed by persons, or when deemed necessary by the City.

58. OMISSIONS IN SPECIFICATIONS

The scope of services or description of items contained within this Solicitation describes the various functions and classes of work required as necessary for the completion of the project. Any omissions of inherent technical functions or classes of work within the specifications and/or statement of work shall not relieve the Proposer from furnishing, installing, or performing such work where required to the satisfactory completion of the project.

59. MATERIALS SHALL BE NEW AND WARRANTED AGAINST DEFECTS

The selected Proposer hereby acknowledges and agrees that all materials, except where recycled content is specifically requested, supplied by the selected Proposer in conjunction with this Solicitation and resultant contract shall be new, warranted for their merchantability, and fit for a particular purpose. In the event any of the materials supplied to the City by the selected Proposer are found to be defective or do not conform to specifications, (1) the materials may be returned to the selected Proposer at the Proposer's expense and the contract cancelled; or (2) the City may require the selected Proposer to replace the materials at the selected Proposer's expense.

60. TOXIC SUBSTANCES/FEDERAL "RIGHT TO KNOW" REGULATIONS

The Federal "Right to Know" Regulation implemented by the Occupational Safety and Health Administration (OSHA) requires employers to inform their employees of any toxic substances to which they may be exposed in the workplace, and to provide training in safe handling practices and emergency procedures. It also requires notification to local fire departments of the location and characteristics of all toxic substances regularly present in the workplace.

Accordingly, the selected Proposer performing under this contract is required to provide two (2) complete sets of Material Safety Data Sheets to each City department utilizing any products that are subject to these regulations. This information shall be provided at the time when the initial delivery is made, on a department-by-department basis.

61. TAXES

The City of Delray Beach is exempt from Federal and State taxes for tangible personal property.

62. PROPOSER'S COSTS

The City shall not be liable for any costs incurred by Proposers in responding to this Request for Qualifications.

63. SUBSTITUTION OF PERSONNEL

It is the intention of the City that the selected Proposer's personnel proposed for the contract shall be available for the initial contract term. In the event the selected Proposer wishes to substitute personnel, the selected Proposer shall propose personnel of equal or higher qualifications, and all replacement personnel are subject to the City's approval. In the event the substitute personnel are not satisfactory to the City, and the matter cannot be resolved to the satisfaction of the City, the City reserves the right to cancel the contract for cause.

64. FORCE MAJEURE

The City and the selected Proposer are excused from the performance of their respective obligations under the contract when and to the extent that their performance is delayed or prevented by any circumstances beyond their control, including fire, flood, explosion, strikes or other labor disputes, natural disasters, public emergency, war, riot, civil commotion, malicious damage, act or omission of any governmental authority, delay or failure or shortage of any type of transportation, equipment, or service from a public utility needed for their performance provided that:

a. The non-performing party gives the other party prompt written notice describing the particulars of the force majeure, including, but not limited to, the nature of the occurrence and its expected duration, and continues to furnish timely reports with respect thereto during the period of the force majeure.

b. The excuse of performance is of no greater scope and of no longer duration than is required by the force majeure.

c. No obligations of either party that arose before the force majeure causing the excuse of performance are excused as a result of the force majeure.

d. The non-performing party uses its best efforts to remedy its inability to perform.

Notwithstanding the above, performance shall not be excused under this section for a period in excess of two (2) months, provided that in extenuating circumstances, the City may excuse performance for a longer term. Economic hardship of the selected Proposer shall not constitute a force majeure. The term of the contract shall be extended by a period equal to that during which either party's performance is suspended under this section.

65. NOTICES

Notices shall be effective when received at the addresses specified in the contract/agreement. Changes in respective addresses to which such notices are to be directed may be made from time to time by either party by written notice to the other party. Facsimile and email transmissions are acceptable notice effective when received; however, facsimile and email transmissions received after 5:00 p.m. or on weekends or holidays will be deemed received on the next business day. The original of the notice must also be mailed to the receiving party.

Nothing contained in this section shall be construed to restrict the transmission of routine communications between representatives of the selected Proposer and the City of Delray Beach.

66. FISCAL FUNDING OUT

The City's obligation pursuant to any contract or agreement entered into in accordance with this Solicitation is specifically contingent upon the lawful appropriation of funds. Failure to lawfully appropriate funds for any contract or agreement awarded shall result in automatic termination of the contract or agreement. A non-appropriation event shall not constitute a default or breach of said contract or agreement by the City.

END OF SECTION 9

SECTION 10: SOLICITATION SUMMARY

PURCHASING AND CONTRACT ADMINISTRATION DIVISION
The City of Delray Beach
100 NW 1st Avenue
Delray Beach, FL 33444

SOLICITATION SUMMARY

IMPORTANT NOTICE
The information you provide on this page will be read aloud at the PUBLIC OPENING for this solicitation. It is VERY IMPORTANT that the summary information you provide below is exactly the same information contained in your Proposal. If subsequent to the opening of Proposals, the City determines that the information contained in the electronic version of your Proposal is different from the information on this Solicitation Summary form, the City reserves the right to deem your Proposal NON-RESPONSIVE and remove your Proposal from further evaluation and consideration for contract award.

PROPOSAL INFORMATION

Proposal Number:	RFQ No. 2025-006
Title:	Project No. 17-047 / Historic Marine Way Seawall, Roadway, Utility, and Drainage Improvements CONSTRUCTION MANAGER AT RISK
Due Date and Time:	December 4, 2024 **@ 2:00 P.M., (LOCAL TIME)**
Name of Proposer:	_____
Address:	_____
Contact Person:	_____
Authorized Signature:	_____
Date:	_____

By signing and submitting this Solicitation Summary form, the Proposer affirms that the information provided above is an exact and correct summary of the information contained in the electronic version of the Proposer's Proposal to the City of Delray Beach.

THIS SOLICITATION SUMMARY MUST BE SIGNED AND UPLOADED WITH YOUR SECURE ELECTRONIC PROPOSAL SUBMITTAL THROUGH www.bidnetdirect.com//cityofdelraybeach

END OF SECTION 10

AIA® Document A305™ – 2020

Contractor's Qualification Statement

THE PARTIES SHOULD EXECUTE A SEPARATE CONFIDENTIALITY AGREEMENT IF THEY INTEND FOR ANY OF THE INFORMATION IN THIS A305-2020 TO BE HELD CONFIDENTIAL.

SUBMITTED BY:
(Organization name and address.)

SUBMITTED TO:
(Organization name and address.)

This document has important legal consequences. Consultation with an attorney is encouraged with respect to its completion or modification.

TYPE OF WORK TYPICALLY PERFORMED
(Indicate the type of work your organization typically performs, such as general contracting, construction manager as constructor services, HVAC contracting, electrical contracting, plumbing contracting, or other.)

THIS CONTRACTOR'S QUALIFICATION STATEMENT INCLUDES THE FOLLOWING:
(Check all that apply.)

- ☐ Exhibit A – General Information
- ☐ Exhibit B – Financial and Performance Information
- ☐ Exhibit C – Project-Specific Information
- ☐ Exhibit D – Past Project Experience
- ☐ Exhibit E – Past Project Experience (Continued)

CONTRACTOR CERTIFICATION
The undersigned certifies under oath that the information provided in this Contractor's Qualification Statement is true and sufficiently complete so as not to be misleading.

_____ _____
Organization's Authorized Representative Signature **Date**

_____
Printed Name and Title

NOTARY
State of:
County of:
Signed and sworn to before me this day of

_____
Notary Signature

My commission expires:

Sample

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AIA® Document A305™ – 2020 Exhibit A

General Information

This Exhibit is part of the Contractor's Qualification Statement, submitted by
and dated the day of in the year
(In words, indicate day, month and year.)

This document has important legal consequences. Consultation with an attorney is encouraged with respect to its completion or modification.

§ A.1 ORGANIZATION
§ A.1.1 Name and Location
§ A.1.1.1 Identify the full legal name of your organization.

§ A.1.1.2 List all other names under which your organization currently does business and, for each name, identify jurisdictions in which it is registered to do business under that trade name.

§ A.1.1.3 List all prior names under which your organization has operated and, for each name, indicate the date range and jurisdiction in which it was used.

§ A.1.1.4 Identify the address of your organization's principal place of business and list all office locations out of which your organization conducts business. If your organization has multiple offices, you may attach an exhibit or refer to a website.

§ A.1.2 Legal Status
§ A.1.2.1 Identify the legal status under which your organization does business, such as sole proprietorship, partnership, corporation, limited liability corporation, joint venture, or other.

.1 If your organization is a corporation, identify the state in which it is incorporated, the date of incorporation, and its four highest-ranking corporate officers and their titles, as applicable.

.2 If your organization is a partnership, identify its partners and its date of organization.

.3 If your organization is individually owned, identify its owner and date of organization.

.4 If the form of your organization is other than those listed above, describe it and identify its individual leaders:

Sample

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§ A.1.2.2 Does your organization own, in whole or in part, any other construction-related businesses? If so, identify and describe those businesses and specify percentage of ownership.

§ A.1.3 Other Information

§ A.1.3.1 How many years has your organization been in business?

§ A.1.3.2 How many full-time employees work for your organization?

§ A.1.3.3 List your North American Industry Classification System (NAICS) codes and titles. Specify which is your primary NAICS code.

§ A.1.3.4 Indicate whether your organization is certified as a governmentally recognized special business class, such as a minority business enterprise, woman business enterprise, service disabled veteran owned small business, woman owned small business, small business in a HUBZone, or a small disadvantaged business in the 8(a) Business Development Program. For each, identify the certifying authority and indicate jurisdictions to which such certification applies.

§ A.2 EXPERIENCE

§ A.2.1 Complete Exhibit D to describe up to four projects, either completed or in progress, that are representative of your organization's experience and capabilities.

§ A.2.2 State your organization's total dollar value of work currently under contract.

§ A.2.3 Of the amount stated in Section A.2.2, state the dollar value of work that remains to be completed:

§ A.2.4 State your organization's average annual dollar value of construction work performed during the last five years.

§ A.3 CAPABILITIES

§ A.3.1 List the categories of work that your organization typically self-performs.

§ A.3.2 Identify qualities, accreditations, services, skills, or personnel that you believe differentiate your organization from others.

§ A.3.3 Does your organization provide design collaboration or pre-construction services? If so, describe those services.

§ A.3.4 Does your organization use building information modeling (BIM)? If so, describe how your organization uses BIM and identify BIM software that your organization regularly uses.

Sample

§ A.3.5 Does your organization use a project management information system? If so, identify that system.

§ A.4 REFERENCES

§ A.4.1 Identify three client references:
(Insert name, organization, and contact information)

§ A.4.2 Identify three architect references:
(Insert name, organization, and contact information)

§ A.4.3 Identify one bank reference:
(Insert name, organization, and contact information)

§ A.4.4 Identify three subcontractor or other trade references:
(Insert name, organization, and contact information)

Sample

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AIA® Document A305™ – 2020 Exhibit B

Financial and Performance Information

This Exhibit is part of the Contractor's Qualification Statement, submitted by
and dated the day of in the year
(In words, indicate day, month and year.)

This document has important legal consequences. Consultation with an attorney is encouraged with respect to its completion or modification.

§ B.1 FINANCIAL

§ B.1.1 Federal tax identification number:

§ B.1.2 Attach financial statements for the last three years prepared in accordance with Generally Accepted Accounting Principles, including your organization's latest balance sheet and income statement. Also, indicate the name and contact information of the firm that prepared each financial statement.

§ B.1.3 Has your organization, its parent, or a subsidiary, affiliate, or other entity having common ownership or management, been the subject of any bankruptcy proceeding within the last ten years?

§ B.1.4 Identify your organization's preferred credit rating agency and identification information.
(Identify rating agency, such as Dun and Bradstreet or Equifax, and insert your organization's identification number or other method of searching your organization's credit rating with such agency.)

§ B.2 DISPUTES AND DISCIPLINARY ACTIONS

§ B.2.1 Are there any pending or outstanding judgments, arbitration proceedings, bond claims, or lawsuits against your organization, its parent, or a subsidiary, affiliate, or other entity having common ownership or management, or any of the individuals listed in Exhibit A, Section 1.2, in which the amount in dispute is more than $75,000?
(If the answer is yes, provide an explanation.)

§ B.2.2 In the last five years, has your organization, its parent, or a subsidiary, affiliate, or other entity having common ownership or management:
(If the answer to any of the questions below is yes, provide an explanation.)

.1 failed to complete work awarded to it?

.2 been terminated for any reason except for an owners' convenience?

.3 had any judgments, settlements, or awards pertaining to a construction project in which your organization was responsible for more than $75,000?

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.4 filed any lawsuits or requested arbitration regarding a construction project?

§ B.2.3 In the last five years, has your organization, its parent, or a subsidiary, affiliate, or other entity having common ownership or management; or any of the individuals listed in Exhibit A Section 1.2:
(If the answer to any of the questions below is yes, provide an explanation.)

.1 been convicted of, or indicted for, a business-related crime?

.2 had any business or professional license subjected to disciplinary action?

.3 been penalized or fined by a state or federal environmental agency?

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AIA® Document A305™ – 2020 Exhibit C

Project Specific Information

This Exhibit is part of the Contractor's Qualification Statement, submitted by
and dated the day of in the year
(In words, indicate day, month and year.)

PROJECT:
(Name and location or address.)

This document has important legal consequences. Consultation with an attorney is encouraged with respect to its completion or modification.

CONTRACTOR'S PROJECT OFFICE:
(Identify the office out of which the contractor proposes to perform the work for the Project.)

TYPE OF WORK SOUGHT
(Indicate the type of work you are seeking for this Project, such as general contracting, construction manager as constructor, design-build, HVAC subcontracting, electrical subcontracting, plumbing subcontracting, etc.)

CONFLICT OF INTEREST
Describe any conflict of interest your organization, its parent, or a subsidiary, affiliate, or other entity having common ownership or management, or any of the individuals listed in Exhibit A Section 1.2, may have regarding this Project.

§ C.1 PERFORMANCE OF THE WORK

§ C.1.1 When was the Contractor's Project Office established?

§ C.1.2 How many full-time field and office staff are respectively employed at the Contractor's Project Office?

§ C.1.3 List the business license and contractor license or registration numbers for the Contractor's Project Office that pertain to the Project.

§ C.1.4 Identify key personnel from your organization who will be meaningfully involved with work on this Project and indicate (1) their position on the Project team, (2) their office location, (3) their expertise and experience, and (4) projects similar to the Project on which they have worked.

§ C.1.5 Identify portions of work that you intend to self-perform on this Project.

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§ C.1.6 To the extent known, list the subcontractors you intend to use for major portions of work on the Project.

§ C.2 EXPERIENCE RELATED TO THE PROJECT

§ C.2.1 Complete Exhibit D to describe up to four projects performed by the Contractor's Project Office, either completed or in progress, that are relevant to this Project, such as projects in a similar geographic area or of similar project type. If you have already completed Exhibit D, but want to provide further examples of projects that are relevant to this Project, you may complete Exhibit E.

§ C.2.2 State the total dollar value of work currently under contract at the Contractor's Project Office:

§ C.2.3 Of the amount stated in Section C.2.2, state the dollar value of work that remains to be completed:

§ C.2.4 State the average annual dollar value of construction work performed by the Contractor's Project Office during the last five years.

§ C.2.5 List the total number of projects the Contractor's Project Office has completed in the last five years and state the dollar value of the largest contract the Contractor's Project Office has completed during that time.

§ C.3 SAFETY PROGRAM AND RECORD

§ C.3.1 Does the Contractor's Project Office have a written safety program?

§ C.3.2 List all safety-related citations and penalties the Contractor's Project Office has received in the last three years.

§ C.3.3 Attach the Contractor's Project Office's OSHA 300a Summary of Work-Related Injuries and Illnesses form for the last three years.

§ C.3.4 Attach a copy of your insurance agent's verification letter for your organization's current workers' compensation experience modification rate and rates for the last three years.

§ C.4 INSURANCE

§ C.4.1 Attach current certificates of insurance for your commercial general liability policy, umbrella insurance policy, and professional liability insurance policy, if any. Identify deductibles or self-insured retentions for your commercial general liability policy.

§ C.4.2 If requested, will your organization be able to provide property insurance for the Project written on a builder's risk "all-risks" completed value or equivalent policy form and sufficient to cover the total value of the entire Project on a replacement cost basis?

§ C.4.3 Does your commercial general liability policy contain any exclusions or restrictions of coverage that are prohibited in AIA Document A101-2017, Exhibit A, Insurance A.3.2.2.2? If so, identify.

Sample

§ C.5 SURETY

§ C.5.1 If requested, will your organization be able to provide a performance and payment bond for this Project?

§ C.5.2 Surety company name:

§ C.5.3 Surety agent name and contact information:

§ C.5.4 Total bonding capacity:

§ C.5.5 Available bonding capacity as of the date of this qualification statement:

Sample

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AIA® Document A305™ – 2020 Exhibit D

Contractor's Past Project Experience

	1	2	3	4
PROJECT NAME				
PROJECT LOCATION				
PROJECT TYPE				
OWNER				
ARCHITECT				
CONTRACTOR'S PROJECT EXECUTIVE				
KEY PERSONNEL (include titles)				
PROJECT DETAILS	Contract Amount Completion Date % Self-Performed Work	Contract Amount Completion Date % Self-Performed Work	Contract Amount Completion Date % Self-Performed Work	Contract Amount Completion Date % Self-Performed Work
PROJECT DELIVERY METHOD	☐ Design-bid-build ☐ Design-build ☐ CM constructor ☐ CM advisor ☐ Other:	☐ Design-bid-build ☐ Design-build ☐ CM constructor ☐ CM advisor ☐ Other:	☐ Design-bid-build ☐ Design-build ☐ CM constructor ☐ CM advisor ☐ Other:	☐ Design-bid-build ☐ Design-build ☐ CM constructor ☐ CM advisor ☐ Other:
SUSTAINABILITY CERTIFICATIONS				

Sample

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AIA® Document A305™ – 2020 Exhibit E

Contractor's Past Project Experience, Continued

	1	2	3	4
PROJECT NAME				
PROJECT LOCATION				
PROJECT TYPE				
OWNER				
ARCHITECT				
CONTRACTOR'S PROJECT EXECUTIVE				
KEY PERSONNEL (include titles)				
PROJECT DETAILS	Contract Amount Completion Date % Self-Performed Work	Contract Amount Completion Date % Self-Performed Work	Contract Amount Completion Date % Self-Performed Work	Contract Amount Completion Date % Self-Performed Work
PROJECT DELIVERY METHOD	☐ Design-bid-build ☐ Design-build ☐ CM constructor ☐ CM advisor ☐ Other:	☐ Design-bid-build ☐ Design-build ☐ CM constructor ☐ CM advisor ☐ Other:	☐ Design-bid-build ☐ Design-build ☐ CM constructor ☐ CM advisor ☐ Other:	☐ Design-bid-build ☐ Design-build ☐ CM constructor ☐ CM advisor ☐ Other:
SUSTAINABILITY CERTIFICATIONS				

Sample

Init.

/

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DRAFT

AIA® Document A201® – 2017

Modified General Conditions of the Contract for Construction

for the following PROJECT:
(Name and location or address)

RFQ No. [insert]
CMAR GENERAL CONDITIONS TEMPLATE«»

THE OWNER:
(Name, legal status and address)

The City of Delray Beach
100 NW 1st Avenue
Delray Beach, FL 33444« »« »
« »

The Construction Manager:
(Name, legal status, address, and other information)

THE ~~ARCHITECT~~A/E PROFESSIONAL:
(Name, legal status and address)

« »« »
« »[insert]

TABLE OF ARTICLES

1 GENERAL PROVISIONS

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3 CONTRACTOR

4 ~~ARCHITECT~~A/E PROFESSIONAL

5 SUBCONTRACTORS

6 CONSTRUCTION BY OWNER OR BY SEPARATE CONTRACTORS

7 CHANGES IN THE WORK

8 TIME

9 PAYMENTS AND COMPLETION

10 PROTECTION OF PERSONS AND PROPERTY

11 INSURANCE AND BONDS

ADDITIONS AND DELETIONS: The author of this document has added information needed for its completion. The author may also have revised the text of the original AIA standard form. An *Additions and Deletions Report* that notes added information as well as revisions to the standard form text is available from the author and should be reviewed.

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For guidance in modifying this document to include supplementary conditions, see AIA Document A503™, Guide for Supplementary Conditions.

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User Notes: (1750221649)

12 UNCOVERING AND CORRECTION OF WORK

13 MISCELLANEOUS PROVISIONS

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DRAFT

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User Notes: (1750221649)

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ARTICLE 1 GENERAL PROVISIONS

§ 1.1 Basic Definitions

§ 1.1.1 The Contract Documents

The Contract Documents are enumerated in the AIA A133-2019 Modified Agreement (the "Agreement") between the Owner and Contractor (referred to as Construction Manager) ~~(hereinafter the Agreement)~~ and consist of the Agreement and Exhibits thereto, these Modified General Conditions of the Contract, ~~(General, Supplementary and other Conditions),~~ Drawings, Specifications, Addenda issued prior to execution of the Contract, other documents listed in the Agreement, and Modifications issued after execution of the Contract. A Modification is (1) a written amendment to the Contract signed by both parties, (2) a Change Order, (3) a Construction Change Directive, or (4) a written order for a minor change in the Work issued by the ~~Architect~~A/E Professional. ~~Unless specifically enumerated in the Agreement, the Contract Documents do not include the advertisement or invitation to bid, Instructions to Bidders, sample forms, other information furnished by the Owner in anticipation of receiving bids or proposals, the Contractor's bid or proposal, or portions of Addenda relating to bidding or proposal requirements.~~ The Contract Documents also include the RFQ No. [insert] issued by Owner for this Project. Any of the Contract Documents not attached hereto are hereby incorporated by reference and shall be deemed to be of the same force and effect as if attached hereto. For purposes of the Agreement and these Modified General Conditions, the terms "Contractor" and "Construction Manager" shall be used interchangeably.

§ 1.1.2 The Contract

The Contract Documents form the Contract for Construction. The Contract represents the entire and integrated agreement between the parties hereto and supersedes prior negotiations, representations, or agreements, either written or oral. The Contract may be amended or modified only by a Modification. The Contract Documents shall not be construed to create a contractual relationship of any kind (1) between the Contractor and the ~~Architect~~A/E Professional or the ~~Architect~~A/E Professional's consultants, (2) between the Owner and a Subcontractor or a Sub-subcontractor, (3) between the Owner and the ~~Architect~~A/E Professional or the ~~Architect~~A/E Professional's consultants, or (4) between any persons or entities other than the Owner and the Contractor, it being specifically understood and agreed that none of the Contractor's Subcontractors, Sub-subcontractors, materialmen and equipment suppliers shall be deemed to be a third-party beneficiary of this Contract. The ~~Architect~~A/E Professional shall, however, be entitled to performance and enforcement of obligations under the Contract intended to facilitate performance of the ~~Architect~~A/E Professional's duties.

§ 1.1.3 The Work

The term "Work" means the construction and services required by the Contract Documents, whether completed or partially completed and includes all Work that is reasonably inferable therefrom as being necessary to accomplish the intent of the Contract Documents and fully functioning systems and a fully functioning Project, all in accordance with and as required by all applicable federal, state and local building codes, laws, ordinances, rules and regulations. The Work ~~, and~~ includes all ~~other~~ labor, materials, equipment, and services provided or to be provided by the Contractor to fulfill the Contractor's obligations. The Work may constitute the whole or a part of the Project.

§ 1.1.4 The Project

The Project is the total construction of which the Work performed under the Contract Documents may be the whole or a part and which may include construction by the Owner and by Separate Contractors.

§ 1.1.5 The Drawings

The Drawings are the graphic and pictorial portions of the Contract Documents showing the design, location and dimensions of the Work, generally including plans, elevations, sections, details, schedules, and diagrams.

§ 1.1.6 The Specifications

The Specifications are that portion of the Contract Documents consisting of the written requirements for materials, equipment, systems, standards and workmanship for the Work, and performance of related services.

§ 1.1.7 Instruments of Service

Instruments of Service are representations, in any medium of expression now known or later developed, of the tangible and intangible creative work performed by the ~~Architect~~A/E Professional and the ~~Architect~~A/E Professional's consultants under their respective professional services agreements. Instruments of Service may include, without limitation, studies, surveys, models, sketches, drawings, specifications, and other similar materials.

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§ 1.1.8 Initial Decision Maker

The Initial Decision Maker is the person identified in the Agreement to render initial decisions on Claims in accordance with Section 15.2. The Owner's Representative as identified in the Agreement shall serve as the Initial Decision Maker. The Initial Decision Maker shall not show partiality to the Owner or Contractor and shall not be liable for results of interpretations or decisions rendered in good faith.

§ 1.1.9 Knowledge

The terms "knowledge," "recognize," and "discover," their respective derivatives, and similar terms in the Contract Documents as used in reference to the Contractor shall be interpreted to mean that which the Contractor reasonably knows, reasonably recognizes, and reasonably discovers or should discover in exercising the reasonable care, skill, and diligence required by the Contract Documents in his capacity as a Contractor. Analogously, the expression "reasonably inferable" and similar terms in the Contract Documents shall be interpreted to mean reasonably inferable by a contractor familiar with the Project and exercising the reasonable care, skill, and diligence required of the Contractor by the Contract Documents.

§ 1.1.10 Words such as "provide," "furnish," furnish and install," "supply," "include," and similar terms shall, unless otherwise noted, be directions to Contractor to provide and pay for all labor, materials and services necessary for the proper execution and completion of the relevant Contractor's Work. The term "any" shall be interpreted as any and all whenever more than one item would be applicable for completion of the Work in accordance with the Contract Documents.

§ 1.2 Correlation and Intent of the Contract Documents

§ 1.2.1 The intent of the Contract Documents is to include all items necessary for the proper execution and completion of the Work by the Contractor. The Contract Documents are complementary, and what is required by one shall be as binding as if required by all; performance by the Contractor shall be required only to the extent consistent with the Contract Documents and reasonably inferable from them as being necessary to produce the indicated results.

§ 1.2.1.1 The invalidity of any provision of the Contract Documents shall not invalidate the Contract or its remaining provisions. If it is determined that any provision of the Contract Documents violates any law, or is otherwise invalid or unenforceable, then that provision shall be revised to the extent necessary to make that provision legal and enforceable. In such case the Contract Documents shall be construed, to the fullest extent permitted by law, to give effect to the parties' intentions and purposes in executing the Contract.

§ 1.2.2 Organization of the Specifications into divisions, sections and articles, and arrangement of Drawings shall not control the Contractor in dividing the Work among Subcontractors or in establishing the extent of Work to be performed by any trade.

§ 1.2.3 Unless otherwise stated in the Contract Documents, words that have well-known technical or construction industry meanings are used in the Contract Documents in accordance with such recognized meanings. To the extent any conflict or discrepancy exists between the Contract Documents that cannot be resolved between the parties, interpretations will be based on the following priorities: (a) This Agreement; (b) the Modified General Conditions; (c) all Exhibits hereto, as modified; (d) executed Modifications, if any, with those of a later date having precedence over those of an earlier date; (e) Drawings and Specifications; and (f) any other Contract Documents. On the Drawings, given dimensions shall take precedence over scaled measurements, and large scale drawings over small scale drawings. Before ordering any materials or doing any Work, the Contractor shall verify measurements at the Project site and shall be responsible for the correctness of such measurements. The Contractor must call any such conflict or discrepancy between the Contract Documents and/or between the Contract Documents and applicable standards, codes and ordinances and/or between the Contract Documents and the existing Project it discovers to the Owner's attention, in writing, prior to proceeding with the Work. To the extent Contractor has sufficient information and access to do so, Contractor must verify all grades, elevations, dimensions, locations and quantities indicated on the Contract Drawings prior to the performance of Work. The Contractor shall, therefore, satisfy itself as to the accuracy of all grades, elevations, dimensions, locations and quantities. In all cases of interconnection of its Work with existing or other Work, it shall verify at the site all grades, elevations, dimensions, locations and quantities relating to such existing or other Work. Any errors due to the Contractor's failure to so verify all such grades, elevations, dimensions, locations and quantities shall be promptly rectified by the Contractor without any additional cost to the Owner. Any differences found shall be submitted to the A/E Professional for resolution before proceeding with the Work and in such time so as not to delay the progress of the Work. Whenever a product to be furnished by Contractor requires it to be in

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accordance with a Federal Specification, an ASTM Standard, an American National Standards Institute Specification or other Association Standard, including the requirement of compliance with any local certifications for products such as a Notice of Acceptance approving the product, the Contractor shall present an affidavit from the manufacturer when provided by the manufacturer and, when requested by the A/E Professional or Owner or as set forth in the Specifications certifying that the product complies with the particular Standard or Specification. When provided by the manufacturer and requested by the A/E Professional or Owner the specified support test data shall be submitted to substantiate compliance.

§ 1.3 Capitalization

Terms capitalized in these Modified General Conditions include those that are (1) specifically defined, (2) the titles of numbered articles, or (3) the titles of other documents published by the American Institute of ~~Architect~~A/E Professionals.

§ 1.4 Interpretation

§ 1.4.1 In the interest of brevity the Contract Documents frequently omit modifying words such as "all" and "any" and articles such as "the" and "an," but the fact that a modifier or an article is absent from one statement and appears in another is not intended to affect the interpretation of either statement.

§ 1.4.2 Execution of the Contract by the Contractor is a representation that the Contractor has visited the site, become familiar with local conditions under which the Work is to be performed and correlated personal observations with requirements of the Contract Documents. Claims for additional costs or extensions of time because of the failure of Contractor to familiarize itself with conditions at the Project site will not be allowed. The Contractor shall be solely responsible for providing a safe place for the performance of the Work. The Owner shall not be required to make any adjustment in the Contract Sum or grant an extension to the Contract Time in connection with any failure by the Contractor to comply with the requirements of this Article.

§ 1.5 Ownership and Use of Drawings, Specifications, and Other Instruments of Service

§ 1.5.1 To the extent set forth in the agreement between the Owner and the A/E Professional, tThe ~~Architect~~A/E Professional and the ~~Architect~~A/E Professional's consultants shall be deemed the authors and owners of their respective Instruments of Service, including the Drawings and Specifications, and retain all common law, statutory, and other reserved rights in their Instruments of Service, including copyrights. The Contractor, Subcontractors, Sub-subcontractors, and suppliers shall not own or claim a copyright in the Instruments of Service. Submittal or distribution to meet official regulatory requirements or for other purposes in connection with the Project is not to be construed as publication in derogation of the ~~Architect~~A/E Professional's or ~~Architect~~A/E Professional's consultants' reserved rights.

§ 1.5.2 The Contractor, Subcontractors, Sub-subcontractors, and suppliers are authorized to use and reproduce the Instruments of Service provided to them, subject to any protocols established pursuant to Sections 1.7 and 1.8, solely and exclusively for execution of the Work. All copies made under this authorization shall bear the copyright notice, if any, shown on the Instruments of Service. The Contractor, Subcontractors, Sub-subcontractors, and suppliers may not use the Instruments of Service on other projects or for additions to the Project outside the scope of the Work without the specific written consent of the Owner, ~~Architect~~A/E Professional, and the ~~Architect~~A/E Professional's consultants.

§ 1.5.3 Contractor shall maintain at the Project Site, and shall make available to Owner and A/E Professional, one record copy of the Drawings marked to indicate any deviations from the Contract Documents (the "As-Built Drawings") in good order. The As-Built Drawings shall be prepared and updated during the prosecution of the Work. The prints for As-Built Drawing use will be a set of black-line prints provided by A/E Professional to Contractor at the start of construction. Contractor shall maintain said set in good condition and shall use colored pencils to mark-up said set with "as-built information" in a legible manner to show: (i) deviations from the Drawings made during construction; (ii) details in the Work not previously shown; (iii) changes to existing conditions or existing conditions found to differ from those shown on any existing drawings; (iv) the actual installed position of equipment, piping, conduits, light switches, electric fixtures, circuiting, ducts, dampers, access panels, control valves, drains, openings and stub-outs; and (v) such other information as either Owner or A/E Professional may reasonably request. At the completion of the Work, Contractor shall deliver all As-Built Drawings to Owner. Final payment and any retention shall not be due and owing to Contractor until the final As-Built Drawings required above are delivered to Owner.

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§ 1.6 Notice

§ 1.6.1 Except as otherwise provided in Section 1.6.2, where the Contract Documents require one party to notify or give notice to the other party, such notice shall be provided in writing to the designated representative of the party to whom the notice is addressed and shall be deemed to have been duly served if delivered in person, by mail, by courier, or by electronic transmission if a method for electronic transmission is set forth in the Agreement.

§ 1.6.2 Notice of Claims as provided in Section 15.1.3 shall be provided in writing and shall be deemed to have been duly served only if delivered to the designated representative of the party to whom the notice is addressed by certified or registered mail, or by courier providing proof of delivery.

§ 1.7 Digital Data Use and Transmission

The parties shall agree upon protocols governing the transmission and use of Instruments of Service or any other information or documentation in digital form. The parties will use AIA Document E203™–2013, Building Information Modeling and Digital Data Exhibit, to establish the protocols for the development, use, transmission, and exchange of digital data.

§ 1.8 Building Information Models Use and Reliance

Any use of, or reliance on, all or a portion of a building information model without agreement to protocols governing the use of, and reliance on, the information contained in the model and without having those protocols set forth in AIA Document E203™–2013, Building Information Modeling and Digital Data Exhibit, and the requisite AIA Document G202™–2013, Project Building Information Modeling Protocol Form, shall be at the using or relying party's sole risk and without liability to the other party and its contractors or consultants, the authors of, or contributors to, the building information model, and each of their agents and employees.

ARTICLE 2 OWNER

§ 2.1 General

§ 2.1.1 The Owner is the person or entity identified as such in the Agreement and is referred to throughout the Contract Documents as if singular in number. The Owner shall designate in writing a representative who shall have express authority to bind the Owner with respect to all matters requiring the Owner's approval or authorization. Except as otherwise provided in Section 4.2.1, the ~~Architect~~A/E Professional does not have such authority. The term "Owner" means the Owner or the Owner's authorized representative.

§ 2.1.2 Owner shall provide Contractor with a copy of the Notice of Commencement, as required by Florida law, that it will file for the Project.~~The Owner shall furnish to the Contractor, within fifteen days after receipt of a written request, information necessary and relevant for the Contractor to evaluate, give notice of, or enforce mechanic's lien rights. Such information shall include a correct statement of the record legal title to the property on which the Project is located, usually referred to as the site, and the Owner's interest therein.~~

§ 2.2 Omitted. ~~Evidence of the Owner's Financial Arrangements~~

~~**§ 2.2.1** Prior to commencement of the Work and upon written request by the Contractor, the Owner shall furnish to the Contractor reasonable evidence that the Owner has made financial arrangements to fulfill the Owner's obligations under the Contract. The Contractor shall have no obligation to commence the Work until the Owner provides such evidence. If commencement of the Work is delayed under this Section 2.2.1, the Contract Time shall be extended appropriately.~~

~~**§ 2.2.2** Following commencement of the Work and upon written request by the Contractor, the Owner shall furnish to the Contractor reasonable evidence that the Owner has made financial arrangements to fulfill the Owner's obligations under the Contract only if (1) the Owner fails to make payments to the Contractor as the Contract Documents require; (2) the Contractor identifies in writing a reasonable concern regarding the Owner's ability to make payment when due; or (3) a change in the Work materially changes the Contract Sum. If the Owner fails to provide such evidence, as required, within fourteen days of the Contractor's request, the Contractor may immediately stop the Work and, in that event, shall notify the Owner that the Work has stopped. However, if the request is made because a change in the Work materially changes the Contract Sum under (3) above, the Contractor may immediately stop only that portion of the Work affected by the change until reasonable evidence is provided. If the Work is stopped under this Section 2.2.2, the Contract Time shall be extended appropriately and the Contract Sum shall be increased by the amount of the Contractor's reasonable costs of shutdown, delay and start-up, plus interest as provided in the Contract Documents.~~

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~~§ 2.2.3 After the Owner furnishes evidence of financial arrangements under this Section 2.2, the Owner shall not materially vary such financial arrangements without prior notice to the Contractor.~~

~~§ 2.2.4 Where the Owner has designated information furnished under this Section 2.2 as "confidential," the Contractor shall keep the information confidential and shall not disclose it to any other person. However, the Contractor may disclose "confidential" information, after seven (7) days' notice to the Owner, where disclosure is required by law, including a subpoena or other form of compulsory legal process issued by a court or governmental entity, or by court or arbitrator(s) order. The Contractor may also disclose "confidential" information to its employees, consultants, sureties, Subcontractors and their employees, Sub-subcontractors, and others who need to know the content of such information solely and exclusively for the Project and who agree to maintain the confidentiality of such information.~~

§ 2.3 Information and Services Required of the Owner

§ 2.3.1 Except for permits and fees that are the responsibility of the Contractor under the Contract Documents, including those required under Section 3.7.1, the Owner shall secure and pay for necessary approvals, easements, assessments and charges required for construction, use or occupancy of permanent structures or for permanent changes in existing facilities.

§ 2.3.2 The Owner ~~shall retain~~has retained an ~~architect~~A/E Professional lawfully licensed to practice architecture or engineering, or an entity lawfully practicing architecture or engineering, in the jurisdiction where the Project is located. That person or entity is identified as the ~~Architect~~A/E Professional in the Agreement and is referred to throughout the Contract Documents as if singular in number.

§ 2.3.3 If the employment of the ~~Architect~~A/E Professional terminates, the Owner shall employ a successor to whom the Contractor has no reasonable objection and whose status under the Contract Documents shall be that of the ~~Architect~~A/E Professional.

§ 2.3.4 The Owner shall furnish surveys describing physical characteristics, legal limitations and utility locations for the site of the Project, and a legal description of the site. The Contractor shall be entitled to rely on the accuracy of information furnished by the Owner but shall exercise proper precautions relating to the safe performance of the Work.

§ 2.3.5 The Owner shall furnish information or services required of the Owner by the Contract Documents with reasonable promptness. The Owner shall also furnish any other information or services under the Owner's control and relevant to the Contractor's performance of the Work with reasonable promptness after receiving the Contractor's written request for such information or services.

§ 2.3.6 Unless otherwise provided in the Contract Documents, the Owner shall furnish to the Contractor one copy of the Contract Documents for purposes of making reproductions pursuant to Section 1.5.2.

§ 2.4 Owner's Right to Stop the Work

If the Contractor fails to correct Work that is not in accordance with the requirements of the Contract Documents as required by Section 12.2 or ~~repeatedly~~ fails to carry out Work in accordance with the Contract Documents, the Owner may issue a written order to the Contractor to stop the Work, or any portion thereof, until the cause for such order has been eliminated; however, the right of the Owner to stop the Work shall not give rise to a duty on the part of the Owner to exercise this right for the benefit of the Contractor or any other person or entity, except to the extent required by Section 6.1.3.

§ 2.5 Owner's Right to Carry Out the Work

If the Contractor defaults or neglects to carry out the Work in accordance with the Contract Documents and fails within a ten-day period after receipt of notice from the Owner to commence and continue correction of such default or neglect with diligence and promptness, the Owner may, without prejudice to other remedies the Owner may have, correct such default or neglect. Such action by the Owner and amounts charged to the Contractor are both subject to prior approval of the ~~Architect~~A/E Professional and the ~~Architect~~A/E Professional may, pursuant to Section 9.5.1, withhold or nullify a Certificate for Payment in whole or in part, to the extent reasonably necessary to reimburse the Owner for the reasonable cost of correcting such deficiencies, including Owner's expenses and compensation for the ~~Architect~~A/E Professional~~'s~~ additional services of the A/E Professional and/or Owner's Representative made necessary by such default, neglect, or failure. If current and future payments are not sufficient to cover such amounts, the Contractor shall pay the difference to the Owner. If the Contractor disagrees with the actions of the Owner or the

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~~Architect~~A/E Professional, or the amounts claimed as costs to the Owner, the Contractor may file a Claim pursuant to Article 15.

ARTICLE 3 CONTRACTOR

§ 3.1 General

§ 3.1.1 The Contractor is the person or entity identified as such in the Agreement and is referred to throughout the Contract Documents as if singular in number. The Contractor shall be lawfully licensed ~~, if required~~ in the jurisdiction where the Project is located. The Contractor shall designate in writing a representative who shall have express authority to bind the Contractor with respect to all matters under this Contract. The term "Contractor" means the Contractor or the Contractor's authorized representative.

§ 3.1.2 The Contractor shall perform the Work in accordance with the Contract Documents.

§ 3.1.3 The Contractor shall not be relieved of its obligations to perform the Work in accordance with the Contract Documents either by activities or duties of the ~~Architect~~A/E Professional in the ~~Architect~~A/E Professional's administration of the Contract, or by tests, inspections or approvals required or performed by persons or entities other than the Contractor.

§ 3.1.4 Prior to commencement of the Work, Contractor shall provide the Owner with copies of the above current licenses. Contractor further represents that it has read, examined and understands the pertinent Contract Documents and that it is qualified and able to perform this Work; that it has a sufficient number of qualified personnel to assure timely performance of this Work; that it has the proper tools and equipment to perform this Work; and that it is financially capable of fully performing the Work under this Contract.

§ 3.2 Review of Contract Documents and Field Conditions by Contractor

§ 3.2.1 Execution of the Contract by the Contractor is a representation that the Contractor has visited the site, become generally familiar with local conditions under which the Work is to be performed, and correlated personal observations with requirements of the Contract Documents.

§ 3.2.2 Because the Contract Documents are complementary, the Contractor shall, before starting each portion of the Work, carefully study and compare the various Contract Documents relative to that portion of the Work, as well as the information furnished by the Owner pursuant to Section 2.3.4, shall take field measurements of any existing conditions related to that portion of the Work, and shall observe any conditions at the site affecting it. These obligations are for the purpose of facilitating coordination and construction by the Contractor and are not for the purpose of discovering errors, omissions, or inconsistencies in the Contract Documents; however, the Contractor shall promptly report to the ~~Architect~~A/E Professional and Owner any errors, inconsistencies or omissions discovered by or made known to the Contractor as a request for information in such form as the ~~Architect~~A/E Professional may require. It is recognized that the Contractor's review is made in the Contractor's capacity as a contractor and not as a licensed design professional, unless otherwise specifically provided in the Contract Documents.

§ 3.2.3 The Contractor is not required to ascertain that the Contract Documents are in accordance with applicable laws, statutes, ordinances, codes, rules and regulations, or lawful orders of public authorities, but the Contractor shall promptly report to the ~~Architect~~A/E Professional any nonconformity discovered by or made known to the Contractor as a request for information in such form as the ~~Architect~~A/E Professional may require. The Contractor shall be liable for damage, loss or expense to the Owner, including, without limitation, delays and the cost of correcting defective construction, resulting from the Contractor's performing any construction activity which it knows or should know involves such errors, inconsistency, omission or variation.

§ 3.2.4 If the Contractor believes that additional cost or time is involved because of clarifications or instructions the ~~Architect~~A/E Professional issues in response to the Contractor's notices or requests for information pursuant to Sections 3.2.2 or 3.2.3, the Contractor shall submit Claims as provided in Article 15. If the Contractor fails to perform the obligations of Sections 3.2.2 or 3.2.3, the Contractor shall not be entitled to any increase in Contract Price or Contract Time and shall pay such costs and damages to the Owner, subject to Section 15.1.7, as would have been avoided if the Contractor had performed such obligations. ~~If the Contractor performs those obligations, the Contractor shall not be liable to the Owner or Architect for damages resulting from errors, inconsistencies or omissions in the Contract Documents, for differences between field measurements or conditions and the Contract Documents, or for nonconformities of the Contract Documents to applicable laws, statutes, ordinances, codes, rules and regulations, and lawful orders of public authorities.~~

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§ 3.2.5 The Contractor represents and warrants that the construction means, methods, procedures and techniques necessary to perform the Work will be consistent with and conform to: (1) good and sound practices within the construction industry; (2) generally prevailing and accepted industry standards applicable to the Work; (3) requirements of any warranties applicable to the Work; and (4) applicable, laws, codes, orders and ordinances which bear upon the Contractor's performance of the Work.

§ 3.3 Supervision and Construction Procedures

§ 3.3.1 The Contractor shall supervise and direct the Work, using the Contractor's best skill and attention. The Contractor shall be solely responsible for, and have control over, construction means, methods, techniques, sequences, and procedures, and for coordinating all portions of the Work under the Contract. If the Contract Documents give specific instructions concerning construction means, methods, techniques, sequences, or procedures, the Contractor shall evaluate the jobsite safety thereof and shall be solely responsible for the jobsite safety of such means, methods, techniques, sequences, or procedures. If the Contractor determines that such means, methods, techniques, sequences or procedures may not be safe, the Contractor shall give timely notice to the Owner and ~~Architect~~A/E Professional, and shall propose alternative means, methods, techniques, sequences, or procedures. The ~~Architect~~A/E Professional shall evaluate the proposed alternative solely for conformance with the design intent for the completed construction. Unless the ~~Architect~~A/E Professional objects to the Contractor's proposed alternative, the Contractor shall perform the Work using its alternative means, methods, techniques, sequences, or procedures.

§ 3.3.2 The Contractor shall be responsible to the Owner for acts and omissions of the Contractor's employees, Subcontractors and their agents and employees, and other persons or entities performing portions of the Work for, or on behalf of, the Contractor or any of its Subcontractors.

§ 3.3.3 The Contractor shall be responsible for inspection of portions of Work already performed to determine that such portions are in proper condition to receive subsequent Work.

§ 3.3.4 Contractor has the responsibility to ensure that all material and equipment suppliers, manufacturers, and Subcontractors, and their respective agents and employees adhere to the requirements of the Contract Documents, and that they order and provide all materials, equipment and supplies in a timely manner. Contractor shall coordinate its Work with that of all others under its control or Owner's control working on or supplying the Project. Contractor shall be responsible for coordination, locations, and routing of all material and equipment as designed by the Owner, A/E Professional, Engineers, and other consultants of the Owner. In areas and locations where the proper and most effective location and routing cannot be made as indicated or coordinated, Contractor shall contact Owner and A/E Professional in writing and meet with all others involved before proceeding with installations, to plan the most effective and efficient method of overall installation. Contractor shall pay all monthly utilities charges for construction until Substantial Completion.

§ 3.3.5 Contractor's Compliance with Contract Documents.

The Contractor shall give all notices, and warrants and represents that the Work when completed will be constructed in compliance with the Contract Documents and all applicable federal, state and local laws, codes, regulations, permits, decisions, orders, professional licenses, ordinances, and other legal requirements of the authorities have jurisdiction over the Project. Contractor shall bear responsibility for and bear all costs necessary to insure full compliance with the Contract Documents and all applicable laws, codes and ordinances, including the cost of removing existing Work, the cost of replacing any Work with Work conforming to the applicable requirements and any attorney's fees or other expenses incurred by Owner in responding to any complaints, citations, court orders, administrative orders or similar governmental edicts or process. The provisions of this Section shall survive the completion and final payment or termination of this Contract.

§ 3.4 Labor and Materials

§ 3.4.1 Unless otherwise provided in the Contract Documents, the Contractor shall provide and pay for labor, materials, equipment, tools, construction equipment and machinery, water, heat, utilities, transportation, and other facilities and services necessary for proper execution and completion of the Work, whether temporary or permanent and whether or not incorporated or to be incorporated in the Work.

§ 3.4.2 Except in the case of minor changes in the Work approved by the ~~Architect~~A/E Professional in accordance with Section 3.12.8 or ordered by the ~~Architect~~A/E Professional in accordance with Section 7.4, the Contractor may

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make substitutions only with the consent of the Owner, after evaluation by the ~~Architect~~A/E Professional and in accordance with a Change Order or Construction Change Directive.

§ 3.4.3 The Contractor shall enforce strict discipline and good order among the Contractor's employees and other persons carrying out the Work. The Contractor shall not permit employment of unfit persons or persons not properly skilled in tasks assigned to them.

§ 3.5 Warranty

§ 3.5.1 The Contractor warrants to the Owner and ~~Architect~~A/E Professional that the Work and materials and equipment furnished under the Contract will be of good quality and new unless the Contract Documents require or permit otherwise. The Contractor further warrants that the Work will conform to the requirements of the Contract Documents and will be free from defects, except for those inherent in the quality of the Work the Contract Documents require or permit. Work, materials, or equipment not conforming to these requirements may be considered defective. ~~The Contractor's warranty excludes remedy for damage or defect caused by abuse, alterations to the Work not executed by the Contractor, improper or insufficient maintenance, improper operation, or normal wear and tear and normal usage.~~ If required by the ~~Architect~~A/E Professional, the Contractor shall furnish satisfactory evidence as to the kind and quality of materials and equipment.

§ 3.5.2 All material, equipment, or other special warranties required by the Contract Documents shall be issued in the name of the Owner, or shall be transferable to the Owner, and shall commence in accordance with Section 9.8.4.

§ 3.5.3 Warranty Forms.

The Contractor shall obtain warranties, for a minimum period of one (1) year from Final Completion, from all subcontractors in the form attached as Exhibit ___ to the Agreement. Contractor agrees that it shall secure Extended Warranties for all items having Extended Warranties from the applicable subcontractors, or equipment or material manufacturers, as set forth in the Exhibits to Agreement. Any warranties obtained by the Contractor which deviate from the forms attached hereto must be approved by Owner.

§ 3.5.4 Contractor shall provide to the Owner one (1) electronic copy of the following information:

.1 All Subcontractor warranties fully executed in the form approved by the Owner;

.2 All Extended Warranties required by the Contract Documents;

.3 The Contractor's warranty;

.4 A list of all Subcontractors, Sub-subcontractors and suppliers who performed work on the Project or who furnished materials for use in the Project, such list to include the name, address, telephone number and responsible person at all such entities;

The delivery, endorsement or assignment of such warranties shall not release the Contractor from obligations pursuant to the Contract Documents.

§ 3.5.5 If the Contractor fails to commence to correct defective or nonconforming Work within three (3) business days from written notice to Contractor, the Owner may correct such defective or nonconforming Work. If the Contractor commences to correct such defective or nonconforming Work but fails to diligently and continuously work on such correction, the Owner may upon an additional three (3) business days' notice to Contractor, correct such item at Contractor's sole cost and expense. Owner may deduct such costs from any monies due Contractor. If the defective or nonconforming Work is discovered after final payment, then Contractor shall pay such cost and expense, including attorney's fees incurred. The Contractor shall bear all costs of correcting such defective Work.

§ 3.5.6 The warranty obligations of this Article shall survive completion and final payment or termination of this Contract for the Work performed to the date of termination.

§ 3.5.7 In the case of an emergency, Contractor, within twenty four (24) hours of written notice by Owner and/or A/E Professional, shall diligently and continuously pursue any necessary repairs or replacements of defects until corrected and will restore the Work to the condition required by the Contract Documents. Contractor shall restore surface, subsurface, collateral and primary conditions disturbed during warranty work to their prior condition.

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Contractor agrees that if Contractor fails to diligently pursue correction of any deficiency in a continuous and expeditious manner until completion, Owner may, in its sole discretion, correct such deficiencies at Contractor's sole and exclusive expense and that such action shall not invalidate any conditions of the Contract Documents. Contractor shall indemnify and hold Owner harmless from any claims, loss, damage or expense due to defects in the Work.

§ 3.5.8 The Contractor shall bear the cost of correcting destroyed or damaged construction, whether completed or partially completed, of the Owner or separate contractors caused by the Contractor's correction or removal of Work which is not in accordance with the requirements of the Contract Documents without reimbursement from the Owner.

§ 3.5.9 If the Owner prefers to accept Work which is not in accordance with the requirements of the Contract Documents, the Owner may do so in writing instead of requiring its removal and correction, in which case the Contract Sum will be reduced as appropriate and equitable. Such adjustment shall be effected whether or not final payment has been made.

§ 3.5.10 Prior to Substantial Completion, Contractor shall obtain all required inspections or other required documentation by the suppliers and Manufacturers' representatives for equipment and supplies during the course of performing the Work and during the warranty period, in order to ensure that all Manufacturer warranties will be honored thorough out the Manufacturer's entire warranty period.

§ 3.6 Taxes

The Contractor shall pay sales, consumer, use and similar taxes for the Work provided by the Contractor that are legally enacted when bids are received or negotiations concluded, whether or not yet effective or merely scheduled to go into effect.

§ 3.7 Permits, Fees, Notices and Compliance with Laws

§ 3.7.1 Unless otherwise provided in the Contract Documents, the Contractor shall secure and pay for the building permit as well as for other permits, fees, licenses, and inspections by government agencies necessary for proper execution and completion of the Work that are customarily secured after execution of the Contract and legally required at the time bids are received or negotiations concluded.

§ 3.7.2 The Contractor shall comply with and give notices required by applicable laws, statutes, ordinances, codes, rules and regulations, and lawful orders of public authorities applicable to performance of the Work.

§ 3.7.3 If the Contractor performs Work knowing it to be contrary to applicable laws, statutes, ordinances, codes, rules and regulations, or lawful orders of public authorities, the Contractor shall assume appropriate responsibility for such Work and shall bear the costs attributable to correction.

§ 3.7.4 Concealed or Unknown Conditions

If the Contractor encounters conditions at the site that are (1) subsurface or otherwise concealed physical conditions that differ materially from those indicated in the Contract Documents or (2) unknown physical conditions of an unusual nature that differ materially from those ordinarily found to exist and generally recognized as inherent in construction activities of the character provided for in the Contract Documents, the Contractor shall promptly provide notice to the Owner and the ~~Architect~~A/E Professional before conditions are disturbed and in no event later than 14 days after first observance of the conditions. The ~~Architect~~A/E Professional will promptly investigate such conditions and, if the ~~Architect~~A/E Professional determines that they differ materially and cause an increase or decrease in the Contractor's cost of, or time required for, performance of any part of the Work, will recommend that an equitable adjustment be made in the Contract Sum or Contract Time, or both. If the ~~Architect~~A/E Professional determines that the conditions at the site are not materially different from those indicated in the Contract Documents and that no change in the terms of the Contract is justified, the ~~Architect~~A/E Professional shall promptly notify the Owner and Contractor, stating the reasons. If either party disputes the ~~Architect~~A/E Professional's determination or recommendation, that party may submit a Claim as provided in Article 15.

§ 3.7.5 If, in the course of the Work, the Contractor encounters human remains or recognizes the existence of burial markers, archaeological sites or wetlands not indicated in the Contract Documents, the Contractor shall immediately suspend any operations that would affect them and shall notify the Owner and ~~Architect~~A/E Professional. Upon receipt of such notice, the Owner shall promptly take any action necessary to obtain governmental authorization required to resume the operations. The Contractor shall continue to suspend such operations until otherwise instructed by the Owner but shall continue with all other operations that do not affect those remains or features. Requests for

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adjustments in the Contract Sum and Contract Time arising from the existence of such remains or features may be made as provided in Article 15.

§ 3.8 Allowances

§ 3.8.1 The Contractor shall include in the Contract Sum all allowances stated in the Contract Documents. Items covered by allowances shall be supplied for such amounts and by such persons or entities as the Owner may direct, but the Contractor shall not be required to employ persons or entities to whom the Contractor has reasonable objection.

§ 3.8.2 Unless otherwise provided in the Contract Documents,

- **.1** allowances shall cover the cost to the Contractor of materials and equipment delivered at the site and all required taxes, less applicable trade discounts;
- **.2** Contractor's costs for unloading and handling at the site, labor, installation costs, overhead, profit, and other expenses contemplated for stated allowance amounts shall be included in the Contract Sum but not in the allowances; and
- **.3** whenever costs are more than or less than allowances or if they are deleted, the Contract Sum shall be adjusted accordingly by Change Order. The amount of the Change Order shall reflect (1) the difference between actual costs and the allowances under Section 3.8.2.1 and (2) changes in Contractor's costs under Section 3.8.2.2.

§ 3.8.3 Materials and equipment under an allowance shall be selected by the Owner with reasonable promptness.

§ 3.9 Superintendent

§ 3.9.1 The Contractor shall employ a competent superintendent and necessary assistants who shall be in attendance at the Project site during performance of the Work. The superintendent shall represent the Contractor, and communications given to the superintendent shall be as binding as if given to the Contractor.

§ 3.9.2 Contractor shall assign to the Project team the key employees ("Key Employees") including without limitation engineers, a superintendent, and a project manager, a list of which is attached as Exhibit ____ to the Agreement, who shall not be replaced without the Owner's prior written consent, which shall not be unreasonably withheld. Unauthorized replacement of the Key Employees by the Contractor may be deemed to be a material breach of this Agreement. If it is necessary to replace the Key Employee(s), the Contractor shall so advise the Owner in writing and the replacement individual shall likewise be subject to the Owner's approval. The Owner may reply within fourteen ~~The Contractor, as soon as practicable after award of the Contract, shall notify the Owner and Architect~~A/E Professional ~~of the name and qualifications of a proposed superintendent. Within~~ (14) days of receipt of the information, ~~the Architect may notify the Contractor,~~ stating whether the Owner or the ~~Architect~~A/E Professional (1) has reasonable objection to the proposed superintendent or Key Employees or (2) requires additional time for review. Failure of the ~~Architect~~ Owner to provide notice within the 14-day period shall constitute notice of no reasonable objection.

§ 3.9.3 The Contractor shall not employ a proposed superintendent or Key Employees to whom the Owner or ~~Architect~~A/E Professional has made reasonable and timely objection. The Contractor shall not change the superintendent without the Owner's consent, which shall not unreasonably be withheld or delayed.

§ 3.10 Contractor's Construction and Submittal Schedules

§ 3.10.1 The Contractor, promptly after being awarded the Contract, shall submit for the Owner's and ~~Architect~~A/E Professional's information a Contractor's construction schedule for the Work. The schedule shall contain detail appropriate for the Project, including (1) the date of commencement of the Work, interim schedule milestone dates, and the date of Substantial Completion; (2) an apportionment of the Work by construction activity; and (3) the time required for completion of each portion of the Work. The schedule shall provide for the orderly progression of the Work to completion and shall not exceed time limits current under the Contract Documents. The schedule shall be revised at appropriate intervals as required by the conditions of the Work and Project.

§ 3.10.2 The Contractor, promptly after being awarded the Contract and thereafter as necessary to maintain a current submittal schedule, shall submit a submittal schedule for the ~~Architect~~A/E Professional's approval. The ~~Architect~~A/E Professional's approval shall not be unreasonably delayed or withheld. The submittal schedule shall (1) be coordinated with the Contractor's construction schedule, and (2) allow the ~~Architect~~A/E Professional reasonable time to review submittals. If the Contractor fails to submit a submittal schedule, or fails to provide submittals in accordance with the

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approved submittal schedule, the Contractor shall not be entitled to any increase in Contract Sum or extension of Contract Time based on the time required for review of submittals.

§ 3.10.3 The Contractor shall perform the Work in strict accordance with the original schedules submitted to the Owner and A/E Professional unless a revision to the schedule is approved in writing by the Owner.

§ 3.10.4 The original construction schedule and all subsequently submitted updated construction schedules shall be in a detailed precedence-style, resource loaded critical path method (CPM) type format satisfactory to the Owner and the A/E Professional which shall also: (1) provide a graphic representation of all activities and events that will occur during performance of the Work; (2) identify each phase of construction and occupancy; and (3) set forth dates that are critical in ensuring the timely and orderly completion of the Work in accordance with the requirements of the Contract Documents (hereinafter referred to as "Milestone Dates"). Contractor shall provide Owner will the original/planned, resource loaded schedule electronic files in P6 native electronic files (.xer format). Upon review and acceptance by the Owner and the A/E Professional of the Milestone Dates, the construction schedule shall be deemed part of the Contract Documents and attached to the Agreement as a Exhibit ____ to be incorporated in the Contract Documents. The Contractor shall monitor the progress of the Work for conformance with the requirements of the construction schedule and shall promptly advise the Owner of any delays or potential delays. The accepted construction schedule shall be updated one time each month to reflect actual conditions and Contractor shall provide Owner with a copy of the updated resource loaded schedule, the electronic files in P6 native electronic files (.xer format), and a list of all changes made to the schedule, at the time Contractor submits its monthly Payment Application. In the event any progress report or schedule update indicates any delays, the Contractor shall propose an affirmative plan to correct the delay, including resequencing of the Work, overtime and/or additional labor, if necessary. In no event shall any progress report constitute an adjustment in the Contract Time, Milestone Dates, or the Contract Sum unless any such adjustment is agreed to by the Owner and authorized pursuant to properly executed written Change Order. Contractor shall maintain such progress schedule on a current basis in accordance with the provisions of this Section and shall keep proper records available to inspection by Owner to substantiate actual activity, duration and completion dates.

§ 3.10.5 In the event the Owner determines that the performance of the Work, as of a Milestone Date, has not progressed or reached the level of completion required by the Contract Documents, the Owner shall have the right to order the Contractor, in writing, to take corrective measures necessary to expedite the progress of construction, including, without limitation, (1) working additional shifts or overtime, (2) supplying additional manpower, equipment, and facilities, (3) re-sequencing the Work to avoid the effects of the potential delay; and (4) other similar measures utilizing the most cost effective and reasonable acceleration methods possible to avoid delays and liquidated damages. All such measures required to keep the Project on schedule and to avoid delays shall be a Cost of the Work but shall not be a basis to increase the Contract Sum.

§ 3.10.6 All time limits and obligations are of the essence in the Contract Documents.

§ 3.10.7 The Owner may exercise the rights furnished the Owner under or pursuant to this Section as frequently as the Owner deems necessary to ensure that the Contractor's performance of the Work will comply with any Milestone Date and/or the Substantial Completion Date set forth in the Contract Documents. Alternatively, Owner may exercise termination rights as provided for in the Contract Documents.

~~**§ 3.10.3** The Contractor shall perform the Work in general accordance with the most recent schedules submitted to the Owner and Architect.~~

§ 3.11 Documents and Samples at the Site

The Contractor shall make available, at the Project site, the Contract Documents, including Change Orders, Construction Change Directives, and other Modifications, in good order and marked currently to indicate field changes and selections made during construction, and the approved Shop Drawings, Product Data, Samples, and similar required submittals. These shall be in electronic form or paper copy, available to the ~~Architect~~A/E Professional and Owner, and delivered to the ~~Architect~~A/E Professional for submittal to the Owner upon completion of the Work as a record of the Work as constructed.

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§ 3.12 Shop Drawings, Product Data and Samples

§ 3.12.1 Shop Drawings are drawings, diagrams, schedules, and other data specially prepared for the Work by the Contractor or a Subcontractor, Sub-subcontractor, manufacturer, supplier, or distributor to illustrate some portion of the Work.

§ 3.12.2 Product Data are illustrations, standard schedules, performance charts, instructions, brochures, diagrams, and other information furnished by the Contractor to illustrate materials or equipment for some portion of the Work.

§ 3.12.3 Samples are physical examples that illustrate materials, equipment, or workmanship, and establish standards by which the Work will be judged.

§ 3.12.4 Shop Drawings, Product Data, Samples, and similar submittals are not Contract Documents. Their purpose is to demonstrate how the Contractor proposes to conform to the information given and the design concept expressed in the Contract Documents for those portions of the Work for which the Contract Documents require submittals. Review by the ~~Architect~~A/E Professional is subject to the limitations of Section 4.2.7. Informational submittals upon which the ~~Architect~~A/E Professional is not expected to take responsive action may be so identified in the Contract Documents. Submittals that are not required by the Contract Documents may be returned by the ~~Architect~~A/E Professional without action.

§ 3.12.5 The Contractor shall review for compliance with the Contract Documents, approve, and submit to the ~~Architect~~A/E Professional, Shop Drawings, Product Data, Samples, and similar submittals required by the Contract Documents, in accordance with the submittal schedule approved by the ~~Architect~~A/E Professional or, in the absence of an approved submittal schedule, with reasonable promptness and in such sequence as to cause no delay in the Work or in the activities of the Owner or of Separate Contractors.

§ 3.12.6 By submitting Shop Drawings, Product Data, Samples, and similar submittals, the Contractor represents to the Owner and ~~Architect~~A/E Professional that the Contractor has (1) reviewed and approved them, (2) determined and verified materials, field measurements and field construction criteria related thereto, or will do so, and (3) checked and coordinated the information contained within such submittals with the requirements of the Work and of the Contract Documents.

§ 3.12.7 The Contractor shall perform no portion of the Work for which the Contract Documents require submittal and review of Shop Drawings, Product Data, Samples, or similar submittals, until the respective submittal has been approved by the ~~Architect~~A/E Professional.

§ 3.12.8 The Work shall be in accordance with approved submittals except that the Contractor shall not be relieved of responsibility for deviations from the requirements of the Contract Documents by the ~~Architect~~A/E Professional's approval of Shop Drawings, Product Data, Samples, or similar submittals, unless the Contractor has specifically notified the ~~Architect~~A/E Professional of such deviation at the time of submittal and (1) the ~~Architect~~A/E Professional has given written approval to the specific deviation as a minor change in the Work, or (2) a Change Order or Construction Change Directive has been issued authorizing the deviation. The Contractor shall not be relieved of responsibility for errors or omissions in Shop Drawings, Product Data, Samples, or similar submittals, by the ~~Architect~~A/E Professional's approval thereof.

§ 3.12.9 The Contractor shall direct specific attention, in writing or on resubmitted Shop Drawings, Product Data, Samples, or similar submittals, to revisions other than those requested by the ~~Architect~~A/E Professional on previous submittals. In the absence of such notice, the ~~Architect~~A/E Professional's approval of a resubmission shall not apply to such revisions.

§ 3.12.10 The Contractor shall not be required to provide professional services that constitute the practice of ~~architect~~A/E Professionalure or engineering unless such services are specifically required by the Contract Documents for a portion of the Work or unless the Contractor needs to provide such services in order to carry out the Contractor's responsibilities for construction means, methods, techniques, sequences, and procedures. The Contractor shall not be required to provide professional services in violation of applicable law.

§ 3.12.10.1 If professional design services or certifications by a design professional related to systems, materials, or equipment are specifically required of the Contractor by the Contract Documents, the Owner and the ~~Architect~~A/E Professional will specify all performance and design criteria that such services must satisfy. The Contractor shall be

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entitled to rely upon the adequacy and accuracy of the performance and design criteria provided in the Contract Documents. The Contractor shall cause such services or certifications to be provided by an appropriately licensed design professional, whose signature and seal shall appear on all drawings, calculations, specifications, certifications, Shop Drawings, and other submittals prepared by such professional. Shop Drawings, and other submittals related to the Work, designed or certified by such professional, if prepared by others, shall bear such professional's written approval when submitted to the ~~Architect~~A/E Professional. The Owner and the ~~Architect~~A/E Professional shall be entitled to rely upon the adequacy and accuracy of the services, certifications, and approvals performed or provided by such design professionals, provided the Owner and ~~Architect~~A/E Professional have specified to the Contractor the performance and design criteria that such services must satisfy. Pursuant to this Section 3.12.10, the ~~Architect~~A/E Professional will review and approve or take other appropriate action on submittals only for the limited purpose of checking for conformance with information given and the design concept expressed in the Contract Documents.

§ 3.12.10.2 If the Contract Documents require the Contractor's design professional to certify that the Work has been performed in accordance with the design criteria, the Contractor shall furnish such certifications to the ~~Architect~~A/E Professional at the time and in the form specified by the ~~Architect~~A/E Professional.

§ 3.13 Use of Site

The Contractor shall confine operations at the site to areas permitted by applicable laws, statutes, ordinances, codes, rules and regulations, lawful orders of public authorities, and the Contract Documents and shall not unreasonably encumber the site with materials or equipment. If the Work requires the use of sidewalks, public ways or other areas outside of the Owner's Project site, the Contractor shall be responsible for obtaining all necessary approvals for such work, and Contractor shall pay for and obtain all necessary permits, including but not limited to road closure permits. The Contractor shall also arrange and pay for all local police and fire officers and personnel required to be present at or adjacent to the Project site in connection with the work. The Contractor must secure all materials and equipment that are stored on the Project site and shall take all safety precautions necessary to protect such materials and equipment. The Contractor shall be responsible, as a Cost of the Work included as part of the Contract Sum, for all measures to protect the Project site and property adjacent to the Project, from the Contractor's Work.

§ 3.14 Cutting and Patching

§ 3.14.1 The Contractor shall be responsible for cutting, fitting, or patching required to complete the Work or to make its parts fit together properly. All areas requiring cutting, fitting, or patching shall be restored to the condition existing prior to the cutting, fitting, or patching, unless otherwise required by the Contract Documents.

§ 3.14.2 The Contractor shall not damage or endanger a portion of the Work or fully or partially completed construction of the Owner or Separate Contractors by cutting, patching, or otherwise altering such construction, or by excavation. The Contractor shall not cut or otherwise alter construction by the Owner or a Separate Contractor except with written consent of the Owner and of the Separate Contractor. Consent shall not be unreasonably withheld. The Contractor shall not unreasonably withhold, from the Owner or a Separate Contractor, its consent to cutting or otherwise altering the Work.

§ 3.15 Cleaning Up and Repair

§ 3.15.1 The Contractor shall at all times keep the premises and surrounding area free from accumulation of waste materials and rubbish caused by operations under the Contract. At completion of the Work, the Contractor shall, at its sole cost and expense, remove waste materials, rubbish, the Contractor's tools, construction equipment, machinery, and surplus materials from and about the Project.

§ 3.15.2 If the Contractor fails to clean up as provided in the Contract Documents, the Owner may do so and the Owner shall be entitled to reimbursement from the Contractor or Owner may deduct the cost of cleanup from any amounts due Contractor.

§ 3.15.3 Contractor agrees to immediately repair at its sole cost and expense all damages to the Property, including, but not limited to, any damages to real or personal property arising from or relating to Contractor's performance of the Work to the reasonable satisfaction of the Owner.

§ 3.16 Access to Work

The Contractor shall provide the Owner and ~~Architect~~A/E Professional with access to the Work in preparation and progress wherever located.

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§ 3.17 Royalties, Patents and Copyrights

The Contractor shall pay all royalties and license fees. The Contractor shall defend suits or claims for infringement of copyrights and patent rights and shall hold the Owner and ~~Architect~~A/E Professional harmless from loss on account thereof, but shall not be responsible for defense or loss when a particular design, process, or product of a particular manufacturer or manufacturers is required by the Contract Documents, or where the copyright violations are contained in Drawings, Specifications, or other documents prepared by the Owner or ~~Architect~~A/E Professional. However, if an infringement of a copyright or patent is discovered by, or made known to, the Contractor, the Contractor shall be responsible for the loss unless the information is promptly furnished to the ~~Architect~~A/E Professional.

§ 3.18 Indemnification

§ 3.18.1 To the fullest extent permitted by law, the Contractor shall defend, indemnify and hold harmless the Owner, ~~Architect~~A/E Professional, ~~Architect~~A/E Professional's consultants, and agents and employees of any of them from and against claims, damages, losses, and expenses, including but not limited to attorneys' fees (at the trial and appellate levels), arising out of or resulting from performance of the Work, ~~provided that such claim, damage, loss, or expense is attributable to bodily injury, sickness, disease or death, or to injury to or destruction of tangible property (other than the Work itself), but only to the extent caused by the negligent acts or omissions of the Contractor, a Subcontractor, anyone directly or indirectly employed by them, or anyone for whose acts they may be liable,~~ regardless of whether or not such claim, damage, loss, or expense is caused in part by a party indemnified hereunder. Such obligation shall not be construed to negate, abridge, or reduce other rights or obligations of indemnity that would otherwise exist as to a party or person described in this Section 3.18.

§ 3.18.2 In any and all claims against the Indemnified Parties by any employee of the Contractor, or anyone for whose acts any of them may be liable, the indemnification obligation under this provision of this Contract shall not be limited in any way by any limitation on the amount or type of damages, compensation or benefits payable by or on behalf of the Contractor or any Subcontractor under Workers Compensation Acts, Disability Benefit Acts or other employee benefit acts.

§ 3.18.3 The Parties hereto acknowledge and agree that, to the extent any portion of the indemnification provisions contained herein is deemed void or unenforceable in any action or proceeding, then such portion shall be considered severed such that it will not affect the remaining portions of these indemnification provisions.

§ 3.18.4 The Indemnitors' indemnity obligations under this Section shall also specifically include, without limitation, all claims, fines, penalties, damages, liability, costs, fees, expenses (including, without limitation, reasonable attorneys' fees and expenses), and punitive and consequential damages (if any) arising out of, or in connection with or attributable to, any claims made against the Indemnified Parties for (i) bodily injury, sickness, disease, death, or destruction of tangible property caused by Contractor and/or any of its Subcontractors and/or Sub-subcontractors, (ii) violation of or failure to comply with any law, statute, ordinance, rule, regulation, code or requirement of a public authority that bears upon the performance of the Work by the Contractor, and/or any of the Indemnitors, or any person or entity for whom they are responsible, (iii) Contractor's failure to comply with any provision of the Contract Documents including Warranty obligations, and obligations to correct damaged and defective work, (iv) means, methods, procedures, techniques, or sequences of execution or performance of the Work, and/or (v) failure to secure and pay for permits, fees, approvals, licenses, and inspections as required under this Contract and/or the other the Contract Documents, or any violation of any permit or other approval of a public authority applicable to the Work, by the Contractor, a Subcontractor, or any person or entity for whom either is responsible. Moreover, and without limiting the foregoing, the Indemnitor's indemnity obligations under this Section include any and all claims by third parties against Indemnified Parties for consequential damages arising from and/or in connection with this Contract and/or the performance and/or failure of the Work.

§ 3.18.5 The Contractor shall indemnify and hold harmless all of the Indemnified Parties from and against any costs and expenses (including reasonable attorneys' fees for all trial and appellate levels) incurred by any of the Indemnified Parties in enforcing any of the Contractor's defense, indemnity and hold-harmless obligations under this Contract.

§ 3.18.6 The Contractor shall include in all Subcontracts provisions by which each Subcontractor agrees to defend, indemnify and hold harmless Contractor and the Indemnified Parties from and against liability, damages, losses and costs, including, but not limited to, reasonable attorneys' fees for all trial and appellate levels, arising out of, in connection with, or resulting from the performance of the Work or any Subcontractor's obligations under the Contract Documents to the same extent and in the same manner as the Contractor is liable to Owner pursuant to this provision.

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§ 3.18.7 The provisions of this Section shall survive final completion and final payment or termination of this Contract.

~~§ 3.18.2 In claims against any person or entity indemnified under this Section 3.18 by an employee of the Contractor, a Subcontractor, anyone directly or indirectly employed by them, or anyone for whose acts they may be liable, the indemnification obligation under Section 3.18.1 shall not be limited by a limitation on amount or type of damages, compensation, or benefits payable by or for the Contractor or a Subcontractor under workers' compensation acts, disability benefit acts, or other employee benefit acts.~~

ARTICLE 4 ~~ARCHITECT~~A/E PROFESSIONAL

§ 4.1 General

§ 4.1.1 The ~~Architect~~A/E Professional is the person or entity retained by the Owner pursuant to Section 2.3.2 and identified as such in the Agreement.

§ 4.1.2 Duties, responsibilities, and limitations of authority of the ~~Architect~~A/E Professional as set forth in the Contract Documents shall not be restricted, modified, or extended without written consent of the Owner, Contractor, and ~~Architect~~A/E Professional. Consent shall not be unreasonably withheld.

§ 4.2 Administration of the Contract

§ 4.2.1 The ~~Architect~~A/E Professional will provide administration of the Contract as described in the Contract Documents and will be an Owner's representative with the authorities described herein during construction until the date the ~~Architect~~A/E Professional issues the final Certificate for Payment. The ~~Architect~~A/E Professional will have authority to act on behalf of the Owner only to the extent provided in the Contract Documents.

§ 4.2.2 The ~~Architect~~A/E Professional will visit the site at intervals appropriate to the stage of construction, or as otherwise agreed with the Owner, to become generally familiar with the progress and quality of the portion of the Work completed, and to determine in general if the Work observed is being performed in a manner indicating that the Work, when fully completed, will be in accordance with the Contract Documents. However, the ~~Architect~~A/E Professional will not be required to make exhaustive or continuous on-site inspections to check the quality or quantity of the Work. The ~~Architect~~A/E Professional will not have control over, charge of, or responsibility for the construction means, methods, techniques, sequences or procedures, or for the safety precautions and programs in connection with the Work, since these are solely the Contractor's rights and responsibilities under the Contract Documents.

§ 4.2.3 On the basis of the site visits, the ~~Architect~~A/E Professional will keep the Owner reasonably informed about the progress and quality of the portion of the Work completed, and promptly report to the Owner (1) known deviations from the Contract Documents, (2) known deviations from the most recent construction schedule submitted by the Contractor, and (3) defects and deficiencies observed in the Work. The ~~Architect~~A/E Professional will not be responsible for the Contractor's failure to perform the Work in accordance with the requirements of the Contract Documents. The ~~Architect~~A/E Professional will not have control over or charge of, and will not be responsible for acts or omissions of, the Contractor, Subcontractors, or their agents or employees, or any other persons or entities performing portions of the Work.

§ 4.2.4 Communications

The Owner and Contractor shall include the ~~Architect~~A/E Professional in all communications that relate to or affect the ~~Architect~~A/E Professional's services or professional responsibilities. The Owner shall promptly notify the ~~Architect~~A/E Professional of the substance of any direct communications between the Owner and the Contractor otherwise relating to the Project. Communications by and with the ~~Architect~~A/E Professional's consultants shall be through the ~~Architect~~A/E Professional. Communications by and with Subcontractors and suppliers shall be through the Contractor. Communications by and with Separate Contractors shall be through the Owner. The Contract Documents may specify other communication protocols. Contractor hereby authorizes and consents to direct communications, at any time and in any fashion, between Owner and any Subcontractors and Sub-subcontractors on the Project, regarding the Work performed on the Project and the status of payments to said persons or entities for said Work.

§ 4.2.5 Based on the ~~Architect~~A/E Professional's evaluations of the Contractor's Applications for Payment, the ~~Architect~~A/E Professional will review and certify the amounts due the Contractor and will issue Certificates for Payment in such amounts.

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§ 4.2.6 The Owner, Owner's Representative, and ~~Architect~~A/E Professional ha~~s~~ve authority to reject Work that does not conform to the Contract Documents. Whenever the ~~Architect~~A/E Professional considers it necessary or advisable, the ~~Architect~~A/E Professional will have authority to require inspection or testing of the Work in accordance with Sections 13.4.2 and 13.4.3, whether or not the Work is fabricated, installed or completed. However, neither this authority of the ~~Architect~~A/E Professional nor a decision made in good faith either to exercise or not to exercise such authority shall give rise to a duty or responsibility of the ~~Architect~~A/E Professional to the Contractor, Subcontractors, suppliers, their agents or employees, or other persons or entities performing portions of the Work.

§ 4.2.7 The ~~Architect~~A/E Professional will review and approve, or take other appropriate action upon, the Contractor's submittals such as Shop Drawings, Product Data, and Samples, but only for the limited purpose of checking for conformance with information given and the design concept expressed in the Contract Documents. The ~~Architect~~A/E Professional's action will be taken in accordance with the submittal schedule approved by the ~~Architect~~A/E Professional or, in the absence of an approved submittal schedule, with reasonable promptness while allowing sufficient time in the ~~Architect~~A/E Professional's professional judgment to permit adequate review. Review of such submittals is not conducted for the purpose of determining the accuracy and completeness of other details such as dimensions and quantities, or for substantiating instructions for installation or performance of equipment or systems, all of which remain the responsibility of the Contractor as required by the Contract Documents. The ~~Architect~~A/E Professional's review of the Contractor's submittals shall not relieve the Contractor of the obligations under Sections 3.3, 3.5, and 3.12. The ~~Architect~~A/E Professional's review shall not constitute approval of safety precautions or of any construction means, methods, techniques, sequences, or procedures. The ~~Architect~~A/E Professional's approval of a specific item shall not indicate approval of an assembly of which the item is a component.

§ 4.2.8 The ~~Architect~~A/E Professional ~~will~~ may prepare Change Orders and Construction Change Directives, and may order minor changes in the Work as provided in Section 7.4. The ~~Architect~~A/E Professional will investigate and make determinations and recommendations regarding concealed and unknown conditions as provided in Section 3.7.4.

§ 4.2.9 The ~~Architect~~A/E Professional will conduct inspections to determine the date or dates of Substantial Completion and the date of final completion; issue Certificates of Substantial Completion pursuant to Section 9.8; receive and forward to the Owner, for the Owner's review and records, written warranties and related documents required by the Contract and assembled by the Contractor pursuant to Section 9.10; and issue a final Certificate for Payment pursuant to Section 9.10.

§ 4.2.10 If the Owner and ~~Architect~~A/E Professional agree, the ~~Architect~~A/E Professional will provide one or more Project representatives to assist in carrying out the ~~Architect~~A/E Professional's responsibilities at the site. The Owner shall notify the Contractor of any change in the duties, responsibilities and limitations of authority of the Project representatives.

§ 4.2.11 The ~~Architect~~A/E Professional will interpret and decide matters concerning performance under, and requirements of, the Contract Documents on written request of either the Owner or Contractor. The ~~Architect~~A/E Professional's response to such requests will be made in writing within any time limits agreed upon or otherwise with reasonable promptness.

§ 4.2.12 Interpretations and decisions of the ~~Architect~~A/E Professional will be consistent with the intent of, and reasonably inferable from, the Contract Documents and will be in writing or in the form of drawings. When making such interpretations and decisions, the ~~Architect~~A/E Professional will endeavor to secure faithful performance by both Owner and Contractor, will not show partiality to either, and will not be liable for results of interpretations or decisions rendered in good faith.

§ 4.2.13 The ~~Architect~~A/E Professional's decisions on matters relating to aesthetic effect will be final if consistent with the intent expressed in the Contract Documents.

§ 4.2.14 The ~~Architect~~A/E Professional will review and respond to requests for information about the Contract Documents. The ~~Architect~~A/E Professional's response to such requests will be made in writing within any time limits agreed upon or otherwise with reasonable promptness. If appropriate, the ~~Architect~~A/E Professional will prepare and issue supplemental Drawings and Specifications in response to the requests for information.

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§ 4.2.15 Should the Contractor request information, interpretations of Contract Documents, use of alternates, approval of samples (but not Shop Drawings) or make other similar requests (hereinafter "RFI" or "RFIs"), it shall do so in good faith, in writing, and in a reasonable time and fashion. The A/E Professional's response to RFIs will be made in writing and within five (5) business days except for emergencies which shall be within three (3) business days. The period shall be extended if the A/E Professional is not able to respond due to the failure of Contractor to provide adequate and accurate information to the A/E Professional. Furthermore, should the A/E Professional require compensation to review any Contractor requests which are abusive or unreasonable in number or timing, the A/E Professional shall expedite its review of the RFIs provided Contractor agrees in writing to reimburse Owner for any architectural or engineering fees necessitated in responding to such RFIs. Contractor agrees that Owner may deduct any such architectural or engineering fees from any sums otherwise due Contractor.

§ 4.2.16 With regard to the submission and approval of Shop Drawings or other submittals, the period of time for response is as soon as reasonably possible, but no longer than ten (10) business days, except for emergencies which shall be reviewed by A/E Professional in three (3) business days. It is Contractor's responsibility to determine in advance the amount of time A/E Professional will take to review Shop Drawings or submittals and what information will be required for adequate review. Contractor is further responsible for submitting thorough and complete requests for review or approval in sufficient time so as not to cause any delay to the Contractor's Work. Contractor shall submit Shop Drawings in accordance with the submittal schedule. Contractor will not be entitled to an extension of the Contact Time or increase to the Contract Sum due to any delay on the part of A/E Professional, unless Contractor can demonstrate by clear and convincing documentation that Contractor properly submitted the request in accordance with the approved submittal schedule and A/E Professional failed, due to no fault of Contractor, to respond in accordance with the approved submittal schedule, and was in fact delayed, which delay could not have otherwise been avoided by Contractor.

§ 4.2.17 Notwithstanding any other provision to the Contract, the A/E Professional or its consultant(s) does not have authority to authorize changes to the Contract Documents. Only Owner shall be authorized to execute Change Orders, or otherwise modify these Contract Documents. Should Contractor desire to change any materials, or equipment required by Construction Change Directives, Contractor must first notify the Owner and A/E Professional of its intent to deviate from the Contract Documents by preparing a Construction Change Directive and obtain written approval for performance of any Work which changes or deviates from the Contract Documents. Failure to obtain said approval in writing will bar Contractor from any claim for additional compensation, delays or arguing that the A/E Professional or its consultants directed the work.

ARTICLE 5 SUBCONTRACTORS

§ 5.1 Definitions

§ 5.1.1 A Subcontractor is a person or entity who has a direct contract with the Contractor to perform a portion of the Work at the site. The term "Subcontractor" is referred to throughout the Contract Documents as if singular in number and means a Subcontractor or an authorized representative of the Subcontractor. The term "Subcontractor" does not include a Separate Contractor or the subcontractors of a Separate Contractor.

§ 5.1.2 A Sub-subcontractor is a person or entity who has a direct or indirect contract with a Subcontractor to perform a portion of the Work at the site. The term "Sub-subcontractor" is referred to throughout the Contract Documents as if singular in number and means a Sub-subcontractor or an authorized representative of the Sub-subcontractor.

§ 5.2 Award of Subcontracts and Other Contracts for Portions of the Work

§ 5.2.1 Unless otherwise stated in the Contract Documents, the Contractor, as soon as practicable after award of the Contract, shall notify the Owner and ~~Architect~~A/E Professional of the persons or entities proposed for each principal portion of the Work, including those who are to furnish materials or equipment fabricated to a special design. Within 14 days of receipt of the information, the ~~Architect~~A/E Professional may notify the Contractor whether the Owner or the ~~Architect~~A/E Professional (1) has reasonable objection to any such proposed person or entity or (2) requires additional time for review. Failure of the ~~Architect~~A/E Professional to provide notice within the 14-day period shall constitute notice of no reasonable objection.

§ 5.2.2 The Contractor shall not contract with a proposed person or entity to whom the Owner or ~~Architect~~A/E Professional has made reasonable and timely objection. The Contractor shall not be required to contract with anyone to whom the Contractor has made reasonable objection.

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§ 5.2.3 If the Owner or ~~Architect~~A/E Professional has reasonable objection to a person or entity proposed by the Contractor, the Contractor shall propose another to whom the Owner or ~~Architect~~A/E Professional has no reasonable objection. ~~If the proposed but rejected Subcontractor was reasonably capable of performing the Work, the Contract Sum and Contract Time shall be increased or decreased by the difference, if any, occasioned by such change, and an appropriate Change Order shall be issued before commencement of the substitute Subcontractor's Work. However, no increase in the Contract Sum or Contract Time shall be allowed for such change unless the Contractor has acted promptly and responsively in submitting names as required.~~

§ 5.2.4 The Contractor shall not substitute a Subcontractor, person, or entity for one previously selected if the Owner or ~~Architect~~A/E Professional makes reasonable objection to such substitution.

§ 5.3 Subcontractual Relations

By appropriate written agreement, the Contractor shall require each Subcontractor, to the extent of the Work to be performed by the Subcontractor, to be bound to the Contractor by terms of the Contract Documents, and to assume toward the Contractor all the obligations and responsibilities, including the responsibility for safety of the Subcontractor's Work that the Contractor, by these Contract Documents, assumes toward the Owner and ~~Architect~~A/E Professional. Each subcontract agreement shall preserve and protect the rights of the Owner and ~~Architect~~A/E Professional under the Contract Documents with respect to the Work to be performed by the Subcontractor so that subcontracting thereof will not prejudice such rights, and shall allow to the Subcontractor, unless specifically provided otherwise in the subcontract agreement, the benefit of all rights, remedies, and redress against the Contractor that the Contractor, by the Contract Documents, has against the Owner. Where appropriate, the Contractor shall require each Subcontractor to enter into similar agreements with Sub-subcontractors. The Contractor shall make available to each proposed Subcontractor, prior to the execution of the subcontract agreement, copies of the Contract Documents to which the Subcontractor will be bound, and, upon written request of the Subcontractor, identify to the Subcontractor terms and conditions of the proposed subcontract agreement that may be at variance with the Contract Documents. Subcontractors will similarly make copies of applicable portions of such documents available to their respective proposed Sub-subcontractors.

§ 5.3.1 Subcontract Agreements. Contractor hereby agrees that each subcontract agreement shall contain provisions granting the Contractor the right to terminate the subcontract at any time for the Contractor's convenience and without cause. Each subcontract agreement shall preserve and protect the rights of the Owner under the Contract Documents with respect to the Work to be performed by the Subcontractor so that subcontracting thereof will not prejudice such rights, and shall allow to the Subcontractor, unless specifically provided otherwise in the subcontract agreement, the benefit of all rights, remedies and redress against the Contractor that the Contractor, by the Contract Documents, has against the Owner. Where appropriate, the Contractor shall require each Subcontractor to enter into similar written agreements with Sub-Subcontractors. The Contractor shall make available to each proposed Subcontractor, prior to the execution of the subcontract agreement, copies of the Contract Documents to which the Subcontractor will be bound. Subcontractors will similarly make copies of applicable portions of such documents available to their respective proposed Sub-Subcontractors.

§ 5.4 Contingent Assignment of Subcontracts

§ 5.4.1 The Contractor hereby assigns to the Owner an option to accept assignment of all of Contractor's contract rights with respect to Subcontractors and material and equipment suppliers that contracted to provide Work, materials and equipment to the Project in accordance with the Contract Documents, provided that Owner may elect in writing to exercise that option only after proper termination of the Contactor for Contractor's default. For those subcontract agreements which the Owner accepts by notifying the Subcontractors and Contractor in writing, the option shall include, but not be limited to, all Contractor's rights to make claims regarding quality of the Work and warranty claims. It is further agreed that all Subcontracts and material and equipment purchase contracts entered into by Contractor or its Subcontractors or material suppliers, shall contain a provision stating that, if after termination of Contractor for Contractor's default or completion of the Work, the Owner may bring any claim directly against any Subcontractor of Contractor, including any surety bond furnished for or on behalf of such Subcontractor, for breach of contract, warranty rights, quality of workmanship, and create third party beneficiary rights of Owner in said agreements. It is further agreed and understood that such assignment(s) and third party beneficiary rights are part of the consideration to Owner for entering into this Agreement with Contractor and may not be withdrawn. Subcontractor or equipment and material suppliers shall be notified of Owner's rights. Additionally, nothing contained in this Agreement shall constitute an assignment of Contractor's rights against the Owner or create any third party beneficiary rights in any Subcontractors or material and equipment suppliers of Contractor. The purpose of this provision is to

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allow the Owner, in addition to Contractor, to make claim for damage or indemnification directly against any Subcontractors or material and equipment suppliers that may be ultimately responsible for defects or deficiencies in the Work or materials and equipment. Additionally, this assignment is for the purpose of permitting Owner to require any such Subcontractor or materials and equipment suppliers to complete the unperformed obligations under such Subcontract, should the Contractor be in default or be terminated by Owner.~~Each subcontract agreement for a portion of the Work is assigned by the Contractor to the Owner, provided that~~

~~.1 assignment is effective only after termination of the Contract by the Owner for cause pursuant to Section 14.2 and only for those subcontract agreements that the Owner accepts by notifying the Subcontractor and Contractor; and~~

~~.2 assignment is subject to the prior rights of the surety, if any, obligated under bond relating to the Contract.~~

~~When the Owner accepts the assignment of a subcontract agreement, the Owner assumes the Contractor's rights and obligations under the subcontract.~~

§ 5.4.2 Nothing in this Article or Agreement shall be deemed to create any contractual relationship between the Owner and any Subcontractor, material provider or supplier or to create any rights of any Subcontractor against the Owner for any actions, debts, obligations, responsibilities or liabilities occurring prior to any assignment executed pursuant to this Article.~~Upon such assignment, if the Work has been suspended for more than 30 days, the Subcontractor's compensation shall be equitably adjusted for increases in cost resulting from the suspension.~~

§ 5.4.3 Upon assignment to the Owner under this Section 5.4, the Owner may further assign the subcontract to a successor contractor or other entity. ~~If the Owner assigns the subcontract to a successor contractor or other entity, the Owner shall nevertheless remain legally responsible for all of the successor contractor's obligations under the subcontract.~~

ARTICLE 6 CONSTRUCTION BY OWNER OR BY SEPARATE CONTRACTORS

§ 6.1 Owner's Right to Perform Construction and to Award Separate Contracts

§ 6.1.1 The term "Separate Contractor(s)" shall mean other contractors retained by the Owner under separate agreements. The Owner reserves the right to perform construction or operations related to the Project with the Owner's own forces, and with Separate Contractors. ~~retained under Conditions of the Contract substantially similar to those of this Contract, including those provisions of the Conditions of the Contract related to insurance and waiver of subrogation.~~

§ 6.1.2 When separate contracts are awarded for different portions of the Project or other construction or operations on the site, the term "Contractor" in the Contract Documents in each case shall mean the Contractor who executes each separate Owner-Contractor Agreement.

§ 6.1.3 The ~~Owner~~ Contractor shall provide for coordination of the activities of the Owner's own forces and of each Separate Contractor with the Work of the Contractor~~, who shall cooperate with them~~. The Contractor shall participate with any Separate Contractors and the Owner in reviewing their construction schedules. The parties acknowledge that the Contractor's schedule has included time for all known separate Owner contractors to perform their work, based on Contractor's experience and knowledge. The Contractor shall review those portions of the Contract Documents to be performed by the Owner's separate contractors, if any, that may impact Contractor's performance of its Work, and that may be interrelated with the Work to be performed by the Contractor, and shall schedule those separate contractors' work so as to cause no delay to the Work. ~~The Contractor shall make any revisions to its construction schedule deemed necessary after a joint review and mutual agreement. The construction schedules shall then constitute the schedules to be used by the Contractor, Separate Contractors, and the Owner until subsequently revised.~~

§ 6.1.4 Unless otherwise provided in the Contract Documents, when the Owner performs construction or operations related to the Project with the Owner's own forces or with Separate Contractors, the Owner or its Separate Contractors shall have the same obligations and rights that the Contractor has under the Conditions of the Contract, including, without excluding others, those stated in Article 3, this Article 6, and Articles 10, 11, and 12.

§ 6.1.5 If any part of the Work depends upon proper execution of work performed by Owner or Owner's separate contractors, the Contractor, its Subcontractors, and their respective Sub-subcontractors shall, prior to proceeding with the Work, inspect such Work and promptly report to Owner any apparent discrepancies or defects in such other Work. Failure of the Contractor, its Subcontractors, or their respective Sub-subcontractors to comply with these requirements shall bar any claims thereafter that defects in Contractor's Work, or delays in the schedule, are due to defects in the

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Work performed by others. Similarly, if any part of the work performed by Owner or Owner's separate contractors depends upon proper execution of Work performed by Contractor, its Subcontractors, and their respective Sub-subcontractors, Owner's separate contractors shall, prior to proceeding with the work, inspect such Work and promptly report to Contractor any apparent discrepancies or defects in such Work. Failure of Owner's separate contractors or utility contractors to comply with these requirements shall bar any claims thereafter that defects in Owner's separate contractors' work are due to defects in the Work performed by Contractor.

§ 6.1.6 Contractor shall provide Owner's separate contractors with a reasonable opportunity for the introduction and storage of their materials, equipment and execution of their work.

§ 6.2 Mutual Responsibility

§ 6.2.1 The Contractor shall afford the Owner and Separate Contractors reasonable opportunity for introduction and storage of their materials and equipment and performance of their activities, and shall connect and coordinate the Contractor's construction and operations with theirs as required by the Contract Documents.

§ 6.2.2 If part of the Contractor's Work depends for proper execution or results upon construction or operations by the Owner or a Separate Contractor, the Contractor shall, prior to proceeding with that portion of the Work, promptly notify the ~~Architect~~A/E Professional of apparent discrepancies or defects in the construction or operations by the Owner or Separate Contractor that would render it unsuitable for proper execution and results of the Contractor's Work. Failure of the Contractor to notify the ~~Architect~~A/E Professional of apparent discrepancies or defects prior to proceeding with the Work shall constitute an acknowledgment that the Owner's or Separate Contractor's completed or partially completed construction is fit and proper to receive the Contractor's Work. The Contractor shall not be responsible for discrepancies or defects in the construction or operations by the Owner or Separate Contractor that are not apparent.

§ 6.2.3 The Contractor shall reimburse the Owner for costs the Owner incurs that are payable to a Separate Contractor because of the Contractor's delays, improperly timed activities or defective construction. The Owner shall be responsible to the Contractor for costs the Contractor incurs because of a Separate Contractor's delays, improperly timed activities, damage to the Work or defective construction.

§ 6.2.4 The Contractor shall promptly remedy damage that the Contractor wrongfully causes to completed or partially completed construction or to property of the Owner or Separate Contractor as provided in Section 10.2.5.

§ 6.2.5 The Owner and each Separate Contractor shall have the same responsibilities for cutting and patching as are described for the Contractor in Section 3.14.

§ 6.3 Owner's Right to Clean Up

If a dispute arises among the Contractor, Separate Contractors, and the Owner as to the responsibility under their respective contracts for maintaining the premises and surrounding area free from waste materials and rubbish, the Owner may clean up and the ~~Architect~~A/E Professional will allocate the cost among those responsible.

ARTICLE 7 CHANGES IN THE WORK

§ 7.1 General

§ 7.1.1 Changes in the Work may be accomplished after execution of the Contract, and without invalidating the Contract, by Change Order, Construction Change Directive or order for a minor change in the Work, subject to the limitations stated in this Article 7 and elsewhere in the Contract Documents.

§ 7.1.2 A Change Order shall be based upon agreement among the Owner, Contractor, and ~~Architect~~A/E Professional. A Construction Change Directive requires agreement by the Owner and ~~Architect~~A/E Professional and may or may not be agreed to by the Contractor. An order for a minor change in the Work may be issued by the ~~Architect~~A/E Professional alone.

§ 7.1.3 Changes in the Work shall be performed under applicable provisions of the Contract Documents. The Contractor shall proceed promptly with changes in the Work, unless otherwise provided in the Change Order, Construction Change Directive, or order for a minor change in the Work.

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§ 7.2 Change Orders

§ 7.2.1 A Change Order is a written instrument prepared by the ~~Architect~~A/E Professional and signed by the Owner, Contractor, and ~~Architect~~A/E Professional stating their agreement upon all of the following:

.1 The change in the Work;

.2 The amount of the adjustment, if any, in the Contract Sum; and

.3 The extent of the adjustment, if any, in the Contract Time.

§ 7.2.2 All Claims arising out of or relating to a Change Order shall be deemed waived unless expressly reserved in such Change Order. Contractor is specifically prohibited from unilaterally preserving Claims, including Claims for extension of the Contract Time. Notwithstanding any other provision to the Contract, the A/E Professional or its consultant will not have authority to authorize changes to the Contract Documents.

§ 7.2.3 Agreement on any Change Order shall constitute a final settlement of all matters which the Contractor knew or should have known relating to the change in the Work that is the subject of the Change Order, including but not limited to all direct and indirect costs associated with such change and all adjustments to the Contract Sum and Contract Time.

§ 7.2.4 Change Order requests shall not be considered unless and until submitted in writing to the Owner and the A/E Professional together with documentation detailing the change and supporting the requested increase or decrease in the Contract Sum and/or Contract Time. Such documentation must show: (i) all materials by quantity and price, (ii) all labor by unit price, (iii) insurance, (iv) permits, (v) payroll taxes and employee benefits, (vi) equipment by quantity and rate, (vii) Subcontractor markup, (viii) Contractor's Fee; (ix) a clear and concise statement of the basis for the claim, including dates and names of parties and people involved, with back up information, Contract Documents relied upon, including reference to sections of the Drawings and Specifications, daily reports, weather reports, meeting minutes, correspondence and the like; and (x) an updated schedule meeting the requirements of the Contract Documents, showing the impact of the Change to the agreed upon Project Schedule. Any requested increase to Contract Sum for the Contractor's General Condition costs shall be limited to actual on-site cost increases for General Conditions items incurred as a direct result of the change.

§ 7.2.5 Under no circumstances shall increase in the cost of materials or labor be considered the basis for a Claims by the Contractor for additional compensation, no matter how severe the increase of the cost of the materials or labor to the Contractor.

§ 7.2.6 In the event of any dispute between Owner and Contractor arising out or relating to the requirements of the Contract, any modification, or the terms of a pending Change Order, the Contractor shall continue to perform the Work, including any Work required by pending Change Orders, and Construction Change Directives and Owner shall continue to make payments of undisputed sums in accordance with the Contract Documents, pending final resolution of such dispute.

§ 7.3 Construction Change Directives

§ 7.3.1 A Construction Change Directive is a written order prepared by the ~~Architect~~A/E Professional and signed by the Owner and ~~Architect~~A/E Professional, directing a change in the Work prior to agreement on adjustment, if any, in the Contract Sum or Contract Time, or both. The Owner may by Construction Change Directive, without invalidating the Contract, order changes in the Work within the general scope of the Contract consisting of additions, deletions, or other revisions, the Contract Sum and Contract Time being adjusted accordingly.

§ 7.3.2 A Construction Change Directive shall be used in the absence of total agreement on the terms of a Change Order.

§ 7.3.3 If the Construction Change Directive provides for an adjustment to the Contract Sum, the adjustment shall be based on one of the following methods:

.1 Mutual acceptance of a lump sum properly itemized and supported by sufficient substantiating data to permit evaluation;

.2 Unit prices stated in the Contract Documents or subsequently agreed upon;

.3 Cost to be determined in a manner agreed upon by the parties and a mutually acceptable fixed or percentage fee; or

.4 As provided in Section 7.3.4.

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§ 7.3.4 If the Contractor does not respond promptly or disagrees with the method for adjustment in the Contract Sum, the ~~Architect~~A/E Professional shall determine the adjustment on the basis of reasonable expenditures and savings of those performing the Work attributable to the change, including, in case of an increase in the Contract Sum, an amount for overhead and profit as set forth in the Agreement, or if no such amount is set forth in the Agreement, a reasonable amount. In such case, and also under Section 7.3.3.3, the Contractor shall keep and present, in such form as the ~~Architect~~A/E Professional may prescribe, an itemized accounting together with appropriate supporting data. Unless otherwise provided in the Contract Documents, costs for the purposes of this Section 7.3.4 shall be limited to the following:

.1 Costs of labor, including applicable payroll taxes, fringe benefits required by agreement or custom, workers' compensation insurance, and other employee costs approved by the ~~Architect~~A/E Professional;

.2 Costs of materials, supplies, and equipment, including cost of transportation, whether incorporated or consumed;

.3 Rental costs of machinery and equipment, exclusive of hand tools, whether rented from the Contractor or others;

.4 Costs of premiums for all bonds and insurance, permit fees, and sales, use, or similar taxes, directly related to the change; and

.5 Costs of supervision and field office personnel directly attributable to the change.

§ 7.3.5 If the Contractor disagrees with the adjustment in the Contract Time, the Contractor may make a Claim in accordance with applicable provisions of Article 15.

§ 7.3.6 Upon receipt of a Construction Change Directive, the Contractor shall promptly proceed with the change in the Work involved and advise the ~~Architect~~A/E Professional of the Contractor's agreement or disagreement with the method, if any, provided in the Construction Change Directive for determining the proposed adjustment in the Contract Sum or Contract Time.

§ 7.3.7 A Construction Change Directive signed by the Contractor indicates the Contractor's agreement therewith, including adjustment in Contract Sum and Contract Time or the method for determining them. Such agreement shall be effective immediately and shall be recorded as a Change Order.

§ 7.3.8 The amount of credit to be allowed by the Contractor to the Owner for a deletion or change that results in a net decrease in the Contract Sum shall be actual net cost as confirmed by the ~~Architect~~A/E Professional. When both additions and credits covering related Work or substitutions are involved in a change, the allowance for overhead and profit shall be figured on the basis of net increase, if any, with respect to that change.

§ 7.3.9 Pending final determination of the total cost of a Construction Change Directive to the Owner, the Contractor may request payment for Work completed under the Construction Change Directive in Applications for Payment. The ~~Architect~~A/E Professional will make an interim determination for purposes of monthly certification for payment for those costs and certify for payment the amount that the ~~Architect~~A/E Professional determines, in the ~~Architect~~A/E Professional's professional judgment, to be reasonably justified. The ~~Architect~~A/E Professional's interim determination of cost shall adjust the Contract Sum on the same basis as a Change Order, subject to the right of either party to disagree and assert a Claim in accordance with Article 15.

§ 7.3.10 When the Owner and Contractor agree with a determination made by the ~~Architect~~A/E Professional concerning the adjustments in the Contract Sum and Contract Time, or otherwise reach agreement upon the adjustments, such agreement shall be effective immediately and the ~~Architect~~A/E Professional will prepare a Change Order. Change Orders may be issued for all or any part of a Construction Change Directive.

§ 7.4 Minor Changes in the Work

The ~~Architect~~A/E Professional may order minor changes in the Work that are consistent with the intent of the Contract Documents and do not involve an adjustment in the Contract Sum or an extension of the Contract Time. The ~~Architect~~A/E Professional's order for minor changes shall be in writing. If the Contractor believes that the proposed minor change in the Work will affect the Contract Sum or Contract Time, the Contractor shall notify the ~~Architect~~A/E Professional and shall not proceed to implement the change in the Work. If the Contractor performs the Work set forth in the ~~Architect~~A/E Professional's order for a minor change without prior notice to the ~~Architect~~A/E Professional that such change will affect the Contract Sum or Contract Time, the Contractor waives any adjustment to the Contract Sum or extension of the Contract Time.

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ARTICLE 8 TIME

§ 8.1 Definitions

§ 8.1.1 Unless otherwise provided, Contract Time is the period of time, including authorized adjustments, allotted in the Contract Documents for Substantial Completion of the Work.

§ 8.1.2 The date of commencement of the Work is the date established in the Agreement.

§ 8.1.3 The date of Substantial Completion is the date certified by the ~~Architect~~A/E Professional in accordance with Section 9.8.

§ 8.1.4 The term "day" as used in the Contract Documents shall mean calendar day unless otherwise specifically defined.

§ 8.2 Progress and Completion

§ 8.2.1 Time limits stated in the Contract Documents are of the essence of the Contract. By executing the Agreement, the Contractor confirms that the Contract Time is a reasonable period for performing the Work.

§ 8.2.2 The Contractor shall not knowingly, except by agreement or instruction of the Owner in writing, commence the Work prior to the effective date of insurance required to be furnished by the Contractor and Owner.

§ 8.2.3 The Contractor shall proceed expeditiously with adequate forces and shall achieve Substantial Completion within the Contract Time.

§ 8.3 Delays and Extensions of Time

§ 8.3.1 If the Contractor is delayed at any time in the commencement or progress of the Work by (1) an act or neglect of the Owner ~~or Architect, of an employee of either, or of a Separate Contractor~~; (2) by changes ordered in the Work; (3) by labor disputes, fire, unusual delay in deliveries impacting the South Florida construction industry, unavoidable casualties, or adverse weather conditions documented in accordance with Section 15.1.6.2, ~~or other causes beyond the Contractor's control; (4) by delay authorized by the Owner pending mediation and binding dispute resolution; or (5) by other causes~~ that the Contractor asserts, and the ~~Architect~~A/E Professional determines, justify delay, then the Contract Time shall be extended for such reasonable time as the ~~Architect~~A/E Professional may determine.

§ 8.3.2 Adjustments in the Contract Time will be permitted for a delay only to the extent such delay (1) is not caused, in whole or in part, by the Contractor, or its Subcontractors and material suppliers; (2) could not be limited or avoided by the Contractor's timely notice to the Owner of the delay; (3) is of a duration not less than one (1) Business day; (4) impacts the critical path of the Project and (5) was mitigated by the Contractor to the maximum extent practicable. All requests for extensions of time other than those associated with changes in the Work, must be submitted in writing to the Owner within five (5) calendar days of the event giving rise to the delay. Failure to so request an extension will constitute a waiver of any right for an extension of time.

§ 8.3.3 ~~2~~ Claims relating to time shall be made in accordance with applicable provisions of Article 15.

§ 8.3.4 In entering into the Contract, the Contractor represents and warrants that it has considered all impacts and potential impacts associated with the following: (1) COVID-19 and any other worldwide pandemics known at the time of execution of the Agreement ("Pandemics") and (2) the current military conflicts involving Russia and the Ukraine and Israel and Hamas ("Military Conflicts"). Contractor further represents and warrants that in entering into this Contract, it has accounted for any and all labor or material shortages, delivery lead time, or price increases that may be caused by local and or national conditions, including but not limited to impacts from the Pandemics and the Military Conflicts. Contractor also represents and warrants that in determining time requirements for procurement, installation, and construction completion, Contractor has taken into account the impacts of the Pandemics and the Military Conflicts, and has included all of those factors in the Construction Schedule and Contract Sum.

§ 8.3.4.1 Contractor will not seek any price increases or time extensions relating to or arising from any impacts of the Pandemics or the Military Conflicts.

§ 8.3.4.2 The Owner shall not be required to make any adjustment in the Contract Sum or grant an extension to the Contract Time in connection with any failure by the Contractor to comply with the requirements of this Section 8.3.4.

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§ 8.3.5 No Damage for Delays. Except for delays due to the gross negligence of the Owner or active interference by the Owner, Contractor's sole and exclusive remedy for delays shall be an increase to the Contract Time. Contractor shall not be entitled to an increase in the Contract Price or to payment of any other additional monies from Owner for costs incurred as a result of such delay, including additional or extended General Conditions costs or General Requirements costs. Owner's exercise of its rights under this Contract shall in no way be considered active interference.

§ 8.3.6 All schedule float is the property of Owner and may not be used by Contractor.

§ 8.4 Owner's Delay and Entitlement to Liquidated Damages

§ 8.4.1 The Contractor acknowledges that the Contract Time for the Substantial Completion of the Work requires that the Substantial Completion of the entire Work occur on or before specified date(s) as provided in the Agreement, subject to any extensions of the Contract Time. The Contractor acknowledges and agrees that the Owner will suffer severe financial loss in the event of delay and Owner shall be entitled to liquidated damages as provided in the Contract Documents. Liquidated damages are set forth in the Agreement.

~~§ 8.3.3 This Section 8.3 does not preclude recovery of damages for delay by either party under other provisions of the Contract Documents.~~

ARTICLE 9 PAYMENTS AND COMPLETION

§ 9.1 Contract Sum

§ 9.1.1 The Contract Sum is stated in the Agreement and, including authorized adjustments, is the total amount payable by the Owner to the Contractor for performance of the Work under the Contract Documents.

§ 9.1.2 If unit prices are stated in the Contract Documents or subsequently agreed upon, and if quantities originally contemplated are materially changed so that application of such unit prices to the actual quantities causes substantial inequity to the Owner or Contractor, the applicable unit prices shall be equitably adjusted.

§ 9.2 Schedule of Values

Where the Contract is based on a stipulated sum or Guaranteed Maximum Price, the Contractor shall submit a schedule of values to the ~~Architect~~Owner's Representative before the first Application for Payment, allocating the entire Contract Sum to the various portions of the Work. The schedule of values shall be prepared in the form, and supported by the data to substantiate its accuracy, required by the ~~Architect~~Owner's Representative. This schedule, unless objected to by the ~~Architect~~Owner's Representative, shall be used as a basis for reviewing the Contractor's Applications for Payment. Any changes to the schedule of values shall be submitted to the ~~Architect~~Owner's Representative and supported by such data to substantiate its accuracy as the ~~Architect~~Owner's Representative may require, and unless objected to by the ~~Architect~~Owner's Representative, shall be used as a basis for reviewing the Contractor's subsequent Applications for Payment.

§ 9.3 Applications for Payment

§ 9.3.1 At least ~~ten~~ twenty (20) days before the date established for each progress payment, the Contractor shall submit to the ~~Architect~~Owner's Representative an itemized Application for Payment prepared in accordance with the schedule of values, if required under Section 9.2, for completed portions of the Work. The application shall be notarized, if required, and supported by all data substantiating the Contractor's right to payment that the Owner or ~~Architect~~Owner's Representative require, such as copies of requisitions, and releases and waivers of liens from Subcontractors and suppliers, and shall reflect retainage if provided for in the Contract Documents.

§ 9.3.1.1 Along with the Contractor's Application for Payment, Contractor shall submit to Owner and Owner's Representative the following;

.1 a sworn and certified progress payment affidavit which recites that all laborers, material suppliers and subcontractors dealing with the Contractor have been paid in full up through the date of the affidavit;

.2 partial releases of lien from Contractor, material suppliers and subcontractors and any lienors serving a Notice to Owner as required by this section 9.3, and evidence of proof of payment of any indebtedness incurred with respect to the Work of Contractor as may be required by Owner;

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.3 evidence that all Work has been fully performed as required pursuant to the Contract Documents up to the time of the request for payment, and the Work has been inspected and accepted by the Owner's Representative and any governmental authorities required to inspect the Work, and such other evidence that the Owner may reasonably require;

.4 an updated construction schedules; and

.5 Any other document or information required elsewhere in the Contract Documents as a condition precedent to payment.

§ 9.3.1.2~~1~~ As provided in Section 7.3.9, such applications may include requests for payment on account of changes in the Work that have been properly authorized by Construction Change Directives, or by interim determinations of the ~~Architect~~Owner's Representative, but not yet included in Change Orders.

§ 9.3.1.3~~2~~ Applications for Payment shall not include requests for payment for portions of the Work for which the Contractor does not intend to pay a Subcontractor or supplier, unless such Work has been performed by others whom the Contractor intends to pay.

§ 9.3.2 Unless otherwise provided in the Contract Documents, payments shall be made on account of materials and equipment delivered and suitably stored at the site for subsequent incorporation in the Work. If approved in advance by the Owner, payment may similarly be made for materials and equipment suitably stored off the site at a location agreed upon in writing. Payment for materials and equipment stored on or off the site shall be conditioned upon compliance by the Contractor with procedures satisfactory to the Owner to establish the Owner's title to such materials and equipment or otherwise protect the Owner's interest, and shall include the costs of applicable insurance, storage, and transportation to the site, for such materials and equipment stored off the site.

§ 9.3.3 The Contractor warrants that title to all Work covered by an Application for Payment will pass to the Owner no later than the time of payment. The Contractor further warrants that upon submittal of an Application for Payment all Work for which Certificates for Payment have been previously issued and payments received from the Owner shall, to the best of the Contractor's knowledge, information, and belief, be free and clear of liens, claims, security interests, or encumbrances, in favor of the Contractor, Subcontractors, suppliers, or other persons or entities that provided labor, materials, and equipment relating to the Work.

§ 9.4 Certificates for Payment

§ 9.4.1 The ~~Architect~~Owner's Representative will, within seven days after receipt of the Contractor's Application for Payment, either (1) issue to the Owner a Certificate for Payment in the full amount of the Application for Payment, with a copy to the Contractor; or (2) issue to the Owner a Certificate for Payment for such amount as the ~~Architect~~Owner's Representative determines is properly due, and notify the Contractor and Owner of the ~~Architect~~Owner's Representative's reasons for withholding certification in part as provided in Section 9.5.1; or (3) withhold certification of the entire Application for Payment, and notify the Contractor and Owner of the ~~Architect~~Owner's Representative's reason for withholding certification in whole as provided in Section 9.5.1.

§ 9.4.2 The issuance of a Certificate for Payment will constitute a representation by the ~~Architect~~Owner's Representative to the Owner, based on the ~~Architect~~Owner's Representative's evaluation of the Work and the data in the Application for Payment, that, to the best of the ~~Architect~~Owner's Representative's knowledge, information, and belief, the Work has progressed to the point indicated, the quality of the Work is in accordance with the Contract Documents, and that the Contractor is entitled to payment in the amount certified. The foregoing representations are subject to an evaluation of the Work for conformance with the Contract Documents upon Substantial Completion, to results of subsequent tests and inspections, to correction of minor deviations from the Contract Documents prior to completion, and to specific qualifications expressed by the ~~Architect~~Owner's Representative. However, the issuance of a Certificate for Payment will not be a representation that the ~~Architect~~Owner's Representative has (1) made exhaustive or continuous on-site inspections to check the quality or quantity of the Work; (2) reviewed construction means, methods, techniques, sequences, or procedures; (3) reviewed copies of requisitions received from Subcontractors and suppliers and other data requested by the Owner to substantiate the Contractor's right to payment; or (4) made examination to ascertain how or for what purpose the Contractor has used money previously paid on account of the Contract Sum.

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§ 9.5 Decisions to Withhold Certification

§ 9.5.1 The ~~Architect~~Owner's Representative or Owner may withhold or reject a Certificate for Payment in whole or in part, to the extent reasonably necessary to protect the Owner, if in the Owner's or ~~Architect~~Owner's Representative's opinion the representations to the Owner required by Section 9.4.2 cannot be made. If the ~~Architect~~Owner's Representative is unable to certify payment in the amount of the Application, the ~~Architect~~Owner's Representative will notify the Contractor and Owner as provided in Section 9.4.1. If the Contractor and ~~Architect~~Owner's Representative cannot agree on a revised amount, the ~~Architect~~Owner's Representative will promptly issue a Certificate for Payment for the amount for which the ~~Architect~~Owner's Representative is able to make such representations to the Owner. The ~~Architect~~Owner's Representative may also withhold a Certificate for Payment or, because of subsequently discovered evidence, may nullify the whole or a part of a Certificate for Payment previously issued, to such extent as may be necessary in the ~~Architect~~Owner's Representative's opinion to protect the Owner from loss for which the Contractor is responsible, including loss resulting from acts and omissions described in Section 3.3.2, because of

- **.1** defective Work not remedied;
- **.2** third party claims filed or reasonable evidence indicating probable filing of such claims, unless security acceptable to the Owner is provided by the Contractor;
- **.3** failure of the Contractor to make payments properly to Subcontractors or suppliers for labor, materials or equipment;
- **.4** reasonable evidence that the Work cannot be completed for the unpaid balance of the Contract Sum;
- **.5** damage to the Owner or a Separate Contractor;
- **.6** reasonable evidence that the Work will not be completed within the Contract Time, and that the unpaid balance would not be adequate to cover actual or liquidated damages for the anticipated delay; ~~or~~
- **.7** ~~repeated~~ failure to carry out the Work in accordance with the Contract Documents;~~.~~
- **.8** failure to provide releases of lien for each Application for Payment in accordance with the Contract Documents; or
- **.9** failure of the Work to progress satisfactorily or according to schedule; or
- **.10** any other failure to perform a material obligation contained in the Contract Documents.

§ 9.5.2 When either party disputes the ~~Architect~~Owner's Representative's decision regarding a Certificate for Payment under Section 9.5.1, in whole or in part, that party may submit a Claim in accordance with Article 15.

§ 9.5.3 When the reasons for withholding certification are removed, certification will be made for amounts previously withheld.

§ 9.5.4 If the ~~Architect~~Owner's Representative withholds certification for payment under Section 9.5.1.3, the Owner may, at its sole option, issue joint checks to the Contractor and to any Subcontractor or supplier to whom the Contractor failed to make payment for Work properly performed or material or equipment suitably delivered. If the Owner makes payments by joint check, the Owner shall notify the ~~Architect~~Owner's Representative and the Contractor shall reflect such payment on its next Application for Payment.

§ 9.6 Progress Payments

§ 9.6.1 After the ~~Architect~~Owner's Representative has issued a Certificate for Payment, the Owner shall make payment in the manner and within the time provided in the Contract Documents, and shall so notify the ~~Architect~~Owner's Representative.

§ 9.6.2 The Contractor shall pay each Subcontractor, no later than seven days after receipt of payment from the Owner, the amount to which the Subcontractor is entitled, reflecting percentages actually retained from payments to the Contractor on account of the Subcontractor's portion of the Work. The Contractor shall, by appropriate agreement with each Subcontractor, require each Subcontractor to make payments to Sub-subcontractors in a similar manner.

§ 9.6.3 The ~~Architect~~Owner's Representative will, on request, furnish to a Subcontractor, if practicable, information regarding percentages of completion or amounts applied for by the Contractor and action taken thereon by the ~~Architect~~Owner's Representative and Owner on account of portions of the Work done by such Subcontractor.

§ 9.6.4 The Owner has the right to request written evidence from the Contractor that the Contractor has properly paid Subcontractors and suppliers amounts paid by the Owner to the Contractor for subcontracted Work. If the Contractor fails to furnish such evidence within seven days, the Owner shall have the right to contact Subcontractors and suppliers to ascertain whether they have been properly paid. Neither the Owner nor ~~Architect~~Owner's Representative shall have

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an obligation to pay, or to see to the payment of money to, a Subcontractor or supplier, except as may otherwise be required by law.

§ 9.6.5 The Contractor's payments to suppliers shall be treated in a manner similar to that provided in Sections 9.6.2, 9.6.3 and 9.6.4.

§ 9.6.6 A Certificate for Payment, a progress payment, or partial or entire use or occupancy of the Project by the Owner shall not constitute acceptance of Work not in accordance with the Contract Documents.

§ 9.6.7 Payments received by the Contractor for Work properly performed by Subcontractors and suppliers shall be held by the Contractor for those Subcontractors or suppliers who performed Work or furnished materials, or both, under contract with the Contractor for which payment was made by the Owner.

§ 9.6.8 Owner may, in its discretion, make all or any portion of any progress payment by check payable jointly to the order of Contractor and any lienor giving timely notice, and deduct said sum from the balance then due Contractor. However, such payment, if made, shall not create any third party beneficiary or other rights in such lienor. In making such payments to lienors/subcontractors, the Owner shall require such lienor to execute the waiver of lien form in accordance with §713.06, Fla. Stat.

§ 9.6.9 Payments to Subcontractors by the Owner.

§ 9.6.9.1 If the Owner fails to approve an application for payment for a cause which is the fault of the Contractor and not the fault of a particular subcontractor, or if the Contractor fails to make a payment which is properly due to a particular subcontractor, the Owner may after ten (10) calendar days' written notice to Contractor, pay such subcontractor and Contractor jointly, less the amount to be retained under his subcontract.

§ 9.6.9.2 The Owner shall have no obligation to pay, or to see to the payment of, any monies to any subcontractor. Nothing contained in herein shall be deemed to create any contractual relationship between the Owner and any subcontractor or to create any rights in any subcontractor against the Owner.

§ 9.6.10 No payments made under this Contract shall be evidence of performance of this Contract, either wholly or in part, and no payment including final payment shall be construed to be an acceptance of defective Work or improper materials, nor shall use of the Work by the Owner constitute acceptance of the Work hereunder or any part thereof or a waiver of any of the Owner's claims..

§ 9.6.11 If the Owner is entitled to reimbursement or payment from the Contractor or Surety under or pursuant to the Contract Documents, such payment shall be made promptly upon written demand by the Owner. Notwithstanding anything contained in the Contract Documents to the contrary, if the Contractor or Surety fail to promptly make any undisputed payment due the Owner after such written notice, the Owner shall have an absolute right to offset such amount against the Contract Sum and may, in the Owner's reasonable discretion, elect either to: (1) deduct an amount equal to that which the Owner is entitled from any payment then or thereafter due the Contractor from the Owner; or (2) issue a written notice to the Contractor reducing the Contract Sum by an amount equal to that which the Owner is entitled. Nothing contained herein shall be deemed an admission of liability by Contractor nor limit Contractor's right to contest same. Nothing contained in this Section requires consent of Surety or notice to surety of Owner's intent to take such action.

~~**§ 9.6.7** Unless the Contractor provides the Owner with a payment bond in the full penal sum of the Contract Sum, payments received by the Contractor for Work properly performed by Subcontractors or provided by suppliers shall be held by the Contractor for those Subcontractors or suppliers who performed Work or furnished materials, or both, under contract with the Contractor for which payment was made by the Owner. Nothing contained herein shall require money to be placed in a separate account and not commingled with money of the Contractor, create any fiduciary liability or tort liability on the part of the Contractor for breach of trust, or entitle any person or entity to an award of punitive damages against the Contractor for breach of the requirements of this provision.~~

§ 9.6.12~~8~~ Provided the Owner has fulfilled its payment obligations under the Contract Documents, the Contractor shall defend and indemnify the Owner from all loss, liability, damage or expense, including reasonable attorney's fees and litigation expenses, arising out of any lien claim or other claim for payment by any Subcontractor or supplier of any tier. Upon receipt of notice of a lien claim or other claim for payment, the Owner shall notify the Contractor. If approved by the applicable court, when required, the Contractor may substitute a surety bond for the property against which the lien or other claim for payment has been asserted.

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§ 9.7 Failure of Payment

If the ~~Architect~~Owner's Representative does not issue a Certificate for Payment, through no fault of the Contractor, within seven days after receipt of the Contractor's Application for Payment, or if the Owner does not pay the Contractor all undisputed amounts within ~~seven~~ twenty-one (21) days after the date established in the Contract Documents, the amount certified by the ~~Architect~~Owner's Representative or awarded by binding dispute resolution, then the Contractor may, upon seven additional days' notice to the Owner and ~~Architect~~Owner's Representative, stop the Work until payment of the amount owing has been received. The Contract Time shall be extended appropriately and the Contract Sum shall be increased by the amount of the Contractor's reasonable costs of shutdown, delay and start-up, plus interest as provided for in the Contract Documents.

§ 9.8 Substantial Completion

§ 9.8.1 Substantial Completion is the stage in the progress of the Work when the Work or designated portion thereof is sufficiently complete in accordance with the Contract Documents so that the Owner can occupy or utilize the Work for its intended use and obtain all permits, licenses, and certificates required for such use. Specifically, and in addition to the foregoing, in order to achieve Substantial Completion for the Work, Contractor must achieve the following additional, minimum requirements:

1. Site cleanup and restoration of all exterior elements including roof surfaces, ledges, gutters, windows, exterior facades (including without limitation removal of all excess materials, debris, supplies, equipment, temporary structures, ladders, scaffolding, staging and/or trailers) has been completed;

2. All parking areas, all landscaping, all exterior building finishes, all interior building finishes, all interior spaces, all structural, mechanical, and technical systems required by the Contract Documents, all fire and life safety systems, are completed and ready for use or occupancy;

3. The Work is ready for occupancy, completed in accordance with the Drawings and Specifications and the Contract Documents including, but not limited to: (1) low voltage system, if any; (2) MEP trim out, if any; (3) security systems, if any; (4) finish painting, if any; (5) designated flooring, if any; (6) millwork, if any; and (7) cabinets, if any; all as applicable, are complete.

4. The Work is ready for occupancy, completed in accordance with the Plans and Specifications and the Contract Documents and, to the extent it is within the Contractor's scope of Work, all persons or entities having jurisdiction over the Project have issued the appropriate permits, and authorizations for the construction and use of the Work and the Work has received a temporary or final Certificate of Occupancy; and

~~4.~~5. Contractor has complied with the turnover obligations set forth in **§ 9.9** (including subparts) below.

§ 9.8.2 When the Contractor considers that the Work, or a portion thereof which the Owner agrees to accept separately, is substantially complete, the Contractor shall prepare and submit to the ~~Architect~~A/E Professional a comprehensive list of items to be completed or corrected prior to final payment. Failure to include an item on such list does not alter the responsibility of the Contractor to complete all Work in accordance with the Contract Documents.

§ 9.8.3 Upon receipt of the Contractor's list, the ~~Architect~~A/E Professional will make an inspection to determine whether the Work or designated portion thereof is substantially complete. If the ~~Architect~~A/E Professional's inspection discloses any item, whether or not included on the Contractor's list, which is not sufficiently complete in accordance with the Contract Documents so that the Owner can occupy or utilize the Work or designated portion thereof for its intended use, the Contractor shall, before issuance of the Certificate of Substantial Completion, complete or correct such item upon notification by the ~~Architect~~A/E Professional. In such case, the Contractor shall then submit a request for another inspection by the ~~Architect~~A/E Professional to determine Substantial Completion.

§ 9.8.4 When the Work or designated portion thereof is substantially complete, the ~~Architect~~A/E Professional will prepare a Certificate of Substantial Completion that shall establish the date of Substantial Completion; establish responsibilities of the Owner and Contractor for security, maintenance, heat, utilities, damage to the Work and

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insurance; and fix the time within which the Contractor shall finish all items on the list accompanying the Certificate. Warranties required by the Contract Documents shall commence on the date of Substantial Completion of the Work or designated portion thereof unless otherwise provided in the Certificate of Substantial Completion.

§ 9.8.5 The Certificate of Substantial Completion shall be submitted to the Owner and Contractor for their written acceptance of responsibilities assigned to them in the Certificate. Upon such acceptance, and consent of surety if any, the Owner shall make payment of retainage applying to the Work or designated portion thereof. Such payment shall be adjusted for Work that is incomplete or not in accordance with the requirements of the Contract Documents.

§ 9.9 Partial Occupancy or Use or Turnover

§ 9.9.1 The Contractor shall be responsible for operating and maintaining the Work and all systems and equipment that are part of the Work until Substantial Completion as defined in AIA A201 Modified General Conditions above or until a mutually agreed upon earlier Turnover as set forth herein.

§ 9.9.2 The Owner may occupy or use any completed or partially completed portion of the Work at any stage when such portion is designated by separate agreement with the Contractor, provided such occupancy or use or turnover is consented to by the insurer and authorized by public authorities having jurisdiction over the Project. Such partial occupancy or use may commence whether or not the portion is substantially complete, provided the Owner and Contractor have accepted in writing the responsibilities assigned to each of them for payments, retainage, if any, security, maintenance, heat, utilities, damage to the Work and insurance, and have agreed in writing concerning the period for correction of the Work and commencement of warranties required by the Contract Documents. When the Contractor considers a portion substantially complete, the Contractor shall prepare and submit a list to the ~~Architect~~A/E Professional as provided under Section 9.8.2. Consent of the Contractor to partial occupancy or use shall not be unreasonably withheld. The stage of the progress of the Work shall be determined by written agreement between the Owner and Contractor or, if no agreement is reached, by decision of the ~~Architect~~A/E Professional.

§ 9.9.2 Immediately prior to such partial occupancy or use or turnover, the Owner, Contractor, and ~~Architect~~A/E Professional shall jointly inspect the area to be occupied or portion of the Work to be used in order to determine and record the condition of the Work.

§ 9.9.3 Unless otherwise agreed upon, partial occupancy or use or turnover of a portion or portions of the Work shall not constitute acceptance of Work not complying with the requirements of the Contract Documents.

§ 9.9.4 Prior to the time of Substantial Completion, Turnover or any partial occupancy or use may occur from Contractor to Owner, the following minimum requirements must be met by Contractor and submitted to Owner:

1. Contractor's installers and operation and regular maintenance personnel have met with Owner's representative and the property manager(s) for the Project or other individuals as may be designated by Owner, at the Project site, to provide complete instructions and training needed for proper start-up, operation, shut-down and maintenance of that part of Work. Instructions by manufacturer's representatives are required where installers are not experts in operating/maintenance procedures, or as specified in the Construction Documents. For operational equipment, installers shall demonstrate startup, shut-down, emergency operations, noise and vibration adjustments, safety, economy/efficiency adjustments, and other applicable operations, and shall review maintenance and operating instructions which are required to be performed in order to maintain in force applicable warranties, guaranties and bonds;

2. Contractor has provided Owner with Three (3) heavy duty, bound, hard-cover books and one (1) electronic copy of same, properly identified on both the front and the spine of each binder and indexed, in suitable sets of manageable size, containing the following information related to all equipment and systems on the Project:

    1. Training, maintenance and operating manual information;
    2. emergency instructions;
    3. spare part listings;
    4. wiring diagrams;
    5. recommended "turn around" cycles;
    6. inspections procedures;

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7. shop drawings, product data, and any other applicable information;
8. detailed information and records for maintenance performed on all equipment and systems on the Project, operated and maintained by Contractor prior to Substantial Completion

3. Contractor has provided Owner with Three (3) heavy duty, bound, hard-cover books and one (1) electronic copy of same, properly identified on both the front and the spine of each binder and indexed, in suitable sets of manageable size, containing the following information:

1. All Subcontractor warranties fully executed in the form approved by the Owner;
2. All Extended Warranties required by the Contract Documents;
3. The Contractor's warranty; and
4. A list of all Subcontractors, Sub-subcontractors and suppliers who performed Work on the Project or who furnished equipment or materials for use in the Project, such list to include the name, address, email address, and telephone number of the responsible person at all such entities.

4. Contractor has provided Owner the Red Line drawings as required by the Contract Documents.

§ 9.9.5 The delivery, endorsement or assignment of such warranties shall not release the Contractor from obligations pursuant to the Contract Documents.

§ 9.10 Final Completion and Final Payment

§ 9.10.1 ~~**Upon receipt of the Contractor's notice that the Work is ready for final inspection and acceptance and upon receipt of a final Application for Payment, the Architect**~~**Statutory** ~~**will promptly make such inspection. When the Architect finds the Work acceptable under the Contract Documents and the Contract fully performed, the Architect will promptly issue a final Certificate for Payment stating that to the best of the Architect's knowledge, information and belief, and on the basis of the Architect's on-site visits and inspections, the Work has been completed in accordance with the Contract Documents and that the entire balance found to be due the Contractor and noted in the final Certificate is due and payable. The Architect's final Certificate for Payment will constitute a further representation that conditions listed in Section 9.10.2 as precedent to the Contractor's being entitled to final payment have been fulfilled.**~~ **Requirements for Final Payment:**

§ 9.10.1.1 Upon receipt of written notice from Contractor that the Work is ready for final inspection and acceptance, the Owner and A/E Professional, will promptly make the Final Inspection and shall prepare a Final Punch List as required by the Florida Statutes. To the extent this Project involves more than one building or structure, or will proceed in multiple phases, the Owner will provide a Final Punch List for each building, structure, or phase of the Project within the time limitations set forth in this Article.

§ 9.10.1.2 The Owner shall work with the Owner's Representative and/or A/E Professional to prepare the Final Punch List, which shall include a list of items and the estimated cost to complete each such item, which is required to render complete, satisfactory, and acceptable the Work of the Contractor.

§ 9.10.1.3 To the extent this Project has an estimated cost of less than $10 million, the Owner shall develop the Final Punch List no later than thirty (30) calendar days after the Project has achieved Substantial Completion. The Owner shall deliver the Final Punch List to Contractor within five (5) calendar days of its development.

§ 9.10.1.4 All items in the Final Punch List shall be completed by the Contractor within thirty (30) calendar days after Contractor's receipt of the Final Punch List. If the Final Punch List is not provided to the Contractor by the agreed upon date for delivery of the Final Punch List, the Contract Time for completion shall be extended by the number of days that the Owner exceeded the delivery date.

§ 9.10.1.5 Notwithstanding anything to the contrary contained in any Contract Documents or any attachment thereto, the Owner may withhold from payments to Contractor a sum equal to one hundred and fifty percent (150%) of the cost of the items on the Final Punch List (the "Final Punch List Balance").

§ 9.10.1.6 Within twenty (20) business days after the Final Punch List is created, the Owner shall pay the Contractor any remaining contract balance, including all retainage previously withheld, excluding an amount equal to the Final Punch List Balance as set forth in Section 9.10.1.5.

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§ 9.10.1.7 The failure to include any corrective work or pending items not yet completed on the Final Punch List does not alter the responsibility of the Contractor to complete all the construction services purchased pursuant to the Agreement. All items that require correction under the Contract Documents, which are identified after the preparation and delivery of the Final Punch List remain the obligation of the Contractor as defined by the Contract Documents.

§ 9.10.1.8 Upon Contractor's completion of the Final Punch List, Contractor may submit to the Owner a final Application for Payment requesting the Final Punch List Balance set forth in Section 9.10.1.5.

§ 9.10.1.9 If Owner finds the Work acceptable, the requisite documents have been submitted and the requirements of the Contract Documents fully satisfied, and all conditions of the permits and regulatory agencies have been met, a Final Certificate of Payment shall be issued, stating that the requirements of the Contract Documents have been performed and the Work is ready for acceptance under the terms and conditions thereof.

§ 9.10.1.10 If a good faith dispute exists as to whether one or more items identified on the Final Punch List have been completed in accordance with the Contract Documents, Owner may continue to withhold up to 150% of the total cost to complete such item.

§ 9.10.1.11 Owner is not required to pay or release any amounts to Contractor that are the subject of a good faith dispute made in writing pursuant to the Agreement.

§ 9.10.1.12 Retainage. Five percent (5%) of all monies earned by Contractor shall be retained by Owner until twenty (20) business days after creation of the Final Punch List as set forth this section. Within twenty (20) business days after the Final Punch List is created, the Owner shall pay the Contractor any remaining contract balance, including all retainage previously withheld, with the exception of an amount equal to 150% of the estimated cost to complete the items identified on the Final Punch List, as set forth herein.

§ 9.10.1.13 This Agreement is intended to comply with the requirements of Sections 218.735 and 255.073-079, Florida Statutes, as applicable. If this Article or Agreement contains any provision found to be unlawful under Sections 218.735 and 255.073-079, Florida Statutes, the same shall be deemed to be of no effect and shall be deemed stricken from this Agreement without affecting the binding force of this Agreement as it shall remain after omitting such provision.

§ 9.10.2 Final payment, including any remaining retention shall not become due until the Contractor satisfies the requirements of the Contract Documents. As used in the Contract Documents, "Final Completion" shall mean such time after Substantial Completion and the following express conditions precedent to Final Payment have been met:

.1 the A/E Professional has issued a Certificate of Final Completion;

.2 all "punch list" items have been fully completed to the reasonable satisfaction of Owner and A/E Professional, unless the failure of the same to issue is not due to the failure of Contractor to complete its scope of Work;

.3 the final certificate of occupancy and all final governmental and utility authority permits have been issued, unless the final certificate of occupancy is delayed for reasons that are beyond the control of the Contractor and those for whom the Contractor is responsible;

.4 Contractor has fully cleaned and restored the site with respect to all of the final punch list work; and

.5 all temporary utilities are disconnected;

§ 9.10.3 In addition to the above, Contractor shall have performed and or submitted (as applicable) to the A/E Professional and/or Owner's Representative and Owner the following:

.1 an affidavit that payrolls, bills for materials and equipment, and other indebtedness connected with the Work for which the Owner or the Owner's property might be responsible or

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encumbered (less amounts withheld by Owner) have been paid or otherwise satisfied, or shall be paid out of Contractor's final payment;

.2 consent of surety, if any, to final payment;

.3 documentation of any special warranties, such as manufacturers' warranties or specific Subcontractor warranties;

.4 all previously undelivered manufacturer and Subcontractor guarantees, warranties and manuals and documents;

.5 final and or conditional releases of lien, waivers of claim, satisfactions of liens or claims, and such other affidavits as may be reasonably required by the Owner to assure a lien-free and claim-free completion of the Work; Where Contractor is in a dispute with a Subcontractor and or supplier, consent of surety to Final Payment is acceptable.

.6 To the extent A/E Professional in missing any shop drawings and or submittals, Contractor will provide any such items requested in writing;

.7 evidence that all temporary utilities have been disconnected;

.8 the Contractor has fully cleaned and restored the site, including removal of all rubbish and construction debris;

.9 all final governmental permits for which Contract is responsible under the Contract Documents have been issued and all permits have been closed out,

.10 Contractor has complied with all partial occupancy or Turnover obligations set forth in the AIA A201 Modified General Conditions above; and

.11 Contractor has complied with all other requirements of the Contract Documents.

~~Neither final payment nor any remaining retained percentage shall become due until the Contractor submits to the Architect (1) an affidavit that payrolls, bills for materials and equipment, and other indebtedness connected with the Work for which the Owner or the Owner's property might be responsible or encumbered (less amounts withheld by Owner) have been paid or otherwise satisfied, (2) a certificate evidencing that insurance required by the Contract Documents to remain in force after final payment is currently in effect, (3) a written statement that the Contractor knows of no reason that the insurance will not be renewable to cover the period required by the Contract Documents, (4) consent of surety, if any, to final payment, (5) documentation of any special warranties, such as manufacturers' warranties or specific Subcontractor warranties, and (6) if required by the Owner, other data establishing payment or satisfaction of obligations, such as receipts and releases and waivers of liens, claims, security interests, or encumbrances arising out of the Contract, to the extent and in such form as may be designated by the Owner. If a Subcontractor refuses to furnish a release or waiver required by the Owner, the Contractor may furnish a bond satisfactory to the Owner to indemnify the Owner against such lien, claim, security interest, or encumbrance. If a lien, claim, security interest, or encumbrance remains unsatisfied after payments are made, the Contractor shall refund to the Owner all money that the Owner may be compelled to pay in discharging the lien, claim, security interest, or encumbrance, including all costs and reasonable attorneys' fees.~~

§ 9.10.4 The Contractor's obligation to complete all Work in accordance with the Contract Documents shall not be deemed waived, excused, or otherwise satisfied by any failure of any person or entity to include, discover, or identify any incomplete or defective Work in any punch list, completion list, or inspection report, including without limitation the Substantial Completion Punch List, or any further punch lists.

§ 9.10.5 Final payment may be withheld on account of (1) defective Work not remedied, (2) claims or liens filed, (3) failure of the Contractor to make payments properly to subcontractors or for labor, materials, or equipment, (4) failure to provide waivers of lien for all lienors giving notices, (5) damage to the Owner's property caused by Contractor, its subcontractors or anyone working for Contractor, in which case a reasonable estimated amount of such damages shall be withheld from Contractor's payment until such damages are satisfactorily corrected, (6) failure to carry out the Work in accordance with the Contract Documents.

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§ 9.10.63 If, after Substantial Completion of the Work, final completion thereof is materially delayed through no fault of the Contractor or by issuance of Change Orders affecting final completion, and the ~~Architect~~A/E Professional and/or Owner's Representative so confirms, the Owner shall, upon application by the Contractor and certification by the ~~Architect~~A/E Professional and/or Owner's Representative, and without terminating the Contract, make payment of the balance due for that portion of the Work fully completed, corrected, and accepted. If the remaining balance for Work not fully completed or corrected is less than retainage stipulated in the Contract Documents, and if bonds have been furnished, the written consent of the surety to payment of the balance due for that portion of the Work fully completed and accepted shall be submitted by the Contractor to the ~~Architect~~A/E Professional and/or Owner's Representative prior to certification of such payment. Such payment shall be made under terms and conditions governing final payment, except that it shall not constitute a waiver of Claims.

§ 9.10.74 The making of final payment shall not constitute a waiver of Claims by the Owner ~~except those arising from~~

~~.1 liens, Claims, security interests, or encumbrances arising out of the Contract and unsettled;~~

~~.2 failure of the Work to comply with the requirements of the Contract Documents;~~

~~.3 terms of special warranties required by the Contract Documents; or~~

~~.4 audits performed by the Owner, if permitted by the Contract Documents, after final payment.~~.

§ 9.10.85 Acceptance of final payment by the Contractor, a Subcontractor, or a supplier, shall constitute a waiver of claims by that payee except those previously made in writing and identified by that payee as unsettled at the time of final Application for Payment.

§ 9.10.9 Prior to final payment, Contractor shall (1) organize maintenance and operating manual information into suitable sets of manageable size, and bind into individual binders properly identified and indexed; (2) include as applicable emergency instructions, spare part listing, warranties, guarantees or wiring diagrams, recommended "turn around" cycles, inspections procedures, shop drawings, product data, and any other applicable information; (3) Bind each manual of each set in heavy-duty, three-ring vinyl cover binders, and include pocket folders for folded sheet information; and (4) mark identification on both the front and the spine of each binder.

ARTICLE 10 PROTECTION OF PERSONS AND PROPERTY

§ 10.1 Safety Precautions and Programs

The Contractor shall be responsible for initiating, maintaining, and supervising all safety precautions and programs in connection with the performance of the Contract.

§ 10.2 Safety of Persons and Property

§ 10.2.1 The Contractor shall take reasonable precautions for safety of, and shall provide reasonable protection to prevent damage, injury, or loss to

.1 employees on the Work and other persons who may be affected thereby;

.2 the Work and materials and equipment to be incorporated therein, whether in storage on or off the site, under care, custody, or control of the Contractor, a Subcontractor, or a Sub-subcontractor; and

.3 other property at the site or adjacent thereto, such as trees, shrubs, lawns, walks, pavements, roadways, structures, and utilities not designated for removal, relocation, or replacement in the course of construction.

§ 10.2.2 The Contractor shall comply with, and give notices required by applicable laws, statutes, ordinances, codes, rules and regulations, and lawful orders of public authorities, bearing on safety of persons or property or their protection from damage, injury, or loss.

§ 10.2.3 The Contractor shall implement, erect, and maintain, as required by existing conditions and performance of the Contract, reasonable safeguards for safety and protection, including posting danger signs and other warnings against hazards; promulgating safety regulations; and notifying the owners and users of adjacent sites and utilities of the safeguards.

§ 10.2.4 When use or storage of explosives or other hazardous materials or equipment, or unusual methods are necessary for execution of the Work, the Contractor shall exercise utmost care and carry on such activities under supervision of properly qualified personnel.

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§ 10.2.5 The Contractor shall promptly remedy damage and loss to property caused in whole or in part by the Contractor, a Subcontractor, a Sub-subcontractor, or anyone directly or indirectly employed by any of them, or by anyone for whose acts they may be liable and for which the Contractor is responsible under the Contract Documents. The Contractor may make a Claim for the cost to remedy the damage or loss to the extent such damage or loss is attributable in whole or in part to the grossly negligent acts or omissions of the Owner or A/E Professional or anyone directly or indirectly employed by either of them, or by anyone for whose acts either of them may be liable, and not attributable in whole or in part to the fault or negligence of the Contractor. The foregoing obligations of the Contractor are in addition to the Contractor's obligations under the Agreement.

§ 10.2.6 Any damage to adjacent property or improvements shall be promptly repaired by the Contractor, if caused in whole or in part by Contractor or its Subcontractors, any Sub-subcontractor or anyone directly or indirectly employed by any of them, or by anyone for whose acts any of them may be liable. The foregoing is not intended to prevent the Contractor from making claim against any insurance that may provide coverage to the Contractor.

§ 10.2.7 The Contractor shall designate a responsible member of the Contractor's organization at the site whose duty shall be the prevention of accidents and theft. This person shall be the Contractor's superintendent unless otherwise designated by the Contractor in writing to the Owner and A/E Professional.

~~**§ 10.2.5** The Contractor shall promptly remedy damage and loss (other than damage or loss insured under property insurance required by the Contract Documents) to property referred to in Sections 10.2.1.2 and 10.2.1.3 caused in whole or in part by the Contractor, a Subcontractor, a Sub-subcontractor, or anyone directly or indirectly employed by any of them, or by anyone for whose acts they may be liable and for which the Contractor is responsible under Sections 10.2.1.2 and 10.2.1.3. The Contractor may make a Claim for the cost to remedy the damage or loss to the extent such damage or loss is attributable to acts or omissions of the Owner or Architect or anyone directly or indirectly employed by either of them, or by anyone for whose acts either of them may be liable, and not attributable to the fault or negligence of the Contractor. The foregoing obligations of the Contractor are in addition to the Contractor's obligations under Section 3.18.~~

~~**§ 10.2.6** The Contractor shall designate a responsible member of the Contractor's organization at the site whose duty shall be the prevention of accidents. This person shall be the Contractor's superintendent unless otherwise designated by the Contractor in writing to the Owner and Architect.~~

§ 10.2.8~~7~~ The Contractor shall not permit any part of the construction or site to be loaded so as to cause damage or create an unsafe condition.

§ 10.2.9~~8~~ Injury or Damage to Person or Property

If either party suffers injury or damage to person or property because of an act or omission of the other party, or of others for whose acts such party is legally responsible, notice of the injury or damage, whether or not insured, shall be given to the other party within a reasonable time not exceeding 21 days after discovery. The notice shall provide sufficient detail to enable the other party to investigate the matter.

§ 10.3 Hazardous Materials and Substances

§ 10.3.1 The Contractor is responsible for compliance with any requirements included in the Contract Documents regarding hazardous materials or substances. If the Contractor encounters a hazardous material or substance not addressed in the Contract Documents and if reasonable precautions will be inadequate to prevent foreseeable bodily injury or death to persons resulting from a material or substance, including but not limited to asbestos or polychlorinated biphenyl (PCB), encountered on the site by the Contractor, the Contractor shall, upon recognizing the condition, immediately stop Work in the affected area and notify the Owner and ~~Architect~~A/E Professional of the condition.

§ 10.3.2 Upon receipt of the Contractor's notice, the Owner shall obtain the services of a licensed laboratory to verify the presence or absence of the material or substance reported by the Contractor and, in the event such material or substance is found to be present, to cause it to be rendered harmless. Unless otherwise required by the Contract Documents, the Owner shall furnish in writing to the Contractor and ~~Architect~~A/E Professional the names and qualifications of persons or entities who are to perform tests verifying the presence or absence of the material or substance or who are to perform the task of removal or safe containment of the material or substance. The Contractor and the ~~Architect~~A/E Professional will promptly reply to the Owner in writing stating whether or not either has

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reasonable objection to the persons or entities proposed by the Owner. If either the Contractor or ~~Architect~~A/E Professional has an objection to a person or entity proposed by the Owner, the Owner shall propose another to whom the Contractor and the ~~Architect~~A/E Professional have no reasonable objection. When the material or substance has been rendered harmless, Work in the affected area shall resume upon written agreement of the Owner and Contractor. By Change Order, the Contract Time shall be extended appropriately and the Contract Sum shall be increased by the amount of the Contractor's reasonable additional costs of shutdown, delay, and start-up.

§ 10.3.3 ~~To the fullest extent permitted by law, the~~The Owner shall indemnify and hold harmless the Contractor, Subcontractors, ~~Architect~~A/E Professional, ~~Architect~~A/E Professional's consultants, and agents and employees of any of them from and against claims, damages, losses, and expenses, including but not limited to attorneys' fees, arising out of or resulting from performance of the Work in the affected area if in fact the material or substance presents the risk of bodily injury or death as described in Section 10.3.1 and has not been rendered harmless, provided that such claim, damage, loss, or expense is attributable to bodily injury, sickness, disease or death, or to injury to or destruction of tangible property (other than the Work itself), except to the extent that such damage, loss, or expense is due to the fault or negligence of the party seeking indemnity.

§ 10.3.4 The Owner shall not be responsible under this Section 10.3 for hazardous materials or substances the Contractor brings to the site. ~~unless such materials or substances are required by the Contract Documents. The Owner shall be responsible for hazardous materials or substances required by the Contract Documents, except to the extent of the Contractor's fault or negligence in the use and handling of such materials or substances.~~

§ 10.3.5 The Contractor shall reimburse the Owner for the cost and expense the Owner incurs (1) for remediation of hazardous materials or substances the Contractor brings to the site and negligently handles, or (2) where the Contractor fails to perform its obligations under Section 10.3.1, except to the extent that the cost and expense are due to the Owner's fault or negligence.

~~**§ 10.3.6** If, without negligence on the part of the Contractor, the Contractor is held liable by a government agency for the cost of remediation of a hazardous material or substance solely by reason of performing Work as required by the Contract Documents, the Owner shall reimburse the Contractor for all cost and expense thereby incurred.~~

§ 10.4 Emergencies

In an emergency affecting safety of persons or property, the Contractor shall act, at the Contractor's discretion, to prevent threatened damage, injury, or loss. Additional compensation or extension of time claimed by the Contractor on account of an emergency shall be determined as provided in Article 15 and Article 7. Within ten (10) days of executing the Agreement, the Contractor shall furnish a hurricane preparedness plan to secure the site and prevent damage to the Project, which shall be attached as an exhibit to the Agreement as Exhibit ___.

ARTICLE 11 INSURANCE AND BONDS

§ 11.1 Contractor's Insurance and Bonds

§ 11.1.1 The Contractor shall purchase and maintain insurance of the types and limits of liability, containing the endorsements, and subject to the terms and conditions, as described in the RFQ No. [insert] and reflected in the Insurance Exhibit _____ to the Agreement ~~or elsewhere in the Contract Documents~~. The Contractor shall purchase and maintain the required insurance from an insurance company or insurance companies lawfully authorized to issue insurance in the jurisdiction where the Project is located and having an A.M. BEST's rating of "A-X" or better. The Owner, ~~Architect~~A/E Professional, and ~~Architect~~A/E Professional's consultants shall be named as additional insureds under the Contractor's commercial general liability policy or as otherwise described in the Contract Documents.

§ 11.1.2 The insurance required by Section 11.1 shall be the primary insurance and shall be written for not less than limits of liability specified in the Contract Documents or required by law, whichever coverage is greater and shall name Owner, A/E Professional and A/E Professional's Consultants as additional and named insureds covering bodily injury, death, property damage and personal injury and Owner as an additional insured for claims to the extent caused by the Contractor's negligent acts or omissions during the Contractor's completed operations. Coverages, whether written on an occurrence or claims-made basis, shall be maintained without interruption from the date of commencement of the Work until the date of final payment except for completed operations coverage, which shall be maintained for two (2) years after the completion of the Project.

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§ 11.1.3 The Contractor shall not commence any portion of the Work under the Contract until it has obtained all insurance required under this Article 11 or the Agreement and, except for completed operations insurance or except as otherwise provided herein.

§ 11.1.4 The deductible on all insurance required of Contractor under this Article 11 or the Agreement shall not exceed [insert] dollars and shall in all events be paid by the Contractor.

§ 11.1.5 Certificates of insurance, Additional and Named Insured Endorsements, and actual copies of the Insurance Policies in accordance with this Article shall be delivered to the Owner prior to commencement of the Work and thereafter upon renewal or replacement of each required policy of insurance, and the certificates of insurance and endorsements are attached hereto as an exhibit to be incorporated in the Contract Documents. These certificates and the insurance policies required by this Section 11.1 shall contain a provision that coverages afforded under the policies will not be canceled or allowed to expire until at least 60 days' prior written notice has been given to the Owner. Contractor shall not commence Work and shall not be entitled to any payments under the Contract Documents until the required policies have been delivered to Owner and reviewed by Owner's insurance professional and found to be in compliance with the Contract Documents.

§ 11.1.6 An additional certificate evidencing continuation of liability coverage, including coverage for completed operations, shall be submitted with the final Application for Payment as required by Article 9 and thereafter upon renewal or replacement of such coverage until the expiration of the time required by Section 11.1.2. Information concerning reduction of coverage on account of revised limits or claims paid under the General Aggregate, or both, shall be furnished by the Contractor with reasonable promptness.

§ 11.1.7 Contractor's failure to provide and maintain the insurance required by this Contract shall be grounds for termination, and Contractor shall be liable for all losses, damages, costs and expenses associated with the failure to maintain the required insurance.

§ 11.1.8 Except to the extent covered by and paid by insurance, the Contractor shall be responsible for all loss or damage Contractor or its Subcontractors cause to the Work, including the Contractor's materials delivered to site for incorporation therein and all property issued to the Contractor by the Owner for use or incorporation in the Work.

§ 11.1.9 The Contractor shall secure, pay for, and maintain whatever insurance they may deem necessary for protection against loss of owned or rented capital equipment and tools, including any tools owned by mechanic, any tools, equipment, stagings, towers and forms owned or rented by its subcontractors or agents under this Contract. Failure of the Contractor to secure such insurance or to maintain adequate levels of coverage shall not obligate the Owner or its agents and employees for any losses of owned or rented equipment or for any Work damaged. If the Contractor secures such insurance, the insurance policy shall include a waiver of subrogation as follows: "It is agreed that in no event shall this insurance company have any right of recovery against the Owner." The Contractor agrees to cooperate fully with the insurance company or companies in carrying out the provisions and conditions of all policies applicable to Work to be done, as well as all rules and recommendations of such company or companies in regard to accident prevention, reports and audits. The Contractor further agrees that notice of every accident will not only be reported immediately to the Owner, and also to such insurance company or companies.

~~**§ 11.1.2** The Contractor shall provide surety bonds of the types, for such penal sums, and subject to such terms and conditions as required by the Contract Documents. The Contractor shall purchase and maintain the required bonds from a company or companies lawfully authorized to issue surety bonds in the jurisdiction where the Project is located.~~

~~**§ 11.1.3** Upon the request of any person or entity appearing to be a potential beneficiary of bonds covering payment of obligations arising under the Contract, the Contractor shall promptly furnish a copy of the bonds or shall authorize a copy to be furnished.~~

~~**§ 11.1.4 Notice of Cancellation or Expiration of Contractor's Required Insurance.** Within three (3) business days of the date the Contractor becomes aware of an impending or actual cancellation or expiration of any insurance required by the Contract Documents, the Contractor shall provide notice to the Owner of such impending or actual cancellation or expiration. Upon receipt of notice from the Contractor, the Owner shall, unless the lapse in coverage arises from an act or omission of the Owner, have the right to stop the Work until the lapse in coverage has been cured by the~~

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~~procurement of replacement coverage by the Contractor. The furnishing of notice by the Contractor shall not relieve the Contractor of any contractual obligation to provide any required coverage.~~

§ 11.2 Owner's Insurance

§ 11.2.1 The Owner shall be responsible for maintaining the Owner's usual liability insurance and Builder's Risk coverage. The parties agree and acknowledge that, should any insurance maintained by the Owner not provide coverage for losses and/or damages arising from any acts, errors, omissions, or negligence on the part of the Contractor and/or its subcontractors, the Contractor and all applicable Subcontractors shall bear the risk and pay for such losses regardless of whether the Contractor should be covered for such losses by the Contractor's general liability or other insurance policies.

§ 11.2.2 The Owner's Builder's Risk insurance shall be maintained, unless otherwise provided in the Contract Documents or otherwise agreed in writing by all persons and entities who are beneficiaries of such insurance, until completion of the Project.

.1 Deductibles: The Owner's Builder's Risk insurance shall have a reasonable deductible, with such deductible amount to be determined at the sole discretion of the Owner. The Contractor shall pay for any deductibles on the Owner's insurance policies for claims to the extent they arise in whole or in part as a result of the Contractor's, or third parties for which Contractor is responsible, acts, errors, or omissions under this Agreement.

.2 Any Owner's Builder's Risk insurance policy shall extend only to materials actually installed in the Project or at the premises ready for installation (unless otherwise agreed by the insurer). Any plant, materials, equipment, tools or fixtures forming a part of the capital assets of the Contractor or belonging to any of its employees shall not be covered by the builders risk insurance maintained by Owner. Any such Builder's Risk insurance policy shall be subject to the usual limitations and exclusions normally contained in such policies of insurance, including, without limitation, a reasonable deductible at the discretion of the Owner. In the event of any loss or damage paid by the Builder's Risk policy, such proceeds shall be accepted and used by Owner at Owner's sole discretion.

.3 Unless otherwise provided in the Contract Documents, the Builder's Risk insurance shall cover portions of the Work stored off the Site after written approval of the Owner at the value established in the approval, and also portions of the Work in transit.

~~**§ 11.2 Owner's Insurance**~~

~~**§ 11.2.1** The Owner shall purchase and maintain insurance of the types and limits of liability, containing the endorsements, and subject to the terms and conditions, as described in the Agreement or elsewhere in the Contract Documents. The Owner shall purchase and maintain the required insurance from an insurance company or insurance companies lawfully authorized to issue insurance in the jurisdiction where the Project is located.~~

~~**§ 11.2.2 Failure to Purchase Required Property Insurance.** If the Owner fails to purchase and maintain the required property insurance, with all of the coverages and in the amounts described in the Agreement or elsewhere in the Contract Documents, the Owner shall inform the Contractor in writing prior to commencement of the Work. Upon receipt of notice from the Owner, the Contractor may delay commencement of the Work and may obtain insurance that will protect the interests of the Contractor, Subcontractors, and Sub-Subcontractors in the Work. When the failure to provide coverage has been cured or resolved, the Contract Sum and Contract Time shall be equitably adjusted. In the event the Owner fails to procure coverage, the Owner waives all rights against the Contractor, Subcontractors, and Sub-subcontractors to the extent the loss to the Owner would have been covered by the insurance to have been procured by the Owner. The cost of the insurance shall be charged to the Owner by a Change Order. If the Owner does not provide written notice, and the Contractor is damaged by the failure or neglect of the Owner to purchase or maintain the required insurance, the Owner shall reimburse the Contractor for all reasonable costs and damages attributable thereto.~~

~~**§ 11.2.3 Notice of Cancellation or Expiration of Owner's Required Property Insurance.** Within three (3) business days of the date the Owner becomes aware of an impending or actual cancellation or expiration of any property insurance required by the Contract Documents, the Owner shall provide notice to the Contractor of such impending or actual cancellation or expiration. Unless the lapse in coverage arises from an act or omission of the Contractor: (1) the Contractor, upon receipt of notice from the Owner, shall have the right to stop the Work until the lapse in coverage~~

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~~has been cured by the procurement of replacement coverage by either the Owner or the Contractor; (2) the Contract Time and Contract Sum shall be equitably adjusted; and (3) the Owner waives all rights against the Contractor, Subcontractors, and Sub-subcontractors to the extent any loss to the Owner would have been covered by the insurance had it not expired or been cancelled. If the Contractor purchases replacement coverage, the cost of the insurance shall be charged to the Owner by an appropriate Change Order. The furnishing of notice by the Owner shall not relieve the Owner of any contractual obligation to provide required insurance.~~

§ 11.3 Waivers of Subrogation

§ 11.3.1 Except for losses due to the negligence or breach of contract of a, subcontractor, sub-subcontractor or persons they are responsible for, the Owner and Contractor waive all rights against each other and any of their subcontractors, sub-subcontractors, agents and employees, each of the other for compensation for damages caused by fire or other perils to the extent paid for by the Owner's Builder's Risk insurance, Owner's property insurance, or by the Contractor's liability insurance obtained pursuant to this Article, except such rights as they have to proceeds of such insurance held by the Owner and the Contractor. This shall not act as a waiver of any other rights or remedies under the Contract Documents.

§ 11.3.2 A loss insured under the property or Builder's Risk insurance for the Property shall be adjusted by the Owner, using reasonable discretion and not as a fiduciary for Contractor or any other interested party, and made payable to the Owner for the insureds, as their interest may appear, subject to requirements of any applicable mortgagee clause. The Contractor shall pay Subcontractors their just shares of insurance proceeds received by the Contractor, and by appropriate written agreements where legally required for validity, shall require Subcontractors to make payments to their Sub-subcontractors in similar manner.

§ 11.3.3 The Owner shall not be required to give bond for performance of the Owner's duties. The Owner may deposit in a separate account insurance proceeds so received, which the Owner shall distribute in accordance with the terms of any settlement reached with the Builder's Risk insurer. If after such loss no other special agreement is made and unless the Owner terminates the Contract for convenience, replacement of damaged property shall be performed by the Contractor in accordance with this Agreement and paid for by Owner.

§ 11.4 Performance of Bond and Payment of Bond

§ 11.4.1 If required by the terms of RFQ No. ___, Contractor shall furnish bonds covering faithful performance of the Contract and payment of obligations arising thereunder as stipulated in RFQ No. ___.

§ 11.4.2 Upon the request of any person or entity appearing to be a potential beneficiary of bonds covering payment of obligations arising under the Contract, the Contractor shall promptly furnish a copy of the bonds or shall authorize a copy to be furnished.

§ 11.4.3 To the extent required by RFQ No. ___, Contractor shall provide the Owner with a 100% performance bond in the amount of the Contract Sum utilizing the form provided with these Contract Documents which shall incorporate the obligation of Surety referenced in this Contract and an unconditional payment bond in accordance with Fla. Stat. § 713.23 in the amount of the Contract Sum covering the faithful performance of the Contract and payment of all obligations thereunder. The bonds shall be executed by a surety that is licensed in Florida and shall remain in effect as required by law and the Contract Documents. The bonds shall be effective as of the Commencement Date as defined in the Contract and shall cover all Work and obligations under the Contract Documents.

§ 11.4.4 The Contractor shall, upon approval of the bonds by the Owner, record the bonds with the County Clerk's Office of the county in which the work is to be performed and promptly furnish the Owner with a certified copy of the recorded bonds.

§ 11.4.5 Both the payment bond and the performance bond under this Article shall display the Surety's bond number, and attach a rider containing the following provisions:

.1 Surety hereby agrees that it consents to and waives notice of any addition, alteration, omission, change, or other modification of the Contract Documents. Any other addition, alteration, change, extension of time, backcharge, or other modification of the Contract Documents, or forbearance on the part of either Owner or Contractor to the other, shall not release Surety of its obligations hereunder, and notice to the surety of such matters is hereby waived.

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.2 Surety hereby stipulates and agrees that the obligation of said Surety and its bond shall be in no way impaired or affected by any extension of time, modification, omission, addition, or change in or of the said Contract or the Work to be performed thereunder, or by any payment thereunder before the time required therein, or by any waiver of any provisions thereof, or by any assignment, subletting or other transfer thereof or of any part thereof, or of any Work to be performed or any moneys due or to become due thereunder. Surety expressly consents to the payment provisions as provided in this Contract. In any event, even if the Surety fails to include such language in its bond, by incorporating this Contract into the Payment and Performance Bonds furnished for this Project, Surety agrees to the provisions of this Article and the provisions of § 11.4.4.

.3 Surety hereby agrees that if, after the 14 day Notice to the Contractor and Surety, the Contractor and Surety do not cure the default as provided in this Section, then the Surety, in addition to the Contractor, without the need to terminate the Contractor, shall be liable to Owner for any damages the Owner may sustain and be entitled to pursuant to the Contract and the bonds. No further Notices shall be required by Owner.

§ 11.4.6 Should Contractor fail to perform any of its obligations under this Contract, the Owner shall give the Contractor and Surety a fourteen day (14) Notice of Default. After receipt of the 14 day Notice provided herein, the Contractor and Surety shall have the right and opportunity to cure the default(s). If, after the 14 day Notice, the Contractor and Surety do not cure the default as provided in this Section, then the Surety, in addition to the Contractor, without the need to terminate the Contractor, shall be liable to Owner for any damages the Owner may sustain and be entitled to pursuant to this Contract and the bonds. No further Notices shall be required by Owner.

~~**§ 11.3 Waivers of Subrogation**~~

~~**§ 11.3.1** The Owner and Contractor waive all rights against (1) each other and any of their subcontractors, sub-subcontractors, agents, and employees, each of the other; (2) the Architect and Architect's consultants; and (3) Separate Contractors, if any, and any of their subcontractors, sub-subcontractors, agents, and employees, for damages caused by fire, or other causes of loss, to the extent those losses are covered by property insurance required by the Agreement or other property insurance applicable to the Project, except such rights as they have to proceeds of such insurance. The Owner or Contractor, as appropriate, shall require similar written waivers in favor of the individuals and entities identified above from the Architect, Architect's consultants, Separate Contractors, subcontractors, and sub-subcontractors. The policies of insurance purchased and maintained by each person or entity agreeing to waive claims pursuant to this section 11.3.1 shall not prohibit this waiver of subrogation. This waiver of subrogation shall be effective as to a person or entity (1) even though that person or entity would otherwise have a duty of indemnification, contractual or otherwise, (2) even though that person or entity did not pay the insurance premium directly or indirectly, or (3) whether or not the person or entity had an insurable interest in the damaged property.~~

~~**§ 11.3.2** If during the Project construction period the Owner insures properties, real or personal or both, at or adjacent to the site by property insurance under policies separate from those insuring the Project, or if after final payment property insurance is to be provided on the completed Project through a policy or policies other than those insuring the Project during the construction period, to the extent permissible by such policies, the Owner waives all rights in accordance with the terms of Section 11.3.1 for damages caused by fire or other causes of loss covered by this separate property insurance.~~

~~**§ 11.4 Loss of Use, Business Interruption, and Delay in Completion Insurance**~~

~~The Owner, at the Owner's option, may purchase and maintain insurance that will protect the Owner against loss of use of the Owner's property, or the inability to conduct normal operations, due to fire or other causes of loss. The Owner waives all rights of action against the Contractor and Architect for loss of use of the Owner's property, due to fire or other hazards however caused.~~

~~**§11.5 Adjustment and Settlement of Insured Loss**~~

~~**§ 11.5.1** A loss insured under the property insurance required by the Agreement shall be adjusted by the Owner as fiduciary and made payable to the Owner as fiduciary for the insureds, as their interests may appear, subject to requirements of any applicable mortgagee clause and of Section 11.5.2. The Owner shall pay the Architect and Contractor their just shares of insurance proceeds received by the Owner, and by appropriate agreements the Architect and Contractor shall make payments to their consultants and Subcontractors in similar manner.~~

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~~§ 11.5.2 Prior to settlement of an insured loss, the Owner shall notify the Contractor of the terms of the proposed settlement as well as the proposed allocation of the insurance proceeds. The Contractor shall have 14 days from receipt of notice to object to the proposed settlement or allocation of the proceeds. If the Contractor does not object, the Owner shall settle the loss and the Contractor shall be bound by the settlement and allocation. Upon receipt, the Owner shall deposit the insurance proceeds in a separate account and make the appropriate distributions. Thereafter, if no other agreement is made or the Owner does not terminate the Contract for convenience, the Owner and Contractor shall execute a Change Order for reconstruction of the damaged or destroyed Work in the amount allocated for that purpose. If the Contractor timely objects to either the terms of the proposed settlement or the allocation of the proceeds, the Owner may proceed to settle the insured loss, and any dispute between the Owner and Contractor arising out of the settlement or allocation of the proceeds shall be resolved pursuant to Article 15. Pending resolution of any dispute, the Owner may issue a Construction Change Directive for the reconstruction of the damaged or destroyed Work.~~

ARTICLE 12 UNCOVERING AND CORRECTION OF WORK

§ 12.1 Uncovering of Work

§ 12.1.1 If a portion of the Work is covered contrary to the ~~Architect~~A/E Professional's request or to requirements specifically expressed in the Contract Documents, it must, if requested in writing by the ~~Architect~~A/E Professional, be uncovered for the ~~Architect~~A/E Professional's examination and be replaced at the Contractor's expense without change in the Contract Time.

§ 12.1.2 If a portion of the Work has been covered that the ~~Architect~~A/E Professional has not specifically requested to examine prior to its being covered, the ~~Architect~~A/E Professional may request to see such Work and it shall be uncovered by the Contractor. ~~If such Work is in accordance with the Contract Documents, the Contractor shall be entitled to an equitable adjustment to the Contract Sum and Contract Time as may be appropriate.~~ If such Work is not in accordance with the Contract Documents, the costs of uncovering the Work, and the cost of correction, shall be at the Contractor's expense.

§ 12.2 Correction of Work

§ 12.2.1 Before Substantial Completion

The Contractor shall promptly correct Work rejected by the ~~Architect~~A/E Professional or failing to conform to the requirements of the Contract Documents, discovered before Substantial Completion and whether or not fabricated, installed or completed. Costs of correcting such rejected Work, including additional testing and inspections, the cost of uncovering and replacement, and compensation for the ~~Architect~~A/E Professional's services and expenses made necessary thereby (including attorneys' fees), shall be at the Contractor's expense. The obligations of this Section shall survive completion and final payment or termination of the Agreement.

§ 12.2.2 After Substantial Completion

§ 12.2.2.1 In addition to the Contractor's obligations under the Agreement, if, within one (1) year after the date of Final Completion of all the Work or any longer period provided in an Extended Warranty, is found to be not in accordance with the requirements of the Contract Documents, the Contractor shall correct it promptly after receipt of notice from the Owner to do so. The Owner shall give such notice promptly after discovery of the condition. If the Contractor fails to commence correction of nonconforming Work within five (5) business days after receipt of prior reasonable notice by the Owner, the Owner may correct the nonconforming Work in accordance with the Agreement. Contractor is obligated to reimburse Owner for all corrective costs and damages incurred as a result of Contractor's failure to correct nonconforming Work. This obligation shall survive completion and final payment or termination of the Contract.

~~In addition to the Contractor's obligations under Section 3.5, if, within one year after the date of Substantial Completion of the Work or designated portion thereof or after the date for commencement of warranties established under Section 9.9.1, or by terms of any applicable special warranty required by the Contract Documents, any of the Work is found to be not in accordance with the requirements of the Contract Documents, the Contractor shall correct it promptly after receipt of notice from the Owner to do so, unless the Owner has previously given the Contractor a written acceptance of such condition. The Owner shall give such notice promptly after discovery of the condition. During the one-year period for correction of Work, if the Owner fails to notify the Contractor and give the Contractor an opportunity to make the correction, the Owner waives the rights to require correction by the Contractor and to make a claim for breach of warranty. If the Contractor fails to correct nonconforming Work within a reasonable time during that period after receipt of notice from the Owner or Architect, the Owner may correct it in accordance with Section 2.5.~~

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§ 12.2.2.2 The one-year period for correction of Work or any longer period provided in an Extended Warranty shall be extended with respect to portions of Work first performed after Substantial Completion by the period of time between Substantial Completion and the actual completion of that portion of the Work.

§ 12.2.2.3 The one-year period for correction of Work or any longer period provided in an Extended Warranty shall ~~not~~ be extended ~~by corrective~~for corrected Work performed by the Contractor pursuant to this Section 12.2.

§ 12.2.3 The Contractor shall remove from the site portions of the Work that are not in accordance with the requirements of the Contract Documents and are neither corrected by the Contractor nor accepted by the Owner.

§ 12.2.4 The Contractor shall bear the cost of correcting destroyed or damaged construction of the Owner or Separate Contractors, whether completed or partially completed, caused by the Contractor's correction or removal of Work that is not in accordance with the requirements of the Contract Documents.

§ 12.2.5 Nothing contained in this Section 12.2 shall be construed to establish a period of limitation with respect to other obligations the Contractor has under the Contract Documents. Establishment of the one-year period for correction of Work as described in Section 12.2.2 relates only to the specific obligation of the Contractor to correct the Work, and has no relationship to the time within which the obligation to comply with the Contract Documents may be sought to be enforced, nor to the time within which proceedings may be commenced to establish the Contractor's liability with respect to the Contractor's obligations other than specifically to correct the Work.

§ 12.3 Acceptance of Nonconforming Work

If the Owner prefers to accept Work that is not in accordance with the requirements of the Contract Documents, the Owner may do so instead of requiring its removal and correction, in which case the Contract Sum will be reduced as appropriate and equitable. Such adjustment shall be effected whether or not final payment has been made. If payments due to the Contractor are insufficient to cover the adjustment, Contractor shall pay the difference to the Owner.

ARTICLE 13 MISCELLANEOUS PROVISIONS

§ 13.1 Governing Law

The Agreement and the Contract Documents shall be governed by the law of the State of Florida without regard to conflicts of law provisions.

~~The Contract shall be governed by the law of the place where the Project is located, excluding that jurisdiction's choice of law rules. If the parties have selected arbitration as the method of binding dispute resolution, the Federal Arbitration Act shall govern Section 15.4.~~

§ 13.2 Successors and Assigns

§ 13.2.1 The Owner and Contractor respectively bind themselves, their partners, successors, assigns, and legal representatives to covenants, agreements, and obligations contained in the Contract Documents. ~~Except as provided in Section 13.2.2, neither~~ Neither party to the Contract shall assign the Contract as a whole without written consent of the other. If either party attempts to make an assignment without such consent, that party shall nevertheless remain legally responsible for all obligations under the Contract.

~~**§ 13.2.2** The Owner may, without consent of the Contractor, assign the Contract to a lender providing construction financing for the Project, if the lender assumes the Owner's rights and obligations under the Contract Documents. The Contractor shall execute all consents reasonably required to facilitate the assignment.~~

§ 13.3 Rights and Remedies

§ 13.3.1 Duties and obligations imposed by the Contract Documents and rights and remedies available thereunder shall be in addition to and not a limitation of duties, obligations, rights, and remedies otherwise imposed or available by law.

§ 13.3.2 No action or failure to act by the Owner, ~~Architect~~A/E Professional, or Contractor shall constitute a waiver of a right or duty afforded them under the Contract, nor shall such action or failure to act constitute approval of or acquiescence in a breach thereunder, except as may be specifically agreed upon in writing. The invalidity of any part or provisions of the Contract Documents shall not affect the validity or enforceability of any other part of the Contract Documents. Any waiver by the Owner of any breach of the Contract Documents shall not be held to be a waiver of any other or subsequent breach, and any waiver by the Owner of any right to terminate the Contract shall not be held

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to be a waiver of any breach of the Contract Documents, but the Owner retains all its rights to recover damages therefor.

§ 13.4 Tests and Inspections

§ 13.4.1 Tests, inspections, and approvals of portions of the Work shall be made as required by the Contract Documents and by applicable laws, statutes, ordinances, codes, rules, and regulations or lawful orders of public authorities. Unless otherwise provided, the Contractor shall make arrangements for such tests, inspections, and approvals with an independent testing laboratory or entity acceptable to the Owner, or with the appropriate public authority, and shall bear all related costs of tests, inspections, and approvals. The Contractor shall give the ~~Architect~~A/E Professional timely notice of when and where tests and inspections are to be made so that the ~~Architect~~A/E Professional may be present for such procedures. ~~The Owner shall bear costs of tests, inspections, or approvals that do not become requirements until after bids are received or negotiations concluded. The Owner shall directly arrange and pay for tests, inspections, or approvals where building codes or applicable laws or regulations so require.~~

§ 13.4.2 If the ~~Architect~~A/E Professional, Owner, or public authorities having jurisdiction determine that portions of the Work require additional testing, inspection, or approval not included under Section 13.4.1, the ~~Architect~~A/E Professional will, upon written authorization from the Owner, instruct the Contractor to make arrangements for such additional testing, inspection, or approval, by an entity acceptable to the Owner, and the Contractor shall give timely notice to the ~~Architect~~A/E Professional of when and where tests and inspections are to be made so that the ~~Architect~~A/E Professional may be present for such procedures. Such costs, except as provided in Section 13.4.3, shall be at the Owner's expense.

§ 13.4.3 If procedures for testing, inspection, or approval under Sections 13.4.1 and 13.4.2 reveal failure of the portions of the Work to comply with requirements established by the Contract Documents, all costs made necessary by such failure, including those of repeated procedures, additional testing, and compensation for the services and expenses of the A/E Professional, A/E Professional's consultants, Owner's consultants, including special and threshold inspectors or other engineers, shall be at the Contractor's expense. Owner may deduct such amounts from the balance due the Contractor.~~If procedures for testing, inspection, or approval under Sections 13.4.1 and 13.4.2 reveal failure of the portions of the Work to comply with requirements established by the Contract Documents, all costs made necessary by such failure, including those of repeated procedures and compensation for the Architect's services and expenses, shall be at the Contractor's expense.~~

§ 13.4.4 Required certificates of testing, inspection, or approval shall, unless otherwise required by the Contract Documents, be secured by the Contractor and promptly delivered to the ~~Architect~~A/E Professional.

§ 13.4.5 If the ~~Architect~~A/E Professional is to observe tests, inspections, or approvals required by the Contract Documents, the ~~Architect~~A/E Professional will do so promptly and, where practicable, at the normal place of testing.

§ 13.4.6 Tests or inspections conducted pursuant to the Contract Documents shall be made promptly to avoid unreasonable delay in the Work.

§ 13.5 Interest

Payments due and unpaid under the Contract Documents shall bear interest as provided in the Agreement.

§ 13.6 Time Limits on Claims

The Owner and Contractor shall commence all claims and causes of action, whether in contract, tort, breach of warranty or otherwise, against the other arising out of or related to the Contract within the time period specified by applicable law.

§ 13.7 It shall be incumbent upon the Contractor to have permit revisions issued and executed by the Building Department in a timely manner so as not to delay the construction process, and the Contractor shall bear the cost of such revisions.

§ 13.8 The Construction work Saturdays, Sundays or after normal hours, if approved, shall be at no additional cost to the Owner.

§ 13.9 Maintenance

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Various materials and finishes of materials exposed to the Florida environment will begin to deteriorate over time. Materials such as rooftop equipment, piping, conduits, etc., as well as finishes for stainless steel, wood, aluminum, etc. are all subject to deterioration. The Contractor is to provide the Owner a maintenance program for various products on the project. All maintenance required prior to Substantial Completion or partial occupancy or Turnover will be performed by Contractor as part of the Work. Contractor shall not be responsible for maintenance following Substantial Completion or partial occupancy or Turnover.

§ 13.10 Maintenance Records

After Substantial Completion (but before Final Payment) or upon occupancy, the Contractor shall meet with and arrange for each installer of parts of Work requiring regular maintenance to meet with Owner's representative and the property manager(s) for the Project or other individuals as may be designated by Owner, at the Project site, to provide basic instructions needed for proper operation and maintenance of that part of Work. Instructions by manufacturer's representatives are required where installers are not experts in operating/maintenance procedures, or as specified in the Construction Documents. For operational equipment, installers shall demonstrate startup, shut-down, emergency operations, noise and vibration adjustments, safety, economy/efficiency adjustments, and other applicable operations, and shall review maintenance and operating instructions which are required to be performed in order to maintain in force applicable warranties, guaranties and bonds. Completion of all training is an express condition precedent to Final Payment.

§ 13.11 No Agency Relationship

It is understood that Contractor is not herein appointed the agent of Owner but is and shall remain an independent contractor. Accordingly, all aspects of Contractor's performance of the Agreement, except as specifically provided in the Agreement, shall be under the direction and control of Contractor.

§ 13.12 Third Parties

No provision in the Agreement shall create or give to third parties any claim or right of action against Owner.

§ 13.13 Place of Work

Contractor, under regulations prescribed by Owner, shall use only established roadways, and such temporary roadways as may be approved by Owner. When materials or equipment are transported in performance of the Work, vehicles shall not be loaded beyond the load limit as established by federal, state or local law regulations. When it is necessary to cross curbing and/or sidewalks, protection against damage shall be provided by Contractor, and any damage caused will be immediately repaired by Contractor, at Contractor's cost, and if not repaired by Contractor within five days after notice in writing, Owner may make such repairs and charge the amount of such repairs to the Contractor. All existing sidewalks, curbs and pavements disturbed, broken, removed, or otherwise damaged by Contractor, during the performance of the Work under the Agreement, shall be replaced by the Contractor at its sole expense. Replaced or repaired sidewalks, curbs, and pavements shall be constructed of similar materials and by similar methods to the original construction. Replaced or repaired sidewalks, curbs and payment shall be smoothly blended into the existing Work and shall not present depressions or humps and shall be acceptable to Owner.~~from the date payment is due at the rate the parties agree upon in writing or, in the absence thereof, at the legal rate prevailing from time to time at the place where the Project is located.~~

ARTICLE 14 TERMINATION OR SUSPENSION OF THE CONTRACT

~~**§ 14.1 Termination by the Contractor**~~

~~**§ 14.1.1** The Contractor may terminate the Contract if the Work is stopped for a period of 30 consecutive days through no act or fault of the Contractor, a Subcontractor, a Sub-subcontractor, their agents or employees, or any other persons or entities performing portions of the Work, for any of the following reasons:~~

- ~~.1 Issuance of an order of a court or other public authority having jurisdiction that requires all Work to be stopped;~~
- ~~.2 An act of government, such as a declaration of national emergency, that requires all Work to be stopped;~~
- ~~.3 Because the Architect has not issued a Certificate for Payment and has not notified the Contractor of the reason for withholding certification as provided in Section 9.4.1, or because the Owner has not made payment on a Certificate for Payment within the time stated in the Contract Documents; or~~
- ~~.4 The Owner has failed to furnish to the Contractor reasonable evidence as required by Section 2.2.~~

~~**§ 14.1.2** The Contractor may terminate the Contract if, through no act or fault of the Contractor, a Subcontractor, a Sub-subcontractor, their agents or employees, or any other persons or entities performing portions of the Work, repeated suspensions, delays, or interruptions of the entire Work by the Owner as described in Section 14.3, constitute~~

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~~in the aggregate more than 100 percent of the total number of days scheduled for completion, or 120 days in any 365 day period, whichever is less.~~

~~**§ 14.1.3** If one of the reasons described in Section 14.1.1 or 14.1.2 exists, the Contractor may, upon seven days' notice to the Owner and Architect, terminate the Contract and recover from the Owner payment for Work executed, as well as reasonable overhead and profit on Work not executed, and costs incurred by reason of such termination.~~

~~**§ 14.1.4** If the Work is stopped for a period of 60 consecutive days through no act or fault of the Contractor, a Subcontractor, a Sub-subcontractor, or their agents or employees or any other persons or entities performing portions of the Work because the Owner has repeatedly failed to fulfill the Owner's obligations under the Contract Documents with respect to matters important to the progress of the Work, the Contractor may, upon seven additional days' notice to the Owner and the Architect, terminate the Contract and recover from the Owner as provided in Section 14.1.3.~~

§ 14.12 Termination by the Owner for Cause

§ 14.12.1 The Owner may terminate the Contract if the Contractor

.1 ~~repeatedly~~ refuses or fails to supply enough properly skilled workers or proper materials;

.2 fails to make payment to Subcontractors or suppliers in accordance with the respective agreements between the Contractor and the Subcontractors or suppliers;

.3 ~~repeatedly~~ disregards applicable laws, statutes, ordinances, codes, rules and regulations, or lawful orders of a public authority; ~~or~~

.4 otherwise is guilty of substantial breach of a provision of the Contract Documents;

.5 admits in writing its inability to pay its debts generally as they become due, or if the Contractor makes a general assignment for the benefit of its creditors, or if a receiver, liquidator, trustee or assignee is appointed on account of its bankruptcy or insolvency;

.6 submits an Application for Payment, sworn statement, waiver of lien, affidavit or document that is intentionally falsely filed; or

.7 has a construction lien filed against any part of the Work or the site of the project for work performed under the Agreement for which the Contractor has been paid by thee Owner and not promptly bonded or insured over by the Contractor in accordance with Florida Statutes after five (5) days written notice to the Contractor.

§ 14.12.2 When any of the reasons described in Section 14.12.1 exist, the Owner, may, without prejudice to any other remedy it may have and after giving the Contractor seven (7) day's written notice, terminate the Agreement and take possession of the site and all materials, tools, equipment and machinery thereon owned by the Contractor and may finish the Work by whatever reasonable method the Owner may deem expedient. ~~and upon certification by the Architect~~A/E Professional ~~that sufficient cause exists to justify such action, the Owner may, without prejudice to any other rights or remedies of the Owner and after giving the Contractor and the Contractor's surety, if any, seven days' notice, terminate employment of the Contractor and may, subject to any prior rights of the surety:~~

~~**.1** Exclude the Contractor from the site and take possession of all materials, equipment, tools, and construction equipment and machinery thereon owned by the Contractor;~~

~~**.2** Accept assignment of subcontracts pursuant to Section 5.4; and~~

~~**.3** Finish the Work by whatever reasonable method the Owner may deem expedient. Upon written request of the Contractor, the Owner shall furnish to the Contractor a detailed accounting of the costs incurred by the Owner in finishing the Work.~~

§ 14.12.3 When the Owner terminates the Contract for one of the reasons stated in Section 14.12.1, the Contractor shall not be entitled to receive further payment until the Work is finished.

§ 14.12.4 The Owner's right to terminate the Contract, pursuant to this Section, shall be in addition to and not in limitation of any rights or remedies existing hereunder or pursuant thereto or at law or in equity. ~~If the unpaid balance of the Contract Sum exceeds costs of finishing the Work, including compensation for the Architect's services and expenses made necessary thereby, and other damages incurred by the Owner and not expressly waived, such excess shall be paid to the Contractor. If such costs and damages exceed the unpaid balance, the Contractor shall pay the difference to the Owner. The amount to be paid to the Contractor or Owner, as the case may be, shall be certified by the Initial Decision Maker, upon application, and this obligation for payment shall survive termination of the Contract.~~

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§ 14.1.5 Should Owner Terminate for Cause and should a court of competent jurisdiction subsequently determine that the Termination for Cause was improper, then in that event, the Termination shall be considered a Termination for Convenience as set forth in Paragraph 14.3 below.

§ 14.23 Suspension by the Owner for Convenience

§ 14.23.1 The Owner may, without cause, order the Contractor in writing to suspend, delay or interrupt the Work, in whole or in part for such period of time as the Owner may determine.

§ 14.23.2 The Contract Sum and Contract Time shall be adjusted for increases in the cost and time caused by suspension, delay, or interruption under Section 14.23.1. Adjustment of the Contract Sum shall include profit. No adjustment shall be made to the extent

.1 that performance is, was, or would have been, so suspended, delayed, or interrupted, by another cause for which the Contractor is responsible; or

.2 that an equitable adjustment is made or denied under another provision of the Contract.

§ 14.34 Termination by the Owner for Convenience

§ 14.34.1 The Owner may, within seven (7) calendar day's prior written notice~~at any time~~, terminate the Contract for the Owner's convenience and without cause.

§ 14.34.2 Upon receipt of notice from the Owner of such termination for the Owner's convenience, the Contractor shall

.1 cease operations as directed by the Owner in the notice;

.2 take actions necessary, or that the Owner may direct, for the protection and preservation of the Work; and

.3 except for Work directed to be performed prior to the effective date of termination stated in the notice, terminate all existing subcontracts and purchase orders and enter into no further subcontracts and purchase orders.

§ 14.34.3 In case of such termination for the Owner's convenience, the Owner shall pay the Contractor for Work properly executed; costs incurred by reason of the termination, including costs attributable to termination of Subcontracts; and the termination fee, if any, set forth in the Agreement. In the event of Termination for Convenience, the Owner shall not be liable to the Contractor for lost profits on any Work not performed, home office overhead, or any other type of consequential, special or indirect damages and Contractor hereby waives same. All costs of performance claimed by Contractor must be fully supported by the Contractor's invoices and other documentation acceptable to the Owner, and shall be subject to the Owner's audit. The Contractor shall make its records available at reasonable times and places for the Owner's audit. Payments to the Contractor shall be reduced by any setoffs, damages, claims to which the Owner is entitled under this Contract.

§ 14.3.4 The Owner's right to terminate the Contract shall be in addition to and not in limitation of any rights or remedies existing hereunder or pursuant thereto or at law or in equity.

ARTICLE 15 CLAIMS AND DISPUTES

§ 15.1 Claims

§ 15.1.1 Definition

A Claim is a demand or assertion by one of the parties seeking, as a matter of right, payment of money, a change in the Contract Time, or other relief with respect to the terms of the Contract. The term "Claim" also includes other disputes and matters in question between the Owner and Contractor arising out of or relating to the Contract. The responsibility to substantiate Claims shall rest with the party making the Claim. This Section 15.1.1 does not require the Owner to file a Claim in order to impose liquidated damages in accordance with the Contract Documents. Submittal of a request for Change Order shall not be considered notice of a Claim required by this Article.

§ 15.1.2 Time Limits on Claims

The Owner and Contractor shall commence all Claims and causes of action against the other and arising out of or related to the Contract, whether in contract, tort, breach of warranty or otherwise, in accordance with the requirements of the binding dispute resolution method selected in the Agreement and within the period specified by applicable law,

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but in any case not more than 10 years after the date of Substantial Completion of the Work. The Owner and Contractor waive all Claims and causes of action not commenced in accordance with this Section 15.1.2.

§ 15.1.3 Notice of Claims

§ 15.1.3.1 Claims by either the Owner or Contractor, where the condition giving rise to the Claim is first discovered prior to expiration of the period for correction of the Work set forth in Section 12.2.2, shall be initiated by notice to the other party and to the Initial Decision Maker with a copy sent to the ~~Architect~~A/E Professional, if the ~~Architect~~A/E Professional is not serving as the Initial Decision Maker. Claims by either party under this Section 15.1.3.1 shall be initiated within 21 days after occurrence of the event giving rise to such Claim or within 21 days after the claimant first recognizes the condition giving rise to the Claim, whichever is later.

§ 15.1.3.2 Claims by either the Owner or Contractor, where the condition giving rise to the Claim is first discovered after expiration of the period for correction of the Work set forth in Section 12.2.2, shall be initiated by notice to the other party. In such event, no decision by the Initial Decision Maker is required.

§ 15.1.4 Continuing Contract Performance

§ 15.1.4.1 Pending final resolution of a Claim, except as otherwise agreed in writing or as provided in Section 9.7 and Article 14, the Contractor shall proceed diligently with performance of the Contract and the Owner shall continue to make payments in accordance with the Contract Documents.

§ 15.1.4.2 The Contract Sum and Contract Time shall be adjusted in accordance with the Initial Decision Maker's decision, subject to the right of either party to proceed in accordance with this Article 15. The ~~Architect~~A/E Professional will issue Certificates for Payment in accordance with the decision of the Initial Decision Maker.

§ 15.1.5 Claims for Additional Cost

If the Contractor wishes to make a Claim for an increase in the Contract Sum, notice as provided in Section 15.1.3 shall be given before proceeding to execute the portion of the Work that is the subject of the Claim. Prior notice is not required for Claims relating to an emergency endangering life or property arising under Section 10.4.

§ 15.1.6 Claims for Additional Time

§ 15.1.6.1 If the Contractor wishes to make a Claim for an increase in the Contract Time, notice as provided in Section 15.1.3 shall be given. The Contractor's Claim shall include an estimate of cost and of probable effect of delay on progress of the Work. In the case of a continuing delay, only one Claim is necessary.

§ 15.1.6.2 If exceptional or unusual adverse weather conditions are the basis for a Claim for additional time, such Claim shall be documented by data substantiating that weather conditions were abnormal for the period of time, could not have been reasonably anticipated, and had an adverse effect on the scheduled construction.

§ 15.1.7 Contractor's Waiver of Claims for Consequential Damages

The Contractor ~~and Owner~~ waives Claims against ~~each other~~Owner for consequential damages arising out of or relating to this Contract. This ~~mutual~~ waiver includes

~~.1 damages incurred by the Owner for rental expenses, for losses of use, income, profit, financing, business and reputation, and for loss of management or employee productivity or of the services of such persons; and~~

~~.2~~ damages incurred by the Contractor for principal office expenses including the compensation of personnel stationed there, for losses of financing, business and reputation, and for loss of profit, except anticipated profit arising directly from the Work.

This ~~mutual~~ waiver is applicable, without limitation, to all consequential damages due to ~~either party's~~Owner's termination of Contractor in accordance with ~~Article 14~~the Contract Documents. Nothing contained in this Section 15.1.7 shall be deemed to preclude assessment of liquidated damages, when applicable, in accordance with the requirements of the Contract Documents.

§ 15.2 Initial Decision

§ 15.2.1 Claims, excluding those where the condition giving rise to the Claim is first discovered after expiration of the period for correction of the Work set forth in Section 12.2.2 or arising under Sections 10.3, 10.4, and 11.5, shall be referred to the Initial Decision Maker for initial decision. The ~~Architect~~ Owner's Representative will serve as the Initial Decision Maker~~, unless otherwise indicated in the Agreement~~. Except for those Claims excluded by this Section 15.2.1, an initial decision shall be required as a condition precedent to mediation of any Claim. If an initial

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decision has not been rendered within 30 days after the Claim has been referred to the Initial Decision Maker, the party asserting the Claim may demand mediation and binding dispute resolution without a decision having been rendered. Unless the Initial Decision Maker and all affected parties agree, the Initial Decision Maker will not decide disputes between the Contractor and persons or entities other than the Owner. Contractor must continue with its Work when a Claim is pending before the Initial Decision Maker.

§ 15.2.2 The Initial Decision Maker will review Claims and within ten days of the receipt of a Claim take one or more of the following actions: (1) request additional supporting data from the claimant or a response with supporting data from the other party, (2) reject the Claim in whole or in part, (3) approve the Claim, (4) suggest a compromise, or (5) advise the parties that the Initial Decision Maker is unable to resolve the Claim if the Initial Decision Maker lacks sufficient information to evaluate the merits of the Claim or if the Initial Decision Maker concludes that, in the Initial Decision Maker's sole discretion, it would be inappropriate for the Initial Decision Maker to resolve the Claim.

§ 15.2.3 In evaluating Claims, the Initial Decision Maker may, but shall not be obligated to, consult with or seek information from either party or from persons with special knowledge or expertise who may assist the Initial Decision Maker in rendering a decision. The Initial Decision Maker may request the Owner to authorize retention of such persons at the Owner's expense.

§ 15.2.4 If the Initial Decision Maker requests a party to provide a response to a Claim or to furnish additional supporting data, such party shall respond, within ten days after receipt of the request, and shall either (1) provide a response on the requested supporting data, (2) advise the Initial Decision Maker when the response or supporting data will be furnished, or (3) advise the Initial Decision Maker that no supporting data will be furnished. Upon receipt of the response or supporting data, if any, the Initial Decision Maker will either reject or approve the Claim in whole or in part.

§ 15.2.5 The Initial Decision Maker will render an initial decision approving or rejecting the Claim, or indicating that the Initial Decision Maker is unable to resolve the Claim. This initial decision shall (1) be in writing; (2) state the reasons therefor; and (3) notify the parties and the ~~Architect~~A/E Professional, if the ~~Architect~~A/E Professional is not serving as the Initial Decision Maker, of any change in the Contract Sum or Contract Time or both. The initial decision ~~shall be final and~~is not binding on the parties ~~but subject to mediation and, if the parties fail to resolve their dispute through mediation, to~~and is subject to binding dispute resolution.

§ 15.2.6 Either party may file for mediation of an initial decision at any time, subject to the terms of Section 15.2.6.1.

§ 15.2.6.1 Either party may, within 30 days from the date of receipt of an initial decision, demand in writing that the other party file for mediation. If such a demand is made and the party receiving the demand fails to file for mediation within 30 days after receipt thereof, then both parties waive their rights to mediate or pursue binding dispute resolution proceedings with respect to the initial decision.

§ 15.2.7 In the event of a Claim against the Contractor, the Owner may, but is not obligated to, notify the surety, if any, of the nature and amount of the Claim. If the Claim relates to a possibility of a Contractor's default, the Owner may, but is not obligated to, notify the surety and request the surety's assistance in resolving the controversy.

§ 15.2.8 If a Claim relates to or is the subject of a mechanic's lien, the party asserting such Claim may proceed in accordance with applicable law to comply with the lien notice or filing deadlines.

§ 15.3 Mediation

§ 15.3.1 Claims, disputes, or other matters in controversy arising out of or related to the Contract, except those waived as provided for in Sections 9.10.4, 9.10.5, and 15.1.7, shall be subject to mediation as a condition precedent to binding dispute resolution.

§ 15.3.2 In the event that the parties agree in writing to mediation, such mediation shall be administered by the American Arbitration Association in accordance with its Construction Industry Mediation Procedures in effect on the date of the Agreement. The written agreement to mediate shall be filed with the person or entity administering the mediation. If the mediation process is initiated concurrently with the filing of binding dispute resolution, including litigation, proceedings, mediation shall proceed in advance of binding dispute resolution proceedings, which shall be stayed pending mediation for a period of 60 days from the date of filing, unless stayed for a longer period by agreement of the parties or court order.~~The parties shall endeavor to resolve their Claims by mediation which, unless the parties~~

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~~mutually agree otherwise, shall be administered by the American Arbitration Association in accordance with its Construction Industry Mediation Procedures in effect on the date of the Agreement. A request for mediation shall be made in writing, delivered to the other party to the Contract, and filed with the person or entity administering the mediation. The request may be made concurrently with the filing of binding dispute resolution proceedings but, in such event, mediation shall proceed in advance of binding dispute resolution proceedings, which shall be stayed pending mediation for a period of 60 days from the date of filing, unless stayed for a longer period by agreement of the parties or court order. If an arbitration is stayed pursuant to this Section 15.3.2, the parties may nonetheless proceed to the selection of the arbitrator(s) and agree upon a schedule for later proceedings.~~

§ 15.3.3 Either party may, within 30 days from the date that mediation has been concluded without resolution of the dispute or 60 days after mediation has been demanded without resolution of the dispute, demand in writing that the other party file for binding dispute resolution. If such a demand is made and the party receiving the demand fails to file for binding dispute resolution within 60 days after receipt thereof, then both parties waive their rights to binding dispute resolution proceedings with respect to the initial decision.

§ 15.3.4 The parties shall share the mediator's fee and any filing fees equally. The mediation shall be held in the place where the Project is located, unless another location is mutually agreed upon. Agreements reached in mediation shall be enforceable as settlement agreements in any court having jurisdiction thereof.

§ 15.3.5 Litigation

Litigation of Claims, disputes or other matters in question between the Owner and Contractor arising out of or relating to this Contract or breach thereof, which are not resolved by mediation, shall be subject to and decided by litigation exclusively in the state courts of Palm Beach County, Florida. Contractor and Owner consent to the venue of the State Courts of Palm Beach County, Florida and specifically recognize and acknowledge the waiver of any right to remove any action to federal court on the basis of diversity jurisdiction or on any other basis.

§ 15.3.6 In the event of any litigation arising out of or relating to this Agreement or the Contract Documents, the prevailing party shall recover from the non prevailing party, all reasonable attorney's fees, paralegal fees and Court costs incurred by the prevailing party.

§16 Miscellaneous

§ 16.1 Modification

No change or modification of the Contract shall be valid unless in writing and signed by all parties hereto, excluding Construction Change Directives which do not require the signature of the Contractor. No waiver of any of the provisions of this Contract shall be valid unless in writing and signed by the party against whom it is sought to be enforced.

§ 16.2 Rights and Remedies

The duties and obligations imposed by the Contract Documents and the rights and remedies available thereunder shall be in addition to and not in limitation of any duties, obligations, rights and remedies otherwise imposed or available by law. All indemnities, representations, and waivers made by Contractor in favor of Owner shall survive completion of the Work, the making of final payment, and any termination of the Agreement.

§ 16.4 Severability and Waiver

The partial or complete invalidity of any one or more provisions of this Contract or any portion of the Contract Documents shall not affect the validity or continuing force and effect of any other provision. The failure of either party hereto to insist, in any one or more instances, upon the performance of any of the terms, covenants or conditions the Contract, or to exercise any right herein, shall not be construed as a waiver or relinquishment of such term, covenant, condition or right as respects further performance.

~~**§ 15.4 Arbitration**~~

~~**§ 15.4.1** If the parties have selected arbitration as the method for binding dispute resolution in the Agreement, any Claim subject to, but not resolved by, mediation shall be subject to arbitration which, unless the parties mutually agree otherwise, shall be administered by the American Arbitration Association in accordance with its Construction Industry Arbitration Rules in effect on the date of the Agreement. The Arbitration shall be conducted in the place where the Project is located, unless another location is mutually agreed upon. A demand for arbitration shall be made in writing, delivered to the other party to the Contract, and filed with the person or entity administering the arbitration. The party~~

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~~filing a notice of demand for arbitration must assert in the demand all Claims then known to that party on which arbitration is permitted to be demanded.~~

~~**§ 15.4.1.1** A demand for arbitration shall be made no earlier than concurrently with the filing of a request for mediation, but in no event shall it be made after the date when the institution of legal or equitable proceedings based on the Claim would be barred by the applicable statute of limitations. For statute of limitations purposes, receipt of a written demand for arbitration by the person or entity administering the arbitration shall constitute the institution of legal or equitable proceedings based on the Claim.~~

~~**§ 15.4.2** The award rendered by the arbitrator or arbitrators shall be final, and judgment may be entered upon it in accordance with applicable law in any court having jurisdiction thereof.~~

~~**§ 15.4.3** The foregoing agreement to arbitrate and other agreements to arbitrate with an additional person or entity duly consented to by parties to the Agreement, shall be specifically enforceable under applicable law in any court having jurisdiction thereof.~~

~~**§ 15.4.4 Consolidation or Joinder**~~

~~**§ 15.4.4.1** Subject to the rules of the American Arbitration Association or other applicable arbitration rules, either party may consolidate an arbitration conducted under this Agreement with any other arbitration to which it is a party provided that (1) the arbitration agreement governing the other arbitration permits consolidation, (2) the arbitrations to be consolidated substantially involve common questions of law or fact, and (3) the arbitrations employ materially similar procedural rules and methods for selecting arbitrator(s).~~

~~**§ 15.4.4.2** Subject to the rules of the American Arbitration Association or other applicable arbitration rules, either party may include by joinder persons or entities substantially involved in a common question of law or fact whose presence is required if complete relief is to be accorded in arbitration, provided that the party sought to be joined consents in writing to such joinder. Consent to arbitration involving an additional person or entity shall not constitute consent to arbitration of any claim, dispute or other matter in question not described in the written consent.~~

~~**§ 15.4.4.3** The Owner and Contractor grant to any person or entity made a party to an arbitration conducted under this Section 15.4, whether by joinder or consolidation, the same rights of joinder and consolidation as those of the Owner and Contractor under this Agreement.~~

[SIGNATURE PAGE TO FOLLOW]

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IN WITNESS WHEREOF, the Owner and the Construction Manager executed this Agreement as of the day and year first above written.

ATTEST: OWNER/CITY OF DELRAY BEACH

By:

Katerri Johnson, City Clerk Thomas F. Carney, Jr., Mayor

Approved as to form and legal sufficiency:

Lynn Gelin, City Attorney

Construction Manager

By:

Print Name:

Title:

(SEAL)

STATE OF

COUNTY OF

The foregoing instrument was acknowledged before me by means of ☐ physical presence or ☐ online notarization, this day of , 20 by (name of person), as (type of authority) for (name of party on behalf of whom instrument was executed).

Personally known ___ OR Produced Identification
Type of Identification Produced

Notary Public – State of

~~This Agreement is entered into as of the day and year first written above.~~

~~**OWNER** *(Signature)*~~ ~~« »~~ ~~(Printed name and title)~~	~~**CONSTRUCTION MANAGER** *(Signature)*~~ ~~« »~~ ~~(Printed name and title)~~

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DRAFT **AIA® Document A133® – 2019**

Modified Standard Form of Agreement Between Owner and Construction Manager as Constructor where the basis of payment is the Cost of the Work Plus a Fee with a Guaranteed Maximum Price

AGREEMENT made as of the « » day of «»March in the year «»2024
(In words, indicate day, month, and year.)

BETWEEN the Owner:
(Name, legal status, address, and other information)

The City of Delray Beach, Florida
A municipal corporation and a political subdivision of the State of Florida, its successors and assigns
100 NW 1st Avenue
Delray Beach, FL 33444«»«»
«»
«»
«»

and the Construction Manager:
(Name, legal status, address, and other information)

«»«»
«»
«»
«»[insert]

for the following Project:
(Name, location, and detailed description)

RFQ No. [insert]
CMAR AGREEMENT TEMPLATE«»
«»

The Architect/Engineer (the "A/E Professional"):
(Name, legal status, address, and other information)

«»«»
«»
«»
«»[insert]

The Owner and Construction Manager agree as follows.

ADDITIONS AND DELETIONS: The author of this document has added information needed for its completion. The author may also have revised the text of the original AIA standard form. An *Additions and Deletions Report* that notes added information as well as revisions to the standard form text is available from the author and should be reviewed.

This document has important legal consequences. Consultation with an attorney is encouraged with respect to its completion or modification.

AIA Document A201™–2017, General Conditions of the Contract for Construction, is adopted in this document by reference. Do not use with other general conditions unless this document is modified.

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5 COMPENSATION AND PAYMENTS FOR PRECONSTRUCTION PHASE SERVICES

6 COMPENSATION FOR CONSTRUCTION PHASE SERVICES

7 COST OF THE WORK FOR CONSTRUCTION PHASE

8 DISCOUNTS, REBATES, AND REFUNDS

9 SUBCONTRACTS AND OTHER AGREEMENTS

10 ACCOUNTING RECORDS

11 PAYMENTS FOR CONSTRUCTION PHASE SERVICES

12 DISPUTE RESOLUTION

13 TERMINATION OR SUSPENSION

14 MISCELLANEOUS PROVISIONS

15 SCOPE OF THE AGREEMENT

EXHIBIT A GUARANTEED MAXIMUM PRICE AMENDMENT
EXHIBIT B INSURANCE AND BONDS

ARTICLE 1 INITIAL INFORMATION

§ 1.1 This Agreement is based on the Initial Information set forth in this Section 1.1.
(For each item in this section, insert the information or a statement such as "not applicable" or "unknown at time of execution.")

§ 1.1.1 The Owner's program for the Project, as described in Section 4.1.1:
(Insert the Owner's program, identify documentation that establishes the Owner's program, or state the manner in which the program will be developed.)

See the information provided in RFQ NO [insert], which is attached as Exhibit ___.

§ 1.1.2 The Project's physical characteristics:
(Identify or describe pertinent information about the Project's physical characteristics, such as size; location; dimensions; geotechnical reports; site boundaries; topographic surveys; traffic and utility studies; availability of public and private utilities and services; legal description of the site, etc.)

See the information provided in RFQ NO [insert], which is attached as Exhibit ___.

§ 1.1.3 The Owner's budget for the Guaranteed Maximum Price, as defined in Article 6:
(Provide total and, if known, a line item breakdown.)

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«»The Owner's GMP is to be determined.

§ 1.1.4 The Owner's anticipated design and construction milestone dates:

.1 Design phase milestone dates, if any:

«» [insert, if applicable]

.2 Construction commencement date:

[Date to be established after approval of the GMP and addendum to this Agreement.«»

.3 Substantial Completion date or dates:

« »The Project shall have a duration of [insert] calendar days to Ssubstantial Ceompletion of the Project from Construction commencement date

.4 Other milestone dates:

«»N/A

§ 1.1.5 The Owner's requirements for accelerated or fast-track scheduling, or phased construction, are set forth below:
(Identify any requirements for fast-track scheduling or phased construction.)

N/A [insert, if applicable]«»

§ 1.1.6 The Owner's anticipated Sustainable Objective for the Project:
(Identify and describe the Owner's Sustainable Objective for the Project, if any.)

[N/A [insert, if applicable]~~insert~~]«»

§ 1.1.6.1 If the Owner identifies a Sustainable Objective, the Owner and Construction Manager shall complete and incorporate AIA Document E234™–2019, Sustainable Projects Exhibit, Construction Manager as Constructor Edition, into this Agreement to define the terms, conditions and services related to the Owner's Sustainable Objective. If E234–2019 is incorporated into this agreement, the Owner and Construction Manager shall incorporate the completed E234–2019 into the agreements with the consultants and contractors performing services or Work in any way associated with the Sustainable Objective.

§ 1.1.7 Other Project information:
(Identify special characteristics or needs of the Project not provided elsewhere.)

See the information provided in RFQ NO [insert], which is attached as Exhibit ___.«»

§ 1.1.8 The Owner identifies the following representative in accordance with Section 4.2:
(List name, address, and other contact information.)

«»[Insert]

§ 1.1.9 The persons or entities, in addition to the Owner's representative, who are required to review the Construction Manager's submittals to the Owner are as follows:
(List name, address and other contact information.)

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«»A/E Professional, or as applicable, the A/E Professional's consultants

§ 1.1.10 The Owner shall retain the following consultants and contractors:
(List name, legal status, address, and other contact information.)

.1 Geotechnical Engineer:

[insert, as applicable]«»«»
« »
« »
« »
« »

.2 Civil Engineer:

[Included as part of A/E Professional]]«»«»
«»
«»
«»
«»

.3 Other, if any:
(List any other consultants retained by the Owner, such as a Project or Program Manager.)

_____«»[N/A]

§ 1.1.11 The ~~Architect~~A/E Professional's representative:
(List name, address, and other contact information.)

[insert]«»
«»
«»
«»
«»
«»

§ 1.1.12 The Construction Manager identifies the following representative in accordance with Article 3:
(List name, address, and other contact information.)

[insert]«»
«»
«»
«»
«»
«»

§ 1.1.13 The Owner's requirements for the Construction Manager's staffing plan for Preconstruction Services, as required under Section 3.1.9:
(List any Owner-specific requirements to be included in the staffing plan.)

See the information provided in RFQ NO [insert], which is attached as Exhibit ___«»

§ 1.1.14 The Owner's requirements for subcontractor procurement for the performance of the Work:

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(List any Owner-specific requirements for subcontractor procurement.)

[See the information provided in RFQ NO [insert], which is attached as Exhibit ___ «»

§ 1.1.15 Other Initial Information on which this Agreement is based:

[N/A]«»

§ 1.2 The Owner and Construction Manager may generally rely on the Initial Information, but Construction Manager shall promptly notify Owner of any conflicts or discrepancies Construction Manager discovers or should discover (in its capacity and experience as a general contractor) with respect to the Initial Information. Both parties, however, recognize that such information may materially change and, in that event, the Owner and the Construction Manager shall appropriately adjust the Project schedule, the Construction Manager's services, and the Construction Manager's compensation. The Owner shall adjust the Owner's budget for the Guaranteed Maximum Price and the Owner's anticipated design and construction milestones, as necessary, to accommodate material changes in the Initial Information.

§ 1.3 Neither the Owner's nor the Construction Manager's representative shall be changed without ten (10) days' prior written notice to the other party.

ARTICLE 2 GENERAL PROVISIONS

§ 2.1 The Contract Documents

§ 2.1.1 The Contract Documents consist of this Agreement, the AIA A201-2017 General Conditions of the Contract ~~(General, Supplementary and other Conditions)~~as modified (the "Modified General Conditions"), Drawings, Specifications, Addenda issued prior to execution of this Agreement, Exhibits to this Agreement, other documents listed in this Agreement, and Modifications issued after execution of this Agreement, all of which form the Contract and are as fully a part of the Contract as if attached to this Agreement or repeated herein (the "Contract Documents"). Upon the Owner's acceptance of the Construction Manager's Guaranteed Maximum Price proposal, the Contract Documents will also include the documents described in Section 3.2.3 and identified in the Guaranteed Maximum Price Amendment and revisions prepared by the ~~Architect~~A/E Professional and furnished by the Owner as described in Section 3.2.8. The Contract represents the entire and integrated agreement between the parties hereto and supersedes prior negotiations, representations or agreements, either written or oral. To the extent any conflict exists between the Contract Documents that cannot be resolved between the parties, interpretations will be based on the following priorities: (a) This Agreement; (b) the Modified General Conditions; (c) all Exhibits hereto, as modified; (d) executed Modifications, if any, with those of a later date having precedence over those of an earlier date; (e) Drawings and Specifications; and (f) any other Contract Documents. ~~If anything in the other Contract Documents, other than a Modification, is inconsistent with this Agreement, this Agreement shall govern.~~ An enumeration of the Contract Documents, other than a Modification, appears in Article 15.

§ 2.1.2 Unless otherwise stated in the Contract Documents, words that have well-known technical or construction industry meanings are used in the Contract Documents in accordance with such recognized meanings. On the Drawings, given dimensions shall take precedence over scaled measurements and large-scale drawings over small-scale drawings.

§ 2.1.3 Any of the Contract Documents not attached hereto but expressly identified in this Agreement are hereby incorporated by reference and shall be deemed to be of the same force and effect as if actually attached hereto.

§ 2.1.4 The intent of the Contract Documents is to include all items necessary for the proper execution and completion of the Work by the Construction Manager. Performance by the Construction Manager shall be required to the extent consistent with the Contract Documents and reasonably inferable from them as being necessary to produce the indicated results.

§ 2.1.5 If the Construction Manager discovers any inconsistency, ambiguity, discrepancy or error in the Contract Documents, the Construction Manager shall promptly seek clarification in writing from the Owner.

§ 2.2 Relationship of the Parties

The Construction Manager accepts the relationship of trust and confidence established by this Agreement and covenants with the Owner to cooperate with the ~~Architect~~A/E Professional and Owner's Representative and exercise the

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Construction Manager's skill and judgment in furthering the interests of the Owner to furnish efficient construction administration, management services, and supervision; to furnish at all times an adequate supply of workers, and materials, and equipment; and to perform the Work in an expeditious and economical manner consistent with the Owner's interests. The Owner agrees to furnish or approve, in a timely manner, information required by the Construction Manager and to make payments to the Construction Manager in accordance with the requirements of the Contract Documents.

§ 2.3 General Conditions

§ 2.3.1 For the Preconstruction Phase, AIA Document A201™–2017, Modified General Conditions of the Contract for Construction, shall apply as follows: Section 1.5, Ownership and Use of Documents; Section 1.7, Digital Data Use and Transmission; Section 1.8, Building Information Model Use and Reliance; Section 2.2.4, Confidential Information; Section 3.12.10, Professional Services; Section 10.3, Hazardous Materials; Section 13.1, Governing Law. The term "Contractor" as used in A201–2017 shall mean the Construction Manager.

§ 2.3.2 For the Construction Phase, the general conditions of the contract shall be as set forth in A201–2017, Modified General Conditions, which document is incorporated herein by reference. The term "Contractor" as used in A201–2017, Modified General Conditions shall mean the Construction Manager.

ARTICLE 3 CONSTRUCTION MANAGER'S RESPONSIBILITIES

The Construction Manager's Preconstruction Phase responsibilities are set forth in Sections 3.1 and 3.2, and in the applicable provisions of A201-2017, Modified General Conditions, referenced in Section 2.3.1. The Construction Manager's Construction Phase responsibilities are set forth in Section 3.3. The Owner and Construction Manager may agree, in consultation with the ArchitectA/E Professional and Owner's Representative, for the Construction Phase to commence prior to completion of the Preconstruction Phase, in which case, both phases will proceed concurrently. The Construction Manager shall identify a representative authorized to act on behalf of the Construction Manager with respect to the Project.

§ 3.1 Phase 1: Pre-construction Services

§ 3.1.1 General. During the Preconstruction Phase of the Project, the Construction Manager will provide preconstruction services where necessary or appropriate to further the interests of the Owner and the Project. Construction Manager shall render Services which support the services to be rendered by A/E Professional, including design review, Project planning, and the specific Services described in this Article 3. Construction Manager shall perform Phase 1 Pre-construction Services per the Scope of Services, which is attached as Exhibit ___, and in accordance with the General Conditions.

§ 3.1.2 Review Project Requirements and Site Data. Construction Manager shall review and study all background data, specifications and other related materials made available by Owner as to requirements, criteria, priorities, feasibility, and physical and financial limitations with regard to the Project and shall review with Owner's Representative and A/E Professional site data (such as access, location of services and utilities, security, surveys, and soils information) and other relevant information.

§ 3.1.3 Verify Site and Working Conditions. Construction Manager shall visit the Project site, review all information related to the site and to the conditions under which the Work will be performed. Construction Manager shall notify Owner's Representative in writing of any conditions of which the Construction Manager becomes aware or should have become aware in the exercise of reasonable care, that would adversely affect the progress, quality, or cost of the Work. Construction Manager will recommend means of addressing such conditions, and suggest additional testing or services reasonably required in connection therewith.

§ 3.1.4 Consultation of Design

The Construction Manager shall attend all meetings with the A/E Professional and Owner, as scheduled by the Owner, to discuss such matters as procedures, progress, coordination, and scheduling of the Work. The Construction Manager shall advise the Owner and the A/E Professional on proposed site use and improvements, selection of materials, and building systems and equipment. The Construction Manager shall also provide recommendations consistent with the Project requirements to the Owner and A/E Professional on constructability; availability of materials and labor; time requirements for procurement, installation and construction; and factors related to construction cost including, but not limited to, costs of alternative designs or materials, preliminary budgets, and possible cost reductions. The Construction Manager agrees to be reasonably available to perform the following facets related to the Preconstruction Phase:

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1. reviewing all drawings, permits, approvals, documents, and reports for the Project including, without limitation, the Plans and Specifications;

2. review all permit applications and accompanying documentation;

3. review projected work schedule, timeline and benchmark dates;

4. offer alternatives to plans and proposals, including cost-saving measures and value engineering;

5. interface with subcontractors and vendors that fit specifically to the nature of this project and to the specific scopes of work;

6. develop bid packages and obtain written bids from subcontractors, vendors and or suppliers;

7. provide monthly summaries;

8. provide such other services reasonably agreed to between Owner and Construction Manager and as necessary to the successful development of the Project.

§ 3.1.5 Review of A/E Professional's Schedule. Construction Manager shall review and study all schedules and updates thereof submitted by A/E Professional concerning the schedule for performance of A/E Professional's services. Within ten (10) days after receipt of any such schedule or update, Construction Manager shall submit to Owner's Representative a written analysis of same describing any anticipated problems or delays to the Project related to A/E Professional's schedule.~~,~~

When Project requirements for Construction Phase Services have been sufficiently identified, the Construction Manager shall prepare and periodically update a Project schedule for the A/E Professional's review and the Owner's acceptance. The Construction Manager shall obtain the A/E Professional's approval for the portion of the Project schedule relating to the performance of the A/E Professional's services. The Project schedule shall coordinate and integrate the Construction Manager's services, the A/E Professional's services, other Owner consultants' services, and the Owner's responsibilities and identify items that could affect the Project's timely completion. The updated Project schedule shall include the following: submission of the Guaranteed Maximum Price proposal; components of the Work; times of commencement and completion required of each subcontractor; ordering and delivery of products, including those that must be ordered well in advance of construction; and the occupancy requirements of the Owner.

§ 3.1.6 Phased Construction

The Construction Manager shall provide recommendations with regard to accelerated or fast-track scheduling, procurement, or phased construction. The Construction Manager shall take into consideration cost reductions, cost information, constructability, provisions for temporary facilities and procurement and construction scheduling issues.

§ 3.1.7 Procurement Guidelines and Plan. Construction Manager shall prepare and submit, for the Owner's approval, procurement guidelines and a procurement plan for the Project. The Construction Manager shall prepare, for the Owner's acceptance, a procurement schedule for long-lead items that must be ordered well in advance of construction. The Construction Manager shall expedite and coordinate the ordering and delivery of materials that must be ordered well in advance of construction. If the Owner agrees to procure any items prior to the establishment of the Guaranteed Maximum Price, the Owner shall procure the items on terms and conditions acceptable to the Construction Manager. Upon the establishment of the Guaranteed Maximum Price, the Owner shall assign all contracts for these items to the Construction Manager and the Owner shall thereafter accept responsibility for them.

§ 3.1.8 Utilities, Communications and Other Infrastructure Issues. Construction Manager shall advise and assist A/E Professional and represent Owner, if requested, in coordinating appropriately with local utilities, communications, and other related infrastructure issues.

§ 3.1.9 Review Design Documents. Construction Manager shall review and study, on a continuing basis through the Design and Construction Phases, all design and construction documents prepared by A/E Professional and shall notify Owner's Representative and A/E Professional in writing of any errors, omissions, conflicts, inconsistencies, or ambiguities discovered, identify potential value engineering options before the bidding cycle and Construction Phase begin, and

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recommend alternatives when design details affect construction feasibility, constructability, quality, or the Project schedule.\

§ 3.1.10 Constructability Analyses. When requested by Owner's Representative, Construction Manager shall provide written constructability analyses of the Project, including items to be addressed with A/E Professional such as accessibility, construction methods, assembly, installation, materials handling, expandability, phasing and other Construction Phase-related activities. The analysis of constructability issues shall be performed on an ongoing basis during the Design Phase.

§ 3.1.11 Presentations. When requested by Owner's Representative, Construction Manager shall assist Owner and A/E Professional in making one or more presentations of design concepts, cost studies, site evaluation, and other data developed in relation to the Project.

§ 3.1.12 Value Engineering. Construction Manager shall perform Value Engineering studies and propose to the Owner design, construction and systems alternatives for reducing the cost of the Project, or elements thereof. Construction Manager shall provide Owner with an estimate of the cost of, and the savings that will result from, implementing such Value Engineering alternatives. Construction Manager shall implement any Value Engineering alternatives approved by Owner, and the GMP shall be adjusted prior to issuance of the purchase order, or if the purchase order has been issued then by deductive Change Order to reflect the savings to be achieved by implementing such Value Engineering alternatives.

§ 3.1.16 Estimating and Monitoring Costs

§ 3.1.16.1 Construction Cost Estimate. Within thirty (30) days after the A/E Professional's completion of the [Insert first design stage] Design Stage, the Construction Manager shall prepare an estimate (the "Construction Cost Estimate") of the cost of constructing the Project in accordance with the requirements of the [insert] Design Stage and shall provide same to Owner's Representative. The Construction Cost Estimate shall be broken down in such detail as Owner's Representative may require and shall include a recommended contingency for the Work. Construction Manager shall revise the Construction Cost Estimate monthly until the GMP is established and shall provide such revised estimates to Owner's Representative on a monthly basis.

As the A/E Professional progresses through the design stages, Construction Manager shall prepare estimates of the Cost of the Work with increasing detail and refinement until such time as the Owner and Construction Manager agree on a Guaranteed Maximum Price for the Work. Such estimates shall be provided for the Owner's review and approval. The Construction Manager shall inform the Owner and A/E Professional when estimates of the Cost of the Work exceed the latest approved Project budget and make recommendations for corrective action.

§ 3.1.16.2 Monitoring Construction Costs. Throughout the duration of the Project, Construction Manager shall regularly monitor conditions in the construction market to identify factors that will or may affect costs for completing the Project and furnish a written analysis.

§ 3.1.16.3 Cash Flow Forecasts. Construction Manager shall prepare a written forecast of projected accumulation of cash payments against the Project. Cash flow projections shall be generated for anticipated monthly payments as well as cumulative payments. On a monthly basis, Construction Manager shall provide Owner's Representative with an updated forecast of such projected monthly payments.

§ 3.1.17 Bid Solicitation and Award

§ 3.1.17.1 Construction Manager shall provide all necessary services related to the bidding of subcontracts for the construction of the Project, including but not limited to: (a) preparing appropriate bid documents, including proposed forms of contract and purchase orders; (b) establishing bid schedules; (c) active program of developing bidder interest; (c) furnishing information concerning the Project to prospective bidders; (d) conducting pre-bid conferences; (e) receiving and analyzing bids and making recommendations to Owner regarding bid awards; (f)f investigating the acceptability and responsibility of sub- subcontractors or suppliers proposed by any Subcontractor and advising Owner of such evaluations; (g) negotiating with Subcontractors concerning any matter related to the Project; (h) such other services required by Owner with respect to the bidding process; and (i) Subcontractor is required to prepare, for approval, coordination drawings prior to installation of work if required by Owner and/or A/E Professional. These costs shall be considered part of the GMP.

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§ 3.1.17.2 Nothing in the Agreement shall be interpreted to relieve the Construction Manager of its responsibilities for the Project including but limited to: preparation and accuracy of subcontract solicitations, selection of qualified subcontractors, subcontract performance, payments to subcontractors and the safety of personnel and property.

§ 3.1.17.3 In the event that the Construction Manager performs a portion of the Work on the Project, other than construction management, then for that portion of the Work the Construction Manager shall be treated as any other Subcontractor and shall abide by all the Subcontractor requirements identified in this Agreement.

§ 3.1.17.4 Approval of Subcontractors. Construction Manager shall not subcontract for any part of the Services or Work with any Subcontractor or consultant who is not properly licensed. or against whom Owner has an reasonable objection. As soon as practicable after the bidding process and during development of the Guaranteed Maximum Price, Construction Manager shall furnish in writing to the Owner's Representative the names of persons or entities (including those who are to furnish materials or equipment) proposed for each portion of the Work, the portion of the Work which each such Subcontractor is to perform, and the place of business of such Subcontractor.

The Construction Manager shall not contract with a proposed person or entity which the Owner has made a reasonable objection or that is not in good standing with the Owner. The Owner shall have the right to require the Construction Manager not to award any subcontract to a person, firm or corporation reasonably objected to by the Owner. If the Owner has a reasonable objection to a person or entity proposed by the Construction Manager, the Construction Manager shall propose another with whom the Owner has no objection.

The Construction Manager shall not change a Subcontractor, person or entity previously selected if the Owner makes objection to such change.

The Construction Manager shall be responsible and liable to the Owner for all work performed by the Subcontractors or their employees, agents or contractors, pursuant to this Agreement.

§ 3.1.184 Extent of Responsibility

The Construction Manager shall exercise reasonable care in performing its Preconstruction Services. The Owner, Owner's Representative, and ~~Architect~~A/E Professional shall be entitled to rely on, and shall not be responsible for, the accuracy, completeness, and timeliness of services and information furnished by the Construction Manager. The Construction Manager, however, does not warrant or guarantee estimates and schedules except as may be included as part of the Guaranteed Maximum Price. The Construction Manager is not required to ascertain that the Drawings and Specifications are in accordance with applicable laws, statutes, ordinances, codes, rules and regulations, or lawful orders of public authorities, but the Construction Manager shall promptly report to the ~~Architect~~A/E Professional and Owner in writing any nonconformity and/or conflicts discovered by or made known to the Construction Manager as a request for information in such form as the ~~Architect~~A/E Professional may require.

~~**§ 3.1.2** The Construction Manager shall provide a preliminary evaluation of the Owner's program, schedule and construction budget requirements, each in terms of the other.~~

~~**§ 3.1.3 Consultation**~~

~~**§ 3.1.3.1** The Construction Manager shall schedule and conduct meetings with the Architect and Owner to discuss such matters as procedures, progress, coordination, and scheduling of the Work.~~

~~**§ 3.1.3.2** The Construction Manager shall advise the Owner and Architect on proposed site use and improvements, selection of materials, building systems, and equipment. The Construction Manager shall also provide recommendations to the Owner and Architect, consistent with the Project requirements, on constructability; availability of materials and labor; time requirements for procurement, installation and construction; prefabrication; and factors related to construction cost including, but not limited to, costs of alternative designs or materials, preliminary budgets, life cycle data, and possible cost reductions. The Construction Manager shall consult with the Architect regarding professional services to be provided by the Construction Manager during the Construction Phase.~~

~~**§ 3.1.3.3** The Construction Manager shall assist the Owner and Architect in establishing building information modeling and digital data protocols for the Project, using AIA Document E203™–2013, Building Information Modeling and Digital Data Exhibit, to establish the protocols for the development, use, transmission, and exchange of digital data.~~

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§ 3.1.4 Project Schedule

When Project requirements in Section 4.1.1 have been sufficiently identified, the Construction Manager shall prepare and periodically update a Project schedule for the Architect's review and the Owner's acceptance. The Construction Manager shall obtain the Architect's approval for the portion of the Project schedule relating to the performance of the Architect's services. The Project schedule shall coordinate and integrate the Construction Manager's services, the Architect's services, other Owner consultants' services, and the Owner's responsibilities; and identify items that affect the Project's timely completion. The updated Project schedule shall include the following: submission of the Guaranteed Maximum Price proposal; components of the Work; times of commencement and completion required of each Subcontractor; ordering and delivery of products, including those that must be ordered in advance of construction; and the occupancy requirements of the Owner.

§ 3.1.5 Phased Construction

The Construction Manager, in consultation with the Architect, shall provide recommendations with regard to accelerated or fast-track scheduling, procurement, and sequencing for phased construction. The Construction Manager shall take into consideration cost reductions, cost information, constructability, provisions for temporary facilities, and procurement and construction scheduling issues.

§ 3.1.6 Cost Estimates

§ 3.1.6.1 Based on the preliminary design and other design criteria prepared by the Architect, the Construction Manager shall prepare, for the Architect's review and the Owner's approval, preliminary estimates of the Cost of the Work or the cost of program requirements using area, volume, or similar conceptual estimating techniques. If the Architect or Construction Manager suggests alternative materials and systems, the Construction Manager shall provide cost evaluations of those alternative materials and systems.

§ 3.1.6.2 As the Architect progresses with the preparation of the Schematic Design, Design Development and Construction Documents, the Construction Manager shall prepare and update, at appropriate intervals agreed to by the Owner, Construction Manager and Architect, an estimate of the Cost of the Work with increasing detail and refinement. The Construction Manager shall include in the estimate those costs to allow for the further development of the design, price escalation, and market conditions, until such time as the Owner and Construction Manager agree on a Guaranteed Maximum Price for the Work. The estimate shall be provided for the Architect's review and the Owner's approval. The Construction Manager shall inform the Owner and Architect in the event that the estimate of the Cost of the Work exceeds the latest approved Project budget, and make recommendations for corrective action.

§ 3.1.6.3 If the Architect is providing cost estimating services as a Supplemental Service, and a discrepancy exists between the Construction Manager's cost estimates and the Architect's cost estimates, the Construction Manager and the Architect shall work together to reconcile the cost estimates.

§ 3.1.7 As the Architect progresses with the preparation of the Schematic Design, Design Development and Construction Documents, the Construction Manager shall consult with the Owner and Architect and make recommendations regarding constructability and schedules, for the Architect's review and the Owner's approval.

§ 3.1.8 The Construction Manager shall provide recommendations and information to the Owner and Architect regarding equipment, materials, services, and temporary Project facilities.

§ 3.1.9 The Construction Manager shall provide a staffing plan for Preconstruction Phase services for the Owner's review and approval.

§ 3.1.10 If the Owner identified a Sustainable Objective in Article 1, the Construction Manager shall fulfill its Preconstruction Phase responsibilities as required in AIA Document E234™ 2019, Sustainable Projects Exhibit, Construction Manager as Constructor Edition, attached to this Agreement.

§ 3.1.11 Subcontractors and Suppliers

§ 3.1.11.1 If the Owner has provided requirements for subcontractor procurement in section 1.1.14, the Construction Manager shall provide a subcontracting plan, addressing the Owner's requirements, for the Owner's review and approval.

§ 3.1.11.2 The Construction Manager shall develop bidders' interest in the Project.

§ 3.1.11.3 The processes described in Article 9 shall apply if bid packages will be issued during the Preconstruction Phase.

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~~§ 3.1.12 Procurement~~

~~The Construction Manager shall prepare, for the Architect's review and the Owner's acceptance, a procurement schedule for items that must be ordered in advance of construction. The Construction Manager shall expedite and coordinate the ordering and delivery of materials that must be ordered in advance of construction. If the Owner agrees to procure any items prior to the establishment of the Guaranteed Maximum Price, the Owner shall procure the items on terms and conditions acceptable to the Construction Manager. Upon the establishment of the Guaranteed Maximum Price, the Owner shall assign all contracts for these items to the Construction Manager and the Construction Manager shall thereafter accept responsibility for them.~~

§ 3.1.9~~13~~ Compliance with Laws

The Construction Manager shall comply with applicable laws, statutes, ordinances, codes, rules and regulations, and lawful orders of public authorities applicable to its performance under this Contract, and with equal employment opportunity programs, and other programs as may be required by governmental and quasi-governmental authorities for inclusion in the Contract Documents.

§ 3.1.1~~0~~94 Other Preconstruction Services

Insert a description of any other Preconstruction Phase services to be provided by the Construction Manager, or reference an exhibit attached to this document

(Describe any other Preconstruction Phase services, such as providing cash flow projections, development of a project information management system, early selection or procurement of subcontractors, etc.)

~~«~~ [insert, if any]

§ 3.2 Phase 2: Construction Services, Guaranteed Maximum Price Proposal, and Contract Time

§ 3.2.1 At a time to be mutually agreed upon by the Owner and the Construction Manager, the Construction Manager, in consultation with the A/E Professional and Owner's Representative, shall prepare a Guaranteed Maximum Price proposal, supported by all subcontractor and material supplier costing documentation with quantities, for the Owner's and ~~and Architect~~A/E Professional's ~~review~~reviews ~~review,~~ and the Owner's acceptance. The Guaranteed Maximum Price in the proposal shall be the sum of the Construction Manager's estimate of the Cost of the Work, including the Construction Manager's Fee, and General Conditions, and ~~,~~the Construction Manager's contingency described in Section 3.2.4.

§ 3.2.2 To the extent that the Contract Documents are anticipated to require further development, the Guaranteed Maximum Price includes the costs attributable to such further development consistent with the Contract Documents and reasonably inferable therefrom. Such further development does not include changes in scope, systems, kinds and quality of materials, finishes, or equipment, all of which, if required, shall be incorporated by Change Order.

§ 3.2.3 The Construction Manager shall include with the Guaranteed Maximum Price proposal a written statement of its basis, which shall include the following:

.1 A list of the Drawings and Specifications, including all Addenda thereto, and the Conditions of the Contract;

.2 A list of the clarifications and assumptions made by the Construction Manager in the preparation of the Guaranteed Maximum Price proposal, to supplement the information provided by the Owner and contained in the Drawings and Specifications;~~including assumptions under Section 3.2.2;~~

.3 A statement of the proposed Guaranteed Maximum Price, including a statement of the estimated Cost of the Work organized by trade categories or systems, including allowances; the Construction Manager's contingency set forth in Section 3.2.4; and the Construction Manager's Fee and General Conditions;

.4 The anticipated date of Substantial Completion upon which the proposed Guaranteed Maximum Price is based; ~~and~~

.5 A date by which the Owner must accept the Guaranteed Maximum Price; and

.6 A list of the major Subcontracts and purchasing agreements that will be entered into within the first twenty-five (25) days following the Notice to Proceed. A list of all other Subcontracts and purchasing agreements within sixty (60) days thereafter~~.~~

§ 3.2.4 Construction Manager shall keep and submit to Owner full and detailed records substantiating the Guaranteed Maximum Price proposal, including but not limited to, complete documentation supporting budgeted line items, proposals from Subcontractors and materials suppliers, Subcontracts and contracts with materials suppliers and related parties (as defined herein) and other back up documents, and shall make such records available to Owner, Owner's Representative,

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A/E Professional and any cost control consultants hired by Owner for inspection, audit and copying during regular business hours and upon reasonable notice.

§ 3.2.54 To the extent Owner determines in its sole discretion that this Project will provide for a contingency, iIn preparing the Construction Manager's Guaranteed Maximum Price proposal, the Construction Manager shall include a contingency for the Construction Manager's exclusive use to cover those costs that are included in the Guaranteed Maximum Price but not otherwise allocated to another line item or included in a Change Order.

§ 3.2.65 The Construction Manager shall meet with the Owner and ArchitectA/E Professional to review the Guaranteed Maximum Price proposal. In the event that the Owner or ArchitectA/E Professional discover any inconsistencies or inaccuracies in the information presented, they shall promptly notify the Construction Manager, who shall make appropriate adjustments to the Guaranteed Maximum Price proposal, its basis, or both.

§ 3.2.76 If the Owner notifies the Construction Manager that the Owner has accepted the Guaranteed Maximum Price proposal in writing before the date specified in the Guaranteed Maximum Price proposal, the Guaranteed Maximum Price proposal shall be deemed effective without further acceptance from the Construction Manager. Following acceptance of a Guaranteed Maximum Price, the Owner and Construction Manager shall execute the Guaranteed Maximum Price Amendment amending this Agreement, a copy of which the Owner shall provide to the ArchitectA/E Professional and a copy of which shall be attached hereto as Exhibit A. The Guaranteed Maximum Price Amendment shall set forth the agreed upon Guaranteed Maximum Price with the information and assumptions upon which it is based.

§ 3.2.87 The Construction Manager shall not incur any cost to be reimbursed as part of the Cost of the Work prior to the execution of the Guaranteed Maximum Price Amendment, unless the Owner provides prior written authorization for such costs.

§ 3.2.98 The Owner shall authorize the A/E Professional to provide revisions, if necessary, to the Drawings and Specifications to incorporate those agreed-upon assumptions and clarifications contained in the Guaranteed Maximum Price Amendment that differ from the requirements of the Drawings and Specifications. The Owner shall timely furnish those revised Drawings and Specifications, if any, to the Construction Manager as they are revised.
The Owner shall authorize preparation of revisions to the Contract Documents that incorporate the agreed upon assumptions and clarifications contained in the Guaranteed Maximum Price Amendment. The Owner shall promptly furnish such revised Contract Documents to the Construction Manager. The Construction Manager shall notify the Owner and Architect of any inconsistencies between the agreed upon assumptions and clarifications contained in the Guaranteed Maximum Price Amendment and the revised Contract Documents.

§ 3.2.109 The Construction Manager shall include in the Guaranteed Maximum Price all sales, consumer, use and similar taxes for the Work provided by the Construction Manager that are legally enacted, whether or not yet effective, at the time the Guaranteed Maximum Price Amendment is executed.

§ 3.3 Construction Phase

§ 3.3.1 General

§ 3.3.1.1 For purposes of Section 8.1.2 of A201–2017, Modified General Conditions, the date of commencement of the Work shall mean the date of commencement of the Construction Phase.

§ 3.3.1.2 The Construction Phase shall commence upon the Owner's issuance of a Notice to Proceed ("Commencement Date") and the Contract Time shall be measured starting from the Commencement Date. The Construction Manager shall achieve Substantial Completion of the entire Work not later than _____ (_____) calendar days after the Commencement Date (the "Contract Time"). Final Completion shall be achieved no later than _____ (_____) calendar days after Substantial Completion. execution of the Guaranteed Maximum Price Amendment or, prior to acceptance of the Guaranteed Maximum Price proposal, by written agreement of the parties. The written agreement shall set forth a description of the Work to be performed by the Construction Manager, and any insurance and bond requirements for Work performed prior to execution of the Guaranteed Maximum Price Amendment.

§ 3.3.2 Administration

§ 3.3.2.1 The Construction Manager shall schedule and conduct meetings to discuss such matters as procedures, progress, coordination, scheduling, and status of the Work. The Construction Manager shall prepare and promptly distribute minutes of the meetings to the Owner, Owner's Representative, and ArchitectA/E Professional.

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§ 3.3.2.2 Upon the execution of the Guaranteed Maximum Price Amendment, the Construction Manager shall prepare and submit to the Owner and ~~Architect~~A/E Professional a construction schedule for the Work and a submittal schedule in accordance with Section 3.10 of A201–2017, Modified General Conditions.

§ 3.3.2.3 Monthly Report

The Construction Manager shall record the progress of the Project. On a monthly basis, or otherwise as agreed to by the Owner, the Construction Manager shall submit written progress reports to the Owner, Owner's Representative, and ~~Architect~~A/E Professional, showing percentages of completion and other information required by the Owner. Along with the monthly progress reports, Construction Manager shall provide updated project Schedules (which will include schedules distributed during the month and for the two weeks following the date of the current monthly progress report), a log of and copies of all lien releases obtained during the month from Subcontractors and suppliers and others required to provide lien releases pursuant to the Contract Documents, a listing of any Change Orders and Construction Change Directives issued during the month, copies of the minutes for the weekly Project team (Owner, A/E Professional, Owner's Representative, and Construction Manager) meetings that month, a report of all Requests for Information and responses thereto, a report of all submittals, a copy of all completed Daily Logs for the month, all invoices and back up for all costs and expenses that correspond to the monthly payment application, project cost control measures and status of contingency, and copies of field and aerial photographs of the Project.

§ 3.3.2.4 Daily Logs

The Construction Manager shall keep, and make available to the Owner, Owner's Representative, and ~~Architect~~A/E Professional, a daily log containing a record for each day of weather, record of deliveries, portions of the Work in progress, number of workers on site, identification of equipment on site, problems that might affect progress of the work, accidents, injuries, and other information required by the Owner. All report formats will be in a form approved by Owner.

§ 3.3.2.5 Cost Control

The Construction Manager shall develop a system of cost control for the Work, including regular monitoring of actual costs for activities in progress and estimates for uncompleted tasks and proposed changes. The Construction Manager shall identify variances between actual and estimated costs and report the variances to the Owner and ~~Architect~~A/E Professional, and shall provide this information in its monthly reports to the Owner and ~~Architect~~A/E Professional, in accordance with Section 3.3.2.3 above. In the event the Construction Manager fails to report a variance in its most current monthly report and fails to otherwise promptly notify Owner of such variance, and such failure by Construction Manager results in Owner incurring damages or increases in cost, Owner may assert a Claim pursuant to the General Conditions to seek reimbursement for such costs. In such instances, the Initial Decision Maker shall evaluate the Claim.

ARTICLE 4 OWNER'S RESPONSIBILITIES

§ 4.1 Information and Services Required of the Owner

§ 4.1.1 The Owner shall provide information with reasonable promptness, regarding requirements for and limitations on the Project, including a written program which shall set forth the Owner's objectives, constraints, and criteria, including schedule, space requirements and relationships, flexibility and expandability, special equipment, systems, sustainability and site requirements.

§ 4.1.2 ~~Prior to the execution of the Guaranteed Maximum Price Amendment, the Construction Manager may request in writing that the Owner provide reasonable evidence that the Owner has made financial arrangements to fulfill the Owner's obligations under the Contract. After execution of the Guaranteed Maximum Price Amendment, the Construction Manager may request such information as set forth in A201–2017 Section 2.2.~~Omitted.

§ 4.1.3 The Owner shall establish and periodically update the Owner's budget for the Project, including (1) the budget for the Cost of the Work as defined in Article 7, (2) the Owner's other costs, and (3) reasonable contingencies related to all of these costs. If the Owner significantly increases or decreases the Owner's budget for the Cost of the Work, the Owner shall notify the Construction Manager and ~~Architect~~A/E Professional. The Owner and the ~~Architect~~A/E Professional, in consultation with the Construction Manager, shall thereafter agree to a corresponding change in the Project's scope and quality.

§ 4.1.4 Structural and Environmental Tests, Surveys and Reports. During the Preconstruction Phase, the Owner shall furnish the following information or services with reasonable promptness. The Owner shall also furnish any other information or services under the Owner's control and relevant to the Construction Manager's performance of the Work

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with reasonable promptness after receiving the Construction Manager's written request for such information or services. The Construction Manager shall be entitled to generally rely on the accuracy of information and services furnished by the Owner but shall exercise proper precautions relating to the safe performance of the Work, including the careful review and field verification of such information, and shall promptly notify Owner of any conflicts or discrepancies Construction Manager discovers or should discover (in its capacity and experience as a general contractor).

§ 4.1.4.1 The Owner shall furnish tests, inspections, and reports, required by law and as otherwise agreed to by the parties, such as structural, mechanical, and chemical tests, tests for air and water pollution, and tests for hazardous materials.

§ 4.1.4.2 The Owner shall furnish surveys describing physical characteristics, legal limitations and utility locations for the site of the Project, and a written legal description of the site. The surveys and legal information shall include, as applicable, grades and lines of streets, alleys, pavements and adjoining property and structures; designated wetlands; adjacent drainage; rights-of-way, restrictions, easements, encroachments, zoning, deed restrictions, boundaries and contours of the site; locations, dimensions and other necessary data with respect to existing buildings, other improvements and trees; and information concerning available utility services and lines, both public and private, above and below grade, including inverts and depths. All the information on the survey shall be referenced to a Project benchmark.

§ 4.1.4.3 The Owner, ~~when such services are requested~~upon Construction Manager's reasonable request, shall furnish services of geotechnical engineers, which may include test borings, test pits, determinations of soil bearing values, percolation tests, evaluations of hazardous materials, seismic evaluation, ground corrosion tests and resistivity tests, including necessary operations for anticipating subsoil conditions, with written reports and appropriate recommendations.

§ 4.1.5 During the Construction Phase, the Owner shall furnish information or services required of the Owner by the Contract Documents with reasonable promptness. The Owner shall also furnish any other information or services under the Owner's control and relevant to the Construction Manager's performance of the Work with reasonable promptness after receiving the Construction Manager's written request for such information or services.

§ 4.1.6 If the Owner identified a Sustainable Objective in Article 1, the Owner shall fulfill its responsibilities as required in AIA Document E234™–2019, Sustainable Projects Exhibit, Construction Manager as Constructor Edition, attached to this Agreement.

§ 4.2 Owner's Designated Representative

The Owner shall identify a representative authorized to act on behalf of the Owner with respect to the Project. The Owner's representative shall render decisions promptly and furnish information expeditiously, so as to avoid unreasonable delay in the services or Work of the Construction Manager. Except as otherwise provided in ~~Section 4.2.1~~Article 4 of A201–2017, Modified General Conditions, the ~~Architect~~A/E Professional does not have such authority. The term "Owner" means the Owner or the Owner's authorized representative.

§ 4.2.1 Legal Requirements. The Owner shall furnish all legal, insurance and accounting services, including auditing services, that may be reasonably necessary at any time for the Project to meet the Owner's needs and interests.

§ 4.3 ~~Architect~~A/E Professional

The Owner shall retain an ~~Architect~~A/E Professional to provide services, duties and responsibilities as described in AIA Document B133™–2019, Standard Form of Agreement Between Owner and ~~Architect~~A/E Professional, Construction Manager as Constructor Edition, including any additional services requested by the Construction Manager that are necessary for the Preconstruction and Construction Phase services under this Agreement. The Owner shall provide the Construction Manager with a copy of the scope of services in the executed agreement between the Owner and the ~~Architect~~A/E Professional, and any further modifications to the ~~Architect~~A/E Professional's scope of services in the agreement.

ARTICLE 5 COMPENSATION AND PAYMENTS FOR PRECONSTRUCTION PHASE SERVICES

§ 5.1 Compensation

§ 5.1.1 For the Construction Manager's Preconstruction Phase services described in Sections 3.1 and 3.2, the Owner shall compensate the Construction Manager as follows:

(Insert amount of, or basis for, compensation and include a list of reimbursable cost items, as applicable.)

[insert]

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§ 5.1.2 The hourly billing rates for Preconstruction Phase services of the Construction Manager and the Construction Manager's Consultants and Subcontractors, if any, are set forth below.
(If applicable, attach an exhibit of hourly billing rates or insert them below.)

[insert]« »

§ 5.1.2.1 Hourly billing rates for Preconstruction Phase services include all costs to be paid or incurred by the Construction Manager, as required by law or collective bargaining agreements, for taxes, insurance, contributions, assessments and benefits and, for personnel not covered by collective bargaining agreements, customary benefits such as sick leave, medical and health benefits, holidays, vacations and pensions, and shall remain unchanged unless the parties execute a Modification.

~~**§ 5.1.3** If the Preconstruction Phase services covered by this Agreement have not been completed within « » (« ») months of the date of this Agreement, through no fault of the Construction Manager, the Construction Manager's compensation for Preconstruction Phase services shall be equitably adjusted.~~

§ 5.2 Payments

§ 5.2.1 Unless otherwise agreed, payments for services shall be made monthly in proportion to services performed.

§ 5.2.2 Payments are due and payable upon presentation of the Construction Manager's invoice. Amounts unpaid « » (« »)twenty-one (21) days after the invoice date shall bear interest at the rate entered below~~, or in the absence thereof at the legal rate prevailing from time to time at the principal place of business of the Construction Manager.~~
~~(Insert rate of monthly or annual interest agreed upon.)~~:

« » % « »[insert]

ARTICLE 6 COMPENSATION FOR CONSTRUCTION PHASE SERVICES

§ 6.1 Contract Sum

§ 6.1.1 The Owner shall pay the Construction Manager the Contract Sum in current funds for the Construction Manager's performance of the Contract after execution of the Guaranteed Maximum Price Amendment. The Contract Sum is the Cost of the Work as defined in Article 7 plus the Construction Manager's Fee.

§ 6.1.2 The Construction Manager's Fee:
(State a lump sum, percentage of Cost of the Work or other provision for determining the Construction Manager's Fee.)

« »[insert %] of the Cost of the Work.

§ 6.1.3 The method of adjustment of the Construction Manager's Fee for changes in the Work:

For approved changes in the Work, the rate of the Construction Manager's Fee shall not be adjusted and shall remain equal to [insert %] of the Cost of the Work directly attributable to any such change that is incurred or paid by the Construction Manager during performance of the Work, plus increases in insurance costs and bond costs (if any) based on the stipulated rates set forth in Article 7, below. Consequently, the total amount earned by the Construction Manager as the Construction Manager's Fee may increase, but the basis of the Construction Manager's Fee shall always remain [insert %] of the Cost of the Work that is actually incurred by the Construction Manager. A deductive Change Order shall reduce the GMP by the Cost of the Work for the Change in the Work.« »

§ 6.1.4 Limitations, if any, on a Subcontractor's overhead and profit for increases in the cost of its portion of the Work:

In the event Owner approves and executes a Change Order or Construction Change Directive pursuant to the terms and conditions of the Contract Documents, the maximum cumulative mark-up for overhead and profit to all Subcontractors, if any, for such change Work shall in no event exceed [insert %] of the actual Cost of the Work associated with such Change Order or Construction Change Directive, as the case may be.« »

§ 6.1.5 Rental rates for Construction Manager-owned equipment shall not exceed « »[insert] percent (« » %) of the standard rental rate paid at the place of the Project.

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§ 6.1.6 Liquidated damages, if any:

~~*(Insert terms and conditions for liquidated damages, if any.)*~~

§ 6.1.6.1 Time is of the essence regarding this Agreement and the work contemplated hereunder, and the Owner may suffer financial loss and/or inconvenience if the work is not completed to the satisfaction of the Owner by the time stipulated in the Contract Documents. Therefore, failure to timely complete the work shall result in the Construction Manager being subject to liquidated damages, but not as penalty, in the amount of amount of _____% of the Guaranteed Maximum Price or $_____ for each and every calendar day the work remains incomplete or the items remain undelivered. As compensation due the Owner for loss of use and for additional costs incurred by the Owner due to such non-completion of the work, the Owner shall have the right to deduct the liquidated damages from any amount due, or that may become due to the Construction Manager under the Contract Documents, or to invoice the Construction Manager for such damages if the costs incurred exceed the amount due to the Construction Manager. The Construction Manager and the Owner agree that the amount for liquidated damages is not punitive and is intended to compensate the Owner for difficult to quantify losses.

§ 6.1.6.2 Construction Manager hereby expressly waives and relinquishes any right which it may have to seek to characterize the above noted liquidated damages as a penalty, which the parties agree represents a fair and reasonable estimate of Owner's actual damages at the time of contracting if Construction Manager fails to substantially complete the Work in a timely manner.

§ 6.1.6.3 The amount of Liquidated Damages, if any, shall be deducted by the Owner from Final Payment otherwise due the Contractor. In the event the amount of total Liquidated Damages exceeds the Final Payment, the Owner shall withhold Final Payment and Contractor shall promptly pay to Owner the balance owed.

§ 6.1.6.4 The aforesaid provisions shall not affect the Owner's right to terminate this Agreement as provided in the Contract Documents nor limit any of the other remedies available to the Owner as hereinabove provided, and as provided in the Contract Documents. The Owner's exercise of its right to terminate this Agreement shall not release the Construction Manager from its obligation to pay liquidated damages as set forth herein nor shall it release Construction Manager of its obligations to diligently pursue the appropriate claim against its culpable Subcontractors, suppliers, manufacturers or Subcontractor Default Insurance (if applicable), for the benefit of Owner.

«»

§ 6.1.7 Other:

(Insert provisions for bonus, cost savings or other incentives, if any, that might result in a change to the Contract Sum.)

§ 6.1.7.1 Buyout Savings. Construction Manager may be able to generate buyout savings through the subcontractor buyout process (the "Buyout Savings"). As each portion of the Work is procured by the Construction Manager, the Construction Manager shall determine whether Buyout Savings, if any, exist, which shall be evaluated on a line-item basis for each line item on account of which the Construction Manager procures the Work for more or less than the amount carried on the Schedule of Values therefor. Buyout Savings shall be evaluated on an aggregate basis, meaning that savings from the favorable buy-out of one line item can be used to offset buy-out losses on another line item before the overall calculation of Buyout Savings is performed. Construction Manager shall include in its Schedule of Values, a line item for Buyout Savings which will show all net Buyout Savings. Upon completion of ninety percent (90%) of the Work by count of the Subcontractor buyouts, Construction Manager shall prepare and submit a Subcontractor Buyout Report for Owner's review and approval that lists and summarizes all Subcontractor buyouts to date. For each subcontract awarded, the report shall include a list of all trade line items included in the award and compare the total GMP amount for those line items to the actual award value for the subcontract to calculate the "buyout variance" for each subcontract and then tally these to determine if there is an overall net buyout "savings" or "overrun" at that point. Construction Manager shall continue to buyout the balance of the Project and maintain the aggregate balance of Buyout Savings during the entire Project. When the Project achieves Final Completion, any Buyout Savings achieved, as demonstrated in the Subcontractor Buyout Report, will be split by Owner and Contractor with Owner receiving seventy percent (70%) and Construction Manager receiving thirty percent (30%) by way of Change Order adjusting the GMP.

«»

§ 6.2 Guaranteed Maximum Price

§ 6.2.1 The Construction Manager guarantees that the Contract Sum (including Construction Manager's Fee, Construction Manager's General Conditions, and Contingency) shall not exceed the Guaranteed Maximum Price set forth in the Guaranteed Maximum Price Amendment, subject to additions and deductions by Change Order as provided in the

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Contract Documents. Costs which would cause the Guaranteed Maximum Price to be exceeded shall be paid by the Construction Manager without reimbursement by the Owner.

§ 6.2.2 Allowances, if any, which will be included in the Guaranteed Maximum Price shall be identified on an exhibit attached to the Guaranteed Maximum Price Amendment. Once an allowance item is fully purchased by Construction Manager, including all associated Subcontractor Work, and approved by Owner as set forth in the Contract Documents, the price will be included within the GMP and the former allowance Work will then be removed from the Allowance list. Change Orders concluding the full Allowance scope in this Agreement shall recite that the affected Allowance is closed as an Allowance and included in the GMP.

§ 6.2.4 By submitting the GMP Amendment, Construction Manager represents to Owner that Construction Manager and its subcontractors, material and equipment suppliers have compared and reviewed all general and specific details on the Drawings and Specifications and that conflicts, discrepancies, errors and omissions, which are within the commonly accepted knowledge base of a licensed general contractor, subcontractor, trades persons, manufacturers or other parties required to carry out the work involved in the GMP Amendment have been corrected or clarified prior to execution of the GMP Amendment, and therefore Construction Manager warrants that 1) the GMP includes, without limitation, the cost of correcting all conflicts, discrepancies, errors, or omissions which Construction Manager identified, or should have identified through the exercise of reasonable skill and care of a general contractor, during the pre-construction phase of this Agreement; 2) that Construction Manager's review and comparison of all drawings and specifications has taken into consideration the total and complete functioning of all systems and therefore the Construction Manager represents that the Guaranteed Maximum Price Amendment represents the total cost for complete and functional systems; and 3) that Construction Manager can complete the Project in the time set forth in the GMP Amendment and the approved Project Schedule.

§ 6.2.5 If Owner and Construction Manager are unable to reach an agreement on a Final GMP Amendment, Owner shall be permitted to terminate this Agreement for Convenience, in accordance with the provision set forth in Article 14 of the Modified General Conditions.

§ 6.3 Changes in the Work

§ 6.3.1 The Owner may, without invalidating the Contract, order changes in the Work within the general scope of the Contract consisting of additions, deletions or other revisions. The Owner shall issue such changes in writing. The Construction Manager may be entitled to an equitable adjustment in the Contract Time as a result of changes in the Work, provided same are approved by a written Change Order signed by Owner.

§ 6.3.1.1 The ~~Architect~~A/E Professional may order minor changes in the Work as provided in Article 7 of AIA Document A201–2017, Modified General Conditions ~~of the Contract for Construction~~.

§ 6.3.2 Adjustments to the Guaranteed Maximum Price on account of changes in the Work subsequent to the execution of the Guaranteed Maximum Price Amendment may be determined by any of the methods listed in Article 7 of AIA Document A201–2017, Modified General Conditions ~~of the Contract for Construction~~.

§ 6.3.3 Adjustments to subcontracts awarded on the basis of a stipulated sum shall be determined in accordance with Article 7 of A201–2017, Modified General Conditions, as they refer to "cost" and "fee," and not by Articles 6 and 7 of this Agreement. Adjustments to subcontracts awarded with the Owner's prior written consent on the basis of cost plus a fee (if any) shall be calculated in accordance with the terms of those subcontracts.

§ 6.3.4 In calculating adjustments to the Guaranteed Maximum Price, the terms "cost" and "costs" as used in Article 7 of AIA Document A201–2017, Modified General Conditions, shall mean the Cost of the Work as defined in Article 7 of this Agreement and the term "fee" shall mean the Construction Manager's Fee as defined in Section 6.1.2 of this Agreement.

~~**§ 6.3.5** If no specific provision is made in Section 6.1.3 for adjustment of the Construction Manager's Fee in the case of changes in the Work, or if the extent of such changes is such, in the aggregate, that application of the adjustment provisions of Section 6.1.3 will cause substantial inequity to the Owner or Construction Manager, the Construction Manager's Fee shall be equitably adjusted on the same basis that was used to establish the Fee for the original Work, and the Guaranteed Maximum Price shall be adjusted accordingly.~~

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ARTICLE 7 COST OF THE WORK FOR CONSTRUCTION PHASE

§ 7.1 Costs to Be Reimbursed

§ 7.1.1 The term Cost of the Work shall mean costs necessarily incurred by the Construction Manager in the proper performance of the Work. The Cost of the Work shall include only the items set forth in Sections 7.1 through 7.7.

§ 7.1.2 Where, pursuant to the Contract Documents, any cost is subject to the Owner's prior approval, the Construction Manager shall obtain such approval in writing prior to incurring the cost.

§ 7.1.3 Costs shall be at rates not higher than the standard rates paid at the place of the Project, except with prior approval of the Owner.

§ 7.1.4 The Construction Manager shall use reasonable efforts to provide a minimum of three (3) bids/proposals for all Work included in Cost of the Work for the Owner's review and consideration, prior to the Construction Manager procuring the Work for same. The Construction Manager shall consult with the Owner before awarding the subcontract and shall provide the Owner with a copy of each Subcontractor bid and proposed subcontract for the Owner's review. The recommendation of the bids, proposals, and Subcontractors for the Work included in the Cost of the Work shall be made solely by the Construction Manager, with the Owner providing final approval of the Construction Manager's recommendations in accordance with this Agreement. Upon Owner's request, the Construction Manager shall provide Owner with a complete copy of each subcontract agreement.

§ 7.1.5 There shall be zero ($00.00) mark-up on any reimbursable expenses or Cost of the Work as all mark-up is captured in either Construction Manager's Fee or Construction Manager's General Conditions as set forth in this Agreement.

§ 7.2 Labor Costs

§ 7.2.1 Wages or salaries of construction workers directly employed by the Construction Manager to perform the construction of the Work at the site or, with the Owner's prior approval, at off-site workshops.

§ 7.2.2 Wages or salaries of the Construction Manager's supervisory and administrative personnel when stationed at the site and performing Work, with the Owner's prior approval.

~~§ 7.2.2.1 Wages or salaries of the Construction Manager's supervisory and administrative personnel when performing Work and stationed at a location other than the site, but only for that portion of time required for the Work, and limited to the personnel and activities listed below:~~
~~(Identify the personnel, type of activity and, if applicable, any agreed upon percentage of time to be devoted to the Work.)~~

~~« »~~

§ 7.2.3 Wages and salaries of the Construction Manager's supervisory or administrative personnel engaged at factories, workshops or while traveling, in expediting the production or transportation of materials or equipment required for the Work, but only for that portion of their time required for the Work.

§ 7.2.4 Costs paid or incurred by the Construction Manager, as required by law or collective bargaining agreements, for taxes, insurance, contributions, assessments and benefits and, for personnel not covered by collective bargaining agreements, customary benefits such as sick leave, medical and health benefits, holidays, vacations and pensions, provided such costs are based on wages and salaries included in the Cost of the Work under Sections 7.2.1 through 7.2.3.

§ 7.2.5 ~~If agreed rates for~~The above agreed burden rates for labor costs, in lieu of actual costs, ~~are provided in this Agreement, the rates shall remain unchanged throughout the duration of this Agreement, unless the parties execute a Modification.~~shall remain unchanged throughout the duration of this Agreement.

§ 7.2.6 Construction Manager shall provide a Manpower Staffing Plan showing all anticipated salaried and hourly staff positions as part of the Key Personnel.

§ 7.3 Subcontract Costs

§ 7.3.1 Payments made by the Construction Manager to Subcontractors in accordance with the requirements of the subcontracts and this Agreement.

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§ 7.3.2 Timely and valid claims made by Subcontractors to Construction Manager may only be considered legitimate Subcontractor costs under this Article 7 to the extent that the entitlement and quantum of each Subcontractor claim have been researched and validated as to amount and that the claim is consistent with this Agreement, the cost are reimbursable pursuant to the Agreement, and the Construction Manager concurs in writing with the Subcontractor's position based upon the Subcontractor's documented representations.

§ 7.4 Costs of Materials and Equipment Incorporated in the Completed Construction

§ 7.4.1 Costs, including transportation and storage at the site, of materials and equipment incorporated, or to be incorporated, in the completed construction. Owner must approve in writing all advance payments for Subcontractors deposits and advances for Work deemed "long lead items," or "special order items" or other selected items pertaining to the Work. If the storage of materials or equipment to be incorporated into the Project is required due, in whole or in part, to the failure of Construction Manager to have the applicable portion of the Project ready for incorporation of such materials or equipment in accordance with the Construction Schedule, then such transportation and storage costs shall not be included in the Cost of Work but, instead, shall be at the sole cost of the Construction Manager.

§ 7.4.2 Costs of materials described in the preceding Section 7.4.1 in excess of those actually installed to allow for reasonable waste and spoilage. Unused excess materials, if any, shall become the Owner's property at the completion of the Work or, at the Owner's option, shall be sold by the Construction Manager. Any amounts realized from such sales shall be credited to the Owner as a deduction from the Cost of the Work.

§ 7.5\ Costs of Other Materials and Equipment, Temporary Facilities and Related Items

§ 7.5.1 Costs of transportation, storage, installation, dismantling, maintenance, and removal of materials, supplies, temporary facilities, machinery, equipment and hand tools not customarily owned by construction workers that are provided by the Construction Manager at the site and fully consumed in the performance of the Work. Costs of materials, supplies, temporary facilities, machinery, equipment, and tools, that are not fully consumed, shall be based on the cost or value of the item at the time it is first used on the Project site less the value of the item when it is no longer used at the Project site. Costs for items not fully consumed by the Construction Manager shall mean fair market value.

§ 7.5.2 Rental charges for temporary facilities, machinery, equipment, and hand tools not customarily owned by construction workers that are provided by the Construction Manager at the site, and the costs of transportation, installation, dismantling, minor repairs, and removal of such temporary facilities, machinery, equipment, and hand tools. Rates and quantities of equipment owned by the Construction Manager, or a related party as defined in Section 7.8, shall be subject to the Owner's prior approval. The total rental cost of any such equipment may not exceed the purchase price of any comparable item.

§ 7.5.3 Costs of removal of debris from the site of the Work and its proper and legal disposal.

§ 7.5.4 Costs of the Construction Manager's site office, including general office equipment and supplies.

§ 7.5.5 Costs of materials and equipment suitably stored off the site at a mutually acceptable location, subject to the Owner's prior approval.

§ 7.6 Miscellaneous Costs

§ 7.6.1 The cost of Subcontractor bonds are not a Cost of the Work unless agreed to in writing by the Owner. ~~Premiums for that portion of insurance and bonds required by the Contract Documents that can be directly attributed to this Contract.~~

~~**§ 7.6.1.1** Costs for self-insurance, for either full or partial amounts of the coverages required by the Contract Documents, with the Owner's prior approval.~~

~~**§ 7.6.1.2** Costs for insurance through a captive insurer owned or controlled by the Construction Manager, with the Owner's prior approval.~~

§ 7.6.2 Sales, use, or similar taxes, imposed by a governmental authority, that are related to the Work and for which the Construction Manager is liable.

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§ 7.6.3 Fees and assessments for the building permit, and for other permits, licenses, and inspections, for which the Construction Manager is required by the Contract Documents to pay.

§ 7.6.4 Fees of laboratories for tests required by the Contract Documents; except those related to defective or nonconforming Work for which reimbursement is excluded under Article 13 of AIA Document A201–2017, Modified General Conditions or by other provisions of the Contract Documents, and which do not fall within the scope of Section 7.7.3.

§ 7.6.5 Royalties and license fees paid for the use of a particular design, process, or product, required by the Contract Documents.

§ 7.6.5.1 The cost of defending suits or claims for infringement of patent rights arising from requirements of the Contract Documents, payments made in accordance with legal judgments against the Construction Manager resulting from such suits or claims, and payments of settlements made with the Owner's consent, unless the Construction Manager had reason to believe that the required design, process, or product was an infringement of a copyright or a patent, and the Construction Manager failed to promptly furnish such information to the ~~Architect~~A/E Professional as required by Article 3 of AIA Document A201–2017, Modified General Conditions. The costs of legal defenses, judgments, and settlements shall not be included in the Cost of the Work used to calculate the Construction Manager's Fee or subject to the Guaranteed Maximum Price.

§ 7.6.6 Costs for communications services, electronic equipment, and software, directly related to the Work and located at the site, with the Owner's prior approval.

§ 7.6.7 Costs of document reproductions and delivery charges.

§ 7.6.8 Deposits lost for causes other than the Construction Manager's negligence or failure to fulfill a specific responsibility in the Contract Documents.

§ 7.6.9 Legal, mediation and arbitration costs, including attorneys' fees, other than those arising from disputes between the Owner and Construction Manager, reasonably incurred by the Construction Manager after the execution of this Agreement in the performance of the Work and with the Owner's prior approval, which shall not be unreasonably withheld.

§ 7.6.10 Expenses incurred in accordance with the Construction Manager's standard written personnel policy for relocation and temporary living allowances of the Construction Manager's personnel required for the Work, with the Owner's prior approval.

§ 7.6.11 That portion of the reasonable expenses of the Construction Manager's supervisory or administrative personnel incurred while traveling in discharge of duties connected with the Work.

§ 7.7 Other Costs and Emergencies

§ 7.7.1 Other costs incurred in the performance of the Work, ~~with the Owner's prior approval.~~if and to the extent approved in advance by the Owner.

§ 7.7.2 Costs incurred in taking action to prevent threatened damage, injury, or loss, in case of an emergency affecting the safety of persons and property, as provided in Article 10 of AIA Document A201–2017, Modified General Conditions.

§ 7.7.3 Costs of repairing or correcting damaged or nonconforming Work executed by the Construction Manager, Subcontractors, or suppliers, provided that such damaged or nonconforming Work was not caused by the negligence of, or failure to fulfill a specific responsibility by, the Construction Manager, and only to the extent that the cost of repair or correction is not recovered by the Construction Manager from insurance, sureties, Subcontractors, suppliers, or others.

~~**§ 7.7.4** The costs described in Sections 7.1 through 7.7 shall be included in the Cost of the Work, notwithstanding any provision of AIA Document A201–2017 or other Conditions of the Contract which may require the Construction Manager to pay such costs, unless such costs are excluded by the provisions of Section 7.9.~~

§ 7.8 Related Party Transactions

§ 7.8.1 For purposes of this Section 7.8, the term "related party" shall mean (1) a parent, subsidiary, affiliate, or other entity having common ownership of, or sharing common management with, the Construction Manager; (2) any entity in

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which any stockholder in, or management employee of, the Construction Manager holds an equity interest in excess of ten percent in the aggregate; (3) any entity which has the right to control the business or affairs of the Construction Manager; or (4) any person, or any member of the immediate family of any person, who has the right to control the business or affairs of the Construction Manager.

§ 7.8.2 If any of the costs to be reimbursed arise from a transaction between the Construction Manager and a related party, the Construction Manager shall notify the Owner in writing of the specific nature of the contemplated transaction, including the identity of the related party and the anticipated cost to be incurred, before any such transaction is consummated or cost incurred. If the Owner, after such notification, authorizes the proposed transaction in writing, then the cost incurred shall be included as a cost to be reimbursed, and the Construction Manager shall procure the Work, equipment, goods, or service, from the related party, as a Subcontractor, according to the terms of Article 9. If the Owner fails to authorize the transaction in writing, the Construction Manager shall procure the Work, equipment, goods, or service from some person or entity other than a related party according to the terms of Article 9.

§ 7.9 Costs Not To Be Reimbursed

§ 7.9.1 The Cost of the Work shall not include the items listed below:

.1 Salaries and other compensation of the Construction Manager's personnel stationed at the Construction Manager's principal office or offices other than the site office , except while providing Preconstruction Phase services and except as specifically provided in Section 7.2, or as may be provided in Article 14;

.2 Bonuses, profit sharing, incentive compensation, and any other discretionary payments, paid to anyone hired by the Construction Manager or paid to any Subcontractor or vendor, unless the Owner has provided prior approval;

.3 Expenses of the Construction Manager's principal office and offices other than the site office;

.4 Overhead and general expenses, except as may be expressly included in Sections 7.1 to 7.7;

.5 The Construction Manager's capital expenses, including interest on the Construction Manager's capital employed for the Work;

.6 Costs of the Work due to the fault or negligence of the Construction Manager, its Subcontractors, or any other person or entity employed by the Construction Manager or Subcontractors, or under contract with them or performing work on the Project on behalf of them or under their supervision, or for whose acts the Construction Manager or its Subcontractors may be liable, including, but not limited to the costs of correcting damaged, defective or non-conforming work, disposal and replacement of materials and equipment incorrectly ordered or supplied, and repairing damage to property not forming party of the Work. The Construction Manager specifically agrees that it shall receive no compensation, and the Cost of Work shall not include, any costs incurred by the Construction Manager in repairing or correcting, or supervising the correction or repair of, defective or non-conforming Work performed or supplied by any Subcontractor, material supplier, or any other person or entity employed by the Construction Manager, under contract with the Construction Manager, or performing Work on the Project on behalf of or under the supervision of the Construction Manager or Construction Manager's personnel and that the Construction Manager's sole remedy with respect to the recovery of such costs shall be whatever remedies are contained in the Construction Manager's subcontract agreements with its Subcontractors, suppliers and other persons or entities providing Work on the Project~~Except as provided in Section 7.7.3 of this Agreement, costs due to the negligence of, or failure to fulfill a specific responsibility of the Contract by, the Construction Manager, Subcontractors, and suppliers, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable~~;

.7 Any cost not specifically and expressly described in Sections 7.1 to 7.7;

.8 Costs, other than costs included in Change Orders approved by the Owner, that would cause the Guaranteed Maximum Price to be exceeded; and

.9 Costs for services incurred during the Preconstruction Phase.

ARTICLE 8 DISCOUNTS, REBATES, AND REFUNDS

§ 8.1 Cash discounts obtained on payments made by the Construction Manager shall accrue to the Owner if (1) before making the payment, the Construction Manager included the amount to be paid, less such discount, in an Application for Payment and received payment from the Owner, or (2) the Owner has deposited funds with the Construction Manager with which to make payments; otherwise, cash discounts shall accrue to the Construction Manager. Trade discounts, rebates, refunds, and amounts received from sales of surplus materials and equipment shall accrue to the Owner, and the Construction Manager shall make provisions so that they can be obtained.

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§ 8.2 Amounts that accrue to the Owner in accordance with the provisions of Section 8.1 shall be credited to the Owner as a deduction from the Cost of the Work.

ARTICLE 9 SUBCONTRACTS AND OTHER AGREEMENTS

§ 9.1 Those portions of the Work that the Construction Manager does not customarily perform with the Construction Manager's own personnel shall be performed under subcontracts or other appropriate agreements with the Construction Manager as set forth in Section 3.1.17 of this Agreement. The Owner may designate specific persons from whom, or entities from which, the Construction Manager shall obtain bids. The Construction Manager shall obtain bids from Subcontractors, and from suppliers of materials or equipment fabricated especially for the Work, who are qualified to perform that portion of the Work in accordance with the requirements of the Contract Documents. ~~The Construction Manager shall deliver such bids to the Architect and Owner with an indication as to which bids the Construction Manager intends to accept. The Owner then has the right to review the Construction Manager's list of proposed subcontractors and suppliers in consultation with the Architect and, subject to Section 9.1.1, to object to any subcontractor or supplier.~~ Any advice of the ~~Architect~~A/E Professional or Owner's Representative, or approval or objection by the Owner, shall not relieve the Construction Manager of its responsibility to perform the Work in accordance with the Contract Documents. The Construction Manager shall not be required to contract with anyone to whom the Construction Manager has reasonable objection.

§ 9.1.1 When a specific subcontractor or supplier (1) is recommended to the Owner by the Construction Manager; (2) is qualified to perform that portion of the Work; and (3) has submitted a bid that conforms to the requirements of the Contract Documents without reservations or exceptions, but the Owner requires that another bid be accepted, then the Construction Manager may require that a Change Order be issued to adjust the Guaranteed Maximum Price by the difference between the bid of the person or entity recommended to the Owner by the Construction Manager and the amount of the subcontract or other agreement actually signed with the person or entity designated by the Owner.

§ 9.2 Subcontracts or other agreements shall conform to the applicable payment provisions of this Agreement, and shall not be awarded on the basis of cost plus a fee without the Owner's prior written approval. If a subcontract is awarded on the basis of cost plus a fee, the Construction Manager shall provide in the subcontract for the Owner to receive the same audit rights with regard to the Subcontractor as the Owner receives with regard to the Construction Manager in Article 10.

ARTICLE 10 ACCOUNTING RECORDS

The Construction Manager shall keep full and detailed records and accounts related to the Cost of the Work, and exercise such controls, as may be necessary for proper financial management under this Contract and to substantiate all costs incurred. The accounting and control systems shall be satisfactory to the Owner. The Owner and the Owner's auditors shall, during regular business hours and upon reasonable notice, be afforded access to, and shall be permitted to audit and copy, the Construction Manager's records and accounts, including complete documentation supporting accounting entries, books, job cost reports, correspondence, instructions, drawings, receipts, subcontracts, Subcontractor's proposals, Subcontractor's invoices, purchase orders, vouchers, memoranda, and other data relating to this Contract. The Construction Manager shall preserve these records for a period of four (4) years after Final Payment, or for such longer period as may be required by law. Such right of access may be exercised during the Work or after Substantial Completion of the Work, with respect to records pertaining to contract performance, change orders, Claims, or payment audits including a final payment audit. Such right of access may also be exercised post termination if the Contract is terminated for default or convenience. This Section is applicable to all Change Orders or Claims by or against the Construction Manager and or a Subcontractor of any tier whether or not they affect the GMP. The Construction Manager agrees to include the provisions of this Section in all its contracts and all tier subcontracts with regard to any audits of payments received by the Construction Manager to verify that such payments were made and that such payments were made for the use required by the Project. Audits conducted under this Section shall be in accordance with generally accepted auditing standards and established procedures and guidelines of the reviewing audit agency. The Construction Manager agrees to the disclosure of all information and reports resulting from access to records under this Section to the Owner, provided that the Construction Manager is afforded the opportunity for an audit exit conference. If the Owner audits the Construction Manager's books and records and discovers actual costs or an error in the Construction Manager's favor by more than one percent (1%) of the Cost of the Work to date, the Construction Manager shall reimburse the Owner for the cost of such audit and the Construction Manager shall promptly refund the amount overpaid to the Owner. ~~The Construction Manager shall preserve these records for a period of three years after final payment, or for such longer period as may be required by law.~~

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ARTICLE 11 PAYMENTS FOR CONSTRUCTION PHASE SERVICES

§ 11.1 Progress Payments

§ 11.1.1 Based upon Applications for Payment submitted to the ~~Architect~~Owner's Representative by the Construction Manager, and Certificates for Payment issued by the ~~Architect~~Owner's Representative, the Owner shall make progress payments on account of the Contract Sum, to the Construction Manager, as provided below and elsewhere in the Contract Documents.

§ 11.1.2 The period covered by each Application for Payment shall be one calendar month ending on the last day of the month, or as follows:

« »

§ 11.1.3 Owner/Owner's Representative, Construction Manager and A/E Professional shall meet at the Project site between the 25th and 28th day of each month to review Construction Manager's "Pencil Draw" for that month's Application for Payment (which shall include all amounts through the end of the month), which shall be a preliminary draft of the Application for Payment prepared by Construction Manager. After that meeting, Construction Manager shall revise the Pencil Draw in accordance with any reasonable objection or recommendation of the Owner/Owner's Representative or A/E Professional that is consistent with the requirements of the Contract Documents. Such revised Pencil Draw shall be resubmitted by Construction Manager as the Application for Payment on or by the first (1st) day of a month. The Owner and Owner's Representative shall approve, if correct, and the Owner's Representative shall certify, if correct, the Application for Payment by the seventh (7th) of the month and the Owner shall make payment of the certified amount to the Construction Manager not later than the twenty-first (21st) day of the same month, provided the revised Pencil Draw is accurate. If errors are found in the revised Pencil Draw, it shall be revised and resubmitted for review in accordance with this Section. ~~Provided that an Application for Payment is received by the Architect not later than the « » day of a month, the Owner shall make payment of the amount certified to the Construction Manager not later than the « » day of the « » month. If an Application for Payment is received by the Architect after the application date fixed above, payment of the amount certified shall be made by the Owner not later than « » (« ») days after the Architect receives the Application for Payment.~~

~~(Federal, state or local laws may require payment within a certain period of time.)~~

§ 11.1.4 With each Application for Payment, the Construction Manager shall submit payrolls, petty cash accounts, receipted invoices or invoices with check vouchers attached, and any other evidence required by the Owner or ~~Architect~~Owner's Representative to demonstrate that payments already made by the Construction Manager on account of the Cost of the Work equal or exceed progress payments already received by the Construction Manager, plus payrolls for the period covered by the present Application for Payment, less that portion of the progress payments attributable to the Construction Manager's Fee plus payrolls for the period covered by the present Application for Payment, as evidenced by copies of Construction Manager's payroll register certified by Construction Manager as to its accuracy as support for the fringe benefits and labor burden (any deviation in the payroll register from the Check Activity with Detail previously submitted to the Owner for the prior period must be agreed to by Owner in writing). In addition, as a further condition to payment of each progress payment, Construction Manager shall submit to Owner: (i) a sworn and certified Progress Payment Affidavit, which recites that all laborers, material suppliers and Subcontractors dealing with the Construction Manager have been paid in full through the date of the prior application for payment which has been received by Construction Manager from Owner, with the exception of disputed payments; (ii) a partial release of lien conditioned upon payment from Construction Manager for the current Application for Payment, (iii) partial releases of lien from all lienors providing Work on the applicable Application for Payment through the date of the last payment made, (iv) partial releases of lien conditioned only upon payment from all lienors providing Work on the applicable Application for Payment, through the date of the current Application for Payment, (v) any evidence of payment of any indebtedness incurred with respect to the Work of Construction Manager, as may be required by Owner and/or Owner's Representative and such other evidence that they may reasonably require substantiating that all Work which is the subject of each such Application for Payment has been performed, and (vi) where required by any manufacturers for extended warranties, inspection certificates or other acceptable documentation confirming the acceptable completion of any and all required inspections for the Work performed for which payment is being made.

§ 11.1.5 Each Application for Payment shall be based on the most recent schedule of values submitted by the Construction Manager with the Final GMP Amendment unless subsequently amended by Change Order in accordance with the Contract Documents. If the Schedule of Values is subsequently amended by Change Order in accordance with the Contract Documents, then each subsequent Application for Payment shall be based on the Amended Schedule of Values. The

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schedule of values shall allocate the entire Guaranteed Maximum Price among: (1) the various portions of the Work; (2) any contingency for costs that are included in the Guaranteed Maximum Price but not otherwise allocated to another line item or included in a Change Order; and (3) the Construction Manager's Fee.

§ 11.1.5.1 The Construction Manager's General Conditions shall be shown as separate items. As individual subcontracts are executed, the actual subcontract value will be identified separately in the Schedule of Values in place of the estimates that made up the original Final GMP, with any remaining portion of the line item carried in the same scope of Work, to complete the Work in any particular division, as long as the Final GMP is not increased. The schedule of values shall be prepared in such form and supported by such data to substantiate its accuracy as the ~~Architect~~Owner's Representative may require. The schedule of values shall be used as a basis for reviewing the Construction Manager's Applications for Payment.

§ 11.1.5.2 The allocation of the Guaranteed Maximum Price under this Section 11.1.5 shall not constitute a separate guaranteed maximum price for the Cost of the Work of each individual line item in the schedule of values.

§ 11.1.5.3 When the Construction Manager allocates costs from a contingency to another line item in the schedule of values, the Construction Manager shall submit supporting documentation to the ~~Architect~~Owner's Representative.

§ 11.1.6 Applications for Payment shall show the percentage of completion of each portion of the Work as of the end of the period covered by the Application for Payment. The percentage of completion shall be the lesser of (1) the percentage of that portion of the Work which has actually been completed, or (2) the percentage obtained by dividing (a) the expense that has actually been incurred by the Construction Manager on account of that portion of the Work and for which the Construction Manager has made payment or intends to make payment prior to the next Application for Payment, by (b) the share of the Guaranteed Maximum Price allocated to that portion of the Work in the schedule of values.

§ 11.1.7 In accordance with AIA Document A201–2017, Modified General Conditions, and subject to other provisions of the Contract Documents, the amount of each progress payment shall be computed as follows:

§\ 11.1.7.1 The amount of each progress payment shall first include:

.1 That portion of the Guaranteed Maximum Price properly allocable to completed Work as determined by multiplying the percentage of completion of each portion of the Work by the share of the Guaranteed Maximum Price allocated to that portion of the Work in the most recent schedule of values;

.2 That portion of the Guaranteed Maximum Price properly allocable to materials and equipment delivered and suitably stored at the site for subsequent incorporation in the completed construction or, if approved in writing in advance by the Owner, suitably stored off the site at a location agreed upon in writing;

.3 That portion of Construction Change Directives that the ~~Architect~~Owner's Representative determines, in the ~~Architect's~~Owner's Representative's professional judgment, to be reasonably justified; and

.4 The Construction Manager's Fee, computed upon the Cost of the Work described in the preceding Sections 11.1.7.1.1 and 11.1.7.1.2 at the rate stated in Section 6.1.2 or, if the Construction Manager's Fee is stated as a fixed sum in that Section, an amount that bears the same ratio to that fixed-sum fee as the Cost of the Work included in Sections 11.1.7.1.1 and 11.1.7.1.2 bears to a reasonable estimate of the probable Cost of the Work upon its completion.

§ 11.1.7.2 The amount of each progress payment shall then be reduced by:

.1 The aggregate of any amounts previously paid by the Owner;

.2 The amount, if any, for Work that remains uncorrected and for which the ~~Architect~~Owner's Representative has previously withheld a Certificate for Payment as provided in Article 9 of AIA Document A201–2017, Modified General Conditions;

.3 Any amount for which the Construction Manager does not intend to pay a Subcontractor or material supplier, unless the Work has been performed by others the Construction Manager intends to pay;

.4 For Work performed or defects discovered since the last payment application, any amount for which the ~~Architect~~Owner's Representative may withhold payment, or nullify a Certificate of Payment in whole or in part, as provided in Article 9 of AIA Document A201–2017, Modified General Conditions;

.5 The shortfall, if any, indicated by the Construction Manager in the documentation required by Section 11.1.4 to substantiate prior Applications for Payment, or resulting from errors subsequently discovered by the Owner's auditors in such documentation; and

.6 Retainage withheld pursuant to Section 11.1.8.

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§ 11.1.8 Retainage

§ 11.1.8.1 For each progress payment made prior to Substantial Completion of the Work, the Owner may withhold the following amount, as retainage, from the payment otherwise due:
(Insert a percentage or amount to be withheld as retainage from each Application for Payment. The amount of retainage may be limited by governing law.)

Owner shall withhold Five Percent (5%) retainage on all amounts due Construction Manager for each Application.

§ 11.1.8.1.1 The following items are not subject to retainage:
(Insert any items not subject to the withholding of retainage, such as general conditions, insurance, etc.)

NA

§ 11.1.8.2 Reduction or limitation of retainage, if any, shall be as follows:
(If the retainage established in Section 11.1.8.1 is to be modified prior to Substantial Completion of the entire Work, insert provisions for such modification.)

NA

§ 11.1.8.3 Except as set forth in this Section 11.1.8.3, upon Substantial Completion of the Work, the Construction Manager may submit an Application for Payment that includes the retainage withheld from prior Applications for Payment pursuant to this Section 11.1.8. The Application for Payment submitted at Substantial Completion shall not include retainage as follows:
(Insert any other conditions for release of retainage, such as upon completion of the Owner's audit and reconciliation, upon Substantial Completion.)

NA

~~**§ 11.1.9** If final completion of the Work is materially delayed through no fault of the Construction Manager, the Owner shall pay the Construction Manager any additional amounts in accordance with Article 9 of AIA Document A201–2017.~~

~~**§ 11.1.10** Except with the Owner's prior written approval, the Construction Manager shall not make advance payments to suppliers for materials or equipment which have not been delivered and suitably stored at the site.~~

§ 11.1.9~~11~~ The Owner and the Construction Manager shall agree upon a mutually acceptable procedure for review and approval of payments to Subcontractors, and the percentage of retainage held on Subcontracts, and the Construction Manager shall execute subcontracts in accordance with those agreements.

§ 11.1.9.1 Except with the Owner's prior written approval, the Construction Manager shall not make advance payments to suppliers for materials or equipment which have not been delivered and stored at the site.

§ 11.1.1~~02~~ In taking action on the Construction Manager's Applications for Payment the ~~Architect~~Owner's Representative shall be entitled to rely on the accuracy and completeness of the information furnished by the Construction Manager, and such action shall not be deemed to be a representation that (1) the ~~Architect~~Owner's Representative has made a detailed examination, audit, or arithmetic verification, of the documentation submitted in accordance with Section 11.1.4 or other supporting data; (2) that the ~~Architect~~Owner's Representative has made exhaustive or continuous on-site inspections; or (3) that the ~~Architect~~Owner's Representative has made examinations to ascertain how or for what purposes the Construction Manager has used amounts previously paid on account of the Contract. Such examinations, audits, and verifications, if required by the Owner, will be performed by the Owner's auditors acting in the sole interest of the Owner.

§ 11.1.11 In the event of any breach or default by the Construction Manager under the Contract Documents, Owner may withhold any payment or part of any payment in the amount of the costs and damages incurred by Owner to correct, remedy and/or mitigate any Construction Manager defaults or the amount costs of damages, including actual delay damages, reasonably estimated to be incurred to correct, remedy and/or mitigate any Construction Manager defaults including, but not limited to: (1) defective Work not remedied; (2) claims or liens filed, unless bonded off; (3) failure of the Construction Manager to make payments properly to Subcontractors or for labor, materials, or equipment; (4) failure

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to provide waivers of lien for all lienors giving notices; (5) damage to the Owner's property caused by Contactor, its Subcontractors or anyone working for Construction Manager; (6) failure of the Work to progress satisfactorily or according to schedule; and (7) failure to carry out the Work in accordance with the Contract Documents.

§ 11.1.12 It is understood that each Application for Payment shall constitute a certification and representation by the Construction Manager to the Owner that: (i) the construction has progressed to the point indicated; (ii) the quality of the Work covered by the application is in accordance with the Contract Documents; (iii) there are no liens or claims outstanding or known to exist at the date of the application; (iv) all due and payable bills with respect to the Work have been paid to date or included in the amount requested in the previous application, and there is no known basis for the filing of any construction liens or claims or any other lien or claim on the Work; (v) duly executed waivers and releases have been obtained from all Subcontractors for work done and materials furnished through the date of payment; (vi) the Construction Manager is entitled to payment in the amount requested; (vii) such Application for Payment represents a just estimate of cost reimbursable to Construction Manager under the terms of the Contract Documents, (viii) such Application for Payment has not been front-end-loaded either by Construction Manager or by any of its Subcontractors and (ix) that Construction Manager has not adjusted line items in the Schedule of Values without Owner's prior written consent.

§ 11.2 Final Payment

§ 11.2.1 Subject to the requirements of Section 9.10 of the Modified General Conditions, fFinal payment, constituting the entire unpaid balance of the Contract Sum, shall be made by the Owner to the Construction Manager when

- **.1** the Construction Manager has fully performed the Contract, except for the Construction Manager's responsibility to correct Work as provided in Article 12 of AIA Document A201–2017, Modified General Conditions, and to satisfy other requirements, if any, which extend beyond final payment;
- **.2** the Construction Manager has submitted a final accounting for the Cost of the Work and a final Application for Payment; and
- **.3** a final Certificate for Payment has been issued by the ~~Architect~~Owner's Representative in accordance with Section 11.2.2.2.

Construction Manager understands and agrees that its final application for Final Payment will constitute a further representation that the conditions precedent to Construction Manager's being entitled to Final Payment have been fulfilled.

§ 11.2.2 Within 30 days of the Owner's receipt of the Construction Manager's final accounting for the Cost of the Work, the Owner shall conduct an audit of the Cost of the Work or notify the ~~Architect~~Owner's Representative that it will not conduct an audit.

§ 11.2.2.1 If the Owner conducts an audit of the Cost of the Work, the Owner shall, within 10 days after completion of the audit, submit a written report based upon the auditors' findings to the ~~Architect~~Owner's Representative.

§ 11.2.2.2 Within seven days after receipt of the written report described in Section 11.2.2.1, or receipt of notice that the Owner will not conduct an audit, and provided that the other conditions of Section 11.2.1 have been met, the ~~Architect~~Owner's Representative will either issue to the Owner a final Certificate for Payment with a copy to the Construction Manager, or notify the Construction Manager and Owner in writing of the ~~Architect's~~Owner's Representative's reasons for withholding a certificate as provided in Article 9 of AIA Document A201–2017, Modified General Conditions. ~~The time periods stated in this Section 11.2.2 supersede those stated in Article 9 of AIA Document A201–2017.~~ The ~~Architect~~Owner's Representative is not responsible for verifying the accuracy of the Construction Manager's final accounting.

§ 11.2.2.3 If the Owner's auditors' report concludes that the Cost of the Work, as substantiated by the Construction Manager's final accounting, is less than claimed by the Construction Manager, the Construction Manager shall be entitled to request mediation of the disputed amount without seeking an initial decision pursuant to Article 15 of AIA Document A201–2017, Modified General Conditions. A request for mediation shall be made by the Construction Manager within 30 days after the Construction Manager's receipt of a copy of the ~~Architect's~~Owner's Representative's final Certificate for Payment. Failure to request mediation within this 30-day period shall result in the substantiated amount reported by the Owner's auditors becoming binding on the Construction Manager. Pending a final resolution of the disputed amount, the Owner shall pay the Construction Manager the amount certified in the ~~Architect's~~Owner's Representative's final Certificate for Payment.

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§ 11.2.3 The Owner's final payment to the Construction Manager shall be made no later than 30 days after the issuance of the ~~Architect's~~Owner's Representative's final Certificate for Payment , ~~,~~and Construction Manager's strict and full compliance with all conditions precedent to final payment contained throughout Section 9.10 of the Modified General Conditions and throughout the Contract Documents. ~~or as follows:~~

~~« »~~

~~**§ 11.2.4** If, subsequent to final payment, and at the Owner's request, the Construction Manager incurs costs, described in Sections 7.1 through 7.7, and not excluded by Section 7.9, to correct defective or nonconforming Work, the Owner shall reimburse the Construction Manager for such costs, and the Construction Manager's Fee applicable thereto, on the same basis as if such costs had been incurred prior to final payment, but not in excess of the Guaranteed Maximum Price. If adjustments to the Contract Sum are provided for in Section 6.1.7, the amount of those adjustments shall be recalculated, taking into account any reimbursements made pursuant to this Section 11.2.4 in determining the net amount to be paid by the Owner to the Construction Manager.~~

§ 11.3 Interest

Undisputed p~~P~~ayments which are due under the Contract Documents and unpaid for a period of twenty-one (21) additional days ~~under the Contract~~ shall bear interest from the date payment is due at the rate stated below, ~~or in the absence thereof, at the legal rate prevailing from time to time at the place where the Project is located.~~.
(Insert rate of interest agreed upon, if any.)

~~« »~~[insert] % « »

ARTICLE 12 DISPUTE RESOLUTION

§ 12.1 Initial Decision Maker

§ 12.1.1 Any Claim between the Owner and Construction Manager shall be resolved in accordance with the provisions set forth in this Article 12 and Article 15 of A201–2017, Modified General Conditions. However, for Claims arising from or relating to the Construction Manager's Preconstruction Phase services, no decision by the Initial Decision Maker shall be required as a condition precedent to mediation or binding dispute resolution, and Section 12.1.2 of this Agreement shall not apply.

§ 12.1.2 The ~~Architect~~ Owner's Representative will serve as the Initial Decision Maker pursuant to Article 15 of AIA Document A201–2017, Modified General Conditions, for Claims arising from or relating to the Construction Manager's Construction Phase services.~~, unless the parties appoint below another individual, not a party to the Agreement, to serve as the Initial Decision Maker.~~
~~(If the parties mutually agree, insert the name, address and other contact information of the Initial Decision Maker, if other than the Architect.)~~

~~« »~~
~~« »~~
~~« »~~
~~« »~~

§ 12.2 Binding Dispute Resolution

For any Claim subject to, but not resolved by mediation pursuant to Article 15 of AIA Document A201–2017, Modified General Conditions, the method of binding dispute resolution shall be as follows:
(Check the appropriate box.)

[« »] Arbitration pursuant to Article 15 of AIA Document A201–2017

[X~~« »~~] Litigation in a court of competent jurisdiction

[« »] Other: *(Specify)*

« »

§ 12.3 WAIVER OF TRIAL BY JURY

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IN THE EVENT OF LITIGATION, BOTH PARTIES HEREBY KNOWINGLY, IRREVOCABLY, VOLUNTARILY, AND INTENTIONALLY WAIVE ANY RIGHT EITHER PARTY MAY HAVE TO A TRIAL BY JURY IN RESPECT OF ANY ACTION, PROCEEDING, CLAIM, OR COUNTERCLAIM ARISING OUT OF OR RELATING TO THIS AGREEMENT, OR THE BREACH THEREOF, OR IN CONNECTION WITH THE WORK OR ANY COURSE OF CONDUCT, COURSE OF DEALING, STATEMENTS (WHETHER VERBAL OR WRITTEN), OR ANY ACTIONS OR INACTIONS OF EITHER PARTY.

~~If the Owner and Construction Manager do not select a method of binding dispute resolution, or do not subsequently agree in writing to a binding dispute resolution method other than litigation, Claims will be resolved by litigation in a court of competent jurisdiction.~~

ARTICLE 13 TERMINATION OR SUSPENSION

§ 13.1 Termination Prior to Execution of the Guaranteed Maximum Price Amendment

§ 13.1.1 If the Owner and the Construction Manager do not reach an agreement on the Guaranteed Maximum Price, the Owner may terminate this Agreement upon not less than seven (7) days' written notice to the Construction Manager. ~~, and the Construction Manager may terminate this Agreement, upon not less than seven days' written notice to the Owner.~~

§ 13.1.2 In the event of termination of this Agreement pursuant to Section 13.1.1, the Construction Manager shall be compensated for Preconstruction Phase services and Work performed prior to receipt of a notice of termination, in accordance with the terms of this Agreement. In no event shall the Construction Manager's compensation under this Section exceed the compensation set forth in Section 5.1.

~~**§ 13.1.3** Prior to the execution of the Guaranteed Maximum Price Amendment, the Owner may terminate this Agreement upon not less than seven days' written notice to the Construction Manager for the Owner's convenience and without cause, and the Construction Manager may terminate this Agreement, upon not less than seven days' written notice to the Owner, for the reasons set forth in Article 14 of A201–2017.~~

~~**§ 13.1.4** In the event of termination of this Agreement pursuant to Section 13.1.3, the Construction Manager shall be equitably compensated for Preconstruction Phase services and Work performed prior to receipt of a notice of termination. In no event shall the Construction Manager's compensation under this Section exceed the compensation set forth in Section 5.1.~~

~~**§ 13.1.5** If the Owner terminates the Contract pursuant to Section 13.1.3 after the commencement of the Construction Phase but prior to the execution of the Guaranteed Maximum Price Amendment, the Owner shall pay to the Construction Manager an amount calculated as follows, which amount shall be in addition to any compensation paid to the Construction Manager under Section 13.1.4:~~

- ~~.1 Take the Cost of the Work incurred by the Construction Manager to the date of termination;~~
- ~~.2 Add the Construction Manager's Fee computed upon the Cost of the Work to the date of termination at the rate stated in Section 6.1 or, if the Construction Manager's Fee is stated as a fixed sum in that Section, an amount that bears the same ratio to that fixed sum Fee as the Cost of the Work at the time of termination bears to a reasonable estimate of the probable Cost of the Work upon its completion; and~~
- ~~.3 Subtract the aggregate of previous payments made by the Owner for Construction Phase services.~~

~~**§ 13.1.6** The Owner shall also pay the Construction Manager fair compensation, either by purchase or rental at the election of the Owner, for any equipment owned by the Construction Manager that the Owner elects to retain and that is not otherwise included in the Cost of the Work under Section 13.1.5.1. To the extent that the Owner elects to take legal assignment of subcontracts and purchase orders (including rental agreements), the Construction Manager shall, as a condition of receiving the payments referred to in this Article 13, execute and deliver all such papers and take all such steps, including the legal assignment of such subcontracts and other contractual rights of the Construction Manager, as the Owner may require for the purpose of fully vesting in the Owner the rights and benefits of the Construction Manager under such subcontracts or purchase orders. All Subcontracts, purchase orders and rental agreements entered into by the Construction Manager will contain provisions allowing for assignment to the Owner as described above.~~

~~**§ 13.1.6.1** If the Owner accepts assignment of subcontracts, purchase orders or rental agreements as described above, the Owner will reimburse or indemnify the Construction Manager for all costs arising under the subcontract, purchase order~~

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~~or rental agreement, if those costs would have been reimbursable as Cost of the Work if the contract had not been terminated. If the Owner chooses not to accept assignment of any subcontract, purchase order or rental agreement that would have constituted a Cost of the Work had this agreement not been terminated, the Construction Manager will terminate the subcontract, purchase order or rental agreement and the Owner will pay the Construction Manager the costs necessarily incurred by the Construction Manager because of such termination.~~

§ 13.2 Termination or Suspension Following Execution of the Guaranteed Maximum Price Amendment

§ 13.2.1 Termination

The Contract may be terminated or suspended by the Owner or the Construction Manager only as provided in Article 14 of AIA Document A201–2017, Modified General Conditions.

~~**§ 13.2.2 Termination by the Owner for Cause**~~

~~**§ 13.2.2.1** If the Owner terminates the Contract for cause as provided in Article 14 of AIA Document A201–2017, the amount, if any, to be paid to the Construction Manager under Article 14 of AIA Document A201–2017 shall not cause the Guaranteed Maximum Price to be exceeded, nor shall it exceed an amount calculated as follows:~~

~~.1 Take the Cost of the Work incurred by the Construction Manager to the date of termination;~~

~~.2 Add the Construction Manager's Fee, computed upon the Cost of the Work to the date of termination at the rate stated in Section 6.1 or, if the Construction Manager' Fee is stated as a fixed sum in that Section, an amount that bears the same ratio to that fixed-sum Fee as the Cost of the Work at the time of termination bears to a reasonable estimate of the probable Cost of the Work upon its completion;~~

~~.3 Subtract the aggregate of previous payments made by the Owner; and~~

~~.4 Subtract the costs and damages incurred, or to be incurred, by the Owner under Article 14 of AIA Document A201–2017.~~

~~**§ 13.2.2.2** The Owner shall also pay the Construction Manager fair compensation, either by purchase or rental at the election of the Owner, for any equipment owned by the Construction Manager that the Owner elects to retain and that is not otherwise included in the Cost of the Work under Section 13.2.2.1.1. To the extent that the Owner elects to take legal assignment of subcontracts and purchase orders (including rental agreements), the Construction Manager shall, as a condition of receiving the payments referred to in this Article 13, execute and deliver all such papers and take all such steps, including the legal assignment of such subcontracts and other contractual rights of the Construction Manager, as the Owner may require for the purpose of fully vesting in the Owner the rights and benefits of the Construction Manager under such subcontracts or purchase orders.~~

~~**§ 13.2.3 Termination by the Owner for Convenience**~~

~~If the Owner terminates the Contract for convenience in accordance with Article 14 of AIA Document A201–2017, then the Owner shall pay the Construction Manager a termination fee as follows:~~

~~*(Insert the amount of or method for determining the fee, if any, payable to the Construction Manager following a termination for the Owner's convenience.)*~~

~~**§ 13.3 Suspension**~~

~~The Work may be suspended by the Owner as provided in Article 14 of AIA Document A201–2017; in such case, the Guaranteed Maximum Price and Contract Time shall be increased as provided in Article 14 of AIA Document A201–2017, except that the term "profit" shall be understood to mean the Construction Manager's Fee as described in Sections 6.1 and 6.3.5 of this Agreement.~~

ARTICLE 14 MISCELLANEOUS PROVISIONS

§ 14.1 Terms in this Agreement shall have the same meaning as those in A201–2017, Modified General Conditions. Where reference is made in this Agreement to a provision of AIA Document A201–2017, Modified General Conditions, or another Contract Document, the reference refers to that provision as amended or supplemented by other provisions of the Contract Documents.

§ 14.2 Successors and Assigns

§ 14.2.1 The Owner and Construction Manager, respectively, bind themselves, their partners, successors, assigns and legal representatives to covenants, agreements, and obligations contained in the Contract Documents. Except as provided in Section 14.2.2 of this Agreement, and in Section 13.2.2 of A201–2017, Modified General Conditions, neither party to the Contract shall assign the Contract as a whole without written consent of the other. If either party attempts to make an

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assignment without such consent, that party shall nevertheless remain legally responsible for all obligations under the Contract.

~~**§ 14.2.2** The Owner may, without consent of the Construction Manager, assign the Contract to a lender providing construction financing for the Project, if the lender assumes the Owner's rights and obligations under the Contract Documents. The Construction Manager shall execute all consents reasonably required to facilitate the assignment.~~

§ 14.3 Insurance and Bonds

For all phases of the Project, the Construction Manager and the Owner shall purchase and maintain insurance as set forth in Article 11 of the Modified General Conditions.

~~**§ 14.3.1 Preconstruction Phase**~~

~~The Construction Manager shall maintain the following insurance for the duration of the Preconstruction Services performed under this Agreement. If any of the requirements set forth below exceed the types and limits the Construction Manager normally maintains, the Owner shall reimburse the Construction Manager for any additional cost.~~

~~**§ 14.3.1.1** Commercial General Liability with policy limits of not less than « » ($ « ») for each occurrence and « » ($ « ») in the aggregate for bodily injury and property damage.~~

~~**§ 14.3.1.2** Automobile Liability covering vehicles owned, and non-owned vehicles used, by the Construction Manager with policy limits of not less than « » ($ « ») per accident for bodily injury, death of any person, and property damage arising out of the ownership, maintenance and use of those motor vehicles, along with any other statutorily required automobile coverage.~~

~~**§ 14.3.1.3** The Construction Manager may achieve the required limits and coverage for Commercial General Liability and Automobile Liability through a combination of primary and excess or umbrella liability insurance, provided that such primary and excess or umbrella liability insurance policies result in the same or greater coverages as the coverages required under Sections 14.3.1.1 and 14.3.1.2, and in no event shall any excess or umbrella liability insurance provide narrower coverage than the primary policy. The excess policy shall not require the exhaustion of the underlying limits only through the actual payment by the underlying insurers.~~

~~**§ 14.3.1.4** Workers' Compensation at statutory limits and Employers Liability with policy limits not less than « » ($ « ») each accident, « » ($ « ») each employee, and « » ($ « ») policy limit.~~

~~**§ 14.3.1.5** Professional Liability covering negligent acts, errors and omissions in the performance of professional services, with policy limits of not less than « » ($ « ») per claim and « » ($ « ») in the aggregate.~~

~~**§ 14.3.1.6 Other Insurance**~~

~~*(List below any other insurance coverage to be provided by the Construction Manager and any applicable limits.)*~~

~~Coverage~~	~~Limits~~

~~**§ 14.3.1.7 Additional Insured Obligations.** To the fullest extent permitted by law, the Construction Manager shall cause the primary and excess or umbrella polices for Commercial General Liability and Automobile Liability to include the Owner as an additional insured for claims caused in whole or in part by the Construction Manager's negligent acts or omissions. The additional insured coverage shall be primary and non-contributory to any of the Owner's insurance policies and shall apply to both ongoing and completed operations.~~

~~**§ 14.3.1.8** The Construction Manager shall provide certificates of insurance to the Owner that evidence compliance with the requirements in this Section 14.3.1.~~

~~**§ 14.3.2 Construction Phase**~~

~~After execution of the Guaranteed Maximum Price Amendment, the Owner and the Construction Manager shall purchase and maintain insurance as set forth in AIA Document A133™–2019, Standard Form of Agreement Between Owner and Construction Manager as Constructor where the basis of payment is the Cost of the Work Plus a Fee with a Guaranteed Maximum Price, Exhibit B, Insurance and Bonds, and elsewhere in the Contract Documents.~~

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~~§ 14.3.2.1 The Construction Manager shall provide bonds as set forth in AIA Document A133™ 2019 Exhibit B, and elsewhere in the Contract Documents.~~

~~§ 14.4 Notice in electronic format, pursuant to Article 1 of AIA Document A201 2017, may be given in accordance with AIA Document E203™ 2013, Building Information Modeling and Digital Data Exhibit, if completed, or as otherwise set forth below:~~
~~*(If other than in accordance with AIA Document E203 2013, insert requirements for delivering notice in electronic format such as name, title, and email address of the recipient and whether and how the system will be required to generate a read receipt for the transmission.)*~~

~~« »~~

§ 14.45 Other provisions:

§ 14.4.1 Attorneys' Fees/Prevailing Party.
In the event that any litigation arises out of or under this Agreement, then the prevailing party in such litigation shall be entitled to recover from the non-prevailing party, all reasonable costs of such action, including but not limited to reasonable expert fees, attorneys' fees and paralegal fees for all trial and appellate levels. In any suit, action, or other proceeding, including bankruptcy, arising out of or in any manner relating to the Contract Documents, including without limitation, (i) the enforcement or interpretation of a party's rights or obligations under the Contract Documents (whether in contract, tort, or both), or (ii) the declaration of any rights or obligations under the Contract Documents, the successful or prevailing party, as determined by the court, shall be entitled to recover from the losing party, as determined by the court, reasonable attorneys' fees, paralegal fees, and disbursements (including disbursements which would not otherwise be taxable as cost in the proceeding) and expert witness fees. All references in the Contract Documents to attorneys' fees shall be deemed to include all attorney and paralegal fees and costs incurred pre-litigation as well as through all post-judgment and appellate levels and in connection with collection, and bankruptcy proceedings. In addition to the above, the prevailing party shall be entitled to recover from the non-prevailing party, all litigation costs associated with discovery and production of Electronically Stored Information (ESI).

§ 14.4.2 Severability.
If any term or provision of the Contract, or the application thereof to any person or circumstances, shall be invalid or unenforceable to any extent, the remainder of the Contract or the application of the Contract to persons or circumstances other than those against whom or which such term or provision is invalid or unenforceable, shall not be affected thereby, and each term and provision of the Contract shall be valid and enforceable to the fullest extent permissible by law.

§ 14.4.3 Signatures.
The Contract may be executed in multiple counterparts, each of which will be deemed an original agreement and all of which together will constitute one agreement.

§ 14.4.4 Time.
Unless otherwise provided, Contract Time is the period of time, including authorized adjustments, allotted in the Contract Documents for Substantial Completion of the Work. The term "day" as used in the Contract Documents shall mean calendar day unless otherwise specifically defined. Time limits stated in the Contract Documents are of the essence of the Contract. By executing the Agreement the Construction Manager confirms that the Contract Time is a reasonable period for performing the Work.

§ 14.4.5 Headings.
The headings contained in the Contract are inserted only for convenience and reference are not meant to define, limit or describe the scope or intent of the Contract Documents or in any way to affect the terms and provisions set forth herein.

§ 14.4.6 No Third Party Beneficiaries.
Nothing contained in this Agreement shall create a contractual relationship with or a cause of action in favor of a third party against either the Owner or Construction Manager.

§ 14.4.7 Flow Down.
Construction Manager shall cause this Contract to be incorporated by reference in all agreements entered into between it and its Subcontractors, such that the terms and conditions of the Contract flow down to and bind all Subcontractors, whether specifically required or not by any provision of the Contract Documents. Notwithstanding the foregoing, any

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terms of this Contract with respect to the Construction Manager's Fee are specifically excluded from the flow down provisions of this Contract. Notwithstanding the foregoing, no provisions of the Subcontracts shall flow up or apply to Owner.

§ 14.4.8 Materials Procurement.

Construction Manager, in accordance with its fiduciary duties to Owner, shall use its (and shall cause its Subcontractors to use their) best efforts to limit Owner's exposure to increases in the cost of materials for the Work by locking in prices for same with applicable suppliers and venders in a timely and prudent manner and to avoid increased and unnecessary costs to the Owner. However, to the extent that a price has been locked in with a supplier for materials and the market for such materials later decreases prior to the time such materials are delivered and installed at the Project site, Construction Manager shall use its (and shall cause its Subcontractors to use their) best efforts to reduce the price of such materials.

§ 14.4.9 Excess Materials.

Unused excess materials, if any, shall become the Owner's property at the completion of the Work or, at the Owner's option, shall be sold by the Construction Manager. Any amounts realized from such sales shall be credited to the Owner as a deduction from the Cost of the Work. Any materials provided to Owner in accordance with this Section shall be specifically listed by Construction Manager in a written inventory provided to the Owner detailing the material, material source, and location of the Project for which the material was originally obtained.

§ 14.4.10 Scrutinized Companies

§ 14.4.10.1 Construction Manager certifies that it and its subconsultants are not on the Scrutinized Companies that Boycott Israel List. Pursuant to Section 287.135, F.S., the Owner may immediately terminate this Agreement at its sole option if the Construction Manager or its subconsultants are found to have submitted a false certification; or if Construction Manager, or its subconsultants are placed on the Scrutinized Companies that Boycott Israel List or is engaged in the boycott of Israel during the term of the Agreement.

§ 14.4.10.2 If this Agreement is for more than one million dollars, Construction Manager certifies that it and its subconsultants are also not on the Scrutinized Companies with Activities in Sudan, Scrutinized Companies with Activities in the Iran Petroleum Energy Sector List, or engaged with business operations in Cuba or Syria as identified in Section 287.135, F.S. Pursuant to Section 287.135, F.S., the Owner may immediately terminate this Agreement at its sole option if Construction Manager, its affiliates, or its subconsultants are found to have submitted a false certification; or if Construction Manager, its affiliates, or its subconsultants are placed on the Scrutinized Companies with Activities in Sudan List, or Scrutinized Companies with Activities in the Iran Petroleum Energy Sector List, or engaged with business operations in Cuba or Syria during the term of the Agreement.

§ 14.4.10.3 Construction Manager agrees to observe the above requirements for applicable subcontracts entered into for the performance of work under this Agreement.

§ 14.4.10.4 As provided in Subsection 287.135(8), F.S., if federal law ceases to authorize the above-stated contracting prohibitions then they shall become inoperative.

§ 14.4.11 Sovereign Immunity.

Nothing in this Agreement shall be construed as a waiver of the Owner's sovereign immunity. This Agreement shall not constitute or be construed as a waiver of any of the privileges, rights, defenses, remedies, or immunities available to the Owner. The failure to enforce, or any delay in the enforcement of, any privileges, rights, defenses, remedies, or immunities available to the Owner under the Agreement or under applicable law shall not constitute a waiver of such privileges, rights, defenses, remedies, or immunities or be considered as a basis for estoppel. Owner does not waive any privileges, rights, defenses, or immunities available to Owner by entering into the Agreement or by its conduct prior to or subsequent to entering into the Agreement.

§ 14.4.12 Public Records.

Owner is a public agency subject to Chapter 119, Florida Statutes. To the extent that Construction Manager is acting on behalf of Owner pursuant to Section 119.0701, Florida Statutes, Construction Manager shall:

(i) Keep and maintain public records required by the Owner to perform the Services.

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(ii) Upon request from the Owner's custodian of public records, provide the Owner with a copy of the requested records or allow the records to be inspected or copied within a reasonable time at a cost that does not exceed the cost provided in Florida Statute or as otherwise provided by law.

(iii) Ensure that public records that are exempt or confidential and exempt from public records disclosure requirements are not disclosed except as authorized by law for the duration of the Agreement term and following completion of the Agreement if the Construction Manager does not transfer the records to the Owner.

(iv) Upon completion of the Agreement, transfer, at no cost, to the Owner all public records in possession of the Construction Manager or keep and maintain public records required by the Owner to perform the Services. If the Construction Manager transfers all public records to the Owner upon completion of the Agreement, the Construction Manager shall destroy any duplicate public records that are exempt or confidential and exempt from public records disclosure requirements. If the Construction Manager keeps and maintains public records upon completion of the Agreement, the Construction Manager shall meet all applicable requirements for retaining public records. All records stored electronically must be provided to the Owner, upon request from the Owner's custodian of public records, in a format that is compatible with the information technology systems of the Owner.

(v) If the Construction Manager does not comply with this section, the Owner shall enforce the Contract provisions in accordance with the Contract Documents and may unilaterally cancel this Contract in accordance with state law.

IF THE CONSTRUCTION MANAGER HAS QUESTIONS REGARDING THE APPLICATION OF CHAPTER 119, FLORIDA STATUTES, TO THE CONSTRUCTION MANAGER'S DUTY TO PROVIDE PUBLIC RECORDS RELATING TO THIS AGREEMENT, CONTACT THE CUSTODIAN OF PUBLIC RECORDS AT CITY OF DELRAY BEACH, CITY CLERK, 100 N.W. 1ST AVE., DELRAY BEACH FLORIDA. THE CITY CLERK'S OFFICE MAY BE CONTACTED BY PHONE AT 561-243-7050 OR VIA EMAIL AT CITYCLERK@MYDELRAYBEACH.COM.

«»

§ 14.4.13 Inspector General.

Construction Manager is aware that the Inspector General of Palm Beach County has the authority to investigate and audit matters relating to the negotiation and performance of this Contract and may demand and obtain records and testimony from Construction Manager and its subcontractors and lower tier subcontractors. Construction Manager understands and agrees that in addition to all other remedies and consequences provided by law, the failure of Construction Manager or its subcontractors and lower tier subcontractors to fully cooperate with the Inspector General when requested may be deemed by the ~~City~~Owner to be a material breach of this Agreement justifying its termination.

§ 14.4.14 E-Verify.

By entering into this Agreement Construction Manager acknowledges its obligation to comply with the provisions of Section 448.095, Fla. Stat., "Employment Eligibility." Construction Manager affirms and represents it is registered with the E-Verify system, utilizing same, and will continue to utilize same as required by law. Compliance with this section includes, but is not limited to, utilization of the E-Verify System to verify the work authorization status of all newly hired employees and requiring all subcontractors to provide an affidavit attesting that the subcontractor does not employ, contract with, or subcontract with, an unauthorized alien. Failure to comply with this section will result in the termination of this Agreement, or if your subcontractor knowingly violates the statute, the subcontract must be terminated immediately. Any challenge to termination under this provision must be filed in the Circuit Court no later than 20 calendar days after the date of termination. If terminated for a violation of the statute by Construction Manager, the Construction Manager may be prohibited from conducting future business with the Owner or awarded a solicitation or contract for a

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period of 1 year after the date of termination. All costs incurred to initiate and sustain the aforementioned programs shall be the responsibility of the Construction Manager.

ARTICLE 15 SCOPE OF THE AGREEMENT

§ 15.1 This Agreement represents the entire and integrated agreement between the Owner and the Construction Manager and supersedes all prior negotiations, representations or agreements, either written or oral. This Agreement may be amended only by written instrument signed by both Owner and Construction Manager.

§ 15.2 The following documents comprise the Agreement:

.1 AIA Document A133™–2019, Modified Standard Form of Agreement Between Owner and Construction Manager as Constructor where the basis of payment is the Cost of the Work Plus a Fee with a Guaranteed Maximum Price

.2 AIA Document A133™-2019, Exhibit A, Guaranteed Maximum Price Amendment, if executed

.3 AIA Document A133™–2019, Exhibit B, Insurance and Bonds

.4 AIA Document A201™–2017, Modified General Conditions of the Contract for Construction

.5 AIA Document E203™–2013, Building Information Modeling and Digital Data Exhibit, dated as indicated below:

(Insert the date of the E203-2013 incorporated into this Agreement.)

« », if applicable

.6 Other Exhibits:
(Check all boxes that apply.)

[« »] AIA Document E234™–2019, Sustainable Projects Exhibit, Construction Manager as Constructor Edition, dated as indicated below:
(Insert the date of the E234-2019 incorporated into this Agreement.)

« »

[« »] Supplementary and other Conditions of the Contract:

Document	Title	Date	Pages

.7 Other documents, if any, listed below:
(List here any additional documents that are intended to form part of the Contract Documents. AIA Document A201–2017 provides that the advertisement or invitation to bid, Instructions to Bidders, sample forms, the Construction Manager's bid or proposal, portions of Addenda relating to bidding or proposal requirements, and other information furnished by the Owner in anticipation of receiving bids or proposals, are not part of the Contract Documents unless enumerated in this Agreement. Any such documents should be listed here only if intended to be part of the Contract Documents.)

Exhibit ____ – Initial Construction Schedule
Exhibit ____ – Initial Schedule of Values (To be agreed upon in the GMP Amendment)
Exhibit ____ – Construction Manager's Key Personnel
Exhibit ____ – Warranty Forms
Exhibit ____ – Hurricane Preparedness Plan
Exhibit ____ – RFQ No. ____
Exhibit ____ Phase 1 Scope of Services

« »

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IN WITNESS WHEREOF, the Owner and the Construction Manager executed this Agreement as of the day and year first above written.

ATTEST: OWNER/CITY OF DELRAY BEACH

By: _____

Katerri Johnson, City Clerk Thomas F. Carney, Jr., Mayor

Approved as to form and legal sufficiency:

_____

Lynn Gelin, City Attorney

Construction Manager

By: _____

Print Name: _____

Title: _____

(SEAL)

STATE OF _____

COUNTY OF _____

The foregoing instrument was acknowledged before me by means of ☐ physical presence or ☐ online notarization, this day of , 20 by _____ (name of person), as _____ (type of authority) for _____ (name of party on behalf of whom instrument was executed).

Personally known ___ OR Produced Identification
Type of Identification Produced _____

_____

Notary Public – State of _____

~~This Agreement is entered into as of the day and year first written above.~~

~~**OWNER** *(Signature)*~~ ~~« »« »~~ ~~(Printed name and title)~~	~~**CONSTRUCTION MANAGER** *(Signature)*~~ ~~« »« »~~ ~~(Printed name and title)~~

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AIA® Document A201® – 2017

Modified General Conditions of the Contract for Construction

for the following PROJECT:
(Name and location or address)

RFQ No. [insert]
CMAR GENERAL CONDITIONS TEMPLATE

THE OWNER:
(Name, legal status and address)

The City of Delray Beach
100 NW 1st Avenue
Delray Beach, FL 33444
The Construction Manager:
(Name, legal status, address, and other information)

THE A/E PROFESSIONAL:
(Name, legal status and address)

[insert]

TABLE OF ARTICLES

1 GENERAL PROVISIONS

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13 MISCELLANEOUS PROVISIONS

ADDITIONS AND DELETIONS: The author of this document has added information needed for its completion. The author may also have revised the text of the original AIA standard form. An *Additions and Deletions Report* that notes added information as well as revisions to the standard form text is available from the author and should be reviewed.

This document has important legal consequences. Consultation with an attorney is encouraged with respect to its completion or modification.

For guidance in modifying this document to include supplementary conditions, see AIA Document A503™, Guide for Supplementary Conditions.

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14 TERMINATION OR SUSPENSION OF THE CONTRACT

15 CLAIMS AND DISPUTES

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ARTICLE 1 GENERAL PROVISIONS

§ 1.1 Basic Definitions

§ 1.1.1 The Contract Documents

The Contract Documents are enumerated in the AIA A133-2019 Modified Agreement (the "Agreement") between the Owner and Contractor (referred to as Construction Manager) and consist of the Agreement and Exhibits thereto, these Modified General Conditions of the Contract, Drawings, Specifications, Addenda issued prior to execution of the Contract, other documents listed in the Agreement, and Modifications issued after execution of the Contract. A Modification is (1) a written amendment to the Contract signed by both parties, (2) a Change Order, (3) a Construction Change Directive, or (4) a written order for a minor change in the Work issued by the A/E Professional. The Contract Documents also include the RFQ No. [insert] issued by Owner for this Project. Any of the Contract Documents not attached hereto are hereby incorporated by reference and shall be deemed to be of the same force and effect as if attached hereto. For purposes of the Agreement and these Modified General Conditions, the terms "Contractor" and "Construction Manager" shall be used interchangeably.

§ 1.1.2 The Contract

The Contract Documents form the Contract for Construction. The Contract represents the entire and integrated agreement between the parties hereto and supersedes prior negotiations, representations, or agreements, either written or oral. The Contract may be amended or modified only by a Modification. The Contract Documents shall not be construed to create a contractual relationship of any kind (1) between the Contractor and the A/E Professional or the A/E Professional's consultants, (2) between the Owner and a Subcontractor or a Sub-subcontractor, (3) between the Owner and the A/E Professional or the A/E Professional's consultants, or (4) between any persons or entities other than the Owner and the Contractor, it being specifically understood and agreed that none of the Contractor's Subcontractors, Sub-subcontractors, materialmen and equipment suppliers shall be deemed to be a third-party beneficiary of this Contract. The A/E Professional shall, however, be entitled to performance and enforcement of obligations under the Contract intended to facilitate performance of the A/E Professional's duties.

§ 1.1.3 The Work

The term "Work" means the construction and services required by the Contract Documents, whether completed or partially completed and includes all Work that is reasonably inferable therefrom as being necessary to accomplish the intent of the Contract Documents and fully functioning systems and a fully functioning Project, all in accordance with and as required by all applicable federal, state and local building codes, laws, ordinances, rules and regulations. The Work includes all labor, materials, equipment, and services provided or to be provided by the Contractor to fulfill the Contractor's obligations. The Work may constitute the whole or a part of the Project.

§ 1.1.4 The Project

The Project is the total construction of which the Work performed under the Contract Documents may be the whole or a part and which may include construction by the Owner and by Separate Contractors.

§ 1.1.5 The Drawings

The Drawings are the graphic and pictorial portions of the Contract Documents showing the design, location and dimensions of the Work, generally including plans, elevations, sections, details, schedules, and diagrams.

§ 1.1.6 The Specifications

The Specifications are that portion of the Contract Documents consisting of the written requirements for materials, equipment, systems, standards and workmanship for the Work, and performance of related services.

§ 1.1.7 Instruments of Service

Instruments of Service are representations, in any medium of expression now known or later developed, of the tangible and intangible creative work performed by the A/E Professional and the A/E Professional's consultants under their respective professional services agreements. Instruments of Service may include, without limitation, studies, surveys, models, sketches, drawings, specifications, and other similar materials.

§ 1.1.8 Initial Decision Maker

The Initial Decision Maker is the person identified in the Agreement to render initial decisions on Claims in accordance with Section 15.2. The Owner's Representative as identified in the Agreement shall serve as the Initial Decision Maker. The Initial Decision Maker shall not show partiality to the Owner or Contractor and shall not be liable for results of interpretations or decisions rendered in good faith.

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§ 1.1.9 Knowledge

The terms "knowledge," "recognize," and "discover," their respective derivatives, and similar terms in the Contract Documents as used in reference to the Contractor shall be interpreted to mean that which the Contractor reasonably knows, reasonably recognizes, and reasonably discovers or should discover in exercising the reasonable care, skill, and diligence required by the Contract Documents in his capacity as a Contractor. Analogously, the expression "reasonably inferable" and similar terms in the Contract Documents shall be interpreted to mean reasonably inferable by a contractor familiar with the Project and exercising the reasonable care, skill, and diligence required of the Contractor by the Contract Documents.

§ 1.1.10 Words such as "provide," "furnish," furnish and install," "supply," "include," and similar terms shall, unless otherwise noted, be directions to Contractor to provide and pay for all labor, materials and services necessary for the proper execution and completion of the relevant Contractor's Work. The term "any" shall be interpreted as any and all whenever more than one item would be applicable for completion of the Work in accordance with the Contract Documents.

§ 1.2 Correlation and Intent of the Contract Documents

§ 1.2.1 The intent of the Contract Documents is to include all items necessary for the proper execution and completion of the Work by the Contractor. The Contract Documents are complementary, and what is required by one shall be as binding as if required by all; performance by the Contractor shall be required only to the extent consistent with the Contract Documents and reasonably inferable from them as being necessary to produce the indicated results.

§ 1.2.1.1 The invalidity of any provision of the Contract Documents shall not invalidate the Contract or its remaining provisions. If it is determined that any provision of the Contract Documents violates any law, or is otherwise invalid or unenforceable, then that provision shall be revised to the extent necessary to make that provision legal and enforceable. In such case the Contract Documents shall be construed, to the fullest extent permitted by law, to give effect to the parties' intentions and purposes in executing the Contract.

§ 1.2.2 Organization of the Specifications into divisions, sections and articles, and arrangement of Drawings shall not control the Contractor in dividing the Work among Subcontractors or in establishing the extent of Work to be performed by any trade.

§ 1.2.3 Unless otherwise stated in the Contract Documents, words that have well-known technical or construction industry meanings are used in the Contract Documents in accordance with such recognized meanings. To the extent any conflict or discrepancy exists between the Contract Documents that cannot be resolved between the parties, interpretations will be based on the following priorities: (a) This Agreement; (b) the Modified General Conditions; (c) all Exhibits hereto, as modified; (d) executed Modifications, if any, with those of a later date having precedence over those of an earlier date; (e) Drawings and Specifications; and (f) any other Contract Documents. On the Drawings, given dimensions shall take precedence over scaled measurements, and large scale drawings over small scale drawings. Before ordering any materials or doing any Work, the Contractor shall verify measurements at the Project site and shall be responsible for the correctness of such measurements. The Contractor must call any such conflict or discrepancy between the Contract Documents and/or between the Contract Documents and applicable standards, codes and ordinances and/or between the Contract Documents and the existing Project it discovers to the Owner's attention, in writing, prior to proceeding with the Work. To the extent Contractor has sufficient information and access to do so, Contractor must verify all grades, elevations, dimensions, locations and quantities indicated on the Contract Drawings prior to the performance of Work. The Contractor shall, therefore, satisfy itself as to the accuracy of all grades, elevations, dimensions, locations and quantities. In all cases of interconnection of its Work with existing or other Work, it shall verify at the site all grades, elevations, dimensions, locations and quantities relating to such existing or other Work. Any errors due to the Contractor's failure to so verify all such grades, elevations, dimensions, locations and quantities shall be promptly rectified by the Contractor without any additional cost to the Owner. Any differences found shall be submitted to the A/E Professional for resolution before proceeding with the Work and in such time so as not to delay the progress of the Work. Whenever a product to be furnished by Contractor requires it to be in accordance with a Federal Specification, an ASTM Standard, an American National Standards Institute Specification or other Association Standard, including the requirement of compliance with any local certifications for products such as a Notice of Acceptance approving the product, the Contractor shall present an affidavit from the manufacturer when provided by the manufacturer and, when requested by the A/E Professional or Owner or as set forth in the Specifications certifying that the product complies with the particular Standard or Specification. When provided by the manufacturer and requested by the A/E Professional or Owner the specified support test data shall be submitted to substantiate compliance.

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§ 1.3 Capitalization
Terms capitalized in these Modified General Conditions include those that are (1) specifically defined, (2) the titles of numbered articles, or (3) the titles of other documents published by the American Institute of A/E Professionals.

§ 1.4 Interpretation
§ 1.4.1 In the interest of brevity the Contract Documents frequently omit modifying words such as "all" and "any" and articles such as "the" and "an," but the fact that a modifier or an article is absent from one statement and appears in another is not intended to affect the interpretation of either statement.

§ 1.4.2 Execution of the Contract by the Contractor is a representation that the Contractor has visited the site, become familiar with local conditions under which the Work is to be performed and correlated personal observations with requirements of the Contract Documents. Claims for additional costs or extensions of time because of the failure of Contractor to familiarize itself with conditions at the Project site will not be allowed. The Contractor shall be solely responsible for providing a safe place for the performance of the Work. The Owner shall not be required to make any adjustment in the Contract Sum or grant an extension to the Contract Time in connection with any failure by the Contractor to comply with the requirements of this Article.

§ 1.5 Ownership and Use of Drawings, Specifications, and Other Instruments of Service
§ 1.5.1 To the extent set forth in the agreement between the Owner and the A/E Professional, the A/E Professional and the A/E Professional's consultants shall be deemed the authors and owners of their respective Instruments of Service, including the Drawings and Specifications, and retain all common law, statutory, and other reserved rights in their Instruments of Service, including copyrights. The Contractor, Subcontractors, Sub-subcontractors, and suppliers shall not own or claim a copyright in the Instruments of Service. Submittal or distribution to meet official regulatory requirements or for other purposes in connection with the Project is not to be construed as publication in derogation of the A/E Professional's or A/E Professional's consultants' reserved rights.

§ 1.5.2 The Contractor, Subcontractors, Sub-subcontractors, and suppliers are authorized to use and reproduce the Instruments of Service provided to them, subject to any protocols established pursuant to Sections 1.7 and 1.8, solely and exclusively for execution of the Work. All copies made under this authorization shall bear the copyright notice, if any, shown on the Instruments of Service. The Contractor, Subcontractors, Sub-subcontractors, and suppliers may not use the Instruments of Service on other projects or for additions to the Project outside the scope of the Work without the specific written consent of the Owner, A/E Professional, and the A/E Professional's consultants.

§ 1.5.3 Contractor shall maintain at the Project Site, and shall make available to Owner and A/E Professional, one record copy of the Drawings marked to indicate any deviations from the Contract Documents (the "As-Built Drawings") in good order. The As-Built Drawings shall be prepared and updated during the prosecution of the Work. The prints for As-Built Drawing use will be a set of black-line prints provided by A/E Professional to Contractor at the start of construction. Contractor shall maintain said set in good condition and shall use colored pencils to mark-up said set with "as-built information" in a legible manner to show: (i) deviations from the Drawings made during construction; (ii) details in the Work not previously shown; (iii) changes to existing conditions or existing conditions found to differ from those shown on any existing drawings; (iv) the actual installed position of equipment, piping, conduits, light switches, electric fixtures, circuiting, ducts, dampers, access panels, control valves, drains, openings and stub-outs; and (v) such other information as either Owner or A/E Professional may reasonably request. At the completion of the Work, Contractor shall deliver all As-Built Drawings to Owner. Final payment and any retention shall not be due and owing to Contractor until the final As-Built Drawings required above are delivered to Owner.

§ 1.6 Notice
§ 1.6.1 Except as otherwise provided in Section 1.6.2, where the Contract Documents require one party to notify or give notice to the other party, such notice shall be provided in writing to the designated representative of the party to whom the notice is addressed and shall be deemed to have been duly served if delivered in person, by mail, by courier, or by electronic transmission if a method for electronic transmission is set forth in the Agreement.

§ 1.6.2 Notice of Claims as provided in Section 15.1.3 shall be provided in writing and shall be deemed to have been duly served only if delivered to the designated representative of the party to whom the notice is addressed by certified or registered mail, or by courier providing proof of delivery.

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§ 1.7 Digital Data Use and Transmission

The parties shall agree upon protocols governing the transmission and use of Instruments of Service or any other information or documentation in digital form. The parties will use AIA Document E203™–2013, Building Information Modeling and Digital Data Exhibit, to establish the protocols for the development, use, transmission, and exchange of digital data.

§ 1.8 Building Information Models Use and Reliance

Any use of, or reliance on, all or a portion of a building information model without agreement to protocols governing the use of, and reliance on, the information contained in the model and without having those protocols set forth in AIA Document E203™–2013, Building Information Modeling and Digital Data Exhibit, and the requisite AIA Document G202™–2013, Project Building Information Modeling Protocol Form, shall be at the using or relying party's sole risk and without liability to the other party and its contractors or consultants, the authors of, or contributors to, the building information model, and each of their agents and employees.

ARTICLE 2 OWNER

§ 2.1 General

§ 2.1.1 The Owner is the person or entity identified as such in the Agreement and is referred to throughout the Contract Documents as if singular in number. The Owner shall designate in writing a representative who shall have express authority to bind the Owner with respect to all matters requiring the Owner's approval or authorization. Except as otherwise provided in Section 4.2.1, the A/E Professional does not have such authority. The term "Owner" means the Owner or the Owner's authorized representative.

§ 2.1.2 Owner shall provide Contractor with a copy of the Notice of Commencement, as required by Florida law, that it will file for the Project.

§ 2.2 Omitted.

§ 2.3 Information and Services Required of the Owner

§ 2.3.1 Except for permits and fees that are the responsibility of the Contractor under the Contract Documents, including those required under Section 3.7.1, the Owner shall secure and pay for necessary approvals, easements, assessments and charges required for construction, use or occupancy of permanent structures or for permanent changes in existing facilities.

§ 2.3.2 The Owner has retained an A/E Professional lawfully licensed to practice architecture or engineering, or an entity lawfully practicing architecture or engineering, in the jurisdiction where the Project is located. That person or entity is identified as the A/E Professional in the Agreement and is referred to throughout the Contract Documents as if singular in number.

§ 2.3.3 If the employment of the A/E Professional terminates, the Owner shall employ a successor to whom the Contractor has no reasonable objection and whose status under the Contract Documents shall be that of the A/E Professional.

§ 2.3.4 The Owner shall furnish surveys describing physical characteristics, legal limitations and utility locations for the site of the Project, and a legal description of the site. The Contractor shall be entitled to rely on the accuracy of information furnished by the Owner but shall exercise proper precautions relating to the safe performance of the Work.

§ 2.3.5 The Owner shall furnish information or services required of the Owner by the Contract Documents with reasonable promptness. The Owner shall also furnish any other information or services under the Owner's control and relevant to the Contractor's performance of the Work with reasonable promptness after receiving the Contractor's written request for such information or services.

§ 2.3.6 Unless otherwise provided in the Contract Documents, the Owner shall furnish to the Contractor one copy of the Contract Documents for purposes of making reproductions pursuant to Section 1.5.2.

§ 2.4 Owner's Right to Stop the Work

If the Contractor fails to correct Work that is not in accordance with the requirements of the Contract Documents as required by Section 12.2 or fails to carry out Work in accordance with the Contract Documents, the Owner may issue a written order to the Contractor to stop the Work, or any portion thereof, until the cause for such order has been

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eliminated; however, the right of the Owner to stop the Work shall not give rise to a duty on the part of the Owner to exercise this right for the benefit of the Contractor or any other person or entity, except to the extent required by Section 6.1.3.

§ 2.5 Owner's Right to Carry Out the Work

If the Contractor defaults or neglects to carry out the Work in accordance with the Contract Documents and fails within a ten-day period after receipt of notice from the Owner to commence and continue correction of such default or neglect with diligence and promptness, the Owner may, without prejudice to other remedies the Owner may have, correct such default or neglect. Such action by the Owner and amounts charged to the Contractor are both subject to prior approval of the A/E Professional and the A/E Professional may, pursuant to Section 9.5.1, withhold or nullify a Certificate for Payment in whole or in part, to the extent reasonably necessary to reimburse the Owner for the reasonable cost of correcting such deficiencies, including Owner's expenses and compensation for the A/E Professional additional services of the A/E Professional and/or Owner's Representative made necessary by such default, neglect, or failure. If current and future payments are not sufficient to cover such amounts, the Contractor shall pay the difference to the Owner. If the Contractor disagrees with the actions of the Owner or the A/E Professional, or the amounts claimed as costs to the Owner, the Contractor may file a Claim pursuant to Article 15.

ARTICLE 3 CONTRACTOR

§ 3.1 General

§ 3.1.1 The Contractor is the person or entity identified as such in the Agreement and is referred to throughout the Contract Documents as if singular in number. The Contractor shall be lawfully licensed in the jurisdiction where the Project is located. The Contractor shall designate in writing a representative who shall have express authority to bind the Contractor with respect to all matters under this Contract. The term "Contractor" means the Contractor or the Contractor's authorized representative.

§ 3.1.2 The Contractor shall perform the Work in accordance with the Contract Documents.

§ 3.1.3 The Contractor shall not be relieved of its obligations to perform the Work in accordance with the Contract Documents either by activities or duties of the A/E Professional in the A/E Professional's administration of the Contract, or by tests, inspections or approvals required or performed by persons or entities other than the Contractor.

§ 3.1.4 Prior to commencement of the Work, Contractor shall provide the Owner with copies of the above current licenses. Contractor further represents that it has read, examined and understands the pertinent Contract Documents and that it is qualified and able to perform this Work; that it has a sufficient number of qualified personnel to assure timely performance of this Work; that it has the proper tools and equipment to perform this Work; and that it is financially capable of fully performing the Work under this Contract.

§ 3.2 Review of Contract Documents and Field Conditions by Contractor

§ 3.2.1 Execution of the Contract by the Contractor is a representation that the Contractor has visited the site, become generally familiar with local conditions under which the Work is to be performed, and correlated personal observations with requirements of the Contract Documents.

§ 3.2.2 Because the Contract Documents are complementary, the Contractor shall, before starting each portion of the Work, carefully study and compare the various Contract Documents relative to that portion of the Work, as well as the information furnished by the Owner pursuant to Section 2.3.4, shall take field measurements of any existing conditions related to that portion of the Work, and shall observe any conditions at the site affecting it. These obligations are for the purpose of facilitating coordination and construction by the Contractor and are not for the purpose of discovering errors, omissions, or inconsistencies in the Contract Documents; however, the Contractor shall promptly report to the A/E Professional and Owner any errors, inconsistencies or omissions discovered by or made known to the Contractor as a request for information in such form as the A/E Professional may require. It is recognized that the Contractor's review is made in the Contractor's capacity as a contractor and not as a licensed design professional, unless otherwise specifically provided in the Contract Documents.

§ 3.2.3 The Contractor is not required to ascertain that the Contract Documents are in accordance with applicable laws, statutes, ordinances, codes, rules and regulations, or lawful orders of public authorities, but the Contractor shall promptly report to the A/E Professional any nonconformity discovered by or made known to the Contractor as a request for information in such form as the A/E Professional may require. The Contractor shall be liable for damage, loss or expense to the Owner, including, without limitation, delays and the cost of correcting defective construction,

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resulting from the Contractor's performing any construction activity which it knows or should know involves such errors, inconsistency, omission or variation.

§ 3.2.4 If the Contractor believes that additional cost or time is involved because of clarifications or instructions the A/E Professional issues in response to the Contractor's notices or requests for information pursuant to Sections 3.2.2 or 3.2.3, the Contractor shall submit Claims as provided in Article 15. If the Contractor fails to perform the obligations of Sections 3.2.2 or 3.2.3, the Contractor shall not be entitled to any increase in Contract Price or Contract Time and shall pay such costs and damages to the Owner, subject to Section 15.1.7, as would have been avoided if the Contractor had performed such obligations.

§ 3.2.5 The Contractor represents and warrants that the construction means, methods, procedures and techniques necessary to perform the Work will be consistent with and conform to: (1) good and sound practices within the construction industry; (2) generally prevailing and accepted industry standards applicable to the Work; (3) requirements of any warranties applicable to the Work; and (4) applicable, laws, codes, orders and ordinances which bear upon the Contractor's performance of the Work.

§ 3.3 Supervision and Construction Procedures

§ 3.3.1 The Contractor shall supervise and direct the Work, using the Contractor's best skill and attention. The Contractor shall be solely responsible for, and have control over, construction means, methods, techniques, sequences, and procedures, and for coordinating all portions of the Work under the Contract. If the Contract Documents give specific instructions concerning construction means, methods, techniques, sequences, or procedures, the Contractor shall evaluate the jobsite safety thereof and shall be solely responsible for the jobsite safety of such means, methods, techniques, sequences, or procedures. If the Contractor determines that such means, methods, techniques, sequences or procedures may not be safe, the Contractor shall give timely notice to the Owner and A/E Professional, and shall propose alternative means, methods, techniques, sequences, or procedures. The A/E Professional shall evaluate the proposed alternative solely for conformance with the design intent for the completed construction. Unless the A/E Professional objects to the Contractor's proposed alternative, the Contractor shall perform the Work using its alternative means, methods, techniques, sequences, or procedures.

§ 3.3.2 The Contractor shall be responsible to the Owner for acts and omissions of the Contractor's employees, Subcontractors and their agents and employees, and other persons or entities performing portions of the Work for, or on behalf of, the Contractor or any of its Subcontractors.

§ 3.3.3 The Contractor shall be responsible for inspection of portions of Work already performed to determine that such portions are in proper condition to receive subsequent Work.

§ 3.3.4 Contractor has the responsibility to ensure that all material and equipment suppliers, manufacturers, and Subcontractors, and their respective agents and employees adhere to the requirements of the Contract Documents, and that they order and provide all materials, equipment and supplies in a timely manner. Contractor shall coordinate its Work with that of all others under its control or Owner's control working on or supplying the Project. Contractor shall be responsible for coordination, locations, and routing of all material and equipment as designed by the Owner, A/E Professional, Engineers, and other consultants of the Owner. In areas and locations where the proper and most effective location and routing cannot be made as indicated or coordinated, Contractor shall contact Owner and A/E Professional in writing and meet with all others involved before proceeding with installations, to plan the most effective and efficient method of overall installation. Contractor shall pay all monthly utilities charges for construction until Substantial Completion.

§ 3.3.5 Contractor's Compliance with Contract Documents.

The Contractor shall give all notices, and warrants and represents that the Work when completed will be constructed in compliance with the Contract Documents and all applicable federal, state and local laws, codes, regulations, permits, decisions, orders, professional licenses, ordinances, and other legal requirements of the authorities have jurisdiction over the Project. Contractor shall bear responsibility for and bear all costs necessary to insure full compliance with the Contract Documents and all applicable laws, codes and ordinances, including the cost of removing existing Work, the cost of replacing any Work with Work conforming to the applicable requirements and any attorney's fees or other expenses incurred by Owner in responding to any complaints, citations, court orders, administrative orders or similar governmental edicts or process. The provisions of this Section shall survive the completion and final payment or termination of this Contract.

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§ 3.4 Labor and Materials

§ 3.4.1 Unless otherwise provided in the Contract Documents, the Contractor shall provide and pay for labor, materials, equipment, tools, construction equipment and machinery, water, heat, utilities, transportation, and other facilities and services necessary for proper execution and completion of the Work, whether temporary or permanent and whether or not incorporated or to be incorporated in the Work.

§ 3.4.2 Except in the case of minor changes in the Work approved by the A/E Professional in accordance with Section 3.12.8 or ordered by the A/E Professional in accordance with Section 7.4, the Contractor may make substitutions only with the consent of the Owner, after evaluation by the A/E Professional and in accordance with a Change Order or Construction Change Directive.

§ 3.4.3 The Contractor shall enforce strict discipline and good order among the Contractor's employees and other persons carrying out the Work. The Contractor shall not permit employment of unfit persons or persons not properly skilled in tasks assigned to them.

§ 3.5 Warranty

§ 3.5.1 The Contractor warrants to the Owner and A/E Professional that the Work and materials and equipment furnished under the Contract will be of good quality and new unless the Contract Documents require or permit otherwise. The Contractor further warrants that the Work will conform to the requirements of the Contract Documents and will be free from defects, except for those inherent in the quality of the Work the Contract Documents require or permit. Work, materials, or equipment not conforming to these requirements may be considered defective. If required by the A/E Professional, the Contractor shall furnish satisfactory evidence as to the kind and quality of materials and equipment.

§ 3.5.2 All material, equipment, or other special warranties required by the Contract Documents shall be issued in the name of the Owner, or shall be transferable to the Owner, and shall commence in accordance with Section 9.8.4.

§ 3.5.3 Warranty Forms.

The Contractor shall obtain warranties, for a minimum period of one (1) year from Final Completion, from all subcontractors in the form attached as Exhibit ___ to the Agreement. Contractor agrees that it shall secure Extended Warranties for all items having Extended Warranties from the applicable subcontractors, or equipment or material manufacturers, as set forth in the Exhibits to Agreement. Any warranties obtained by the Contractor which deviate from the forms attached hereto must be approved by Owner.

§ 3.5.4 Contractor shall provide to the Owner one (1) electronic copy of the following information:

.1 All Subcontractor warranties fully executed in the form approved by the Owner;

.2 All Extended Warranties required by the Contract Documents;

.3 The Contractor's warranty;

.4 A list of all Subcontractors, Sub-subcontractors and suppliers who performed work on the Project or who furnished materials for use in the Project, such list to include the name, address, telephone number and responsible person at all such entities;

The delivery, endorsement or assignment of such warranties shall not release the Contractor from obligations pursuant to the Contract Documents.

§ 3.5.5 If the Contractor fails to commence to correct defective or nonconforming Work within three (3) business days from written notice to Contractor, the Owner may correct such defective or nonconforming Work. If the Contractor commences to correct such defective or nonconforming Work but fails to diligently and continuously work on such correction, the Owner may upon an additional three (3) business days' notice to Contractor, correct such item at Contractor's sole cost and expense. Owner may deduct such costs from any monies due Contractor. If the defective or nonconforming Work is discovered after final payment, then Contractor shall pay such cost and expense, including attorney's fees incurred. The Contractor shall bear all costs of correcting such defective Work.

§ 3.5.6 The warranty obligations of this Article shall survive completion and final payment or termination of this

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Contract for the Work performed to the date of termination.

§ 3.5.7 In the case of an emergency, Contractor, within twenty four (24) hours of written notice by Owner and/or A/E Professional, shall diligently and continuously pursue any necessary repairs or replacements of defects until corrected and will restore the Work to the condition required by the Contract Documents. Contractor shall restore surface, subsurface, collateral and primary conditions disturbed during warranty work to their prior condition. Contractor agrees that if Contractor fails to diligently pursue correction of any deficiency in a continuous and expeditious manner until completion, Owner may, in its sole discretion, correct such deficiencies at Contractor's sole and exclusive expense and that such action shall not invalidate any conditions of the Contract Documents. Contractor shall indemnify and hold Owner harmless from any claims, loss, damage or expense due to defects in the Work.

§ 3.5.8 The Contractor shall bear the cost of correcting destroyed or damaged construction, whether completed or partially completed, of the Owner or separate contractors caused by the Contractor's correction or removal of Work which is not in accordance with the requirements of the Contract Documents without reimbursement from the Owner.

§ 3.5.9 If the Owner prefers to accept Work which is not in accordance with the requirements of the Contract Documents, the Owner may do so in writing instead of requiring its removal and correction, in which case the Contract Sum will be reduced as appropriate and equitable. Such adjustment shall be effected whether or not final payment has been made.

§ 3.5.10 Prior to Substantial Completion, Contractor shall obtain all required inspections or other required documentation by the suppliers and Manufacturers' representatives for equipment and supplies during the course of performing the Work and during the warranty period, in order to ensure that all Manufacturer warranties will be honored thorough out the Manufacturer's entire warranty period.

§ 3.6 Taxes

The Contractor shall pay sales, consumer, use and similar taxes for the Work provided by the Contractor that are legally enacted when bids are received or negotiations concluded, whether or not yet effective or merely scheduled to go into effect.

§ 3.7 Permits, Fees, Notices and Compliance with Laws

§ 3.7.1 Unless otherwise provided in the Contract Documents, the Contractor shall secure and pay for the building permit as well as for other permits, fees, licenses, and inspections by government agencies necessary for proper execution and completion of the Work that are customarily secured after execution of the Contract and legally required at the time bids are received or negotiations concluded.

§ 3.7.2 The Contractor shall comply with and give notices required by applicable laws, statutes, ordinances, codes, rules and regulations, and lawful orders of public authorities applicable to performance of the Work.

§ 3.7.3 If the Contractor performs Work knowing it to be contrary to applicable laws, statutes, ordinances, codes, rules and regulations, or lawful orders of public authorities, the Contractor shall assume appropriate responsibility for such Work and shall bear the costs attributable to correction.

§ 3.7.4 Concealed or Unknown Conditions

If the Contractor encounters conditions at the site that are (1) subsurface or otherwise concealed physical conditions that differ materially from those indicated in the Contract Documents or (2) unknown physical conditions of an unusual nature that differ materially from those ordinarily found to exist and generally recognized as inherent in construction activities of the character provided for in the Contract Documents, the Contractor shall promptly provide notice to the Owner and the A/E Professional before conditions are disturbed and in no event later than 14 days after first observance of the conditions. The A/E Professional will promptly investigate such conditions and, if the A/E Professional determines that they differ materially and cause an increase or decrease in the Contractor's cost of, or time required for, performance of any part of the Work, will recommend that an equitable adjustment be made in the Contract Sum or Contract Time, or both. If the A/E Professional determines that the conditions at the site are not materially different from those indicated in the Contract Documents and that no change in the terms of the Contract is justified, the A/E Professional shall promptly notify the Owner and Contractor, stating the reasons. If either party disputes the A/E Professional's determination or recommendation, that party may submit a Claim as provided in Article 15.

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§ 3.7.5 If, in the course of the Work, the Contractor encounters human remains or recognizes the existence of burial markers, archaeological sites or wetlands not indicated in the Contract Documents, the Contractor shall immediately suspend any operations that would affect them and shall notify the Owner and A/E Professional. Upon receipt of such notice, the Owner shall promptly take any action necessary to obtain governmental authorization required to resume the operations. The Contractor shall continue to suspend such operations until otherwise instructed by the Owner but shall continue with all other operations that do not affect those remains or features. Requests for adjustments in the Contract Sum and Contract Time arising from the existence of such remains or features may be made as provided in Article 15.

§ 3.8 Allowances

§ 3.8.1 The Contractor shall include in the Contract Sum all allowances stated in the Contract Documents. Items covered by allowances shall be supplied for such amounts and by such persons or entities as the Owner may direct, but the Contractor shall not be required to employ persons or entities to whom the Contractor has reasonable objection.

§ 3.8.2 Unless otherwise provided in the Contract Documents,

- **.1** allowances shall cover the cost to the Contractor of materials and equipment delivered at the site and all required taxes, less applicable trade discounts;
- **.2** Contractor's costs for unloading and handling at the site, labor, installation costs, overhead, profit, and other expenses contemplated for stated allowance amounts shall be included in the Contract Sum but not in the allowances; and
- **.3** whenever costs are more than or less than allowances or if they are deleted, the Contract Sum shall be adjusted accordingly by Change Order. The amount of the Change Order shall reflect (1) the difference between actual costs and the allowances under Section 3.8.2.1 and (2) changes in Contractor's costs under Section 3.8.2.2.

§ 3.8.3 Materials and equipment under an allowance shall be selected by the Owner with reasonable promptness.

§ 3.9 Superintendent

§ 3.9.1 The Contractor shall employ a competent superintendent and necessary assistants who shall be in attendance at the Project site during performance of the Work. The superintendent shall represent the Contractor, and communications given to the superintendent shall be as binding as if given to the Contractor.

§ 3.9.2 Contractor shall assign to the Project team the key employees ("Key Employees") including without limitation engineers, a superintendent, and a project manager, a list of which is attached as Exhibit ___ to the Agreement, who shall not be replaced without the Owner's prior written consent, which shall not be unreasonably withheld. Unauthorized replacement of the Key Employees by the Contractor may be deemed to be a material breach of this Agreement. If it is necessary to replace the Key Employee(s), the Contractor shall so advise the Owner in writing and the replacement individual shall likewise be subject to the Owner's approval. The Owner may reply within fourteen A/E Professional(14) days of receipt of the information, stating whether the Owner or the A/E Professional (1) has reasonable objection to the proposed superintendent or Key Employees or (2) requires additional time for review. Failure of the Owner to provide notice within the 14-day period shall constitute notice of no reasonable objection.

§ 3.9.3 The Contractor shall not employ a proposed superintendent or Key Employees to whom the Owner or A/E Professional has made reasonable and timely objection. The Contractor shall not change the superintendent without the Owner's consent, which shall not unreasonably be withheld or delayed.

§ 3.10 Contractor's Construction and Submittal Schedules

§ 3.10.1 The Contractor, promptly after being awarded the Contract, shall submit for the Owner's and A/E Professional's information a Contractor's construction schedule for the Work. The schedule shall contain detail appropriate for the Project, including (1) the date of commencement of the Work, interim schedule milestone dates, and the date of Substantial Completion; (2) an apportionment of the Work by construction activity; and (3) the time required for completion of each portion of the Work. The schedule shall provide for the orderly progression of the Work to completion and shall not exceed time limits current under the Contract Documents. The schedule shall be revised at appropriate intervals as required by the conditions of the Work and Project.

§ 3.10.2 The Contractor, promptly after being awarded the Contract and thereafter as necessary to maintain a current submittal schedule, shall submit a submittal schedule for the A/E Professional's approval. The A/E Professional's approval shall not be unreasonably delayed or withheld. The submittal schedule shall (1) be coordinated with the

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Contractor's construction schedule, and (2) allow the A/E Professional reasonable time to review submittals. If the Contractor fails to submit a submittal schedule, or fails to provide submittals in accordance with the approved submittal schedule, the Contractor shall not be entitled to any increase in Contract Sum or extension of Contract Time based on the time required for review of submittals.

§ 3.10.3 The Contractor shall perform the Work in strict accordance with the original schedules submitted to the Owner and A/E Professional unless a revision to the schedule is approved in writing by the Owner.

§ 3.10.4 The original construction schedule and all subsequently submitted updated construction schedules shall be in a detailed precedence-style, resource loaded critical path method (CPM) type format satisfactory to the Owner and the A/E Professional which shall also: (1) provide a graphic representation of all activities and events that will occur during performance of the Work; (2) identify each phase of construction and occupancy; and (3) set forth dates that are critical in ensuring the timely and orderly completion of the Work in accordance with the requirements of the Contract Documents (hereinafter referred to as "Milestone Dates"). Contractor shall provide Owner will the original/planned, resource loaded schedule electronic files in P6 native electronic files (.xer format). Upon review and acceptance by the Owner and the A/E Professional of the Milestone Dates, the construction schedule shall be deemed part of the Contract Documents and attached to the Agreement as a Exhibit ___ to be incorporated in the Contract Documents. The Contractor shall monitor the progress of the Work for conformance with the requirements of the construction schedule and shall promptly advise the Owner of any delays or potential delays. The accepted construction schedule shall be updated one time each month to reflect actual conditions and Contractor shall provide Owner with a copy of the updated resource loaded schedule, the electronic files in P6 native electronic files (.xer format), and a list of all changes made to the schedule, at the time Contractor submits its monthly Payment Application. In the event any progress report or schedule update indicates any delays, the Contractor shall propose an affirmative plan to correct the delay, including resequencing of the Work, overtime and/or additional labor, if necessary. In no event shall any progress report constitute an adjustment in the Contract Time, Milestone Dates, or the Contract Sum unless any such adjustment is agreed to by the Owner and authorized pursuant to properly executed written Change Order. Contractor shall maintain such progress schedule on a current basis in accordance with the provisions of this Section and shall keep proper records available to inspection by Owner to substantiate actual activity, duration and completion dates.

§ 3.10.5 In the event the Owner determines that the performance of the Work, as of a Milestone Date, has not progressed or reached the level of completion required by the Contract Documents, the Owner shall have the right to order the Contractor, in writing, to take corrective measures necessary to expedite the progress of construction, including, without limitation, (1) working additional shifts or overtime, (2) supplying additional manpower, equipment, and facilities, (3) re-sequencing the Work to avoid the effects of the potential delay; and (4) other similar measures utilizing the most cost effective and reasonable acceleration methods possible to avoid delays and liquidated damages. All such measures required to keep the Project on schedule and to avoid delays shall be a Cost of the Work but shall not be a basis to increase the Contract Sum.

§ 3.10.6 All time limits and obligations are of the essence in the Contract Documents.

§ 3.10.7 The Owner may exercise the rights furnished the Owner under or pursuant to this Section as frequently as the Owner deems necessary to ensure that the Contractor's performance of the Work will comply with any Milestone Date and/or the Substantial Completion Date set forth in the Contract Documents. Alternatively, Owner may exercise termination rights as provided for in the Contract Documents.

§ 3.11 Documents and Samples at the Site

The Contractor shall make available, at the Project site, the Contract Documents, including Change Orders, Construction Change Directives, and other Modifications, in good order and marked currently to indicate field changes and selections made during construction, and the approved Shop Drawings, Product Data, Samples, and similar required submittals. These shall be in electronic form or paper copy, available to the A/E Professional and Owner, and delivered to the A/E Professional for submittal to the Owner upon completion of the Work as a record of the Work as constructed.

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§ 3.12 Shop Drawings, Product Data and Samples

§ 3.12.1 Shop Drawings are drawings, diagrams, schedules, and other data specially prepared for the Work by the Contractor or a Subcontractor, Sub-subcontractor, manufacturer, supplier, or distributor to illustrate some portion of the Work.

§ 3.12.2 Product Data are illustrations, standard schedules, performance charts, instructions, brochures, diagrams, and other information furnished by the Contractor to illustrate materials or equipment for some portion of the Work.

§ 3.12.3 Samples are physical examples that illustrate materials, equipment, or workmanship, and establish standards by which the Work will be judged.

§ 3.12.4 Shop Drawings, Product Data, Samples, and similar submittals are not Contract Documents. Their purpose is to demonstrate how the Contractor proposes to conform to the information given and the design concept expressed in the Contract Documents for those portions of the Work for which the Contract Documents require submittals. Review by the A/E Professional is subject to the limitations of Section 4.2.7. Informational submittals upon which the A/E Professional is not expected to take responsive action may be so identified in the Contract Documents. Submittals that are not required by the Contract Documents may be returned by the A/E Professional without action.

§ 3.12.5 The Contractor shall review for compliance with the Contract Documents, approve, and submit to the A/E Professional, Shop Drawings, Product Data, Samples, and similar submittals required by the Contract Documents, in accordance with the submittal schedule approved by the A/E Professional or, in the absence of an approved submittal schedule, with reasonable promptness and in such sequence as to cause no delay in the Work or in the activities of the Owner or of Separate Contractors.

§ 3.12.6 By submitting Shop Drawings, Product Data, Samples, and similar submittals, the Contractor represents to the Owner and A/E Professional that the Contractor has (1) reviewed and approved them, (2) determined and verified materials, field measurements and field construction criteria related thereto, or will do so, and (3) checked and coordinated the information contained within such submittals with the requirements of the Work and of the Contract Documents.

§ 3.12.7 The Contractor shall perform no portion of the Work for which the Contract Documents require submittal and review of Shop Drawings, Product Data, Samples, or similar submittals, until the respective submittal has been approved by the A/E Professional.

§ 3.12.8 The Work shall be in accordance with approved submittals except that the Contractor shall not be relieved of responsibility for deviations from the requirements of the Contract Documents by the A/E Professional's approval of Shop Drawings, Product Data, Samples, or similar submittals, unless the Contractor has specifically notified the A/E Professional of such deviation at the time of submittal and (1) the A/E Professional has given written approval to the specific deviation as a minor change in the Work, or (2) a Change Order or Construction Change Directive has been issued authorizing the deviation. The Contractor shall not be relieved of responsibility for errors or omissions in Shop Drawings, Product Data, Samples, or similar submittals, by the A/E Professional's approval thereof.

§ 3.12.9 The Contractor shall direct specific attention, in writing or on resubmitted Shop Drawings, Product Data, Samples, or similar submittals, to revisions other than those requested by the A/E Professional on previous submittals. In the absence of such notice, the A/E Professional's approval of a resubmission shall not apply to such revisions.

§ 3.12.10 The Contractor shall not be required to provide professional services that constitute the practice of A/E Professionalure or engineering unless such services are specifically required by the Contract Documents for a portion of the Work or unless the Contractor needs to provide such services in order to carry out the Contractor's responsibilities for construction means, methods, techniques, sequences, and procedures. The Contractor shall not be required to provide professional services in violation of applicable law.

§ 3.12.10.1 If professional design services or certifications by a design professional related to systems, materials, or equipment are specifically required of the Contractor by the Contract Documents, the Owner and the A/E Professional will specify all performance and design criteria that such services must satisfy. The Contractor shall be entitled to rely upon the adequacy and accuracy of the performance and design criteria provided in the Contract Documents. The Contractor shall cause such services or certifications to be provided by an appropriately licensed design professional, whose signature and seal shall appear on all drawings, calculations, specifications, certifications, Shop Drawings, and

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other submittals prepared by such professional. Shop Drawings, and other submittals related to the Work, designed or certified by such professional, if prepared by others, shall bear such professional's written approval when submitted to the A/E Professional. The Owner and the A/E Professional shall be entitled to rely upon the adequacy and accuracy of the services, certifications, and approvals performed or provided by such design professionals, provided the Owner and A/E Professional have specified to the Contractor the performance and design criteria that such services must satisfy. Pursuant to this Section 3.12.10, the A/E Professional will review and approve or take other appropriate action on submittals only for the limited purpose of checking for conformance with information given and the design concept expressed in the Contract Documents.

§ 3.12.10.2 If the Contract Documents require the Contractor's design professional to certify that the Work has been performed in accordance with the design criteria, the Contractor shall furnish such certifications to the A/E Professional at the time and in the form specified by the A/E Professional.

§ 3.13 Use of Site

The Contractor shall confine operations at the site to areas permitted by applicable laws, statutes, ordinances, codes, rules and regulations, lawful orders of public authorities, and the Contract Documents and shall not unreasonably encumber the site with materials or equipment. If the Work requires the use of sidewalks, public ways or other areas outside of the Owner's Project site, the Contractor shall be responsible for obtaining all necessary approvals for such work, and Contractor shall pay for and obtain all necessary permits, including but not limited to road closure permits. The Contractor shall also arrange and pay for all local police and fire officers and personnel required to be present at or adjacent to the Project site in connection with the work. The Contractor must secure all materials and equipment that are stored on the Project site and shall take all safety precautions necessary to protect such materials and equipment. The Contractor shall be responsible, as a Cost of the Work included as part of the Contract Sum, for all measures to protect the Project site and property adjacent to the Project, from the Contractor's Work.

§ 3.14 Cutting and Patching

§ 3.14.1 The Contractor shall be responsible for cutting, fitting, or patching required to complete the Work or to make its parts fit together properly. All areas requiring cutting, fitting, or patching shall be restored to the condition existing prior to the cutting, fitting, or patching, unless otherwise required by the Contract Documents.

§ 3.14.2 The Contractor shall not damage or endanger a portion of the Work or fully or partially completed construction of the Owner or Separate Contractors by cutting, patching, or otherwise altering such construction, or by excavation. The Contractor shall not cut or otherwise alter construction by the Owner or a Separate Contractor except with written consent of the Owner and of the Separate Contractor. Consent shall not be unreasonably withheld. The Contractor shall not unreasonably withhold, from the Owner or a Separate Contractor, its consent to cutting or otherwise altering the Work.

§ 3.15 Cleaning Up and Repair

§ 3.15.1 The Contractor shall at all times keep the premises and surrounding area free from accumulation of waste materials and rubbish caused by operations under the Contract. At completion of the Work, the Contractor shall, at its sole cost and expense, remove waste materials, rubbish, the Contractor's tools, construction equipment, machinery, and surplus materials from and about the Project.

§ 3.15.2 If the Contractor fails to clean up as provided in the Contract Documents, the Owner may do so and the Owner shall be entitled to reimbursement from the Contractor or Owner may deduct the cost of cleanup from any amounts due Contractor.

§ 3.15.3 Contractor agrees to immediately repair at its sole cost and expense all damages to the Property, including, but not limited to, any damages to real or personal property arising from or relating to Contractor's performance of the Work to the reasonable satisfaction of the Owner.

§ 3.16 Access to Work

The Contractor shall provide the Owner and A/E Professional with access to the Work in preparation and progress wherever located.

§ 3.17 Royalties, Patents and Copyrights

The Contractor shall pay all royalties and license fees. The Contractor shall defend suits or claims for infringement of copyrights and patent rights and shall hold the Owner and A/E Professional harmless from loss on account thereof,

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but shall not be responsible for defense or loss when a particular design, process, or product of a particular manufacturer or manufacturers is required by the Contract Documents, or where the copyright violations are contained in Drawings, Specifications, or other documents prepared by the Owner or A/E Professional. However, if an infringement of a copyright or patent is discovered by, or made known to, the Contractor, the Contractor shall be responsible for the loss unless the information is promptly furnished to the A/E Professional.

§ 3.18 Indemnification

§ 3.18.1 To the fullest extent permitted by law, the Contractor shall defend, indemnify and hold harmless the Owner, A/E Professional, A/E Professional's consultants, and agents and employees of any of them from and against claims, damages, losses, and expenses, including but not limited to attorneys' fees (at the trial and appellate levels), arising out of or resulting from performance of the Work, regardless of whether or not such claim, damage, loss, or expense is caused in part by a party indemnified hereunder. Such obligation shall not be construed to negate, abridge, or reduce other rights or obligations of indemnity that would otherwise exist as to a party or person described in this Section 3.18.

§ 3.18.2 In any and all claims against the Indemnified Parties by any employee of the Contractor, or anyone for whose acts any of them may be liable, the indemnification obligation under this provision of this Contract shall not be limited in any way by any limitation on the amount or type of damages, compensation or benefits payable by or on behalf of the Contractor or any Subcontractor under Workers Compensation Acts, Disability Benefit Acts or other employee benefit acts.

§ 3.18.3 The Parties hereto acknowledge and agree that, to the extent any portion of the indemnification provisions contained herein is deemed void or unenforceable in any action or proceeding, then such portion shall be considered severed such that it will not affect the remaining portions of these indemnification provisions.

§ 3.18.4 The Indemnitors' indemnity obligations under this Section shall also specifically include, without limitation, all claims, fines, penalties, damages, liability, costs, fees, expenses (including, without limitation, reasonable attorneys' fees and expenses), and punitive and consequential damages (if any) arising out of, or in connection with or attributable to, any claims made against the Indemnified Parties for (i) bodily injury, sickness, disease, death, or destruction of tangible property caused by Contractor and/or any of its Subcontractors and/or Sub-subcontractors, (ii) violation of or failure to comply with any law, statute, ordinance, rule, regulation, code or requirement of a public authority that bears upon the performance of the Work by the Contractor, and/or any of the Indemnitors, or any person or entity for whom they are responsible, (iii) Contractor's failure to comply with any provision of the Contract Documents including Warranty obligations, and obligations to correct damaged and defective work, (iv) means, methods, procedures, techniques, or sequences of execution or performance of the Work, and/or (v) failure to secure and pay for permits, fees, approvals, licenses, and inspections as required under this Contract and/or the other the Contract Documents, or any violation of any permit or other approval of a public authority applicable to the Work, by the Contractor, a Subcontractor, or any person or entity for whom either is responsible. Moreover, and without limiting the foregoing, the Indemnitor's indemnity obligations under this Section include any and all claims by third parties against Indemnified Parties for consequential damages arising from and/or in connection with this Contract and/or the performance and/or failure of the Work.

§ 3.18.5 The Contractor shall indemnify and hold harmless all of the Indemnified Parties from and against any costs and expenses (including reasonable attorneys' fees for all trial and appellate levels) incurred by any of the Indemnified Parties in enforcing any of the Contractor's defense, indemnity and hold-harmless obligations under this Contract.

§ 3.18.6 The Contractor shall include in all Subcontracts provisions by which each Subcontractor agrees to defend, indemnify and hold harmless Contractor and the Indemnified Parties from and against liability, damages, losses and costs, including, but not limited to, reasonable attorneys' fees for all trial and appellate levels, arising out of, in connection with, or resulting from the performance of the Work or any Subcontractor's obligations under the Contract Documents to the same extent and in the same manner as the Contractor is liable to Owner pursuant to this provision.

§ 3.18.7 The provisions of this Section shall survive final completion and final payment or termination of this Contract.

ARTICLE 4 A/E PROFESSIONAL

§ 4.1 General

§ 4.1.1 The A/E Professional is the person or entity retained by the Owner pursuant to Section 2.3.2 and identified as such in the Agreement.

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§ 4.1.2 Duties, responsibilities, and limitations of authority of the A/E Professional as set forth in the Contract Documents shall not be restricted, modified, or extended without written consent of the Owner, Contractor, and A/E Professional. Consent shall not be unreasonably withheld.

§ 4.2 Administration of the Contract

§ 4.2.1 The A/E Professional will provide administration of the Contract as described in the Contract Documents and will be an Owner's representative with the authorities described herein during construction until the date the A/E Professional issues the final Certificate for Payment. The A/E Professional will have authority to act on behalf of the Owner only to the extent provided in the Contract Documents.

§ 4.2.2 The A/E Professional will visit the site at intervals appropriate to the stage of construction, or as otherwise agreed with the Owner, to become generally familiar with the progress and quality of the portion of the Work completed, and to determine in general if the Work observed is being performed in a manner indicating that the Work, when fully completed, will be in accordance with the Contract Documents. However, the A/E Professional will not be required to make exhaustive or continuous on-site inspections to check the quality or quantity of the Work. The A/E Professional will not have control over, charge of, or responsibility for the construction means, methods, techniques, sequences or procedures, or for the safety precautions and programs in connection with the Work, since these are solely the Contractor's rights and responsibilities under the Contract Documents.

§ 4.2.3 On the basis of the site visits, the A/E Professional will keep the Owner reasonably informed about the progress and quality of the portion of the Work completed, and promptly report to the Owner (1) known deviations from the Contract Documents, (2) known deviations from the most recent construction schedule submitted by the Contractor, and (3) defects and deficiencies observed in the Work. The A/E Professional will not be responsible for the Contractor's failure to perform the Work in accordance with the requirements of the Contract Documents. The A/E Professional will not have control over or charge of, and will not be responsible for acts or omissions of, the Contractor, Subcontractors, or their agents or employees, or any other persons or entities performing portions of the Work.

§ 4.2.4 Communications

The Owner and Contractor shall include the A/E Professional in all communications that relate to or affect the A/E Professional's services or professional responsibilities. The Owner shall promptly notify the A/E Professional of the substance of any direct communications between the Owner and the Contractor otherwise relating to the Project. Communications by and with the A/E Professional's consultants shall be through the A/E Professional. Communications by and with Subcontractors and suppliers shall be through the Contractor. Communications by and with Separate Contractors shall be through the Owner. The Contract Documents may specify other communication protocols. Contractor hereby authorizes and consents to direct communications, at any time and in any fashion, between Owner and any Subcontractors and Sub-subcontractors on the Project, regarding the Work performed on the Project and the status of payments to said persons or entities for said Work.

§ 4.2.5 Based on the A/E Professional's evaluations of the Contractor's Applications for Payment, the A/E Professional will review and certify the amounts due the Contractor and will issue Certificates for Payment in such amounts.

§ 4.2.6 The Owner, Owner's Representative, and A/E Professional have authority to reject Work that does not conform to the Contract Documents. Whenever the A/E Professional considers it necessary or advisable, the A/E Professional will have authority to require inspection or testing of the Work in accordance with Sections 13.4.2 and 13.4.3, whether or not the Work is fabricated, installed or completed. However, neither this authority of the A/E Professional nor a decision made in good faith either to exercise or not to exercise such authority shall give rise to a duty or responsibility of the A/E Professional to the Contractor, Subcontractors, suppliers, their agents or employees, or other persons or entities performing portions of the Work.

§ 4.2.7 The A/E Professional will review and approve, or take other appropriate action upon, the Contractor's submittals such as Shop Drawings, Product Data, and Samples, but only for the limited purpose of checking for conformance with information given and the design concept expressed in the Contract Documents. The A/E Professional's action will be taken in accordance with the submittal schedule approved by the A/E Professional or, in the absence of an approved submittal schedule, with reasonable promptness while allowing sufficient time in the A/E Professional's professional judgment to permit adequate review. Review of such submittals is not conducted for the purpose of determining the accuracy and completeness of other details such as dimensions and quantities, or for

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substantiating instructions for installation or performance of equipment or systems, all of which remain the responsibility of the Contractor as required by the Contract Documents. The A/E Professional's review of the Contractor's submittals shall not relieve the Contractor of the obligations under Sections 3.3, 3.5, and 3.12. The A/E Professional's review shall not constitute approval of safety precautions or of any construction means, methods, techniques, sequences, or procedures. The A/E Professional's approval of a specific item shall not indicate approval of an assembly of which the item is a component.

§ 4.2.8 The A/E Professional may prepare Change Orders and Construction Change Directives, and may order minor changes in the Work as provided in Section 7.4. The A/E Professional will investigate and make determinations and recommendations regarding concealed and unknown conditions as provided in Section 3.7.4.

§ 4.2.9 The A/E Professional will conduct inspections to determine the date or dates of Substantial Completion and the date of final completion; issue Certificates of Substantial Completion pursuant to Section 9.8; receive and forward to the Owner, for the Owner's review and records, written warranties and related documents required by the Contract and assembled by the Contractor pursuant to Section 9.10; and issue a final Certificate for Payment pursuant to Section 9.10.

§ 4.2.10 If the Owner and A/E Professional agree, the A/E Professional will provide one or more Project representatives to assist in carrying out the A/E Professional's responsibilities at the site. The Owner shall notify the Contractor of any change in the duties, responsibilities and limitations of authority of the Project representatives.

§ 4.2.11 The A/E Professional will interpret and decide matters concerning performance under, and requirements of, the Contract Documents on written request of either the Owner or Contractor. The A/E Professional's response to such requests will be made in writing within any time limits agreed upon or otherwise with reasonable promptness.

§ 4.2.12 Interpretations and decisions of the A/E Professional will be consistent with the intent of, and reasonably inferable from, the Contract Documents and will be in writing or in the form of drawings. When making such interpretations and decisions, the A/E Professional will endeavor to secure faithful performance by both Owner and Contractor, will not show partiality to either, and will not be liable for results of interpretations or decisions rendered in good faith.

§ 4.2.13 The A/E Professional's decisions on matters relating to aesthetic effect will be final if consistent with the intent expressed in the Contract Documents.

§ 4.2.14 The A/E Professional will review and respond to requests for information about the Contract Documents. The A/E Professional's response to such requests will be made in writing within any time limits agreed upon or otherwise with reasonable promptness. If appropriate, the A/E Professional will prepare and issue supplemental Drawings and Specifications in response to the requests for information.

§ 4.2.15 Should the Contractor request information, interpretations of Contract Documents, use of alternates, approval of samples (but not Shop Drawings) or make other similar requests (hereinafter "RFI" or "RFIs"), it shall do so in good faith, in writing, and in a reasonable time and fashion. The A/E Professional's response to RFIs will be made in writing and within five (5) business days except for emergencies which shall be within three (3) business days**.** The period shall be extended if the A/E Professional is not able to respond due to the failure of Contractor to provide adequate and accurate information to the A/E Professional. Furthermore, should the A/E Professional require compensation to review any Contractor requests which are abusive or unreasonable in number or timing, the A/E Professional shall expedite its review of the RFIs provided Contractor agrees in writing to reimburse Owner for any architectural or engineering fees necessitated in responding to such RFIs. Contractor agrees that Owner may deduct any such architectural or engineering fees from any sums otherwise due Contractor.

§ 4.2.16 With regard to the submission and approval of Shop Drawings or other submittals, the period of time for response is as soon as reasonably possible, but no longer than ten (10) business days, except for emergencies which shall be reviewed by A/E Professional in three (3) business days. It is Contractor's responsibility to determine in advance the amount of time A/E Professional will take to review Shop Drawings or submittals and what information will be required for adequate review. Contractor is further responsible for submitting thorough and complete requests for review or approval in sufficient time so as not to cause any delay to the Contractor's Work. Contractor shall submit Shop Drawings in accordance with the submittal schedule. Contractor will not be entitled to an extension of the Contact Time or increase to the Contract Sum due to any delay on the part of A/E Professional, unless Contractor can

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demonstrate by clear and convincing documentation that Contractor properly submitted the request in accordance with the approved submittal schedule and A/E Professional failed, due to no fault of Contractor, to respond in accordance with the approved submittal schedule, and was in fact delayed, which delay could not have otherwise been avoided by Contractor.

§ 4.2.17 Notwithstanding any other provision to the Contract, the A/E Professional or its consultant(s) does not have authority to authorize changes to the Contract Documents. Only Owner shall be authorized to execute Change Orders, or otherwise modify these Contract Documents. Should Contractor desire to change any materials, or equipment required by Construction Change Directives, Contractor must first notify the Owner and A/E Professional of its intent to deviate from the Contract Documents by preparing a Construction Change Directive and obtain written approval for performance of any Work which changes or deviates from the Contract Documents. Failure to obtain said approval in writing will bar Contractor from any claim for additional compensation, delays or arguing that the A/E Professional or its consultants directed the work.

ARTICLE 5 SUBCONTRACTORS

§ 5.1 Definitions

§ 5.1.1 A Subcontractor is a person or entity who has a direct contract with the Contractor to perform a portion of the Work at the site. The term "Subcontractor" is referred to throughout the Contract Documents as if singular in number and means a Subcontractor or an authorized representative of the Subcontractor. The term "Subcontractor" does not include a Separate Contractor or the subcontractors of a Separate Contractor.

§ 5.1.2 A Sub-subcontractor is a person or entity who has a direct or indirect contract with a Subcontractor to perform a portion of the Work at the site. The term "Sub-subcontractor" is referred to throughout the Contract Documents as if singular in number and means a Sub-subcontractor or an authorized representative of the Sub-subcontractor.

§ 5.2 Award of Subcontracts and Other Contracts for Portions of the Work

§ 5.2.1 Unless otherwise stated in the Contract Documents, the Contractor, as soon as practicable after award of the Contract, shall notify the Owner and A/E Professional of the persons or entities proposed for each principal portion of the Work, including those who are to furnish materials or equipment fabricated to a special design. Within 14 days of receipt of the information, the A/E Professional may notify the Contractor whether the Owner or the A/E Professional (1) has reasonable objection to any such proposed person or entity or (2) requires additional time for review. Failure of the A/E Professional to provide notice within the 14-day period shall constitute notice of no reasonable objection.

§ 5.2.2 The Contractor shall not contract with a proposed person or entity to whom the Owner or A/E Professional has made reasonable and timely objection. The Contractor shall not be required to contract with anyone to whom the Contractor has made reasonable objection.

§ 5.2.3 If the Owner or A/E Professional has reasonable objection to a person or entity proposed by the Contractor, the Contractor shall propose another to whom the Owner or A/E Professional has no reasonable objection.

§ 5.2.4 The Contractor shall not substitute a Subcontractor, person, or entity for one previously selected if the Owner or A/E Professional makes reasonable objection to such substitution.

§ 5.3 Subcontractual Relations

By appropriate written agreement, the Contractor shall require each Subcontractor, to the extent of the Work to be performed by the Subcontractor, to be bound to the Contractor by terms of the Contract Documents, and to assume toward the Contractor all the obligations and responsibilities, including the responsibility for safety of the Subcontractor's Work that the Contractor, by these Contract Documents, assumes toward the Owner and A/E Professional. Each subcontract agreement shall preserve and protect the rights of the Owner and A/E Professional under the Contract Documents with respect to the Work to be performed by the Subcontractor so that subcontracting thereof will not prejudice such rights, and shall allow to the Subcontractor, unless specifically provided otherwise in the subcontract agreement, the benefit of all rights, remedies, and redress against the Contractor that the Contractor, by the Contract Documents, has against the Owner. Where appropriate, the Contractor shall require each Subcontractor to enter into similar agreements with Sub-subcontractors. The Contractor shall make available to each proposed Subcontractor, prior to the execution of the subcontract agreement, copies of the Contract Documents to which the Subcontractor will be bound, and, upon written request of the Subcontractor, identify to the Subcontractor terms and conditions of the proposed subcontract agreement that may be at variance with the Contract Documents.

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Subcontractors will similarly make copies of applicable portions of such documents available to their respective proposed Sub-subcontractors.

§ 5.3.1 Subcontract Agreements. Contractor hereby agrees that each subcontract agreement shall contain provisions granting the Contractor the right to terminate the subcontract at any time for the Contractor's convenience and without cause. Each subcontract agreement shall preserve and protect the rights of the Owner under the Contract Documents with respect to the Work to be performed by the Subcontractor so that subcontracting thereof will not prejudice such rights, and shall allow to the Subcontractor, unless specifically provided otherwise in the subcontract agreement, the benefit of all rights, remedies and redress against the Contractor that the Contractor, by the Contract Documents, has against the Owner. Where appropriate, the Contractor shall require each Subcontractor to enter into similar written agreements with Sub-Subcontractors. The Contractor shall make available to each proposed Subcontractor, prior to the execution of the subcontract agreement, copies of the Contract Documents to which the Subcontractor will be bound. Subcontractors will similarly make copies of applicable portions of such documents available to their respective proposed Sub-Subcontractors.

§ 5.4 Contingent Assignment of Subcontracts

§ 5.4.1 The Contractor hereby assigns to the Owner an option to accept assignment of all of Contractor's contract rights with respect to Subcontractors and material and equipment suppliers that contracted to provide Work, materials and equipment to the Project in accordance with the Contract Documents, provided that Owner may elect in writing to exercise that option only after proper termination of the Contactor for Contractor's default. For those subcontract agreements which the Owner accepts by notifying the Subcontractors and Contractor in writing, the option shall include, but not be limited to, all Contractor's rights to make claims regarding quality of the Work and warranty claims. It is further agreed that all Subcontracts and material and equipment purchase contracts entered into by Contractor or its Subcontractors or material suppliers, shall contain a provision stating that, if after termination of Contractor for Contractor's default or completion of the Work, the Owner may bring any claim directly against any Subcontractor of Contractor, including any surety bond furnished for or on behalf of such Subcontractor, for breach of contract, warranty rights, quality of workmanship, and create third party beneficiary rights of Owner in said agreements. It is further agreed and understood that such assignment(s) and third party beneficiary rights are part of the consideration to Owner for entering into this Agreement with Contractor and may not be withdrawn. Subcontractor or equipment and material suppliers shall be notified of Owner's rights. Additionally, nothing contained in this Agreement shall constitute an assignment of Contractor's rights against the Owner or create any third party beneficiary rights in any Subcontractors or material and equipment suppliers of Contractor. The purpose of this provision is to allow the Owner, in addition to Contractor, to make claim for damage or indemnification directly against any Subcontractors or material and equipment suppliers that may be ultimately responsible for defects or deficiencies in the Work or materials and equipment. Additionally, this assignment is for the purpose of permitting Owner to require any such Subcontractor or materials and equipment suppliers to complete the unperformed obligations under such Subcontract, should the Contractor be in default or be terminated by Owner.

§ 5.4.2 Nothing in this Article or Agreement shall be deemed to create any contractual relationship between the Owner and any Subcontractor, material provider or supplier or to create any rights of any Subcontractor against the Owner for any actions, debts, obligations, responsibilities or liabilities occurring prior to any assignment executed pursuant to this Article.

§ 5.4.3 Upon assignment to the Owner under this Section 5.4, the Owner may further assign the subcontract to a successor contractor or other entity.

ARTICLE 6 CONSTRUCTION BY OWNER OR BY SEPARATE CONTRACTORS

§ 6.1 Owner's Right to Perform Construction and to Award Separate Contracts

§ 6.1.1 The term "Separate Contractor(s)" shall mean other contractors retained by the Owner under separate agreements. The Owner reserves the right to perform construction or operations related to the Project with the Owner's own forces, and with Separate Contractors.

§ 6.1.2 When separate contracts are awarded for different portions of the Project or other construction or operations on the site, the term "Contractor" in the Contract Documents in each case shall mean the Contractor who executes each separate Owner-Contractor Agreement.

§ 6.1.3 The Contractor shall provide for coordination of the activities of the Owner's own forces and of each Separate Contractor with the Work of the Contractor. The Contractor shall participate with any Separate Contractors and the

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Owner in reviewing their construction schedules. The parties acknowledge that the Contractor's schedule has included time for all known separate Owner contractors to perform their work, based on Contractor's experience and knowledge. The Contractor shall review those portions of the Contract Documents to be performed by the Owner's separate contractors, if any, that may impact Contractor's performance of its Work, and that may be interrelated with the Work to be performed by the Contractor, and shall schedule those separate contractors' work so as to cause no delay to the Work.

§ 6.1.4 Unless otherwise provided in the Contract Documents, when the Owner performs construction or operations related to the Project with the Owner's own forces or with Separate Contractors, the Owner or its Separate Contractors shall have the same obligations and rights that the Contractor has under the Conditions of the Contract, including, without excluding others, those stated in Article 3, this Article 6, and Articles 10, 11, and 12.

§ 6.1.5 If any part of the Work depends upon proper execution of work performed by Owner or Owner's separate contractors, the Contractor, its Subcontractors, and their respective Sub-subcontractors shall, prior to proceeding with the Work, inspect such Work and promptly report to Owner any apparent discrepancies or defects in such other Work. Failure of the Contractor, its Subcontractors, or their respective Sub-subcontractors to comply with these requirements shall bar any claims thereafter that defects in Contractor's Work, or delays in the schedule, are due to defects in the Work performed by others. Similarly, if any part of the work performed by Owner or Owner's separate contractors depends upon proper execution of Work performed by Contractor, its Subcontractors, and their respective Sub-subcontractors, Owner's separate contractors shall, prior to proceeding with the work, inspect such Work and promptly report to Contractor any apparent discrepancies or defects in such Work. Failure of Owner's separate contractors or utility contractors to comply with these requirements shall bar any claims thereafter that defects in Owner's separate contractors' work are due to defects in the Work performed by Contractor.

§ 6.1.6 Contractor shall provide Owner's separate contractors with a reasonable opportunity for the introduction and storage of their materials, equipment and execution of their work.

§ 6.2 Mutual Responsibility

§ 6.2.1 The Contractor shall afford the Owner and Separate Contractors reasonable opportunity for introduction and storage of their materials and equipment and performance of their activities, and shall connect and coordinate the Contractor's construction and operations with theirs as required by the Contract Documents.

§ 6.2.2 If part of the Contractor's Work depends for proper execution or results upon construction or operations by the Owner or a Separate Contractor, the Contractor shall, prior to proceeding with that portion of the Work, promptly notify the A/E Professional of apparent discrepancies or defects in the construction or operations by the Owner or Separate Contractor that would render it unsuitable for proper execution and results of the Contractor's Work. Failure of the Contractor to notify the A/E Professional of apparent discrepancies or defects prior to proceeding with the Work shall constitute an acknowledgment that the Owner's or Separate Contractor's completed or partially completed construction is fit and proper to receive the Contractor's Work. The Contractor shall not be responsible for discrepancies or defects in the construction or operations by the Owner or Separate Contractor that are not apparent.

§ 6.2.3 The Contractor shall reimburse the Owner for costs the Owner incurs that are payable to a Separate Contractor because of the Contractor's delays, improperly timed activities or defective construction. The Owner shall be responsible to the Contractor for costs the Contractor incurs because of a Separate Contractor's delays, improperly timed activities, damage to the Work or defective construction.

§ 6.2.4 The Contractor shall promptly remedy damage that the Contractor wrongfully causes to completed or partially completed construction or to property of the Owner or Separate Contractor as provided in Section 10.2.5.

§ 6.2.5 The Owner and each Separate Contractor shall have the same responsibilities for cutting and patching as are described for the Contractor in Section 3.14.

§ 6.3 Owner's Right to Clean Up

If a dispute arises among the Contractor, Separate Contractors, and the Owner as to the responsibility under their respective contracts for maintaining the premises and surrounding area free from waste materials and rubbish, the Owner may clean up and the A/E Professional will allocate the cost among those responsible.

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ARTICLE 7 CHANGES IN THE WORK

§ 7.1 General

§ 7.1.1 Changes in the Work may be accomplished after execution of the Contract, and without invalidating the Contract, by Change Order, Construction Change Directive or order for a minor change in the Work, subject to the limitations stated in this Article 7 and elsewhere in the Contract Documents.

§ 7.1.2 A Change Order shall be based upon agreement among the Owner, Contractor, and A/E Professional. A Construction Change Directive requires agreement by the Owner and A/E Professional and may or may not be agreed to by the Contractor. An order for a minor change in the Work may be issued by the A/E Professional alone.

§ 7.1.3 Changes in the Work shall be performed under applicable provisions of the Contract Documents. The Contractor shall proceed promptly with changes in the Work, unless otherwise provided in the Change Order, Construction Change Directive, or order for a minor change in the Work.

§ 7.2 Change Orders

§ 7.2.1 A Change Order is a written instrument prepared by the A/E Professional and signed by the Owner, Contractor, and A/E Professional stating their agreement upon all of the following:

.1 The change in the Work;
.2 The amount of the adjustment, if any, in the Contract Sum; and
.3 The extent of the adjustment, if any, in the Contract Time.

§ 7.2.2 All Claims arising out of or relating to a Change Order shall be deemed waived unless expressly reserved in such Change Order. Contractor is specifically prohibited from unilaterally preserving Claims, including Claims for extension of the Contract Time. Notwithstanding any other provision to the Contract, the A/E Professional or its consultant will not have authority to authorize changes to the Contract Documents.

§ 7.2.3 Agreement on any Change Order shall constitute a final settlement of all matters which the Contractor knew or should have known relating to the change in the Work that is the subject of the Change Order, including but not limited to all direct and indirect costs associated with such change and all adjustments to the Contract Sum and Contract Time.

§ 7.2.4 Change Order requests shall not be considered unless and until submitted in writing to the Owner and the A/E Professional together with documentation detailing the change and supporting the requested increase or decrease in the Contract Sum and/or Contract Time. Such documentation must show: (i) all materials by quantity and price, (ii) all labor by unit price, (iii) insurance, (iv) permits, (v) payroll taxes and employee benefits, (vi) equipment by quantity and rate, (vii) Subcontractor markup, (viii) Contractor's Fee; (ix) a clear and concise statement of the basis for the claim, including dates and names of parties and people involved, with back up information, Contract Documents relied upon, including reference to sections of the Drawings and Specifications, daily reports, weather reports, meeting minutes, correspondence and the like; and (x) an updated schedule meeting the requirements of the Contract Documents, showing the impact of the Change to the agreed upon Project Schedule. Any requested increase to Contract Sum for the Contractor's General Condition costs shall be limited to actual on-site cost increases for General Conditions items incurred as a direct result of the change.

§ 7.2.5 Under no circumstances shall increase in the cost of materials or labor be considered the basis for a Claims by the Contractor for additional compensation, no matter how severe the increase of the cost of the materials or labor to the Contractor.

§ 7.2.6 In the event of any dispute between Owner and Contractor arising out or relating to the requirements of the Contract, any modification, or the terms of a pending Change Order, the Contractor shall continue to perform the Work, including any Work required by pending Change Orders, and Construction Change Directives and Owner shall continue to make payments of undisputed sums in accordance with the Contract Documents, pending final resolution of such dispute.

§ 7.3 Construction Change Directives

§ 7.3.1 A Construction Change Directive is a written order prepared by the A/E Professional and signed by the Owner and A/E Professional, directing a change in the Work prior to agreement on adjustment, if any, in the Contract Sum or Contract Time, or both. The Owner may by Construction Change Directive, without invalidating the Contract, order changes in the Work within the general scope of the Contract consisting of additions, deletions, or other revisions, the Contract Sum and Contract Time being adjusted accordingly.

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§ 7.3.2 A Construction Change Directive shall be used in the absence of total agreement on the terms of a Change Order.

§ 7.3.3 If the Construction Change Directive provides for an adjustment to the Contract Sum, the adjustment shall be based on one of the following methods:

.1 Mutual acceptance of a lump sum properly itemized and supported by sufficient substantiating data to permit evaluation;

.2 Unit prices stated in the Contract Documents or subsequently agreed upon;

.3 Cost to be determined in a manner agreed upon by the parties and a mutually acceptable fixed or percentage fee; or

.4 As provided in Section 7.3.4.

§ 7.3.4 If the Contractor does not respond promptly or disagrees with the method for adjustment in the Contract Sum, the A/E Professional shall determine the adjustment on the basis of reasonable expenditures and savings of those performing the Work attributable to the change, including, in case of an increase in the Contract Sum, an amount for overhead and profit as set forth in the Agreement, or if no such amount is set forth in the Agreement, a reasonable amount. In such case, and also under Section 7.3.3.3, the Contractor shall keep and present, in such form as the A/E Professional may prescribe, an itemized accounting together with appropriate supporting data. Unless otherwise provided in the Contract Documents, costs for the purposes of this Section 7.3.4 shall be limited to the following:

.1 Costs of labor, including applicable payroll taxes, fringe benefits required by agreement or custom, workers' compensation insurance, and other employee costs approved by the A/E Professional;

.2 Costs of materials, supplies, and equipment, including cost of transportation, whether incorporated or consumed;

.3 Rental costs of machinery and equipment, exclusive of hand tools, whether rented from the Contractor or others;

.4 Costs of premiums for all bonds and insurance, permit fees, and sales, use, or similar taxes, directly related to the change; and

.5 Costs of supervision and field office personnel directly attributable to the change.

§ 7.3.5 If the Contractor disagrees with the adjustment in the Contract Time, the Contractor may make a Claim in accordance with applicable provisions of Article 15.

§ 7.3.6 Upon receipt of a Construction Change Directive, the Contractor shall promptly proceed with the change in the Work involved and advise the A/E Professional of the Contractor's agreement or disagreement with the method, if any, provided in the Construction Change Directive for determining the proposed adjustment in the Contract Sum or Contract Time.

§ 7.3.7 A Construction Change Directive signed by the Contractor indicates the Contractor's agreement therewith, including adjustment in Contract Sum and Contract Time or the method for determining them. Such agreement shall be effective immediately and shall be recorded as a Change Order.

§ 7.3.8 The amount of credit to be allowed by the Contractor to the Owner for a deletion or change that results in a net decrease in the Contract Sum shall be actual net cost as confirmed by the A/E Professional. When both additions and credits covering related Work or substitutions are involved in a change, the allowance for overhead and profit shall be figured on the basis of net increase, if any, with respect to that change.

§ 7.3.9 Pending final determination of the total cost of a Construction Change Directive to the Owner, the Contractor may request payment for Work completed under the Construction Change Directive in Applications for Payment. The A/E Professional will make an interim determination for purposes of monthly certification for payment for those costs and certify for payment the amount that the A/E Professional determines, in the A/E Professional's professional judgment, to be reasonably justified. The A/E Professional's interim determination of cost shall adjust the Contract Sum on the same basis as a Change Order, subject to the right of either party to disagree and assert a Claim in accordance with Article 15.

§ 7.3.10 When the Owner and Contractor agree with a determination made by the A/E Professional concerning the adjustments in the Contract Sum and Contract Time, or otherwise reach agreement upon the adjustments, such

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agreement shall be effective immediately and the A/E Professional will prepare a Change Order. Change Orders may be issued for all or any part of a Construction Change Directive.

§ 7.4 Minor Changes in the Work

The A/E Professional may order minor changes in the Work that are consistent with the intent of the Contract Documents and do not involve an adjustment in the Contract Sum or an extension of the Contract Time. The A/E Professional's order for minor changes shall be in writing. If the Contractor believes that the proposed minor change in the Work will affect the Contract Sum or Contract Time, the Contractor shall notify the A/E Professional and shall not proceed to implement the change in the Work. If the Contractor performs the Work set forth in the A/E Professional's order for a minor change without prior notice to the A/E Professional that such change will affect the Contract Sum or Contract Time, the Contractor waives any adjustment to the Contract Sum or extension of the Contract Time.

ARTICLE 8 TIME

§ 8.1 Definitions

§ 8.1.1 Unless otherwise provided, Contract Time is the period of time, including authorized adjustments, allotted in the Contract Documents for Substantial Completion of the Work.

§ 8.1.2 The date of commencement of the Work is the date established in the Agreement.

§ 8.1.3 The date of Substantial Completion is the date certified by the A/E Professional in accordance with Section 9.8.

§ 8.1.4 The term "day" as used in the Contract Documents shall mean calendar day unless otherwise specifically defined.

§ 8.2 Progress and Completion

§ 8.2.1 Time limits stated in the Contract Documents are of the essence of the Contract. By executing the Agreement, the Contractor confirms that the Contract Time is a reasonable period for performing the Work.

§ 8.2.2 The Contractor shall not knowingly, except by agreement or instruction of the Owner in writing, commence the Work prior to the effective date of insurance required to be furnished by the Contractor and Owner.

§ 8.2.3 The Contractor shall proceed expeditiously with adequate forces and shall achieve Substantial Completion within the Contract Time.

§ 8.3 Delays and Extensions of Time

§ 8.3.1 If the Contractor is delayed at any time in the commencement or progress of the Work by (1) an act or neglect of the Owner; (2) by changes ordered in the Work; (3) by labor disputes, fire, unusual delay in deliveries impacting the South Florida construction industry, unavoidable casualties, or adverse weather conditions documented in accordance with Section 15.1.6.2, that the Contractor asserts, and the A/E Professional determines, justify delay, then the Contract Time shall be extended for such reasonable time as the A/E Professional may determine.

§ 8.3.2 Adjustments in the Contract Time will be permitted for a delay only to the extent such delay (1) is not caused, in whole or in part, by the Contractor, or its Subcontractors and material suppliers; (2) could not be limited or avoided by the Contractor's timely notice to the Owner of the delay; (3) is of a duration not less than one (1) Business day; (4) impacts the critical path of the Project and (5) was mitigated by the Contractor to the maximum extent practicable. All requests for extensions of time other than those associated with changes in the Work, must be submitted in writing to the Owner within five (5) calendar days of the event giving rise to the delay. Failure to so request an extension will constitute a waiver of any right for an extension of time.

§ 8.3.3 Claims relating to time shall be made in accordance with applicable provisions of Article 15.

§ 8.3.4 In entering into the Contract, the Contractor represents and warrants that it has considered all impacts and potential impacts associated with the following: (1) COVID-19 and any other worldwide pandemics known at the time of execution of the Agreement ("Pandemics") and (2) the current military conflicts involving Russia and the Ukraine and Israel and Hamas ("Military Conflicts"). Contractor further represents and warrants that in entering into this Contract, it has accounted for any and all labor or material shortages, delivery lead time, or price increases that may be caused by local and or national conditions, including but not limited to impacts from the Pandemics and the Military

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Conflicts. Contractor also represents and warrants that in determining time requirements for procurement, installation, and construction completion, Contractor has taken into account the impacts of the Pandemics and the Military Conflicts, and has included all of those factors in the Construction Schedule and Contract Sum.

§ 8.3.4.1 Contractor will not seek any price increases or time extensions relating to or arising from any impacts of the Pandemics or the Military Conflicts.

§ 8.3.4.2 The Owner shall not be required to make any adjustment in the Contract Sum or grant an extension to the Contract Time in connection with any failure by the Contractor to comply with the requirements of this Section 8.3.4.

§ 8.3.5 No Damage for Delays. Except for delays due to the gross negligence of the Owner or active interference by the Owner, Contractor's sole and exclusive remedy for delays shall be an increase to the Contract Time. Contractor shall not be entitled to an increase in the Contract Price or to payment of any other additional monies from Owner for costs incurred as a result of such delay, including additional or extended General Conditions costs or General Requirements costs. Owner's exercise of its rights under this Contract shall in no way be considered active interference.

§ 8.3.6 All schedule float is the property of Owner and may not be used by Contractor.

§ 8.4 Owner's Delay and Entitlement to Liquidated Damages

§ 8.4.1 The Contractor acknowledges that the Contract Time for the Substantial Completion of the Work requires that the Substantial Completion of the entire Work occur on or before specified date(s) as provided in the Agreement, subject to any extensions of the Contract Time. The Contractor acknowledges and agrees that the Owner will suffer severe financial loss in the event of delay and Owner shall be entitled to liquidated damages as provided in the Contract Documents. Liquidated damages are set forth in the Agreement.

ARTICLE 9 PAYMENTS AND COMPLETION

§ 9.1 Contract Sum

§ 9.1.1 The Contract Sum is stated in the Agreement and, including authorized adjustments, is the total amount payable by the Owner to the Contractor for performance of the Work under the Contract Documents.

§ 9.1.2 If unit prices are stated in the Contract Documents or subsequently agreed upon, and if quantities originally contemplated are materially changed so that application of such unit prices to the actual quantities causes substantial inequity to the Owner or Contractor, the applicable unit prices shall be equitably adjusted.

§ 9.2 Schedule of Values

Where the Contract is based on a stipulated sum or Guaranteed Maximum Price, the Contractor shall submit a schedule of values to the Owner's Representative before the first Application for Payment, allocating the entire Contract Sum to the various portions of the Work. The schedule of values shall be prepared in the form, and supported by the data to substantiate its accuracy, required by the Owner's Representative. This schedule, unless objected to by the Owner's Representative, shall be used as a basis for reviewing the Contractor's Applications for Payment. Any changes to the schedule of values shall be submitted to the Owner's Representative and supported by such data to substantiate its accuracy as the Owner's Representative may require, and unless objected to by the Owner's Representative, shall be used as a basis for reviewing the Contractor's subsequent Applications for Payment.

§ 9.3 Applications for Payment

§ 9.3.1 At least twenty (20) days before the date established for each progress payment, the Contractor shall submit to the Owner's Representative an itemized Application for Payment prepared in accordance with the schedule of values, if required under Section 9.2, for completed portions of the Work. The application shall be notarized, if required, and supported by all data substantiating the Contractor's right to payment that the Owner or Owner's Representative require, such as copies of requisitions, and releases and waivers of liens from Subcontractors and suppliers, and shall reflect retainage if provided for in the Contract Documents.

§ 9.3.1.1 Along with the Contractor's Application for Payment, Contractor shall submit to Owner and Owner's Representative the following;

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.1 a sworn and certified progress payment affidavit which recites that all laborers, material suppliers and subcontractors dealing with the Contractor have been paid in full up through the date of the affidavit;

.2 partial releases of lien from Contractor, material suppliers and subcontractors and any lienors serving a Notice to Owner as required by this section 9.3, and evidence of proof of payment of any indebtedness incurred with respect to the Work of Contractor as may be required by Owner;

.3 evidence that all Work has been fully performed as required pursuant to the Contract Documents up to the time of the request for payment, and the Work has been inspected and accepted by the Owner's Representative and any governmental authorities required to inspect the Work, and such other evidence that the Owner may reasonably require;

.4 an updated construction schedules; and

.5 Any other document or information required elsewhere in the Contract Documents as a condition precedent to payment.

§ 9.3.1.2 As provided in Section 7.3.9, such applications may include requests for payment on account of changes in the Work that have been properly authorized by Construction Change Directives, or by interim determinations of the Owner's Representative, but not yet included in Change Orders.

§ 9.3.1.3 Applications for Payment shall not include requests for payment for portions of the Work for which the Contractor does not intend to pay a Subcontractor or supplier, unless such Work has been performed by others whom the Contractor intends to pay.

§ 9.3.2 Unless otherwise provided in the Contract Documents, payments shall be made on account of materials and equipment delivered and suitably stored at the site for subsequent incorporation in the Work. If approved in advance by the Owner, payment may similarly be made for materials and equipment suitably stored off the site at a location agreed upon in writing. Payment for materials and equipment stored on or off the site shall be conditioned upon compliance by the Contractor with procedures satisfactory to the Owner to establish the Owner's title to such materials and equipment or otherwise protect the Owner's interest, and shall include the costs of applicable insurance, storage, and transportation to the site, for such materials and equipment stored off the site.

§ 9.3.3 The Contractor warrants that title to all Work covered by an Application for Payment will pass to the Owner no later than the time of payment. The Contractor further warrants that upon submittal of an Application for Payment all Work for which Certificates for Payment have been previously issued and payments received from the Owner shall, to the best of the Contractor's knowledge, information, and belief, be free and clear of liens, claims, security interests, or encumbrances, in favor of the Contractor, Subcontractors, suppliers, or other persons or entities that provided labor, materials, and equipment relating to the Work.

§ 9.4 Certificates for Payment

§ 9.4.1 The Owner's Representative will, within seven days after receipt of the Contractor's Application for Payment, either (1) issue to the Owner a Certificate for Payment in the full amount of the Application for Payment, with a copy to the Contractor; or (2) issue to the Owner a Certificate for Payment for such amount as the Owner's Representative determines is properly due, and notify the Contractor and Owner of the Owner's Representative's reasons for withholding certification in part as provided in Section 9.5.1; or (3) withhold certification of the entire Application for Payment, and notify the Contractor and Owner of the Owner's Representative's reason for withholding certification in whole as provided in Section 9.5.1.

§ 9.4.2 The issuance of a Certificate for Payment will constitute a representation by the Owner's Representative to the Owner, based on the Owner's Representative's evaluation of the Work and the data in the Application for Payment, that, to the best of the Owner's Representative's knowledge, information, and belief, the Work has progressed to the point indicated, the quality of the Work is in accordance with the Contract Documents, and that the Contractor is entitled to payment in the amount certified. The foregoing representations are subject to an evaluation of the Work for conformance with the Contract Documents upon Substantial Completion, to results of subsequent tests and inspections, to correction of minor deviations from the Contract Documents prior to completion, and to specific qualifications expressed by the Owner's Representative. However, the issuance of a Certificate for Payment will not be a representation that the Owner's Representative has (1) made exhaustive or continuous on-site inspections to check the quality or quantity of the Work; (2) reviewed construction means, methods, techniques, sequences, or procedures; (3) reviewed copies of requisitions received from Subcontractors and suppliers and other data requested by the Owner

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to substantiate the Contractor's right to payment; or (4) made examination to ascertain how or for what purpose the Contractor has used money previously paid on account of the Contract Sum.

§ 9.5 Decisions to Withhold Certification

§ 9.5.1 The Owner's Representative or Owner may withhold or reject a Certificate for Payment in whole or in part, to the extent reasonably necessary to protect the Owner, if in the Owner's or Owner's Representative's opinion the representations to the Owner required by Section 9.4.2 cannot be made. If the Owner's Representative is unable to certify payment in the amount of the Application, the Owner's Representative will notify the Contractor and Owner as provided in Section 9.4.1. If the Contractor and Owner's Representative cannot agree on a revised amount, the Owner's Representative will promptly issue a Certificate for Payment for the amount for which the Owner's Representative is able to make such representations to the Owner. The Owner's Representative may also withhold a Certificate for Payment or, because of subsequently discovered evidence, may nullify the whole or a part of a Certificate for Payment previously issued, to such extent as may be necessary in the Owner's Representative's opinion to protect the Owner from loss for which the Contractor is responsible, including loss resulting from acts and omissions described in Section 3.3.2, because of

- **.1** defective Work not remedied;
- **.2** third party claims filed or reasonable evidence indicating probable filing of such claims, unless security acceptable to the Owner is provided by the Contractor;
- **.3** failure of the Contractor to make payments properly to Subcontractors or suppliers for labor, materials or equipment;
- **.4** reasonable evidence that the Work cannot be completed for the unpaid balance of the Contract Sum;
- **.5** damage to the Owner or a Separate Contractor;
- **.6** reasonable evidence that the Work will not be completed within the Contract Time, and that the unpaid balance would not be adequate to cover actual or liquidated damages for the anticipated delay;
- **.7** failure to carry out the Work in accordance with the Contract Documents;
- **.8** failure to provide releases of lien for each Application for Payment in accordance with the Contract Documents; or
- **.9** failure of the Work to progress satisfactorily or according to schedule; or
- **.10** any other failure to perform a material obligation contained in the Contract Documents.

§ 9.5.2 When either party disputes the Owner's Representative's decision regarding a Certificate for Payment under Section 9.5.1, in whole or in part, that party may submit a Claim in accordance with Article 15.

§ 9.5.3 When the reasons for withholding certification are removed, certification will be made for amounts previously withheld.

§ 9.5.4 If the Owner's Representative withholds certification for payment under Section 9.5.1.3, the Owner may, at its sole option, issue joint checks to the Contractor and to any Subcontractor or supplier to whom the Contractor failed to make payment for Work properly performed or material or equipment suitably delivered. If the Owner makes payments by joint check, the Owner shall notify the Owner's Representative and the Contractor shall reflect such payment on its next Application for Payment.

§ 9.6 Progress Payments

§ 9.6.1 After the Owner's Representative has issued a Certificate for Payment, the Owner shall make payment in the manner and within the time provided in the Contract Documents, and shall so notify the Owner's Representative.

§ 9.6.2 The Contractor shall pay each Subcontractor, no later than seven days after receipt of payment from the Owner, the amount to which the Subcontractor is entitled, reflecting percentages actually retained from payments to the Contractor on account of the Subcontractor's portion of the Work. The Contractor shall, by appropriate agreement with each Subcontractor, require each Subcontractor to make payments to Sub-subcontractors in a similar manner.

§ 9.6.3 The Owner's Representative will, on request, furnish to a Subcontractor, if practicable, information regarding percentages of completion or amounts applied for by the Contractor and action taken thereon by the Owner's Representative and Owner on account of portions of the Work done by such Subcontractor.

§ 9.6.4 The Owner has the right to request written evidence from the Contractor that the Contractor has properly paid Subcontractors and suppliers amounts paid by the Owner to the Contractor for subcontracted Work. If the Contractor fails to furnish such evidence within seven days, the Owner shall have the right to contact Subcontractors and suppliers

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to ascertain whether they have been properly paid. Neither the Owner nor Owner's Representative shall have an obligation to pay, or to see to the payment of money to, a Subcontractor or supplier, except as may otherwise be required by law.

§ 9.6.5 The Contractor's payments to suppliers shall be treated in a manner similar to that provided in Sections 9.6.2, 9.6.3 and 9.6.4.

§ 9.6.6 A Certificate for Payment, a progress payment, or partial or entire use or occupancy of the Project by the Owner shall not constitute acceptance of Work not in accordance with the Contract Documents.

§ 9.6.7 Payments received by the Contractor for Work properly performed by Subcontractors and suppliers shall be held by the Contractor for those Subcontractors or suppliers who performed Work or furnished materials, or both, under contract with the Contractor for which payment was made by the Owner.

§ 9.6.8 Owner may, in its discretion, make all or any portion of any progress payment by check payable jointly to the order of Contractor and any lienor giving timely notice, and deduct said sum from the balance then due Contractor. However, such payment, if made, shall not create any third party beneficiary or other rights in such lienor. In making such payments to lienors/subcontractors, the Owner shall require such lienor to execute the waiver of lien form in accordance with §713.06, Fla. Stat.

§ 9.6.9 Payments to Subcontractors by the Owner.

§ 9.6.9.1 If the Owner fails to approve an application for payment for a cause which is the fault of the Contractor and not the fault of a particular subcontractor, or if the Contractor fails to make a payment which is properly due to a particular subcontractor, the Owner may after ten (10) calendar days' written notice to Contractor, pay such subcontractor and Contractor jointly, less the amount to be retained under his subcontract.

§ 9.6.9.2 The Owner shall have no obligation to pay, or to see to the payment of, any monies to any subcontractor. Nothing contained in herein shall be deemed to create any contractual relationship between the Owner and any subcontractor or to create any rights in any subcontractor against the Owner.

§ 9.6.10 No payments made under this Contract shall be evidence of performance of this Contract, either wholly or in part, and no payment including final payment shall be construed to be an acceptance of defective Work or improper materials, nor shall use of the Work by the Owner constitute acceptance of the Work hereunder or any part thereof or a waiver of any of the Owner's claims..

§ 9.6.11 If the Owner is entitled to reimbursement or payment from the Contractor or Surety under or pursuant to the Contract Documents, such payment shall be made promptly upon written demand by the Owner. Notwithstanding anything contained in the Contract Documents to the contrary, if the Contractor or Surety fail to promptly make any undisputed payment due the Owner after such written notice, the Owner shall have an absolute right to offset such amount against the Contract Sum and may, in the Owner's reasonable discretion, elect either to: (1) deduct an amount equal to that which the Owner is entitled from any payment then or thereafter due the Contractor from the Owner; or (2) issue a written notice to the Contractor reducing the Contract Sum by an amount equal to that which the Owner is entitled. Nothing contained herein shall be deemed an admission of liability by Contractor nor limit Contractor's right to contest same. Nothing contained in this Section requires consent of Surety or notice to surety of Owner's intent to take such action.

§ 9.6.12 Provided the Owner has fulfilled its payment obligations under the Contract Documents, the Contractor shall defend and indemnify the Owner from all loss, liability, damage or expense, including reasonable attorney's fees and litigation expenses, arising out of any lien claim or other claim for payment by any Subcontractor or supplier of any tier. Upon receipt of notice of a lien claim or other claim for payment, the Owner shall notify the Contractor. If approved by the applicable court, when required, the Contractor may substitute a surety bond for the property against which the lien or other claim for payment has been asserted.

§ 9.7 Failure of Payment

If the Owner's Representative does not issue a Certificate for Payment, through no fault of the Contractor, within seven days after receipt of the Contractor's Application for Payment, or if the Owner does not pay the Contractor all undisputed amounts within twenty-one (21) days after the date established in the Contract Documents, the amount certified by the Owner's Representative or awarded by binding dispute resolution, then the Contractor may, upon

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seven additional days' notice to the Owner and Owner's Representative, stop the Work until payment of the amount owing has been received. The Contract Time shall be extended appropriately and the Contract Sum shall be increased by the amount of the Contractor's reasonable costs of shutdown, delay and start-up, plus interest as provided for in the Contract Documents.

§ 9.8 Substantial Completion

§ 9.8.1 Substantial Completion is the stage in the progress of the Work when the Work or designated portion thereof is sufficiently complete in accordance with the Contract Documents so that the Owner can occupy or utilize the Work for its intended use and obtain all permits, licenses, and certificates required for such use. Specifically, and in addition to the foregoing, in order to achieve Substantial Completion for the Work, Contractor must achieve the following additional, minimum requirements:

1. Site cleanup and restoration of all exterior elements including roof surfaces, ledges, gutters, windows, exterior facades (including without limitation removal of all excess materials, debris, supplies, equipment, temporary structures, ladders, scaffolding, staging and/or trailers) has been completed;

2. All parking areas, all landscaping, all exterior building finishes, all interior building finishes, all interior spaces, all structural, mechanical, and technical systems required by the Contract Documents, all fire and life safety systems, are completed and ready for use or occupancy;

3. The Work is ready for occupancy, completed in accordance with the Drawings and Specifications and the Contract Documents including, but not limited to: (1) low voltage system, if any; (2) MEP trim out, if any; (3) security systems, if any; (4) finish painting, if any; (5) designated flooring, if any; (6) millwork, if any; and (7) cabinets, if any; all as applicable, are complete.

4. The Work is ready for occupancy, completed in accordance with the Plans and Specifications and the Contract Documents and, to the extent it is within the Contractor's scope of Work, all persons or entities having jurisdiction over the Project have issued the appropriate permits, and authorizations for the construction and use of the Work and the Work has received a temporary or final Certificate of Occupancy; and

5. Contractor has complied with the turnover obligations set forth in **§ 9.9** (including subparts) below.

§ 9.8.2 When the Contractor considers that the Work, or a portion thereof which the Owner agrees to accept separately, is substantially complete, the Contractor shall prepare and submit to the A/E Professional a comprehensive list of items to be completed or corrected prior to final payment. Failure to include an item on such list does not alter the responsibility of the Contractor to complete all Work in accordance with the Contract Documents.

§ 9.8.3 Upon receipt of the Contractor's list, the A/E Professional will make an inspection to determine whether the Work or designated portion thereof is substantially complete. If the A/E Professional's inspection discloses any item, whether or not included on the Contractor's list, which is not sufficiently complete in accordance with the Contract Documents so that the Owner can occupy or utilize the Work or designated portion thereof for its intended use, the Contractor shall, before issuance of the Certificate of Substantial Completion, complete or correct such item upon notification by the A/E Professional. In such case, the Contractor shall then submit a request for another inspection by the A/E Professional to determine Substantial Completion.

§ 9.8.4 When the Work or designated portion thereof is substantially complete, the A/E Professional will prepare a Certificate of Substantial Completion that shall establish the date of Substantial Completion; establish responsibilities of the Owner and Contractor for security, maintenance, heat, utilities, damage to the Work and insurance; and fix the time within which the Contractor shall finish all items on the list accompanying the Certificate. Warranties required by the Contract Documents shall commence on the date of Substantial Completion of the Work or designated portion thereof unless otherwise provided in the Certificate of Substantial Completion.

§ 9.8.5 The Certificate of Substantial Completion shall be submitted to the Owner and Contractor for their written acceptance of responsibilities assigned to them in the Certificate. Upon such acceptance, and consent of surety if any,

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the Owner shall make payment of retainage applying to the Work or designated portion thereof. Such payment shall be adjusted for Work that is incomplete or not in accordance with the requirements of the Contract Documents.

§ 9.9 Partial Occupancy or Use or Turnover

§ 9.9.1 The Contractor shall be responsible for operating and maintaining the Work and all systems and equipment that are part of the Work until Substantial Completion as defined in AIA A201 Modified General Conditions above or until a mutually agreed upon earlier Turnover as set forth herein.

§ 9.9.2 The Owner may occupy or use any completed or partially completed portion of the Work at any stage when such portion is designated by separate agreement with the Contractor, provided such occupancy or use or turnover is consented to by the insurer and authorized by public authorities having jurisdiction over the Project. Such partial occupancy or use may commence whether or not the portion is substantially complete, provided the Owner and Contractor have accepted in writing the responsibilities assigned to each of them for payments, retainage, if any, security, maintenance, heat, utilities, damage to the Work and insurance, and have agreed in writing concerning the period for correction of the Work and commencement of warranties required by the Contract Documents. When the Contractor considers a portion substantially complete, the Contractor shall prepare and submit a list to the A/E Professional as provided under Section 9.8.2. Consent of the Contractor to partial occupancy or use shall not be unreasonably withheld. The stage of the progress of the Work shall be determined by written agreement between the Owner and Contractor or, if no agreement is reached, by decision of the A/E Professional.

§ 9.9.2 Immediately prior to such partial occupancy or use or turnover, the Owner, Contractor, and A/E Professional shall jointly inspect the area to be occupied or portion of the Work to be used in order to determine and record the condition of the Work.

§ 9.9.3 Unless otherwise agreed upon, partial occupancy or use or turnover of a portion or portions of the Work shall not constitute acceptance of Work not complying with the requirements of the Contract Documents.

§ 9.9.4 Prior to the time of Substantial Completion, Turnover or any partial occupancy or use may occur from Contractor to Owner, the following minimum requirements must be met by Contractor and submitted to Owner:

1. Contractor's installers and operation and regular maintenance personnel have met with Owner's representative and the property manager(s) for the Project or other individuals as may be designated by Owner, at the Project site, to provide complete instructions and training needed for proper start-up, operation, shut-down and maintenance of that part of Work. Instructions by manufacturer's representatives are required where installers are not experts in operating/maintenance procedures, or as specified in the Construction Documents. For operational equipment, installers shall demonstrate startup, shut-down, emergency operations, noise and vibration adjustments, safety, economy/efficiency adjustments, and other applicable operations, and shall review maintenance and operating instructions which are required to be performed in order to maintain in force applicable warranties, guaranties and bonds;

2. Contractor has provided Owner with Three (3) heavy duty, bound, hard-cover books and one (1) electronic copy of same, properly identified on both the front and the spine of each binder and indexed, in suitable sets of manageable size, containing the following information related to all equipment and systems on the Project:

1. Training, maintenance and operating manual information;
2. emergency instructions;
3. spare part listings;
4. wiring diagrams;
5. recommended "turn around" cycles;
6. inspections procedures;
7. shop drawings, product data, and any other applicable information;
8. detailed information and records for maintenance performed on all equipment and systems on the Project, operated and maintained by Contractor prior to Substantial Completion

3. Contractor has provided Owner with Three (3) heavy duty, bound, hard-cover books and one (1)

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electronic copy of same, properly identified on both the front and the spine of each binder and indexed, in suitable sets of manageable size, containing the following information:

1. All Subcontractor warranties fully executed in the form approved by the Owner;
2. All Extended Warranties required by the Contract Documents;
3. The Contractor's warranty; and
4. A list of all Subcontractors, Sub-subcontractors and suppliers who performed Work on the Project or who furnished equipment or materials for use in the Project, such list to include the name, address, email address, and telephone number of the responsible person at all such entities.

4. Contractor has provided Owner the Red Line drawings as required by the Contract Documents.

§ 9.9.5 The delivery, endorsement or assignment of such warranties shall not release the Contractor from obligations pursuant to the Contract Documents.

§ 9.10 Final Completion and Final Payment
§ 9.10.1 Statutory Requirements for Final Payment:
§ 9.10.1.1 Upon receipt of written notice from Contractor that the Work is ready for final inspection and acceptance, the Owner and A/E Professional, will promptly make the Final Inspection and shall prepare a Final Punch List as required by the Florida Statutes. To the extent this Project involves more than one building or structure, or will proceed in multiple phases, the Owner will provide a Final Punch List for each building, structure, or phase of the Project within the time limitations set forth in this Article.

§ 9.10.1.2 The Owner shall work with the Owner's Representative and/or A/E Professional to prepare the Final Punch List, which shall include a list of items and the estimated cost to complete each such item, which is required to render complete, satisfactory, and acceptable the Work of the Contractor.

§ 9.10.1.3 To the extent this Project has an estimated cost of less than $10 million, the Owner shall develop the Final Punch List no later than thirty (30) calendar days after the Project has achieved Substantial Completion. The Owner shall deliver the Final Punch List to Contractor within five (5) calendar days of its development.

§ 9.10.1.4 All items in the Final Punch List shall be completed by the Contractor within thirty (30) calendar days after Contractor's receipt of the Final Punch List. If the Final Punch List is not provided to the Contractor by the agreed upon date for delivery of the Final Punch List, the Contract Time for completion shall be extended by the number of days that the Owner exceeded the delivery date.

§ 9.10.1.5 Notwithstanding anything to the contrary contained in any Contract Documents or any attachment thereto, the Owner may withhold from payments to Contractor a sum equal to one hundred and fifty percent (150%) of the cost of the items on the Final Punch List (the "Final Punch List Balance").

§ 9.10.1.6 Within twenty (20) business days after the Final Punch List is created, the Owner shall pay the Contractor any remaining contract balance, including all retainage previously withheld, excluding an amount equal to the Final Punch List Balance as set forth in Section 9.10.1.5.

§ 9.10.1.7 The failure to include any corrective work or pending items not yet completed on the Final Punch List does not alter the responsibility of the Contractor to complete all the construction services purchased pursuant to the Agreement. All items that require correction under the Contract Documents, which are identified after the preparation and delivery of the Final Punch List remain the obligation of the Contractor as defined by the Contract Documents.

§ 9.10.1.8 Upon Contractor's completion of the Final Punch List, Contractor may submit to the Owner a final Application for Payment requesting the Final Punch List Balance set forth in Section 9.10.1.5.

§ 9.10.1.9 If Owner finds the Work acceptable, the requisite documents have been submitted and the requirements of the Contract Documents fully satisfied, and all conditions of the permits and regulatory agencies have been met, a Final Certificate of Payment shall be issued, stating that the requirements of the Contract Documents have been performed and the Work is ready for acceptance under the terms and conditions thereof.

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§ 9.10.1.10 If a good faith dispute exists as to whether one or more items identified on the Final Punch List have been completed in accordance with the Contract Documents, Owner may continue to withhold up to 150% of the total cost to complete such item.

§ 9.10.1.11 Owner is not required to pay or release any amounts to Contractor that are the subject of a good faith dispute made in writing pursuant to the Agreement.

§ 9.10.1.12 Retainage. Five percent (5%) of all monies earned by Contractor shall be retained by Owner until twenty (20) business days after creation of the Final Punch List as set forth this section. Within twenty (20) business days after the Final Punch List is created, the Owner shall pay the Contractor any remaining contract balance, including all retainage previously withheld, with the exception of an amount equal to 150% of the estimated cost to complete the items identified on the Final Punch List, as set forth herein.

§ 9.10.1.13 This Agreement is intended to comply with the requirements of Sections 218.735 and 255.073-079, Florida Statutes, as applicable. If this Article or Agreement contains any provision found to be unlawful under Sections 218.735 and 255.073-079, Florida Statutes, the same shall be deemed to be of no effect and shall be deemed stricken from this Agreement without affecting the binding force of this Agreement as it shall remain after omitting such provision.

§ 9.10.2 Final payment, including any remaining retention shall not become due until the Contractor satisfies the requirements of the Contract Documents. As used in the Contract Documents, "Final Completion" shall mean such time after Substantial Completion and the following express conditions precedent to Final Payment have been met:

.1 the A/E Professional has issued a Certificate of Final Completion;

.2 all "punch list" items have been fully completed to the reasonable satisfaction of Owner and A/E Professional, unless the failure of the same to issue is not due to the failure of Contractor to complete its scope of Work;

.3 the final certificate of occupancy and all final governmental and utility authority permits have been issued, unless the final certificate of occupancy is delayed for reasons that are beyond the control of the Contractor and those for whom the Contractor is responsible;

.4 Contractor has fully cleaned and restored the site with respect to all of the final punch list work; and

.5 all temporary utilities are disconnected;

§ 9.10.3 In addition to the above, Contractor shall have performed and or submitted (as applicable) to the A/E Professional and/or Owner's Representative and Owner the following:

.1 an affidavit that payrolls, bills for materials and equipment, and other indebtedness connected with the Work for which the Owner or the Owner's property might be responsible or encumbered (less amounts withheld by Owner) have been paid or otherwise satisfied, or shall be paid out of Contractor's final payment;

.2 consent of surety, if any, to final payment;

.3 documentation of any special warranties, such as manufacturers' warranties or specific Subcontractor warranties;

.4 all previously undelivered manufacturer and Subcontractor guarantees, warranties and manuals and documents;

.5 final and or conditional releases of lien, waivers of claim, satisfactions of liens or claims, and such other affidavits as may be reasonably required by the Owner to assure a lien-free and

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claim-free completion of the Work; Where Contractor is in a dispute with a Subcontractor and or supplier, consent of surety to Final Payment is acceptable.

.6 To the extent A/E Professional in missing any shop drawings and or submittals, Contractor will provide any such items requested in writing;

.7 evidence that all temporary utilities have been disconnected;

.8 the Contractor has fully cleaned and restored the site, including removal of all rubbish and construction debris;

.9 all final governmental permits for which Contract is responsible under the Contract Documents have been issued and all permits have been closed out,

.10 Contractor has complied with all partial occupancy or Turnover obligations set forth in the AIA A201 Modified General Conditions above; and

.11 Contractor has complied with all other requirements of the Contract Documents.

§ 9.10.4 The Contractor's obligation to complete all Work in accordance with the Contract Documents shall not be deemed waived, excused, or otherwise satisfied by any failure of any person or entity to include, discover, or identify any incomplete or defective Work in any punch list, completion list, or inspection report, including without limitation the Substantial Completion Punch List, or any further punch lists.

§ 9.10.5 Final payment may be withheld on account of (1) defective Work not remedied, (2) claims or liens filed, (3) failure of the Contractor to make payments properly to subcontractors or for labor, materials, or equipment, (4) failure to provide waivers of lien for all lienors giving notices, (5) damage to the Owner's property caused by Contractor, its subcontractors or anyone working for Contractor, in which case a reasonable estimated amount of such damages shall be withheld from Contractor's payment until such damages are satisfactorily corrected, (6) failure to carry out the Work in accordance with the Contract Documents.

§ 9.10.6 If, after Substantial Completion of the Work, final completion thereof is materially delayed through no fault of the Contractor or by issuance of Change Orders affecting final completion, and the A/E Professional and/or Owner's Representative so confirms, the Owner shall, upon application by the Contractor and certification by the A/E Professional and/or Owner's Representative, and without terminating the Contract, make payment of the balance due for that portion of the Work fully completed, corrected, and accepted. If the remaining balance for Work not fully completed or corrected is less than retainage stipulated in the Contract Documents, and if bonds have been furnished, the written consent of the surety to payment of the balance due for that portion of the Work fully completed and accepted shall be submitted by the Contractor to the A/E Professional and/or Owner's Representative prior to certification of such payment. Such payment shall be made under terms and conditions governing final payment, except that it shall not constitute a waiver of Claims.

§ 9.10.7 The making of final payment shall not constitute a waiver of Claims by the Owner.

§ 9.10.8 Acceptance of final payment by the Contractor, a Subcontractor, or a supplier, shall constitute a waiver of claims by that payee except those previously made in writing and identified by that payee as unsettled at the time of final Application for Payment.

§ 9.10.9 Prior to final payment, Contractor shall (1) organize maintenance and operating manual information into suitable sets of manageable size, and bind into individual binders properly identified and indexed; (2) include as applicable emergency instructions, spare part listing, warranties, guarantees or wiring diagrams, recommended "turn around" cycles, inspections procedures, shop drawings, product data, and any other applicable information; (3) Bind each manual of each set in heavy-duty, three-ring vinyl cover binders, and include pocket folders for folded sheet information; and (4) mark identification on both the front and the spine of each binder.

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ARTICLE 10 PROTECTION OF PERSONS AND PROPERTY

§ 10.1 Safety Precautions and Programs

The Contractor shall be responsible for initiating, maintaining, and supervising all safety precautions and programs in connection with the performance of the Contract.

§ 10.2 Safety of Persons and Property

§ 10.2.1 The Contractor shall take reasonable precautions for safety of, and shall provide reasonable protection to prevent damage, injury, or loss to

- **.1** employees on the Work and other persons who may be affected thereby;
- **.2** the Work and materials and equipment to be incorporated therein, whether in storage on or off the site, under care, custody, or control of the Contractor, a Subcontractor, or a Sub-subcontractor; and
- **.3** other property at the site or adjacent thereto, such as trees, shrubs, lawns, walks, pavements, roadways, structures, and utilities not designated for removal, relocation, or replacement in the course of construction.

§ 10.2.2 The Contractor shall comply with, and give notices required by applicable laws, statutes, ordinances, codes, rules and regulations, and lawful orders of public authorities, bearing on safety of persons or property or their protection from damage, injury, or loss.

§ 10.2.3 The Contractor shall implement, erect, and maintain, as required by existing conditions and performance of the Contract, reasonable safeguards for safety and protection, including posting danger signs and other warnings against hazards; promulgating safety regulations; and notifying the owners and users of adjacent sites and utilities of the safeguards.

§ 10.2.4 When use or storage of explosives or other hazardous materials or equipment, or unusual methods are necessary for execution of the Work, the Contractor shall exercise utmost care and carry on such activities under supervision of properly qualified personnel.

§ 10.2.5 The Contractor shall promptly remedy damage and loss to property caused in whole or in part by the Contractor, a Subcontractor, a Sub-subcontractor, or anyone directly or indirectly employed by any of them, or by anyone for whose acts they may be liable and for which the Contractor is responsible under the Contract Documents. The Contractor may make a Claim for the cost to remedy the damage or loss to the extent such damage or loss is attributable in whole or in part to the grossly negligent acts or omissions of the Owner or A/E Professional or anyone directly or indirectly employed by either of them, or by anyone for whose acts either of them may be liable, and not attributable in whole or in part to the fault or negligence of the Contractor. The foregoing obligations of the Contractor are in addition to the Contractor's obligations under the Agreement.

§ 10.2.6 Any damage to adjacent property or improvements shall be promptly repaired by the Contractor, if caused in whole or in part by Contractor or its Subcontractors, any Sub-subcontractor or anyone directly or indirectly employed by any of them, or by anyone for whose acts any of them may be liable. The foregoing is not intended to prevent the Contractor from making claim against any insurance that may provide coverage to the Contractor.

§ 10.2.7 The Contractor shall designate a responsible member of the Contractor's organization at the site whose duty shall be the prevention of accidents and theft. This person shall be the Contractor's superintendent unless otherwise designated by the Contractor in writing to the Owner and A/E Professional.

§ 10.2.8 The Contractor shall not permit any part of the construction or site to be loaded so as to cause damage or create an unsafe condition.

§ 10.2.9 Injury or Damage to Person or Property

If either party suffers injury or damage to person or property because of an act or omission of the other party, or of others for whose acts such party is legally responsible, notice of the injury or damage, whether or not insured, shall be given to the other party within a reasonable time not exceeding 21 days after discovery. The notice shall provide sufficient detail to enable the other party to investigate the matter.

§ 10.3 Hazardous Materials and Substances

§ 10.3.1 The Contractor is responsible for compliance with any requirements included in the Contract Documents regarding hazardous materials or substances. If the Contractor encounters a hazardous material or substance not

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addressed in the Contract Documents and if reasonable precautions will be inadequate to prevent foreseeable bodily injury or death to persons resulting from a material or substance, including but not limited to asbestos or polychlorinated biphenyl (PCB), encountered on the site by the Contractor, the Contractor shall, upon recognizing the condition, immediately stop Work in the affected area and notify the Owner and A/E Professional of the condition.

§ 10.3.2 Upon receipt of the Contractor's notice, the Owner shall obtain the services of a licensed laboratory to verify the presence or absence of the material or substance reported by the Contractor and, in the event such material or substance is found to be present, to cause it to be rendered harmless. Unless otherwise required by the Contract Documents, the Owner shall furnish in writing to the Contractor and A/E Professional the names and qualifications of persons or entities who are to perform tests verifying the presence or absence of the material or substance or who are to perform the task of removal or safe containment of the material or substance. The Contractor and the A/E Professional will promptly reply to the Owner in writing stating whether or not either has reasonable objection to the persons or entities proposed by the Owner. If either the Contractor or A/E Professional has an objection to a person or entity proposed by the Owner, the Owner shall propose another to whom the Contractor and the A/E Professional have no reasonable objection. When the material or substance has been rendered harmless, Work in the affected area shall resume upon written agreement of the Owner and Contractor. By Change Order, the Contract Time shall be extended appropriately and the Contract Sum shall be increased by the amount of the Contractor's reasonable additional costs of shutdown, delay, and start-up.

§ 10.3.3 The Owner shall indemnify and hold harmless the Contractor, Subcontractors, A/E Professional, A/E Professional's consultants, and agents and employees of any of them from and against claims, damages, losses, and expenses, including but not limited to attorneys' fees, arising out of or resulting from performance of the Work in the affected area if in fact the material or substance presents the risk of bodily injury or death as described in Section 10.3.1 and has not been rendered harmless, provided that such claim, damage, loss, or expense is attributable to bodily injury, sickness, disease or death, or to injury to or destruction of tangible property (other than the Work itself), except to the extent that such damage, loss, or expense is due to the fault or negligence of the party seeking indemnity.

§ 10.3.4 The Owner shall not be responsible under this Section 10.3 for hazardous materials or substances the Contractor brings to the site.

§ 10.3.5 The Contractor shall reimburse the Owner for the cost and expense the Owner incurs (1) for remediation of hazardous materials or substances the Contractor brings to the site and negligently handles, or (2) where the Contractor fails to perform its obligations under Section 10.3.1, except to the extent that the cost and expense are due to the Owner's fault or negligence.

§ 10.4 Emergencies

In an emergency affecting safety of persons or property, the Contractor shall act, at the Contractor's discretion, to prevent threatened damage, injury, or loss. Additional compensation or extension of time claimed by the Contractor on account of an emergency shall be determined as provided in Article 15 and Article 7. Within ten (10) days of executing the Agreement, the Contractor shall furnish a hurricane preparedness plan to secure the site and prevent damage to the Project, which shall be attached as an exhibit to the Agreement as Exhibit ___.

ARTICLE 11 INSURANCE AND BONDS

§ 11.1 Contractor's Insurance and Bonds

§ 11.1.1 The Contractor shall purchase and maintain insurance of the types and limits of liability, containing the endorsements, and subject to the terms and conditions, as described in the RFQ No. [insert] and reflected in the Insurance Exhibit _____ to the Agreement. The Contractor shall purchase and maintain the required insurance from an insurance company or insurance companies lawfully authorized to issue insurance in the jurisdiction where the Project is located and having an A.M. BEST's rating of "A-X" or better. The Owner, A/E Professional, and A/E Professional's consultants shall be named as additional insureds under the Contractor's commercial general liability policy or as otherwise described in the Contract Documents.

§ 11.1.2 The insurance required by Section 11.1 shall be the primary insurance and shall be written for not less than limits of liability specified in the Contract Documents or required by law, whichever coverage is greater and shall name Owner, A/E Professional and A/E Professional's Consultants as additional and named insureds covering bodily injury, death, property damage and personal injury and Owner as an additional insured for claims to the extent caused by the Contractor's negligent acts or omissions during the Contractor's completed operations. Coverages, whether written on an occurrence or claims-made basis, shall be maintained without interruption from the date of

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commencement of the Work until the date of final payment except for completed operations coverage, which shall be maintained for two (2) years after the completion of the Project.

§ 11.1.3 The Contractor shall not commence any portion of the Work under the Contract until it has obtained all insurance required under this Article 11 or the Agreement and, except for completed operations insurance or except as otherwise provided herein.

§ 11.1.4 The deductible on all insurance required of Contractor under this Article 11 or the Agreement shall not exceed [insert] dollars and shall in all events be paid by the Contractor.

§ 11.1.5 Certificates of insurance, Additional and Named Insured Endorsements, and actual copies of the Insurance Policies in accordance with this Article shall be delivered to the Owner prior to commencement of the Work and thereafter upon renewal or replacement of each required policy of insurance, and the certificates of insurance and endorsements are attached hereto as an exhibit to be incorporated in the Contract Documents. These certificates and the insurance policies required by this Section 11.1 shall contain a provision that coverages afforded under the policies will not be canceled or allowed to expire until at least 60 days' prior written notice has been given to the Owner. Contractor shall not commence Work and shall not be entitled to any payments under the Contract Documents until the required policies have been delivered to Owner and reviewed by Owner's insurance professional and found to be in compliance with the Contract Documents.

§ 11.1.6 An additional certificate evidencing continuation of liability coverage, including coverage for completed operations, shall be submitted with the final Application for Payment as required by Article 9 and thereafter upon renewal or replacement of such coverage until the expiration of the time required by Section 11.1.2. Information concerning reduction of coverage on account of revised limits or claims paid under the General Aggregate, or both, shall be furnished by the Contractor with reasonable promptness.

§ 11.1.7 Contractor's failure to provide and maintain the insurance required by this Contract shall be grounds for termination, and Contractor shall be liable for all losses, damages, costs and expenses associated with the failure to maintain the required insurance.

§ 11.1.8 Except to the extent covered by and paid by insurance, the Contractor shall be responsible for all loss or damage Contractor or its Subcontractors cause to the Work, including the Contractor's materials delivered to site for incorporation therein and all property issued to the Contractor by the Owner for use or incorporation in the Work.

§ 11.1.9 The Contractor shall secure, pay for, and maintain whatever insurance they may deem necessary for protection against loss of owned or rented capital equipment and tools, including any tools owned by mechanic, any tools, equipment, stagings, towers and forms owned or rented by its subcontractors or agents under this Contract. Failure of the Contractor to secure such insurance or to maintain adequate levels of coverage shall not obligate the Owner or its agents and employees for any losses of owned or rented equipment or for any Work damaged. If the Contractor secures such insurance, the insurance policy shall include a waiver of subrogation as follows: "It is agreed that in no event shall this insurance company have any right of recovery against the Owner." The Contractor agrees to cooperate fully with the insurance company or companies in carrying out the provisions and conditions of all policies applicable to Work to be done, as well as all rules and recommendations of such company or companies in regard to accident prevention, reports and audits. The Contractor further agrees that notice of every accident will not only be reported immediately to the Owner, and also to such insurance company or companies.

§ 11.2 Owner's Insurance

§ 11.2.1 The Owner shall be responsible for maintaining the Owner's usual liability insurance and Builder's Risk coverage. The parties agree and acknowledge that, should any insurance maintained by the Owner not provide coverage for losses and/or damages arising from any acts, errors, omissions, or negligence on the part of the Contractor and/or its subcontractors, the Contractor and all applicable Subcontractors shall bear the risk and pay for such losses regardless of whether the Contractor should be covered for such losses by the Contractor's general liability or other insurance policies.

§ 11.2.2 The Owner's Builder's Risk insurance shall be maintained, unless otherwise provided in the Contract Documents or otherwise agreed in writing by all persons and entities who are beneficiaries of such insurance, until completion of the Project.

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.1 Deductibles: The Owner's Builder's Risk insurance shall have a reasonable deductible, with such deductible amount to be determined at the sole discretion of the Owner. The Contractor shall pay for any deductibles on the Owner's insurance policies for claims to the extent they arise in whole or in part as a result of the Contractor's, or third parties for which Contractor is responsible, acts, errors, or omissions under this Agreement.

.2 Any Owner's Builder's Risk insurance policy shall extend only to materials actually installed in the Project or at the premises ready for installation (unless otherwise agreed by the insurer). Any plant, materials, equipment, tools or fixtures forming a part of the capital assets of the Contractor or belonging to any of its employees shall not be covered by the builders risk insurance maintained by Owner. Any such Builder's Risk insurance policy shall be subject to the usual limitations and exclusions normally contained in such policies of insurance, including, without limitation, a reasonable deductible at the discretion of the Owner. In the event of any loss or damage paid by the Builder's Risk policy, such proceeds shall be accepted and used by Owner at Owner's sole discretion.

.3 Unless otherwise provided in the Contract Documents, the Builder's Risk insurance shall cover portions of the Work stored off the Site after written approval of the Owner at the value established in the approval, and also portions of the Work in transit.

§ 11.3 Waivers of Subrogation

§ 11.3.1 Except for losses due to the negligence or breach of contract of a, subcontractor, sub-subcontractor or persons they are responsible for, the Owner and Contractor waive all rights against each other and any of their subcontractors, sub-subcontractors, agents and employees, each of the other for compensation for damages caused by fire or other perils to the extent paid for by the Owner's Builder's Risk insurance, Owner's property insurance, or by the Contractor's liability insurance obtained pursuant to this Article, except such rights as they have to proceeds of such insurance held by the Owner and the Contractor. This shall not act as a waiver of any other rights or remedies under the Contract Documents.

§ 11.3.2 A loss insured under the property or Builder's Risk insurance for the Property shall be adjusted by the Owner, using reasonable discretion and not as a fiduciary for Contractor or any other interested party, and made payable to the Owner for the insureds, as their interest may appear, subject to requirements of any applicable mortgagee clause. The Contractor shall pay Subcontractors their just shares of insurance proceeds received by the Contractor, and by appropriate written agreements where legally required for validity, shall require Subcontractors to make payments to their Sub-subcontractors in similar manner.

§ 11.3.3 The Owner shall not be required to give bond for performance of the Owner's duties. The Owner may deposit in a separate account insurance proceeds so received, which the Owner shall distribute in accordance with the terms of any settlement reached with the Builder's Risk insurer. If after such loss no other special agreement is made and unless the Owner terminates the Contract for convenience, replacement of damaged property shall be performed by the Contractor in accordance with this Agreement and paid for by Owner.

§ 11.4 Performance of Bond and Payment of Bond

§ 11.4.1 If required by the terms of RFQ No. ___, Contractor shall furnish bonds covering faithful performance of the Contract and payment of obligations arising thereunder as stipulated in RFQ No. ___.

§ 11.4.2 Upon the request of any person or entity appearing to be a potential beneficiary of bonds covering payment of obligations arising under the Contract, the Contractor shall promptly furnish a copy of the bonds or shall authorize a copy to be furnished.

§ 11.4.3 To the extent required by RFQ No. ___, Contractor shall provide the Owner with a 100% performance bond in the amount of the Contract Sum utilizing the form provided with these Contract Documents which shall incorporate the obligation of Surety referenced in this Contract and an unconditional payment bond in accordance with Fla. Stat. § 713.23 in the amount of the Contract Sum covering the faithful performance of the Contract and payment of all obligations thereunder. The bonds shall be executed by a surety that is licensed in Florida and shall remain in effect as required by law and the Contract Documents. The bonds shall be effective as of the Commencement Date as defined in the Contract and shall cover all Work and obligations under the Contract Documents.

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§ 11.4.4 The Contractor shall, upon approval of the bonds by the Owner, record the bonds with the County Clerk's Office of the county in which the work is to be performed and promptly furnish the Owner with a certified copy of the recorded bonds.

§ 11.4.5 Both the payment bond and the performance bond under this Article shall display the Surety's bond number, and attach a rider containing the following provisions:

.1 Surety hereby agrees that it consents to and waives notice of any addition, alteration, omission, change, or other modification of the Contract Documents. Any other addition, alteration, change, extension of time, backcharge, or other modification of the Contract Documents, or forbearance on the part of either Owner or Contractor to the other, shall not release Surety of its obligations hereunder, and notice to the surety of such matters is hereby waived.

.2 Surety hereby stipulates and agrees that the obligation of said Surety and its bond shall be in no way impaired or affected by any extension of time, modification, omission, addition, or change in or of the said Contract or the Work to be performed thereunder, or by any payment thereunder before the time required therein, or by any waiver of any provisions thereof, or by any assignment, subletting or other transfer thereof or of any part thereof, or of any Work to be performed or any moneys due or to become due thereunder. Surety expressly consents to the payment provisions as provided in this Contract. In any event, even if the Surety fails to include such language in its bond, by incorporating this Contract into the Payment and Performance Bonds furnished for this Project, Surety agrees to the provisions of this Article and the provisions of § 11.4.4.

.3 Surety hereby agrees that if, after the 14 day Notice to the Contractor and Surety, the Contractor and Surety do not cure the default as provided in this Section, then the Surety, in addition to the Contractor, without the need to terminate the Contractor, shall be liable to Owner for any damages the Owner may sustain and be entitled to pursuant to the Contract and the bonds. No further Notices shall be required by Owner.

§ 11.4.6 Should Contractor fail to perform any of its obligations under this Contract, the Owner shall give the Contractor and Surety a fourteen day (14) Notice of Default. After receipt of the 14 day Notice provided herein, the Contractor and Surety shall have the right and opportunity to cure the default(s). If, after the 14 day Notice, the Contractor and Surety do not cure the default as provided in this Section, then the Surety, in addition to the Contractor, without the need to terminate the Contractor, shall be liable to Owner for any damages the Owner may sustain and be entitled to pursuant to this Contract and the bonds. No further Notices shall be required by Owner.

ARTICLE 12 UNCOVERING AND CORRECTION OF WORK

§ 12.1 Uncovering of Work

§ 12.1.1 If a portion of the Work is covered contrary to the A/E Professional's request or to requirements specifically expressed in the Contract Documents, it must, if requested in writing by the A/E Professional, be uncovered for the A/E Professional's examination and be replaced at the Contractor's expense without change in the Contract Time.

§ 12.1.2 If a portion of the Work has been covered that the A/E Professional has not specifically requested to examine prior to its being covered, the A/E Professional may request to see such Work and it shall be uncovered by the Contractor. If such Work is not in accordance with the Contract Documents, the costs of uncovering the Work, and the cost of correction, shall be at the Contractor's expense.

§ 12.2 Correction of Work

§ 12.2.1 Before Substantial Completion

The Contractor shall promptly correct Work rejected by the A/E Professional or failing to conform to the requirements of the Contract Documents, discovered before Substantial Completion and whether or not fabricated, installed or completed. Costs of correcting such rejected Work, including additional testing and inspections, the cost of uncovering and replacement, and compensation for the A/E Professional's services and expenses made necessary thereby (including attorneys' fees), shall be at the Contractor's expense. The obligations of this Section shall survive completion and final payment or termination of the Agreement.

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§ 12.2.2 After Substantial Completion

§ 12.2.2.1 In addition to the Contractor's obligations under the Agreement, if, within one (1) year after the date of Final Completion of all the Work or any longer period provided in an Extended Warranty, is found to be not in accordance with the requirements of the Contract Documents, the Contractor shall correct it promptly after receipt of notice from the Owner to do so. The Owner shall give such notice promptly after discovery of the condition. If the Contractor fails to commence correction of nonconforming Work within five (5) business days after receipt of prior reasonable notice by the Owner, the Owner may correct the nonconforming Work in accordance with the Agreement. Contractor is obligated to reimburse Owner for all corrective costs and damages incurred as a result of Contractor's failure to correct nonconforming Work. This obligation shall survive completion and final payment or termination of the Contract.

§ 12.2.2.2 The one-year period for correction of Work or any longer period provided in an Extended Warranty shall be extended with respect to portions of Work first performed after Substantial Completion by the period of time between Substantial Completion and the actual completion of that portion of the Work.

§ 12.2.2.3 The one-year period for correction of Work or any longer period provided in an Extended Warranty shall be extended for corrected Work performed by the Contractor pursuant to this Section 12.2.

§ 12.2.3 The Contractor shall remove from the site portions of the Work that are not in accordance with the requirements of the Contract Documents and are neither corrected by the Contractor nor accepted by the Owner.

§ 12.2.4 The Contractor shall bear the cost of correcting destroyed or damaged construction of the Owner or Separate Contractors, whether completed or partially completed, caused by the Contractor's correction or removal of Work that is not in accordance with the requirements of the Contract Documents.

§ 12.2.5 Nothing contained in this Section 12.2 shall be construed to establish a period of limitation with respect to other obligations the Contractor has under the Contract Documents. Establishment of the one-year period for correction of Work as described in Section 12.2.2 relates only to the specific obligation of the Contractor to correct the Work, and has no relationship to the time within which the obligation to comply with the Contract Documents may be sought to be enforced, nor to the time within which proceedings may be commenced to establish the Contractor's liability with respect to the Contractor's obligations other than specifically to correct the Work.

§ 12.3 Acceptance of Nonconforming Work

If the Owner prefers to accept Work that is not in accordance with the requirements of the Contract Documents, the Owner may do so instead of requiring its removal and correction, in which case the Contract Sum will be reduced as appropriate and equitable. Such adjustment shall be effected whether or not final payment has been made. If payments due to the Contractor are insufficient to cover the adjustment, Contractor shall pay the difference to the Owner.

ARTICLE 13 MISCELLANEOUS PROVISIONS

§ 13.1 Governing Law

The Agreement and the Contract Documents shall be governed by the law of the State of Florida without regard to conflicts of law provisions.

§ 13.2 Successors and Assigns

§ 13.2.1 The Owner and Contractor respectively bind themselves, their partners, successors, assigns, and legal representatives to covenants, agreements, and obligations contained in the Contract Documents. Neither party to the Contract shall assign the Contract as a whole without written consent of the other. If either party attempts to make an assignment without such consent, that party shall nevertheless remain legally responsible for all obligations under the Contract.

§ 13.3 Rights and Remedies

§ 13.3.1 Duties and obligations imposed by the Contract Documents and rights and remedies available thereunder shall be in addition to and not a limitation of duties, obligations, rights, and remedies otherwise imposed or available by law.

§ 13.3.2 No action or failure to act by the Owner, A/E Professional, or Contractor shall constitute a waiver of a right or duty afforded them under the Contract, nor shall such action or failure to act constitute approval of or acquiescence in a breach thereunder, except as may be specifically agreed upon in writing. The invalidity of any part or provisions

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of the Contract Documents shall not affect the validity or enforceability of any other part of the Contract Documents. Any waiver by the Owner of any breach of the Contract Documents shall not be held to be a waiver of any other or subsequent breach, and any waiver by the Owner of any right to terminate the Contract shall not be held to be a waiver of any breach of the Contract Documents, but the Owner retains all its rights to recover damages therefor.

§ 13.4 Tests and Inspections

§ 13.4.1 Tests, inspections, and approvals of portions of the Work shall be made as required by the Contract Documents and by applicable laws, statutes, ordinances, codes, rules, and regulations or lawful orders of public authorities. Unless otherwise provided, the Contractor shall make arrangements for such tests, inspections, and approvals with an independent testing laboratory or entity acceptable to the Owner, or with the appropriate public authority, and shall bear all related costs of tests, inspections, and approvals. The Contractor shall give the A/E Professional timely notice of when and where tests and inspections are to be made so that the A/E Professional may be present for such procedures.

§ 13.4.2 If the A/E Professional, Owner, or public authorities having jurisdiction determine that portions of the Work require additional testing, inspection, or approval not included under Section 13.4.1, the A/E Professional will, upon written authorization from the Owner, instruct the Contractor to make arrangements for such additional testing, inspection, or approval, by an entity acceptable to the Owner, and the Contractor shall give timely notice to the A/E Professional of when and where tests and inspections are to be made so that the A/E Professional may be present for such procedures. Such costs, except as provided in Section 13.4.3, shall be at the Owner's expense.

§ 13.4.3 If procedures for testing, inspection, or approval under Sections 13.4.1 and 13.4.2 reveal failure of the portions of the Work to comply with requirements established by the Contract Documents, all costs made necessary by such failure, including those of repeated procedures, additional testing, and compensation for the services and expenses of the A/E Professional, A/E Professional's consultants, Owner's consultants, including special and threshold inspectors or other engineers, shall be at the Contractor's expense. Owner may deduct such amounts from the balance due the Contractor.

§ 13.4.4 Required certificates of testing, inspection, or approval shall, unless otherwise required by the Contract Documents, be secured by the Contractor and promptly delivered to the A/E Professional.

§ 13.4.5 If the A/E Professional is to observe tests, inspections, or approvals required by the Contract Documents, the A/E Professional will do so promptly and, where practicable, at the normal place of testing.

§ 13.4.6 Tests or inspections conducted pursuant to the Contract Documents shall be made promptly to avoid unreasonable delay in the Work.

§ 13.5 Interest

Payments due and unpaid under the Contract Documents shall bear interest as provided in the Agreement.

§ 13.6 Time Limits on Claims

The Owner and Contractor shall commence all claims and causes of action, whether in contract, tort, breach of warranty or otherwise, against the other arising out of or related to the Contract within the time period specified by applicable law.

§ 13.7 It shall be incumbent upon the Contractor to have permit revisions issued and executed by the Building Department in a timely manner so as not to delay the construction process, and the Contractor shall bear the cost of such revisions.

§ 13.8 The Construction work Saturdays, Sundays or after normal hours, if approved, shall be at no additional cost to the Owner.

§ 13.9 Maintenance

Various materials and finishes of materials exposed to the Florida environment will begin to deteriorate over time. Materials such as rooftop equipment, piping, conduits, etc., as well as finishes for stainless steel, wood, aluminum, etc. are all subject to deterioration. The Contractor is to provide the Owner a maintenance program for various products on the project. All maintenance required prior to Substantial Completion or partial occupancy or Turnover

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will be performed by Contractor as part of the Work. Contractor shall not be responsible for maintenance following Substantial Completion or partial occupancy or Turnover.

§ 13.10 Maintenance Records

After Substantial Completion (but before Final Payment) or upon occupancy, the Contractor shall meet with and arrange for each installer of parts of Work requiring regular maintenance to meet with Owner's representative and the property manager(s) for the Project or other individuals as may be designated by Owner, at the Project site, to provide basic instructions needed for proper operation and maintenance of that part of Work. Instructions by manufacturer's representatives are required where installers are not experts in operating/maintenance procedures, or as specified in the Construction Documents. For operational equipment, installers shall demonstrate startup, shut-down, emergency operations, noise and vibration adjustments, safety, economy/efficiency adjustments, and other applicable operations, and shall review maintenance and operating instructions which are required to be performed in order to maintain in force applicable warranties, guaranties and bonds. Completion of all training is an express condition precedent to Final Payment.

§ 13.11 No Agency Relationship

It is understood that Contractor is not herein appointed the agent of Owner but is and shall remain an independent contractor. Accordingly, all aspects of Contractor's performance of the Agreement, except as specifically provided in the Agreement, shall be under the direction and control of Contractor.

§ 13.12 Third Parties

No provision in the Agreement shall create or give to third parties any claim or right of action against Owner.

§ 13.13 Place of Work

Contractor, under regulations prescribed by Owner, shall use only established roadways, and such temporary roadways as may be approved by Owner. When materials or equipment are transported in performance of the Work, vehicles shall not be loaded beyond the load limit as established by federal, state or local law regulations. When it is necessary to cross curbing and/or sidewalks, protection against damage shall be provided by Contractor, and any damage caused will be immediately repaired by Contractor, at Contractor's cost, and if not repaired by Contractor within five days after notice in writing, Owner may make such repairs and charge the amount of such repairs to the Contractor. All existing sidewalks, curbs and pavements disturbed, broken, removed, or otherwise damaged by Contractor, during the performance of the Work under the Agreement, shall be replaced by the Contractor at its sole expense. Replaced or repaired sidewalks, curbs, and pavements shall be constructed of similar materials and by similar methods to the original construction. Replaced or repaired sidewalks, curbs and payment shall be smoothly blended into the existing Work and shall not present depressions or humps and shall be acceptable to Owner.

ARTICLE 14 TERMINATION OR SUSPENSION OF THE CONTRACT

§ 14.1 Termination by the Owner for Cause

§ 14.1.1 The Owner may terminate the Contract if the Contractor

- **.1** refuses or fails to supply enough properly skilled workers or proper materials;
- **.2** fails to make payment to Subcontractors or suppliers in accordance with the respective agreements between the Contractor and the Subcontractors or suppliers;
- **.3** disregards applicable laws, statutes, ordinances, codes, rules and regulations, or lawful orders of a public authority;
- **.4** otherwise is guilty of substantial breach of a provision of the Contract Documents;
- **.5** admits in writing its inability to pay its debts generally as they become due, or if the Contractor makes a general assignment for the benefit of its creditors, or if a receiver, liquidator, trustee or assignee is appointed on account of its bankruptcy or insolvency;
- **.6** submits an Application for Payment, sworn statement, waiver of lien, affidavit or document that is intentionally falsely filed; or
- **.7** has a construction lien filed against any part of the Work or the site of the project for work performed under the Agreement for which the Contractor has been paid by thee Owner and not promptly bonded or insured over by the Contractor in accordance with Florida Statutes after five (5) days written notice to the Contractor.

§ 14.1.2 When any of the reasons described in Section 14.1.1 exist, the Owner, may, without prejudice to any other remedy it may have and after giving the Contractor seven (7) day's written notice, terminate the Agreement and take

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possession of the site and all materials, tools, equipment and machinery thereon owned by the Contractor and may finish the Work by whatever reasonable method the Owner may deem expedient. A/E Professional

§ 14.1.3 When the Owner terminates the Contract for one of the reasons stated in Section 14.1.1, the Contractor shall not be entitled to receive further payment until the Work is finished.

§ 14.1.4 The Owner's right to terminate the Contract, pursuant to this Section, shall be in addition to and not in limitation of any rights or remedies existing hereunder or pursuant thereto or at law or in equity.

§ 14.1.5 Should Owner Terminate for Cause and should a court of competent jurisdiction subsequently determine that the Termination for Cause was improper, then in that event, the Termination shall be considered a Termination for Convenience as set forth in Paragraph 14.3 below.

§ 14.2 Suspension by the Owner for Convenience

§ 14.2.1 The Owner may, without cause, order the Contractor in writing to suspend, delay or interrupt the Work, in whole or in part for such period of time as the Owner may determine.

§ 14.2.2 The Contract Sum and Contract Time shall be adjusted for increases in the cost and time caused by suspension, delay, or interruption under Section 14.2.1. Adjustment of the Contract Sum shall include profit. No adjustment shall be made to the extent

- **.1** that performance is, was, or would have been, so suspended, delayed, or interrupted, by another cause for which the Contractor is responsible; or
- **.2** that an equitable adjustment is made or denied under another provision of the Contract.

§ 14.3 Termination by the Owner for Convenience

§ 14.3.1 The Owner may, within seven (7) calendar day's prior written notice, terminate the Contract for the Owner's convenience and without cause.

§ 14.3.2 Upon receipt of notice from the Owner of such termination for the Owner's convenience, the Contractor shall

- **.1** cease operations as directed by the Owner in the notice;
- **.2** take actions necessary, or that the Owner may direct, for the protection and preservation of the Work; and
- **.3** except for Work directed to be performed prior to the effective date of termination stated in the notice, terminate all existing subcontracts and purchase orders and enter into no further subcontracts and purchase orders.

§ 14.3.3 In case of such termination for the Owner's convenience, the Owner shall pay the Contractor for Work properly executed; costs incurred by reason of the termination, including costs attributable to termination of Subcontracts; and the termination fee, if any, set forth in the Agreement. In the event of Termination for Convenience, the Owner shall not be liable to the Contractor for lost profits on any Work not performed, home office overhead, or any other type of consequential, special or indirect damages and Contractor hereby waives same. All costs of performance claimed by Contractor must be fully supported by the Contractor's invoices and other documentation acceptable to the Owner, and shall be subject to the Owner's audit. The Contractor shall make its records available at reasonable times and places for the Owner's audit. Payments to the Contractor shall be reduced by any setoffs, damages, claims to which the Owner is entitled under this Contract.

§ 14.3.4 The Owner's right to terminate the Contract shall be in addition to and not in limitation of any rights or remedies existing hereunder or pursuant thereto or at law or in equity.

ARTICLE 15 CLAIMS AND DISPUTES

§ 15.1 Claims

§ 15.1.1 Definition

A Claim is a demand or assertion by one of the parties seeking, as a matter of right, payment of money, a change in the Contract Time, or other relief with respect to the terms of the Contract. The term "Claim" also includes other disputes and matters in question between the Owner and Contractor arising out of or relating to the Contract. The responsibility to substantiate Claims shall rest with the party making the Claim. This Section 15.1.1 does not require the Owner to file a Claim in order to impose liquidated damages in accordance with the Contract Documents. Submittal of a request for Change Order shall not be considered notice of a Claim required by this Article.

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§ 15.1.2 Time Limits on Claims

The Owner and Contractor shall commence all Claims and causes of action against the other and arising out of or related to the Contract, whether in contract, tort, breach of warranty or otherwise, in accordance with the requirements of the binding dispute resolution method selected in the Agreement and within the period specified by applicable law, but in any case not more than 10 years after the date of Substantial Completion of the Work. The Owner and Contractor waive all Claims and causes of action not commenced in accordance with this Section 15.1.2.

§ 15.1.3 Notice of Claims

§ 15.1.3.1 Claims by either the Owner or Contractor, where the condition giving rise to the Claim is first discovered prior to expiration of the period for correction of the Work set forth in Section 12.2.2, shall be initiated by notice to the other party and to the Initial Decision Maker with a copy sent to the A/E Professional, if the A/E Professional is not serving as the Initial Decision Maker. Claims by either party under this Section 15.1.3.1 shall be initiated within 21 days after occurrence of the event giving rise to such Claim or within 21 days after the claimant first recognizes the condition giving rise to the Claim, whichever is later.

§ 15.1.3.2 Claims by either the Owner or Contractor, where the condition giving rise to the Claim is first discovered after expiration of the period for correction of the Work set forth in Section 12.2.2, shall be initiated by notice to the other party. In such event, no decision by the Initial Decision Maker is required.

§ 15.1.4 Continuing Contract Performance

§ 15.1.4.1 Pending final resolution of a Claim, except as otherwise agreed in writing or as provided in Section 9.7 and Article 14, the Contractor shall proceed diligently with performance of the Contract and the Owner shall continue to make payments in accordance with the Contract Documents.

§ 15.1.4.2 The Contract Sum and Contract Time shall be adjusted in accordance with the Initial Decision Maker's decision, subject to the right of either party to proceed in accordance with this Article 15. The A/E Professional will issue Certificates for Payment in accordance with the decision of the Initial Decision Maker.

§ 15.1.5 Claims for Additional Cost

If the Contractor wishes to make a Claim for an increase in the Contract Sum, notice as provided in Section 15.1.3 shall be given before proceeding to execute the portion of the Work that is the subject of the Claim. Prior notice is not required for Claims relating to an emergency endangering life or property arising under Section 10.4.

§ 15.1.6 Claims for Additional Time

§ 15.1.6.1 If the Contractor wishes to make a Claim for an increase in the Contract Time, notice as provided in Section 15.1.3 shall be given. The Contractor's Claim shall include an estimate of cost and of probable effect of delay on progress of the Work. In the case of a continuing delay, only one Claim is necessary.

§ 15.1.6.2 If exceptional or unusual adverse weather conditions are the basis for a Claim for additional time, such Claim shall be documented by data substantiating that weather conditions were abnormal for the period of time, could not have been reasonably anticipated, and had an adverse effect on the scheduled construction.

§ 15.1.7 Contractor's Waiver of Claims for Consequential Damages

The Contractor waives Claims against Owner for consequential damages arising out of or relating to this Contract. This waiver includes damages incurred by the Contractor for principal office expenses including the compensation of personnel stationed there, for losses of financing, business and reputation, and for loss of profit, except anticipated profit arising directly from the Work.

This waiver is applicable, without limitation, to all consequential damages due to Owner's termination of Contractor in accordance with the Contract Documents. Nothing contained in this Section 15.1.7 shall be deemed to preclude assessment of liquidated damages, when applicable, in accordance with the requirements of the Contract Documents.

§ 15.2 Initial Decision

§ 15.2.1 Claims, excluding those where the condition giving rise to the Claim is first discovered after expiration of the period for correction of the Work set forth in Section 12.2.2 or arising under Sections 10.3, 10.4, and 11.5, shall be referred to the Initial Decision Maker for initial decision. The Owner's Representative will serve as the Initial Decision Maker. Except for those Claims excluded by this Section 15.2.1, an initial decision shall be required as a condition

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precedent to mediation of any Claim. If an initial decision has not been rendered within 30 days after the Claim has been referred to the Initial Decision Maker, the party asserting the Claim may demand mediation and binding dispute resolution without a decision having been rendered. Unless the Initial Decision Maker and all affected parties agree, the Initial Decision Maker will not decide disputes between the Contractor and persons or entities other than the Owner. Contractor must continue with its Work when a Claim is pending before the Initial Decision Maker.

§ 15.2.2 The Initial Decision Maker will review Claims and within ten days of the receipt of a Claim take one or more of the following actions: (1) request additional supporting data from the claimant or a response with supporting data from the other party, (2) reject the Claim in whole or in part, (3) approve the Claim, (4) suggest a compromise, or (5) advise the parties that the Initial Decision Maker is unable to resolve the Claim if the Initial Decision Maker lacks sufficient information to evaluate the merits of the Claim or if the Initial Decision Maker concludes that, in the Initial Decision Maker's sole discretion, it would be inappropriate for the Initial Decision Maker to resolve the Claim.

§ 15.2.3 In evaluating Claims, the Initial Decision Maker may, but shall not be obligated to, consult with or seek information from either party or from persons with special knowledge or expertise who may assist the Initial Decision Maker in rendering a decision. The Initial Decision Maker may request the Owner to authorize retention of such persons at the Owner's expense.

§ 15.2.4 If the Initial Decision Maker requests a party to provide a response to a Claim or to furnish additional supporting data, such party shall respond, within ten days after receipt of the request, and shall either (1) provide a response on the requested supporting data, (2) advise the Initial Decision Maker when the response or supporting data will be furnished, or (3) advise the Initial Decision Maker that no supporting data will be furnished. Upon receipt of the response or supporting data, if any, the Initial Decision Maker will either reject or approve the Claim in whole or in part.

§ 15.2.5 The Initial Decision Maker will render an initial decision approving or rejecting the Claim, or indicating that the Initial Decision Maker is unable to resolve the Claim. This initial decision shall (1) be in writing; (2) state the reasons therefor; and (3) notify the parties and the A/E Professional, if the A/E Professional is not serving as the Initial Decision Maker, of any change in the Contract Sum or Contract Time or both. The initial decision is not binding on the parties and is subject to binding dispute resolution.

§ 15.2.6 Either party may file for mediation of an initial decision at any time, subject to the terms of Section 15.2.6.1.

§ 15.2.6.1 Either party may, within 30 days from the date of receipt of an initial decision, demand in writing that the other party file for mediation. If such a demand is made and the party receiving the demand fails to file for mediation within 30 days after receipt thereof, then both parties waive their rights to mediate or pursue binding dispute resolution proceedings with respect to the initial decision.

§ 15.2.7 In the event of a Claim against the Contractor, the Owner may, but is not obligated to, notify the surety, if any, of the nature and amount of the Claim. If the Claim relates to a possibility of a Contractor's default, the Owner may, but is not obligated to, notify the surety and request the surety's assistance in resolving the controversy.

§ 15.2.8 If a Claim relates to or is the subject of a mechanic's lien, the party asserting such Claim may proceed in accordance with applicable law to comply with the lien notice or filing deadlines.

§ 15.3 Mediation

§ 15.3.1 Claims, disputes, or other matters in controversy arising out of or related to the Contract, except those waived as provided for in Sections 9.10.4, 9.10.5, and 15.1.7, shall be subject to mediation as a condition precedent to binding dispute resolution.

§ 15.3.2 In the event that the parties agree in writing to mediation, such mediation shall be administered by the American Arbitration Association in accordance with its Construction Industry Mediation Procedures in effect on the date of the Agreement. The written agreement to mediate shall be filed with the person or entity administering the mediation. If the mediation process is initiated concurrently with the filing of binding dispute resolution, including litigation, proceedings, mediation shall proceed in advance of binding dispute resolution proceedings, which shall be stayed pending mediation for a period of 60 days from the date of filing, unless stayed for a longer period by agreement of the parties or court order.

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§ 15.3.3 Either party may, within 30 days from the date that mediation has been concluded without resolution of the dispute or 60 days after mediation has been demanded without resolution of the dispute, demand in writing that the other party file for binding dispute resolution. If such a demand is made and the party receiving the demand fails to file for binding dispute resolution within 60 days after receipt thereof, then both parties waive their rights to binding dispute resolution proceedings with respect to the initial decision.

§ 15.3.4 The parties shall share the mediator's fee and any filing fees equally. The mediation shall be held in the place where the Project is located, unless another location is mutually agreed upon. Agreements reached in mediation shall be enforceable as settlement agreements in any court having jurisdiction thereof.

§ 15.3.5 Litigation

Litigation of Claims, disputes or other matters in question between the Owner and Contractor arising out of or relating to this Contract or breach thereof, which are not resolved by mediation, shall be subject to and decided by litigation exclusively in the state courts of Palm Beach County, Florida. Contractor and Owner consent to the venue of the State Courts of Palm Beach County, Florida and specifically recognize and acknowledge the waiver of any right to remove any action to federal court on the basis of diversity jurisdiction or on any other basis.

§ 15.3.6 In the event of any litigation arising out of or relating to this Agreement or the Contract Documents, the prevailing party shall recover from the non prevailing party, all reasonable attorney's fees, paralegal fees and Court costs incurred by the prevailing party.

§16 Miscellaneous

§ 16.1 Modification

No change or modification of the Contract shall be valid unless in writing and signed by all parties hereto, excluding Construction Change Directives which do not require the signature of the Contractor. No waiver of any of the provisions of this Contract shall be valid unless in writing and signed by the party against whom it is sought to be enforced.

§ 16.2 Rights and Remedies

The duties and obligations imposed by the Contract Documents and the rights and remedies available thereunder shall be in addition to and not in limitation of any duties, obligations, rights and remedies otherwise imposed or available by law. All indemnities, representations, and waivers made by Contractor in favor of Owner shall survive completion of the Work, the making of final payment, and any termination of the Agreement.

§ 16.4 Severability and Waiver

The partial or complete invalidity of any one or more provisions of this Contract or any portion of the Contract Documents shall not affect the validity or continuing force and effect of any other provision. The failure of either party hereto to insist, in any one or more instances, upon the performance of any of the terms, covenants or conditions the Contract, or to exercise any right herein, shall not be construed as a waiver or relinquishment of such term, covenant, condition or right as respects further performance.

[SIGNATURE PAGE TO FOLLOW]

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IN WITNESS WHEREOF, the Owner and the Construction Manager executed this Agreement as of the day and year first above written.

ATTEST:

OWNER/CITY OF DELRAY BEACH

_____
Katerri Johnson, City Clerk

By: _____
Thomas F. Carney, Jr., Mayor

Approved as to form and legal sufficiency:

_____
Lynn Gelin, City Attorney

Construction Manager

By: _____

Print Name: _____

Title: _____

(SEAL)

STATE OF _____

COUNTY OF _____

The foregoing instrument was acknowledged before me by means of ☐ physical presence or ☐ online notarization, this ____ day of _____, 20____ by _____ (name of person), as _____ (type of authority) for _____ _____ (name of party on behalf of whom instrument was executed).

Personally known ___ OR Produced Identification
Type of Identification Produced _____

_____
Notary Public – State of _____

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DRAFT

AIA® Document A133® – 2019

Modified Standard Form of Agreement Between Owner and Construction Manager as Constructor *where the basis of payment is the Cost of the Work Plus a Fee with a Guaranteed Maximum Price*

AGREEMENT made as of the « » day of March in the year 2024
(In words, indicate day, month, and year.)

BETWEEN the Owner:
(Name, legal status, address, and other information)

The City of Delray Beach, Florida
A municipal corporation and a political subdivision of the State of Florida, its successors and assigns
100 NW 1st Avenue
Delray Beach, FL 33444
and the Construction Manager:
(Name, legal status, address, and other information)

[insert]

for the following Project:
(Name, location, and detailed description)

RFQ No. [insert]
CMAR AGREEMENT TEMPLATE
The Architect/Engineer (the "A/E Professional"):
(Name, legal status, address, and other information)

[insert]

The Owner and Construction Manager agree as follows.

ADDITIONS AND DELETIONS: The author of this document has added information needed for its completion. The author may also have revised the text of the original AIA standard form. An *Additions and Deletions Report* that notes added information as well as revisions to the standard form text is available from the author and should be reviewed.

This document has important legal consequences. Consultation with an attorney is encouraged with respect to its completion or modification.

AIA Document A201™–2017, General Conditions of the Contract for Construction, is adopted in this document by reference. Do not use with other general conditions unless this document is modified.

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DRAFT

ARTICLE 1 INITIAL INFORMATION

§ 1.1 This Agreement is based on the Initial Information set forth in this Section 1.1.
(For each item in this section, insert the information or a statement such as "not applicable" or "unknown at time of execution.")

§ 1.1.1 The Owner's program for the Project, as described in Section 4.1.1:
(Insert the Owner's program, identify documentation that establishes the Owner's program, or state the manner in which the program will be developed.)

See the information provided in RFQ NO [insert], which is attached as Exhibit ___.

§ 1.1.2 The Project's physical characteristics:
(Identify or describe pertinent information about the Project's physical characteristics, such as size; location; dimensions; geotechnical reports; site boundaries; topographic surveys; traffic and utility studies; availability of public and private utilities and services; legal description of the site, etc.)

See the information provided in RFQ NO [insert], which is attached as Exhibit ___.

§ 1.1.3 The Owner's budget for the Guaranteed Maximum Price, as defined in Article 6:
(Provide total and, if known, a line item breakdown.)

The Owner's GMP is to be determined.

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§ 1.1.4 The Owner's anticipated design and construction milestone dates:

.1 Design phase milestone dates, if any:

[insert, if applicable]

.2 Construction commencement date:

Date to be established after approval of the GMP and addendum to this Agreement.

.3 Substantial Completion date or dates:

« »The Project shall have a duration of [insert] calendar days to Substantial Completion of the Project from Construction commencement date

.4 Other milestone dates:

N/A

§ 1.1.5 The Owner's requirements for accelerated or fast-track scheduling, or phased construction, are set forth below:
(Identify any requirements for fast-track scheduling or phased construction.)

N/A [insert, if applicable]

§ 1.1.6 The Owner's anticipated Sustainable Objective for the Project:
(Identify and describe the Owner's Sustainable Objective for the Project, if any.)

N/A [insert, if applicable]t]

§ 1.1.6.1 If the Owner identifies a Sustainable Objective, the Owner and Construction Manager shall complete and incorporate AIA Document E234™–2019, Sustainable Projects Exhibit, Construction Manager as Constructor Edition, into this Agreement to define the terms, conditions and services related to the Owner's Sustainable Objective. If E234–2019 is incorporated into this agreement, the Owner and Construction Manager shall incorporate the completed E234–2019 into the agreements with the consultants and contractors performing services or Work in any way associated with the Sustainable Objective.

§ 1.1.7 Other Project information:
(Identify special characteristics or needs of the Project not provided elsewhere.)

See the information provided in RFQ NO [insert], which is attached as Exhibit ___.

§ 1.1.8 The Owner identifies the following representative in accordance with Section 4.2:
(List name, address, and other contact information.)

[Insert]

§ 1.1.9 The persons or entities, in addition to the Owner's representative, who are required to review the Construction Manager's submittals to the Owner are as follows:
(List name, address and other contact information.)

A/E Professional, or as applicable, the A/E Professional's consultants

§ 1.1.10 The Owner shall retain the following consultants and contractors:
(List name, legal status, address, and other contact information.)

.1 Geotechnical Engineer:

[insert, as applicable]« »
« »

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« »
« »

.2 Civil Engineer:

[Included as part of A/E Professional]]

.3 Other, if any:
(List any other consultants retained by the Owner, such as a Project or Program Manager.)

[N/A]

§ 1.1.11 The A/E Professional's representative:
(List name, address, and other contact information.)

[insert]

§ 1.1.12 The Construction Manager identifies the following representative in accordance with Article 3:
(List name, address, and other contact information.)

[insert]

§ 1.1.13 The Owner's requirements for the Construction Manager's staffing plan for Preconstruction Services, as required under Section 3.1.9:
(List any Owner-specific requirements to be included in the staffing plan.)

See the information provided in RFQ NO [insert], which is attached as Exhibit ___

§ 1.1.14 The Owner's requirements for subcontractor procurement for the performance of the Work:
(List any Owner-specific requirements for subcontractor procurement.)

[See the information provided in RFQ NO [insert], which is attached as Exhibit ___

§ 1.1.15 Other Initial Information on which this Agreement is based:

[N/A]

§ 1.2 The Owner and Construction Manager may generally rely on the Initial Information, but Construction Manager shall promptly notify Owner of any conflicts or discrepancies Construction Manager discovers or should discover (in its capacity and experience as a general contractor) with respect to the Initial Information. Both parties, however, recognize that such information may materially change and, in that event, the Owner and the Construction Manager shall appropriately adjust the Project schedule, the Construction Manager's services, and the Construction Manager's compensation. The Owner shall adjust the Owner's budget for the Guaranteed Maximum Price and the Owner's anticipated design and construction milestones, as necessary, to accommodate material changes in the Initial Information.

§ 1.3 Neither the Owner's nor the Construction Manager's representative shall be changed without ten (10) days' prior written notice to the other party.

ARTICLE 2 GENERAL PROVISIONS

§ 2.1 The Contract Documents

§ 2.1.1 The Contract Documents consist of this Agreement, the AIA A201-2017 General Conditions of the Contract as modified (the "Modified General Conditions"), Drawings, Specifications, Addenda issued prior to execution of this Agreement, Exhibits to this Agreement, other documents listed in this Agreement, and Modifications issued after execution of this Agreement, all of which form the Contract and are as fully a part of the Contract as if attached to this Agreement or repeated herein (the "Contract Documents"). Upon the Owner's acceptance of the Construction Manager's Guaranteed Maximum Price proposal, the Contract Documents will also include the documents described in Section 3.2.3 and identified in the Guaranteed Maximum Price Amendment and revisions prepared by the A/E Professional and furnished by the Owner as described in Section 3.2.8. The Contract represents the entire and integrated agreement between the parties hereto and supersedes prior negotiations, representations or agreements, either written or oral. To the extent

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any conflict exists between the Contract Documents that cannot be resolved between the parties, interpretations will be based on the following priorities: (a) This Agreement; (b) the Modified General Conditions; (c) all Exhibits hereto, as modified; (d) executed Modifications, if any, with those of a later date having precedence over those of an earlier date; (e) Drawings and Specifications; and (f) any other Contract Documents. An enumeration of the Contract Documents, other than a Modification, appears in Article 15.

§ 2.1.2 Unless otherwise stated in the Contract Documents, words that have well-known technical or construction industry meanings are used in the Contract Documents in accordance with such recognized meanings. On the Drawings, given dimensions shall take precedence over scaled measurements and large-scale drawings over small-scale drawings.

§ 2.1.3 Any of the Contract Documents not attached hereto but expressly identified in this Agreement are hereby incorporated by reference and shall be deemed to be of the same force and effect as if actually attached hereto.

§ 2.1.4 The intent of the Contract Documents is to include all items necessary for the proper execution and completion of the Work by the Construction Manager. Performance by the Construction Manager shall be required to the extent consistent with the Contract Documents and reasonably inferable from them as being necessary to produce the indicated results.

§ 2.1.5 If the Construction Manager discovers any inconsistency, ambiguity, discrepancy or error in the Contract Documents, the Construction Manager shall promptly seek clarification in writing from the Owner.

§ 2.2 Relationship of the Parties

The Construction Manager accepts the relationship of trust and confidence established by this Agreement and covenants with the Owner to cooperate with the A/E Professional and Owner's Representative and exercise the Construction Manager's skill and judgment in furthering the interests of the Owner to furnish efficient construction administration, management services, and supervision; to furnish at all times an adequate supply of workers, materials, and equipment; and to perform the Work in an expeditious and economical manner consistent with the Owner's interests. The Owner agrees to furnish or approve, in a timely manner, information required by the Construction Manager and to make payments to the Construction Manager in accordance with the requirements of the Contract Documents.

§ 2.3 General Conditions

§ 2.3.1 For the Preconstruction Phase, AIA Document A201™–2017, Modified General Conditions, shall apply as follows: Section 1.5, Ownership and Use of Documents; Section 1.7, Digital Data Use and Transmission; Section 1.8, Building Information Model Use and Reliance; Section 2.2.4, Confidential Information; Section 3.12.10, Professional Services; Section 10.3, Hazardous Materials; Section 13.1, Governing Law. The term "Contractor" as used in A201–2017 shall mean the Construction Manager.

§ 2.3.2 For the Construction Phase, the general conditions of the contract shall be as set forth in A201–2017, Modified General Conditions, which document is incorporated herein by reference. The term "Contractor" as used in A201–2017, Modified General Conditions shall mean the Construction Manager.

ARTICLE 3 CONSTRUCTION MANAGER'S RESPONSIBILITIES

The Construction Manager's Preconstruction Phase responsibilities are set forth in Sections 3.1 and 3.2, and in the applicable provisions of A201-2017, Modified General Conditions, referenced in Section 2.3.1. The Construction Manager's Construction Phase responsibilities are set forth in Section 3.3. The Owner and Construction Manager may agree, in consultation with the A/E Professional and Owner's Representative, for the Construction Phase to commence prior to completion of the Preconstruction Phase, in which case, both phases will proceed concurrently. The Construction Manager shall identify a representative authorized to act on behalf of the Construction Manager with respect to the Project.

§ 3.1 Phase 1: Pre-construction Services

§ 3.1.1 General. During the Preconstruction Phase of the Project, the Construction Manager will provide preconstruction services where necessary or appropriate to further the interests of the Owner and the Project. Construction Manager shall render Services which support the services to be rendered by A/E Professional, including design review, Project planning, and the specific Services described in this Article 3. Construction Manager shall perform Phase 1 Pre-construction Services per the Scope of Services, which is attached as Exhibit ___, and in accordance with the General Conditions.

§ 3.1.2 Review Project Requirements and Site Data. Construction Manager shall review and study all background data, specifications and other related materials made available by Owner as to requirements, criteria, priorities, feasibility, and

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physical and financial limitations with regard to the Project and shall review with Owner's Representative and A/E Professional site data (such as access, location of services and utilities, security, surveys, and soils information) and other relevant information.

§ 3.1.3 Verify Site and Working Conditions. Construction Manager shall visit the Project site, review all information related to the site and to the conditions under which the Work will be performed. Construction Manager shall notify Owner's Representative in writing of any conditions of which the Construction Manager becomes aware or should have become aware in the exercise of reasonable care, that would adversely affect the progress, quality, or cost of the Work. Construction Manager will recommend means of addressing such conditions, and suggest additional testing or services reasonably required in connection therewith.

§ 3.1.4 Consultation of Design

The Construction Manager shall attend all meetings with the A/E Professional and Owner, as scheduled by the Owner, to discuss such matters as procedures, progress, coordination, and scheduling of the Work. The Construction Manager shall advise the Owner and the A/E Professional on proposed site use and improvements, selection of materials, and building systems and equipment. The Construction Manager shall also provide recommendations consistent with the Project requirements to the Owner and A/E Professional on constructability; availability of materials and labor; time requirements for procurement, installation and construction; and factors related to construction cost including, but not limited to, costs of alternative designs or materials, preliminary budgets, and possible cost reductions. The Construction Manager agrees to be reasonably available to perform the following facets related to the Preconstruction Phase:

1. reviewing all drawings, permits, approvals, documents, and reports for the Project including, without limitation, the Plans and Specifications;

2. review all permit applications and accompanying documentation;

3. review projected work schedule, timeline and benchmark dates;

4. offer alternatives to plans and proposals, including cost-saving measures and value engineering;

5. interface with subcontractors and vendors that fit specifically to the nature of this project and to the specific scopes of work;

6. develop bid packages and obtain written bids from subcontractors, vendors and or suppliers;

7. provide monthly summaries;

8. provide such other services reasonably agreed to between Owner and Construction Manager and as necessary to the successful development of the Project.

§ 3.1.5 Review of A/E Professional's Schedule. Construction Manager shall review and study all schedules and updates thereof submitted by A/E Professional concerning the schedule for performance of A/E Professional's services. Within ten (10) days after receipt of any such schedule or update, Construction Manager shall submit to Owner's Representative a written analysis of same describing any anticipated problems or delays to the Project related to A/E Professional's schedule.

When Project requirements for Construction Phase Services have been sufficiently identified, the Construction Manager shall prepare and periodically update a Project schedule for the A/E Professional's review and the Owner's acceptance. The Construction Manager shall obtain the A/E Professional's approval for the portion of the Project schedule relating to the performance of the A/E Professional's services. The Project schedule shall coordinate and integrate the Construction Manager's services, the A/E Professional's services, other Owner consultants' services, and the Owner's responsibilities and identify items that could affect the Project's timely completion. The updated Project schedule shall include the following: submission of the Guaranteed Maximum Price proposal; components of the Work; times of commencement and completion required of each subcontractor; ordering and delivery of products, including those that must be ordered well in advance of construction; and the occupancy requirements of the Owner.

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§ 3.1.6 Phased Construction

The Construction Manager shall provide recommendations with regard to accelerated or fast-track scheduling, procurement, or phased construction. The Construction Manager shall take into consideration cost reductions, cost information, constructability, provisions for temporary facilities and procurement and construction scheduling issues.

§ 3.1.7 Procurement Guidelines and Plan. Construction Manager shall prepare and submit, for the Owner's approval, procurement guidelines and a procurement plan for the Project. The Construction Manager shall prepare, for the Owner's acceptance, a procurement schedule for long-lead items that must be ordered well in advance of construction. The Construction Manager shall expedite and coordinate the ordering and delivery of materials that must be ordered well in advance of construction. If the Owner agrees to procure any items prior to the establishment of the Guaranteed Maximum Price, the Owner shall procure the items on terms and conditions acceptable to the Construction Manager. Upon the establishment of the Guaranteed Maximum Price, the Owner shall assign all contracts for these items to the Construction Manager and the Owner shall thereafter accept responsibility for them.

§ 3.1.8 Utilities, Communications and Other Infrastructure Issues. Construction Manager shall advise and assist A/E Professional and represent Owner, if requested, in coordinating appropriately with local utilities, communications, and other related infrastructure issues.

§ 3.1.9 Review Design Documents. Construction Manager shall review and study, on a continuing basis through the Design and Construction Phases, all design and construction documents prepared by A/E Professional and shall notify Owner's Representative and A/E Professional in writing of any errors, omissions, conflicts, inconsistencies, or ambiguities discovered, identify potential value engineering options before the bidding cycle and Construction Phase begin, and recommend alternatives when design details affect construction feasibility, constructability, quality, or the Project schedule.

§ 3.1.10 Constructability Analyses. When requested by Owner's Representative, Construction Manager shall provide written constructability analyses of the Project, including items to be addressed with A/E Professional such as accessibility, construction methods, assembly, installation, materials handling, expandability, phasing and other Construction Phase-related activities. The analysis of constructability issues shall be performed on an ongoing basis during the Design Phase.

§ 3.1.11 Presentations. When requested by Owner's Representative, Construction Manager shall assist Owner and A/E Professional in making one or more presentations of design concepts, cost studies, site evaluation, and other data developed in relation to the Project.

§ 3.1.12 Value Engineering. Construction Manager shall perform Value Engineering studies and propose to the Owner design, construction and systems alternatives for reducing the cost of the Project, or elements thereof. Construction Manager shall provide Owner with an estimate of the cost of, and the savings that will result from, implementing such Value Engineering alternatives. Construction Manager shall implement any Value Engineering alternatives approved by Owner, and the GMP shall be adjusted prior to issuance of the purchase order, or if the purchase order has been issued then by deductive Change Order to reflect the savings to be achieved by implementing such Value Engineering alternatives.

§ 3.1.16 Estimating and Monitoring Costs

§ 3.1.16.1 Construction Cost Estimate. Within thirty (30) days after the A/E Professional's completion of the [Insert first design stage] Design Stage, the Construction Manager shall prepare an estimate (the "Construction Cost Estimate") of the cost of constructing the Project in accordance with the requirements of the [insert] Design Stage and shall provide same to Owner's Representative. The Construction Cost Estimate shall be broken down in such detail as Owner's Representative may require and shall include a recommended contingency for the Work. Construction Manager shall revise the Construction Cost Estimate monthly until the GMP is established and shall provide such revised estimates to Owner's Representative on a monthly basis. As the A/E Professional progresses through the design stages, Construction Manager shall prepare estimates of the Cost of the Work with increasing detail and refinement until such time as the Owner and Construction Manager agree on a Guaranteed Maximum Price for the Work. Such estimates shall be provided for the Owner's review and approval. The Construction Manager shall inform the Owner and A/E Professional when estimates of the Cost of the Work exceed the latest approved Project budget and make recommendations for corrective action.

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§ 3.1.16.2 Monitoring Construction Costs. Throughout the duration of the Project, Construction Manager shall regularly monitor conditions in the construction market to identify factors that will or may affect costs for completing the Project and furnish a written analysis.

§ 3.1.16.3 Cash Flow Forecasts. Construction Manager shall prepare a written forecast of projected accumulation of cash payments against the Project. Cash flow projections shall be generated for anticipated monthly payments as well as cumulative payments. On a monthly basis, Construction Manager shall provide Owner's Representative with an updated forecast of such projected monthly payments.

§ 3.1.17 Bid Solicitation and Award

§ 3.1.17.1 Construction Manager shall provide all necessary services related to the bidding of subcontracts for the construction of the Project, including but not limited to: (a) preparing appropriate bid documents, including proposed forms of contract and purchase orders; (b) establishing bid schedules; (c) active program of developing bidder interest; (c) furnishing information concerning the Project to prospective bidders; (d) conducting pre-bid conferences; (e) receiving and analyzing bids and making recommendations to Owner regarding bid awards; (f) investigating the acceptability and responsibility of sub- subcontractors or suppliers proposed by any Subcontractor and advising Owner of such evaluations; (g) negotiating with Subcontractors concerning any matter related to the Project; (h) such other services required by Owner with respect to the bidding process; and (i) Subcontractor is required to prepare, for approval, coordination drawings prior to installation of work if required by Owner and/or A/E Professional. These costs shall be considered part of the GMP.

§ 3.1.17.2 Nothing in the Agreement shall be interpreted to relieve the Construction Manager of its responsibilities for the Project including but limited to: preparation and accuracy of subcontract solicitations, selection of qualified subcontractors, subcontract performance, payments to subcontractors and the safety of personnel and property.

§ 3.1.17.3 In the event that the Construction Manager performs a portion of the Work on the Project, other than construction management, then for that portion of the Work the Construction Manager shall be treated as any other Subcontractor and shall abide by all the Subcontractor requirements identified in this Agreement.

§ 3.1.17.4 Approval of Subcontractors. Construction Manager shall not subcontract for any part of the Services or Work with any Subcontractor or consultant who is not properly licensed. or against whom Owner has a reasonable objection. As soon as practicable after the bidding process and during development of the Guaranteed Maximum Price, Construction Manager shall furnish in writing to the Owner's Representative the names of persons or entities (including those who are to furnish materials or equipment) proposed for each portion of the Work, the portion of the Work which each such Subcontractor is to perform, and the place of business of such Subcontractor.

The Construction Manager shall not contract with a proposed person or entity which the Owner has made a reasonable objection or that is not in good standing with the Owner. The Owner shall have the right to require the Construction Manager not to award any subcontract to a person, firm or corporation reasonably objected to by the Owner. If the Owner has a reasonable objection to a person or entity proposed by the Construction Manager, the Construction Manager shall propose another with whom the Owner has no objection.

The Construction Manager shall not change a Subcontractor, person or entity previously selected if the Owner makes objection to such change.

The Construction Manager shall be responsible and liable to the Owner for all work performed by the Subcontractors or their employees, agents or contractors, pursuant to this Agreement.

§ 3.1.18 Extent of Responsibility

The Construction Manager shall exercise reasonable care in performing its Preconstruction Services. The Owner, Owner's Representative, and A/E Professional shall be entitled to rely on, and shall not be responsible for, the accuracy, completeness, and timeliness of services and information furnished by the Construction Manager. The Construction Manager, however, does not warrant or guarantee estimates and schedules except as may be included as part of the Guaranteed Maximum Price. The Construction Manager is not required to ascertain that the Drawings and Specifications are in accordance with applicable laws, statutes, ordinances, codes, rules and regulations, or lawful orders of public authorities, but the Construction Manager shall promptly report to the A/E Professional and Owner in writing any

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nonconformity and/or conflicts discovered by or made known to the Construction Manager as a request for information in such form as the A/E Professional may require.

§ 3.1.9 Compliance with Laws

The Construction Manager shall comply with applicable laws, statutes, ordinances, codes, rules and regulations, and lawful orders of public authorities applicable to its performance under this Contract, and with equal employment opportunity programs, and other programs as may be required by governmental and quasi-governmental authorities for inclusion in the Contract Documents.

§ 3.1.19 Other Preconstruction Services

Insert a description of any other Preconstruction Phase services to be provided by the Construction Manager, or reference an exhibit attached to this document

(Describe any other Preconstruction Phase services, such as providing cash flow projections, development of a project information management system, early selection or procurement of subcontractors, etc.)

[insert, if any]

§ 3.2 Phase 2: Construction Services, Guaranteed Maximum Price Proposal, and Contract Time

§ 3.2.1 At a time to be mutually agreed upon by the Owner and the Construction Manager, the Construction Manager, in consultation with the A/E Professional and Owner's Representative, shall prepare a Guaranteed Maximum Price proposal, supported by all subcontractor and material supplier costing documentation with quantities, for the Owner's and A/E Professional's review and the Owner's acceptance. The Guaranteed Maximum Price in the proposal shall be the sum of the Construction Manager's estimate of the Cost of the Work, including the Construction Manager's Fee, and General Conditions, and the Construction Manager's contingency described in Section 3.2.4.

§ 3.2.2 To the extent that the Contract Documents are anticipated to require further development, the Guaranteed Maximum Price includes the costs attributable to such further development consistent with the Contract Documents and reasonably inferable therefrom. Such further development does not include changes in scope, systems, kinds and quality of materials, finishes, or equipment, all of which, if required, shall be incorporated by Change Order.

§ 3.2.3 The Construction Manager shall include with the Guaranteed Maximum Price proposal a written statement of its basis, which shall include the following:

.1 A list of the Drawings and Specifications, including all Addenda thereto, and the Conditions of the Contract;

.2 A list of the clarifications and assumptions made by the Construction Manager in the preparation of the Guaranteed Maximum Price proposal, to supplement the information provided by the Owner and contained in the Drawings and Specifications;

.3 A statement of the proposed Guaranteed Maximum Price, including a statement of the estimated Cost of the Work organized by trade categories or systems, including allowances; the Construction Manager's contingency set forth in Section 3.2.4; and the Construction Manager's Fee and General Conditions;

.4 The anticipated date of Substantial Completion upon which the proposed Guaranteed Maximum Price is based;

.5 A date by which the Owner must accept the Guaranteed Maximum Price; and

.6 A list of the major Subcontracts and purchasing agreements that will be entered into within the first twenty-five (25) days following the Notice to Proceed. A list of all other Subcontracts and purchasing agreements within sixty (60) days thereafter

§ 3.2.4 Construction Manager shall keep and submit to Owner full and detailed records substantiating the Guaranteed Maximum Price proposal, including but not limited to, complete documentation supporting budgeted line items, proposals from Subcontractors and materials suppliers, Subcontracts and contracts with materials suppliers and related parties (as defined herein) and other back up documents, and shall make such records available to Owner, Owner's Representative, A/E Professional and any cost control consultants hired by Owner for inspection, audit and copying during regular business hours and upon reasonable notice.

§ 3.2.5 To the extent Owner determines in its sole discretion that this Project will provide for a contingency, in preparing the Construction Manager's Guaranteed Maximum Price proposal, the Construction Manager shall include a contingency for the Construction Manager's exclusive use to cover those costs that are included in the Guaranteed Maximum Price but not otherwise allocated to another line item or included in a Change Order.

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§ 3.2.6 The Construction Manager shall meet with the Owner and A/E Professional to review the Guaranteed Maximum Price proposal. In the event that the Owner or A/E Professional discover any inconsistencies or inaccuracies in the information presented, they shall promptly notify the Construction Manager, who shall make appropriate adjustments to the Guaranteed Maximum Price proposal, its basis, or both.

§ 3.2.7 If the Owner notifies the Construction Manager that the Owner has accepted the Guaranteed Maximum Price proposal in writing before the date specified in the Guaranteed Maximum Price proposal, the Guaranteed Maximum Price proposal shall be deemed effective without further acceptance from the Construction Manager. Following acceptance of a Guaranteed Maximum Price, the Owner and Construction Manager shall execute the Guaranteed Maximum Price Amendment amending this Agreement, a copy of which the Owner shall provide to the A/E Professional and a copy of which shall be attached hereto as Exhibit A. The Guaranteed Maximum Price Amendment shall set forth the agreed upon Guaranteed Maximum Price with the information and assumptions upon which it is based.

§ 3.2.8 The Construction Manager shall not incur any cost to be reimbursed as part of the Cost of the Work prior to the execution of the Guaranteed Maximum Price Amendment, unless the Owner provides prior written authorization for such costs.

§ 3.2.9 The Owner shall authorize the A/E Professional to provide revisions, if necessary, to the Drawings and Specifications to incorporate those agreed-upon assumptions and clarifications contained in the Guaranteed Maximum Price Amendment that differ from the requirements of the Drawings and Specifications. The Owner shall timely furnish those revised Drawings and Specifications, if any, to the Construction Manager as they are revised.

§ 3.2.10 The Construction Manager shall include in the Guaranteed Maximum Price all sales, consumer, use and similar taxes for the Work provided by the Construction Manager that are legally enacted, whether or not yet effective, at the time the Guaranteed Maximum Price Amendment is executed.

§ 3.3 Construction Phase

§ 3.3.1 General

§ 3.3.1.1 For purposes of Section 8.1.2 of A201–2017, Modified General Conditions, the date of commencement of the Work shall mean the date of commencement of the Construction Phase.

§ 3.3.1.2 The Construction Phase shall commence upon the Owner's issuance of a Notice to Proceed ("Commencement Date") and the Contract Time shall be measured starting from the Commencement Date. The Construction Manager shall achieve Substantial Completion of the entire Work not later than _____ (_____) calendar days after the Commencement Date (the "Contract Time"). Final Completion shall be achieved no later than _____(_____) calendar days after Substantial Completion.

§ 3.3.2 Administration

§ 3.3.2.1 The Construction Manager shall schedule and conduct meetings to discuss such matters as procedures, progress, coordination, scheduling, and status of the Work. The Construction Manager shall prepare and promptly distribute minutes of the meetings to the Owner, Owner's Representative, and A/E Professional.

§ 3.3.2.2 Upon the execution of the Guaranteed Maximum Price Amendment, the Construction Manager shall prepare and submit to the Owner and A/E Professional a construction schedule for the Work and a submittal schedule in accordance with Section 3.10 of A201–2017, Modified General Conditions.

§ 3.3.2.3 Monthly Report

The Construction Manager shall record the progress of the Project. On a monthly basis, or otherwise as agreed to by the Owner, the Construction Manager shall submit written progress reports to the Owner, Owner's Representative, and A/E Professional, showing percentages of completion and other information required by the Owner. Along with the monthly progress reports, Construction Manager shall provide updated project Schedules (which will include schedules distributed during the month and for the two weeks following the date of the current monthly progress report), a log of and copies of all lien releases obtained during the month from Subcontractors and suppliers and others required to provide lien releases pursuant to the Contract Documents, a listing of any Change Orders and Construction Change Directives issued during the month, copies of the minutes for the weekly Project team (Owner, A/E Professional, Owner's Representative, and Construction Manager) meetings that month, a report of all Requests for Information and responses thereto, a report of

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all submittals, a copy of all completed Daily Logs for the month, all invoices and back up for all costs and expenses that correspond to the monthly payment application, project cost control measures and status of contingency, and copies of field and aerial photographs of the Project.

§ 3.3.2.4 Daily Logs

The Construction Manager shall keep, and make available to the Owner, Owner's Representative, and A/E Professional, a daily log containing a record for each day of weather, record of deliveries, portions of the Work in progress, number of workers on site, identification of equipment on site, problems that might affect progress of the work, accidents, injuries, and other information required by the Owner. All report formats will be in a form approved by Owner.

§ 3.3.2.5 Cost Control

The Construction Manager shall develop a system of cost control for the Work, including regular monitoring of actual costs for activities in progress and estimates for uncompleted tasks and proposed changes. The Construction Manager shall identify variances between actual and estimated costs and report the variances to the Owner and A/E Professional, and shall provide this information in its monthly reports to the Owner and A/E Professional, in accordance with Section 3.3.2.3 above. In the event the Construction Manager fails to report a variance in its most current monthly report and fails to otherwise promptly notify Owner of such variance, and such failure by Construction Manager results in Owner incurring damages or increases in cost, Owner may assert a Claim pursuant to the General Conditions to seek reimbursement for such costs. In such instances, the Initial Decision Maker shall evaluate the Claim.

ARTICLE 4 OWNER'S RESPONSIBILITIES

§ 4.1 Information and Services Required of the Owner

§ 4.1.1 The Owner shall provide information with reasonable promptness, regarding requirements for and limitations on the Project, including a written program which shall set forth the Owner's objectives, constraints, and criteria, including schedule, space requirements and relationships, flexibility and expandability, special equipment, systems, sustainability and site requirements.

§ 4.1.2 Omitted.

§ 4.1.3 The Owner shall establish and periodically update the Owner's budget for the Project, including (1) the budget for the Cost of the Work as defined in Article 7, (2) the Owner's other costs, and (3) reasonable contingencies related to all of these costs. If the Owner significantly increases or decreases the Owner's budget for the Cost of the Work, the Owner shall notify the Construction Manager and A/E Professional. The Owner and the A/E Professional, in consultation with the Construction Manager, shall thereafter agree to a corresponding change in the Project's scope and quality.

§ 4.1.4 Structural and Environmental Tests, Surveys and Reports. During the Preconstruction Phase, the Owner shall furnish the following information or services with reasonable promptness. The Owner shall also furnish any other information or services under the Owner's control and relevant to the Construction Manager's performance of the Work with reasonable promptness after receiving the Construction Manager's written request for such information or services. The Construction Manager shall be entitled to generally rely on the accuracy of information and services furnished by the Owner but shall exercise proper precautions relating to the safe performance of the Work, including the careful review and field verification of such information, and shall promptly notify Owner of any conflicts or discrepancies Construction Manager discovers or should discover (in its capacity and experience as a general contractor).

§ 4.1.4.1 The Owner shall furnish tests, inspections, and reports, required by law and as otherwise agreed to by the parties, such as structural, mechanical, and chemical tests, tests for air and water pollution, and tests for hazardous materials.

§ 4.1.4.2 The Owner shall furnish surveys describing physical characteristics, legal limitations and utility locations for the site of the Project, and a written legal description of the site. The surveys and legal information shall include, as applicable, grades and lines of streets, alleys, pavements and adjoining property and structures; designated wetlands; adjacent drainage; rights-of-way, restrictions, easements, encroachments, zoning, deed restrictions, boundaries and contours of the site; locations, dimensions and other necessary data with respect to existing buildings, other improvements and trees; and information concerning available utility services and lines, both public and private, above and below grade, including inverts and depths. All the information on the survey shall be referenced to a Project benchmark.

§ 4.1.4.3 The Owner, upon Construction Manager's reasonable request, shall furnish services of geotechnical engineers, which may include test borings, test pits, determinations of soil bearing values, percolation tests, evaluations of hazardous

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materials, seismic evaluation, ground corrosion tests and resistivity tests, including necessary operations for anticipating subsoil conditions, with written reports and appropriate recommendations.

§ 4.1.5 During the Construction Phase, the Owner shall furnish information or services required of the Owner by the Contract Documents with reasonable promptness. The Owner shall also furnish any other information or services under the Owner's control and relevant to the Construction Manager's performance of the Work with reasonable promptness after receiving the Construction Manager's written request for such information or services.

§ 4.1.6 If the Owner identified a Sustainable Objective in Article 1, the Owner shall fulfill its responsibilities as required in AIA Document E234™–2019, Sustainable Projects Exhibit, Construction Manager as Constructor Edition, attached to this Agreement.

§ 4.2 Owner's Designated Representative

The Owner shall identify a representative authorized to act on behalf of the Owner with respect to the Project. The Owner's representative shall render decisions promptly and furnish information expeditiously, so as to avoid unreasonable delay in the services or Work of the Construction Manager. Except as otherwise provided in Article 4 of A201–2017, Modified General Conditions, the A/E Professional does not have such authority. The term "Owner" means the Owner or the Owner's authorized representative.

§ 4.2.1 Legal Requirements. The Owner shall furnish all legal, insurance and accounting services, including auditing services, that may be reasonably necessary at any time for the Project to meet the Owner's needs and interests.

§ 4.3 A/E Professional

The Owner shall retain an A/E Professional to provide services, duties and responsibilities as described in AIA Document B133™–2019, Standard Form of Agreement Between Owner and A/E Professional, Construction Manager as Constructor Edition, including any additional services requested by the Construction Manager that are necessary for the Preconstruction and Construction Phase services under this Agreement. The Owner shall provide the Construction Manager with a copy of the scope of services in the executed agreement between the Owner and the A/E Professional, and any further modifications to the A/E Professional's scope of services in the agreement.

ARTICLE 5 COMPENSATION AND PAYMENTS FOR PRECONSTRUCTION PHASE SERVICES

§ 5.1 Compensation

§ 5.1.1 For the Construction Manager's Preconstruction Phase services described in Sections 3.1 and 3.2, the Owner shall compensate the Construction Manager as follows:
(Insert amount of, or basis for, compensation and include a list of reimbursable cost items, as applicable.)

[insert]

§ 5.1.2 The hourly billing rates for Preconstruction Phase services of the Construction Manager and the Construction Manager's Consultants and Subcontractors, if any, are set forth below.
(If applicable, attach an exhibit of hourly billing rates or insert them below.)

[insert]

§ 5.1.2.1 Hourly billing rates for Preconstruction Phase services include all costs to be paid or incurred by the Construction Manager, as required by law or collective bargaining agreements, for taxes, insurance, contributions, assessments and benefits and, for personnel not covered by collective bargaining agreements, customary benefits such as sick leave, medical and health benefits, holidays, vacations and pensions, and shall remain unchanged unless the parties execute a Modification.

§ 5.2 Payments

§ 5.2.1 Unless otherwise agreed, payments for services shall be made monthly in proportion to services performed.

§ 5.2.2 Payments are due and payable upon presentation of the Construction Manager's invoice. Amounts unpaid twenty-one (21) days after the invoice date shall bear interest at the rate entered below:

[insert]

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ARTICLE 6 COMPENSATION FOR CONSTRUCTION PHASE SERVICES

§ 6.1 Contract Sum

§ 6.1.1 The Owner shall pay the Construction Manager the Contract Sum in current funds for the Construction Manager's performance of the Contract after execution of the Guaranteed Maximum Price Amendment. The Contract Sum is the Cost of the Work as defined in Article 7 plus the Construction Manager's Fee.

§ 6.1.2 The Construction Manager's Fee:

(State a lump sum, percentage of Cost of the Work or other provision for determining the Construction Manager's Fee.)

[insert %] of the Cost of the Work.

§ 6.1.3 The method of adjustment of the Construction Manager's Fee for changes in the Work:

For approved changes in the Work, the rate of the Construction Manager's Fee shall not be adjusted and shall remain equal to [insert %] of the Cost of the Work directly attributable to any such change that is incurred or paid by the Construction Manager during performance of the Work, plus increases in insurance costs and bond costs (if any) based on the stipulated rates set forth in Article 7, below. Consequently, the total amount earned by the Construction Manager as the Construction Manager's Fee may increase, but the basis of the Construction Manager's Fee shall always remain [insert %] of the Cost of the Work that is actually incurred by the Construction Manager. A deductive Change Order shall reduce the GMP by the Cost of the Work for the Change in the Work.

§ 6.1.4 Limitations, if any, on a Subcontractor's overhead and profit for increases in the cost of its portion of the Work:

In the event Owner approves and executes a Change Order or Construction Change Directive pursuant to the terms and conditions of the Contract Documents, the maximum cumulative mark-up for overhead and profit to all Subcontractors, if any, for such change Work shall in no event exceed [insert %] of the actual Cost of the Work associated with such Change Order or Construction Change Directive, as the case may be.

§ 6.1.5 Rental rates for Construction Manager-owned equipment shall not exceed [insert] percent (« » %) of the standard rental rate paid at the place of the Project.

§ 6.1.6 Liquidated damages, if any:

§ 6.1.6.1 Time is of the essence regarding this Agreement and the work contemplated hereunder, and the Owner may suffer financial loss and/or inconvenience if the work is not completed to the satisfaction of the Owner by the time stipulated in the Contract Documents. Therefore, failure to timely complete the work shall result in the Construction Manager being subject to liquidated damages, but not as penalty, in the amount of amount of _____% of the Guaranteed Maximum Price or $_____ for each and every calendar day the work remains incomplete or the items remain undelivered. As compensation due the Owner for loss of use and for additional costs incurred by the Owner due to such non-completion of the work, the Owner shall have the right to deduct the liquidated damages from any amount due, or that may become due to the Construction Manager under the Contract Documents, or to invoice the Construction Manager for such damages if the costs incurred exceed the amount due to the Construction Manager. The Construction Manager and the Owner agree that the amount for liquidated damages is not punitive and is intended to compensate the Owner for difficult to quantify losses.

§ 6.1.6.2 Construction Manager hereby expressly waives and relinquishes any right which it may have to seek to characterize the above noted liquidated damages as a penalty, which the parties agree represents a fair and reasonable estimate of Owner's actual damages at the time of contracting if Construction Manager fails to substantially complete the Work in a timely manner.

§ 6.1.6.3 The amount of Liquidated Damages, if any, shall be deducted by the Owner from Final Payment otherwise due the Contractor. In the event the amount of total Liquidated Damages exceeds the Final Payment, the Owner shall withhold Final Payment and Contractor shall promptly pay to Owner the balance owed.

§ 6.1.6.4 The aforesaid provisions shall not affect the Owner's right to terminate this Agreement as provided in the Contract Documents nor limit any of the other remedies available to the Owner as hereinabove provided, and as provided in the Contract Documents. The Owner's exercise of its right to terminate this Agreement shall not release the Construction Manager from its obligation to pay liquidated damages as set forth herein nor shall it release Construction Manager of its obligations to diligently pursue the appropriate claim against its culpable Subcontractors, suppliers, manufacturers or Subcontractor Default Insurance (if applicable), for the benefit of Owner.

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§ 6.1.7 Other:
(Insert provisions for bonus, cost savings or other incentives, if any, that might result in a change to the Contract Sum.)

§ 6.1.7.1 Buyout Savings. Construction Manager may be able to generate buyout savings through the subcontractor buyout process (the "Buyout Savings"). As each portion of the Work is procured by the Construction Manager, the Construction Manager shall determine whether Buyout Savings, if any, exist, which shall be evaluated on a line-item basis for each line item on account of which the Construction Manager procures the Work for more or less than the amount carried on the Schedule of Values therefor. Buyout Savings shall be evaluated on an aggregate basis, meaning that savings from the favorable buy-out of one line item can be used to offset buy-out losses on another line item before the overall calculation of Buyout Savings is performed. Construction Manager shall include in its Schedule of Values, a line item for Buyout Savings which will show all net Buyout Savings. Upon completion of ninety percent (90%) of the Work by count of the Subcontractor buyouts, Construction Manager shall prepare and submit a Subcontractor Buyout Report for Owner's review and approval that lists and summarizes all Subcontractor buyouts to date. For each subcontract awarded, the report shall include a list of all trade line items included in the award and compare the total GMP amount for those line items to the actual award value for the subcontract to calculate the "buyout variance" for each subcontract and then tally these to determine if there is an overall net buyout "savings" or "overrun" at that point. Construction Manager shall continue to buyout the balance of the Project and maintain the aggregate balance of Buyout Savings during the entire Project. When the Project achieves Final Completion, any Buyout Savings achieved, as demonstrated in the Subcontractor Buyout Report, will be split by Owner and Contractor with Owner receiving seventy percent (70%) and Construction Manager receiving thirty percent (30%) by way of Change Order adjusting the GMP.

§ 6.2 Guaranteed Maximum Price

§ 6.2.1 The Construction Manager guarantees that the Contract Sum (including Construction Manager's Fee, Construction Manager's General Conditions, and Contingency) shall not exceed the Guaranteed Maximum Price set forth in the Guaranteed Maximum Price Amendment, subject to additions and deductions by Change Order as provided in the Contract Documents. Costs which would cause the Guaranteed Maximum Price to be exceeded shall be paid by the Construction Manager without reimbursement by the Owner.

§ 6.2.2 Allowances, if any, which will be included in the Guaranteed Maximum Price shall be identified on an exhibit attached to the Guaranteed Maximum Price Amendment. Once an allowance item is fully purchased by Construction Manager, including all associated Subcontractor Work, and approved by Owner as set forth in the Contract Documents, the price will be included within the GMP and the former allowance Work will then be removed from the Allowance list. Change Orders concluding the full Allowance scope in this Agreement shall recite that the affected Allowance is closed as an Allowance and included in the GMP.

§ 6.2.4 By submitting the GMP Amendment, Construction Manager represents to Owner that Construction Manager and its subcontractors, material and equipment suppliers have compared and reviewed all general and specific details on the Drawings and Specifications and that conflicts, discrepancies, errors and omissions, which are within the commonly accepted knowledge base of a licensed general contractor, subcontractor, trades persons, manufacturers or other parties required to carry out the work involved in the GMP Amendment have been corrected or clarified prior to execution of the GMP Amendment, and therefore Construction Manager warrants that 1) the GMP includes, without limitation, the cost of correcting all conflicts, discrepancies, errors, or omissions which Construction Manager identified, or should have identified through the exercise of reasonable skill and care of a general contractor, during the pre-construction phase of this Agreement; 2) that Construction Manager's review and comparison of all drawings and specifications has taken into consideration the total and complete functioning of all systems and therefore the Construction Manager represents that the Guaranteed Maximum Price Amendment represents the total cost for complete and functional systems; and 3) that Construction Manager can complete the Project in the time set forth in the GMP Amendment and the approved Project Schedule.

§ 6.2.5 If Owner and Construction Manager are unable to reach an agreement on a Final GMP Amendment, Owner shall be permitted to terminate this Agreement for Convenience, in accordance with the provision set forth in Article 14 of the Modified General Conditions.

§ 6.3 Changes in the Work

§ 6.3.1 The Owner may, without invalidating the Contract, order changes in the Work within the general scope of the Contract consisting of additions, deletions or other revisions. The Owner shall issue such changes in writing. The

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Construction Manager may be entitled to an equitable adjustment in the Contract Time as a result of changes in the Work, provided same are approved by a written Change Order signed by Owner.

§ 6.3.1.1 The A/E Professional may order minor changes in the Work as provided in Article 7 of AIA Document A201–2017, Modified General Conditions.

§ 6.3.2 Adjustments to the Guaranteed Maximum Price on account of changes in the Work subsequent to the execution of the Guaranteed Maximum Price Amendment may be determined by any of the methods listed in Article 7 of AIA Document A201–2017, Modified General Conditions.

§ 6.3.3 Adjustments to subcontracts awarded on the basis of a stipulated sum shall be determined in accordance with Article 7 of A201–2017, Modified General Conditions, as they refer to "cost" and "fee," and not by Articles 6 and 7 of this Agreement. Adjustments to subcontracts awarded with the Owner's prior written consent on the basis of cost plus a fee (if any) shall be calculated in accordance with the terms of those subcontracts.

§ 6.3.4 In calculating adjustments to the Guaranteed Maximum Price, the terms "cost" and "costs" as used in Article 7 of AIA Document A201–2017, Modified General Conditions, shall mean the Cost of the Work as defined in Article 7 of this Agreement and the term "fee" shall mean the Construction Manager's Fee as defined in Section 6.1.2 of this Agreement.

ARTICLE 7 COST OF THE WORK FOR CONSTRUCTION PHASE

§ 7.1 Costs to Be Reimbursed

§ 7.1.1 The term Cost of the Work shall mean costs necessarily incurred by the Construction Manager in the proper performance of the Work. The Cost of the Work shall include only the items set forth in Sections 7.1 through 7.7.

§ 7.1.2 Where, pursuant to the Contract Documents, any cost is subject to the Owner's prior approval, the Construction Manager shall obtain such approval in writing prior to incurring the cost.

§ 7.1.3 Costs shall be at rates not higher than the standard rates paid at the place of the Project, except with prior approval of the Owner.

§ 7.1.4 The Construction Manager shall use reasonable efforts to provide a minimum of three (3) bids/proposals for all Work included in Cost of the Work for the Owner's review and consideration, prior to the Construction Manager procuring the Work for same. The Construction Manager shall consult with the Owner before awarding the subcontract and shall provide the Owner with a copy of each Subcontractor bid and proposed subcontract for the Owner's review. The recommendation of the bids, proposals, and Subcontractors for the Work included in the Cost of the Work shall be made solely by the Construction Manager, with the Owner providing final approval of the Construction Manager's recommendations in accordance with this Agreement. Upon Owner's request, the Construction Manager shall provide Owner with a complete copy of each subcontract agreement.

§ 7.1.5 There shall be zero ($00.00) mark-up on any reimbursable expenses or Cost of the Work as all mark-up is captured in either Construction Manager's Fee or Construction Manager's General Conditions as set forth in this Agreement.

§ 7.2 Labor Costs

§ 7.2.1 Wages or salaries of construction workers directly employed by the Construction Manager to perform the construction of the Work at the site or, with the Owner's prior approval, at off-site workshops.

§ 7.2.2 Wages or salaries of the Construction Manager's supervisory and administrative personnel when stationed at the site and performing Work, with the Owner's prior approval.

§ 7.2.3 Wages and salaries of the Construction Manager's supervisory or administrative personnel engaged at factories, workshops or while traveling, in expediting the production or transportation of materials or equipment required for the Work, but only for that portion of their time required for the Work.

§ 7.2.4 Costs paid or incurred by the Construction Manager, as required by law or collective bargaining agreements, for taxes, insurance, contributions, assessments and benefits and, for personnel not covered by collective bargaining

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agreements, customary benefits such as sick leave, medical and health benefits, holidays, vacations and pensions, provided such costs are based on wages and salaries included in the Cost of the Work under Sections 7.2.1 through 7.2.3.

§ 7.2.5 The above agreed burden rates for labor costs, in lieu of actual costs, shall remain unchanged throughout the duration of this Agreement.

§ 7.2.6 Construction Manager shall provide a Manpower Staffing Plan showing all anticipated salaried and hourly staff positions as part of the Key Personnel.

§ 7.3 Subcontract Costs

§ 7.3.1 Payments made by the Construction Manager to Subcontractors in accordance with the requirements of the subcontracts and this Agreement.

§ 7.3.2 Timely and valid claims made by Subcontractors to Construction Manager may only be considered legitimate Subcontractor costs under this Article 7 to the extent that the entitlement and quantum of each Subcontractor claim have been researched and validated as to amount and that the claim is consistent with this Agreement, the cost are reimbursable pursuant to the Agreement, and the Construction Manager concurs in writing with the Subcontractor's position based upon the Subcontractor's documented representations.

§ 7.4 Costs of Materials and Equipment Incorporated in the Completed Construction

§ 7.4.1 Costs, including transportation and storage at the site, of materials and equipment incorporated, or to be incorporated, in the completed construction. Owner must approve in writing all advance payments for Subcontractors deposits and advances for Work deemed "long lead items," or "special order items" or other selected items pertaining to the Work. If the storage of materials or equipment to be incorporated into the Project is required due, in whole or in part, to the failure of Construction Manager to have the applicable portion of the Project ready for incorporation of such materials or equipment in accordance with the Construction Schedule, then such transportation and storage costs shall not be included in the Cost of Work but, instead, shall be at the sole cost of the Construction Manager.

§ 7.4.2 Costs of materials described in the preceding Section 7.4.1 in excess of those actually installed to allow for reasonable waste and spoilage. Unused excess materials, if any, shall become the Owner's property at the completion of the Work or, at the Owner's option, shall be sold by the Construction Manager. Any amounts realized from such sales shall be credited to the Owner as a deduction from the Cost of the Work.

§ 7.5\ Costs of Other Materials and Equipment, Temporary Facilities and Related Items

§ 7.5.1 Costs of transportation, storage, installation, dismantling, maintenance, and removal of materials, supplies, temporary facilities, machinery, equipment and hand tools not customarily owned by construction workers that are provided by the Construction Manager at the site and fully consumed in the performance of the Work. Costs of materials, supplies, temporary facilities, machinery, equipment, and tools, that are not fully consumed, shall be based on the cost or value of the item at the time it is first used on the Project site less the value of the item when it is no longer used at the Project site. Costs for items not fully consumed by the Construction Manager shall mean fair market value.

§ 7.5.2 Rental charges for temporary facilities, machinery, equipment, and hand tools not customarily owned by construction workers that are provided by the Construction Manager at the site, and the costs of transportation, installation, dismantling, minor repairs, and removal of such temporary facilities, machinery, equipment, and hand tools. Rates and quantities of equipment owned by the Construction Manager, or a related party as defined in Section 7.8, shall be subject to the Owner's prior approval. The total rental cost of any such equipment may not exceed the purchase price of any comparable item.

§ 7.5.3 Costs of removal of debris from the site of the Work and its proper and legal disposal.

§ 7.5.4 Costs of the Construction Manager's site office, including general office equipment and supplies.

§ 7.5.5 Costs of materials and equipment suitably stored off the site at a mutually acceptable location, subject to the Owner's prior approval.

§ 7.6 Miscellaneous Costs

§ 7.6.1 The cost of Subcontractor bonds are not a Cost of the Work unless agreed to in writing by the Owner.

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§ 7.6.2 Sales, use, or similar taxes, imposed by a governmental authority, that are related to the Work and for which the Construction Manager is liable.

§ 7.6.3 Fees and assessments for the building permit, and for other permits, licenses, and inspections, for which the Construction Manager is required by the Contract Documents to pay.

§ 7.6.4 Fees of laboratories for tests required by the Contract Documents; except those related to defective or nonconforming Work for which reimbursement is excluded under Article 13 of AIA Document A201–2017, Modified General Conditions or by other provisions of the Contract Documents, and which do not fall within the scope of Section 7.7.3.

§ 7.6.5 Royalties and license fees paid for the use of a particular design, process, or product, required by the Contract Documents.

§ 7.6.5.1 The cost of defending suits or claims for infringement of patent rights arising from requirements of the Contract Documents, payments made in accordance with legal judgments against the Construction Manager resulting from such suits or claims, and payments of settlements made with the Owner's consent, unless the Construction Manager had reason to believe that the required design, process, or product was an infringement of a copyright or a patent, and the Construction Manager failed to promptly furnish such information to the A/E Professional as required by Article 3 of AIA Document A201–2017, Modified General Conditions. The costs of legal defenses, judgments, and settlements shall not be included in the Cost of the Work used to calculate the Construction Manager's Fee or subject to the Guaranteed Maximum Price.

§ 7.6.6 Costs for communications services, electronic equipment, and software, directly related to the Work and located at the site, with the Owner's prior approval.

§ 7.6.7 Costs of document reproductions and delivery charges.

§ 7.6.8 Deposits lost for causes other than the Construction Manager's negligence or failure to fulfill a specific responsibility in the Contract Documents.

§ 7.6.9 Legal, mediation and arbitration costs, including attorneys' fees, other than those arising from disputes between the Owner and Construction Manager, reasonably incurred by the Construction Manager after the execution of this Agreement in the performance of the Work and with the Owner's prior approval, which shall not be unreasonably withheld.

§ 7.6.10 Expenses incurred in accordance with the Construction Manager's standard written personnel policy for relocation and temporary living allowances of the Construction Manager's personnel required for the Work, with the Owner's prior approval.

§ 7.6.11 That portion of the reasonable expenses of the Construction Manager's supervisory or administrative personnel incurred while traveling in discharge of duties connected with the Work.

§ 7.7 Other Costs and Emergencies

§ 7.7.1 Other costs incurred in the performance of the Work, if and to the extent approved in advance by the Owner.

§ 7.7.2 Costs incurred in taking action to prevent threatened damage, injury, or loss, in case of an emergency affecting the safety of persons and property, as provided in Article 10 of AIA Document A201–2017, Modified General Conditions.

§ 7.7.3 Costs of repairing or correcting damaged or nonconforming Work executed by the Construction Manager, Subcontractors, or suppliers, provided that such damaged or nonconforming Work was not caused by the negligence of, or failure to fulfill a specific responsibility by, the Construction Manager, and only to the extent that the cost of repair or correction is not recovered by the Construction Manager from insurance, sureties, Subcontractors, suppliers, or others.

§ 7.8 Related Party Transactions

§ 7.8.1 For purposes of this Section 7.8, the term "related party" shall mean (1) a parent, subsidiary, affiliate, or other entity having common ownership of, or sharing common management with, the Construction Manager; (2) any entity in which any stockholder in, or management employee of, the Construction Manager holds an equity interest in excess of ten percent in the aggregate; (3) any entity which has the right to control the business or affairs of the Construction

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Manager; or (4) any person, or any member of the immediate family of any person, who has the right to control the business or affairs of the Construction Manager.

§ 7.8.2 If any of the costs to be reimbursed arise from a transaction between the Construction Manager and a related party, the Construction Manager shall notify the Owner in writing of the specific nature of the contemplated transaction, including the identity of the related party and the anticipated cost to be incurred, before any such transaction is consummated or cost incurred. If the Owner, after such notification, authorizes the proposed transaction in writing, then the cost incurred shall be included as a cost to be reimbursed, and the Construction Manager shall procure the Work, equipment, goods, or service, from the related party, as a Subcontractor, according to the terms of Article 9. If the Owner fails to authorize the transaction in writing, the Construction Manager shall procure the Work, equipment, goods, or service from some person or entity other than a related party according to the terms of Article 9.

§ 7.9 Costs Not To Be Reimbursed

§ 7.9.1 The Cost of the Work shall not include the items listed below:

- **.1** Salaries and other compensation of the Construction Manager's personnel stationed at the Construction Manager's principal office or offices other than the site office , except while providing Preconstruction Phase services and except as specifically provided in Section 7.2, or as may be provided in Article 14;
- **.2** Bonuses, profit sharing, incentive compensation, and any other discretionary payments, paid to anyone hired by the Construction Manager or paid to any Subcontractor or vendor, unless the Owner has provided prior approval;
- **.3** Expenses of the Construction Manager's principal office and offices other than the site office;
- **.4** Overhead and general expenses, except as may be expressly included in Sections 7.1 to 7.7;
- **.5** The Construction Manager's capital expenses, including interest on the Construction Manager's capital employed for the Work;
- **.6** Costs of the Work due to the fault or negligence of the Construction Manager, its Subcontractors, or any other person or entity employed by the Construction Manager or Subcontractors, or under contract with them or performing work on the Project on behalf of them or under their supervision, or for whose acts the Construction Manager or its Subcontractors may be liable, including, but not limited to the costs of correcting damaged, defective or non-conforming work, disposal and replacement of materials and equipment incorrectly ordered or supplied, and repairing damage to property not forming party of the Work. The Construction Manager specifically agrees that it shall receive no compensation, and the Cost of Work shall not include, any costs incurred by the Construction Manager in repairing or correcting, or supervising the correction or repair of, defective or non-conforming Work performed or supplied by any Subcontractor, material supplier, or any other person or entity employed by the Construction Manager, under contract with the Construction Manager, or performing Work on the Project on behalf of or under the supervision of the Construction Manager or Construction Manager's personnel and that the Construction Manager's sole remedy with respect to the recovery of such costs shall be whatever remedies are contained in the Construction Manager's subcontract agreements with its Subcontractors, suppliers and other persons or entities providing Work on the Project;
- **.7** Any cost not specifically and expressly described in Sections 7.1 to 7.7;
- **.8** Costs, other than costs included in Change Orders approved by the Owner, that would cause the Guaranteed Maximum Price to be exceeded; and
- **.9** Costs for services incurred during the Preconstruction Phase.

ARTICLE 8 DISCOUNTS, REBATES, AND REFUNDS

§ 8.1 Cash discounts obtained on payments made by the Construction Manager shall accrue to the Owner if (1) before making the payment, the Construction Manager included the amount to be paid, less such discount, in an Application for Payment and received payment from the Owner, or (2) the Owner has deposited funds with the Construction Manager with which to make payments; otherwise, cash discounts shall accrue to the Construction Manager. Trade discounts, rebates, refunds, and amounts received from sales of surplus materials and equipment shall accrue to the Owner, and the Construction Manager shall make provisions so that they can be obtained.

§ 8.2 Amounts that accrue to the Owner in accordance with the provisions of Section 8.1 shall be credited to the Owner as a deduction from the Cost of the Work.

ARTICLE 9 SUBCONTRACTS AND OTHER AGREEMENTS

§ 9.1 Those portions of the Work that the Construction Manager does not customarily perform with the Construction Manager's own personnel shall be performed under subcontracts or other appropriate agreements with the Construction

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Manager as set forth in Section 3.1.17 of this Agreement. The Owner may designate specific persons from whom, or entities from which, the Construction Manager shall obtain bids. The Construction Manager shall obtain bids from Subcontractors, and from suppliers of materials or equipment fabricated especially for the Work, who are qualified to perform that portion of the Work in accordance with the requirements of the Contract Documents. Any advice of the A/E Professional or Owner's Representative, or approval or objection by the Owner, shall not relieve the Construction Manager of its responsibility to perform the Work in accordance with the Contract Documents. The Construction Manager shall not be required to contract with anyone to whom the Construction Manager has reasonable objection.

§ 9.1.1 When a specific subcontractor or supplier (1) is recommended to the Owner by the Construction Manager; (2) is qualified to perform that portion of the Work; and (3) has submitted a bid that conforms to the requirements of the Contract Documents without reservations or exceptions, but the Owner requires that another bid be accepted, then the Construction Manager may require that a Change Order be issued to adjust the Guaranteed Maximum Price by the difference between the bid of the person or entity recommended to the Owner by the Construction Manager and the amount of the subcontract or other agreement actually signed with the person or entity designated by the Owner.

§ 9.2 Subcontracts or other agreements shall conform to the applicable payment provisions of this Agreement, and shall not be awarded on the basis of cost plus a fee without the Owner's prior written approval. If a subcontract is awarded on the basis of cost plus a fee, the Construction Manager shall provide in the subcontract for the Owner to receive the same audit rights with regard to the Subcontractor as the Owner receives with regard to the Construction Manager in Article 10.

ARTICLE 10 ACCOUNTING RECORDS

The Construction Manager shall keep full and detailed records and accounts related to the Cost of the Work, and exercise such controls, as may be necessary for proper financial management under this Contract and to substantiate all costs incurred. The accounting and control systems shall be satisfactory to the Owner. The Owner and the Owner's auditors shall, during regular business hours and upon reasonable notice, be afforded access to, and shall be permitted to audit and copy, the Construction Manager's records and accounts, including complete documentation supporting accounting entries, books, job cost reports, correspondence, instructions, drawings, receipts, subcontracts, Subcontractor's proposals, Subcontractor's invoices, purchase orders, vouchers, memoranda, and other data relating to this Contract. The Construction Manager shall preserve these records for a period of four (4) years after Final Payment, or for such longer period as may be required by law. Such right of access may be exercised during the Work or after Substantial Completion of the Work, with respect to records pertaining to contract performance, change orders, Claims, or payment audits including a final payment audit. Such right of access may also be exercised post termination if the Contract is terminated for default or convenience. This Section is applicable to all Change Orders or Claims by or against the Construction Manager and or a Subcontractor of any tier whether or not they affect the GMP. The Construction Manager agrees to include the provisions of this Section in all its contracts and all tier subcontracts with regard to any audits of payments received by the Construction Manager to verify that such payments were made and that such payments were made for the use required by the Project. Audits conducted under this Section shall be in accordance with generally accepted auditing standards and established procedures and guidelines of the reviewing audit agency. The Construction Manager agrees to the disclosure of all information and reports resulting from access to records under this Section to the Owner, provided that the Construction Manager is afforded the opportunity for an audit exit conference. If the Owner audits the Construction Manager's books and records and discovers actual costs or an error in the Construction Manager's favor by more than one percent (1%) of the Cost of the Work to date, the Construction Manager shall reimburse the Owner for the cost of such audit and the Construction Manager shall promptly refund the amount overpaid to the Owner.

ARTICLE 11 PAYMENTS FOR CONSTRUCTION PHASE SERVICES

§ 11.1 Progress Payments

§ 11.1.1 Based upon Applications for Payment submitted to the Owner's Representative by the Construction Manager, and Certificates for Payment issued by the Owner's Representative, the Owner shall make progress payments on account of the Contract Sum, to the Construction Manager, as provided below and elsewhere in the Contract Documents.

§ 11.1.2 The period covered by each Application for Payment shall be one calendar month ending on the last day of the month, or as follows:

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§ 11.1.3 Owner/Owner's Representative, Construction Manager and A/E Professional shall meet at the Project site between the 25th and 28th day of each month to review Construction Manager's "Pencil Draw" for that month's Application

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for Payment (which shall include all amounts through the end of the month), which shall be a preliminary draft of the Application for Payment prepared by Construction Manager. After that meeting, Construction Manager shall revise the Pencil Draw in accordance with any reasonable objection or recommendation of the Owner/Owner's Representative or A/E Professional that is consistent with the requirements of the Contract Documents. Such revised Pencil Draw shall be resubmitted by Construction Manager as the Application for Payment on or by the first (1st) day of a month. The Owner and Owner's Representative shall approve, if correct, and the Owner's Representative shall certify, if correct, the Application for Payment by the seventh (7th) of the month and the Owner shall make payment of the certified amount to the Construction Manager not later than the twenty-first (21st) day of the same month, provided the revised Pencil Draw is accurate. If errors are found in the revised Pencil Draw, it shall be revised and resubmitted for review in accordance with this Section.

§ 11.1.4 With each Application for Payment, the Construction Manager shall submit payrolls, petty cash accounts, receipted invoices or invoices with check vouchers attached, and any other evidence required by the Owner or Owner's Representative to demonstrate that payments already made by the Construction Manager on account of the Cost of the Work equal or exceed progress payments already received by the Construction Manager, plus payrolls for the period covered by the present Application for Payment, less that portion of the progress payments attributable to the Construction Manager's Fee plus payrolls for the period covered by the present Application for Payment, as evidenced by copies of Construction Manager's payroll register certified by Construction Manager as to its accuracy as support for the fringe benefits and labor burden (any deviation in the payroll register from the Check Activity with Detail previously submitted to the Owner for the prior period must be agreed to by Owner in writing). In addition, as a further condition to payment of each progress payment, Construction Manager shall submit to Owner: (i) a sworn and certified Progress Payment Affidavit, which recites that all laborers, material suppliers and Subcontractors dealing with the Construction Manager have been paid in full through the date of the prior application for payment which has been received by Construction Manager from Owner, with the exception of disputed payments; (ii) a partial release of lien conditioned upon payment from Construction Manager for the current Application for Payment, (iii) partial releases of lien from all lienors providing Work on the applicable Application for Payment through the date of the last payment made, (iv) partial releases of lien conditioned only upon payment from all lienors providing Work on the applicable Application for Payment, through the date of the current Application for Payment, (v) any evidence of payment of any indebtedness incurred with respect to the Work of Construction Manager, as may be required by Owner and/or Owner's Representative and such other evidence that they may reasonably require substantiating that all Work which is the subject of each such Application for Payment has been performed, and (vi) where required by any manufacturers for extended warranties, inspection certificates or other acceptable documentation confirming the acceptable completion of any and all required inspections for the Work performed for which payment is being made.

§ 11.1.5 Each Application for Payment shall be based on the most recent schedule of values submitted by the Construction Manager with the Final GMP Amendment unless subsequently amended by Change Order in accordance with the Contract Documents. If the Schedule of Values is subsequently amended by Change Order in accordance with the Contract Documents, then each subsequent Application for Payment shall be based on the Amended Schedule of Values. The schedule of values shall allocate the entire Guaranteed Maximum Price among: (1) the various portions of the Work; (2) any contingency for costs that are included in the Guaranteed Maximum Price but not otherwise allocated to another line item or included in a Change Order; and (3) the Construction Manager's Fee.

§ 11.1.5.1 The Construction Manager's General Conditions shall be shown as separate items. As individual subcontracts are executed, the actual subcontract value will be identified separately in the Schedule of Values in place of the estimates that made up the original Final GMP, with any remaining portion of the line item carried in the same scope of Work, to complete the Work in any particular division, as long as the Final GMP is not increased. The schedule of values shall be prepared in such form and supported by such data to substantiate its accuracy as the Owner's Representative may require. The schedule of values shall be used as a basis for reviewing the Construction Manager's Applications for Payment.

§ 11.1.5.2 The allocation of the Guaranteed Maximum Price under this Section 11.1.5 shall not constitute a separate guaranteed maximum price for the Cost of the Work of each individual line item in the schedule of values.

§ 11.1.5.3 When the Construction Manager allocates costs from a contingency to another line item in the schedule of values, the Construction Manager shall submit supporting documentation to the Owner's Representative.

§ 11.1.6 Applications for Payment shall show the percentage of completion of each portion of the Work as of the end of the period covered by the Application for Payment. The percentage of completion shall be the lesser of (1) the percentage of that portion of the Work which has actually been completed, or (2) the percentage obtained by dividing (a) the expense

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that has actually been incurred by the Construction Manager on account of that portion of the Work and for which the Construction Manager has made payment or intends to make payment prior to the next Application for Payment, by (b) the share of the Guaranteed Maximum Price allocated to that portion of the Work in the schedule of values.

§ 11.1.7 In accordance with AIA Document A201–2017, Modified General Conditions, and subject to other provisions of the Contract Documents, the amount of each progress payment shall be computed as follows:

§\ 11.1.7.1 The amount of each progress payment shall first include:

.1 That portion of the Guaranteed Maximum Price properly allocable to completed Work as determined by multiplying the percentage of completion of each portion of the Work by the share of the Guaranteed Maximum Price allocated to that portion of the Work in the most recent schedule of values;

.2 That portion of the Guaranteed Maximum Price properly allocable to materials and equipment delivered and suitably stored at the site for subsequent incorporation in the completed construction or, if approved in writing in advance by the Owner, suitably stored off the site at a location agreed upon in writing;

.3 That portion of Construction Change Directives that the Owner's Representative determines, in the Owner's Representative's professional judgment, to be reasonably justified; and

.4 The Construction Manager's Fee, computed upon the Cost of the Work described in the preceding Sections 11.1.7.1.1 and 11.1.7.1.2 at the rate stated in Section 6.1.2 or, if the Construction Manager's Fee is stated as a fixed sum in that Section, an amount that bears the same ratio to that fixed-sum fee as the Cost of the Work included in Sections 11.1.7.1.1 and 11.1.7.1.2 bears to a reasonable estimate of the probable Cost of the Work upon its completion.

§ 11.1.7.2 The amount of each progress payment shall then be reduced by:

.1 The aggregate of any amounts previously paid by the Owner;

.2 The amount, if any, for Work that remains uncorrected and for which the Owner's Representative has previously withheld a Certificate for Payment as provided in Article 9 of AIA Document A201–2017, Modified General Conditions;

.3 Any amount for which the Construction Manager does not intend to pay a Subcontractor or material supplier, unless the Work has been performed by others the Construction Manager intends to pay;

.4 For Work performed or defects discovered since the last payment application, any amount for which the Owner's Representative may withhold payment, or nullify a Certificate of Payment in whole or in part, as provided in Article 9 of AIA Document A201–2017, Modified General Conditions;

.5 The shortfall, if any, indicated by the Construction Manager in the documentation required by Section 11.1.4 to substantiate prior Applications for Payment, or resulting from errors subsequently discovered by the Owner's auditors in such documentation; and

.6 Retainage withheld pursuant to Section 11.1.8.

§ 11.1.8 Retainage

§ 11.1.8.1 For each progress payment made prior to Substantial Completion of the Work, the Owner may withhold the following amount, as retainage, from the payment otherwise due:
(Insert a percentage or amount to be withheld as retainage from each Application for Payment. The amount of retainage may be limited by governing law.)

Owner shall withhold Five Percent (5%) retainage on all amounts due Construction Manager for each Application.

§ 11.1.8.1.1 The following items are not subject to retainage:
(Insert any items not subject to the withholding of retainage, such as general conditions, insurance, etc.)

NA

§ 11.1.8.2 Reduction or limitation of retainage, if any, shall be as follows:
(If the retainage established in Section 11.1.8.1 is to be modified prior to Substantial Completion of the entire Work, insert provisions for such modification.)

NA

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§ 11.1.8.3 Except as set forth in this Section 11.1.8.3, upon Substantial Completion of the Work, the Construction Manager may submit an Application for Payment that includes the retainage withheld from prior Applications for Payment pursuant to this Section 11.1.8. The Application for Payment submitted at Substantial Completion shall not include retainage as follows:
(Insert any other conditions for release of retainage, such as upon completion of the Owner's audit and reconciliation, upon Substantial Completion.)

NA

§ 11.1.9 The Owner and the Construction Manager shall agree upon a mutually acceptable procedure for review and approval of payments to Subcontractors, and the percentage of retainage held on Subcontracts, and the Construction Manager shall execute subcontracts in accordance with those agreements.

§ 11.1.9.1 Except with the Owner's prior written approval, the Construction Manager shall not make advance payments to suppliers for materials or equipment which have not been delivered and stored at the site.

§ 11.1.10 In taking action on the Construction Manager's Applications for Payment the Owner's Representative shall be entitled to rely on the accuracy and completeness of the information furnished by the Construction Manager, and such action shall not be deemed to be a representation that (1) the Owner's Representative has made a detailed examination, audit, or arithmetic verification, of the documentation submitted in accordance with Section 11.1.4 or other supporting data; (2) that the Owner's Representative has made exhaustive or continuous on-site inspections; or (3) that the Owner's Representative has made examinations to ascertain how or for what purposes the Construction Manager has used amounts previously paid on account of the Contract. Such examinations, audits, and verifications, if required by the Owner, will be performed by the Owner's auditors acting in the sole interest of the Owner.

§ 11.1.11 In the event of any breach or default by the Construction Manager under the Contract Documents, Owner may withhold any payment or part of any payment in the amount of the costs and damages incurred by Owner to correct, remedy and/or mitigate any Construction Manager defaults or the amount costs of damages, including actual delay damages, reasonably estimated to be incurred to correct, remedy and/or mitigate any Construction Manager defaults including, but not limited to: (1) defective Work not remedied; (2) claims or liens filed, unless bonded off; (3) failure of the Construction Manager to make payments properly to Subcontractors or for labor, materials, or equipment; (4) failure to provide waivers of lien for all lienors giving notices; (5) damage to the Owner's property caused by Contactor, its Subcontractors or anyone working for Construction Manager; (6) failure of the Work to progress satisfactorily or according to schedule; and (7) failure to carry out the Work in accordance with the Contract Documents.

§ 11.1.12 It is understood that each Application for Payment shall constitute a certification and representation by the Construction Manager to the Owner that: (i) the construction has progressed to the point indicated; (ii) the quality of the Work covered by the application is in accordance with the Contract Documents; (iii) there are no liens or claims outstanding or known to exist at the date of the application; (iv) all due and payable bills with respect to the Work have been paid to date or included in the amount requested in the previous application, and there is no known basis for the filing of any construction liens or claims or any other lien or claim on the Work; (v) duly executed waivers and releases have been obtained from all Subcontractors for work done and materials furnished through the date of payment; (vi) the Construction Manager is entitled to payment in the amount requested; (vii) such Application for Payment represents a just estimate of cost reimbursable to Construction Manager under the terms of the Contract Documents, (viii) such Application for Payment has not been front-end-loaded either by Construction Manager or by any of its Subcontractors and (ix) that Construction Manager has not adjusted line items in the Schedule of Values without Owner's prior written consent.

§ 11.2 Final Payment

§ 11.2.1 Subject to the requirements of Section 9.10 of the Modified General Conditions, final payment, constituting the entire unpaid balance of the Contract Sum, shall be made by the Owner to the Construction Manager when

- **.1** the Construction Manager has fully performed the Contract, except for the Construction Manager's responsibility to correct Work as provided in Article 12 of AIA Document A201–2017, Modified General Conditions, and to satisfy other requirements, if any, which extend beyond final payment;
- **.2** the Construction Manager has submitted a final accounting for the Cost of the Work and a final Application for Payment; and
- **.3** a final Certificate for Payment has been issued by the Owner's Representative in accordance with Section 11.2.2.2.

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Construction Manager understands and agrees that its final application for Final Payment will constitute a further representation that the conditions precedent to Construction Manager's being entitled to Final Payment have been fulfilled.

§ 11.2.2 Within 30 days of the Owner's receipt of the Construction Manager's final accounting for the Cost of the Work, the Owner shall conduct an audit of the Cost of the Work or notify the Owner's Representative that it will not conduct an audit.

§ 11.2.2.1 If the Owner conducts an audit of the Cost of the Work, the Owner shall, within 10 days after completion of the audit, submit a written report based upon the auditors' findings to the Owner's Representative.

§ 11.2.2.2 Within seven days after receipt of the written report described in Section 11.2.2.1, or receipt of notice that the Owner will not conduct an audit, and provided that the other conditions of Section 11.2.1 have been met, the Owner's Representative will either issue to the Owner a final Certificate for Payment with a copy to the Construction Manager, or notify the Construction Manager and Owner in writing of the Owner's Representative's reasons for withholding a certificate as provided in Article 9 of AIA Document A201–2017, Modified General Conditions. The Owner's Representative is not responsible for verifying the accuracy of the Construction Manager's final accounting.

§ 11.2.2.3 If the Owner's auditors' report concludes that the Cost of the Work, as substantiated by the Construction Manager's final accounting, is less than claimed by the Construction Manager, the Construction Manager shall be entitled to request mediation of the disputed amount without seeking an initial decision pursuant to Article 15 of AIA Document A201–2017, Modified General Conditions. A request for mediation shall be made by the Construction Manager within 30 days after the Construction Manager's receipt of a copy of the Owner's Representative's final Certificate for Payment. Failure to request mediation within this 30-day period shall result in the substantiated amount reported by the Owner's auditors becoming binding on the Construction Manager. Pending a final resolution of the disputed amount, the Owner shall pay the Construction Manager the amount certified in the Owner's Representative's final Certificate for Payment.

§ 11.2.3 The Owner's final payment to the Construction Manager shall be made no later than 30 days after the issuance of the Owner's Representative's final Certificate for Payment and Construction Manager's strict and full compliance with all conditions precedent to final payment contained throughout Section 9.10 of the Modified General Conditions and throughout the Contract Documents.

§ 11.3 Interest

Undisputed payments which are due under the Contract Documents and unpaid for a period of twenty-one (21) additional days shall bear interest from the date payment is due at the rate stated below.
(Insert rate of interest agreed upon, if any.)

[insert] % « »

ARTICLE 12 DISPUTE RESOLUTION

§ 12.1 Initial Decision Maker

§ 12.1.1 Any Claim between the Owner and Construction Manager shall be resolved in accordance with the provisions set forth in this Article 12 and Article 15 of A201–2017, Modified General Conditions. However, for Claims arising from or relating to the Construction Manager's Preconstruction Phase services, no decision by the Initial Decision Maker shall be required as a condition precedent to mediation or binding dispute resolution, and Section 12.1.2 of this Agreement shall not apply.

§ 12.1.2 The Owner's Representative will serve as the Initial Decision Maker pursuant to Article 15 of AIA Document A201–2017, Modified General Conditions, for Claims arising from or relating to the Construction Manager's Construction Phase services.

§ 12.2 Binding Dispute Resolution

For any Claim subject to, but not resolved by mediation pursuant to Article 15 of AIA Document A201–2017, Modified General Conditions, the method of binding dispute resolution shall be as follows:
(Check the appropriate box.)

[« »] Arbitration pursuant to Article 15 of AIA Document A201–2017

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[X] Litigation in a court of competent jurisdiction

[« »] Other: *(Specify)*

« »

§ 12.3 WAIVER OF TRIAL BY JURY

IN THE EVENT OF LITIGATION, BOTH PARTIES HEREBY KNOWINGLY, IRREVOCABLY, VOLUNTARILY, AND INTENTIONALLY WAIVE ANY RIGHT EITHER PARTY MAY HAVE TO A TRIAL BY JURY IN RESPECT OF ANY ACTION, PROCEEDING, CLAIM, OR COUNTERCLAIM ARISING OUT OF OR RELATING TO THIS AGREEMENT, OR THE BREACH THEREOF, OR IN CONNECTION WITH THE WORK OR ANY COURSE OF CONDUCT, COURSE OF DEALING, STATEMENTS (WHETHER VERBAL OR WRITTEN), OR ANY ACTIONS OR INACTIONS OF EITHER PARTY.

ARTICLE 13 TERMINATION OR SUSPENSION

§ 13.1 Termination Prior to Execution of the Guaranteed Maximum Price Amendment

§ 13.1.1 If the Owner and the Construction Manager do not reach an agreement on the Guaranteed Maximum Price, the Owner may terminate this Agreement upon not less than seven (7) days' written notice to the Construction Manager.

§ 13.1.2 In the event of termination of this Agreement pursuant to Section 13.1.1, the Construction Manager shall be compensated for Preconstruction Phase services and Work performed prior to receipt of a notice of termination, in accordance with the terms of this Agreement. In no event shall the Construction Manager's compensation under this Section exceed the compensation set forth in Section 5.1.

§ 13.2 Termination or Suspension Following Execution of the Guaranteed Maximum Price Amendment

§ 13.2.1 Termination

The Contract may be terminated or suspended by the Owner or the Construction Manager only as provided in Article 14 of AIA Document A201–2017, Modified General Conditions.

ARTICLE 14 MISCELLANEOUS PROVISIONS

§ 14.1 Terms in this Agreement shall have the same meaning as those in A201–2017, Modified General Conditions. Where reference is made in this Agreement to a provision of AIA Document A201–2017, Modified General Conditions, or another Contract Document, the reference refers to that provision as amended or supplemented by other provisions of the Contract Documents.

§ 14.2 Successors and Assigns

§ 14.2.1 The Owner and Construction Manager, respectively, bind themselves, their partners, successors, assigns and legal representatives to covenants, agreements, and obligations contained in the Contract Documents. Except as provided in Section 14.2.2 of this Agreement, and in Section 13.2.2 of A201–2017, Modified General Conditions, neither party to the Contract shall assign the Contract as a whole without written consent of the other. If either party attempts to make an assignment without such consent, that party shall nevertheless remain legally responsible for all obligations under the Contract.

§ 14.3 Insurance and Bonds

For all phases of the Project, the Construction Manager and the Owner shall purchase and maintain insurance as set forth in Article 11 of the Modified General Conditions.

§ 14.4 Other provisions:

§ 14.4.1 Attorneys' Fees/Prevailing Party.

In the event that any litigation arises out of or under this Agreement, then the prevailing party in such litigation shall be entitled to recover from the non-prevailing party, all reasonable costs of such action, including but not limited to reasonable expert fees, attorneys' fees and paralegal fees for all trial and appellate levels. In any suit, action, or other proceeding, including bankruptcy, arising out of or in any manner relating to the Contract Documents, including without

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limitation, (i) the enforcement or interpretation of a party's rights or obligations under the Contract Documents (whether in contract, tort, or both), or (ii) the declaration of any rights or obligations under the Contract Documents, the successful or prevailing party, as determined by the court, shall be entitled to recover from the losing party, as determined by the court, reasonable attorneys' fees, paralegal fees, and disbursements (including disbursements which would not otherwise be taxable as cost in the proceeding) and expert witness fees. All references in the Contract Documents to attorneys' fees shall be deemed to include all attorney and paralegal fees and costs incurred pre-litigation as well as through all post-judgment and appellate levels and in connection with collection, and bankruptcy proceedings. In addition to the above, the prevailing party shall be entitled to recover from the non-prevailing party, all litigation costs associated with discovery and production of Electronically Stored Information (ESI).

§ 14.4.2 Severability.
If any term or provision of the Contract, or the application thereof to any person or circumstances, shall be invalid or unenforceable to any extent, the remainder of the Contract or the application of the Contract to persons or circumstances other than those against whom or which such term or provision is invalid or unenforceable, shall not be affected thereby, and each term and provision of the Contract shall be valid and enforceable to the fullest extent permissible by law.

§ 14.4.3 Signatures.
The Contract may be executed in multiple counterparts, each of which will be deemed an original agreement and all of which together will constitute one agreement.

§ 14.4.4 Time.
Unless otherwise provided, Contract Time is the period of time, including authorized adjustments, allotted in the Contract Documents for Substantial Completion of the Work. The term "day" as used in the Contract Documents shall mean calendar day unless otherwise specifically defined. Time limits stated in the Contract Documents are of the essence of the Contract. By executing the Agreement the Construction Manager confirms that the Contract Time is a reasonable period for performing the Work.

§ 14.4.5 Headings.
The headings contained in the Contract are inserted only for convenience and reference are not meant to define, limit or describe the scope or intent of the Contract Documents or in any way to affect the terms and provisions set forth herein.

§ 14.4.6 No Third Party Beneficiaries.
Nothing contained in this Agreement shall create a contractual relationship with or a cause of action in favor of a third party against either the Owner or Construction Manager.

§ 14.4.7 Flow Down.
Construction Manager shall cause this Contract to be incorporated by reference in all agreements entered into between it and its Subcontractors, such that the terms and conditions of the Contract flow down to and bind all Subcontractors, whether specifically required or not by any provision of the Contract Documents. Notwithstanding the foregoing, any terms of this Contract with respect to the Construction Manager's Fee are specifically excluded from the flow down provisions of this Contract. Notwithstanding the foregoing, no provisions of the Subcontracts shall flow up or apply to Owner.

§ 14.4.8 Materials Procurement.
Construction Manager, in accordance with its fiduciary duties to Owner, shall use its (and shall cause its Subcontractors to use their) best efforts to limit Owner's exposure to increases in the cost of materials for the Work by locking in prices for same with applicable suppliers and venders in a timely and prudent manner and to avoid increased and unnecessary costs to the Owner. However, to the extent that a price has been locked in with a supplier for materials and the market for such materials later decreases prior to the time such materials are delivered and installed at the Project site, Construction Manager shall use its (and shall cause its Subcontractors to use their) best efforts to reduce the price of such materials.

§ 14.4.9 Excess Materials.
Unused excess materials, if any, shall become the Owner's property at the completion of the Work or, at the Owner's option, shall be sold by the Construction Manager. Any amounts realized from such sales shall be credited to the Owner as a deduction from the Cost of the Work. Any materials provided to Owner in accordance with this Section shall be specifically listed by Construction Manager in a written inventory provided to the Owner detailing the material, material source, and location of the Project for which the material was originally obtained.

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§ 14.4.10 Scrutinized Companies

§ 14.4.10.1 Construction Manager certifies that it and its subconsultants are not on the Scrutinized Companies that Boycott Israel List. Pursuant to Section 287.135, F.S., the Owner may immediately terminate this Agreement at its sole option if the Construction Manager or its subconsultants are found to have submitted a false certification; or if Construction Manager, or its subconsultants are placed on the Scrutinized Companies that Boycott Israel List or is engaged in the boycott of Israel during the term of the Agreement.

§ 14.4.10.2 If this Agreement is for more than one million dollars, Construction Manager certifies that it and its subconsultants are also not on the Scrutinized Companies with Activities in Sudan, Scrutinized Companies with Activities in the Iran Petroleum Energy Sector List, or engaged with business operations in Cuba or Syria as identified in Section 287.135, F.S. Pursuant to Section 287.135, F.S., the Owner may immediately terminate this Agreement at its sole option if Construction Manager, its affiliates, or its subconsultants are found to have submitted a false certification; or if Construction Manager, its affiliates, or its subconsultants are placed on the Scrutinized Companies with Activities in Sudan List, or Scrutinized Companies with Activities in the Iran Petroleum Energy Sector List, or engaged with business operations in Cuba or Syria during the term of the Agreement.

§ 14.4.10.3 Construction Manager agrees to observe the above requirements for applicable subcontracts entered into for the performance of work under this Agreement.

§ 14.4.10.4 As provided in Subsection 287.135(8), F.S., if federal law ceases to authorize the above-stated contracting prohibitions then they shall become inoperative.

§ 14.4.11 Sovereign Immunity.

Nothing in this Agreement shall be construed as a waiver of the Owner's sovereign immunity. This Agreement shall not constitute or be construed as a waiver of any of the privileges, rights, defenses, remedies, or immunities available to the Owner. The failure to enforce, or any delay in the enforcement of, any privileges, rights, defenses, remedies, or immunities available to the Owner under the Agreement or under applicable law shall not constitute a waiver of such privileges, rights, defenses, remedies, or immunities or be considered as a basis for estoppel. Owner does not waive any privileges, rights, defenses, or immunities available to Owner by entering into the Agreement or by its conduct prior to or subsequent to entering into the Agreement.

§ 14.4.12 Public Records.

Owner is a public agency subject to Chapter 119, Florida Statutes. To the extent that Construction Manager is acting on behalf of Owner pursuant to Section 119.0701, Florida Statutes, Construction Manager shall:

(i) Keep and maintain public records required by the Owner to perform the Services.

(ii) Upon request from the Owner's custodian of public records, provide the Owner with a copy of the requested records or allow the records to be inspected or copied within a reasonable time at a cost that does not exceed the cost provided in Florida Statute or as otherwise provided by law.

(iii) Ensure that public records that are exempt or confidential and exempt from public records disclosure requirements are not disclosed except as authorized by law for the duration of the Agreement term and following completion of the Agreement if the Construction Manager does not transfer the records to the Owner.

(iv) Upon completion of the Agreement, transfer, at no cost, to the Owner all public records in possession of the Construction Manager or keep and maintain public records required by the Owner to perform the Services. If the Construction Manager transfers all public records to the Owner upon completion of the Agreement, the Construction Manager shall destroy any duplicate public records that are exempt or confidential and exempt from public records disclosure requirements. If the Construction Manager keeps and maintains public records upon completion of the Agreement, the Construction Manager shall meet all applicable requirements for retaining public records. All records stored electronically must be provided to the Owner, upon request from the Owner's custodian of public records, in a format that is compatible with the information technology systems of the Owner.

(v) If the Construction Manager does not comply with this section, the Owner shall enforce the Contract provisions in accordance with the Contract Documents and may unilaterally cancel this Contract in accordance with state law.

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IF THE CONSTRUCTION MANAGER HAS QUESTIONS REGARDING THE APPLICATION OF CHAPTER 119, FLORIDA STATUTES, TO THE CONSTRUCTION MANAGER'S DUTY TO PROVIDE PUBLIC RECORDS RELATING TO THIS AGREEMENT, CONTACT THE CUSTODIAN OF PUBLIC RECORDS AT CITY OF DELRAY BEACH, CITY CLERK, 100 N.W. 1ST AVE., DELRAY BEACH FLORIDA. THE CITY CLERK'S OFFICE MAY BE CONTACTED BY PHONE AT 561-243-7050 OR VIA EMAIL AT CITYCLERK@MYDELRAYBEACH.COM.

§ 14.4.13 Inspector General.
Construction Manager is aware that the Inspector General of Palm Beach County has the authority to investigate and audit matters relating to the negotiation and performance of this Contract and may demand and obtain records and testimony from Construction Manager and its subcontractors and lower tier subcontractors. Construction Manager understands and agrees that in addition to all other remedies and consequences provided by law, the failure of Construction Manager or its subcontractors and lower tier subcontractors to fully cooperate with the Inspector General when requested may be deemed by the Owner to be a material breach of this Agreement justifying its termination.

§ 14.4.14 E-Verify.
By entering into this Agreement Construction Manager acknowledges its obligation to comply with the provisions of Section 448.095, Fla. Stat., "Employment Eligibility." Construction Manager affirms and represents it is registered with the E-Verify system, utilizing same, and will continue to utilize same as required by law. Compliance with this section includes, but is not limited to, utilization of the E-Verify System to verify the work authorization status of all newly hired employees and requiring all subcontractors to provide an affidavit attesting that the subcontractor does not employ, contract with, or subcontract with, an unauthorized alien. Failure to comply with this section will result in the termination of this Agreement, or if your subcontractor knowingly violates the statute, the subcontract must be terminated immediately. Any challenge to termination under this provision must be filed in the Circuit Court no later than 20 calendar days after the date of termination. If terminated for a violation of the statute by Construction Manager, the Construction Manager may be prohibited from conducting future business with the Owner or awarded a solicitation or contract for a period of 1 year after the date of termination. All costs incurred to initiate and sustain the aforementioned programs shall be the responsibility of the Construction Manager.

ARTICLE 15 SCOPE OF THE AGREEMENT

§ 15.1 This Agreement represents the entire and integrated agreement between the Owner and the Construction Manager and supersedes all prior negotiations, representations or agreements, either written or oral. This Agreement may be amended only by written instrument signed by both Owner and Construction Manager.

§ 15.2 The following documents comprise the Agreement:

.1 AIA Document A133™–2019, Modified Standard Form of Agreement Between Owner and Construction Manager as Constructor where the basis of payment is the Cost of the Work Plus a Fee with a Guaranteed Maximum Price

.2 AIA Document A133™-2019, Exhibit A, Guaranteed Maximum Price Amendment, if executed

.3 AIA Document A133™–2019, Exhibit B, Insurance and Bonds

.4 AIA Document A201™–2017, Modified General Conditions of the Contract for Construction

.5 AIA Document E203™–2013, Building Information Modeling and Digital Data Exhibit, dated as indicated below, if applicable

.6 Other Exhibits:
(Check all boxes that apply.)

[« »] AIA Document E234™–2019, Sustainable Projects Exhibit, Construction Manager as Constructor Edition, dated as indicated below:
(Insert the date of the E234-2019 incorporated into this Agreement.)

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[« »] Supplementary and other Conditions of the Contract:

Document	Title	Date	Pages

.7 Other documents, if any, listed below:
(List here any additional documents that are intended to form part of the Contract Documents. AIA Document A201–2017 provides that the advertisement or invitation to bid, Instructions to Bidders, sample forms, the Construction Manager's bid or proposal, portions of Addenda relating to bidding or proposal requirements, and other information furnished by the Owner in anticipation of receiving bids or proposals, are not part of the Contract Documents unless enumerated in this Agreement. Any such documents should be listed here only if intended to be part of the Contract Documents.)

Exhibit ___ – Initial Construction Schedule
Exhibit ___ – Initial Schedule of Values (To be agreed upon in the GMP Amendment)
Exhibit ___ – Construction Manager's Key Personnel
Exhibit ___ – Warranty Forms
Exhibit ___ – Hurricane Preparedness Plan
Exhibit ___ – RFQ No. ___
Exhibit ____ Phase 1 Scope of Services

DRAFT

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User Notes: (1181231941)

IN WITNESS WHEREOF, the Owner and the Construction Manager executed this Agreement as of the day and year first above written.

ATTEST:

OWNER/CITY OF DELRAY BEACH

_____
Katerri Johnson, City Clerk

By: _____
Thomas F. Carney, Jr., Mayor

Approved as to form and legal sufficiency:

_____
Lynn Gelin, City Attorney

Construction Manager

By: _____

Print Name: _____

Title: _____

(SEAL)

STATE OF _____

COUNTY OF _____

The foregoing instrument was acknowledged before me by means of ☐ physical presence or ☐ online notarization, this _ day of _____, 20____ by _____ _____ (name of person), as _____ (type of authority) for _____ _____ (name of party on behalf of whom instrument was executed).

Personally known ___ OR Produced Identification
Type of Identification Produced _____

_____
Notary Public – State of _____

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User Notes: (1181231941)

HISTORIC MARINE WAY SEAWALL, ROADWAY, AND DRAINAGE IMPROVEMENT

CITY PROJECT No. 17-047

TECHNICAL SPECIFICATIONS

DIVISION 1

01010	SUMMARY OF WORK
01020	ALLOWANCE
01025	MEASUREMENT AND PAYMENT
01041	PROJECT COORDINATION
01045	CUTTING AND PATCHING
01050	FIELD ENGINEERING
01090	REFERENCE STANDARDS
01152	APPLICATION FOR PAYMENT
01153	CHANGE ORDER PROCEDURES
01200	PROJECT MEETINGS
01310	CONSTRUCTION SCHEDULES
01340	SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES
01370	SCHEDULE OF VALUES
01380	CONSTRUCTION PHOTOGRAPHS
01410	TESTING LABORATORY SERVICES
01500	CONSTRUCTION FACILITIES AND TEMPORARY CONTROLS
01530	BARRIERS
01570	TRAFFIC CONTROL
01580	PROJECT IDENTIFICATION AND SIGNS
01590	FIELD OFFICES AND SHEDS
01600	MATERIAL AND EQUIPMENT
01630	SUBSTITUTIONS AND PRODUCT OPTIONS
01650	STARTING OF MECHANICAL SYSTEMS
01660	TESTING, ADJUSTING, AND BALANCING OF ENVIRONMENTAL SYSTEMS
01672	TESTING PIPING SYSTEMS
01700	CONTRACT CLOSEOUT
01720	PROJECT RECORD DOCUMENTS
01730	OPERATING AND MAINTENANCE DATA

DIVISION 2

02010	SUBSURFACE INVESTIGATION
02050	BUILDING DEMOLITION
02110	CLEARING AND GRUBBING

02210	EXCAVATION AND SWALE GRADING
02211	SITE GRADING
02220	TRENCHING, BACKFILLING, AND COMPACTING
02235	LIMEROCK BASE, PRIMED
02260	FINISH GRADING
02281	TERMITE CONTROL
02360	CONCRETE PILING
02511	CONCRETE SIDEWALKS
02512	CONCRETE SIDEWALK RESTORATION
02513	ASPHALTIC CONCRETE PAVING
02515	CONCRETE PAVING STONES
02520	CONCRETE CURBS AND HEADERS
02546	FINAL ASPHALTIC CONCRETE SURFACE COURSE
02550	ASPHALTIC CONCRETE OVERLAY
02570	MILLING OF EXISTING ASPHALT PAVEMENT
02574	PAVEMENT REMOVAL AND REPLACEMENT
02580	PAVEMENT MARKINGS
02605	SEWERAGE AND DRAINAGE MANHOLES
02610	POLYETHYLENE ENCASEMENT
02640	VALVES, COCKS, HYDRANTS, AND APPURTENANCES
02645	VALVES, COCKS, AND APPURTENANCES
02661	WATER MAINS
02675	DISINFECTION OF POTABLE WATER LINES
02680	TESTING PIPING SYSTEMS – POTABLE WATER
02720	STORM DRAINAGE SYSTEM
02726	EXFILTRATION TRENCH
02730	SANITARY SEWER PIPE
02767	MANHOLE REHABILITATION
02775	MANHOLES AND VAULTS
02780	FIBER OPTIC CONDUIT
02785	PULL BOXES
02800	IRRIGATION
02830	CHAIN LINK FENCING
02850	UNDERGROUND SPRINKLER SYSTEM
02900	LANDSCAPING
02934	SODDING
02944	SEEDING
02950	TREES, PLANTS, AND GROUND COVER

DIVISION 4

04100	MORTAR
04300	UNIT MASONRY SYSTEM

DIVISION 5

05121	REPAIR AND RENOVATIONS
05500	FABRICATED METALWORK AND CASTINGS
05520	HANDRAILS AND RAILINGS

DIVISION 13

13100	LIGHTNING PROTECTION SYSTEM
13700	PROCESS INSTRUMENTATION AND CONTROLS

DIVISION 15

15005	PIPING, GENERAL
15100	MANUALLY OPERATED VALVES
15105	SELF-CONTAINED AUTOMATIC PROCESS VALVES
15400	PLUMBING

DIVISION 16

16000	ELECTRICAL GENERAL REQUIREMENTS

ADDITIONAL ELECTRICAL SPECIFICATIONS

231323	FACILITY ABOVE GROUND FUEL-OIL STORAGE TANKS
260010	SUPPLEMENTAL REQUIREMENTS FOR ELECTRICAL
260533.13	CONDUITS FOR ELECTRICAL SYSTEMS
260533.16	BOXES AND COVERS FOR ELECTRICAL SYSTEMS
260573.13	SHORT-CIRCUIT STUDIES
260573.16	COORDINATION STUDIES
260800	COMMISIONING OF ELECTRICAL SYSTEMS
262416	PANELBOARDS
262923	VARIABLE-FREQUENCY MOTOR CONTROLLERS
263213.13	DIESEL-ENGINE-DRIVEN GENERATOR SETS
263600	TRANSFER SWITCHES
264113	LIGHTNING PROTECTION FOR STRUCTURES
264313	SURGE PROTECTIVE DEVICES FOR LOW-VOLTAGE ELECTRICAL POWER CIRCUITS

ADDITIONAL DRAINAGE SPECIFICATIONS

15165	SUBMERSIBLE ELECTRIC AXIAL FLOW PUMP

ADDITIONAL STRUCTURAL SPECIFICATIONS

02261	JET GROUTING
02262	STEEL SHEET PILING
02367	FOUNDATION PILING (PRESTRESSED CONCRETE)
03050	CONCRETE ADMIXTURE WATERPROOFING
03100	CONRCRETE FORMWORK AND ACCESSORIES
03200	CONCRETE REINFORCEMENT
03300	CAST-IN-PLACE CONCRETE

03350	COMPACTION GROUTING
03600	GROUT
05060	WELDING
05070	BOLTENED FASTENERS
05100	STRUCTURAL STEEL
08110	HOLLOW METAL DOORS AND FRAMES
08700	FINISH HARDWARE AND ACCESSORIES
09900	PROTECTIVE COATINGS

SECTION 01010
SUMMARY OF WORK

PART 1 - GENERAL

1.01 WORK COVERED BY CONTRACT DOCUMENTS

A. The work covered by these specifications comprises, in general, the furnishing of all labor, equipment, materials, and performing all operations to construct road improvements, as well as, water, sewer, and drainage improvements for the City of Delray Beach as described and specified further in the Technical Specifications and as shown on the Contract Drawings.

B. Except as specifically noted, the Contractor shall provide and pay for:

1. Labor, materials, tools, construction equipment, and machinery.
2. Water and utilities required for construction.
3. Other facilities and services necessary for proper execution and completion of the work.

C. The Contractor shall comply with all codes, ordinances, rules, regulations, orders and other legal requirements of the City of Delray Beach.

D. Roadway restoration/reconstruction for any individual street shall be completed within 30 calendar days subsequent to substantial completion of underground utility construction on a street by street basis. The submitted construction schedule shall indicate this construction sequence.

1.02 SILTATION AND BANK EROSION

The Contractor shall take adequate precautions to minimize siltation and bank erosion in the vicinity of canals or ditches, in discharging well point systems or during other construction activities.

1.03 STORAGE OF MATERIALS

Suitable storage facilities shall be furnished by the Contractor. All materials, supplies and equipment intended for use in the work shall be suitably stored by the Contractor to prevent damage from exposure, admixture with foreign substances, or vandalism or other cause. The Engineer will refuse to accept, or sample for testing, materials, supplies or equipment that have been improperly stored, as determined by the Engineer.

Materials found unfit for use shall not be incorporated in the work and shall immediately be removed from the construction or storage site. Delivered materials

shall be stored in manner acceptable to the Engineer before any payment for same will be made. Materials strung out along the line of construction will not be allowed unless the materials will be installed within one week from the time of unloading and stringing out.

1.04 PRESERVATION OF PROPERTY

The Contractor shall preserve from damage all property along the line of the work, or which is in the vicinity of or is in any way affected by the work, the removal or destruction of which is not called for by the plans. Wherever such property is damaged due to the activities of the Contractor, it shall be immediately restored to its original condition by the Contractor at no cost to the Owner.

In case of failure on the part of the Contractor to restore such property, or make good such damage for injury, the Owner may, after 48 hours notice to the Contractor, proceed to repair, rebuild or otherwise restore such property as may be deemed necessary and the cost thereof will be deducted from any monies due or which may become due the Contractor under this contract.

1.05 CLEAN UP

The Contractor shall keep the construction site free of rubbish and other materials and restore to their original conditions those portions of the site not designated for the alteration by the Contract Documents. Clean up and restoration shall be accomplished on a continuing basis throughout the contract period and in such a manner as to maintain a minimum of nuisance and interference to the general public and residents in the vicinity of the work.

The Contractor shall also remove, when no longer needed, all temporary structures and equipment used in his operation. It is the intent of this specification that the construction areas and those other areas not designated for alteration by the Contract Documents shall be immediately restored to original condition as upon completion of the project.

1.06 PUBLIC SAFETY AND CONVENIENCE

The Contractor shall at all times so conduct his work as to ensure the least possible obstruction to traffic, or inconvenience to the general public and residents in the vicinity of the work. No road or street shall be closed to the public, except with the permission of the Engineer and other jurisdictional governmental authority, if any. Fire hydrants on or adjacent to the work shall be kept accessible. Provisions shall be made by the Contractor to ensure public access to sidewalks, public telephones, and the proper functioning of all gutters, sewer inlets, drainage ditches, and irrigation ditches. No open excavation shall be left overnight except during road closing. All open excavation within the roadway shall be backfilled and a temporary asphalt patch applied prior to darkness each day. A cold asphalt patch is acceptable.

1.07 SAFETY AND OSHA COMPLIANCE

A. The Contractor shall comply in all respects with all Federal, State and Local safety and health regulations. Copies of the Federal regulations may be obtained from the U.S. Department of Labor, Occupation Safety and Health Administration (OSHA), Washington, DC 20210 or their regional offices.

B. The Contractor shall comply in all respects with the applicable Workman's Compensation Law.

1.08 CONTRACTOR'S USE OF PREMISES

A. Coordinate use of premises under direction of Engineer.

B. Assume full responsibility for the protection and safekeeping of equipment and materials stored on the site.

C. Move any stored Products, under Contractor's control, which interfere with operations of the Owner or separate Contractor.

END OF SECTION

SECTION 01020
ALLOWANCE

PART 1 - GENERAL

1.01 REQUIREMENTS INCLUDED

Include in the Contract Sum the allowance stated in the Contract Documents.

1.02 RELATED REQUIREMENTS

Conditions of the Contract.

1.04 CONTINGENCY ALLOWANCE

Include in the Contract, lump sum contingency allowances as follows:

1. Video recordings: Allow the lump sum of $16,000.00.
2. Unforeseen Conditions Allowance: Allow the lump sum of $1,550,000.00.

PART 2 - PRODUCTS

Not used.

PART 3 - EXECUTION

3.01 GENERAL

A. The Video Allowance is to be used as directed by the Engineer.

B. The Utility Allowance shall be used as necessary to pay for unforeseen utility conflict resolutions, utility repair work, or other work not within the original scope of work as bid, such work to be performed only at the direction and with the the authorization of the City.

C. At the closeout of contract, monies remaining in the Contingency Allowance will be credited to the Owner by Change Order.

END OF SECTION

SECTION 01025
MEASUREMENT AND PAYMENT

PART 1 - GENERAL

1.01 EXPLANATION AND DEFINITIONS

A. The following explanation of the Measurement and Payment for the bid form items is made for information and guidance. The omission of reference to any item in this description shall not, however, alter the intent of the bid form or relieve the Contractor of the necessity of furnishing such as part of the Contract.

1.02 PAYMENT

A. Payment shall be made for the items listed on the Bid Form on the basis of the work actually performed and completed, such work including but not limited to, the furnishing of all necessary labor, materials, equipment, transportation, clean up, and all other appurtenances to complete the construction and installation of the work to the configuration and extent as shown on the drawings and described in the specifications.

B. It is intended that all mobilization, insurance, bond, license and other miscellaneous administrative costs, and all other costs to the Contractor not specifically identified in the following item description be distributed among and included in the unit prices stated. No additional payment shall be made for transportation, communications, office maintenance, project signs, and other incidental work or services, and no further payment shall be made for remobilization unless all of the work is suspended by the Engineer for a period in excess of three months and through no fault to the Contractor.

C. All required manufacturer testing and certification shall be included in the unit prices shown in the Proposal and Contract. Density testing required for compacted backfilling, and concrete strength and materials testing required at the time of construction shall be arranged for and paid for by the owner.

PART 2 - MATERIALS

Not used.

PART 3 - EXECUTION

3.01 SITE MOBILIZATION / DEMOBILIZATION (10%) – Bid Item No. 1

A. Payment for mobilization/demobilization, permits, bonds, insurance, scheduling and temporary facilities and utilities will be made at the contract Lump Sum (LS) price bid for the item, which price shall be full compensation for all materials, labor, equipment, tools, excavation, masonry and all other incidentals necessary to complete this item.

B. Payment item for mobilization shall **not exceed ten percent (10%) of the base bid contract price** and shall be paid in increments in proportion to the total work completed. Should the price for Site Mobilization exceed 10% of the Contract amount, any amount over the 10% will be paid with the Contractor's final payment application.

3.02 MAINTENANCE OF TRAFFIC (5%) - Bid Item No. 2

A. The quantity of traffic control to be considered for payment shall be equivalent to the percentage of the project determined by the Engineer to be complete as of the date of the pay request submitted. The percent completion of the project shall be based on the percent of the total project actually constructed and not on the percent of the Contract price completed.

B. Payment for traffic control shall be made on the basis of a percentage (as determined in 'A' above) of the Lump Sum Price. The contract unit price shall include compensation for required labor, materials, and equipment necessary to provide traffic control in accordance with the specifications.

3.03 AS-BUILT RECORD DRAWINGS – Bid Item No. 3

A. Payment for this item shall be on a Lump Sum (LS) Basis. One set of full size design drawings on reproducible material and an electronic file of the design drawings on compact disk will be furnished to the Contractor by the City. The Contractor shall maintain full size (22" x 34") field drawings to reflect the "as-built" items of work as the work progresses. Upon completion of the work, the contractor shall prepare a record set of "as-built" drawings on full size, reproducible material and an electronic file in AutoCAD 2012 or latest version. **The As-built data shall be in State Plane Coordinates and NAVD 88.** No final payment will be made for "as-built" drawings until both the reproducible and electronic files are received and accepted by the City.

B. This item does not include surveying work required for layout and alignment of utility improvements.

C. The signed and sealed As-Built drawings prepared by professional surveyor are required to be submitted with each pay request. Measurement for payment for

providing and furnishing As-Built drawings shall be based upon percent of project complete.

D. All survey work shall be performed by an independent third party surveyor, licensed to practice in the State of Florida. The surveyor shall be retained by the Contractor and approved by the City.

3.04 NPDES PERMIT/EROSION CONTROL – Bid Item Nos. 4 and 5

A. Payment for Contractor required NPDES Permit application (Notice of Intent and Notice of Termination), reporting and associated erosion protection measures including turbidity abatement for dewatering procedures will be made at the Contract Lump Sum (LS) Price Bid for this item. The percent completion of the project shall be based on the percent of the total project actually constructed and not on the percent of the Contract price completed.

B. Payment for NPDES Permit/Erosion Protection Measures shall be made on the basis of a percentage (as determined in 'A' above) of the Lump Sum Price. The contract lump sum price shall include compensation for required labor, materials, and equipment necessary for complying with the NPDES Permit and providing Erosion Protection Measures during construction activities in accordance with the Contract Documents.

C. Pay item includes NPDES Inspections per the permit conditions and all inlet protection and all silt fencing required.

3.05 INDEMNIFICATION - Bid Item No. 6

A. Payment under this item is included in accordance with Article 6.30 of the General Conditions.

3.06 VIDEO ALLOWANCE – Bid Item No. 7

A. Payment under this item shall be made as stipulated in Specifications Section 01020 - Allowances.

3.07 UNFORSEEN CONDITIONS ALLOWANCE (10%) – Bid Item No. 8

A. Payment under this item shall be made stipulated in Specifications Section 01020 - Allowances.

3.08 SITE DEMOLITION AND DISPOSAL - Bid Item No. 9

A. Payment for this item shall be made on a Lump Sum (LS) basis. The Contractor's unit price shall include full compensation for all excavation and demolition necessary within the right of way including debris removal, grading, and any other required clearing and grubbing in accordance with the plans and specifications, except for any areas designated to be paid for separately or to be specifically included in the costs of other work under the Contract.

B. Stationing limits are approximate, and should be verified by the Contractor per the plans. Items included in site demolition and disposal are as follows, but are not limited to:

a. Sheet C7.0
   i. Pavement Removal (STA 9+10 to STA 11+12)
   ii. Removal of Existing Road (STA 8+10 to STA 8+38)
   iii. Sidewalk Removal (see plans for limits)
   iv. Removal, storage, and reinstallation in-kind of existing hand rail, bike rack, and mailbox south of the dockmaster building (only if needed to be removed during construction)
   v. Removal of Type "D" Curb (along SE 2nd St and adjacent to existing storm structures being removed)
   vi. Removal of Existing Sanitary Structure
   vii. Removal of Existing 8" VCP Sewer Main
   viii. Removal of Existing Storm Structure
   ix. Removal of Existing 15" Drainage Main
   x. Removal of Existing Paver Driveway

b. Sheet C7.1
   i. Pavement Removal (STA 11+12 to STA 13+97)
   ii. Sidewalk Removal (see plans for limits)
   iii. Removal of Type "D" Curb (adjacent to existing storm structures being removed)
   iv. Removal of Existing Storm Structure
   v. Removal of Existing 12" RCP Drainage Main
   vi. Removal of Existing 15" HDPE Drainage Main

c. Sheet C7.2
   i. Pavement Removal (STA 9+10 to STA 11+12)
   ii. Removal of Existing Road (from intersection of Marine Way and SE 1st St, continuing north along Marine Way, see plans)
   iii. Sidewalk Removal (see plans for limits)
   iv. Removal of Type "D" Curb (see plans)
   v. Removal of Existing 8" PVC Water Main
   vi. Removal of Existing 8" PVC Sanitary Sewer Main

vii. Removal of Existing Sanitary Structure
viii. Existing cable crossing and manatee sign to be removed, stored, and relocated
ix. Removal of Existing Storm Structure
x. Removal of Existing 24" Outfall
xi. Removal of Existing 15" RCP Drainage Main
xii. Removal of Existing 24" RCP Drainage Main
xiii. Removal of Existing 48" RCP Drainage Main
xiv. Removal of Existing Concrete Driveway

d. Sheet C7.3
i. Removal of Existing Road (STA 16+85 to STA 18+95)
ii. Removal of Existing Pavers (see plans)
iii. Removal of Existing Header Curb (STA 18+95 to STA 19+93)
iv. Removal of Existing Sanitary Structure
v. Removal of Existing 8" PVC Water Main
vi. Removal of Existing 8" PVC Sanitary Sewer Main
vii. Removal of Existing Storm Structure
viii. Removal of Existing 8" Outfall
ix. Removal of Existing 8" PVC Drainage Main
x. Removal of Existing Paver Driveway/Walkway
xi. Removal of Existing Rock Driveway/Walkway
xii. Removal of Existing Ramp

e. Sheet C7.4
i. Sidewalk Removal (see plans for limits)
ii. Removal of Existing Pavers (see plans for limits)
iii. Removal of Existing Header Curb (see plans for limits)
iv. Removal of Existing Ramp

3.09 REMOVAL, RECONDITIONING, AND REINSTALLATION OF EXISTING GAZEBO – Bid Item No. 10

A. Payment for this item shall be on a Lump Sum (LS) basis. The contract unit price shall include full compensation for all labor, materials, equipment necessary to remove, recondition, and reinstall the existing gazebo back to its original condition in accordance with the plans and specifications.

3.10 FLOWABLE FILL – Bid Item No. 11

A. Payment for furnishing and installing this item will be made per cubic yard (CY) of flowable fill. The contractor's unit price shall include all necessary labor and materials for furnishing and installing flowable fill above drainage pipe as called for in the plans.

3.11 PAVER BRICK - ROADWAY– Bid Item No. 12

A. The quantity of paver brick driveway shall be determined by measurement of the units per Square Yard (SY) installed and accepted.

B. The contract unit price shall include full compensation for all labor, materials, equipment and testing necessary to install the asphalt base, subgrade, joints, and paver brick roadway in accordance with the plans and specifications.

C. Paver brick roadway replacement beyond the limits established by the project construction drawings will not be considered for payment.

3.12 SUPERPAVE ASPHALTIC CONCRETE PAVEMENT – 3" TYPE SP-9.5 ASPHALT – Bid Item No. 13

A. Payment for installing new 3" Type SP-9.5 asphalt pavement, including tack coat, where indicated on the plans shall be made at the Contractor's unit price per Tonnage (TN) for Type S-9.5 asphalt pavement and shall include all labor, material, and equipment required to construct 3" asphaltic concrete as required due to construction activities. The unit price shall include compensation for labor, materials, and equipment required to construct the new asphaltic surface.

B. This unit price shall also include all necessary labor, materials, and equipment to adjust the valve boxes, manholes, rims, inlets, or other fixtures to final grade, transitions to existing pavement, tack coating, compaction, vibration and settlement monitoring, rolling, brooming, asphalt testing and any other work required to complete the work.

C. This item also includes installing an asphalt taper around all structures in roadway, and connections to existing pavement and drainage connections.

3.13 8" LIMEROCK (LBR 100) BASE – Bid Item No. 14

A. Payment for installing new 8-inch compacted limerock base including primer and tack coats where indicated on the plans shall be made at the Contractor's unit price per Square Yard (SY) for limerock base installed and accepted.

B. The Contract Unit Price shall include compensation for labor, materials, and equipment required to construct the new limerock base, including primer coats, and testing in accordance with the plans and specifications.

3.14 12” COMPACTED SUBGRADE - Bid Item No. 15

A. The unit price bid per Square Yard (SY) for the stabilized subgrade (12" thick) shall include all labor, material, and equipment required to construct the subgrade as shown on the detail drawings. The unit price shall include all excavation, line cutting of existing pavement, preparation of subgrade, fine grading, placement of subgrade material, compaction, vibration and settlement monitoring, rolling, brooming, and other miscellaneous work required to complete the work in accordance with Florida Department of Transportation Standard Specifications for Road and Bridge Construction, latest edition and City of Delray Beach specifications.

3.15 MILL EXISTING 1" ASPHALT PAVEMENT AND OVERALY 1” TYPE SP-9.5 ASPHALT - Bid Item No. 16

A. Payment for milling 1-inch existing asphalt pavement, where indicated on the plans, shall be made at the Contractor’s unit price per Square Yard (SY) for 1-inch milling and shall include all labor, material, and equipment required to mill 1-inch of existing asphalt as shown on the plan view and detail drawings. The unit price shall include compensation for multiple mobilizations, labor, materials, and equipment required to mill existing pavement.

B. This unit price shall also include all necessary labor, materials, and equipment to adjust the valve boxes, manholes, rims, inlets, or other fixtures to final grade, transitions to existing pavement, tack coating, compaction, rolling, brooming, asphalt testing, replacement of existing traffic loop detection, replacement of blue fire hydrant pavement markers, and any other work required to complete the work.

3.16 5’ WIDE CONCRETE SIDEWALK (6” THICK)– Bid Item No. 17

A. Payment for sidewalks where indicated on the plans and specifications per City Details, shall be made at the Contractor's unit price per Square Yard (SY) of sidewalk installed and accepted by the City and Consultant. The Contract Unit Price shall include full compensation for labor, material, equipment, and testing required to install the sub- base, joints, and sidewalk in accordance with the plans and specifications.

B. Payment shall be made for sidewalks constructed or replaced by authorization of the Consultant and shall include protection of existing landscaping, root pruning, and restoration of adjacent ground. Any sidewalk that is broken incidental to construction shall be replaced at the Contractor's expense.

3.17 CONCRETE CURBS AND GUTTERS – Bid Items Nos. 18 through 21

A. The quantity of curbs and/or gutter shall be determined by measurement of the

units of Linear Foot (LF) of curb and/or gutter installed and accepted.

B. Payment for furnishing and installing concrete curbs and gutters shall be made at the contract unit price per linear foot (LF) of each type concrete curb and/or gutter, including flared ends and transitions, rebar (as applicable) installed and accepted. The contract unit price shall include all labor, materials, and equipment necessary to prepare and test the sub-base and install the concrete curbs and/or gutter in accordance with the plans and specifications.

C. Refer to City Detail RT – 19.0, "CURB AND GUTTER SECTIONS".

3.18 CONCRETE DRIVEWAY (6" THICK)– Bid Item No. 22

C. The quantity of concrete driveways shall be determined by measurement of the units per Square Yard (SY) installed and accepted.

D. The contract unit price shall include full compensation for all labor, materials, equipment and testing necessary to install the sub-base, joints, and concrete driveways in accordance with the plans and specifications.

E. Concrete driveway replacement beyond the limits established by the project construction drawings will not be considered for payment.

3.19 PAVER BRICK DRIVEWAY– Bid Item No. 23

A. The quantity of paver brick driveways shall be determined by measurement of the units per Square Yard (SY) installed and accepted.

B. The contract unit price shall include full compensation for all labor, materials, equipment and testing necessary to install the sub-base, joints, and paver brick driveways in accordance with the plans and specifications.

C. Paver brick driveway replacement beyond the limits established by the project construction drawings will not be considered for payment.

3.20 STABILIZED PARKING AREA– Bid Item No. 24

A. Payment for this item shall be made at the Contractor's Unit Price per Square Yard (SY) of stabilized parking installed and accepted. The Contract Unit Price shall include compensation for all labor, material, and equipment required to install in accordance with the plans and specifications.

B. Measurement of this item shall be in the units of area (SY) that have been

stabilized, in those areas where stabilizations is necessary to obtain the required densities.

3.21 STEEL BOLLARD (STATIONARY AND REMOVABLE) - Bid Item No. 25 and 26

A. The quantity of new bollards installed will be determined by a count of bollards installed and accepted.

B. Payment for bollards will be made at the contract unit price (EA) for bollards installed by authorization of, and accepted by the Engineer, and shall include all necessary materials, labor, and equipment to complete the work.

3.22 CURB RAMP WITH DETECTABLE SURFACE WARNINGS – Bid Items No. 27

A. Payment for this item shall be made at the Contractor's unit price per Square Yard (SY) of concrete curb ramp installed and accepted. The Contractor's unit price shall include full compensation for furnishing and installing the curb ramps including concrete sidewalk as required by City specifications, sidewalk curbing, curb transitions, and the provision of detectable warning surfaces. Ramp slopes and dimensions shall be constructed per FDOT Index 522 at the locations shown on the Drawings. The curb ramps shall be in accordance with the plans, details, and specifications.

B. The Contract Unit Price shall also include adjustment of existing sidewalk or curb ramps to proposed grades including provision of additional sand or adjustments to the subgrade in order to match proposed back of curb elevations or in order to relocate curb ramps, and any sub- base or concrete testing.

C. Refer to FDOT STANDARD PLANS FY 2023-24, or latest edition, INDEX 522-002 and FDOT SECTION 527 - DETECTABLE WARNINGS ON WALKING SURFACES.

3.23 ALUMINUM PEDESTRIAN RAILING - Bid Item No. 28

A. Payment for furnishing and installing aluminum pedestrian railing shall be made at the Contractor's unit price per Linear Foot (LF) and shall include all necessary labor and materials for furnishing and installing the aluminum railing as called for in the plans. The quantity of new aluminum pedestrian railing will be determined by a count of Linear Foot (LF) of aluminum railing installed and accepted.

B. Refer to FDOT Standard Plans FY2023-24 or latest edition, Index 515-062.

3.24 DIP AND PVC WATER MAIN (VARYING DIAMETERS) - Bid Item Nos. 29 through 31

A. Payment for this pipe shall be determined by the number of Linear Foot (LF) of each size of pipe installed, in place, completed and approved. The footage shall be the horizontal

distance measured along the surface of the trench between the centerlines of connecting or branch mains. The length of all fittings and valves in the main shall be included in the footage as typical sections of the pipeline being measured.

B. The unit price bid per Linear Foot (LF) under this item shall be full compensation for providing all excavation, de-watering, backfilling, thrust restraint, fittings, and other appurtenances required to complete construction of the water main, including testing of the line, and not included in other bid items.

3.25 GATE VALVE - Bid Item Nos. 32 and 33

A. Payment for furnishing and installing gate valves of each size shall be made at the Contractor's unit price per valve (EA) and shall include all necessary labor and materials for furnishing and installing the valves and appurtenances as called for in the plans. No payment shall be made under this item for valves required for wet taps, or fire hydrants.

3.26 LINE STOP - Bid Item No. 34

A. Payment for furnishing and installing line stops of each size shall be made at the Contractor's unit price per line stop (EA) and shall include all necessary labor and materials for furnishing and installing the line stops and appurtenances as called for in the plans.

3.27 PLUG - Bid Item No. 35

A. Payment for furnishing and installing plugs of each size shall be made at the Contractor's unit price per plug (EA) and shall include all necessary labor and materials for furnishing and installing the plugs and appurtenances as called for in the plans.

3.28 FIRE HYDRANT ASSEMBLY - Bid Item No. 36

A. Payment for relocating existing fire hydrants or for furnishing and installing fire hydrants shall be made at the Contractor's unit price per each (EA) hydrant and shall include all necessary labor and materials for relocating the existing fire hydrants or for furnishing and installing the proposed fire hydrants, including 6 inch gate valve and box.

3.29 SINGLE WATER SERVICE - Bid Item No. 37

A. The number of water services will be determined by the count of units each (EA) installed and accepted as indicated on the plans.

B. Payment for furnishing and installing water services will be made at the Contractor's unit price for each single water service installed and accepted. The Contract Unit Price will

include compensation for labor, material and equipment, required to install the new water service and connection to the proposed water main, all in accordance with the plans and specifications. Payment will also include full compensation for providing all excavation, backfilling, fittings and other appurtenances necessary to complete the water service installation.

3.30 FITTINGS - Bid Item No. 38

A. Where identified in the schedule of Bid Items as a separate pay item, payment shall include all labor and materials required to furnish and install fittings, including restraining glands, bolts, nuts, gaskets, "megalugs", electronic markers, concrete thrust blocks, and all necessary appurtenances. Payment for this item shall be determined by units of tonnage (TN) installed and accepted. Measured weight will be based on the weight of the fitting body only as stated on the shipping documents provided by the manufacturer/supplier. The Contractor shall submit a copy of these documents to the Engineer with payment requests.

3.31 8" x 6" TAPPING SLEEVE AND VALVE - Bid Item No. 39

A. Payment under this item shall be made at the Contractor's unit price for each (EA) tapping valve and sleeve, and shall include all necessary labor and materials for a pressure tested and approved tap, including tapping sleeve and valve.

3.32 8" x 6" TEE - Bid Item No. 40

A. Payment for furnishing and installing tees of each size shall be made at the Contractor's unit price for each (EA) tee and shall include all necessary labor and materials for furnishing and installing the tees and appurtenances as called for in the plans.

3.33 DIP AND PVC SANITARY SEWER MAIN (8" DIAMETER) - Bid Item Nos. 41, 42, and 46

A. The quantity of DIP and PVC sanitary sewer lines will be determined by measurement of the units installed and accepted. Measurement will be along the centerline of the pipe from center of structure to center of structure, except where a change in depth requires a different bid item, measurement shall be at the nearest joint coupling.

B. Payment for furnishing and installing pipe at the various depths will be made at the Contractor's unit price per linear foot (LF) for the pipe and shall include all necessary labor and materials for furnishing and laying of the pipe, dewatering if required, excavation of any type including rock, backfilling, and clean-up. Contractor shall provide sewer bypass plans for review.

C. Payment for bypass pumping/piping shall be made on a Lump Sum (LS) basis.

3.34 GRAVITY SEWER MANHOLE - Bid Item No. 43

A. Payment for furnishing and installing sanitary sewer manholes will be made at the Contractor's unit price for each (EA) sanitary sewer manhole installed and accepted. The Contract Unit Price will include compensation for labor, material and equipment, and cleanup required to install the new sanitary sewer manhole at the specified depth.

3.35 CONNECT TO EXISTING SANITARY SEWER -Bid Item No. 44

A. Payment will be made on a Lump Sum (LS) basis and shall include all labor, materials and equipment required to complete the work, including cut-in to existing sanitary line or coring existing manhole, and adjusting existing manhole inverts as called for in the plans.

3.36 SINGLE SEWER SERVICE - Bid Item No. 45

A. Measurement of this item will be determined by the count of each (EA) single sewer service that is constructed and connected as indicated on the plans.

B. Payment will be made at the contract unit price per each (EA) single sewer service constructed and connected to the sanitary sewer line, including cleanouts. Payment will also include full compensation for providing all excavation, backfilling, fittings, and other appurtenances necessary to complete sewer service installation.

3.37 RCP, DIP, AND HDPE DRAINAGE MAIN (VARYING DIAMETERS) - Bid Item Nos. 47 through 52 and 54

A. The quantity of RCP, DIP, and HDPE pipe shall be determined by measurement of the units installed and accepted. Measurement shall be along the centerline of the pipe from center of structure to center of structure.

B. Payment for furnishing and installing RCP, DIP, or HDPE pipe of various sizes and types shall be made at the Contractor's unit price per linear foot (LF) of the pipe and shall include all necessary labor and materials for furnishing and laying of the pipe, dewatering if required, excavation of any type including rock, excavation and removal of muck, backfilling and clean-up.

3.38 36” PRCP DRAINAGE MAIN AND 6’ x 4’EXFILTRATION TRENCH -Bid Item Nos. 53 and 55

A. The quantity of 36" perforated reinforced concrete pipe shall be determined by measurement of the units installed and accepted. Measurement shall be made along the centerline of the pipe.

B. Payment for furnishing and installing 36" perforated reinforced concrete pipe, shall be made at the Contractor's unit price per linear foot (LF) of perforated reinforced concrete pipe and shall include all necessary labor and materials for furnishing and laying of the pipe, for construction of exfiltration trench as indicated in the detail drawing on the plans and shall include: filter fabric, course aggregate, dewatering if required, excavation of any type including rock, backfill, testing, and clean-up.

3.39 STORM MANHOLE - Bid Item No. 56

A. Payment for furnishing and installing storm drainage manholes will be made at the Contractor's unit price for each (EA) storm drainage manhole installed and accepted. The Contract Unit Price will include compensation for labor, material and equipment, and cleanup required to install the new storm drainage manhole at the specified depth.

3.40 DRAINAGE STRUCTURES - Bid Item Nos. 57, 59, and 60

A. The number of Type “C”, “E”, and “V” inlets, Type “J” Structure, Type “P” Structures, and Curb inlets, shall be determined by the count of units installed and accepted.

B. Payment for installing drainage structures shall be made at the Contractor's unit price per each (EA) structure installed and accepted. The Contract Unit Price shall include compensation for labor, material and equipment required to install the inlets or manholes in accordance with the plans and specifications.

3.41 BAFFLE BOX AND BRACKET (11.33’ x 17.33’) - Bid Item No. 58

A. The number of baffles and brackets installed in existing inlets will be determined by a count of the baffles installed and accepted. Baffles shall be constructed to the dimensions shown on the detail sheet of the plans.

B. Payment for furnishing and installing the materials for weir construction will be made at the Contractor's unit price for each (EA) baffle installed and accepted. The contract unit price shall include compensation for labor, materials, and equipment required to complete the work.

3.42 NYLOPLAST DRAIN BASIN WITH PEDESTRIAN GRATE – Bid Item No. 61

A. Payment for this item shall be made at the Contractor's Unit Price per each (EA) Nyloplast drain basin with pedestrian grate installed and accepted. The Contract Unit Price shall include compensation for all labor, material, and equipment required to install in accordance with the plans and specifications.

3.43 WASTOP IN-LINE CHECK VALVE (4" AND 66") - Bid Item Nos. 62 and 63

A. Payment for furnishing and installing Wastop In-Line check valves will be made at the Contractor's unit price per each (EA), and shall include all necessary labor and materials for furnishing and installing the valves and appurtenances as called for in the plans.

3.44 PAVEMENT MARKINGS - Bid Item No. 64

A. The quantity of pavement markings installed shall be determined by a count of units of pavement markings installed and accepted.

B. Payment for pavement markings, including RPMs where required, shall be made on a Lump Sum (LS) basis for pavement markings installed by authorization of, and accepted by the Engineer, and shall include all necessary materials, labor, and equipment required to complete the work.

3.45 SIGNAGE - Bid Item No. 65

A. Payment for these items shall be made per (EA) sign installed and accepted. The Contractor's unit price shall include full compensation for all signage as indicated on the plans.

B. The Contract Unit Price shall include compensation for labor, materials, and equipment required to install all signage in accordance with the plans and specifications.

3.46 PUMP STATION STRUCTURE - Bid Item No. 66

A. Payment for the Pump Station structure shall be paid as Lump Sum (LS). This includes maintenance of traffic, dewatering, excavation, support of existing utilities, coordination with proposed storm-water pipe connections, foundation preparation, base slab, walls, internal partitions, and weirs, forming, reinforcing, supply and installation of precast deck slab units, connections, grouting, traffic and pedestrian open grating, including discharge bay seawall, sheet pile, discharge bay excavation, discharge piping, grating and framing, demolition of existing seawall and site cleanup.

B. Payment for the Pump Station structure will be made at the Contract's lump sum price for the pump station installed by authorization of, and accepted by the Consultant, and shall include all necessary materials, labor, and equipment to complete the work.

3.47 UTILITY BAY STRUCTURE - Bid Item No. 67

A. Payment for the Utility Bay structure shall be paid as Lump Sum (LS). This includes maintenance of traffic, excavation and exposure of the existing watermain and fiberoptic duct bank., steel sheet pile installation, jet grout cutoff wall, dewatering, excavation, support of existing utilities, upper retaining wall, coordination with proposed storm-water pipe connections, forming, reinforcing, pedestrian open grating, including, utility bay excavation, discharge piping, grating and framing, rip-rap, demolition of existing seawall and site cleanup.

B. Payment for the Utility Bay structure will be made at the Contract's lump sum price for the utility bay. installed by authorization of, and accepted by the Consultant, and shall include all necessary materials, labor, and equipment to complete the work.

3.48 EMERGENCY GENERATOR FOUNDATION STRUCTURE - Bid Item No. 68

A. Payment for the Emergency Generator structure shall be paid as Lump Sum (LS). This includes Maintenance of Traffic, dewatering, excavation, support of existing utilities, foundation preparation, base slab, and site cleanup.

B. Payment for the Emergency Generator structure will be made at the Contract's lump sum price for the Emergency Generator. installed by authorization of, and accepted by the Consultant, and shall include all necessary materials, labor, and equipment to complete the work.

3.49 REPLACEMENT DOCK AT DOCK 84 - Bid Item No. 69

A. Payment for the Replacement Dock at dock 84 shall be paid as Lump Sum (LS). This includes Maintenance of Traffic, demolition off the existing dock, including full pile removal, installation of new timber piles, heavy timber framing, deck and handrails dewatering, excavation, arborist trimming of mangroves, support of existing utilities, foundation preparation, and site cleanup.

B. Payment for the Replacement Dock structure will be made at the Contract's lump sum price for the Replacement Dock. installed by authorization of, and accepted by the Consultant, and shall include all necessary materials, labor, and equipment to complete the work.

3.50 SEAWALL STRUCTURE (MARINE WAY) - Bid Item No. 70

A. Payment for the Sea Wall structure shall be paid as Lump Sum (LS). This includes maintenance of traffic, dewatering, excavation, support of existing utilities, coordination with proposed storm-water pipe connections, steel sheet pile

installation, foundation preparation, walls, forming, reinforcing, connections, grouting, demolition of existing dock access and site cleanup.

B. Payment for the Sea Wall structure will be made at the Contract's lump sum price for the Sea Wall installed by authorization of, and accepted by the Consultant, and shall include all necessary materials, labor, and equipment to complete the work.

3.51 HELICAL PILES (DOCKMASTER BUILDING) - Bid Item No. 71

A. Payment for the Helical Piles shall be paid per each (EA) Helical pile installed and accepted. This includes excavation, modifications of the existing building footer, installation of the underpinning bracket and helical piles, installation of post installed anchors, backfill of excavated soil, and site cleanup.

B. Payment for the Helical pile installation will be made at the Contract's per each (EA) Helical Pile installed by authorization of, and accepted by the Consultant, and shall include all necessary materials, labor, and equipment to complete the work.

3.52 PRESSURE GROUT - Bid Item No. 72

A. Payment for the Pressure Grout structure shall be paid as Unit Price with a base bid of five cubic yards (CY) of grout. This includes installation of pressure grout and site cleanup.

B. Payment for the Pressure Grout will be made at the Contract's Unit Price for the Pressure Grout installed by authorization of, and accepted by the Consultant, and shall include all necessary materials, labor, and equipment to complete the work.

3.53 PALM TREE REMOVAL – Bid Item No. 73

A. Payment for this item shall be made on a quantity of units removed (EA) basis. The Contractor's unit price shall include full compensation for removal of landscape material including trees, palms, soil, and root barriers as indicated in the landscape plans and specifications.

B. The Contractor's Unit Cost (EA) price shall include compensation for labor, materials, and equipment required to remove, excavate, and haul the landscape material and backfill soil in accordance with the detail drawings and specifications.

3.54 ROOT PRUNING AND TREE RELOCATION – Bid Item No. 74

A. Payment for this item shall be made on a quantity of units removed & relocated (EA) basis. The Contractor's unit price shall include full compensation for relocation of landscape material including trees, palms, soil, root barriers, root pruning, and staking and guying the trees as indicated in the landscape plans and specifications.

Payment for these items also include fertilizer and temporary irrigation as specified in the plans or required.

B. The Contractor's Unit Cost (EA) price shall include compensation for labor, materials, and equipment required to furnish, excavate, haul, place landscape, prune, backfill soil, mulch, install, and maintain the landscape material in accordance with the detail drawings and specifications.

3.55 PROTECTION OF EXISTING TREE TO REMAIN – Bid Item No. 75

A. Payment for this item shall be made on a quantity per each tree protected (EA) basis. The Contractor's unit price shall include full compensation for protection of landscape material including trees, palms, soil, and root barriers as indicated in the landscape plans and specifications.

B. The Contractor's Unit Cost (EA) price shall include compensation for labor, materials, and equipment required to furnish, excavate, haul, place landscape, prune backfill soil, mulch, install, and maintain the landscape material in accordance with the detail drawings and specifications.

3.56 PEDESTRIAN LIGHT POLE – Bid Item No. 76

A. Payment for this item shall be made at the Contractor's Unit Price per each (EA) light pole installed and accepted. The Contract Unit Price shall include compensation for all labor, material, equipment or any other items required to install these items in accordance with the plans and specifications.

B. The quantity of pedestrian light poles shall be determined by measurement of each (EA) unit installed and accepted.

3.57 TREES/PALMS AND SHRUB AREAS – Bid Items Nos. 77 through 80

A. Payment for these items shall be made per each (EA) tree, palm, or shrub. The Contractor's unit price shall include full compensation for furnishing and installing the landscape material including trees, palms, shrubs, ground cover, temporary irrigation, protection, and staking and guying the trees as indicated in the landscape plans and specifications. Payment for this item also includes fertilizer as specified in the plans.

B. The Contractor's unit price per each (EA) tree, palm, or shrub shall include compensation for labor, materials, and equipment required to furnish, excavate, haul, place landscape, prune, backfill soil, mulch, install, and maintain the landscape material in accordance with the detail drawings and specifications.

3.58 ST. AUGUSTINE SOD - Bid Item No. 81

A. Payment for this item shall be made on a Square Foot (SF) basis. The Contractor's unit price shall include full compensation for furnishing and installing the landscape material including ground cover and soil as indicated in the landscape plans and specifications. Payment for this item also includes fertilizer and temporary irrigation as specified in the plans or required.

B. The Contractor's Unit Cost (SF) price shall include compensation for labor, materials, and equipment required to furnish, excavate, haul, place landscape, prune, backfill soil, mulch, install, and maintain the landscape material in accordance with the detail drawings and specifications.

3.59 ROOT BARRIER ALLOWANCE - Bid Item No. 82

A. Payment for this item shall be made at the contract unit price per Linear Foot (LF). The Contractor's unit price shall include full compensation for furnishing and installing the root barriers as indicated in the landscape plans and specifications.

B. The Contractor's unit price per Linear Foot (LF) shall include compensation for labor, materials, and equipment required to furnish, excavate, haul, place landscape, prune, backfill soil, mulch, install, and maintain the landscape material in accordance with the detail drawings and specifications.

3.60 GRASSPAVE2 – Bid Item No. 83

A. Payment for this item shall be made at the Contractor's Unit Price per Square Foot (SF) installed and accepted. The Contract Unit Price shall include compensation for all labor, material, equipment or any other items required to install these items in accordance with the plans and specifications.

B. The quantity of Grasspave shall be determined by measurement of the units of Square Foot (SF) installed and accepted.

3.61 DRIP IRRIGATION FOR GRASSPAVE2 – Bid Item No. 84

A. Payment for this item shall be made at the Contractor's unit price per Square Foot (SF) installed and accepted. The Contractor's unit price shall include full compensation for furnishing and installing the irrigation material including piping, wet taps, valves, meters, bubblers, connections, irrigation spray heads, controllers, service rack, testing, backfilling and appurtenances as indicated and shown in the landscape plans and specifications.

B. The Contractor's unit price per Square Foot (SF) shall include compensation for labor, materials, and equipment required to furnish, install, and maintain the irrigation system and material in accordance with the detail drawings and specifications.

3.62 DECK 84 IRRIGATION ALLOWANCE – Bid Item No. 85

A. Payment for this item shall be made on a Lump Sum (LS) basis. The Contract Unit Price shall include compensation for all labor, material, and equipment required to install irrigation and accompanying appurtenances for Deck 84 in accordance with the plans and specifications.

3.63 IRRIGATION WATER METER, CONTROLLER, BACKFLOW, AND ELECTRIC – Bid Item No. 86

A. Payment for this item shall be made on a Lump Sum (LS) basis. The Contractor's unit price shall include full compensation for furnishing and installing the irrigation water meter, controller, backflow preventer, and electrical conduit and appurtenances as indicated and shown in the landscape plans and specifications.

B. The Contractor's Lump Sum (LS) price shall include compensation for labor, materials, and equipment required to furnish, install, and maintain the irrigation water meter, controller, backflow preventer, and electric in accordance with the detail drawings and specifications.

3.64 LED LUMINAIRES AND POLES – Bid Item Nos. 87 and 88

A. Payment for these items shall be made at the Contractor's Unit Price per each (EA) item installed and accepted. The Contract Unit Price shall include compensation for all labor, material, equipment or any other items required to install these items in accordance with the plans and specifications.

B. Payment shall be made for each unit installed by authorization of the Consultant.

3.65 PVC ELECTRICAL CONDUIT (VARYING DIAMETERS)– Bid Item Nos. 89 through 92

A. The quantity of PVC conduit will be determined by measurement of units of Linear Foot (LF) of PVC conduit installed and accepted. Measurement will be along the centerline of the conduit.

B. Payment for furnishing and installing PVC conduit will be made at the Contractor's unit price per Linear Foot (LF) of the conduit and shall include installation as indicated on the plans.

3.66 TRENCHING – Bid Item No. 93

A. Payment for this item shall be made at the Contractor's Unit Price per Linear Foot (LF) of trenching installed and accepted. The Contract Unit Price shall include compensation for all labor, material, and equipment required to install electrical conduit in accordance with the plans and specifications.

3.67 20A/1P BREAKERS – Bid Item No. 94

A. Payment for these items shall be made at the Contractor's Unit Price per each (EA) breaker unit installed and accepted. The Contract Unit Price shall include compensation for all labor, material, and equipment required to install in accordance with the plans and specifications.

3.68 600A AND 800A PANELS (INCLUDES INSTALLATION) – Bid Item Nos. 95 and 96

A. Payment for these items shall be made at the Contractor's Unit Price per each (EA) panel installed and accepted. The Contract Unit Price shall include compensation for all labor, material, and equipment required to install in accordance with the plans and specifications.

3.69 800A (MAIN BREAKER AND ATS) – Bid Item Nos. 97 and 98

A. Payment for this item shall be made at the Contractor's Unit Price per each (EA) 800A unit installed and accepted. The Contract Unit Price shall include compensation for all labor, material, and equipment required to install in accordance with the plans and specifications.

3.70 CONDITIONED ENCLOSURE – Bid Item No. 99

A. Payment for this item shall be made at the Contractor's Unit Price per each (EA) conditioned enclosure installed and accepted. The Contract Unit Price shall include compensation for all labor, material, and equipment required to install in accordance with the plans and specifications.

3.71 VFD (135HP AND 40 HP) – Bid Item Nos. 100 and 101

A. Payment for these items shall be made at the Contractor's Unit Price per each (EA) unit installed and accepted. The Contract Unit Price shall include compensation for all labor, material, and equipment required to install in accordance with the plans and specifications.

3.72 30KVA POWER ZONE PANEL – Bid Item No. 102

A. Payment for these items shall be made at the Contractor's Unit Price per each (EA) 30KVA Power Zone panel installed and accepted. The Contract Unit Price shall include compensation for all labor, material, and equipment required to install in accordance with the plans and specifications.

3.73 500KW GENSET WITH ENCLOSURE – Bid Item No. 103

C. Payment for this item shall be made at the Contractor's Unit Price per each (EA) 500KW Genset with enclosure installed and accepted. The Contract Unit Price shall include compensation for all labor, material, and equipment required to install in accordance with the plans and specifications.

3.74 4000 GALLON CONVAULT TANK – Bid Item No. 104

A. Payment for this item shall be made at the Contractor's Unit Price per each (EA) 4000 GAL Convault tank installed and accepted. The Contract Unit Price shall include compensation for all labor, material, and equipment required to install in accordance with the plans and specifications.

3.75 ELECTRICAL WIRE COSTS (MATERIAL AND INSTALLATION) – Bid Item Nos. 105 through 109

A. Payment for these items shall be made at the Contractor's Unit Price per linear foot (LF) of wire installed and accepted. The Contract Unit Price shall include compensation for all labor, material, and equipment required to install in accordance with the plans and specifications.

3.76 RELOCATION OF CITY MARINA CABINET PAD – Bid Item No. 110

A. Payment for this item shall be made on a Lump Sum (LS) Basis. The Contract Unit Price shall include compensation for all labor, material, and equipment required to install in accordance with the plans and specifications.

3.77 FPL ESTIMATED COSTS – Bid Item No. 111

B. Payment for this item shall be made on a Lump Sum (LS) Basis. The Contract Unit Price shall include compensation for all labor, material, and equipment required to install in accordance with the plans and specifications.

3.78 SUBMERSIBLE PUMP INCLUDING PUMP CAN & FSI (20,000 GPM) – Bid Item No. 112

A. Payment for this item shall be made at the Contractor's Unit Price per each (EA) unit installed and accepted. The Contract Unit Price shall include compensation for all labor, material, and equipment required to install in accordance with the plans and specifications.

3.79 SUBMERSIBLE PUMP INCLUDING PUMP CAN & FSI (5,000 GPM) – Bid Item No. 113

A. Payment for this item shall be made at the Contractor's Unit Price per each (EA) unit installed and accepted. The Contract Unit Price shall include compensation for all labor, material, and equipment required to install in accordance with the plans and specifications.

3.80 DISCHARE PIPING - 30" and 16" (FITTINGS,BENDS.RESTRAINTS, ETC.) – Bid Item No. 114

A. Payment for this item shall be made on a Lump Sum (LS) Basis. The Contract Unit Price shall include compensation for all labor, material, and equipment required to install in accordance with the plans and specifications.

3.81 FLAP GATE (30" AND 16") – Bid Item Nos. 115 and 116

A. Payment for these items shall be made at the Contractor's Unit Price per each (EA) flap gate installed and accepted. The Contract Unit Price shall include compensation for all labor, material, and equipment required to install in accordance with the plans and specifications.

3.82 STILLING WELL – Bid Item No. 117

A. Payment for this item shall be made at the Contractor's Unit Price per each (EA) stilling well installed and accepted. The Contract Unit Price shall include compensation for all labor, material, and equipment required to install in accordance with the plans and specifications.

END OF SECTION

SECTION 01041
PROJECT COORDINATION

PART 1 - GENERAL

1.01 REQUIREMENTS INCLUDED

A. Engineer will coordinate the work between Prime Contractors as required.

B. [The] [Each Prime] Contractor shall:

1. Coordinate work of his [own] employees and subcontractors.
2. Expedite his work to assure compliance with schedules.
3. [Coordinate his work with that of other Prime Contractors and work by Owner.]
4. Comply with orders and instructions of Engineer.

1.02 RELATED REQUIREMENTS

A. Section 01152: Applications for Payment.

B. Section 01200: Project Meetings.

C. Section 01340: Shop Drawings, Product Data and Samples.

D. Section 01700: Contract Closeout.

1.03 CONSTRUCTION ORGANIZATION AND START-UP

A. Engineer shall establish on-site lines of authority and communications:

1. Schedule and conduct pre-construction meeting and progress meetings as specified in Section.
2. Establish procedures for [intra-project communications]:
   a. Submittals
   b. Reports and records
   c. Recommendations
   d. Coordination of drawings
   e. Schedules
   f. Resolution of conflicts
3. Interpret Contract Documents:
   a. Transmit written interpretations to [Prime] Contractors, and to other concerned parties.
4. Assist in obtaining permits and approvals:

a. Verify that contractor[s] and subcontractors have obtained inspections for Work and for temporary facilities.

5. Control the use of Site:
   a. Allocate space for [each Prime] Contractor's use for field offices, sheds, and work and storage areas.
6. Inspection and Testing:
   a. Inspect work to assure performance in accord with requirements of Contract Documents.
   b. Administer special testing and inspections of suspect Work.
   c. Reject Work which does not comply withrequirements of Contract Documents.

1.04 CONTRACTOR'S DUTIES

A. Construction Schedules:

1. Prepare a detailed schedule of basic operations.
2. Monitor schedules as work progresses:
   a. Identify potential variances between scheduled and probable completion dates or each phase.
   b. Recommend to Owner adjustments in schedule to meet required completion dates.
   c. Document changes in schedule; submit to Owner, Engineer and to involved subcontractors.
3. Observe work of each subcontractor to monitor compliance with schedule.
   a. Verify that labor and equipment are adequate for the work and the schedule.
   b. Verify that product procurement schedules are adequate.
   c. Verify that product deliveries are adequate to maintain schedule.
   d. Report noncompliance to Engineer, with recommendation for changes.

B. Process Shop Drawings, Product Data and Samples:

1. Prior to submittal to Engineer, review for compliance with Contract Documents:
   a. Field dimensions and clearance dimensions.
   b. Relation to available space.
   c. Effect of any changes on the work of any subcontractor.

C. Prepare Coordination Drawings as required to resolve conflicts and to assure coordination of the work of, or affected by, mechanical and electrical trades, or by special equipment requirements.

1. Submit to Engineer.

2. Reproduce and distribute copies to concerned parties after Engineer review.

D. Maintain Reports and Records at Job Site, available to Engineer and Owner.

1. Daily log of progress of work.
2. Records
   a. Contracts
   b. Purchase orders
   c. Materials and equipment records
   d. Applicable handbooks, codes and standards
3. Maintain file of record documents

1.05 CONTRACTOR'S CLOSE-OUT DUTIES

A. At completion of Work, conduct an inspection to assure that:

1. Specified cleaning has been accomplished.
2. Temporary facilities have been removed from site.

B. Substantial Completion:

1. Conduct an inspection to develop a list of Work to be completed or corrected.
2. Assist Engineer in inspection.
3. Supervise correction and completion of work of subcontractors.

1.06 ENGINEER'S CLOSE-OUT DUTIES

A. Final Completion:

1. When [each] Contractor determines that Work is finally complete, conduct an inspection to verify completion of Work.

B. Administration of Contract closeout:

1. Receive and review contractor's final submittals.
2. Transmit to Owner with recommendations for action.

PART 2 - PRODUCTS

Not used.

PART 3 - EXECUTION

Not used.

END OF SECTION

SECTION 01045
CUTTING AND PATCHING

PART 1- GENERAL

1.01 REQUIREMENTS INCLUDED

A. Contractor shall be responsible for all cutting, fitting and patching, including related excavation and backfill, required to complete the Work or to:

1. Make its several parts fit together properly.
2. Uncover portions of the Work to provide for installation of ill-timed work.
3. Remove and replace defective work.
4. Remove and replace work not conforming to requirement of Contract Documents.
5. Remove samples of installed work as specified for testing.
6. Provide routine penetrations of non-structural surfaces for installation of piping and electrical conduit.

1.02 RELATED REQUIREMENTS

A. Section 01010: Summary of Work.

B. Section 01630: Substitutions and Product Options.

1.03 SUBMITTALS

A. Submit a written request to Engineer well in advance of executing and cutting or alteration which affects:

1. Work of the Owner or any separate contractor.
2. Structural value or integrity of any element of the project.
3. Integrity or effectiveness of weather-exposed or moisture-resistant element or systems.
4. Efficiency, operational life, maintenance or safety of operational elements.
5. Visual qualities of sight-exposed elements.

B. Request shall include:

1. Identification of the Project.
2. Description of affected work.
3. The necessity for cutting, alteration or excavation.
4. Effect on work of Owner or any separate contractor, or on structural or weatherproof integrity of Project.

5. Description of proposed work:
    a. Scope of cutting, patching, alteration, or excavation.
    b. Trades who will execute the work.
    c. Products proposed to be used.
    d. Extent of refinishing to be done.
6. Alternative to cutting and patching.
7. Cost proposal, when applicable.
8. Written permission of any separate contractor whose work will be affected.

C. Should conditions of Work or the schedule indicate a change of products from original installation, contractor shall submit request for substitution as specified in Section 01630 - Substitutions and Product Options.

D. Submit written notice to Engineer designating the date and the time the Work will be uncovered.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Comply with specifications and standards for each specific product involved.

PART 3 - EXECUTION

3.01 INSPECTION

A. Inspect existing conditions of Project, including elements subject to damage or to movement during cutting and patching.

B. After uncovering work, inspect conditions affecting installation of Products, or performance of work.

C. Report unsatisfactory or questionable conditions to Engineer in writing; do not proceed with work until Engineer has provided further instructions.

3.02 PREPARATION

A. Provide adequate temporary support as necessary to assure structural value or integrity of affected portion of work.

B. Provide devices and methods to protect other portions of Project from damage.

C. Provide protection from elements for that portion of the Project which may be exposed by cutting and patching work, and maintain excavations free from water.

3.03 PERFORMANCE

A. Execute cutting and demolition by methods which will prevent damage to other work, and will provide proper surfaces to receive installation of repairs.

B. Execute excavating and backfilling by methods which will prevent settlement or damage to other work.

C. Employ original Installer or Fabricator to perform cutting and patching for:

1. Weather-exposed or moisture-resistant elements.
2. Sight-exposed finished surfaces.

D. Execute fittings and adjustment of products to provide a finished installation to comply with specified products, functions, tolerances and finishes.

E. Restore work which has been cut or removed; install new products to provide completed work in accord with requirements of Contract documents.

F. Fit work airtight to pipes, sleeves, ducts, conduit or other penetrations through surfaces.

G. Refinish entire surfaces as necessary to provide an even finish to match adjacent finishes;

1. For continuous surfaces, refinish to nearest intersection.
2. For an assembly, refinish entire unit.

END OF SECTION

SECTION 01050
FIELD ENGINEERING

PART 1 - GENERAL

1.01 REQUIREMENTS INCLUDED

A. Provide and pay for field engineering services required for Project.

1. Survey work required in execution of Project.
2. Civil, structural or other professional engineering services specified, or required to execute Contractor's construction methods.

B. Owner's Representative will identify existing control points indicated on the Drawings, as required.

1.02 RELATED REQUIREMENTS

A. Conditions of the Contract.

B. Section 01010: Summary of Work.

C. Section 01700: Contract Closeout.

1.03 QUALIFICATIONS OF SURVEYOR OR ENGINEER

A. Qualified engineer or land surveyor, registered in the State of Florida.

1.04 SURVEY REFERENCE POINTS

A. Existing basic horizontal and vertical control points for the Project are those designated on Drawings.

B. Locate and protect control points prior to starting site work, and preserve all permanent reference points during construction.

1. Make no changes or relocations without prior written notice to Engineer.
2. Report to Engineer when any reference point is lost or destroyed, or requires relocation because of necessary changes in grades or locations.
3. Require surveyor to replace project control points which may be lost or destroyed.
   a. Establish replacements based on original survey control.

1.05 PROJECT SURVEY REQUIREMENTS

A. Establish lines and levels, locate and lay out, by instrumentation and similar appropriate means:

1. Site improvements
   a. Stakes for grading, fill and topsoil placement.
   b. Utility slopes and invert elevations.
2. Batter boards for structures.
3. Building foundation, column locations and floor levels.
4. Controlling lines and levels required for mechanical and electrical trades.

B. From time to time, verify layouts by same methods.

C. Locate and mark all known underground utilities prior to entrance of any equipment on the site. All such utilities shall be protected from heavy traffic. Establish and maintain barricades around all manholes, drains, and similar underground items. Immediately notify the owner of any conflict between operations and any in ground item to remain.

1.06 RECORDS

A. Maintain a complete, accurate log of all control and survey work as it progresses.

1.07 SUBMITTALS

A. Submit name and address of registered surveyor and Professional Engineer to Engineer.

B. On request of Engineer, submit documentation to verify accuracy of field engineering work.

C. Submit certificate signed by registered engineer or surveyor certifying that elevations and locations of improvements are in conformance, or non-conformance, with Contract Documents.

PART 2 - PRODUCTS

Not used.

PART 3 - EXECUTION

Not used.

END OF SECTION

SECTION 01090
REFERENCE STANDARDS

PART 1 - GENERAL

1.01 REQUIREMENTS INCLUDED

Abbreviation and acronyms used in Contract Documents to identify reference standards.

1.02 QUALITY ASSURANCE

A. Application: When a standard is specified by reference, comply with requirements and recommendations stated in that standard, except when requirements are modified by the Contract Documents, or applicable codes establish stricter standards.

B. Publication Date: The publication in effect on the date of issue of Contract Documents, except when a specific publication date is specified.

1.03 ABBREVIATIONS, NAMES, AND ADDRESSES OR ORGANIZATIONS

A. Obtain copies of referenced standards direct from publication source, when needed for proper performance of Work, or when required for submittal by Contract Documents.

AA	Aluminum Association 818 Connecticut Avenue, N.W. Washington, DC 20006
AABC	Associated Air Balance Council 1000 Vermont Avenue, N.W. Washington, DC 20005
AASHTO	American Association of State Highway & Transportation Officials 444 North Capitol Street, N.W. Washington, DC 20001
ACI	American Concrete Institute Box 19150 Redford Station Detroit, MI 48219

ADC	Air Diffusion Council 435 North Michigan Avenue Chicago, IL 60611
AI	Asphalt Institute Asphalt Institute Building College Park, MD 20740
AISC	American Institute of Steel Construction 1221 Avenue of the Americas New York, NY 10020
AISI	American Iron and Steel Institute 1000 16th Street, N.W. Washington, DC 20036
AMCA	Air Movement and Control Association 30 West University Drive Arlington Heights, Il 60004
ANSI	American National Standards Institute 1430 Broadway New York, NY 10018
ARI	Air-Conditioning and Refrigeration Institute 1815 North Fort Myer Drive Arlington, VA 22209
ASHRAE	American Society of Heating, Refrigerating & Conditioning Engineers 345 East 47th Street New York, NY 10017
ASME	American Society of Mechanical Engineers 345 East 47th Street New York, NY 10017
ASPA	American Sod Producers Association Association Building Ninth and Minesota Hastings, NE 68901

ASTM	American Society of Testing & Materials 1916 Race Street Philadelphia, PA 19103
AWWA	American Water Works Assocation 6666 W. Quincy Avenue Denver, CO 80235
AWI	Architectural Woodwork Institute 2310 South Walter Reed Drive Arlington, VA 22206
AWPA	American Wood-Preserver's Association 7735 Old Georgetown Road Bethesda, MD 20014
AWS	American Welding Society 2501 NW 7th Street Miami, FL 33125
CDA	Cooper Development Association 57th Floor, Chrysler Building 405 Lexington Avenue New York, NY 10017
CLFMI	Chain Link Fence Manufacturers Institute 1101 Connecticut Avenue Washington, DC 20036
CRSI	Concrete Reinforcing Steel Institute 180 North LaSalle Street, Suite 2110 Chicago, IL 60601
MF	Factory Mutual System 1151 Boston Providence Turnpike Norwood, MA 02062
FS	Federal Specification General Services Administration Specifications and Consumer Information Distribution Section (WFSIS) Washington Navy Yard, Bldg. 197 Washington, DC 20407
GA	Gypsum Association

	1603 Orrington Avenue Evanston, IL 60201
MIL	Military Specification Naval Publications and Forms Center 5801 Tabor Avenue Philadelphia, PA 19120
MLSFA	Metal Lath/Steel Framing Association 221 North LaSalle Street Chicago, IL 60601
NAAMM	National Association of Architectural Metal Manufacturers 221 North LaSalle Street Chicago, IL 60601
NEBB	National Environmental Balancing Bureau 8224 Old Courthouse Road Vienna, VA 22180
NEMA	National Electrical Manufacturer's Association 2101 L Street, N.W. Washington, DC 20037
NFPA	National Fire Protection Association 470 Atlantic Avenu Boston, MA 02210
NFPA	National Forest Products Association 1619 Massachusetts Avenue, N.W. Washington, DC 20036
NTMA	National Terrazzo and Mosaic Association 3166 Des Plains Avenue Des Plains, Il 60018
PCA	Portland Cement Association 5420 Old Orchard Road Skokie, IL 20076
PCI	Prestressed Concrete Institute 20 North Wacker Drive Chicago, IL 60606
PS	Product Standard U.S. Department of Commerce

Washington, DC 20203

RCSHSB — Red Cedar Shingle & Handsplit Shake Bureau
515 116th Avenue
Bellevue, WA 98004

SDI — Steel Deck Institute
Box 3812
St. Louis, MO 63122

SDI — Steel Door Institute
712 Lakewood Center North
Cleveland, OH 44107

SIGMA — Sealed Insulating Glass Manufacturers Association
111 East Wacker Drive
Chicago, IL 60601

SJI — Steel Joist Institute
1703 Parham Road, Suite 204
Richmond, VA 23229

SMACNA — Sheet Metal and Air Conditioning Contractors' National Association
8224 Old Court House Road
Vienna, VA 22180

TAS — Technical Aid Series
Construction Specifications Institute
1150 Seventeenth Street, N.W.
Washington, DC 20036

TCA — Tile Council of America, Inc.
Box 326
Princeton, NJ 08540

UL — Underwriter's Laboratories, Inc.
333 Pfingston Road
Northbrook, Il 60062

PART 2 - PRODUCTS

Not used.

PART 3 - EXECUTION

Not used.

END OF SECTION

SECTION 01152
APPLICATION FOR PAYMENT

PART 1 - GENERAL

1.01 REQUIREMENTS INCLUDED

A. Submit Applications for Payment to Engineer in accordance with the schedule established by Conditions of the Contract and herein.

1.02 RELATED REQUIREMENTS

A. Agreement Between Owner and Contractor: Lump Sum and Unit Price.

B. Conditions of the Contract: Progress Payments, Retainage and Final Payment.

C. Section 01020: Allowances.

D. Section 01153: Change Order Procedures.

E. Section 01370: Schedule of Values.

F. Section 01700: Contract Closeout.

1.03 FORMAT AND DATA REQUIRED

A. Submit applications in the form required by Owner, in accordance with the example which will be provided by the Engineer, with itemized data typed on 8-1/2 inch x 11 inch white paper continuation sheets.

B. Provide itemized data on continuation sheet:

1. Format, schedules, line items and values: Those of the Schedule of Values accepted by Engineer.

1.04 PREPARATION OF APPLICATION FOR EACH PROGRESS PAYMENT

A. Application Form:

1. Fill in required information, including that for Change Orders executed prior to date of submittal of application.
2. Fill in summary of dollar values to agree with respective totals indicated on continuation sheets.
3. Execute certification with signature of a responsible officer of Contract firm.

B. Continuation Sheets:

1. Fill in total list of all scheduled component items of Work, with item number and scheduled dollar value for each item.
2. Fill in dollar value in each column for each scheduled line item when work has been preformed or products stored.
    a. Round off values to nearest dollar, or as specified for Schedule of Values.
3. List each Change Order executed prior to date of submission at the end of the continuation sheets.
    a. List by Change Order Number, and description,as for an original component item of work.

1.05 SUBSTANTIATING DATA FOR PROGRESS PAYMENTS

A. When the Owner or the Engineer requires substantiating data, Contractor shall submit suitable information, with a cover letter identifying:

1. Project
2. Application number and date.
3. Detailed list of enclosures.
4. For stored products:
    a. Item number and identification as shown on application.
    b. Description of specific material.

B. Submit one copy of data and cover letter for each copy of application.

1.06 PREPARATION OF APPLICATION FOR FINAL PAYMENT

A. Fill in Application form as specified for progress payments.

B. Use continuation sheet for presenting the final statement of accounting as specified in Section 01700 - Contract Closeout.

1.07 SUBMITTAL PROCEDURE

A. Submit Applications for Payment to Engineer at the times stipulated.

B. Number: [4] copies of Application.

C. When Engineer finds Application properly completed and correct, he will transmit certificate for payment to Owner, with copy to Contractor.

PART 2 - PRODUCTS

Not used.

PART 3 - EXECUTION

Not used.

END OF SECTION

SECTION 01153
CHANGE ORDER PROCEDURES

PART 1 - GENERAL

1.01 REQUIREMENTS INCLUDED

A. Promptly implement change order procedures.

1. Provide full written data required to evaluate changes.
2. Maintain detailed records of work done on time and material/force account basis.
3. Provide full documentation to Engineer on request.

B. Designate in writing the member of Contractor's organization:

1. Who is authorized to accept changes in the Work.
2. Who is responsible for informing others in the Contractor's employ of the authorization of changes in the Work.

C. Owner will designate in writing the person who is authorized to execute Change Orders.

1.02 RELATED REQUIREMENTS

A. Agreement: The amounts of established unit prices.

B. General conditions and Supplementary Conditions.

C. Conditions of the Contract:

1. Methods of determining cost or credit to Owner resulting from changes in Work made on a time and material basis.
2. Contractor's claims for the additional cost.

D. Section 01020: Allowances.

E. Section 01152: Application for Payment.

F. Section 01310: Construction Schedules.

G. Section 01370: Schedule of Values.

H. Section 01630: Substitutions and Product Options.
I. Section 01700: Contract Closeout.

1.03 DEFINITIONS

A. Change Order: See General Conditions and Supplementary Conditions.

B. Construction Change Authorization: A written order to the Contractor, signed by Owner and Engineer, which amends the Contract Documents as described, and authorizes Contractor to proceed with a change which affects the Contract Sum or the Contract Time, for inclusion in a subsequent Change Order.

C. Field Order: A written order, instructions, or interpretations, signed by Engineer making minor changes in the Work not involving a change in Contract Sum or Contract Time.

1.04 PRELIMINARY PROCEDURES

A. Owner or Architect may initiate changes by submitting a Proposal Request to Contractor. Request will include:

1. Detailed description of the Change, products, and location of the change in the Project.
2. Supplementary or revised Drawings and Specifications.
3. The projected time span for making the change, and a specific statement as to whether overtime work is, or is not, authorized.
4. A specific period of time during which the requested price will be considered valid.
5. Such request is for information only, and is not an instruction to execute the changes, nor to stop Work in progress.

B. Contractor may initiate changes by submitting a written notice to Architect, containing:

1. Description of the proposed changes.
2. Statement of the reason for making the changes.
3. Statement of the effect on the Contract Sum and the Contract Time.
4. Statement of the effect on the work of separate contractors.
5. Documentation supporting any change in Contract Sum or Contract Time, as appropriate.

1.05 CONSTRUCTION-CHANGE AUTHORIZATION

A. In lieu of Proposal Request, Engineer may issue a construction change authorization for Contractor to proceed with a change for subsequent inclusion in a Change Order.

B. Authorization will describe changes in the Work, both additions and deletions, with attachments of revised Contract Documents to define details of the change,

and will designate the method of determining any change in the Contract Sum and any change in Contract Time.

C. Owner and Engineer will sign and date the Construction Change Authorization as authorization for the Contractor to proceed with the changes.

D. Contractor shall sign and date the Construction Change Authorization to indicate agreement with the terms therein.

1.06 DOCUMENTATION OF PROPOSALS AND CLAIMS

A. Support each quotation for a lump-sum proposal, and for each unit price which has not previously been established, with sufficient substantiating data to allow Engineer to evaluate the quotation.

B. On request provide additional data to support time and cost computations:

1. Labor required.
2. Equipment required.
3. Products required.
    a. Recommended sources of purchase and unit cost.
    b. Quantities required.
4. Taxes, insurance and bonds.
5. Credit for work deleted from Contract, similarly documented.
6. Overhead and profit.
7. Justification for any change in Contract Time.

C. Support each claim for additional costs, and for work done on a time-and-material/force account basis, with documentation as required for a lump-sum proposal, plus additional information:

1. Name of Owner's authorized agent who ordered the work, and date of the order.
2. Dates and times work was performed, and by whom.
3. Time record, summary of hours worked, and hourly rates paid.
4. Receipts and invoices for:
    a. Equipment used, listing dates and times of use.
    b. Products used, listing of quantities.
    c. Subcontractors.

D. Document requests for substitutions for Products as specified in Section 01630.

1.07 PREPARATION OF CHANGE ORDERS

A. Engineer will prepare each Change Order.

B. Owner's Form, per example provided by the Engineer.

C. Change Order will describe changes in the Work, both additions and deletions, with attachments of revised Contract Documents to define details of the change.

D. Change Order will provide an accounting of the adjustment in the Contract Sum and in the Contact Time.

1.08 LUMP-SUM/FIXED PRICE CHANGE ORDER

A. Content of Change Orders will be based on, either;

1. Engineer's Proposal Request and Contractor's responsive Proposal as mutually agreed between Owner and Contractor.
2. Contractor's Proposal for a change, as recommended by Engineer.

B. Owner and Engineer will sign and date the Change Order as authorization for the Contractor to proceed with the changes.

C. Contractor shall sign and date the Change Order to indicate agreement with the terms therein.

1.09 UNIT PRICE CHANGE ORDER

A. Content of Change Orders will be based on, either:

1. Engineer's definition of the scope of the required changes.
2. Contractor's Proposal for a change, as recommended by Engineer.
3. Survey of completed work.

B. The amounts of the unit prices to be:

1. Those stated in the Agreement.
2. Those mutually agreed upon between Owner and Contractor.

C. When quantities of each of the items affected by the Change Order can be determined prior to start of the work:

1. Owner and Engineer will sign and date the Change Order as authorization for Contractor to proceed with the changes.
2. Contractor shall sign and date the Change Order to indicate agreement with the terms herein.

D. When quantities of the items cannot be determined prior to start of the work:

1. Engineer or Owner will issue a construction change authorization directing Contractor to proceed with the change on the basis of unit prices, and will cite the applicable unit prices.
2. At completion of the change, Engineer will determine the cost of such work based on the unit process and quantities used.
    a. Contractor shall submit documentation to establish the number of units of each item and any claims for a change in Contract Time.
3. Engineer will sign and date the Change Order to establish the change in Contract Sum and in Contract Time.
4. Owner and Contractor will sign and date the Change Order to indicate their agreement with the terms therein.

1.10 TIME AND MATERIAL/FORCE ACCOUNT CHANGE ORDER/ CONSTRUCTION CHANGE AUTHORIZATION

A. Engineer and Owner will issue a Construction Change Authorization directing Contractor to proceed with the changes.

B. At completion of the change, Contractor shall submit itemized accounting and supporting data as provided in the Article "Documentation of Proposals and Claims" of this Section.

C. Engineer will determine the allowable cost for such work, as provided in General Conditions and
Supplementary Conditions.

D. Engineer will sign and date the Change Order to establish the change in Contract Sum and in Contract Time.

E. Owner and Contractor will sign and date the Change Order to indicate their agreement therewith.

1.11 CORRELATION WITH CONTRACTOR'S SUBMITTALS

A. Periodically revise Schedule of Values and Request for Payment forms to record each change as a separate item of Work, and to record the adjusted Contract sum.

B. Periodically revise the Construction Schedule to reflect each change in Contract Time.

1. Revise subschedules to show changes for other items of work affected by the changes.

C. Upon completion of work under a Change Order, enter pertinent changes in Record Documents.

PART 2 - PRODUCTS

Not used.

PART 3 - EXECUTION

Not used.

END OF SECTION

SECTION 01200
PROJECT MEETINGS

PART 1 - GENERAL

1.01 REQUIREMENTS INCLUDED

A. Owner shall schedule and administer preconstruction meeting, periodic progress meetings, and specially called meetings throughout progress of the Work.

1. Prepare agenda for meetings.
2. Distribute written notice of each meeting four days in advance of meeting date.
3. Make physical arrangements for meetings.
4. Preside at meetings.
5. Record the minutes; include significant proceedings and decisions.
6. Reproduce and distribute copies of minutes within three days after each meeting.
    a. To participants in the meeting.
    b. To parties affected by decisions made at the meeting.

B. Representatives of contractors, subcontractors and suppliers attending meetings shall be qualified and authorized to act on behalf of the entity each represents.

1.02 RELATED REQUIREMENTS

A. Instructions to Bidders: Pre-Bid Conferences.

B. Section 01340: Shop Drawings, Product Data and Samples.

C. Section 01700: Contract Closeout.

D. Section 01730: Operating and Maintenance Data.

1.03 PRE-CONSTRUCTION MEETING

A. Schedule within 20 days after effective date of the agreement.

B. Location: A central site, convenient for all parties, designated by the Owner.

C. Attendance:

1. Owner's Representative.
2. Engineer and his professional consultants.

3. Resident Project Representative.
4. Contractor's Superintendent.
5. Major Subcontractors.
6. Others as Appropriate and approved by the Owner.

D. Suggested Agendum:

1. Distribution and discussion of:
   a. List of major subcontractors and suppliers.
   b. Projected Construction Schedules.
2. Critical work sequencing.
3. Major equipment deliveries and priorities.
4. Project Coordination.
   a. Designation of responsible personnel.
5. Procedures and processing of:
   a. Field decisions.
   b. Proposal requests.
   c. Submittals.
   d. Change Orders.
   e. Applications for Payment.
6. Adequacy for distribution of Contract Documents.
7. Procedures for maintaining Record Documents.
8. Use of premises.
   a. Office, work and storage areas.
   b. Owner's requirements.
9. Construction facilities, controls and construction aids.
10. Temporary utilities.
11. Safety and first-aid procedures.
12. Security procedures.
13. Housekeeping procedures.
14. Miscellaneous.

1.04 PROGRESS MEETINGS

A. Schedule regular periodic meetings, as required.

B. Hold called meetings as required by progress of the Work.

C. Location of the meetings: Project field office of the Contractor or other site directed by the Engineer.

D. Attendance:

1. Engineer, and his professional consultants as needed.
2. Subcontractors as appropriate to the agenda.
3. Suppliers as appropriate to the agenda.

4. Others.

E. Suggested Agenda:

1. Review, approval of minutes of previous meeting.
2. Review of Work progress since previous meeting.
3. Field observations, problems, conflicts.
4. Problems which impede Construction Schedule.
5. Review of off-site fabrication, delivery schedules.
6. Corrective measures and procedures to regain projected schedule.
7. Revisions to Construction Schedule.
8. Progress, schedule, during succeeding work period.
9. Coordination of schedules.
10. Review of submittal schedules; expedite as required.
11. Maintenance of quality standards.
12. Pending changes and substitutions.
13. Review proposed changes for:
    a. Effect on Construction Schedule and on completion date.
    b. Effect on other contracts relating to the project.
14. Review of record drawings.
15. Other business.

PART 2 - PRODUCTS

Not used.

PART 3 - EXECUTION

Not used.

END OF SECTION

SECTION 01310
CONSTRUCTION SCHEDULES

PART 1 - GENERAL

1.01 REQUIREMENTS INCLUDED

A. Promptly after award of the Contract, prepare and submit to Engineer estimated construction progress schedules for the Work, with subschedules of related activities which are essential to its progress.

B. Submit revised progress schedules to maintain proposed schedule within 30 days of work in place.

1.02 RELATED REQUIREMENTS

A. Conditions of the Contract.

B. Section 01010: Summary of Work.

C. Section 01020: Allowances.

D. Section 01041: Project Coordination.

E. Section 01200: Project Meetings.

F. Section 01340: Shop Drawings.

1.03 FORM OF SCHEDULES

A. Prepare schedules in the form of:

1. Horizontal Bar Chart.
2. Network Analysis System.
3. Other Method Accepted by Owner.

B. Format of Listings: The chronological order of the start of each item of work.

1.04 CONTENT OF SCHEDULES

A. Construction Progress Schedule:

1. Show the complete sequence of construction by activity.
2. Show the dates for the beginning, and completion of each major element of construction. Specifically list:

a. Site clearing.
b. Site utilities.
c. Foundation work.
d. Structural framing.
e. Subcontractor work.
f. Equipment installations.
g. Delivery of O & M Manuals.
h. Finishings.
i. Start-up

B. Submittals, Schedule for Shop Drawings, Product Data and Samples. Show:

1. The dates for Contractor's Submittals.
2. The dates revised submittals will be required from the Engineer.

C. Provide subschedules to define critical portions of prime schedules.

1.05 PROGRESS REVISIONS

A. Indicate progress of each activity to date of submission.

B. Show changes occurring since previous submission of schedule:

1. Major changes in scope.
2. Activities modified since previous submission.
3. Revised projections of progress and completion.
4. Other identifiable changes.

C. Provide a narrative report as needed to define:

1. Problem areas, anticipated delays, and the impact on the schedule.
2. Corrective action recommended, and its effect.
3. The effect of changes on schedules of other prime contractors.

1.06 SUBMISSIONS

A. Submit initial schedules within 10 days after the effective date of the Agreement.

1. Engineer will review schedules and return review copy within 10 days after receipt.
2. If required, resubmit within seven days after return of review copy.

B. With each application for payment, submit progress schedule if revised since last payment request.

C. Submit one reproducible transparency which will be returned to the Contractor, plus two copies which will be retained by the Engineer.

1.07 DISTRIBUTION

A. Distribute copies of the reviewed schedules to:

1. Job site file.
2. Subcontractors.
3. Other concerned parties.

B. Instruct recipients to report promptly to the Contractor, in writing, any problems anticipated by the projections shown in the schedules.

PART 2 - PRODUCTS

Not used.

PART 3 - EXECUTION

Not used.

END OF SECTION

SECTION 01340
SHOP DRAWINGS, PRODUCT DATA AND SAMPLES

PART 1 - GENERAL

1.01 REQUIREMENTS INCLUDED

Submit Shop Drawings, Product Data and Samples required by Contract Documents.

1.02 RELATED REQUIREMENTS

A. Definitions and Additional Responsibilities of Parties: Conditions of the Contract.

B. Section 01700: Contract Closeout.

1.03 SHOP DRAWINGS

A. Drawings shall be presented in a clear and Thorough manner.

1. Details shall be identified by reference of sheet and detail or schedule.

B. Minimum sheet size: 8½ X 11 inches.

1.04 PRODUCT DATA

A. Preparation

1. Clearly mark each copy to identify pertinent products or models.
2. Show performance characteristics and capacities.
3. Show dimensions and clearances required.
4. Show wiring or piping diagrams and controls.

B. Manufacture's standard schematic drawings and diagrams:

1. Modify drawings and diagrams by deleting information which is not applicable to the work.
2. Supplement standard information to provide information specifically applicable to the work.

1.05 CONTRACTOR RESPONSIBILITIES

A. Review Shop Drawings, Product Data and Samples prior to submission.

B. Determine and verify:

1. Field measurements.
2. Field construction criteria.
3. Catalog numbers and similar data.
4. Conformance with specifications.

C. Coordinate each submittal with requirements of the Work and of the Contract Documents.

D. Notify the Engineer in writing, at time of submission, of any deviations in the submittals from requirements of the contract Documents.

E. Begin no fabrication or work which requires approved submittals until return of submittals by Engineer

1.06 SUBMISSION REQUIREMENTS

A. Make submittals in such sequence as to cause no delay in the work.

B. Number of submittals required:

1. Shop Drawings and Product Data: Submit six (6) copies.
2. Samples: Submit the quantity stated in each specification section.

C. Submittals shall contain:

1. The date of submission and the dates of any previous submissions.
2. The Project title and number.
3. Contract identification.
4. The names of:
   a. Contractor
   b. Supplier
   c. Manufacturer
5. Identification of the product, with the specification section number.
6. Field dimensions, clearly identified as such.
7. Relation to adjacent or critical features of the work or materials.
8. Applicable standards, such as ASTM or Federal specification numbers.
9. Identifications of deviations from Contract Documents.
10. Identification of revisions on resubmittals.
11. An 8-inch X 3.5-inch blank space for Contractor and Engineer stamps.
12. CONTRACTOR'S stamp intitialed or signed, certifying to review of submittal, verification of products, field measurements and field construction criteria and coordination of the information within the submittal with requirements of the Work and of Contract Documents.

1.07 RESUBMISSION REQUIREMENTS

A. Make any corrections or changes in the submittals noted by the Engineer and resubmit unless otherwise noted.

B. Shop Drawings and Product Data:

1. Revise initial drawings or data, and resubmit as specified for the initial submittal.
2. Indicate any changes which have been made other than those suggested by the Engineer.

C. Samples: Submit new samples as required for initial submittal.

1.08 ENGINEER'S DUTIES

A. Review submittals within 30 days or in accord with schedule.

B. Affix stamp and initials or signature, and indicate status of submittal.

C. Return submittals to Contractor for distribution, or resubmission.

D. Review initial submittals and one resubmittal. Resubmittals that cannot be approved will be returned. Additional resubmittals will be reviewed by the Engineer, and costs for time and materials for reviewing resubmittals will be back charged by the Engineer to the Contractor.

END OF SECTION

SECTION 01370
SCHEDULE OF VALUES

PART 1 - GENERAL

1.01 REQUIREMENTS INCLUDED

A. Submit to the Engineer a Schedule of Values allocated to the various portions of the Work, within ten days after award of contract.

B. Upon the request of the Engineer, support the values with data which will substantiate their correctness.

C. The Schedule of Values, unless objected to by the Engineer, shall be used only as the basis for the Contractor's Applications for Payment.

D. Related Requirements in Other Parts of the Contract Documents.

1. Agreement
2. General Conditions
3. Supplementary Conditions

1.02 RELATED REQUIREMENTS

A. Section 01020: Allowances

B. Section 01152: Application for Payment

C. Section 01600: Material and Equipment.

1.03 FORM AND CONTENT OF SCHEDULE OF VALUES

A. Type schedule on 8-1/2-inch X 11-inch white paper; Contractor's standard forms and automated printout will be considered for approval by Engineer upon Contractors request. Identify schedule with:

1. Title of Project, location and (City, County, Owner) Project Number.
2. Engineer and Engineer's Project number.
3. Name and Address of Contractor.
4. Date of Submission.

B. Schedule shall list the installed value of the component parts of the Work, in sufficient detail to serve as a basis for computing values for progress payments during construction.

C. Follow the table of contents of these Specifications as the format for listing component items.

1. Identify each line item with the number and title of the respective major section of the specifications.

D. For each major line item list sub-values of:

1. Major products or operations under the item.
2. Contract conditions, such as: bonds, insurance premiums, job mobilization, construction facilities and temporary controls.

E. For the various portions of the Work:

1. Each item shall include a directly proportional amount of the Contractor's overhead and profit.
2. For items on which progress payments will be requested for stored materials, break down the value into:
   a. The cost of the materials, delivered and unloaded, with taxes paid.
   b. The total installed value.

F. The sum of all values listed in the schedule shall equal the total Contract Sum.

1.04 SUBSCHEDULE OF UNIT MATERIAL VALUES

A. Submit a subschedule of unit costs and quantities for:

1. Products specified under a unit cost allowance in Section 01020.
2. Products on which progress payments will be requested for stored products.

B. The form of submittal shall parallel that of the Schedule of Values, with each item identified the same as the line item it the Schedule of Values.

C. The unit quantity for bulk materials shall include an allowance for normal waste.

D. The unit values for the materials shall be broken down into:

1. Cost of the material, delivered and unloaded at the site, with taxes paid.
2. Installation costs, including Contractor's overhead and profit.

E. The installed unit value multiplied by the quantity listed shall equal the cost of that item in the Schedule of Values.

PART 2 - PRODUCTS

Not used.

PART 3 - EXECUTION

Not used.

END OF SECTION

SECTION 01380
CONSTRUCTION PHOTOGRAPHS

PART 1 - GENERAL

1.01 REQUIREMENTS INCLUDED

A. Employ competent photographer to take construction record photographs periodically during course of the Work.

1.02 RELATED REQUIREMENTS

A. Section 01010: Summary of Work

B. Section 01020: Allowances.

C. Section 01152: Application for Payment.

D. Section 01700: Contract Closeout.

1.03 PHOTOGRAPHY REQUIRED

A. Provide photographs taken on cutoff date for each scheduled Application for Payment.

B. Views and Quantities Required:

1. At each specified time, photograph Project from twelve to twenty different views, as approved by Engineer.
2. Provide 8 x 10 inch prints of each view.

C. Negatives:

1. Submit to Engineer with prints.

1.04 COSTS OF PHOTOGRAPHY

A. Pay costs for specified photography and prints.

B. Parties requiring additional photography or prints will pay photographer directly.

PART 2 - PRODUCTS

2.01 PRINTS

A. Color:

1. Paper; Single weight, neutral black image tone, white base.
2. Finish: Smooth surface, glossy.

B. Identify each print on back, listing:

1. Name of Project.
2. Orientation of view.
3. Date and time or exposure.
4. Name and address of photographer.
5. Photographer's numbered identification of exposure.

PART 3 - EXECUTION

3.01 TECHNIQUE

A. Factual presentation

B. Correct exposure and focus.

1. High resolution and sharpness.
2. Maximum depth-of-field.
3. Minimum distortion.

3.02 VIEWS REQUIRED

A. Photograph from locations to adequately illustrate condition of construction and state of progress.

1. At successive periods of photography, take at least one photograph from the same overall view as previously.
2. Consult with engineer at each period of photography for instructions concerning views required.

3.03 DELIVERY OF PRINTS

A. Deliver prints to Engineer to accompany each Application for Payment.

END OF SECTION

SECTION 01410
TESTING LABORATORY SERVICES

PART 1 - GENERAL

1.01 REQUIREMENTS INCLUDED

A. The Owner will employ services of an Independent Testing Laboratory to perform specified testing.

1. Contractor shall cooperate with laboratory to facilitate the execution of its required services.

1.02 LIMITATIONS OF AUTHORITY OF TESTING LABORATORY

A. Laboratory is not authorized to:

1. Release, revoke, alter or enlarge on requirements of Contract Documents.
2. Approve or accept any portion of the Work.
3. Perform any duties of the Contractor.

1.03 CONTRACTOR'S RESPONSIBILITIES

A. Cooperate with laboratory personnel and/or Engineer, provide access to Work or manufacturer's operations.

B. Secure and deliver to the laboratory adequate quantities of representational samples of materials proposed to be used and which require testing.

C. Provide to the laboratory the preliminary design mix proposed to be used for concrete, and other material mixes which require control by the testing laboratory.

D. Furnish copies of Products test reports as required.

E. Furnish incidental labor and facilities:

1. To provide access to Work to be tested.
2. To obtain and handle samples at the Project site or at the source of the product to be tested.
3. To facilitate inspections and tests.
4. For storage and curing of test samples.

F. Notify the Engineer sufficiently in advance of operations to allow for laboratory assignment of personnel and scheduling of tests:

When tests or inspections cannot be performed after such notice, reimburse Owner for laboratory personnel and travel expenses incurred due to Contractor's negligence.

G. Make arrangements with the Engineer and the laboratory and pay for additional samples and tests required for Contractor's convenience.

PART 2 - PRODUCTS

Not used.

PART 3 - EXECUTION

3.01 PAYMENT

A. Testing of materials and products will be performed by an independent testing laboratory appointed and paid for by the Owner. Testing will be performed so as to least encumber the performance of Work.

B. The Owner will authorized the cost of one (1) series of tests only, on the area or item being evaluated. The Contractor shall pay for costs of additional testing as required due to improper performance of Work.

C. When work of this contract or portions of work are completed, notify the Engineer so that arrangements can be made with the laboratory to perform or witness the tests. Do not proceed with additional portions of Work until results have been verified.

END OF SECTION

SECTION 01500
CONSTRUCTION FACILITIES AND TEMPORARY CONTROLS

PART 1 - GENERAL

1.01 REQUIREMENTS INCLUDED

A. Furnish, install and maintain temporary utilities required for construction, remove on completion of Work.

1.02 RELATED REQUIREMENTS

A. Section 01010: Summary of Work.

B. Section 01590: Field Offices an Sheds.

1.03 REQUIREMENTS OF REGULATORY AGENCIES

A. Comply with National Electric Code.

B. Comply with Federal, State and local codes and regulations and with utility company requirements.

PART 2 - PRODUCTS

2.01 MATERIALS, GENERAL

A. Materials may be new or used, but must be adequate in capacity for the required usage, must not create unsafe conditions, and must not violate requirements of applicable codes and standards.

2.02 TEMPORARY ELECTRICITY AND LIGHTING

A. Arrange with utility company, provide service required for power and lighting, and pay all costs for service and for power used.

B. Install circuit and branch wiring, with area distribution boxes located so that power and lighting is available throughout the construction by the use of construction-type power cords.

C. Provide adequate artificial lighting for all areas of work when natural light is not adequate for work, and for areas accessible to the public.

2.03 TEMPORARY HEAT AND VENTILATION

A. Provide temporary heat and ventilation as required to maintain adequate environmental conditions to facilitate progress of the Work, to meet specified minimum conditions for the installation of materials, and to protect materials and finishes from damage due to temperature or humidity.

B. Provide adequate forced ventilation of enclosed areas for curing of installed materials, to disperse humidity, and to prevent hazardous accumulations of dust, fumes, vapors or gases.

C. Portable heaters shall be standard approved units complete with controls.

D. Pay all costs of installation, maintenance, operation and removal, and for fuel consumed.

2.04 TEMPORARY TELEPHONE SERVICE

A. Arrange with local telephone service company to provide direct line telephone service at the construction site. Service required:

1. One direct line instrument in Field Office of Contractor.
2. One direct line instrument in Field Office of Project Representative.
3. Other instruments at the option of the contractor, or as required by regulations.

B. Pay all costs for installation, maintenance and removal, and service charges for local calls. Toll charges shall be paid by the party who places the call.

2.05 TEMPORARY WATER

A. Provide water for construction and potable purposes; pay all costs for installation, maintenance and removal.

B. {Owner will provide all water for construction purposes for use by the Contractor at no expense.}

C. Make conservative use of water. Any negligence or wastefulness will be reason for waiving the provisions for free water.

D. All connections to hydrants to be made by Owner's personnel.

E. [Water for construction and non-potable purposes may be obtained from wells developed on site by Contractor.]

F. [Non-potable water for general construction purposes shall be clean, non-turbid, and non-saline; and acceptable to the Engineer.]

G. Water utilization for concrete plaster and mortar shall meet the respective requirements and standards set forth for water utilized in these construction materials.

H. The Owner will make water available at designated hydrants on the Owner's water system for use by the Contractor.

2.06 TEMPORARY SANITARY FACILITIES

A. Provide sanitary facilities in compliance with laws and regulations.

B. Service, clean and maintain facilities and enclosures.

C. Existing plumbing facilities shall not be used by construction personnel.

2.07 TEMPORARY ACCESS ROAD AND PARKING

A. Site Access Roads:

1. Construct new temporary access roads over designated easements from public thorough- fare to site entrance.

B. On-Site Roads and Parking Areas:

1. Locate roads, drives, walks and parking facilities to provide uninterrupted access to construction offices, mobilization, work, storage areas, and other areas required for execution of the contract.
2. Submit proposed location for Engineer's approval.
3. Provide access for emergency vehicles.
   a. Maintain driveways a minimum of 15 feet wide, between and around combustible materials in storage and mobilization areas.
4. Maintain traffic areas free as possible of excavated materials, construction equipment, products and debris.
5. Keep fire hydrants and water control valves free from obstruction and accessible for use.
6. Provide traffic control devices as required by governing authorities along established public thoroughfares which will be used as haul routes to site access.

2.08 TEMPORARY CONTROLS

A. Noise Control:

Not used.

B. Dust Control:

1. Provide positive methods and apply dust control materials to minimize raising dust from construction operations, and provide positive means to prevent air-borne dust from dispersing into the atmosphere.

C. Water Control:

1. Provide methods to control surface water to prevent damage to the Project, the site, or adjoining properties.
   a. Control fill, grading and ditching to direct surface drainage away from excavations, pits, tunnels and other construction areas; and to direct drainage to proper runoff.
2. Provide, operate and maintain hydraulic equipment of adequate capacity to control surface water.
3. Dispose of drainage water in a manner to prevent flooding, erosion, or other damage to any portion of the site or to adjoining areas.

D. Pest Control:

Not used.

E. Rodent Control:

1. Provide rodent control as necessary to prevent infestation of construction or storage area.
   a. Employ methods and use materials which will not adversely affect conditions at the site or on adjoining properties.
   b. Should the use of rodenticides be considered necessary, submit an informational copy of the proposed program to Owner with a copy to Engineer. Clearly indicate:
      (1) The area or areas to be treated.
      (2) The rodenticides to be used, with a copy of the manufacturer's printed instructions.
      (3) The pollution preventative measures to be employed.
2. The use of any rodenticide shall be in full accordance with the manufacturer's printed instructions and recommendations.

F. Debris Control:

1. Maintain all areas under Contractor's control free of extraneous debris.

2. Initiate and maintain a specific program to prevent accumulation of debris at construction site, storage and parking areas, or along access roads and haul routes.
    a. Provide acceptable containers for deposit of debris.
    b. Prohibit overloading of trucks to prevent spillages on access and haul routes.
        (1) Provide periodic inspection of traffic areas to enforce require- ments.
3. Schedule periodic collection and disposal of debris.
    a. Provide additional collections and disposals of debris whenever the periodic schedule is inadequate to prevent accumulation.

G. Pollution Control:

1. Provide methods, means and facilities required to prevent contamination of soil, water or atmosphere by the discharge of noxious substances from construction operations.
2. Provide equipment and personnel, perform emergency measures required to contain any spillages, and to remove contaminated soils or liquids.
    a. Excavate and dispose of any contaminated earth off-site, and replace with suit- able compacted fill and topsoil.
3. Take special measure to prevent harmful substances from entering public waters.
    a. Prevent disposal of wastes, effluents, chemicals, or other such substances adjacent to streams, or in sanitary or storm sewers.
4. Provide systems for control of atmospheric pollutants.
    a. Prevent toxic concentrations of chemicals.
    b. Prevent harmful dispersal of pollutants; into the atmosphere.

H. Erosion Control:

1. Plan and execute construction and earth work by methods to control surface drainage from cuts and fills, and from borrow and waste disposal areas, to prevent erosion and sedimentation.
    a. Hold the areas of bare soil exposed at one time to a minimum.
    b. Provide temporary control measures such as berms, dikes and drains.
2. Construct fills land waste areas by selective placement to eliminate surface silts or clays which will erode.
3. Periodically inspect earthwork to detect any evidence of the start of erosion, apply corrective measures as required to control erosion.

PART 3 - EXECUTION

3.01 GENERAL

A. Comply with applicable requirements specified in Division 15 - Mechanical, and in Division 16 - Electrical.

B. Maintain and operate systems to assure continuous service.

C. Modify and extend systems as work progress requires.

3.02 REMOVAL

A. Completely remove temporary materials and equipment when their use is no longer required.

B. Clean and repair damage caused by temporary installations or use of temporary facilities.

C. Restore permanent facilities used for temporary services to specified condition.

1. Prior to final inspection, remove temporary lamps and install new lamps.

END OF SECTION

SECTION 01530
BARRIERS

PART 1 - GENERAL

1.01 REQUIREMENTS INCLUDED

A. Furnish, install and maintain suitable barriers as required to prevent public entry, and to protect the Work, existing facilities, trees and plants from construction operations; remove when no longer needed, or at completion of Work.

1.02 RELATED REQUIREMENTS

A. Section 01010: Summary of Work.

B. Section 01500: Construction Facilities and Temporary controls.

PART 2 - PRODUCTS

2.01 MATERIALS, GENERAL

A. Materials may be new or used, suitable for the intended purpose, but must not violate requirements of applicable codes and standards.

2.02 FENCING

A. Minimum fence height six feet.

B. Open-Mesh Fence:

1. No 11 gauge, two inch mesh, 72 inches high galvanized chain link fabric, with extension arms and three strands of galvanized barbed wire.
2. Galvanized steel posts; 1-1/2 inch line posts and two inch corner posts.

2.03 BARRIERS

A. Materials are Contractor's option, as appropriate to serve required purpose.

PART 3 - EXECUTION

3.01 GENERAL

A. Install facilities of a neat and reasonably uniform appearance, structurally adequate for the required purposes.

B. Maintain barriers during entire construction period.

C. Relocate barriers as required by the progress of construction.

3.02 FENCES

A. Provide and maintain fences necessary to assure security of the site during construction to keep unauthorized people and animals form the site when construction is not in progress.

B. Gates shall have locks; and keys shall be furnished to the Owner.

C. Provide additional security measures as deemed necessary and approved by the Engineer.

3.03 TREE AND PLANT PROTECTION

A. Preserve and protect existing trees and plants at site which are designated to remain, and those adjacent to site.

B. Consult with the Engineer, and remove agreed-on roots and branches which interfere with construction.

1. Employ qualified tree surgeon to remove branches and treat cuts.

C. Provide temporary barriers to a height of six feet, around each, or around each group, of trees and plants.

D. Protect root zones of trees and plants:

1. Do not allow vehicular traffic or parking.
2. Do not store materials or products.
3. Prevent dumping of refuse or chemically injurious materials or liquids.
4. Prevent puddling or continuous running water.

E. Carefully supervise excavating, grading and filling, and other construction operations, to prevent damage.

F. Replace, or suitably repair, trees and plants designated to remain which are damaged or destroyed due to construction operations.

3.04 REMOVAL

A. Completely remove barricades, omit, when construction has progressed to the point that they are no longer needed and when approved by Engineer.

B. Repair damage caused by construction. Fill and grade areas of the site to the required evaluations, and clean up the area.

END OF SECTION

SECTION 01570
TRAFFIC CONTROL

PART 1 - GENERAL

1.01 REQUIREMENTS INCLUDED

A. Provide, operate and maintain equipment, services and personnel, with traffic control and protective devices, as required to expedite vehicular traffic flow around the construction area.

B. Remove temporary equipment and facilities when no longer required, restore grounds to original, or to specified conditions.

1.02 REFERENCES

Traffic regulation shall be in accordance with F.D.O.T. Roadway and Traffic Design Standards Series 600, 1991 Edition, Manual on Uniform Traffic Control Devices, latest Ed., and FDOT Standard Specifications, latest Ed.

1.03 TRAFFIC CONTROL PLAN

A. The Contractor is to prepare a traffic control plan and/or policy statement for each phase of construction. This plan is to be presented to the City Engineer at or before the pre-construction meeting.

B. All proposed traffic control plans and policy statements shall be complete and in compliance with Section 1.02.

1.04 TRAFFIC SIGNALS AND SIGNS

A. Provide and operate traffic control and directional signals required to direct and maintain an orderly flow of traffic in all areas under Contractor's control, or affected by Contractor's operations.

B. Provide traffic control and direction signs, post mounted, at all areas required by Section 1.02.

C. Traffic Signals - Construction requiring traffic signal modification shall be reported to the City Engineer at least 72 hours prior to the commencement of such activities. All excavation work within 30 feet of any traffic signal shall be reported to the City Engineer at least 72 hours prior to its commencement.

D. All existing traffic signs shall remain visible throughout construction activities unless superseded by required construction signing.

1.05 FLAGMEN

Provide qualified and suitably equipped flagmen when construction operations encroach on traffic lanes, as required for regulation of traffic (See Section 1.02).

1.06 FLARES AND LIGHTS

A. Provide lights as required by Section 1.02.

1. To clearly delineate traffic lanes and to guide traffic as required in Section 1.02
2. For use by flagmen in directing traffic.

B. Provide illumination of critical traffic and parking areas as required in Section 1.02.

1.07 CONSTRUCTION PARKING CONTROL

A. Control vehicular parking to preclude interference with public traffic or parking, access by emergency vehicles, Owner's operations, or construction operations.

B. Monitor parking of construction personnel's private vehicles.

1. Maintain free vehicular access to and through parking areas and driveways.
2. Prohibit parking on or adjacent to access roads, or in non-designated areas.

1.08 CONSTRUCTION VEHICLES

A. All slow moving construction vehicles shall have a slow moving sign visible from the rear of the vehicle.

B. All vehicles used for construction activities shall have audible back-up warning devices.

1.09 ROAD CLOSURES

A. No road shall be closed prior to receiving approval from the City Engineer.

B. At least seven days prior to a proposed road closure, the contractor shall submit to the City Engineer a complete traffic control plan. This plan shall include the following minimum information:

1. Sketch of work site and all area roads, streets and mark driveways.
2. Proposed detour route.
3. All necessary traffic control devices to be used.

4. Emergency contractor contact person name and phone to be available 24 hours a day.
5. Estimated times/dates of road closure.

C. The City Engineer shall have the authority to approve an emergency road closure.

PART 2 - PRODUCTS

A. All traffic control devices shall meet or exceed FDOT certification standards.

B. All traffic signs shall have high intensity face material.

PART 3 - EXECUTION

A. Upon notification by the owner either verbally or in writing, the contractor shall correct any noted deficiencies within one hour.

B. Inspection of all traffic control items shall be accomplished at least twice per day. One of these inspections shall be at the end of the work day or at night.

END OF SECTION

SECTION 01580
PROJECT IDENTIFICATION AND SIGNS

PART 1 - GENERAL

1.01 REQUIREMENTS INCLUDED

A. Furnish, install and maintain one project identification sign.

B. Remove sign upon completion of construction.

C. Allow no other signs to be displayed without approval of Engineer.

1.02 PROJECT IDENTIFICATION SIGN

One painted sign of size, design, lettering, and construction as shown on page three of this section.

1. Locate as directed by Engineer.
2. Color as indicated.

1.03 QUALITY ASSURANCE

A. Sign Painter: Professional Experience in type of work required.

B. Finishes, Painting: Adequate to resist weathering and fading for scheduled construction period.

PART 2 - PRODUCTS

2.01 SIGN MATERIALS

A. Structure and Framing: May be new or used, wood or metal, in sound condition structurally adequate to work and suitable for specified finish.

B. Sign Surfaces: Exterior softwood plywood with medium density overlay, standard large sizes to minimize joints.

C. Rough Hardware: Galvanized

D. Paint: Exterior quality.

1. Use Bulletin colors for graphics.
2. Colors for structure, framing, sign surfaces and graphics: As indicated.

PART 3 - EXECUTION

3.01 PROJECT IDENTIFICATION SIGN

A. Paint exposed surfaces of supports, framing and surface material; one coat of primer and one coat of exterior paint.

B. Paint graphics in styles, sizes and colors selected.

1. Lettering shall be as noted.
2. City Logo shall be yellow and blue.
3. Background shall be white.

3.02 SIGN LOCATION

Sign shall be located within the City right of way in an area approved by the Engineer.

3.03 MAINTENANCE

A. Maintain sign and supports in a neat, clean condition; repair damages to structure, framing or sign.

B. Relocate informational sign as required by progress of the work.

3.04 REMOVAL

A. Remove sign, framing, supports and foundations at completion of project or at direction of Engineer.

[Remainder of this page left blank intentionally.]

END OF SECTION

SECTION 01590
FIELD OFFICES AND SHEDS

PART 1 - GENERAL

1.01 REQUIREMENTS INCLUDED

A. Furnish, install and maintain temporary field offices during entire construction period.

B. Furnish, install and maintain storage and work sheds needed for construction.

C. At completion of work, remove field offices, sheds and contents.

1.02 RELATED REQUIREMENTS

A. Section 01010: Summary of Work.

B. Section 01500: Construction Facilities and Temporary Controls.

1.03 OTHER REQUIREMENTS

A. Prior to installation of offices and sheds, consult with Engineer on location, access and related facilities.

1.04 REQUIREMENTS FOR FACILITIES

A. Construction:

1. Structurally sound, weathertight, with floors raised above ground.
2. Temperature transmission resistance: Compatible with occupancy and storage requirements.
3. At Contractor's option, portable or mobile buildings may be used.
   a. Mobile homes, when used, shall be modified for office use.
   b. Do not use mobile homes for living quarters.

B. Office for Engineer and Owner's Representative:

1. A separate space for sole use of designated occupants,with secure entrance doors and one key per occupant.
2. Area: 150 sq. ft. minimum, with minimum dimension eight feet.
3. Windows:
   a. Minimum: Three, with a minimum total area of 10 percent of floor area.
   b. Operable sash and insect screens.

c. Locate to provide view of construction areas.

4. Furnishings:
   a. One standard size desk with three drawers, one per occupant.
   b. One drafting table: 39 in. X 72 in. and 36 in. high.
   c. One metal, double-door storage cabinet.
   d. One plan rack to hold a minimum of six racks of project drawings.
   e. Standard four-drawer legal-size metal filing cabinet with locks and keys.
   f. Six LF of bookshelves.
   g. One swivel arm chair.
   h. Two straight chairs.
   i. One drafting table stool.
   j. One waste basket per desk and table.
   k. One tackboard, 36 in. X 30 in.
5. Services
   a. Lighting: 50 foot-candles at desk top height.
   b. Automatic heating and mechanical cooling equipment to maintain comfort conditions.
   c. Minimum of four 110 volt duplex electric convenience outlets, at least one on each wall.
   d. Electric distribution panel: Two circuits minimum, 110 volt, 60 hertz service.
   e. Convenient access to drinking water and toilet facilities.
   f. Telephone: One direct line instrument.

C. Storage Sheds:

1. To requirements of various trades.
2. Dimensions: Adequate for storage and handling of products.
3. Ventilation: Comply with specified and code requirements for products stored.
4. Heating: Adequate to maintain temperatures specified in respective sections for the products stored.

1.05 USE OF EXISTING FACILITIES

A. Existing facilities at the site shall not be used for field offices or for storage.

1.06 USE OF PERMANENT FACILITIES

A. Permanent facilities shall not be used for field offices or for storage.

PART 2 - PRODUCTS

2.01 MATERIALS, EQUIPMENT, FURNISHINGS

A. May be new or used, but must be serviceable, adequate for required purpose, and must not violate applicable codes or regulations.

PART 3 - EXECUTION

3.01 PREPARATION

A. Fill and grade sites for temporary structures to provide surface drainage.

1. Dimensions: Adequate for storage and handling of products.

3.02 INSTALLATION

A. Construct temporary field office and storage sheds on proper foundations, provide connections for utility services.

1. Secure portable or mobile buildings when used.
2. Provide steps and landings at entrance doors.

B. Mount thermometer at convenient outside location, not in direct sunlight.

3.03 MAINTENANCE AND CLEANING

A. Provide periodic maintenance and cleaning for temporary structures, furnishings, equipment and services.

3.04 REMOVAL

A. Remove temporary field offices, contents and services at a time no longer needed.

B. Remove storage sheds when no longer needed.

C. Remove foundations and debris; grade site to required elevations and clean the areas.

END OF SECTION

SECTION 01600
MATERIAL AND EQUIPMENT

PART 1 - GENERAL

1.01 REQUIREMENTS INCLUDED

A. Products.

B. Workmanship.

C. Manufacturer's Instructions.

D. Transportation and Handling.

E. Storage and Protection

F. Substitutions and Product Options.

1.02 RELATED REQUIREMENTS

A. Section 01010: Summary of Work.

B. Section 01020: Allowances.

C. Section 01090: Reference Standards.

D. Section 01340: Shop Drawings, Product Data and Samples.

E. Section 01630: Substitutions and Product Options.

F. Section 01700: Contract Closeout.

1.03 PRODUCTS

A. Products include material, equipment, and systems.

B. Comply with Specifications and referenced standards as minimum requirements.

C. Components required to be supplied in quantity within a Specification section shall be the same, and shall be interchangeable.

1.04 WORKMANSHIP

A. Comply with industry standards except when more restrictive tolerances of specified requirements indicate more rigid standards or more precise workmanship.

B. Perform work by persons qualified to produce workmanship for specified quality.

C. Secure Products in place with positive anchorage devices designed and sized to withstand stresses, vibration, and racking.

1.05 MANUFACTURER'S INSTRUCTIONS

A. When work is specified to comply with manufacturer's instructions, submit copies as specified in Section 01340, and distribute copies to persons involved, and maintain one set in field office.

B. Perform work in accordance with details of instructions and specified requirements. Should a conflict exist between Specifications and instructions, consult with the Engineer.

1.06 TRANSPORTATION AND HANDLING

A. Provide equipment and personnel necessary to handle products, including those provided by Owner, by methods to prevent soiling or damage to products or packaging.

B. Provide additional protection during handling as necessary to prevent scraping, marring or otherwise damaging products or surrounding surfaces.

C. Handle products by methods to prevent bending or overstressing.

D. Lift heavy components only at designated lifting points.

1.07 STORAGE AND PROTECTION

A. Store Products in accordance with manufacturer's instructions, with seals and labels intact and legible. Store sensitive Products in weather-tight enclosures and maintain within temperature and humidity ranges required by manufacturer's instructions.

B. For exterior storage of fabricated Products, place on supports above ground. Cover Products subject to deterioration with impervious sheet covering; and provide ventilation to avoid condensation.

C. Store loose granular materials on solid surfaces in a well-drained area; prevent mixing with foreign matter.

D. Arrange storage to provide access for inspection. Periodically inspect to assure Products are undamaged, and are maintained under required conditions.

E. After installation, provide coverings to protect Products from damage from traffic and construction operations. Remove when no longer needed.

F. During such periods of time that are designated by the United States Weather Bureau as being a hurricane warning or alert, construction materials or equipment shall be secured against displacement by wind forces.

PART 2 - PRODUCTS

Not used.

PART 3 - EXECUTION

Not used.

END OF SECTION

SECTION 01630
SUBSTITUTIONS AND PRODUCT OPTIONS

PART 1 - GENERAL

1.01 REQUIREMENTS INCLUDED

Furnish and install Products specified, under options and conditions for substitutions stated in this Section.

1.02 RELATED REQUIREMENTS

A. Information for Bidders and General Conditions.

B. Section 01020: Allowances.

C. Section 01340: Shop Drawings.

D. Section 01700: Contract Closeout.

1.03 PRODUCTS LIST

A. Within 30 days after award of Contract, submit to Engineer five copies of complete list of major Products which are proposed for installation.

B. Tabulate Products by specification section number and title.

C. For products specified only by reference standards, list for each such Product:

1. Name and address of manufacturer.
2. Trade Name.
3. Model or catalog designation.
4. Manufacturer's data:
    a. Reference standards.
    b. Performance test data.

1.04 CONTRACTOR'S OPTIONS

A. For Products specified only by reference standard, select product meeting that standard, by any manufacturer.

B. For products specified by naming several products or manufacturers, select any one or those products and manufacturers names which complies with Specifications.

C. For products specified by naming only one or more products or manufacturers and stating "or equal", submit a request as for substitutions, for any product or manufacturer which is not specifically named.

1.05 SUBSTITUTIONS

A. Within a period of 30 days after award of Contract, Engineer will consider formal requests from the Contractor for substitution of products in place of those specified:

After the end of that period, the request will be considered only in case of product unavailability or other conditions beyond the control of the Contractor.

B. Submit a separate request for each substitution. Support each request with:

1. Complete data substantiating compliance of the proposed substitution with requirements stated in the Contract Documents:
    a. Product identification, including manufacturer's name and address.
    b. Manufacturer's literature; identify:
        1) Product description.
        2) Reference standards.
        3) Performance and test data.
    c. Samples, as applicable.
    d. Name and address of similar projects on which product has been used, and the date of each installation
2. Itemized comparison of the proposed substitution with product specified; List significant variations.
3. Data relating to changes in the construction schedule.
4. Any effect of the substitution on separate contracts.
5. List of changes required in other work or products.
6. Accurate cost data comparing proposed substitution with product specified.
7. Designation of required license fees or royalties.
8. Designation of availability of maintenance services, and sources of replacement materials.

C. Substitutions will not be considered for acceptance when:

1. They are indicated or implied on Shop Drawings or product data submittals without a formal request from Contractor.
2. They are requested directly by a subcontractor or supplier.
3. No Data relating to changes in construction schedule.
4. Any effect of substitution on separate contracts.
5. List of changes required in other work or products.
6. Accurate cost data comparing proposed substitution with product specified.
7. Designation of required license fees or royalties.
8. Designation of availability of maintenance services, sources of replacement materials.

9. Acceptance will require substantial revision of Contract Documents.

D. Substitute products shall not be ordered or installed without written acceptance of Engineer.

E. Engineer will determine the acceptability of proposed substitutions.

1.06 CONTRACTOR'S REPRESENTATION

A. In making formal request for substitution Contractor represents that:

1. He has investigated proposed product and has determined that it is equal to or superior in all respects to that specified.
2. He will provide the same warranties or bonds for substitution as for product specified.
3. He will coordinate installation of accepted substitution into the Work, and will make such changes as may be required for the Work to be complete in all respects.
4. He waives claims for additional costs caused by substitution which may subsequently become apparent.
5. Cost data is complete and includes related costs under his Contract, but not:
   a. Costs under separate contracts.
   b. Engineer's costs of redesign or revision of Contract Documents.

1.07 ENGINEER DUTIES

A. Review Contractor's requests for substitutions with reasonable promptness.

B. Notify Contractor, in writing, of decision to accept or reject requested substitution.

PART 2 - PRODUCTS

Not used.

PART 3 - EXECUTION

Not used.

END OF SECTION

SECTION 01650
STARTING OF MECHANICAL SYSTEMS

PART 1 - GENERAL

1.01 REQUIREMENTS INCLUDED

A. Provide material and labor required to perform start-up of each respective item of equipment and syste. Start-up shall include: adjustment and balance procedures.

1. Provide information and assistance required, cooperate with test, adjust and balance services.

B. Comply strictly with specified procedures in starting up mechanical systems.

C. Provide Factory Service Representative to check equipment and certify to its proper installation prior to start-up and during start-up and testing.

1.02 RELATED REQUIREMENTS

A. Section 01041: Project Coordination.

B. Each Specification Section as Applicable.

1.03 START-UP PROCEDURES

A. Bearings:

1. Inspect for cleanliness, clean and remove foreign materials.
2. Verify alignment.
3. Replace defective bearings, and those which run rough or noisy.
4. Grease as necessary, and in accord with manufacturer's recommendations.

B. Drives:

1. Adjust tension in V-belt drives, and adjust varipitch sheaves and drives for proper equipment speed.
2. Adjust drives for alignment of sheaves and V-belts.
3. Clean, remove foreign materials before starting operation.

C. Motors:

1. Check each motor for amperage comparison to nameplate value.
2. Correct conditions which produce excessive current flow, and which exist due to equipment malfunction.

D. Pumps:

1. Check mechanical seals for cleanliness and adjustment before running pump.
2. Inspect shaft sleeves for scoring.
3. Inspect mechanical faces, chambers, and seal rings, replace if defective.
4. Verify that piping system is free of dirt and scale before circulating liquid through the pump.

E. Control Valves:

1. Inspect both hand and automatic control valves, clean bonnets and stems.
2. Tighten packing glands to assure no leakage, but permit valve stems to operate without galling.
3. Replace packing in valves to retain maximum adjustment after system is judged complete.
4. Replace packing on any valve which continues to leak.
5. Remove and repair bonnets which leak.
6. Coat packing gland threads and valve stems with a surface preparation of "Moly-Cote", "Fel-Pro", or equal after cleaning.
7. Verify that control valve seats are free from foreign material, and are properly positioned for inteded service.

F. Tighten flanges after system has been placed in operation.

1. Replace flange gaskets which show any sign of leakage after tightening.

G. Inspect screwed joints for leadage.

1. Promptly remake each joint which appears to be faulty, do not wait for rust to form.
2. Clean threads on both parts, apply compound and remake joints.

H. After systems has been placed in operation, clean strainers, dirt pockets, orifices, valve seats and headers in fluid systems, to assure being free of foreign materials.

I. Open air vents, remove operation elements.

1. Clean thoroughly, replace internal parts and put back into operation.

K. Set and calibrate draft guages of air filters and other equipment.

L. Inspect fan wheels for clearance and balance.

1. Provide factory-authorized personnel for adjustment when needed.

M. Check each electrical control circuit to assure that operation complies with specifications and requirements to provide desired performance.

N. Inspect each pressure gauge and thermometer for calibration.

1. Replace items which are defaced, broken, or which read incorrectly.

O. Repair damaged insulation.

P. Vent gases trapped in any part of systems.

1. Verify that liquids are drained from all parts of gas or air systems.

Q. Check piping for leaks at every joint, and at every screwed, flanged, or welded connection, using "Leak-Tek" or other approved compound.

PART 2 - PRODUCTS

Not used.

PART 3 - EXECUTION

Not used.

END OF SECTION

SECTION 01660
TESTING, ADJUSTING & BALANCING OF ENVIRONMENTAL SYSTEMS

PART 1 - GENERAL

1.01 REQUIREMENTS INCLUDED

A. Supplementary Conditions: Retainage to be withheld against installing contractor until final completion of testing, adjusting and balancing for one season.

B. Section 01041: Project Coordination.

C. Section 01650: Starting of Mechanical Systems.

D. Section 01730: Operating and Maintenance Data.

1.02 DESCRIPTION

A. Perform testing of central station equipment, balancing of distribution system, and adjustment of terminal devices for HVAC systems of Project.

B. Provide instruments required for testing, adjusting and balancing operations.

1. Make instruments available to Engineer to facilitate spot checks during testing.
2. Retain possession of instruments, remove from site at completion of services.

1.03 QUALITY ASSURANCE

A. The organization which performs the service shall be a current member in good standing, certified to perform services required for the Project, of either:

1. Associated Air Balance Council (AABC).

2. National Environmental Balancing Bureau (NEBB).

B. At least 60 days before start of required Work, transmit to Engineer the name of the organization proposed to perform the services.

C. Comply with applicable procedures and standards of the certification sponsoring association; either:

1. "National Standards for Field Measurements and Instrumentation, Total Systems Balance, Air Distribution-Hydronics Systems", dated 1974 by AABC.
2. "Procedural Standards for Testing, Adjusting and Balancing of Environmental Systems", dated January 1977, by NEBB.
3. Perform services under direction of the supervisor who is designated and qualified under certification requirements of sponsoring association.
4. Calibration and maintenance of instruments shall be in accord with requirements of the standards, and calibration histories for each instrument shall be available for examination.
5. Accuracy of measurements shall comply with requirements of the standards.

1.04 SUBMITTALS

A. Preliminary: Submit three copies of documentation to confirm compliance with Quality Assurance provisions:

1. Organization supervisor and personnel training and qualifications.
2. Specimen copy of each of the report forms proposed for use.

B. Second: At least fifteen days prior to starting field Work, submit three copies of:

1. A set of report forms filled out as to the design flow values and the installed equipment pressure drops, and the required CFM for air terminals.
2. A complete list of instruments proposed to be used, organized in appropriate categories, with data sheets for each. Show:
   a. Manufacturer and model number.
   b. Description and use when needed to further identify the instrument.
   c. Requests for re-calibration of specific instruments.

C. Third: At least fifteen days prior to Contractor's request for final inspection, submit three copies of final reports on applicable reporting forms for review.

1. Schedule testing and balancing of parts of the systems which is delayed due to seasonal, climatic, occupancy, or other conditions beyond control of the Contractor as early as the proper conditions will allow after consultation with Engineer.
2. Submit reports of delayed testing promptly after execution of those services.
3. Form of Final Reports:
   a. Each individual final reporting form must bear the signature of the person who recorded data and that of the TAB supervisor of the reporting organization.

b. Identify instruments of all types which are used, and last date of calibration of each.

1.05 JOB CONDITIONS

A. Prior to start of testing, adjusting and balancing, verify that required "Job Conditions" are met:
   1. System installation is complete and in full operation.
   2. Outside conditions are within a reasonable range relative to design conditions.
   3. Lights are turned "on" when lighting is included in the cooling load.
   4. Special equipment such as computers, laboratory equipment, and electronic equipment are in full operation.

B. Verify that requirements for preparation for testing and balancing have been met for elements for each of the systems which require testing.

1.06 PROCEDURES, GENERAL

A. Comply fully with the procedural standards for the certifying association under whose standards service will be performed.

   1. Execute each step of the prescribed TABprocedures without omission.
   2. Accurately record the required data.

1.07 AIR BALANCING

A. Make measurements in accord with recognized procedures and practices of the certifying association.

B. Measure air volume discharge at each outlet and adjust air outlets to design air volumes within ten percent over or under.

C. Adjust fan speeds and motor drives within drive limitations for required air volume.

   1. Set a speed to provide air volume at farthest distance without excess static pressure.

D. Measure and adjust air supply and exhaust fan units to deliver design conditions at 100 percent cooling.

E. Adjust outside air automatic dampers, outside air, return air, and exhaust dampers for design conditions.

F. Measure static air pressure conditions on air supply units, including filter and coil pressure drops, and total pressure across the fan.

G. Evaluate building and room pressure conditions to determine adequate supply and return air conditions.

H. Evaluate space and zone temperature conditions to determine adequate performance of the systems to maintain temperatures without draft.

I. Measure temperature conditions across outside air, return air, and e

J. Mark balancing dampers and cocks.

1.08 HYDRONIC BALANCING

Not used.

1.09 COORDINATION

A. Coordinate services with the work of the various trades to ensure rapid completion of the services.

B. Promptly report to Engineer any deficiencies noted during performance of services to allow immediate corrective action.

PART 2 - PRODUCTS

Not used.

PART 3 - EXECUTION

Not used.

END OF SECTION

SECTION 01672
TESTING PIPING SYSTEMS

PART 1 - GENERAL

1.01 REQUIREMENTS INCLUDED

A. Perform specified services with Contractor's qualified personnel, or employ and pay for a qualified organization to perform specified services.

B. Domestic and Small Diameter Systems Test.

C. Interior Drainage Systems.

D. Underground Sewer Systems.

E. Exterior and Interior Process Piping Systems.

F. Gas and Air Piping Systems.

1.02 RELATED REQUIREMENTS

A. Section 01200: Project Meetings

B. Section 02675: Disinfection of Potable Water Lines.

C. Section 01700: Contract Closeout.

1.03 DESCRIPTION

A. Perform testing of piping systems as specified below.

B. Provide instruments required for testing of piping systems.

1. Make instruments available to Engineer to facilitate spot checks during testing.
2. Retain possession of instruments, remove from site at completion of services.

C. Provide all water required for flushing and testing.

D. Provide all necessary pumping equipment and other equipment, materials and facilities required for proper completion of the flushing and testing specified.

E. Source and quality of water, procedure and test equipment shall be acceptable to the Engineer.

F. All tests shall be made in the presence of the Engineer. Notify Engineer at least 48 hours before any Work is to be inspected or tested.

G. If inspection or test shows defects, the piping system(s) shall be repaired or replaced and inspection repeated, until such piping is acceptable to the Engineer.

H. All pipe, fittings, valves and joints shall be carefully examined during test. Leaky joints shall be tightened by remaking the joint. Repair of lead joints with a caulking tool using wicking, or tinfoil will not be accepted.

I. Sections of the system may be tested separately, but when so tested it shall be distinctly understood that any defect which may subsequently develop in a section already tested and accepted shall promptly be corrected and that section retested.

J. Disposal of the water used for testing shall be subject to the approval of the Engineer.

1.04 QUALITY ASSURANCE

A. The organization which performs the testing shall, prior to testing, provide their qualifications and demonstrate their ability to perform the services to the satisfaction of the Engineer.

1.05 SUBMITTALS

A. Preliminary:

1. Submit three copies of documentation to confirm compliance with Quality Assurance provisions:
   a. Organization supervisor and personnel training and qualifications.
   b. Specimen copy of each of the report forms proposed for use.

B. At least fifteen days prior to Contractor's request for final inspection, submit three copies of final reports on applicable reporting forms, for review.

1. Each individual final reporting form must bear the signature of the person who recorded data and that of the supervisor of the reporting organization.
2. Identify instruments of all types which were used, and last date of calibration of each.

1.06 JOB CONDITIONS

A. Prior to start of testing of piping systems, verify that required "Job Conditions" are met:

1. System or system element installation is complete.
2. All required materials, water, instruments, etc. are on hand.
3. All other preparations are completed.

1.07 TESTING PROCEDURES

A. Domestic and Small Diameter Process Systems Test:

1. Domestic Water and process system four inches and under in size, including hot and cold water systems, water supply lines, chemical handling and process systems, shall all be tested and approval obtained prior to painting, placing of any backfill, installation of insulating covering, or concealment within the building construction.
2. All such piping systems shall be tested at a pressure of 100 psi unless written approval for a lesser test pressure is obtained from the Engineer.

B. Interior Drainage System:

1. The entire drainage system inside teh buildings, including underground sanitary and storm sewer and soil waste, vent and downspout piping shall be tested with air or water.
2. Teh tests shall be applied to the drainage system in sections as directed by the Engineer.
3. No section shall be tested with less than a 10 foot head of water or five pounds per square inch of air pressure and all underground storm sewer and downspout piping shall be tested with a pressure equal to at least 10 feet above the highest roof drain.
4. In general, one of the following tests will be required, as the plumbing on each floor is completed.
    a. Water Test:
        (1) Each section shall be tightly plugged except the highest opening of the section under test. The Contractor shall set up a temporary standpipe on the highest opening not less than 10 feet high above the opening and fill the test section with water.
        (2) In testing successive sections, at least the upper 10 feet of the next preceding section shall be retested, so that no joint or pipe in the building shall have been subjected to a test of less than a head of 10 feet of water.
        (3) The water pressure shall remain constant for not less than two hours without the addition of water.

(4) When vertical stacks above the ground floor, together with their branch waste and vent pipes, are tested separately, a plug shall be 0nserted in the cleanout at the base of the vertical stack being tested in lieu of filling entire system in the building with water.

b. Air Test:

(1) The air test shall be made by attaching an air compressor or test apparatus to any suitable opening, and closing all other inlets and outlets to the system, then forcing air into the system until there is a uniform pressure sufficient to balance a column of mercury 10 inches in height, or five pounds per square inch, whichever is greater, on the entire system. This pressure shall be maintained constant for 30 minutes.

(2) Water tests are preferred, and shall be made, unless prohibited by freezing weather. In all cases, prior approval of the Engineer shall be obtained before substituting air tests for water tests.

C. Underground Sewer System:

1. After backfill has been placed, the Engineer shall visually inspect, by lamping, all gravity flow lines to check alignment and grade. All obstructions shall be removed. Any sewer showing less than a full circle of light when a lamp is viewed between adjacent manholes shall be considered unsatisfactory and shall be repaired by the Contractor without additional compensation.
2. All force mains shall be tested before the joints are covered by applying a hydrostatic pressure of 100 psi for a duration of two hours or as directed by the Engineer.
3. All underground sewer system piping for gravity flow shall be tested according to one of the following leakage test methods as approved by the Engineer. When leakage occurs in excess of the specified limits, defective pipe or joints shall be located and repaired at the expense of the Contractor. If defective portions cannot be located, the Contractor, at his own expense, shall remove and reconstruct as much of the original work as necessary to obtain a sewer testing within the allowable leakage limits.

a. Infiltration Tests:

(1) When the ground water level is above the level of the top of the sewer, a test shall be made for infiltration. The infiltration test will be made by sealing off a length of sewer and measuring the amount of infiltration by the depth of flow over a measuring weir, or by pumping the infiltrated water into barrels, or other suitable containers.

(2) Tests shall be conducted for a minimum of four hours. Infiltration leakage shall not exceed 50 gallons per 24

hours, per inch diameter, per mile of sewer (0.038 gallons/day/inch/foot).

b. Exfiltration Tests:

(1) When the ground water table is below the top of the pipe, the sewer shall be tested for leakage by exfiltration. Exfiltration leakage test shall consist of plugging off the particular section of the sewer pipe between two manholes, filling the section with water to the rim in the upper manhole and allowing it to stand not less than four hours.

(2) The section shall then be refilled with water up to the original point and after two additional hours the drop in the water surface shall be measured. With this measurement over the two hour period and based on the diameter of the manhole, the Engineer will compute the leakage, which in no case shall exceed 50 gallons per inch diameter, per 24 hours, per mile of pipe for exfiltration (0.076 gal./day/inch/foot).

c. Air Testing:

(1) After backfilling the Contractor shall conduct a pressure test using low pressure air. The contractor shall furnish all labor, tools and equipment for air testing. The section of sewer to be tested shall be isolate with pneumatic plugs that have a sealing length greater than the diameter of the pipe and are capable of resisting test pressures without external bracing or blocking.

(2) The sewer shall be pressurized to four psi gauge greater than the average back pressure of any ground water over the pipe. This pressure shall be maintained until the temperature of the pipe and the air have equalized, but not less than two minutes. After the temperature has stabilized, the air supply shall be disconnected and the pressure allowed to drop. The time in minutes required for the pressure to drip from 3.5 psig to 2.5 psig shall not be less than t as computed as follows: $t = 0.47d$, where d is the pipe diameter in inches.

D. Exterior and Interior Process Piping Systems:

1. Exterior and interior process piping shall pass a hydrostatic pressure test and a leakage test as defined below before acceptance. The pressure and leakage test shall be made after all jointing operations are completed and after backfilling is completed. All concrete reaction blocks, or other bracing and restraining facilities, shall be in place at least 14 days before the initial filling of the line.

2. The pressure and leakage tests may be applied to an individual section of line isolated between the existing line valves, or may be applied to shorter

sections of line at the Contractor's option. If shorter sections are tested, test plugs or bulkheads as required at the ends of the test section shall be furnished and installed by the Contractor at his expense, together with all anchors, braces, and other devices required to withstand the hydrostatic pressure on such plug or plugs, without imposing any hydraulic thrust on the pipe line or any part thereof. The Contractor shall be solely responsible for any and all damage to the pipe line, and/or to any other facility, which may result from the failure of test plugs furnished by him or supports therefor, in any case.

3. Tests:

a. Hydrostatic Tests.

(1) The section of line to be tested shall be slowly filled with water and all air expelled from the pipe. Care shall be taken that all air valves are installed and open in the section being filled, and that the rate of filling does not exceed the venting capacity of the air valves.

(2) Hydrostatic test pressure shall be as follows:

Pressure Test System	Rating
Effluent Piping	20 psi
Potable Water	100 psi
Miscellaneous Pressure Pipe	100 psi
Other Process Piping	20 psi

(3) After the section of the line to be tested has been filled with water, the specified test pressure shall be applied and maintained for a period of not less than two hours for whatever longer period as may be necessary for the Engineer to complete the inspection of the line under test and to locate any and all defective joints and pipe line materials. If the repairs are needed, such repairs shall be made, the line refilled, and the test pressure applied as before; this operation shall be repeated until the line and all parts of it withstand the test pressure in a satisfactory manner.

b. Leakage Test for Slip Type Joint.

(1) After the specified pressure test has been completed, the line being tested shall be subjected to a leakage test under a hydrostatic pressure selected by the Contractor in the range of 50 percent to 100 percent of the pressure specified for the pressure test. Regardless of the leakage test pressure used, such pressure shall be maintained constant (within a maximum variation of plus or minus five percent) during the entire time that line leakage measurements are being made, so that the allowable leakage rate may be determined accurately from the leakage rate formula.

(2) Leakage measurements shall not be started until a constant test pressure has been established. Compression of air trapped in unvented pipes of fittings will give false leakage readings under changing pressure conditions. After the test pressure has been established and stabilized, the line leakage shall be measured by means of a water meter installed on the line side of the force pump.

(3) Line leakage is defined as the total amount of water introduced into the line as measured by the meter during the leakage test. The pipe line, or tested section thereof, will not be accepted if and while it has a leakage rate in excess of that rate determined by the following formula:

$$L = 0.00025\ NDp$$, in which:

L = Maximum permissible leakage rate, in gallons per hour, throughout the entire length of line being tested.

N = Number of gasketed joints (two for each flexible coupling joint) in the line under test.

D = Nominal internal diameter (in inches) of the pipe in the line.

p = The square root of the actual pressure in psig on all joints in the tested portion of the line (not necessarily the authorized test pressure). This actual pressure shall be determined by finding the difference between the average elevation of all tested pipe joints and the elevation of the pressure plane represented by the specified or authorized leakage test pressure, land then converting this difference, in feet of head, to pounds per square inch hydrostatic pressure.

The average actual pressure may be assumed to be equal to the leakage test pressure where the maximum difference in elevations of the pipe joints under test does not exceed 20 feet.

(4) There shall be no leakage allowed in threaded, flanged, mechanical joint or welded pipeline construction whether buried or exposed. The field welded pipe joints shall be inspected for pinholes and tested by means of soap suds and vacuum look box or other methods acceptable to the Engineer. Pinholes and leaks shall not be repaired by peening. The defective portion of weld shall be cut out and rewelded. All testing and repairs shall meet the approval of the Engineer at all times.

(5) Where the leakage test shows a leakage rate in excess of the permissible maximum, the Contractor shall make all necessary surveys in connection with the location and repair of leaking joints to the extent required to reduce the total leakage to the prescribed amount.

(6) All joints in piping shall be watertight and free from visible leaks during the prescribed tests. Each and every leak which may be discovered at any time prior to the expiration of one year from and after the date of final acceptance of the work by the Owner shall be located and repaired by and at the expense of the Contractor, regardless of any amount that the total line leakage rate during the specified leakage test may be below the specified maximum rate.

E. Gas and Air Piping Systems: Gas and air piping systems shall be tested with air at a pressure of 20 psig. The test pressure shall be maintained for a period of not less than two hours and for whatever longer period as may be necessary for the Engineer to complete the inspection of the line under test and to locate; any and all defective joints and pipe line materials.

PART 2 - PRODUCTS

Not used.

PART 3 - EXECUTION

3.01 GENERAL

A. Prior to testing, flush all piping systems with water to remove all debris in the system.

B. For testing refer to the Testing Procedures above.

END OF SECTION

SECTION 01700
CONTRACT CLOSEOUT

PART 1 - GENERAL

1.01 REQUIREMENTS INCLUDED

A. Substantial Completion

B. Final inspection after completion

C. Final cleaning

D. Contractor's closeout submittals

E. Final adjustment of accounts

1.02 SUBSTANTIAL COMPLETION

A. When CONTRACTOR considers work has reached substantial completion, he shall submit to the ENGINEER the following:

1. Written notice that the work is substantially complete in accordance with Contract Documents.
2. A list of items yet to be completed or corrected and explanations thereof.

B. Within a reasonable time upon receipt of such notice, the ENGINEER will make an inspection, if necessary, to determine the status of completion.

C. Should the ENGINEER determine that the work is not substantially complete:

1. The ENGINEER will promptly notify the CONTRACTOR in writing, giving the reasons thereof.
2. CONTRACTOR shall remedy the deficiencies in the work and send a second written notice of Substantial Completion to the ENGINEER.
3. Upon receipt of the second notice, the ENGINEER will reinspect the Work.

D. When the ENGINEER finds that the Work is substantially complete he will issue a Certificate of Substantial Completion with a tentative list of items to be completed or corrected before final inspection.

1.03 FINAL INSPECTION AFTER COMPLETION

A. When CONTRACTOR considers the Work is complete with all minor deficiencies completed or corrected, he shall submit written certification that:

1. Contract Document requirements have been met.
2. Work has been inspected for compliance with Contract Documents.
3. Work has been completed in accordance with Contract Documents.
4. All minor deficiencies have been corrected or completed and the Work is ready for final inspection.
5. Project record documents are complete and submitted.

B. Within a reasonable time upon receipt of such certification, the ENGINEER will make an inspection to verify the status of completion.

C. Should the ENGINEER determine that the work is incomplete or defective:

1. The ENGINEER will promptly notify the CONTRACTOR in writing, listing the incomplete or defective work.
2. CONTRACTOR shall remedy the deficiencies in the work and send a second written certification to the ENGINEER that the Work is complete.
3. Upon receipt of the second certification, the ENGINEER will reinspect the Work.

D. When the ENGINEER determines that the work is acceptable, under the Contract Documents, he shall request the CONTRACTOR to make closeout submittals.

1.04 FINAL CLEANING

A. Execute prior to final inspection.

B. Clean site; sweep paved areas, rake clean other surfaces.

C. Remove waste and surplus materials, rubbish, and construction facilities from the Project and from the site.

1.05 CONTRACTOR'S CLOSEOUT SUBMITTALS

A. Project Record Documents

1. At Contract closeout, submit documents with transmittal letter containing date, Project title, CONTRACTOR'S name and address, list of documents, and signature of CONTRACTOR.

2. Drawings; Legibly marked to record actual construction:

a. Horizontal and vertical locations of underground utilities and appurtenances, referenced to permanent surface improvements.
b. Drawings shall be signed and sealed by a surveyor registered in the State of Florida.

3. Specifications and Addenda; Legibly mark each Section to record.
4. Changes made by Field Order or by Change Order.

B. Evidence of payment and Release of Liens.

1.06 FINAL ADJUSTMENT OF ACCOUNTS

A. Submit a final statement of accounting to the Engineer.

B. Statement shall reflect all adjustments to the Contract Sum.

1. The original Contract sum.
2. Additions and deductions resulting from:
   a. Previous change orders or written amendment.
   b. Allowances
   c. Unit prices
   d. Deductions for uncorrected work.
   e. Penalties and bonuses
   f. Deductions for liquidated damages
   g. Other adjustments
3. Total Contract Sum as adjusted
4. Previous payments
5. Sum remaining due

PART 2 - PRODUCTS

Not used.

PART 3 - EXECUTION

Not used.

END OF SECTION

SECTION 01720
PROJECT RECORD DOCUMENTS

PART 1 - GENERAL

1.01 REQUIREMENTS INCLUDED

A. Maintain at the site of the OWNER a record copy of:

1. Drawings

2. Specifications

3. Addenda

4. Change Orders and other modifications to the Contract.

5. Approved Shop Drawings, Product Data and Samples.

6. Field Test Records.

1.02 RELATED REQUIREMENTS

A. All applicable sections of the Specifications.

B. Conditions of the Contract.

1.03 MAINTENANCE OF DOCUMENTS AND SAMPLES

A. Store documents and samples in CONTRACTOR's field office apart from documents used for construction.

1. Provide files and racks for storage of documents.

2. Provide locked cabinet or secure storage space for storage of samples.

B. File documents and samples in accordance with CSI format.

C. Maintain documents in a clean, dry, legible condition and in good order. Do not use record documents for construction purposes.

D. Make documents and samples available at all times for inspection by OWNER's Representative.

1.04 MARKING DEVICES

Provide felt tip marking pens for recording information in the color code designated by OWNER's Representative.

1.05 RECORDING

A. Label each document, "PROJECT RECORD" in neat large printed letters, or by rubber stamp.

B. Record information concurrently with construction progress. Do not conceal any work until required information is recorded.

C. Drawings: Legibly mark to record actual construction (hard copy):

1. Horizontal and vertical locations of underground utilities and appurtenances, referenced to permanent surface improvements.

2. Location of internal utilities and appurtenances concealed in the construction, referenced to visible and accessible features of the structures.

3. Field changes of dimension and detail.

4. Changes made by Field Order or by Change Order.

5. Details not on original Contract Drawings.

D. Specifications and Addenda; legibly mark each Section to record:

1. Manufacturer, trade name, catalog number, and supplier of each produce and item of equipment actually installed.

2. Changes made by Field Order or by Change Order.

1.06 AS-BUILT PLANS (RECORD DRAWINGS

A. The CONTRACTOR shall maintain full size (24"x36") field drawings to reflect the "as-built" items of work as the work progresses. Upon completion of the work, the CONTRACTOR shall prepare a record set of "as-built" drawings on full-size, reproducible material and an electronic file in ACAD 2000 Format or Latest Version. One set of full size design drawings on reproducible material will be furnished to the CONTRACTOR by the design ENGINEER at the current square foot price. An electronic file of the design drawings on a compact disk will be furnished to the CONTRACTOR by the design ENGINEER at no additional cost. No additional payment will be made for those "as-built" drawings.

B. The cost of maintaining record changes, and preparation of the Record Drawings shall be included in the unit prices bid for the affected items. Upon completion of the work the CONTRACTOR shall furnish the ENGINEER the reproducible "as-built" Drawings and the electronic files. The completed Record drawings shall be delivered to the Engineer at least 48 hours prior to final inspection of the work. **The Final inspection will not be conducted unless the Record Drawings are in the possession of the ENGINEER.**

C. The completed (or final) record drawings shall be certified by a Professional Land surveyor registered in the State of Florida. This certification shall consist of the surveyor's embossed seal bearing his registration number, the surveyor's signature and date on each sheet of the drawing set. In addition, the key sheet, cover sheet or first sheet of the plans set shall list the business address and telephone number of the surveyor.

D. Representative items of work that should be shown on the record drawings as verified, changed or added are shown below:

1. Plans:

a. Structure types, location with grade of rim and flow-line elevations.
b. Sewer type, length, size and elevations.
c. Utility type, length, size and elevation in conflict structures.
d. All maintenance access structures, valves and hydrants within right-of way.
e. Spot (critical) elevations at plateaued intersections, P.C., P.T., midpoint of all intersections.
f. Sewer laterals shall be stationed between maintenance access structures.

2. Pavement Marking and Signing Plans: Sign location where installed if different from plans.

3. Water and Sewer Plans: Location (horizontal and vertical) of all pipe lines, structures, fittings, valves and appurtenances and water /sanitary sewer pipe crossings.

E. The CONTRACTOR shall submit three sets of progress record drawings with each application for payment. These drawings shall accurately depict the work completed and for which payment is being requested.

F. As-built drawings shall include the following criteria at a minimum.

1. As-builts of water lines shall include the following information:

a. Top of pipe elevations and horizontal location every 100 lf.

b. Locations and elevations of all fittings including bends, tees, gate valves, double detector check valves, fire hydrant, etc.

c. All tie-ins to existing lines shall be as-built.

d. The ends of all water services at the buildings or homes shall be as-built or where the water service terminates.

2. As-builts of all gravity sanitary sewer lines include the following information:

a. Rims, inverts and length of piping between structures as well as slopes.

b. The stub ends of all sewer laterals shall be located and if there are any cleanouts installed on the sewer laterals then the invert elevation of these cleanouts need to be obtained.

c. Lift station as-builts shall consist of top of wet well elevation, invert elevation of the incoming line, bottom of the wet well and as-builts of the compound area.

3. Force main as-builts shall be prepared the same as the water line as-builts.

4. As-builts of all drainage lines shall include the following information:

a. Rims, inverts and length of piping between structures and weir elevations if applicable.

b. The size of the piping shall be verified by the survey crew at the time of as-built.

5. All rock as-builts for parking lot, roadways and swales areas shall consist of the following:

   a. Rock elevations at all high and low points, and at enough intermediate point's to confirm slope consistency and every 50' for roadways.

   b. Rock as-builts shall be taken at all locations where there is a finish grade elevation shown on the design plans.

   c. All catch basin and manhole rim elevations shall be shown.

   d. Elevations around island areas will also be required.

   e. As-builts shall be taken on all paved and unpaved swales prior to placement of asphalt and/or topsoil/sod, at enough intermediate points to confirm slope consistency and conformance to the plan details.

6. Lake and canal bank as-builts shall include a key sheet of the lake for the location of cross sections. Lake and canal bank cross sections shall be plotted at a minimum of every 100 lf, unless otherwise specified. As builts shall consist of the location and elevation of the top of bank, edge of water and the deep cut line, with the distance between each shown on the drawing.

7. Retention area as-built elevations shall be taken at the bottom of the retention area and at the top of bank. If there are contours indicated on the design plans, then they shall be as-built as well

8. If a change is made via field order or deviation to any structure, pipeline, etc., a new location shall be noted on the as-builts. The ENGINEER may request additional as-built information to verify horizontal or vertical locations.

1.07 SUBMITTAL

A. At Contract closeout, deliver Record Documents to OWNER's Representative, or presentation to the OWNER.

B. A complete set of "As-Built" Drawings shall be prepared and delivered to the OWNER's Representative for the OWNER. Work shall be performed by a Registered Professional Land Surveyor and shall include, but not be limited to the following:

1. Valve boxes, splice boxes, pull boxes, al underground utilities-waterlines, electrical runs, irrigation system, storm drainage pipe and structures, finished necessary grades, benches, curbs, fences walls signs, light fixtures and other items as necessary.

C. Accompany submittal with transmittal letter in duplicate, containing:

1. Date.
2. Project title and number.
3. CONTRACTOR's name and address.
4. Title and number of each Record Document.
5. Signature of CONTRACTOR or his authorized representative.

PART 2 – PRODUCTS (Not Applicable)

PART 3 – EXECUTION (Not Applicable)

END OF SECTION

SECTION 01730
OPERATING AND MAINTENANCE DATA

PART 1 - GENERAL

1.01 REQUIREMENTS INCLUDED

A. Maintain at the site of the OWNER a record copy of:

1. Drawings

2. Specifications

3. Addenda

4. Change Orders and other modifications to the Contract.

5. Approved Shop Drawings, Product Data and Samples.

6. Field Test Records.

1.02 RELATED REQUIREMENTS

A. All applicable sections of the Specifications.

B. Conditions of the Contract.

1.03 MAINTENANCE OF DOCUMENTS AND SAMPLES

A. Store documents and samples in CONTRACTOR's field office apart from documents used for construction.

1. Provide files and racks for storage of documents.

2. Provide locked cabinet or secure storage space for storage of samples.

B. File documents and samples in accordance with DSI format

C. Maintain documents in a clean, dry, legible condition and in good order. Do not use record documents for construction purposes.

D. Make documents and samples available at all times for inspection by OWNER's Representative.

1.04 MARKING DEVICES

Provide felt tip marking pens for recording information in the color code designated by OWNER's Representative.

10.5 RECORDING

A. Label each document, "PROJECT RECORD" in neat large printed letters, or by rubber stamp.

B. Record information concurrently with construction progress. Do not conceal any work until required information is recorded.

C. Drawings: Legibly mark to record actual construction (hard copy and ACAD 2000 Format):

1. Horizontal and vertical locations of underground utilities and appurtenances

Record information concurrently with construction progress. Do not conceal any work until required information is recorded.

C.

1. Size: 8-1/2 inches X 11 inches.
2. Paper: Manufacturer's printed data, or neatly typewritten.
3. Drawings:
   a. Provide reinforced punched binder tab, bind in with text.
   b. Fold larger drawings to size of text pages.
4. Provide fly-leaf for each separate product, or each piece of operating equipment.
   a. Provide typed description of product, and major component parts of equipment.
   b. Provide indexed tabs.
5. Cover - Identify each volume with typed or printed title "OPERATING AND MAINTENANCE INSTRUCTIONS." List:
   a. Title and Project.
   b. Identity of separate structure as applicable.
   c. Identity of general subject matter covered in the manual.

D. Binders:

1. Commercial quality three-ring binders with durable and cleanable plastic covers.
2. Maximum ring size: Three inch.
3. When multiple binders are used, correlate the data into related consistent groupings.

1.05 CONTENT OF MANUAL

A. Neatly typewritten table of contents for each volume, arranged in systematic order.

1. A list of each product required to be included, indexed to content of the volume.
2. List, with each product, name, address and telephone number of:
   a. Maintenance contractor, as appropriate.
   b. Local source of supply for parts and replacement.
3. Identify each product by product name and other identifying symbols as set forth in Contract Documents.

B. Product Data:

1. Include only those sheets which are pertinent to the specific product.
2. Annotate each sheet to:
   a. Clearly identify specific product or part installed.
   b. Clearly identify data applicable to installation.
   c. Delete references to inapplicable information.

C. Drawings

1. Supplement product data with drawings as necessary to clearly illustrate:
   a. Relations of component parts of equipment and systems.
   b. Control of flow diagrams.

D. Written text, as required to supplement product data for the particular installation:

1. Organize in consistent format under separate headings for different procedures.
2. Provide logical sequence of instruction for each procedure.

E. Copy of each warranty, bond and service contract issued.

1. Provide information sheet for Owner's personnel:
   a. Proper procedures in event of failure.
   c. Instances which might affect validity of warranties or bonds.

1.06 MANUAL FOR MATERIALS AND FINISHES

Not used.

1.07 MANUAL FOR EQUIPMENT AND SYSTEMS

A. Submit ten copies of complete manual in final form.

B. Content, for each unit of equipment and system, as appropriate:

1. Description of unit and component parts.
    a. Function, normal operating characteristics, and limiting conditions.
    b. Performance curves, engineering data and tests.
    c. Complete nomenclature and commercial number of replaceable parts.
2. Operating procedures.
    a. Start-up, break-in, routine and normal operating instructions.
    b. Regulation, control, stopping, shut-down and emergency instructions.
    c. Summer and winter operating instructions.
    d. Special operating instructions.
3. Maintenance Procedures:
    a. Routine operations.
    b. Guide to "Trouble-shooting.
    c. Disassembly, repair and reassembly.
    d. Alignment, adjusting and checking.
4. Servicing and lubricants required.
    a. List of lubricants required.
5. Manufacturer's printed operating and maintenance instructions.
6. Description of sequence of operation by control manufacturer.
7. Original manufacturer's parts list, illustrations, assembly drawings and diagrams required for maintenance.
    a. Predicted life of parts subject to wear.
    b. Items recommended to be stocked as parts.
8. As-installed control diagrams by controls manufacturer.

C. Content, for each electric and electronic system, as appropriate:

1. Description of system and component parts.
    a. Function, normal operating characteristics, and limiting conditions.
    b. Performance curves, engineering data and tests.
    c. Complete nomenclature and commercial number of replaceable parts.
2. Circuit directories of panelboards.
    a. Electrical service.
    b. Controls.
    c. Communications.
3. As-installed color coded wiring diagrams.
4. Operating procedures:
    a. Routine and normal operating instructions.
    b. Sequences required.
    c. Special operating instructions.

5. Maintenance procedures:
    a. Routing operations.
    b. Guide to trouble shooting.
    c. Disassembly, repair and reassembly.
    d. Adjustment and checking.
6. Manufacturer's printed operating and maintenance instructions.
7. List of original manufacturer's spare parts, manufacturer's current prices, and recommended quantities to be maintained in storage.
8. Other data as required under pertinent Sections of Specifications.

D. Prepare and include additional data when the need for such data becomes apparent during instruction of Owner's personnel.

E. Additional requirements for operating and maintenance data: Respective Sections of Specifications.

F. Provide complete information for products specified in:

1. Section 02441: Underground Sprinkler System.
2. Section 02598: Pond and Reservoir Liners.
3. Section 05500: Metal Fabrications.
4. Section 08120: Aluminum Doors and Frames.
5. Section 08331: Overhead Coiling Doors.
6. Section 08521: Aluminum Projected Windows.
7. Section 10525: Fire and Safety Equipment.
8. Section 11010: Maintenance Equipment.
9. Section 11201: Stop Gates.
10. Section 11214: Vertical Turbine Pumps.
11. Section 11225: Hydropneumatic System.
12. Section 11234: Chlorination Equipment.
13. Section 11302: Sewage Ejectors.
14. Section 11303: Package Pump Stations.
15. Section 11314: Vortex Type Pumps.
16. Section 11316: Plunger Pumps.
17. Section 11315: Progressive Cavity Pumps.
18. Section 11320: Grit Removal Equipment.
19. Section 11331: Bar Screen.
20. Section 11361: Clarifier Equipment.
21. Section 11365: Lateral Flow Thickener.
22. Section 11373: Aeration Blowers.
23. Section 11374: Aeration Equipment.
24. Section 11400: Kitchen Equipment.
25. Section 11600: Laboratory Equipment and Supplies.
26. Section 12347: Laboratory Casework and Accessories.

27. Section 13620: Monitoring Systems.
28. Section 13980: Solar Heating Systems.
29. Section 14300: Electric Hoists and Trollies.
30. Section 14310: Hand Operated Hoists.
31. Section 15100: Valves,Cocks and Appurtenances.
32. Section 15139: Seal Water Units.
33. Section 15150: Compressors.
34. Section 15661: Air Cooled Condensing Units.
35. Section 15699: Refrigeration Specialties.
36. Section 15750: Coils.
37. Section 15763: Air Handling Units with Coils.
38. Section 15764: Terminal Units.
39. Section 15820: Air Distribution Equipment.
40. Section 15880: Air Treatment Equipment.
41. Section 15900: Controls and Instrumentation.
42. Section 16142: Incandescent Dimmers.
43. Section 16150: Motors and Motor Controls.
44. Section 16160: Panel Boards.
45. Section 16172: Dry Type Transformers.
46. Section 16205: Package Engine Generator Set.
47. Section 16741: Telephone System.
48. Section 16900: Instrumentation System.
49. Section 16913: Mechanical Equipment Controls.
50. Section 16920: Motor Control Centers.
51. Section 16921: Miscellaneous Mechanical Equipment.
52. Other items as may be individually specified within the sections.

1.08 SUBMITTAL SCHEDULE

A. Submit specified number of copies of approved data in final form prior to 50 percent completion of project.

B. Changes and Corrections to approved data due to construction adjustments shall be submitted prior to substantial completion of the project.

1.09 INSTRUCTION OF OWNER'S PERSONNEL

A. Prior to final inspection or acceptance, provide Factory Representative to fully instruct Owner's designated operating and maintenance personnel in operation, adjustment and maintenance of products, equipment and systems.

B. Operating and Maintenance Manual shall constitute the basis of instruction.

1. Review contents of manual with personnel in full detail to explain all aspects of operations and maintenance.

PART 2 - PRODUCTS

Not used.

PART 3 - EXECUTION

Not used.

END OF SECTION

SECTION 02010
SUBSURFACE INVESTIGATION

PART 1 - GENERAL

1.01 RESPONSIBILITY

A. Subsurface explorations have been made and copies of the results are included herein for reference. This information was obtained primarily for use in preparing the pavement base and subgrade design, the Contractor may draw his own conclusions therefrom. No responsibility is assumed by the Owner for subsoil quality or condition other than at the locations, and at the time the exploration was made. No claim for extra compensation or for extension of time will be allowed on account of subsurface conditions inconsistent with the data shown, except as may be provided elsewhere herein.

PART 2 - PRODUCTS

2.01 SOIL BORINGS

A. Copies of the following are included herein:

1. Soil boring data.

PART 3 - EXECUTION

Not used.

END OF SECTION

SECTION 02050
BUILDING DEMOLITION

PART 1 - GENERAL

1.01 WORK INCLUDED

A. Demolish designated structures.

B. Remove materials from site.

C. Remove foundations.

D. Remove underground tanks and piping, unless noted otherwise.

E. Disconnect, cap, remove and identify utilities.

1.02 RELATED WORK

A. Section 01500: Construction Facilities and Temporary Controls.

B. Section 01530: Barriers: Barricades, fences and landscape protection.

C. Section 01700: Contract Closeout: Project record documents.

D. Section 02110: Clearing and grubbing

1.03 SUBMITTALS

A. Submit demolition and removal procedures and schedule under provisions of Section 01340.

1.04 EXISTING CONDITIONS

A. Conduct demolition to minimize interference with adjacent structures.

B. Provide,erect, and maintain temporary barriers and security devices.

C. Conduct operations with minimum interference to public or private thoroughfares. Maintain protected egress and access at all times.

PART 2 - PRODUCTS

Not used.

PART 3 - EXECUTION

3.01 PREPARATIONS

A. Prevent movement or settlement of adjacent structures. Provide bracing and shoring.

B. Protect existing landscaping materials, appurtenances, structures, which are not to be demolished.

C. Disconnect, remove and cap designated utility lines within demolition areas.

D. Mark location of disconnected utilities. Identify utilities and indicate capping locations on Project Record Documents.

3.02 EXECUTION

A. Demolish indicated structures and appurtenances in an orderly and careful manner, and in accordance with staging requirements.

B. Cease operations and notify Engineer immediately if adjacent structures appear to be endangered. Do not resume operations until corrective measures have been taken.

C. Except where noted otherwise, immediately remove demolished material from site.

D. Remove materials to be re-installed or retained in manner to prevent damage. Store and protect under provisions of Section 01600.

E. Remove and promptly dispose of contaminated, vermin infested, or dangerous materials encountered.

F. Do not burn or bury materials on site.

G. Remove foundation walls and footings to a minimum two feet below finished grade.

H. Remove concrete slabs on grade.

I. Pump out buried tanks located within demolition area. Fill tanks with sand or fine gravel and cover with fill; remove piping.

J. Keep work sprinkled to minimize dust. Provide hoses and watermain or hydrant connections for this purpose.

K. Backfill areas excavated, open pits and holes caused as a result of demolition. Use backfill specified in Section 02219.

L. Rough grade and compact areas affected by demolition to maintain site grades and contours.

M. Remove demolished materials from site as work progresses. Leave site in clean condition.

END OF SECTION

SECTION 02110
CLEARING AND GRUBBING

PART 1 - GENERAL

1.01 SCOPE

The work to be performed under this item shall consist of either the clearing of or the clearing and grubbing of the area along the alignment of construction, from public right-of-way to public right-of-way, as designated on the drawings, and areas required to perform the proposed construction.

A. Clearing - Where clearing only is required it shall consist of the cutting and removal of all trees, stumps, bush, logs, hedges, and the removal of all fences and other loose or projecting material from the designated area. Clearing shall also apply to the removal of existing pavement and concrete required to perform the scope of work. The grubbing of stumps and roots will be required.

B. Clearing and Grubbing - Clearing and grubbing shall consist of clearing the surface of the ground of the designated areas of all trees, stumps, down timber, logs, snags, brush, undergrowth, hedges, heavy growth of grass or weeds, fences, structures, debris, and rubbish of any nature, natural obstructions or such material which, in the opinion of ENGINEER, is unsuitable, including grubbing of stumps, roots, matter roots, foundations and disposal from the project of all spoil materials resulting from clearing and grubbing by burning or otherwise.

1.02 REFERENCES

Florida Department of Transportation Standard Specifications for Road and Bridge construction (F.D.O.T.). latest edition.

PART 2 - MATERIALS

2.01 MATERIALS FOR REPLACEMENT

All materials required to be brought on to the site for filling of holes caused by grubbing or otherwise shall be consistent with materials of the surrounding area.

PART 3 - EXECUTION

3.01 SCHEDULE

CONTRACTOR shall schedule the clearing or clearing and grubbing work at a satisfactory distance in advance of the pipe laying operations.

3.02 SPOIL MATERIALS REMOVAL

All materials to be disposed of by removal from the site shall be disposed of by CONTRACTOR at the Contractor's expense. In no case shall any discarded materials be left in piles adjacent to or within the project limits. The manner and location of disposal of materials shall be subject to review by ENGINEER and shall not create an unsightly or objectionable view.

3.03 CLEARING

Clear the area of all objectionable materials. Trees unavoidably falling outside the specified limits must be cut up, removed, and disposed of in a satisfactory manner. Preserve and protect from injury all trees not to be removed. The trees, stumps, and brush shall be cut to a height of not more than 12-inches above the ground. The grubbing of stumps and roots will be required.

Fences shall be removed and disposed of when directed by ENGINEER. Fence wire shall be neatly rolled and the wire and posts stored on the project if they are to be used again, or stored at a designated location if the fence is to remain the property of OWNER.

3.04 CLEARING AND GRUBBING

In areas designated to be cleared and grubbed, all stumps, roots, buried logs, brush, grass and other unsatisfactory materials shall be removed.

All holes remaining after the grubbing operation in embankment areas shall have the sides broken down to flatten out the slopes, and shall be filled with acceptable material, moistened and properly compacted in layers to the density required. The same construction procedure shall be applied to all holes remaining after grubbing in excavation areas where the depth of holes exceeds the depth of the proposed excavation.

END OF SECTION

SECTION 02210
EXCAVATION AND SWALE GRADING

PART 1 - GENERAL

1.01 SCOPE

This item shall consist of the excavating, removing and satisfactory disposition of all materials required to construct the Project and the placement and shaping of required swales to be done in accordance with these Specifications and in conformity with the dimensions and typical sections, lines, and grades, shown on the Plans.

All suitable material taken from excavation shall be used in the formation of embankment, subgrade and for backfilling as indicated on the Plans or hauled off-site, or as directed by the ENGINEER. When the volume of excavation is not sufficient for construction of the fill to the grades indicated, the deficiency shall be supplied by the Contractor.

1.02 REFERENCES

Standards applicable to these specifications shall be:

A. Americans Association of State Highway and Transportation Officials (AASHTO).

B. Florida Department of Transportation (F.D.O.T.) Section 120 "Excavation and Embankment". from the Standards Specification for Road & Bridge Construction book

PART 2 - PRODUCTS

Not used.

PART 3 - EXECUTION OF WORK

3.01 EXCAVATION

The rough excavation shall be carried to the necessary depth to obtain the specified depth of subgrade compaction shown on the Plans. Likewise, on embankments, the depth of subgrade compaction shall be as shown on the Plans.

Should the CONTRACTOR, through negligence or other fault, excavate below the designated lines, he shall replace the excavation with approved materials, in an approved manner and condition, at this own expense. The ENGINEER shall have complete control over the interpretation of the Plans and Specifications concerning the excavation, moving, placing and disposal of all material and shall determine the suitability of material to be placed in embankments. All material determined unsuitable shall be disposed of in waste areas or as directed. Topsoil shall not be used in fill or in subgrades but shall be handled and placed as directed.

The CONTRACTOR shall inform and satisfy himself as to the character, quantity, and distribution of all material to be excavated. No payment will be made for any excavated material which is used for purposes other than those designated. All spoil areas shall be leveled to a uniform line and section and shall present a neat appearance before project acceptance.

Those areas outside of the pavement areas in which the top layer of soil material becomes compacted, due to hauling or to any other activity of the CONTRACTOR, shall be scarified to a depth of 4-inches, as directed, to loosen and pulverize the soil.

If it is necessary to interrupt existing irrigation systems, sewers or under drainage conduits, utilities or similar underground structures, or parts thereof, the CONTRACTOR shall be reponsible for and shall take all necessary precautions to protect and preserve or provide temporary services. When such facilities are encountered, the CONTRACTOR shall, at his own expense, satisfactorily repair all damage to such facilities or structures which may result from any of his operations during the period of the contract.

3.02 SWALE EXCAVATION

Swale excavation shall consist of excavating for drainage swales such as intercepting, inlet or outlet or any other type as designed or shown on the Plans.

The work shall be performed in the proper sequence with the other construction. The location of all ditches shall be established on the ground. All satisfactory material shall be placed in fills; unsatisfactory material shall be placed inspoil areas or as directed. Waste or surplus material shall be disposed of as directed by the ENGINEER. All necessary handwork shall be performed to secure a finish true to line, elevation, and cross section, as designated.

Swales constructed on the project shall be maintained to the required cross section and shall be kept free from debris or obstructions until the project is accepted.

3.03 STRIPPING

All vegetation such as brush, heavy sods, heavy growth of grass, decayed vegetable matter, rubbish and any other unsuitable material within the area upon which embankment is to be placed shall be stripped or otherwise removed before the embankment is started, and in no case shall such objectionable material be allowed in or under the embankment.

END OF SECTION

SECTION 02211
SITE GRADING

PART 1 - GENERAL

1.01 WORK INCLUDED

A. Remove topsoil and stockpile on site for later use.

B. Excavate sub-soil and reform to grades, contours and levels.

C. Excavate or fill for roadways, walks, curbs, gutters, parking areas, landscaped areas and as shown on the Drawings.

1.02 RELATED WORK

A. Section 02110: Clearing and Grubbing.

B. Section 02210: Excavation and Swale Grading.

C. Section 02220: Trenching, Backfilling and Compacting.

D. Section 02260: Finish Grading.

E. Section 02513: Asphaltic Concrete Paving.

1.03 EXISTING CONDITIONS

A. Known underground, surface and aerial utility lines, and buried objects are based on best available data and indicated on the Drawings. Contractor shall verify all locations.

1.04 PROTECTION

A. Protect trees, shrubs and lawns and other features remaining as part of final landscaping.

B. Protect bench marks, and existing structures, fences, roads, sidewalks, paving and curbs against damage from equipment and vehicular traffic.

C. Protect aerial, surface, or underground utility lines or appurtenance which are to remain.

D. Repair any damage, at no cost to Owner.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Excavated fill material: Soil free from roots, rocks larger than 3-inches, and building debris.

B. Additional fill material: Shall be approved by the Engineer.

PART 3 - EXECUTION

3.01 PREPARATION

A. Establish and identify required lines, levels, contours and datum.

B. Maintain bench marks, monuments, and other reference points. Re-establish if disturbed or destroyed, at no cost to Owner.

C. Before start of grading, establish the location and extent of utilities in the work areas. Notify utilities to remove and relocate lines which are in the way of construction.

D. Maintain, protect, reroute or extend as required existing utilities to remain which pass through the work area.

3.02 REMOVAL OF TOPSOIL

A. Topsoil of horticultural value shall be stripped from areas of construction under this contract and stockpiled in area designated by Engineer. Said material shall be stockpiled separately from fill material.

B. Do not permit topsoil to be mixed with subsoil

C. Do not strip topsoil when wet.

D. Do not drive heavy equipment over stockpiled topsoil.

3.03 ROUGH GRADING

A. Rough grade site to required levels, profiles, contours and elevations ready for finish grading and surface treatment. Maintain the following:
   1. Sodded areas - 4 1/2-inches below finished grade elevation.

2. Seeded areas - 6-inches below finished grade.
3. Paved areas - 18-inches below finished grade elevations.
4. Shrub beds - 24-inches below finished grade elevations.
5. Flower beds - 18-inches below finished grade elevations.
6. Concrete sidewalks - 8-inches below finished grade elevations.

B. Pior to placing fill material over undisturbed subsoil, scarify surface to depth of 6-inches.

3.04 SURPLUS MATERIAL

A. Remove surplus materials from site.

B. Dispose of surplus material at no cost to Owner.

END OF SECTION

SECTION 02220
TRENCHING, BACKFILLING AND COMPACTING

PART 1 - GENERAL

1.01 WORK INCLUDED

A. Excavate for all underground piping.

B. Place and compact granular beds and fills over pipelines to rough grade elevations.

C. Dewater excavations as required.

1.02 RELATED WORK

A. Section 02661: Water Mains.

B. Section 02720: Storm Drainage System.

C. Section 02730: Sanitary Sewer Pipe.

1.03 SITE COMPACTION TESTING

A. Testing of compacted fill materials will be performed in accordance with F.D.O.T. and A.A.S.H.T.O. specifications.

B. If, during progress of Work, tests indicate that compacted materials do not meet specified requirements, remove defective work, replace and retest as directed by ENGINEER.

C. Ensure compacted fills are tested before proceeding with placement of surface materials.

1.04 PROTECTION

A. Protect trees, shrubs, lawn, areas to receive planting, rock outcropping and other features remaining as part of final landscaping.

B. Protect bench marks and existing structures, roads, sidewalks, paving and curbs against damage from vehicular or foot traffic. Install and maintain proper bridging, planking and cants to provide access to buildings.

C. Protect excavations by shoring, bracing, sheet piling underpinning, or by other methods, as required to prevent cave-ins or loose dirt from falling into excavations in accordance with Trench Safety Act.

D. Underpin or otherwise support adjacent structure(s) which may be damaged by excavation work. This includes other utility lines and pipe runs.

E. Notify ENGINEER of any unexpected sub-surface conditions. Discontinue work in the area until ENGINEER provides notification to resume work.

PART 2 - PRODUCTS

2.01 PRODUCTS

A. Bedding Materials: Pipe shall be placed on dry, undisturbed earth.

B. Selected Backfill: After pipe joints have been inspected and given preliminary approval, and sufficient time has elapsed for setting of joints if necessary, backfilling shall be performed, together with tamping until fill has progressed to an elevation at least one foot above the top of the pipe bell. During this initial stage of backfilling, approved granular materials or loose soil free from lumps, clods, or stones shall be deposited in layers approximately 6-inches thick and compacted by manually operated machine tampers actuated by compressed air, or other suitable means. Tampers and machines shall be suitable for the work, and subject to approval by ENGINEER.

C. Backfill Material: Excavated material, free from roots, rocks larger than 3½ inches in size and building debris.

D. Fill under landscaped areas: Free from alkali, salt, and petroleum products. Use sub-soil excavated from site only if conforming to specified requirements.

PART 3 - EXECUTION

3.01 PREPARATION AND LAYOUT

A. Establish extent of excavation by area and elevation. Designate and identify datum elevation.

B. Set required lines and levels.

C. Maintain bench marks, monuments and other reference points.

3.02 UTILITIES

A. Before starting excavation, establish the location and extent of underground utilities occurring in the work area.

B. Notify ENGINEER if utility lines which are in the way of excavation are uncovered.

C. Protect active utility services uncovered by excavation.

D. Remove abandoned utility service lines from areas of excavation. Cap, plug or seal such lines and identify at grade.

E. Accurately locate and record abandoned and active utility lines re-routed or extended on Project Record Documents.

3.03 TRENCHING

A. Ensure trenching does not interfere with normal 45 degree bearing splay of any foundation.

B. Excavate in accordance with lines and grades.

C. Cut trenches sufficiently wide to enable proper installation of pipe and to allow for inspection. Trim and shape trench bottom and leave free of irregularities, lumps and projections.

D. Do not disturb soil within branch spread of existing trees or shrubs that are to remain. If it is necessary to excavate through roots, perform work by hand and cut roots with a sharp axe.

E. When complete, request ENGINEER to inspect excavations. Correct unauthorized excavation as directed, at no cost to OWNER.

F. Remove excess or unsuitable excavated sub-soil from site.

3.04 DEWATERING

A. Keep trenches dry. Provide necessary equipment including pumps, piping and temporary drains.

B. Do not discharge drainage water into municipal sewers without municipal approval. Ensure water discharge does not contain silt held in suspension.

C. Direct surface drainage away from excavated areas.

D. Control the grading in and adjacent to excavations to prevent water running into excavated areas or onto adjacent properties or public thoroughfares.

E. Furnish and operate suitable pumps on a 24 hour basis to keep excavations free of water until piping has been placed and backfilling has been completed.

F. No water shall be allowed to rise over masonry or mortar until the concrete or mortar has set at least 24 hours.

3.05 BACKFILLING

A. Do not start backfilling until piping has been inspected.

B. Ensure trenches are free of building debris, wood, rocks over 3½ inches in diameter and water.

C. Backfill systematically and as early as possible to allow maximum time for natural settlement and compaction.

D. After backfill has reached a point one foot above the top of the pipe, a variation in the procedure as to manner of placing and amount of compaction to fill will be allowed, depending upon the location of the work and danger from subsequent settlement, as follows:

1. For backfilling in unimproved areas (along utility easements and in parkway strip beyond the edge of driveways and graveled parking areas), from an elevation of one foot above top of pipe to the surface of the ground, backfill may be deposited by equipment. Depositing in layers, or tamping will not be required. Sufficient surplus excavated material shall be neatly rounded over the trench, to compensate for settlement. All surplus excavated materials beyond that indicated above shall be disposed of by Contractor.
2. For backfilling beneath driveways and parking areas, alleys, and streets where non-rigid type surfacing is to be replaced. This shall also include dirt, gravel or asphalt driveways and alleys.
    a. The backfill material shall be carefully deposited in uniform layers not to exceed 12-inches in thickness and each layer shall be compacted to 98% of maximum density in accordance with AASHTO T-180 with manually operated machine tampers.
    b. In lieu of the foregoing compaction method, the backfill material and procedure used may be that as specified under Method 3, below.
    c. Berms: Every 200 feet per lift.
    d. Swales: For areas that have been built-up and a swale cut-in to every 200 feet; otherwise; density testing of swales cut-in to existing ground does not require density testing.
    e. The Contractor is to "map" all density test results on the Record Drawings on each day when field tests are performed. Contractor's testing laboratory shall leave a copy of the day's density testing results on site.
3. For backfilling across and beneath driveways, sidewalks, parking areas or streets where a rigid type paving is to be replaced (concrete and asphaltic concrete and brick surfaces).
    a. All backfill material shall be approved granular material of high weight and density. The material shall be carefully deposited in

uniform layers not to exceed 12-inches thick (loose measure), and each layer shall be compacted by ramming or tamping with tools approved by ENGINEER in a manner that does not disturb the pipe. Where necessary, granular base material of the type and thickness specified shall be used for the last layer prior to surfacing.

END OF SECTION

SECTION 02235
LIMEROCK BASE, PRIMED

PART 1 - GENERAL

1.01 SCOPE

A. This item shall consist of the construction of a base course composed of limerock including the application of a bituminous prime coat. It shall be constructed on the prepared subgrade in accordance with these specification and shall conform to the dimensions, lines, grades and cross sections shown on the plans.

1.02 REFERENCES

Standards applicable to this Specification shall be:

A. American Association of State Highway and Transportation Officials Standard Specifications (AASHTO).

1. AASHTO T49-80 - Standard Method of Test for Penetration of Bituminous Materials.
2. AASHTO M81-75 (Latest Edition) - Standard Specification for Cut-Back Asphalt (Rapid-Curing Type).
3. AASHTO T180-74 (Latest Edition) - Standard Method of Tests for Moisture-Density Relations.

B. Florida Department of Transportation Standard Specifications (F.D.O.T.).

1. FDOT Section 200, Limerock Base Latest edition
2. FDOT Section 300, Prime and tack Latest edition
3. FDOT Section 911, Limerock Material for Base and Stabilized Base Latest edition

1.03 SUBMITTALS

A. The contractor will, at least ten days prior to start of work, submit in writing the source of all materials to be used.

B. The Contractor will, without additional compensation, submit such tests as may be required by the Engineer.

1.04 MEASUREMENT AND PAYMENT

A. Method of Measurement: The quantity to be paid for under this Section shall be the area, in square yards, of limerock base, primed, completed and accepted.

B. Basis of Payment: The quantity of limerock base primed, determined as provided above, shall be paid for at the contract unit price per square yard for Limerock Base primed, completed and accepted. Such price and payment shall be full compensation for all the work specified in this Section, including correcting all defective surface and deficient thickness.

PART 2 - MATERIALS

2.01 LIMEROCK

Except as might be specifically shown otherwise, all limerock material and the sources thereof shall be furnished by the Contractor. Any limerock material occurring in State furnished borrow areas shall not be used by the Contractor in constructing the base, unless permitted by the plans or other contract documents.

A. Composition - The minimum percentage of carbonates of calcium and magnesium in the limerock material shall be 70. The maximum percentage of water-sensitive clay mineral shall be 3%. Determination shall be at the option of the Engineer.

B. Liquid Limit and Plasticity Requirements

1. Material for Limerock Base: The liquid limit shall not exceed 35 and the material shall be non-plastic.
2. Material Used in Limerock Stabilized Base: The liquid limit shall not exceed 35 and the plastic index shall not exceed 10.

C. Mechanical Requirements

1. Deleterious Material - Limerock material shall not contain cherty or other extremely hard pieces, or lumps, balls or pockets of sand or clay size material in sufficient quantity as to be detrimental to the proper bonding, finishing, or strength of the limerock base.
2. Gradation and Size Requirements
   a) For Limerock Base - At least 97 percent (by weight of the material shall pass a 3-1/2 inch sieve and the material shall be graded uniformly down to dust. The fine material shall consist entirely of dust of fracture. All crushing or breaking-up which might be necessary in order to meet such size requirements shall be done before the material is placed on the road.

b) For Limerock Stabilized Base - For this use the limerock material shall meet the requirements of 911-5.21 except that 97 percent shall pass the 1-1/2 inch sieve.

D. Limerock Bearing Ratio Requirements - Limerock material used in construction of limerock base shall have an average LBR value of not less that 100. The average LBR value of material produced at a particular source shall be determined in accordance with an approved quality control procedure.

2.02 PRIME COAT MATERIAL (300-2 Latest Edition)

A. The material used for prime coat shall be cut-back Asphalt Grade RC-70 or RC-250 meeting the requirements of (FDOT 916-2) Emulsified Asphalt Grades SS-1 or CSS-1, SS-1H or CSS-1H diluted in equal proportion with water; Asphalt Emulsified Asphalt Grade AE-60, AE-90, AE-150 or AE-200 diluted at the ratio of 6 parts emulsified asphalt to 4 parts water; special MS-Emulsion diluted at the ratio of 6 parts emulsified asphalt to 4 parts water; Asphalt Emulsion Prime (AEP) meeting the requirements, Emulsion Prime (RS type) meeting the requirements of (FDOT 916-4), or other types and grades of bituminous material which may be called for in the plans or Special Provisions.

The Contractor may select any of the specified bituminous materials unless the plans or Special Provisions indicate the use of a specific material. Types and Grades of bituminous material other than those specified above may be allowed if it can be shown that the alternate material will properly perform the function of prime coat material.

B. Cover Material for Prime Coat - If an emulsified asphalt is used for prime coat, the Engineer may require that cover material be hot-asphalt coated (mix to contain from two to four percent asphalt-cement) if necessary to achieve a prime coat which will remain reasonably intact until the surface course is placed.

If material other than emulsified asphalt is used for the prime coat, the cover material shall be either sand (bare or hot-asphalt coated) or screenings, at the Contractor's option. The sand shall be nonplastic and free from any appreciable amount of silt, clay balls and root particles, and from any noticeable sticks, trash, vegetation or other organic matter. Screening shall be as specified in FDOT 902.5.

PART 3 - EXECUTION

3.01 TRANSPORTING LIMEROCK

The limerock shall be transported to the point where it is to be used, over rock previously placed if practicable, and dumped on the end of the preceding spread.

Hauling over the subgrade and dumping on the subgrade will be permitted when these operations will not be detrimental to the base as determined by the Engineer.

3.02 EQUIPMENT

A. Limerock Base - The rock shall be spread by mechanical rock spreaders, equipped with a device which strikes off the rock uniformly to laying thickness, and capable of producing an even distribution of the rock. For crossovers, intersections and ramp areas; for roadway widths of 20 feet or less; for the main roadway area when forms are used and for any other areas where the use of a mechanical spreader is not practicable; spreading may be done by bulldozers or blade graders.

B. Pressure Distributor - The pressure distributor shall be equipped with pneumatic tires having a sufficient width of rubber in contact with the road surface to avoid breaking the bond or forming a rut in the surface. The distance between the centers of openings of the outside nozzles of the spray bar shall be equal to the width of the application required, within an allowable variation two (2) inches.

The outside nozzle at each end of the spray bar shall have an area of opening not less than 25 percent nor more than 75 percent, in excess of the other nozzles. All other nozzles shall have uniform openings. When the application covers less than the full width, the normal opening of the end nozzle at the junction line may remain the same as those of the interior nozzles. less than the full width, the normal opening of the end nozzle at the junction line may remain the same as those of the interior nozzles.

3.03 SPREADING LIMEROCK

A. Method of Spreading - The limerock shall be spread uniformly with equipment as specified in 3.02 A. above. All segreated areas of fine or coarse rock shall be removed and replaced with properly graded rock.

B. Number of Courses - When the specified compacted thickness of the base is greater than six inches, the base; shall be constructed in two courses. The thickness of the first course shall be approximately one-half the total thickness of the finished base, or enough additional to bear the weight of the construction equipment without disturbing the subgrade.

3.04 COMPACTING AND FINISHING BASE

A. Single-Course Base - For single-course base, after the spreading is completed the entire surface shall be scarified and then shaped so as to produce the required grade and cross section after compaction.

B. Double-Course Base - For double-course base, the first course shall be cleaned of foreign material and bladed and brought to a surface cross section approximately parallel to that of the finished base. Prior to the spreading of any material for the upper course, the density tests for the lower course shall be made and the Engineer shall have determined that the required compaction has been obtained. After the spreading of the material for the final course is completed, its surface shall be finished and shaped so as to produce the required grade and cross section after compaction, and free of scabs and laminations.

C. Moisture Content - When the material does not have the proper moisture content to insure the required density, wetting or drying will be required. When water is added it shall be uniformly mixed-in by disking to the full depth of the course which is being compacted. Wetting or drying operations shall involve manipulation, as a unit, of the entire width and depth of the course which is being compacted.

D. Density Requirements - As soon as proper conditions of moisture are attained the material shall be compacted to a density of not less than 98 percent of maximum density as determined by AASHTO T 180. The minimum density which will be acceptable at any location outside the traveled roadway (such as intersections, crossovers, turnouts, etc) shall be 95 percent of such maximum. Limerock base for shoulder pavement shall be compacted to a density not less than 95 percent of the maximum density as determined under AASHTO T 180.

E. Density Test - At least three density determinations shall be made on each day's final compaction operations on each course, and the density determinations shall be made at more frequent intervals if deemed necessary by the Engineer.

During final compacting operations, if blading of any areas is necessary to obtain the true grade and cross section, the compacting operations for such areas shall be completed prior to making the density tests on the finished base.

F. Correction of Defects

1. Contamination of Base Material - If, at any time, the subgrade material should become mixed with the base course material, the Contractor shall, without additional compensation, dig out and remove the mixture, reshape and compact the subgrade and replace the materials removed with clean base material, which shall be shaped and compacted as specified above.
2. Cracks and Checks - If cracks or checks appear in the base, either before or after priming, which, in the opinion of the Engineer, would impair the structural efficiency of the base, the Contractor shall remove the cracks or checks by rescarifying, reshaping, adding base material where necessary, and recompacting.

3.05 PRIMING

A. Preparation - The prime coat shall be applied only when the base meets the specified density requirements and the moisture content in the top half of the base does not exceed 90 percent of the optimum moisture of the base material. At the time of priming, the base shall be firm, unyielding and in such condition that no undue distortion will occur.

Before any bituminous material is applied, all loose material, dust, dirt, caked clay and other foreign material which might prevent proper bond with the existing surface shall be removed for the full width of the application. Particular care shall be taken in cleaning the outer edges of the strip to be treated, to insure that the prime or tack coat will adhere.

When the prime or tack coat is applied adjacent to curb and gutter, valley gutter or any other concrete surfaces, such concrete surfaces (except where they are to be covered with a bituminous wearing course) shall be covered with heavy paper, or otherwise protected while the prime or tack coat is being applied. Any bituminous material deposited on such concrete surfaces shall be removed.

The temperature of the prime material shall be between 100 degrees Fahrenheit and 150 degrees Fahrenheit. The actual temperature shall be that which will insure uniform distribution. The material shall be applied by means of a pressure distributor. The amount to be applied will be dependent on the character of the surface and shall be sufficient to coat the surface thoroughly and uniformly, with no excess.

B. Rate of Application - The rate of application shall be not less than 0.10 gallon per square yard, unless a lower rate is approved by the Engineer.

C. Sprinkling - If so required by the Engineer the base shall be lightly sprinkled with water and rolled with a traffic roller, in advance of the application of the prime.

D. Sanding - The primed base shall be covered by a light uniform application of cover material. If considered necessary for proper distribution of spread, the cover material shall be lightly dragged with a drag broom, after which it shall be rolled with a traffic roller, for at least ten passes over the entire area.

E. Sampling Device on Transport Tanks - All transport tanks delivering bituminous materials for use on the project shall be equipped with an approved spigot-type sampling device.

F. Temperature Sensing Device on Transport Tanks - All transport tanks delivering bituminous materials for use on the Department's projects shall be equipped with an approved dial type thermometer.

The thermometer shall have a temperature range from 50 degrees Fahrenheit to 500 degrees Fahrenheit in 25 degrees Fahrenheit increments with a minimum dial diameter of two inches.

The thermometer shall be located near the midpoint in length and within the middle third of the height of the tank and be enclosed in a well with a protective window or by other means as necessary to keep the instrument clean and in the proper working condition.

3.06 QUALITY CONTROL

A. Testing Surface - The finished surface of the base course shall be checked with a templet cut to the required crown and with a 15-foot straightedge laid parallel to the centerline of the road. All irregularities greater than 1/4 inch shall be corrected by scarifying and removing or adding rock as required, after which the entire area shall be recompacted as specified hereinbefore. In the testing of the surface, the measurements will not be taken in small holes caused by individual pieces of rock having been pulled out by the grader.

B. Thickness Requirements

1. Measurements - Thickness of base shall be measured at intervals of not more than 200 feet. Measurements shall be taken at various points on the cross section, through holes not less than three inches in diameter.
2. Areas Requiring Correction - Where the compacted base is deficient by more than 1/2 inch from the thickness called for in the plans, the Contractor shall correct such areas by scarifying and adding rock. The base shall be scarified and rock added for a distance of 100 feet in each direction from the edge of the deficient area. The affected areas shall then be brought to the required state of compaction and to the required thickness and cross section.
3. Deficient Areas Left in Place - As an exception to the requirement for correcting areas of base which show a thickness deficiency exceeding the allowable 1/2 inch, if so approved in writing by the Engineer. Any of such areas in which the extent of the deficiency might be considered as not sufficient to seriously impair the required strength of the base may be left in place. No payment, however, will be made for such deficient areas left in place and not corrected.

3.07 MAINTENANCE

The Contractor will be responsible for assuring that the true crown and templet are maintained, with no rutting or other distortion, and that the base meets all the requirements, at the time the surface course is applied.

END OF SECTION

SECTION 02260
FINISH GRADING

PART 1 - GENERAL

1.01 WORK INCLUDED

A. The Contractor shall, under this Section, supply, place, compact and roll finish grade materials prior to landscaping work.

B. Finish grade sub-soil.

C. Cut out areas to receive stabilizing base course materials for paving and sidewalks.

D. Place, finish grade and compact topsoil.

1.02 RELATED WORK

A. Section 02210: Excavation and Swale Grading.

B. Section 02211: Site Grading.

C. Section 02220: Trenching, Backfilling and Compacting.

D. Section 02934: Sodding.

1.03 PROTECTION

The Contractor shall prevent damage to existing fencing, trees, landscaping, natural features, bench marks, pavement, utility lines, and sprinkler system. Correct damage at no cost to the Owner.

PART 2 - PRODUCTS

2.01 MATERIALS

Topsoil shall be friable loam free from subsoil, roots, grass, excessive amount of weeds, stones and foreign matter; acidity range (ph) of 5.5 to 7.5; containing a minimum of 4 percent and a maximum of 25 percent organic matter. (Use topsoil stockpiled on site if conforming to these requirements, or as directed by the Engineer.)

PART 3 - EXECUTION

3.01 SUB-SOIL PREPARATION

A. Rough grade sub-soil systematically to allow for a maximum amount of natural settlement and compaction. Eliminate uneven areas and low spots. Remove debris, roots, branches, stones, etc., in excess of 2 inches in size. Remove sub-soil which has been contaminated with petroleum products.

B. Cut out areas, to sub-grade elevation, which are to receive stabilizing base for paving and sidewalks.

C. Bring sub-soil to required levels, profiles and contours. Make changes in grade gradual. Blend slopes in to level areas.

D. Slope grade away from building minimum 4 inches in 10 feet (unless indicated otherwise on Drawings).

3.02 PLACING TOPSOIL

A. Place topsoil in area where seeding, sodding and planting is to be performed. Place to the following minimum depths, up to finished grade elevations:

1. 6-inches for seeded areas.
2. 4 1/2-inches for sodded areas.
3. 24-inches for shrub beds.
4. 18-inches for flower beds.

B. Use topsoil in relatively dry state. Place during dry weather.

C. Fine grade topsoil eliminating rough and low areas to ensure positive drainage. Maintain levels, profiles and contours of sub-grades.

D. Remove stones, roots, grass, weeds, debris and other foreign material while spreading.

E. Manually spread topsoil around trees, plants, buildings and other structures to prevent damage which may be caused by grading equipment.

F. Lightly compact placed topsoil.

3.03 SURPLUS MATERIAL

A. Remove surplus sub-soil and topsoil from site.

B. Leave stockpile areas and entire job site clean and raked, ready to receive landscaping.

END OF SECTION

SECTION 02281
TERMITE CONTROL

PART 1 - GENERAL

1.01 SCOPE

A. Intent: The intent under this Section is to encompass subterranean termite control treatment by means of soil poisoning at and under buildings:

1. Main Pumping Facility and Control Building.
2. Chlorination Building.
3. Maintenance Garage
4. Grit Chamber.

1.02 QUALIFICATIONS

A. Acceptable Applicators: The Work shall be performed by a certified pest or termite control organization that is licensed in the State of Florida for termite control work.

1.03 TESTING AND GUARANTEE

A. Testing: At the Owner's option, during application one or more samples of the poison being used may be taken for testing. Costs will be paid by the Owner, unless test results indicate non-compliance with Specifications, in which case all areas shall be retreated and all resulting costs, including testing shall be at no expense to the Owner.

B. Guarantee: Upon completion of the soil treatment and prior to final payment of the Work, furnish to the Owner, a written guarantee certifying that the application was made at the concentration rates and methods specified herein for subterranean termite control.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Chemicals & Concentrations: The listed chemicals are toxic to animal and plant life and shall be applied with caution by experienced personnel. Apply to soil areas to be treated one of the following chemicals at not less than the designated concentration applied in water emulsion.

1. Benzene Hexachloride 0.8% of Gamma Isomer

2.	Chlordane	1.0%
3.	Dieldrin	0.5%

PART 3 - EXECUTION

3.01 APPLICATION

A. Soil preparation: The toxicant shall not be applied until the subgrade work of other trades has been completed. The toxicant shall not be applied when soil or fill is excessively wet.

B. Vapor Bearer Material: All toxic treated areas shall be immediately protected with vapor barrier and adequate precautions taken to prevent disturbance of the toxic treatment by human or animal contact.

1. Concrete Foundations: At exterior and interior foundation walls or columns, soil treatment shall extend one foot below grade. Rate of application is four (4) gallons per ten (10) lineal feet on each side of wall or column.
2. Concrete Floor Slabs: Apply an overall treatment of toxicant at the rate of one and one half (1-1/2) gallon per ten (10) square feet under the entire area of floor slabs, exterior platforms, and to a distance of five (5) feet from the building walls. Additional toxicant shall be applied at the rate of two (2) gallons per five (5) lineal feet beneath slab expansion joints, and all areas where the slab will be penetrated by pipes, floor drains, ducts, conduit or other construction features.

END OF SECTION

SECTION 02360
CONCRETE PILING

PART 1 - GENERAL

1.01 SCOPE

The work included in this Specification consists of the furnishing, driving, cutting off and splicing of concrete piling as may be required to place concrete piling as shown on the Plans. Unless otherwise specified herein, all concrete piling shall be supplied and installed accordance with the Florida Department of Transportation Standard Specifications for Road and Bridge Construction.

1.02 REFERENCES

Standards and Specifications which apply to these specifications are:

A. Florida Department of Transportation Standard Specifications for Road and Bridge Construction, latest Edition and all supplements.

B. The South Florida Building Code, Broward County Edition.

1.03 SUBMITTALS

A. Test results of the unloaded test piles shall be furnished for the approval of the Engineer for determining the overall lengths of all piling.

1.04 MEASUREMENT AND PAYMENT

A. UNLOADED TEST PILE

The quantity of this item to be paid for shall be the length in feet of test pile as shown on the Plans or authorized by the Engineer and actually driven, complete and accepted. No deductions from the length in feet of the test pile furnished will be made if cut-off is permitted by the Engineer. This test pile will be left in place as a permanent pile and shall be paid for only as a test pile.

The test pile shall be paid for at the Contract Unit Price per linear foot for Unloaded Test Pile, completed and accepted, which price and payment shall include incidentals necessary to complete all the work of this item.

B. CONCRETE PILING

The quantity of this item to be paid for shall be the length in feet of each type or size piling furnished, driven, and accepted according to the authorized length list, including any approved additions, as measured from tip to cut-off for each pile.

No deduction from the length of piling furnished will be made if cut-off is permitted by the Engineer. Payment shall be made at the Contract Unit Price per linear foot for the concrete piling listed in the Proposal.

C. SPLICES

For each pile splice authorized by the Engineer to obtain lengths greater than ordered or to build up test piles for use as permanent piles, or for further testing, four additional feet of the type piling being driven shall be included in the quantities to be paid for as compensation for cutting back the original pile and making the splice.

PART 2 - MATERIALS

2.01 CONCRETE PILING

All piles shall be manufactured using Class IV concrete in accordance with the appropriate sections of the Florida Department of Transportation Standard Specifications for Road and Bridge Construction, unless otherwise shown on the Plans.

2.02 CARE OF PILES

A. Prestressed, precast piles may be moved at any time after the transfer of the prestressing force but shall not be driven until the concrete has reached its full specified compressive strength. At transfer of the prestressing force the required concrete strength shall be at least 4,000 psi.

B. Non-prestressed, precast piles shall not be driven until the concrete has reached its full specified compressive strength and shall not be removed from the forms until 50 percent of its full strength is attained. The method of storage and handling shall be such as to eliminate the danger of fracture by impact, or of undue bending stresses in transport. The piles shall be lifted by means of a suitable bridge or sling attached to the pick-up points indicated by the manufacturer.

PART 3 - EXECUTION OF WORK

3.01 DRIVING OF PILES

Concrete piles shall be driven to the bearing values of minimum penetrations shown on the Plans. The bearing values shall be determined by the following formula:

$$R = \frac{2E}{S + 0.1 + 0.01\,P}$$

Where: R = Safe Bearing value in tons
E = Energy blow of hammer in foot-tons
S = Average penetration per blow, in inches, as recorded for the last 10 to 20 blows.
P = Weight of pile as driven, in tons.
The value of E shall be determined as follows:

A. For single-action steam or air hammers:

$$E=WH$$

Where: W = Weight of striking part of hammer, in tons
H = Height of hammer fall, in feet

B. For differential - acting steam or air hammers:
E = Manufacturer's rated energy blow for the hammer, for the particular speed of operation being used.

C. For combustion-type hammers:
E = Value established (or approved) by the Engineer for the particular size and make of hammer.

Whatever type hammer is used, it shall deliver adequate energy per blow for the proper driving of the piling. Driving of piles using Drop Hammers will not be permitted.

All pile driving shall be observed, logged and recorded by an inspector provided by the Owner. Said records shall be maintained in accordance with the South Florida Building Code for each pile driven. Piling shall not be driven without the Owner's inspector present.

Piling shall not be driven more than 1/4 inch per foot from the vertical, with a maximum variation of the head of the pile from the position shown in the Plans of not more than three inches. The Contractor shall provide suitable guides to insure that the proper location of the piles is maintained.

The lengths of piling shown on the Plans are for the Contractor's information and reflect the Engineer's best judgement as to the required length to obtain the necessary bearing value. It shall be the Contractor's responsibility to attain the required bearing value of each pile.

All piles shall be protected during driving by driving blocks and cushioning material adequate to prevent damage to the pile head under ordinary driving conditions.

3.02 PILE SPLICES

Splices and build-ups for piles shall be of either reinforced cast-in-place or reinforced prestressed and shall be constructed in accordance with shop drawings submitted to, and approved by the Engineer.

3.03 UNLOADED TEST PILES (PRESTRESSED)

Prior to manufacture of concrete piling, pile(s) shall be furnished to be placed in the location shown on the Plans for the test pile(s). Piling shall be manufactured, furnished and driven in accordance with the Plans and this Specification. Piling shall be considered exploratory and shall be driven their full length, unless refusal prevents full penetration as approved by the Engineer. The results of driving test piles will then determine the overall lengths of the remainder of piling as designated by the Engineer in an authorized length list.

END OF SECTION

SECTION 02511
CONCRETE SIDEWALKS

PART 1 - GENERAL

1.01 SCOPE

A. The work specified in this section consists of the construction of concrete sidewalks, in accordance with these specifications, and in conformity with the lines, grades, dimensions and notes shown on the plans.

1.02 REFERENCES

A. City of Delray Beach Standards RT 5.1.

B. FDOT Satandard Specifications for Road and Bridge Construction, latest edition

PART 2 - PRODUCTS

2.01 MATERIALS

A. The concrete mix shall produce standard wieight concrete with the following properties to be verified by the use of the appropriate listed test methods.

1. Compressive strength: 3,000 psi at 28 days - tested according to ASTM designation C31 (AASHTO T23)
2. Slump Range: 2-4 inches - tested according according to ASTM designation C143 (AASHTO T119)

B. Joint materials shall be in accordance with FDOT Specification Section 932.

2.02 FORMS

A. Forms for this work shall be made of either wood or metal and shall have a depth equal to the plan dimensions for the depth of concrete being deposited against them. They shall be straight, fee from warp or bends, and of sufficient strength, when staked, to resist the pressure of the concrete without deviation from line and grade. Forms shall be cleaned each time they are used and shall be oiled or saturated with water prior to placing the concrete.

PART 3 - EXECUTION

3.01 SUB-GRADE

A. Excavation shall be made to the required depth, and the sub-grade or base upon which the sidewalk is to be set shall be compacted to a firm, even surface, true to grade and cross-section, by means of watering, rolling or tamping. The sub-grade For sidewalk to be used as driveway pavement shall be compacted as directed by the City Engineer. The sub-grade shall be moist at the time the concrete is placed.

3.02 JOINTS

A. Expansion Joints between the sidewalk and the curb or driveway or at fixed objects and sidewalk intersections shall be 1/2 inch joints, formed with a preformed joint filler.

B. Preformed Filler shall meet the requirements of AASHTO M-153 or M-213, or cellulose fiber types meeting all the requirements of AASHTO M-213 except the asphalt content are acceptable provided they contain minimums of 0.2 percent copper pentachlorophenate as a preservative and 1.0 percent waterproofing wax. For AASHTO M-153, unless a particular type is specified, either type I, type II, or type III may be used

C. Contraction Joints may be of the open type, or may be sawed.

1. Open type contraction joints shall be formed by staking a metal bulkhead in place and depositing the concrete on both sides. After the concrete has set sufficiently to preserve the width and shape of the joint, the bulkhead shall be removed. After the sidewalk has been finished over the joint, the slot shall be edged with a tool having a 1/2" radius.
2. If the Contractor elects to saw the contraction joints, a slot approximately 3/16" wide and not less than 1-1/2" deep shall be cut with a concrete saw after the concrete has set and within the following periods of time: Joints at not more than 30' intervals - 12 hrs after finishing, and remaining joints - within 96 hrs after finishing.

3.03 PLACING

A. The concrete shall be placed in the forms to the required depth, and shall be tamped and spaded until mortar entirely covers its surface.

3.04 FINISHING

A. SCREEDING: All surplus water, laitance and inert material shall be worked off the surface of the concrete with a ten (10) foot straight edge, or by some other method equally as satisfactory and so approved by the City Engineer.

B. FLOATING; SURFACE REQUIREMENTS: The concrete shall be given a wooden float finish. The surface variations shall not be more than three-sixteenths (3/16) inch under a ten (10) foot straight edge, nor more than one-eighth (1/8) inch on a five (5) foot transverse section. The edge of the sidewalk shall be carefully finished with an edging tool having a radius of one-half (1/2) inch.

3.06 THICKNESS

Concrete sidewalks shall be four (4) inches thick except at driveways where sidewalks shall be six (6) inches thick.

END OF SECTION

SECTION 02512
CONCRETE SIDEWALK RESTORATION

PART 1 - GENERAL

1.01 SCOPE

The work to be performed under this item shall include the selling and delivering and the installing of concrete sidewalk which have been removed and/or damaged during the course of construction of the work performed under this Contract. The sidewalk shall be replaced to the same width as the original sidewalk.

1.02 REFERENCES

Florida Department of Transportation (FDOT) Standard Specifications for Road and Bridge Construction 1986 Section 345 "Portland Cement Concrete".

PART 2 - MATERIALS

2.01 ACCEPTABLE MATERIALS

A. The concrete mix shall produce standard weight concrete with the following properties to be verified by the use of the appropriate listed test methods.

1. Compressive strength: 3,000 psi at 28 days - tested according to ASTM designation C31 (AASHTO T23)
2. Slump Range: 2-4 inches - tested according to ASTM designation C143 (AASHTO T119)

B. Joint materials shall be in accordance with FDOT Specification Section 932.

PART 3 - EXECUTION

All material, labor, forms, tools and equipment for restoration of the sidewalk shall be supplied by the Contractor. All disturbed sidewalk shall be replaced with 4-inch thick 3,000 psi concrete (6-inches thick at driveways) to the widths required. The sidewalk finish shall match as near as possible the original finish. Broken or cracked sidewalk shall be removed and disposed of as directed by the Engineer.

END OF SECTION

SECTION 02513
ASPHALTIC CONCRETE PAVING

PART 1 - GENERAL

1.01 WORK INCLUDED

A. Prepare sub-grade to receive base course.

B. Place stabilizing base courses, work and compact.

C. Prime base course, place asphalt pavement.

1.02 RELATED WORK

A. Section 01410: Testing Laboratory Services.

B. Section 02211: Site Grading.

C. Section 02580: Pavement Marking.

1.03 REFERENCE STANDARDS

A. ASTM D1557 - Tests for Moisture - Density Relationship of Soils using 10 lb. Rammer in 18 inch Drop.

B. AASHTO M-81 - Penetration Graded Asphalt Cement.

C. AASHTO M-140 - Emulsified Asphalt.

D. FDOT Standard Specification for Road & Bridge Construction - Section 200 - Limerock Base

E. FDOT Standard Specification for Road and Bridge Construction - Section 913 - Shell Base.

F. FDOT Standard Specification for Road and Bridge Construction - Section 913 - Shell Stabilized Base.

G. FDOT Standard Specification for Road and Bridge Construction - Section 330 - Hot Bituminous Mixtures General Construction Requirements.

H. FDOT Standard Specification for Road and Bridge Construction - Section 916-1 - Asphalt Cement.

1.04 TESTING AND INSPECTION

A. Testing and inspection of asphalt pavement mixes and testing of placed stabilizing base course and asphalt pavement will be performed by an independent testing laboratory, in accordance with Section 01410-Testing Lab Services, and Section 01020-Allowances. Testing and inspection will be performed so as to minimize disruption to work.

B. Allow testing laboratory access to the mixing plant for verification of weights or proportions, character of materials used and determination of temperatures used in the preparation of asphalt concrete mix.

C. When and if required, the testing laboratory will perform laboratory tests on proposed asphalt pavement mixes to determine conformity with requirements.

D. The testing laboratory will perform one series of compaction tests for stabilizing base course and for asphalt pavement. The contractor shall pay for costs of additional testing as required due to improper performance of work.

E. When stabilizing base course or portion thereof has been placed and compacted in accordance with requirements, notify the testing laboratory to perform density and bearing value tests. Do not place asphalt pavement until results have been verified and base course installation approved.

F. If compaction tests indicate that stabilizing base course or asphalt paving do not meet specified requirements, remove defective work, replace and retest at Contractor's expense.

PART 2 - MATERIALS

2.01 LIMEROCK

A. Composition - The minimum percentage of carbonates of calcium and magnesium in the limerock material shall be 70. The maximum percentage of water-sensitive clay mineral shall be 3 percent. Limerock material shall not contain cherty or other extremely hard pieces, or lumps, balls or pockets of sand or clay size material in sufficient quantity as to be detrimental to the proper bonding, finishing, or strength of the limerock base.

B. Gradation and Size Requirements - At least 97 percent (by weight of the material shall pass a 3½ inch sieve and the material shall be graded uniformly down to dust. The fine material shall consist entirely of dust of fracture. All crushing or

breaking-up which might be necessary in order to meet such size requirements shall be done before the material is placed on the road.

C. Limerock Bearing Requirements - Limerock material used in construction of limerock base shall have an average LBR value of not less than 100. The average LBR value of material produced at a particular source shall be determined in accordance with an approved quality control procedure.

2.02 CRUSHED CONCRETE

A. Composition - The minimum percentage of carbonates of calcium and magnesium in the material shall be 70. All foreign material such as metal fragments, organic matter, etc. shall be removed from the material before delivery to the job site.

B. Gradation - 100 percent (by weight) of the material shall pass a 3 inch sieve, with 40 percent to 70 percent passing the number 10 sieve. Not more than 20 percent, by dry weight, of the material shall pass the 200 sieve by washing. all crushing or breaking up which might be necessary in order to meet such size requirements shall be done before the material is placed on the road.

C. Bearing Requirements - The Crushed Concrete Base shall have an average Limerock Bearing Ration (LBR) of not less than 100. The average LBR value of material produced at a particular source shall be determined in accordance with an approved quality control procedure.

D. Crushed Concrete may be substituted for Limerock as base material by adding 2 inches to the specified thickness.

2.03 PRIME COAT

A. Prime coat shall be one of the following:

1. Cutback Asphalt, Grade RC-70 or RC-250 shall meet the requirements of AASHTO Specification M-81.
2. Emulsified Asphalt Grade SS-1 or SS1H shall meet the requirements of ASSHTO Specifications M-140 and/or M-280.

2.04 TACK COAT

A. Tack coat shall be one of the following:

1. Asphalt Cement, Penetration Grade 85-100 shall meet the requirements of AASHTO Specification M-20.
2. Emulsified Asphalt, Grade RS-2 shall meet the requirements of AASHTO Specification M-140.

2.05 ASPHALTIC CONCRETE

A. Asphaltic concrete surface course - Type S-III asphaltic concrete wearing surface, 1½ inches in compacted thickness or as indicated on the Drawings, in accordance with Sections 330-10 Compacting Mixture and 331 Type S-III Asphaltic Concrete of aforesaid DOT Standard Specification.

PART 3 - EXECUTION

3.01 PREPARATION

A. Subgrade shall be stabilized per Section 160 - Stabilizing, of the FDOT Standard Specifications for Road and Bridge Construction.

B. Bearing Value Requirements for subgrade stabilization

1. Limerock Bearing Ratio - Minimum LBR 40 under paved and curbed areas, and minimum LBR 30 in shoulder and swale areas.
2. Florida Bearing Value - Minimum FBV 75 pounds per square inch (psi) under paved and curbed areas, and minimum FBV 50 psi in shoulder and swale areas.

3.02 TRANSPORTING BASE COURSES

The limerock shall be transported to the point where it is to be used, over rock previously placed if practicable, and dumped on the end of the preceding spread. Hauling over the subgrade and dumping on the subgrade will be permitted when these operations will not be detrimental to the base as determined by the Engineer.

3.03 EQUIPMENT

A. Base Course - The rock shall be spread by mechanical rock spreaders, equipped with a device which strikes off the rock uniformly to laying thickness, and capable of producing an even distribution of the rock.

B. Pressure Distributor - The pressure distributor shall be equipped with pneumatic tires having a sufficient width of rubber in contact with the road surface to avoid breaking the bond or forming a rut in the surface. The distance between the centers of openings of the outside nozzles of the spray bar shall be equal to the width of the application required, within an allowable variation two (2) inches.

3.04 SPREADING BASE COURSE

A. Method of Spreading - The limerock shall be spread uniformly with equipment as specified in 3.02 above. All segregated areas of fine or coarse rock shall be removed and replaced with properly graded rock.

B. Number of Courses - When the specified compacted thickness of the base is greater than six inches, the base shall be constructed in two courses. The thickness of the first course shall be approximately one-half the total thickness of the finished base, or enough additional to bear the weight of the construction equipment without disturbing the subgrade.

3.05 COMPACTING AND FINISHING BASE

A. Dynamic Compactor with vibratory rollers shall not be used on this project and shall not be permitted at the job site. The contractor is responsible for all damages caused by compaction operations.

B. Single-Course Base - For single-course base, after the spreading is completed the entire surface shall be scarified and then shaped so as to produce the required grade and cross section after compaction.

C. Double-Course Base - For double-course base, the first course shall be cleaned of foreign material and bladed and brought to a surface cross section approximately parallel to that of the finished base. Prior to the spreading of any material for the upper course, the density tests for the lower course shall be made and the Engineer shall have determined that the required compaction has been obtained. After the spreading of the material for the final course is completed, its surface shall be finished and shaped so as to produce the required grade and cross section after compaction, and free of scabs and laminations.

D. Moisture Content - When the material does not have the proper moisture content to insure the required density, wetting or drying will be required. When water is added it shall be uniformly mixed-in by disking to the full depth of the course which is being compacted. Wetting or drying operations shall involve manipulation, as a unit, of the entire width and depth of the course which is being compacted.

E. Density Requirements - As soon as proper conditions of moisture are attained the material shall be compacted to a density of not less than 98 percent of maximum density as determined by AASHTO T-180. The minimum density which will be acceptable at any location outside the traveled roadway.

F. Density Test - At least three density determinations shall be made on each day's final compaction operations on each course, and the density determinations shall be made at more frequent intervals if deemed necessary by the Engineer.

During final compacting operations, if blading of any areas is necessary to obtain the true grade and cross section, the compacting operations for such areas shall be completed prior to making the density tests on the finished base.

G. Correction of Defects:

1. Contamination of Base Material - If, at any time, the subgrade material should become mixed with the base course material, the Contractor shall, without additional compensation, dig out and remove the mixture, reshape and compact the subgrade and replace the materials removed with clean base material, which shall be shaped and compacted as specified above.
2. Cracks and Checks - If cracks or checks appear in the base, either before or after priming, which, in the opinion of the Engineer, would impair the structural efficiency of the base, the Contractor shall remove the cracks or checks by rescarifying, reshaping, adding base material where necessary, and recompacting.

H. Surface Testing - The finished surface of the base course shall be checked with a templet cut to the required crown and with a 15 foot straightedge laid parallel to the center line of the road. All irregularities greater than ¼ inch shall be corrected by scarifying and removing or adding base course material as required, after which the entire area shall be recompacted.

3.06 PRIMING

A. Preparation - The prime coat shall be applied only when the base meets the specified density requirements and the moisture content in the top half of the base does not exceed 90 percent of the optimum moisture of the base material. At the time of priming, the base shall be firm, unyielding and in such condition that no undue distortion will occur.

Before any bituminous material is applied, all loose material, dust, dirt, caked clay and other foreign material which might prevent proper bond with the existing surface shall be removed for the full width of the application. Particular care shall be taken in cleaning the outer edges of the strip to be treated, to insure that the prime or tack coat will adhere.

When the prime or tack coat is applied adjacent to curb and gutter, valley gutter or any other concrete surfaces, such concrete surfaces (except where they are to be covered with a bituminous wearing course) shall be covered with heavy paper, or otherwise protected while the prime or tack coat is being applied. Any bituminous material deposited on such concrete surfaces shall be removed.

The temperature of the prime material shall be between 100 degrees Fahrenheit and 150 degrees Fahrenheit. The actual temperature shall be that which will insure uniform distribution. The material shall be applied by means of a pressure

distributor. The amount to be applied will be dependent on the character of the surface and shall be sufficient to coat the surface thoroughly and uniformly, with no excess.

B. Rate of Application - The rate of application shall be not less than 0.10 gallon per square yard, unless a lower rate is approved by the Engineer.

C. Sprinkling - If so required by the Engineer the base shall be lightly sprinkled with water and rolled with a traffic roller, in advance of the application of the prime.

D. Sanding - The primed base shall be covered by a light uniform application of cover material. If considered necessary for proper distribution of spread, the cover material shall be lightly dragged with a drag broom, after which it shall be rolled with a traffic roller.

E. Sampling Device on Transport Tanks - All transport tanks delivering bituminous materials for use on the project shall be equipped with an approved spigot-type sampling device.

F. Temperature Sensing Device on Transport Tanks - All transport tanks delivering bituminous materials shall be equipped with an approved dial type thermometer. The thermometer shall have a temperature range from 50 degrees Fahrenheit to 500 degrees Fahrenheit in 25 degrees Fahrenheit increments with a minimum dial diameter of two inches.

3.07 QUALITY CONTROL

A. Testing Surface - The finished surface of the base course shall be checked with a templet cut to the required crown and with a 15-foot straightedge laid parallel to the centerline of the road. All irregularities greater than ¼ inch shall be corrected by scarifying and removing or adding rock as required, after which the entire area shall be recompacted as specified hereinbefore. In the testing of the surface, the measurements will not be taken in small holes caused by individual pieces of rock having been pulled out by the grader.

B. Thickness Requirements:

1. Measurements - Thickness of base shall be measured at intervals of not more than 200 feet. Measurements shall be taken at various points on the cross section, through holes not less than three inches in diameter.
2. Areas Requiring Correction - Where the compacted base is deficient by more than ½ inch from the thickness called for in the plans, the Contractor shall correct such areas by scarifying and adding rock. The base shall be scarified and rock added for a distance of 100 feet in each direction from the edge of the deficient area. The affected areas shall then be brought to the required state of compaction and to the required thickness and cross section.

3. Deficient Areas Left in Place - As an exception to the requirement for correcting areas of base which show a thickness deficiency exceeding the allowable ½ inch, the deficiency might be considered as not sufficient to seriously impair the required strength of the base and may be left in place. No payment, however, will be made for such deficient areas left in place and not corrected.

3.08 MAINTENANCE

The Contractor will be responsible for assuring that the true crown and templet are maintained, with no rutting or other distortion, and that the base meets all the requirements, at the time the surface course is applied.

3.09 PROTECTING ADJACENT WORK

Provide adequate protection for all adjacent construction, whatever it may be, against bituminous spraying. Spraying of bituminous material on work, other than base course, will not be accepted.

3.10 TRANSPORTATION OF THE ASPHALT

The surface course shall be transported in tight vehicles previously cleaned of all foreign material. The inside surface of the truck bodies shall be only thinly coated with soapy water or an approved emulsion containing not over 5 percent oil. Kerosine, gasoline or similar products shall not be used. After coating and before loading, the truck bodies shall be raised and drained of all excess liquids.

3.11 INSTALLATION OF FINAL ASPHALTIC CONCRETE SURFACE COURSE

The Contractor shall install Type S-III asphaltic concrete surface course over the entire surface in two (2) ¾ inch lifts.

Mechanical spreading and screeding equipment shall be of an approved type that is self-propelled and can be steered. It shall be equipped with a receiving and disbursing hopper and a mechanical screed or strike-off member capable of adjustment to regulate the depth of material being spread. Tandem Type 5 to 12 ton steel- wheeled rollers shall be used for sealing. Self- Propelled, pneumatic-tired traffic rollers equipped with at least 7b smooth tread, low pressure tires, having a total weight of 6 to 10 tons shall be used for final rolling.

3.12 FIELD QUALITY CONTROL

The final surface course of all pavements will be required to be checked by a rolling straightedge. The finished surface shall not vary more than 3/16 inch from the straightedge applied parallel to the centerline of the pavement. The straightedge shall have an effective length of 15 feet.

END OF SECTION

SECTION 02515
CONCRETE PAVING STONES

PART 1 - GENERAL

1.01 RELATED WORK

A. Section 02513: Asphaltic Concrete Paving

1.02 WORK INCLUDED

A. Prepare subgrade and base course

B. Supply and place sand laying course.

C. Supply and install interlocking concrete paving stones in quality, shape, thickness and color as specified.

D. Supply and place all accessory items as required by the Contract.

1.03 PRODUCT HANDLING

A. Paving stones shall be delivered and unloaded at jobsite with or without pallets and bound in such manner that no damage occurs to the product during handling, hauling and unloading.

PART 2 - MATERIALS

2.01 SOLID CONCRETE INTERLOCKING PAVING STONES:

ASTM DESIGNATION C936-82

Paving stones shall be : UNI-Stone, UNI-Decor, Super-Decor, Appian-Stone, City Square, Holland-Stone, UNI-Coloc, UNI-Stone II, Finetta Stone, or Delta Stone, as shown on the plans, and manufactured by Paver Systems, or equal.

Paving stones thickness shall be: 2-3/8" (6cm) or 3-1/8" (8cm). Paving stones color shall be: Grey, Charcoal, Tan, Colorado, Brown, Red, Colormix II (Red & Charcoal), Colormix III (Red, Charcoal, & Tan), Colormix I (Tan - Red), Slate (Grey - Charcoal).

2.02 CEMENTITIOUS MATERIALS

A. Portland Cements shall conform to ASTM Specification C-150.

B. Aggregates shall conform to ASTM Specification C-33 for Normal Weight Concrete Aggregate (no expanded shale or lightweight aggregates) except that grading requirements shall not necessarily apply.

C. Other Constituents:

Coloring pigments, air-intraining agents, integral water repellents, finely ground silica, etc., shall conform to ASTM standards where applicable, or shall be previously established as suitable for use in concrete.

D. Physical Requirements:

1. Compressive Strength - At the time of delivery to the work site, the average compressive strength shall not be less than 8,000 psi with no individually unit strength less then 7,200 psi with testing procedures in accordance with ASTM Standard C-140.
2. Absorption - The average absorption shall not be greater than five percent (5%) with no individual unit absorption greater than seven percent (7%).
3. Proven Field Performance - Satisfying field performance is indicated with units similar in composition, and made with the same manufacturing equipment as those to be supplied to the City, do not exhibit objectionable deterioration after at least one (1) year.

E. Visual Inspection:

1. All units shall be sound and free of defects. Pavers damaged in any manner will be rejected and replaced with new materials at no expense to the City.

F. Sampling and Testing:

1. The Contractor shall submit manufacturer's product data for each type of concrete paver specified.
2. A minimum of three (3) concrete pavers of each type and size specified shall be submitted to the City for approval. Samples shall exhibit the full color range of pavers to be provided.
3. Reports of testing of pressed concrete paver shall be submitted to the City.
4. Testing shall be performed by an independent testing laboratory, and shall conform to ASTM C 140 methods where applicable.
5. Test reports shall indicate the following as a minimum:
    a. Compressive strength, psi.
    b. Absorption, 5 hour submersion in cold water.
    c. Absorption, 24 hour submersion in cold water.
    d. Maximum saturation coefficient.
    e. Initial rate of absorption (suction).
    f. Abrasion index.

g. Freeze - thaw.

G. Rejection:

1. In case the shipment fails to conform to the specified requirements, the manufacturer may sort it, and new test units shall be selected at random by the purchaser from the retained lot and tested at the expense of the manufacturer. In case the second set of test units fails to conform to the specified requirements, the entire lot shall be rejected.

H. Expense of Tests:

The expense of inspection and testing shall be borne by the Contractor.

2.03 SAND LAYING COURSE

A. The sand laying course shall be a well graded clean washed sharp sand with 100% passing a 3/8" sieve size and a maximum of 3% passing a No. 200 sieve size. Manufactured concrete sand, limestone screening, or similar material may be used.DO NOT USE MASON SAND.

2.04 EDGE RESTRAINT

A. All edges of the installed paving stone shall be restrained. The type of edge restraint shall be approved at locations as noted on plans.

B. The edge restraint can be:

1. Paver Systems-Curb (Precast)
2. Buildings
3. Concrete curb or sidewalk (Cast in Place)
4. Pressure treated timber
5. Compacted earth
6. Other suitable method of preventing movement of edge stones
7. As indicated on the plans

PART 3 - EXECUTION

3.01 CONTRACTOR

The paving stone installer/contractor must have related experience in the installation of interlocking concrete paving stones.

3.02 PREPARATION OF THE BASE COURSE

A. A suitable base must be prepared as detailed in section 02513 - Asphaltic Concrete Pavers of the project specifications.

B. The base course shall be shaped to grade and cross section with an allowable tolerance of 1/4" (5mm).

C. The compacted base shall be 3-1/8" (80 mm) below final grade for 2-3/8" (6cm) pavers and 3-7/8" (100 mm) below final grade for 3-1/8" (8cm) pavers.

3.03 CONSTRUCTION OF THE SAND LAYING COURSE

A. The finished base course shall be approved before the placement of the sand laying course.

B. The uncompacted sand laying course shall be spread evenly over the area to be paved and then screeded to a level that will produce 1" (25 mm) thickness when the paving stones have been placed.

C. Screeded and leveled to the desired elevation, this sand laying course shall not be disturbed in any way.

3.04 LAYING OF CONCRETE PAVING STONES

A. The paving stones shall be laid in the approved pattern as noted or shown on drawings.

B. The paving stones shall be laid in such a manner that the desired pattern is maintained and the joints between the stones do not exceed 1/8" (3 mm).

C. String lines should be used to hold all pattern lines true.

D. The gaps at the edge of the paver surface shall be filled with standard edge stone or with stones cut to fit. Cutting shall be accomplished to leave a clean edge to the traffic surface using a masonry saw. Scoring and breaking will not be acceptable. No cuts shall result with a paver less than 1/3 of original dimension.

E. Paving stones shall be vibrated into the sand laying course using a vibrator capable of 3,000 to 5,000 pounds compaction force with the surface clean and joints open.

F. After vibration, clean masonry type sand containing at least 30% of 1/8" (3mm) particles shall be spread over the paving stone surface, allowed to dry, and vibrated into joints with additional vibrator passes and brushing so as to completely fill joints.

G. Surplus material shall then be swept from the surface or left on surface during construction time to insure complete filling of joints during initial use. This sand also may provide surface protection from construction debris.

H. Upon completion of work covered in the Section, the Contractor shall clean up all work areas by removing all debris, surplus material and equipment from the site.

END OF SECTION

SECTION 02520
CONCRETE CURBS AND HEADERS

PART 1 - GENERAL

1.01 SCOPE

The work covered by this section of the specifications consists of furnishing all plant, labor, equipment, appliances and materials and performing all operations in connection the construction of concrete curbs and headers, complete and in place, in strict accordance with these specifications and the applicable drawings and subject to the terms and conditions of this contract.

1.02 REFERENCES

Florida Department of Transportation Standard Specifications for Road and Bridge Construction, (latest edition)

PART 2 - PRODUCTS

2.01 MATERIALS

A. The concrete mix shall produce standard weight concrete with the following properties to be verified by the use of the appropriate listed test methods.

- *Compressive strength*: 3,000 psi at 28 days - tested according to ASTM designation C31 (AASHTO T23)
- *Slump Range*: 2-4 inches - tested according to ASTM designation C143 (AASHTO T119)

B. Joint materials shall be in accordance with FDOT Specification Section 932

PART 3 - EXECUTION

3.01 CONSTRUCTION METHODS

Concrete curbs and headers shall be constructed of the type and in the locations as shown on the plans.

A. FORMS: Forms for this work shall be made of either wood or metal. They shall be straight, free from warp or bends, and of sufficient strength, when staked, to resist the pressure of the concrete without springing. If made of wood, they shall be of

two (2) inch surfaced plank; if made of metal, they shall be of approved section and shall have a flat surface on top.

B. CONSTRUCTION: Excavation shall be made to the required depth; and the sub-grade or base upon which the curb or header is placed shall be compacted to 98% AASHTO T-180.

The concrete shall be placed in the forms to the depth specified, and tamped and spaded to prevent honeycomb and until the top of the structure can be floated smooth and the edges rounded to the radius shown on the plans.

Contraction joints shall be placed at intervals of ten feet except where a lesser interval is required for closure, but no section shall be less than four feet in length.

Contraction joints shall be created while the concrete is still plastic by using a grooving tool or by inserting a premolded filler strip, or a groove may be saw cut into the concrete soon after it has hardened. Curb with irregular cracks due to late contraction joint construction will not be accepted.

Expansion joints shall be constructed at all radius points and at other locations indicated on the plans. They shall be located at intervals of 500 feet between other expansion joints, or ends of a run. The joint shall be 1/2 inch in width.

The forms shall be removed within twenty-four (24) hours after the concrete has been placed, and minor defects then filled with mortar composted of one (1) part of Portland Cement and two (2) parts of fine aggregate. Plastering shall not be permitted on the face of the curb; and all rejected curb, or header shall be removed and replaced without additional compensation. The curb top, face and/or header top shall be given a surface finish while the concrete is still green. A brush finish will be required unless noted otherwise; however, additional finishing may be required in areas considered too rough or with minor defects.

After the concrete has been rubbed smooth, it shall be rubbed again until a uniform color is produced, using a thin grout composed of one (1) part of Portland Cement and one (1) part of fine aggregate.

After concrete has set sufficiently, the spaces in front and back of the curb shall be refilled to the required elevation with suitable material, which shall be placed and thoroughly compacted in layers of not more than six (6) inches in thickness.

END OF SECTION

SECTION 02546
FINAL ASPHALTIC CONCRETE SURFACE COURSE

PART 1 - GENERAL

1.01 SCOPE

The work to be performed under this item shall include the selling, delivering and installing of final asphaltic concrete surface courses as herein specified.

1.02 REFERENCES

Standards applicable in this Specification shall be:

A. Florida Department of Transportation - Standard Specifications for Road and Bridge Construction (Latest Edition).

1. Section 300 - Prime and Tack Coats for Base Courses. Subsections (1, 2.3, 3, 4, 5, 7).
2. Section 320 - Hot Bituminous Mixtures - Plant, Methods and Equipment. Subsections (1, 2.1, 2.5 to 2.13, 3, 4, 5).
3. Section 330 - Hot Bituminous Mixtures - General Construction Requirements. Subsections (1, 3 to 13).
4. Section 334 - Type S-1 or SP-12.5, Asphaltic Concrete.

1.03 SUBMITTALS

A. Manufacturer's Data - Prior to fabrication or installation of the final asphaltic concrete surface course, the Contractor shall furnish to the Engineer, for review and approval the following:

1. Certification from the manufacturer that their plant meets the requirements of Section 320 above.
2. Formula for job mix.

PART 2 - MATERIALS

2.01 TACK COAT

Unless otherwise specified by the Engineer, the material used for the tack coat shall be Emulsified Asphalt, Grade RS-2, Section 300-2.3 F.D.O.T. Standard Specification for Road and Bridge Construction.

2.02 FINAL ASPHALTIC SURFACE COURSES

The material used shall be Type S-III or SP-9.5 asphaltic concrete conforming to Section 334 of the F.D.O.T. Standard Specifications for Road and Bridge Construction.

PART 3 - EXECUTION

3.01 CLEANING SURFACES

Prior to the laying of the surface courses, the surface of the pavement or base to be covered shall be cleaned of all loose and deleterious material by the use of power brooming or hand brooming where necessary. All such material shall be collected and disposed of by the Contractor.

3.02 PATCHING AND LEVELING COURSES

Where a surface course is to be constructed on an existing paved surface which is irregular, said surface shall be brought to proper grade and cross section by the application of patching or leveling courses.

3.03 APPLICATION OF TACK COAT

The material shall be heated to a suitable temperature and applied in a thin, uniform layer at a rate of between 0.02 and 0.08 gallons per square yard. The tack coat shall be applied sufficiently in advance of the surface course laying to permit drying but not so far in advance as to lose its adhesiveness as a result of being covered with dust. The tack coat shall be kept free from traffic until the surface course has been laid.

3.04 TRANSPORTATION OF THE ASPHALT

The surface course shall be transported in tight vehicles previously cleaned of all foreign material. The inside surface of the truck bodies shall be only thinly coated with soapy water or an approved emulsion containing not over 5% oil. Kerosine, gasoline or similar products shall not be used. After coating and before loading, the truck bodies shall be raised and drained of all excess liquids.

3.05 INSTALLATION OF FINAL ASPHALTIC CONCRETE SURFACE COURSE

Prior to final acceptance, or as directed by the Engineer, the Contractor shall install a 1-inch layer of Type S-1 Final Asphaltic Concrete Surface course over the entire street width as directed by the Engineer. A leveling course as indicated

on the storm drainage plan sheets shall be placed prior to the final asphaltic concrete surface course under this item. All other placement of pavement shall be as shown on the "Restoration Detail" for non state-owned public pavement.

Mechanical spreading and screeding equipment shall be of an approved type that is self-propelled and can be steered. It shall be equipped with a receiving and disbursing hopper and a mechanical screed or strike-off member capable of adjustment to regulate the depth of material being spread. Tandem Type 5 to 12 ton steel- wheeled rollers shall be used for sealing. Self- Propelled, pneumatic-tired traffic rollers equipped with at least 7b smooth tread, low pressure tires, having a total weight of 6 to 10 tons shall be used for final rolling.

3.06 FIELD QUALITY CONTROL

The final surface course of all pavements will be required to be checked by a rolling straightedge. The finished surface shall not vary more than 3/16 inch from the straightedge applied parallel to the centerline of the pavement. The straightedge shall have an effective length of 15 feet.

END OF SECTION

SECTION 02550
ASPHALTIC CONCRETE OVERLAY

PART 1 - GENERAL

1.10 SCOPE

The work to be performed under this item shall include the selling, delivering and installing of final asphaltic concrete surface courses as herein specified.

1.02 REFERENCES

Standards applicable in this Specification shall be:

A. Florida Department of Transportation - Standard Specifications for Road and Bridge Construction (1986).

1. Section 300 - Prime and Tack Coats for Base Courses. Subsections (1, 2.3, 3, 4, 5, 7).
2. Section 320 - Hot Bituminous Mixtures - Plant, Methods and Equipment. Subsections (1, 2.1, 2.5, to 2.13, 3, 4, 5).
3. Section 330 - Hot Bituminous Mixtures - General Construction Requirements. Subsections (1, 3 to 13).
4. Section 331 - Type S-III, Asphaltic Concrete. Subsections (1 to 5).

1.03 SUBMITTALS

A. Manufacturer's Data - Prior to fabrication or installation of the final asphaltic concrete surface course, the Contractor shall furnish to the Engineer, for review and approval the following:

1. Certification from the manufacturer that their plant meets the requirements of Section 320 above.
2. Formula for job mix.

PART 2 - MATERIALS

2.01 TACK COAT

Unless otherwise specified by the Engineer, the material used for the tack coat shall be Emulsified Asphalt, Grade RS-2, Section 300-2.3 F.D.O.T. Specification.

2.02 ASPHALTIC CONCRETE

Asphaltic concrete surface course - Type S-III asphaltic concrete wearing surface, 1 inch in compacted thickness or as indicated on the Drawings, in accordance with Sections 330-10 Compacting Mixture and 331 Type S-III Asphaltic Concrete of aforesaid DOT Standard Specification.

PART 3 - EXECUTION

3.01 CLEANING SURFACES

Prior to the laying of the surface courses, the surface of the pavement or base to be covered shall be cleaned of all loose and deleterious material by the use of power brooming or hand brooming where necessary. All such material shall be collected and disposed of by the Contractor.

3.02 PATCHING AND LEVELING COURSES

Where a surface course is to be constructed on an existing paved surface which is irregular, said surface shall be brought to proper grade and cross section by the application of patching or leveling courses.

3.03 APPLICATION OF TACK COAT

The material shall be heated to a suitable temperature and applied in a thin, uniform layer at a rate of between 0.02 and 0.08 gallons per square yard. The tack coat shall be applied sufficiently in advance of the surface course laying to permit drying but not so far in advance as to lose its adhesiveness as a result of being covered with dust. The tack coat shall be kept free from traffic until the surface course has been laid.

3.04 TRANSPORTATION OF THE ASPHALT

The surface course shall be transported in tight vehicles previously cleaned of all foreign material. The inside surface of the truck bodies shall be only thinly coated with soapy water or an approved emulsion containing not over 5 percent oil. Kerosine, gasoline or similar products shall not be used. After coating and before loading, the truck bodies shall be raised and drained of all excess liquids.

3.05 INSTALLATION OF ASPHALTIC CONCRETE

Prior to final acceptance, or as directed by the Engineer, the Contractor shall install a 1-inch layer of Type S-III (as indicated on the drawings) Asphaltic Concrete over the entire street width as directed by the Engineer. A leveling course as indicated on the plan sheets shall be placed prior to the final asphaltic concrete surface course under this item.

Mechanical spreading and screeding equipment shall be of an approved type that is self-propelled and can be steered. It shall be equipped with a receiving and disbursing hopper and a mechanical screed or strike-off member capable of adjustment to regulate the depth of material being spread. Tandem Type 5 to 12 ton steel- wheeled rollers shall be used for sealing. Self- Propelled, pneumatic-tired traffic rollers equipped with at least 7b smooth tread, low pressure tires, having a total weight of 6 to 10 tons shall be used for final rolling.

3.06 FIELD QUALITY CONTROL

The final surface course of all pavements will be required to be checked by a rolling straightedge. The finished surface shall not vary more than 3/16 inch from the straightedge applied parallel to the centerline of the pavement. The straightedge shall have an effective length of 15 feet.

END OF SECTION

SECTION 02570
MILLING OF EXISTING ASPHALT PAVEMENT

PART 1 - GENERAL

1.10 SCOPE

The work specified in this Section consists of removing existing asphaltic concrete pavement by milling to improve the rideability of the finished pavement, to lower the finished grade adjacent to existing curb prior to resurfacing, or to completely remove existing pavement.

When milling to improve rideability, an average depth of cut will be specified in the plans.

Unless otherwise specified, the milled material becomes the property of the Contractor.

1.02 REFERENCES

Florida Department of Transportation - Standard Specification for Road and Bridge Construction (Latest Edition)

PART 2 - EQUIPMENT

2.01 MILLING MACHINE

The milling machine shall be capable of maintaining a depth of cut and cross slope that will achieve the results specified in the plans and specifications. The overall length of the machine (out to out measurement excluding the conveyor) shall be a minimum of 18 feet. The minimum cutting width shall be six feet.

The milling machine shall be equipped with a built-in automatic grade control system that can control the transverse slope and the longitudinal profile to produce the specified results.

Any commercially manufactured milling machine meeting the above requirements will be approved to start the project. If it becomes evident after milling has started that the milling machine cannot consistently produce the specified results, the milling machine will be rejected for further use.

When milling to lower the grade adjacent to existing curb or other areas where it impractical to use the above described equipment, the use of a smaller milling machine will be permitted.

The milling machine shall be equipped with means to effectively limit the amount of dust escaping the removal operation. For complete pavement removal, the use of alternate

removal and crushing equipment, in lieu of the equipment specified above, may be approved by the Engineer.

PART 3 - EXECUTION

3.01 CONSTRUCTION

When milling to improve rideability, the existing pavement shall be removed to the average depth specified in the plans, in a manner that will restore the pavement surface to a uniform cross section and longitudinal profile. The Project Engineer may require the use of a stringline to ensure maintaining the proper alignment.

The contractor may elect to make multiple cuts to achieve the required pavement configuration or depth of cut.

The milling machine shall be operated to effectively minimize the amount of dust being emitted from the machine. Prewetting of the pavement may be required.

If traffic is to be maintained on the milled surface prior to the placement of the new asphaltic concrete, the pattern of striations shall be such as to produce an acceptable riding surface.

Prior to opening an area which has been milled to traffic, the pavement shall be thoroughly swept with a power broom or other approved equipment to remove to the greatest extent practicable, fine material which will dust under traffic. This operation shall be conducted in a manner so as to minimize the potential for creation of a traffic hazard and to minimize air pollution.

Sweeping of the milled surface with a power broom will be required prior to placing asphaltic concrete.

In urban and other sensitive areas where dust would cause a serious problem, the Contractor shall use a street sweeper (using water) or other equipment capable of removing and controlling dust. Approval of the use of such equipment is contingent upon its demonstrated ability to do the work.

To prevent, to the greatest extent practicable, the infiltration of milled material into the storm sewer system when the milling operation is within the limits of and adjacent to a municipal curb and gutter or a closed drainage system, the sweeping operation shall be performed immediately after the milling operations or as directly by the Engineer.

END OF SECTION

SECTION 02574
PAVEMENT REMOVAL AND REPLACEMENT

PART 1 - GENERAL

1.01 WORK INCLUDED

A. Work included under this Section consists of cutting, removing, protecting and replacing existing pavements of the various types encountered, roadways, driveways, sidewalks, curb and combination curb and gutter.

B. Protection of Existing Improvements: The Contractor shall be responsible for the protection of all pavements, sidewalks and other improvements within the work area. All damage to such improvements, as a result of the Contractor's operations, beyond the limits of the work of pavement replacement as described herein, shall be repaired by the Contractor at his expense.

PART 2 - PRODUCTS

2.01 MATERIALS

Materials, including limerock, bituminous prime and tack coat, and asphaltic concrete for the above work shall meet the requirements established therefore by the FDOT Specifications.

1. Limerock shall be Miami or Ocala Limerock.
2. Bituminous prime coat material shall be cutback asphalt Grade RC-70.
3. Bituminous tack coat material shall be emulsified asphalt Grade RS-2.
4. Asphaltic concrete shall be Type S-III

PART 3 - EXECUTION

3.01 PREPARATION

Pedestrian or school crossings: Where the work crosses or interferes with school or pedestrian crossings, extreme care shall be taken by the contractor to insure the safety of school children or other pedestrians.

3.02 PERFORMANCE

A. Removals:

1. *Pavement Removal*: Where existing pavement is to be removed, the surfacing shall be mechanical saw cut prior to trench excavation, leaving a uniform and straight edge, with minimum disturbance to the remaining adjacent surfacing. The width of cut for this phase of existing pavement removal shall be minimal.
2. *Sidewalk, Drive, and Curb Removal*: Concrete sidewalks, curbs, combination curb and gutter, walks, drive ribbons, or driveways shall be removed by initially sawing the structure, with a suitable power saw, as specified above for pavement. When a formed joint in the concrete exists within 3 feet of the proposed saw cut and parallels the proposed saw cut, the removal line shall be extended to the formed joint. After sawing, the material shall be removed.

B. Restorations:

1. *General*: Street or roadway pavement cut and removed in connection with trench excavation shall be replaced or restored in equal or better condition than the original and as shown on the Drawings. The Drawings indicate minimum requirements.
2. *Pavement Restoration - Asphalt*:
    a. Limerock base course shall be compacted for its full thickness to not less than 98 percent of maximum density as determined by AASHTO T-180.
    b. Construction methods and equipment shall generally meet the requirements therefore as established in the FDOT Specifications, but shall be modified to meet the relatively narrow strip construction conditions. Any such modifications shall be approved by the Engineer prior to their use.
    c. Joints with existing surface and base shall be straight and neat. If necessary to obtain a straight net joint, the Contractor shall cut out sufficient existing material and replace it with new material.
    d. The upper surface of the completed base course shall be compacted to an elevation to permit the full depth of the surface course to be of the pavement surface. The completed surface shall match the line and grade of the existing surface. When pavement is removed to the edge of the roadway, the replaced base course shall extend not less than 6-inches beyond the edge of the surfacing constructed without deviating from the grade
3. *Driveway Restoration - Asphalt*: Driveway pavement with limerock base cut and removed in connection with trench excavation shall be replaced or restored as specified above for street or roadway pavement, except the new limerock base course shall equal the existing base course in thickness, except that in no case shall new driveway base course be less than 6-inches in

thickness. Muck or unsuitable material found under existing driveway construction will not be removed and replaced.

4. *Concrete, Sidewalk, Walkway, Driveway Ribbon and Curb Restoration*.
   a. Concrete sidewalks, walkways, driveways, driveway ribbons and curbs required to be removed for the installation of facilities under this Contract shall be restored. Class B concrete shall be used in all cases.
   b. Replaced portions of these items shall conform to the lines, grades and cross sections of the removed portions. Concrete sidewalks and walkways shall be of 4-inch thickness; concrete driveways and driveway ribbons shall be 6-inch thickness. Replaced concrete curb and/or gutter shall joint neatly to the remaining section.
5. *Pavement Restoration - Concrete*: Rigid pavement shall be replaced in kind with Class B concrete, using high early strength cement.

END OF SECTION

SECTION 02580
PAVEMENT MARKINGS

PART 1 - GENERAL

1.01 WORK INCLUDED

A. The work included in this Section consists of applying pavement markings as required to restore disturbed pavement areas. Work shall adhere to all City and FDOT standards.

1.02 RELATED REFERENCES

A. All markings shall conform to the requirements of the Manual of Uniform Traffic Control Devices, and FDOT Roadway and Traffic Design Standards.

B. Thermoplastic shall conform to the requirements of the Florida D.O.T. Standard Specifications for Road and Bridge Construction (Section 711) latest edition.

PART 2 - PRODUCTS

2.01 THERMOPLASTIC

A. All markings to be Alkyd thermoplastic only.

2.02 TEMPORARY MARKINGS

A. Temporary markings on final asphalt shall be only for backed construction tape. Lower asphalt lifts may be marked with paint or any other approved marking material.

2.03 REFLECTIVE PAVEMENT MARKERS (RPM'S)

A. RPM'S shall meet FDOT Class B Specifications, and shall be installed per Palm Beach County Typical T-3-89-004-PS.

PART 3 - EXECUTION

3.01 APPLICATION

A. Thermoplastic shall not be installed on roadway until five (5) calendar days after final lift of asphalt has been completed, with the exception of friction course which shall be thirty (30) days.

B. If existing marking material is not compatible with Alkyd thermosplastic, it shall be removed prior to installation of new markings.

END OF SECTION

SECTION 02605

SEWERAGE AND DRAINAGE MANHOLES

PART 1 - GENERAL

1.01 WORK INCLUDED

A. Furnish and install manholes as shown on the drawings, including:

1. Precast concrete sections
2. Brick
3. Mortar
4. Cast iron frame and lids

1.02 RELATED WORK

A. Section 02720: Storm Drainage System

B. Section 02221: Trenching, Backfilling and Compacting

C. Section 02513: Asphaltic Concrete Paving

1.03 REFERENCE STANDARDS

A. ASTM C478: Precast Reinforced Concrete Manhole Sections.

B. ASTM C443: Joints For Circular Concrete Sewer and Culvert Pipe Using Rubber Gaskets.

1.04 SUBMITTALS

A. Submit Shop Drawings in accordance with Section 01340.

PART 2 - PRODUCTS

2.01 MANHOLES

A. Manholes shall be 48 inch diameter, unless otherwise indicated, constructed of precast ring block and/or precast concrete ring, eight inch minimum thickness construction, unless otherwise indicated on the Drawings.

B. Concrete floor slab shall be minimum eight inches thick with #6 bar at six inch spacing each way or precast bases.

C. Top section shall be offset cone 2 feet 8 inches high with 24 inch opening at top.

D. Joints shall be a compression type, neoprene gasket joint conforming to ASTM C443, of a design approved by the Engineer.

E. Lifting holes through the structures are not permitted.

F. All grout used for sealing around pipe openings shall be of a non-shrinking type, acceptable to the Engineer, designed for use in water. All openings and joints shall be sealed water-tight.

G. Precast manhole tops shall terminate at such elevations as will permit laying up a minimum of five inches of brick under the manhole frame to make allowance for future street grade adjustments.

H. Drop connections, where required on precast manholes, shall be cast monolithically with the manhole elements.

I. Inverts shall be formed of sewer pipe or of mortar and brick, as described below, to provide a smooth flowing channel of the exact shape of the sewer to which it connects. All inverts of manholes shall be shaped while the manholes are under construction. All inverts shall follow the grades of the pipe entering the manholes. Changes in direction of the sewer and entering branch or branches shall have a true curve of as large a radius as the size of the manhole will permit.

J. Where shown on the Drawings or ordered by the Engineer, the Contractor shall provide manholes with stub lines for connection to future sewer lines. Provide the end of each stub line with a bell and close by means of an approved plug. This plug shall be removed, at some later time, without injury to the pipe. Reference each stub accurately to the center of the manhole, and record the actual invert elevation of each end.

PART 3 - EXECUTION

3.01 LEAK PROOFING

A. Walls shall be sealed against leakage by the application on the complete exterior surface of a plaster coat of cement mortar of approximately the same composition as mortar for masonry joints, applied not less than 1/2 inch in thickness at any point by steel trowel as the wall is built. Precast manholes shall be sealed at ring joints.

B. Walls alternatively may be sealed against leakage by a heavy brush-coat application of an approved waterproofing compound, mixed and applied in accordance with manufacturer's recommendations. Not less than 50 pounds of compound shall be used on each 125 square feet of exterior surface area, and the coverage of block and joints shall be continuous and uniform. Joints must be struck and troweled flush, and dried for at least twenty four (24) hours under good curing conditions, before seal coat is applied.

3.02 INSTALLATION

No backfilling of excavation, above elevation of top of interior concrete fill, shall be performed until waterproof coating has been cured for at least twenty four (24) hours and inspected and approved by the Engineer. Any defective coverage shall be repaired to the satisfaction of the Engineer before backfilling is performed.

END OF SECTION

SECTION 02610
POLYETHYLENE ENCASEMENT

PART 1 - GENERAL

1.10 SCOPE

This standard covers materials and installation procedures for polyethylene encasement to be applied to underground installations of ductile-iron pipe. This standard also may be used for polyethylene encasement of fittings, valves, and other appurtenances to ductile-iron pipe systems.

1.02 REFERENCES

AWWA C105 (ANSI A21.5) polyethylene encasement for ductile-iron piping for water and other liquids.

1.03 RELATED WORK

1. Section 02661 - Water Mains
2. Section 02645 - Valves, Cocks, Hydrants and Appurtenances.

PART 2 - MATERIALS

2.01 POLYETHYLENE FILM

A. Polyethylene -
Polyethylene film shall be manufactured of virgin polyethylene material conforming to the following requirements of ASTM* D1248-84, Standard Specification for Polyethylene Plastics Molding and Extrusion Materials.
Type: I
Class: A (natural color) or C (black)
Grade: E-1
Flow rate (formerly melt index): 0.4 maximum Dielectric strength: Volume resistivity, minimum ohm.cm=1015

B. Polyethylene film -
Tensile strength: 1200 psi (8.3 MPa) minimum Elongation: 300 percent minimum

C. Thickness -
Polyethylene film shall have a nominal thickness of 0.008 in. (8 mil or 200 um). The minus tolerance on thickness is 10 percent of the nominal thickness.

D. Tube size or sheet width -

Tube size for each pipe diameter shall be 20 inches for 6" DIP and 24 inches for 8" DIP.

PART B - INSTALLATION

3.01 GENERAL

The polyethylene encasement shall prevent contact between the pipe and the surrounding backfill and bedding material, but is not intended to be a completely airtight or watertight enclosure. All lumps of clay, mud, cinders, etc. on the pipe surface shall be removed prior to installation of the polyethylene encasement. During installation, care shall be exercised to prevent soil or embedment material from becoming trapped between the pipe and the polyethylene.

The polyethylene film shall be fitted to the contour of the pipe to effect a snug, but not tight, encasement with minimum space between the polyethylene and the pipe. Sufficient slack shall be provided in contouring to prevent stretching the polyethylene where it bridges irregular surfaces, such as bell-spigot interfaces, bolted joints, or fittings, and to prevent damage to the polyethylene due to backfilling operations. Overlaps and ends shall be secured with adhesive tape, string, or any other material capable of holding the polyethylene encasement in place until backfilling operations are complete.

For installations below the water table and/or in areas subject to tidal actions, it is recommended that both ends of the polyethylene tube be sealed as thoroughly as possible with adhesive tape at the joint overlap.

3.02 PIPE

This standard includes three methods of installation of polyethylene encasement on pipe. Methods A and B are for use with polyethylene tubes.

3.03 METHOD A

Cut polyethylene tube to a length approximately 2 feet (0.6 m) longer than the pipe section. Slip the tube around the pipe, centering it to provide a 1-ft (0.3-m) overlap on each adjacent pipe section, and bunching it accordion-fashion lengthwise until it clears the pipe ends. Lower the pipe into the trench and make up the pipe joint with the preceding section of pipe. A shallow bell hole must be made at joints to facilitate installation of the polyethylene tube.

After assembling the pipe joint, make the overlap of the polyethylene tube. Pull the bunched polyethylene from the preceding length of pipe, slip it over the end of the new length of pipe, and secure it in place. Then slip the end of the polyethylene from the new pipe section over the end of the first wrap until it overlaps the joint at the end of the preceding length of pipe. Secure the overlap in place. Take up the slack width at the top of the pipe to make a snug, but not tight, fit along the barrel of the pipe, securing the fold at quarter points.

Any cuts, tears, punctures, or other damage to the polyethylene shall be repaired as described in paragraph 3.07. Proceed with installation of the next section of pipe in the same manner.

3.04 METHOD B

(Refer to Figure 5.3) Cut polyethylene tube to a length approximately 1 ft (0.3 m) shorter than that of the pipe section. Slip the tube around the pipe, centering it to provide 6 in. (15 cm) of bare pipe at each end. Take up the slack width at the top of the pipe to make a snug, but not tight, fit along the barrel of the pipe, securing the fold at quarter points; secure the ends as described in paragraph 3.01.

Before making up a joint, slip a 3-ft (0.9 -m) length of polyethylene tube over the end of the preceding pipe section, bunching it accordion-fashion lengthwise. After overlapping the polyethylene previously installed on each adjacent section of pipe

Any cuts, tears, punctures, or other damage to the polyethylene shall be repaired as described in paragraph 3.07. Proceed with installation of the next section of pipe in the same manner.

3.05 PIPE-SHAPED APPURTENANCES

Cover bends, reducers, offsets, and other pipe-shaped appurtenances with polyethylene in the same manner as the pipe.

3.06 ODD-SHAPED APPURTENANCES

When it is not practical to wrap valves, tees, crosses, and other odd-shaped pieces in a tube, wrap with a flat sheet or split length of polyethylene tube by passing the sheet under the appurtenance and bringing it up around the body. Make seams by bringing the edges together, folding over twice, and taping down. Handle width and overlaps at joints as described in paragraph 3.30.

3.07 REPAIRS

Repair any cuts, tears, punctures, or damage to polyethylene with adhesive tape or with a short length of polyethylene sheet or a tube cut open, wrapped around the pipe to cover the damaged area, and secured in place.

3.08 OPENINGS IN ENCASEMENT

Provide openings for branches, service taps, blowoffs, air valves, and similar appurtenances by making an X-shaped cut in the polyethylene and temporarily folding back the film. After the appurtenance is installed, tape the slack securely to the appurtenance and repair the cut, as well as any other damaged areas in the polyethylene, with tape. Service taps may also be made directly through the polyethylene, with any resulting damaged areas being repaired as described above.

3.09 JUNCTIONS BETWEEN WRAPPED AND UNWRAPPED PIPE

Where polyethylene-wrapped pipe joins an adjacent pipe that is not wrapped, extend the polyethylene wrap to cover the adjacent pipe for a distance of at least 3 ft (0.9 m). Secure the end with circumferential turns of tape.

Service lines of dissimilar metals shall be wrapped with polyethylene or a suitable dielectric tape for a minimum clear distance of 3 ft (0.9 m) away from the ductile-iron pipe.

3.10 BACKFILL FOR POLYETHYLENE-WRAPPED PIPE

Use the same backfill material as that specified for pipe without polyethylene wrap, exercising care to prevent damage to the polyethylene wrapping when placing backfill. Backfill material shall be free from cinders, refuse, boulders, rocks, stones, or other material that could damage polyethylene, In general, backfilling practice should be in accordance with the latest revision of AWWA C600, Standard for Installation of Ductile-Iron Water Mains and Their Appurtenances.

END OF SECTION

SECTION 02640
VALVES, COCKS, HYDRANTS AND APPURTENANCES

PART 1 - GENERAL

1.01 WORK INCLUDED

A. Gate valves.

B. Check valves.

C. Butterfly valves.

D. Plug Valves.

E. Corporation cocks.

F. Automatic pinch valve.

G. Sampling cocks and hose bibbs.

H. Globe or angle valves.

I. Drain valves.

J. Strainers.

K. Backflow preventer valves.

L. Ball valves for PVC pipe.

M. Shear gate valves.

N. Flap valve.

O. Solenoid valves.

P. Diaphragm valves.

Q. Surge relief valves.

R. Air release valves.

S. Dresser type couplings.
T. Expansion joints.

U. Valve boxes.

V. Gauges.

W. Hydrants.

X. Needle valves.

Y. Diaphragm seals.

Z. Pressure reducing valves.

1.02 RELATED WORK

A. Section 11211: Centrifugal High Service Pumps.

B. Section 11214: Vertical Turbine Pumps.

C. Section 11234: Chlorination Equipment.

D. Section 11303: Package Pump Stations.

E. Section 15060: Pipe and Pipe Fittings.

F. Section 15139: Seal Water Units.

G. Section 15450: Plumbing Fixtures, Trim.

H. Section 15699: Refrigeration Specialties.

I. Section 15750: Coils.

1.03 REFERENCES

A. AWWA - American Waterworks Association.

B. ASTM - American Society for Testing Materials

C. FS - Federal Specification.

1.04 SHOP DRAWINGS

A. Submit copies of valve ordering schedule for approval before ordering valves.

B. Submit detailed Shop Drawings in accordance with Section 01340. Clearly indicate make, model, location, type, size and pressure rating.

PART 2 - PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS

A. Provide valves and operators of same manufacturer throughout, where possible.

B. Provide valves with manufacturer's name and pressure rating clearly marked on outside of body.

C. Acceptable Manufacturers as noted herein. Substitutions in accordance with Section 01630.

2.02 VALVE CONNECTIONS

A. Provide valves suitable to connect to adjoining piping as specified for pipe joints. Use pipe size valves.

B. Thread pipe sizes 2-1/2 inches and smaller.

C. Flange pipe sizes three inches and larger.

D. Solder or screw to solder adaptors for copper tubing.

E. Use grooved body valves with mechanical grooved jointed piping.

F. Provide butterfly valve with tapped lug body when used for isolating service.

2.03 GATE VALVES

A. Gate valves three inches and larger in size shall be of the non-rising stem type and shall conform to AWWA C500, latest revision, with handwheel or wrench nut, extension stems and other appurtenances as required. Valves shall be rated for 150 psi working pressure.

1. Shall open counterclockwise.
2. Shall be iron body, fully bronze mounted, double disk, parallel seat; non-rising stem valves with O-ring seals and with end connection as called for in the Drawings.
3. Shall be as manufactured by Iowa Valve Co., Mueller Co., Crane Co., or equal.

B. Gate valves smaller than three inches shall be 125 lb. bronze body, rising stem, solid-wedge valves capable of being repacked under pressure when valve is fully open. The valves shall be as manufactured by Crane Co., Walworth Co., Lunkenhelmer Co., or equal.

C. Quick-opening valves shall be iron body, fully bronze mounted, double disk, parallel seat, sliding stem gate valves with quick-opening type operators. The valves shall be as manufactured by Iowa Valve Co., M & H Valve and Fittings Co., Crane Co., or equal.

D. Where required, gate valves shall be provided with a box cast in the slab and a cover. Box cover shall be for valve stem and nut. The floor box and cover shall be equal to those manufactured by Rodney Hunt Machine Company, Orange, Massachusetts, or equal.

2.04 CHECK VALVES

A. Check valves three inches and smaller in size shall be bronze swing check valves complying with all requirements for Type III and Type IV valves as covered in Federal Specification WW-V-51a for Class "A" 125 pound Bronze Check Valves. Check valves for chemical feed lines, except sulfuric acid lines, shall be swing check valves with PVC body and EPDM seats and seals by Asahi/America, Inc., Medford, Mass. Check valves for sulfuric acid shall be swing type valves with PVC body and viton seats and seals by Asahi/America, Inc., Medford, Mass.

B. Swing check valves four inches and larger shall have cast iron body, cast iron gate, bronze valve seat ring and gate ring, 150 psi working pressure, conforming to AWWA C508. The gate and all internal working parts shall be capable of being removed through the top of the valve by unbolting and removing the cover. The valves shall be as manufactured by Mueller Co., or equal.

C. Slanting disc check valves shall be used for the high service discharge lines. Valves shall meet the following requirements.

1. The body shall be heavy two piece cast iron construction. The two (2) halves shall be bolted together thru the center section, in a manner to capture the seat on a 55 angle. The seat ring and disc ring must be of the design that permits replaceability in the field without need for specific tools or machining. The pivot pins in the body and bushings in the disc lugs must be stainless steel of different hardnesses to prevent galling. The area throughout the valve body must be equal to full pipe area. The area thru the seat section shall be 40% larger than the inlet and outlet of the valve to achieve lowest

head loss. Valves shall have integrally cast on 125# class flanged ends.

2. The valves must have a bottom mounted buffer for free open and positive non-slam closing. The buffer shall be designed to contact the disc curing the last 10% of the closure and thereafter control the closure until the valve is shut off in a manner to minimize or prevent water hammer. The rate of closure shall be externally adjustable and variable. The line media to the buffer must be separated by a combination pressure sensing oil/water separator device to protect the buffer cylinder against corrosive build-up from the media. Limit switches shall be provided for open and close positions. Switches shall be adjustable.

3. The manufacturer shall have been regularly engaged in the design and manufacture of Slanting Disc Check Valves for at least ten years and shall submit a list of at least ten separate installations in service for a minimums of seven years for Engineer approval prior to release to manufacturer.

4. All materials of construction to be certified in writing to conform to A.S.T.M. specifications as follows:

Bodies	Cast Iron	ASTM A48, Class 30
Disc	125# Class Cast Iron	ASTM A48, Class 30
Seat Ring	Stainless Steel	ASTM A582
Disc Ring	Stainless Steel	ASTM A582
Pivot Pins	Stainless Steel	ASTM A582
Bushings	Stainless Steel	ASTM A269
Dashpot Shaft	Stainless Steel	ASTM A582
Dashpot Cylinder	Hardcoated Aliminum	Commercial
Exterior Paint	Phenolic Primer, Red Oxide	

5. Valve to be APCO Series 800B Slanting Disc Check Valve with bottom mounting oil dashpot, as manufactured by Valve & Primer Corporation, Shaumberg, Ill., or approved equal product meeting all detailed requirements of these specifications by Val-Matic Valve and Manufacturing Corporation, Lyons, Ill.

D. Silent check valves shall be provided as shown on the Drawings. Silent check valves shall be globe type and shall be designed with cast iron bodies (ASTM A 48, Class 30), bronze or Buna-N seat, bronze plug and Type 304 stainless steel spring. The valve plug must be center guided at both ends with a through integral shaft and spring loaded for guaranteed silent shut-off operation. The seat and plug shall be hand replaceable in the field for ease of maintenance. The flow area through the body shall be equal to or greater than the cross-sectional area of the equivalent pipe size.

Valve to be APCO Series 600 Silent Check Valves, as manufactured by Valve & Primer Corporation, Schaumberg, Illinois, or approved equal

product by Val-Matic Valve and Manufacturing Corporation, Lyons, Illinois, or GA Industries, Inc., Pittsburg, PA.

2.05 BUTTERFLY VALVES

A. All butterfly valves and operators shall be the product of one manufacturer who shall have been engaged regularly in the manufacture of valves of the AWWA type and sizes required for a period of not less than five years. All valves and operators shall conform to AWWA C504 with the additions and modifications noted herein.

B. Valve bodies shall be of cast iron conforming to ASTM A126 Class B. Valve shafts shall be of Type 304 SS.

C. All valves shall be AWWA Class 150B unless noted otherwise on the Drawings.

D. All valves except those specifically noted otherwise on the Drawings shall be provided with two flanges conforming to ANSI B16.1.

E. The laying lengths shall conform to the short body type.

F. Valves for buried service shall have mechanical joint ends suitable for attachment to the connecting pipe, and shall be capable of withstanding the external pressure of the earth load which will be placed over it as determined from the Drawings.

G. Valve seats shall be of Buna-N material of the insert type and mechanically retained. The complete seat shall be replaceable without disassembling of the valve. The seal between the seat and disc shall not be interrupted by the shafting and shall provide tight shut-off at pressure class specified.

H. All valves with cylinder operators shall have renewable stuffing boxes which can be repacked without removal of operator.

I. The seat of valves 30 inches and larger in size shall be capable of being adjusted from inside the pipeline.

J. Valves shall be provided with operators as indicated on the Drawings and specified herein. Valves shall be provided with limit switches where shown on the Drawings to indicate open and close positions. Limit switches shall be enclosed in a NEMA 4 enclosure.

2.06 PLUG VALVES

A. Plug valves shall be of the nonlubricated eccentric type with balanced resilient plugs faced with natural or synthetic rubber suitable for service in sewage and sludge piping as manufactured by Dezurik Co., Sartell, Minn., Homestead Valve Co., Bethlehem. PA, or equal.

B. Port areas shall be unobstructed when open and have smoothly shaped waterways of not less than 80 percent of full pipe area.

C. Bodies shall be case in Ni-Resist, Type II Iron Alloy, suitable for 125 pound working water pressure and shall have raised seats.

D. Valves three inches and larger shall have seats of a welded-in overlay of not less than 90 percent pure nickel. Valves less than three inches shall have plastic or epoxy covered seats.

E. Valves shall have permanently lubricated upper and lower stainless steel bushings on plug journal ends.

F. Valves shall have bolted bonnets. Valves shall be designed so that they can be repacked under line pressure without removing the bonnet from the valve. Packing shall be adjustable.

G. Valves eight inches and larger shall be gear-operated with hand wheels and valves smaller than eight inches shall be wrench-operated, except as hereinafter specified or indicated on the Drawings.

H. Plug valves less than three inches shall have screwed ends. Plug valves three inches and larger shall have flanged ends faced and drilled in accordance with the 125 pound ANSI standard. Plug valves for air throttling shall be V-Port plug valves as manufactured by DeZurik Company, Figure 702 or equal.

I. Valve operators shall be provided as indicated on the Drawings and specified herein.

2.07 VALVE OPERATORS

A. Hydraulically or pneumatically operated valves shall be of a single manufacturer, have an auxiliary, fully enclosed work gear operator with handwheel. Operators shall comply in all respects with physical and performance requirements of AWWA C504-80.

B. Valve operators shall be sized for operation at the pressure and flow conditions as indicated hereinafter. Actuator body shall be bronze hand drawn or brass. Cylinder pistons shall be chromium plated steel. Amalgon

may be of brass. Cylinders shall be equipped with adjustable cushions on each end of stroke. Rod seals, rod wiper and pistion cups shall be BUNA-N.

C. Pneumatic cylinder operators shall be sized to operate at 60 psi minimum and 80 maximum available air pressure unless specified otherwise.

D. Two speed control valves, two limit switches (NEMA IV enclosure) and one four-way solenoid 120 volt valve (NEMA IV enclosure) shall be provided with each cylinder if positioner is not furnished.

E. Gear operators shall be totally enclosed, worm-gear type, permanent-lubricated, and shall be water tight and dust-tight. Gear operators shall be provided with adjustable stops for the open and closed position to prevent over-travel, and shall have a valve disc position indicator.

F. Manual operators shall be of the enclosed worm gear type. Manual operators for exterior buried valves shall be equipped with enclosed worm gear operators suitable for buried service conforming to AWWA C-504.

G. A suitable wrench shall be provided for each six wrench operated station. Wrenches of wheels and chains shall be of suitable size and sufficient length for easy operation of the valves at their rated working pressure. A suitable lever shall be provided for each lever operated valve with suitable method for securing lever to valve stem.

H. Chain operators, consisting of sprocket wheels, chain guides and operating chains shall be provided for all valves with centerlines located more than six feet six inches above the operating level. Operating chain shall be galvanized and shall extend within three feet of the operating level.
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I. Rate-of-flow controller butterfly valves shall be provided with cylinder actuators with positioners. Cylinder actuators shall have adjustable stops to allow adjustment of valve opening between 10 degrees and 90 degrees.

2.08 CORPORATION COCKS

A. Corporation cocks for connection to cast-iron, ductile iron or steel piping shall be all brass or bronze suitable for 150 psi operating pressure and similar to Mueller Co. H-10046 or equal by Clow Corp., and shall be of sizes required and/or noted on the Drawings.

2.09 AUTOMATIC PINCH VALVE

A. The valve shall be of the full metal body, mechanical pinch type with flange joint ends on both the body of the flexible sleeve. Port area shall be 100 percent of the full pipe area at the valve ends. The valve area shall either be 100 percent of the full opipe area through the entire length of the valve or concentrically reduced and expanded so that the minimum full open area is center in the valve. The valve shall be a series 5400 ATO/FC as manufactured by Red Valve Co., Inc. (complete with ASCO Model 8320A173, 3-way solenoid valve).

B. The valve length shall be as given in ISA S75.08. The integral flanges shall be drilled and tapped to ANSI B16.1, Class 125 standard.

C. The pinch tube shall be one piece construction with integral flanges drilled to be retained by the flange bolts. The pinch tube shall be reinforced with calendered nylon. The pinch tube shall be connected to the pinch bars by rubber tabs imbedded in the tube reinforcing ply. All internal valve metal parts are to be completely isolated from the product line by the flexible elastomer pinch tube.

D. The steel mechanism shall be double-acting, closing the pinch tube, sleeve, on the center line of the valve. The mechanism shall be interlocking so that any movement of the top pinch bar is mirrored by the lower pinch bar.

The mechanism shall be supported by the mounting yoke. The pinch mechanism shall be adjustable for stroke without removing the valve from the line. The mechanism shall be connected to the cylinder actuator by a stainless steel stem.

E. The single cylinder actuator shall be manufactured utilizing black Amalgon cylinder tubing. The cylinder is to have a working pressure of 250 psi. The spring for directional fail systems shall be fully enclosed in the cylinder housing. The cylinder assembly shall be mounted on the valve body be means of an open yoke.

2.10 SAMPLING COCKS AND HOSE BIBBS

A. Sampling cocks and hose bibbs shall be provided and installed where indicated on the drawings and shall be 3/4 inch bronze body, rubber composition disc, garden hose valves.

B. Sillcocks on the exterior of the building shall be 3/4 inch polished brass non-freeze wall hydrants with loose T handle key; Josam series 1400-N, Wade W8605, or Blake L-1325, located 18 inches above finished grade.

C. A globe valve shall be provided in an accessible location ahead of sillcock to throttle flow and also for shut-off.

2.11 GLOBE OR ANGLE VALVES

A. Valves smaller than three inches shall be bronze, rising stem, inside screw, renewable composition disc, solder or screw ends except for chemical service lines. Chemical service line valves shall be PVC body with EPDM seals and flanged ends.

B. Valves three inches and larger shall be iron body, bronze trim, O.S. and Y., renewable composition disc, flanged ends.

C. Valves shall be as manufactured by Crane. Powell, Stockham, Nibco or equal.

2.12 DRAIN VALVES

A. Valves shall be bronze compression stops with nipple and cap or hose thread.

B. Valves shall be as manufactured by Crane, Watts, Powell or equal.

2.13 STRAINERS

A. Strainers for chemical feed pump suction lines shall be of the following materials:

1. Alum, caustic and sodium aluminate lines - PVC body, EPDM seals, PVC screens.
2. Sulfuric acid line - PVC body, Viton seals, PVC screens.

B. Strainers shall be see-through body and shall be as manufactured by Asahi/America, Medford, Mass., or Hayward.

2.14 BACKFLOW PREVENTER VALVES

A. Valves shall be all bronze construction, stainless steel internal parts, double check valve assemblies, including strainer and gate valves conforming to AWWA 506.

B. Valves shall be as manufactured by Hersey Products-Water Meter & Controls Group, Watts or equal.

2.15 BALL VALVES FOR PVC PIPE

A. Valves for use on PVC pipe lines shall be of polyvinyl chloride and shall have seals mad of Viton and seats of Teflon, unless noted otherwise.

B. O-rings and seals shall be of materials as noted.

C. PVC valves shall be made of Type 1 Grade 1 polyvinyl chloride conforming to ASTM D1785, latest revision.

D. Valves shall be approved by the manufacturer of the adjacent pipe and fittings in order to ensure compatibility of valves.

E. Ball valves for chemical lines shall be of polyvinyl chloride and shall have seats made of Teflon backed with EPDM, except for sulfuric acid valves which shall be backed with Viton. Ball valves for chemical lines shall be Asahi/America, or equal. Seals and O-rings shall be of the following materials:

1. Alum and Caustic (NaOH) - EPDM.
2. Sulfuric Acid and Sodium Aluminate Lines - Viton.

2.16 SOLENOID VALVES

A. Solenoid valves (except for pneumatic Operators) shall be bronzed body, screwed end, single integral seat, full pipe area, globe type valves, with renewable composition disc seats.

B. Valves shall be suitable for operation on 120 volt, single phase, 60 Hertz current, and designed to open when energized.

C. The solenoid valves shall be manufactured by Automatic Valve Co., In., Indianapolis, Ind.; Automatic Switch Hawthorne, N.J.; or equal.

2.17 DIAPHRAGM VALVES

A. Diaphragm valves shall have cast or malleable iron bodies, ad shall be rubber lined and hand wheel operated. Diaphragm and lining shall extend over the surface of the flanges. Diaphragm and lining shall be of the type of rubber and material recommended by the manufacturer for the service intended.

B. Flanges shall be faced and drilled in accordance with the 125 pound ANSI Standard.

C. Valve bodies shall be of the Saunders patent straightway design similar to those made by Grinnell Co., Inc., Providence, P.I., or equal.

2.18 STEEL BALL VALVES

A. Steel ball valves on ammonia gas lines shall be as required in Section 11235.

2.19 SHEAR GATE VALVES

A. Shear gate valves shall be iron body, bronze mounted valves with flanged ends. The valve shall close tight by wedging.

B. Lifting handles shall be made of bronze and shall have provisions on both the handles and walls for holding the valves in the open or closed position.

C. Shear gate valves shall be made by Jams B. Clow & Sons, Chicago, Illinois; Neenah Foundry Co., Neenah, Wisconsin; Coldwell-Wilcox Company, Fairfield, Connecticut; Chapman Division, Crane Company, Indian Orchard, Massachusetts; or acceptable equivalent.

2.20 FLAP VALVES

A. Flap valves shall be of the hinged, single flap type designed to close tight whenever downstream pressure exceeds upstream pressure.

B. Flap valves shall have body and cover made of gray cast iron conforming to ASTM Standard Specification for Gray Iron Castings for Valves, Flanges, and Pipe Fittings, Designation A126-71, Class B. Covers shall be dished or ribbed to provide adequate strength under all operating loads.

C. Covers shall be weighted to require only a small pressure drop to full discharge.

D. Frames shall be flat or flanged type as indicated on the drawings, faced and drilled for bolting directly to an iron wall casting or form mounting directly on the face of a concrete wall or pipe end.

E. Cover or flap shall have machined grooves into which a bronze seat facing shall be fitted and securely fastened.

F. Hinge arms shall be bronze castings conforming to ASTM Standard Specification for High-Strength Yellow Brass (Manganese Bronze) and Leaded High-Strength Yellow Brass (Leaded Manganese Bronze) Sand Castings, Designation 3137-71. Alloy 865. The hinge pins shall be silicon bronze conforming to ASTM Standard Specifications for Cooper-Silicon Alloy Rod, Bar, and Shapes, Designation ASTM B98-69. The hinges shall consist of a double-pivot point for each arm with a rotation at the lower pivot point limited and adjustable. The upper hinge post shall be threaded to

enable adjustment of the sensitivity of the gate. Lubrication fittings shall be supplied at all pivot points.

G. Anchor bolts shall be similar to those made by Armco Steel Corp., Middletown, Ohio; Rodney Hunt Co., Orange, Massachusetts; Coldwell-Wilcox Co., Fairfield, Connecticut or acceptable equivalent.

2.21 PRESSURE RATINGS

A. Extension stems shall be provided and installed on all valves in buried locations and where indicated on the Drawings.

B. Use valves for fire protection suitable for 175 psig WOG.

2.22 EXTENSION STEMS

A. Extension stems shall be provided and installed on all valves in buried locations and where indicated on the Drawings.

B. Extension stems shall be fabricated from solid steel shafting not smaller in diameter than the stem of the valve or from galvanized steel pipe having an internal diameter not smaller than the diameter of the valve stem.

C. Stem couplings shall be both threaded and keyed to the coupled stems and shall be of approved design and construction. Pipe couplings will not be acceptable.

D. Extension stems for buried valves shall extend to within six inches of the surface of the ground. Each extension stem shall be connected to the valve operator with a suitable universal joint type of coupling. All connections shall be pinned.

E. Each extension stem shall be provided with spacers which will center the stem in a valve box having an inside diameter of 6 inches, and shall be equipped with a standard AWWA wrench nut as described in Section 20 of AWWA C500 except where handwheels are indicated on the Drawings.

2.23 SURGE RELIEF VALVE

A. Surge relief valve on high service line shall be of cast iron body and cover will be all bronze trim construction. The valve shall be flanged faced and drilled to 150 lb. ANSI 16.1 Standards and shall be 8-inch size, angle body design.

B. The valve shall be manufactured by GA Industries, Inc., Figure NO. 6600-D, or equal.

2.24 AIR RELEASE VALVE

A. The air release shall have a cast iron body, cover and baffle, stainless steel float, bronze water diffuser, Buna-N or Viton seat and stainless steel trim. Valves shall be provided with a vacuum check to prevent air from reentering the line. The fittings shall be threaded. The air release valves on water mains shall be by APCO Valve & Primer Corporation, Schaujburg, Illinois, by Val-Matic Valve and Manufacturing Corporation. Lyons, Illinois, or equal.

B. Air release valve on high service pumps shall consist of an air release valve and a water control switch will be wired to annunciate loss-of-prime. Valve shall be constructed to prevent air from re-entering the pump. Valve shall be 2", Model 205/2123 as manufactured by Valve and Primer Corporation, Schaumberb, Illinois or equal.

C. Air release valve for Vertical Turbine Pumps shall be designed to allow large quantities of air to escape out the orifice when the pump is started and close water tight when the liquid enters the valve. The air valve shall also permit large quantities of air to re-enter through the orifice when the pump is stopped to prevent a vacuum from forming in the pump column.

D. Valve to be AOCL Air and Vacuum Valve for Vertical Turbine Pumps, as manufactured by Valve and Primer Corp., Schuambert, Ill., or approved equal.

2.25 DRESSER TYPE COUPLINGS

A. Couplings shall be as manufactured by the Dresser Manufacturing Division or equal and of a style as specified on the drawings.

B. The couplings shall be placed to evenly cover the ends of the pipe and tightened without damage to the gaskets or pipe coating. The nuts on all bolts shall be started and tightened evenly around the entire circumference of the pipe. No one nut shall be tightened more than 1/4 tighter than the remainder of the nuts on the coupling. A 1/4 inch space shall be left between the ends of the pipe.

2.26 EXPANSION JOINTS

A. The Contractor shall furnish and install expansion joints as shown on the Drawings.

B. All expansion joints shall be yoked in a manner so as to provide for the transmission of any tension loading to which the joint may be subjected during system operation. The compressive and/or lateral movement of the

joint shall not be impaired by the yoking system, sometimes referred to as control units.

C. The expansion joints shall be made with a high-grade rubber, combined with a synthetic fabric and reinforced with a minimum of four steel rings per joint.

D. Arches shall be filled with a soft rubber material. The flanges shall be full-face fabric reinforced rubber flanges drilled for bolts in accordance with 125 pound ASA drilling.

E. Joints shall be designed to safely withstand a working pressure of 100 psi.

F. Expansion joints shall be as manufactured by Mercer Rubber Company, Trenton, N.J. or equal.

2.27 VALVE BOXES

A. All buried valves shall be provided with valve boxes as indicated on the Drawings with a minimum thickness of l/2" and constructed so that the removable cover will not be thrown out by travel over it.

B. Small gauges that are part of the specified instrument and standard equipment assemblies are not included in this Section.

C. All gauges except those for air service shall be provided with a diaphragm seal to prevent the fluid to be measured from clogging or corroding the Bourdon tube or bellows element of the gauges.

D. Pressure gauges shall be designed to indicate pressures above atmospheric pressure, and vacuum gauges shall be designed to indicate pressures below atmospheric pressure. All gauges shall read zero when exposed to atmospheric pressure.

E. Gauges for pressures up to and including 20 feet of water column shall be provided with bellows pressure element and for pressures above 20 feet shall be Bourdon tube type.

F. Gauges shall be Grade 2A with an error not exceeding 1/2 of one percent of full scale range.

G. Gauges with a seal between the Bourdon tube or bellows pressure element and the medium to be measured shall have an overall error not exceeding one percent of scale range for the middle half and 1 1/2 percent for the remainder of the scale.

H. Grades of accuracy shall conform to the requirements of ANSI B40.1. The Contractor shall submit manufacturer's certifications indicating that the gauges provided have met the accuracy requirements specified.

I. Gauges shall be constructed of sound, durable material free from all defects and imperfections that may in any way affect the accuracy and serviceability of the gauges.

J. The gauge case shall be of phenolic plastic material free from warpage, checks and other defects with surfaces smooth and free from chips, cracks and blisters.

K. Dial shall be 4-1/2 inches nominal diameter and shall be white laminated plastic with standard graduations and numbers permanently marked thereon in black. Scale shall extend over an arc not less than 270 degrees. Subdivisions of the scale shall conform to the requirements of ANSI B40.1 for Grade 2A gauges, unless approved otherwise. Units of measure shall be distinctly and permanently marked on the dial or on laminated plastic name plates cemented to the dial. Each dial shall read in both psig and feet of water.

L. Glass windows shall be 1/8 inch thick clear glass tightly seated on durable gasket material so as to be fumeproof and waterproof.

M. Bourdon tube shall be phosphor bronze silver-soldered or brazed to its brass socket. Bellows type element shall be constructed of brass. The assembly shall be tested carefully, over pressured and stress relieved.

N. Socket stem shall extend at least 1-1/4 inches below the gauge case and shall have large wrench flats. Bottom shall be 1/2 inch N.P.T. male connection.

O. Movement components shall be of stainless steel, of the rotary gear of helical roller type, constructed as to minimize wear and meet and maintain accuracy requirements specified. Movements shall have suitable corrosion-resistant bushings and wearing surfaces. Gauges shall have provision for adjustment of the zero reading.

P. Pressure gauges shall have under pressure protection and vacuum gauges shall have over pressure protection.

Q. Diaphragm seals shall be suitable for the gauges furnished. Diaphragm housing assembly shall be steel construction with an approved gasket designed so that the bottom housing can be easily removed for cleaning without disturbing the calibrated and filled upper housing assembly. Diaphragm shall have an overall diameter of not less than three inches and shall be 304 stainless steel for pressure gauges, Kel F for vacuum gauges.

Gauges shall be factory filled with silicone oil or approved equal and calibrated by the manufacturer. Upper housing shall be provided with bleed seal and the lower housing shall be provided with flushing connection.

R. Diaphragm-protected gauges shall be provided with snubbers and N.P.T. female connection in the lower housing for pipe mounting. Diaphragm Seals shall be Ashcroft No. 101, Helicoid Gauge Co., or equal.

S. Gauge assemblies shall be complete with brass pipe and fittings, brass shutoff valve or cock and a tee with a brass test cock with female outlet and all arranged to allow field checking with a 4-1/2 inch test gauge.

T. Gauges shall be furnished for the suction and discharge nozzle of each pump.

U. Pump suction gauges shall be compound type having a range of 30 inches Hg. to 15 psi.

V. Pump discharge gauges shall be selected at the nearest standard range which provides a top limit above the pump shutoff head at the operating conditions. Range shall be in feet of head for less than 200 feet and psi for greater than 200 feet.

W. Gauges shall be sized such that the normal operation condition shall be midscale. However, the maximum equipment operation pressure must be less than 90 percent of full scale.

2.29 HYDRANTS

A. Hydrants shall conform to the latest edition of AWWA C502 and shall be furnished complete with wrench and other appurtenances.

B. Manufacturer's Certification of compliance with AWWA C502 and tests listed therein will be required.

C. All hydrants shall be of the breakable type, with the breakable section located at the ground line.

D. Hydrants are to be of the compression type, opening against the pressure and closing with the pressure.

E. All hydrants shall have 5-1/4 inch Valve Opening, two hose nozzles, one pumper nozzle, and a six inch shoe.

F. Any specially sized hydrants other than those listed above will be as shown on the Drawings if required for use on this project.

G. The type of inlet connecting joint to be utilized will conform to the type specified for fittings on the pipe being utilized on the project.

H. All hydrants shall be of sufficient length to provide a minimum depth of cover over the hub as shown on the Drawings.

I. Hydrants shall agree in hose thread size with those now in use in the area. Hydrant pumper nozzle shall be the same size as that in use in the area.

J. Hydrants must have oil reservoir or other satisfactory device above the water line to afford lubrication to all working parts of the hydrant each time the hydrant is operated.

K. Hydrants shall be of the "O" ring construction type.

L. All hydrants shall be provided with bronze nozzles, with caps and chains.

M. Each hydrant shall have at least one positive operating drain valve so located as to drain all water from the standpipe when the main valve is closed, leaving no water in the standpipe.

N. Hydrants shall be opened by turning the operator nut counterclockwise.

O. Hydrants shall be similar to those made by Mueller Co., Decatur, Illinois; Centurion Model or equal.

2.30 NEEDLE VALVES

A. The needle valves shall have a cast bronze body and be constructed in accordance with ASTM B62 and shall be designed for an operating pressure of 125 psi and a 200 psi maximum test pressure. Ends shall be ANSI B2.1 threaded. The valves shall have a rising bronze stem and non-slip malleable iron hand wheel.
The needle valves shall be Figure 680 as manufactured by the Wm. Powell Company, Cincinnati, Ohio, or Figure 88 as manufactured by Crane Company, Valve Division, Chicago, Illinois, or equal.

2.31 DIAPHRAGM SEALS

A. Diaphragm seals shall be installed on pressure gauge connections to all sludge, chemical and air lines where shown on the Drawings, to protect pressure switches used to monitor excessive pressures on sludge, chemical and air lines. The diaphragm shall be "thread attached" to both piping and

pressure switches. Diaphragm seals shall be constructed of cadmium plated carbon steel, except for the lower housing which shall be specifically chosen according to the fluid pressure being monitored.

B. Diaphragm seals shall have a flushing connection and be type SB by Mansfield and Green; No. 877 Trerice; Marshall town; or equal.

2.32 PRESSURE REDUCING VALVES

A. Pressure reducing valves shall be installed where indicated on the Drawings. The valves shall be forged brass or cast iron body, fully bronze mounted, direct acting, bronze internal time, reinforced neoprene diaphragm. Valves shall have an inlet side pressure gage connection and adjusting screw or "T" handle.

B. Valve sizes smaller than 3 inches shall have screwed ends.

C. The pressure reducing valves shall be as manufactured by Ross Valve Manufacturing Co., Inc., Troy, New York, equal by Casy Valve Manufacturing Co., Inc., Decatur, Illinois, or equal.

D. Valve 3 inches or larger write specific spec.)

PART 3 - EXECUTION

3.01 GENERAL

A. The Contractor shall furnish and install in the appropriate locations as shown on the Drawings all valves and special fittings as specified.

B. Where required for satisfactory operation of valves or gates, extension stems, stem guides, valve boxes, floor boxes and other valve appurtenances shall be provided.

C. Extension stems shall be complete with guide bearings, wrench nut, and tee handle wrench.

D. All valve stems where packing is specified shall be packed with material properly selected for the service intended.

E. Valves shall be installed in all pipe ahead of fixtures, appliances and equipment not furnished with stops, and elsewhere as required for proper control and isolation of selections of systems for maintenance purposes.

F. Valves shall be suitable for safe working pressure as required in each application. Manufacturer's name and service and pressure marking shall be cast into the body.

G. Valves shall be constructed for not less than 125 pounds per square inch working pressure, (200 pound cold water, oil or gas, non-shock, except as otherwise specified), and shall be so designed and installed that they can be packed under pressure. Shut-off valves shall be gate valves, except where other type valves are specifically indicated or specified.

3.02 INSTALLATION

A. Install valves with stems upright or horizontal, not inverted.

B. Use plug valves for wastewater and sludge service.

C. Install gate or ball valves for shut-off and isolating service, to isolate equipment, part of systems or vertical risers.

D. Use gate valves or butterfly valves for potable water service.

E. Provide spring loaded check valves on discharge of condensate pumps, condenser water and water booster pumps.

F. Use plug cocks for gas service.

G. Use plug valves in water systems for throttling service. Use non-lubricated plug cocks only when shut-off or isolating valves are also provided.

H. Use butterfly valves in chilled and condenser water systems interchangeably in place of gate and globe valves.

I. Provide drain valves at main shut-off valves, low points of piping and apparatus.

J. Install valves so that they are easily accessible for operation, visual inspection and preventive maintenance.

K. Buried valves shall be firmly set on a foundation or fooling of solid concrete, not less than eight inches thick nor less than one cubic foot in volume, which shall have been placed on firmly compacted ground.

L. The height of the buried valve and its supporting foundation shall be such as to conform to the height of the connecting pipe, so that there will be no strain on the joints. The valve shall be set in a vertical position unless otherwise designated on the Drawings.

M. All buried valves shall be provided with valve boxes. The riser shall rest on the valve and be adjusted so that the cover may be set flush with existing sidewalk or paved streets and in all unpaved streets, driveways, road rights-of-way, etc., located at the direction of the Engineer.

The valve box shall be set to allow equal movement above and below finished grade when located in utility easements not subject to street traffic. The riser shall be centered over the valve, and the top of the riser section shall be approximately on line with nut at top of valve stem. The entire assembly shall be plumb.

END OF SECTION

SECTION 02645
VALVES, COCKS, AND APPURTENANCES

PART 1 - GENERAL

1.01 WORK INCLUDED

A. Gate valves

B. Tapping sleeves

C. Sampling cocks and hose bibbs

D. Air release valves

E. Valve boxes

F. Valve vaults

G. Hydrants

H. Service saddles

I. Polyethylene tubing

J. Corporation stops

K. Curb stops

L. Tie rods

M. Valve identification systems

1.02 RELATED WORK

Section 02661: Water Mains

1.03 REFERENCES

A. AWWA - American Waterworks Association.

B. ASTM - American Society for Testing Materials

C. FS - Federal Specification.

1.04 SHOP DRAWINGS

A. Submit copies of valve ordering schedule for approval before ordering valves.

B. Submit detailed Shop Drawings in accordance with Section 01340. Clearly indicate make, model, location, type, size and pressure rating.

PART 2 - PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS

A. Provide valves and operators of same manufacturer throughout, where possible.

B. Provide valves with manufacturer's name and pressure rating clearly marked on outside of body.

C. Acceptable Manufacturers as noted herein. Substitutions in accordance with Section 01630.

2.02 GATE VALVES

A. Gate valves 3 inches and larger in size shall be of the non-rising stem type and shall conform to AWWA C500, latest revision, with handwheel or wrench nut, extension stems and other appurtenances as required. Valves shall be rated for 150 pounds per square inch (psi) working pressure.

1. Shall open counter clockwise.
2. Shall be iron body, fully bronze mounted, double disk, parallel seat; non-rising stem valves with O-ring seals and with end connection as called for in the Drawings.
3. Shall be as manufactured by Iowa Valve Co., Mueller Co., Crane Co., or equal.

B. *Exterior Valve Coatings*: All exterior surfaces of iron body gate valves shall be clean, dry and free from rust and grease before coating. For buried service, the exterior ferrous parts of all valves shall be coated at the factory with an asphaltic coating in accordance with ANSI/AWWA C151 latest revisions. Prior to backfilling, all uncoated nuts, bolts, glands, rods and other parts of joints shall be coated in the field with coal tar epoxy equal to Koppers Bitumastic No. 300-M.

2.03 BUTTERFLY VALVES

A. *General*: All valves for water service, 14 inches in size and larger, shall be butterfly valves. All butterfly valves shall be Class 150-B in conformance with

ANSI/AWWA C504, latest revision and designed for a minimum working pressure of 150 psi. Butterfly valves shall be of the tight closing rubber seat type. Valves shall be bubble tight with 150 psi on the upstream side of the valves and 0 psi on the downstream side and shall be satisfactory for applications involving valve operation after long periods of inactivity. Valve discs shall rotate 90 degrees from the fully open position to the fully closed position. Butterfly valves shall be as manufactured by DeZurik, American- Darling Valve Company, Dresser Industries, Inc., Kennedy Valve Manufacturing Company, Mueller Company or Henry Pratt Company.

B. *Valve Bodies*: Valve body shall be cast iron per ASTM A126 Class B or ductile iron per ASTM A536 Grade 65-45-12. Flanged end valves shall be faced and drilled per ANSI B16.1, Class 125, or as specified by purchaser. Mechanical joint ends shall be per ANSI A21.22 and include MJ end accessories. Valve body to include a stainless steel seat ring that is mechanically retained without use of clamping devices, adjusting segments, or other hardware being in the waterway.

C. *Valve Disc*: Valve disc shall be solid type ductile iron without any external vanes, ribs, etc., to obstruct flow. Resilient seat shall be located on edge of disc, offset from the shaft, and seal against mating stainless steel body seat with 360 degree uninterrupted contact. The resilient seat shall be locked to the disc by three separate means of retention, and be field adjustable, if necessary, with no tools other than a standard socket wrench. Replacement of seat in field shall be possible without valve disassembly.

D. *Valve Shaft*: The disc shall be connected to the offset stainless steel shaft by locked taper wedge keys and stainless steel retaining nuts on the back side of the disc. Taper keys shall be heat treated 416 Stainless Steel fro added strength. Shaft shall be stub type for valves 30-inch and larger; one piece for valves 24-inch and smaller. The valve shall be equipped with adjustable thruster for centering the disc on 30-inch and larger valves if required.

E. *Valve Bearings*: Shaft shall have nylon sleeve or woven teflon fiberglassed backed sleeve for bearing surfaces. Bearings shall be self lubricating.

F. *Valve Actuators*: Manual actuators shall be manufactured and assembled to the valve by the valve manufacturer. They shall be direct mounted to the valve or be located on top of an extended bonnet as required. Actuator shall be designed with field adjustable stops and be capable of holding disc stationary in any position under full rated pressure. Stop-limiting devices must withstand 300 foot-pounds of input torque without failure.

G. *Interior Valve Coating*: Interior of valve body and valve disc except for valve seat and stainless steel valve seat ring shall be coated with a fusion bonded, thermosetting epoxy coating in accordance with AWWA C550, latest revision. Coating shall be holiday-free with a minimum thickness of 12 mils. Surfaces shall be clean, dry and free from rust and grease before coating.

H. *Exterior Valve Coating*: All exterior surfaces of butterfly valves shall be clean, dry and free from rust and grease before coating. For buried service, the exterior ferrous parts of all valves shall be coated at the factory with an asphaltic coating in accordance with ANSI/AWWA C151 latest revision. Prior to backfilling, all uncoated nuts, bolts, glands, rods and other parts of joints shall be coated in the field with coal tar epoxy equal to Kopers Bitumastic No. 300-M.

I. *Valve Testing*: Prior to shipment from the factory, hydrostatic and leakage tests shall be conducted for each butterfly valve. Hydrostatic and leakage tests shall be conducted in strict accordance with ANSI/AWWA C504, latest revision.

2.04 TAPPING SLEEVES

Tapping sleeves shall conform to the requirements of AWWA C110/A21.10 latest revision.

2.05 SAMPLING COCKS AND HOSE BIBBS

Sampling cocks and hose bibbs shall be provided and installed where indicated on the drawings and shall be ¾-inch bronze body, rubber composition disc, garden hose valves.

2.06 AIR RELEASE VALVE

A. A water main shall have air release valve assemblies installed where indicated on the Drawings. The locations indicated are approximate. The actual locations shall be determined in the field during construction and approved by the Engineer prior to construction of the assemblies.

B. The Contractor shall submit to the Engineer, for approval, a profile of the water main in the vicinity of the high point indicated. The profile shall extend a minimum of 200 linear feet each side of the high point of the force main as installed during construction. Elevations of the high point and the top of the pipe at 50-foot intervals within the 400-foot area described above shall be submitted.

C. The air release valves shall be of the type that will release air, manually from the line when pressurized and keeps air from entering the line when not pressurized. The air release valves shall have a 2-inch valve inlet, corporation stop, saddle, galvanized steel pipe and fittings and gate valve. Valves, fittings and piping shall be rated for a working pressure of 150 psi for below ground installation.

D. Air release valves shall be the APCO Model 200-A or approved equal, for water. Air release valves shall be installed at all high points and shall be located in approved vault structures. Air release valves shall be attached to an approved saddle with 2-inch Mueller Corporation stop or Ford ball-corp (2-inch with tee head

adapter). Air release valves will be checked for proper operation during the hydrostatic testing of the water main to two times rated working pressure.

2.07 VALVE BOXES

A. Furnish, assemble, and place a valve box over the operating nut for each buried valve. The valve box shall be designed so as to prevent the transmission of surface loads directly to the valve or piping.

B. Valve boxes shall be of the adjustable slide-type of suitable length with an interior diameter of not less than 5 inches. The valve boxes shall be manufactured of cast iron and shall be adjustable for elevation and shall be set to allow equal movement above and below finished grade. The castings shall be manufactured clean, even grain, gray cast iron conforming to ASTM A48 Class 30B for Gray Iron Castings; and shall be smooth, true to pattern, free from blow holes, sand holes, projections and other harmful defects. The seating surfaces of both the cover and the top section shall be machined so that the cover will not rock after it has been seated. The valve boxes shall be coated inside and outside with an asphaltic coating prior to machining, so that the machined seating surfaces will be free of any coating. Cast iron valve box assemblies shall be Clow Corp. No. F-2452, Tyler Corp. Series 6855 or 6865 approved equal.

C. Valve extension stems shall be provided for all buried valves when operating nut is deeper than 3 feet below final grade.

2.08 VALVE VAULTS

Valve vaults shall be constructed of precast or cast-in-place concrete with dimensions as shown on the Drawings. Concrete shall have a minimum compressive strength of 4,500 psi at 28 days. The steel reinforcement for the structures shall be dssigned and constructed to withstand the loads expected. The cover for the valve vault shall be as shown on the Drawings as approved by the Engineer according to Public Utility Department Standards.

2.09 HYDRANTS

A. Fire hydrants shall be general service type, ductile iron body, fully bronze mounted, for 150 psi working pressure, complying with AWWA Standard C502, latest revision. The inlet connection shall be mechanical joint type, with accessories, for 6-inch ductile iron pipe. The hydrant foot shall have integral cast tie-cast lugs. The integral shut-off valve shall be compression type opening against water pressure, and shall open left (counter-clockwise) as viewed from the operating nut.

B. The main hydrant valve opening shall be 5¼ inches. Valve diameter and general interior design shall be sufficient to provide head loss/flow quantity ratios less than specified in the above cited standard. The main valve seat and the threaded portion of the hydrant into which it screws shall be bronze. The stem operating threads and thrust bearing, and bronze seat ring threads shall be sealed by replaceable O-rings to protect from moisture and corrosion. Stem and seat ring threads shall be permanently greased lubricated or provided with a means for lubrication. All interior working parts of the hydrant shall be removable from the top of the hydrant to allow for repairs without removing the hydrant barrel after it has been installed. A weather shield shall be provided on the bonnet to protect the operating nut and lock nut area form dirt and water.

C. The hose nozzels shall be bronze with American National Standard fire hose coupling screw threads, one 4½ inch pumper nozzle cap nuts shall be securely chained to hydrant barrel. Chains shall be corrosion resistant and painted to match hydrant color. The hydrants shall be "traffic" type with a frangible flange or lugs and operating stem section at ground line.

D. Hydrants shall be furnished with a 3-foot bury body except where deeper burial depths are indicated on the plans or as designated by the Engineer.

E. Coatings for Fire Hydrants: All ferrous metal surfaces of the hydrants shall be clean, dry and free from grease before coating as follows:

1. All exposed exterior surfaces below the ground lien shall be coated at the factory with coal tar epoxy equal to Kopers Bitumastic No. 300-M, for a minimum total finish dry film thickness of 20 mils.
2. All exposed interior surfaces above and below the main hydrant valve, except non-ferrous and machined ferrous surfaces shall be coated at the factory with a fusion bonded thermosetting epoxy coating in accordance with AWWA C550, latest revision. Coating shall be holiday free with a minimum thickness of 12 mils.
3. All exposed, exterior, aboveground ferrous metal surfaces including barrel, bonnet, nozzle caps, nozzle cap chains, nuts, bolts and other fasteners shall be coated at the factory as follows:
    a. Shop primed with one coat, 1.5 mils dry film thickness of a rust inhibitive resin primer. Primer shall be compatible with finish coating and shall be applied in accordance with the coating manufacturer's recommendation. Primer shall be Koppers Pub Primer, or approved equal.
    b. Shop finish painted with two coats, 1.4 mils dry film thickness each coat, of a medium to long oil alkyd resin coating. Finish coating shall be applied in accordance with the coating manufacturer's recommendations. Finish coating shall be Koppers Rustarmor 500, or approved equal.

F. Approved Fire Hydrants: Fire hydrants shall be supplied from one manufacturer for the Project. The fire hydrants supplied shall be from the approved list for general service type fire hydrants listed below.

Manufacturer	Model
American	B-84-B
Kennedy	K81A Guardian
Mueller	Centurion A-423

G. Fire hydrants installed, but not yet in service, shall be covered with a burlap sack.

H. Each hydrant shall be furnished with a hydrant wrench.

2.10 SERVICE SADDLES

Service saddles shall have ductile iron bodies in accordance with ASTM A536, latest revision, with double stainless steel straps. Ductile iron body shall have a fusion bonded nylon coating with a minimum thickness of 12 mils. Straps shall be Type 316 stainless steel with premium grade Type 316 stainless steel bolts and Type 316 stainless steel washers and nuts. The nuts shall be Teflon coated. The gasket material shall be an elastomeric compound resistant to degradation by oil, natural gas, acids, alkalies, most aliphalic fluids and chloramines in potable water. The outlet to the saddle shall have CC threads. Service saddles shall be Rockwell, Baker, Shur-o-Seal, Romac or an equal approved by the Engineer.

2.11 POLYETHYLENE TUBING

Service lines and jumper connections shall be polyethylene tubing conforming to ASTM D2737; SDR 9 with a minimum working pressure of 200 psi.

2.12 CORPORATION STOPS

Corporation stops shall be manufactured from cast bronze with machined fitting surfaces, and in accordance with AWWA C-800 latest, in sizes 1 inch up to including 2 inches. The inlet connection shall be AWWA standard corporation stop thread. The outlet connection shall be a packjoint outlet for copper or plastic tubing. Corporation stops with compression joint outlets for copper or plastic tubing shall be Type FB 1102 as manufactured by Ford Meter Box Company, or approved equal.

2.13 CURB STOPS

Curb stops shall be AWWA C-800 approved ball valve, roundway, with check, with lock wing cast on stop body and operating tee cap to provide for locking the stop in closed position. Curb stops for use with copper or plastic services shall have an inlet connection with a compression joint and an outlet connection with female iron pipe thread, as manufactured by Ford Meter Box Company B41 with padlock wings, or approved equal.

2.14 TIE RODS

When prior approval is obtained from the Engineer, ductile iron pipe, fittings, and valves may be restrained using tie bolt joint restraint. All bolts, nuts, washers, tie rods and other fasteners for the joint restraint system shall be manufactured of Type 316 Stainless Steel. Tie rods shall have a minimum diameter of ¾-inch. The number of tie rods required per joint shall be as recommended by the manufacturer.

2.15 VALVE IDENTIFICATION SYSTEMS

A. Buried Valves:

1. In paved areas, tops of valve box covers shall be set flush with pavement. Following paving operations, a 30-inch square shall be neatly cut in the pavement around the box and the paving removed. The top of the box shall then be adjusted to the proper elevation and a 30-inch square by 6-inch thick concrete pad poured around the box cover. Concrete pads in traffic areas shall be reinforced with No.4 reinforcement bars as shown on the Drawings. Concrete for the pad shall be 3,000 psi compressive strength.
2. In unpaved areas, tops of valve box covers shall be set 0.20 feet above finished grade. After the top of the box is set to the proper elevation, a 30-inch square by 6-inch thick concrete pad shall be poured around the box cover. Concrete for the pad shall be 3,000 psi compressive strength.
3. Shall have valve boxes protected by a concrete pad. The concrete pad for the valve box cover shall have a 2½-inch diameter, bronze disc embedded in the surface as shown on the Drawings. The bronze disc shall have the following information neatly stamped on it:
   a. Size of valve, inches
   b. Type of valve:
      Ÿ GV - Gate Valve
      Ÿ BFV - Butterfly Valve
   c. Valve Service - "PW" for Potable Water
   d. Number of turns to fully open
   e. Direction to open
   f. Year of installation

PART 3 - EXECUTION

3.01 INSTALLATION OF VALVES

A. Valves of the size and type shown on the Drawings shall be set plumb and installed at the locations indicated on the Drawings. Valves shall be installed in accordance

with manufacturer's installation instructions and with the Details shown on the Drawings.

B. Valves shall be installed such that they are supported properly in their respective positions, free from distortion and strain. Valves shall be installed such that their weight is not borne by pumps and equipment that are not designed to support the weight of the valve.

C. Valves shall be carefully inspected during installation; they shall be opened wide and then tightly closed and the various nuts and bolts shall be tested for tightness. Special care shall be taken to prevent any foreign matter form becoming lodged in the valve seat. Check and adjust all valves for smooth operation.

D. Install valves with the operating stem in either horizontal or vertical position.

E. Allow sufficient clearance around the valve operator for proper operation.

F. Clean iron flanges before installing flanged valves. Clean carbon steel flange bolts and nuts by wire brushing, lubricate threads with oil or graphite, and tighten nuts uniformly and progressively. Clean threaded joints by wire brushing or swabbing. Apply Teflon joint compound or Teflon tape to pipe threads before installing threaded valves. Joints shall be watertight.

G. For buried valves, a valve box shall be centered accurately over the operating nut and the entire assembly shall be plumb. The tops of valve boxes shall be adjusted to the proper elevation as specified below and as shown on the Drawings.

H. Valves shall be tested hydrostatically, concurrently with the pipeline in which they are installed. Protect or isolate any parts of valves, operators, or control and instrumentation systems whose pressure rating is less than the pressure test(s). If valve joints leak during pressure testing, loosen or remove the nuts and bolts, reseat or replace the gasket, reinstall or retighten the bolts and nuts and hydrostatically retest the joints.

I. Following installation of buried valves or valve installed in valve vaults, repair any scratches, marks and other types of surface damage, etc., etc., with a costing equal to the original coating supplied by the manufacturer. Prior to backfilling, coat all nuts, bolts and other parts of the valve joints with coal tar epoxy equal to Koppers Bitumastic No. 300-M, for a minimum dry film thickness of 16 mils.

J. All valves shall be wrapped with visqueen (6 mils).

3.02 INSTALLATION OF FIRE HYDRANTS

A. Fire hydrants shall be installed at the locations shown and as detailed on the Drawings, and in accordance with the manufacturer's installation instructions, and Palm Beach County Environmental Control Rules.

B. No fire hydrant assembly shall be backfilled until approved by the Engineer.

C. Provide crushed stone drainage material and concrete thrust blocks as shown on the Drawings. Thrust blocks shall be as specified hereinabove.

D. Barrel and operating stem extensions shall be provided for fire hydrants, if necessary, to install the hydrant at the proper elevation above finish grade, as detailed on the Drawings.

E. After installation, the fire hydrants shall be hydrostatically tested and flushed with the line in which they are installed.

3.03 INSTALLATION OF VALVE VAULTS

A. Concrete valve vaults shall be constructed in a workmanlike manner at locations and dimensions indicated on the Drawings. Precast concrete vaults shall be set on a foundation of crushed stone, 12 inches thick. The vaults shall be constructed such that the structure will not transmit dead or live loads to the piping. Care shall be taken to prevent earth and other material from entering vault structures.

B. Door frames and covers for meter or vault shall be cast into the top as indicated on the Drawings. In non-paved areas, the top of the vaults shall be set a minimum of 2 inches above finished grade.

3.04 INSTALLATION OF TIE RODS

Tie rods shall be installed in strict accordance with the manufacturer's written installation requirements. Unless otherwise indicated on the Drawings, the size and number of tie rods for a joint or installation shall be as recommended by the manufacturer's design chart for a working pressure of 150 psi.

END OF SECTION

SECTION 02661
WATER MAINS

PART 1 - GENERAL

1.01 SCOPE

The work to be performed under this Item shall include the furnishing and installing of water mains and appurtenances as herein described and as shown on the Plans. The Contractor shall perform all excavation, backfilling and related work required for the construction of these mains, in accordance with the provisions set forth under the applicable items of this Specification and of the General Requirements. Where not otherwise set forth, all work shall be in accordance with AWWA (ANSI) C600.

1.02 REFERENCES

Standards applicable in this Specification shall be:

A. American Water Works Association (AWWA) and American National Standards Institute (ANSI).

1. AWWA C104 (ANSI A21.4) Cement-Mortar Lining for Ductile-Iron and Gray Iron Pipe and Fittings for Water.
2. AWWA C105 Polyethylene Encasement for Ductile-Iron Pipe Systems
3. AWWA C110 Gray-Iron and Ductile-Iron Fittings, 3-inch through 48-inch for Water and Other Liquids.
4. AWWA C111 (ANSI A21.11) Rubber Gasket Joints for Ductile-Iron and Gray-Iron Pressure Pipe and Fittings.
5. AWWA C150 (ANSI A21.50) Thickness Design of Ductile-Iron Pipe.
6. AWWA C151 (ANSI A21.51) Ductile-Iron Pipe, Centrifugally Cast in Metal Molds or Sand Lined Molds for Water or Other Liquids.
7. AWWA C600 Installation of Ductile Iron Water Mains and Appurtenances.
8. AWWA C601 Standard for Disinfecting Water Mains.
9. AWWA C900 Polyvinyl Chloride (PVC) Pressure Pipe, 4 in. through 12 in., for Water Distribution.
10. AWWA C901 Polyethylene Pressure Pipe and Tubing for Water Service.

B. American Association of State Highway and Transportation Official (AASHTO). AASHTO T-180-82 The Moisture-Density Relation of Soils Using a 10-pound. (4.54 kilogram) Rammer and an 18-inch (457 milimeter) Drop.

PART 2 - MATERIALS

2.01 PIPE

A. Ductile Iron Pipe: Ductile iron pipe shall conform to AWWA C151 (ANSI A21.51) and shall be thickness Class 53 for 4 inch, Class 52 for 6 and 8-inch.

B. Lining: Ductile iron pipe for water mains shall have an internal lining of cement mortar in accordance with AWWA C104/A21.4.

C. Coating: Buried ductile iron pipe shall be bituminous coated per AWWA C151/A21.51

D. Encasement: In corrosive environments, Ductile iron pipe shall be encased in polyethylene in accordance with AWWA C105.

E. Polyvinyl Chloride (PVC) Pipe: In corrosive environments where PVC pipe, 4 in. through 12 in., is specified, it shall conform to AWWA C900.

F. Service Lines: Service lines shall be polyethylene (SDR 9) tubing and have a minimum working pressure of 200 pounds per square inch (psi).

2.02 FITTINGS

Ductile Iron Fittings - Ductile iron fittings shall be mechanical joint type and shall conform to ANSI/AWWA C110/A21.10. All fittings shall have a working pressure rating of 350 psi in sizes 4-inch through 24-inch and 250 psi for sizes 30-inch through 54-inch, and shall be coated and lined as specified for pipe.

2.03 JOINTS

A. Push-on Joints - For bell and spigot ductile iron pipe and fittings shall be rubber gasket compression, push-on type as specified in AWWA C111 (ANSI A21.11). These joints may be U.S. pipe and Foundry "Tyton" Joints or approved equal.

B. Restrained Joints - Restrained joints may be used in lieu of thrust blocks for changes in elevation or alignment as shown on the Plans or as required in the field by the Engineer. The length of restraint required shall be approved by the engineer. These joints may be U.S. Pipe and Foundry "TR Flex" Joints, MEGALUGS, or approved equal.

2.04 CONCRETE FOR THRUST BLOCKS

Concrete for thrust blocks shall have a compressive strength of 2,500 psi after 28 days.

2.05 FOUNDATION ROCK

A sieve analysis of foundation rock shall conform to the following limits:

Passing 3/4" - 100%	Passing #4 - 0-10%
Passing 3/8" - 20-55%	Passing #8 - 0-5%

2.06 ELECTRONIC PIPE LOCATORS

The Contractor shall install blue "Scotchmark" electronic ball markers at all fittings and service connections. The Contractor shall furnish the City, upon completion of the work, with a transmitter/receiver device for locating the ball markers.

2.07 PIPE COLOR CODING

All water main pipe and pipe fittings installed under this project shall be color coded or marked using blue as a predominant color. All underground plastic pipes shall be solid-wall blue pipe, shall have a co-extruded blue external skin, or shall be black pipe with blue stripes incorporated into, or applied to, the pipe wall; and underground metal pipe shall have blue stripes applied to the pipe wall. Pipe striped during manufacturing of the pipe shall have continuous stripes that run parallel to the axis of the pipe, that are located at no greater than 90-degree intervals around the pipe, and that shall remain intact during and after installation of the pipe. If tape or paint is used to stripe pipe during installation of the pipe, the tape or paint shall be applied in a continuous line that runs parallel to the axis of the pipe and that is located along the top of the pipe; for pipe with an internal diameter of 24 inches or greater, tape or paint shall be applied in continuous lines along each side of the pipe as well as along the top of the pipe. Aboveground pipe shall be painted blue or shall be color coded or marked like underground pipe.

PART 3 - EXECUTION

The installation and testing of the water main shall be done in accordance with AWWA (ANSI) C600 plus the additional requirements described herein or shown on the Plans.

3.01 PREPARATION

A. Clearing - The Contractor shall perform all clearing necessary, where applicable, for the proper installation of all water mains, and appurtenances in the locations shown on the drawings. Plantings, shrubbery, trees, utility poles or structures subject to damage resulting from the excavation shall be transplanted, relocated, braced, shored or otherwise protected and preserved unless otherwise directed by the Engineer.

B. The layout of some of the piping systems shown on the drawings may be diagrammatic, but shall be followed as closely as the work will permit.

C. Ream pipes and tubes. Clean off scale and dirt, inside and out, before assembly. Remove all foreign material from piping.

3.02 TRENCHING

A. Perform trench excavation and provide pipe protection to the line and grade indicated on the contract drawings and as specified in Section 02220. Remove all muck and organic material.

B. Foundation - Foundations are shown on the plan details and described in this specification.

1. Type 1 Trench - Type 1 Trench shall be considered "Standard" for this project and shall be installed under all pipe when an undisturbed trench bottom is found.

2. Bedding shall consist of at least four inches of 3/8-inch to 3/4-inch (where unsuitable in-situ materials are encountered) washed and graded limerock placed in the trench and tamped to the proposed elevation of the center line of the pipe prior to any pipe laying. Holes shall be excavated at each bell so that the pipe is supported along the barrel only. This bedding shall not be used under any circumstances as a drain for ground water. The contractor shall take all precautions necessary to maintain the bedding in a compacted state and to prevent washing, erosion or loosening of this bed.

3. Preparation of Trench - the trench shall be excavated to the depth shown on the Plans. Care shall be taken during the excavation operation not to disturb the soil below the grade line of the bottom of the pipe. Bell holes shall be hand excavated so that there are no bearing surfaces on the bells. The pipe barrel shall be uniformly supported along its entire length.

In granular material and where the conditions permit, the bottom shall be shaped to fit the lower quarter of the pipe barrel. Where rock or unstable material is encountered, the trench shall be excavated 8 inches below the required depth. The subgrade for the pipe shall be made by backfilling with approved material and compacted as directed by the Engineer. The pipe shall not be installed when the stabilization of the trench bottoms are rendered soft or unstable as a result of construction methods, such as improper or inadequate sheeting, dewatering or other causes. The Contractor shall correct such conditions so as to provide proper bedding or foundations for the proposed installation as indicated in the paragraph above.

3.03 INSTALLATION

All pipe, fittings and valves shall be installed according to AWWA Specification C600. Prior to installation, all pipe and appurtenances shall be examined for damage and defects. Under no circumstances shall defective pipe be installed. All lumps,

blisters and excess coating materials shall be removed from the socket and plain ends of each pipe. While being placed in the trench, care shall be taken to prevent foreign material from entering the pipe. As each length of pipe is placed in the trench, the joint shall be assembled and the pipe brought to correct line and grade.

At times when pipe laying is not in progress, the open end of the pipe shall be closed by a watertight plug. When practical, the plug shall remain in place until the trench is pumped completely dry. When it is necessary to deflect the pipe from a straight line in either the vertical or horizontal plane, or where long radius curves are permitted, the amount of deflection shall not exceed that of Table 5 and 6 in AWWA Specification C600.

A. Pipe Restraint - All bends, tees, and dead ends shall be restrained by a thrust block as detailed on the drawings (or other approved method).

All bends, tees and dead ends in pipe 4 inches to 12 inches shall be restrained by a thrust block as detailed on the drawings. In pipe sizes greater than 12 inches, the restraint shall be by restraint joints on the piping on each side of the fittings for distances detailed on the drawings.

B. Polyethylene Encasement - Ductile Iron Pipe installed in corrosive environments shall be encased in either of 8-mil low-density (LD) polyethylene or 4 mil, high-density, cross-laminated (HDCL) polyethylene, in accordance with AWWA C105 latest edition.

C. Backfill

1. General - Where the trench has been dewatered, backfilling must progress sufficiently before pumps are shut off to prevent flotation of pipe. Any pipe that has been displaced perceptibly from its correct position shall be removed and relaid properly at the Contractor's expense. Backfilling shall follow pipe laying within 100 feet, unless otherwise directed by the Engineer, but shall not be performed in any case until the Engineer has approved the line for backfilling. Water shall not be added except as required to obtain Optimum Moisture Content and "flooding" or "puddling" will not allowed.
   Backfill material shall be free of roots, logs, limbs, large rocks or any material or debris determined to be unsuitable by the Engineer. The Engineer may reject any material which he considers unsuitable for backfill.
   The compaction procedures specified herein shall be considered "minimum procedures" to prevent after-settlement and the Contractor shall reopen, refill and recompact any trenches indicating improper backfill procedures or after settlement.
   All road crossings shall be backfilled immediately; made passable and maintained passable until the permanent repair is made.

2. City Rights-of-Way

a) Initial Lift (to 12 inches above pipe) - The initial lift shall be carefully backfilled around and over the pipe with select materials, not exceeding 1/2 inch in diameter, and compacted in 6 inch layers with manual equipment to an average maximum density of 95 percent as determined by AASHTO T-180 (Modified Proctor).

b) Final Lift - The final lift (to finish grade or bottom of pavement as applicable) shall be carefully backfilled with material free from organic material and stones or clumps exceeding 6 inches (4 inches in the final 12 inch layer) in diameter, and compacted in 12 inch layers to an average maximum density of 98 percent as determined by AASHTO T-180 (Modified Proctor).

c) Density Compliance - in determining compliance with the density specifications, the lowest acceptable density shall be 98 percent. In determining "job average maximum density," 102 percent shall be the highest percentage used.

3.04 PIPELINE CLEANING (PIGGING)

A. The Contractor shall clean and flush water mains in the following manner:

1. The Contractor will insert a flexible polyurethane foam "swab" (2 lbs/CF) complete with rear polyurethane drive seal, into the first section of pipe. The "swab" shall remain there until the pipeline construction is complete. The "swab" may also be inserted into wyes or tees after construction is complete.
2. Cleaning and flushing shall be accomplished by propelling the "swab" down the pipeline to the exit point with potable water during the initial filling of the main, prior to bacteriological testing. Flushing shall continue until the pig exits and the water is completely clear.
3. If cleaning and flushing exit point is through a fire hydrant (8" line or smaller) the Contractor shall remove the hydrant internal valve assembly to allow passage of the "swab".

3.05 FIELD QUALITY CONTROL

A. Hydrostatic Tests:

The Contractor shall provide all necessary material and shall perform all work required in connection with the test, including temporary plugs where required. All pipe shall be tested to a hydrostatic pressure of 150 P.S.I. The required pressure as measured at the point of highest elevation shall be applied for not less than two hours, and all pipe, fittings, valves and joints shall be made water tight if leakage is evident.

No pipe installation will be accepted unless and until the leakage is less than that as specified under Section 4.2 of the AWWA (ANSI) C600.

B. Sterilization of Complete Line:

Before being placed in service, each line shall be sterilized in accordance with the directions of the Florida State Board of Health and in accordance with AWWA C601.

C. Connections to the Existing System:

Connections to be made by the Contractor are shown on the Plans. Connections shall not be made until the new main is cleared by PALM BEACH COUNTY HEALTH DEPARTMENT.

D. Density Tests:

The Engineer shall specify at what locations test will be made in the backfill to determine the adequacy of the compaction operation.

3.06 ADJUSTING AND CLEANING

A. Restoring Surfaces:

The top surfaces of the backfill shall be restored to present standards or better conditions. Trenches shall be carefully examined upon the completion of backfilling and surface irregularities that are dangerous or obstructive to traffic, are to be removed.

Paved sections shall conform in grade with adjacent areas and shall be of at least equal quality. Design mixes for flexible pavement shall be subject to approval by the Engineer. All damaged or undermined areas of existing pavement, not previously removed, shall be removed and restored to original conditions or in the specified manner.

Equipment shall not travel over loose rock fragments, or other hard material, lying on sections or pavement which is not to be removed. Removal, replacement and restoration of areas of pavement shall be as indicated on drawings.

END OF SECTION

SECTION 02675
DISINFECTION OF POTABLE WATER LINES

PART 1 - GENERAL

1.01 REQUIREMENTS INCLUDED

A. Provide personnel, equipment and supplies to disinfect new water mains and domestic water systems, and flush out systems at completion of treatment.

B. Owner will obtain services of a certified lab per Section 01410.

C. A reduced pressure zone backflow preventer shall be used on the fill connection and will be provided by the City.

1.02 RELATED REQUIREMENTS

A. Section 02661: Water Mains

B. AWWA C-651, Latest Revision

1.03 DEFINITIONS

A. Disinfectant Residual - The quantity of disinfectant in treated water.

B. ppm - parts per million.

1.04 QUALITY ASSURANCE

A. Contractor shall be experienced in performing work specified herein.

B. Regulatory Agency Requirements: Comply with State and Local Requirements.

1.05 SUBMITTALS

A. Test Reports: Submit four copies as follows:

1. Disinfection Report, include:
   a. Date issued.
   b. Project name and location.
   c. Contractor's name, address, and phone number.
   d. Type and form of disinfectant used.
   e. Time and date of disinfectant injection completion.
   f. Test locations selected by Engineer.

g. Initial and 24 hour disinfectant residuals in ppm for each outlet tested, obtained from testing laboratory.
h. Time and date of flushing start.
i. Time and date of flushing completion.
j. Disinfectant residual after flushing in ppm for each outlet tested, obtained from testing laboratory.

1.06 PROTECTION

A. Provide necessary signs, barricades, and notices to prevent any person from accidentally consuming water or disturbing system being treated.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Disinfectant

1. Free chlorine; liquid, powder, or tablet
2. Sodium Hypochlorite

PART 3 - EXECUTION

3.01 INSPECTION

A. Prior to starting work verify that potable water system is completed and cleaned.

B. Do not start work until conditions are satisfactory.

3.02 PREPARATION OF WATER FOR TREATMENT

A. Use potable water obtained from an approved public water supply for disinfection and flushing.

B. Notify engineer 48 hours prior to starting tests.

3.03 SYSTEM TREATMENT

A. Inject disinfectant throughout system to obtain 50 to 80 ppm residual.

B. Starting at outlet closest to water source, bleed water from each outlet until water produces odor of disinfectant. Repeat process at each outlet throughout system.

C. Test for disinfectant residual at each of the following locations:

1. Ends of piping runs.
2. Remote outlets.
3. Sample Points

D. Maintain disinfectant in system for 24 hours.

3.04 FLUSHING

A. Remove disinfectant from system; permit no more than residual rate of incoming water or one ppm, whichever is greater.

3.05 BACTERIOLOGICAL TEST

A. Water samples to be taken by an Independent Certified Lab no sooner than 24 hours after flushing system.

B. Water samples to be analyzed in accordance with Standard Methods for the Examination of Water & Waste Water, latest edition, published by American Water Works Association, 6666 West Quinch Avenue, Denver;, CO 80235.

C. If bacteriological test proves water quality to be unacceptable, repeat system treatment.

END OF SECTION

SECTION 02680
TESTING PIPING SYSTEMS - POTABLE WATER

PART 1 - GENERAL

1.01 REQUIREMENTS INCLUDED

A. Perform specified services with Contractor's qualified personnel, or employ and pay for a qualified organization to perform specified services.

B. Pressure Piping Systems.

1.02 RELATED REQUIREMENTS

A. Section 02675: Disinfection of Potable Water Lines.

B. Section 01700: Contract Closeout.

1.03 DESCRIPTION

A. Perform testing of piping systems in accordance with AWWA C-600 and as specified below.

B. Provide instruments required for testing of piping systems.

1. Make instruments available to Engineer to facilitate spot checks during testing.
2. Retain possession of instruments, remove from site at completion of services.

C. Provide all water required for flushing and testing.

D. Provide all necessary pumping equipment and other equipment, materials and facilities required for proper completion of the flushing and testing specified.

E. Source and quality of water, procedure and test equipment shall be by approval of the Engineer.

F. All tests shall be made in the presence of the Engineer. Notify Engineer at least 48 hours before any Work is to be inspected or tested.

G. If inspection or test shows defects, the piping system(s) shall be repaired and replaced and inspection repeated, until such piping is acceptable to the Engineer.

H. Sections of the system may be tested separately, but when so tested it shall be distinctly understood that any defect which may subsequently develop in a section already tested and accepted shall promptly be corrected and that section retested.

I. Disposal of the water used for testing shall be subject to the approval of the Engineer.

1.06 JOB CONDITIONS

A. Prior to start of testing of piping systems, verify that required "Job Conditions" are met:
   1. System or system element installation is complete.
   2. All required materials, water, instruments, etc. are on hand.
   3. All other preparations are completed.

1.07 TESTING PROCEDURES

A. Pressure Piping Systems:

   1. All pressure piping shall pass a hydrostatic pressure test and a leakage test as defined below before acceptance. The pressure and leakage test shall be made after all jointing operations are completed and after backfilling is completed. All concrete reaction blocks, or other bracing and restraining facilities, shall be in place at least 24 hours before the initial filling of the line.
   2. The pressure and leakage tests may be applied to an individual section of line isolated between the existing line valves, or may be applied to shorter sections or line as approved by the Engineer. If shorter sections are tested, test plugs or bulkheads as required at the ends of the test section shall be furnished and installed by the Contractor at his expense, together with all anchors, braces and other devices required to withstand the hydrostatic pressure on such plug or plugs, without imposing any hydraulic thrust on the pipe line or any part thereof. The Contractor shall be solely responsible for any and all damage to the pipe line, and/or to any other facility, which may result from the failure of test plugs furnished by him or supports therefor, in any case.
   3. Tests:
      a. *Hydrostatic Tests*:
         (1) The section of line to be tested shall be slowly filled with water and all air expelled from the pipe. Care shall be taken that all air valves are installed and open in the section being filled, and that the rate of filling does not exceed the venting capacity of the air valves.
         (2) Hydrostatic test pressure shall be as follows:

System Working Pressure 150 psi

(3) After the pipe has been laid, all newly laid pipe or any valved section thereof shall be subjected to a hydrostatic pressure of at least 1.5 times the working pressure at the point of testing (or 150 p.s.i., whichever is greater).

(a) Test pressure shall:

i. Not be less than 1.25 times the working pressure at the highest point along the test section.

ii. Not exceed pipe or thrust-restraint design pressures.

iii. Be of at least 2-hour duration.

iv. Not vary by more than + 5 psi (0.35 Bar) for the duration of the test.

v. Not exceed twice the rated pressure of the valves or hydrants when the pressure boundary of the test section includes closed gate valves or hydrants. NOTE: Valves shall not be operated in either direction at differential pressure exceeding the rated pressure.

vi. Not exceed the rated pressure of the valves when the pressure boundary of the test section includes closed resilient-seated gate valves or butterfly valves.

(b) Each valved section of pipe shall be filled with water slowly and the specified test pressure based on the elevation of the lowest point of the line or section under test and corrected to the elevation of the test gauge shall be applied by means of a pump connected to the pipe in a manner satisfactory to the owner. Valves shall not be operated in either the opening or closing direction at differential pressures above the rated pressure. It is good practice to allow the system to stabilize at the test pressure before conducting the leakage test.

(4) Examination. Any exposed pipe, fittings, valves, hydrants, and joints shall be examined carefully during the test. Any damage or defective pipe, fittings, valves, or hydrants that are discovered following the pressure test shall be repaired or replaced with sound material and the test shall be repeated until it is satisfactory to the Owner.

b. *Leakage Test*:

(1) A leakage test shall be conducted concurrently with the pressure test. A leakage shall be defined as the quantity of water that must be supplied into the newly laid pipe, or any valved section thereof, to maintain pressure within 5 psi (0.35

Bar) of the specified test pressure after the air in the pipeline has been expelled and the pipe has been filled with water. Leakage shall not be measured by a drop in pressure in a test section over a period of time.

(2) No pipe installation will be accepted if the leakage is greater than that determined by the following formula:

$$\mathbf{L} = \frac{S \times D \times \sqrt{P}}{133,200}$$

in which L is the allowable leakage, in gallons per hour; S is the length of pipe tested in feet; D is the nominal diameter of the pipe in inches; and P is the average test pressure during the leakage test, in pounds per square inch. The leakage test shall be conducted for a period of two hours.

(a) Allowable leakage at various pressures is shown in Section 3.02.

(b) When the testing again closed metal-seated valves, an additional leakage per closed valve of 0.0078 gal/h/in (0.0012L/h/mm) of nominal valve size shall be allowed.

(c) When hydrants are in the test section, the test shall be made against the closed hydrant.

(d) Acceptance of installation. Acceptance shall be determined on the basis of allowable leakage. If any test of pipe laid disclosed leakage greater than that specified in Section "b" above, the contractor shall, at his own expense, locate and make repairs as necessary until the leakage is within the specified allowance.

(3) All visible leaks are to be repaired regardless of the amount of leakage.

PART 2 - PRODUCTS

Not used.

PART 3 - EXECUTION

3.01 GENERAL

A. Prior to testing, flush all piping systems with water to remove all debris in the system.

B. For testing refer to the Testing Procedures above.

END OF SECTION

SECTION 02720
STORM DRAINAGE SYSTEM

PART 1 - GENERAL

1.01 DESCRIPTION OF WORK

The extent of the storm drainage system is shown on the drawings and/or specified.

1.02 RELATED WORK

A. Section 02110: Clearing and Grubbing

B. Section 02210: Excavation and Swale Grading

C. Section 02220: Trenching, Backfilling and Compacting

1.03 SUBMITTALS

A. Submit shop drawings for pipe, inlets, manholes, frames and covers.

PART 2 - PRODUCTS

2.01 REINFORCED CONCRETE PIPE

A. Reinforced concrete pipe for the construction of the storm drainage system shall be manufactured in accordance with Section 430 of the Florida Department of Transportation Standard Specifications for Road and Bridge Construction and ASTM C76. The reinforced concrete pipe shall meet the design requirements for Class III, Wall B pipe as specified on Table 3, ASTM C76. Location and size of pipe is as shown on the drawings.

B. The reinforced concrete pipe shall be sealed by the use of round rubber gaskets. The rubber gaskets used shall meet the requirements as specified in Section 941 of the Standard Specifications for Road and Bridge Construction and ASTM C76.

2.02 CORRUGATED ALUMINUM PIPE

A. Corrugated Aluminum pipe for the construction of the storm drainage system shall be manufactured in accordance with Section 945 of the Florida Department of Transportation Standard Specifications for Road and Bridge Construction.

2.03 MANHOLES AND INLETS

A. Precast manholes and inlets shall be manufactured in accordance with Section 425 of the Florida Department of Transportation Standard Specifications for Road and Bridge Construction and the Department of Transportation Road Design Standards.

B. Manhole frames and covers, and inlet frames and grated shall be the type and duty as shown on the drawings. All castings shall be true to pattern in form, have the correct dimensions and be free from faults and cracks. Bearing surfaces between frames and covers shall be machine fitted to prevent rocking.

PART 3 - EXECUTION

3.01 INSTALLATION

A. Piping and appurtenances for sewers shall be of the type and material specified in the applicable sections of the Detailed Specifications. All pipe, fittings, jointing, materials, grates, manhole frames and covers, and other appurtenances shall be new material to be included in the work; and if not specifically described in these specifications, shall be of the best quality and entirely suitable for the service intended. All such material shall be approved by the engineer prior to installation.

B. Pipe shall be protected during storage and handling against impact shocks, or free fall. Pipe shall be kept clean at all times and no pipe shall be used that does not conform fully with standards or specifications hereinafter described.

C. Each pipe section shall be laid in strict conformance with the line and grade as shown on the construction plans. Three (3) batter boards and a top line shall be used when pipe is laid, unless another method of checking the inner grade is approved by the engineer. The laying of pipe in finished trenches shall commence at the lowest point with the bell end laid upgrade.

D. The contractor shall provide and maintain on the job site at all times, a guage rod of sufficient length to reach from the invert of the pipe being laid to the top line secured on the batter boards. The gauge rod shall be graduated and numbered each foot of its entire length and shall be equipped with either a plumb line or two (2) spirit levels.

E. Construction using any of the several type laser beam devices is generally acceptable provided same is in good repair and calibration and a level and level rod is used to check for grade at catch basins, manholes and outfalls. Use of levels and/or transits alone is discouraged and generally will not be permitted.

F. Prior to installing the pipe, the rubber gasket shall be placed on the tongue of the pipe, in accordance with the manufacturer's recommendations, but not more than

twenty-four (24) hours prior to installation of the pipe. The tongue end shall be protected at all times from the sun, blowing dust, or other deleterious agents. Gaskets shall be inspected before installation of the pipe and any loose or improperly affixed gaskets shall be removed and replaced to the satisfaction of the engineer.

G. Pipe shall be set firmly according to the lines and grade; and preparatory to making joints for concrete pipe, all surfaces of the portion of the pipe to be jointed shall be thoroughly cleaned. The pipe shall be laid with the groove upstream. A shallow excavation shall be made underneath the pipe at the joint.

H. Immediately prior to installation, the entire interior of the groove of the pipe already installed, and the rubber gasket of the pipe to be installed shall be coated with an approved vegetable soap lubricant. The groove and spigot ends shall be cleaned prior to application of the lubricant. The pipe shall then be aligned with the previously installed pipe and the joint pulled together. The joint shall be pulled by the use of interior or exterior pull jacks or winches, anchored by suitable means. The choice of method and type of equipment will depend on trench conditions, type and size of pipe, and its ability to properly seat the gasket. If, while making the joint, the gasket becomes loose and can be seen through the exterior joint recess, when the joint is pulled up to within one (1) inch of closure, the pipe shall be removed and the joint remade to the satisfaction of the engineer.

3.02 EARTHWORK

Excavation of trenches, preparation of trench bottoms, backfilling and other earthwork in connection with installation of storm sewers shall be in accordance with the section: 02220 Trenching, Backfilling and Compacting for piping systems.

3.03 RESPONSIBILITY

The contractor shall be held strictly responsible for all parts of the work that bear the load of the backfill. If structural failures in the sewers or appurtenances develop within one (1) year from the date of final acceptance of the work, the contractor shall be required to replace all faulty material at his full expense. To this end, the contractor is advised to purchase material under a guarantee from the manufacturer, guaranteeing proper service under conditions which are established by the drawings, specifications and local conditions.

END OF SECTION

SECTION 02726
EXFILTRATION TRENCH

PART 1 - GENERAL

1.01 WORK INCLUDED

A. In general, the work specified in this Section shall consist of the construction of Exfiltration Trench, utilizing one of the authorized types of pipe, with ballast rock, and syhthetic filter fabric in accordance with these Specifications and in conformity with the lines, grades, dimensions, notes and details shown on the Drawings.

1.02 RELATED WORK

Section 02220: Trenching, Backfilling and Compacting for Piping Systems.

PART 2 - PRODUCTS

2.01 PERFORATED CORRUGATED METAL PIPE

A. Corrugated Aluminum Alloy Culvert Perforated Pipe shall conform to Section 945 of the FDOT Standard Specifications. Perforations shall be uniformly spaced around the full periphery of the pipe. There shall not be less than 30, 3/8 inch* round perforations per square foot of pipe surface except that perforations are not required within 4 inches of each end of each length of pipe or in a corrugation where seams are located.

B. Galvanized Corrugated Steel Pipe shall conform to Section 943 of the FDOT Standard Specifications and perforations shall be located as described above.

* 5/16-inch diameter holes may be utilized in lieu of the 3/8 -inch diameter holes if the number of holes are increased to provide an equal cross sectional hole area. The other requirements remain the same.

2.02 SLOTTED CONCRETE PIPE

A. Slotted concrete pipe for the construction of the storm drainage system shall be manufactured in accordance with Section 430 of the Florida Department of Transportation Standard Specifications for Road and Bridge Construction and ASTM C76. The reinforced concrete pipe shall meet the design requirements for Class III, Wall B pipe as specified on Table 3, ASTM C76. Location and size of pipe is as shown on the drawings.

B. The slotted concrete pipe shall be sealed by the use of round rubber gaskets. The rubber gaskets used shall meet the requirements as specified in Section 941 of the Standard Specifications for Road and Bridge Construction and ASTM C76.

2.03 BALLAST ROCK

All ballast rock shall be locally procured and shall be obtained from fresh water sources. It shall be washed and free of deleterious matter. It shall not have more than 45 percent loss of section as specified by M63 of AASHTO Specifications governing the Los Angeles Abrasion Test. It shall not show more than a 10 percent loss in 10 cycles as specified by M63 of AASHTO Specifications governing the soundness test. The ballast rock shall meet the gradation requirements as specified by M43 of AASHTO Specifications for size number 24 (2 1/2 to 3/4 -inch) or number 4 (1 1/2 to 3/4-inch). The Owner reserves the right to have sample tests made of the material at selected intervals by an approved laboratory at its expense.

2.04 SYNTHETIC FILTER FABRIC

Plastic filter fabric shall conform to the requirements of Section 985 of the FDOT Standard Specifications. Geolon N40 is an acceptable plastic filter fabric.

PART 3 - EXECUTION

3.01 PREPARATION

A. Pipe Trench: The trench shall be excavated carefully to such depths as required to permit the ballast rock and the pipe to be placed in accordance with the details shown on the Drawings.

B. Sheeting, Bracing and Shoring: The Contractor shall furnish, place and maintain, sheet piling, underpinning or other approved bracing and shoring materials, which may be required to support the sides of the excavation and prevent any failure of the trench wall, which in any way may delay construction, endanger personnel, damage public or private property or be detrimental to maintaining traffic. All such work shall be in accord with the governing specifications.

3.02 INSTALLATION

A. Placing Filter Fabric:

1. Areas where the filter fabric is to be placed shall be reasonably smooth and free of projections which could damage the filter material.
2. The material shall be loosely laid and/or hung (not stretched). Adjacent strips shall overlap by a minimum of 8-inches. The fabric shall be placed in such a manner that no bridging affect occurs and no place shall there be

voids between the fabric and the surrounding trench. The fabric shall be anchored in place with plastic securing pins (as recommended by the filter material manufacturer) inserted through the fabric along, but not closer than two inches to, each edge and to the extent necessary to prevent displacement of the fabric or other material.

B. Laying Pipe: All pipe shall be carefully laid in conformity with the lines and grades specified in the Drawings and in accordance with these specifications. Unless otherwise specified in the Drawings, the pipe shall be set with a minimum cover of 24 inches or a maximum cover of 66 inches.

C. Placing Ballast Rock and Backfilling: After the pipe has been laid and the laying approved, the ballast rock shall be placed carefully, so as not to disturb the pipe, around and over the pipe to the depth shown on the Drawings. The trench above the ballast rock shall be filled with select fill material, which shall be placed in layers not to exceed 6-inch compacted thickness, in conformance to the lines and grades shown on the Drawings.

D. Drainage Structures: Drainage structures shall conform to the requirements of Section 02720.

END OF SECTION

SECTION 02730
SANITARY SEWER PIPE

PART 1 - GENERAL

1.01 DESCRIPTION

The work of this section includes, but is not limited to:

1. Sanitary sewer gravity pipelines.
2. Sanitary sewer pressure pipelines.
3. Laterals/service connections.

1.03 .RELATED WORK:

Section 02220: Trenching, Backfilling and Compaction

1.02 QUALITY ASSURANCE

A. Reference Standards:

1. American National Standards Institute (ANSI):
   A21.4 - 1974 Cement-Mortar Lining for Ductile-Iron Pipe and Fittings.
   A21.11 - 1972 Rubber-Gasket Joints for Ductile-Iron Pressure Pipe and Fittings.
   A21.51 - 1984 Ductile-Iron Pipe, Centrifugally Cast in Metal Molds or Sand-Lined Molds, for water or other Liquids.
2. American Society for Testing and Materials (ASTM):
   D1248 Polyethylene plastics moulding and extrusion materials for ductile-iron pipe & fittings.
   D1785-76 Specification for Polyvinyl Chloride (PVC) Plastic Pipe, Schedules 40, 80, and 120.
   D2241-78 Specification for Polyvinyl Chloride (PVC Plastic Pipe (SDR-PR).
   D2466-76 Specification for Socket-Type PVC Plastic Pipe Fittings, Schedule 40.
   D3033-79 Specification for Type PSP Polyvinyl Chloride (PVC) Sewer Pipe and Fittings.
   D3034-78 Specification for Type PMS Polyvinyl Chloride (PVC) Sewer Pipe and Fittings.
   D3212-76 Specification for Joints for Drain and Sewer Plastic Pipes Using Flexible Elastomeric Seals.
   F477-76 Specification for Elastomeric Seals (Gaskets) for Joining Plastic Pipe.

F679-80 Specification for Polyvinyl Chloride (PVC) Large-Diameter Plastic Gravity Sewer Pipe and Fittings.

B. Reject materials contaminated with gasoline, lubricating oil, liquid or gaseous fuel, aromatic compounds, paint solvent, paint thinner, or acid.

1.03 PRODUCT DELIVERY, STORAGE AND HANDLING

A. Delivery and Handling:

1. Do not place materials on private property without written permission of the property owner.
2. During loading, transporting and unloading, exercise care to prevent damage to materials.
3. Do not drop pipe or fittings. Avoid shock or damage at all times.
4. Take measures to prevent damage to the exterior surface or internal lining of the pipe.

B. Storage:

1. Pipe may be strung along alignment where approved by the Engineer.
2. Do not stack pipe higher than recommended by the pipe manufacturer.
3. Store gaskets for mechanical and push-on joints in a cool, dry location out of direct sunlight and not in contact with petroleum products.

PART 2 - PRODUCTS

2.01 POLYVINYLCHLORIDE (PVC) PIPE

A. Gravity Pipe and Fittings:

1. Pipe 15-inch diameter and smaller: ASTM D3033 or ASTM D3034, SDR-35 (Johns-Manville, Ring-Tite, or approved equal).
2. Pipe 18-inch to 27-inch diameter: ASTM F679 (Johns-Mansville Permaloc or approved equal).
3. Flexible Elastomeric Seals: ASTM D3212 Seal Material: ASTM F477.

2.02 DUCTILE-IRON PIPE

A. Pipe:

1. AWWA C151-81 ANSI A21.51, Thickness Class as shown (Class 52 Min.)
2. ASTM Standard D1248 "Polyethylene Plastics Moulding and Extrusion Materials". (Virgin Polyethylene, compounded with carbon black).

B. Fittings:

1. Ductile-Iron, ANSI A21.10
2. Provide with standard lining as for ductile-iron pipe for force mains.

C. Joints: ANSI A21.11

1. Where not specifically shown on the contract drawings, joints may be either mechanical joint or push-on joint as specified by AWWA C151 (ANSI A 21.51), (Tyton) (Usiflex).

D. Rubber gaskets, Lubricants, Glands, Bolts and Nuts: ANSI A21.11.

2.03 STEEL CASING PIPE

A. Pipe: ASTM A53; 35,000 psi minimum yield strength, asphalt coated.

1. Wall thickness as indicated on the drawings.

B. Joints: Electric resistance welded.

PART 3 - EXECUTION

3.01 PREPARATION

A. Perform trench excavation to the line and grade indicated on the Contract Drawings and as specified in Section 02220. Remove all muck and organic material.

B. Provide pipe protection as specified in Section 02220 for each type of pipe used. Place aggregate in a manner to avoid segregation, and compact to the maximum practical density so that the pipe can be laid to the required tolerances.

3.02 LAYING PIPE IN TRENCHES

A. Use laser alignment instruments during pipe laying operations. Instruments should be checked and calibrated periodically.

B. Lower pipe into trench using handling equipment designed for the purpose to assure safety of personnel and to avoid damage to pipe. Do not drop pipe.

C. Lay pipe proceeding upgrade with the bell or groove pointing upstream.

D. Lay pipe to a true uniform line with the barrel of the pipe resting solidly in pipe protection material throughout its length. For pipe lines under paved areas trench bottom to be lined with geo-textile fabric material to enclose all rock material added to trench. Excavate recesses in pipe protection material to accommodate joints,

fittings and appurtenances. Do not subject pipe to a blow or shock to achieve solid bearing or grade.

E. Lay each section of pipe in such a manner as to form a close concentric joint with the adjoining section and to avoid offsets in the flow line.

F. Clean and inspect each section of pipe before joining. Assemble to provide tight, flexible joints that permit movement caused by expansion, contraction, and ground movement. Use lubricant recommended by the pipe or fittings manufacturer for making joints. If unusual joining resistance is encountered or if the pipe can not be fully inserted into the bell, disassemble joints, inspect for damage, reclean joint components and reassemble joints.

G. Assemble joints in accordance with recommendations of the manufacturer.

1. *Push-on-Joints*:
    a. Clean the inside of the bell and the outside of the spigot. Insert rubber gasket into the bell recess.
    b. Apply a thin film of gasket lubricant to either the inside of the gasket or the spigot and of the pipe, or both.
    c. Insert the spigot end of the pipe into the socket using care to keep the joint from contacting the ground. Complete the joint by forcing the plain end of the bottom of the socket. Mark pipe that is not furnished with a depth mark before assembly to assure that the spigot is fully inserted.
2. *Mechanical Joints*:
    a. Wash the socket and plain end. Apply a thin film of soapy water. Slip the gland and gasket over the plain end of the pipe. Apply soapy water to gasket.
    b. Insert the plain end of the pipe into the socket and seat the gasket evenly in the socket.
    c. Slide the gland into position, insert bolts, and finger-tighten nuts.
    d. Bring bolts to uniform tightness. Tighten bolts 180 degrees apart, alternately.

H. Dissemble and remake improperly assembled joints using a new gasket.

I. Check each pipe installed as to line and grade in place. Correct deviation from grade immediately. A deviation from the designed grade as shown on the Contract Drawings, or deflection of pipe joints will be cause for rejection.

J. Place sufficient backfill on each section of pipe as it is laid, to hold firmly in place.

K. Clean interior of the pipe as work progresses. Where cleaning after laying is difficult because of small pipe size, use a suitable swab or drag in the pipe and pull forward past each joint immediately after the jointing has been completed.

L. Keep trenches and excavations free of water during construction.

M. When the work is not in progress, and at the end of each workday, securely plug open ends of pipe and fittings to prevent trench water, earth, or other substances from entering the pipes or fittings.

3.03 WYE BRANCHES AND TEES

A. Install wye branches or pipe tees at locations designated by the Engineer concurrent with pipe laying operations. Use standard fittings of the same material and joint type as the pipeline into which they are installed.

B. For taps into the existing pipeline, use a saddle wye or tee with stainless steel clamps. Mount saddles with solvent cement or gasket and secure with metal bands. Lay out holes with a template and cut holes with a mechanical hole cutter.

3.04 LATERALS

A. Construct laterals from the wye branch to a terminal point as designated on the drawings or as required to maintain existing service.

B. Where the depth of the main pipeline warrants, construct riser-type laterals from the wye branch in accordance with Standard Details. The determination as to the type of riser, slope and depth of lateral pipe at the termination point will be made by the Engineer in the field.

C. Install an approved watertight plug, braced to withstand pipeline test pressure thrust, at the termination of the lateral. Install a temporary marker stake extending from the end of the lateral to 1 foot above finished grade.

3.05 THRUST RESTRAINT

A. Provide thrust blocking or restrained joints for pressure pipeline at all bends, tees, and changes in direction.

3.06 BACKFILLING TRENCHES

A. Backfill pipeline trenches only after examination of pipe laying by the Engineer.

3.07 TESTING

Pneumatic Leak Tests:

A. Equipment: Furnish the following equipment for the pneumatic tests:

Amount	Description
1	Pneumatic compressor separator-dryer system capable of providing oil-free dry air & equipped with one or more full capacity safety relief calves set at a pressure of not more than 105 percent of the required primary test pressure.
1	Calibrated test gauge

B. Gravity Sewers: Gravity sewers shall be air tested as follows:

1. *Time of Testing*: Test pipe after backfilling has been completed. The Contractor, at his option and expense, may make other earlier tests to ensure compliance with the tests specified herein.
2. *Procedure*:
   a. After all plugs are in place and securely blocked, introduce air slowly into the pipe section to be tested until the internal air pressure reaches 5.0 pounds per square inch or 4.0 pounds per square inch greater than the average back pressure of any ground water that may submerge the pipe. Allow a minimum of 2 minutes for the air temperature to stabilize. Determine the height of the groundwater table, at the time of the test.
   b. Pipe and joints being air tested shall be considered satisfactory when tested at an average pressure of 3.0 pounds per square inch greater than the average back pressure of any ground water that may submerge the pipe, when (1) the total rate of air loss from the section being tested does not exceed 2.0 cubic feet per minute, or (2) the section of line does lose air at a rate greater than 0.0030 cubic foot per minute per square foot of internal pipe surface.

3.08 VIDEO RECORDING, AS BUILT, & WARRANTY

A. After completion of the work and after completing the air test, a video recording shall be made by the contractor and approved by the city, before the system is accepted for maintenance.

B. Complete "AS BUILT" information relative to manholes, valves, services, fittings, pipe lengths, inverts, and slopes shall be accurately recorded and submitted to the city signed and sealed by a registered land surveyor.

C. At the end of the one year warranty period, the contractor shall T.V. inspect, air test every joint, and check manhole joints and connections to determine if repairs are necessary before the warranty bond is released.

END OF SECTION

SECTION 02767
MANHOLE REHABILITATION

PART 1 - GENERAL

1.01 SCOPE

This specification shall govern all work, materials, and equipment required for manhole rehabilitation for the purpose of eliminating infiltration, providing corrosion protection, repair of voids, and restoration of the structural integrity of the manhole as a result of applying a monolithic fiber-reinforced structural/structurally enhanced cementitious liner to the wall and bench surfaces of brick, concrete, or any other masonry construction material.

Described are procedures for manhole preparation, cleaning, application and testing. The applicator, approved and trained by the manufacturer, shall furnish all labor, equipment and materials for applying a cementitious mix to form a monolithic liner of a minimum 1/2 inch thickness, with machinery specially designed for the application. All aspects of the installation shall be in accordance with the manufacturer's recommendation and with the following specifications which includes....

A. The removal of any loose and unsound material.

B. Cleaning of the area to be sprayed with high pressure water.

C. The repair and filling voids.

D. The repair and sealing of the invert and benches.

E. The elimination of active infiltration prior to making the application.

F. The spray application of a cementitious mix to form a structural/structurally enhanced monolithic liner.

PART 2 - MATERIALS

2.01 PATCHING MIX

A quick-setting, fiber-reinforced, calcium aluminate-based cementitious material for patching and filling voids and cracks

A.	Compressive Strength (ASTM C-109)	6 Hrs. 1400 psi
B.	Shrinkage (ASTM C-596)	0% at 90% R. H.
C.	Bond (ASTM C321)	28 days, 150 psi
D.	Cement	Sulfate resistant
E.	Density, when applied	105 $\pm$ 5 pcf

2.02 INFILTRATION CONTROL MIX

A rapid setting cementitious product specifically formulated for leak control, shall be used to stop minor water infiltration and shall be mixed and applied according to manufacturer's recommendations and shall have the following minimum requirements:

Compressive Strength	ASTM C-109	1 hr	600 psi
Compressive Strength	ASTM C-109	24 hr	1,000 psi
Bond	ASTM C-321	1 hr	30 psi
Bond	ASTM C-321	24 hr	80 psi

2.03 GROUTING MIX

A. A rapid setting cementitious grout, shall be used for stopping very active infiltration and filling voids and shall be mixed and applied according to manufacturer's recommendations.

B. Chemical grouts may be used for stopping very active infiltration and shall be mixed and applied per manufacturer's recommendations.

2.04 LINER MIX

A. A fiber-reinforced pure-fused calcium aluminate aggregate to be wet mixed and low pressure spray applied to form the structure/structurally enhanced monolithic cementitous liner covering all internal manhole surfaces. Liner material to be LaFarge SewperCoat PG or a pre approved equal.

B. Material shall be pre-mixed and specially formulated to withstand H2S (hydrogen sulfide) bacterial corrosion and abrasion in sewer networks.

C. Material shall have the following minimum requirements:

Compressive Strength	ASTM C-495	1 day > 8,000 psi
Compressive Strength	ASTM C-495	7 day > 9,000 psi
Compressive Strength	ASTM C-495	28 day > 9,000 psi
Flexural Strength	ASTM C-293	12 hr > 1,000 psi
Flexural Strength	ASTM C-293	28 day > 1,400 psi
Shrinkage	ASTM C-596	0 percent at 95% R.H.

2.05 BONDING COMPOUND

Material shall be a modified cementitious bonding compound that protects exposed reinforcement steel and enhances bond of overlay to substrate.

2.06 WATER

Shall be clean and potable. Questionable water shall be tested by a testing laboratory in accordance with ASTM C-94. Potable water need not be tested.

2.07 OTHER MATERIALS

No other material shall be used with the mixes described in 2.01, 2.02, 2.03, 2.04 and 2.05 without prior approval from the Engineer.

PART 3 - EXECUTION

3.01 PREPARATION

A. Place covers over sewer invert to prevent extraneous material form entering the sewer lines.

B. Remove foreign loose and unsound concrete and masonry material not able to be removed by high pressure water spray may require the use of mason's or mechanical tools for removal.

D. Loose, unsound, and protruding concrete and masonry material not able to be removed by high pressure water spray may require the use of mason's or mechanical tools for removal.

E. Active hydrostatic leaks (infiltration) shall be stopped using one of the rapid-setting grouting mixes specially formulated for control of very active infiltration.

F. Very active hydrostatic leaks (infiltration shall be stopped using one of the rapid-setting grouting mixes specially formulated for control of very active infiltration.

G. Clean and prepare exposed reinforcement steel, and apply and cure bonding compound, in accordance with the product manufacturer's instructions and recommendations.

H. Prepare cracks and voids to be patched and filled, and apply cure patching mix, in accordance with the product manufacturer's instructions and recommendations.

I. Areas of manholes that are found to be structurally damaged and in need of repair beyond the scope of this specification shall be brought to the attention of the Engineer. A suitable repair method shall be developed for each area and submitted to the Engineer for review prior to commencing the repair.

J. Prepare, clean and repair manhole benches and inverts in the same manner as prescribed above.

3.02 INVERT REPAIR

A. After all preparation has been completed, remove all loose material all loose material and wash wall again.

B. Any bench, invert, or service line repairs shall be made at this time using the quick setting patching mix (paragraph 2.01) and shall be used per manufacturer's recommendations.

C. Invert repair shall be perform on all inverts with visible damage or infiltration. After blocking flow through the manhole, and thoroughly cleaning invert, the quick setting patch mix (paragraph 2.01) shall be applied to the invert in an expeditious manner. The mix shall be troweled uniformly onto the damaged invert extending out onto the base of the manhole sufficiently to tie into the structural/structurally enhanced monolithic liner to be applied. The finished invert surfaces shall be smooth and free of ridges. The flow may be re-established in the manhole within 30 minutes after placement of the mix.

3.03 LINER APPLICATION, CURING AND TESTING

A. Prepare manhole surfaces, wet batch-mix liner material, low pressure spray apply liner mix to manhole ceiling, wall and bench surfaces and allow liner to cure in accordance with the product manufacturer's instructions and recommendations.

B. Equipment is complete with water storage and metering system. Mixer and pump are hydraulically powered. Equipment is mounted to heavy duty construction tandem axle, road worthy trailer, complete with electric brakes and running lights. Internal combustion engine powers hydraulic system and air compressor.

3.04 MIXING

A. For each bag of product, use the amount of water specified by the manufacturer and mix using the approved equipment described in Part 3 for 30 seconds to 1 minute after all materials have been placed in the mixing hopper.

B. Liner application shall be 0.5 inch minimum thickness. The application shall be completed with a minimum of two coats. The first coat shall be applied at a thickness adequate to cover the substrate and be trowled to compact the material into voids and set the bond. The second coat shall be applied to ensure complete coverage at the specified 0.5 inch minimum thickness.

C. Inverts shall be lined with patching mix, trowl applied in one coat to a 0.5 inch minimum thickness.

D. Prepare, label and submit recommended daily or per lot test specimens for testing.

3.05 WEATHER

No application shall be made to frozen surfaces or if freezing is expected to occur inside the manhole within 24 hours after application. If ambient temperatures are in excess of 95 degrees F, precautions shall be taken to keep the mix temperature at time of application below 90 degrees F. Mix water temperature shall not exceed 85 degrees F. Chill with ice if necessary.

3.06 FINAL ACCEPTANCE TESTING

At the direction of the owner or his assignee, the rehabilitated manholes shall be tested as follows:

A. Visually verify the absence of leaks.

B. Perform an exfiltration test.

1. (For manholes 0 to 6 feet deep) if water loss is one (1) inch or less in five minutes manhole is acceptable.
2. (For manholes over 6 feet deep) if water loss is one (1) inch or less plus 1/8 inch per additional foot of depth in five minutes, manhole is acceptable.

END OF SECTION

SECTION 02775
MANHOLES AND VAULTS

PART 1 - GENERAL

1.01 WORK INCLUDED

A. Furnish and install, as shown on the Drawings, manholes and vaults including:

1. Precast concrete sections
2. Brick
3. Mortar
4. Cast iron frame and lids

1.02 RELATED WORK

A. Section 02720: Storm Drainage System

B. Section 02221: Trenching, Backfilling and Compacting

C. Section 02513: Asphaltic Concrete Paving

1.03 REFERENCE STANDARDS

A. ASTM C478: Precast Reinforced Concrete Manhole Sections.

B. ASTM C443: Joints For Circular Concrete Sewer and Culvert Pipe Using Rubber Gaskets.

1.04 SUBMITTALS

A. Submit Shop Drawings in accordance with Section 01340.

PART 2 - PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS

A. Neenah No. R-1712 with Type A Lid.

B. Russco No. M-510 with Type C lid.

C. Clark No. R502 with Type A lid.

D. Substitutions: Items of same function and performance are acceptable in conformance with Section 1630.

2.02 MANHOLES

A. Manholes shall be 48 inch diameter, unless otherwise indicated, constructed of precast ring block and/or precast concrete ring, eight inch minimum thickness construction, unless otherwise indicated on the Drawings.

B. Concrete floor slab shall be minimum eight inches thick with #6 bar at six inch spacing each way or precast bases.

C. Top section shall be offset cone 2 feet 8 inches high with 24 inch opening at top.

D. Joints shall be a compression type, neoprene gasket joint conforming to ASTM C443, of a design approved by the Engineer.

E. Lifting holes through the structures are not permitted.

F. All grout used for sealing around pipe openings shall be of a non-shrinking type, acceptable to the Engineer, designed for use in water. All openings and joints shall be sealed water-tight.

G. Precast manhole tops shall terminate at such elevations as will permit laying up a minimum of five inches of brick under the manhole frame to make allowance for future street grade adjustments.

H. Drop connections, where required on precast manholes, shall be cast monolithically with the manhole elements.

I. Manhole steps shall be provided in the manholes, consisting of approved aluminum or fiberglass steps spaced at 16 inches on centers, set into the manhole wall.

J. Inverts shall be formed of sewer pipe or of mortar and brick, as described below, to provide a smooth flowing channel of the exact shape of the sewer to which it connects. All inverts of manholes shall be shaped while the manholes are under construction. All inverts shall follow the grades of the pipe entering the manholes. Changes in direction of the sewer and entering branch or branches shall have a true curve of as large a radius as the size of the manhole will permit.

K. Where shown on the Drawings or ordered by the Engineer, the Contractor shall provide manholes with stub lines for connection to future sewer lines. Provide the end of each stub line with a bell and close by means of an approved plug. This plug shall be removed, at some later time, without injury to the pipe. Reference each stub accurately to the center of the manhole, and record the actual invert elevation of each end.

2.03 VAULTS

A. Vaults and similar structures shall be constructed as shown on the Drawings of size and shape indicated. The installation shall be in accordance with all other sections of this specification.

B. Pipes entering the vault or structure shall enter through wall sleeves, except for concrete or VCP pipe entering a wet vault, wherein the pipe may be installed as follows:

1. The pipe may be cast into the wall of the structure provided the first three pipe lengths outside the structure shall have minimum laying length, dependent on pipe type and size, with the first point occurring within 12 inches of the structure.
2. Grout the pipe into the structure with a non-shrinking grout, acceptable to the Engineer, designed for use in water. All joints shall be sealed watertight.
3. Utilize a sealing material between the pipe and structure such as Link Seal manufactured by the Thunderline Corporation, or equal when approved by the Engineer.

PART 3 - EXECUTION

3.01 LEAK PROOFING

A. Walls shall be sealed against leakage by the application on the complete exterior surface of a plaster coat of cement mortar of approximately the same composition as mortar for masonry joints, applied not less than 1/2 inch in thickness at any point by steel trowel as the wall is built. Precast manholes shall be sealed at ring joints.

B. Walls alternatively may be sealed against leakage by a heavy brush-coat application of an approved waterproofing compound, mixed and applied in accordance with manufacturer's recommendations. Not less than 50 pounds of compound shall be used on each 125 square feet of exterior surface area, and the coverage of block and joints shall be continuous and uniform. Joints must be struck and troweled flush, and dried for at least twenty four (24) hours under good curing conditions, before seal coat is applied.

3.02 INSTALLATION

A. No backfilling of excavation, above elevation of top of interior concrete fill, shall be performed until waterproof coating has been cured for at least twenty four (24) hours and inspected and approved by the Engineer. Any defective coverage shall be repaired to the satisfaction of the Engineer before backfilling is performed.

END OF SECTION

SECTION 02780
FIBER OPTIC CONDUIT

PART 1 - GENERAL

1.01 SCOPE

The work covered by this section of the specifications consists of furnishing all plant, labor, equipment, appliances and materials, and performing all operations in connection with the construction of Fiber Optic Conduit and structures, all complete and in place, in strict accordance with the specifications, engineering drawings, and subject to the terms and conditions of the contract.

1.02 REFERENCES

A. Section 02220: Trenching, Backfilling and compacting.

PART 2 - MATERIALS

1.03 CONDUIT

A. *General*: Piping and appurtenances for fiber optic conduit shall be unplasticized polyvinyl chloride (PVC) conforming to ASTM D 3034 and SDR 35 with integral wall bell and spigot joints for push-on rubber gasket type seals conforming to ASTM D-1369.

PART 3 - EXECUTION

A. *Installation*: Pipe shall be protected during Storage and handling against impact, shocks, or free fall. Pipe shall be kept clean at all times and no pipe shall be used that does not conform fully with standards or specifications hereinafter described. All pipe and appurtenances shall be installed in strict accordance with AWW manual M23 for PVC pipe, as well as directives of the engineer. Any section of pipe found with defective installation, either before or after laying, shall be replaced with new sections without additional expense to the owner.

B. Before lowering into the trench, each section of Pipe shall be inspected for defects. Defective, damaged, or unsound pipe shall be rejected. Deflections from a straight line or grade, is not permitted. Pipes shall be laid straight to allow for the installation of a fiber optic system.

C. Prior to lowering pipe into the trench, the pipe interior shall be thoroughly cleaned of all foreign material. The pipe shall not be laid in water, or when the trench or

weather conditions are unsuitable for the work proposed, except by permission of the engineer. When work is not in progress, open ends of pipe and fittings shall be securely closed such that no trench water, earth or other material will enter the pipe or fittings. Prior to completing the joint, the contractor shall insure that each section of pipe shall rest solidly upon the bed, with recesses excavated to accommodate the bells and joints. Pipe shall be laid at locations shown on the engineering plans and shall be provided with a minimum of twenty four (24) inches cover above the pipe crown, unless otherwise approved by the engineer, or noted on the construction drawings.

D. Pipe and appurtenances shall be installed so as to prevent contact with rock, muck, or other excessively acid, alkaline, or unstable soils destructive to physical properties of the pipe. Where such soils are encountered trench excavation shall be removed as required to obtain a firm supporting base and replaced with a minimum of six (6) inches sand backfill around the pipe exterior. Backfill sand shall be clean and free from deleterious material, and subject to approval of the engineer.

PART 4 - TEST

Upon completion of the work, and prior to the placement of asphalt, a visual inspection shall be made of the completed system along with a low pressure air test.

END OF SECTION

SECTION 02785
PULL BOXES

PART 1 - GENERAL

1.01 WORK INCLUDED

A. Furnish and install, as shown on the Drawings, Pull Boxes:

1. Precast concrete sections
2. Filter Fabric
3. Three Quarter inch diameter gravel
4. Steel cover

1.02 RELATED WORK

A. Section 02221: Trenching, Backfilling and Compacting

B. Section 02611: Fiber Optic Conduit

C. Section 02700: Concrete Sidewalks

1.03 SUBMITTALS

A. Submit Shop Drawings in accordance with Section 01340.

PART 2 - PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS

A. Brooks Products Inc. W 301 with No. 300-19 Steel Parkway cover or No. 300-20 Traffic cover or equal as required.

2.02 PULLBOXES AND COVERS

A. Pull Boxes shall be pre-cast concrete 4'-0" x 4'-0" and 2'-9" deep (minimum). Minimum wall and floor slab shall be 4" thick. The boxes shall be designed for H-20-44 traffic loading. Concrete strength shall be 4,500 psi min.

B. Frame and covers shall be steel traffic covers (traffic bearing) or parkway covers (non-traffic bearing) as specified on the plans. Covers shall include a recessed lift handle, lock and fit securely in the box mounted frame. Two sets of keys shall be furnished to the City. Locks shall be master keyed. Beaded weld lettering shall

be placed on the center of the cover. The size of the lettering shall be one (1) inch and shall read as follows:

Fiber Optic Cable
City of Delray Beach

The frame and covers shall be thoroughly painted with an Epoxy Ester Modified Alkyd Tred-Safe Anti-Slip coating. Color shall be light grey. The coating shall be applied in accordance with the manufacturers recommendation and shall be thoroughly dry prior to installation.

C. A 1'-0" x 1'-0" x 1'-0" sump shall be installed at the bottom of each pull box. The sumps shall be three quarter (3/4) inch diameter pea-rock gravel encased in a filter fabric acceptable to the City Engineer.

PART 3 -EXECUTION

3.01 INSTALLATION

A. Pull boxes installed in sidewalks shall be set flush with sidewalk; pull boxes to be installed outside sidewalks shall match finish grade.

B. Connections to the proposed fiber optic conduit shall be sealed with a non-shrink grout acceptable to the Engineer and be water-tight. Knock out in end walls may be used, but they must match the size and elevation of the proposed conduit.

C. Excavation shall be the minimum required to properly set the pull box. The contractor shall take all precautions not to damage adjacent property, landscaping, fences or utilities.

END OF SECTION

SECTION 02800
IRRIGATION

PART I - GENERAL

1.01 DESCRIPTION OF WORK

A. The scope of work consists of installing a complete and operable irrigation system as shown on the drawings and as hereafter specified, including furnishing all labor, equipment, materials and supervision necessary to construct the irrigation system. The Contractor shall also be responsible for necessary electrical wiring that may be needed to power the controller, including coordination with FPL and payment of FPL fees.

B. The irrigation system shall be constructed using the sprinkler heads, valves, piping, fittings, controllers, wiring, etc., of the sizes and types as shown on the drawings and as required by these specifications.

C. The Contractor shall obtain all required City permits, although permit fees will be waived.

D. Locations of all sprinkler lines shown on the drawings are essentially diagrammatic. Locations of all sprinkler heads, valves, piping, wiring, etc., shall be established by the Contractor, in coordination with the landscaping at the time of construction.

F. The Contractor shall provide as built shop drawings for any major field changes made by the Contractor to the original plans authorized by the City.

1.02 JOB CONDITIONS

A. It shall be the responsibility of the Contractor to protect all persons from injury and to avoid property damage.

B. The Contractor shall be responsible for locating all underground utilities in the field prior to beginning construction. The Contractor shall call the following numbers 48 hours prior to digging to obtain the existing utilities locations.

Sunshine State One Call Center	1-800-432-4770
City of Delray Beach Utilities	407-243-7300

C. The Contractor shall be responsible for the temporary support, adequate protection, maintenance and repair of any damage to existing utilities, structures, drains, sewer and other obstructions encountered in the progress of work.

D. The contractor shall not be held responsible for concealed contingencies such as, but not limited to rock, water, hard pan or other obstacles encountered in excavation work which are not apparent at the time of trenching.

E. The Contractor shall protect existing lawns, plant materials, and site grades unless otherwise noted on plans or previously approved by the City's Representative.

F. Any disruption, destruction, or disturbance of any plants or structures shall be completely restored to the satisfaction of the City's Representative.

G. Whenever irrigation plans and existing utilities conflict, the Contractor shall notify the City's Representative in order to field adjust the irrigation plan layout.

H. Any pavement cut, broken, or undermined during the installation of the system shall be fully restored at the Contractor's expense.

I. The drawings show conditions as they are believed to exist, but it is not intended or inferred that the conditions as shown constitute are presentation by or on behalf of the City that such conditions actually exist. The Contractor shall inspect the job site prior to the bid submittal and shall accept full responsibility for any loss sustained as a result of any variance between the conditions shown on the drawings and the actual conditions revealed during the progress of work or otherwise.

J. The Contractor shall be responsible for relocating any irrigation lines as required by the proposed modifications to the intersection. These locations will generally occur in areas where the sod will be eliminated and asphalt will be installed. If needed, to minimize disruption of irrigation service to adjacent properties, lines will be temporarily capped until ultimate modifications are completed.

PART 2 - PRODUCTS

A. General

1. All irrigation work shall be done in a good workman like manner and in accordance with the manufacturer's specifications.
2. Any existing irrigation pipes and heads encountered during installation of the new system shall be removed.
3. All irrigation system materials shall be new.

B. Pipe: All pipes shall be delivered in full 20 foot lengths and clearly marked with the manufacturer's name and classification.

1. Main: All pipe situated hydraulically between the water meter and the sprinkler control valve is classified as MAIN LINE PIPE, and is herein

specified to be PVC Type I, Schedule 40 and shall be equipped with factory attached couplings or integrally formed bells for solvent weld connections. All pipe shall be cut squarely and burrs removed. All P.V.C. joints to be made with the use of cleaner, primer and clean solvent weld.

2. Lateral: Pipe situated hydraulically on the discharge side of the sprinkler control valve is classified as LATERAL LINE PIPE. All pipe sizes from 1/2" to 1" diameter shall be PVC, Type I SDR 26, class 315 and pipe size ranging from 1 1/4" to 3 " diameter shall be PVC, Type I SRD 26, class 160. Pipe shall be equipped with factory attached couplings or integrally formed bells for solvent weld connections.

C. Fittings:

1. Main line and lateral pipe fittings shall be of the proper type and class for use with the above specified pipe and shall have either solvent weld IPS threaded connections according to the requirements of the connection being made.
2. Both the fittings and the solvent cement and cleaner used in their installation shall be either manufactured or supplied by the manufacturer, or supplied by, the manufacturer of the pipe on which they are to be used. The Contractor shall guarantee that the pipe, fittings, cement and cleaner utilized in this work are all compatible with one another.

D. Threaded pipe connections between Main pipe and sprinkler control valves shall be made using threaded pipe and fittings. Galvanized schedule 40 or PVC Schedule 80 threaded pipe and fittings are herein specified for this use.

E. Sprinkler heads shall be as specified on the drawings and shall be installed 6 inches from the back of the curb.

F. Valves and Gate Valves shall be as specified on the drawings.

G. Valve boxes shall be "Ametek", "Flexon" or equal. All valve boxes shall be numbered according to the irrigation plans.

H. Wire:

1. Wiring used for connecting the automatic remote control valves to the controllers shall be type UF, 600 Volt, single strand, solid copper with PVC insulation 4/64 inch thick. Size shall be 14 gauge, red for "hot" or lead wires, and the common wire to be 14 gauge, white in color.
2. All splices in control wire shall be made at valve locations or marked with valve access box.

I. Irrigation controllers shall be as specified on the plans.

J. Hose bibs shall be installed at all valve boxes.

PART 3 - EXECUTION

3.01 INSTALLATION

A. General: The Contractor shall install the irrigation system to provide a fully operational automatic system. The Contractor shall install all materials specified and implied by the drawings and specifications.

B. Trenching and Backfilling

1. Trenches for pipe shall be cut to required grade lines and compacted to provide accurate grade and uniform bearing for the full length of the line. The bottom of the trenches shall be free of rock or other sharp edged objects. Minimum cover shall be 24 inches for pressure lines and 18 inches for non-pressure lines. All pipe lines shall have a 6 inch minimum clearance from each other and from lines of other trades. Backfill shall be compacted to dry density equal to adjacent undisturbed soils and shall conform to adjacent grades without dips, sunken areas or other irregularities.

C. Sprinkler Heads

1. Riser mounted spray sprinkler heads shall be installed above the plant material taking into account the mature plant height.
2. Spray pop-up sprinkler heads shall be installed flush with finish grade. One-half- inch flexible PVC shall be installed between the rigid PVC and the sprinkler head.
3. Sprinkler heads placed adjacent to walks and curbs shall be installed 6 inches from concrete.
4. High-pop sprinkler heads in planted areas shall be installed with the top of the head even with the top of the adjacent plant material.
5. Automatic remote control valves shall be installed in specified valve boxes. The valve shall have 6 inches of pea gravel installed below the bottom of the valve.
6. Controller shall be installed as specified on the accompanying drawing detail. It shall be equipped with lightning protection and grounded to a standard 5/8 inch copper clad steel ground rod or rods driven a minimum of 8 feet into the ground and clamped.

3.02 TESTING AND INSPECTION

A. Prior to the commencement of work an inspection schedule will be established between the Contractor and the City's Representative. All work will be inspected

prior to backfilling trenches. Should the material, workmanship or method of installation not meet the standards specified herein, the Contractor shall replace the work at his own expense.

B. All irrigation main lines shall be pressure tested prior to acceptance and shall maintain a pressure of 100 psi for one hour with no leakage.

C. The contractor shall balance and adjust the various components of the system so the overall operation of the system is most efficient. This includes a synchronization of the controllers, adjustments to pressure regulations, pressure relief valves, part circle sprinkler heads, and individual station adjustments on the controllers.

3.03 SITE CLEANUP

A. The Contractor shall keep the construction site clean of all surplus materials, waste, tools, equipment, rubbish, excessive earth and waste generated by the installation of the irrigation system.

B. The Contractor shall fully restore the site to the conditions that existed prior to the beginning of the irrigation system installation.

3.04 MAINTENANCE

It shall be the Contractor's responsibility to maintain the irrigation system until the date of acceptance for substantial completion.

3.05 GUARANTEE

The Contractor, as part of this contract shall furnish a written guarantee for all materials and workmanship for a period of one year from the date of substantial completion. Leaks shall be repaired and paid for by the Contractor at any time they appear during the warranty period.

END OF SECTION

SECTION 02830
CHAIN LINK FENCING

PART I - GENERAL

1.01 SUMMARY OF WORK

A. The work under this section includes the relocation of existing, or installation of new chain link fencing.

B. The Contractor shall furnish at their expense all supervisors, equipment, tools, materials, labor, transportation, and other facilities and services necessary to properly install/replace and/or repair chain link fencing.

C. Safeguarding of all contractor-owned equipment, responsibility of the contractor and employees. The City of Delray Beach assumes no direct or implied responsibility for the theft, vandalization, injury or other undesirable actions occurring to or performed with any contractor- owned materials.

D. The Contractor shall be responsible for the protection of all buildings, structures, and utilities that are underground, above ground, or on the surface against damages resulting from their operations. All damages incurred shall be repaired/replaced by the Contractor to the satisfaction of the school district at no additional cost to the district.

1.02 WARRANTY

The Contractor shall re-execute any and all work that fails to conform to the requirements of the contract documents that appears during the progress of the work. Further, the Contractor shall remedy any defects due to faulty materials and/or workmanship which appear within a period of one (1) year from date installation is accepted.

PART 2 - PRODUCTS

2.01 MATERIALS

A. *Fabric*: The height of the fabric shall be from 3-1/2' to 12', as specified, job for job. Fabric shall be #9 gauge steel wire woven into a 2" mesh. All fence fabric shall be made of good commercial quality steel wire having a minimum tensile strength of 90,000 PSI before zinc-coated after fabrication by the hot-dip process. The weight of zinc-coating shall not be less than 1.2 ounces per square foot of actual surface covered when tested in accordance with the method described in ASTM Designations A90-53. The zinc used for the coating shall conform to the grades specified in ASTM Designation B6-58. Standard Specifications for Slab

Zinc (Speltzer). All fabric shall be installed barb side down unless specific instructions are given in writing to install barbs up for security or other reasons.

B. *Posts*: All posts shall be galvanized steel schedule 40 steel pipe, sized according to the table below. Maximum spacing of line posts shall be ten(10) feet.

Fabric Height	Line Post		Corner or Terminal Post	
	O.D.	wt. per ft.	O.D.	wt. per ft.
3'-4'	2"	2.72	3"	5.79
5'-10'	2½"	3.65	3"	5.79
12' & over	3"	5.79	4"	9.11

C. *Rails*: All fencing shall have top rails of 1-5/8" O.D. (weight 2.27 pounds per ft.) galvanized steel pipe, joined with galvanized steel sleeves to give rigid joint and assembled so as to allow for expansion and contraction. Top rails shall be continuous through line posts and rigidly connected to corner and terminal posts.

D. *Bracing*: Truss bracing consisting of 1-5/8" O.D.galvanized pipe and diameter bar shall be provided in panels adjoining all corner, terminal and gate posts. In straight runs of fence over 500' a panel shall be braced at intervals not to exceed 500'.

E. *Post Tops*: All post tops shall be heavy malleable iron or pressed steel, hot dipped galvanized, fitted over the top of posts to exclude moisture. Line post tops shall provide for passage of top rail.

F. *Stretcher Bars*: Stretcher bars constructed of hot dip galvanized, 3/16" x 3/4" high carbon steel, shall be used to attach fabric to corner, terminal or gate posts by means of galvanized beveled edge bands.

G. *Fabric Ties*: Fabric ties shall be #9 galvanized steel wire and shall be used to attach fabric to top rails at 24" centers, maximum, and to line posts at 14" center, maximum.

H. *Gates*: Gate posts shall be galvanized steel pipe in sizes as specified below:

Single Gate Opening	Double Gate Opening	Pipe Size O.D.	Weight per Foot
To 6'	To 12'	3"	5.79 lbs.
6' to 12'	12' to 26'	4"	9.11 lbs.
12' & over	26' to 32'	4"*	9.11 lbs.

* Requires wheel on end of gate.

Gate frames and internal bracing shall be 2" O.D. (2.27 lbs. per ft.) galvanized steel pipe. Gate fabric shall be the same as specified for the fence. Gate hinges shall be be industrial type that allow gate to swing 180^{o}.

Latches shall be galvanized malleable iron and shall provide a means of readily locking with a padlock. For double swing gates, the latch shall be of the drop bar type securely bolted to gate frame and shall engage a galvanized heavy malleable iron gate stop anchored to concrete footing.

I. *Concrete Footings*: All posts shall be set in concrete with a minimum compressive strength of 2500 psi in 28 days. Posts shall be set 2" above bottom of footing with top of footing above grade crowned and troweled smooth.

Height of Fabric	Type of Post	Hole Diameter at Top	Hole Depth
4’	Line	8”	24”
4’	Corner & Terminal	10”	30”
6’	Line	10”	36”
6’	Corner & Terminal	12”	36”
8’	Line, Corner & Terminal	14”	36”
10’ & over	Line, Corner & Terminal	16”	48”

Three inch (3") O.D. gate posts shall have 14" x 36" footings and four inch (4") O.D. gate posts shall have 14" x 40" footings.

J. *Maze Openings*: Maze openings in fences shall be constructed by overlapping of sections of fence to allow passage of personnel but to prevent passage of motor cycles, motor scooters, bicycles and horses.

K. *Tension Wire*: Install tension (coil) wire at the bottom of all fence material.

PART 3 - EXECUTION

3.01 INITIATION OF WORK

When entering any school district site to initiate repairs or develop the work requirements (proposal) contractor's employee shall report their presence to the Main Office, sign in on the visitors log and prominently display the School District issued I.D. badge at all times. Emphasis should be placed upon causing as little as possible disruption to the educational environment, and comporting themselves in the most professional manner possible.

END OF SECTION

SECTION 02850
UNDERGROUND SPRINKLER SYSTEM

PART 1 - GENERAL

1.01 SCOPE

A. The Contractor shall provide all labor, materials and equipment necessary to construct an irrigation system complete with ditching, piping, manual valves, sprinklers, cleaning and testing. All materials shall be new. If a conflict arises between Drawings and Specifications, the Specifications shall govern.

1.02 WORK INCLUDED

A. Sprinkler heads.

B. Valves and associated accessories.

C. Excavation, installation of system to water source, testing, and backfilling.

1.03 RELATED WORK

A. Section 02220: Trenching, Backfilling and Compacting.

B. Section 02260: Finish Grading.

C. Section 02661: Water Mains

D. Section 02640: Valves, Cocks and Appurtenances.

1.04 WARRANTY AND GUARANTEE CERTIFICATE

A. The Contractor shall furnish a Certificate of Warranty registration and a guarantee of workmanship and materials for a one (1) year period from the date of final acceptance of the system. Final payment for the system shall be contingent upon receipt of this certification by the Owner.

1.05 OPERATING AND MAINTENANCE DATA

A. The Contractor shall submit data in accordance with Section 01340.

B. Provide instructions covering full operation, care and maintenance of system and controls, and manufacturer's parts catalog.

C. Include schedule showing length of time each valve is to be open to provide determined amount of water.

D. Instruct Owner's designated maintenance personnel in proper operation of system, including adjusting of sprinkler heads.

1.08 PROTECTION

A. Protect trees, shrubs, lawns, structures, and features installed or remaining as part of landscaping, from damage.

PART 2 - PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS

A. Buckner

B. Safe-T-Lawn

C. Rainbird

2.02 MATERIALS

A. Pipe:

1. Polyvinyl Chloride Pipe: polyvinyl chloride pipe and fittings shall be rigid high impact Type 1, Schedule 80, meeting commercial standards CS-207-60; and physical characteristics shall conform to the latest ASTM Specifications D-256, D-696, D-785, D792 and D-1599. Fittings shall be compatible with the pipe.
   a. The jointing and installation of polyvinyl chloride pipe and fittings shall conform to the manufacturer's recommendations. All PVC joints shall have clean solvent welds except; those threaded connections shown.
   b. PVC pipe under pavement shall be in sleeves constructed of Schedule 40 galvanized sleeve prior to placement of the sleeve. The encased PVC irrigation line shall be capped on both ends to prevent foreign materials from entering the pipe.
   c. Pipe sleeves shall extend not less than 12 inches beyond the curb line into the planting areas. The PVC irrigation lines lines shall extend not less than two (2) feet into the planting areas. All sleeves shall have minimum cover of twenty-four (24) inches. The ends of all sleeves shall be marked and flagged to prevent them from being lost during construction.
   d. Valves and Boxes: see Section 02640

PART 3 - EXECUTION

3.01 PREPARATION

A. Piping layout indicated on Drawings is diagrammatic. Reroute around plants and structures.

B. Ensure sleeves are installed under paving.

3.02 TRENCHING

A. Trench for sprinkler system to ensure proper grades and slopes to drain points.

B. Keep trenches free of debris, material, or obstructions that may damage pipe.

3.03 INSTALLATION

A. Install piping, valves, controls, and sprinklers in accordance with manufacturer's written instructions.

B. Provide for thermal movement.

C. Set sprinkler heads and box covers to finished grade.

D. Use threaded Schedule 80 nipples for risers to each outlet to facilitate easy replacement.

E. After piping is installed and before sprinkler heads are installed and backfilling commences, open valves and use full head of water to flush out system.

F. Backfill sprinkler system as specified in Section 02220.

G. Replace plantings or structures damaged by installation o sprinkler system.

H. Mark locations of all buried valves with a five (5) foot section of three (3) inch concrete filled PVC Pipe set vertically so that three (3) feet extends above finish grade.

3.04 CLEANING AND TESTING OF SYSTEM

A. Prior to installing irrigation heads, the lines shall be thoroughly flushed with water to remove all stone and sand particles from the system. Threaded caps shall be installed on all risers, beginning with one closest to the water source and

working out to the end of all lateral lines. Backfilling of the trench may begin at this time; however, all pipe joints and riser connections shall be left exposed for leakage testing. At the direction of the Engineer, all heads within a representative portion of the system shall be capped and the following hydrostatic leakage tests shall be performed.

B. The pressure required for hydrostatic pressure tests shall be 100 pounds per square inch. The Contractor shall provide temporary plugs and blocking necessary to maintain the required test pressure. Corporation cocks at least 3/4 inches in diameter shall be provided at each pipe dead end in order to bleed air from the line. The cost of these items shall be included as part of testing.

C. Pipe lines shall be filled with water, all air shall be removed, and a pressure of 100 pounds per square inch shall be maintained in the pipe for a period of not less than two (2) hours by means of a pressure pump. Accurate means shall be provided for measuring the water required to maintain this pressure. The line water loss when tested under a pressure of 100 pounds per square inch, shall not exceed 60 gallons per 24 hours per inch diameter per mile of pipe. All leaks at exposed joints, and all leaks evident at the surface where pipe is covered shall be repaired, regardless of total leakage, as shown by test. Lines which fail to meet tests shall be repaired and re-tested as necessary until test requirements are met. Defective materials, pipes, valves and accessories shall be removed and replaced at no cost to the Owner.

3.05 WATERING PERIODS AND APPLICATION RATES

A. All sections of the irrigation system are to provide the landscaped areas with 1.5 inches of water per week. Each system should be run every other day; however, during the first month after planting, the sprinkler system should be operated every day to ensure establishment of the plants.

3.06 SPARE PARTS

A. The following items shall be provided:

1. Two extra sprinkler heads of each size and type for each twenty (20) heads installed.
2. Two valve keys for every ten (10) manual valves.
3. Two keys for valve markers.
4. Two wrenches for each type of head core, and for removing and installing each type of head.

END OF SECTION

SECTION 02900
LANDSCAPING

PART I - GENERAL

1.01 DESCRIPTION OF WORK

A. The extent of the work is shown on the drawings and described in these specifications. The Contractor shall provide all plant materials, soil, mulch and equipment and labor necessary to install the landscaping indicated on the drawings and as described in these specifications. Contractor is also responsible for the fill and grading needed for the creation of the landscape berm.

B. All landscaping shown therein shall be installed in compliance with the Florida Department of Transportation "Manual of Uniform Minimum Standards for Design, Construction, and Maintenance for Streets and Highways" and the "Manual of Traffic Control Safe Practices for the Streets and Highway Construction Maintenance and Utility Operation."

1.02 WORK NOT INCLUDED

All work indicated on the plans is the responsibility of the Contractor. No work has been deleted or assigned to others.

1.03 STANDARDS

A. All plant materials shall conform to the grades and standards for Florida No. 1 or better, as established in the most recent edition of "Grades and Standards for Nursery Plants", Part I & II, Florida Department of Agriculture.

B. All plant material shall be grown and installed in accordance with good horticultural practices. The stock, free of disease, insects, eggs, larvae and defects such as knots, sun-scald, injuries, abrasions or disfigurement.

C. The City reserves the right to reject any materials that do not meet drawing or specification requirements.

D. All trees, shrubs and ground covers must be planted with a 4 foot minimum off-set from the face of the curb.

1.04 SUBSTITUTIONS

A. If a plant is found not to be suitable or available, the Landscape Contractor is to notify the City's Representative prior to bidding.

B. The City's Representative is then required to select an alternative and to inform all prospective bidders of the approved alternate.

C. All plant materials shall conform to the sizes indicated on plans. If materials cannot be located at the specified sizes, this information must be indicated on the plant materials estimated quantities bid sheet. The ability of other bidders to provide the materials at the sizes specified will generally be given favorable consideration over a bidder who cannot provide materials requested.

1.05 QUANTITIES

All quantities indicated on the plant list are intended as a guide for bidders. All bidders must, however, submit their bid based on the estimated quantities sheet in the bid package. Any discrepancy found shall be resolved after the award of bid and adjusted based on unit prices.

1.06 EXISTING CONDITIONS

A. The Landscape Contractor shall notify all utility companies prior to construction to locate all underground utilities. The Contractor shall perform work in such a manner to protect and avoid damage to said utilities. Contractor shall call the following numbers 48 hours prior to digging for any installation work:

Sunshine State One Call Center	1-800-432-4770
City of Delray Beach	407- 243-7300

B. The Contractor shall protect all lawns and existing site conditions unless otherwise noted on plans or previously approved in writing by the property owner or City's representative.

C. When conditions detrimental to plant growth are encountered, such as fill, rubble, drainage problems or other obstructions, the contractor shall notify the City's Representative before planting.

D. The Contractor shall not be held responsible for concealed contingencies such as, but not limited to, rock, water, clay pan or other obstacles encountered in excavation that were not apparent at the time of bidding.

E. Street lighting or other utilities that may impact ultimate plant materials locations shall be brought to the attention of the City's Representative. Field adjustments shall be approved by the City prior to planting.

PART 2 - PRODUCTS

2.01 PRODUCTS & MATERIAL

A. Topsoil: shall be composed of 50% peat moss, 30% muck, and 20% sand. Soil shall be well mixed, friable, free of subsoil, brush, weeds, litter, roots, stumps and stones larger than 2" and other extraneous or toxic materials harmful to plant growth.

B. Mulch: shall be shredded Cypress or Malaleuca mulch which shall be clean, fresh, free of branches and other foreign matter. Mulch shall be used around all shrubs, ground covers and tree trunks and placed to a minimum depth of 3 inches.

C. Wood tree stakes: shall be pine wood.

2.02 PLANT MATERIALS

A. Container grown stock shall have been grown in a container long enough for the root system to have developed sufficiently to hold its soil together.

B. All plant materials shall be nursery grown unless otherwise specified. Pruning shall be done before planting or during planting operations.

C. All plant materials in transit shall be covered with burlap or similar cover to keep from drying out.

D. State nursery inspection certificates shall be furnished to the City's Representative upon request.

PART 3 - EXECUTION

3.01 SITE PREPARATION

A. Contractor shall be responsible for the relocation of the two existing Tabebuia argentea trees currently located in the two medians. Trees will be relocated to a City facility within a 4 mile radius.

B. The finished grade shall be established by the Landscape Contractor prior to the installation of plant materials and sod. Relative to sod laying, rough grades shall be established adjacent to curb lines, sidewalks or roadways so that the sod is flush or slightly below these areas.

3.02 PLANTING PROCEDURES

A. Planting pits shall be dug large enough for the proper setting of the rootball (a minimum of one foot wider than the rootball for shrubs and 2 feet wider for trees) and deep enough to permit the rootball to rest at the same grade at which it was grown or slightly higher.

B. Plants shall be set straight in the center of the pit with the most desirable side facing the prominent view.

C. The planting pit shall be backfilled with topsoil according to the specifications.

D. Tamp soil half way through backfilling to remove air pockets; finish backfilling and water thoroughly.

E. All trees shall be staked using sound horticultural methods; guy wires shall be flagged.

F. All plant materials shall be fertilized at the time of planting at application rates following manufacturer's specifications.

3.03 CLEAN-UP

A. During planting, all areas shall be kept reasonably clean and neat.

B. Upon completion, all debris and waste materials resulting from planting operations shall be removed from the project and disposed of legally.

3.04 WATER

Water for plant materials installation will be available within the medians via a hose bib connection from the irrigation system.

3.05 MAINTENANCE

A. It shall be the responsibility of the Landscape Contractor to maintain the planting areas until acceptance of substantial completion. Maintenance shall include, but not be restricted to watering, weeding, mowing, pruning, cultivating, spraying for insects and disease, removal of dead materials, and adjustment of stakes and/or other necessary maintenance procedures.

B. After acceptance for substantial completion the Landscape Contractor shall be responsible during the six month warranty period to ensure that all plant materials are being adequately watered.

3.06 LANDSCAPING GUARANTEE

A. The Contractor, as part of this contract shall guarantee all materials, workmanship and plant materials for a period of six months from the date of the acceptance for substantial completion. The Contractor shall notify the City's Representative upon completion of the guarantee period in order to schedule the final inspection and acceptance under this contract.

B. All plant materials shall be alive and in a vigorous growing condition at the end of the guarantee period.

C. Any plant materials that are rejected for failure to meet specifications shall be replaced within two weeks of rejection. A new warranty period shall begin upon replacement and acceptance by the City.

D. The Landscape Contractor shall be responsible during the six month warranty period to inform the City of any maintenance deficiencies verbally to avoid and delays in needed maintenance, which shall be followed up in writing.

E. The Landscape Contractor shall not be responsible during the guarantee period for damages resulting from natural causes such as floods, lightning, freezing rain or winds over 60 miles per hour, nor will he be held accountable for acts of negligence on the part of the owner, or fires, or vandalism unless insurance required under this contract covers this damage or loss.

F. All replacements shall be plants of the same kind and size as those specified in the plant list. They shall be furnished and planted as specified herein at no additional cost to the owner.

END OF SECTION

SECTION 02934
SODDING

PART 1 - GENERAL

1.01 SCOPE

Provide all labor, materials and equipment necessary for complete sodding of areas affected by construction and not within the area covered by the Landscaping Plans. This shall include, but not be limited to: liming, fertilizing, sodding, necessary barriers, tests and all incidentals to make the work complete.

1.02 WORK INCLUDED

A. Testing of topsoil.

B. Raking and leveling topsoil as required for sodding.

C. Liming and fertilizing of topsoil.

D. Laying and rolling of sod.

E. Maintaining sod.

Part 2 - PRODUCTS

2.01 MATERIALS

A. Fertilizer:

1. Fertilizer shall be commercial fertilizer, as manufactured by International Chemical Company or approved equal.
2. Said fertilizer shall have a 10-20-6 N.P.K. content and contain a minimum of 60 percent of organic material.
3. It shall be delivered at the site in the original sealed containers.

B. Sod:

1. The sod shall be as grown by a certified turf nursery and CONTRACTOR shall inform ENGINEER as to the source of the sod to be utilized prior to ordering and delivery of sod.

2. Sod shall be furnished and installed in rectangular sod strips measuring 12 to 16-inches in width of standard lengths of not less than 2 feet and delivered on pallets.
3. After the preparation of the areas to be sodded has been approved by ENGINEER sod all previously sodded areas where no permanent construction exists. Supply and install sod which is equal to or approved equal to sod which exists at the project site. As a minimum, Type No. 1 sod composed of grasses grown from a Bahia Seed mixture shall be used for stabilization of final grade.
4. St. Augestine Floratam Sod shall be placed in areas that will be or are irrigated. Bahia sod shall be placed in areas not irrigated.

PART 3 - EXECUTION

3.01 INSTALLATION

A. These areas shall be fine graded to achieve the finished subgrade after compaction which shall be obtained by rolling, dragging or by an approved method which obtains an equivalent compaction to that produced by a hand roller weighing from 75 to 100 pounds per foot of width. All depressions caused by settlement or rolling shall be filled with additional existing or furnished topsoil and regraded and prepared as specified above until it presents a reasonably smooth and even finish at the required sod sub-grade.

B. All sod furnished shall be living sod containing at least 70 percent of thickly matter grasses as specified and free from noxious weeds.

C. No broken pads or torn or uneven ends will be accepted. Standard size sections of sod shall be strong enough to support own weight and retain their size and shape when suspended vertically with a firm grasp on the upper 10 percent of the section. Sod shall not be harvested when its moisture content (excessively wet or dry) may adversely affect its survival.

D. Sod shall be harvested, delivered, and installed within a period of 36 hours. Sod not installed within this time period shall be subject to inspection and rejection by ENGINEER, and shall be removed from the side and a fresh sod supply shall be furnished at no extra cost to OWNER.

E. The topsoil shall not be moist at time of installation; however, it shall contain sufficient moisture so as not be powdery or dusty, both as determined by the supplier's representative.

F. The overlapping of existing lawn with new sod along limit of work lines will not be permitted. Sod shall be laid in strips, edge to edge, with the lateral joints staggered. All minor or unavoidable openings in the sod shall be closed with sod plugs or with

topsoil, as directed by ENGINEER. However, sod laid with joints determined to be too large shall be lifted and 43-laid as specified herein at no extra cost to OWNER.

G. Immediately after the sod is laid, the sod shall be watered thoroughly by hand or mechanical sprinkling until the sod and at least 2-inch of the top soil bed have been thoroughly moistened.

H. CONTRACTOR shall be responsible to furnish his own supply of water to the site at no extra cost. If possible, OWNER shall furnish CONTRACTOR, upon request, with a source and supply of water. Contractor shall apply for temporary meter and pay Owner for water used at current utility billing rates. However, if OWNER' water supply is not available or not functioning, CONTRACTOR shall be responsible to furnish adequate supplies at his own cost. All work injured or damaged due to the lack of, or the use of too much water, shall be CONTRACTOR's responsibility to correct.

3.02 MAINTENANCE

A. Maintain the entire sodded areas until final acceptance at the completion of the Contract. Maintenance shall include watering as specified, weeding and removal of stones which may appear. All bare or dead spots which become apparent shall be properly prepared, limed and fertilized, and resodded at CONTRACTOR's expense as many times as necessary to secure a good growth. In the event that the sod installation is not accepted by ENGINEER, the entire area shall be maintained and cut by CONTRACTOR until final acceptance of the sod installation.

B. Take whatever measures are necessary to protect the sod while it is developing. These measures shall include furnishing or warning signs, barriers, or any other necessary measures of protection.

END OF SECTION

SECTION 02944
SEEDING

PART 1 - GENERAL

1.01 WORK INCLUDED

A. Preparation of subgrade to receive topsoil.

B. Seeding and fertilizing.

C. Seed protection on slopes.

D. Hydroseeding.

E. Maintaining seeded areas until acceptance.

1.02 RELATED WORK

A. Section 01410: Testing Laboratory Services.

B. Section 02260: Finish Grading.

1.03 QUALITY ASSURANCE

A. Test top soil in accordance with Section 01410.

B. Supply written analysis stating N, P, and K requirements, organic matter content, and ph value of soil.

1.04 DELIVERY, STORAGE AND HANDLING

A. Deliver grass seed in original containers showing analysis of seed moisture, percentage of pure seed, year of production, net weight, date of packaging and location of packaging. Damaged packages are not acceptable.

B. Deliver fertilizer in waterproof bags showing weight, chemical analysis, and name of manufacturer.

1.05 EXISTING CONDITIONS

A. Beginning work means acceptance of existing conditions.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Seed:

1. Grass seed shall be a mixture of equal parts of Bermuda seed and Pensacola bahia, except that during the winter months, if so directed by the Engineer, rye grass seed or other approved winter cover crop seed may be substituted for the Bermuda seed. The two types of seed used shall be thoroughly dry-mixed immediately before sowing. Seed which has become wet or moldy shall not be used.
2. The Bermuda seed shall be hulled seed. The Pensacola bahia seed shall be scarified seed, having a minimum active germination of 40 percent and a total germination of 85 percent. All seed shall meet the requirements of the Florida State Department of Agriculture and all applicable State laws, and shall be approved by the Engineer before being sown.

B. Mulch:

1. Dry Mulch: The mulch material used shall normally be dry mulch. Dry mulch shall be straw or hay, consisting of oat, rye or wheat straw, or of pangola, peanut, coastal Bermuda or bahia grass hay.
2. Green Mulch: Green mulch shall consist of live coastal Bermuda, or other approved type of grass, and shall be free from weeds and obnoxious or undesirable grasses.
3. No green mulch which, in the Engineer's opinion,has been allowed to become sufficiently dry as to lose its growth-producing benefits, will be allowed to be used.
4. In the event that the subsequent stand of grass is found to be contaminated with weeds or other obnoxious or undesirable growth, and it can be determined that such growth was introduced with the green mulch, then the Contractor will be required to effectively eliminate such undesirable growth at his own expense.

C. Commercial Fertilizer:

1. Commercial fertilizers shall comply with the State fertilizer laws.
2. The numeral designations for fertilizer indicate the minimum percentages (respective) of: (1) total nitrogen, (2) available phosphoric acid, and (3) water-soluble potash, contained in the fertilizer.
3. The chemical designation shall be 8-8-8. Other designations may be approved specifically for a particular project; and if liquid fertilizer other than that of chemical designation 8-8-8 is used, the total nitrogen content shall not exceed 12 percent.
4. Either dry or liquid fertilizer may be used.

D. Water for Grassing:

1. The water used in the grassing operations may be obtained from any approved spring, pond, lake, stream or municipal water system. The water shall be free of excess and harmful chemicals, acids, alkalis or any substance which might be harmful to plant growth or obnoxious to traffic. Salt water shall not be used. Municipal water shall be metered. Contractor shall apply for temporary meter and pay current utility billing rates.

2.02 EQUIPMENT

A. Fertilizer Spreader: The device for spreading dry fertilizer or for spraying liquid fertilizer shall meet the approval of the Engineer.

B. Seed Spreader: The seed spreader shall be an approved mechanical hand spreader or other approved type of spreader and may be integral with the cultipacker rolling equipment specified below.

C. Equipment for Cutting Mulch into Soil: The mulching equipment shall be a rotavator, or other equipment determined by the Engineer to be equally suitable for cutting the specified materials uniformly into the soil and to the required controlled depth.

D. Rollers: A cultipacker, traffic roller, or other roller approved by the Engineer, will be required for rolling the grassed or grassed and mulched areas.

E. Water-Metering Devices: The vehicle used for applying the water to the grassed areas shall be equipped with an approved metering device installed at such point on the vehicle as to measure the water at the time of its being applied to the grassed areas.

PART 3 - EXECUTION

3.01 INSTALLATION

A. General

1. Fertilizing, seeding or mulching operations will not be permitted when wind velocities exceed 15 miles per hour. Seed shall be sown only when the soil is moist and in proper condition to induce growth.
2. All soil manipulation shall be done at right angles to the direction of slope.
3. The soil shall be maintained in a moist condition for a period of at least two weeks after the planting.

B. Applying and Mixing Fertilizer:

1. At the Contractor's option either dry or liquid commercial-grade fertilizer may be used. The rate of application for dry fertilizer may be used. The rate of application for dry fertilizer shall be 800 to 1000 pounds per acre, with application in the upper range for sandy soils and in the lower range for loamy soils. The exact rate will be set by the Engineer. Liquid fertilizer shall be applied at an equivalent rate which will provide the same amount of plant food as required for dry fertilizer (or at approximately 74 to 92 gallons per acre).
2. The fertilizer shall be spread or sprayed uniformly over the area to be grassed by use of the approved distributing device, except that on steep slopes or other areas where machine spreading may not be practicable, spreading may be done by hand or by hose if the Engineer so directs. Immediately after dry fertilizer is spread it shall be harrowed in and mixed with the soil to a depth of approximately four inches. When liquid fertilizer is used, the Soil, if dry, shall be moistened by sprinkling before the liquid fertilizer is applied. Liquid fertilizer shall be applied not later than seven days after the seed is in place.

C. Mulching:

1. *Dry Mulch*: When mulching is called for approximately two inches, loose thickness, of the straw or hay material shall then be applied uniformly over the grassing area, and the mulch material cut into the soil with the equipment specified, so as to produce a loose mulch thickness of three to four inches. Care shall be exercised so that the materials are not cut into the soil deeper than four inches.
2. *Green Mulch*: When green mulch is used, the green mulch shall be incorporated into the soil not later than two days after being cut, and no artificial watering shall be done before the mulch is applied. It shall be spread in a layer of approximately two inches loose thickness, and cut into the soil with the equipment specified. The material shall not be cut into the soil deeper than four inches.

D. Seeding:

1. Soon after the mulch material has been cut into the soil, and while the soil is still loose and moist, the seed shall be scattered uniformly over the grassing area.
2. The rate of spread for the seed shall be as follows:
   a. Where mulching is not called for, or where dry mulch is used, the rate shall be 60 pounds per acre. In the period from March 15th to October 15th the seed mixture shall be 30 pounds of bahia and 30 pounds of Bermuda. In the remainder of the year the mixture shall be 20 pounds each of bahia, Bermuda and rye seed.
   b. When green mulch is used, the required rate of spread shall be reduced to 40 pounds per acre, because of the faster growing rate of the green mulch as compared with that of the seeds. The seed mixture shall be

22-1/2 pounds of bahia and 22-1/2 pounds of Bermuda, except that in the period of October 15th to March 15th the mixture shall be 15 pounds each of bahia, Bermuda and rye grass seed.

3. Seeding may be done in conjunction with rolling if the equipment used is designed for that purpose.

E. Rolling: Immediately after completion of the seeding, the entire grassed or mulched area shall be rolled thoroughly with the equipment specified. At least two trips over the entire area will be required.

F. Seed Protection on Slopes:

1. Cover seeded slopes where grade is 3:1 or greater with jute matting. Roll matting down over slopes without stretching or pulling.
2. Lay matting smoothly on soil surface, burying top end of each section in narrow six inch trench. Leave 12 inch overlap from top roll over bottom roll. Leave four inch overlap over adjacent section.
3. Staple outside edges and overlaps at 36 inch intervals.
4. Lightly dress slopes with topsoil to ensure close contact between matting and soil.
5. In ditches, unroll matting in direction of flow. Overlap ends of strips six inches with upstream section on top.

3.02 MAINTENANCE PERIOD

A. Maintenance period shall be until final acceptance.

3.03 MAINTENANCE

A. Maintain surfaces and supply additional topsoil where necessary, including areas affected by erosion.

B. Water to ensure uniform seed germination and to keep surface of soil damp.

C. Apply water slowly so that surface of soil will not puddle and crust.

D. Cut grass first time when it reaches height of 2-1/2 inches and maintain to minimum height of two inches. Do not cut more than 1/3 of blade at any one mowing. Remove clippings.

E. After first mowing, water grass sufficiently to moisten soil from three to five inches deep.

F. Apply weed killer when weeds start developing, during calm weather when air temperature is above 50 degrees Fahrenheit.

G. Replant damaged grass areas showing root growth failure, deterioration, bare or thin spots, and eroded areas.

3.04 RESTORATION

A. Restore pavement, concrete, grassed areas, planted areas, and structures damaged during execution of work of this section.

3.05 ACCEPTANCE

A. Seeded areas will be accepted at end of maintenance period when seeded areas are properly established and otherwise acceptable.

END OF SECTION

SECTION 02950
TREES, PLANTS & GROUND COVER

PART 1 - GENERAL

1.01 WORK INCLUDED

A. The Contractor shall furnish all labor, materials, equipment and transportation required to complete the planting as shown on the Drawings, and as specified under this item.

B. Trees, plants, and ground cover.

C. Topsoil bedding.

D. Temporary support.

E. Mulching.

F. Maintenance service.

1.02 RELATED WORK

A. Section 02260: Finish Grading.

B. Section 02486: Sodding.

1.03 QUALITY ASSURANCE

A. The Contractor shall only perform work with personnel experienced in the work required of this Section under direction of a skilled foreman.

1.04 DELIVER, STORAGE AND HANDLING

A. Insofar as is practicable plant material shall be planted on the day of delivery. In the event this is not possible the Contractor shall protect that stock not planted.

B. Protect plants at all times from sun or drying winds. Plants that cannot be planted immediately on delivery shall be kept in the shade, well protected with soil, wet moss or other acceptable materials, and shall be kept well watered. Plants shall not remain unplanted for longer than three days after delivery.

C. Plants shall not be bound with wire or rope at anytime so as to damage the bark or break branches. Plants shall be lifted and handled from the bottom of the ball only.

D. Plants moved with a ball will not be accepted if the ball is cracked or broken before or during planting operations.

1.05 GUARANTEE

A. All plants shall be guaranteed by the Contractor to be in a good, healthy and flourishing condition. The guarantee period shall be for one year from the date of formal written acceptance of this section of the contract completed in all respects in accordance with the Drawings and Specifications.

B. The Contractor shall remove and replace, at his expense and within the planting periods herein before specified, all dead plants, all plants not in a vigorous and thriving condition, all plants which are so injured or damaged as to render them unsuitable for the purpose intended. Plants shall be free of dead or dying branches and branch tips, and shall bear foliage of the normal density, size species, variety and size shown on the Drawings and shall be planted, protected, maintained and guaranteed in accordance with the requirements specified for the plants to which the replacements relate.

C. The guarantee of all replacement plants shall also be for a period of one year from the date of their acceptance after replacement. If the replacement plant is determined to be unacceptable during the guarantee period, the Owner may elect subsequent replacement, credit or reimbursement.

D. The Contractor shall not be responsible after planting for such injuries, losses, or damages to plants as are directly and "proximately" caused by acts of God, the public enemy, vandalism, animals, vehicles or fire.

PART 2 - PRODUCTS

2.01 PLANTS

A. Plants shall be typical of their species and variety; have normal growth habits; well-developed branches, densely foliated; vigorous, fibrous root systems (unless selected by the Landscape Architect for other than normal forms and shapes).

B. Plants shall be free from defects and injuries. (Plants shall be certified by the State and Federal authorities to be free from plant diseases and insect infestations).

C. Quality and size of plants, spread of roots, and size of balls shall be in accordance with ASA Z60.1-1959, "American Standard for Nursery Stock" as published by the American Association of Nurserymen, Inc. or applicable update of same.

D. Plants shall not be pruned before planting.

E. Plants shall be freshly dug and nursery grown. Nursery grown plants shall have been transplanted or root pruned at least once in past three years. Plants shall have been grown under climatic conditions similar to those in locality of project, or have been acclimated for at least two years to conditions of locality or project.

F. Collected plants must have been grown in favorable locations on subgrade which insures good fibrous roots and vigorous conditions.

G. Each bundle of plants and all separate plants shall be properly attached thereto before delivery to project site. Label shall identify plant by name and provide any specific data as to location and arrangement.

H. No plants shall be delivered to the project site, except for required samples, until inspection has been made in the field or at the nursery, or unless specifically authorized in writing by the Engineer.

I. All trees must have straight trunks with a single leader intact. Bark shall be free of abrasion, all fresh cuts over 1-1/4 inch shall have calloused over.

J. Trees will not be accepted which have had their leaders cut or which have leaders damaged so that cutting is necessary. Trees which have had their tops cut off shall bear no evidence of decayed scars and shall have any cutting showing complete healing of the stem.

K. Unless otherwise specified, shade trees shall be free of branches up to six feet, with a single leader well branched, and reasonable straight stems.

L. The backfill mixture for plants shall be as follows:

1. One part peat or an approved rotted peat or humus.
2. Two parts approved topsoil, furnished or reused Where indicated on the Drawings a continuous planting bed eighteen (18) inches deep containing the backfill mixture shall be constructed in accordance with the Drawings.

M. Fertilizer shall be of the complete type and shall be submitted to the Engineer only after soil has been tested.

N. Mulch:

1. Mulch shall be shredded cypress bark and shall be free from clinkers and blocky pieces. The moisture content shall be 40 percent retained with normal watering or rainfall. The material shall be free of leaves, twigs and other debris.
2. A one cubic yard sample of the material to be furnished shall be spread in place on the site for approval by the Engineer. The Contractor shall not order delivery of the remaining materials until such approval is made.

PART 3 - EXECUTION

3.01 PLANTING OPERATIONS

A. General: The Contractor shall be responsible for planting at correct grades and alignment.

B. Stake out on the ground locations for plants and outlines of areas to be planted and obtain approval of the Engineer before excavation is begun.

C. Excavation of Planting Areas:

1. Care - No plant pits shall be dug or prepared until their location is approved by Landscape Architect. Reasonable care shall be exercised to have pits dug and soil prepared prior to moving plants to their respective locations for planting to ensure that they will not be unnecessarily exposed to drying elements or to physical damage.
2. Circular pits with vertical sides shall be excavated for all plants except for hedge and plants specifically designated on the Drawings to be planted in beds.
3. Diameter of pits for B & B material and B.R. material shall be at least one (1) foot greater than the spread of the ball or roots. The depth of all plant pits shall be enough to accommodate the ball or roots and the prepared soil in the bottom of the pit.

3.02 PLANTING METHODS

A. Set all plants plumb and straight. Set at such a level that, after settlement, a normal or natural relationship of the crown of the plant with the ground surface will be established. Locate plant into the center of the pit.

B. When ball, burlapped, and platformed plants are set, first remove platform from pit. Then tamp topsoil carefully under and around base of ball to fill all voids. Remove all burlap, ropes,and wires from sides and tops of balls, but do not remove burlap from under ball.

C. Spread out roots of bare rooted plants. Work topsoil carefully in among them. Cut off all broken or frayed roots with a clean cut.

D. The roots of B.R. plants, pruned as required, shall be spread out to their approximate natural position. B & B plants place in their wrapped ball shall be so set that after settlement, they will stand at approximately the same depth as in the nursery or field, the soil at the bottom of the hole to be loosened to a depth of three inches and mixed with topsoil.

E. The plant hole shall be backfilled with topsoil placed in six inch layers around the roots or ball. Each layer shall be carefully tamped inplace in a manner to avoid injury to the roots or ball or disturbing the position of the plant. When approximately two-thirds of the plant hole has been backfilled, the hole shall be filled with water and the soil allowed to settle around the roots. B & B plants shall have the burlap cut away or folded back from the top of the ball before applying the water. Form four inch saucer around the tree and shrub pits. Individual plant pits shall be finished with shoulder of soil mix placed outside rim of pits to form saucer over entire area of pits. On all sloped except minor ones, soil mix shall be formed into an adequate dam or shoulder on downhill side to catch and hold water and avoid erosion and slope on uphill side shall properly regraded to satisfaction of Engineer.

F. Hedge plants may be planted in a continuous trench 22 inches wide by 22 inches deep instead of separate round pits. Plants shall be evenly spaced true to line and grade after settlement.

G. No planting except ground cover and vines shall be placed closer than two feet to pavements or structures.

3.03 PLANT SUPPORT

A. General: Trees shall be supported immediately after planting. All trees six inches and over in trunk diameter shall be guyed. Smaller trees shall be staked. Wires shall be encased in hose to prevent direct contact with bark of the tree and shall be placed around the trunk in a single loop. Wires shall be tightened and kept taut by twisting the strands together, or with turn buckles.

B. Guying:

1. Guying shall be done with three guys spaced equally about each tree. Each guy shall consist of two strands of wire attached to the tree trunk at an angle of about 60 degrees at about two-fifths of the height of the tree and anchored at the ground either to notched stakes which have been driven into the ground at an angle away from the tree so that the tops of the anchor stakes are below finished grade, or where underground utilities are within four feet or finished grade to deadmen placed at least three feet below finished grade. Lines must be taut.

2. Plants shall stand plumb after staking and guying.

Tree Caliper	Support Method
To 1 inch	1 Stake w/one tie
1-2 inches	2 Stakes w/2 ties
2-4 inches	3 Guy wires

3.04 CLEANUP AND FINISH AFTER PLANTING

A. During course of planting, excess and waste materials shall be continuously and promptly removed, lawn areas kept clear and all reasonable precautions taken to avoid damage to existing structures, plants and grass.

B. When planting in an area has been completed, the area shall be thoroughly cleaned up. Debris, rubbish, subsoil and waste materials shall be cleaned up and removed from the property.

C. Existing grass areas which have been injured by the work shall be regraded and sodded or seeded; and the entire area, when completed, shall be neat and clean to the satisfaction of the Engineer.

D. In the event that "Plant Operations" are executed after the lawns have been installed, the attention of the Contractor is called to the paragraph "Protection" following.

E. Protection: Contractor shall protect all plants and lawns from damage at all times. The moving of heavy equipment or materials over the lawn areas shall be done on planks or pontoons.

F. All pavements, sodded and planted areas, structures and substructures not specifically provided for in the Contract disturbed by the Contractor during the execution of the Work shall be restored by the Contractor, in a manner satisfactory to the Engineer, to their original conditions at no cost to the Owner.

3.05 MAINTENANCE

A. General:

1. Maintenance shall begin when project commences and continue only until substantial completion and written provisional acceptance.
2. Planting maintenance shall include all necessary watering, cultivation, weeding, pruning, wound dressing, disease and insect pest control, protective spraying, replace- ment of unacceptable materials, straightening plants which lean or sag, adjustment of plants which settle or are planted too low, and any other procedure consistent with good horticultural practice necessary to insure normal, vigorous and healthy growth of all Work under this Contract.
3. The Contractor shall be responsible for the use of all materials, labor and equipment, and any injury to plant materials, caused by such material. Labor and equipment shall be corrected and repaired by the Contractor at no expense to the Owner.

4. Watering: Water plant material other than sod. The quantity of water applied at one time shall be sufficient to penetrate the soil to a minimum depth of eight inches at a rate which will prevent saturation of the soil.
5. Weeding: Keep all planting areas free from weeds and undesirable grasses by a method and by materials approved by the Engineer.
6. Disease and Insect Pest Control: Inspect all plant materials at least once a month to locate any disease or insect pest infestations. Upon the discovery of any disease or insect pest infestation, identify or have identified, the nature or species of the infestation and submit the proposed method of control to the Engineer for approval prior to application of control measures.
7. Guys and Stakes: The Contractor shall maintain guys and stakes. This shall include but not be limited to adjusting and replacing turnbuckles as necessary and repairing or replacements of accessories when required.

END OF SECTION

SECTION 04100
MORTAR

PART 1 - GENERAL

1.01 WORK INCLUDED

A. Mortar and grout for unit masonry.

1.02 RELATED WORK

A. Section 01410: Testing Laboratory Services

B. Section 04300: Unit Masonry System: Installation of Mortar.

1.03 MIX TESTS

A. Testing of Mortar Mix Cubes: In accordance with Section 01410.

B. Testing of Grout Mix Cylinders: In accordance with Section 01410.

1.04 REFERENCES

A. ASTM C5 - Quicklime for Structural Purposes.

B. ASTM C91- Masonry Cement.

C. ASTM C94 - Ready-Mixed Concrete.

D. ASTM C144 - Aggregate for Masonry Mortar.

E. ASTM C150 - Portland Cement.

F. ASTM C270 - Mortar for Unit Masonry.

G. ASTM C387 - Packaged, Dry, Combined Materials for Mortar and Concrete.

H. ASTM C476 - Grout for Reinforced and Non-Reinforced Masonry.

I. ASTM C780 - Preconstruction and Construction Evaluation of Mortars for Plain and Reinforced Unit Masonry.

J. International Masonry Industry All-Weather Council (IMIAC) - Recommended Practices and Guide Specifications for Cold Weather Masonry Construction.

1.05 SUBMITTALS

Submit in accordance with Section 01340.

1.06 ENVIRONMENTAL REQUIREMENTS

Cold Weather Requirements: IMIAC - Recommended Practices and Guide Specifications for Cold Weather Masonry Construction.

PART 2 - PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS

Not applicable.

2.02 MATERIALS

A. Portland Cement: ASTM C150, normal-Type I; gray color.

B. Masonry Cement: ASTM C98, for general use.

C. Mortar Aggregate: ASTM C144, standard masonry type; clean, dry, protected against dampness, freezing, and foreign matter.

D. Grout Fine Aggregate: Not less than 2 1/4 inches and not more than three times the sum of volume of cement used.

E. Hydrated Lime: ASTM C207, Type S.

F. Quicklime: ASTM C5, non-hydraulic type.

G. Premix Mortar: ASTM C387, using gray cement.

H. Water: Clean and potable.

2.03 MORTAR COLOR

Not used.

2.04 ADMIXTURES

Not used.

2.05 MIXES

A. Mortar for Load Bearing Walls and Partitions: ASTM C270, Type S.

B. Mortar for Reinforced Masonry: ASTM C476, Type PM.

C. Pointing Mortar: ASTM C270, Type N; with maximum two percent ammonium stearate or calcium stearate per cement weight.

2.06 GROUT FILL

Not used.

2.07 MORTAR MIXING

A. Thoroughly mix mortar ingredients in quantities needed for immediate use in accordance with ASTM C270 and C476.

B. If water is lost by evaporation, retemper within one hour of mixing. Do not retemper mortar after two hours of mixing.

PART 3 - EXECUTION

3.01 INSTALLATION

A. After inspection of concrete grout spaces by Engineer, plug cleanout holes with masonry units. Brace against wet grout pressure.

B. Install mortar and grout in accordance with Section 04300.

C. Work grout into cores and cavities to eliminate voids.

D. Do not displace reinforcing steel placing grout.

E. Clean concrete grout spaces of excess mortar and debris.

END OF SECTION

SECTION 04300
UNIT MASONRY SYSTEM

PART 1 - GENERAL

1.01 WORK INCLUDED

A. Concrete units.

B. Reinforcement, anchorages, and accessories.

1.02 WORK INSTALLED BUT FURNISHED BY OTHERS

A. Section 07600 - Flashing and Sheet Metal: Reglets for flashings.

1.03 RELATED WORK

A. Section 04100: Mortar: Mortar and grout.

B. Section 07160: Bituminous Dampproofing: Dampproofing masonry surfaces.

C. Section 07175: Water repellent coating.

D. Section 07211: Granular Insulation: Loose fill insulation for masonry unit cores.

1.04 MOCK UP

A. Provide mock-up for Engineer's inspection.

B. Construct split fluted block to four X four foot panel size, including mortar and accessories specified. When used.

C. Obtain approval prior to proceeding with the Work.

D. Remove the panel when directed by the Engineer.

1.05 REFERENCES

A. ASTM C90 - Hollow Load Bearing Concrete Masonry Untis.

B. International Masonry Industry All-Weather Council (IMIAC) - Recommended Practices and Guide Specifications for Cold Weather Masonry Construction.

1.06 SAMPLES

A. Submit samples in accordance with Section 01340.

B. Submit one sample of split fluted block of integral color available to illustrate color, texture, and extremities of color range.

1.07 CERTIFICATES

Submit manufacturer's certificates in accordance with Section 01340.

1.08 ENVIRONMENTAL REQUIREMENT

Cold Weather Requirements: IMIAC - Recommended Practices and Specifications for Cold Weather Masonry Construction.

PART 2 - PRODUCT

2.01 ACCEPTABLE CONCRETE MASONRY UNIT MANUFACTURERS

Substitutions: Items of same function and performance are acceptable in accordance with Section 01600 and 01630.

2.02 CONCRETE MASONRY UNITS

A. Concrete masonry units shall be plain concrete masonry units meeting the requirements of ASTM C90, latest revision, unless specified otherwise.

B. Concrete Masonry Unit:

1. *Split Fluted*: As specified for plain concrete masonry unit but with eight flutes uniformly spaced on one face, or on one face and one end at corner units. Flute faces shall be as-split, without tool marks. Refer to area drawing where applicable.
   a. Flute profile shall be rectangular.
   b. Flute size: ¾ inch deep by ¼ inch wide.
2. Concrete Masonry Unit, Acoustical: As specified for plain concrete masonry units but with two flared slots starting at bottom of unit to form resonating cavities at cores, and two septas sprung in place.
   a. Slot size: ; Approximately ½ inch by 6 inches.
   b. Core fillers: Fibrous filler element.
   c. Noise reduction coefficient of painted 8 inch unit: 0.50 to 0.60 minimum.
   d. Peak sound absorption: 90 to 180 Hz.

PART 3 - EXECUTION

3.01 PREPARATION

A. Supply metal anchors for placement. Direct correct placement.

B. Verify items provided by other sections of work are properly sized and located.

C. Establish lines, levels, and coursing. Protect from disturbance.

D. Provide temporary bracing during erection of masonry work. Maintain in place until building structure provides permanent bracing.

3.02 COURSING

A. Place masonry to lines and levels indicated.

B. Maintain masonry courses to uniform width. Make vertical and horizontal joints equal and of uniform thickness.

C. Lay standard concrete masonry in running bond. Course one block unit and one mortar joint to equal 8 inches. Form flush mortar joints.

D. Lay split fluted masonry units in stacked bond.

3.03 PLACING AND BONDING

A. Lay masonry in full bed or mortar, properly jointed with other work. Butting corners of joints, deep or excessive furrowing of mortar joints are not permitted.

B. Fully bond intersections, and external and internal corners.

C. Do not shift or tap masonry units after mortar has taken initial set. Where adjustment must be made, remove mortar and replace.

D. Remove excess mortar.

E. Perform job site cutting with proper tools to provide straight unchipped edges. Take care to prevent breaking masonry unit corners or edges.

F. Cut mortar joints of masonry units flush where resilient base is scheduled or bitumen dampproofing is applied.

G. Isolate masonry partitions from vertical structural framing members with a control joint as indicated.

3.04 CAVITY WALL

Not used.

3.05 TOLERANCES

A. Alignment of Columns: Maximum ¼ inch from true line.

B. Variation from Unit to Adjacent Unit: 1/32 inch maximum.

C. Variation from Plane of Wall: ¼ inch in 10 feet and ½ inch in 20 feet or more.

D. Variation from Plumb: ¼ inch per story noncumulative; ½ inch in two stories or more.

E. Variation from Level Coursing: 1/8 inch in 3 feet; 1/4 inch in 10 feet; ½ inch maximum.

F. Variation of Joint Thickness: 1/8 inch in 3 inches.

G. Maximum Variation from Cross Sectional Thickness of Walls: Plus or minus ¼ inch.

3.06 REINFORCEMENT AND ANCHORAGES

A. Install horizontal joint reinforcement 16 inches oc, unless noted otherwise on the drawings.

B. Place masonry joint reinforcement in first and second horizontal joints above and below openings. Extend 16 inches minimum each side of opening.

C. Place joint reinforcement continuous in first and second joint below top of walls.

D. Lap joint reinforcement ends minimum 6 inches. Extend 16 inches minimum each side of opening.

E. Place reinforcing bars supported and secured against displacement. Maintain position within 1/2 inch of true dimension.

F. Verify that anchorages embedded in concrete members are properly placed. Embed anchorages in every second joint. Dovetail masonry anchors shall be hot dip galvanized and 1 inch X 3/16 inch X required length.

G. Embed wall ties in masonry back-up for veneer at maximum 16 inches oc vertically and 36 inches oc horizontally.

H. For 8 inch walls, two deformed side rods, No. 5 or larger, truss rods No. 5 or larger. Hot dip galvanized after fabrication. Truss-mesh by Hohmann and Barnard, Inc., Dur-O-Wal, or Blok-Turs by AA Wire Products, Inc.

3.07 MASONRY FLASHINGS

Not used.

3.08 LINTELS

A. Construct lintels using grout fill and reinforcing specified. Place two No. 4 reinforcing bars 1 inch from bottom web, for openings up to 42 inches wide. Place 2 No. 5 reinforcing bars in same location for openings up to 78 inches wide. (Height of floor or roof above shall exceed opening width.)

B. Use reinforcing bars of one piece lengths only.

C. Place and consolidate grout fill without disturbing reinforcing.

D. Allow lintels to reach strength before removing temporary supports.

3.09 GROUTED COMPONENTS

At bearing points, fill masonry cores with grout minimum 12 inches from opening.

3.10 CONTROL JOINTS

A. Do not continue horizontal joint reinforcing across control joints.

B. Form control joints by use of sheet building paper bond braker one side fitted to hollow contour of block unit end. Fill created core with grout fill. Rake joint at exposed faces for rod and sealant.

C. Size joint in accordance with standard practices for sealant performance.

3.11 BUILT-IN WORK

A. As work progresses, build-in aluminum door frames, fabricated aluminum frames, window frames, wood nailing strips, anchor bolts, and other items to be built in the work supplied by other sections.

B. Build-in items plumb and level.

C. Bed anchors of aluminum door and glazed frames in mortar joints. Fill frame voids solid with mortar. Fill masonry cores with grout minimum 12-inches from framed openings.

D. Do not build-in organic materials subject to deterioration.

3.12 CUTTING AND FITTING

A. Cutting of masonry shall be with a masonry saw and openings in walls for electrical boxes and other items to be cut no greater than 1.4 inch larger than the box or item. Cutting or chiseling of masonry units for installation f conduit shall be permitted. Conduit shall be installed as masonry work progresses.

B. Obtain approval prior to cutting or fitting any area not indicated or where appearance or strength of masonry work may be impaired.

3.13 PARGING

A. Parge masonry walls in two uniform coats of mortar. Maintain 3/4 inch total thickness.

B. Dampen masonry walls prior to application.

C. Scarify base coat to ensure full bond to subsequent coat.

D. Sponge trowel surface smooth and flat with a maximum surface variation of 1:100.

3.14 CLEANING

A. Remove excess mortar and smears.

B. Replace defective mortar. Match adjacent work.

C. Clean soiled surfaces with a non-acidic solution which will not harm masonry or adjacent materials. consult masonry manufacturer for acceptable cleaners.

3.15 PROTECTION

A. Maintain protective boards at exposed external corners which may be damaged by construction activities.

B. Provide protection without damaging completed work.

C. At day's end, cover unfinished walls to prevent moisture infiltration.

END OF SECTION

SECTION 05121
REPAIR AND RENOVATIONS

PART 1 - GENERAL

1.01 WORK INCLUDED

Furnish all labor, materials, equipment, incidentals, transportation, erection and supervision necessary to complete all structural and miscellaneous steel repairs and related work called for by the Specifications or reasonably inferred.

1.02 RELATED REQUIREMENTS

A. American Institute of Steel Construction (AISC).

B. American Welding Society (AWS).

C. American Society for Testing Materials (ASTM).

D. AWWA D-100

1.03 QUALIFICATIONS

Welding procedures, welders, welding operations and tackers shall be qualified in accordance with the "Structural Welding Code," AWS D1.1 - Latest Edition.

1.04 SUBMITTALS

Submit Shop Drawings in accordance with Section 01340, indicating all shop and erection details including cuts, connections, holes, threaded fasteners, and welds. Submit description of erection procedures, including sequence of erection, temporary bracing and welding procedures.

1. Structural Steel
2. High-Strength Bolts
3. Primer Paint
4. Shrinkage-Resistant Grout

1.05 PRODUCT HANDLING

Storage of Materials: Structural materials, Either plain or fabricated, shall be stored above the ground upon platforms, skids, or other supports. Material shall be kept free from dirt, grease and other foreign matter and shall be protected from corrosion.

PART 2 - PRODUCTS

2.01 MATERIALS (AS APPLICABLE)

A. Steel Shapes, Bars and Plates: Domestic manufacture conforming to ASTER A36.

B. Steel pipe shall be manufactured and tested in accordance with the standards set forth in AWWA C200 latest edition for fabricated or mill-type water pipe. The pipe shall be made from sheet or plate rolled into sections having longitudinal or spirally formed butt-welded seams. Girth seams shall be butt-welded and shall be at least 8 feet apart except in specials and fittings. The steel shall conform to the standards established in Section 2 and Section 3 or AWWA C200.

Except as modified or supplemented herein all steel pipe used for potable water service four inches and larger, fittings and specials shall conform to the applicable requirements of the following standard specifications latest editions:

AWWA Standards:
C200 Steel Water Pipe 6 inches and larger
C203 Coal-Tar Protecting Coatings and Linings for Steel Water Pipelines - Enamel and Tape Hot-Applied
C205 Cement-Mortar Protective Lining and Coating for Steel Water Pipe - 4 inches and Large - Shop Applied
C206 Field Welding of Steel Water Pipe
C207 Steel Pipe Flanges for Waterworks Service - Sizes 4 Inches through 144 Inches, Class D
C208 Dimensions for Steel Water Pipe Fittings

C. Standard Bolts and Nuts: ASTM A325. Unless otherwise noted.

D. Standard Bolts and Nuts: ASTM A325. Unless otherwise noted.

E. Anchor Bolts: Stainless Steel - AISI Type 302 Minimum Yield Strength f_y = 30,000 PSI.

F. Welding Electrodes: E-70 Series.

G. Grout: Shrinkage-resistant, pre-mixed, factory packaged. Provide one of the following:

1. Master Builders: Embecco
2. Sonneborn: Ferrolith
3. Toch Brothers: Irontox
4. W.R. Grace: Vibra-Foil
5. Sika Chemical: Kemox C

H. Shop-Paint: Rust inhibitive primer in accordance with Section 09900: Painting.

I. Finish Paint: In accordance with Section 09900: Painting.

PART 3 - EXECUTION

3.01 FABRICATION

A. Conform to above referenced quality standards for fabrication. Fabrication by members of AISC only.

B. Use only Certified Welders.

C. Apply one shop coat paint to surfaces not to be encased in concrete in accordance with Section 09900.

1. Clean by hand or power tool of all rust, scale, weld slag, dirt and other foreign matter. Oil and grease removed with solvents.
2. Primer: One coat as specified in Section 09900.
3. Repaint all areas affected by welding and abrasions after erecting.

D. Provide all items required to be cast in, or built in, to proper trades in sufficient time to avoid delay.

E. Galvanize members indicated. Hot dipped galvanized after fabrication in accordance with ANSI-ASTM A123, and ANSI-ASTM A385.

F. Shearing, punching, and cutting shall leave clean, true lines and surfaces. Hole 1/16 inch larger than nominal bolt diameter unless otherwise detailed.

G. Members encased in concrete shall be cleaned as per C, above.

H. Shop connections welded unless otherwise indicated. Connection to develop full moment and shear capacity of member.

3.02 ERECTION (AS APPLICABLE)

A. Conform to above referenced standards for erection.

B. All field welding to be done by certified welders. Furnish Engineer with name and certificate number of all welders.

C. Erect all items plumb, properly spaced true to line and dimension. Work not conforming to these requirements shall be removed and replaced correctly.

D. Set column bases true and level by means of double nuts. Grout under bearing plates with shrink-resistant grout.

E. Provide adequate brace stays to hold structural steel in place until permanently anchored.

F. Field paint all welds immediately after inspection by Engineer whit approved primer.

G. Touch-up shop coats of paint which are damaged as soon as steel is erected.

H. Dissimilar Materials: Where dissimilar metal surfaces come in contact, keep surfaces from direct contact by:

1. Paint faying surfaces of dissimilar metals with coating of heavy-bodied bitumastic, or:
2. Apply full coverage of non-conductive tape or gasket.

I. Welded joints shall be full strength butt or fillet welds. Connections to develop full capacity of member.

3.03 REPAIRS

A. General

1. Repairs shall be accomplished prior to abrasive blasting and painting.
2. All work shall be accomplished by skilled workmen in a workmanlike manner. All welders shall hold current AWS Certification and shall submit all credentials to the Engineer prior to starting work. All welding will be subject to testing and inspection in accordance with Section 11 of AWWA D100-79.
3. All materials shall be new and shall be in conformance with AWWA Standards. Fabrication shall be done by manufacturers who are regularly engaged in the manufacture of the type of work herein specified.
4. The Contractor shall submit shop drawings for all repair work preformed in accordance with the special provisions.
5. The finished tank shall not leak. Any leaks found shall be repaired by caulking or other suitable method at no additional cost.
6. All repairs shall blend into the existing structure in such a way that they shall maintain their aesthetic appearance.

B. Treatment of Pits

1. Pit treatment will fall into one of the following three categories:
   Type 1: Pits deeper than ½ the plate thickness.
   Type 2: Pits less than ½ the plate thickness, with narrow openings and pointed bottoms.
   Type 3: Pits less than ½ the plate thickness, but with wide crater type openings, and without pointed bottoms.
2. Type 1 pits shall be repaired by welding. Weld deposit shall be continuous and without undercut. The weld shall be ground smooth (but not necessarily

flush) and abrasive blasted. In any areas where perforations occur through the metal, the weld will be back-gouged from the opposite side and welded.

3. Type 2 pits shall be caulked using a suitable epoxy pit sealer. Prior to caulking, the pit shall be cleaned by abrasive blasting and hand cleaning to remove all scale and debris. The pit shall then be sealed using an approved 100% solids epoxy seam sealer compatible with the painting system. Sealer will be allowed to cure according to the manufacturer's instructions before proceeding with the specified coating system.
4. Type 3 pits shall be coated with a thinned coat of the specified eopxy coating prior to application of the specified coating system. Repair of type 3 pits shall be included under the lump sum price for painting.
5. All pit repairs will be as designated by the Engineer.

C. East Water Treatment Plant

1. Softening Basins (Figures 5 and 6)
   a. Replace radial launders.
   b. Replace peripheral launders.
   c. Replace outlet/overflow box.
   d. Replace concentrator lifting rods.
2. Lime Silo (Figure 7)
   a. Replace long sweeps over 4" fill pipe; include wear plate in new sweep.
   b. Replace hatch at top of silo.
   c. Continuous weld and caulk steel band on top trim.

D. 1.0 MG Elevated Storage Reservoir (Figure 8)

Replace vents.

E. 0.3 MG Elevated Storage Reservoir (Figure 9)

1. Replace overflow pipe as required.
2. Tighten and adjust all sway rods.
3. Ladder safety devices should be adjusted and renovated.
4. Drill chain holes in the balcony floor plates at all low points where water is ponding.

END OF SECTION

SECTION 05500

FABRICATED METALWORK AND CASTINGS

PART 1 GENERAL

1.01WORK INCLUDED

A. This Section covers the Work necessary to furnish and install, complete, all fabricated metalwork and castings.

B. Like items of materials provided hereunder shall be the end products of one manufacturer in order to achieve standardization for appearance, maintenance, and replacement.

C. See CONDITIONS OF THE CONTRACT, and Division 1, GENERAL REQUIREMENTS, which contain information and requirements that apply to the Work specified herein and are mandatory for this project.

1.02RELATED WORK SPECIFIED ELSEWHERE

A. Section 15481 - Vacuum Sewer System and Accessories.

1.03SUBMITTALS

A. Submittals shall be made in accordance with Section 01300 - Submittals.

B. Submittal data shall include, but not be limited to:

1. Shop drawings, including calculations where required.
2. Test pieces and samples.
3. Certificates, test reports, etc.
4. color samples of abrasive nosings.

PART 2 PRODUCTS

2.01GENERAL

A. The use of a manufacturer's name and model or catalog number is for the purpose of establishing the standard of quality and general configuration desired only. Products of other manufacturers will be considered in accordance with Section 00705 - GENERAL CONDITIONS.

B. Unless otherwise indicated, all materials shall conform to the latest issue of the following ASTM Specifications:

Item	ASTM Specification
Steel Shapes and Plates	A 36
Zinc (Hot Galvanized) Coatings of Fabricated Steel	ASTM A 123
Stainless Steel	
Bars and Shapes	A 276, Type 316
Steel Plate, Sheet, and Strip	A 167, Type 316
Bolts	A 193, Type 316
Nuts	A 194, Type 316

Item	ASTM Specification
Aluminum, Structural Shapes	Alloy 6061-T6; conform to referenced specifications and ASTM sections found in the Aluminum Association current Construction Manual Series
Connection Bolts for Steel Members	A 325-F
Galvanized Bolts	A 307, A 153
Connection Bolts for Wood Members	A307
Connection Bolts for Aluminum	A 2024-T4, or use appropriate stainless steel
Cast Iron	A 48, Class 30

C. The miscellaneous metalwork and castings indicated on the Drawings, or required to secure the various parts together and provide a complete installation, shall be included under this section. The tabulation of items herein is not intended to be all-inclusive, and it shall be the CONTRACTOR'S responsibility to provide all metalwork and castings shown, specified, or which case reasonably be inferred as necessary to complete the project.

2.02 STEEL ANCHOR BOLTS (NONSUBMERGED USE)

AA. One-half-inch minimum diameter with hex nuts, or as shown. Bolts and nuts shall be steel as specified hereinbefore.

2.03 STAINLESS STEEL ANCHOR BOLTS (SUBMERGED USE)

A. ASTM A 193, Type 316 stainless steel anchor bolt, ½-inch minimum diameter with hex nuts, or size as shown.

B. Submerged use is defined as any connection to concrete from point 1 foot 6 inches above the maximum water surface in a water-holding basin and any connection below that point.

2.04 STAINLESS STEEL FASTENERS LUBRICANT (ANTI-SEIZING)

A. Where stainless steel nuts and machined bolts, anchor bolts, concrete anchors, and all other threaded fasteners are used, CONTRACTOR shall apply an anti-seizing lubricant to the threads prior to making up the connections. The lubricant shall contain substantial amounts of molybdenum disulfide, graphite, mica, talic, or copper.

2.05 MACHINE ANCHOR BOLTS

A. For equipment with motors 3 horsepower or greater, fabricate as shown or as required. Size of fastening stud and anchor bolts as required by equipment manufacturer, stainless.

B. All machine anchor bolts, nuts and washers shall be stainless steel.

2.06 ADHESIVE ANCHORS

A. Adhesive anchors shall be Parabond capsule anchors with 316 stainless steel stud, nuts, and washers, as manufactured by Molly Division, 504 Mt. Laurel Avenue, Temple, PA 19560; heavy-duty adhesive anchor with HBP adhesive cartridge and has 316 stainless steel anchor rod assembly as manufactured by Hilti, Inc., PO Box 45400, Tulsa, OK 74145, or equal.

B. Adhesive anchors shall be used for anchoring all metal components at or below a point 1 foot 6 inches above the peak (maximum) water surface elevations in water-holding structures. For embedded anchors refer to stainless steel anchors as hereinbefore specified.

2.07 SHELL-TYPE ANCHOR

A. Shell-type anchors shall be self-drilling or non-drilling Red Head anchors as manufactured by the Phillips Drill Company, or equal.

2.08 WEDGE ANCHORS

A. Wedge anchors shall be Red Head wedge-type anchors as manufactured by the Phillips Drill Company, Parabolt anchors as manufactured by the Molly Division of Emhart Corporation, or equal.

2.09 EXPANSION ANCHORS

A. Stainless steel expansion anchors shall be a pre-assembled heavy duty sleeve style undercut anchor with an internal hex head meeting the requirements of ASTM F593. The anchors shall have a nylon compression ring and an expansion cone with an oversized annular ring which expands to undercut the base material. The steel components shall be manufactured

from Type 303 or 304 stainless steel. Anchors shall be as dimensioned and supplied by the Rawlplug Company, or equal.

2.10 PIPE SLEEVES

A. ASTM A 120 standard weight steel pipe. Where shown, fabricate seepage rings of 1/4-inch steel plate extending 2 inches from pipe and weld continuously to pipe around complete circumference. Galvanize after fabrication. Support pipe sleeves by form work to prevent contact with reinforcing steel. Do not weld reinforcing to pipe sleeves.

2.11 STRUCTURAL SUPPORTS AND COMPONENTS

A. Provide all structural supports of the sizes, materials and weights shown. All connections shall be welded, unless otherwise shown on the Drawings and as specified herein.

2.12 MACHINE BOLTS, INSERTS, AND FASTENERS

A. Machine bolts, inserts, and fasteners permanently embedded in concrete shall be Type 316 stainless steel.

B. Machine bolts, inserts, and fasteners not permanently embedded in concrete, but located outdoors in well wet floors, walls, and ceilings; chemical handling areas; equipment rooms subject to drainage, leakage, and washdown; and in galleries and trenches, shall be Type 316 stainless steel.

C. Machine bolts, inserts, and fasteners not permanently embedded in concrete, but located indoors where washdown, leakage, and drainage are not likely to occur (e.g., in personnel buildings excluding laboratories, on motor floors, in electrical equipment rooms, and in control rooms), may be galvanized steel, ASTM A 153.

2.13 .NEOPRENE GASKET

1. Unless otherwise indicated. Rubatex No. R-411-N, (ASTM D 1056-RE-41-E), soft, closed-cell, neoprene gasket material, as manufactured by Rubatex Division of Great American Industries, Bedford, VA; equivalent as manufactured by Garlock Manufacturing, San Francisco, CA; or equal. The material shall be suitable for exposure to chlorine, lime and other chemicals typically used in water and wastewater treatment. Thickness shall be as indicated, but in no case less than 1/4-inch. Gaskets shall be furnished without skin coat on either side. Provide two spare gaskets for each location shown requiring neoprene gaskets.

2.14 GRATING

A. Grating shall be fabricated of aluminum I-shaped bars, alloy 6063-T6, with swaged cross bars spaced on 4" centers. Bearing bars shall be spaced on 1-3/16" centers. Top surface of bearing bars shall be striated to provide a nonslip surface.

B. Grating shall support a uniform load of 200 pounds per square foot with a deflection of not more than 1/4". Maximum fiber stress shall not exceed that allowed by the Aluminum Association. Minimum depth shall be as noted on Drawings.

C. Gratings shall be provided with all frames, seat angles, fasteners, and other appropriate accessories as required. Metals to be embedded in concrete shall be Type 316 stainless steel.

D. Cutouts for all circular or square obstructions to be at least 2" larger than the obstruction. All cut openings shall be banded with bar the same depth as the bearing bars. The ends of all grating shall be banded.

E. Fasteners for anchoring grating to beam and channel flanges shall be stainless steel, Universal clip type with 1/4-inch Type 304 or 316 stainless steel bolts and nuts. Fasteners shall be furnished for a minimum spacing of four feet, or as required, for proper support to each panel, unless otherwise noted on the Drawings.

F. Standard installation clearances and tolerances shall conform to the requirements of the current Metal Bar Grating Manual published by the National Association of Architectural Metal Manufacturers.

G. Width of any single grating section shall not exceed 3 feet 1 inch, or be less than 1-foot 6-inches unless otherwise shown on reviewed shop drawings.

H. All support angles and framing shall be provided by the grating manufacturer. Support angles and framing shall be of the size and materials as indicated on the Drawings and as specified herein.

I. Aluminum Grating shall be as manufactured by Thompson Fabricating Company, Inc., Alpha Enterprises, or equal.

PART 3 EXECUTION

3.01 GENERAL

A. Workmanship and finish of all metalwork specified under this section shall be the highest grade and equal to the best practice of modern shops for the respective work. Exposed surfaces shall have smooth finish and sharp, well-defined lines. Provide all necessary rabbets, lugs, and brackets to that the work can be assembled in a neat, substantial manner. Conceal fastenings where practical. Drill metalwork and countersink holes as required for attaching hardware or other materials. Fabricate materials as specified weld connections, except where bolting is directed. Items requiring special fabrication methods are mentioned herein. Fabrication of all other items shall be of equal quality. Methods of fabrication not otherwise specified or shown shall be adequate for the stresses and as directed by the ENGINEER.

B. Grind all exposed edges of welds smooth on walkways, guardrails, handrails, stairways, channel door frames, steel column bases, and where indicated on the Drawings. All sharp edges shall be rounded to a 1/8-inch minimum radius; all burrs, jagged edges, and surface defects shall be ground smooth.

C. Welds and adjacent areas shall be prepared such that there is (1) no undercutting or reverse ridges on the weld bead, (2) no weld spatter on or adjacent to the weld or any other area to be painted, and (3) no sharp peaks or ridges along the weld bead. All embedded pieces of electrode or wire shall be ground flush with the adjacent surface of the weld bead.

D. Aluminum: Fabricate aluminum as shown, and in accordance with the Aluminum Association Standards and the manufacturer's recommendations as reviewed. Grind smooth sheared edges exposed in the finished work.

3.02 WELDING

A. The technique or welding employed, appearance, quality of welds made, and the methods of correcting defective Work shall conform to codes for Arc and Gas Welding in Building Construction of the AWS and AISC. Surfaces to be welded shall be free from loose scale, rust, grease, paint, and other foreign material, except that mill scale which will withstand vigorous wire brushing may remain. A light film of linseed oil may likewise be disregarded. No welding shall be done when the temperature of the base metal is lower than zero degrees F. Finished members shall be true to line and free from twists.

B. All welding operators shall be qualified in accordance with the requirements of current AWS Standard Qualification Procedure D1.1, Chapter 5, and welders of structural and reinforcing steel shall be certified for all positions of welding in accordance with such procedure. Qualification tests shall be run by a recognized testing laboratory at the CONTRACTOR'S expense.

C. All welding operators shall be subject to examination for requalification using the equipment, materials, and electrodes employed in the execution of the Contract Work. Such requalification, if ordered by the ENGINEER, shall be done at the expense of the CONTRACTOR.

D. Aluminum: Aluminum shall be welded with Gas Metal Arc (MIG) or Gas Tungsten Arc (TIG) processes in accordance with the manufacturer's recommendations as approved, and in accordance with the recommendations of the American Welding Society contained in the Welding Handbook, as last revised. Grind smooth all exposed aluminum welds.

3.03 INSTALLATION OF FABRICATED METALWORK

A. Install in accordance with the shop drawings, the Drawings, and these Specifications. Perform field welding and erection work by skilled mechanics. Install fabricated metalwork plumb or level as applicable. The completed installations shall, in all cases, be rigid, substantial, and neat in appearance. Erect structural steel in accordance with the

applicable portions of AISC Code of Standard Practice, except as modified. Install commercially manufactured products in accordance with manufacturer's recommendations as approved.

B. Aluminum: Erection of aluminum shall be in accordance with the Aluminum Association. Mill markings shall not be removed from concealed surfaces. Exposed surfaces not otherwise coated shall have the inked or painted identification marks removed after the material has been inspected and approved by the ENGINEER.

3.04 ANCHOR BOLTS

A. All anchor bolts shall be accurately located and held in place with templates at the time the concrete is poured.

3.05 ELECTROLYTIC PROTECTION

A. Aluminum in contact with or embedded in concrete shall be provided with an electrolysis protective material. the protective material shall be applied to the aluminum surface which will be in contact with the dissimilar material. Protective system shall be System No. 27 as specified in Section 09900 - Protective Coatings.

B. Aluminum in contact with steel shall be provided with an electrolysis protective material. The protective material shall be neoprene gasket as specified herein.

3.06 PAINTING

A. Thoroughly clean all ferrous metal items not galvanized and give a shop coat of metal primer. Preparation of surfaces and application of primer shall be in accordance with the paint manufacturer's printed directions and recommendations as reviewed and in accordance with Section 09900 - Protective Coatings, utilizing the appropriate painting system.

3.07 PREPARATION FOR SHIPMENT

A. Insofar as is practical, the items provided hereunder shall be factory assembled. The parts and assemblies that are of necessity shipped unassembled, shall be packaged and clearly tagged in a manner that will protect the materials from damage, and facilitate the identification and final assembly in the field.

END OF SECTION

SECTION 05520

HANDRAILS AND RAILINGS

PART 1 GENERAL

1.01WORK INCLUDED

A. This section covers the Work necessary to furnish and install handrails and railings, complete.

B. Like items of equipment provided hereunder shall be the end products of one manufacturer in order to achieve standardization for appearance, operation, maintenance, spare parts and manufacturer's service.

C. See GENERAL PROVISIONS OF THE CONSTRUCTION CONTRACT and Division 1, GENERAL REQUIREMENTS, which contain information and requirements that apply to the Work specified herein and are mandatory for this project.

1.02RELATED WORK SPECIFIED ELSEWHERE

A. Section 05500 - Fabricated Metalwork and Castings.

B. Section 09900 - Protective Coatings.

1.03STANDARDS AND CODES

A. Handrails and railings shall meet the minimum requirements of OSHA and local building codes.

1.04SUBMITTALS

A. Submittals during construction shall be made in accordance with Section 01300 - Submittals. In addition, the following specific information shall be provided:

1. Shop Drawings: Submit shop drawings for all railings, including splices and attachments. Indicate railings in related and dimensional position with scale elevations.

2. Manufacturer's Prefabricated Handrails: Submit catalog data and design information on prefabricated and engineered handrail system. Submit test data showing load and deflection due to load in enough detail to prove that the handrail system does satisfy OSHA requirements. Test data shall be furnished on all base connections of the types required for this project. Acceptance for use will not be granted without this test data.

B. Samples

1. Submit duplicate samples, 6-inches long of typical handrail section showing connections and finish proposed for approval.

2. Submit sample of each fitting for approval.

1.05MAINTENANCE INSTRUCTIONS

A. Procure from manufacturer, recommendations describing procedures for maintaining, including cleaning materials, application methods and precautions as to use of materials which may be detrimental to finish when improperly applied.

B. Submit for review, manufacturer's assembly and installation instructions.

1.06CERTIFICATION

A. Furnish certificate from the manufacturer stating that railing as installed meets all requirements of the Specifications.

PART 2 PRODUCTS

2.01PREFABRICATED HANDRAIL AND STAIR RAILING SYSTEMS

A. Aluminum prefabricated or pre-engineered handrail and stair railing systems shall be as manufactured by Tuttle Aluminum and Bronze, Inc., Thompson Fabricating Company, Inc., Alpha Enterprises, or equal.

B. Provide aluminum toeboard four inches high by 1/4-inch typical unless specifically deleted on the Drawings.

2.02PIPE

A. Aluminum: Extruded Alloy 6063, Temper T6, Schedule 40, 1-1/2-inch IPS (1.90-inch outside diameter, 0.145-inch wall thickness) minimum.

2.03EMBEDDED ITEMS

A. All stainless steel anchorages to be embedded in concrete shall be furnished and installed under Section 05500 - Fabricated Metalwork and Castings.

2.04FITTINGS

A. Fittings shall be fabricated from material similar to the railings. Elbows, flanges, sleeves, and similar items shall be welded, set screw, or bolted type. All connections shall be the

continuous diameter type for smooth appearance and to permit continuous sliding of hands.

2.05FASTENERS

A. Types and sizes as shown or as required by railing manufacturer. All fasteners for aluminum shall be 304 or 316 stainless steel. Fasteners not indicated shall be of a type applicable to the installation and shall develop the strengths required.

2.06FINISHES

A. Aluminum: Provide an AA clear, anodized, M32C22A41 finish on exposed surfaces.

2.07FABRICATION

A. Cut pipe square within 2 degrees and to lengths within 1/8-inch (3 mm).

B. Remove burrs from cut edges.

C. Form elbow bends and wall returns to uniform radius, free from buckles and twists with finished surfaces smooth.

D. Locate intermediate rails between top rail and finish floor or between top rail and centerline of tread on stairways as shown on the Drawings.

E. The Handrail Post Base Details are shown on the Drawings. Field measure and install as shown.

F. All aluminum railings, posts and elbows shall be packed and shipped in individual plastic shrink film or other material to protect the finish.

2.08SAFETY CHAINS

A. Safety chains shall be Type 316 stainless steel proof coil chain. Chains shall be straight link style, 3/16-inch diameter with at least twelve links per foot and with snap hooks on each end. Snap hooks shall be boat type and eye bolts for attachment of chains shall be 3/16-inch stainless steel bolts with 3/4-inch diameter eyes, anchored as required. Chains shall be 4-inches longer than the anchorage spacing for each guarded area.

PART 3 EXECUTION

3.01DELIVERY, STORAGE AND HANDLING

A. Deliver, store and handle components in such a manner as to prevent damage to finished surfaces.

B. Store components in dry, clean location away from uncured concrete and masonry. Cover with waterproof paper, tarpaulin or polyethylene sheeting.

C. Maintain protective covering on pipe until installation is complete and other trades are off the job.

3.02PROTECTION FROM ENTRAPPED WATER

A. All exterior installations and interior installations subject to high humidity shall have provisions made to drain water from the railing system. When posts are mounted in concrete or when bends or elbows occur at low points, weep holes of 1/4-inch diameter shall be drilled at the lowest possible elevations, one hole per post or rail. Hole shall be drilled in the plane of the rail.

3.03SETTING POSTS

A. Coat ends of aluminum posts in contact with concrete as specified in Section 09900 - Protective Coatings.

B. Set posts plumb and aligned to within 1/8-inch in 12 feet.

C. Set rails horizontal or parallel to rake of steps to within 1/8-inch in 12 feet.

D. Assemble connections end-to-end and splice joints by using internal sleeves, bonded by adhesive.

E. Assemble and install in accordance with printed instructions of the manufacturer.

3.04FITTING ASSEMBLY

A. Assemble pipe with pressure-fit fittings at joints and drive together to within 0.02 inch.

B. Assemble fitting into posts before pressing rails onto fittings.

C. Use wood blocks and padding to prevent damage to pipe and fittings.

D. Seal recessed holes of exposed locking screws using plastic filler, cement colored to match finish of pipe.

E. Where predrilled holes are not furnished, drill holes of proper size for screws and countersink to a flush fit.

3.05EXPANSION JOINTS

A. Provide at intervals of not more than 40 feet on centers.

B. Provide slip joint with internal sleeve extending 2 inches beyond each side of joint.

C. Fasten to one side using either adhesive or two blind rivets, set at 120 degrees and 240 degrees internal from top of pipe.

D. Locate joints within 12 inches of posts.

5. Install protective casing over the expansion joint. Casing material and finish shall match hand rails.

3.06CLEANING

A. Wash thoroughly using clean water and soap. Rinse with clean water.

B. Do not use acid solution, steel wool or other harsh abrasive.

C. If stain remains after washing, remove finish and restore in accordance with recommendations of manufacturer.

3.07REPAIR OF DEFECTIVE WORK

A. Remove stained or otherwise defective Work and replace with materials that meet the Specification requirements.

END OF SECTION

13100 - LIGHTNING PROTECTION SYSTEM
LIGHTNING PROTECTION SYSTEM

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Impalement protection air terminals.
B. Interconnecting conductors.
C. Grounding and bonding for lightning protection.

1.2 RELATED SECTIONS

A. The following sections cover work related to lightning protection but which are not the responsibility of the lightning protection system installer.
B. Section 02317 - Trenching for Site Utilities: Trenching, backfilling, and compaction required for lightning protection ground system.

1.3 REFERENCES

A. 29 CFR 1910 and 29 CFR 1926 - OSHA Regulations.
B. Title 8, Section 344.90 - State of California Occupational Safety and Health Regulations, Impalement Protection, Specifications and Testing Criteria; for Title 8, CCR Section 1712.
C. NFPA 780 - Standard for the Installation of Lightning Protection Systems.
D. UL 96 - Standard for Safety for Lightning Protection Equipment.
E. UL 96A - Standard for Safety for Installation Requirements for Lightning Protection Systems.

1.4 SUBMITTALS

A. Submit in accordance with Section 01300.
B. Product Data: Submit product data sheets showing application, dimensions, and material of each component utilized in the lightning protection system.
C. Shop Drawings: Submit shop drawings showing layout of air terminals, bonding connections to metal objects, bonding connections to structure, and ground electrodes. Include sizes of air terminals, conductors, ground electrodes, and connection/termination details.
D. Test Reports: Submit report of specified impalement protection test or other evidence complying with specified test criteria for air terminal(s) to be utilized in the installation.
E. Accident Protection Plan: Submit plan compliant with U.S. OSHA regulations in 29 CFR 1926 and 29CFR 1910.
F. Certificates: Submit proof of UL listing in accordance with UL 96.
G. Manufacturer's Instructions: Submit manufacturer's installation instructions.
H. Field Quality Control Reports.
I. Project Record Documents: Accurately record locations of all air terminals, bonding, grounding, and conductors.

1.5 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company listed in the current UL Electrical Construction Directory and specializing in manufacture of lightning protection equipment.

B. Installer Qualifications: Company listed in the current UL Electrical Construction Directory and specializing in installation of lightning protection systems.

C. Pre-Installation Meeting: Convene a pre-installation conference with all applicable trades and disciplines one week prior to commencing work of this section.

1.6 COORDINATION

A. Coordinate work under this section with roof, interior, exterior, electrical, and mechanical work.

PART 2 PRODUCTS

1.7 MANUFACTURERS

A. Acceptable Manufacturer: National Lighting Protection Corporation; 4120 Brighton Boulevard, Unit A-40, Denver, CO 80216-3729. ASD. Tel: (800) 628-2816. http://www.safetypoint.com

B. Requests for substitutions will be considered as outlined in Section 01630.

1.8 COMPONENTS

A. Lightning Protection System: Provide a complete lightning protection system complying with NFPA 780.
   1. Provide all air terminals, bonding, interconnecting conductors, and grounding.
   2. Provide a UL Master Labeled system in accordance with UL 96A.
   3. Provide new components complying with UL 96.

B. Air Terminals: Impalement protection air terminals; NLP FlatHead air terminals with extension rods and safety springs or equal.
   1. Material: Copper.
   2. Size: As required by structure class under provisions of UL 96A and NFPA 780 for applicable system installation except where specified in excess of herein.
   3. Project air terminals a minimum of 10 inches (254 mm) above object to be protected.
   4. Comply with "Guarded" requirements of U.S. OSHA standards 29 CFR 1910.23(c)(3), 1910.212(a), 1926.501(b), and the intent of 1926.701(b).
   5. Impalement Protection Test: Tested in accordance with test method specified in State of California Occupational Safety and Health Regulations, Title 8, Section 344.90.
   6. Color: Powder-coated safety yellow or orange to identify potential impalement hazard.

C. Ground Terminations:
   1. Copper-Clad Ground Rods: 3/4 inch (19 mm) diameter by 10 feet (3 m) long, minimum.
   2. Ground Plates: 26 gauge copper, 2 square feet (0.2 sq m) in area, minimum.
   3. Electrolytic Ground Rods: 10 feet (3 m) long, minimum, straight or "L" shaped with cap to allow recharging.
   4. Ground Loop Conductor: Minimum 4/0 19 strand copper encased in San-Earth conductive concrete.

D. Conductors:
   1. Cable: Copper.
   2. Size: As required by structure class under the provisions of UL 96A and NFPA 780 for the applicable system installation.

E. Connectors, Splices, and Bases:
   1. Above Grade: Cast bronze.
   2. Below Grade and Concealed: Burndy HYGROUND or equal.

PART 3 EXECUTION

1.9 EXAMINATION

A. Verify that surfaces are ready to receive work.

B. Verify dimensions and measurements shown on shop drawings with field conditions.

C. Verify that all systems that may influence the lightning protection system design are included or referenced on the shop drawings.

D. Verify adequate guards against impalement are in place or will be implemented as required by job progress.

E. Verify required procedures to prevent voiding of roofing warranty.

1.10 PREPARATION

A. Protect elements under other sections from damage or disfiguration during work under this section.

B. Coordinate all below grade lightning protection system installation with the general contractor.

1.11 INSTALLATION

A. Install in accordance with manufacturer's instructions.

B. Install in accordance with OSHA regulations 29CFR 1910.23(c)(3), 1910.252(a), 1926.501(b)(8), and in accordance with the intent of OSHA's 1926.701 Guarded Requirements.

C. Install in accordance with NFPA 780 and UL 96A.

D. Structural steel may be utilized as the main down conductor.
   1. Structural steel shall be electrically continuous or made so.
   2. Ground every other column or at intervals not exceeding an average of 60 feet on center.

E. Securely fasten conductors to the structure at every 36 inches (915 mm) on center utilizing fasteners with corrosion resistance equal to that of the conductor.

F. Interconnect metal objects of induction situated within 6 feet (1830 mm) of a lightning protection conductor or bonded metal body to the lightning protection system.

1. Interconnect grounded metal bodies via a main size conductor.
2. Interconnect ungrounded metal bodies via a secondary conductor no smaller than No.6 AWG copper.

G. Utilize tin or lead coated copper and bronze equipment where corrosive atmospheres are present.

H. Maintain lightning protection conductors in a downward or horizontal path to ground avoiding "U" and "V" pockets with the following exception:
1. A conductor may rise no more than 3 inches (76 mm) for every 12 inches (305 mm) of run.

I. No bend of conductor shall form a final included angle of less than 90 degrees nor shall have a radius of less than 8 inches (203 mm). Exceptions are through roof, through wall, and "T" connections.

1.12 FIELD QUALITY CONTROL

A. Inspection:
1. Inspect down conductors prior to being covered by interior, exterior, or other installations.
2. Inspect lightning protection system grounds and connections prior to burial.

B. Manufacturer's Field Services:
1. Apply for and obtain the UL Master Label; at the time of application for UL Master Label send a copy of the application to the Owner's representative.
2. Attach the UL Master Label to the structure at the location specified by the Owner.

C. Field Quality Control: Manufacturer shall arrange and pay for field services as follows:
1. Obtain the services of Underwriters Laboratories (UL), Inc. to provide the inspection and certification of the lightning protection system under the provisions of UL 96A.
2. Certify that surge protection is installed on the electrical service.
3. Certify that surge suppression is installed on the antenna, telephone, radio, and television lead wires.

SECTION 13700
PROCESS INSTRUMENTATION AND CONTROLS

PART 1 GENERAL

1.01 WORK INCLUDED

A. Furnish all engineering, labor, materials and equipment to furnish, install, adjust, test, document and start-up all process instrumentation and controls as shown on the Drawings and specified herein, complete

B. The process instrumentation and control system specified herein shall be a complete system.

C. Like items of equipment provided hereunder shall be the end products of one manufacturer in order to achieve standardization for appearance, operation and maintenance.

D. See Contract for Construction and Division 1, GENERAL REQUIREMENTS, which contain information and requirements which apply to the work specified herein and are mandatory for this project.

1.02 RELATED WORK SPECIFIED ELSEWHERE

A. Section 11310 – Submersible Pump Station – General

B. Section 16000 – Electrical General Requirements.

1.03 REFERENCE SPECIFICATIONS, CODES AND STANDARDS

A. ISA Standards and Practices for Instrumentation – Current Edition.

1.04 DEFINITIONS

A. The instrumentation and control (I&C) subcontractor shall be a single firm, under direct contract and direction of the CONTRACTOR. The I&C subcontractor shall assume complete responsibility for the engineering, furnishing, technical advise on, certification as to correctness of installation, final connections to, adjusting, documenting, testing and start-up of the process instrumentation and control system as shown and described in these Contract Documents. The I&C system, but the I&C subcontractor shall be fully responsible for these connections.

B. CONTRACTOR as distinct from the I&C subcontractor, shall provide all additional materials and labor necessary to supplement the materials and labor provided by the I&C subcontractor as necessary to satisfy the requirements of this project.

C. System acceptance shall be defined as the point in time when:

1. All submittals and documentation have been submitted, reviewed and accepted.
2. The complete system of instrumentation and controls has successfully completed all testing requirements specified herein.
3. All CITY'S staff personnel training has been completed.

1.05 SYSTEM INSTALLATION RESPONSIBILITY

A. The CONTRACTOR shall be ultimately responsible for the complete and proper installation of the process instrumentation and control system. The general contractor shall either include installation within the scope of the I&C subcontractor's contract or shall provide for the installation by an experienced I&C system installer, acceptable to ENGINEER.

1.06 SUBMITTALS

A. Submittals shall be in accordance with Section 01300 – Submittals.

B. Catalog information, descriptive literature, wiring diagrams, and shop drawings on all controllers, recorders, indicators, transmitters, primary elements, flow measuring equipment and appurtenances, rotameters, pressure regulating valves, gauges, and all other components of the system shall be provided.

C. Individual data (or specification) sheets shall be provided for all components provided under this section. The purpose of these data sheets is to supplement the generalized catalog information provided by citing all specific features for each specific component (e.g.: scale range, materials of construction, special options included, etc.). Each component data sheet shall bear the component name and instrument tag number designation shown on the Drawings and Specifications.

D. Catalog information on all electrical devices furnished under this section.

E. Shop Drawings and catalog material for all control panels and enclosures.

F. Panel elementary diagrams of prewired panels. Diagrams shall be similar to those diagrams shown on the Drawings, but with the addition of all switched analog signals and all auxiliary devices such as relays, alarms, fuses, lights, fans, heaters, etc. Drawings shall include all terminal numbers.

G. Plumbing diagrams of preplumbed panels and interconnecting plumbing diagrams.

H. Interconnecting wiring diagrams, showing all component and panel terminal board identification numbers and external wire numbers. This diagram shall

include all intermediate terminations between field diagram shall include all intermediate terminations between field elements and panels (e.g., terminal junction boxes, motor control centers, etc.). This diagram shall be coordinated with the Electrical Subcontractor and shall bear his mark showing that this has been done.

Diagrams, device designations, and symbols shall be in accordance with NEMA ICA 1-101.

I. A tabulation of steady state air consumption of each pneumatic instrument (as applicable).

J. Loop diagrams, which shall consist of an individual wiring and/or plumbing diagram for each analog loop showing all terminal numbers, the location of the dc power supply, the location of any booster relays or common dropping resistors, etc. The loop diagrams shall meet the minimum requirements of ISA S5.4 plus the following requirements: each loop diagram shall be divided into three areas for identification of element locations: panel face, back-of-panel, and field, respectively. On each diagram present a tabular summary of: (a) the output capability of the transmitting instruments, (b) the input impedance of each receiving instrument, (c) an estimate of the loop wiring impedance based on the wire sizes and lengths shown, (d) the total loop impedance, and (e) reserve output capacity. Loop diagrams shall be on individual 8-1/2 – inch by 11 – inch or 11 – inch by 17 – inch Drawings.

K. Systems testing, calibration and adjustment procedures along with the proposed calibration, adjustment and check-out forms for this project.

L. Operation and maintenance manual including operating and maintenance information and specifications for all components specified under this Section. Submitted literature shall be of sufficient detail so as to facilitate the operation, removal, installation, adjustment, calibration and maintenance of each component specified in this Section. O & M Manuals shall include internal wiring diagrams for all panels. Wiring diagrams shall show all terminal block number designations and wire numbers.

M. The I&C subcontractor shall submit a maximum of eight (8) sets of as-built Drawings of all process and instrumentation diagrams. P&ID's shall be same format as in Contract Documents.

N. All test results, system calibration and adjustment settings shall be submitted to ENGINEER for review prior to the introduction of current to the system of individual components.

1.07 QUALITY ASSURANCE

A. The CONTRACTOR'S attention is directed to the fact that the instrumentation and control functions result in an integrated system. Therefore, it is the intention of this specification that all controls and instruments including panel assemblies, telemetry systems, computer hardware and computer software will be provided, furnished, assembled and shipped, along with installation supervision, inspection and start-up by one Instrumentation Subcontractor which has a minimum of five (5) years of experience on installations of similar complexity even though individual control and instrumentation components may be the standard products of separate manufacturing companies.

B. Since many control items and instrumentation devices involve the assembly and interlocking functions of many individual parts, solenoids, pressure switches, timing relays, relays, switches, push buttons, contacts, dials, charts, clocks, pens, etc., the functional system descriptions contained herein are given to allow the Instrumentation Subcontractor to choose the proper components and to assemble them so as to provide a rugged, low maintenance, easy cleaning, reliable mechanism suitable for the temperature, salt spray and humidity conditions of the Southeast Florida coastal area and which will perform the described function(s).

C. All of the equipment furnished by the Instrumentation Subcontractor shall be the latest and proven design. Specifications and Drawings call attention to certain features, but do not purport to cover all details entering into the design of the instrumentation system. The completed system shall be compatible with the functions required and the equipment furnished by the CONTRACTOR.

1.08 SEQUENCING AND SCHEDULING

A. Every effort shall be made to minimize interference with the OWNER'S existing plant operation. Should any shutdown, total or partial, be required, it shall be scheduled and coordinated with the OWNER and his approval must be obtained prior to the shutdown.

B. The I&C subcontractor shall obtain from the CONTRACTOR the required information on those primary elements, valves, valve actuators and other control equipment or devices that are required to be interfaced with, but are not provided within the context of this section.

C. The I&C subcontractor shall coordinate his work with the CONTACTOR to ensure that all components provided under this section are properly installed; the proper type, size and number of control wires and conduits are provided and installed; the proper type, size and number of pneumatic tubes with their conduits are provided an installed and proper electrical circuits are provided for all components and systems.

1.09 DELIVERY, STORAGE AND HANDLING

A. Proper shipping, storage and handling procedures shall be followed as recommended by the equipment MANUFACTURER and as specified herein.

B. All parts shall be properly protected so that no damage or deterioration will occur during shipment, normal unloading, storage and installation.

C. All equipment and parts must be properly protected against any damage during a prolonged storage period at the site. Proper job site storage is the responsibility of the CONTRACTOR.

D. Factory assembled parts and components shall not be dismantled for shipment unless permission is received in writing from the ENGINEER. This provision shall not apply if the items are too large to be shipped in a completely assembled condition.

E. Finished iron or steel surfaces not painted shall be properly protected to prevent rust and corrosion.

F. Each box or package shall be properly marked to show its net wierht in addition to its contents.

1.10 WARRANTY

A. The MANUFACTURER and CONTRACTOR shall warrant the equipment being supplied to the CITY against all defects in workmanship and materials for a period on one (1) year. Warranty period shall commence on Substantial Completion date as outlined in the General Conditions. Warranties for all equipment installed under this contract shall run concurrently.

B. The MANUFACTURER'S warranty period shall run concurrently with the CONTRACTOR'S warranty period. No exception to this provision shall be allowed. The CONTRACTOR shall be responsible for proper storage of the equipment so as to remain in an "as shipped" condition. If the equipment remains in storage at the job site for longer than six (6) months, before installation, the CONTRACTOR shall provide factory service personnel for a complete inspection of the equipment. Any work necessary to restore the equipment to an "as shipped" condition will be the responsibility of the CONTRACTOR.

1.11 SPARE PARTS

A. Furnish the manufacturer's recommended spare parts including at least the following:

1. One (1) plug-in relay of each type provided.

2. One (1) carton of indicator lights of each color provided.

3. Four (4) float switches.

4. Five (5) fuses of each type used.

5. One (1) Main Breaker, of each size as specified.

6. One (1) Pump Breaker, of each size as specified.

7. One (1) Motor Starter with overloads, auxiliary contact and reset assembly, size as specified.

8. Five (5) Barrier Relays.

B. All parts shall be furnished in containers which are clearly marked and identified as to the contents.

1.12 TEST PROCEDURE DEVELOPMENT AND DOCUMENTATION

A. I & C subcontractor shall prepare and submit to the ENGINEER for review, a detailed description of the test procedures that he proposed to perform to demonstrate conformance of the complete system of instrumentation and controls to this Specification.

B. It is recommended that the I & C subcontractor develop the test procedures in two steps by first submitting general descriptions and outlines of the tests and then, upon receipt of approval, submit the required detailed procedures and forms.

C. Operational Acceptance Tests

1. The I & C subcontractor shall prepare check-off sheet (s) for each loop and an instrument calibration sheet for each active I & C element (except simple hand switches, lights, etc.). These check-off and data sheets shall form the basis for these operational tests and this documentation.

2. Each loop check-off sheet shall cite the following information and shall provide spaces for sign-off on individual items and on the completed loop by the I & C subcontractor:

   a. Project name;
   b. Loop number;
   c. For each element: Tag number, description, manufacturer and model number, installation bulletin, and Specification sheet number;
   d. Loop description;

e. Installation check;
f. Termination check;
g. Calibration check;
h. Adjustment check;
i. Space for comments;
j. Space for loop sign-off by I & C subcontractor and date.

3. Each instrument calibration sheet shall provide the following information and a space for sign-off on individual items and on the completed unit by the I & C subcontractor:

a. Project name;
b. Loop number;
c. Tag number;
d. Manufacturer;
e. Model number;
f. Serial number;
g. Calibration range;
h. Calibration data: Input, output, and error at 10 percent, 50 percent and 90 percent of span;
i. Switch setting, contact action, and dead band for discrete elements;
j. Space for comments;
k. Space for sign-off by I & C subcontractor and date.

D. Functional Acceptance Tests

The I & C subcontractor shall prepare two types of test forms as follows:

1. For those functions that can be demonstrated on a loop-by-loop basis, the form shall include:

a. Project name;
b. Loop number;
c. Loop description;
d. Test procedure description;
e. For each component: Tag number, description, manufacturer, and data sheet number;
f. Space for sign-off and date by both I & C subcontractor and ENGINEER;

2. For those functions that cannot be demonstrated on a loop-by-loop basis, the test form shall be a listing of the specific tests to be conducted. With each test description the following information shall be included:

a. Spec page and paragraph of function demonstrated;
b. Description of function;
c. Space for sign-off and date by both I & C subcontractor and ENGINEER.

PART 2 PRODUCTS

2.01 GENERAL

A. The process instrumentation and control system shall provide all of the functions as described hereinafter for each loop and as shown by the Drawings. Major equipment items are specified for each loop. However, it shall be the responsibility of the I & C subcontractor to provide all items of equipment, whether indicated or not, that are necessary to effect the required loop performance.

B. Display and control loops are shown on the Drawings.

C. Control panel (s) shall be provided with a U.L label and be manufactured by a U.L. 508 custom panel manufacturer. Panel manufacturer shall be required to submit proof of current enrollment in UL's Custom Builders Program.

D. Process instrumentation and control systems shall be manufactured and provided by CC Control Corporation, or equal.

2.02 LOOP SPECIFICATION FORMAT

A. "Functions" specify the functional performance of the loop and includes a description of any functional interlocks to be provided by the I & C subcontractor. For more precise information on a loop's functional interlocks, refer to the Drawings.

B. "Components" specify the major components to be provided for a loop. Each component is identified by three pieces of information: tag number, component identification code and component name and options.

C. Tag numbers example HS-1-3-7

HS = Instrumentation society designation: Hand Switch.
1 = Unit process number.
3 = Loop number.
7 = Unit or item number.

D. Component identification code is an alphanumeric code used to reference a particular component specification within this section.

E. Component name and options are listed as required for each specific requirement. One particular nomenclature has been used to define the action of discrete devices about their set points.

"Rising" – in reference to a set point means that the contacts are closed for all process variable values above that point.

"Falling" –in reference to a set point means that contacts are closed for all process variable values below that point.

2.03 UNIT PROCESS 1 – WASTEWATER PUMPING

A. Functions:

1. Provide Hand/Off/Auto control HS-3 and HS-4 for each wastewater pump. Operation is same for each pump. In Hand mode, pump runs. In Off mode, pump will not run. In Auto mode, pump runs when called by RTU (normal operation).

   Provide run indication for each pump, RL1 and RL2.

   Provide non-resettable run time meter for each pump, ETM1 and ETM2.

   Provide On-Off hand switch, HS-1 and HS-2, for each wastewater pump. Operation is same for each pump. In "Off" position, pump will not start regardless of position of HS-3 or HS-4 or status of RTU system. In "On" position, pump runs as called by HS-3 or HS-4 and RTU system (normal operation).

2. Provide to RTU (via terminal strip) discrete signals from the PLC, corresponding to the following leads:

   1. Pumps Off
   2. Lead Pump On
   3. Lag Pump On
   4. High Level Alarm

3. Provide continuous 4-20 mA dc signal from AE/AIT to RTU corresponding to % LEL of wetwell.

4. Provide to RTU (via terminal strip) discrete signal from intruder alarm switch, IAS, upon opening of cabinet door and discontinue upon closing cabinet door.

5. Receive at control panel a discrete signal from emergency backup float switch FS-1. Start time delay relay TDR upon signal from float switch FS-1 and energize control relay CR1 to start both pumps. Time delay relay TDR shall time out (0-5 min) and discontinue power to CR1 and the system shall reset to pumps "Off" position.

6. Provide fluorescent courtesy light, convenience outlet, motor starters, all indicated breakers, lightning arrestor, surge capacitor, control power and isolation transformers (as applicable). Refer to drawings.

7. Provide the following external interfaces (discrete outputs) from control panel:

Destination	Description
RTU	Pump 1 run, from MS1 Aux.
RTU	Pump 2 run, from MS2 Aux.

B. Components:

Tag Number	Component Identification Code	Component Name and Options
GR	M7	Generator Receptacle
LA	M7	Lightning Arrestor
SC	M7	Surge Capacitor
MS (2)	M7	Pump Motor Starter
CCB	M7	Control Circuit Breaker
DRB	M7	Duplex Receptacle Breaker 15 amp
OL	M7	Overload Heaters
RTU	R1	Remote telemetry unit (furnished by Owner)
RTUB	M7	Remote telemetry unit breaker (15 amp)
MB (2)	M7	Pump Motor Breaker (Amperage Rating indicated on drawings)
HS-3, 4	M7	Selector Switch 3 Pos. (Hand-Off-Auto)

HS-1, 2	M7	Selector Switch (BYP0 2 Pos, (On-Off)
MCB/ECB	M7	Main and emergency circuit breakers w/mechanical interlock (amperage rating indicated on drawings)
FL	M7	Fluorescent Lamp
LE	L20	Aquitape Gauge Range: As Specified
FLB	M7	Fluorescent light Bkr, 15 amps
RL	M7	Run Light – Red (Push to test)
CPT	X3	Control Power Transformer (120 volt to 24 volt)
PLCB	M7	PLC Power Supply Breaker, 15 amp
PLC	PLC1	Programmable Logic Controller
FS1	L8	Float Switches (rising)
IAS	M7	Magnetic Switch
GFIR	M7	Ground Fault Interrupting Receptacle
ETM	M7	Elapsed time meter (hours) non-resettable
SAF-PAK	M7	Barrier Relay
CR	M7	Control Relays
CGD	A20	Combustible Gas Detector Range: 0-100 % LEL

TDR	M7	Time Delay Relay Range: 0-5 minutes

2.04 A20, COMBUSTIBLE GAS DETECTOR

A. The combustible gas detector shall use infrared technology to avoid the poisoning of catalytic bead sensors by H2S. The infrared sensor shall use double compensated optics for long life and no routine calibration or maintenance requirements. The construction shall incorporate all 316 stainless steel with a NEMA 4X and 7X housing. The electronics and optics shall be hermetically sealed and communicate via 4-20mA, RS485 and bidirectional HART protocols. The complete unit shall be capable of being submerged and returned to service without maintenance. Until shall provide a 4-20MA DC output corresponding to 0-100% LEL.

B. Unit shall be provided with minimum 30 feet of cable, or length as required by manufacturer for installation.

C. Unit shall come complete with all installation hardware indicated by the standard details.

D. Combustible gas detector shall be Drager Polytron2 IR, or equal.

2.05 L8 LEVEL SWITCH, FLOAT TYPE WITH INTEGRAL SWITCH (NON-MERCURY)

A. Direct-acting float type consisting of a non-mercury switch enclosed in a float and connected to a two-conductor, combination support and signal cable. The entire assembly shall form a completely watertight and impact-resistant unit. Floats shall be of chemical-resistant polypropylene material or other corrosion-resistant material. Cable shall be rugged and flexible with heavy neoprene or PVC jacket. The actuation/deactuation differential shall not exceed 1-inch. Units shall be pipe mounted or suspended type as noted and provided with a minimum of 30 feet of cable unless otherwise noted. Each pipe mounted type shall be provided with a clamp to secure the cable to its support pipe, 2 feet of stainless steel support pipe and stainless steel pipe mounting clamps.

B. Each suspended type shall be provided with necessary brackets and clamps to suspend the unit from the top of a tank or vessel. The suspended type shall include an integral or attached weight assembly for stabilization and positive operation of the unit. All mounting clamps shall be PVC or Neoprene.

C. Units shall be as manufactured by Anchor Scientific, or equal.

2.06 L20 AQUITAPE GAUGING SYSTEM

A. Aquitape Type AGS gauging system shall be as manufactured by Metritape, Inc. Liquid measured shall be water (S.G.=1.00). Aquitape shall be provided complete with all necessary Type 316 stainless steel mounting hardware and junction box by Data Flow Systems, Inc.

B. Sensor length shall be as indicated on drawings and extend from wetwell floor to transmitter mounting location. Controller shall verify length required at each lift station.

2.07 M7 MISCELLANEOUS

A. Circuit Breakers

1. Square – D
2. Amperage Ratings shall be indicated on drawings.

B. Fuses

1. Bussman 600 volt.

C. Control Relays

1. Control relays shall be programmable.
2. General Electric 10 amp or equal.

D. Pushbuttons.

1. Square-D Class 9001, Type K, pushbutton, or equal.

E. Ground Fault Interrupting Receptacle

1. Leviton Duplex Receptacle or equal.
2. AC receptacle box shall be Steel City 58351-1/2 or equal.
3. Covers shall be Steel City 58-C-5, or equal.

F. Motor Starter

1. Square D 8536 motor starters with NEMA rated contactors, minimum size 1. Provide overload blocks with overloads as required.
2. Provide auxiliary contacts as required.
3. Reset buttons Square D 9066-RA1, or equal.

G. Selector Switches

1. Square-D, Class 9001, Type K, or equal.
2. Operators shall be black knob type or key switch, 3-position or 2-position, as noted.
3. Selector switches shall be spring return where noted.

H. Surge and Lightning Arrestors

1. All control panels shall be provided with surge and lightning arrestors as specified.
2. Power
   a. Surge arrestor shall be GE Tranquell, 9L15FCB001.
3. Lightning Surge Suppressor
   a. Lightning surge suppressors shall be Innovative Technology P-Plus Series.
4. Signal
   a. Panel surge arrestors shall be Joslyne, 1800 series.
   b. Field surge arrestors shall be Joslyne, 1660-06.

I. Generator Receptacle

1. Units shall be Model JRS1044FR or JRS2044FR as manufactured by Russel Stol.
2. Amperage ratings and model numbers required shall be indicated on drawings. Verify wiring configuration with City to match their existing portable generator.

J. Fluorescent Lamp

1. 8 watt, 120v, 12”, Grainger 2V809, or equal.
2. Bulb, 8w, 12”, miniature, Phillips, or equal.

K. Indicator Lights

1. Square-D trans type 6 volt, Class 9001, type K, push to test, or equal.
2. Lens color shall be as noted.

L. Elapsed Time Meter

1. Hour meter, non-reset type, Cramer 635K, or equal.

M. Surge Capacitor

1. General Electric 9L18BAB301, or equal.

N. Ground Lug

1. #1/0 Wire Ilsco AU-0, or equal.

O. Magnetic Door Switch

1. Simplex, UL Listed, magnetic flush or surface mounted contact and magnet. Contacts shall be hermetically sealed.
2. Edwards, Model #61, or equal.

P. Time Delay Relays

1. Time delay relays shall be programmable with adjustable ranges, DIP switch settable.
2. Omron or equal.

Q. Barrier Relay

1. Barrier relays shall be SAF-Pak as manufactured by GEMS Sensors, for use in hazardous areas, with intrinsically safe-sensing circuit. Units shall be UL approved for use in Class I, Division 2, environments.

2.08 R1 REMOTE TELEMETRY UNIT AND ACCESSORIES (FURNISHED BY OWNER)

A. Control panel shall be capable of being monitored and controlled by existing CITY operated radio telemetry system central terminal unit (CTU). Separate terminal blocks shall be provided in control panel, so following wire pints as indicated herein and shown on the drawings can be monitored/controlled:

MONITOR

1. Alarm Bell, OFF/ON
2. Alarm Light, OFF/On
3. Float Sequence, NORMAL/FAULT
4. Starter #1, NORMAL/FAULT
5. Starter #2, NORMAL/FAULT
6. Pump #1, OFF/ON
7. Pump #2, OFF/ON
8. Emergency Low, ALARM/NORMAL
9. Emergency High, ALARM/NORMAL
10. RTU Power, OFF/ON
11. Wetwell Level, LOW/NORMAL
12. Three Phase Power, NORMAL/FAULT (not required)
13. HOA Switch Position, AUTO/HAND/OFF (each pump)

CONTROL

1. Pump #1 Override, DISABLED/ENABLED
2. Pump #2 Override, DISABLED/ENABLED
3. Alarm Bell, ENABLED/DISABLED
4. Station Auto Control, ENABLED/DISABLED
5. Phase Monitor, ENABLED/BYPASSED

B. CONTRACTOR shall be responsible for installation of RTU panel and antenna and for providing all wire and conduit as required for RTU to control panel terminal block.

C. Remote telemetry unit shall be size RTU204 as manufactured and installed by Data Flow Systems, Inc. of Melbourne, Florida. All components shall match the OWNER'S existing system and operation.

D. A representative of Data Flow Systems, Inc. shall be present to certify the installation and startup of the RTU system.

Note: RTU System and antenna are existing at each lift station site. CONTRACTOR is responsible for all work required to relocate existing antenna at each site. Existing RTU and accessories shall be salvaged for OWNER. Above listed RTU accessories shall be provided at the sites as indicated on the Drawings.

2.09 PLC1 PROGRAMMABLE LOGIC CONTROLLER

A. The programmable logic controller shall be Allen-Bradley, Micro Controller, Catalog Number 1761-L20AWA-5A.

B. Specific PLC Requirements:

1. 1K User Memory
2. Input: 120 VAC
   Output: Relay
   Power: 100/240 VAC
   Analog: 4 in/1 out
3. Class I, Div 2

C. All programming required for operational strategies shall be completed n field by the City of Delray Beach.

2.10 X 3 CONTROL POWER TRANSFORMER

A. Industrial control transformers, Square D, Class 9070.

2.11 FIELD PANEL CONSTRUCTION

A. Field panels shall be UL Listed, modified, NEMA 3R, Type 316 Stainless Steel enclosure with padlockable draw latches or 3-point padlockable handles conforming to the requirements of the National Electrical Manufacturer's Association.

B. In addition to the NEMA 3R standard, the panel shall conform to the following requirements:

1. Minimum metal thickness shall be 12-gauge.

2. All doors shall be rubber-gasketed with continuous hinge.

3. Provide Type 316 stainless steel drip shield.

4. Provide aluminum dead front panel for component mounting as shown on drawings.

5. Print pocket and one (1) set of reduced drawings shall be provided on interior side of door.

6. Minimum overall dimensions shall be 30" W x 36" H x 10" D or as required by UL Subject 508A for Industrial Control Panels.

7. Control panel diagrams and overload tables shall be laminated to the inside of cabinet door.

8. Provide door stop kits for outer cabinet door and dead front door.

C. Cabinet enclosure shall be as manufactured by Hoffman, Electromate, or equal.

2.12 PANEL ELECTRICAL

A. Wiring

1. All electrical wiring shall be in accordance with the applicable requirements of Division 16 – Electrical. Wires shall be 600 volt class, PVC insulated stranded copper and shall be of the sizes required for the current to be carried, but not below 15=4 AWG enclosed in either sheet metal raceway or plastic wiring duct. Wiring for signal circuits shall be twisted shielded pairs not smaller than No. 18 AWG, and be separated at least 6 inches from any power wiring.

2. All panel wiring shall be labeled with T&B Shrink-Kon HVM marker system.

B. Terminal Blocks

1. Terminal blocks shall be one-piece molded plastic blocks with screw type terminals and barriers rated for 300 volts. Terminals shall be double sided. Terminals shall have permanent, legible identification.

2. Wires shall be terminated at the terminal blocks with crimp type, preinsulated, locking forked-tongue lugs. Lugs shall be of the appropriate size for the terminal block screws and for the number and size of the wires terminated.

3. Allow 20% extra terminals for spares.

2.13 NAMEPLATES, NAME TAGS AND SERVICE LEGENDS

A. All components provided under this section, both field and panel mounted, shall be provided with permanently mounted name tags bearing the entire ISA tag number of the components. Panel mounted tags shall be plastic; field mounted tags shall be stamped stainless steel.

B. Circuit breakers and all dead front panel items shall be clearly labeled by name, not tag number. Nameplates are defined as inscribed laminated plastic plates mounted under or near a panel face mounted instrument. Service legends are defined as inscribed laminated plastic integrally mounted on a panel face mounted instrument.

C. Service legends and nameplates shall be engraved, rigid, laminated plastic. Service legends and nameplates shall be fastened to the panel by screws or with a specially applied adhesive. Fastening shall not depend only on the adhesive backing of the nameplate. Unless otherwise noted, color shall be black with white letters and letter height shall be 3/16 – inch.

D. Field mounted tags shall be 16-gauge, 304 stainless steel with 3/16-inch high characters.

E. Each panel shall be provided with a cabinet face mounted laminated nameplate as specified above. Unless otherwise noted, color shall be black with white letters ½-inch high.

PART 3 EXECUTION

3.01 GENERAL

A. Install materials and equipment in a workmanlike manner utilizing craftsmen skilled in the particular trade. Provide work which has a neat and finished appearance.

B. Electrical work shall be performed in compliance with these Specifications. Where these Specifications and the Drawings do not delineate precise installation procedures, API RP 550 shall be used as a guide toinstallation procedures.

C. Coordinate I&C work with the OWNER, the CONTRACTOR and work of other trades to avoid conflicts, errors, delays and unnecessary interference with operation of the existing plant (s) during construction.

3.02 PROTECTION OF EQUIPMENT

A. Throughout this Contract, the Contractor shall provide protection for materials and equipment against loss or damage and from the effects of weather. Prior to installation, store items in indoor, dry locations. Provide h eating in storage areas for items subject to corrosion under damp conditions. Specific storage requirements shall be in accordance with the ENGINEER-reviewed I&C subcontractor's recommendations.

3.03 EQUIPMENT INSTALLATION

A. Field equipment and panels shall mounted as shown by the drawings.

B. Follow manufacturers' installation instructions explicitly, unless otherwise indicated. Wherever any conflict arises between manufacturers' instructions, and these Contract Documents, follow ENGINEER'S decision, at no additional cost to OWNER. Keep copy of manufacturers' instructions on the job site available for review at all times.

C. Where existing materials and equipment are removed or relocated, remove and deliver to the OWNER all materials no longer used unless otherwise directed by the ENGINEER. Repair affected surfaces to conform to the type, quality and finish of the surrounding surface in a neat and workmanlike manner. Follow any specific instructions given by the ENGINEER.

3.04 ELECTRIC CONTROL AND SIGNAL WIRING

A. Control and signal wiring external to the control panels and all power wiring shall conform to the requirements of Division 16 – Electrical.

B. Control and signal wiring in control panels shall be restrained by plastic ties or ducts. Hinge wiring shall be secured at each end so that any bending or twisting will be around the longitudinal axis of the wore and the bend area shall be protected with a sleeve.

C. Arrange wiring neatly, cut to proper length and remove surplus wire. Provide abrasion protection for any wire bundles which pass through holes or across edges of sheet metal.

D. Wiring shall not be spliced or tapped except at device terminals or terminal blocks.

E. Panels and panel mounted equipment shall be assembled as far as possible at the I&C subcontractor's plant. No work, other than correction of minor defects or minor transit damage, shall be done on the panels at the job site.

F. I&C subcontractor shall observe and advise on the installation to the extent required to certify in writing that the equipment will perform as required.

3.05 MANUFACTURER'S SERVICES

A. The supervisory services of a factory-trained service engineer who is specifically trained on the type of equipment herein specified shall be provided for a period of not less than one (1) eight (8)-hour day during construction to assist the CONTRACTOR in the location of sleeves; methods of installing conduits and special cable; mounting, piping and wiring of one of each type of device and the method of protecting all of the equipment prior to placing it into service. Upon completion of the equipment prior to placing it into service. Upon completion of the installation, the services of the above service engineer shall be provided for a period of not less than one (1) day for calibration and startup of the equipment and instructing the operating personnel. The minimum days specified above does not relieve the Instrumentation Subcontractor from providing sufficient service to place the system into satisfactory operation.

B. No form of energy shall be turned on to any part of the instrumentation system prior to receipt by the ENGINEER of a certified statement of approval of the installation from the CONTRACTOR containing his supplier's authorization for energizing the system.

C. A factory trained service engineer shall be provided for placing the system into operation. After the system is being operated by the OWNER'S personnel, the service engineer shall return for a one-day instruction course in the maintenance and operation of the system.

D. All instrumentation shall be calibrated in the presence of the ENGINEER in accordance with the range and accuracy specified herein. Certified test reports shall be filed with the ENGINEER.

3.06 TESTING

A. All elements of the Instrumentation and Control system shall be tested to demonstrate that the total system satisfies all of the requirements of this specification.

B. All special testing materials and equipment shall be provided by the I&C Subcontractor. Where it is not practical to test with real process variables, the I & C Subcontractor shall provide suitable means of simulation. These simulation techniques shall be subject to the approval of the ENGINEER.

C. The I & C Subcontractor shall coordinate all of his testing with the CONTRACTOR and all other associated subcontractors.

D. As a minimum, the testing shall include the following:

1. Factory Tests

   All analog panels and panel assemblies shall be tested fr proper operation at the I & C Subcontractor's factory prior to the shipment of any system element to the site. Results of the factory tests shall be recorded and submitted for approval before shipment of any panel or panel assembly to the plant.

2. Operational Acceptance Tests

   The objective of these tests is to demonstrate that the system of Process Instrumentation and Control is READY for final operation.

   The I & C System shall be checked for proper installation, adjusted, and calibrated on a loop-by-loop basis to verify that it is ready to function as specified.

   All system elements shall be checked to verify that they have been installed properly and that all terminations have been made correctly.

   All discrete elements and systems shall have their set points adjusted and shall be checked for proper operation (e.g., interlock functions, contact closure on rising/falling P.V., etc.).

All continuous elements and systems shall have three-point calibrations performed. All controller tuning constants shall be adjusted to preliminary settings.

The OPERATIONA ACCEPTANCE TESTS shall be completed prior to starting the FUNCTIONAL ACCEPTANCE TESTS. The actual testing program shall be conducted in accordance with prior approved procedures and shall be documented as required hereinafter.

3. Functional Acceptance Tests

The objective of these tests is to demonstrate that the system of Instrumentation and Controls is operating and complying with the specified performance requirements.

A witnessed, FUNCTIONAL ACCEPTANCE TEST shall be performed on the complete system of Instrumentation and Controls. Each function shall be demonstrated to the satisfaction of the ENGINEER on a loop-by-loop and/or paragraph-by-paragraph basis.

Each test shall be witnessed and signed off by both the I & C Subcontractor and the ENGINEER upon satisfactory completion.

The actual testing program shall be conducted in accordance with prior approved procedures and shall be documented as required hereinafter.

The I & C Subcontractor shall notify the ENGINEER at least 2 weeks prior to the date of the FUNCTIONAL ACCEPTANCE TEST.

3.07 CLEAN-UP

A. Keep the premises free from accumulation of waste material or rubbish. Upon completion of work, remove materials, scraps, and debris from premises and from interior and exterior of all devices and equipment. Touch-up scratches, scrapes, or chips in interior and exterior surfaces of devices and equipment with finishes matching as nearly as possible the type, color, consistency and type of surface of the original finish.

END OF SECTION

SECTION 15005

PIPING, GENERAL

PART 1 - GENERAL

1.01 WORK INCLUDED

A. Furnish and install ductile iron pipe and all appurtenant work, complete in place, all in accordance with the requirements of the Contract Documents.

B. See CONDITIONS OF THE CONTRACT and Division 1, GENERAL REQUIREMENTS, which contain information and requirements which apply to the Work specified herein and are mandatory for this project.

C. Like items provided hereunder shall be the end products of one manufacturer in order to achieve standardization for appearance, operation and maintenance.

1.02 RELATED WOARK SPECIFIED ELSEWHERE

A. Section 02200 – Earthwork.

1.03 REFERENCE SPECIFICATIONS, CODES AND STANDARDS

A. Commercial Standards (Latest Revisions) :

ANSI/AWWA C110/A21.10	Ductile-Iron and Gray-Iron fittings, 3 in. through 48 in. for water and other liquids.
ANSI/AWWA C111/A21.11	Rubber Gasket Joints for Ductile-Iron and Gray-Iron Pressure Pipe and Fittings.
ANSI/AWWA C115/A21.15	Flanged Ductile-Iron Pipe with Threaded Flanges.
ANSI/AWWA C150/A21.50	Thickness Design of Ductile-Iron Pipe
ANSI/AWWA C151/A21.51	Ductile-Iron Pipe, Centrifugally Cast, in Metal Molds or Sand-Lined Molds for Water and Other Liquids.

ANSI/AWWA C153/A21.53	Ductile-Iron Compact Fittings, 3 in. through 16 in., for water and other liquids.
ANSI/AWWA C210	Liquid Epoxy Coating Systems for the Interior and Exterior of Steel Water Pipelines.
ANSI/AWWA C600	Installation of Ductile-Iron Water Mains and their appurtenances.

1.04 SUBMITTALS

A. Shop Drawings: Submit shop drawings of pipe and fittings in accordance with the requirements in Section 01300 – Submittals, the requirements of the referenced standards and the following supplemental requirements as applicable:
   1. Certified dimensional drawings of pipe and fittings for:
      Pump Station Discharge Piping.

B. Certifications: Furnish an affidavit of compliance to the ENGINEER for all pipe, fittings, pipe linings and other miscellaneous pieces and accessories furnished by the pipe manufacturer. Affidavit shall certify that all materials supplied to the job site have been manufactured in accordance with these specifications and that all tests and inspections have been conducted and approved.

C. All expenses incurred in making samples for certification of tests shall be within the Scope of the Contract.

1.05 QUALITY ASSURANCE

A. Inspections: All pipe shall be subject to inspection at the place of manufacture in accordance with the provisions of the referenced standards, as supplemented by the requirements herein. Notify the ENGINEER in writing of the manufacturing starting date not less than 14 days prior to the start of any phase of the pipe manufacture.

B. During the manufacture of the pipe, the ENGINEER shall be given access to all areas where manufacturing is in process and shall be permitted to make all inspections necessary to confirm compliance with the Specifications.

C. Tests: Except as modified herein, all materials used in the manufacture of the pipe shall be tested in accordance with the requirements of the referenced standards as applicable.

D. Perform said material tests within the Scope of the Contract. The ENGINEER shall have the right to witness all testing conducted; provided, that the schedule is not delayed for the convenience of the ENGINEER.

E. In addition to those tests specifically required, the ENGINEER may request additional samples of any material including lining and coating samples for testing by the OWNER. The additional samples shall be furnished within the Scope of Contract.

1.06 DELIVERY, STORAGE AND HANDLING

A. Handling and Storage: All pipe, fittings, etc., shall be carefully handled and protected against damage, impact shocks and free fall. All pipe handling equipment shall be acceptable to the ENGINEER. Pipe shall not be placed directly on rough ground but shall be supported in a manner which will protect the pipe against injury whenever stored at the trench site or elsewhere. Pipe shall be handled and stored at the trench site in accordance with the following paragraphs. No pipe shall be installed where the lining or coating show defects that may be harmful as determined by the ENGINEER. Such damaged lining or coating shall be repaired, or a new undamaged pipe shall be furnished and installed.

B. Stockpiled pipe shall be supported on sand or earth berms free of rock exceeding 3 inches in diameter. The pipe shall not be rolled and shall be secured to prevent accidental rolling.

C. Strutting: Adequate strutting shall be provided on all specials, fittings, and straight pipe 48 inches in diameter and larger so as to avoid damage to the pipe and fittings during handling, storage, hauling, and installation.

D. All pipe damaged prior to Substantial Completion of the project shall be repaired or replaced by the CONTRACTOR within the Scope of the Contract.

PART 2 - PRODUCTS

2.01 GENERAL

A. The pipe shall be of the diameter shown, shall be furnished complete with rubber gaskets and all specials and fittings shall be provided as specified herein and required under the Contract Documents.

B. Laying Lengths: Maximum pipe laying lengths shall be 20 ft. with shorter lengths provided as required.

C. Finish: The pipe shall have smooth dense interior surfaces and shall be free from fractures, excessive interior surface crazing and roughness.

D. The use of a manufacturer's name and model number is for the purpose of establishing the standard of quality and general configuration desired. Products from other manufacturers will be considered in accordance with Section 01005 – General Requirements.

2.02 MATERIALS

A. Ductile Iron Pipe: Pipe materials shall conform to the requirements of ANSI/AWWA C151/A21.51 and unless otherwise noted herein this specification or the drawings, all ductile iron pipe shall be as follows:

Nominal Diameter	Minimum Pressure Class	Special Cases Thickness Class
3" thru 12"	350 Psi	--
14" thru 20"	250 Psi	--
Flanged Pipe (all diameters)	--	53 (Min)

B. Epoxy: Protecto 401 Ceramic Epoxy as manufactured by Vulcan Painters, Inc., or equal.

2.03 DUCTILE IRON PIPE

A. General: Ductile iron pipe used in this project shall be in accordance with reh requirements of NSI/AWWA C150/A21.50, ANSI/AWWA C151/A21.51 and ANSI/AWWA C115/A21.15 as applicable.

B. Ductile iron pipe for force mains and other sanitary installations as indicated on the Drawings shall be lined with a tightly bonded epoxy lining of nominal thickness 40 mils in accordance with AWWA C210. Lining shall be compatible for sanitary service. Submit manufacturer's data on lining material proposed for this application. Submittal shall include but not be limited to manufacturer's product data and specifications, information showing materials' resistance to sanitary sewage and by-products, recommended finish thickness, surface preparation requirements, application procedures and field repair procedures.

C. Pump station discharge piping shall be flanged pipe in accordance with ANSI/AWWA C115/A21.15 and ANSI/AWWA C110/A21.10. Pipe shall be epoxy lined as specified above.

D. Ductile iron pipe shall be of the diameter as shown on the drawings and class as specified herein.

2.04 PUSH-ON JOINTS (NON-RESTRAINED TYPE)

A. Push-on pipe joints (non-restrained type) shall be “Fastite” as manufactured by American Cast Iron Pipe Company, “Tyton” as manufactured by U.S. Pipe and Foundry, equal. Push-on joints shall meet the requirements of ANSI/AWWA C111/A21.11.

2.05 PUSH-ON JOINTS (RESTRAINED TYPE)

A. Push-on joints (restrained type), 12-inch and smaller, shall use “Fast-Grip” gasket system by American Cast Iron Pipe Company, “Field Lok” gasket system by U.S. Pipe and Foundry, or equal.

2.06 MECHANICAL JOINTS (STANDARD)

A. Restrained mechanical joints shall be utilized for fittings and valves at locations indicated on the drawings.

2.07 MECHANICAL JOINTS (RESTRAINED)

A. Restrained mechanical joints shall be utilized for fittings and valves at locations indicated on the drawings.

B. Restraint of mechanical joints shall be accomplished by using a Megalug Series 1100 restraining follower gland as manufactured by EBAA Iron Sales, Inc. or equal.

C. Mechanical joints for fittings and valves shall meet the requirements of ANSI/AWWA C111/A21.11.

2.08 FLANGED JOINTS

A. Flanged joints meeting the requirements of ANSI/AWWA C115/A21.15 shall be utilized at locations shown on the Drawings.

B. Gaskets for flanged joints shall be ring type gaskets, 1/8-inch thick, compatible for the service conveyed by the pipeline. Bolts, nuts and washers shall meet the requirements of AWW/C115/A21.15 and shall be either type 304 stainless steel or standard low carbon steel as follows: type 304 stainless steel, bolts, nuts and washers shall be used for all flanged locations exposed to weather and the low carbon steel bolts, nuts and washers shall be used for all interior flanged piping locations.

2.09 JOINT ACCESSORIES

A. Joint gaskets shall be synthetic rubber as per ANSI/AWWA C111/A21.11. Gaskets shall be compatible to applicable service.

B. Joint lubricants shall be furnished by the pipe manufacturer.

2.10 FITTINGS AND SPECIALS

A. Fitting shall be ductile iron compact fittings manufactured in accordance with ANSI/AWWA C111/A21.11.

B. Fittings for flanged pipe shall be short body ductile iron with flanged ends in accordance with AWWA/C110 with 125# flanges having a pressure rating of 250 psi.

C. Fittings shall be coated and lined as specified for the applicable pipe application.

D. Fittings shall be of the diameter and class as shown on the Drawings or specified herein.

2.11 DUTILE IRON WALL PIPES

A. Provide ductile iron wall pipes of the proper diameter and with ends as shown on the Drawings for connection to adjacent ductile iron pipes where they pass through concrete walls which are to be watertight. All wall pipes shall be provided with standard seep ring. Wall pipes shall be of a class equal to or greater than the remainder of the pipe in the line. If standard castings are not readily available, special castings shall be cast or fabricated which will provide a watertight installation.

2.12 DUCTILE IRON FLANGE ADAPTERS (NON-RESTRAINED TYPE)

A. Flange adapters shall be used as required on plain end ductile iron pipe. Flanges shall be cast from 60-42-10 as cast ductile iron for ASTM 536. Bolt pattern shall meet ANSI B16.1,125 lbs. Flanges shall contain ductile iron set screws. Flange adapters shall be Series 1000 as manufactured by EBBA Iron, Inc. or equal.

2.13 DUCTILE IRON FLANGE ADAPTORS (RESTRAINED TYPE)

A. Flange adapters shall be made of ductile iron conforming to ASTM A536 and have flange bolt circles that are compatible with ANSI/AWWA C115/A21.15.

Restraint for the flange adapter shall consist of a plurality of individually actuated gripping wedges to maximize restraint capability.
Torque limiting actuating screws shall be used to insure proper initial set of the gripping wedges.

The flange adapters shall be capable of deflection during assembly or permit lengths of pipe to be field cut to allow a minimum 0.6" gap between the end of the pipe and the mating flange without affecting the integrity of the seal.

B. The flange adapter shall be the SERIES 2100 MEGAFLANGE adapter as produced by EBAA Iron, Inc., or equal.

2.14 MECHANICAL JOINT RTAINER GLANDS

A The mechanical joint retainer glands shall be designed to fit standard mechanical joint bells with Standard T head bolts conforming to ANSI/AWWA C111/A21.11 and ANSI/AWWA C153/A21.53 of latest revision.

Glands shall be manufactured of ductile iron conforming to ASTM A536-80 grade 60-42-10. Setscrews shall be of hardened ductile iron and require the same torque in all sizes. Steel setscrews are not permitted.

These devices shall be UL listed and have the stated pressure rating with a minimum safety factor of 2:1 and shall be Series 100 as manufactured by EBAA Iron, Inc., or equal.

2.15 DUCTILE IRON COUPLING

A. Couplings for joining of plain end pipe shall be Ford Ductile Iron Couplings Style FC1, Dresser Style 153, or equal. Thrust ties shall be provided as required to sustain the force developed by 1-1/2 times the specified maximum operating pressure.

2.16 PIPE FINISH (BURIED)

A. The pipe shall have smooth dense exterior and interior surfaces and shall be free from fractures. The outside coating shall be an asphaltic coating at least 1 mil thick and applied to the pipe after lining has been placed.

2.17 PIPE FINISH (EXPOSED)

A. Exposed piping and fittings shall be shop primed with a catalyzed rust inhibitive epoxy primer. Minimum dry film thickness shall be 2-3 mils. Surface preparation shall be white metal blast cleaning in accordance with Steel Structures Painting Council No. 10 (SSPC-SP10). Primer shall be compatible for use with coatings specified in Section 09900 – Protective Coatings.

PART 3 - EXECUTION

3.01 INSTALLATION OF PIPE

A. Inspect each piece of pipe and fitting prior to installation to insure that there are no damaged portions of the pipe.

B. Before placement of the pipe in the trench, the interior of each pipe or fitting shall be thoroughly cleaned of any foreign substance, which may have collected thereon and shall be kept clean at all times thereafter. For this purpose, the openings of all pipes and fittings in the trench shall be closed during any interruption of the Work.

C. Pipe shall be installed in accordance with AWWA C600.

D. Pipe shall be laid directly on the bedding material. No blocking will be permitted, and the bedding shall be such that if forms a continuous, solid bearing for the full length of the pipe. Excavations shall be made as needed to facilitate removal of handling devices after the pipe is laid. Bell holes shall be formed at the ends of the pipe to prevent point loading at the bells or couplings. Excavation shall be made as needed outside the normal trench section at field joints to permit adequate access to the joints for field connection operations and for application of coating on field joints.

E. In laying pipe, it shall be laid to the set line and grade, within approximately one inch plus or minus. On grades of zero slope, the intent is to lay to grade.

F. Where necessary to raise or lower the pipe due to unforeseen obstructions or other causes, the ENGINEER may change the alignment and/or the grades. Such change shall be made by the deflection of joints, by the use of bevel adapters, or by the use of additional fittings. However, in no case shall the deflection in the joint exceed the maximum deflection recommended by the pipe manufacturer. No joint shall be misfit any amount which will be detrimental to the strength and water tightness of the finished joint. In all cases the joint opening shall be the controlling factor.

G. Except for the short runs which may be permitted by the ENGINEER, pipes shall be laid uphill on grades exceeding 10 percent. Pipe which is laid on a downhill grade shall be blocked and held in place until sufficient support is furnished by the following pipe to prevent movement. All bends shall be properly installed as shown.

3.02 PUSH-ON JOINTS

A. Immediately before jointing pipe, the bell end of the pipe shall be thoroughly cleaned, and a clean rubber gasket installed lubricated with a manufacturers approved vegetable-based lubricant. The spigot end of the pipe section shall then

be inserted into the bell of the previously laid joint and telescoped into its proper position. Tilting of the pipe to insert the spigot into the bell will not be permitted. After the pipe lengths have been joined, a feeler gauge shall be inserted into the recess and moved around the periphery of the joint to detect any irregularity in the position of the gasket. If the gasket cannot be felt all around, or there is a shallow area, the joint shall be disassembled. If the gasket is undamaged, as determined by the ENGINEER, it may be reused, but only after the bell end and gasket have been relubricated.

3.03 RESTRAINED JOINTS

A. Provide and install restrained joint, pipe and accessories as indicated on the Drawings and specified herein.

B. Restrained joints shall be completed in accordance with the manufacturer's installation instructions.

C. Restrained type joints as specified shall be used for all joints within jack and bore casings and within 20 feet of the limits of the casing.

3.04 INSTALLATION OF PIPE APPRTENANCES

A. All valves shall be handled in a manner to prevent any injury or damage to any part of the valve or adjoining pipe. All joints shall be thoroughly cleaned and prepared prior to installation. Adjust all stem packing and operate each valve prior to installation to insure proper operation.

B. All valves shall be installed so that the valve stems are plumb and in the location shown.

3.05 THRUST BLOCK INSTALLATION

A. Provide reaction or thrust blocking for all fittings, valves and other items as indicated by the Drawings. Dimensions shall be as shown on the Drawings.

B. The concrete mix shall be as specified in Section 03300 – Concrete, for a 28-day compressive strength of not less than 3000 psi.

C. Place blocking between the undisturbed ground and the fitting to be anchored. The bearing surface shall be as shown on the Drawings or as directed by the ENGINEER. Place the blocking so that the pipe and fitting joints will be accessible to repairs, unless otherwise shown.

3.06 CLEANING

A. As pipe laying progresses, keep the pipe interior free of all debris. Completely clean the interior of the pipe of all sand, dirt, mortar splatter and any other debris following completion of pipe laying and any necessary interior repairs prior to testing and completed pipeline.

END OF SECTION

SECTION 15100

MANUALLY OPERATED VALVES

PART 1 - GENERAL

1.01 WORK INCLUDED

A. Furnish all labor, equipment, materials and incidentals for the complete installation of the following types of manually operated valves, check valves and appurtenances shown on the Drawing and specified herein.

1. Valve Appurtenances.

2. Ball Valves.

3. Globe Valves.

4. Plug Valves.

5. Check Valves.

B. Like items of materials provided hereunder shall be the end products of one manufacturer in order to achieve standardization for appearance, maintenance, replacement and service.

C. See CONDITIONS OF THE CONTRACT AND Division 1, GENERAL REQUIREMENTS, for information and requirements which apply to the Work specified in this Section and that are mandatory for this project.

1.02 SUBMITTALS

A. Submit detailed shop drawings and valve manufacturer's specifications in accordance with Section 01300 – Submittals. Clearly indicate make, model, location, type, size and pressure rating.

PART 2 - PRODUCTS

2.01 GENERAL

A. All valves shall be complete with all necessary operating handwheels, chain wheels, extension stems, floor stands, worm and gear operators, operating nuts, chains, and wrenches which are required for the proper completion of the Work included under this section.

B. Renewable parts including discs, packing, and seats shall be of types recommended by valve manufacturer for intended service.

2.02 MANUFACTURERS

A. All units shall have the name of the manufacturer and the size of the valve cast on the body of bonnet or shown on a permanently attached plate in raised letters.

B. The use of a manufacturer's name and model or catalog number is for the purpose of establishing the standard of quality and general configuration desired.

2.03 MATERIALS

A. Brass and bronze components of valves and appurtenances which have surfaces in contact with the water shall be alloys containing less than 16 percent zinc and 2 percent aluminum.

B. Acceptable alloys are of the following ASTM designations:

1. B 61, B 62, B 98 (Alloy A, B, or D), B 139 (Alloy A), B 143 (Alloy 1-B), B 164, B 194, B 292 (Alloy A), and B 127.
2. Stainless steel Alloy 18-8 may be substituted for bronze at the option of the manufacturer and with the acceptance of the ENGINEER.

C. All gland bolts on iron body valves shall be bronze and shall be fitted with brass nuts.

2.04 VALVE BOXES

A. Valve boxes shall be of the two-piece adjustable screw type, cast iron, with 5-1/4-inch shaft of appropriate length for the installation. Extension pieces, if required, shall be the manufacturer's standard type. Valve box tops shall have raised letters saying "WATER" or "SEWER", as applicable. Valve boxes shall be USF 7500 as manufactured by U.S. Foundry and Manufacturing Corporation of Miami, Florida.

2.05 VALVE STEM EXTENSIONS

A. Where the depth of the valve is such that its centerline is more than 4 feet below grade, operating extension stems shall be provided to bring the operating nut to a point 6 inches below the surface of the ground and/or box cover. Extension stems shall have 2-inch standard operating nut and steel alignment washer. Extension stems shall be by the General Engineering Company, or equal.

2.06 GATE VALVES

A. V-1: Gate valves 2 inches and smaller for water service shall be all-bronze with screwed bonnet and ends, single solid wedge gate, and nonrising stem. Valves shall be rated 125-poind SWP, 200-pound WOG, and shall be Walworth Company figure 4; Crane Co. Cat. No. 438; or equal.

2.07 BALL VALVES

A. V-30: Ball valves 2 inches and smaller, for general water and air service, shall be all-bonze, top entry type, with screwed ends, full bore ports, Teflon seats and hand lever operators, rated 250-pound GOG minimum 125 psi SWP. Valves shall be Crane Co. Accesso, Cat. No. 2330-FT; Lunkenheimer Figure No. 700-SB; or equal.

B. V-35: Ball valves 2 inches and smaller for general corrosive service shall be all Type 316 stainless steel, top entry type with screwed ends, full bore ports, Teflon seats and cadmium plated carbon steel hand lever operators and stem nuts, cadmium plated alloy steel body bolts and nuts and vinyl handle sleeve. Valves shall be manufactured by Whitey Company or equal.

2.08 GLOBE VALVES

A. V-41: Angle type hose valves 1-1/2 inches and smaller shall be brass or bronze body, with rising stem, composition disc and handwheel rated 250 psi WOG minimum. Valves shall have standard hose thread on the outlet end. Valves shall be Powell Valve Co., Figure 150H; Jenkins Figure 112, or equal.

B. V-42: Globe valves 3 inches and smaller with outlet hose thread and cap shall be all bronze with screwed ends, union bonnet, inside screw, rising stem and FTE disc. Valves shall be rated 150 psi SWP, 300 psi WOG and shall be Nibco T-113-HC, or equal.

2.09 PLUG VALVES

A. V-50: Eccentric plug valves 3 inches and larger shall be of the nonlubricated type with resilient faced plugs with end connections as shown on Drawings. Flanged valves shall be faced and drilled to the ANSI B16.1, 125 pound standard. Mechanical joint ends shall be in accordance with the AWWA C111/A21.11-90. Screwed ends shall be to the NPT standard. Valve bodies shall be of ASTM A126 Class B cast iron, 31,000 psi tensile strength minimum. All exposed nuts, bolts, springs and washers shall be zinc plated for above ground, non-submerged installations and 300 Series stainless steel for buried or submerged installations. Port areas on valves through 20 inches in size shall be at least 80% of full pipe area and valves 24 inches and larger shall have a minimum port area of 70% of the full pipe area. Resilient plug facings shall be Neoprene or Buna N material on a single piece plug. The seats shall be in the body and shall be a minimum of 90% nickel. Threaded, adjustable seats shall not be allowed. Valve shaft seals or packing shall be adjustable and replaceable without removing the valve from service or interrupting service. Valves shall have a minimum pressure rating of 175 psi (3”-12”) and 150 psi (14”-24”) and provide drop-tight shut-off. Valves shall be by DeZurik, or equal.

B. Valves for above ground, non-submerged, exposed installations shall be equipped with fixed hand lever operators.

C. Valves for buried or submerged installations shall be provided with permanently lubricated, totally enclosed worm gear actuators with a 2-inch operating nut. Actuator shall be fully gasketed and capable of withstanding a minimum external groundwater pressure of 10 psi.

D. All interior and exterior ferrous surfaces shall be epoxy coated. Epoxy coatings shall be compatible for service fluid as applicable. Coating for use with potable water processes shall be NSF approved for contact with potable water. Epoxy coating application shall be manufacturer’s standard unless otherwise specified.

2.10 CHECK VALVES

A. V-76: Horizontal swing check valves with outside lever and weight shall have an iron body, flanged ends, bronze mounted and shall meet the requirements of AWWA C508. Seal at hinge shaft shall be accomplished with packing glands, O-rings are not acceptable. Valves shall be Clow F-5382, List 115; Kennedy Fig. 106LW; or equal.

PART 3 - EXECUTION

3.01 General

A. Before installation, the valves shall be thoroughly cleaned of all foreign material and shall be inspected for proper operation, both opening and closing, and to verify that the valves seat properly. Valves shall be installed so that the stems are vertical. Jointing shall conform to AWWA C600. Valves shall be installed as depicted in the standard details. Joints shall be tested with the adjacent pipeline. If joints leak under test, valves shall be disconnected and reconnected, and the valve and/or the pipeline retested.

B. Valves shall be installed at locations shown on the Drawings in a manner recommended by the manufacturer and acceptable to ENGINEER.

C. Bolt holes of flanged valves shall straddle the vertical centerline of the pipe run. Prior to installing flanged valves, the flange faces shall be thoroughly cleaned. After cleaning, insert gasket and bolts, and tighten the nuts progressively and uniformly. If flanges leak under pressure, loosen or remove the nuts and bolts, reseat or replace the gasket, retighten and/or reinstall the nuts and bolts, and retest the joints. Joints shall be watertight at test pressures before acceptance.

D. Thoroughly clean threads of screwed joints by wire brushing or other approved method. Apply approved joint compound to threads prior to making joints. Joints shall be watertight at test pressures before acceptance.

3.02 VALVE BOXES

A. Center the valve boxes and set plumb over the operating nuts of the valves. Set valve boxes so that they do not transmit shock or stress to the valves. Set the valve box covers flush with the surface of the finished pavement or grade as shown. Cut extensions to the proper length so that the valve box does not ride on the extension when set at grade. Valve boxes shall be installed as depicted in the Standard Details.

B. Backfill shall be the same as specified for the adjacent pipe. Place backfill around the valve boxes and thoroughly compact to a density equal to that specified for the adjacent trench and in such a manner that will not damage or displace the valve box from proper alignment or grade. Misaligned valve boxes shall be excavated, plumbed and backfilled within the Scope of the Contract.

3.03 PROTECTIVE COATINGS

A. Buried valves shall be standard manufacturers epoxy coating.

B. Shop and field painting shall be in accordance with and as specified in Section 09900 – Protective Coatings.

C. All exposed valves shall be factory primed and field finished in accordance with Section 09900 – Protective Coatings. Factory applied coatings shall be compatible with specified field coatings.

3.04 TESTING

A. Valves shall be tested at the same time that the adjacent pipeline is tested. Joints shall show no visible leakage under test. Repair joints that show signs of leakage prior to final acceptance. If there are any special parts of control systems or operators that might be damaged by the pipeline test, they shall be properly protected. The CONTRACTOR will be held responsible for any damage caused by the testing.

B. If requested by the ENGINEER, the valve manufacturer shall furnish an affidavit stating the materials options furnished and/or that it has complied with these and other referenced specifications.

END OF SECTION

SECTION 15105

SELF-CONTAINED AUTOMATIC PROCESS VALVES

PART 1 - GENERAL

1.01 WORK INCLUDED

A. This Section covers all work necessary to completely furnish and install all of the various self-contained automatic process valves required, complete.

B. Like items of materials provided hereunder shall be the end products of one manufacturer in order to achieve standardization for appearance, maintenance, replacement and service.

C. See CONDITIONS OF THE CONTRACT AND Division 1, GENERAL REQUIREMENTS, which contain information and requirements that apply to the Work specified herein and are mandatory for this project.

1.02 SUBMITTALS

A. Submittals shall be made in accordance with Section 01300 – Submittals.

PART 2 - PRODUCTS

2.01 REDUCED PRESSURE BACKFLOW PREVENTER

A. The reduced pressure principle backflow preventer shall be a complete assembly consisting of two independently acting, spring loaded check valves together with an automatically operating pressure differential relief located between the two check valves. The first check valve shall reduce the supply pressure a predetermined amount so that during normal flow and the cessation of normal flow, the pressure between the check valves is less than the supply pressure. In case of leakage of either check valve, the differential relief valve shall discharge to atmosphere to maintain the pressure between the check valves less than the supply pressure.

B. Unit shall include tightly closing gate shut-off valves located at each end of the unit. Unit shall also be fitted with properly located test cocks. Operation shall be completely automatic. All internal parts of the check valves and pressure differential valve must be removable or replaceable without requiring the complete removal of the unit from the service line.

C. Units shall have a bronze strainer, bronze body and cover, and shall be rated for a working water pressure of 175 psi and maximum temperature of 140 degrees F.

D. Units shall be 1-1/2-ingh Series 909S as manufactured by Watts Regulator or equal.

PART 3 - EXECUTION

3.01 General

A. Clean and inspect all valves in the open and closed positions prior to installing in the line.

B. Each valve shall be installed complete with all accessories as described herein and shall be totally automatic.

C. Valve assembly shall be installed within a valve assembly as indicated within the standard details of the contract drawings.

D. Install and adjust according to manufacturer's recommendations.

E. Test valve with adjacent pipeline and repair any leaks as necessary.

END OF SECTION

SECTION 15400

PLUMBING

PART 1 - GENERAL

1.01 WORK INCLUDED

A. This Section covers all work necessary to furnish and install, complete, the miscellaneous plumbing and piping systems.

B. Like items of materials provided hereunder shall be the end products of one manufacturer in order to achieve standardization for appearance, maintenance, replacement.

C. See CONDITIONS OF THE CONTRACT and Division 1, GENERAL REQUIREMENTS, which contain information and requirements that apply to the Work specified herein and are mandatory for this project.

1.02 RELATED WORK SPECIFIED ELSEWHERE

A. Section 02200 - Earthwork.

B. Section 15105 – Self-contained Automatic Process Valves.

1.03 SUBMITTALS

A. Submittals during construction shall be made in accordance with Section 01300-Submittals.

1.04 EQUIPMENT ACCESSIBILITY

A. The CONTRACTOR shall be fully aware of the peculiarities and limitations of the space available for the installation of all materials in this Contract.

B. In addition, the contractor shall insure that all equipment, such as valves, traps, clean-outs, and other such apparatus shall be readily accessible. Provide access panels where required. The foregoing shall also apply in general to any part of the system which may be necessary to be reached from time to time for maintenance and operation of the system.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Unless otherwise specified, all materials shall conform to the requirements of the Standard building Code, Copyright by Southern Building Code Congress International, Inc., Latest Edition.

B. The revision of the particular ASA, ASTM, NBS or AWWA standard in effect at the time of advertisement for bids shall be the minimum acceptable.

C. Dielectric couplings shall be provided between ferrous and nonferrous materials.

D. If instructed by the ENGINEER, furnish certified statements from the manufacturer that the material conforms to the requirements specified above.

2.02 GALVANIZED STEEL PIPING (ANTENNA TOWER)

A. Galvanized Steel Pipe: ASTM A120, Seamless or electric resistance welded, Schedule 40.

B. Joints: Screwed.

C. Fittings: 150-pound malleable iron, galvanized, ASTM A197 or ASTM A47, dimensions conforming to ANSI B16.3; unions, 300-pound malleable iron, galvanized, ASTM A197 or ASTM A47, bass to iron seat.

D. Thread Lubricant: Teflon tape or acceptable joint compound that is insoluble in water.

2.03 POLYVINYL CHLORIDE (PVC) PIPING

A. Pipe: Schedule 40 or Schedule 80, Type I, Grade 1, ASTM D1784 and ASTM D1785.

B. Fittings: Socket type, same schedule as pipe, ASTM D2467. Threaded type, Schedule 80, ASTM D2464.

C. PVC Cement: Conforming to ASTM D2564.

D. Thread Lubricant: Teflon tape.

E. Joints: ANSI/ASTM B32, solder, Grade 95TA.

2.04 COPPER PIPING

A. Copper Tubing: Seamless, ASTM B88, Type L, hard drawn.

B. Fittings: Commercially pure wrought copper, socket joint ANSI/ASME B16.29.

C. Joints: ANSI/ASTM B32, solder, Grade 95TA.

2.05 ADJUSTABLE PIPE SUPPORT SADDLE

A. Adjustable pipe saddle support shall be Grinnel Fig. 264, or equal.

PART 3 - EXECUTION

3.01 General

A. Install all piping, fixtures, equipment, and accessories in strict accordance with the plumbing laws, rules, and regulations of the State, County and City, whichever represents the higher standard. All work shall be approved by the State and/or City Plumbing Inspector.

B. Drawings do not attempt to show exact details of all piping, and no extra payment will be allowed for obstruction by work of other trades or local obstructions to the Work under this Contract which require offsets. Where diagrams have been made to show piping connections, the CONTRACTOR is cautioned that these diagrams must not be used for obtaining material quantities. Changes in location of equipment or piping, advisable in the opinion of the CONTRACTOR, shall be submitted to the ENGINEER for review before proceeding with the Work. All measurements and dimensions shall be verified at the site. All equipment shall be adjusted and left in a condition satisfactory to the ENGINEER.

C. Trench excavation shall conform to Section 00200 – Earthwork.

D. The Work shall be carefully laid out in advance, and no excessive cutting of construction will be permitted. Damage to buildings, piping, wiring, or equipment as a result of cutting for installation shall be repaired by mechanics skilled in the trade involved, at no additional cost.

END OF SECTION

SECTION 16000
ELECTRICAL GENERAL REQUIREMENTS

PART 1-GENERAL

1.01 RELATED DOCUMENTS

A. The general provisions of the Contract, including General Conditions, apply to all the work specified in the Electrical 16000 Sections.

1.02 LAWS, PERMITS, FEES AND NOTICES

A. Secure and pay all permits, fees and licenses necessary for the proper execution of the work. Submit all notices and comply with all laws, ordinances, rules and regulations of any public agency bearing on the work. Contractor shall be a licensed electrical contractor in the county of construction.

1.03 DEPARTURES

A. If any departures from the Contract Drawings or Specifications are deemed necessary, details of such departures and the reasons therefore shall be submitted as soon as practicable to the Engineer for advance written approval.

1.04 GUARANTEES

A. Final Acceptance. Furnish written guarantee covering all materials, workmanship, labor and equipment for a period on one (1) year from the date of substantial completion as described in the Contract General Conditions.

B. The Owner reserves the right to operate and use all materials and equipment failing to meet the requirements of the Contract Documents until such unacceptable materials and equipment are replaced or repaired to the satisfaction of the Engineer.

1.05 AS-BUILT INFORMATION

A. A set of “red-lined” electrical drawings shall be carefully maintained at the job site. Actual conditions are to be put on the drawings in red on a daily basis so the drawings will continuously show locations and routes of cable trays, conduits, pull-boxes, circuit numbers, and other information required by the Engineer.

1.06 JOB SITE VISIT

A. Visit the project site before submitting a bid. Verify all dimensions shown and determine the characteristics of existing facilities which will affect performance of the work, but which are not shown on drawings or described within the specifications.

1.07 CLEANUP

A. Maintain a continuous cleanup during the progress of the work and use appointed storage areas for supplies. The premises shall be kept free from accumulations of waste materials and rubbish.

1.08 CUTTING AND PATCHING

A. Cut and prepare all openings, chases and trenches required for the installation of equipment and materials. Repair, remodel and finish in strict conformance with the quality of workmanship and materials in the surroundings. Obtain written permission from the Engineer for any alterations to structural members before proceeding.

1.09 MAINTENANCE

A. Render all necessary measures to ensure complete protection and maintenance of all systems, materials, and equipment prior to final acceptance. Any materials or equipment not properly maintained or protected to assure a factory new condition at the time of final acceptance shall be replaced immediately at no additional cost to the Owner.

1.10 WATERPROOFING

A. Whenever any work penetrates any waterproofing, seal and render the work waterproof. All work shall be accomplished so as not to void or diminish any waterproofing bond or guarantee.

1.11 TESTS

A. Conduct an operating test of equipment prior to the Engineer's approval. The equipment shall be demonstrated to operate in accordance with the requirements of these Specifications. The tests shall be performed in the presence of the Engineer or an authorized representative. The electrical contractor shall furnish all instruments, electricity and personnel required for the tests.

1.12 SUMMARY OF ELECTRICAL WORK

A. Provide all labor, materials, tools, supplies, equipment and temporary utilities to complete the work shown on the drawings and specified herein. All systems are to be completely installed and fully operational. Specifically the work includes, but is not necessarily limited to:

1. Power service for Station 89.

2. New control pump panel.

3. Installation of RTU and pressure transmitters.

4. Conduit and wire as indicated on plans.

5. Grounding.

6. Start-up testing and documentation.

7. Lightning Protection.

1.13 CODES AND STANDARDS

A. General Applicable provisions of the following codes and standards and other codes and standards required by the State of Florida and local jurisdictions are hereby imposed on a general basis for electrical work (in addition to specific applications specified by individual work sections of these specifications):

1. U.L. : Electrical materials shall be approved by the Underwriters' Laboratories, Inc. This applies to materials which are covered by U.L. standards. Factory applied labels are required.

2. National Electrical Code.

3. OSHA: Standards of the Occupational Safety and Health Administration are to be complied with.

4. NEMA: National Electrical Manufactures Association Standards are to be met wherever standards have been established by that agency, and proof is specifically required with material submittals for switchboards, motor control centers, panel boards, cable trays, motors, switches, circuit breakers, and fuses.

5. ANSI: American National Standards Institute.

6. NESC: National Electrical Safety Code.

1.14 ELECTRICAL TEMPORARY FACILITIES

A. The electrical contractor shall include in his bid the cost of furnishing, installing, maintaining, and removing all materials and equipment required to provide temporary light and power to perform the work of all trades during construction and until work is completed.

B. Safety

1. All reasonable safety requirements shall be observed to protect workers and the public from shock and fire hazards. Ground fault interrupters shall be employed in accordance with codes.

2. Ground wires are required in all circuits. Ground poles are required on all outlets. All metallic cases shall be grounded.

3. Rain tight cabinets shall be used for all equipment employed in wet areas.

1.15 EXCAVATING FOR ELECTRICAL WORK

A. General

1. Excavation or drilling, backfill and repair of paving and grassing is to be in the bid of the electrical contractor. The actual work need not be performed by electrical trades. However, the electrical contractor is responsible for all excavation, drilling, dewatering, backfilling, tamping, and repair of pavements and grassing required in support of electrical work. All areas disturbed by electrical work shall be repaired to their original condition, or as indicated on the drawings.

B. Coordination

1. The electrical contractor must check for existing utilities before commencing any excavation or drilling.

2. Contract drawings and other trades are to be consulted to avoid interferences with other utilities on this project.

3. In the event of damage to existing utilities, the Engineer shall be immediately notified, and damage shall be immediately repaired.

4. The Owner is to be consulted to ascertain locations of existing interferences by referring to "As Built" drawings and Owner's experience. The excavations are to be scheduled at the Owner's convenience.

C. Precautions
   1. The electrical contractor must take every reasonable precaution to avoid interferences. In the vicinity of a suspected interference, excavations shall be dug by hand.

1.16 ELECTRICAL SUBMITTAL

A. Submittals for Approval

1. Refer to Section 01300 – Submittals for additional instructions on and this Section, the more stringent requirements shall apply.

2. Shop Drawings and manufacturer's data sheets are required for all electrical materials.

3. Submittals will not be accepted for partial systems. Submit all materials for each specifications section at one time. Submittals must be arranged, correlated, indexed and bound in orderly sets for ease of review.

4. Samples are to be supplied for any substitute as requested by the Engineer.

5. Submit shop drawings, manufacturer's data, and certifications on all items of electrical work prior to the time such equipment and materials are to be ordered. Order no equipment or materials without approval from the Engineer. Submittals will not be accepted for partial system submittals; submit all data at one time.

6. Contractor shall be responsible for investigating existing systems or shop drawings in order to fully integrate the new equipment into the system. Adequate shop drawings may or may not exist for all existing systems.

B. Operation and Maintenance Manuals

1. Submit all manufacturer's service, installation and operation manuals, instructions and bulletins. These manuals shall be subject to review of the ENGINEER. If acceptable they shall be forwarded to the OWNER. If not acceptable they shall be returned to the CONTRACTOR for revision and resubmittal. Manuals shall contain but not be limited to the following:

   a. Brief description of systems and basic features.
   b. Manufacturer's name and model number for all components in the system.

List of local factory authorized service companies

a. Operating instructions.
b. Maintenance instructions.
c. Trouble shooting instructions.
d. Manufacturer's literature describing each piece of equipment.
e. Power and control wiring diagrams.
f. Parts Lists.

1.17 ELECTRICAL PRODUCTS

A. Standard Products

1. Unless otherwise indicated in writing by the Engineer, the products to be furnished under this specification shall be the manufacturer's latest design. Units of equipment and components of the same purpose and rating shall be interchangeable throughout the project. All products shall be newly manufactured. Defective equipment or equipment damaged in the course of installation or test, shall be replaced or repaired in a manner meeting with the approval of the Engineer at no additional expense to the Owner.

B. Delivery, Storage, and Handling

1. Deliver products to project properly identified with names, model numbers, types, grades, compliance labels and similar information needed for distinct identification; adequately packaged or protected to prevent deterioration during shipment, storage and handling. Store in a dry, well ventilated, indoor space, except where prepared and protected by the manufacturer specifically for exterior instructions for storage locations.

C. Substitutions

1. Comply with instructions in the Contract General Conditions and obtain pre-approval of the engineer regarding substitutions.

1.18 ELECTRICAL IDENTIFICATION

A. Color Coding Conductor colors shall be in accordance with the N.E.C. and NFPA requirements. Refer also to applicable sections of these specifications. Three phase feeder and branch circuits shall be identified as follows:

120/240	277/480
A-Black	A-Brown
B-Red	B-Orange
C-Blue	C-Yellow

Neutral – White Neutral - Gray

B. Nameplates

1. The following items shall be equipped with nameplates: All motors, motor starters, motor control centers, pushbutton stations, control panels, time switches, disconnect or relays in separate enclosures, receptacles, wall switches, high voltage boxes and cabinets. All light switches and outlets shall carry a phenolic plate with the supply Special Electrical systems shall be identified at junction and pull boxes, terminal cabinets and equipment racks.

2. Nameplates shall adequately describe the function of the particular equipment involved. Nameplates for panel boards and switchboards shall include the panel designation, voltage and phase of the supply. For example, "Panel A, 277/480V, 3-phase, 4-wire." The name of the machine on the motor nameplates for a particular machine shall be the same as the one used on all motor starters, disconnect and P.B. station nameplates for that machine. Normal power nameplates shall be laminated phenolic plastic, white front and back with black core, with lettering etched through the outer covering; black engraved letters on white background. Lettering shall be 3/16 inch high at pushbutton stations, thermal overload switches, receptacles, wall switches and similar devices, where the nameplate is attached to the device plate. At all other locations, lettering shall ¼ inch high, unless otherwise detailed on the Drawings. Nameplates shall be securely fastened to the equipment with No. 4 Phillips, round-head, cadmium plated, steel self-tapping screws or nickel-plated brass bolts. Motor nameplates may be non-ferrous metal not less than 0.03 inch thick, die stamped. In lieu of separate plastic nameplates, engraving directly on device plates is acceptable. Engraved lettering shall be filled with contrasting enamel. Equipment nameplate schedule for all equipment shall be submitted with shop drawing submittal for Engineer's approval.

3. All junction and splice boxes shall be labeled using permanent shipping tags attached to boxes; not covers.

C. Wire and Cable Identification

1. All wire and cable shall be identified at each termination point and at each pull box, splice box, junction box, or manhole. Provide permanent, waterproof, non-metallic (paper unacceptable) tags indicating the circuit number in 3/16 inch letters.

2. Individual wires within equipment enclosures shall be identified using the equipment manufacturer's shop drawing wire numbers. Panel wire numbers

and terminal numbers shall agree. Wire markers shall be T&B shrink-kon HVM marker heat shrink system or an equal.

D. Signs

1. Warning signs shall comply with OSHA requirements and reasonable safety precautions.

END OF SECTION

SECTION 231323
FACILITY ABOVEGROUND FUEL-OIL STORAGE TANKS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:
   1. Concrete-vaulted, steel, fuel-oil ASTs.

1.2 DEFINITIONS

A. AST: Aboveground storage tank.

1.3 ACTION SUBMITTALS

A. Product Data: For each type of product.

   1. Include construction details, material descriptions, and dimensions of individual components and profiles.
   2. Include rated capacities, operating characteristics, electrical characteristics, and furnished specialties and accessories.
   3. Fuel-oil storage tank accessories.

B. Shop Drawings:

   1. Include plans, elevations, sections, and ballast pads and anchors, and lifting or supporting points.
   2. Indicate dimensions, components, and location and size of each field connection.
   3. Shop Drawing Scale: [**1/4 inch per foot (1:50)**]

1.4 INFORMATIONAL SUBMITTALS

A. Site Survey: Plans, drawn to scale, on which fuel-oil storage tanks are shown and coordinated with other services and utilities.

B. Qualification Data: For qualified professional engineer.

C. Seismic Qualification Data: For ASTs, accessories, and components, from manufacturer.

   1. Basis for Certification: Indicate whether withstand certification is based on actual test of assembled components or on calculation.
   2. Dimensioned Outline Drawings of Equipment Unit: Identify center of gravity and locate and describe mounting and anchorage provisions.
   3. Detailed description of equipment anchorage devices on which the certification is based and their installation requirements.

D. Sample Warranty: For special warranty.

1.5 CLOSEOUT SUBMITTALS

A. Operation and Maintenance Data: For fuel-oil equipment and accessories to include in emergency, operation, and maintenance manuals.

1.6 QUALITY ASSURANCE

A. EPA Compliance: Comply with EPA and state and local authorities having jurisdiction. Include recording of fuel-oil storage tanks and monitoring of tanks.

1.7 WARRANTY

A. Special Warranty: Manufacturer agrees to repair or replace components of fuel-oil storage tanks that fail in materials or workmanship within specified warranty period.

1. Storage Tanks:

a. Failures include, but are not limited to, the following when used for storage of fuel oil at temperatures not exceeding [**150 deg F (66 deg C)**]

b. Warranty Period: [**10**] years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Delegated Design: Engage a qualified professional engineer, as defined in Section 014000 "Quality Requirements," to design restraint and anchors for fuel-oil ASTs, and equipment, including comprehensive engineering analysis, using performance requirements and design criteria indicated.

1. The term "withstand" means "the unit will remain in place without separation of any parts when subjected to the seismic forces specified[**and the unit will be fully operational after the seismic event**]."

2.2 CONCRETE-VAULTED, STEEL, FUEL-OIL AST

A. Description: **UL 142, UL 2085, and STI F941**; thermally insulated, fire-resistant and protected, double-wall, horizontal, steel tank; with primary- and secondary-containment walls and insulation and with interstitial space.

B. Construction: Fabricated with welded, carbon steel and insulation and encased in concrete that will protect from bullets; suitable for operation at atmospheric pressure and for storing fuel oil with specific gravity up to 1.1 and with test temperature according to UL 2085.

2.3 FUEL-OIL AST ACCESSORIES

A. Threaded pipe connection fittings on top of tank, for fill, supply, return, vent, sounding, and gaging. Include cast-iron plugs for shipping.

B. Striker Plates: Inside tank, on bottom below fill, vent, sounding, gage, and other tube openings.

C. Lifting Lugs: For handling and installation.

2.4 LEAK-DETECTION AND MONITORING SYSTEM

A. Cable and Sensor System: Comply with UL 1238.
   1. Calibrated leak-detection and monitoring system with probes and other sensors and remote alarm panel for fuel-oil storage tanks and fuel-oil piping.
   2. Include fittings and devices required for testing.
   3. Controls: Electrical, operating on **120**V ac.

2.5 SOURCE QUALITY CONTROL
   1. Horizontal, **Concrete-Vaulted**, Steel ASTs: UL 142 and UL 2085.

B. Affix standards organization's code stamp.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine roughing-in for aboveground fuel-oil storage tanks to verify actual locations.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 EARTHWORK

A. Comply with requirements in Section 312000 "Earth Moving" for excavating, trenching, and backfilling.

B. Allow for cast-in-place, concrete base.

3.3 FUEL-OIL AST INSTALLATION

A. Install tank bases and supports.

B. Concrete Bases: Anchor AST to concrete base according to equipment manufacturer's written instructions and according to seismic codes at Project.

   1. Construct concrete bases of dimensions indicated, but not less than 4 inches (100 mm) larger in both directions than supported unit.

2. Install epoxy-coated anchor bolts for supported equipment that extend through concrete base, and anchor into structural concrete floor.
3. Place and secure anchorage devices. Use supported equipment manufacturer's setting drawings, templates, diagrams, instructions, and directions furnished with items to be embedded.
4. Install anchor bolts to elevations required for proper attachment to supported equipment.
5. Use **3000-psig (20.7-MPa)**, 28-day, compressive-strength concrete and reinforcement as specified in Section 033000 "Cast-in-Place Concrete."

C. Connect piping and vent fittings.

D. Install ground connections.

E. Install tank leak-detection and monitoring devices.

F. Install steel ASTs according to STI R912.

G. Install insulated and concrete-vaulted, steel ASTs according to STI R942.

H. Fill storage tanks with fuel oil.

3.4 LIQUID-LEVEL GAGE SYSTEM INSTALLATION

A. Install liquid-level gage system. Install panel inside building where indicated.

3.5 LEAK-DETECTION AND MONITORING SYSTEM INSTALLATION

A. Install leak-detection and monitoring system. Install alarm panel inside building where indicated.

1. Double-Wall, Fuel-Oil Storage Tanks: [**Install probes**] [**Install probes or use factory-installed integral probes**] [**Use factory-installed integral probes**] in interstitial space.
2. Install liquid-level gage.

3.6 LABELING AND IDENTIFYING

A. Nameplates, pipe identification, and signs are specified in Section 230553 "Identification for HVAC Piping and Equipment."

3.7 FIELD QUALITY CONTROL

A. Manufacturer's Field Service: Engage a factory-authorized service representative to test and inspect components, assemblies, and equipment installations, including connections.

Retain "Perform the following tests and inspections" Paragraph below to require Contractor to perform tests and inspections.

B. Perform the following tests and inspections[**with the assistance of a factory-authorized service representative**]:

1. Tanks: Minimum hydrostatic or compressed-air test pressures for fuel-oil storage tanks that have not been factory tested and do not bear the ASME code stamp or a listing mark acceptable to authorities having jurisdiction:
   a. Double-Wall Tanks:

      1) Inner Tanks: Minimum 3 psig (20.7 kPa) and maximum 5 psig (34.5 kPa).
      2) Interstitial Space: Minimum 3 psig (20.7 kPa) and maximum 5 psig (34.5 kPa), or 5.3-in. Hg (18-kPa) vacuum.

   b. Where vertical height of fill and vent pipes is such that the static head imposed on the bottom of the tank is greater than 10 psig (69 kPa), hydrostatically test the tank and fill and vent pipes to a pressure equal to the static head thus imposed.
   c. Maintain the test pressure for one hour.

C. ASTs will be considered defective if they do not pass tests and inspections.

D. Prepare test and inspection reports.

END OF SECTION

SECTION 260010
SUPPLEMENTAL REQUIREMENTS FOR ELECTRICAL

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Supplemental requirements generally applicable to the Work specified in Division 26. This Section is also referenced by related Work specified in other Divisions.

B. Related Requirements:

1. Section 260011 "Facility Performance Requirements for Electrical" for seismic-load, wind-load, acoustical, and other field conditions applicable to Work specified in this Section.

1.2 REFERENCES

A. Abbreviations and Acronyms for Electrical Terms and Units of Measure:

1. 8P8C: An 8-position 8-contact modular jack.
2. A: Ampere, unit of electrical current.
3. AC or ac: Alternating current.
4. AFCI: Arc-fault circuit interrupter.
5. AIC: Ampere interrupting capacity.
6. AL, Al, or ALUM: Aluminum.
7. ASD: Adjustable-speed drive.
8. ATS: Automatic transfer switch.
9. AWG: American wire gauge; see ASTM B258.
10. BAS: Building automation system.
11. BIL: Basic impulse insulation level.
12. BIM: Building information modeling.
13. CAD: Computer-aided design or drafting.
14. CATV: Community antenna television.
15. CB: Circuit breaker.
16. cd: Candela, the SI fundamental unit of luminous intensity.
17. CO/ALR: Copper-aluminum, revised.
18. COPS: Critical operations power system.
19. CU or Cu: Copper.
20. CU-AL or AL-CU: Copper-aluminum.
21. dB: Decibel, a unitless logarithmic ratio of two electrical, acoustical, or optical power values.
22. dB(A-weighted) or dB(A): Decibel acoustical sound pressure level with A-weighting applied in accordance with IEC 61672-1.
23. dB(adjusted) or dBa: Decibel weighted absolute noise power with respect to 3.16 pW (minus 85 dBm).

24. dBm: Decibel absolute power with respect to 1 mW.
25. DC or dc: Direct current.
26. DCOA: Designated critical operations area.
27. DDC: Direct digital control (HVAC).
28. EGC: Equipment grounding conductor.
29. ELV: Extra-low voltage.
30. EMF: Electromotive force.
31. EMI: Electromagnetic interference.
32. EPM: Electrical preventive maintenance.
33. EPS: Emergency power supply.
34. EPSS: Emergency power supply system.
35. ESS: Energy storage system.
36. EV: Electric vehicle.
37. EVPE: Electric vehicle power export equipment.
38. EVSE: Electric vehicle supply equipment.
39. fc: Footcandle, an internationally recognized unit of illuminance equal to one lumen per square foot or 10.76 lx. The simplified conversion 1 fc = 10 lx in the Specifications is common practice and considered adequate precision for building construction activities. When there are conflicts, lux is the primary unit; footcandle is specified for convenience.
40. FLC: Full-load current.
41. ft: Foot.
42. ft-cd: Foot-candle, the antiquated U.S. Standard unit of illuminance, equal to one international candle measured at a distance of one foot, that was superseded in 1948 by the unit "footcandle" after the SI unit candela (cd) replaced the international candle; see "fc,"
43. GEC: Grounding electrode conductor.
44. GFCI: Ground-fault circuit interrupter.
45. GFPE: Ground-fault protection of equipment.
46. GND: Ground.
47. HACR: Heating, air conditioning, and refrigeration.
48. HDPE: High-density polyethylene.
49. HID: High-intensity discharge.
50. HP or hp: Horsepower.
51. HVAC: Heating, ventilating, and air conditioning.
52. Hz: Hertz.
53. IBT: Intersystem bonding termination.
54. inch: Inch. To avoid confusion, the abbreviation "in." is not used.
55. IP: Ingress protection rating (enclosures); Internet protocol (communications).
56. IR: Infrared.
57. IS: Intrinsically safe.
58. IT&R: Inspecting, testing, and repair.
59. ITE: Information technology equipment.
60. kAIC: Kiloampere interrupting capacity.
61. kcmil or MCM: One thousand circular mils.
62. kV: Kilovolt.
63. kVA: Kilovolt-ampere.
64. kVAr or kVAR: Kilovolt-ampere reactive.
65. kW: Kilowatt.
66. kWh: Kilowatt-hour.
67. LAN: Local area network.
68. lb: Pound (weight).

69. lbf: Pound (force).
70. LCD: Liquid-crystal display.
71. LCDI: Leakage-current detector-interrupter.
72. LED: Light-emitting diode.
73. Li-ion: Lithium-ion.
74. lm: Lumen, the SI derived unit of luminous flux.
75. LNG: Liquefied natural gas.
76. LP-Gas: Liquefied petroleum gas.
77. LRC: Locked-rotor current.
78. LV: Low voltage.
79. lx: Lux, the SI derived unit of illuminance equal to one lumen per square meter.
80. m: Meter.
81. MCC: Motor-control center.
82. MDC: Modular data center.
83. MG set: Motor-generator set.
84. MIDI: Musical instrument digital interface.
85. MLO: Main lugs only.
86. MV: Medium voltage.
87. MVA: Megavolt-ampere.
88. mW: Milliwatt.
89. MW: Megawatt.
90. MWh: Megawatt-hour.
91. NC: Normally closed.
92. Ni-Cd: Nickel-cadmium.
93. Ni-MH: Nickel-metal hydride.
94. NIU: Network interface unit.
95. NO: Normally open.
96. NPT: National (American) standard pipe taper.
97. OCPD: Overcurrent protective device.
98. ONT: Optical network terminal.
99. PC: Personal computer.
100. PCS: Power conversion system.
101. PCU: Power-conditioning unit.
102. PF or pf: Power factor.
103. PHEV: Plug-in hybrid electric vehicle.
104. PLC: Programmable logic controller.
105. PLFA: Power-limited fire alarm.
106. PoE: Power over Ethernet.
107. PV: Photovoltaic.
108. PVC: Polyvinyl chloride.
109. pW: Picowatt.
110. RFI: (electrical) Radio-frequency interference; (contract) Request for interpretation.
111. RMS or rms: Root-mean-square.
112. RPM or rpm: Revolutions per minute.
113. SCADA: Supervisory control and data acquisition.
114. SCR: Silicon-controlled rectifier.
115. SPD: Surge protective device.
116. sq.: Square.
117. SWD: Switching duty.
118. TCP/IP: Transmission control protocol/Internet protocol.
119. TEFC: Totally enclosed fan-cooled.

120. TR: Tamper resistant.
121. TVSS: Transient voltage surge suppressor.
122. UL: (standards) Underwriters Laboratories, Inc.; (product categories) UL, LLC.
123. UL CCN: UL Category Control Number.
124. UPS: Uninterruptible power supply.
125. USB: Universal serial bus.
126. UV: Ultraviolet.
127. V: Volt, unit of electromotive force.
128. V(ac): Volt, alternating current.
129. V(dc): Volt, direct current.
130. VA: Volt-ampere, unit of complex electrical power.
131. VAR: Volt-ampere reactive, unit of reactive electrical power.
132. VFC: Variable-frequency controller.
133. VOM: Volt-ohm-multimeter.
134. VPN: Virtual private network.
135. VRLA: Valve regulated lead acid; also called "sealed lead acid (SLA)" or "valve regulated sealed lead acid."
136. W: Watt, unit of real electrical power.
137. Wh: Watt-hour, unit of electrical energy usage.
138. WPT: Wireless power transfer.
139. WPTE: Wireless power transfer equipment.
140. WR: Weather resistant.

B. Abbreviations and Acronyms for Electrical Raceway Types:

1. EMT: Electrical metallic tubing.
2. ENT: Electrical nonmetallic tubing.
3. EPEC: Electrical HDPE underground conduit (thin wall).
4. EPEC-A: Type A electrical HDPE underground conduit.
5. EPEC-B: Type B electrical HDPE underground conduit.
6. ERMC: Electrical rigid metal conduit.
7. ERMC-A: Aluminum electrical rigid metal conduit.
8. ERMC-S: Steel electrical rigid metal conduit.
9. ERMC-S-G: Galvanized-steel electrical rigid metal conduit.
10. ERMC-S-PVC: PVC-coated-steel electrical rigid metal conduit.
11. ERMC-SS: Stainless steel electrical rigid metal conduit.
12. FMC: Flexible metal conduit.
13. FMC-A: Aluminum flexible metal conduit.
14. FMC-S: Steel flexible metal conduit.
15. FMT: Steel flexible metallic tubing.
16. FNMC: Flexible nonmetallic conduit. See "LFNC."
17. HDPE: HDPE underground conduit (thick wall).
18. HDPE-40: Schedule 40 HDPE underground conduit.
19. HDPE-80: Schedule 80 HDPE underground conduit.
20. IMC: Steel electrical intermediate metal conduit.
21. LFMC: Liquidtight flexible metal conduit.
22. LFNC: Liquidtight flexible nonmetallic conduit.
23. LFNC-A: Layered (Type A) liquidtight flexible nonmetallic conduit.
24. LFNC-B: Integral (Type B) liquidtight flexible nonmetallic conduit.
25. LFNC-C: Corrugated (Type C) liquidtight flexible nonmetallic conduit.
26. PVC: Rigid PVC conduit.

27. PVC-40: Schedule 40 rigid PVC conduit.
28. PVC-80: Schedule 80 rigid PVC Conduit.
29. PVC-A: Type A rigid PVC concrete-encased conduit.
30. PVC-EB: Type EB rigid PVC concrete-encased underground conduit.
31. RGS: See ERMC-S-G.
32. RMC: See ERMC.
33. RTRC: Reinforced thermosetting resin conduit.
34. RTRC-AG: Low-halogen, aboveground reinforced thermosetting resin conduit.
35. RTRC-AG-HW: Heavy wall, low-halogen, aboveground reinforced thermosetting resin conduit.
36. RTRC-AG-SW: Standard wall, low-halogen, aboveground reinforced thermosetting resin conduit.
37. RTRC-AG-XW: Extra heavy wall, low-halogen, aboveground reinforced thermosetting resin conduit.
38. RTRC-BG: Low-halogen, belowground reinforced thermosetting resin conduit.

C. Abbreviations and Acronyms for Electrical Single-Conductor and Multiple-Conductor Cable Types:

1. AC: Armored cable.
2. CATV: Coaxial general-purpose cable.
3. CATVP: Coaxial plenum cable.
4. CATVR: Coaxial riser cable.
5. CI: Circuit integrity cable.
6. CL2: Class 2 cable.
7. CL2P: Class 2 plenum cable.
8. CL2R: Class 2 riser cable.
9. CL2X: Class 2 cable, limited use.
10. CL3: Class 3 cable.
11. CL3P: Class 3 plenum cable.
12. CL3R: Class 3 riser cable.
13. CL3X: Class 3 cable, limited use.
14. CM: Communications general-purpose cable.
15. CMG: Communications general-purpose cable.
16. CMP: Communications plenum cable.
17. CMR: Communications riser cable.
18. CMUC: Under-carpet communications wire and cable.
19. CMX: Communications cable, limited use.
20. DG: Distributed generation cable.
21. FC: Flat cable.
22. FCC: Flat conductor cable.
23. FPL: Power-limited fire-alarm cable.
24. FPLP: Power-limited fire-alarm plenum cable.
25. FPLR: Power-limited fire-alarm riser cable.
26. IGS: Integrated gas spacer cable.
27. ITC: Instrumentation tray cable.
28. ITC-ER: Instrumentation tray cable, exposed run.
29. MC: Metal-clad cable.
30. MC-HL: Metal-clad cable, hazardous location.
31. MI: Mineral-insulated, metal-sheathed cable.
32. MTW: (machine tool wiring) Moisture-, heat-, and oil-resistant thermoplastic cable.

33. MV: Medium-voltage cable.
34. NM: Nonmetallic sheathed cable.
35. NMC: Nonmetallic sheathed cable with corrosion-resistant nonmetallic jacket.
36. NMS: Nonmetallic sheathed cable with signaling, data, and communications conductors, plus power or control conductors.
37. NPLF: Non-power-limited fire-alarm circuit cable.
38. NPLFP: Non-power-limited fire-alarm circuit cable for environmental air spaces.
39. NPLFR: Non-power-limited fire-alarm circuit riser cable.
40. NUCC: Nonmetallic underground conduit with conductors.
41. OFC: Conductive optical fiber general-purpose cable.
42. OFCG: Conductive optical fiber general-purpose cable.
43. OFCP: Conductive optical fiber plenum cable.
44. OFCR: Conductive optical fiber riser cable.
45. OFN: Nonconductive optical fiber general-purpose cable.
46. OFNG: Nonconductive optical fiber general-purpose cable.
47. OFNP: Nonconductive optical fiber plenum cable.
48. OFNR: Nonconductive optical fiber riser cable.
49. P: Marine shipboard cable.
50. PLTC: Power-limited tray cable.
51. PLTC-ER: Power-limited tray cable, exposed run.
52. PV: Photovoltaic cable.
53. RHH: (high heat) Thermoset rubber, heat-resistant cable.
54. RHW: Thermoset rubber, moisture-resistant cable.
55. SA: Silicone rubber cable.
56. SE: Service-entrance cable.
57. SER: Service-entrance cable, round.
58. SEU: Service-entrance cable, flat.
59. SIS: Thermoset cable for switchboard and switchgear wiring.
60. TBS: Thermoplastic cable with outer braid.
61. TC: Tray cable.
62. TC-ER: Tray cable, exposed run.
63. TC-ER-HL: Tray cable, exposed run, hazardous location.
64. THW: Thermoplastic, heat- and moisture-resistant cable.
65. THHN: Thermoplastic, heat-resistant cable with nylon jacket outer sheath.
66. THHW: Thermoplastic, heat- and moisture-resistant cable.
67. THWN: Thermoplastic, moisture- and heat-resistant cable with nylon jacket outer sheath.
68. TW: Thermoplastic, moisture-resistant cable.
69. UF: Underground feeder and branch-circuit cable.
70. USE: Underground service-entrance cable.
71. XHH: Cross-linked polyethylene, heat-resistant cable.
72. XHHW: Cross-linked polyethylene, heat- and moisture-resistant cable.

D. Abbreviations and Acronyms for Electrical Flexible Cord Types:

1. SEO: 600 V extra-hard-usage, hard-service cord with thermoplastic elastomer insulation and oil-resistant thermoplastic elastomer outer covering for damp locations.
2. SEOW: 600 V extra-hard-usage, hard-service cord with thermoplastic elastomer insulation and oil-resistant thermoplastic elastomer outer covering for damp or wet locations.

3. SEOO: 600 V extra-hard-usage, hard-service cord with oil-resistant thermoplastic elastomer insulation and oil-resistant thermoplastic elastomer outer covering for damp locations.
4. SEOOW: 600 V extra-hard-usage, hard-service cord with oil-resistant thermoplastic elastomer insulation and oil-resistant thermoplastic elastomer outer covering for damp or wet locations.

E. Definitions:

1. 8-Position 8-Contact (8P8C) Modular Jack: An unkeyed jack with up to eight contacts commonly used to terminate twisted-pair and multiconductor Ethernet cable. Also called a "TIA-1096 miniature 8-position series jack" (8PSJ), or an "IEC 8877 8-pole jack."

    a. Be careful when suppliers use "RJ45" generically. Obsolete RJ45 jacks used for analog telephone cables have rejection keys. 8P8C jacks used for digital telephone cables and Ethernet cables do not have rejection keys.
2. Cable: In accordance with NIST NBS Circular 37 and IEEE standards, in the United States for the purpose of interstate commerce, the definition of "cable" is (1) a conductor with insulation, or a stranded conductor with or without insulation (single-conductor cable); or (2) a combination of conductors insulated from one another (multiple-conductor cable).
3. Communications Jack: A fixed connecting device designed for insertion of a communications cable plug.
4. Communications Outlet: One or more communications jacks, or cables and plugs, mounted in a box or ring, with a suitable protective cover.
5. Conductor: In accordance with NIST NBS Circular 37 and IEEE standards, in the United States for the purpose of interstate commerce, the definition of "conductor" is (1) a wire or combination of wires not insulated from one another, suitable for carrying an electric current; (2) (National Electrical Safety Code) a material, usually in the form of wire, cable, or bar, suitable for carrying an electric current; or (3) (general) a substance or body that allows a current of electricity to pass continuously along it.
6. Direct Buried: Installed underground without encasement in concrete or other protective material.
7. Enclosure: The case or housing of an apparatus, or the fence or wall(s) surrounding an installation, to prevent personnel from accidentally contacting energized parts or to protect the equipment from physical damage. Types of enclosures and enclosure covers include the following:

    a. Cabinet: An enclosure that is designed for either surface mounting or flush mounting and is provided with a frame, mat, or trim in which a swinging door or doors are or can be hung.
    b. Concrete Box: A box intended for use in poured concrete.
    c. Conduit Body: A means for providing access to the interior of a conduit or tubing system through one or more removable covers at a junction or terminal point. In the United States, conduit bodies are listed in accordance with outlet box requirements.
    d. Conduit Box: A box having threaded openings or knockouts for conduit, EMT, or fittings.
    e. Cutout Box: An enclosure designed for surface mounting that has swinging doors or covers secured directly to and telescoping with the walls of the enclosure.

f. Device Box: A box with provisions for mounting a wiring device directly to the box.
g. Extension Ring: A ring intended to extend the sides of an outlet box or device box to increase the box depth, volume, or both.
h. Floor Box: A box mounted in the floor intended for use with a floor box cover and other components to complete the floor box enclosure.
i. Floor-Mounted Enclosure: A floor box and floor box cover assembly with means to mount in the floor that is sealed against the entrance of scrub water at the floor level.
j. Floor Nozzle: An enclosure used on a wiring system, intended primarily as a housing for a receptacle, provided with a means, such as a collar, for surface-mounting on a floor, which may or may not include a stem to support it above the floor level, and is sealed against the entrance of scrub water at the floor level.
k. Junction Box: A box with a blank cover that joins different runs of raceway or cable and provides space for connection and branching of the enclosed conductors.
l. Outlet Box: A box that provides access to a wiring system having pryout openings, knockouts, threaded entries, or hubs in either the sides or the back, or both, for the entrance of conduit, conduit or cable fittings, or cables, with provisions for mounting an outlet box cover, but without provisions for mounting a wiring device directly to the box.
m. Pedestal Floor Box Cover: A floor box cover that, when installed as intended, provides a means for typically vertical or near-vertical mounting of receptacle outlets above the floor's finished surface.
n. Pull Box: A box with a blank cover that joins different runs of raceway and provides access for pulling or replacing the enclosed cables or conductors.
o. Raised-Floor Box: A floor box intended for use in raised floors.
p. Recessed Access Floor Box: A floor box with provisions for mounting wiring devices below the floor surface.
q. Recessed Access Floor Box Cover: A floor box cover with provisions for passage of cords to recessed wiring devices mounted within a recessed floor box.
r. Ring: A sleeve, which is not necessarily round, used for positioning a recessed wiring device flush with the plaster, concrete, drywall, or other wall surface.
s. Ring Cover: A box cover, with raised center portion to accommodate a specific wall or ceiling thickness, for mounting wiring devices or luminaires flush with the surface.
t. Termination Box: An enclosure designed for installation of termination base assemblies consisting of bus bars, terminal strips, or terminal blocks with provision for wire connectors to accommodate incoming or outgoing conductors, or both.

8. Emergency Systems: Those systems legally required and classed as emergency by municipal, state, federal, or other codes, or by any governmental agency having jurisdiction that are designed to ensure continuity of lighting, electrical power, or both, to designated areas and equipment in the event of failure of the normal supply for safety to human life.
9. Fault Limited: Providing or being served by a source of electrical power that is limited to not more than 100 W when tested in accordance with UL 62368-1.

a. The term "fault limited" is intended to encompass most Class 1, 2, and 3 power-limited sources complying with Article 725 of NFPA 70; Class ES1 and ES2 electrical energy sources that are Class PS1 electrical power sources (e.g., USB); and Class ES3 electrical energy sources that are Class PS1 and PS2 electrical

power sources (e.g., PoE). See UL 62368-1 for discussion of classes of electrical energy sources and classes of electrical power sources.

10. High-Performance Building: A building that integrates and optimizes on a life-cycle basis all major high-performance attributes, including energy conservation, environment, safety, security, durability, accessibility, cost-benefit, productivity, sustainability, functionality, and operational considerations.
11. Jacket: A continuous nonmetallic outer covering for conductors or cables.
12. Luminaire: A complete lighting unit consisting of a light source such as a lamp, together with the parts designed to position the light source and connect it to the power supply. It may also include parts to protect the light source or the ballast or to distribute the light.
13. Mode: The terms "Active Mode," "Off Mode," and "Standby Mode" are used as defined in the Energy Independence and Security Act (EISA) of 2007.
14. Multi-Outlet Assembly: A type of surface, flush, or freestanding raceway designed to hold conductors, receptacles, and switches, assembled in the field or at the factory.
15. Plenum: A compartment or chamber to which one or more air ducts are connected and that forms part of the air distribution system.
16. Receptacle: A fixed connecting device arranged for insertion of a power cord plug. Also called a power jack.
17. Receptacle Outlet: One or more receptacles mounted in a box with a suitable protective cover.
18. Sheath: A continuous metallic covering for conductors or cables.
19. UL Category Control Number (CCN): An alphabetic or alphanumeric code used to identify product categories covered by UL's Listing, Classification, and Recognition Services.
20. Voltage Class: For specified circuits and equipment, voltage classes are defined as follows:

    a. Control Voltage: Having electromotive force between any two conductors, or between a single conductor and ground, that is supplied from a battery or other Class 2 or Class 3 power-limited source.
    b. Line Voltage: (1) (controls) Designed to operate using the supplied low-voltage power without transformation. (2) (transmission lines, transformers, SPDs) The line-to-line voltage of the supplying power system.
    c. Extra-Low Voltage (ELV): Not having electromotive force between any two conductors, or between a single conductor and ground, exceeding 30 V(ac rms), 42 V(ac peak), or 60 V(dc).
    d. Low Voltage (LV): Having electromotive force between any two conductors, or between a single conductor and ground, that is rated above 30 V but not exceeding 1000 V.
    e. Medium Voltage (MV): Having electromotive force between any two conductors, or between a single conductor and ground, that is rated about 1 kV but not exceeding 69 kV.
    f. High Voltage: (1) (circuits) Having electromotive force between any two conductors, or between a single conductor and ground, that is rated above 69 kV but not exceeding 230 kV. (2) (safety) Having sufficient electromotive force to inflict bodily harm or injury.

21. Wire: In accordance with NIST NBS Circular 37 and IEEE standards, in the United States for the purpose of interstate commerce, the definition of "wire" is a slender rod or filament of drawn metal. A group of small wires used as a single wire is properly called a

"stranded wire." A wire or stranded wire covered with insulation is properly called an "insulated wire" or a "single-conductor cable." Nevertheless, when the context indicates that the wire is insulated, the term "wire" will be understood to include the insulation.

1.3 COORDINATION

A. Arrange to provide temporary electrical **power** in accordance with requirements specified in Division 01.

1.4 PREINSTALLATION MEETINGS

A. Electrical Preconstruction Conference: Schedule conference with Architect and Owner, not later than **10** days after notice to proceed. Agenda topics include, but are not limited to, the following:

1. Electrical installation schedule.
2. Status of power system studies.
3. Value analysis proposals and requests for substitution of electrical equipment.
4. Utility work coordination and class of service requests.
5. Commissioning activities.

1.5 SEQUENCING

A. Conduct and submit results of power system studies before submitting Product Data and Shop Drawings for electrical equipment.

1.6 ACTION SUBMITTALS

A. Coordination Drawings for Ceiling Areas: Where indicated on drawings, provide reflected ceiling plan(s), supplemented by sections and other details, drawn to scale, in accordance with Section 013100 "Project Management and Coordination," on which the following items are shown and coordinated with each other, using input from installers of the items involved:

1. Suspended ceiling components.
2. Structural members to which equipment and suspension systems will be attached.
3. Size and location of access panels on ceilings.
4. Elevation, size, and route of sprinkler piping.
5. Elevation, size, and route of plumbing piping.
6. Elevation, size, and route of ductwork.
7. Elevation, size, and route of cable tray.
8. Elevation, size, and route of conduit.
9. Elevation and size of wall-mounted and ceiling-mounted equipment.
10. Access panels.
11. Sprinklers.
12. Air inlets and outlets.
13. Control modules.
14. Luminaires.

15. Communications devices.
16. Speakers.
17. Security devices.
18. Fire-alarm devices.
19. Indicate clear dimensions for maintenance access in front of equipment.
20. Indicate dimensions of fully-open access doors.

B. Coordination Drawings for Conduit Routing: Conduit routing plans, drawn to scale, on which the following items are shown and coordinated with each other, using input from installers of items involved:

1. Structural members in paths of conduit groups with common supports.
2. HVAC and plumbing items and architectural features in paths of conduit groups with common supports.

C. Coordination Drawings for Large Equipment Indoor Installations:

1. Location plan, drawn to scale, showing heavy equipment or truck access paths to loading dock or other freight access into building. Indicate available width and height of doors or openings.
2. Floor plan for entry floor and floor where equipment is located, drawn to scale, showing heavy equipment access paths for maintenance and replacement, with the following items shown and coordinated with each other, based on input from installers of the items involved:

    a. Dimensioned concrete bases, outlines of equipment, conduit entries, and grounding equipment locations.
    b. If freight elevator must be used, indicate width and height of door and depth of car. Indicate if large equipment must be tipped to use elevator.
    c. Dimensioned working clearances and dedicated areas below and around electrical equipment where obstructions and tripping hazards are prohibited.

1.7 INFORMATIONAL SUBMITTALS

A. Electrical Installation Schedule: At preconstruction meeting, and periodically thereafter as dates change, provide schedule for electrical installation Work to Owner and Architect including, but not limited to, milestone dates for the following activities:

1. Submission of power system studies.
2. Submission of specified coordination drawings.
3. Submission of action submittals specified in Division 26.
4. Orders placed for major electrical equipment.
5. Preinstallation meetings specified in Division 26.
6. Utility service outages.
7. Utility service inspection and activation.
8. Closing of walls and ceilings containing electrical Work.
9. System startup, testing, and commissioning activities for major electrical equipment.
10. System startup, testing, and commissioning activities for emergency lighting.
11. System startup, testing, and commissioning activities for automation systems (SCADA, BMS, lighting, HVAC, fire alarm, fire pump, etc.).

12. Pouring of concrete housekeeping pads for electrical equipment and testing of concrete samples.
13. Requests for special inspections.
14. Requests for inspections by authorities having jurisdiction.

1.8 CLOSEOUT SUBMITTALS

A. Operation and Maintenance Data:

1. Include the following information:

a. Manufacturer's operating specifications.
b. User's guides for software and hardware.
c. Schedule of maintenance material items recommended to be stored at Project site.
d. Detailed instructions covering operation under both normal and abnormal conditions.
e. Time-current curves for overcurrent protective devices and manufacturer's written instructions for testing and adjusting their settings.
f. List of load-current and overload-relay heaters with related motor nameplate data.
g. List of lamp types and photoelectric relays used on Project, with ANSI and manufacturers' codes.
h. Manufacturer's instructions for setting field-adjustable components.
i. Manufacturer's instructions for testing, adjusting, and reprogramming microprocessor controls.
j. EPSS: Manufacturer's system checklists, maintenance schedule, and maintenance log sheets in accordance with NFPA 110.
k. Exterior pole inspection and repair procedures.

1.9 QUALIFICATIONS

A. Electrical Professional Engineer: Professional engineer possessing active qualifications specified in Section 014000 "Quality Requirements," with expertise in electrical engineering, including electrical power system modeling and analysis of electrical safety in accordance with NFPA 70E.

B. Generator Set Installers: Installer possessing active qualifications specified in Section 014000 "Quality Requirements," and able to present unexpired certified Installer credentials issued by generator set manufacturer prior to starting installation.

C. Lightning Protection System Installers: Installer possessing active qualifications specified in Section 014000 "Quality Requirements," and able to present **unexpired UL-Listed Installer,** prior to starting installation.

PART 2 - PRODUCTS

2.1 SUBSTITUTION LIMITATIONS FOR ELECTRICAL EQUIPMENT

A. Substitution requests for electrical equipment will be entertained under the following conditions:

1. Substitution requests may be submitted for consideration prior to the Electrical Preconstruction Conference if accompanied by value analysis data indicating that substitution will comply with Project performance requirements while significantly increasing value for Owner throughout life of facility.
2. Substitution requests may be submitted for consideration concurrently with submission of power system study reports when those reports indicate that substitution is necessary for safety of maintenance personnel and facility occupants.
3. Contractor is responsible for sequencing and scheduling power system studies and electrical equipment procurement. After the Electrical Preconstruction Conference, insufficient lead time for electrical equipment delivery will not be considered a valid reason for substitution.

2.2 FACILITY ELECTRICAL PREVENTIVE MAINTENANCE (EPM) PROGRAM BINDERS

A. Description: Set of binders containing operation and maintenance data for facility's electrical equipment that was compiled during analysis of installed electrical Work for Facility EPM Program development.

B. Applicable Standards:

1. Regulatory Requirements: Comply with recommendations in NFPA 70B.
2. General Characteristics:

a. Volume 1 - Introduction:

1) Summarize how Facility EPM Program Analysis was performed, how data were collected, and how volumes are organized.
2) Describe Facility EPM Program and provide recommended policies and procedures for implementing the program and keeping it current.
3) Provide place for Owner to identify contact information for employees responsible for implementing and maintaining Facility EPM Program.

b. Volume 2 - Facility Safety, Hazards Awareness, and Emergency Procedures:

1) Include training requirements for employees and contractors.
2) Include list of known facility hazards impacting IT&R activities.
3) Include approval and permitting procedures for IT&R activities.
4) Include incident emergency response procedures.
5) Include emergency shutdown procedures.
6) Include electrical disaster recovery procedures.

c. Volume 3 - Facility Diagrams and Schedules:

1) Include single-line diagrams.
2) Include grounding and bonding diagrams.
3) Include essential wiring diagrams.
4) Include system automation diagrams (SCADA, BMS, lighting, HVAC, etc.).
5) Include records of switchgear, switchboard, and panelboard schedules.
6) Include time-current curves for overcurrent protective devices.
7) Include list of load-current and overload-relay heaters with related motor nameplate data.

PART 3 - EXECUTION

3.1 INSTALLATION OF ELECTRICAL WORK

A. Unless more stringent requirements are specified in the Contract Documents or manufacturers' written instructions, comply with NFPA 70 and NECA NEIS 1 for installation of Work specified in Division 26. Consult Architect for resolution of conflicting requirements.

3.2 SYSTEM STARTUP

A. Commissioning Activities:

1. Generator start-up and load bank test.

2. Fuel Tank dispensing start up

3.3 FIELD QUALITY CONTROL

A. Administrant for Low-Voltage Electrical Tests and Inspections:
1. Engage qualified low-voltage electrical testing and inspecting agency to administer and perform tests and inspections.

B. Administrant for Field Tests and Inspections of Lighting Installations:
1. Administer and perform tests and inspections **with assistance of the engineer**.

3.4 CLOSEOUT ACTIVITIES

A. Demonstration: **Demonstrate** to Owner's maintenance and clerical personnel **and building occupants** how to operate the following systems and equipment:

1. Lighting control devices specified in Section 260923 "Lighting Control Devices."
2. Lighting control systems specified in Section 260943.23 "Relay-Based Lighting Controls."

END OF SECTION

SECTION 260533.13
CONDUITS FOR ELECTRICAL SYSTEMS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Type EMT-A and Type EMT-SS duct raceways and elbows.
2. Type ERMC-S duct raceways, elbows, couplings, and nipples.
3. Type PVC duct raceways and fittings.
4. Type LFMC duct raceways.
5. Fittings for conduit, tubing, and cable.
6. Solvent cements.

B. Products Installed, but Not Furnished, under This Section:

1. See Section 260553 "Identification for Electrical Systems" for electrical equipment labels.

C. Related Requirements:

1. Section 260010 "Supplemental Requirements for Electrical" for additional abbreviations, definitions, submittals, qualifications, testing agencies, and other Project requirements applicable to Work specified in this Section.
2. Section 260011 "Facility Performance Requirements for Electrical" for seismic-load, wind-load, acoustical, and other field conditions applicable to Work specified in this Section.
3. Section 260519 "Low-Voltage for Electrical Power Conductors and Cables" for nonmetallic underground conduit with conductors (Type NUCC).

1.2 DEFINITIONS

A. Conduit: A structure containing one or more duct raceways.

B. Duct Raceway: A single enclosed raceway for conductors or cable.

C. Duct Bank: An arrangement of conduit providing one or more continuous duct raceways between two points.

1.3 INFORMATIONAL SUBMITTALS

A. Manufacturers' Published Instructions:

1. Type EMT-S duct raceways and elbows.
2. Type PVC duct raceways and fittings.

3. Fittings for conduit, tubing, and cable.
4. Solvent cements.

PART 2 - PRODUCTS

2.1 TYPE EMT-S DUCT RACEWAYS AND ELBOWS

A. Performance Criteria:

1. Regulatory Requirements: Listed and labeled in accordance with NFPA 70, by qualified electrical testing laboratory recognized by authorities having jurisdiction, and marked for intended location and application.
2. Listing Criteria: UL CCN FJMX; including UL 797.

B. Source Quality Control:

1. Product Data: Prepare and submit catalog cuts, brochures, and performance data illustrating size, physical appearance, and other characteristics of product.
2. Manufacturer's Published Instructions: Prepare and submit installation, testing, and operating instructions for product.

C. UL FJMX - Steel Electrical Metal Tubing (EMT-S) and Elbows:
1. Material: Steel.
2. Options:

a. Exterior Coating: **Zinc**.
b. Interior Coating: **Zinc**.
c. Minimum Trade Size: **Metric designator 21 (trade size 3/4)**.

2.2 TYPE FMC-S AND TYPE FMC-A DUCT RACEWAYS

A. Performance Criteria:

1. Regulatory Requirements: Listed and labeled in accordance with NFPA 70, by qualified electrical testing laboratory recognized by authorities having jurisdiction, and marked for intended location and application.
2. Listing Criteria: UL CCN DXUZ; including UL 1.

B. Source Quality Control:

1. Product Data: Prepare and submit catalog cuts, brochures, and performance data illustrating size, physical appearance, and other characteristics of product.
2. Manufacturer's Published Instructions: Prepare and submit installation, testing, and operating instructions for product.

C. UL DXUZ - Steel Flexible Metal Conduit (FMC-S):
1. Material: Steel.
2. Options:

a. Minimum Trade Size: **Metric designator 21 (trade size 3/4)**.

2.3 TYPE ERMC-S DUCT RACEWAYS, ELBOWS, COUPLINGS, AND NIPPLES

A. Performance Criteria:

1. Regulatory Requirements: Listed and labeled in accordance with NFPA 70, by qualified electrical testing laboratory recognized by authorities having jurisdiction, and marked for intended location and application.
2. Listing Criteria: UL CCN DYIX; including UL 6.

B. Source Quality Control:

1. Product Data: Prepare and submit catalog cuts, brochures, and performance data illustrating size, physical appearance, and other characteristics of product.
2. Manufacturer's Published Instructions: Prepare and submit installation, testing, and operating instructions for product.

C. UL DYIX - Galvanized-Steel Electrical Rigid Metal Conduit (ERMC-S-G), Elbows, Couplings, and Nipples:
1. Exterior Coating: Zinc.
2. Options:

a. Interior Coating: **Zinc with organic top coating**.
b. Minimum Trade Size: **Metric designator 21 (trade size 3/4)**.
c.

2.4 TYPE LFNC DUCT RACEWAYS

A. Performance Criteria:

1. Regulatory Requirements: Listed and labeled in accordance with NFPA 70, by qualified electrical testing laboratory recognized by authorities having jurisdiction, and marked for intended location and application.
2. Listing Criteria: UL CCN DXOQ; including UL 1660.

B. Source Quality Control:

1. Product Data: Prepare and submit catalog cuts, brochures, and performance data illustrating size, physical appearance, and other characteristics of product.
2. Manufacturer's Published Instructions: Prepare and submit installation, testing, and operating instructions for product.

C. UL DXOQ - Layered (Type A) Liquidtight Flexible Nonmetallic Conduit (LFNC-A):
1. Additional Criteria: Type A conduit with smooth seamless inner core and cover bonded together with one or more reinforcement layers between core and cover.
2. Options:

a. Minimum Trade Size: **Metric designator 21 (trade size 3/4)**.

2.5 TYPE PVC DUCT RACEWAYS AND FITTINGS

A. Performance Criteria:

1. Regulatory Requirements: Listed and labeled in accordance with NFPA 70, by qualified electrical testing laboratory recognized by authorities having jurisdiction, and marked for intended location and application.
2. Listing Criteria: UL CCN DZYR; including UL 651.

B. Source Quality Control:

1. Product Data: Prepare and submit catalog cuts, brochures, and performance data illustrating size, physical appearance, and other characteristics of product.
2. Manufacturer's Published Instructions: Prepare and submit installation, testing, and operating instructions for product.

C. UL DZYR - Schedule 40 Rigid PVC Conduit (PVC-40) and Fittings:
1. Dimensional Specifications: Schedule 40.
2. Options:

a. Minimum Trade Size: **Metric designator 21 (trade size 3/4)**.
b. Markings: **For use with maximum 90 deg C wire**

D. UL DZYR - Schedule 80 Rigid PVC Conduit (PVC-80) and Fittings:
1. Dimensional Specifications: Schedule 80.
2. Options:

a. Minimum Trade Size: **Metric designator 21 (trade size 3/4)**.

2.6 SOLVENT CEMENTS

A. Performance Criteria:

1. Regulatory Requirements: Listed and labeled in accordance with NFPA 70, by qualified electrical testing laboratory recognized by authorities having jurisdiction, and marked for intended location and application.
2. Listing Criteria: UL CCN DWTT; including UL 514B.

B. Source Quality Control:

1. Product Data: Prepare and submit catalog cuts, brochures, and performance data illustrating size, physical appearance, and other characteristics of product.

2. Manufacturer's Published Instructions: Prepare and submit installation, testing, and operating instructions for product.

C. UL DWTT - Solvent Cements for Type PVC Duct Raceways and Fittings:

PART 3 - EXECUTION

3.1 SELECTION OF CONDUITS FOR ELECTRICAL SYSTEMS

A. Unless more stringent requirements are specified in Contract Documents or manufacturers' published instructions, comply with NFPA 70 for selection of duct raceways. Consult Architect for resolution of conflicting requirements.

B. Special Instructions Regarding HDPE Conduits: Although Article 353 of NFPA 70 permits use of HDPE conduits where encased in concrete aboveground, UL CCN EAZX listing requirements state that HDPE **and EPEC** underground conduits are intended only for use where direct buried with or without being encased in concrete. Specified Type HDPE **and Type EPEC** underground conduits are not permitted to be used aboveground on Project.

C. Outdoors:

1. Exposed and Subject to Severe Physical Damage: **ERMC**.
2. Exposed and Subject to Physical Damage: **ERMC**.
    a. Locations less than 2.5 m (8 ft) above finished floor.
3. Exposed and Not Subject to Physical Damage: **ERMC**.
4. Concealed Aboveground: **ERMC**.
5. Direct Buried: **PVC-80, PVC-40**.
6. Concrete Encased Not in Trench: **PVC-80**.
7. Concrete Encased in Trench: **PVC-80**.
8. Connection to Vibrating Equipment (Including Transformers and Hydraulic, Pneumatic, Electric Solenoid, or Motor-Driven Equipment): **LFMC**.

D. Indoors:

1. Hazardous Classified Locations: **ERMC**.
2. Exposed and Subject to Severe Physical Damage: **ERMC**. Locations include the following:
    a. Corridors used for traffic of mechanized carts, forklifts, and pallet-handling units.
    b. Mechanical rooms.
    c. Gymnasiums.
3. Exposed and Subject to Physical Damage: **ERMC**. Locations include the following:
    a. Locations less than 2.5 m (8 ft) above finished floor.
    b. Stub-ups to above suspended ceilings.
4. Exposed and Not Subject to Physical Damage: **EMT**.
5. Concealed in Ceilings and Interior Walls and Partitions: **EMT**.
6. Damp or Wet Locations: **Corrosion-resistant EMT**.
7. Connection to Vibrating Equipment (Including Transformers and Hydraulic, Pneumatic, Electric Solenoid, or Motor-Driven Equipment): **LFMC.**

3.2 INSTALLATION OF CONDUITS FOR ELECTRICAL SYSTEMS

A. Comply with manufacturer's published instructions.

B. Reference Standards for Installation: Unless more stringent installation requirements are specified in Contract Documents or manufacturers' published instructions, comply with the following:

1. Type EMT-A: Article 358 of NFPA 70 and NECA NEIS 102.
2. Type EMT-SS: Article 358 of NFPA 70 and NECA NEIS 101.
3. Type EMT-S: Article 358 of NFPA 70 and NECA NEIS 101.
4. Type ENT: Article 362 of NFPA 70 and NECA NEIS 102.
5. Type ERMC-A: Article 344 of NFPA 70 and NECA NEIS 102.
6. Type FMC-S: Article 348 of NFPA 70 and NECA NEIS 101.
7. Type LFMC: Article 350 of NFPA 70 and NECA NEIS 101.
8. Type PVC: Article 356 of NFPA 70 and NECA NEIS 111.
9. Expansion Fittings: NEMA FB 2.40.

C. Special Installation Techniques:

1. General Requirements for Installation of Duct Raceways:

a. Complete duct raceway installation before starting conductor installation.
b. Provide stub-ups through floors with coupling threaded inside for plugs, set flush with finished floor. Plug coupling until conduit is extended above floor to final destination or a minimum of 2 ft (0.6 m) above finished floor.
c. Make bends in duct raceway using large-radius preformed ells except for parallel bends. Field bending must be in accordance with NFPA 70 minimum radii requirements. Provide only equipment specifically designed for material and size involved.
d. Conceal conduit within finished walls, ceilings, and floors unless otherwise indicated. Install conduits parallel or perpendicular to building lines.
e. Support conduit within 12 inch (300 mm) of enclosures to which attached.
f. Install duct sealing fittings at accessible locations in accordance with NFPA 70 and fill them with listed sealing compound. For concealed duct raceways, install fitting in flush steel box with blank cover plate having finish similar to that of adjacent plates or surfaces. Install duct sealing fittings in accordance with NFPA 70.
g. Install devices to seal duct raceway interiors at accessible locations. Locate seals so no fittings or boxes are between the seal and the following changes of environments. Seal interior of duct raceways at the following points:

1) Where conduits pass from warm to cold locations, such as boundaries of refrigerated spaces.
2) Where an underground service duct raceway enters a building or structure.
3) Conduit extending from interior to exterior of building.
4) Conduit extending into pressurized duct raceway and equipment.
5) Conduit extending into pressurized zones that are automatically controlled to maintain different pressure set points.
6) Where otherwise required by NFPA 70.

h. Do not install conduits within 2 inch (50 mm) of the bottom side of a metal deck roof.

i. Keep duct raceways at least 6 inch (150 mm) away from parallel runs of flues and steam or hot-water pipes. Install horizontal duct raceway runs above water and steam piping.
j. Cut conduit perpendicular to the length. For conduits metric designator 53 (trade size 2) and larger, use roll cutter or a guide to make cut straight and perpendicular to the length. Ream inside of conduit to remove burrs.
k. Install pull wires in empty duct raceways. Provide polypropylene or monofilament plastic line with not less than 200 lb (90 kg) tensile strength. Leave at least 12 inch (300 mm) of slack at both ends of pull wire. Cap underground duct raceways designated as spare above grade alongside duct raceways in use.
l. Install duct raceways square to the enclosure and terminate at enclosures without hubs with locknuts on both sides of enclosure wall. Install locknuts hand tight, plus one-quarter turn more.

1) Termination fittings with shoulders do not require two locknuts.

m. Terminate threaded conduits into threaded hubs or with locknuts on inside and outside of boxes or cabinets. Install bushings on conduits up to metric designator 35 (trade size 1-1/4) and insulated throat metal bushings on metric designator 41 (trade size 1-1/2) and larger conduits terminated with locknuts.[**Install insulated throat metal grounding bushings on service conduits**].

2. Types EMT-A, ERMC-A, and FMC-A: Do not install aluminum duct raceways or fittings in contact with concrete or earth.
3. Types ERMC and IMC:

4. Types FMC:

a. Provide a maximum of [**36 inch (915 mm)**] [**72 inch (1830 mm)**] of flexible conduit for [**recessed and semirecessed luminaires,**]equipment subject to vibration, noise transmission, or movement; and for transformers and motors.

5. Types PVC, HDPE, and EPEC:

a. Do not install Type PVC, Type HDPE, or Type EPEC conduit where ambient temperature exceeds [**122 deg F (50 deg C)**] <**Insert temperature**>. Conductor ratings must be limited to 75 deg C except where installed in a trench outside buildings with concrete encasement, where 90 deg C conductors are permitted.
b. Comply with manufacturer's published instructions for solvent welding and fittings.

6. Stub-ups to Above Recessed Ceilings:

a. Provide EMT for duct raceways.
b. Provide a conduit bushing or insulated fitting to terminate stub-ups not terminated in hubs or in an enclosure.

7. Duct Raceway Terminations at Locations Subject to Moisture or Vibration:

a. Provide insulating bushings to protect conductors, including conductors smaller than 4 AWG. **Install insulated throat metal grounding bushings on service conduits**.

8. Expansion-Joint Fittings:

a. Install in runs of aboveground PVC that are located where environmental temperature change may exceed 30 deg F (17 deg C) and that have straight-run length that exceeds 25 ft (7.6 m). Install in runs of aboveground ERMC **and EMT** conduit that are located where environmental temperature change may exceed 100 deg F (55 deg C) and that have straight-run length that exceeds 100 ft (30 m).

b. Install type and quantity of fittings that accommodate temperature change listed for the following locations:

1) Outdoor Locations Not Exposed to Direct Sunlight: **125 deg F (70 deg C)** temperature change.

2) Outdoor Locations Exposed to Direct Sunlight: **155 deg F (86 deg C)** temperature change.

c. Install expansion fittings at locations where conduits cross building or structure expansion joints.

d. Install expansion-joint fitting with position, mounting, and piston setting selected in accordance with manufacturer's published instructions for conditions at specific location at time of installation. Install conduit supports to allow for expansion movement.

D. Interfaces with Other Work:

1. Coordinate with Section 078413 "Penetration Firestopping" for installation of firestopping at penetrations of fire-rated floor and wall assemblies.
2. Coordinate with Section 260529 "Hangers and Supports for Electrical Systems" for installation of conduit hangers and supports.

3.3 PROTECTION

A. Protect coatings, finishes, and cabinets from damage and deterioration.

1. Repair damage to galvanized finishes with zinc-rich paint recommended by manufacturer.
2. Repair damage to PVC coatings or paint finishes with matching touchup coating recommended by manufacturer.

END OF SECTION

SECTION 260533.16
BOXES AND COVERS FOR ELECTRICAL SYSTEMS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Metallic outlet boxes, device boxes, rings, and covers.
2. Nonmetallic outlet boxes, device boxes, rings, and covers.
3. Junction boxes and pull boxes.
4. Cover plates for device boxes.

B. Products Installed, but Not Furnished, under This Section:

1. See Section 260553 "Identification for Electrical Systems" for electrical equipment labels.

C. Related Requirements:

1. Section 260010 "Supplemental Requirements for Electrical" for additional abbreviations, definitions, submittals, qualifications, testing agencies, and other Project requirements applicable to Work specified in this Section.
2. Section 260011 "Facility Performance Requirements for Electrical" for seismic-load, wind-load, acoustical, and other field conditions applicable to Work specified in this Section.

1.2 ACTION SUBMITTALS

A. Product Data:

1. Metallic outlet boxes, device boxes, rings, and covers.
2. Nonmetallic outlet boxes, device boxes, rings, and covers.
3. Junction boxes and pull boxes.
4. Cover plates for device boxes.
5. Hoods for outlet boxes.

1.3 INFORMATIONAL SUBMITTALS

A. Manufacturers' Published Instructions:

1. Metallic outlet boxes, device boxes, rings, and covers.
2. Nonmetallic outlet boxes, device boxes, rings, and covers.
3. Junction boxes and pull boxes.
4. Cover plates for device boxes.
5. Hoods for outlet boxes.

PART 2 - PRODUCTS

2.1 METALLIC OUTLET BOXES, DEVICE BOXES, RINGS, AND COVERS

A. Performance Criteria:

1. Regulatory Requirements: Listed and labeled in accordance with NFPA 70, by qualified electrical testing laboratory recognized by authorities having jurisdiction, and marked for intended location and application.
2. Listing Criteria: UL CCN QCIT; including UL 514A.

B. Source Quality Control:

1. Product Data: Prepare and submit catalog cuts, brochures, and performance data illustrating size, physical appearance, and other characteristics of product.
2. Manufacturer's Published Instructions: Prepare and submit installation, testing, and operating instructions for product.

C. UL QCIT - Metallic Outlet Boxes and Covers:

1. Description: Box having pryout openings, knockouts, threaded entries, or hubs in either the sides of the back, or both, for entrance of conduit, conduit or cable fittings, or cables, with provisions for mounting outlet box cover, but without provisions for mounting wiring device directly to box.
2. Options:

    a. Material: **Sheet Metal**, **Cast metal**.
    b. Sheet Metal Depth: Minimum **2 inch (50 mm**.
    c. Cast-Metal Depth: Minimum **2.4 inch (60.3 mm)**.
    d. Luminaire Outlet Boxes and Covers: Nonadjustable, listed and labeled for attachment of luminaire weighing **up to 50 lb (23 kg) and marked with maximum allowable weight**.
    e. Paddle Fan Outlet Boxes and Covers: Nonadjustable, designed for attachment of paddle fan weighing up to 70 lb (32 kg).

D. UL QCIT - Metallic Conduit Bodies:

1. Description: Means for providing access to interior of conduit or tubing system through one or more removable covers at junction or terminal point. In the United States, conduit bodies are listed in accordance with outlet box requirements.

E. UL QCIT - Metallic Device Boxes:

1. Description: Box with provisions for mounting wiring device directly to box.
2. Options:

    a. Material: **Cast metal**.
    b. Sheet Metal Depth: minimum **2 inch (50 mm**.
    c. Cast-Metal Depth: minimum **2.4 inch (60.3 mm)**.

F. UL QCIT - Metallic Extension Rings:

1. Description: Ring intended to extend sides of outlet box or device box to increase box depth, volume, or both.

G. UL QCIT - Metallic Floor Boxes and Floor Box Covers:

1. Description: Box mounted in floor with floor box cover and other components to complete floor box enclosure.

2.2 NONMETALLIC OUTLET BOXES, DEVICE BOXES, RINGS, AND COVERS

A. Performance Criteria:

1. Regulatory Requirements: Listed and labeled in accordance with NFPA 70 and marked for intended location and use.
2. Listing Criteria: UL CCN QCMZ; including UL 514C.

B. Source Quality Control:

1. Product Data: Prepare and submit catalog cuts, brochures, and performance data illustrating size, physical appearance, and other characteristics of product.
2. Sustainable Design Submittals: Prepare and submit the following documentation for adhesive solvents:

3. Manufacturer's Published Instructions: Prepare and submit installation, testing, and operating instructions for product.

C. UL QCMZ - Nonmetallic Outlet Boxes and Covers:

1. Description: Box having pryout openings, knockouts, threaded entries, or hubs in either the sides or the back, or both, for entrance of conduit, conduit or cable fittings, or cables, with provisions for mounting outlet box cover, but without provisions for mounting wiring device directly to box.

D. UL QCMZ - Nonmetallic Conduit Bodies:

1. Description: Means for providing access to interior of conduit or tubing system through one or more removable covers at junction or terminal point. In the United States, conduit bodies are listed in accordance with outlet box requirements.

E. UL QCMZ - Nonmetallic Device Boxes:

1. Description: Box with provisions for mounting wiring device directly to box.

F. UL QCMZ - Nonmetallic Extension Rings:

1. Description: Ring intended to extend sides of outlet box or device box to increase box depth, volume, or both.

G. UL QCMZ - Nonmetallic Floor Boxes and Floor Box Covers:

1. Description: Box mounted in floor with floor box cover and other components to complete floor box enclosure.

H. UL QCMZ - Nonmetallic Concrete Boxes and Covers:

1. Description: Box intended for use in poured concrete.

2.3 JUNCTION BOXES AND PULL BOXES

A. Performance Criteria:

1. Regulatory Requirements: Listed and labeled in accordance with NFPA 70 and marked for intended location and use.
2. Listing Criteria: UL CCN BGUZ; including UL 50 and UL 50E.

B. Source Quality Control:

1. Product Data: Prepare and submit catalog cuts, brochures, and performance data illustrating size, physical appearance, and other characteristics of product.

C. UL BGUZ - Indoor Sheet Metal Junction and Pull Boxes:

1. Description: Box with a blank cover that serves the purpose of joining different runs of raceway or cable.
2. Options:

a. Degree of Protection: **Type 1.**

D. UL BGUZ - Indoor Cast-Metal Junction and Pull Boxes:

1. Description: Box with a blank cover that serves the purpose of joining different runs of raceway or cable.
2. Options:

a. Degree of Protection: **Type 1**.

E. UL BGUZ - Outdoor Sheet Metal Junction and Pull Boxes:

1. Description: Box with a blank cover that serves the purpose of joining different runs of raceway or cable.
2. Options:

a. Degree of Protection: **Type 3R**.

F. UL BGUZ - Outdoor Cast-Metal Junction and Pull Boxes:

1. Description: Box with a blank cover that serves the purpose of joining different runs of raceway or cable.
2. Options:

a. Degree of Protection: **Type 3R.**

2.4 COVER PLATES FOR DEVICES BOXES

A. Performance Criteria:

1. Regulatory Requirements: Listed and labeled in accordance with NFPA 70 and marked for intended location and use.
2. Wallplate-Securing Screws: Metal with head color to match wallplate finish.

B. Source Quality Control:

1. Product Data: Prepare and submit catalog cuts, brochures, and performance data illustrating size, physical appearance, and other characteristics of product.

2. Manufacturer's Published Instructions: Prepare and submit installation, testing, and operating instructions for product.

C. UL QCIT or QCMZ - Metallic Cover Plates for Device Boxes:
1. Options:

a. Damp and Wet Locations: Listed, labeled, and marked for location and use. Provide gaskets and accessories necessary for compliance with listing.
b. Wallplate Material: **0.032 inch (0.8 mm) thick, Type 302/304 non-magnetic stainless steel with brushed finish**.

D. UL QCIT or QCMZ - Nonmetallic Cover Plates for Device Boxes:
1. Options:

a. Damp and Wet Locations: Listed, labeled, and marked for location and use. Provide gaskets and accessories necessary for compliance with listing.
b. Wallplate Material: **0.060 inch (1.5 mm) thick, high-impact thermoplastic (nylon) with smooth finish and color matching wiring device**.
c. Color: **As indicated on architectural Drawings**.

PART 3 - EXECUTION

3.1 PREPARATION

A. Shop Drawings: Prepare and submit the following:

1. Shop Drawings for Floor Boxes: Show that floor boxes are located to avoid interferences and are structurally allowable. Indicate floor thickness **at location** where boxes are embedded in concrete floors and underfloor clearances where boxes are installed in raised floors.

3.2 SELECTION OF BOXES AND COVERS FOR ELECTRICAL SYSTEMS

A. Unless more stringent requirements are specified in Contract Documents or manufacturers' published instructions, comply with NFPA 70 for selection of boxes and enclosures. Consult Architect for resolution of conflicting requirements.

1. Outdoors:

    a. **Type 3R** unless otherwise indicated.
    b. Locations Exposed to Hosedown: **Type 6**.
    c. Locations Subject to Potential Flooding: Type 6P.
    d. Locations in-Ground or Exposed to Corrosive Agents: **Type 4X**.

2. Indoors:

    a. Type 1 unless otherwise indicated.
    b. Locations Exposed to Hosedown: **Type 6**.

3.3 INSTALLATION OF BOXES AND COVERS FOR ELECTRICAL SYSTEMS

A. Comply with manufacturer's published instructions.

B. Reference Standards for Installation: Unless more stringent installation requirements are specified in Contract Documents or manufacturers' published instructions, comply with the following:

1. Outlet, Device, Pull, and Junction Boxes: Article 314 of NFPA 70.
2. Consult Architect for resolution of conflicting requirements.

C. Special Installation Techniques:

1. Provide boxes in wiring and raceway systems wherever required for pulling of wires, making connections, and mounting of devices or fixtures.
2. Mount boxes at heights indicated on Drawings. If mounting heights of boxes are not individually indicated, give priority to ADA requirements. Install boxes with height measured to **center** of box unless otherwise indicated.
3. Recessed Boxes in Masonry Walls: Saw-cut opening for box in center of cell of masonry block, and install box flush with surface of wall. Prepare block surfaces to provide a flat surface for a raintight connection between box and cover plate or supported equipment and box, whether installed indoors or outdoors.
4. Horizontally separate boxes mounted on opposite sides of walls so they are not in the same vertical channel.
5. Locate boxes so that cover or plate will not span different building finishes.
6. Support boxes in recessed ceilings independent of ceiling tiles and ceiling grid.
7. Support boxes of three gangs or more from more than one side by spanning two framing members or mounting on brackets specifically designed for purpose.
8. Fasten junction and pull boxes to, or support from, building structure. Do not support boxes by conduits.
9. Set metal floor boxes level and flush with finished floor surface.

10. Set nonmetallic floor boxes level. Trim after installation to fit flush with finished floor surface.
11. Do not install aluminum boxes, enclosures, or fittings in contact with concrete or earth.
12. Do not rely on locknuts to penetrate nonconductive coatings on enclosures. Remove coatings in the locknut area prior to assembling conduit to enclosure to ensure a continuous ground path.
13. Boxes and Enclosures in Areas or Walls with Acoustical Requirements:

    a. Seal openings and knockouts in back and sides of boxes and enclosures with acoustically rated putty.
    b. Provide gaskets for wallplates and covers.

14. Identification: Provide labels for boxes and associated electrical equipment.

    a. Identify field-installed conductors, interconnecting wiring, and components.
    b. Provide warning signs.
    c. Label each box with engraved metal or laminated-plastic nameplate.

3.4 CLEANING

A. Remove construction dust and debris from boxes before installing wallplates, covers, and hoods.

3.5 PROTECTION

A. After installation, protect boxes from construction activities. Remove and replace items that are contaminated, defaced, damaged, or otherwise caused to be unfit for use prior to acceptance by Owner.

END OF SECTION

SECTION 260573.13
SHORT-CIRCUIT STUDIES

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Computer-based, fault-current study to determine minimum interrupting capacity of circuit protective devices.

B. Related Requirements:

1. Section 260010 "Supplemental Requirements for Electrical" for additional abbreviations, definitions, submittals, qualifications, testing agencies, and other Project requirements applicable to Work specified in this Section.
2. Section 260011 "Facility Performance Requirements for Electrical" for seismic-load, wind-load, acoustical, and other field conditions applicable to Work specified in this Section.
3. Section 260573.16 "Coordination Studies" for overcurrent protective device coordination studies.
4. Section 260573.19 "Arc-Flash Hazard Analysis" for arc-flash studies.

1.2 DEFINITIONS

A. One-Line Diagram: A diagram that shows, by means of single lines and graphic symbols, the course of an electric circuit or system of circuits and the component devices or parts used therein.

B. Protective Device: A device that senses when an abnormal current flow exists and then removes the affected portion of the circuit from the system.

C. SCCR: Short-circuit current rating.

D. Service: The conductors and equipment for delivering electric energy from the serving utility to the wiring system of the premises served.

E. Single-Line Diagram: See "One-Line Diagram."

1.3 ACTION SUBMITTALS

1. For power system analysis software to be used for studies.

B. Short-Circuit Study Report:

1. Submit the following after approval of system protective devices submittals. Submittals **must** be in digital form.

    a. Short-circuit study input data, including completed computer program input data sheets.
    b. Submit study report for action prior to receiving final approval of distribution equipment submittals. If formal completion of studies will cause delay in equipment manufacturing, obtain approval from Architect for preliminary submittal of sufficient study data to ensure that selection of devices and associated characteristics is satisfactory.
    c. Revised one-line diagram, reflecting field investigation results and results of short-circuit study.

1.4 INFORMATIONAL SUBMITTALS

A. Product Certificates: For short-circuit study software, certifying compliance with IEEE 399.

1.5 QUALITY ASSURANCE

A. Study must be performed using commercially developed and distributed software designed specifically for power system analysis.

B. Software algorithms must comply with requirements of standards and guides specified in this Section.

C. Manual calculations are unacceptable.

PART 2 - PRODUCTS

2.1 POWER SYSTEM ANALYSIS SOFTWARE

A. Comply with IEEE 399 and IEEE 551.

B. Analytical features of power systems analysis software program must have capability to calculate "mandatory," "very desirable," and "desirable" features as listed in IEEE 399.

C. Computer software program must be capable of plotting and diagramming time-current-characteristic curves as part of its output.

D. Computer program must be designed to perform short-circuit studies or have function, component, or add-on module designed to perform short-circuit studies.

E. Computer program must be developed under supervision of licensed professional engineer who holds IEEE Computer Society's Certified Software Development Professional certification.

2.2 SHORT-CIRCUIT STUDY REPORT CONTENTS

A. Executive summary of study findings.

B. Study descriptions, purpose, basis, and scope. Include case descriptions, definition of terms, and guide for interpretation of results.

C. One-line diagram of modeled power system, showing the following:

1. Protective device designations and ampere ratings.
2. Conductor types, sizes, and lengths.
3. Transformer kVA and voltage ratings.
4. Motor and generator designations and kVA ratings.
5. Switchgear, switchboard, motor-control center, and panelboard designations and ratings.
6. Derating factors and environmental conditions.
7. Any revisions to electrical equipment required by study.

D. Comments and recommendations for system improvements or revisions in written document, separate from one-line diagram.

E. Protective Device Evaluation:

1. Evaluate equipment and protective devices and compare to available short-circuit currents. Verify that equipment withstand ratings exceed available short-circuit current at equipment installation locations.
2. Tabulations of circuit breaker, fuse, and other protective device ratings versus calculated short-circuit duties.
3. For 600 V overcurrent protective devices, ensure that interrupting ratings are equal to or higher than calculated 1/2-cycle symmetrical fault current.
4. For devices and equipment rated for asymmetrical fault current, apply multiplication factors listed in standards to 1/2-cycle symmetrical fault current.
5. Verify adequacy of phase conductors at maximum three-phase bolted fault currents; verify adequacy of equipment grounding conductors and grounding electrode conductors at maximum ground-fault currents. Ensure that short-circuit withstand ratings are equal to or higher than calculated 1/2-cycle symmetrical fault current.

F. Short-Circuit Study Input Data:

G. Short-Circuit Study Output Reports:

1. Low-Voltage Fault Report: Three-phase and unbalanced fault calculations, showing the following for each overcurrent device location:

a. Voltage.
b. Calculated fault-current magnitude and angle.
c. Fault-point X/R ratio.
d. Equivalent impedance.

2. Momentary Duty Report: Three-phase and unbalanced fault calculations, showing the following for each overcurrent device location:

a. Voltage.
b. Calculated symmetrical fault-current magnitude and angle.
c. Fault-point X/R ratio.
d. Calculated asymmetrical fault currents:

1) Based on fault-point X/R ratio.
2) Based on calculated symmetrical value multiplied by 1.6.
3) Based on calculated symmetrical value multiplied by 2.7.

3. Interrupting Duty Report: Three-phase and unbalanced fault calculations, showing the following for each overcurrent device location:

a. Voltage.
b. Calculated symmetrical fault-current magnitude and angle.
c. Fault-point X/R ratio.
d. No AC Decrement (NACD) ratio.
e. Equivalent impedance.
f. Multiplying factors for 2-, 3-, 5-, and 8-cycle circuit breakers rated on symmetrical basis.
g. Multiplying factors for 2-, 3-, 5-, and 8-cycle circuit breakers rated on total basis.

PART 3 - EXECUTION

3.1 POWER SYSTEM DATA

A. Obtain data necessary for conduct of study.

1. Verify completeness of data supplied on one-line diagram. Call discrepancies to Architect's attention.
2. For equipment included as Work of this Project, use characteristics submitted under provisions of action submittals and information submittals for this Project.

B. Gather and tabulate required input data to support short-circuit study. Comply with requirements in Section 017839 "Project Record Documents" for recording circuit protective device characteristics. Record data on Record Document copy of one-line diagram. Comply with recommendations in IEEE 551 as to amount of detail that is required to be acquired in field. Field data gathering must be by, or under supervision of, qualified electrical professional engineer. Data include, but are not limited to, the following:

1. Product Data for Project's overcurrent protective devices involved in overcurrent protective device coordination studies. Use equipment designation tags that are consistent with electrical distribution system diagrams, overcurrent protective device submittals, input and output data, and recommended device settings.
2. Obtain electrical power utility impedance at service.
3. Power sources and ties.
4. For transformers, include kVA, primary and secondary voltages, connection type, impedance, X/R ratio, taps measured in percent, and phase shift.
5. For reactors, provide manufacturer and model designation, voltage rating, and impedance.

6. For circuit breakers and fuses, provide manufacturer and model designation. List type of breaker, type of trip, SCCR, current rating, and breaker settings.
7. Generator short-circuit current contribution data, including short-circuit reactance, rated kVA, rated voltage, and X/R ratio.
8. Busway manufacturer and model designation, current rating, impedance, lengths, and conductor material.
9. Motor horsepower and NEMA MG 1 code letter designation.
10. Conductor sizes, lengths, number, conductor material and conduit material (magnetic or nonmagnetic).
11. Derating factors.

3.2 SHORT-CIRCUIT STUDY

A. Perform study following general study procedures contained in IEEE 399.

B. Calculate short-circuit currents according to IEEE 551.

C. Base study on device characteristics supplied by device manufacturer.

D. Extent of electrical power system to be studied is indicated on Drawings.

E. Begin short-circuit current analysis at service, extending down to system overcurrent protective devices as follows:

1. To normal system low-voltage load buses where fault current is 5 kA or less.

F. Study electrical distribution system from normal and alternate power sources throughout electrical distribution system for Project. Study cases of system-switching configurations and alternate operations that could result in maximum fault conditions.

G. Include ac fault-current decay from induction motors, synchronous motors, and asynchronous generators and apply to low- and medium-voltage, three-phase ac systems. Also account for fault-current dc decrement to address asymmetrical requirements of interrupting equipment.

H. Calculate short-circuit momentary and interrupting duties for three-phase bolted fault and single line-to-ground fault at each equipment indicated on one-line diagram.

1. For grounded systems, provide bolted line-to-ground fault-current study for areas as defined for three-phase bolted fault short-circuit study.

I. Include in report identification of protective device applied outside its capacity.

END OF SECTION

SECTION 260573.16
COORDINATION STUDIES

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Computer-based, overcurrent protective device coordination studies to determine overcurrent protective devices and to determine overcurrent protective device settings for selective tripping.

    a. Study results must be used to determine coordination of series-rated devices.

B. Related Requirements:

1. Section 260010 "Supplemental Requirements for Electrical" for additional abbreviations, definitions, submittals, qualifications, testing agencies, and other Project requirements applicable to Work specified in this Section.
2. Section 260011 "Facility Performance Requirements for Electrical" for seismic-load, wind-load, acoustical, and other field conditions applicable to Work specified in this Section.
3. Section 260573.13 "Short-Circuit Studies" for fault-current studies.
4. Section 260573.19 "Arc-Flash Hazard Analysis" for arc-flash studies.

1.2 DEFINITIONS

A. One-Line Diagram: A diagram that shows, by means of single lines and graphic symbols, the course of electric circuit or system of circuits and the component devices or parts used therein.

B. Protective Device: A device that senses when abnormal current flow exists and then removes the affected portion of the circuit from the system.

C. SCCR: Short-circuit current rating.

D. Service: The conductors and equipment for delivering electric energy from the serving utility to the wiring system of the premises served.

E. Single-Line Diagram: See "One-Line Diagram."

1.3 ACTION SUBMITTALS

A. Product Data:

1. For power system analysis software to be used for studies.

B. Coordination Study Report:

1. Submit the following after approval of system protective devices submittals. Submittals **must** be in digital form.

a. Coordination-study input data, including completed computer program input data sheets.
b. Study and equipment evaluation reports.
c. Submit study report for action prior to receiving final approval of distribution equipment submittals. If formal completion of studies will cause delay in equipment manufacturing, obtain approval from Architect for preliminary submittal of sufficient study data to ensure that selection of devices and associated characteristics is satisfactory.
d. Revised one-line diagram, reflecting field investigation results and results of coordination study.

1.4 INFORMATIONAL SUBMITTALS

A. Product Certificates: For overcurrent protective device coordination study software, certifying compliance with IEEE 399.

1.5 QUALITY ASSURANCE

A. Studies must be performed using commercially developed and distributed software designed specifically for power system analysis.

B. Software algorithms must comply with requirements of standards and guides specified in this Section.

C. Manual calculations are unacceptable.

PART 2 - PRODUCTS

2.1 POWER SYSTEM ANALYSIS SOFTWARE

A. Comply with IEEE 242 and IEEE 399.

B. Analytical features of device coordination study computer software program must have capability to calculate "mandatory," "very desirable," and "desirable" features as listed in IEEE 399.

C. Computer software program must be capable of plotting and diagramming time-current-characteristic curves as part of its output. Computer software program must report device settings and ratings of overcurrent protective devices and must demonstrate selective coordination by computer-generated, time-current coordination plots.

1. Optional Features:

a. Arcing faults.
b. Simultaneous faults.
c. Explicit negative sequence.
d. Mutual coupling in zero sequence.

D. Computer program must be designed to perform coordination studies or have function, component, or add-on module designed to perform coordination studies.

E. Computer program must be developed under supervision of licensed professional engineer who holds IEEE Computer Society's Certified Software Development Professional certification.

2.2 COORDINATION STUDY REPORT CONTENTS

A. Executive summary of study findings.

B. Study descriptions, purpose, basis, and scope. Include case descriptions, definition of terms, and guide for interpretation of results.

C. One-line diagram of modeled power system, showing the following:

1. Protective device designations and ampere ratings.
2. Conductor types, sizes, and lengths.
3. Transformer kVA and voltage ratings.
4. Motor and generator designations and kVA ratings.
5. Switchgear, switchboard, motor-control center, and panelboard designations.
6. Revisions to electrical equipment required by study.
7. Study Input Data: As described in "Power System Data" Article.

a. Short-Circuit Study Output: As specified in "Short-Circuit Study Output Reports" Paragraph in "Short-Circuit Study Report Contents" Article in Section 260573.13 "Short-Circuit Studies."

D. Protective Device Coordination Study:

1. Report recommended settings of protective devices, ready to be applied in field. Use manufacturer's data sheets for recording recommended setting of overcurrent protective devices when available.

a. Phase and Ground Relays:

1) Device tag.
2) Relay current transformer ratio and tap, time dial, and instantaneous pickup value.
3) Recommendations on improved relaying systems, if applicable.

b. Circuit Breakers:

1) Adjustable pickups and time delays (long time, short time, and ground).
2) Adjustable time-current characteristic.
3) Adjustable instantaneous pickup.

4) Recommendations on improved trip systems, if applicable.

c. Fuses: Show current rating, voltage, and class.

E. Time-Current Coordination Curves: Determine settings of overcurrent protective devices to achieve selective coordination. Graphically illustrate that adequate time separation exists between devices installed in series, including power utility company's upstream devices. Prepare separate sets of curves for switching schemes and for emergency periods where power source is local generation. Show the following information:

1. Device tag and title, one-line diagram with legend identifying portion of system covered.
2. Terminate device characteristic curves at point reflecting maximum symmetrical or asymmetrical fault current to which device is exposed.
3. Identify device associated with each curve by manufacturer type, function, and, if applicable, tap, time delay, and instantaneous settings recommended.
4. Plot the following listed characteristic curves, as applicable:

   a. Power utility's overcurrent protective device.
   b. Medium-voltage equipment overcurrent relays.
   c. Medium- and low-voltage fuses including manufacturer's minimum melt, total clearing, tolerance, and damage bands.
   d. Low-voltage equipment circuit-breaker trip devices, including manufacturer's tolerance bands.
   e. Transformer full-load current, magnetizing inrush current, and ANSI through-fault protection curves.
   f. Cables and conductors damage curves.
   g. Ground-fault protective devices.
   h. Motor-starting characteristics and motor damage points.
   i. Generator short-circuit decrement curve and generator damage point.
   j. Largest feeder circuit breaker in each motor-control center and panelboard.

5. Maintain selectivity for tripping currents caused by overloads.
6. Maintain maximum achievable selectivity for tripping currents caused by overloads on series-rated devices.
7. Provide adequate time margins between device characteristics such that selective operation is achieved.
8. Comments and recommendations for system improvements.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine Project overcurrent protective device submittals for compliance with electrical distribution system coordination requirements and other conditions affecting performance of the Work. Devices to be coordinated are indicated on Drawings.

1. Proceed with coordination study only after relevant equipment submittals have been assembled. Overcurrent protective devices that have not been submitted and approved prior to coordination study may not be used in study.

3.2 POWER SYSTEM DATA

A. Obtain data necessary for conduct of overcurrent protective device study.

1. Verify completeness of data supplied in one-line diagram on Drawings. Call discrepancies to Architect's attention.
2. For equipment included as Work of this Project, use characteristics submitted under provisions of action submittals and information submittals for this Project.
3. For [**equipment that**] [**relocated equipment and that which**] is existing to remain, obtain required electrical distribution system data by field investigation and surveys, conducted by qualified technicians and engineers. Qualifications of technicians and engineers must be in accordance with NFPA 70E.

B. Gather and tabulate required input data to support coordination study. List below is guide. Comply with recommendations in IEEE 551 for amount of detail required to be acquired in field. Field data gathering must be by, or under supervision of, qualified electrical professional engineer. Data include, but are not limited to, the following:

1. Product Data for overcurrent protective devices specified in other Sections and involved in overcurrent protective device coordination studies. Use equipment designation tags that are consistent with electrical distribution system diagrams, overcurrent protective device submittals, input and output data, and recommended device settings.
2. Electrical power utility impedance at service.
3. Power sources and ties.
4. Short-circuit current at each system bus (three phase and line to ground).
5. Full-load current of loads.
6. Voltage level at each bus.
7. For transformers, include kVA, primary and secondary voltages, connection type, impedance, X/R ratio, taps measured in percent, and phase shift.
8. For reactors, provide manufacturer and model designation, voltage rating, and impedance.
9. For circuit breakers and fuses, provide manufacturer and model designation. List type of breaker, type of trip and available range of settings, SCCR, current rating, and breaker settings.
10. Generator short-circuit current contribution data, including short-circuit reactance, rated kVA, rated voltage, and X/R ratio.
11. For relays, provide manufacturer and model designation, current transformer ratios, potential transformer ratios, and relay settings.
12. Maximum demands from service meters.
13. Busway manufacturer and model designation, current rating, impedance, lengths, size, and conductor material.
14. Motor horsepower and NEMA MG 1 code letter designation.
15. Low-voltage cable sizes, lengths, number, conductor material, and conduit material (magnetic or nonmagnetic).
16. Medium-voltage cable sizes, lengths, conductor material, cable construction, metallic shield performance parameters, and conduit material (magnetic or nonmagnetic).
17. Data sheets to supplement electrical distribution system one-line diagram, cross-referenced with tag numbers on diagram, showing the following:

    a. Special load considerations, including starting inrush currents and frequent starting and stopping.

b. Transformer characteristics, including primary protective device, magnetic inrush current, and overload capability.
c. Motor full-load current, locked rotor current, service factor, starting time, type of start, and thermal-damage curve.
d. Generator thermal-damage curve.
e. Ratings, types, and settings of utility company's overcurrent protective devices.
f. Special overcurrent protective device settings or types stipulated by utility company.
g. Time-current-characteristic curves of devices indicated to be coordinated.
h. Manufacturer, frame size, interrupting rating in amperes root mean square (rms) symmetrical, ampere or current sensor rating, long-time adjustment range, short-time adjustment range, and instantaneous adjustment range for circuit breakers.
i. Manufacturer and type, ampere-tap adjustment range, time-delay adjustment range, instantaneous attachment adjustment range, and current transformer ratio for overcurrent relays.
j. Switchgear, switchboards, motor-control centers, and panelboards ampacity, and SCCR in amperes rms symmetrical.
k. Identify series-rated interrupting devices for condition where available fault current is greater than interrupting rating of downstream equipment. Obtain device data details to allow verification that series application of these devices complies with NFPA 70 and UL 489 requirements.

3.3 COORDINATION STUDY

A. Comply with IEEE 242 for calculating short-circuit currents and determining coordination time intervals.

B. Comply with IEEE 399 for general study procedures.

C. Base study on device characteristics supplied by device manufacturer.

D. Extent of electrical power system to be studied is indicated on Drawings.

E. Begin analysis at service, extending down to system overcurrent protective devices as follows:

1. To normal system low-voltage load buses where fault current is 5 kA or less.

F. Study electrical distribution system from normal and alternate power sources throughout electrical distribution system for Project. Study cases of system-switching configurations and alternate operations that could result in maximum fault conditions.

G. Transformer Primary Overcurrent Protective Devices:

1. Device must not operate in response to the following:

a. Inrush current when first energized.
b. Self-cooled, full-load current or forced-air-cooled, full-load current, whichever is specified for that transformer.
c. Permissible transformer overloads according to IEEE C57.96 if required by unusual loading or emergency conditions.

2. Device settings must protect transformers according to IEEE C57.12.00, for fault currents.

H. Motor Protection:

1. Select protection for low-voltage motors according to IEEE 242 and NFPA 70.
2. Select protection for motors served at voltages more than 600 V according to IEEE 620.

I. Conductor Protection: Protect cables against damage from fault currents according to ICEA P-32-382, ICEA P-45-482, and protection recommendations in IEEE 242. Demonstrate that equipment withstands maximum short-circuit current for time equivalent to tripping time of primary relay protection or total clearing time of fuse. To determine temperatures that damage insulation, use curves from cable manufacturers or from listed standards indicating conductor size and short-circuit current.

J. Generator Protection: Select protection according to manufacturer's instructions and to IEEE 242.

K. Include ac fault-current decay from induction motors, synchronous motors, and asynchronous generators and apply to low- and medium-voltage, three-phase ac systems. Also account for fault-current dc decrement, to address asymmetrical requirements of interrupting equipment.

L. Calculate short-circuit momentary and interrupting duties for three-phase bolted fault and single line-to-ground fault at each equipment indicated on one-line diagram.

1. For grounded systems, provide bolted line-to-ground fault-current study for areas as defined for three-phase bolted fault short-circuit study.

M. Protective Device Evaluation:

1. Evaluate equipment and protective devices and compare to short-circuit ratings.
2. Adequacy of switchgear, motor-control centers, and panelboard bus bars to withstand short-circuit stresses.
3. Application of series-rated devices must be recertified, complying with requirements in NFPA 70.
4. Include in report identification of protective device applied outside its capacity.

3.4 FIELD ADJUSTING

A. Adjust relay and protective device settings according to recommended settings provided by coordination study. Field adjustments must be completed by engineering service division of equipment manufacturer under "Startup and Acceptance Testing" contract portion.

B. Make minor modifications to equipment as required to accomplish compliance with **short-circuit and** protective device coordination studies.

END OF SECTION

SECTION 260800
COMMISSIONING OF ELECTRICAL SYSTEMS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Electrical equipment connected to Normal electrical systems, including the following:
   a. **Distribution** panelboards.
   b. Lightning protection systems.
   c. Grounding systems.

2. Electrical equipment connected to Essential electrical systems that provide an alternative source of power in the absence of power from the Normal electrical system, including the following:
   a. Generators.

3. Controls and instrumentation, including the following:
   a. Fire-alarm systems.

B. Related Requirements:

1. Section 019113 "General Commissioning Requirements" for general Cx process requirements and CxA responsibilities.
2. Section 260010 "Supplemental Requirements for Electrical" for additional abbreviations, definitions, submittals, qualifications, testing agencies, and other Project requirements applicable to Work specified in this Section.
3. Section 260011 "Facility Performance Requirements for Electrical" for seismic-load, wind-load, acoustical, and other field conditions applicable to Work specified in this Section.

1.2 DEFINITIONS

A. BoD: Basis-of-Design Document, as defined in Section 019113 "General Commissioning Requirements."

B. Cx: Commissioning, as defined in Section 019113 "General Commissioning Requirements."

C. CxA: Commissioning Authority, as defined in Section 019113 "General Commissioning Requirements."

D. OPR: Owner's Project Requirements, as defined in Section 019113 "General Commissioning Requirements."

E. "Systems," "Assemblies," "Subsystems," "Equipment," and "Components": Where these terms are used together or separately, they mean "as-built" systems, assemblies, subsystems, equipment, and components.

1.3 INFORMATIONAL SUBMITTALS

A. Construction Checklists by CxA: Draft construction checklists will be created by CxA for Contractor review.

B. Construction Checklists by Contractor: Include the following and comply with requirements in Section 019113 "General Commissioning Requirements" for construction checklists:

1. Instrumentation and control for electrical systems.
2. Instrumentation and control for lighting control systems.
3. Low-voltage power cables.
4. Control voltage power cables.
5. Electrical feeders and branch circuits.
6. Molded-case circuit breakers.
7. Low-voltage power circuit breakers.
8. Grounding systems.
9. Receptacles and devices.
10. Engine generators.
11. Automatic transfer switches.
12. Variable-frequency drives.

1.4 QUALITY ASSURANCE

A. Testing Equipment and Instrumentation Quality and Calibration: For test equipment and instrumentation required to perform electrical Cx work, perform the following:

1. Submit test equipment and instrumentation list. For each equipment or instrument, identify the following:

    a. Equipment/instrument identification number.
    b. Planned Cx application or use.
    c. Manufacturer, make, model, and serial number.
    d. Calibration history, including certificates from agencies that calibrate the equipment and instrumentation.

2. Test equipment and instrumentation must meet the following criteria:

    a. Capable of testing and measuring performance within the specified acceptance criteria.
    b. Be calibrated at manufacturer's recommended intervals with current calibration tags permanently affixed to the instrument being used.
    c. Be maintained in good repair and operating condition throughout duration of use on Project.
    d. Be recalibrated/repaired if dropped or damaged in any way since last calibrated.

B. Proprietary Test Instrumentation and Tools:

1. Equipment Manufacturer's Proprietary Instrumentation and Tools: For installed equipment included in the Cx process, test instrumentation and tools manufactured or prescribed by equipment manufacturer to service, calibrate, adjust, repair, or otherwise work on its equipment or required as a condition of equipment warranty, perform the following:

a. Submit proprietary instrumentation and tools list. For each instrument or tool, identify the following:

1) Instrument or tool identification number.
2) Equipment schedule designation of equipment for which the instrument or tool is required.
3) Manufacturer, make, model, and serial number.
4) Calibration history, including certificates from agencies that calibrate the instrument or tool, where appropriate.

b. Include a separate list of proprietary test instrumentation and tools in operation and maintenance manuals.

c. Electrical proprietary test instrumentation and tools become property of Owner at the time of Substantial Completion.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 CONSTRUCTION CHECKLISTS

A. Prepare detailed construction checklists for electrical systems, subsystems, equipment, and components. Complete and submit construction checklists.

3.2 GENERAL TESTING REQUIREMENTS

A. Certify that electrical systems, subsystems, and equipment have been installed, calibrated, and started and that they are operating according to the Contract Documents and approved Shop Drawings and submittals.

B. Certify that electrical instrumentation and control systems have been completed and calibrated, that they are operating according to the Contract Documents and approved Shop Drawings and submittals, and that pretest set points have been recorded.

C. Set systems, subsystems, and equipment into operating mode to be tested according to approved test procedures (for example, normal shutdown, normal auto position, normal manual position, unoccupied cycle, emergency power, and alarm conditions).

D. Measure capacities and effectiveness of systems, assemblies, subsystems, equipment, and components, including operational and control functions to verify compliance with acceptance criteria.

E. Test systems, assemblies, subsystems, equipment, and components operating modes, interlocks, control responses, and responses to abnormal or emergency conditions, and response according to acceptance criteria.

F. Construction Checklists: Prepare and submit detailed construction checklists for electrical systems, subsystems, equipment, and components.

1. Contributors to development of construction checklists must include, but are not limited to, the following:

    a. Electrical systems and equipment installers.
    b. Electrical instrumentation and controls installers.

G. Perform tests using design conditions, whenever possible.

1. Simulated conditions may, with approval of Architect, be imposed using an artificial load when it is impractical to test under design conditions. Before simulating conditions, calibrate testing instruments. Provide equipment to simulate loads. Set simulated conditions as directed by CxA, and document simulated conditions and methods of simulation. After tests, return configurations and settings to normal operating conditions.
2. Cx test procedures may direct that set points be altered when simulating conditions is impractical.
3. Cx test procedures may direct that sensor values be altered with a signal generator when design or simulating conditions and altering set points are impractical.

H. If tests cannot be completed because of a deficiency outside the scope of the electrical system, document the deficiency and report it to Owner. After deficiencies are resolved, reschedule tests.

I. If seasonal testing is specified, complete appropriate initial performance tests and documentation and schedule seasonal tests.

J. Coordinate schedule with, and perform Cx activities at the direction of the CxA.

K. Comply with Construction Checklist requirements, including material verification, installation checks, startup, and performance tests requirements specified in Sections specifying electrical systems and equipment.

L. Provide qualified testing and inspecting agency personnel in accordance with Section 260010 "Supplemental Requirements for Electrical," instrumentation, tools, and equipment to complete and document the following:

1. Performance tests.
2. Demonstration of a sample of performance tests.
3. Cx tests.
4. Cx test demonstrations.

3.3 Cx TESTS FOR ELECTRICAL SYSTEMS

A. Verification of Normal Electrical System Operation:

1. Prerequisites: Acceptance of results for construction checklists for Division 26 electrical components associated with Normal electrical system.
2. Equipment and Systems to Be Tested: Division 26 electrical equipment.
3. Test Purpose: Verify operation of Normal electrical system.
4. Test Conditions: Energize components of Normal electrical system, one at a time.

B. Verification of Essential Electrical System Operation:

1. Prerequisites:

    a. Acceptance of results for construction checklists for Division 26 electrical components associated with Essential electrical system.
    b. Completion of "Verification of Normal Electrical System Operation" tests.

2. Equipment and Systems to Be Tested: Division 26 electrical equipment.
3. Test Purpose: Verify operation of Essential electrical system.
4. Test Conditions:

    a. Energize components of Normal electrical system.
    b. Simulate a failure of Normal electrical system.

5. Acceptance Criteria: Transfer of power from Normal to Essential electrical system within OPR.

C. Verification of Control and Instrumentation:

1. Prerequisites: Acceptance of results for construction checklists.

    a. Section 260913 "Electrical Power Monitoring and Control."
    b. Section 260926 "Lighting Control Panelboards."
    c. Section 260936 "Modular Dimming Controls."
    d. Section 260943.16 "Addressable-Luminaire Lighting Controls."
    e. Section 260943.23 "Relay-Based Lighting Controls."
    f. Section 262713 "Electricity Metering."
    g. Section 263533 "Power Factor Correction Equipment."

D. Test Purpose: Verify operation of control and monitoring systems for Normal and Essential electrical systems.

E. Test Conditions:

1. Energize components of Normal electrical system.
2. Test operation of equipment.

F. Acceptance Criteria: Operation of equipment according to OPR.

END OF SECTION

SECTION 262416
PANELBOARDS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Power panelboards.
2. Disconnecting and overcurrent protective devices.

B. Related Requirements:

1. Section 260010 "Supplemental Requirements for Electrical" for additional abbreviations, definitions, submittals, qualifications, testing agencies, and other Project requirements applicable to Work specified in this Section.
2. Section 260011 "Facility Performance Requirements for Electrical" for seismic-load, wind-load, acoustical, and other field conditions applicable to Work specified in this Section.

1.2 DEFINITIONS

A. GFEP: Ground-fault equipment protection.

B. MCCB: Molded-case circuit breaker.

C. VPR: Voltage protection rating.

1.3 ACTION SUBMITTALS

A. Product Data:

1. Power panelboards.
2. Disconnecting and overcurrent protective devices.

B. Shop Drawings: For each panelboard and related equipment.

1. Include dimensioned plans, elevations, sections, and details.
2. Short-circuit current rating of panelboards and overcurrent protective devices.
3. Include evidence of listing, by qualified electrical testing laboratory recognized by authorities having jurisdiction, for series rating of installed devices.
4. Include evidence of listing, by qualified electrical testing laboratory recognized by authorities having jurisdiction, for SPD as installed in panelboard.
5. Detail features, characteristics, ratings, and factory settings of individual overcurrent protective devices and auxiliary components.
6. Include wiring diagrams for power, signal, and control wiring.

7. Key interlock scheme drawing and sequence of operations.

C. Field Quality-Control Submittals:

1. Field quality-control reports.

1.4 INFORMATIONAL SUBMITTALS

A. Panelboard Schedules: For installation in panelboards.[**Submit final versions after load balancing.**]

B. Manufacturers' Published Instructions: Record copy of official installation[**and testing**] instructions issued to Installer by manufacturer for the following:

1. Recommended procedures for installing panelboards.
2. Recommended torque settings for bolted connections on panelboards.
3. Recommended temperature range for energizing panelboards.

C. Sample warranties.

1.5 CLOSEOUT SUBMITTALS

A. Warranty documentation.

1.6 MAINTENANCE MATERIAL SUBMITTALS

A. Spare Parts: Furnish to Owner spare parts, for repairing panelboards, that are packaged with protective covering for storage on-site and identified with labels describing contents.[**Include the following:**

1. Keys: **Two** spares for each type of panelboard cabinet lock.

1.7 DELIVERY, STORAGE, AND HANDLING

A. Remove loose packing and flammable materials from inside panelboards; install temporary electric heating (250 W per panelboard) to prevent condensation.

B. Handle and prepare panelboards for installation in accordance with **NECA 407**.

1.8 WARRANTY

A. Special Installer Extended Warranty: Installer warrants that fabricated and installed panelboards perform in accordance with specified requirements and agrees to repair or replace components or products that fail to perform as specified within extended-warranty period.

1. Extended-Warranty Period: **Two** years from date of Substantial Completion; full coverage for labor, materials, and equipment.

PART 2 - PRODUCTS

2.1 PANELBOARDS AND LOAD CENTERS COMMON REQUIREMENTS

A. Fabricate and test panelboards in accordance with IEEE 344 to withstand seismic forces defined in Section 260548.16 "Seismic Controls for Electrical Systems."

B. Product Selection for Restricted Space: Drawings indicate maximum dimensions for panelboards including clearances between panelboards and adjacent surfaces and other items. Comply with indicated maximum dimensions.

C. Electrical Components, Devices, and Accessories: Listed and labeled in accordance with NFPA 70, by qualified electrical testing agency recognized by authorities having jurisdiction, and marked for intended location and application.

D. Comply with NEMA PB 1.

E. Comply with NFPA 70.

F. Enclosures: **Flush and Surface**-mounted, dead-front cabinets.

1. Rated for environmental conditions at installed location.

    a. Indoor Dry and Clean Locations: UL 50E, **Type 1**.
    b. Outdoor Locations: UL 50E, **Type 3R**.

2. Height: 7 ft (2.13 m) maximum.
3. Front: Secured to box with concealed trim clamps. For surface-mounted fronts, match box dimensions; for flush-mounted fronts, overlap box. Trims must cover live parts and may have no exposed hardware.
4. Hinged Front Cover: Entire front trim hinged to box and with standard door within hinged trim cover. Trims must cover live parts and may have no exposed hardware.
5. Finishes:

    a. Panels and Trim: **Steel,** factory finished immediately after cleaning and pretreating with manufacturer's standard two-coat, baked-on finish consisting of prime coat and thermosetting topcoat.
    b. Back Boxes: **Galvanized steel**.

G. Incoming Mains:

1. Location: **Top**.
2. Main Breaker: Main lug interiors up to 400 A must be field convertible to main breaker.

H. Phase, Neutral, and Ground Buses:

1. Material: **Hard-drawn copper, 98 percent conductivity**.

    a. Plating must run entire length of bus.
    b. Bus must be fully rated for entire length.

2. Interiors must be factory assembled into unit. Replacing switching and protective devices may not disturb adjacent units or require removing main bus connectors.
3. Equipment Ground Bus: Adequate for feeder and branch-circuit equipment grounding conductors; bonded to box.
4. Full-Sized Neutral: Equipped with full-capacity bonding strap for service entrance applications. Mount electrically isolated from enclosure.
5. Do not mount neutral bus in gutter.

I. Conductor Connectors: Suitable for use with conductor material and sizes.

1. Material: **Hard-drawn copper, 98 percent conductivity**.
2. Terminations must allow use of 75 deg C rated conductors without derating.
3. Size: Lugs suitable for indicated conductor sizes, with additional gutter space, if required, for larger conductors.
4. Main and Neutral Lugs: **Mechanical** type, with lug on neutral bar for each pole in panelboard.
5. Ground Lugs and Bus-Configured Terminators: **Mechanical** type, with lug on bar for each pole in panelboard.

J. Quality-Control Label: Panelboards or load centers must be labeled, by qualified electrical testing laboratory recognized by authorities having jurisdiction, for use as service equipment with one or more main service disconnecting and overcurrent protective devices. Panelboards or load centers must have meter enclosures, wiring, connections, and other provisions for utility metering. Coordinate with utility company for exact requirements.

K. Future Devices: Panelboards or load centers must have mounting brackets, bus connections, filler plates, and necessary appurtenances required for future installation of devices.

1. Percentage of Future Space Capacity: **5** percent.

L. Panelboard Short-Circuit Current Rating:

1. Rated for series-connected system with integral or remote upstream overcurrent protective devices and labeled by qualified electrical testing laboratory recognized by authorities having jurisdiction. Include label or manual with size and type of allowable upstream and branch devices listed and labeled, by qualified electrical testing laboratory recognized by authorities having jurisdiction, for series-connected short-circuit rating.

    a. Panelboards rated 240 V or less must have short-circuit ratings as shown on Drawings, but not less than 10 000 A(rms) symmetrical.
    b. Panelboards rated above 240 V and less than 600 V must have short-circuit ratings as shown on Drawings, but not less than 14 000 A(rms) symmetrical.

2. Fully rated to interrupt symmetrical short-circuit current available at terminals. Assembly listed, by qualified electrical testing laboratory recognized by authorities having jurisdiction, for 100 percent interrupting capacity.

    a. Panelboards and overcurrent protective devices rated 240 V or less must have short-circuit ratings as shown on Drawings, but not less than 10 000 A(rms) symmetrical.

b. Panelboards and overcurrent protective devices rated above 240 V and less than 600 V must have short-circuit ratings as shown on Drawings, but not less than 14 000 A(rms) symmetrical.

M. Surge Suppression: Factory installed as integral part of indicated panelboards, complying with UL 1449 SPD **Type 1**.

2.2 POWER PANELBOARDS

A. Listing Criteria: NEMA PB 1, distribution type.

B. Doors: Secured with vault-type latch with tumbler lock; keyed alike.

C. Mains: **Lugs only**.

D. Branch Overcurrent Protective Devices for Circuit-Breaker Frame Sizes 125 A and Smaller: **Bolt-on circuit breakers**.

E. Branch Overcurrent Protective Devices for Circuit-Breaker Frame Sizes Larger Than 125 A: **Bolt-on circuit breakers**.

F. Branch Overcurrent Protective Devices: Fused switches.

2.3 DISCONNECTING AND OVERCURRENT PROTECTIVE DEVICES

A. MCCB: Comply with UL 489, with [**series-connected rating**] [**interrupting capacity**] to meet available fault currents.

1. Thermal-Magnetic Circuit Breakers:

    a. Inverse time-current element for low-level overloads.
    b. Instantaneous magnetic trip element for short circuits.
    c. Adjustable magnetic trip setting for circuit-breaker frame sizes 250 A and larger.

2. Adjustable Instantaneous-Trip Circuit Breakers: Magnetic trip element with front-mounted, field-adjustable trip setting.
3. Electronic Trip Circuit Breakers:

    a. RMS sensing.
    b. Field-replaceable rating plug or electronic trip.
    c. Digital display of settings, trip targets, and indicated metering displays.
    d. Multi-button keypad to access programmable functions and monitored data.
    e. Ten-event, trip-history log. Each trip event must be recorded with type, phase, and magnitude of fault that caused trip.
    f. Integral test jack for connection to portable test set or laptop computer.
    g. Field-Adjustable Settings:

        1) Instantaneous trip.
        2) Long- and short-time pickup levels.

3) Long and short time adjustments.
4) Ground-fault pickup level, time delay, and I squared T response.

4. GFCI Circuit Breakers: Single- and double-pole configurations with Class A ground-fault protection (6 mA trip).

PART 3 - EXECUTION

3.1 EXAMINATION

A. Verify actual conditions with field measurements prior to ordering panelboards to verify that equipment fits in allocated space in, and comply with, minimum required clearances specified in NFPA 70.

B. Receive, inspect, handle, and store panelboards in accordance with **NECA 407.**

C. Examine panelboards before installation. Reject panelboards that are damaged, rusted, or have been subjected to water saturation.

D. Examine elements and surfaces to receive panelboards for compliance with installation tolerances and other conditions affecting performance of the Work.

E. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

A. Comply with manufacturer's published instructions.

B. Reference Standards:

1. Panelboards: Unless more stringent requirements are specified in Contract Documents or manufacturers' published instructions, comply with **NECA 407**.
2. Consult Architect for resolution of conflicting requirements.

C. Special Techniques:

1. Equipment Mounting:
   a. Mount surface-mounted panelboards to steel slotted supports [**5/8 inch (16 mm)**] [**1-1/4 inch (32 mm)**] in depth. Orient steel slotted supports vertically.
2. Mount top of trim [**7.5 ft (2.3 m)**] above finished floor unless otherwise indicated.
3. Mount panelboard cabinet plumb and rigid without distortion of box.
4. Mount recessed panelboards with fronts uniformly flush with wall finish and mating with back box.
5. Install overcurrent protective devices and controllers not already factory installed.

   a. Set field-adjustable, circuit-breaker trip ranges.
   b. Tighten bolted connections and circuit breaker connections using calibrated torque wrench or torque screwdriver in accordance with manufacturer's published instructions.

6. Make grounding connections and bond neutral for services and separately derived systems to ground. Make connections to grounding electrodes, separate grounds for isolated ground bars, and connections to separate ground bars.
7. Install filler plates in unused spaces.
8. Stub four 1 inch (25 mm) empty conduits from panelboard into accessible ceiling space or space designated to be ceiling space in future. Stub four 1 inch (25 mm) empty conduits into raised floor space or below slab not on grade.
9. Arrange conductors in gutters into groups and bundle and wrap with wire ties **after completing load balancing**.
10. Mount spare fuse cabinet in accessible location.

D. Interfaces with Other Work:

1. Coordinate layout and installation of panelboards and components with other construction that penetrates walls or is supported by them, including electrical and other types of equipment, raceways, piping, encumbrances to workspace clearance requirements, and adjacent surfaces. Maintain required workspace clearances and required clearances for equipment access doors and panels.

3.3 IDENTIFICATION

A. Identify field-installed conductors, interconnecting wiring, and components; install warning signs complying with requirements in Section 260553 "Identification for Electrical Systems."

B. Panelboard Nameplates: Label each panelboard with nameplate complying with requirements for identification specified in Section 260553 "Identification for Electrical Systems."

C. Device Nameplates: Label each branch circuit device in power panelboards with nameplate complying with requirements for identification specified in Section 260553 "Identification for Electrical Systems."

D. Install warning signs complying with requirements in Section 260553 "Identification for Electrical Systems" identifying source of remote circuit.

E. Panelboard Label: Manufacturer's name and trademark, voltage, amperage, number of phases, and number of poles must be located on interior of panelboard door.

F. Breaker Labels: Faceplate must list current rating, UL and IEC certification standards, and AIC rating.

G. Circuit Directory:

1. Provide computer-generated circuit directory mounted inside panelboard door with transparent plastic protective cover.

a. Circuit directory must identify specific purpose with detail sufficient to distinguish it from other circuits.

2. Create directory to indicate installed circuit loads **after balancing panelboard loads**; incorporate Owner's final room designations. Obtain approval before installing. Handwritten directories are not acceptable. Install directory inside panelboard door.

3.4 FIELD QUALITY CONTROL

A. Acceptance Testing Preparation:

1. Test insulation resistance for each panelboard bus, component, connecting supply, feeder, and control circuit.
2. Test continuity of each circuit.

B. Tests and Inspections:

1. Perform each visual and mechanical inspection and electrical test for low-voltage air circuit breakers **and low-voltage surge arrestors** stated in NETA ATS, Paragraph 7.6 Circuit Breakers. **Perform** optional tests. Certify compliance with test parameters.
2. Correct malfunctioning units on-site, where possible, and retest to demonstrate compliance; otherwise, replace with new units and retest.
3. Perform the following infrared scan tests and inspections and prepare reports:

    a. Initial Infrared Scanning: After Substantial Completion, but not more than 60 days after Final Acceptance, perform infrared scan of each panelboard. Remove front panels so joints and connections are accessible to portable scanner.
    b. Follow-up Infrared Scanning: Perform additional follow-up infrared scan of each panelboard 11 months after date of Substantial Completion.
    c. Instruments and Equipment:

        1) Use infrared scanning device designed to measure temperature or to detect significant deviations from normal values. Provide calibration record for device.

C. Nonconforming Work:

1. Panelboards will be considered defective if they do not pass tests and inspections.
2. Remove and replace defective units and retest.

D. Collect, assemble, and submit test and inspection reports, including certified report that identifies panelboards included and that describes scanning results, with comparisons of two scans. Include notation of deficiencies detected, remedial action taken, and observations after remedial action.

3.5 ADJUSTING

A. Adjust moving parts and operable components to function smoothly, and lubricate as recommended by manufacturer.

B. Set field-adjustable circuit-breaker trip ranges **as specified in Section 260573.16 "Coordination Studies."**

C. Load Balancing: After Substantial Completion, but not more than 60 days after Final Acceptance, measure load balancing and make circuit changes. Prior to making circuit changes to achieve load balancing, inform Architect of effect on phase color coding.

1. Measure loads during period of normal facility operations.
2. Perform circuit changes to achieve load balancing outside normal facility operation schedule or at times directed by Architect. Avoid disrupting services such as fax machines and on-line data processing, computing, transmitting, and receiving equipment.
3. After changing circuits to achieve load balancing, recheck loads during normal facility operations. Record load readings before and after changing circuits to achieve load balancing.
4. Tolerance: Maximum difference between phase loads, within panelboard, may not exceed 20 percent.

3.6 PROTECTION

A. Temporary Heating: Prior to energizing panelboards, apply temporary heat to maintain temperature in accordance with manufacturer's published instructions.

END OF SECTION

SECTION 262923
VARIABLE-FREQUENCY MOTOR CONTROLLERS

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes separately enclosed, preassembled, combination VFCs, rated 600 V and less, for speed control of three-phase, squirrel-cage induction motors.

1.2 DEFINITIONS

A. CE: Conformite Europeene (European Compliance).

B. CPT: Control power transformer.

C. DDC: Direct digital control.

D. EMI: Electromagnetic interference.

E. LED: Light-emitting diode.

F. NC: Normally closed.

G. NO: Normally open.

H. OCPD: Overcurrent protective device.

I. PID: Control action, proportional plus integral plus derivative.

J. RFI: Radio-frequency interference.

K. VFC: Variable-frequency motor controller.
1.

1.3 INFORMATIONAL SUBMITTALS

A. Coordination Drawings: Floor plans, drawn to scale, showing dimensioned layout on which the following items are shown and coordinated with each other, using input from installers of the items involved:

1. Required working clearances and required area above and around VFCs.
2. Show VFC layout and relationships between electrical components and adjacent structural and mechanical elements.
3. Show support locations, type of support, and weight on each support.
4. Indicate field measurements.

B. Qualification Data: For testing agency.

C. Product Certificates: For each VFC from manufacturer.

D. Harmonic Analysis Report: Provide Project-specific calculations and manufacturer's statement of compliance with IEEE 519.

E. Source quality-control reports.

F. Field quality-control reports.

G. Sample Warranty: For special warranty.

1.4 CLOSEOUT SUBMITTALS

A. Operation and Maintenance Data: For VFCs to include in emergency, operation, and maintenance manuals.

1. In addition to items specified in Section 017823 "Operation and Maintenance Data," include the following:

a. Manufacturer's written instructions for testing and adjusting thermal-magnetic circuit breaker and motor-circuit protector trip settings.
b. Manufacturer's written instructions for setting field-adjustable overload relays.
c. Manufacturer's written instructions for testing, adjusting, and reprogramming microprocessor control modules.
d. Manufacturer's written instructions for setting field-adjustable timers, controls, and status and alarm points.
e. Load-Current and List of Settings of Adjustable Overload Relays: Compile after motors have been installed, and arrange to demonstrate that switch settings for motor-running overload protection suit actual motors to be protected.

1.5 QUALITY ASSURANCE

A. Testing Agency Qualifications: Accredited by NETA.

1. Testing Agency's Field Supervisor: Currently certified by NETA to supervise on-site testing.

1.6 DELIVERY, STORAGE, AND HANDLING

A. If stored in space that is not permanently enclosed and air conditioned, remove loose packing and flammable materials from inside controllers and **install temporary electric heating, with at least 250 W per controller**.

B. Product Selection for Restricted Space: Drawings indicate maximum dimensions for VFCs, including clearances between VFCs, and adjacent surfaces and other items.

1.7 WARRANTY

A. Special Warranty: Manufacturer agrees to repair or replace VFCs that fail in materials or workmanship within specified warranty period.

1. Warranty Period: **Five** years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 VARIABLE-FREQUENCY MOTOR CONTROLLERS

2.2 SYSTEM DESCRIPTION

A. General Requirements for VFCs:

1. VFCs and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.
2. Comply with NEMA ICS 7, NEMA ICS 61800-2, and **UL 508A**.

B. Application: **Constant torque.**

C. VFC Description: Variable-frequency motor controller, consisting of power converter that employs pulse-width-modulated inverter, factory built and tested in an enclosure, with integral disconnecting means and overcurrent and overload protection; listed and labeled by an NRTL as a complete unit; arranged to provide self-protection, protection, and variable-speed control of one or more three-phase induction motors by adjusting output voltage and frequency.

1. Units suitable for operation of NEMA MG 1, Design A and Design B motors, as defined by NEMA MG 1, Section IV, Part 30, "Application Considerations for Constant Speed Motors Used on a Sinusoidal Bus with Harmonic Content and General Purpose Motors Used with Adjustable-Voltage or Adjustable-Frequency Controls or Both."
2. *Units* suitable for operation of inverter-duty motors as defined by NEMA MG 1, Section IV, Part 31, "Definite-Purpose Inverter-Fed Polyphase Motors."
3. Listed and labeled for integrated short-circuit current (withstand) rating by an NRTL acceptable to authorities having jurisdiction.

D. Design and Rating: Match load type, such as fans, blowers, and pumps; and type of connection used between motor and load such as direct or through a power-transmission connection.

E. Output Rating: Three phase; 10 to **60 Hz, with voltage proportional to frequency throughout voltage range**; maximum voltage equals input voltage.

F. Unit Operating Requirements:

1. Input AC Voltage Tolerance: Plus 10 and minus **10** percent of VFC input voltage rating.
2. Input AC Voltage Unbalance: Not exceeding **3** percent.
3. Input Frequency Tolerance: Plus or minus 3 percent of VFC frequency rating.
4. Minimum Efficiency: **97** percent at 60 Hz, full load.

5. Minimum Displacement Primary-Side Power Factor: **98** percent under any load or speed condition.
6. Ambient Temperature Rating: Not less than 32 deg F (0 deg C) and not exceeding 104 deg F (40 deg C).
7. Humidity Rating: Less than 95 percent (noncondensing).
8. Altitude Rating: Not exceeding 3300 feet (1000 m).
9. Starting Torque: Minimum 100 percent of rated torque from 3 to 60 Hz.
10. Speed Regulation: Plus or minus **10** percent.
11. Output Carrier Frequency: Selectable; 0.5 to **15** kHz.
12. Stop Modes: Programmable; includes fast, free-wheel, and dc injection braking.

G. Inverter Logic: Microprocessor based, **32** bit, isolated from all power circuits.

H. Isolated Control Interface: Allows VFCs to follow remote-control signal over a minimum 40:1 speed range.

1. Signal: **Electrical**.

I. Internal Adjustability Capabilities:

1. Minimum Speed: 5 to 25 percent of maximum rpm.
2. Maximum Speed: 80 to 100 percent of maximum rpm.
3. Acceleration: **0.1 to 999.9** seconds.
4. Deceleration: **0.1 to 999.9** seconds.
5. Current Limit: 30 to minimum of 150 percent of maximum rating.

J. Self-Protection and Reliability Features:

1. Surge Suppression: **Factory installed as an integral part of the VFC, complying with UL 1449 SPD, Type 1 or Type 2**.
2. Loss of Input Signal Protection: Selectable response strategy, including speed default to a percent of the most recent speed, a preset speed, or stop; with alarm.
3. Under- and overvoltage trips.
4. Inverter overcurrent trips.
5. VFC and Motor-Overload/Overtemperature Protection: Microprocessor-based thermal protection system for monitoring VFCs and motor thermal characteristics, and for providing VFC overtemperature and motor-overload alarm and trip; settings selectable via the keypad.
6. Critical frequency rejection, with **three** selectable, adjustable deadbands.
7. Instantaneous line-to-line and line-to-ground overcurrent trips.
8. Loss-of-phase protection.
9. Reverse-phase protection.
10. Short-circuit protection.
11. Motor-overtemperature fault.

K. Automatic Reset/Restart: Attempt three restarts after drive fault or on return of power after an interruption and before shutting down for manual reset or fault correction; adjustable delay time between restart attempts.

L. Power-Interruption Protection: To prevent motor from re-energizing after a power interruption until motor has stopped, unless "Bidirectional Autospeed Search" feature is available and engaged.

M. Bidirectional Autospeed Search: Capable of starting VFC into rotating loads spinning in either direction and returning motor to set speed in proper direction, without causing damage to drive, motor, or load.

N. Torque Boost: Automatically varies starting and continuous torque to at least 1.5 times the minimum torque to ensure high-starting torque and increased torque at slow speeds.

O. Motor Temperature Compensation at Slow Speeds: Adjustable current fall-back based on output frequency for temperature protection of self-cooled, fan-ventilated motors at slow speeds.

P. Integral Input Disconnecting Means and OCPD: **UL 489, thermal-magnetic circuit breaker** with pad-lockable, door-mounted handle mechanism.

1. Disconnect Rating: **Not less than 115 percent of NFPA 70 motor full-load current rating or VFC input current rating, whichever is larger**.
2. Auxiliary Contacts: NO or NC, arranged to activate before switch blades open.
3. Auxiliary contacts "a" and "b" arranged to activate with circuit-breaker handle.
4. **NC**, **NO** alarm contact that operates only when circuit breaker has tripped.

2.3 PERFORMANCE REQUIREMENTS

2.4 CONTROLS AND INDICATION

A. Status Lights: Door-mounted LED indicators displaying the following conditions:

1. Power on.
2. Run.
3. Overvoltage.
4. Line fault.
5. Overcurrent.
6. External fault.

B. Panel-Mounted Operator Station: Manufacturer's standard front-accessible, sealed keypad and plain-English-language digital display; allows complete programming, program copying, operating, monitoring, and diagnostic capability.

1. Keypad: In addition to required programming and control keys, include keys for HAND, OFF, and AUTO modes.
2. Security Access: Provide electronic security access to controls through identification and password with at least three levels of access: View only; view and operate; and view, operate, and service.

a. Control Authority: Supports at least four conditions: Off, local manual control at VFC, local automatic control at VFC, and automatic control through a remote source.

C. Historical Logging Information and Displays:

1. Real-time clock with current time and date.
2. Running log of total power versus time.
3. Total run time.
4. Fault log, maintaining last **four** faults with time and date stamp for each.

D. Indicating Devices: Digital display **and additional readout devices as required,** mounted flush in VFC door and connected to display VFC parameters including, but not limited to:

1. Output frequency (Hz).
2. Motor speed (rpm).
3. Motor status (running, stop, fault).
4. Motor current (amperes).
5. Motor torque (percent).
6. Fault or alarming status (code).
7. PID feedback signal (percent).
8. DC-link voltage (V dc).
9. Set point frequency (Hz).
10. Motor output voltage (V ac).

E. Control Signal Interfaces:

1. Electric Input Signal Interface:
   a. A minimum of **six** multifunction programmable digital inputs.
2. Remote Signal Inputs: Capability to accept any of the following speed-setting input signals from the DDC system for HVAC or other control systems:

   a. 0- to 10-V dc.
   b. 4- to 20-mA dc.
   c. Potentiometer using up/down digital inputs.
   d. Fixed frequencies using digital inputs.

3. Output Signal Interface: A minimum of **one** programmable analog output signal(s) **operator-selectable "x"- to "y"-mA dc**, which can be configured for any of the following:

   a. Output frequency (Hz).
   b. Output current (load).
   c. DC-link voltage (V dc).
   d. Motor torque (percent).
   e. Motor speed (rpm).
   f. Set point frequency (Hz).

4. Remote Indication Interface: A minimum of **two** programmable dry-circuit relay outputs (120-V ac, 1 A) for remote indication of the following:

   a. Motor running.
   b. Set point speed reached.
   c. Fault and warning indication (overtemperature or overcurrent).
   d. PID high- or low-speed limits reached.

5. Hardwired Points:

    a. Monitoring: On-off status,
    b. Control: On-off operation.

6. Communication Interface: Comply with **ASHRAE 135**. Communication shall interface with DDC system for HVAC to remotely control and monitor lighting from a DDC system for HVAC operator workstation. Control features and monitoring points displayed locally at lighting panel shall be available through the DDC system for HVAC.

2.5 LINE CONDITIONING AND FILTERING

A. Input Line Conditioning: Based on the manufacturer's harmonic analysis study and report, provide input filtering, as required, to limit total demand (harmonic current) distortion and total harmonic voltage demand at the defined point of common coupling to meet IEEE 519 recommendations.

B. EMI/RFI Filtering:

1. CE marked; certify compliance with IEC 61800-3 for **Category C2**.

2.6 BYPASS SYSTEMS

A. Bypass Operation: Safely transfers motor between power converter output and bypass circuit, manually, automatically, or both. Selector switches set modes and indicator lights indicate mode selected. Unit is capable of stable operation (starting, stopping, and running) with motor completely disconnected from power converter.

B. Bypass Mode:
1. Field-selectable automatic or manual, allows local and remote transfer between power converter and bypass contactor and retransfer, either via manual operator interface or automatic-control system feedback.

C. Bypass Controller:

1. Two-Contactor-Style Bypass: Two-contactor-style bypass allows motor operation via the power converter or the bypass controller[**; with input isolating switch and barrier arranged to isolate the power converter and permit safe troubleshooting and testing, both energized and de-energized, while motor is operating in bypass mode**].

    a. Bypass Contactor: Load-break, **NEMA**-rated contactor.
    b. Output Isolating Contactor: Non-load-break, **NEMA**-rated contactor.
    c. Isolating Switch: Non-load-break switch arranged to isolate power converter and permit safe troubleshooting and testing of the power converter, both energized and de-energized, while motor is operating in bypass mode; pad-lockable, door-mounted handle mechanism.

D. Bypass Contactor Configuration: **Reduced-voltage (autotransformer** type.
1. HAND/OFF/AUTO selector switch.

2. NORMAL/TEST Selector Switch: Allows testing and adjusting of VFC while the motor is running in the bypass mode.
3. Contactor Coils: Pressure-encapsulated type.

    a. Operating Voltage: Depending on contactor NEMA size and line-voltage rating, manufacturer's standard matching control power or line voltage.
    b. Power Contacts: Totally enclosed, double break, and silver-cadmium oxide; assembled to allow inspection and replacement without disturbing line or load wiring.

4. Control Circuits: **120**V ac; obtained from **integral CPT, with primary and secondary fuses**, with **CPT control power source** of sufficient capacity to operate all integral devices and remotely located pilot, indicating, and control devices.

5. Overload Relays: NEMA ICS 2.

    a. Solid-State Overload Relays:

        1) Switch or dial selectable for motor-running overload protection.
        2) Sensors in each phase.
        3) **Class 10/20 selectable** tripping characteristic selected to protect motor against voltage and current unbalance and single phasing.
        4) Class II ground-fault protection, with start and run delays to prevent nuisance trip on starting.
        5) Analog communication module.

    b. **NC**, **NO** isolated overload alarm contact.
    c. External overload, reset push button.

2.7 OPTIONAL FEATURES

A. Multiple-Motor Capability: VFC suitable for variable-speed service to multiple motors. Overload protection shuts down VFC and motors served by it, and generates fault indications when overload protection activates.

1. Configure to allow two or more motors to operate simultaneously at the same speed; separate overload relay for each controlled motor.
2. Configure to allow two motors to operate separately; operator selectable via local or remote switch or contact closures; single overload relay for both motors; separate output magnetic contactors for each motor.
3. Configure to allow two motors to operate simultaneously and in a lead/lag mode, with one motor operated at variable speed via the power converter and the other at constant speed via the bypass controller; separate overload relay for each controlled motor.

B. Damper control circuit with end-of-travel feedback capability.

C. Sleep Function: Senses a minimal deviation of a feedback signal and stops the motor. On an increase in speed-command signal deviation, VFC resumes normal operation.

D. Motor Preheat Function: Preheats motor when idle to prevent moisture accumulation in the motor.

2.8 ENCLOSURES

A. VFC Enclosures: NEMA 250, to comply with environmental conditions at installed location.

1. Dry and Clean Indoor Locations: **Type 1**.
2. Outdoor Locations: **Type 3R**.

B. Plenum Rating: UL 1995; NRTL certification label on enclosure, clearly identifying VFC as "Plenum Rated."

2.9 ACCESSORIES

A. General Requirements for Control-Circuit and Pilot Devices: NEMA ICS 5; factory installed in VFC enclosure cover unless otherwise indicated.

1. Push Buttons: **Covered**.
2. Pilot Lights: Push to test.
3. Selector Switches: **Rotary** type.
4. Stop and Lockout Push-Button Station: Momentary-break, push-button station with a factory-applied hasp arranged so padlock can be used to lock push button in depressed position with control circuit open.

B. **NC , NO** bypass contactor auxiliary contact(s).

C. Control Relays: Auxiliary and adjustable **solid-state** time-delay relays.

D. Phase-Failure, Phase-Reversal, and Undervoltage and Overvoltage Relays: Solid-state sensing circuit with isolated output contacts for hard-wired connections. Provide adjustable undervoltage, overvoltage, and time-delay settings.

1. Current Transformers: Continuous current rating, basic impulse insulating level (BIL) rating, burden, and accuracy class suitable for connected circuitry. Comply with IEEE C57.13.

E. Supplemental Digital Meters:

1. Elapsed-time meter.
2. Kilowatt meter.
3. Kilowatt-hour meter.

F. Cooling Fan and Exhaust System: For NEMA 250, **Type 1**; UL 508 component recognized: Supply fan, with **composite** intake and exhaust grills **and filters**; **120**-V ac; obtained from.

G. Sun shields installed on fronts, sides, and tops of enclosures installed outdoors and subject to direct and extended sun exposure.

H. Spare control-wiring terminal blocks**; unwired**

2.10 SOURCE QUALITY CONTROL

A. Testing: Test and inspect VFCs according to requirements in **NEMA ICS 61800-2**.

1. Test each VFC while connected to **its specified motor**
2. Verification of Performance: Rate VFCs according to operation of functions and features specified.

B. VFCs will be considered defective if they do not pass tests and inspections.

C. Prepare test and inspection reports.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine areas, surfaces, and substrates to receive VFCs, with Installer present, for compliance with requirements for installation tolerances, and other conditions affecting performance of the Work.

B. Examine VFC before installation. Reject VFCs that are wet, moisture damaged, or mold damaged.

C. Examine roughing-in for conduit systems to verify actual locations of conduit connections before VFC installation.

D. Prepare written report, endorsed by Installer, listing conditions detrimental to performance of the Work

E. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

A. Wall-Mounting Controllers: Install with tops at uniform height and with disconnect operating handles not higher than 79 inches (2000 mm) above finished floor, unless otherwise indicated, and by bolting units to wall or mounting on lightweight structural-steel channels bolted to wall. For controllers not on walls, provide freestanding racks complying with Section 260529 "Hangers and Supports for Electrical Systems."

B. Floor-Mounting Controllers: Install VFCs on 4-inch (100-mm) nominal thickness concrete base. Comply with requirements for concrete base specified in Section 033000 "Cast-in-Place Concrete."

1. Install dowel rods to connect concrete base to concrete floor. Unless otherwise indicated, install dowel rods on 18-inch (450-mm) centers around the full perimeter of concrete base.

2. For supported equipment, install epoxy-coated anchor bolts that extend through concrete base and anchor into structural concrete floor.
3. Place and secure anchorage devices. Use setting drawings, templates, diagrams, instructions, and directions furnished with items to be embedded.
4. Install anchor bolts to elevations required for proper attachment to supported equipment.

C. Install fuses in each fusible-switch VFC.

D. Install fuses in control circuits if not factory installed. Comply with requirements in Section 262813 "Fuses."

E. Install heaters in thermal-overload relays. Select heaters based on actual nameplate full-load amperes after motors are installed.

F. Install, connect, and fuse thermal-protector monitoring relays furnished with motor-driven equipment.

G. Comply with NECA 1.

3.3 CONTROL WIRING INSTALLATION

A. Install wiring between VFCs and remote devices **and facility's central-control system**. Comply with requirements in Section 260523 "Control-Voltage Electrical Power Cables."

B. Bundle, train, and support wiring in enclosures.

C. Connect selector switches and other automatic-control devices where applicable.

1. Connect selector switches to bypass only those manual- and automatic-control devices that have no safety functions when switches are in manual-control position.
2. Connect selector switches with control circuit in both manual and automatic positions for safety-type control devices such as low- and high-pressure cutouts, high-temperature cutouts, and motor-overload protectors.

3.4 IDENTIFICATION

A. Identify VFCs, components, and control wiring. Comply with requirements for identification specified in Section 260553 "Identification for Electrical Systems."

1. Identify field-installed conductors, interconnecting wiring, and components; provide warning signs.
2. Label each VFC with engraved nameplate.
3. Label each enclosure-mounted control and pilot device.

B. Operating Instructions: Frame printed operating instructions for VFCs, including control sequences and emergency procedures. Fabricate frame of finished metal, and cover instructions with clear acrylic plastic. Mount on front of VFC units.

3.5 FIELD QUALITY CONTROL

A. Perform tests and inspections **with the assistance of a factory-authorized service representative**.

B. Acceptance Testing Preparation:

1. Test insulation resistance for each VFC element, bus, component, connecting supply, feeder, and control circuit.
2. Test continuity of each circuit.

C. Tests and Inspections:

1. Inspect VFC, wiring, components, connections, and equipment installation. **Test and adjust controllers, components, and equipment.**
2. Test insulation resistance for each VFC element, component, connecting motor supply, feeder, and control circuits.
3. Test continuity of each circuit.
4. Verify that voltages at VFC locations are within 10 percent of motor nameplate rated voltages. If outside this range for any motor, notify **Architect** before starting the motor(s).
5. Test each motor for proper phase rotation.
6. Perform tests according to the Inspection and Test Procedures for Adjustable Speed Drives stated in NETA Acceptance Testing Specification. Certify compliance with test parameters.
7. Correct malfunctioning units on-site, where possible, and retest to demonstrate compliance; otherwise, replace with new units and retest.
8. Perform the following infrared (thermographic) scan tests and inspections, and prepare reports:

    a. Initial Infrared Scanning: After Substantial Completion, but not more than 60 days after Final Acceptance, perform an infrared scan of each VFC. Remove front panels so joints and connections are accessible to portable scanner.
    b. Follow-up Infrared Scanning: Perform an additional follow-up infrared scan of each VFC 11 months after date of Substantial Completion.
    c. Instruments and Equipment: Use an infrared scanning device designed to measure temperature or to detect significant deviations from normal values. Provide calibration record for device.

9. Test and adjust controls, remote monitoring, and safeties. Replace damaged and malfunctioning controls and equipment.

D. VFCs will be considered defective if they do not pass tests and inspections.

E. Prepare test and inspection reports, including a certified report that identifies the VFC and describes scanning results. Include notation of deficiencies detected, remedial action taken, and observations made after remedial action.

3.6 STARTUP SERVICE

A. **Perform** startup service.

1. Complete installation and startup checks according to manufacturer's written instructions.

3.7 ADJUSTING

A. Program microprocessors for required operational sequences, status indications, alarms, event recording, and display features. Clear events memory after final acceptance testing and prior to Substantial Completion.

B. Set field-adjustable switches, auxiliary relays, time-delay relays, timers, and overload-relay pickup and trip ranges.

C. Adjust the trip settings of instantaneous-only circuit breakers and thermal-magnetic circuit breakers with adjustable, instantaneous trip elements. Initially adjust to 6 times the motor nameplate full-load amperes and attempt to start motors several times, allowing for motor cool-down between starts. If tripping occurs on motor inrush, adjust settings in increments until motors start without tripping. Do not exceed 8 times the motor full-load amperes (or 11 times for NEMA Premium Efficient motors if required). Where these maximum settings do not allow starting of a motor, notify **Architect** before increasing settings.

D. Set the taps on reduced-voltage autotransformer controllers.

E. Set field-adjustable circuit-breaker trip ranges **as specified in Section 260573.16 "Coordination Studies."**

F. Set field-adjustable pressure switches.

3.8 PROTECTION

A. Temporary Heating: Apply temporary heat to maintain temperature according to manufacturer's written instructions until controllers are ready to be energized and placed into service.

B. Replace VFCs whose interiors have been exposed to water or other liquids prior to Substantial Completion.

3.9 DEMONSTRATION

A. **Train** Owner's maintenance personnel to adjust, operate, reprogram, and maintain VFCs.

END OF SECTION

SECTION 263213.13
DIESEL-ENGINE-DRIVEN GENERATOR SETS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Diesel engine.
2. Diesel fuel-oil system.
3. Control and monitoring.
4. Generator overcurrent and fault protection.
5. Generator, exciter, and voltage regulator.
6. Vibration isolation devices.

B. Related Requirements:

1. Section 262313 "Paralleling Low-Voltage Switchgear" for controls and paralleling equipment for large or multiple parallel engine generators.
2. Section 263343 "Battery Chargers" for remote engine battery chargers.
3. Section 263600 "Transfer Switches" for transfer switches including sensors and relays to initiate automatic-starting and -stopping signals for engine generators.

1.3 DEFINITIONS

A. EPS: Emergency power supply.

B. EPSS: Emergency power supply system.

C. Operational Bandwidth: The total variation from the lowest to highest value of a parameter over the range of conditions indicated, expressed as a percentage of the nominal value of the parameter.

1.4 ACTION SUBMITTALS

A. Product Data: For each type of product.

1. Include rated capacities, operating characteristics, electrical characteristics, and furnished specialties and accessories.
2. Include thermal damage curve for generator.

3. Include time-current characteristic curves for generator protective device.
4. Include fuel consumption in gallons per hour (liters per hour) at 0.8 power factor at 0.5, 0.75, and 1.0 times generator capacity.
5. Include generator efficiency at 0.8 power factor at 0.5, 0.75, and 1.0 times generator capacity.
6. Include airflow requirements for cooling and combustion air in cubic feet per minute (cubic meters per minute) at 0.8 power factor, with air-supply temperature of 95, 80, 70, and 50 deg F (35, 27, 21, and 10 deg C). Provide Drawings indicating requirements and limitations for location of air intake and exhausts.
7. Include generator characteristics, including, but not limited to, kilowatt rating, efficiency, reactances, and short-circuit current capability.

B. Shop Drawings:

1. Include plans and elevations for engine generator and other components specified. Indicate access requirements affected by height of subbase fuel tank.
2. Include details of equipment assemblies. Indicate dimensions, weights, loads, required clearances, method of field assembly, components, and location and size of each field connection.
3. Identify fluid drain ports and clearance requirements for proper fluid drain.
4. Design calculations for selecting vibration isolators and seismic restraints and for designing vibration isolation bases.
5. Vibration Isolation Base Details: Detail fabrication including anchorages and attachments to structure and to supported equipment. Include base weights.
6. Include diagrams for power, signal, and control wiring. Complete schematic, wiring, and interconnection diagrams showing terminal markings for engine generators and functional relationship between all electrical components.

1.5 INFORMATIONAL SUBMITTALS

A. Qualification Data: For **manufacturer andtesting agency**.

B. Source Quality-Control Reports: Including, but not limited to, the following:

1. Certified summary of prototype-unit test report.
2. Certified Test Reports: For components and accessories that are equivalent, but not identical, to those tested on prototype unit.
3. Certified Summary of Performance Tests: Certify compliance with specified requirement to meet performance criteria for sensitive loads.
4. Report of factory test on units to be shipped for this Project, showing evidence of compliance with specified requirements.
5. Report of sound generation.
6. Report of exhaust emissions showing compliance with applicable regulations.
7. Certified Torsional Vibration Compatibility: Comply with NFPA 110.

C. Field quality-control reports.

D. Warranty: For special warranty.

1.6 CLOSEOUT SUBMITTALS

A. Operation and Maintenance Data: For packaged engine generators to include in emergency, operation, and maintenance manuals.

1. In addition to items specified in Section 017823 "Operation and Maintenance Data," include the following:

a. List of tools and replacement items recommended to be stored at Project for ready access. Include part and drawing numbers, current unit prices, and source of supply.
b. Operating instructions laminated and mounted adjacent to generator location.
c. Training plan.

1.7 QUALITY ASSURANCE

A. Installer Qualifications: An authorized representative who is trained and approved by manufacturer.

B. Testing Agency Qualifications: Accredited by NETA.

1. Testing Agency's Field Supervisor: Certified by NETA to supervise on-site testing.

1.8 WARRANTY

A. Manufacturer's Warranty: Manufacturer agrees to repair or replace components of packaged engine generators and associated auxiliary components that fail in materials or workmanship within specified warranty period.

1. Warranty Period: **5 years** from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. As indicated on the construction documents. Approved equivalents with prior approval only.

B. Source Limitations: Obtain packaged engine generators and auxiliary components from single source from single manufacturer.

2.2 PERFORMANCE REQUIREMENTS

A. NFPA Compliance:

1. Comply with NFPA 37.
2. Comply with NFPA 70.
3. Comply with NFPA 110 requirements for Level **1** EPSS.

B. UL Compliance: Comply with UL 2200.

C. Engine Exhaust Emissions: Comply with EPA Tier **3** requirements and applicable state and local government requirements.

D. Noise Emission: Comply with **applicable state and local government requirements** for maximum noise level at **adjacent property boundaries** due to sound emitted by engine generator including engine, engine exhaust, engine cooling-air intake and discharge, and other components of installation.

E. Environmental Conditions: Engine generator system shall withstand the following environmental conditions without mechanical or electrical damage or degradation of performance capability:

1. Ambient Temperature: **41 to 104 deg F (5 to 40 deg C)**.
2. Relative Humidity: Zero to 95 percent.
3. Altitude: Sea level to **1000 feet (300 m)**.

2.3 ENGINE GENERATOR ASSEMBLY DESCRIPTION

A. Factory-assembled and -tested, water-cooled engine, with brushless generator and accessories.

B. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and use.

C. Power Rating: **Standby**.

D. Overload Capacity: 110 percent of service load for 1 hour in 12 consecutive hours.

E. EPSS Class: Engine generator shall be classified as a [**Class 2**] [**Class 6**] [**Class 48**] [**Class 96**] according to NFPA 110.

F. Service Load: Refer to Construction Documents for size.

G. Power Factor: **0.8**, lagging.

H. Frequency: 60 Hz.

I. Voltage: Refer to Electrical Riser Diagram for size.

J. Phase: Refer to Electrical Riser Diagram for Phase.

K. Governor: Adjustable isochronous, with speed sensing.

L. Mounting Frame: Structural steel framework to maintain alignment of mounted components without depending on concrete foundation. Provide lifting attachments sized and spaced to prevent deflection of base during lifting and moving.

M. Capacities and Characteristics:

1. Power Output Ratings: Nominal ratings as indicated at 0.8 power factor excluding power required for the continued and repeated operation of the unit and auxiliaries**, with capacity as required to operate as a unit as evidenced by records of prototype testing**.
2. Nameplates: For each major system component to identify manufacturer's name and address, and model and serial number of component.

N. Engine Generator Performance:

1. Steady-State Voltage Operational Bandwidth: 3 percent of rated output voltage from no load to full load.
2. Transient Voltage Performance: Not more than 20 percent variation for 50 percent step-load increase or decrease. Voltage shall recover and remain within the steady-state operating band within three seconds.
3. Steady-State Frequency Operational Bandwidth: 0.5 percent of rated frequency from no load to full load.
4. Steady-State Frequency Stability: When system is operating at any constant load within the rated load, there shall be no random speed variations outside the steady-state operational band and no hunting or surging of speed.
5. Transient Frequency Performance: Less than 5 percent variation for 50 percent step-load increase or decrease. Frequency shall recover and remain within the steady-state operating band within five seconds.
6. Output Waveform: At no load, harmonic content measured line to line or line to neutral shall not exceed 5 percent total and 3 percent for single harmonics. Telephone influence factor, determined according to NEMA MG 1, shall not exceed 50 percent.
7. Sustained Short-Circuit Current: For a three-phase, bolted short circuit at system output terminals, system shall supply a minimum of 250 percent of rated full-load current for not less than 10 seconds and then clear the fault automatically, without damage to generator system components.
8. Start Time:
    a. Comply with NFPA 110, [**Type U**] [**Type 10**] system requirements.

2.4 DIESEL ENGINE

A. Fuel: ASTM D975, diesel fuel oil, Grade 2-D S15.

B. Rated Engine Speed: 1800 rpm.

C. Lubrication System: Engine or skid-mounted.

1. Filter and Strainer: Rated to remove 90 percent of particles 5 micrometers and smaller while passing full flow.
2. Thermostatic Control Valve: Control flow in system to maintain optimum oil temperature. Unit shall be capable of full flow and is designed to be fail-safe.
3. Crankcase Drain: Arranged for complete gravity drainage to an easily removable container with no disassembly and without use of pumps, siphons, special tools, or appliances.

D. Jacket Coolant Heater: Electric-immersion type, factory installed in coolant jacket system. Comply with UL 499 **and with NFPA 110 requirements for Level 1 equipment for heater capacity**.

E. Integral Cooling System: Closed loop, liquid cooled, with radiator factory mounted on engine generator set mounting frame and integral engine-driven coolant pump.

1. Coolant: Solution of 50 percent ethylene-glycol-based antifreeze and 50 percent water, with anticorrosion additives as recommended by engine manufacturer.
2. Temperature Control: Self-contained, thermostatic-control valve modulates coolant flow automatically to maintain optimum constant coolant temperature as recommended by engine manufacturer.
3. Coolant Hose: Flexible assembly with inside surface of nonporous rubber and outer covering of aging-, UV-, and abrasion-resistant fabric.

    a. Rating: 50-psig (345-kPa) maximum working pressure with coolant at 180 deg F (82 deg C), and noncollapsible under vacuum.
    b. End Fittings: Flanges or steel pipe nipples with clamps to suit piping and equipment connections.

4. Fan: Driven by **multiple belts from engine shaft**.
5. Coolant: Solution of 50 percent ethylene-glycol-based antifreeze and 50 percent water, with anticorrosion additives as recommended by engine manufacturer.
6. Temperature Control: Self-contained, thermostatic-control valve modulates coolant flow automatically to maintain optimum constant coolant temperature as recommended by engine manufacturer.

F. Muffler/Silencer:

1. Critical type, sized as recommended by engine manufacturer and selected with exhaust piping system to not exceed engine manufacturer's engine backpressure requirements.

    a. Minimum sound attenuation of 25 dB at 500 Hz.
    b. Sound level measured at a distance of 10 feet (8 m) from exhaust discharge after installation is complete shall be 70 dBA or less.

G. Air-Intake Filter: **Standard**-duty, engine-mounted air cleaner with replaceable dry-filter element and "blocked filter" indicator.

H. Starting System: **24**-V electric, with negative ground.

1. Cranking Motor: Heavy-duty unit that automatically engages and releases from engine flywheel without binding.
2. Cranking Cycle: **As required by NFPA 110 for system level specified**.
3. Battery: **Lead acid**, with capacity within ambient temperature range specified in "Performance Requirements" Article to provide specified cranking cycle at least **three times** without recharging.
4. Battery Cable: Size as recommended by engine manufacturer for cable length indicated. Include required interconnecting conductors and connection accessories.
5. Battery-Charging Alternator: Factory mounted on engine with solid-state voltage regulation and 35-A minimum continuous rating.

6. Battery Charger: Current-limiting, automatic-equalizing, and float-charging type designed for **lead-acid** batteries. Unit shall comply with UL 1236 and include the following features:

   a. Operation: Equalizing-charging rate of 10 A shall be initiated automatically after battery has lost charge until an adjustable equalizing voltage is achieved at battery terminals. Unit shall then be automatically switched to a lower float-charging mode and shall continue to operate in that mode until battery is discharged again.
   b. Automatic Temperature Compensation: Adjust float and equalize voltages for variations in ambient temperature from minus 40 to 140 deg F (minus 40 to plus 60 deg C) to prevent overcharging at high temperatures and undercharging at low temperatures.
   c. Automatic Voltage Regulation: Maintain constant output voltage regardless of input voltage variations up to plus or minus 10 percent.
   d. Ammeter and Voltmeter: Flush mounted in door. Meters shall indicate charging rates.
   e. Safety Functions: Sense abnormally low battery voltage and close contacts providing low battery voltage indication on control and monitoring panel. Sense high battery voltage and loss of ac input or dc output of battery charger. Either condition shall close contacts that provide a battery-charger malfunction indication at system control and monitoring panel.
   f. Enclosure and Mounting: NEMA 250, Type 1, wall-mounted cabinet.

2.5 DIESEL FUEL-OIL SYSTEM

A. Comply with NFPA 37.

B. Piping: Fuel-oil piping shall be Schedule 40 black steel, complying with requirements in Section 231113 "Facility Fuel-Oil Piping." Cast iron, aluminum, copper, and galvanized steel shall not be used in the fuel-oil system.

C. Main Fuel Pump: Mounted on engine to provide primary fuel flow under starting and load conditions.

D. Fuel Filtering: Remove water and contaminants larger than 1 micron.

E. Relief-Bypass Valve: Automatically regulates pressure in fuel line and returns excess fuel to source.

F. Fuel-Oil Storage Tank: Comply with requirements in **Section 231323 "Facility Aboveground Fuel-Oil Storage Tanks."**

   1. Fuel Tank Capacity: Refer to Construction Documents for Tank sizes..
   2. Duplex Fuel-Oil Transfer Pump: Comply with requirements in Section 231213 "Facility Fuel-Oil Pumps."

G. Day Tank: Comply with UL 142, freestanding, factory-fabricated fuel tank assembly, with integral, float-controlled transfer pump and the following features:

1. Containment: Integral rupture basin with a capacity of 150 percent of nominal capacity of day tank.

    a. Leak Detector: Locate in rupture basin and connect to provide audible and visual alarm in the event of day-tank leak.

2. Tank Capacity: Refer to Construction Documents for all tank sizes.
3. Pump Capacity: Exceeds maximum flow of fuel drawn by engine-mounted fuel supply pump at 110 percent of rated capacity, including fuel returned from engine.
4. Low-Level Alarm Sensor: Liquid-level device operates alarm contacts at 25 percent of normal fuel level.
5. High-Level Alarm Sensor: Liquid-level device operates alarm and redundant fuel shutoff contacts at midpoint between overflow level and 100 percent of normal fuel level.
6. Piping Connections: Factory-installed fuel supply and return lines from tank to engine; local fuel fill, vent line, overflow line; and tank drain line with shutoff valve.
7. Redundant High-Level Fuel Shutoff: Actuated by high-level alarm sensor in day tank to operate a separate motor-control device that disconnects day-tank pump motor. Sensor shall signal solenoid valve, located in fuel suction line between fuel storage tank and day tank, to close. Both actions shall remain in shutoff state until manually reset. Shutoff action shall initiate an alarm signal to control panel but shall not shut down engine generator.

H. Subbase-Mounted, Double-Wall, Fuel-Oil Tank: Factory installed and piped, complying with UL 142 fuel-oil tank. Features include the following:

1. Tank level indicator.
2. Fuel-Tank Capacity: Minimum 133 percent of total fuel required for planned operation plus fuel for periodic maintenance operations between fuel refills.
3. Leak detection in interstitial space.
4. Vandal-resistant fill cap.
5. Containment Provisions: Comply with requirements of authorities having jurisdiction.

2.6 CONTROL AND MONITORING

A. Automatic Starting System Sequence of Operation: When mode-selector switch on the control and monitoring panel is in the automatic position, remote-control contacts in one or more separate automatic transfer switches initiate starting and stopping of engine generator. When mode-selector switch is switched to the on position, engine generator starts. The off position of same switch initiates engine generator shutdown. When engine generator is running, specified system or equipment failures or derangements automatically shut down engine generator and initiate alarms.

B. Provide minimum run time control set for **15** minutes with override only by operation of a remote emergency-stop switch.

C. Comply with UL 508A.

D. Configuration:

1. Operating and safety indications, protective devices, basic system controls, and engine gages shall be grouped in a common control and monitoring panel mounted on the engine generator. Mounting method shall isolate the control panel from engine generator vibration. Panel shall be powered from the engine generator battery.

E. Control and Monitoring Panel:

1. Digital engine generator controller with integrated LCD display, controls, and microprocessor, capable of local and remote control, monitoring, and programming, with battery backup.
2. Instruments: Located on the control and monitoring panel and viewable during operation.

    a. Engine lubricating-oil pressure gage.
    b. Engine-coolant temperature gage.
    c. DC voltmeter (alternator battery charging).
    d. Running-time meter.
    e. AC voltmeter, **connected to a phase selector switch**.
    f. AC ammeter, **connected to a phase selector switch**.
    g. AC frequency meter.
    h. Generator-voltage adjusting rheostat.

3. Controls and Protective Devices: Controls, shutdown devices, and common alarm indication, including the following:

    a. Cranking control equipment.
    b. Run-Off-Auto switch.
    c. Control switch not in automatic position alarm.
    d. Overcrank alarm.
    e. Overcrank shutdown device.
    f. Low-water temperature alarm.
    g. High engine temperature prealarm.
    h. High engine temperature.
    i. High engine temperature shutdown device.
    j. Overspeed alarm.
    k. Overspeed shutdown device.
    l. Low fuel main tank.

        1) Low-fuel-level alarm shall be initiated when the level falls below that required for operation for duration required.

    m. Coolant low-level alarm.
    n. Coolant high-temperature shutdown device.
    o. EPS load indicator.
    p. Battery high-voltage alarm.
    q. Low cranking voltage alarm.
    r. Battery-charger malfunction alarm.
    s. Battery low-voltage alarm.
    t. Lamp test.
    u. Contacts for local and remote common alarm.

F. Remote Alarm Annunciator: An LED indicator light labeled with proper alarm conditions shall identify each alarm event, and a common audible signal shall sound for each alarm condition. Silencing switch in face of panel shall silence signal without altering visual indication. Connect so that after an alarm is silenced, clearing of initiating condition will reactivate alarm until silencing switch is reset. Cabinet and faceplate are surface- or flush-mounting type to suit mounting conditions indicated.

1. Overcrank alarm.
2. Low water-temperature alarm.
3. High engine temperature prealarm.
4. High engine temperature alarm.
5. Low lube oil pressure alarm.
6. Overspeed alarm.
7. Low fuel main tank alarm.
8. Low coolant level alarm.
9. Low cranking voltage alarm.
10. Contacts for local and remote common alarm.
11. Audible-alarm silencing switch.
12. Air shutdown damper when used.
13. Run-Off-Auto switch.
14. Control switch not in automatic position alarm.
15. Low-cranking voltage alarm.

G. Supporting Items: Include sensors, transducers, terminals, relays, and other devices and include wiring required to support specified items. Locate sensors and other supporting items on engine or generator unless otherwise indicated.

H. Remote Emergency-Stop Switch: Flush; wall mounted unless otherwise indicated; and labeled. Push button shall be protected from accidental operation.

2.7 GENERATOR OVERCURRENT AND FAULT PROTECTION

A. Overcurrent protective devices shall be coordinated to optimize selective tripping when a short circuit occurs.

1. Overcurrent protective devices for the entire EPSS shall be coordinated to optimize selective tripping when a short circuit occurs. Coordination of protective devices shall consider both utility and EPSS as the voltage source.

2. Overcurrent protective devices for the EPSS shall be accessible only to authorized personnel.

B. Generator Overcurrent Protective Device:

1. Molded-case circuit breaker, electronic-trip type; 100 percent rated; complying with UL 489:

a. Tripping Characteristics: Adjustable long-time and short-time delay and instantaneous.
b. Trip Settings: Selected to coordinate with generator thermal damage curve.

c. Shunt Trip: Connected to trip breaker when engine generator is shut down by other protective devices.
d. Mounting: Adjacent to, or integrated with, control and monitoring panel.

2.8 GENERATOR, EXCITER, AND VOLTAGE REGULATOR

A. Comply with NEMA MG 1.

B. Drive: Generator shaft shall be directly connected to engine shaft. Exciter shall be rotated integrally with generator rotor.

C. Electrical Insulation: **Class H.**

D. Stator-Winding Leads: Brought out to terminal box to permit future reconnection for other voltages if required. Provide **12**-lead alternator.

E. Range: Provide **limited** range of output voltage by adjusting the excitation level.

F. Construction shall prevent mechanical, electrical, and thermal damage due to vibration, overspeed up to 125 percent of rating, and heat during operation at 110 percent of rated capacity.

G. Enclosure: Dripproof.

H. Voltage Regulator: Solid-state type, separate from exciter, providing performance as specified **and as required by NFPA 110**.

1. Adjusting Rheostat on Control and Monitoring Panel: Provide plus or minus 5 percent adjustment of output-voltage operating band.
2. Maintain voltage within **15** percent on one step, full load.
3. Provide anti-hunt provision to stabilize voltage.
4. Maintain frequency within **10** percent and stabilize at rated frequency within **5** seconds.

I. Strip Heater: Thermostatically controlled unit arranged to maintain stator windings above dew point.

2.9 OUTDOOR ENGINE GENERATOR ENCLOSURE

A. Description:

1. Vandal-resistant, sound-attenuating, weatherproof steel housing; wind resistant up to 175 mph (160 km/h). Multiple panels shall be lockable and provide adequate access to components requiring maintenance. Panels shall be removable by one person without tools. Instruments and control shall be mounted within enclosure.

a. Sound Attenuation Level: 60db at 10’

B. Structural Design and Anchorage: Comply with ASCE/SEI 7 for wind loads up to 175 mph (160 km/h).

C. Hinged Doors: With padlocking provisions.

D. Thermal Insulation: Manufacturer's standard materials and thickness selected in coordination with space heater to maintain winter interior temperature within operating limits required by engine generator components.

E. Muffler Location: **Within** enclosure.

F. Engine-Cooling Airflow through Enclosure: Maintain temperature rise of system components within required limits when unit operates at 110 percent of rated load for two hours with ambient temperature at top of range specified in system service conditions.

1. Louvers: Fixed-engine, cooling-air inlet and discharge. Stormproof and drainable louvers prevent entry of rain and snow.
2. Automatic Dampers: At engine cooling-air inlet and discharge. Dampers shall be closed to reduce enclosure heat loss in cold weather when unit is not operating.
3. Ventilation: Provide temperature-controlled exhaust fan interlocked to prevent operation when engine is running.

G. Convenience Outlets: Factory-wired, GFCI. Arrange for external electrical connection.

2.10 VIBRATION ISOLATION DEVICES

A. Restrained Spring Isolators: Freestanding, steel, open-spring isolators with seismic restraint.

1. Housing: Steel with resilient vertical-limit stops to prevent spring extension due to wind loads or if weight is removed; factory-drilled baseplate bonded to 1/4-inch- (6-mm-) thick, elastomeric isolator pad attached to baseplate underside; and adjustable equipment-mounting and -leveling bolt that acts as blocking during installation.
2. Outside Spring Diameter: Not less than 80 percent of compressed height of the spring at rated load.
3. Minimum Additional Travel: 50 percent of required deflection at rated load.
4. Lateral Stiffness: More than 80 percent of rated vertical stiffness.
5. Overload Capacity: Support 200 percent of rated load, fully compressed, without deformation or failure.
6. Minimum Deflection: **1 inch (25 mm)**.

B. Comply with requirements in Section 232116 "Hydronic Piping Specialties" for vibration isolation and flexible connector materials for steel piping.

C. Comply with requirements in Section 233113 "Metal Ducts" for vibration isolation and flexible connector materials for exhaust shroud and ductwork.

D. Vibration isolation devices shall not be used to accommodate misalignments or to make bends.

2.11 FINISHES

A. Indoor and Outdoor Enclosures and Components: Manufacturer's standard finish over corrosion-resistant pretreatment and compatible primer.

2.12 SOURCE QUALITY CONTROL

A. Prototype Testing: Factory test engine generator using same engine model, constructed of identical or equivalent components and equipped with identical or equivalent accessories.

1. Tests: Comply with IEEE 115 **and with NFPA 110, Level 1 Energy Converters**.

B. Project-Specific Equipment Tests: Before shipment, factory test engine generator and other system components and accessories manufactured specifically for this Project. Perform tests at rated load and power factor. Include the following tests:

1. Test components and accessories furnished with installed unit that are not identical to those on tested prototype to demonstrate compatibility and reliability.
2. Test generator, exciter, and voltage regulator as a unit.
3. Full load run.
4. Maximum power.
5. Voltage regulation.
6. Transient and steady-state governing.
7. Single-step load pickup.
8. Safety shutdown.
9. Report factory test results within 10 days of completion of test.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine areas, equipment bases, and conditions, with Installer present, for compliance with requirements for installation and other conditions affecting packaged engine generator performance.

B. Examine roughing-in for piping systems and electrical connections. Verify actual locations of connections before packaged engine generator installation.

C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

A. Comply with NECA 1 and NECA 404.

B. Comply with packaged engine generator manufacturers' written installation and alignment instructions **and with NFPA 110**.

C. Equipment Mounting:

1. Install packaged engine generators on cast-in-place concrete equipment bases. Comply with requirements for equipment bases and foundations specified in Section 033000 "Cast-in-Place Concrete."

2. Coordinate size and location of concrete bases for packaged engine generators. Cast anchor-bolt inserts into bases. Concrete, reinforcement, and formwork requirements are specified with concrete.
3. Install **packaged engine generator** with **restrained spring isolators** having a minimum deflection of **1 inch (25 mm** on 4-inch- (100-mm-) high concrete base. Secure **sets** to anchor bolts installed in concrete bases. Concrete base construction is specified in Section 260548.16 "Seismic Controls for Electrical Systems."

D. Install packaged engine generator to provide access, without removing connections or accessories, for periodic maintenance.

E. Exhaust System: Install Schedule 40 black steel piping with welded joints and connect to engine muffler. Install thimble at wall. Piping shall be same diameter as muffler outlet.

1. Piping materials and installation requirements are specified in Section 232113 "Hydronic Piping."
2. Install flexible connectors and steel piping materials according to requirements in Section 232116 "Hydronic Piping Specialties."
3. Insulate muffler/silencer and exhaust system components according to requirements in Section 230719 "HVAC Piping Insulation."
4. Install isolating thimbles where exhaust piping penetrates combustible surfaces with a minimum of 9 inches (225 mm) of clearance from combustibles.

F. Drain Piping: Install condensate drain piping to muffler drain outlet full size of drain connection with a shutoff valve, stainless-steel flexible connector, and Schedule 40 black steel pipe with welded joints.

1. Piping materials and installation requirements are specified in Section 232113 "Hydronic Piping."
2. Drain piping valves, connectors, and installation requirements are specified in Section 232116 "Hydronic Piping Specialties."

G. Fuel Piping:

1. Diesel storage tanks, tank accessories, piping, valves, and specialties for fuel systems are specified in Section 231113 "Facility Fuel-Oil Piping."
2. Copper and galvanized steel shall not be used in the fuel-oil piping system.

H. Install electrical devices furnished by equipment manufacturers but not specified to be factory mounted.

3.3 CONNECTIONS

A. Piping installation requirements are specified in other Sections. Drawings indicate general arrangement of piping and specialties.

B. Connect fuel, cooling-system, and exhaust-system piping adjacent to packaged engine generator to allow space for service and maintenance.

C. Connect engine exhaust pipe to engine with flexible connector.

D. Connect fuel piping to engines with a gate valve and union and flexible connector.

E. Ground equipment according to Section 260526 "Grounding and Bonding for Electrical Systems."

F. Connect wiring according to Section 260519 "Low-Voltage Electrical Power Conductors and Cables." Provide a minimum of one 90-degree bend in flexible conduit routed to the engine generator from a stationary element.

G. Balance single-phase loads to obtain a maximum of 10 percent unbalance between any two phases.

3.4 IDENTIFICATION

A. Identify system components according to Section 230553 "Identification for HVAC Piping and Equipment" and Section 260553 "Identification for Electrical Systems."

B. Install a sign indicating the generator neutral is bonded to the main service neutral at the main service location.

3.5 FIELD QUALITY CONTROL

A. Testing Agency:

1. Engage a factory-authorized service representative to test and inspect components, assemblies, and equipment installations, including connections.
2. Perform tests and inspections **with the assistance of a factory-authorized service representative**.

B. Tests and Inspections:

1. Perform tests recommended by manufacturer and each visual and mechanical inspection and electrical and mechanical test listed in first two subparagraphs below, as specified in NETA ATS. Certify compliance with test parameters.

    a. Visual and Mechanical Inspection:

        1) Compare equipment nameplate data with Drawings and the Specifications.
        2) Inspect physical and mechanical condition.
        3) Inspect anchorage, alignment, and grounding.
        4) Verify that the unit is clean.

    b. Electrical and Mechanical Tests:

        1) Perform insulation-resistance tests according to IEEE 43.

            a) Machines Larger Than 200 hp (150 kW): Test duration shall be 10 minutes. Calculate polarization index.

b) Machines 200 hp (150 kW) or Less: Test duration shall be one minute. Calculate the dielectric-absorption ratio.

2) Test protective relay devices.
3) Verify phase rotation, phasing, and synchronized operation as required by the application.
4) Functionally test engine shutdown for low oil pressure, overtemperature, overspeed, and other protection features as applicable.

2. NFPA 110 Acceptance Tests: Perform tests required by NFPA 110 that are additional to those specified here, including, but not limited to, single-step full-load pickup test.
3. Battery Tests: Equalize charging of battery cells according to manufacturer's written instructions. Record individual cell voltages.

a. Measure charging voltage and voltages between available battery terminals for full-charging and float-charging conditions. Check electrolyte level and specific gravity under both conditions.
b. Test for contact integrity of all connectors. Perform an integrity load test and a capacity load test for the battery.
c. Verify acceptance of charge for each element of the battery after discharge.
d. Verify that measurements are within manufacturer's specifications.

4. Battery-Charger Tests: Verify specified rates of charge for both equalizing and float-charging conditions.
5. System Integrity Tests: Methodically verify proper installation, connection, and integrity of each element of engine generator system before and during system operation. Check for air, exhaust, and fluid leaks.
6. Exhaust-System Back-Pressure Test: Use a manometer with a scale exceeding 40-inch wg (120 kPa). Connect to exhaust line close to engine exhaust manifold. Verify that back pressure at full-rated load is within manufacturer's written allowable limits for the engine.
7. Exhaust Emissions Test: Comply with applicable government test criteria.
8. Voltage and Frequency Transient Stability Tests: Use recording oscilloscope to measure voltage and frequency transients for 50 and 100 percent step-load increases and decreases, and verify that performance is as specified.
9. Noise Level Tests: Measure A-weighted level of noise emanating from engine generator installation, including engine exhaust and cooling-air intake and discharge, at **four** locations **25 feet (8 m) from edge of the generator enclosure on the property line**, and compare measured levels with required values.

C. Coordinate tests with tests for transfer switches and run them concurrently.

D. Test instruments shall have been calibrated within the past 12 months, traceable to NIST Calibration Services, and adequate for making positive observation of test results. Make calibration records available for examination on request.

E. Leak Test: After installation, charge exhaust, coolant, and fuel systems and test for leaks. Repair leaks and retest until no leaks exist.

F. Operational Test: After electrical circuitry has been energized, start units to confirm proper motor rotation and unit operation for generator and associated equipment.

G. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and equipment.

H. Remove and replace malfunctioning units and **retest** as specified above.

I. Retest: Correct deficiencies identified by tests and observations, and retest until specified requirements are met.

J. Report results of tests and inspections in writing. Record adjustable relay settings and measured insulation resistances, time delays, and other values and observations. Attach a label or tag to each tested component indicating satisfactory completion of tests.

K. Infrared Scanning: After Substantial Completion, but not more than 60 days after final acceptance, perform an infrared scan of each power wiring termination and each bus connection while running with maximum load. Remove all access panels so terminations and connections are accessible to portable scanner.

1. Follow-up Infrared Scanning: Perform an additional follow-up infrared scan 11 months after date of Substantial Completion.
2. Instrument: Use an infrared scanning device designed to measure temperature or to detect significant deviations from normal values. Provide calibration record for device.
3. Record of Infrared Scanning: Prepare a certified report that identifies terminations and connections checked and that describes scanning results. Include notation of deficiencies detected, remedial action taken, and observations after remedial action.

3.6 MAINTENANCE SERVICE

A. Initial Maintenance Service: Beginning at Substantial Completion, maintenance service shall include **12** months' full maintenance by skilled employees of manufacturer's authorized service representative. Include quarterly preventive maintenance and exercising to check for proper starting, load transfer, and running under load. Include routine preventive maintenance as recommended by manufacturer and adjusting as required for proper operation. Parts shall be manufacturer's authorized replacement parts and supplies.

3.7 DEMONSTRATION

A. Engage a factory-authorized service representative to train Owner's maintenance personnel to adjust, operate, and maintain packaged engine generators.

END OF SECTION

SECTION 263600
TRANSFER SWITCHES

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Contactor-type automatic transfer switches.
2. Transfer switch accessories.

1.2 ACTION SUBMITTALS

A. Product Data:

1. Contactor-type automatic transfer switches.
2. Transfer switch accessories.

B. Product Data Submittals: For each product.

1. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for transfer switches.
2. Include rated capacities, operating characteristics, electrical characteristics, and accessories.

C. Shop Drawings:

1. Include plans, elevations, sections, details showing minimum clearances, conductor entry provisions, gutter space, and installed features and devices.
2. Include material lists for each switch specified.

1.3 INFORMATIONAL SUBMITTALS

A. Qualification Data: For **manufacturer-authorized service representative**.

B. Field quality-control reports.

1.4 CLOSEOUT SUBMITTALS

A. Operation and Maintenance Data: For each type of product to include in emergency, operation, and maintenance manuals.

1. In addition to items specified in Section 017823 "Operation and Maintenance Data," include the following:

a. Features and operating sequences, both automatic and manual.
b. List of all factory settings of relays; provide relay-setting and calibration instructions, including software, where applicable.

1.5 QUALITY ASSURANCE

A. Testing Agency Qualifications:

1. Member company of NETA.

a. Testing Agency's Field Supervisor: Certified by NETA to supervise on-site testing.

1.6 WARRANTY

A. Manufacturer's Warranty: Manufacturer agrees to repair or replace components of transfer switch or transfer switch components that fail in materials or workmanship within specified warranty period.

1. Warranty Period: **Two years** from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

B. Comply with NEMA ICS 1.

C. Comply with NFPA 99.

D. Comply with NFPA 110.

E. Comply with UL 1008 unless requirements of these Specifications are stricter.

F. Indicated Current Ratings: Apply as defined in UL 1008 for continuous loading and total system transfer, including tungsten filament lamp loads not exceeding 30 percent of switch ampere rating, unless otherwise indicated.

G. Tested Fault-Current Closing and Short-Circuit Ratings: Adequate for duty imposed by protective devices at installation locations in Project under the fault conditions indicated, based on testing according to UL 1008.
1. Short-time withstand capability for **three** cycles.

H. Repetitive Accuracy of Solid-State Controls: All settings shall be plus or minus 2 percent or better over an operating temperature range of minus 20 to plus 70 deg C.

I. Resistance to Damage by Voltage Transients: Components shall meet or exceed voltage-surge withstand capability requirements when tested according to IEEE C62.62. Components shall meet or exceed voltage-impulse withstand test of NEMA ICS 1.

J. Electrical Operation: Accomplish by a nonfused, momentarily energized solenoid or electric-motor-operated mechanism. Switches for emergency or standby purposes shall be mechanically and electrically interlocked in both directions to prevent simultaneous connection to both power sources unless closed transition.

K. Service-Rated Transfer Switch:

1. Comply with UL 869A and UL 489.
2. Provide terminals for bonding the grounding electrode conductor to the grounded service conductor.
3. In systems with a neutral, the bonding connection shall be on the neutral bus.
4. Provide removable link for temporary separation of the service and load grounded conductors.
5. Surge Protective Device: Service rated.
6. Service Disconnecting Means: Externally operated, manual **electrically** actuated.

L. Neutral Terminal: Solid and fully rated unless otherwise indicated.
1. Ammeter to display charging current.
2. Fused ac inputs and dc outputs.

M. Factory Wiring: Train and bundle factory wiring and label, consistent with Shop Drawings, by color-code or by numbered or lettered wire and cable **with printed** markers at terminations. Color-coding and wire and cable markers are specified in Section 260553 "Identification for Electrical Systems."

1. Designated Terminals: Pressure type, suitable for types and sizes of field wiring indicated.
2. Power-Terminal Arrangement and Field-Wiring Space: Suitable for top, side, or bottom entrance of feeder conductors as indicated.
3. Control Wiring: Equipped with lugs suitable for connection to terminal strips.
4. Accessible via **front** access.

N. Enclosures: General-purpose **Type 1**, complying with NEMA ICS 6 and UL 508, unless otherwise indicated.

2.2 CONTACTOR-TYPE AUTOMATIC TRANSFER SWITCHES

A. Comply with Level 1 equipment according to NFPA 110.

B. Switch Characteristics: Designed for continuous-duty repetitive transfer of full-rated current between active power sources.

1. Limitation: Switches using molded-case switches or circuit breakers or insulated-case circuit-breaker components are unacceptable.
2. Switch Action: Double throw; mechanically held in both directions.

3. Contacts: Silver composition or silver alloy for load-current switching. Contactor-style automatic transfer-switch units, rated 600 A and higher, shall have separate arcing contacts.
4. Conductor Connectors: Suitable for use with conductor material and sizes.
5. Material: **Tin-plated aluminum.**
6. Main and Neutral Lugs: **Mechanical** type.
7. Ground Lugs and Bus-Configured Terminators: **Mechanical** type.
8. Connectors shall be marked for conductor size and type according to UL 1008.

C. Automatic Open-Transition Transfer Switches: Interlocked to prevent the load from being closed on both sources at the same time.

1. Sources shall be mechanically and electrically interlocked to prevent closing both sources on the load at the same time.

2. Failure of power source serving load initiates automatic break-before-make transfer.

D. Electric Nonautomatic Switch Operation: Electrically actuated by push buttons designated "Normal Source" and "Alternative Source." Switch shall be capable of transferring load in either direction with either or both sources energized.

E. Signal-Before-Transfer Contacts: A set of normally open/normally closed dry contacts operates in advance of retransfer to normal source. Interval shall be adjustable from 1 to 30 seconds.

F. Automatic Transfer-Switch Controller Features:

1. Controller operates through a period of loss of control power.
2. Undervoltage Sensing for Each Phase of Normal **and Alternate** Source: Sense low phase-to-ground voltage on each phase. Pickup voltage shall be adjustable from 85 to 100 percent of nominal, and dropout voltage shall be adjustable from 75 to 98 percent of pickup value. Factory set for pickup at 90 percent and dropout at 85 percent.
3. Voltage/Frequency Lockout Relay: Prevent premature transfer to generator. Pickup voltage shall be adjustable from 85 to 100 percent of nominal. Factory set for pickup at 90 percent. Pickup frequency shall be adjustable from 90 to 100 percent of nominal. Factory set for pickup at 95 percent.
4. Time Delay for Retransfer to Normal Source: Adjustable from zero to 30 minutes, and factory set for 10 minutes. Override shall automatically defeat delay on loss of voltage or sustained undervoltage of emergency source, provided normal supply has been restored.
5. Test Switch: Simulate normal-source failure.
6. Switch-Position Pilot Lights: Indicate source to which load is connected.
7. Source-Available Indicating Lights: Supervise sources via transfer-switch normal- and emergency-source sensing circuits.

    a. Normal Power Supervision: Green light with nameplate engraved "Normal Source Available."
    b. Emergency Power Supervision: Red light with nameplate engraved "Emergency Source Available."

8. Unassigned Auxiliary Contacts: Two normally open, single-pole, double-throw contacts for each switch position, rated 10 A at 240-V ac.

9. Transfer Override Switch: Overrides automatic retransfer control so transfer switch will remain connected to emergency power source regardless of condition of normal source. Pilot light indicates override status.
10. Engine Starting Contacts: One isolated and normally closed, and one isolated and normally open; rated 10 A at 32-V dc minimum.
11. Engine Shutdown Contacts:

    a. Instantaneous; shall initiate shutdown sequence at remote engine-generator controls after retransfer of load to normal source.
    b. Time delay adjustable from zero to five minutes, and factory set for five minutes. Contacts shall initiate shutdown at remote engine-generator controls after retransfer of load to normal source.

12. Engine-Generator Exerciser: Solid-state, programmable-time switch starts engine generator and transfers load to it from normal source for a preset time, then retransfers and shuts down engine after a preset cool-down period. Initiates exercise cycle at preset intervals adjustable from 7 to 30 days. Running periods shall be adjustable from 10 to 30 minutes. Factory settings shall be for 7-day exercise cycle, 20-minute running period, and 5-minute cool-down period. Exerciser features include the following:

    a. Exerciser Transfer Selector Switch: Permits selection of exercise with and without load transfer.
    b. Push-button programming control with digital display of settings.
    c. Integral battery operation of time switch when normal control power is unavailable.

2.3 TRANSFER SWITCH ACCESSORIES

A. Remote Annunciator System:

1. Source Limitations: Same manufacturer as transfer switch in which installed.
2. Functional Description: Remote annunciator panel shall annunciate conditions for indicated transfer switches.
3. Annunciation panel display shall include the following indicators:

    a. Sources available, as defined by actual pickup and dropout settings of transfer-switch controls.
    b. Switch position.
    c. Switch in test mode.
    d. Failure of communication link.

4. Annunciator Panel: LED-lamp type with audible signal and silencing switch.

    a. Indicating Lights: Grouped for each transfer switch monitored.
    b. Label each group, indicating transfer switch it monitors, location of switch, and identity of load it serves.
    c. Mounting: Flush, modular, steel cabinet unless otherwise indicated.
    d. Lamp Test: Push-to-test or lamp-test switch on front panel.

2.4 SOURCE QUALITY CONTROL

A. Factory Tests: Test and inspect components, assembled switches, and associated equipment according to UL 1008. Ensure proper operation. Check transfer time and voltage, frequency, and time-delay settings for compliance with specified requirements. Perform dielectric strength test complying with NEMA ICS 1.

B. Prepare test and inspection reports.

1. For each of the tests required by UL 1008, performed on representative devices, for **legally required** systems. Include results of test for the following conditions:

a. Overvoltage.
b. Undervoltage.
c. Loss of supply voltage.
d. Reduction of supply voltage.
e. Alternative supply voltage or frequency is at minimum acceptable values.
f. Temperature rise.
g. Dielectric voltage-withstand; before and after short-circuit test.
h. Overload.
i. Contact opening.
j. Endurance.
k. Short circuit.
l. Short-time current capability.
m. Receptacle withstand capability.
n. Insulating base and supports damage.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Floor-Mounting Switch: Anchor to floor by bolting.

1. Install transfer switches on cast-in-place concrete equipment base(s). Comply with requirements for equipment bases and foundations specified in Section 033000 "Cast-in-Place Concrete."
2. Coordinate size and location of concrete bases. Cast anchor-bolt inserts into bases.
3. Provide workspace and clearances required by NFPA 70.

B. Annunciator and Control Panel Mounting: Flush in wall unless otherwise indicated.

C. Identify components according to Section 260553 "Identification for Electrical Systems."

D. Set field-adjustable intervals and delays, relays, and engine exerciser clock.

E. Comply with NECA 1.

3.2 CONNECTIONS

A. Wiring to Remote Components: Match type and number of cables and conductors to generator sets, control, and communication requirements of transfer switches as recommended by manufacturer. Increase raceway sizes at no additional cost to Owner if necessary to accommodate required wiring.

B. Wiring Method: Install cables in raceways and cable trays except within electrical enclosures. Conceal raceway and cables except in unfinished spaces.

1. Comply with requirements for raceways specified in Section 260533.13 "Conduits for Electrical Systems."

C. Wiring within Enclosures: Bundle, lace, and train conductors to terminal points with no excess and without exceeding manufacturer's limitations on bending radii.

D. Ground equipment according to Section 260526 "Grounding and Bonding for Electrical Systems."

E. Connect wiring according to Section 260519 "Low-Voltage Electrical Power Conductors and Cables."

F. Connect twisted pair cable according to Section 260523 "Control-Voltage Electrical Power Cables."

G. Route and brace conductors according to manufacturer's written instructions[**.**][**and Section 260529 "Hangers and Supports for Electrical Systems."**] Do not obscure manufacturer's markings and labels.

H. Brace and support equipment according to Section 260548.16 "Seismic Controls for Electrical Systems."

I. Final connections to equipment shall be made with liquidtight, flexible metallic conduit no more than 18 inches (457 mm) in length.

3.3 FIELD QUALITY CONTROL

A. Administrant for Tests and Inspections:
1. Engage qualified testing agency to administer and perform tests and inspections.
2. Engage factory-authorized service representative to administer and perform tests and inspections on components, assemblies, and equipment installations, including connections.

B. Tests and Inspections:

1. After installing equipment, test for compliance with requirements according to NETA ATS.
2. Visual and Mechanical Inspection:

a. Compare equipment nameplate data with Drawings and Specifications.

b. Inspect physical and mechanical condition.
c. Inspect anchorage, alignment, grounding, and required clearances.
d. Verify that the unit is clean.
e. Verify appropriate lubrication on moving current-carrying parts and on moving and sliding surfaces.
f. Verify that manual transfer warnings are attached and visible.
g. Verify tightness of all control connections.
h. Inspect bolted electrical connections for high resistance using one of the following methods, or both:

    1) Use of low-resistance ohmmeter.
    2) Verify tightness of accessible bolted electrical connections by calibrated torque-wrench method according to manufacturer's published data.

i. Perform manual transfer operation.
j. Verify positive mechanical interlocking between normal and alternate sources.
k. Perform visual and mechanical inspection of surge arresters.
l. Inspect control power transformers.

    1) Inspect for physical damage, cracked insulation, broken leads, tightness of connections, defective wiring, and overall general condition.
    2) Verify that primary and secondary fuse or circuit-breaker ratings match Drawings.
    3) Verify correct functioning of drawout disconnecting contacts, grounding contacts, and interlocks.

3. Electrical Tests:

    a. Perform insulation-resistance tests on all control wiring with respect to ground.
    b. Perform a contact/pole-resistance test. Compare measured values with manufacturer's acceptable values.
    c. Verify settings and operation of control devices.
    d. Calibrate and set all relays and timers.
    e. Verify phase rotation, phasing, and synchronized operation.
    f. Perform automatic transfer tests.
    g. Verify correct operation and timing of the following functions:

        1) Normal source voltage-sensing and frequency-sensing relays.
        2) Engine start sequence.
        3) Time delay on transfer.
        4) Alternative source voltage-sensing and frequency-sensing relays.
        5) Automatic transfer operation.
        6) Interlocks and limit switch function.
        7) Time delay and retransfer on normal power restoration.
        8) Engine cool-down and shutdown feature.

4. Measure insulation resistance phase-to-phase and phase-to-ground with insulation-resistance tester. Include external annunciation and control circuits. Use test voltages and procedure recommended by manufacturer. Comply with manufacturer's specified minimum resistance.

a. Check for electrical continuity of circuits and for short circuits.
b. Inspect for physical damage, proper installation and connection, and integrity of barriers, covers, and safety features.
c. Verify that manual transfer warnings are properly placed.
d. Perform manual transfer operation.

C. Coordinate tests with tests of generator and run them concurrently.

D. Report results of tests and inspections in writing. Record adjustable relay settings and measured insulation and contact resistances and time delays. Attach a label or tag to each tested component indicating satisfactory completion of tests.

E. Transfer switches will be considered defective if they do not pass tests and inspections.

F. Remove and replace malfunctioning units and retest as specified above.

G. Prepare test and inspection reports.

3.4 DEMONSTRATION

A. **Train** Owner's maintenance personnel to adjust, operate, and maintain transfer switches and related equipment.

B. Training shall include testing ground-fault protective devices and instructions to determine when the ground-fault system shall be retested. Include instructions on where ground-fault sensors are located and how to avoid negating the ground-fault protection scheme during testing and circuit modifications.

C. Coordinate this training with that for generator equipment.

END OF SECTION

SECTION 264113
LIGHTNING PROTECTION FOR STRUCTURES

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes lightning protection system for ordinary structures.

1.2 INFORMATIONAL SUBMITTALS

A. Coordination Drawings: Lightning protection system Shop Drawings, drawn to scale, on which the following items are shown and coordinated with each other, using input from installers of the items involved:

1. Lightning protection cabling attachments to roofing systems and accessories.
2. Lightning protection strike termination device attachment to roofing systems, coordinated with the roofing system manufacturer.
3. Lightning protection system components penetrating roofing and moisture protection systems and system components, coordinated with the roofing system manufacturer.

B. Qualification Data: For Installer.

C. Product Certificates: For each type of roof adhesive for attaching the roof-mounted air terminal assemblies, approved by the roofing-material manufacturer.

D. Field quality-control reports.

1.3 CLOSEOUT SUBMITTALS

A. Maintenance Data: For lightning protection system to include in maintenance manuals.

1. In addition to items specified in Section 017823 "Operation and Maintenance Data," include the following:

a. Dimensioned site plan showing dimensioned route of the ground loop conductor and the ground rod locations. Comply with requirements of Section 017839 "Project Record Documents."
b. A system testing and inspection record, listing the results of inspections and ground resistance tests, as recommended by NFPA 780, Annex D.

B. Completion Certificate:

1. **UL Master Label Certificate**.

1.4 QUALITY ASSURANCE

A. Installer Qualifications: **UL-listed installer, category OWAY or LPI Master Installer**.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. NFPA Lightning Protection Standard: Comply with NFPA 780 requirements for **Class I Class II** buildings.

B. UL Lightning Protection Standard: Comply with UL 96A requirements for **Class I** buildings.

C. Lightning Protection Components, Devices, and Accessories: Listed and labeled by a qualified testing agency as complying with UL 96, and marked for intended location and application.

2.2 MATERIALS

A. Air Terminals:

1. **Aluminum** unless otherwise indicated.
2. **5/8-inch (16-mm)** diameter by **18 inches (450 mm** long.
3. **Rounded** tip.
4. **Threaded base support**.

B. Class I Main Conductors:

1. **Aluminum: 98,600 circular mils in diameter**.

C. Secondary Conductors:

1. **Aluminum: 41,400 circular mils in diameter**.

D. Ground Rods:

1. Material: **Copper-clad steel**.
2. Diameter: **3/4 inch (19 mm)**.
3. Rods shall be not less than 120 inches (3050 mm) long.

E. Conductor Splices and Connectors: Compression fittings that are installed with hydraulically operated tools, or exothermic welds, approved for use with the class type.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Install lightning protection components and systems according to **NFPA 780**.

B. Install conductors with direct paths from air terminals to ground connections. Avoid bends less than 90 degrees and 8 inches (203 mm) in radius and narrow loops.

C. Conceal conductors within normal view from exterior locations at grade within 200 feet (60 m) of building. Comply with requirements for **concealed systems in NFPA 780**.

1. Roof penetrations required for down conductors and connections to structural-steel framework shall be made using listed through-roof fitting and connector assemblies with solid rods and appropriate roof flashings. Use materials approved by the roofing manufacturer for the purpose. Conform to the methods and materials required at roofing penetrations of the lightning protection components to ensure compatibility with the roofing specifications and warranty.
2. Install conduit where necessary to comply with conductor concealment requirements.
3. Air Terminals on Single-Ply Membrane Roofing: Comply with adhesive manufacturer's written instructions.

3.2 CONNECTIONS

A. Aboveground concealed connections, and connections in earth or concrete, shall be done by exothermic welds or by high-compression fittings listed for the purpose.

B. Aboveground exposed connections shall be done using the following types of connectors, listed and labeled for the purpose: **bolted connectors or high compression crimp**.

C. Bonding Straps and Jumpers: Install in locations accessible for inspection and maintenance, except where routed through short lengths of conduit.

1. Bonding to Structure: Bond straps directly to basic structure, taking care not to penetrate any adjacent parts.
2. Bonding to Equipment Mounted on Vibration Isolation Hangers and Supports: Install bonding so vibration is not transmitted to rigidly mounted equipment.

3.3 CORROSION PROTECTION

A. Do not combine materials that can form an electrolytic couple that will accelerate corrosion in the presence of moisture unless moisture is permanently excluded from junction of such materials.

B. Use conductors with protective coatings where conditions would cause deterioration or corrosion of conductors.

3.4 FIELD QUALITY CONTROL

A. Special Inspections: **Engage** a qualified special inspector to perform the following special inspections:

1. Perform inspections as required to obtain a UL Master Label for system.

B. Prepare test and inspection reports and certificates.

END OF SECTION

SECTION 264313
SURGE PROTECTIVE DEVICES FOR LOW-VOLTAGE ELECTRICAL POWER CIRCUITS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Type 1 surge protective devices (SPDs).
2. Type 2 surge protective devices (SPDs).
3. Enclosures.
4. Conductors and cables.

B. Related Requirements:

1. Section 260010 "Supplemental Requirements for Electrical" for additional abbreviations, definitions, submittals, qualifications, testing agencies, and other Project requirements applicable to Work specified in this Section.
2. Section 260011 "Facility Performance Requirements for Electrical" for seismic-load, wind-load, acoustical, and other field conditions applicable to Work specified in this Section.

1.2 DEFINITIONS

A. I_n: Nominal discharge current.

B. Maximum Continuous Operating Voltage (MCOV): The maximum designated RMS value of the power frequency voltage that may be continuously applied to the mode of protection of an SPD.

C. Metal-Oxide Varistor (MOV): An electronic component with a significant bidirectional, nonlinear current-voltage characteristic.

D. Mode(s), Modes of Protection, or Protection Modes: Electrical paths where the SPD offers defense against transient overvoltages. Examples include: line to neutral (L-N), line to ground (L-G), line to line (L-L), and neutral to ground (N-G).

E. SCCR: Short-circuit current rating.

F. Type 1 SPDs: Permanently connected SPDs intended for installation between the secondary of the service transformer and the line side of the service disconnect overcurrent device.

G. Type 2 SPDs: Permanently connected SPDs intended for installation on the load side of the service disconnect overcurrent device, including SPDs located at the branch panel.

1.3 INFORMATIONAL SUBMITTALS

A. Sample Warranty: For manufacturer's special warranty.

1.4 WARRANTY

A. Special Manufacturer Extended Warranty: Manufacturer warrants that SPDs perform in accordance with specified requirements and agrees to provide repair or replacement of SPDs that fail to perform as specified within extended warranty period.

1. Initial Extended Warranty Period: **Five** year(s) from date of Substantial Completion, for labor, materials, and equipment.

PART 2 - PRODUCTS

2.1 TYPE 1 SURGE PROTECTIVE DEVICES (SPDs)

A. Source Limitations: Obtain devices from single source from single manufacturer.

B. General Characteristics:

1. Reference Standards: UL 1449, Type 1.
2. MCOV: Not less than 125 percent of nominal system voltage for 208Y/120 V and 120/240 V power systems, and not less than 115 percent of nominal system voltage for 480Y/277 V power systems.
3. Peak Surge Current Rating: Minimum single-pulse surge current withstand rating per phase must not be less than **240** kA. Peak surge current rating must be arithmetic sum of the ratings of individual MOVs in a given mode.
4. Protection modes and UL 1449 VPR for grounded wye circuits with **208Y/120 V**, three-phase, four-wire circuits must not exceed the following:

    a. Line to Neutral: **700 V for 208Y/120 V**.
    b. Line to Line: **1200 V for 208Y/120 V**.

5. Protection modes and UL 1449 VPR for 240/120 V, single-phase, three-wire circuits must not exceed the following:

    a. Line to Neutral: 700 V.
    b. Line to Line: 1200 V.

6. SCCR: Not less than **200**kA.
7. I_n Rating: 20 kA.

C. Options:

1. Include integral disconnect switch.
2. Include internal thermal protection that disconnects the SPD before damaging internal suppressor components.

3. Include indicator light display for protection status.
4. Include audible alarm.

2.2 TYPE 2 SURGE PROTECTIVE DEVICES (SPDs)

A. Source Limitations: Obtain devices from single source from single manufacturer.

B. General Characteristics:

1. Reference Standards: UL 1449, Type 2[**; UL 1283**].
2. MCOV: Not less than 125 percent of nominal system voltage for 208Y/120 V and 120/240 V power systems, and not less than 115 percent of nominal system voltage for 480Y/277 V power systems.
3. Peak Surge Current Rating: Minimum single-pulse surge current withstand rating per phase must not be less than [**100**] [**150**] <**Insert value**> kA. Peak surge current rating must be arithmetic sum of the ratings of individual MOVs in a given mode.
4. Protection modes and UL 1449 VPR for grounded wye circuits with [**480Y/277 V**] [**208Y/120 V**], three-phase, four-wire circuits must not exceed the following:

    a. Line to Neutral: **700 V for 208Y/120 V**.
    b. Line to Ground: **700 V for 208Y/120 V**.

5. Protection modes and UL 1449 VPR for 240/120 V, single-phase, three-wire circuits must not exceed the following:

    a. Line to Neutral: 700 V.
    b. Line to Ground: 700 V.
    c. Neutral to Ground: 700 V.
    d. Line to Line: 1200 V.

C. Options:

1. Include LED indicator lights for power and protection status.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Provide OCPD and disconnect for installation of SPD in accordance with UL 1449 and manufacturer's instructions.

B. Install leads between disconnects and SPDs short, straight, twisted, and in accordance with manufacturer's instructions. Comply with wiring methods in Section 260519 "Low-Voltage Electrical Power Conductors and Cables."

1. Do not splice and extend SPD leads unless specifically permitted by manufacturer.
2. Do not exceed manufacturer's recommended lead length.
3. Do not bond neutral and ground.

C. Use crimped connectors and splices only. Wire nuts are unacceptable.

3.2 FIELD QUALITY CONTROL

A. Tests and Inspections:

1. Compare equipment nameplate data for compliance with Drawings and the Specifications.
2. Inspect anchorage, alignment, grounding, and clearances.
3. Verify that electrical wiring installation complies with manufacturer's installation requirements.

B. Nonconforming Work:

1. SPDs that do not pass tests and inspections will be considered defective.
2. Remove and replace defective units and retest.

C. Prepare test and inspection reports.

3.3 STARTUP SERVICE

A. Complete startup checks in accordance with manufacturer's instructions.

B. Do not perform insulation-resistance tests of the distribution wiring equipment with SPDs installed. Disconnect SPDs before conducting insulation-resistance tests; reconnect them immediately after the testing is over.

C. Energize SPDs after power system has been energized, stabilized, and tested.

END OF SECTION

SECTION 15165
SUBMERSIBLE ELECTRIC AXIAL FLOW PUMP

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Submersible electric axial flow pumps including the motors, related piping, and other appurtenances.

1.02 REFERENCES

A. ASTM A36-01- Carbon Structural Steel

B. ASTM A242-01- High Strength Low Alloy Steel.

1.03 DESIGN CONDITIONS

A. The capacity of the pumps shall be no less than the design flow rate at the design head conditions stated herein. Each pump must be designed considering head losses through the conveyance system as shown on the Drawings.

Description	Duty Pump	Primary Pump(s)
Quantity	1	3
Bottom of FSI elevation	-9.5	-9.5
Centerline of discharge pump elevation	-1.5	-1.5
Maximum water level at discharge	6.0	6.0
Design water level at discharge	1.0	1.0
Minimum water level at discharge	-2.2	-2.8
Maximum water level on suction side	6.0	6.0
Design water level on suction side	-6.5	-4.9
Minimum water level on suction side	-8.5	-5.3

NOTE: The above numbers represent elevations in feet (NAVD88) unless noted otherwise.

1.04 PERFORMANCE REQUIREMENTS

A. Pumps shall deliver the design flow rate at head conditions produced when water surface at discharge is at design and the water level on the suction side is at the design water level. Pumps must operate without cavitation within the minimum and maximum head condition range. Motor must operate within manufacturer's ratings at minimum and maximum head conditions both at the factory and on site.

Description	Duty Pump	Primary Pump(s)
Design Flow Rate (gpm)	5,000	20,000
Minimum Efficiency (%)	70	70

1.05 SUBMITTALS

A. Seven (7) copies of product data including shop drawings and schematic diagrams indicating manufacturer's model numbers, certified factory test pump curves, motor characteristics, dimensions and weights, general pump construction and cross-section, components and materials,

thermal and moisture protection, coating data, general wetwell arrangements with dimensions and manufacturer's warranty.

B. The pump manufacturer's certification that the station sump conditions and design water levels are compatible with the pump to be provided

C. Five (5) copies of the operating and maintenance instructions including parts list and a list of recommended spare parts.

1.06 WARRANTY

A. A manufacturer's warranty shall be issued to cover, as a minimum, any defects in material and workmanship under normal use and service for a period of five (5) years or 10,000 hours, whichever comes first. A performance guarantee shall be included in said warranty.

PART 2 PRODUCTS

2.01 GENERAL

A. The pump equipment specified herein shall be the design and fabrication of a single manufacturer which shall have sole source responsibility for said equipment. The manufacturer shall have a minimum of 10 electric submersible pumps of this design and of comparable capacity in the state of Florida with successful operation for a minimum of 5 years. References and records of experiences shall be provided.

B. The pumps shall be designed and manufactured suitable for water service. This service includes turbid storm water that may contain sand, silt, and vegetative trash capable of passing the trash rack. Water temperatures can range from 60° Fahrenheit (F) to 90°F. The equipment including auxiliaries covered by this specification shall be designed and constructed for a minimum service life of twenty years excluding normal wear parts. The average annual usage is estimated to be 1,500 hours per year, with the majority of the usage occurring during a few storm events.

C. Pump and motor assembly shall be suited for continuous submerged service.

E. Pump and discharge housing shall be equipped with a locking assembly to hold the pump in place within the housing during pump operation. The pump shall rest on an O-ring to provide a watertight seal between the pump and housing assembly.

F. Pump and motor assembly shall be removable without disconnecting discharge piping.

G. Pump shall be complete with power and control cables attached. Cables shall reach from pump to junction box without splices.

H. The pump manufacturer shall certify that the pumps will operate in conjunction with the proposed wetwell and intake system as depicted on the Drawings under the conditions specified in paragraphs 1.03 and 1.04 of this Section. Pump costs shall include any recommended wet well modifications (i.e. divider walls or bays, anti-vortex grading, etc.) as deemed necessary by the pump manufacturer for proper and optimal pump operation. Such modifications are to be made at no additional cost to Owner.

I. Acceptable pump manufacturers:

a. Flygt a Xylem Brand,or approved equal

2.02 PUMP CONSTRUCTION

A. Major pump components manufactured of alloy steel conforming to ASTM A242 Corten Steel, ASTM A36 Steel, Type 304 and Type 316 stainless steel, grey cast iron Class 35 or other custom material.

B. The pump propeller blades shall be fabricated using Type 316 stainless steel or ASTM A743 material. The propeller shall be statically and dynamically balanced to 110% of operating speed and secured firmly to the tapered shaft with an alignment key and locknut.

C. The propeller shaft shall be machined from AISI 431 stainless steel or high tensile strength AISI 1045 steel stock with 300 series stainless steel plating on all seal areas. Shaft shall conform to the ASME Code for Transmission Shafting to transmit full load torque and have an additional safety factor for shockloads. The propeller shaft shall be supported and contained in place by multiple, angular contact bearings to prevent axial and radial misalignment or vibration of the shaft. The shaft bearing shall be sealed, oil lubricated, and designed for a bearing life of 100,000 hours use.

D. The pump shall be capable of running dry for extended periods of time without damage. Bearings are located in bearing housing of the motor unit and are sealed and protected from pumped media via mechanical seals on the propeller shaft. No wear shall take place at the point of seal to shaft contact. The propeller shaft and bearing assembly shall be contained in a machined bearing housing centrally supported by flow straightening vanes in the propeller bowl.

E. All metal surfaces coming into contact with the pumped media, other than stainless steel, shall be protected by a factory applied coating of Amercoat 240 Epoxy, Tankguard epoxy or approved alternate coating on the exterior of the pump. Prior to coating, all steel products shall meet the Steel Structures Painting Council clean specification recommended by the coating manufacturer. Coating shall be applied per coating manufacturer's recommendation.

F. Pump shall be protected by the use of factory installed sacrificial zinc anodes

E. Pump and pipe welding shall be continuous full penetration inside and out, and all flanges shall be welded inside and out. All slag shall be removed and undercutting shall not exceed 15% of material thickness.

2.03 ELECTRICAL CONNECTION

A. Power and instrumentation cables shall enter the top of the motor through one of the following sealing systems to prevent water entry to the motor through the cable entry.

1. The cable entry shall be comprised of cylindrical elastomer grommets, flanked by washers, all having a close tolerance fit against the cable outside diameter and the entry inside diameter and compressed by the entry body containing a strain relief function, separate from the function of sealing the cable. The assembly shall bear against a shoulder in the pump top and direct the cable axially upwards. The cable entry junction chamber and motor shall be separated by a stator lead sealing gland or terminal board, which shall isolate the motor interior from foreign material gaining access through the pump top. The cable entry water seal design shall preclude specific torque requirements to insure a watertight and submersible seal.

   The junction chamber, containing the terminal board, shall be sealed from the motor by an elastomer compression seal (O-ring). Connection between the cable conductors and stator leads shall be made with threaded compressed type binding post permanently affixed to a terminal board and thus leak proof.

2. The cable entry shall consist of a system comprising watertight Buna-N grommets located above epoxy sealed leads. The cable entry shall be further protected from water entry into the

cable entrance by means of a steel pipe which shall convey the power and instrumentation cables through the pump discharge housing to the electrical panel.

B. The cable protection and suspension system within the discharge column shall include a stainless steel beam with spring loaded hooks and a stainless steel wire unit to ensure that the cable is always strained and can't be damaged during operation. With a distance of maximum of 2 feet. The cable shall be fixed to the steel wire. Cable bundling kits will be used to help minimize cable movement. Watertight Roxtec Cable thrulet frame with packing - and filler will be provided for the cable entry into the steel discharge tube.

As an alternate the power and instrumentation cables inside the discharge housing can be installed in a steel pipe, extending from pump to discharge housing lid. Threaded at both ends for ease of removal.

2.04 MOTOR REQUIREMENTS

A. Motor housing manufactured of alloy steel conforming to Type 304 stainless steel, or grey cast iron Class 35 or other custom material

B. Motor characteristics

1. NEMA Design - B
2. Insulation Class - H
3. Squirrel Cage - Induction Type
4. Time Rating - Continuous
5. Voltage - 460 Volts / 3 Phase
6. Minimum B-10 Bearing Life - 100,000 hours, factory lubricated
7. Air filled
8. Service Factor - 1.15

C. Corrective power capacitors shall be provided by motor manufacturer.

2.05 SHAFT SEALS

A. Each pump shall be provided with a tandem mechanical shaft seal system. Seals shall run in an oil reservoir. Lapped seal faces shall be hydrodynamically lubricated at a constant rate. The lower/outer seal unit, between the pump and oil chamber, shall be a silicon tungsten carbide seal. The upper/inner seal, between the oil sump and motor housing, shall be silicon tungsten carbide ring or corrosion resistant cemented tungsten carbide (WCCR). Each interface shall be held in contact by its own spring system.

B. The seals shall require neither maintenance nor adjustment, but shall be easily inspected and replaceable.

C. Each pump shall be provided with an oil chamber for a shaft sealing system. The oil chamber shall house a pressure equalizer ring filled with air for oil pressure compensation. The drain and inspection plug, with positive anti-leak seal, shall be easily accessible from the outside.

2.06 PUMP MONITORING

A. A MAS801 monitoring sensor package shall be provided or approved equal. Pumps shall be equipped with a moisture detection device in the stator housing or in the oil filled shaft sealing

system. The moisture detection device shall alarm/shutdown pump unit. Relays compatible with the moisture detection device shall be provided by the pump manufacturer.

B. Motor winding thermostats shall be provided in the stator windings for thermal protection of the motor. These thermal switches shall be used in conjunction with and supplemental to external motor overload protection and shall be connected to the control panel. Relays compatible with thermostats shall be furnished with the pumps by pump manufacturer.

C. The MAS801 Monitoring system shall be mounted in the cabinet and contain per pump 1 Base unit acting as a gateway between the pump and the central monitoring, a central control unit (CU), and FOP display.

2.06 PUMP CAN HOUSING AND DISCHARGE PIPE

A. The pump discharge tube shall be provided by the pump manufacturer as a part of the pump to include the pump mounting ring or mounting plates, tube support assembly, intake cone assembly, pump access tube cover (drilled and tapped for 2-inch ARV (ARV by others), cable conduit junction box assembly, and elbow discharge assembly (rated at 15 psi) with ANSI bolt pattern flange. Design of the pump discharge and support tube shall be coordinated between the pump manufacturer and the Engineer to provide a properly designed and functional pump system for the purpose and design as indicated in the project drawings.

B. It shall be the responsibility of the pump manufacturer and the contractor to coordinate the respective mechanical and structural considerations to insure a proper and workable installation of the provided pump equipment.

C. The pump discharge tube shall be fabricated from a minimum 3/8" thick Corten steel conforming to ASTM A242, with all 316 SS fasteners and accessories. The pump discharge tube shall be provided with square support plates for installation. The pump discharge tube will require back wall bracing every 10 feet for vertical pipes over 10 feet in length. Pump tube shall be equipped with corrosion protection that includes aluminum sacrificial anodes.

D. The main pumps shall use a Flygt manufactured Formed Suction Intake (FSI) or US Army Corps of Engineers Type 10 FSI. The FSI shall be fabricated from ½" thick ASTM A242. The complete FSI shall be coated inside and outside with Amercoat 240 or approved equal. Surface preparation shall be in strict conformance with the coating manufacturers recommendations. Pump manufacturer shall provide Type 316 stainless steel hardware for installation of the FSIs to the wetwell floor. The FSI shall be able to support the weight of the pump housing, pump and water, etc.

2.07 QUALITY CONTROL

A. The pump manufacturer shall perform the following inspections and tests on each pump before shipment from factory:

a) Propeller, motor rating and electrical connection shall be checked for compliance to the customer's purchase order and the pump data plates.

b) A motor and cable insulation test for insulation defects shall be made.

c) Prior to submergence, the pump shall be run dry to establish correct rotation and mechanical integrity.

d) The pump shall be run for 30 minutes submerged a minimum of six (6) feet underwater.

e) A certified test curve (per HI standards) showing the performance of the pump shall be run and supplied to the engineer. The pump curves shall include flow (gpm), total head(ft), pump speed (rpm)efficiency, horsepower requirement of electric motor, Amps and Voltage.

f) After operational test (d), the insulation test (b) is to be performed again.

The pump cable end shall be sealed with a high quality protective covering to make it impervious to moisture or water seepage prior to electrical installation.

PART 3 EXECUTION

3.01 INSTALLATION

A. Construction of the station and installation of the pumps shall be coordinated with the pump manufacturer. All construction and installation shall be in conformance with the Drawings and Specifications and the pump manufacturer's recommendations.

3.02 ELECTRICAL AND CONTROL SYSTEMS

A. Electrical power, control system, and panels shall be as shown on the Drawings and described in the Specifications. The pump supplier shall be responsible for the electrical control system to ensure that the system functions properly.

3.03 START UP AND FINAL TESTING

A. Following installation of the pumping system and all controls, the Contractor shall make all provisions necessary to test complete operation of the station as follows:

1. Performance of each pump shall be demonstrated by running each pump separately for a minimum of 20 minutes and recording amperages and water levels every 5 minutes throughout the test. Submit results to the Engineer.

3.04 DEMONSTRATION

A. A representative from the pump manufacturer is to attend the start up to explain to Owner's personnel the proper operation and maintenance of the equipment.

END OF SECTION

SECTION 02261 JET GROUTING

PART 1 - GENERAL

1.01 SCOPE:

A. This Section specifies requirements for furnishing all labor, equipment, materials, and supplies necessary for soil stabilization by jet grouting as required to meet the project objectives specified herein.

B. The work shall consist of installing, monitoring and testing of Jet Grout within the limits indicated on the contract drawings

C. In connection with the Jet Grouting program, as shown on the drawings, the Jet Grouting Contractor shall provide all labor, materials, and equipment to accomplish the following items of work:

1. Mobilization & Demobilization
2. Drilling
3. Jet Grouting
4. Quality Control/Quality Assurance and verification
5. Spoil containment, collection, and disposal.

D. This section is intended for a performance type specification in so far that the Contractor shall be responsible for selecting jet grouting parameters, equipment, and construction methods of the Jet Grouted elements to meet the specified requirements of the Engineer. The Contractor is responsible for the design of the element or structure created by jet grouting.

1.02 PROJECT OBJECTIVES:

A. The project objectives are to provide an equivalent structural and hydraulically impermeable section at the designated location of the subaqueous utility crossing support wall. The jet grouting installation and construction shall match the depth of the adjacent steel sheet piles and overlap/integrate those sheet pile elements into the jet grout columns on either side of the subaqueous utility crossing. Jet grouting column construction will be terminated at the bottom of the lowest utility. Following achievement of the proper elevation, a conventional concrete gravity retaining wall shall be integrated into and constructed on top of the jet grout section, steel sheet piles and finish concrete cap.

B. Jet grouting is the in-situ jet cutting and mixing/grouting process that creates the desired geometries of a soil-cement grouted element. Jet grouting elements can be:

1. Columns, cylindrical shape (most common case)
2. Half columns, half cylindrical shape
3. Elliptical (bowtie or wrapped candy) shapes.

C. Construction of a desired soil cement wall as overlapping Jet-Grouted columns in single or multiple rows, with the following characteristics:

1. Minimum overlapping column wall thickness: 3.5 Feet
2. Minimum column overlap: 1.5 Feet
3. Minimum Column Depth: (-) 32 NAVD

4. Maximum Hydraulic Conductivity: <10 Gal/Day/Ft2 (i.e., <4.7 -E04 cm/sec)

5. Minimum Stiffness (EI): 13,725,700 K-in2/FT

6. Minimum Unconfined Compressive Strength (UCS): 1000 psi

7. Vertical and horizontal tolerances:

    a. Vertical: (+/-) 0.25 Ft
    b. Horizontal: (+/-) 0.25 Ft

1.03 JOB SITE CONDITIONS

A. Prior to submitting a bid price for the Jet Grouting, the grouting Contractor shall conduct a site inspection and review available subsurface information (including all geotechnical engineering and data reports). Prior to bid, Contractor shall verify the suitability of his methods for the project based on the conditions indicated by the subsurface information provided.

B. The utility locations shown on the Contract Drawings are based on the best information available and identifies and distinguishes between abandoned, existing to be abandoned or removed, existing to remain, and proposed new utilities to be provided by the Owner. The Contractor will be responsible for verification of below ground utilities field located.

C. The Contractor shall be responsible for obtaining any State and municipal permits (if required) and conforming to all State and local regulations.

D. Other project conditions shall include:

1. Environmental restrictions:

2. Noise Restrictions:

3. Work boundaries:

4. Hours for construction:

5. Hauling Restrictions:

6. Waste material handling and disposal:

7. Overhead Utilities:

8. Obstructions:

9. Deformation limitations for sensitive structures:

10. Site Instrumentation requirements for adjacent sensitive structures.

1.04 REFERENCES

A. The most recent version of the following shall apply:

1. ASTM C150 or AASHTO M85 Portland Cement

2. ASTM D1633 - Standard Test Method for Compressive Strength of Molded Soil-Cement Cylinders

3. API Recommended Practice 13B-1: Standard Procedures for Field Testing Water Based Drilling Fluids

4. ACI 233R Slag Cement in Concrete and Mortar or C989-99 Standard Specification for Ground Granulated Blast-Furnace Slag for Use in Concrete and Mortars

5. ASTM D 2113, Practice for Diamond Core Drilling for Site Investigation.

6. ASTM D3740 Standard Practice for Minimum Requirements for Agencies Engaged in the Testing and/or Inspection of Soil and Rock as Used in Engineering Design and Construction.

7. ASTM C618 or AASHTO M295 - Fly Ash

8. API Standard 13A Specification for Oil-Well Drilling Fluid Materials

9. AASHTO T26 Water Testing of Non-Potable Water or ASTM C1602/C 1602M Standard Specification for Mixing Water Used in the Production of Hydraulic Cement Concrete.

10. Procedure for Constant Head Hydraulic Conductivity Tests in Single Drill Holes, USBR7310-89, United States Department of the Interior, Bureau of Reclamation.

11. ASTM D6391, Standard Test Method for Field Measurement of Hydraulic Conductivity Using Borehole Infiltration, ASTM International

12. ASTM C42 – Standard Test Method for Obtaining and Testing Drilled Cores and Sawed Beams of Concrete

13. ASTM C469 – Standard Test Method for Static Modulus of Elasticity and Poisson's Ratio of Concrete in Compression

14. ASTM D5084 - Standard Test Methods for Measurement of Hydraulic Conductivity of Saturated Porous Materials Using a Flexible Wall Permeameter

15. Contract Documents

1.05 DEFINITIONS

A. Fluid Jet Grouting: The jet grouting technique where one fluid, typically a neat cement grout, is injected at high velocity through rotating horizontal radial nozzle(s), delivered through a coaxial nozzle(s), to directly erode and mix with the in-situ soil.

B. Fresh-on-fresh sequence (also referred to as wet-on-wet): Method that involves jet grouting elements successively without waiting for the grout to harden in the adjacent overlapping elements.

C. Horizontal Jet Grouting: Grouting performed from horizontal or sub-horizontal borehole (within +/- 20 degrees from the horizontal plane).

D. Hydraulic conductivity: The k value used in Darcy's law for flow through soil. ASTM and many engineers and geologists who deal with groundwater now use the term "hydraulic conductivity." The term "permeability" is reserved for those properties of soil and rock alone that determine the flow through it of any fluid including gas, water, oil, and contaminants.

E. Jet Grouted Slab: A horizontal structure formed by vertical jet grouting. The primary role of a slab is frequently to minimize water inflow during excavation of the soil above it. Slabs can also serve as struts.

F. Jet Grouting Parameters: Pressure of the fluid(s) within the jet grouting string; flow rate of the fluid(s); grout composition; rotational speed of the jet grouting string; rate of withdrawal or insertion of the jet grouting string; and number and size of nozzles.

G. Jet Grouting String: Jointed rods with single, double, or triple inner conduit that conveys the jet grouting fluid(s) to the monitor.

H. Jet Grouting Supervisor: The individual on site who is in practical and responsible charge for the jet grouting work.

I. Jet Grouting: An in-situ injection technique employed with specialized equipment that includes grout pump(s), grout mixer, drill rig, drill rods and injection monitor with horizontal radial nozzles delivering high velocity fluids to erode, mix, and stabilize in-situ soils using an engineered grout slurry.

J. Monitor (adjusted for single, double, and triple systems): A single, double, or triple fluid drill pipe attached to the end of a drilling string and designed to deliver one to three fluids of the Jet Grouting process, typically air, water, and/or grout. The monitor has one or more injection points (nozzles).

K. Pre-drilling: Method that utilizes traditional soil drilling techniques and/or equipment to pre-bore each jet grout hole prior to jet grouting.

L. Pre-jetting, precutting, or prewashing: The method in which the jet grouting of an element is facilitated by a preliminary disaggregation phase consisting of jetting with water and/or other fluids.

M. Primary-secondary sequence: Method in which installation of an overlapping element cannot commence before a specified hardening time or achievement of predetermined strength of the adjacent previously constructed elements(s).

N. Single Fluid Jet Grouting: The jet grouting technique where a single fluid, typically neat cement grout, is injected at high velocity through horizontal radial nozzle(s) to directly erode and mix with the in-situ soil.

O. Soil-cement element: A column, partial column (sector) or panel (planar shape also known as fans), of soil-cement formed by jet grouting, used as a component of a soil-cement structure.

P. Soil-cement structure: A single zone or block of jet grout elements that are partially or fully interlocked as indicated on the Contract Drawings. Soil cement structures shall be comprised of soil cement elements of sufficient pattern and spacing as to stabilize the soil mass within the limits shown on the Contract Drawings to meet the performance requirements specified in this Section.

Q. Soil-cement: Mixture of grout slurry and in-situ soils formed by the jet grouting process.

R. Specific energy: pressure times flow divided by lift rate.

S. Spoil Return: All materials including but not limited to liquids, semi-solids, and solids, which are discharged above ground surface during, or as a result of jet grouting. Spoils consist of native soil, ground water, grout, and erosional water (if any) injected as part of the jet grouting process.

T. Structural reinforcement: members inserted into the jet grout column to provide additional strength, including deformed bars, high strength steel thread bars, steel casing, or steel beams.

U. Triple Fluid Jet Grouting: The jet grouting technique where one fluid, typically water, is injected at high velocity through horizontal radial nozzle(s) and is assisted by a second fluid, typically air delivered through a coaxial nozzle(s), to erode the in-situ soil, while a separate nozzle placed lower on the monitor delivers a third fluid, typically neat cement grout, at lower velocity to simultaneously fill the soil zone eroded by the cutting fluids (air and water).

V. UCS: Unconfined Compressive Strength of jet grouted mixture at 28days of cured age.

W. Uniformity: The amount of uniformly mixed material measured by core recovery. It is calculated as the total length of recovered core minus the sum of the lengths of unmixed soil regions or lumps that extend across the entire diameter of the core divided by the total core run length expressed as a percentage.

1.06 QUALIFICATIONS

Due to the specialized nature of the jet grouting portion of the work, the Jet Grouting Contractor shall be pre-qualified before bidding on this work. Contractors must meet the following experience criteria:

A. Project Experience

1. The Jet grouting Contractor must have at least five years jet grouting experience over the last ten years; and have completed at least five (5) Jet Grouting projects, with at least two (2) projects having objectives and jet-grouting system (single, double or triple) similar to those of this project and in the same type of soil.

B. Personnel Experience

1. The Jet grouting supervisor must have at least three (3) years on site experience managing jet grouting field operations of comparable or larger size and scope and must have supervised at least two (2) projects within the past five (5) years employing the jet

grouting technique proposed for this project. The supervisor shall have experience and knowledge of all aspects of jet grouting as required for the project and shall be always present at the work site during jet grouting operations.

1.07 SUBMITTALS

A. The Engineer will approve or reject the Contractor's qualifications within fifteen calendar days after receipt of a complete qualifications' submission. Additional time required due to incomplete or unacceptable submittals will not be cause for time extension or impact or delay claims. All costs associated with incomplete or unacceptable submittals shall be borne by the Contractor.

B. Qualifications

The following shall be submitted to the Engineer by the grouting Contractor eight weeks prior to the start of the work:

1. A list of at least (5) previously completed projects for review by the Owner's representative. The list shall include a description of the project location, scope and magnitude, and contact person with phone number.

2. A list of at least (2) previously completed projects of similar scope and purpose for review by the Owner's representative. The list shall include a description of the project, relative size, and contact person with phone number.

3. Resumes of the management, supervisory, and key personnel, for approval by the Owner's representative, in accordance with qualifications of article 1.06 above.

C. Jet Grouting Equipment

The following shall be submitted to the Owner's representative by the grouting Contractor eight weeks prior to the start of the work:

1. Catalog cuts, details of grout mixers, pumps, drill rigs, and a plan view of the jet grout equipment arrangement proposed for use on this project, noting any equipment that has been modified or is of unique construction.

2. Examples of field data collection forms, including a sample copy of daily field report as described in article 3.04.

D. Grout Mix Design

The following shall be submitted to the Owner's representative by the grouting Contractor eight weeks prior to the start of the work:

1. Mix design for the project indicating sources and types of grout materials, including (if available) field test data from previous projects. If the grouting Contractor intends to deviate from the materials defined in Section 2.1 of this specification, it shall submit evidence of satisfactory use of the proposed material from past projects with similar soil conditions or pre-construction trials.

2. Method for verifying grout mix proportions.

E. Field Demonstration Test Program

1. Details of proposed field demonstration test program for jet grouting, as specified in Section 3.01 Testing Program. This shall include location of test columns, layout of test pattern, jet grouting parameters to be used and variables to be tested during test program, and details of proposed quality control/quality assurance testing to meet acceptance criteria specified in article 3.05 Acceptance Criteria. The test program plan shall be submitted to the Owner's representative by the grouting Contractor eight weeks prior to the start of the work. The Engineer shall review and comment within 15 days of receipt of complete submittal.

2. Following performance of the field demonstration test program and prior to beginning production jet grouting operations, submit a summary of the test program including details regarding as-built layout of test area, drilling procedures, grout mixture, jet grouting parameters, quality control/quality assurance records and test results, and proposed jet grouting parameters for use in production grouting based on test program. The Engineer shall review and comment within seven days of receipt of complete submittal.

F. Jet Grouting Procedure

The following shall be submitted to the Owner's representative by the grouting Contractor four weeks prior to the start of the work:

1. General Work Procedures Plan outlining the spacing, location, depth, and general sequence to achieve the specified criteria detailed in this specification. Jet Grout element locations shall be dimensionally referenced to the contract drawings and shown on layout plans of suitable scale to effectively indicate the details of the layout. If pre-drilling of jet grout holes is required, describe the methods and type of equipment to be used.

2. A general jet grout spoil return management plan outlining waste containment methods and areas during jet grouting and treatment and removal plans for jet grout spoil return. Include estimated width of annulus for spoil return and corrective actions to be taken if spoil return is not free flowing, interrupted or episodic.

3. Jet grout site specific safety plan or job hazard analysis

G. Quality assurance, quality control and verification procedures to be used for the field test and production work.

1. Details of the procedures to obtain soil-cement samples; and catalog cuts or shop fabrication drawings of the soil-cement sampling device and curing boxes. See article 3.03 Quality Control/Quality Assurance.

2. Proposed details and formats of all required tabular and graphical data presentations that will be submitted to the Engineer during the course of the Work. This will include submittal of a copy of the reports used for data monitoring and recording, as described in 3.03 Quality Control/ Quality Assurance.

3. Details for hydraulic conductivity testing and/or water-tightness testing if specified.

4. Details of column diameter and overlap verification.

5. Daily Reports shall be provided within one business day after the end of a work shift, the daily reports as described in 3.4 shall be submitted to the Owner's representative by the grouting Contractor.

PART 2 - MATERIALS & EQUIPMENT

2.01 MATERIALS

The grout slurry may consist of a homogeneous mixture of any of the following materials:

A. Cement, Portland, type I or II, ASTM C-150 or AASHTO M85

B. Ground granulated blast furnace slag ASTM C989 Standard Specification for Ground Granulated Blast-Furnace Slag for Use in Concrete and Mortars

C. Flyash Class C or F, ASTM C618 or AASHTO M295.

D. Potable Water shall be free of deleterious materials that may adversely affect the grout.

E. Bentonite, if required, powdered bentonite per API Standard 13A

F. The ratios of the material components, by weight, shall be proposed by the Contractor, confirmed during the preconstruction test program, and reviewed by the Engineer. Once accepted, grout slurry composition shall not be changed unless requested in writing by the Contractor and accepted in writing by the Engineer.

2.02 EQUIPMENT

A. General: All equipment used for drilling boreholes; lowering, raising, and rotating jet monitors; mixing grout; supplying pressurized grout and air-water to jet monitors; and jet monitors shall have proven performance records for use in Jet Grouting work, as demonstrated by the information to be submitted under Section 1.5.

B. Drilling Equipment: Use drilling equipment of a type and capacity suitable for drilling required hole diameters and depths, and lowering, raising, and rotating jet grout monitors to the depths and at the rates required to perform the work as shown on the Contract Drawings and as specified herein. The drill rig shall be equipped with automated controls to regulate and maintain consistent rod lift rate and rod RPM and shall have pressure gauges and flow meters for all fluids injected.

C. Grout Mixing and Injection Equipment: Use grout mixers and holding tanks, water tanks, air compressors, and pumps of sufficient capacity to ensure adequate supply of grout, air, and water at required pressure to the Jet Grouting monitors during a full work shift to produce grout elements of the quality and dimensions necessary.

D. Jet-Grouting pump: Shall be capable, with the nozzles proposed, of providing the required pressure and flow rate adequate for the execution of the work.

E. Compressor (for double and triple fluid Jet-Grouting): Shall be capable of producing the pressure and flow rate values proposed by the Contractor depending on the parameters chosen.

F. Filling grout pump (for triple Jet-Grouting): Shall be capable of producing the pressure and flow rate proposed by the Contractor depending on the parameter chosen.

G. Jet Grout Tools: Use Jet Grouting monitors with appropriate nozzles with the capacity suitable for producing jet grout elements in the soil types identified during Subsurface Explorations performed at the site, and of the size and depth shown on the Contract Drawings and as specified herein. The drill hole diameter shall be sufficiently large to be a clear path for continuous spoil return during all jetting operations.

H. Equipment Instrumentation: Provide instrumentation that allows continuous monitoring and automatic recording of data throughout the jet grouting operations. As a minimum, the following shall be provided:

1. Pressure gauges/devices at the drilling rig to automatically record pressures of cement grout, water, and air during the grouting process.

2. Flow meter(s) to monitor and record the rate and total volume of grouting fluids through the grouting monitor at every element.

3. Devices that automatically monitor and record the rate of monitor rotation and withdrawal.

PART 3 - EXECUTION

3.01 TEST PROGRAM

A. Prior to production work, a test program shall be conducted by the Contractor in accordance with the accepted work plan. The test program shall be used to optimize/verify the various parameters including type of jet-grouting (single, double or triple), necessity of pre-jetting with water, grout mix composition, fluid(s) flows and pressures, rotational speed, lift rate, spoil return, grout, and number and size of nozzles; and confirm that resultant in situ soil-cement properties and dimensions meet required design criteria.

B. The test program will be observed, reviewed, and verified for contract conformance by the Engineer. The test program shall be installed in areas near the planned production work at a location agreed upon between the Engineer and jet grouting subcontractor and in representative soils and depths anticipated to be found during production work.

C. Each test section shall consist of a plan of elements suitable to demonstrate feasibility and installed at the same elevations specified for the production jet grouting work.

D. The test elements shall be exposed by excavation (where possible) and measured for geometric properties. If full-depth excavation is not feasible, core samples or other testing methods shall be used to demonstrate column size/geometry. In cases where excavation is not reasonable, coring at the centroid of a group of three (3) elements shall be conducted, as a minimum.

1. Where coring is used to verify diameter, verticality shall be measured for each test column and the coreholes to verify the location of the elements at the final depth.

2. Three acceptable/representative specimens from each column shall be sent to an independent Laboratory for the tests required to satisfy the criteria specified in Acceptance Criteria.

E. Perform hydraulic conductivity testing if specified when jet grouting is used for water cutoff purposes. Hydraulic conductivity testing procedures shall be proposed by the Contractor and approved by the Engineer.

F. The results of the test program and the recommended jet grouting parameters for the production work shall be submitted in a report to the Engineer for review. The Contractor, at their expense, may be required to repeat the construction of a test section if the results of the test program do not meet the project requirements. The test program shall confirm that the resultant soil-cement properties met the required design criteria prior to the Contractor proceeding with production work.

3.02 PRODUCTION WORK

Execute production jet grouting using the same jet grout tooling, materials, and procedures as demonstrated from the satisfactory set of test elements.

Install jet grout elements, such that continuous spoil returns up the borehole annulus is achieved during all work. When spoils return is lost, the Contractor shall stop jetting and reestablish spoils return prior to resuming jet grouting.

Horizontal location and verticality/deviation shall meet the requirements of 3.5.5 and 3.5.6.

The sequence of jet grout column installation and the need to perform pre-jetting is the responsibility of the jet grouting Contractor and will be based on the results of the successful test program.

A. Maintain a clean site and dispose of all spoil debris, water, and spilled material during jet grouting operations.

B. Equipment for mixing, holding, and pumping grout shall be in a secure location and shall be operated to minimize spillage of material. No material will be allowed to enter storm drains or other drainage courses.

C. The Contractor shall monitor nearby grade, structures, and utilities during all jetting work.

D. If jet-grouting is interrupted during the execution of a column, the re-start of the jetting shall be undertaken at least six inches below the stopping point.,

E. Site access shall be provided to Owner's representatives for observation of the work.

F. If reinforcement is required, the Contractor shall install it at the design location in the fresh column, immediately after the completion of the jet-grouted column or shall install in a borehole drilled in the hardened column.

3.03 QUALITY CONTROL/QUALITY ASSURANCE

A. All Jet Grouting shall be performed in the presence of the Owner's QC/QA Representative. Owner's QC/QA representative shall be notified prior to initiating jet grouting. Monitoring and logging of Jet Grouting operations for both test areas and production work shall be performed by the jet grouting Contractor.

B. The Contractor's equipment shall be configured to record and continuously show all fluid flows and pressures, rotational speed, depth, and rod lift rates. The rod lift rate and rod RPM shall be set by the driller then automatically controlled by the drill rig and automatically recorded on the jet grout installation log during the entire jet grouting process. The Owner's QC/QA representative shall be provided means to monitor this information in real time on request.

C. All the data monitored and recorded, as described in Section 3.3.2, shall be made available within one working day (Section 1.5.8) to the Engineer in a format previously agreed on prior to the work. The Contractor shall supply the Engineer with the software used for this task. The software shall be capable of processing the recorded data and presenting the data graphically in a satisfactory manner.

D. Grout mix proportions shall be measured and documented by the Contractor per the submittal requirements in section 1.5.4 above. Appropriate records shall be kept by the Contractor and submitted to the Engineer to verify that grout mixture(s) are as accepted. Include daily quantities of materials used in Daily Reports.

E. Throughout the jet grouting operations, perform continuous coring to full depth on five (5%) percent of production columns to obtain drill cores of the jet grouted soil. The core will be evaluated by the Engineer for compliance with specific acceptance criteria defined in 3.5 herein. The Contractor shall be notified immediately if the soil-cement samples do not meet the acceptance criteria outlined herein.

F. Perform hydraulic conductivity testing of production elements if jet grouting is used for soil-cement structures such as walls and slabs for water control purposes.

G. Perform borehole deviation measurements on 75 percent of the columns.

3.04 DAILY REPORTS

A. Within one business day of a work shift, submit summary daily reports during production jet grouting that provide the information listed below. A sample of the report form proposed for use by the Contractor shall be submitted to the Engineer for approval prior to the start of work.

Daily reports shall include the following:

1. Equipment and Personnel on site

2. Work initiated and completed.

3. Production interruptions

4. Grouting Records

    a. Jet grout element number, size, and location.

    b. Time and date of beginning and completion of each grout element, including interruptions to the jetting process or material supply.

c. Grout mix data, including mix proportions and unit weight density measurements.

d. Injection pressure of all fluids used to construct each grout element.

e. Flow rates of all fluids used to construct each grout element.

f. Rotation rate and lift rate of jet rods for each grout element.

g. Total grout quantity used for each element.

h. Top and bottom elevations of the jet grout element.

i. Whether flow of spoils return was continuous.

5. Total quantities of materials used for that day.

6. Observations of any unusual, or unanticipated conditions including obstructions, stoppages, loss of circulation, etc., impacts on instrumentation or monitoring.

7. Applicable verification testing done.

Continuous recording of jet grouting parameters shall be provided for each production column to verify consistency with the test program results.

3.05 ACCEPTANCE CRITERIA

A. Installation records from 3.03 and daily reports from 3.04 documenting that the selected parameters from the test program were accurately repeated for the production work.

B. Coring / Uniformity:

C. Full-depth core samples retrieved by the contractor shall be used to evaluate uniformity.

D. Core recovery (expressed as a percentage) is equal to the total length of recovered core divided by the total core run length. Length of recovered core includes lengths of treated and untreated soil.

E. Percent treatment is calculated as the total length of recovered core minus the sum of the lengths of unmixed soil regions or lumps that extend across the entire diameter of the core divided by the total core run length expressed as a percentage.

F. Uniformity is acceptable if percent treatment is at least 75 percent for every 5-ft core run. If the minimum percent treatment cannot be confirmed by coring in coarse sandy or gravelly soil, downhole camera/video can be used to confirm uniformity.

G. If the contractor uses core runs shorter than 5 ft (e.g., 3 ft), then the recovery and percent treatment can be calculated by adding equal amounts of core run length on either side of the short core run length to make up a total 5-ft run length for calculation purposes.

H. Hydraulic conductivity: 10^{-7} Gal/Day/Ft^2 (<4.7 -E04 cm/sec.

I. Unconfined Compressive Strength of Jet Grout Soil Cement Mix: At least ninety (90%) percent of all jet grout samples tested shall have a minimum 28-day unconfined compressive strength of 1000 psi.

J. Minimum overlap thickness: 1.5 feet

K. Borehole deviation and horizontal tolerances:

1. Vertical and horizontal tolerances:

a. Vertical: (+/-) 0.25 Ft

b. Horizontal: (+/-) 0.25 Ft

L. The center of the elements shall not be more than three" from the indicated plan location.

M. Deviations shall be less than required for adequate column overlap.

PART 4 - MEASUREMENT AND PAYMENT

3.06 MEASUREMENT

A. Jet Grouting shall be measured as follows:

1. Mobilization and demobilization will be measured on a lump sum basis. Mobilization pay item will be deemed complete when the Contractor's equipment is set up and ready to commence jet grouting operations. Demobilization item will be complete when all equipment is removed.

2. Test programs, including verification testing, will be measured on a lump sum basis. Test program will be deemed complete when the test elements are installed, and the test grouting report is submitted, and the results accepted by the Engineer.

3. Jet grouting will be measured on a lump sum basis. Jet grouting will be deemed complete when all the columns are installed and accepted by the Engineer.

4. No separate measurement will be made for the Contractor's Quality Assurance-Quality Control Program, including verification testing, all of which shall be considered part of the Work of jet grouting. However, if coring is utilized as a verification test, coring will be measured by the linear foot of core hole.

3.07 PAYMENT

A. Mobilization and demobilization shall be paid as lump sum items.

B. Test Program shall be paid as a separate lump sum items.

C. Jet Grouting shall be paid as a separate lump sum item.

D. No separate payment will be made for the Contractor's Quality Assurance-Quality Control Program, including verification testing, all of which shall be considered part of the Work of

jet grouting. However, if coring is utilized as a verification test, payment will be made on a unit price basis per linear foot of core hole.

END OF SECTION

SECTION 02262 STEEL SHEET PILING

PART 1 - GENERAL

1.01 SCOPE:

A. Summary of Work: The CONTRACTOR shall furnish all labor, materials, and equipment necessary to install all temporary and permanent sheet piling, including wales, tie rods, and bolts, for the structure as indicated on the Drawings and specified herein.

B. Related Work Specified Elsewhere:

1. SECTION 01300 - Submittals

2. **SECTION 09900 - Protective Coatings]**

1.02 APPLICABLE STANDARDS AND PUBLICATIONS:

A. Standards or Codes: The edition of the publications of the organizations listed below in effect at the time of the advertisement for bids form a part of this specification to the extent referenced. See the various paragraphs for the specified standard. In the case of a conflict between the requirements of this SECTION and those of the listed document, the requirements of this SECTION shall prevail.

1. American Society for Testing and Materials (ASTM):

a. A36 - Standard Specification for Carbon Structural Steel

b. A325 - Standard Specification for Structural Bolts, Steel, Heat Treated, 120/105 ksi (kips per square inch) Minimum Tensile Strength

c. A328 - Standard Specification for Steel Sheet Piling

d. A563 - Standard Specification for Carbon and Alloy Steel Nuts [Metric]

e. A572 - Standard Specification for High-Strength Low-Alloy Columbium-Vanadium Structural Steel

f. A668 - Standard Specification for Steel Forgings, Carbon and Alloy, for General Industrial Use

2. American Welding Society (AWS):

a. AWS D1.1 - Structural Welding Code - Steel

1.03 DEFINITIONS: (Not Applicable)

1.04 SUBMITTALS:

A. The CONTRACTOR shall make submittals for Steel Sheet Piling in accordance with SECTION 01300 and the following provisions. The CONTRACTOR shall be responsible for coordination of materials, equipment, and installation regardless if the submittals are made together or separately.

1. For Temporary Sheet Piles:

a. The CONTRACTOR shall submit the temporary steel sheet pile design signed and sealed by a Professional Engineer registered in the State of Florida.

b. Submit fabrication and erection drawings for temporary piling, wales, tie rods, and accessories prior to installation signed and sealed by a Professional Engineer registered in the State of Florida.

2. For Permanent Sheet Piles:

a. Materials submission as identified in Part 2 of this SECTION.

b. Pile driving installation plan.

c. Submit certification that surface preparation and protective coatings have been applied in conformance with specifications.

3. For Temporary and Permanent Sheet Piles:

a. Make and model of Press-In equipment.

B. During pile installation, the CONTRACTOR shall submit records to the ENGINEER each day including the following for each temporary and permanent sheet pile:

1. Name of structure and pile drive-line designation

2. Driven pile length

3. Pile length after cut off

4. Pile cut off and tip elevations

5. Ground surface elevation during driving

6. Final driving resistance and pressure gauge readings.

7. Date and time of day pile is driven

8. Heaving or redriving data

9. Remarks concerning pile-driving operations

1.05 QUALIFICATIONS:

A. Experience Requirement:

1. The CONTRACTOR shall have a minimum of five (5) years experience installing steel sheet piles by the Press-In Method.

1.06 RESPONSIBILITIES:

A. The CONTRACTOR shall be responsible for layout of the piles to the location shown on the Drawings. The CONTRACTOR shall establish monitoring devices and benchmarks as required to complete the WORK.

1.07 CERTIFICATIONS AND TESTING: Not Used

1.08 INSPECTION COORDINATION:

A. The CONTRACTOR shall provide access to the WORK for the ENGINEER as requested for inspection. The CONTRACTOR shall provide at least 48-hour advance notice of its intention to begin new WORK activities.

1.09 WARRANTY:

A. The MANUFACTURER shall warrant the EQUIPMENT, MATERIALS and PRODUCTS specified in this SECTION against defective materials and workmanship with the MANUFACTURER's standard warranty, but for no less than one (1) year from the date of Substantial Completion, and as described in Article 13 of Section 00700 - General Terms and Conditions.

B. The CONTRACTOR shall warrant the WORK against defects for one (1) year from the date of Substantial Completion and as described in Article 13 of Section 00700 - General Terms and Conditions.

PART 2 - PRODUCTS

2.01 PRESS-IN STEEL SHEET PILES:

A. The CONTRACTOR shall provide Steel Sheet Pile in accordance with the following:

1. Sheet piles shall be the size and make as shown on Drawings or approved equal.

2. Permanent steel sheet piles shall be manufactured of hot-rolled steel conforming to ASTM A572, Grade 50. Use of cold-rolled and/or cold-formed temporary and permanent sheet piles is not permitted.

3. Sheet piles shall not have a camber or sweep more than the permitted mill tolerance.

4. Store on platforms, skids or other supports at the Site and support to prevent excessive deflection.

B. The CONTRACTOR shall drive steel sheet piles to the specified elevation.

C. The CONTRACTOR shall provide equipment for driving steel sheet piles as required to complete the WORK and as specified below:

1. The sheet piles shall be driven with an approved non-noise, non-vibratory hydraulic pile press-in and extraction machine.

2. The pile press-in equipment shall be operated at all times at the speeds and conditions recommended by the hydraulic pile press-in MANUFACTURER.

D. The CONTRACTOR shall provide Wales, Plate and Washers conforming to ASTM A36.

E. The CONTRACTOR shall provide tie rods conforming to ASTM A572 for 65 ksi yield stress.

F. The CONTRACTOR shall provide bolts and nuts as follows:

1. Bolts shall conform to A325, otherwise as indicated on the Drawings.

2. Nuts shall conform to ASTM A563.

G. The CONTRACTOR shall provide turnbuckles conforming to ASTM A563.

H. The CONTRACTOR shall provide shop protective coatings as follows:

1. Apply to all wales, tie rods, and accessories.

2. Apply to all sheet piling except as otherwise indicated.

3. Conform to coating system as specified in SECTION 09900 and System S-4.

PART 3 - EXECUTION

3.01 PRESS-IN STEEL SHEET PILES: The CONTRACTOR shall provide pile press-in equipment and press-in steel sheet piles in accordance with the following:

A. Templates: A template shall be provided for each location and be constructed to locate the relative position of the proposed piling layout.

B. Equipment for Press-In Steel Sheet Piles:

1. All pile-installation equipment shall be subject to the ENGINEER's approval after inspection at the job Site.

2. At any time during the progress of the WORK, equipment, which in the ENGINEER's opinion, is in poor operating condition will not be approved for pile installation.

C. Driving Procedure:

1. Sheet piles shall not be pressed-in until inspected and approved for installation.

2. Do not install coated piling until coating has cured a minimum of one (1) week (7 days).

3. Prior to driving pilings in water, a horizontal line shall be painted on both sides of each piling at a fixed distance from the bottom so that it is visible above the water line after installation. This line shall indicate the profile of the bottom elevation of installed pilings so potential problem areas can be identified by abrupt changes in elevation.

4. Pilings shall be Press-in installation procedures and approved methods to ensure no damage to the piles and proper interlocking over their entire lengths. Installation equipment shall be maintained in proper alignment during driving operations by the use of leads or guides attached to the equipment.

5. Pilings damaged during driving or those Press-in out of interlock shall be removed and replaced at the CONTRACTOR's expense.

6. Pilings shall be Press-in without the aid of a water jet or auger, unless authorized by the ENGINEER. Authorized jetting and/or augering shall be performed on both sides of the pilings simultaneously or at the piling centerline and must be discontinued at least **10** feet before final seating of pilings. Adequate precautions shall be taken to ensure that pilings are pressed-in plumb. If the forward or leading edge of the piling wall is found to be out of plumb, the CONTRACTOR shall stop work immediately and provide the ENGINEER with a correction plan. If approved, other corrective measures may be employed to ensure that succeeding pilings are plumb. The maximum permissible vertical alignment deviation (parallel and perpendicular to the wall alignment) for any piling shall be 1/8 inch per foot of length.

7. Pilings in each run or continuous length of piling wall shall be Pressed-in, to the required elevation in accordance with the equipment manufacturers recommendations. No piling shall be Pressed-in to a lower elevation than those behind it in the same run, except when the pilings behind it cannot be Pressed-in deeper. If the piling next to the one being Press-in tends to follow below final elevation, it may be pinned to the next adjacent piling. If obstructions restrict driving a piling to the specified elevation, the obstructions shall be removed or penetrated with an auger or chisel beam. If the CONTRACTOR demonstrates that removal or penetration is impractical, the CONTRACTOR shall make changes in the design alignment of the piling structure as directed to ensure the adequacy and stability of the structure. Pilings shall be Press-in to the depths shown and shall extend up to the elevation indicated for the tops of the piles.

D. Bearing Elevation:

1. The sheet piles shall be Pressed-in to the bearing elevation indicated on the Drawings.

E. Cutoff:

1. Piles shall be cut off perpendicular to the vertical axis of the pile and to within one half inch of the cutoff elevation indicated.

2. Remove the portion of the pile cut off from the Site.

3. If excavation is required to achieve pile cutoff, remove the excess excavated materials as directed by the ENGINEER.

4. Splicing shall not be permitted without approval of the ENGINEER.

F. Installation Tolerance:

1. Tolerances in Driving: All piles shall be Pressed-in with a variation of not more than one eighth inch per foot of pile length from the vertical for plumb piles. Top of pile shall be within three (3) inches of the location indicated. Manipulation of piles to force them into position will not be permitted. All piles will be checked for heave. Piles found to have heaved shall be re-Pressed-in to the required point elevation.

G. Predrilling and Jetting:

1. Predrilling or jetting will not be permitted without written approval from the ENGINEER.

H. Rejected Piles:

1. The ENGINEER will determine the acceptability of all piles Pressed-in and may reject those piles that do not conform to the specifications.

2. For those piles that have been rejected.

a. Withdraw the pile and drive a new pile.

I. Sheet Pile Bracing: Install permanent wales, tie rods and accessories as indicated.

J. Provide temporary bracing as required prior to installation of permanent bracing.

END OF SECTION

SECTION 02367 FOUNDATION PILING (PRESTRESSED CONCRETE)

PART 1 - GENERAL

1.01 SCOPE:

A. Summary of Work: The CONTRACTOR shall furnish all labor, equipment, and materials necessary to install all foundation piling for the structures as shown or specified.

B. Related Work Specified Elsewhere:

1. SECTION 01300 - Submittals
2. SECTION 03050 - Concrete Admixture Waterproofing
3. SECTION 09900 - Protective Coatings

1.02 APPLICABLE STANDARDS AND PUBLICATIONS:

A. Standards or Codes: The edition of the publications of the organizations listed below in effect at the time of the advertisement for bids form a part of this specification to the extent referenced. See the various paragraphs for the specified standard. In the case of a conflict between the requirements of this SECTION and those of the listed document, the requirements of this SECTION shall prevail.

1. American Concrete Institute (ACI):
    a. 211.4R - Guide for Selecting Proportions for High-Strength Concrete Using Portland Cement and Other Cementitious Materials
    b. 214.3R - Simplified Version of the Recommended Practice for Evaluation of Strength Test Results of Concrete
    c. 304R - Guide for Measuring, Mixing, Transporting, and Placing Concrete
    d. 305R - Guide to Hot Weather Concreting
    e. 306R - Guide to Cold Weather Concreting
    f. 309R - Guide for Consolidation of Concrete
    g. 315 - Manual of Standard Practice for Detailing Reinforced Concrete Structures
    h. 318/318R - Building Code Requirements for Reinforced Concrete and Commentary
    i. 543R - Guide to Design, Manufacture, and Installation of Concrete Piles
2. American Society for Testing and Materials (ASTM):
    a. A416 - Standard Specification for Low-Relaxation, Seven-Wire Steel Strand for Prestressed Concrete
    b. A421 - Standard Specification for Stress-Relieved Steel Wire for Prestressed Concrete
    c. A615 - Standard Specification for Deformed and Plain Carbon-Steel Bars for Concrete Reinforcement
    d. A722 - Standard Specification for High-Strength Steel Bar for Prestressing Concrete
    e. A1064 - Standard Specification for Carbon-Steel Wire and Welded Wire Reinforcement, Plain and Deformed, for Concrete
    f. C31 - Standard Practice for Making and Curing Concrete Test Specimens in the Field
    g. C33 - Standard Specification for Concrete Aggregates

h. C39 - Standard Test Method for Compressive Strength of Cylindrical Concrete Specimens

i. C109 - Standard Specification for Compressive Strength of Hydraulic Cement Mortars (using 2-in. or (50 mm) Cube Specimens)

j. C143 - Standard Test Method for Slump of Hydraulic Cement Concrete

k. C150 - Standard Specification for Portland Cement

l. C171 - Standard Specification for Sheet Materials for Curing Concrete

m. C226 - Standard Specification for Air-entraining Additions for Use in the Manufacture of Air-entraining Hydraulic Cement

n. C231 - Standard Test Method for Air Content of Freshly Mixed Concrete by the Pressure Method

o. C260 - Standard Specification for Air-Entraining Admixtures for Concrete

p. C309 - Standard Specification for Liquid Membrane Forming Compounds for Curing Concrete

q. C494 - Standard Specification for Chemical Admixtures for Concrete

r. C595 - Standard Specification for Blended Hydraulic Cements

s. C618 - Standard Specification for Coal Fly Ash and Raw or Calcined Natural Pozzolan for Use in Concrete

t. C666 - Standard Test Method for Resistance of Concrete to Rapid Freezing and Thawing

3. American Welding Society (AWS):

a. D1.4 - Structural Welding Code-Reinforcing Steel

4. Federal Highway Administration (FHWA):

a. NHI-16-009 / 010 - Design and Construction of Driven Pile Foundations

5. Florida Department of Transportation (FDOT):

a. Standard Specification for Road and Bridge Construction, latest edition

b. Section 455 - Standard Specification for Structural Foundation, latest edition

c. Standard Index 20612 -12 Inches Square Prestressed Concrete Pile

6. Prestressed Concrete Institute (PCI):

a. MNL 116 - Manual for Quality Control for Plants and Production of Structural Precast Concrete Products

b. MNL 120 - PCI Design Handbook, Precast and Prestressed Concrete

B. Miscellaneous Project Data:

Geotechnical Engineering Soil Boring Logs by Tierra South Florida dated 11/02/2016 and 12/13/2017.

1. Subsurface soil data logs

1.03 DEFINITIONS: (Not Applicable)

1.04 SUBMITTALS:

A. Submittals shall be in accordance with SECTION 01300 - Submittals.

B. The CONTRACTOR shall make submittals for Driven Prestressed Reinforced Concrete Piles in accordance with SECTION 01300 - Submittals and the following provisions. All information may be submitted together, or in packages as described below. The CONTRACTOR shall be responsible for coordination of materials, equipment, and installation regardless if the submittals are made together or separately.

1. The CONTRACTOR shall submit to the ENGINEER details associated with fabrication of prestressed reinforced concrete piles as follows:

   a. Prior to piling fabrication:

      i. Submit Shop Drawings indicating erection details, build-up details, splice details, and special embedded or attached lifting devices. Shop Drawings shall indicate pick-up and support points for piles. Reinforcing details shall conform to ACI 315.

      ii. Submit shop certification test reports for MANUFACTURER's supplied cement, aggregates, admixtures, curing materials, reinforcing steel, and strand steel. Aggregate certification shall include gradation and quality results. Admixture certification shall include types and quantities to be used during fabrication.

   b. Prior to piling installation:

      i. Submit concrete records for each member indicating date, time and duration of casting, mix proportions, mixing water corrections, slump, air content, method of curing, ambient temperature during curing, duration of curing, concrete strength at time of detensioning, 28-day concrete strength.

      ii. Submit tensioning and detensioning records indicating date and time of each load, stress, and elongation of strand group under loading and unloading.

2. The CONTRACTOR shall submit details of proposed pile-driving equipment to the ENGINEER prior to driving piling. Data shall include:

   a. Make and model of pile driving hammer.

   b. Weight, dimensions, stiffness and coefficient of restitution of cap block assembly (helmet and hammer cushion); dimensions, stiffness, coefficient of restitution and type of material of cushion (pile cushion).

   c. Cushion stiffness shall be determined as:

$$\frac{AE}{S} = L$$

Where:

S	-	Cushion stiffness
A	-	Cushion area
E	-	Secant modulus of elastiENGINEER of cushion material
L	-	Length or height of cushion

3. The CONTRACTOR shall submit details of proposed pre-drilling diameter, depth, method and equipment.

C. The CONTRACTOR shall submit records for Driven Prestressed Reinforced Concrete Piles construction as described below:

1. During pile driving, the CONTRACTOR shall submit daily records to the ENGINEER that are to include the following for each pile:

   a. Name of structure and pile number

   b. Driven pile length

c. Pile length after cutoff

d. Pile cutoff and tip elevations

e. Ground surface elevation during driving

f. Continuous driving resistances, including final driving resistances, and pressure gauge readings or hammer ram stroke

g. Hammer speed in blows per minute during driving

h. Date and time of day pile driven

i. Make and model of pile driving hammer, along with associated capblock cushion material type(s) and dimensions

j. Time required to drive pile

k. Predrilling diameter and depth

l. Heaving or redriving data

m. Remarks concerning pile-driving operations

n. Capacity achieved

1.05 QUALIFICATIONS:

A. Experience Requirement:

1. The piling fabricator shall have been regularly engaged in the production of prestressed reinforced concrete piles for a period of not less than five (5) years, and show a quality capability through certification in the PCI (Plant Certification Program) or through an established quality control program based on PCI Manual NML 116.

2. The CONTRACTOR shall have a minimum of five (5) years experience installing prestressed concrete piles.

1.06 RESPONSIBILITIES: The CONTRACTOR shall be responsible for layout of each pile to the location shown on the Drawings. The CONTRACTOR shall establish monitoring devices and benchmarks as required to complete the WORK. The CONTRACTOR shall provide elevation reference and mark each pile along its entire length at one (1) foot intervals and along at least the last foot of driving at one (1) inch increments, so as to permit determination of the pile tip elevation and corresponding driving resistances during driving.

1.07 CERTIFICATIONS AND TESTING: (Not Applicable)

1.08 INSPECTION COORDINATION: The CONTRACTOR shall provide access to the WORK for the ENGINEER as requested for inspection. The CONTRACTOR shall provide at least 48 hours advance notice of its intention to begin new WORK activities.

1.09 WARRANTY: The CONTRACTOR shall warrant the WORK against defects for one (1) year from the date of Substantial Completion and as described in Article 13 of SECTION 00700 - General Terms and Conditions.

PART 2 - PRODUCTS

2.01 PRODUCT REQUIREMENTS:

A. General Requirements: The CONTRACTOR shall furnish piles as described below.

1. Pile type and capacity shall be as follows:

a. Prestressed reinforced-concrete piles.

b. The design compression capacity of each pile shall not be less than 60 kips, with a corresponding ultimate compression c capacity not less than 92 kips.

2.02 PRESTRESSED REINFORCED-CONCRETE PILES:

A. The CONTRACTOR shall provide piles conforming to the Florida Department of Transportation's "Standard Specifications for Road and Bridge Construction," and as additionally specified or indicated.

B. Materials for Piling: The CONTRACTOR shall furnish piles conforming to the following:

1. Cement:

a. Cement shall conform to ASTM C150, C226, and C595.

b. Type IV cement shall not be used.

c. The tricalcium aluminate content of the cement shall be limited to a maximum amount not in excess of eight (8) percent.

2. Aggregates:

a. Aggregates shall conform to ASTM C33 and to Grade of Coarse Aggregate for Class III Concrete to be utilized in prestressed concrete piling in accordance with FDOT Standard Specifications.

b. All aggregates shall be free from any substance that may be deleteriously reactive with the alkalies in the cement in an amount sufficient to cause excessive expansion of the concrete.

c. Fine aggregate shall consist of clean, natural sand or of hard, dense, durable, uncoated rock particles, and shall be free from injurious amounts of silt, loam, lumps, soft or flaky particles, shale, alkali, organic matter, mica, and other deleterious substances.

d. Fine aggregates from different sources of supply shall not be mixed or stored in the same stockpile or used alternately in the same concrete mix or the same structure.

e. Fine aggregate shall be well graded from coarse to fine, with a fineness modulus not less than 2.00 or greater than 3.40.

3. Admixtures:

a. Chemical admixtures, if used for water reducing set shall conform to ASTM C494, Type A or Type F.

b. Chemical admixtures, if used for water reducing and retarding set, shall conform to ASTM C494, Type D or G.

c. Air-entraining admixtures with chlorides shall not be used.

d. Flyash is allowed as long as it meets the following requirements: Maximum of 25% fly ash or a maximum of 70% slag. In extremely aggressive environments, ensure that the precast concrete has a minimum of 18% fly ash or a minimum of 50% slag. (FDOT 346-2.3 (3)); 15% to 25% Class F for replacement of Portland cement, ACI 211.4R, Table 4.3.6; If fly ash or other pozzolans are used as admixtures, the amount recommended by ACI 211.4R can be used. Because the fly ash content affects the rate of strength development, however, practical considerations may limit the amount of fly ash used for precast-pile applications to less than permitted by ACI 211.4R. Some state highway department specifications also place limits on the use of fly ash in piles. Fly ash or other pozzolans should conform to ASTM C618, ACI 543R, 3.1.4.3.

e. All concrete piles that will be underwater shall have Crystalline Capillary Waterproofing (CCW) admixture in accordance with SECTION 03050 - Concrete Admixture Waterproofing. Otherwise, it shall be coated in accordance with SECTION 09900 - Protective Coatings, System C-3.

4. Curing Materials:

    a. Curing materials, if used, shall conform to ASTM C171 or ASTM C309.

    b. Curing materials, if used, shall provide adequate retention of surface moisture.

    c. Burlap, if used, shall not have previously been used for the storage or handling of sugar products.

5. Water: Water for mixing concrete shall be clean and free from injurious amounts of oils, acids, alkalies, salts, organic materials, or other substances that may be deleterious to concrete or steel.

6. Reinforcing Steel:

    a. Non-prestressed reinforcing steel shall conform to ASTM A615, Grade 60.

    b. Steel for ties and spirals shall conform to ASTM A1064.

    c. Welding of reinforcing steel shall not be performed without prior written approval by the ENGINEER, and then only to be performed in accordance with AWS D1.4.

7. Prestressing Steel:

    a. Prestressing steel shall be seven-wire stress-relieved strand conforming to ASTM A416, or stress-relieved wire conforming to ASTM A421, Type WA.

    b. The minimum ultimate strength shall be 270,000 pounds per square inch (psi).

    c. Prestressing steel shall be free from grease, oil, wax, paint, soil, dirt, loose rust, kinks, bends, or other defects.

C. General Requirements: The CONTRACTOR shall furnish piles conforming to the following:

1. Prestressed reinforced-concrete piles shall be solid, shall be cast as monolithic units of homogeneous high-strength concrete, (Class III in accordance with FDOT Standard Specifications) from butt to tip, and shall be stressed with high-tensile, uncoated, cold-drawn, stressed-relieved steel strands.

2. Piles shall have a minimum cross-section of 14 inches by 14 inches.

3. Design of all prestressed piles shall be the responsibility of the CONTRACTOR. Design criteria shall be in accordance with PCI Manual MNL 120.

4. Piles shall be structurally capable of supporting a minimum load capacity of not less than 30 kips in compression.

5. Piles shall be designed to withstand stresses associated with handling, storage, and pile driving.

6. Concrete shall be conveyed from the mixer to the forms and deposited in place as rapidly as practicable by methods that will not cause segregation or loss of ingredients in accordance with ACI 304R.

7. Concrete shall be deposited as nearly and practicable in its final position in the forms without the need for rehandling.

8. Free-fall, vertical drop of concrete shall not exceed three (3) feet.

9. Aluminum conveying or formwork equipment shall not be used.

10. Chuting shall be performed only where the concrete is deposited into a hopper first before it is placed in the forms.

11. Conveying equipment shall be cleaned thoroughly before each run.

12. Concrete, which has segregated in conveying, shall be removed.

13. Piles shall not be driven until 28 days have elapsed from the time of casting or the CONTRACTOR can provide documented evidence that the pile has attained its intended minimum ultimate compressive strength.

14. Piles shall be fabricated to conform to the following manufactured tolerances from dimensions stipulated:

    a. Pile length plus three-eighths inch per 10 feet of length, but not greater than plus one and one-half inch.

    b. Pile outside width plus three-eighths inch or minus one-quarter inch.

    c. Pile head out of square plus or minus one-quarter inch per 12 inches of width.

    d. Pile ends shall be plane surfaces and perpendicular to the longitudinal axis of the pile with a maximum deviation of one-eighth inch per foot transversely from a true right angle plane.

    e. Pile accumulated deviation from straight-line horizontal alignment (sweep) not more than one-eighth-inch per 10 feet of length.

    f. Pile localized deviation from straight-line horizontal alignment (sweep) not more than one-quarter inch within any 10 feet of horizontal alignment.

    g. Voids or knock-out inserts in piles, if used, plus one quarter inch.

    h. Pile stirrup bars and spirals plus three-quarters inch.

    i. Pile concrete cover to reinforcing steel plus one quarter inch or minus one half inch.

    j. Pile spacing of spirals plus one-half inch.

    k. Pile reinforcing tendons plus one-quarter inch.

    l. Pile handling devices plus six (6) inches.

    m. Piles shall present a true, smooth, and even surface free from any surface blemishes.

D. Fabrication: The CONTRACTOR shall furnish piles conforming to the following:

1. Performance:

    a. Piles shall be constructed of dense concrete possessing a minimum ultimate compressive strength of 6,000 psi in 28 days.

    b. Concrete used in piles shall have a slump of four (4) inches with a plus tolerance of one (1) inch, as determined in accordance with ASTM C143, or as otherwise controlled by FDOT.

    c. Concrete used in piles shall have an air content from 4 to 6 percent, as determined in accordance with ASTM C231.

    d. The ends of all piles and the corners of square piles shall be chamfered.

    e. Test cylinders shall be prepared at the time the concrete is deposited for each production line to determine the strength of the castings. The cylinders shall be cured in the same manner as the piles and shall be placed at the point where the poorest curing conditions are afforded. This point shall be at the coolest region in the bed for steam-cured piles.

    f. Making and curing of concrete test specimens shall be in accordance with ASTM C31.

    g. Compressive testing of concrete cylinders shall be in accordance with ASTM C39.

    h. Pile pick-up points shall be the responsibility of the CONTRACTOR.

    i. Workmanship of pile fabrication shall conform to PCI Manual MNL-116.

2. Forms:

a. Forms shall be of metal, shall be well braced and stiffened against deformation, shall be accurately constructed and watertight, and shall be appropriately treated with lacquer, form oil, or other acceptable material prior to the placement of reinforcing steel so as to prevent bonding of forms to concrete.

b. Forms shall permit movement of the pile without damage during release of the prestressing force.

c. The bottom of the form shall be within one-quarter inch of a true plane in a length of 50 feet.

d. Side forms shall be released as soon as practicable, but shall not be removed until the concrete has attained a minimum compressive strength of not less than 4,000 psi.

3. Placement and Curing:

a. Concrete shall not be deposited in the forms until reinforcement steel and anchorages have been appropriately positioned.

b. Concrete shall be placed promptly after initial mixing is completed and shall be deposited close to its final position in the form.

c. Consolidation of concrete shall be in conformance with ACI 309.

d. Vibrator heads, if used, shall be smaller than the minimum distance between steel members for pretensioning.

e. Vibration of concrete shall proceed until the concrete is thoroughly consolidated.

f. Vibration of concrete shall not be performed in such a manner or for such an extended period of time that segregation of concrete occurs.

g. All piles shall be cured in accordance with Section 4 of the PCI Manual MNL-116.

4. Reinforcements and Embedments:

a. All reinforcing steel, prestressing steel, pick-up points and embedded items, shall be positioned as indicated within the forms and secured to prevent movement during concrete placement.

b. All reinforcing steel and prestressing steel shall have a minimum concrete cover of 3 inches, unless otherwise indicated on the Drawings or directed by the ENGINEER.

c. Installation of reinforcing steel and inserts shall permit the even placement of flow of concrete to all parts of the pile.

d. Knock-out inserts will not be required.

e. All knock-out inserts shall be firmly positioned to prevent them from being displaced during placement of concrete.

5. Pretensioning:

a. The tension to which the steel is to be pretensioned shall be measured by the elongation of the steel and verified by the jack pressure reading of a gauge.

b. Gauges used during pretensioning shall have been calibrated by certified laboratory within 12 months of commencing WORK and shall continue to be calibrated every five (5) months from the date of commencing throughout the term of WORK. Gauges shall be increments to read to the nearest 100 pounds of load.

c. Means shall be provided for measuring the elongation of the tendons to within one-eight-inch.

d. When the difference between the results of measurement and gauge reading is more than five (5) percent, the cause of the discrepancy shall be corrected.

e. Tensioning steel shall be given a uniform prestress prior to being brought to its design prestress. The same initial prestress shall be induced in each unit when several units of prestressing steel in a pile are prestressed simultaneously.

f. Thermal changes, a variation between ambient temperature at time of prestressing and concrete temperature at time of placing concrete, resulting in stress changes shall be accounted for in accordance with PCI Manual MNL-116.

g. For the uniform application of load to strands, the face of the anchorage of final design prestress shall be in a plane parallel to its position under initial prestress.

h. Final design prestress shall be a minimum stress not less than 8 psi across the cross-sectional area of the pile.

6. Detensioning:

a. Prestressing force in pretensioned piles shall be released in such a manner that eccentric forces are minimized by maintaining symmetry of forces about the vertical axis of the pile member.

b. Tension in the strands shall be released gradually from the anchorage in a manner that will minimize sudden or shock loading.

c. Detensioning shall be performed in such a manner and sequence that longitudinal movement is precluded.

d. If concrete has been heat cured, detensioning shall be performed immediately following curing while the concrete is still warm and moist and before dimensional changes allowing cracking or undesirable stressing of concrete are allowed to occur.

e. Detensioning shall be performed as soon as practicable, but shall not be done until the concrete has attained a minimum compressive strength of not less than 4,000 psi.

E. Handling and Storage: The CONTRACTOR shall conform to the following regarding handling and storage of piles.

1. Unless special lifting devices are attached for pick-up, pick-up points shall be clearly and plainly marked on all piles after removal of forms, and all lifting shall be performed at these points.

2. Piles shall be lifted and handled by a suitable bridge or sling where required, which shall be attached to the pick-up points.

3. Special care shall be provided in handling and transporting concrete piles to prevent any appreciable buckling of the pile or cracking of the concrete.

4. Storage areas for prestressed piles shall be stabilized, and a suitable base shall be provided, so that differential settlement or twisting or pile shall not occur.

5. Stacked piles will not be permitted unless CONTRACTOR provides appropriately separated and supported battens placed across the full width of each bearing point.

6. Battens used for storage of piles shall be arranged in vertical planes at a distance not greater than the width of the pile from designated pick-up points.

2.03 PILE DRIVING EQUIPMENT: The CONTRACTOR shall conform to the following with regards to pile driving equipment.

A. Pile Driving Hammer:

1. The CONTRACTOR shall drive piles to either the minimum penetration length stipulated or to the specified and minimum driving resistance whichever is greater.

2. Pile driving hammer shall not develop excessive energy, which would result in overstressing or crushing of pile during driving.

3. The CONTRACTOR shall submit details of pile hammer to the ENGINEER for approval at least two (2) weeks prior to driving piles. Should a change in hammer or driving equipment be necessitated by the CONTRACTOR, CONTRACTOR shall submit revised details to the ENGINEER for approval at least 2 weeks prior to driving piles with revised equipment.

4. The pile-driving hammer shall be operated at all times at speeds and conditions recommended by the hammer MANUFACTURER.

5. The boiler or compressor capacities for the steam- or air-operated hammers shall be sufficient to operate the hammer continuously at the full-rated speed and energy.

6. For the steam- or air-operated pile hammers, the CONTRACTOR shall provide a pressure gauge to be located on the hammer steam or air line in a position such that it can be clearly read by the pile driver operator.

7. For the double-acting diesel hammer, the CONTRACTOR shall provide a bounce chamber pressure gauge to be located in a position such that it can be clearly read by the pile driver operator.

8. For a single-acting diesel hammer, the CONTRACTOR shall mark the ram as approved by the ENGINEER to permit determination of the stroke.

9. The pile driver shall be equipped with fixed leads, secured to the pile-driving rig with rigid bracing, and extending to the lowest point, which the hammer must reach to drive the piles.

B. Capblock (Helmet and Hammer Cushion) and Cushion (Pile Cushion):

1. Piles shall be protected during driving by a capblock-and-cushion assembly of approved design.

2. No pile head will be held so firmly that the slight rotation of the pile normally occurring while the pile is being driven will be prevented.

3. The capblock or cushion materials shall be replaced during driving if it has been damaged, highly compressed, charred, burned, or has become spongy or deteriorated in any manner.

4. The driving helmet or capblock shall fit loosely around the top of the pile so that the driving helmet does not restrain the pile should the pile tend to rotate during driving.

5. The driving helmet or capblock shall fit flush with the plane of the pile end so that a uniform impact force is applied to the pile during driving.

6. If CONTRACTOR elects to use a pile head with projecting strands or mild steel reinforcing, a special driving head or helmet device shall be used to prevent damage to the reinforcement and prevent direct impact forces from being transmitted through the reinforcement.

7. The CONTRACTOR shall submit to the ENGINEER for approval, details concerning the stiffness of the cushion assembly, the coefficient of restitution, and the weight of the capblock-cushion assembly at least two (2) weeks prior to changes on-site to this equipment.

C. Templates: Provide a fixed steel pile template adequate to maintain the pile in proper position and alignment during driving in accordance with FDOT Section 455.

PART 3 - EXECUTION

3.01 DRIVEN PILES:

A. Equipment for Driving Prestressed Reinforced Concrete Piles: All pile-driving equipment shall be subject to the ENGINEER's approval after observation at the Site.

B. Driving Procedure: The CONTRACTOR shall complete the pile driving in conformance with the guidelines below:

1. Drive each pile continuously and without voluntary interruption until the specified penetration length and driving resistance have been obtained.

2. Drive piles in contact with surrounding soil and leave permanently in place.

3. Drive piles in a sequential operation, which will minimize heaving of adjacent piles.

4. Pile driving operations shall be suspended if impact shock results in problems to any adjacent structures or equipment, until corrective measures can be taken.

5. No method requiring force to correct the position or line of any pile during driving will be permitted.

C. Penetration and Driving Resistance:

1. The CONTRACTOR shall drive piles to either the minimum penetration length stipulated or to the specified and minimum driving resistance, whichever is greater. The minimum driving resistance will be determined utilizing the U.S. Department of Transportation, Federal Highway Administration's Wave Equation Analysis of Pile Driving (WEAP) for the pile hammer and associated capblock-cushion materials and properties, as to be submitted and utilized for pile driving by the CONTRACTOR and according to load test results.

2. The CONTRACTOR shall familiarize itself with conditions present at the Site prior to bidding; specifically, should there be limited access dimensions, headroom clearances, or other conditions, which restrict the use of particular driving equipment, and thereby affect the associated minimum driving resistance.

D. Heaving:

1. The CONTRACTOR shall check for heaving on a reference pile selected by the ENGINEER within each pile group or cluster.

2. The reference pile shall be checked by comparison of elevations before and after driving of all adjacent piles within a group or cluster.

3. Heaving shall be considered as occurring to all piles within a group or cluster when the reference pile head elevation changes in excess of 0.025 foot.

4. Piles within a group or cluster shall be redriven when the reference pile heaves in excess of 0.025 foot.

E. Redriving:

1. A pile selected by the ENGINEER from within the initial pile group or cluster driven shall be redriven not less than 4 hours, and preferably 24 hours, after completion of initial driving in order to check for relaxation or freeze. Relaxation is indicated by a lesser number of blows per inch required to mobilize the pile than was attained at completion of its original final driving resistance.

2. Redriving shall be complete using not less than the same number of blows originally applied to the pile, after the hammer has warmed up. Driving resistance shall be noted for each inch of pike penetration. If redriving indicates relaxation, the ENGINEER shall be notified. All piles within a pile group or cluster, which has indicated relaxation, shall be redriven until the driving resistance for the last inch indicates that specified pile capacities have been attained.

3. Redrive all piles within a group or cluster that have indicated heave of the reference pile.

4. Redrive all reaction piles, if undamaged and if permitted by the ENGINEER, beyond their original pile tip penetration to accommodate tip movement from load test and then to minimum driving resistance criteria.

F. Cutoff:

1. When necessary, and upon approval by the ENGINEER, the CONTRACTOR shall cutoff with pneumatic tools, hydraulic stripper, sawing, or other approved methods.

2. The use of explosives or other method that may damage the reinforcing steel or the concrete of the pile to be left in place will not be permitted.

3. Cutoff shall be perpendicular to the vertical axis of the pile within one half inch of the cutoff elevation indicated.

4. If excavation around the piles is required to achieve pile cutoff, excavated material shall be stockpiled for recompaction or removed and disposed of as directed by the ENGINEER.

5. Concrete and reinforcing steel materials wasted from cutoff methods shall be removed and disposed of offsite at the CONTRACTOR's expense, or as otherwise directed by the ENGINEER.

G. Splices and Build-Ups:

1. The CONTRACTOR shall use full-length piles where applicable.

2. Splicing or building up of piles will not be permitted unless otherwise approved by the ENGINEER subsequently in the field during driving; should such activities be approved by the ENGINEER, such splicing or building up of piles shall conform to design considerations regarding driving stresses, lateral applied loads, and water exposure where required.

H. Predrilling and Jetting:

1. When necessary to assist in attaining the indicated penetration length without damage to piles, the CONTRACTOR may be required to predrill and grout the pile.

2. CONTRACTOR shall have equipment for predrilling available or on-site with the anticipation that predrilling may be necessary to achieve sufficient embedment length to support uplift loads.

3. Pile points shall be well seated with moderate soil resistance at the point before full driving energy is applied.

4. The CONTRACTOR shall use continuous flight augers for predrilling with a maximum diameter not larger than 13 and a depth of drilling deep enough to penetrate bearing stratum, as approved by the ENGINEER.

5. Jetting will be permitted.

   a. Where jetting is allowed by the ENGINEER, at least two (2) jets shall be used. All jetted piles shall be driven for the final five (5) feet of penetration, unless otherwise directed by the ENGINEER.

I. Installation Tolerance:

1. Piles shall not exceed a variation from either the vertical axis or battered axis of the pile after driving of more than one-quarter-inch per foot of pile length.

2. The center of axis of the pile head after driving shall not vary from the plan location at cutoff by more than three (3) inches.

3. Acceptable tolerance of top of pile from intended cutoff elevation shall be between one and one-half (1.5) inches and four (4) inches in accordance with FDOT Specifications 455-5.15. The CONTRACTOR may elect to trim piles to cutoff elevation after the pile cap is excavated.

J. Rejected Piles:

1. The ENGINEER will determine the acceptability of all piles driven and may, at their option, reject those piles that do not conform to the Drawings and specifications.

2. The CONTRACTOR shall perform one of the following, as directed by the ENGINEER, for those piles, which have been rejected.

   a. Leave the piles in place, cut off as directed and drive one (1) or more new piles in locations designated by the ENGINEER to replace the rejected pile and maintain symmetry of the pile group or cluster.

   b. Withdraw the pile and drive a new pile. Any holes, which result from pile withdrawal, shall be packed with an approved nonplastic (noncohesive) material before redriving the replacement pile.

K. Test Piles:

1. The CONTRACTOR shall install test piles as recommended in the

2. A. Miscellaneous Project Data: Geotechnical Engineering Services Report SFWMD G-150/G-151W Structure Improvements, Hendry County, Florida, Prepared By: RADISE International, LC, RADISE Project No: 200429, DRAFT October 21, 2020 and Geotechnical Engineering Services Report SFWMD G-136 Structure Improvements, Hendry County, Florida Prepared By: RADISE International, LC, RADISE Project No: 200429, DRAFT January 20, 2021. Test piles shall include the cost for surveying, mobilization, demobilization, installation, and standby time for testing.

END OF SECTION

SECTION 03050 CONCRETE ADMIXTURE WATERPROOFING

PART 1 - GENERAL

1.01 SCOPE:

A. Summary of Work: The WORK of this SECTION specifies crystalline waterproofing admixture for use with new concrete, cast-in-place concrete and/or self-consolidating concrete (SCC) required by the Contract Documents.

B. Related Work Specified Elsewhere:

1. SECTION 01300 Submittals
2. SECTION 03300 Cast-In-Place Concrete
3. SECTION 03600 Grout

1.02 APPLICABLE STANDARDS AND PUBLICATIONS:

A. Standards or Codes: The edition of the standards of the organizations listed below in effect at the time of the advertisement for bids form a part of this specification to the extent referenced. In the case of a conflict between the requirements of this SECTION and those of the listed document, the requirements of this SECTION shall prevail.

1. American Concrete Institute (ACI)
    a. 117 Specifications for Tolerance for Concrete Construction and Materials and Commentary
    b. 212.3R Report on Chemical Admixtures for Concrete
2. ASTM International (ASTM):
    a. C1202 Standard Test Method for Electrical Indication of Concrete's Ability to Resist Chloride Ion Penetration
    b. C494 / C494M Standard Specification for Chemical Admixtures for Concrete
    c. D5084 Standard Test Methods for Measurement of Hydraulic Conductivity of Saturated Porous Materials Using a Flexible Wall Permeameter
3. US Army Corps of Engineers (USACE)
    a. CRD-C48-92 Standard Test Method for Water Permeability of Concrete
4. National Sanitation Foundation International/American National Standards Institute (NSF/ANSI)
    a. 61 Drinking Water System Components - Health Effects
5. Florida Building Code and Local Building Codes as applicable.
6. Florida Department of Transportation (FDOT)
    a. Standard Specifications for Road and Bridge Construction, latest edition

1.03 SUBMITTALS:

A. General: Submittals shall be in accordance with SECTION 01300, of the Technical Specifications and the General Terms and Conditions of the Contract.

B. Product Data: Submit product data, including MANUFACTURER's product sheet, for specified products.

1. Material safety data sheets (MSDS)

C. Quality Assurance:

1. Test Reports: Certified test reports showing compliance with specified performance characteristics and physical properties. Indicate volatile organic compounds (VOCs) during application.

2. Certificates: Product certificates signed by MANUFACTURER certifying materials comply with specified performance characteristics and criteria and with physical requirements.

3. MANUFACTURER's Instructions: MANUFACTURER's written installation instructions.

4. The CONTRACTOR shall provide permeability test results using both the USACE CRD-C48-73 Method and ASTM C1202 Method, for each compressive strength test samples. The concrete shall have a permeability that meets Article 2.02 B.1 of this SECTION.

D. MANUFACTURER's Field Reports: MANUFACTURER's field reports specified.

E. Quality Assurance:

1. Qualifications:

a. Installer: Experienced in performing WORK of this SECTION who has specialized in installation of work similar to that required for this Project.

b. MANUFACTURER: Capable of providing field service representation during construction and approving application method.

2. Regulatory Requirements: Provide admixture that complies with requirements as follows:

a. NSF/ANSI 61, Drinking Water System Components - Health Effects

b. USACE CRD-C48-73 Standard Test Method for Water Permeability of Concrete

c. D5084 - Standard Test Methods for Measurement of Hydraulic Conductivity of Saturated Porous Materials Using a Flexible Wall Permeameter

3. Preinstallation Meetings: Conduct preinstallation meeting to verify Project requirements, MANUFACTURER's installation instructions and MANUFACTURER's warranty requirements.

F. Mix Designs: Prior to beginning the WORK and within fourteen (14) days of the Notice to Proceed, the CONTRACTOR shall submit preliminary concrete mix designs which shall show the proportions and gradations of all materials, including crystalline waterproofing admixture, proposed for each class and type of concrete. Mix designs shall be checked by an independent testing laboratory acceptable to the ENGINEER. All costs related to such checking shall be CONTRACTOR’s responsibility.

1.04 WARRANTY: The CONTRACTOR shall warrant the WORK against defects for one (1) year from the date of Substantial Completion and as described in Article 13 of Section 00700 - General Terms and Conditions.

PART 2 - MATERIALS

2.01 GENERAL: All materials shall be classified as acceptable for potable water use according to NSF Standard 61.

2.02 CRYSTALLINE WATERPROOFING:

A. MANUFACTURERS:

1. ICS Penetron International Ltd.

2. Xypex Chemical Corporation

3. Kryton International Inc.

4. Master Builders Solutions BASF

B. The concrete with the crystalline waterproofing admixture shall have following properties:

1. Permeability: 1.2mm (3/64 inch) after 120 hours (5 days), USACE CRD C48 or ASTM D5084.

2. Compressive Strength of Concrete: in accordance with SECTION 03300.

C. A single MANUFACTURER for the crystalline waterproofing materials shall be used throughout the WORK, and prior to its use, the brand shall be accepted by the ENGINEER.

PART 3 - EXECUTION

3.01 PERFORMANCE REQURIEMENTS:

A. Provide concrete concentrate admixture that has been manufactured and added to concrete mix at time of concrete batching to maintain performance criteria stated by MANUFACTURER without defects, damage or failure.

B. Coordinate and schedule addition of concrete admixture with concrete batching.

3.02 MANUFACTURER'S INSTRUCTIONS:

A. Compliance: Comply with MANUFACTURER's written data, including product technical bulletins, product catalog installation instructions, product installation instructions and specifications. The dosage rate shall be in accordance with Article 3.03A of this Section.

B. All concrete WORK shall be in accordance with SECTION 03300.

3.03 APPLICATION PROCEDURES:

A. Add crystalline waterproofing admixture to concrete at time of batching at the dosage rate of 2% by weight of cement content. The cement content shall be the total cementitious material including silica fume, slag or fly ash. The procedure sequence for addition varies according to type of batch, plant operation and equipment.

1. Ready-Mix Plant, Dry Batch Operation: Add crystalline waterproofing admixture in powder form to drum of ready-mix truck. Add 70% of required water along with 400 pounds (lbs) of aggregate. Mix materials for three (3) minutes minimum to ensure crystalline waterproofing admixture is distributed evenly throughout mix water. Add balance of materials in accordance with standard batch practices.

2. Ready-Mix Plant, Central Mix Operation: Mix crystalline waterproofing admixture with water to form thin slurry in ratio fifteen (15) lb powder to three (3) gallons of water. Pour required amount of material into drum of ready-mix truck. Pour concrete into truck and mix for five (5) minutes minimum to ensure even distribution of crystalline waterproofing admixture throughout concrete.

a. Ensure aggregate, cement and water are batched and mixed in plant in accordance with standard practices and taking into account quantity of water that has already been placed in ready-mix truck.

3. Precast Batch Plant, Pan-Type Mixer: Add crystalline waterproofing admixture to aggregate and mix thoroughly for three (3) minutes minimum prior to adding cement and water.

a. Ensure total concrete mass is blended using standard practices.

b. Obtain homogeneous mixture of crystalline waterproofing admixture with concrete.

c. Do not add dry crystalline waterproofing admixture directly to wet concrete.

3.04 CURING: Curing shall be in accordance with SECTION 03300.

3.05 FIELD QUALITY CONTROL:

A. The MANUFACTURER of the crystalline waterproofing admixture supplied under this SECTION shall be involved in handling, installation, application and protection of product[**s**], and submit written report in acceptable format to verify compliance of WORK.

B. MANUFACTURER's Field Services: Have MANUFACTURER's technical representative schedule Site visits to review WORK during delivery and pouring of concrete.

END OF SECTION

SECTION 03100 CONCRETE FORMWORK AND ACCESSORIES

PART 1 - GENERAL

1.01 SCOPE:

A. Summary of Work: The CONTRACTOR shall provide all labor, materials and equipment for the following:

1. Design and construction of all necessary formwork including the required bracing, supports, scaffolding, shoring, and other falsework to produce cast-in-place concrete in the finished structure within the required tolerances for line, grade dimension and detail.

2. Joints in concrete, complete and in place, in accordance with the Contract Documents. Joints in concrete structures shall be the types defined below and will be permitted only where indicated, unless specifically accepted by the ENGINEER.

B. Related Work Specified Elsewhere:

1. SECTION 01300 – Submittals

[SECTION 03300 - Cast-in-Place Concrete

2. SECTION 07920 - Sealants and Caulking

1.02 APPLICABLE STANDARDS AND PUBLICATIONS: The following standard specifications shall apply to the WORK of this SECTION:

A. Standards or Codes: The edition of the standards of the organizations listed below in effect at the time of the advertisement for bids form a part of this specification to the extent referenced. In the case of a conflict between the requirements of this SECTION and those of the listed document, the requirements of this SECTION shall prevail.

1. American Concrete Institute (ACI)

a. 347 - Guide to Formwork for Concrete

b. 117 - Specification for Tolerances for Concrete Construction and Materials

2. American Society of Testing and Materials (ASTM)

a. A775 – Standard Specification for Epoxy Coated Reinforcing Steel Bars

b. C920 – Standard Specification for Elastomeric Joint Sealant

c. D412 - Standard Test Method for Vulcanized Rubber and Thermoplastic Elastomers - Tension

d. D624 - Standard Test Method for Tear Strength of Conventional Vulcanized Rubber and Thermoplastic Elastomers

e. D638 - Standard Test Method for Tensile Properties of Plastics

f. D746 - Standard Test Method for Brittleness Temperature of Plastics and Elastomers by Impact

g. D747 - Standard Test Method for Apparent Bending Modulus of Plastics by Means of a Cantilever Beam

h. D1056 – Standard Specification for Flexible Cellular Materials - Sponge or Expanded Rubber

i. D1752 – Standard Specification for Preformed Sponge Rubber and Cork Expansion Joint Fillers for Concrete Paving and Structural Construction

j. D2000 - Standard Classification System for Rubber Products in Automotive Applications

k. D2240 - Standard Test Method for Rubber Property - Durometer Hardness

l. D2241 – Standard Specification for Poly (Vinyl Chloride) (PVC) Pressure-Rated Pipe (SDR Series)

3. US Product Standards (PS)

a. PS-1 - Construction and Industrial Plywood for Concrete Forms

b. PS-20 - American Softwood Lumber Standard

4. NSF International

a. 61 - Drinking Water System Components - Health Effects

5. United States Army Corps of Engineers (USACE)

a. CRD-C572 - PVC Waterstops

6. Federal Specifications

a. TT-S-0227 E(3) - Sealing Compound, Elastomeric Type, Multicomponent, for Caulking, Sealing, and Glazing Buildings and Other Structures

7. Occupational Safety and Health Association (OSHA)

a. CFR Title 29 Part 1926 - Safety and Health Regulations for Construction

1.03 DEFINITIONS:

A. Construction Joints:

1. When fresh concrete is placed against a hardened concrete surface, the joint between the two pours is called a construction joint. If indicated on the drawings, joints in water bearing members shall be provided with a waterstop and/or sealant groove of the shape indicated. The surface of the first pour may also be required to receive a coating of bond breaker as indicated.

B. Contraction Joints: Contraction joints are similar to construction joints except that the fresh concrete shall not bond to the hardened surface of the earlier pour, which shall be coated with a bond breaker. The slab reinforcement shall be stopped 4-1/2 inches from the joint, which is provided with a sleeve-type dowel, to allow shrinkage of the concrete of the later pour. Waterstop and/or sealant groove shall also be provided when indicated.

C. Expansion Joints:

1. To allow the concrete to expand freely, a space is provided between the two pours, and the joint shall be formed as indicated. The space is obtained by placing a filler joint material against the earlier pour, to act as a form for the later pour. Unless otherwise indicated, expansion joints in water bearing members shall be provided with a center-bulb type waterstop as indicated.

2. Premolded expansion joint material shall be installed with the edge at the indicated distance below or back from finished concrete surface, and shall have a slightly tapered, dressed, and oiled wood strip secured to or placed at the edge thereof during concrete placement, which shall later be removed to form space for sealing material.

3. The space so formed shall be filled with a joint sealant material as indicated herein. In order to keep the two walls or slab elements in line the joint shall also be provided with a sleeve-type dowel as indicated.

D. Control Joints: The function of the control joint is to provide a weaker plane in the concrete, where shrinkage cracks will probably occur. A groove, of the shape and dimensions indicated, is formed or saw-cut in the concrete. This groove is afterward filled with a joint sealant material.

1.04 SUBMITTALS:

A. Submittals shall be in accordance with SECTION 01300.

B. Falsework Calculations and Drawings: The CONTRACTOR shall submit calculations and drawings prepared and sealed by a Professional Civil Engineer registered in the State of Florida, which indicate the falsework complies with the requirements of OSHA Title 29, Part 1926.703. The submission of design details and calculations for falsework is for information only.

C. The plans of falsework proposed to be used shall be in sufficient detail to indicate the general layout, sizes of members, anticipated stresses, grade of materials to be used in the falsework, means of protecting existing construction which supports falsework, and typical soil conditions.

D. The CONTRACTOR shall submit placement drawings showing the location and type of all joints for each structure.

E. Prior to production of the waterstop materials required under this SECTION, qualification samples of waterstops shall be submitted which represent in all respects the material proposed. Such samples shall consist of extruded or molded sections of each size or shape to be used. The balance of the material to be used shall not be produced until after the ENGINEER has reviewed the qualification samples.

F. Prior to use of the waterstop material in the field, a sample of a prefabricated (shop made fitting) mitered cross and a tee constructed of each size or shape of material to be used shall be submitted. These samples shall be prefabricated (shop made fitting) so that the material and workmanship represent in all respects the fittings to be provided. Field samples of prefabricated (shop made fitting) fittings (crosses, tees, etc.) may also be selected at random by the ENGINEER for testing by a laboratory at the ENGINEER's expense. When tested, tensile strength across the joints shall be at least 1120 psi.

G. The CONTRACTOR shall submit MANUFACTURER’s information demonstrating compliance with requirements for the following:

1. Form ties and related accessories, including taper tie plugs, if taper ties are used
2. Form gaskets
3. Form release agent, including NSF certification if not using mineral oil
4. List of form materials and locations for use
5. Bearing Pads
6. Neoprene Sponge
7. Preformed Joint Filler
8. Backing Rod
9. Bond Breaker
10. Waterstops
11. Slip Dowels
12. PVC Tubing

1.05 QUALIFICATIONS: Every person responsible for waterstop installation is required to have a current individual Certification from the waterstop MANUFACTURER on file with the ENGINEER, which states said individuals are certified and trained to install waterstop per MANUFACTURER’s recommendations and specifications.

1.06 RESPONSIBILITIES:

A. The CONTRACTOR is fully responsible for the design and construction of all forms and falsework to be in compliance with all applicable OSHA requirements, and the requirements of all agencies having jurisdiction on the project. The submission of design details and calculations for falsework is for information only.

B. The CONTRACTOR shall prepare adhesion and cohesion test specimens for construction joint sealant as required herein, at intervals of 5 working days while sealants are being installed.

C. The sealant material shall show no signs of adhesive or cohesive failure when tested in accordance with the following procedure in laboratory and field tests:

1. Sealant specimen shall be prepared between 2 concrete blocks (1-inch by 2-inch by 3-inch). Spacing between the blocks shall be 1-inch. Coated spacers (2-inch by 1-1/2-inch by 1/2-inch) shall be used to insure sealant cross-sections of 1/2-inch by 2 inches with a width of 1-inch.

2. Sealant shall be cast and cured according to MANUFACTURER's recommendations except that curing period shall be not less than 24 hours.

3. Following curing period, the gap between blocks shall be widened to 1-1/2-inch. Spacers shall be used to maintain this gap for 24 hours prior to inspection for failure.

1.07 CERTIFICATIONS:

A. Form materials, which may remain or leave residues on or in the concrete, shall be certified as compliant with NSF 61.

B. Joint materials shall be certified as compliant with NSF 61.

C. The CONTRACTOR shall submit certified test reports from the sealant MANUFACTURER on the actual batch of material being supplied indicating compliance with requirements herein before the sealant is used on the job.

D. The CONTRACTOR shall provide copies of the Waterstop Welding Certifications provided by MANUFACTURER or authorized agent of MANUFACTURER for every person who is to be involved with waterstop installation.

1.08 INSPECTIONS:

A. Falsework shall be inspected for conformance with the accepted submittal. No workers will be allowed to use falsework for access and no concrete placement to related forms will be permitted until the falsework is inspected by the CONTRACTOR for conformance with the submittals and appropriately tagged. No variations or alterations to falsework, as compared to the reference submittal, will be allowed without certification of the variation by the original Professional Engineer.

B. All waterstop field joints shall be subject to rigid inspection, and no such WORK shall be scheduled or started without having made prior arrangements with the ENGINEER for the required inspections. Not less than 24 hours advance notice shall be given for scheduling such inspections.

C. Field joints in waterstops shall be subject to rigid inspection for misalignment, bubbles, inadequate bond, porosity, cracks, offsets, and other defects, which would reduce the potential resistance of the material to water pressure at any point. Defective joints shall be replaced with material, which passes inspection; faulty material shall be removed from the site and properly disposed of.

D. The following waterstop defects represent a partial list of defects which shall be grounds for rejection:

1. Offsets at joints greater than 1/16-inch or 15 percent of material thickness, at any point, whichever is less

2. Exterior crack at joint, due to incomplete bond, which is deeper than 1/16-inch or 15 percent of material thickness, at any point, whichever is less

3. Any combination of offset or exterior crack which will result in a net reduction in the cross section of the waterstop in excess of 1/16-inch or 15 percent of material thickness at any point, whichever is less

4. Misalignment of joint which results in misalignment of the waterstop in excess of 1/2-inch in 10 feet

5. Porosity in the welded joint as evidenced by visual inspection

6. Bubbles or inadequate bonding which can be detected with a penknife test (If, while prodding the entire joint with the point of a penknife, the knife breaks through the outer portion of the weld into a bubble, the joint shall be considered defective.)

7. Visible signs of separation when the cooled splice is bent by hand at any sharp angle

8. Any evidence of burned material

1.09 WARRANTY: The CONTRACTOR shall warrant the WORK against defects for one year from the date of Substantial Completion and as described in Article 13 of Section 00700 - General Terms and Conditions.

PART 2 - PRODUCTS

2.01 FORM AND FALSEWORK MATERIALS:

A. Except as otherwise expressly accepted by the ENGINEER, lumber brought on the Site for use as forms, shoring, or bracing shall be new material. Forms shall be smooth surface forms and shall be of the following materials:

Walls	-	Steel, fiberglass, or plywood panel
Columns	-	Steel, plywood, PVC, fiberglass, or spiral wound fiber forms
Roof and floor	-	Plywood
All other work	-	Steel panels, fiberglass, or plywood

B. Materials for concrete forms, formwork, and falsework shall conform to the following requirements:

1. Plywood shall be new, waterproof, synthetic resin bonded, exterior type, manufactured especially for concrete formwork and shall conform to Plyform Class I, B-B EXT, of PS-1, and shall be edge sealed.

2. Lumber shall be Douglas Fir or Southern Yellow Pine, construction grade or better, in conformance with PS 20.

3. Form materials shall be metal, wood, plywood, or other material that will not adversely affect the concrete and will facilitate placement of concrete to the shape, form, line, and grade indicated. Metal forms shall accomplish such results. Wood forms for surfaces to be painted shall be Medium Density Overlaid plywood, MDO EXT Grade.

C. Unless otherwise indicated, exterior corners in concrete members shall be provided with 3/4-inch chamfers or be tooled to 1/2-inch radius. Re-entrant corners in concrete members shall not have fillets unless otherwise indicated.

D. Forms and falsework to support the roof and floor slabs shall be designed in accordance with ACI 347.

2.02 FORM TIES:

A. Ties shall be standard crimped snap ties with one-inch (1") snapback. Ties shall be provided with a plastic cone or other suitable means for forming a conical hole to insure that the form tie may be broken off back of the face of the concrete. The maximum diameter of removable cones for rod ties, or of other removable form-tie fasteners having a circular cross-section, shall not exceed 1-1/2 inches; and all such fasteners shall be such as to leave holes of regular shape for reaming. Form ties for water-

retaining structures shall have integral waterstops that tightly fit the form tie so that they cannot be moved from mid-point of the tie.

B. Removable taper ties may be used when approved by the ENGINEER. A preformed neoprene or polyurethane tapered plug sized to seat at the center of the wall shall be inserted in the hole left by the removal of the taper tie.

2.03 FORM RELEASING AGENT: Form release agent shall be non-staining and shall leave no residues on or in the concrete unless certified as compliant with NSF 61 and shall not adversely affect the adhesion of paint or other coatings.

2.04 WATERSTOPS:

A. PVC Waterstops:

1. PVC Waterstops shall be extruded from an elastomeric polyvinyl chloride compound containing the plasticizers, resins, stabilizers, and other materials necessary to meet the requirements of this SECTION. No reclaimed or scrap material shall be used. The CONTRACTOR shall obtain from the waterstop MANUFACTURER and shall furnish to the ENGINEER for review, current test reports and a written certification of the MANUFACTURER that the material to be shipped to the job meets the physical requirements as outlined in the USACE CRD-C572, and those listed herein.

2. Flatstrip and Center-Bulb Waterstops: The thickness of waterstops, including the center bulb, shall not be less than 3/8-inch. Waterstop shall be provided with factory installed hog rings at 12 inches on centers along the waterstop.

3. Multi-Rib Waterstops: Multi-rib waterstops where required shall have prefabricated (shop made fitting) joint fittings at all intersections of the ribbed-type waterstops.

4. Retrofit Waterstops: Retrofit waterstops and batten bars shall be manufactured as a complete system including waterstop, SS batten bar, SS anchor bolts, and epoxy gel.

5. Waterstop Testing Requirements: When tested in accordance with the test standards, the waterstop material shall meet or exceed the following requirements:

Property	Value	ASTM Standard
Physical Property, Sheet Material		
Tensile Strength-min (psi)	2000	D 638, Type IV
Ultimate Elongation-min (percent)	350	D 638, Type IV
Low Temp Brittleness-max (degrees F)	-35	D 746
Stiffness in Flexure-min (psi)	600	D 747
Accelerated Extraction (CRD-C572)		
Tensile Strength-min (psi)	1500	D 638, Type IV
Ultimate Elongation-min (percent)	300	D 638, Type IV
Effect of Alkalies (CRD-C572)		
Change in Weight (percent)	+ 0.25/- 0.10	------
Change in Durometer, Shore A	+/- 5	D 2240
Finish Waterstop		
Tensile Strength-min (psi)	1400	D 638, Type IV
Ultimate Elongation-min (percent)	280	D 638, Type IV

B. Pre-formed Hydrophilic Waterstops:

1. Hydrophilic (bentonite-free) waterstops shall be the type that expands in the presence of water to form a watertight joint seal without damaging the concrete in which it is cast.

2. Waterstop shall be manufactured from chloroprene rubber and modified chloroprene rubber with hydrophilic properties. Waterstop shall have a delay coating to inhibit initial expansion due to moisture present in fresh concrete. The minimum expansion ratio of modified chloroprene shall be not less than 2 to 1 volumetric change in distilled water at 70 degrees F (21 degrees C).

3. Hydrophilic Waterstop shall meet the following minimum requirements:

Property	Value	ASTM Standard
Physical Property, Chloroprene		
Tensile Strength-min (psi)	1275	D 412
Ultimate Elongation-min (percent)	350	D 412
Hardness, Shore A	55 +/- 5	D 2240
Physical Property, Modified Chloroprene		
Tensile Strength-min (psi)	300	D 412
Ultimate Elongation-min (percent)	600	D 412
Hardness, Shore A	55 +/- 5	D 2240

4. Bonding agent for hydrophilic waterstop shall be the MANUFACTURER's recommended adhesive for wet, rough concrete.

C. Other Types of Waterstops:

1. When types of waterstops not listed above are indicated, they shall be subjected to the same requirements as those listed herein.

2.05 JOINT SEALANT FOR WATER BEARING JOINTS:

A. Joint sealant shall be polyurethane polymer designed for bonding to concrete, which is continuously submerged in water. No material will be acceptable which has an unsatisfactory history as to bond or durability when used in the joints of water retaining structures.

B. Joint sealant material shall meet the following requirements (73 degrees F and 5percent R.H.):

Requirement	Value	ASTM Standard
Work Life (minutes)	45 - 180	-----
Time to Reach 20 Shore "A" Hardness (at 77 degrees F, 200 gr quantity) - max (hours)	24	-----
Ultimate Hardness	20 - 45 Shore "A"	D 2240
Tensile Strength - min (psi)	175	D 412
Ultimate Elongation - min (percent)	400	D 412
Tear Resistance - min (pounds per inch of thickness)	75	D 624 (Die C)
Color	Light Gray	-----

C. Polyurethane sealants for waterstop joints in concrete shall conform to the following requirements:

1. Sealant shall be 2-part polyurethane with the physical properties of the cured sealant conforming to or exceeding the requirements of ASTM C 920, or TT-S-0227 E(3) for 2-part material, as applicable.

2. For vertical joints and overhead horizontal joints, only "non-sag" compounds shall be used; all such compounds shall conform to the requirements of ASTM C 920 Class 25, Grade NS, or TT-S-0227 E(3), Type II, Class A.

3. For plane horizontal joints, the self-leveling compounds which meet the requirements of ASTM C 920 Class 25, Grade P, or TT-S-0227 E(3), Type I shall be used. For joints subject to either pedestrian or vehicular traffic, a compound providing non-tracking characteristics, and having a Shore "A" hardness range of 35 to 45, shall be used.

4. Primer materials, if recommended by the sealant MANUFACTURER, shall conform to the printed recommendations of the MANUFACTURER.

D. Sealants for non-waterstop joints in concrete shall conform to SECTION 07920.

2.06 JOINT MATERIALS:

A. Bearing Pad: Bearing pad shall be neoprene conforming to ASTM D 2000, BC 420, 40 durometer hardness unless otherwise indicated.

B. Neoprene Sponge: Sponge shall be neoprene, closed-cell, expanded, conforming to ASTM D 1056, Type 2C5-E1.

C. Joint Filler

1. Joint filler for expansion joints in waterholding structures shall be neoprene conforming to ASTM D1056, Type 2C5-E1.

2. Joint filler material in other locations shall be of the preformed non-extruding type joint filler constructed of cellular neoprene sponge rubber or polyurethane of firm texture. Bituminous fiber type will not be permitted. All non-extruding and resilient-type preformed expansion joint fillers shall conform to the requirements and tests set forth in ASTM D 1752, for Type I, except as otherwise indicated.

2.07 BACKING ROD: Backing rod shall be an extruded closed-cell, polyethylene foam rod. The material shall be compatible with the joint sealant material and shall have a tensile strength of not less than 40 psi and a compression deflection of approximately 25 percent at eight (8) psi. The rod shall be 1/8-inch larger in diameter than the joint width except that a one-inch diameter rod shall be used for a 3/4-inch wide joint.

2.08 BOND BREAKER:

A. Bond breaker shall contain a fugitive dye so that areas of application will be readily distinguishable.

B. Bonding agent for hydrophilic waterstop shall be the MANUFACTURER’s recommended adhesive for wet, rough concrete.

2.09 SLIP DOWELS: Slip dowels in joints shall be smooth epoxy-coated bars, conforming to ASTM A 775.

2.10 PVC TUBING: PVC tubing in joints shall be Schedule SDR 13.5, conforming to ASTM D 2241.

2.11 CHAMFER STRIP: Provide three quarter inch triangular fillets, milled clear straight grained wood, surfaced each side, or extruded vinyl type, with or without nail flange to form all exposed concrete edges such as columns, pilasters, beams, curbs, equipment pads, tops of walls, and as indicated. Unless otherwise indicated, exterior corners in concrete members shall be provided with 3/4” chamfers. Re-entrant corners in concrete members shall not have fillets, unless otherwise indicated.

PART 3 - EXECUTION

3.01 FORMS:

A. Forms shall conform to the shape, lines, and dimensions as shown on the Drawings and shall be substantial and sufficiently tight to prevent leakage. Forms shall be properly braced or tied so as to maintain position and shape. Plumb and string lines shall be installed before concrete placement and shall be maintained during placement. Such lines shall be used by CONTRACTOR's personnel and by the ENGINEER and shall be in sufficient number and properly installed. During concrete placement, the CONTRACTOR shall continually monitor plumb and string line form positions and immediately correct deficiencies.

B. The CONTRACTOR shall be fully responsible for the adequacy of the formwork in its entirety and any forms that are unsafe or inadequate in any respect shall promptly be removed from the WORK and replaced. The CONTRACTOR shall provide worker protection from protruding reinforcement bars in accordance with applicable safety codes.

C. The CONTRACTOR may reuse forms only if in good condition and only if acceptable to the ENGINEER. Reused forms shall be thoroughly cleaned and may require light sanding between uses to obtain a uniform surface texture on all exposed concrete surfaces. Forms shall not be reused if they have developed defects that would affect the surface texture of exposed concrete. Exposed concrete surfaces are defined as surfaces, which are permanently exposed to view. In the case of forms for the inside wall surfaces of hydraulic/water retaining structures, unused tie rod holes in forms shall be covered with metal caps or shall be filled by other methods acceptable to the ENGINEER.

D. Forms shall be sufficiently tight to prevent leakage. Forms shall be properly braced or tied together to maintain their position and shape under a load of freshly-placed concrete. If adequate foundation for shores cannot be secured, trussed supports shall be provided.

E. Immediately before the placing of reinforcing, faces of all forms in contact with concrete shall receive a thorough coating of form release agent. Any excess agent shall be satisfactorily removed before placing concrete. If using mineral oil, the CONTRACTOR shall oil the forms at least two weeks in advance of their use. Care shall be exercised to keep oil/release agent off the surfaces of steel reinforcement and other items to be embedded in concrete.

F. The CONTRACTOR shall supply sufficient number of forms of each kind to permit the required rate of progress to be maintained.

G. The design and inspection of concrete forms, falsework, and shoring shall comply with applicable local, state, and Federal regulations.

3.02 WATERSTOPS:

A. Waterstops shall be embedded in the concrete across joints as indicated. Waterstops shall be fully continuous for the extent of the joint. Splices necessary to provide such continuity shall be accomplished in conformance to printed instructions of MANUFACTURER of the waterstops. The CONTRACTOR shall take suitable precautions and means to support and protect the waterstops during the progress of the WORK and shall repair or replace at its own expense any waterstops damaged during the progress of the WORK. Waterstops shall be stored so as to permit free circulation of air around the waterstop material.

B. When any waterstop is installed in the concrete on one side of a joint, while the other half or portion of the waterstop remains exposed to the atmosphere for more than 2 days, suitable precautions shall be taken to shade and protect the exposed waterstop from direct rays of the sun during the entire exposure and until the exposed portion of the waterstop is embedded in concrete.

3.03 SPLICES IN PVC WATERSTOPS:

A. Splices in PVC waterstops shall be performed by heat sealing the adjacent waterstop sections in accordance with the MANUFACTURER's printed recommendations. It is essential that:

1. The material not be damaged by heat sealing.

2. The splices have a tensile strength of not less than 80 percent of the unspliced material tensile strength.

3. The continuity of the waterstop ribs and of its tubular center axis be maintained. No edge welding is allowed.

B. Butt joints of the ends of 2 identical waterstop sections may be made while the material is in the forms.

C. All joints with waterstops involving more than 2 ends to be jointed together, and all joints which involve an angle cut, alignment change, or the joining of 2 dissimilar waterstop sections shall be prefabricated (shop made fitting) prior to placement in the forms, allowing not less than 24-inch long strips of waterstop material beyond the joint. Upon being inspected and approved, such prefabricated (shop made fitting) waterstop joint assemblies shall be installed in the forms and the ends of the 24-inch strips shall be butt welded to the straight run portions of waterstop in place in the forms.

D. Where a centerbulb waterstop intersects and is jointed with a non-centerbulb waterstop, care shall be taken to seal the end of the centerbulb, using additional PVC material if needed.

3.04 FORM DESIGN:

A. Forms shall be true in every respect to the required shape and size, shall conform to the established alignment and grade, and shall be of sufficient strength and rigidity to maintain their position and shape under the loads and operations incident to placing and vibrating the concrete. Suitable and effective means shall be provided on all forms for holding adjacent edges and ends of panels and sections tightly together and in accurate alignment so as to prevent the formation of ridges, fins, offsets, or similar surface defects in the finished concrete.

B. Plywood, 5/8-inch and greater in thickness, may be fastened directly to studding if the studs are spaced close enough to prevent visible deflection marks in the concrete. The forms shall be tight so as to prevent the loss of water, cement, and fines during placing and vibrating of the concrete. Specifically, the bottom of wall forms that rest on concrete footings or slabs shall be provided with a gasket to prevent loss of fines and paste during placement and vibration of concrete. Such gasket may be a 1- to 1-1/2-inch diameter polyethylene rod held in position to the underside of the wall form.

C. The CONTRACTOR shall provide adequate clean-out holes at the bottom of each lift of forms. The size, number, and location of such clean-outs shall be as acceptable to the ENGINEER. Whenever concrete cannot be placed from the top of a wall form in a manner that meets the requirements of the Contract Documents, form windows shall be provided in the size and spacing needed to allow placement of concrete to the requirements of SECTION 03300. The size, number, and location of such form windows shall be as acceptable to the ENGINEER.

3.05 FORM CONSTRUCTION:

A. Vertical Surfaces: All vertical surfaces of concrete members shall be formed, except where placement of the concrete against the ground is indicated. Not less than 1-inch of concrete shall be added to the indicated thickness of a concrete member, where concrete is permitted to be placed against trimmed ground, in lieu of forms. Permission to do this on other concrete members will be granted only for members of comparatively limited height and where the character of the ground is such that it can be trimmed to the required lines and will stand securely without caving or sloughing until the concrete has been placed.

B. Construction Joints: Concrete construction joints will not be permitted at locations other than those indicated, except as may be acceptable to the ENGINEER. When a second lift is placed on hardened concrete, special precautions shall be taken in the way of the number, location, and tightening of ties at the top of the old lift and bottom of the new to prevent any unsatisfactory effect whatsoever on the concrete. Pipe stubs and anchor bolts shall be set in the forms where required.

C. Form Ties

1. Embedded Ties: Holes left by the removal of form tie cones shall be reamed with suitable toothed reamers so as to leave the surface of the holes clean and rough before being filled with mortar. Wire ties for holding forms will not be permitted. No form-tying device or part thereof, other than metal, shall be left embedded in the concrete. Ties shall not be removed in such manner as to leave a hole extending through the interior of the concrete members. The use of snap-ties, which cause spalling of the concrete upon form stripping or tie removal, will not be permitted. If steel panel forms are used, rubber grommets shall be provided where the ties pass

through the form in order to prevent loss of cement paste. Where metal rods extending through the concrete are used to support or to strengthen forms, the rods shall remain embedded and shall terminate not less than 1-inch back from the formed face or faces of the concrete.

2. Removable Ties: Where taper ties are approved for use, the larger end of the taper tie shall be on the wet side of walls in water retaining structures. After the taper tie is removed, the hole shall be thoroughly cleaned and roughened for bond. A precast neoprene or polyurethane tapered plug shall be located at the wall centerline. The hole shall be completely filled with non-shrink grout for water bearing and below-grade walls. The hole shall be completely filled with non-shrink or regular cement grout for above-grade walls, which are dry on both sides. Exposed faces of walls shall have the outer 2 inches of the exposed face filled with a cement grout, which shall match the color and texture of the surrounding wall surface.

3.06 JOINT CONSTRUCTION:

A. Setting Waterstops:

1. In order to eliminate faulty installation that may result in joint leakage, the CONTRACTOR shall be particularly careful to get the correct positioning of the waterstops during installation. Adequate provisions must be made to support and anchor the waterstops during the progress of the WORK and to insure the proper embedment in the concrete. The symmetrical halves of the waterstops shall be equally divided between the concrete pours at the joints. The center axis of the waterstops shall be coincident with the joint openings. Maximum density and imperviousness of the concrete shall be insured by thoroughly working it in the vicinity of all joints.

2. In placing PVC waterstops in the forms, the CONTRACTOR shall provide means to prevent the waterstop from being folded over by the concrete as it is placed. Waterstops shall be held in place with light wire ties on 12-inch centers which shall be passed through hog rings at the edge of the waterstop and tied to the curtain of reinforcing steel. Horizontal waterstops, with their flat face in a vertical plane, shall be held in place with continuous supports to which the top edge of the waterstop shall be tacked. In placing concrete around horizontal waterstops, with their flat face in a horizontal plane, the CONTRACTOR shall work concrete under the waterstops by hand so as to avoid the formation of air and rock pockets.

3. In placing centerbulb waterstops in expansion joints, the centerbulb shall be centered on the joint filler material.

4. Waterstop in vertical wall joints shall stop 6 inches from the top of the wall where such waterstop does not connect with any other waterstop and is not to be connected to a future concrete placement.

B. Joint Location:

1. Construction joints and other types of joints shall be provided where indicated. When not indicated, construction joints shall be provided at 25-foot maximum spacing for all concrete construction. Where joints are indicated spaced greater than 40 feet apart, additional joints shall be provided to maintain the 25-foot maximum spacing. The location of all joints, of any type, shall be submitted for acceptance by the ENGINEER.

C. Joint Preparation:

1. The CONTRACTOR shall take special care in preparing concrete surfaces at joints where bonding between 2 sections of concrete is required. Unless otherwise indicated, such bonding will be required at all horizontal joints in walls. Surfaces shall be prepared in accordance with the requirements of SECTION 03300. Except on horizontal wall construction joints, wall to slab joints, or where otherwise indicated, at all joints where waterstops are required, the joint face of the first pour shall be coated with a bond breaker as indicated herein.

D. Retrofit Joint Preparation:

1. Existing surfaces to receive a retrofit waterstop shall be clean and free from any loose or foreign material. Surface shall be given a light sandblast or hydroblast finish to 1/8-inch amplitude prior to application of epoxy and waterstop.

E. Construction Joint Sealant:

1. Construction joints in water-bearing floor slabs, and elsewhere as indicated, shall be provided with tapered grooves which shall be filled with a construction joint sealant. The material used for forming the tapered grooves shall be left in the grooves until just before the grooves are cleaned and filled with joint sealant. After removing the forms from the grooves, all laitance and fins shall be removed, and the grooves shall be sandblasted. The grooves shall be allowed to become thoroughly dry, after which they shall be blown out; immediately thereafter, they shall be primed, bond breaker tape placed in the bottom of the groove, and filled with the construction joint sealant. The primer shall be furnished by the sealant MANUFACTURER. No sealant will be permitted to be used without a primer. Care shall be used to completely fill the sealant grooves. Areas designated to receive a sealant fillet shall be thoroughly cleaned, as outlined for the tapered grooves, prior to application of the sealant.

2. The primer and sealant shall be placed strictly in accordance with the printed recommendations of the MANUFACTURER, taking special care to properly mix the sealant prior to application. The sides of the sealant groove shall not be coated with bond breaker, curing compound, or any other substance which would interfere with proper bonding of the sealant. Sealant shall achieve final cure at least 7 days before the structure is filled with water.

3. Sealant shall be installed by a competent waterproofing specialty contractor who has a successful record of performance in similar installations.

4. Thorough, uniform mixing of 2-part, catalyst-cured materials is essential; special care shall be taken to properly mix the sealer before its application. Before any sealer is placed, the CONTRACTOR shall arrange to have the crew doing the WORK carefully instructed on the proper method of mixing and application by a representative of the sealant MANUFACTURER.

5. Any joint sealant which fails to fully and properly cure after the MANUFACTURER's recommended curing time for the conditions of the WORK hereunder shall be completely removed; the groove shall be thoroughly sandblasted to remove all traces of the uncured or partially cured sealant and primer, and shall be re-sealed with the indicated joint sealant. Costs of such removal, joint treatment, re-sealing, and appurtenant WORK shall be the CONTRACTOR's responsibility.

F. Hydrophilic Waterstop

1. Where a hydrophilic waterstop is called for in the Contract Documents, it shall be installed with the MANUFACTURER's instructions and recommendations except as modified herein.

2. When requested by the ENGINEER, the CONTRACTOR shall arrange for the MANUFACTURER to furnish technical assistance in the field.

3. Hydrophilic waterstop shall only be used where complete confinement by concrete is provided. Hydrophilic waterstop shall not be used in expansion or contraction joints or in the first 6 inches of any non-intersecting joint.

4. The hydrophilic waterstop shall be located as near as possible to the center of the joint and it shall be continuous around the entire joint. The minimum distance from the edge of the waterstop to the face of the member shall be 5 inches.

5. Where the thickness of the concrete member to be placed on the hydrophilic waterstop is less than 12 inches, the waterstop shall be placed in grooves formed or ground into the concrete. The groove shall be at least 3/4 inch deep and 1-1/4 inches wide. When placed in the groove, the minimum distance from the edge of the waterstop to the face of the member shall be 2.5 inches.

6. Where a hydrophilic waterstop is used in combination with PVC waterstop, the hydrophilic waterstop shall overlap the PVC waterstop for a minimum of 6 inches and shall be adhered to PVC waterstop with single component water-swelling sealant as recommended by MANUFACTURER.

7. The hydrophilic waterstop shall not be installed where the air temperature falls outside the MANUFACTURER's recommended range.

8. The concrete surface under the hydrophilic waterstop shall be smooth and uniform. The concrete shall be ground smooth if needed. Alternately, the hydrophilic waterstop shall be bonded to the surface using an epoxy grout which completely fills all voids and irregularities beneath the waterstop material. Prior to installation, the concrete surface shall be wire brushed to remove any laitance or other materials that may interfere with the bonding of epoxy.

9. The hydrophilic waterstop shall be secured in place with concrete nails and washers at 12-inch maximum spacing. This shall be in addition to the adhesive recommended by the MANUFACTURER

G. Retrofit Waterstop:

1. Retrofit waterstops shall be set in a bed of epoxy over a sandblasted surface with stainless steel batten bars and 1/4-inch diameter stainless steel anchors at 6 inches on center, staggered, and in accordance with the MANUFACTURER's written recommendations.

3.07 REMOVAL OF FORMS:

A. Careful procedures for the removal of forms shall be strictly followed, and this WORK shall be done with care so as to avoid injury to the concrete or workers. In the case of roof slabs and above-ground floor slabs, forms shall remain in place until test cylinders for the roof concrete attain a minimum compressive strength of 75 percent of the 28-day strength (0.75f'c) in SECTION 03300. No forms shall be disturbed or removed under an individual panel or unit before the concrete in all the adjacent panels or units have attained 0.75f'c strength and have been in place for a minimum of 7 days. The time required to establish said strength shall be determined by the ENGINEER, who will make several test cylinders for this purpose from concrete used in the first group of roof panels placed. If the time so determined is more than the 7-day minimum, then that time shall be used as the minimum length of time. Forms for vertical walls of waterholding structures shall remain in place at least 36 hours after the concrete has been placed.

B. Forms for parts of the WORK not specifically mentioned herein shall remain in place for periods of time as recommended in ACI 347.

3.08 FALSEWORK:

A. The CONTRACTOR shall be responsible for the design, engineering, construction, maintenance, and safety of all falsework, including staging, walkways, forms, ladders, and similar appurtenances, which shall equal or exceed the applicable requirements of the provisions of the OSHA Safety and Health Standards for Construction, and the requirements herein.

B. The CONTRACTOR shall design and construct falsework to provide the necessary rigidity and to support the loads. Falsework for the support of a superstructure shall be designed to support the loads that would be imposed if the entire superstructure were placed at one time.

C. The CONTRACTOR shall place falsework upon a solid footing, safe against undermining, and protected from softening. When the falsework is supported on timber piles, the maximum calculated pile loading shall be as recommended by the CONTRACTOR's geotechnical engineer and shall not exceed 20 tons. When falsework is supported on any portion of the structure which is already constructed, the load imposed by the falsework shall be spread, distributed, and braced in such a way as to avoid any possibility of damage to the structure.

3.09 TOLERANCES:

A. The variation from plumb, level and required lines shall not exceed 1/4-inch in any ten feet (10') of length, non cumulative, and there shall be no offsets or visible waviness in the finished surface. All other tolerances shall be within the tolerances of ACI 117 - Standard Tolerances for Concrete Construction and Materials.

END OF SECTION

SECTION 03200 CONCRETE REINFORCEMENT

PART 1 - GENERAL

1.01 SCOPE:

A. Summary of Work: The CONTRACTOR shall furnish all labor, materials and equipment to provide and properly place all concrete reinforcement steel, welded wire fabric, couplers, and concrete inserts for use in the reinforced concrete and masonry construction and all appurtenant work, including all the wires, clips, supports, chairs, spacers, and other accessories as shown on the Drawings and as specified herein.

B. Related Work Specified Elsewhere:

1. SECTION 01300 Submittals
2. SECTION 03100 Concrete Formwork and Accessories
3. SECTION 03300 Cast-In-Place Concrete
4. SECTION 03600 Grout

1.02 APPLICABLE STANDARDS AND PUBLICATIONS:

A. Standards or Codes: The edition of the standards of the organizations listed below in effect at the time of the advertisement for bids form a part of this specification to the extent referenced. See the various paragraphs for the specified standard. In the case of a conflict between the requirements of this SECTION and those of the listed document, the requirements of this SECTION shall prevail.

1. American Concrete Institute (ACI):
   a. 318 Building Code Requirements for Reinforced Concrete
   b. SP-66 Detailing Manual
2. ASTM International (ASTM):
   a. A82 Standard Specification for Steel Wire, Plain, for Concrete Reinforcement
   b. A185 Standard Specification for Steel Welded Wire Reinforcement, Plain, for Concrete
3. Concrete Reinforcing Steel Institute (CRSI):
   a. Recommended Practice for Placing Reinforcing Bars
4. Florida Building Code, Latest Edition

1.03 SUBMITTALS: Submittals shall be in accordance with SECTION 01300 - Submittals. The CONTRACTOR shall submit the following:

A. Mill Certifications of Grade 60 reinforcing steel or stainless steel, as required.

B. Complete bar schedule, bar details and erection drawings in conformance with ACI SP-66.

C. Where mechanical couplers are required or permitted to be used to splice reinforcement steel, the CONTRACTOR shall submit MANUFACTURER's literature which contains instructions and recommendations for installation for each type of coupler used; certified test reports which verify the load capacity of each type and size of coupler used; and Shop Drawings which show the location of each coupler with details of how they are to be installed in the formwork.

D. Mill certificates shall be delivered with each shipment of reinforcing bars.

1.04 RESPONSIBILITIES:

A. The CONTRACTOR shall perform Pull tests to 50 percent of five percent of drilled dowels, randomly selected by the ENGINEER. If any tested dowels slip or yield, an additional five percent of drilled dowels shall be tested until an entire five percent sample is tested without slipping or yielding.

1.05 FACTORY TESTING: If requested by the ENGINEER, the CONTRACTOR shall provide samples from each heat of reinforcement steel delivered in adequate quantity for testing. The CONTRACTOR shall pay costs of additional tests due to material failing tests.

1.06 CERTIFICATIONS:

A. International Code Council Evaluation Service (ICC-ES) Certifications for mechanical couplers, if allowed

B. Mill Certifications of Grade 60 reinforcing steel

1.07 INSPECTION COORDINATION: The CONTRACTOR shall provide sufficient notice and opportunity to the ENGINEER to review the placement of the reinforcing steel before the concrete is placed. The CONTRACTOR shall provide access to the WORK for the ENGINEER as requested for inspection. The CONTRACTOR shall provide 48 hours advance notice of its intention to begin new WORK activities.

1.08 WARRANTY: The CONTRACTOR shall warrant the WORK against defects for one (1) year from the date of Substantial Completion and as described in Article 13 of SECTION 00700 - General Terms and Conditions.

PART 2 - PRODUCTS

2.01 REINFORCING BARS:

A. Metal reinforcement shall be deformed type bars conforming to ASTM A615, Specifications for Deformed and Plain Billet-Steel Bars for Concrete Reinforcement, Grade 60, unless otherwise specified. Reinforcing steel shall be fabricated for the shapes and dimensions indicated on the Drawings and in compliance with ACI 318. All bars shall be bent cold.

B. Replace all reinforcement with bends and kinks not shown on fabrication Shop Drawings. Remove from job Site all such reinforcing and replace with new fabricated steel. Field bending of reinforcement at the work Site is prohibited.

C. Welded wire fabric reinforcement shall conform to the requirements of ASTM A185, and the details indicated. Do not use fabric that has been rolled. Install flat sheets only.

D. Spiral reinforcement shall be cold-drawn steel wire conforming to the requirements of ASTM A82.

E. Mechanical couplers shall be provided where indicated and where approved by the ENGINEER. The couplers shall develop a tensile strength that exceeds 125 percent of the yield strength of the reinforcement bars being spliced at each splice. Where the type of coupler used is composed of more than one component, all components required for a complete splice shall be provided. This shall apply to all mechanical splices, including those splices intended for future connections. Reinforcement steel and coupler used shall be compatible for obtaining the required strength of the connection. Straight threaded type couplers shall require the use of the next larger size reinforcing bar or shall be used with reinforcing bars with specially forged ends which provide upset threads which do not decrease the basic cross section of the bar.

F. Epoxy for grouting reinforcing bars shall be specifically formulated for such application, for the moisture condition, application temperature, and orientation of the hole to be filled. Epoxy grout shall meet the requirements in SECTION 03600 - Grout.

2.02 ACCESSORIES: All chairs and bolsters shall conform to ACI SP-66 and the CRSI Manual of Standard Practices and shall have galvanized or plastic legs.

PART 3 - EXECUTION

3.01 PLACEMENT AND ANCHORAGE:

A. Bar supports shall be spaced in accordance with CRSI.

1. Reinforcement steel shall be supported by concrete, plastic or metal supports, spacers or metal hangers that are strong and rigid enough to prevent any displacement of the reinforcement steel. Where concrete is to be placed on the ground, supporting concrete blocks (or dobies) shall be used in sufficient numbers to support the bars without settlement, but in no case shall such support be continuous. Concrete blocks used to support reinforcement steel shall be tied to the steel with wire ties that are embedded in the blocks. For concrete over formwork, the CONTRACTOR shall provide concrete, metal, plastic, or other acceptable bar chairs and spacers.

2. Limitations on the use of bar support materials shall be as follows.

a. Concrete Dobies: permitted at all locations except where architectural finish is required.

b. Wire Bar Supports: permitted only at slabs over dry areas, interior non-hydraulic wall surfaces, and exterior wall surfaces.

c. Plastic Bar Supports: permitted at all locations except on grade.

B. Reinforcement shall be accurately placed in accordance with the Drawings and shall be adequately secured in position with not less than 16-gauge annealed wire. The placement tolerances shall be in accordance with ACI 318 and the CRSI Manual of Standard Practices.

C. Tie wires shall be bent away from the forms in order to provide the required concrete coverage.

D. Bars additional to those indicated which may be found necessary or desirable by the CONTRACTOR for the purpose of securing reinforcement in position shall be provided by the CONTRACTOR at its own expense.

E. Additional reinforcement around openings:

1. Place an equivalent area of steel around pipe or opening and extend on each side and top and bottom sufficiently to develop bond in each bar.

2. Refer to details on Drawings for bar extension length on each side of opening.

3. Where welded wire fabrics are used, provide extra reinforcing using fabric or deformed bars.

F. Unless otherwise indicated, reinforcement placing tolerances shall be within the limits in Section 7.5 of ACI 318 except where in conflict with the requirements of the Building Code.

G. Bars may be moved as necessary to avoid interference with other reinforcement steel continuously across the entire width of the reinforcement mat, and shall support the reinforcement mat in the plane indicated.

H. Welded wire fabric placed over the ground shall be supported on wired concrete blocks (dobies) spaced not more than three (3) feet on centers in any direction. Welded wire fabric shall not be placed on the ground and hooked into place in the freshly placed concrete.

I. Welded wire fabric reinforcement placed over horizontal forms shall be supported on slab bolsters. Slab bolsters shall be spaced not more than 30-inches on center. The construction practice of placing welded wire fabric on the ground and hooking it into place in the freshly placed concrete shall not be used.

3.02 CONCRETE COVER: The concrete cover over reinforcement shall conform to ACI 318, paragraph 7.7, Concrete Protection for Reinforcement, ACI 350 or Army Corps Engineering Manuals unless otherwise indicated. Tie wires shall be bent away from the forms in order to provide the required concrete coverage.

3.03 SPLICING:

A. All lap splices of bar reinforcement shall be as indicated and conform to Chapter 12 of ACI 318 or as otherwise approved by the ENGINEER. Unless otherwise indicated, dowels shall match the size and spacing of the spliced bar.

B. Laps of welded wire fabric shall be in accordance with ACI 318. Adjoining sheets shall be securely tied together with No. 14 tie wire, one tie for each two running feet. Wires shall be staggered and tied in such a manner that they cannot slip.

C. Splices in column spiral reinforcement, when necessary, shall be made by a lap of 1-1/2 turns.

D. Reinforcing shall not be straightened or rebent in a manner which will injure the material. Bars shall be bent or straight as indicated. Do not use bends different from the bends indicated. Bars shall be bent cold, unless otherwise permitted by the ENGINEER. No bars partially embedded in concrete shall be field-bent except as indicated or specifically permitted by the ENGINEER.

E. Couplers which are located at a joint face shall be a type which can be set either flush or recessed from the face as indicated. The couplers shall be sealed during concrete placement to completely eliminate concrete or cement paste from entering. Couplers intended for future connections shall be recessed a minimum of 1/2-inch from the concrete surface. After the concrete is placed, the coupler shall be plugged with plastic plugs which have an O-ring seal and the recess filled with sealant to prevent any contact with water or other corrosive materials. Threaded couplers shall be plugged.

3.04 CLEANING AND PROTECTION:

A. Unless indicated otherwise, mechanical coupler spacing and capacity shall match the spacing and capacity of the reinforcing indicated for the adjacent section.

B. Reinforcement shall be free of all materials that will reduce bond.

C. Reinforcement steel shall at all times be protected from conditions conducive to corrosion until concrete is placed around it.

D. The surfaces of reinforcement steel and other metalwork to be in contact with concrete shall be thoroughly cleaned of all dirt, grease, loose scale and rust, grout, mortar, and other foreign substances immediately before the concrete is placed. Where there is delay in depositing concrete, reinforcement shall be re-inspected and, if necessary, re-cleaned or sandblasted.

E. Properly cap all vertical reinforcement steel if area is subject to having workers above the reinforcement area.

3.05 INSTALLATION OF DRILLED REINFORCING STEEL DOWELS: For drilling and grouting information see SECTION 03600 - Grout.

END OF SECTION

SECTION 03300 CAST-IN-PLACE CONCRETE

PART 1 - GENERAL

1.01 SCOPE:

A. Summary of Work: The WORK of this SECTION consists of furnishing all labor, equipment, supplies, and materials necessary for the proper placement, curing, finishing, protection, and repair of the cast-in-place concrete required by the Contract Documents.

B. Related Work Specified Elsewhere:

1. SECTION 01300 Submittals
2. SECTION 01410 Testing and Quality Control
3. SECTION 03050 Concrete Admixture Waterproofing
4. SECTION 03100 Concrete Formwork and Accessories
5. SECTION 03200 Concrete Reinforcement
6. SECTION 03600 Grout

1.02 APPLICABLE STANDARDS AND PUBLICATIONS:

A. Standards or Codes: The edition of the standards of the organizations listed below in effect at the time of the advertisement for bids form a part of this specification to the extent referenced. See the various paragraphs for the specified standard. In the case of a conflict between the requirements of this SECTION and those of the listed document, the requirements of this SECTION shall prevail.

1. American Concrete Institute (ACI)
    a. 117 Specification for Tolerances for Concrete Construction and Materials
    b. 301 Specifications for Structural Concrete for Buildings
    c. 304.2R Recommended Practice for Measuring, Mixing, Transporting, and Placing Concrete
    d. 305 Committee Report on Hot-Weather Concreting
    e. 306 Committee Report on Cold-Weather Concreting
    f. 308 Standard Practice for Curing Concrete
    g. 309 Guide for Consolidation of Concrete
    h. 318 Building Code Requirements for Reinforced Concrete
    i. 350 Code Requirements for Environmental Engineering Concrete Structures
2. ASTM International (ASTM):
    a. C31 Making and Curing Concrete compression and Flexure Test Specimens in the Field
    b. C33 Standard Specification for Concrete Aggregates
    c. C39 Standard Test Method for Compressive Strength of Cylindrical Concrete Specimens
    d. C94 Standard Specification for Ready-Mixed Concrete
    e. C127 Standard Test Method for Relative Density (Specific Gravity) and Absorption of Coarse Aggregate
    f. C128 Standard Test Method for Relative Density (Specific Gravity) and Absorption of Fine Aggregate

g. C136 Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates

h. C143 Standard Test Method for Slump of Hydraulic-Cement Concrete

i. C150 Standard Specification for Portland Cement

j. C156 Test Method for Water Retention by Concrete Curing Materials

k. C157 Standard Test Method for Length Change of Hardened Hydraulic-Cement Mortar and Concrete

l. C173 Standard Test Method for Air Content of Freshly Mixed Concrete by the Volumetric Method

m. C231 Standard Test Method for Air Content of Freshly Mixed Concrete by the Pressure Method

n. C260 Standard Specification for Air Entraining Admixtures for Concrete

o. C309 Standard Specification for Liquid Membrane-Forming Compounds for Curing Concrete

p. C494 Standard Specification for Chemical Admixtures for Concrete

q. C566 Standard Test Method for Total Evaporable Moisture Content of Aggregate by Drying

r. C618 Standard Specification for Coal Fly Ash and Raw or Calcined Natural Pozzolan for Use as a Mineral Admixture in Concrete

s. C881 Standard Specification for Epoxy-Resin-Base Bonding Systems for Concrete

t. C1077 Practice for Laboratories Testing Concrete and Concrete Aggregates for use in Construction and Criteria for Laboratory Evaluation

u. C1157 Standard Performance Specification for Hydraulic Cements

v. C1240 Standard Specification for Silica Fume for Use as a Mineral Admixture in Hydraulic-Cement Concrete, Mortar, and Grout

w. D1751 Standard Specification for Preformed Expansion Joint Filler for Concrete Paving and Structural Construction (Nonextruding and Resilient Bituminous Types)

x. D2419 Standard Test Methods for Sand Equivalent Value of Soils and Fine Aggregate

y. E96 Standard Test Methods for Water Vapor Transmission of Materials

z. E1643 Standard Practice for Installation of Water Vapor Retarders Used in Contact with Earth or Granular Fill Under Concrete Slabs

3. Federal Specifications

a. UU-B-790A Building Paper, Vegetable Fiber (Kraft, Waterproofed, Water Repellant and Fire Resistant)

4. Florida Building Code and Local Building Codes as appropriate

5. Florida Department of Transportation (FDOT)

a. Standard Specifications for Road and Bridge Construction, latest edition.

1.03 DEFINITIONS:

A. Structural Concrete: Concrete to be used in all cases except where indicated otherwise in the Contract Documents.

B. Pea Gravel Concrete: Concrete in thin sections and areas with congested reinforcing, at the option of the CONTRACTOR and with written approval of the ENGINEER for the specific location.

C. Sitework Concrete: Concrete to be used for curbs, gutters, catch basins, sidewalks, pavements, fence and guard post embedment, underground pipe encasement, underground duct bank encasement and all other concrete appurtenant to electrical facilities unless otherwise indicated.

D. Lean Concrete: Concrete to be used for thrust blocks, pipe trench cut-off blocks and cradles that are indicated on the Drawings as unreinforced. Lean concrete shall be used as protective cover for dowels intended for future connection.

E. Tremie Concrete: Concrete placed underwater.

F. Hydraulic Structure: A concrete structure for the containment, treatment, or transmission of water, wastewater, other fluids, or gases.

1.04 SUBMITTALS:

A. Submittals shall be in accordance with SECTION 01300 - Submittals.

B. Mix Designs:

1. Prior to beginning the WORK and within 14 days after issuance of the Notice to Proceed, the CONTRACTOR shall submit preliminary concrete mix designs which shall show the proportions and gradations of all materials proposed for each class and type of concrete. Mix designs shall be tested by an independent testing laboratory acceptable to the ENGINEER. All costs related to such testing shall be CONTRACTOR'S responsibility.

2. Test data relating to the cement, aggregate, and admixtures shall be less than six months old. Furnish the submittals in accordance with ACI 301 for the following:

a. Mill tests for cement

b. Admixture certification. Chloride ion content shall be included.

c. Aggregate gradation test results and certification

3. Where ready-mix concrete is used, the CONTRACTOR shall furnish delivery tickets at the time of delivery of each load of concrete. Each ticket shall show the state certified equipment used for measuring and the total quantities, by weight, of cement, sand, each class of aggregate, admixtures, and the amounts of water in the aggregate added at the batching plant, and the amount allowed to be added at the Site for the specific design mix. In addition, each ticket shall state the mix number, total yield in cubic yards, and the time of day, to the nearest minute, corresponding to the times when the batch was dispatched, when it left the plant, when it arrived at the Site, when unloading began, and when unloading was finished.

C. Other

1. The CONTRACTOR shall submit materials and methods for curing.

2. The CONTRACTOR shall submit product specifications, data, and installation instructions for all miscellaneous products called for in this specification.

3. Tremie Concrete:

a. Placement Plan: The CONTRACTOR shall submit detailed plans for concrete placement, which shall include method and equipment used, pipe spacing, and location throughout the duration of placement, and the planned locations to be used for relocating pipes as placement progresses. The plan shall be submitted at least 20 days prior to commencing of concrete placement. No concrete shall be placed until the CONTRACTOR has received written approval from the ENGINEER.

b. Placement Procedures: The CONTRACTOR shall submit placement procedures which include details of stable platform for support of tremie operations, and procedures for

preventing water flowing across or through the underwater placement site during concreting.

1.05 QUALIFICATIONS: Truck mixers shall be equipped with electrically actuated counters by which the number of revolutions of the drum or blades may be readily verified. The counter shall be of the resettable, recording type, and shall be mounted in the driver's cab. The counters shall be actuated at the time of starting mixers at mixing speeds.

1.06 RESPONSIBILITIES: (Not Applicable)

1.07 CERTIFICATIONS AND TESTING:

A. General

1. Concrete and other materials for testing shall be furnished by the CONTRACTOR, and the CONTRACTOR shall assist the ENGINEER in obtaining samples, and disposal and cleanup of excess material.

2. The testing laboratory will meet or exceed the requirements of ASTM C1077.

3. The cost of trial batch, laboratory, and shrinkage tests on cement, aggregates, and concrete, will be the CONTRACTOR'S responsibility.

B. Trial Batch and Laboratory Tests

1. Tests for determining slump shall be in accordance with the requirements of ASTM C143.

2. Testing for aggregate shall include sand equivalence, reactivity, organic impurities, abrasion resistance, and soundness, according to ASTM C33.

3. A testing laboratory approved by the ENGINEER shall prepare a trial batch of each class of concrete, based on the preliminary concrete mixes submitted by the CONTRACTOR. During the trial batch the aggregate proportions may be adjusted by the testing laboratory using the two coarse aggregate size ranges to obtain the required properties. If one size range produces an acceptable mix, a second size range need not be used. Such adjustments will be considered refinements to the mix design and will not be the basis for extra compensation to the CONTRACTOR. Concrete shall conform to the requirements of this SECTION, whether the aggregate proportions are from the CONTRACTOR'S preliminary mix design, or whether the proportions have been adjusted during the trial batch process. The trial batch shall be prepared using the aggregates, cement, and admixture proposed for the Project. The trial batch materials shall be of a quantity such that the testing laboratory can obtain 3 drying shrinkage, and 6 compression test specimens from each batch.

4. The determination of compressive strength shall be made in accordance with ACI 318, Section 5.3.

5. A sieve analysis of the combined aggregate for each trial batch shall be performed according to the requirements of ASTM C136. Values shall be given for percent passing each sieve.

6. The final selection of the Tremie Concrete mix design shall be based upon test placements underwater in a placement box or in a pit that can be de-watered after placement. Test placements shall be examined for concrete flatness, amount of laitance present, quality of concrete at the extreme flow distance of the test. The ENGINEER shall determine the acceptance or rejection of the mix based on the results of the test.

C. Shrinkage Tests:

1. Drying shrinkage tests shall be performed for the trial batches, the first placement of each class of structural concrete, and during construction to ensure continued compliance with these Specifications.

2. Drying shrinkage specimens shall be 4-inch by 4-inch by 11-inch prisms with an effective gauge length of 10-inches; fabricated, cured, dried, and measured in accordance with ASTM C157, modified as follows: specimens shall be removed from molds at an age of 23 plus or minus one (1) hours after trial batching, shall be placed immediately in water at 70 degrees F plus or minus three (3) degrees F for at least 30 minutes, and shall be measured within 30 minutes thereafter to determine original length and then submerged in saturated lime water at 73 degrees F plus or minus three (3) degrees F. Measurement to determine expansion expressed as a percentage of original length shall be made at age seven (7) days. This length at age seven (7) days shall be the base length for drying shrinkage calculations ("0" days drying age). Specimens then shall be stored immediately in a humidity control room maintained at 73 degrees F plus or minus three (3) degrees F and 50 percent plus or minus four (4) percent relative humidity for the remainder of the test. Measurements to determine shrinkage expressed as percentage of base length shall be made and reported separately for 7, 14, 21, and 28 days of drying after seven (7) days of moist curing.

3. The drying shrinkage deformation of each specimen shall be computed as the difference between the base length (at "0" days drying age) and the length after drying at each test age. The average drying shrinkage deformation of the specimens shall be computed to the nearest 0.0001 inch at each test age. If the drying shrinkage of any specimen departs from the average of that test age by more than 0.0004-inch, the results obtained from that specimen shall be disregarded. Results of the shrinkage test shall be reported to the nearest 0.001 percent of shrinkage. Compression test specimens shall be taken in each case from the same concrete used for preparing drying shrinkage specimens. These tests shall be considered a part of the normal compression tests for the Project.

4. The maximum concrete shrinkage for specimens cast in the laboratory from the trial batch, as measured at 21 day drying age or at 28 day drying age shall be 0.036 percent or 0.042 percent, respectively. Standard deviation will not be considered. The CONTRACTOR shall only use a mix design for construction that has first met the trial batch shrinkage requirements. Shrinkage limitations apply only to structural concrete.

5. The maximum concrete shrinkage for specimens cast in the field shall not exceed the trial batch maximum shrinkage requirement by more than 25 percent.

6. If the required shrinkage limitation is not met during construction, the CONTRACTOR shall take any or all of the following actions to reestablish compliance. These actions may include changing the source of aggregates, cement and/or admixtures; reducing water/cement ratio; washing of coarse and/or fine aggregate to reduce fines; increasing the number of construction joints; modifying the curing requirements; or other actions designed to minimize shrinkage or the effects of shrinkage.

D. Field Tests

1. The responsibility to retain the services of an independent testing laboratory shall be as defined in SECTION 01410 – Testing and Quality Control.

2. The CONTRACTOR shall pay the cost of any additional tests and investigation on WORK that does not meet the specifications.

3. Tests on pumped concrete shall be taken at the point of final placement.

4. Compressive Test: Compressive test specimens shall be taken during construction from the first placement of each class of concrete placed each day and for each 150 cubic yards or fraction thereof each day.

    a. Each set of test specimens shall consist of five (5) cylinders. Specimens shall be made in accordance with ASTM C31. Specimens shall be 6-inch diameter by 12-inch high cylinders.

b. Compression tests shall be performed in accordance with ASTM C39. Two (2) cylinders shall be broken at seven (7) days and two (2) at 28 days, and the remaining cylinder shall be held to verify test results, if needed.

c. The acceptance of the test results shall be the average of the strengths of the two specimens tested at 28 days as per ACI 318. Evaluation and acceptance of the concrete shall be per ACI 318, Chapter 5.

5. Slump Tests: One (1) slump test shall be taken per truckload in accordance with ASTM C143.

6. Air Content: Air content shall be determined for each compressive test taken in accordance with ASTM C231 or by ASTM C173.

7. Aggregate testing shall be made every 12 months during construction to ensure continued compliance with these Specifications.

8. Concrete that fails to meet the ACI requirements and these Specifications is subject to removal and replacement.

9. Temperature: Concrete temperature shall be recorded in accordance with ASTM C1064.

10. During placement of concrete underwater, sampling and testing of slump, air content, and temperature shall be taken every hour, or for every 200 cubic yards of concrete placed. Sounding in various locations shall also be conducted at the same interval.

1.08 CONCRETE CONFERENCE:

A. A meeting to review the detailed requirements of the CONTRACTOR'S proposed concrete design mixes and to determine the procedures for producing proper concrete construction shall be held no later than [14] days after the Notice to Proceed.

B. All parties involved in the concrete WORK shall attend the conference, including the following at a minimum:

1. CONTRACTOR'S representative

2. Testing laboratory representative

3. Concrete subcontractor

4. Reinforcing steel subcontractor and detailer

5. Concrete supplier

6. Admixture MANUFACTURER's representative

C. The conference shall be held at a mutually agreed upon time and place. The ENGINEER shall be notified no less than five (5) days prior to the date of the conference.

1.09 WARRANTY: The CONTRACTOR shall warrant the WORK against defects for one (1) year from the date of Substantial Completion and as described in Article 13 of SECTION 00700 - General Terms and Conditions.

PART 2 - MATERIALS

2.01 GENERAL:

A. All materials shall be classified as acceptable for potable water use according to NSF Standard 61.

B. Cement for concrete that will contact potable water shall not be obtained from kilns that burn metal rich hazardous waste fuel.

C. Materials shall be delivered, stored, and handled so as to prevent damage by water or breakage. Cement reclaimed from cleaning bags or leaking containers shall not be used. Cement shall be used in the sequence of receipt of shipments.

D. Materials shall comply with the requirements of Sections 201, 203, and 204 of ACI 301, as applicable.

E. Storage of materials shall conform to the requirements of Section 205 of ACI 301.

2.02 CEMENT:

A. Cement shall be standard Portland Cement Type II conforming to ASTM C150 and C1157

B. A minimum of 85 percent of cement by weight shall pass a 325 screen.

C. A single brand of cement shall be used throughout the WORK, and prior to its use, the brand shall be accepted by the ENGINEER.

D. Sacked cement shall be stored in such a manner so as to permit access for inspection and sampling. Certified mill test reports, including fineness, for each shipment of cement to be used shall be submitted to the ENGINEER, if requested, regarding compliance with these Specifications.

2.03 AGGREGATES:

A. Aggregates shall be obtained from pits acceptable to the ENGINEER, shall be non-reactive, and shall conform to the requirements of ASTM C33.

B. When tested in accordance with ASTM C33, the loss resulting after five (5) cycles of the soundness test, shall not exceed ten (10) percent for fine aggregate and twelve (12) percent for coarse aggregate, when using sodium sulfate.

C. When tested in accordance with ASTM C33, the ratio of silica released to reduction in alkalinity shall not exceed 1.0.

D. Coarse Aggregates:

1. Coarse aggregates shall be crushed stone, gravel or other approved inert material having clean, hard, durable, uncoated particles conforming to ASTM C33.

2. The coarse aggregates shall be prepared and handled in two (2) or more size groups for combined aggregates with a maximum size greater than 3/4-inch. When the aggregates are proportioned for each batch of concrete, the 2 size groups shall be combined.

3. When tested in accordance with ASTM C33, the coarse aggregate shall show a loss not exceeding 42 percent after 500 revolutions, or 10.5 percent after 100 revolutions.

E. Fine Aggregates:

1. Fine aggregates shall be clean sand conforming to ASTM C33.

2. When tested in accordance with ASTM D2419, the sand equivalency shall not be less than 75 percent for an average of three (3) samples, nor less than 70 percent for an individual test. Gradation of fine aggregate shall conform to ASTM C33 when tested in accordance with ASTM C136 for the fineness modulus of the sand used, including the optional grading in Section 6.2. The fineness modulus of sand used shall not be over 3.1.

3. When tested in accordance with ASTM C33, the fine aggregate shall produce a color in the supernatant liquid no darker than the reference standard color solution.

2.04 WATER:

A. The water used in the concrete mix and for curing shall be clean, potable, and in accordance with ACI 318. Water shall be free from objectionable quantities of silty organic matter, alkali, salts, and other impurities.

B. The water shall be considered potable, for the purposes of this SECTION only, if it meets the requirements of the local governmental agencies. Agricultural water with high total dissolved solids (over 1000 mg/l TDS) shall not be used.

2.05 ADMIXTURES:

A. General: All admixtures shall be compatible and be furnished by a single MANUFACTURER capable of providing qualified field service representation. Admixtures shall be used in accordance with MANUFACTURER's recommendations. If the use of an admixture is producing an inferior end result, the CONTRACTOR shall discontinue use of the admixture. Admixtures shall not contain thiocyanates or more than 0.05 percent chloride ion and shall be non-toxic after 30 days.

B. Air Entraining Admixtures:

1. Air entraining admixture shall conform to ASTM C260. Air content shall be tested at the point of placement.

2. The air-entraining agent shall be added to the batch in a portion of the mixing water. The solution shall be batched by means of a mechanical batcher capable of accurate measurement.

3. Sufficient air-entraining agent shall be used to provide a total air content of 3 to 5 percent. Concrete floors to receive a shake-on floor hardener shall have an air content not to exceed three (3) percent or as recommended by the hardener MANUFACTURER.

C. Set Controlling and Water Reducing Admixtures:

1. Admixtures may be added at the CONTRACTOR'S option, subject to the ENGINEER's approval, to control the set, effect water reduction, and increase workability. The cost of adding an admixture shall be the CONTRACTOR'S responsibility. Concrete containing an admixture shall be first placed at a location determined by the ENGINEER. Admixtures shall conform to the requirements of ASTM C494. The required quantity of cement shall be used in the mix regardless of whether or not an admixture is used.

2. The set retarding admixture may be either with or without water-reducing properties. Where the air temperature at the time of placement is expected to be consistently greater than 80 degrees F, a set retarding admixture shall be used. The set retarding admixture shall conform to ASTM C494 Type D unless accepted otherwise by the ENGINEER.

3. Set accelerating admixture may be either with or without water-reducing properties. Where the air temperature at the time of placement is expected to be consistently less than 40 degrees F, a non-corrosive set accelerating admixture shall be used. Set accelerating admixture shall conform to ASTM C494 Type C or E.

4. Normal range water reducer shall conform to ASTM C494, Type A. The quantity of admixture used and the method of mixing shall be in accordance with the MANUFACTURER's instructions and recommendations.

5. High range water reducer shall conform to ASTM C494 Type F. High range water reducer shall be added to the concrete after all other ingredients have been mixed and initial slump has been verified. No more than fourteen (14) ounces of water reducer per sack of cement shall be used. Water reducer shall be considered as part of the mixing water when calculating the water/cement ratio.

a. If the high range water reducer is added to the concrete at the Site, it may be used in conjunction with the same water reducer added at the batch plant. Concrete shall have a slump of three (3) inches plus or minus 1/2-inch prior to adding the high range water reducing admixture at the Site. The high range water reducing admixture shall be

accurately measured and pressure injected into the mixer as a single dose by an experienced technician. A standby system shall be provided and tested prior to each day's operation of the primary system.

b. Concrete shall be mixed at mixing speed for a minimum of 70 mixer revolutions or five (5) minutes after the addition of the high range water reducer, unless recommended otherwise by the MANUFACTURER.

D. Crystalline Capillary Waterproofing Admixture:

1. All concrete for water control structures that will be below the ground surface or underwater shall have Crystalline Capillary Waterproofing (CCW) admixture in accordance with SECTION 03050 – Concrete Admixture Waterproofing.

E. Anti-washout admixture may be used for concrete placed underwater. The admixture shall be added at the MANUFACTURER's recommended dosage rate. The admixture shall be an aqueous solution and the water in such solution shall be counted as mixing water for the purpose of determining the water cement ratio of the concrete. Trial batches shall be made to verify compatibility of the materials and mix design performance.

2.06 CURING MATERIALS:

A. Curing compound shall conform to ASTM C309, Type I, Class B. The initial color of the curing compound shall be white, off white or pale yellow without the use of a pigment. The compound shall be resin based and compliant with local VOC requirements. When curing compound must be removed for finishes or grouting, it shall be of a dissipating type. Sodium silicate compounds shall not be allowed.

B. Polyethylene sheet for use as concrete curing blanket shall be white and shall have a nominal thickness of 6 mils. The loss of moisture when determined in accordance with the requirements of ASTM C156, shall not exceed 0.055 grams per square centimeter of surface.

C. Polyethylene-coated waterproof paper sheeting for use as concrete curing blanket shall consist of white polyethylene sheeting free of visible defects, uniform in appearance, have a minimum thickness of two (2) mils, and be permanently bonded to waterproof paper conforming to the requirements of Federal Specification UU-B-790A. The loss of moisture, when determined in accordance with the requirements of ASTM C156, shall not exceed 0.055 gram per square centimeter of surface.

D. Polyethylene-coated burlap for use as concrete curing blanket shall be minimum 4-mil thick, white opaque polyethylene film impregnated or extruded into one side of the burlap. Burlap shall weigh not less than 9 ounces per square yard. The loss of moisture, when determined in accordance with the requirements of ASTM C156, shall not exceed 0.055 grams per square centimeter of surface.

E. Curing mats for use in Curing Method 6 below, shall be heavy shag rugs or carpets or cotton mats quilted at 4-inches on center. Curing mats shall weigh a minimum of 12 ounces per square yard when dry.

2.07 MISCELLANEOUS MATERIALS:

A. Damp proofing agent shall be an asphalt emulsion conforming to ASTM D1227, Type III, Class 1.

B. Evaporation retardant shall create a monomolecular film on the concrete. The retardant shall have no effect on cement hydration and shall meet local VOC requirements. Evaporation retardant shall not affect adhesion of curing compounds or other treatments and shall not affect the color of the concrete.

C. Floor hardener shall be provided at the following locations:

1. Surface hardener shall be system of integral hardening admixture, shake-on hardener, and surface applied liquid hardener acceptable for both indoor and outdoor applications.

2. Integral hardening admixture shall be a non-chloride admixture that will produce high strength, durable, hard, non-dusting abrasive resistant concrete. Admixture shall react with the Portland cement to produce more complete hydration.

3. Shake-on hardener shall be a ready to use, heavy-duty emery shake-on floor hardener. Aggregate shall consist of no less than 35% aluminum oxide. Hardener shall produce a hard, non-slip floor that will not rust.

4. Surface applied liquid hardener shall be a water borne chemical hardener and dustproofer. Hardener shall meet local VOC requirements and shall be a solution of silicates and fluosilicates.

D. Reinforcement shall be per SECTION 03200 - Concrete Reinforcement.

E. Water Stops shall be per SECTION 03100 - Concrete Formwork and Accessories.

F. Damp proofing agent shall be a waterborne emulsified-asphalt. Damp proofing shall be suitable for "green" or slightly damp surfaces and shall withstand normal expansion and contraction of the concrete. Damp proofing agent shall breath to allow vapors to escape. Damp proofing agent shall meet local VOC requirements.

G. Bonding agents shall be 100% solids, epoxy adhesives conforming to the following:

1. For bonding freshly-mixed, plastic concrete to hardened concrete, bonding agent shall be a medium viscosity adhesive conforming to ASTM C881 Type II, Grade 2, Class C,

2. For bonding hardened concrete or masonry to steel, bonding agent shall be a non-sagging gel adhesive conforming to ASTM C881 Type I or IV, Grade 3, Class C.

H. Vapor Barrier:

1. Vapor Barrier shall consist of a composite of heavy kraft paper, asphalt, fiberglass reinforcement, and polyethylene film. The composite shall be laminated under heat and pressure.

2. Vapor Barrier shall comply with federal specification UU-B-790A, Type I, Grade A, Style 4. Vapor Barrier shall have a water vapor permeance of less than 0.30 perms when tested per ASTM E96.

3. Vapor Barrier shall be installed under concrete slabs of all habitable spaces. Barrier shall be installed per the MANUFACTURER recommendations and per ASTM E1643.

I. Non-Waterstop Joint Material:

1. Preformed Joint Material: Preformed asphalt-impregnated fiber conforming to ASTM D1751.

2. Bond Breaker: All bond breakers shall be roofing felt or 15 mils minimum dry film thickness of bituminous paint as indicated.

J. Flyash for Tremie Concrete

1. Flyash shall be Class F pozzolan conforming to the requirements of ASTM C618. The pozzolan shall be obtained from a single source and shall comprise 15 percent of the volume of the cementitious material in the Tremie Concrete. The remaining 85 percent of the cementitious material volume shall be Portland cement conforming to ASTM C150 Type II.

2.08 CONCRETE DESIGN REQUIREMENTS:

A. General: Concrete shall be composed of cement, admixtures, aggregates, and water of the qualities indicated. The exact proportions in which these materials are to be used for different parts of the WORK will be determined during the trial batch process. In general, the mix shall be designed to produce a concrete capable of being deposited so as to obtain maximum density and minimum

shrinkage, and, where deposited in forms, to have good consolidation properties and maximum smoothness of surface. The aggregate gradations shall be formulated to provide fresh concrete that will not promote rock pockets around reinforcing steel or embedded items. The proportions shall be changed whenever necessary or desirable to meet the required results. All changes shall be subject to review by the ENGINEER.

B. Fine Aggregate Composition:

1. In mix designs for structural concrete, the percentage of fine aggregate in total aggregate by weight shall be as indicated in the following table.

Fine Aggregate	
Fineness Modulus	**Maximum Percent**
2.7 or less	41
2.7 to 2.8	42
2.8 to 2.9	43
2.9 to 3.1	44

2. For other concrete, the maximum percentage of fine aggregate of total aggregate, by weight, shall not exceed 50.

3. Fine aggregate shall be 50 percent, plus or minus five (5) percent by volume of total aggregates for Tremie Concrete.

C. High range water reducer shall not be used in Tremie Concrete except in conjunction with an anti-washout admixture to provide the degree of workability required for proper placement and consolidation.

D. Duct bank concrete shall contain an integral red-oxide coloring pigment. Concrete shall be dyed red throughout. Surface treatment to color duct banks will not be acceptable.

E. Water/Cement Ratio and Compressive Strength:

1. Water/cement ratio is given for aggregates in saturated-surface dry condition, and total moisture of all aggregates, calculated by ASTM C566, less the absorption of the aggregate as calculated by ASTM C127 and C128, shall represent total free moisture in the aggregate to determine the water/cement ratio. Total free moisture of aggregates shall be added to batch water to estimate water content of concrete. Concrete shall have the following minimum properties:

F. Concrete Proportions:

Type of Work	**Min 28-Day Compressive Strength (psi)**	**Maximum Size Aggregate (in)**	*** Cement Content per cubic yd (lbs)**	*** Maximum W/C Ratio (by weight)**
Structural Concrete				
Roof, floor slabs, columns, walls, and all other concrete items not indicated elsewhere.	5,500	1	658 minimum	0.41
12-inch and thicker walls, slabs on grade, and footings (optional)	5,500	1-1/2	658 minimum	0.41
Structural silica fume concrete	N/A	N/A	N/A	N/A

Structural chloride resistant concrete	N/A	N/A	N/A	N/A
Tremie Concrete	4000	3/4	658 minimum	0.45
Pea Gravel Concrete				
Thin sections and areas with congested reinforcing, at the CONTRACTOR'S option and with the written approval of the ENGINEER for the specific location.	5,500	3/8	658 minimum	0.41
Sitework concrete	3,000	1	470 (min)	0.50
Lean concrete	2,000	1	376 (min)	0.60

* The cement content and water cement ratio are based on total cementitious material including silica fume, slag or flyash.

NOTE: The CONTRACTOR is cautioned that the limiting parameters above are not a mix design. Admixtures may be required to achieve workability required by the CONTRACTOR'S construction methods and aggregates. The CONTRACTOR is responsible for providing concrete with the required workability and strength.

G. Adjustments to Mix Design: The CONTRACTOR may elect to decrease the water/cement ratio to achieve the strength and shrinkage requirements and/or add water reducers, as required to achieve workability. The mixes shall be changed whenever such change is necessary or desirable to secure the required strength, density, workability, and surface finish, and the CONTRACTOR shall be entitled to no additional compensation because of such changes. Any changes to the accepted concrete mix design shall be submitted to the ENGINEER for review and shall be tested again in accordance with these Specifications.

H. When using a floor hardener, the water/cement ratio shall not be greater than specified by the hardener MANUFACTURER.

2.09 CONSISTENCY: The quantity of water in a batch of concrete shall be just sufficient, with a normal mixing period, to produce a concrete which can be worked properly into place without segregation and which can be compacted by vibratory methods to give the desired density, impermeability, and smoothness of surface. The quantity of water shall be changed as necessary, with variations in the nature or moisture content of the aggregates, to maintain uniform production of a desired consistency. The consistency of the concrete in successive batches shall be determined by slump tests in accordance with ASTM C143. The slumps shall be as follows:

Part of Work	Slump (in)
All concrete, unless indicated otherwise	3-inches plus or minus 1-inch
With high range water reducer added	7-inches plus or minus 2-inches
Pea gravel mix	7-inches plus or minus 2-inches
Ductbank and pipe encasement	5-inches plus or minus 1-inch
Concrete with hardener	Per Hardener MANUFACTURER
Tremie Concrete	7-inches plus or minus 1 1/2-inches

2.10 MEASUREMENT:

A. The amount of cement and of each separate size of aggregate entering into each batch of concrete shall be determined by direct weighing equipment furnished by the CONTRACTOR and acceptable to the ENGINEER.

B. Weighing tolerances:

Material	Percent of Total Weight
Cement	1
Aggregates	3
Admixtures	3

C. The quantity of water entering the mixer shall be measured by a suitable water meter or other measuring device of a type acceptable to the ENGINEER and capable of measuring the water in variable amounts within a tolerance of one percent. The water feed control mechanism shall be capable of being locked in position so as to deliver constantly any required amount of water to each batch of concrete. A positive quick-acting valve shall be used for a cut-off in the water line to the mixer. The operating mechanism shall prevent leakage when the valves are closed.

PART 3 - EXECUTION

3.01 PROPORTIONING AND MIXING:

A. Proportioning of the mix shall conform to the requirements of Chapter 3 "Proportioning" of ACI 301.

B. Mixing shall conform to the requirements of Chapter 7 of ACI 301.

C. Slumps shall be as indicated herein.

D. Retempering of concrete or mortar that has partially hardened shall not be permitted.

3.02 PREPARATION OF SURFACES FOR CONCRETING:

A. General: Earth surfaces shall be thoroughly wetted by sprinkling prior to the placing of any concrete, and these surfaces shall be kept moist by frequent sprinkling up to the time of placing concrete thereon. The surface shall be free from standing water, mud, and debris at the time of placing concrete.

B. Vapor Barrier

1. Vapor Barrier shall be installed under on-grade building floor slabs of occupiable (non-hydraulic) structures and at other locations indicated.

2. Base shall be leveled, compacted, and tamped per SECTION 02200 - Earthwork. Remove sharp edges, projection materials and roughness that might penetrate vapor barrier. Install barrier with width parallel with the direction of the pour of the concrete.

3. Place, protect, and repair defects in sheet according to ASTM E1643, and the MANUFACTURER's written instructions. Seams shall be lapped and sealed in accordance with ASTM E1643.

4. The CONTRACTOR shall exercise care to avoid puncturing or tearing the vapor barrier during installation. Patch punctures and tears as they occur.

C. Joints in Concrete:

1. All joints shall be installed where indicated on the Drawings or where otherwise approved by the ENGINEER. The surface of the construction joint shall be rough and prior to placement shall be cleaned and moistened with water.

2. Concrete surfaces upon or against which new concrete is to be placed, where the placement of the concrete has been stopped or interrupted so that, as determined by the ENGINEER, the new

concrete cannot be incorporated integrally with that previously placed, are defined as construction joints. The surfaces of horizontal joints shall be given a compacted, roughened surface for good bonding. Except where the Drawings call for joint surfaces to be coated, the joint surfaces shall be cleaned of all laitance, loose or defective concrete, foreign material, and be roughened to a minimum 1/4-inch amplitude. Such cleaning and roughening shall be accomplished by hydroblasting, sandblasting or chipping (exposing aggregate) followed by thorough washing. Pools of water shall be removed from the surface of construction joints before the new concrete is placed.

3. After the surfaces have been prepared, all approximately horizontal construction joints shall be covered with a 6-inch lift of a pea gravel mix. The mix shall be placed and spread uniformly. Wall concrete shall follow immediately and shall be placed upon the fresh pea gravel mix. If high range water reducer is used in the wall concrete, then the pea gravel joint topping does not need to be used.

D. Placing Interruptions: When placing of concrete is to be interrupted long enough for the concrete to take a set, the working face shall be given a shape by the use of forms or other means that will secure proper union with subsequent work; provided that construction joints shall be made only where acceptable to the ENGINEER.

E. Embedded Items:

1. No concrete shall be placed until all formwork, installation of parts to be embedded, reinforcement steel, and preparation of surfaces involved in the placing have been completed and accepted by the ENGINEER at least four (4) hours before placement of concrete. Surfaces of forms and embedded items that have become encrusted with dried grout from previous usage shall be cleaned before the surrounding or adjacent concrete is placed.

2. Inserts or other embedded items shall conform to the requirements herein.

3. Reinforcement, anchor bolts, sleeves, inserts, and similar items shall be set and secured in the forms at locations indicated on the Drawings or shown by Shop Drawings and shall be acceptable to the ENGINEER before any concrete is placed. Accuracy of placement is the responsibility of the CONTRACTOR.

F. Placing New Concrete Against Old: Where new concrete is to be placed against old concrete (any concrete which is greater than 60 days of age), the surface of the old concrete shall be thoroughly cleaned and roughened by hydroblasting, sandblasting or chipping to expose aggregate. The joint surface shall be coated with an epoxy bonding agent unless indicated otherwise by the ENGINEER.

G. No concrete shall be placed in any structure until all water entering the space to be filled with concrete has been properly cut off or has been diverted by pipes, or other means, and carried out of the forms, clear of the WORK. No concrete shall be deposited underwater nor shall the CONTRACTOR allow still water to rise on any concrete until the concrete has attained its initial set. Water shall not be permitted to flow over the surface of any concrete in such manner and at such velocity as will injure the surface finish of the concrete. Pumping or other necessary dewatering operations for removing ground water, if required, shall be the CONTRACTOR's responsibility and shall be subject to the review of the ENGINEER.

H. Corrosion Protection: Pipe, conduit, dowels, and other ferrous items required to be embedded in concrete construction shall be so positioned and supported prior to placement of concrete that there will be a minimum of 2-inches clearance between said items and any part of the concrete reinforcement. Securing such items in position by wiring or welding them to the reinforcement will not be permitted.

I. Openings for pipes, inserts for pipe hangers and brackets, and anchors shall, where practicable, be provided during the placing of concrete.

J. Anchor bolts shall be accurately set and shall be maintained in position by templates while being embedded in concrete.

K. Cleaning: The surfaces of metalwork to be in contact with concrete shall be thoroughly cleaned of all dirt, grease, loose scale and rust, grout, mortar, and other foreign substances immediately before the concrete is placed.

3.03 CONVEYING:

A. Concrete shall be conveyed from the mixer to the place of final deposit by methods that will prevent separation or loss of material.

B. No aluminum materials shall be used in conveying any concrete.

C. Ends of chutes, hopper gates, and all other points of concrete discharge throughout the CONTRACTOR'S conveying, hoisting, and placing system shall be designed and arranged so that concrete passing from them will not fall separated into whatever receptacle immediately receives it. Conveyor belts, if used, shall be of a type acceptable to the ENGINEER. Chutes longer than 50 feet will not be permitted. Minimum slopes of chutes shall be such that concrete of the indicated consistency will readily flow in them. If a conveyor belt is used, it shall be wiped clean by a device operated in such a manner that none of the mortar adhering to the belt will be wasted. All conveyor belts and chutes shall be covered.

D. Pumping:

1. If the pumped concrete does not produce satisfactory end results, the CONTRACTOR shall discontinue the pumping operation and proceed with the placing of concrete using conventional methods.

2. The pumping equipment shall have two (2) cylinders and be designed to operate with one cylinder in case the other one is not functioning. In lieu of this requirement, the CONTRACTOR may have a standby pump on the Site during pumping.

3. The minimum diameter of the hose conduits shall be in accordance with ACI 304.

4. Pumping equipment and hose conduits that are not functioning properly shall be replaced.

5. Aluminum conduits for conveying the concrete shall not be permitted.

6. Concrete samples for slump, air content, and test cylinders will be taken at the placement end of the hose.

E. Tremie Equipment

1. Tremie pipes shall be fabricated of heavy gauge steel pipe to withstand all anticipated handling stresses and shall be sized to prevent aggregate-caused locking. Pipes shall be fabricated in sections such that the upper sections can be removed as the placement progresses. The pipe sections shall be joined with flanges and gasket to prevent water being sucked in the concrete during placement. The tremie pipe shall be marked to facilitate quick determination of the distance from the water surface to the mouth of the tremie.

2. Suitable sized funnel or hopper shall be provided for the tremie to allow transfer of adequate volume of concrete from the delivery device to the tremie. A stable platform shall be provided for the tremie support during the placement operation.

3.04 DELIVERY:

A. Ready-mixed concrete shall be batched, mixed, transported and delivered in accordance with these specifications and ASTM C94 including the following supplementary requirements.

1. Concrete shall be discharged within 1-1/2 hours from the time concrete was mixed, if centrally mixed, or from the time the original water was added, if transit-mixed, or before the drum has been revolved 300 revolutions, whichever is first.

2. Truck mixers and their operation shall be such that the concrete throughout the mixed batch as discharged is within acceptable limits of uniformity with respect to consistency, mix, and grading. If slump tests taken at approximately the 1/4 and 3/4 points of the load during discharge give slumps differing by more than one-inch when the required slump is 3-inches or less, or if they differ by more than 2-inches when the required slump is more than 3-inches, the mixer shall not be used on the WORK unless the causative condition is corrected and satisfactory performance is verified by additional slump tests. Mechanical details of the mixer, such as water measuring and discharge apparatus, condition of the blades, speed of rotation, general mechanical condition of the unit, and clearance of the drum, shall be checked before a further attempt to use the unit will be permitted.

3. The use of non-agitating equipment for transporting ready-mixed concrete will not be permitted. The quality and quantity of materials used in ready-mixed concrete and in batch aggregates shall be subject to continuous inspection at the batching plant by the ENGINEER.

4. Each batch of concrete shall be mixed in a truck mixer for not less than 70 revolutions of the drum or blades at the rate of rotation designated by the MANUFACTURER of equipment. Additional mixing, if any, shall be at the speed designated by the MANUFACTURER of the equipment as agitating speed. All materials including mixing water shall be in the mixer drum before actuating the revolution counter for determining the number of revolution of mixing.

3.05 PLACING:

A. Non-Conforming Work or Materials: Concrete which during or before placing is found not to conform to the requirements indicated herein shall be rejected and immediately removed from the WORK. Concrete which is not placed in accordance with these Specifications, or which is of inferior quality, shall be removed and replaced.

B. Unauthorized Placement: No concrete shall be placed except in the presence of a duly authorized representative of the ENGINEER. The CONTRACTOR shall notify the ENGINEER in writing at least 24 hours in advance of placement of any concrete.

C. Concrete shall not be dropped more than four (4) feet without use of chutes or tremies. Concreting shall be a continuous operation until placement of the section is complete. All concrete shall be worked around reinforcement and embedded items. If vibrators are used, care shall be taken not to segregate concrete. Vibrators will not be allowed to move concrete within the form. All forms and subgrade shall be dampened prior to placement and excess water removed.

D. Placing of concrete shall conform to the applicable requirements of Chapter 8 of ACI 301 and the requirements of this SECTION.

E. Placement in Slabs: Concrete placed in sloping slabs shall proceed uniformly from the bottom of the slab to the top, for the full width of the placement. As the WORK progresses, the concrete shall be vibrated and carefully worked around the slab reinforcement, and the surface of the slab shall be screeded in an up-slope direction.

F. Concrete shall not be dropped through reinforcement steel or into any deep form, nor shall concrete be placed in any form in such a manner as to leave accumulation of mortar on the form surfaces above the placed concrete. In such cases, means such as hoppers and, if necessary, vertical ducts of canvas, rubber, or metal shall be used for placing concrete in the forms in a manner that it may reach the place of final deposit without separation. Concrete shall be uniformly distributed during the process of depositing and in no case after depositing shall any portion be displaced in the forms more than 6-feet in horizontal direction. Concrete in wall forms shall be deposited in uniform horizontal layers not deeper than 2-feet; and care shall be taken to avoid inclined layers or inclined construction joints except where such are required for sloping members. Each layer shall be placed while the previous

layer is still soft. The rate of placing concrete in wall forms shall not exceed 5-feet of vertical rise per hour. Sufficient illumination shall be provided in the interior of all forms so that the concrete at the places of deposit is visible from the deck or runway.

G. Concrete with hardener shall be placed per the hardener MANUFACTURERs written recommendations.

H. Placing New Concrete Against Old: Epoxy adhesive bonding agent shall be applied to the old surfaces according to the MANUFACTURER's written recommendations. This provision shall not apply to joints where waterstop is provided, see SECTION 03100 - Concrete Formwork and Accessories.

I. Temperature of Concrete: The temperature of concrete when it is being placed shall be not more than 90 degrees F or less than 55 degrees F for sections less than 12-inches thick, nor less than 50 degrees for all other sections. The CONTRACTOR shall be entitled to no additional compensation on account of the temperature requirements.

J. Concrete of structure slab shall be poured immediately on top of tremie concrete if tremie is selected for dewatering. No stone or any other materials shall be filled in between the tremie and the structure slab.

K. Hot Weather Placement

1. Placement of concrete in hot weather shall conform to ACI 305 and the following:

2. When the temperature of the concrete is 85 degrees F or above, the time between the introduction of the cement to the aggregates and discharge shall not exceed [60] minutes.

3. If concrete is placed when the weather is such that the temperature of the concrete would exceed 90 degrees F, the CONTRACTOR shall employ effective means, such as pre-cooling of aggregates and mixing water using ice or placing at night, as necessary to maintain the temperature of the concrete below 90 degrees F as it is placed.

L. Cold Weather Placement

1. Placement of concrete in cold weather shall conform to ACI 306.1, and the following:

2. Concrete ingredients shall not be heated to a temperature higher than that necessary to keep the temperature of the mixed concrete, as placed, from falling below the minimum temperature.

3. Remove all ice and frost from the surfaces, including reinforcement, against which concrete is to be placed. Before beginning concrete placement, thaw the subgrade to a minimum depth of 6-inches. Reinforcement and embedded items shall be warmed to above 32 degrees F prior to concrete placement.

4. Maintain the concrete temperature above 50 degrees F for at least 72 hours after placement.

M. Order of Placing Concrete

1. The order of placing concrete in all parts of the WORK shall be acceptable to the ENGINEER. In order to minimize the effects of shrinkage, the concrete shall be placed in units as bounded by construction joints at the indicated locations. The placing of units shall be done by placing alternate units in a manner such that each unit placed shall have cured at least five (5) days for hydraulic structures and two (2) days for all other structures before the contiguous unit or units are placed, except that the corner sections of vertical walls shall not be placed until the two (2) adjacent wall panels have cured at least ten (10) days for hydraulic structures and 4 days for all other structures.

2. The surface of the concrete shall be level whenever a run of concrete is stopped. To ensure a level, straight joint on the exposed surface of walls, a wood strip at least 3/4-inch thick shall be tacked to the forms on these surfaces. The concrete shall be carried about 1/2-inch above the underside of the strip. About one hour after the concrete is placed, the strip shall be removed

and any irregularities in the edge formed by the strip shall be leveled with a trowel and laitance shall be removed.

N. Placing Concrete Underwater

1. Tremie Concrete shall be placed per ACI 304.2 Chapter 8 for placing concrete underwater.

2. Starting Placement

a. Prior to Tremie Concrete placement, the CONTRACTOR shall use proper means to prevent flow of water across or through the placement site.

b. The CONTRACTOR shall determine the spacing of tremie pipes for concrete placement but shall maintain a minimum of one pipe for each 300 square feet of concrete placed.

c. Tremie started using the end plate, dry pipe technique shall be filled with concrete before being raised off the bottom. The pipe shall be initially raised sufficiently to establish a mound around the mouth of the tremie pipe.

d. Tremie started using a go-devil shall be lifted a maximum of 6-inches to allow water to escape, then concrete shall be added to the tremie slowly to force the go-devil downward. Once the go-devil reaches the mouth of the tremie, the tremie shall be lifted to allow the escape of the go-devil, and the forming of a mound around the mouth of the pipe.

e. Tremie pipe shall be adequately embedded in the fresh concrete, and slowly raised so as to prevent "loss of seal". Should a "loss of seal" occur in a tremie, placement through that tremie must be terminated immediately, and the tremie pipe removed. The flow must be restarted with the end plate, dry pipe technique, a go-devil shall not be used to restart a tremie after loss of seal.

f. The CONTRACTOR shall frequently verify the depth of the excavation. Remove any accumulated sediments before placing tremie concrete to ensure design thickness for tremie concrete is achieved.

3. Placing

a. Placement of concrete shall be as continuous as possible through the tremie. Placement interruptions less than 30 minutes are allowed to restart without any special procedure. Placement interruptions between 30 minutes and the initial setting time shall be treated by removal, resealing, and restarting the tremie.

b. Placement interruptions longer than the initial setting time are to be treated as horizontal construction joints. The concrete surface shall be "green cut" by a diver after it sets. The concrete surface shall be water jetted immediately prior to resuming concrete placement.

c. The rate of concrete rise shall be established based on the concrete production of the local area and the spacing of the pipes. The volume of concrete shall be monitored throughout the placement to detect placement problems, such as underrun or overrun. Should underrun or overrun occur, corrective actions such as readjusting the rate of concrete rise, and alternating the pipe spacing shall be taken to ensure proper placement.

d. Tremie blockage shall be cleared with caution to prevent "loss of seal".

e. The pipe delivering concrete must be secured and remain fixed horizontally while concrete is flowing, so as not to damage the concrete surface, and create additional laitance, and lead to "loss of seal".

4. Post-Placement Evaluation

a. Concrete placed underwater shall be evaluated after completion of placing with, but not limited to the methods below.

b. Coring in area of maximum concrete flow, or in area where "loss of seal" occurred during placement.

c. After de-watering, accurately surveying the entire concrete surface to evaluate the adequacy of the concrete placement, such as cracks, voids, and honeycomb. The defects shall be clearly marked for repair. The concrete shall be protected from dryness, or damages until repairs are completed.

d. As determined by the ENGINEER, the area of questionable concrete quality shall be cored and tested for compressive strength.

3.06 TAMPING AND VIBRATING:

A. As concrete is placed in the forms or in excavations, it shall be thoroughly settled and compacted throughout the entire depth of the layer which is being consolidated, into a dense, homogeneous mass, filling all corners and angles, thoroughly embedding the reinforcement, eliminating rock pockets, and bringing only a slight excess of water to the exposed surface of concrete. Vibrators shall be Group 3 per ACI 309, high speed power vibrators (8,000 to 12,000 rpm) of an immersion type in sufficient number and with at least one standby unit as required. Group 2 vibrators may be used only at specific locations when accepted by the ENGINEER. [Tremie concrete shall not be vibrated.]

B. Care shall be used in placing concrete around waterstops. The concrete shall be carefully worked by rodding and vibrating to make sure that all air and rock pockets have been eliminated. Where flat-strip type waterstops are placed horizontally, the concrete shall be worked under the waterstops by hand, making sure that air and rock pockets have been eliminated. Concrete surrounding the waterstops shall be given additional vibration over and above that used for adjacent concrete placement to assure complete embedment of the waterstops in the concrete.

C. Concrete in walls shall be internally vibrated and at the same time rammed, stirred, or worked with suitable appliances, tamping bars, shovels, or forked tools until it completely fills the forms or excavations and closes snugly against all surfaces. Subsequent layers of concrete shall not be placed until the layers previously placed have been worked thoroughly. Vibrators shall be provided in sufficient numbers, with standby units as required, to accomplish the required results within 15 minutes after concrete of the prescribed consistency is placed in the forms. The vibrating head shall not contact the surfaces of the forms. Care shall be taken not to vibrate concrete excessively or to work it in any manner that causes segregation of its constituents.

3.07 CURING AND DAMPPROOFING: Concrete shall be cured for a minimum of five (5) days after placement in accordance with the methods indicated below for the different parts of the WORK.

Surface to be Cured or Dampproofed	Method
Unstripped forms	1
Wall sections with forms removed	6
Construction joints between footings and walls, and between floor slab and columns	2
Encasement and ductbank concrete and thrust blocks	3
All concrete surfaces not specifically indicated in this Paragraph	4
Floor slabs on grade in hydraulic structures	5
Slabs on grade to receive an adhered floor finish	6 (Omit curing compound)
Slabs not on grade	6
Silica Fume Concrete	N/A
Concrete with hardener	Per manufacture's written recommendations
Tremie Concrete	8

A. Method 1: Wooden forms shall be wetted immediately after concrete has been placed and shall be kept wet with water until removal. If steel forms are used the exposed concrete surfaces shall be kept

continuously wet until the forms are removed. If forms are removed within 7 days of placing the concrete, curing shall be continued in accordance with Method 6 below.

B. Method 2: The surface shall be covered with burlap mats which shall be kept wet with water for the duration of the curing period, until the concrete in the walls has been placed. No curing compound shall be applied to surfaces cured under Method 2.

C. Method 3: The surface shall be covered with moist earth not less than 4 hours or more than 24 hours after the concrete is placed. Earthwork operations that may damage the concrete shall not begin until at least 7 days after placement of concrete.

D. Method 4: The surface shall be sprayed with a liquid curing compound.

1. It shall be applied in accordance with the MANUFACTURER's printed instructions at a maximum coverage rate of 200 square feet per gallon and in such a manner as to cover the surface with a uniform film that will seal thoroughly.

2. Where the curing compound method is used, care shall be exercised to avoid damage to the seal during the 7-day curing period. If the seal is damaged or broken before the expiration of the curing period, the break shall be repaired immediately by the application of additional curing compound over the damaged portion.

3. Wherever curing compound has been applied by mistake to surfaces against which concrete subsequently is to be placed and to which it is to adhere, compound shall be entirely removed by wet sandblasting just prior to the placing of new concrete.

4. Curing compound shall be applied as soon as the concrete has hardened enough to prevent marring on unformed surfaces and within two (2) hours after removal of forms. Repairs to formed surfaces shall be made within the two (2) hour period; provided, however, that any such repairs which cannot be made within the said two (2) hour period shall be delayed until after the curing compound has been applied. When repairs are to be made to an area on which curing compound has been applied, the area involved shall first be wet-sandblasted to remove the curing compound.

5. At locations where concrete is placed adjacent to a panel which has been coated with curing compound, the panel shall have curing compound reapplied to an area within 6-feet of the joint and to any other location where the curing membrane has been disturbed.

6. Prior to final acceptance of the WORK, all visible traces of curing compound shall be removed from all surfaces in such a manner that does not damage the surface finish.

E. Method 5:

1. Until the concrete surface is covered with curing compound, the entire surface shall be kept damp by applying water using nozzles that atomize the flow so that the surface is not marred or washed. The concrete shall be given a coat of curing compound in accordance with Method 4 above. Not less than one hour or more than four (4) hours after the curing compound has been applied, the surface shall be wetted with water delivered through a fog nozzle, and concrete-curing blankets shall be placed on the slabs. The curing blankets shall be polyethylene sheet, polyethylene-coated waterproof paper sheeting, or polyethylene-coated burlap. The blankets shall be laid with the edges butted together and with the joints between strips sealed with 2-inch wide strips of sealing tape or with edges lapped not less than 3-inches and fastened together with a waterproof cement to form a continuous watertight joint.

2. The curing blankets shall be left in place during the seven (7) day curing period and shall not be removed until after concrete for adjacent work has been placed. If the curing blankets become torn or otherwise ineffective, the CONTRACTOR shall replace damaged sections. During the first three (3) days of the curing period, no traffic of any nature and no depositing, temporary or otherwise, of any materials shall be permitted on the curing blankets. During the remainder of the curing period, foot traffic and temporary depositing of materials that impose light pressure will be permitted only on top of plywood sheets 5/8-inch minimum thickness, laid over the

curing blanket. The CONTRACTOR shall add water under the curing blanket as often as necessary to maintain damp concrete surfaces at all times.

F. Method 6: This method applies to both walls and slabs.

1. The concrete shall be kept continuously wet by the application of water for a minimum period of at least seven (7) consecutive days beginning immediately after the concrete has reached final set or forms have been removed.

2. Until the concrete surface is covered with the curing medium, the entire surface shall be kept damp by applying water using nozzles that atomize the flow so that the surface is not marred or washed.

3. Heavy curing mats shall be used as a curing medium to retain the moisture during the curing period. The curing medium shall be weighted or otherwise held substantially in contact with the concrete surface to prevent being dislodged by wind or any other causes. Edges shall be continuously held in place.

4. The curing blankets and concrete shall be kept continuously wet by the use of sprinklers or other means both during and after normal working hours.

5. Immediately after the application of water has terminated at the end of the curing period, the curing medium shall be removed, the entire concrete surface shall be wetted, and curing compound shall be immediately applied to the entire surface in accordance with Method 4 above.

6. The CONTRACTOR shall dispose of excess water from the curing operation to avoid damage to the WORK.

G. Method 8: This method applies to Tremie Concrete. Concrete shall be cured for not less than 14 days after placing, by continuous submerging of the top surface with a minimum of 6-inches of water for the full duration of curing period. Curing compound shall not be used for curing. If a reinforced slab is to be placed over the Tremie Concrete, then the concrete surface shall be kept damp by applying of water using nozzles or extending the submerging period until the placement of the slab.

H. Damp proofing:

1. The exterior surfaces of backfilled dry well walls and buried roof slabs shall be damp proofed as follows.

2. Immediately after completion of curing the surface shall be sprayed with a damp proofing agent consisting of an asphalt emulsion. Application shall be in 2 coats. The first coat shall be diluted to one-half strength by the addition of water and shall be sprayed on so as to provide a maximum coverage rate of 100 square feet per gallon of dilute solution. The second coat shall consist of an application of the undiluted material and shall be sprayed on so as to provide a maximum coverage rate of 100 square feet per gallon. Damp proofing material shall be as indicated above.

3. As soon as the material has taken an initial set, the entire area thus coated shall be coated with whitewash. Any formula for mixing the whitewash may be used if it produces a uniformly coated white surface and remains until placing of the backfill. If the whitewash fails to remain on the surface until the backfill is placed, the CONTRACTOR shall apply additional whitewash.

3.08 CONCRETE FINISHES:

A. General: Surfaces shall be free from fins, bulges, ridges, offsets, honeycombing, or roughness of any kind, and shall present a finished, smooth, continuous hard surface. Allowable deviations from plumb or level and from the alignment, profiles, and dimensions indicated are defined as tolerances and are indicated herein. These tolerances are to be distinguished from irregularities in finish as described herein. Aluminum finishing tools shall not be used.

B. Formed Surfaces: No tr treatment is required after form removal except for curing, repair of defective concrete, and treatment of surface defects. Where architectural finish is required, it shall be as indicated.

C. Unformed Surfaces:

After proper and adequate vibration and tamping, unformed top surfaces of slabs, floors, walls, and curbs shall be brought to a uniform surface with suitable tools. Immediately after the concrete has been screeded, it shall be treated with a liquid evaporation retardant. The retardant shall be used again after each WORK operation as necessary to prevent drying shrinkage cracks. The classes of finish for unformed concrete surfaces are designated and defined as follows:**Unformed Surface Finish Schedule**

Area	**Finish**
Grade slabs and foundations to be covered with concrete or fill material	U1
Floors to be covered with grouted tile or topping grout	U2
Water bearing slabs with slopes 10 percent and less	U3
Water bearing slabs with slopes greater than 10 percent	U4
Slabs not water bearing	U4
Slabs to be covered with built-up roofing	U2
Interior slabs and floors to receive architectural finish	U3
Top surface of walls subject to foot traffic	U4
Top surface of walls not subject to foot traffic	U3
Floors to receive surface hardener	U5

1. Finish U1 - Sufficient leveling and screeding to produce an even, uniform surface with surface irregularities not to exceed 3/8-inch. No further special finish is required.

2. Finish U2 - (Float Finish)

   a. Compact, accurately screed and float to a true uniform surface.

   b. Surfaces shall be floated with wood or metal floats or a finishing machine using float blades. Excessive floating of surfaces while the concrete is plastic and dusting of dry cement and sand on the concrete surface to absorb excess moisture will not be permitted.

   c. Floating shall be the minimum necessary to produce a surface that is free from screed marks and is uniform in texture. Test surface with straightedge and eliminate high and low spots of more than 1/8-inch in ten (10) feet. Surface irregularities shall not exceed 1/4-inch.

   d. Joints and edges shall be tooled where indicated or as determined by the ENGINEER.

3. Finish U3 - (Hand-Troweled Finish)

   a. Finish surface as in Finish U2 - Float Finish and after the surface has hardened sufficiently to prevent excess of fine material from being drawn to the surface, trowel with steel trowel to obtain a smooth dense finish after concrete has hardened to ring under the trowel.

   b. The finish shall produce a smooth dense uniform surface free of all irregularities, blemishes, ripples, and trowel marks.

4. Finish U4 - (Nonskid Finish)

   a. Trowel the Finish U3 - Hand-trowel Finish surface to remove local depressions or high points. In addition, the surface shall be given a light broom finish with brooming perpendicular to drainage unless otherwise indicated.

b. The resulting surface shall be rough enough to provide a nonskid finish.

5. Finish U5 - (Surface hardener)

a. Immediately after screeding, shake on hardener shall be applied per the MANUFACTURER's written recommendations.

b. Surface shall receive a minimum of two coats of a liquid hardener per the MANUFACTURER's written recommendations.

c. CONTRACTOR shall notify hardener MANUFACTURER three (3) working days prior to hardened concrete floor being placed.

d. Hardener MANUFACTURER shall provide continuous supervision of concrete and hardener placements, supplying ENGINEER with a report of each day's placement. Cost of supervision is to be borne by CONTRACTOR.

3.09 ARCHITECTURAL FINISH:

A. General: Architectural finishes shall be provided only where specifically indicated below. In all other locations, the paragraph entitled Concrete Finishes shall apply.

Location	Finish
All formed and unformed surfaces above grade and exposed to view	Burlap Finish

B. Immediately after the forms have been stripped, the concrete surface shall be inspected and any poor joints, voids, rock pockets, or other defective areas shall be repaired and form-tie holes filled as indicated herein.

C. Architectural finishes shall not be applied until the concrete surface has been repaired as required and the concrete has cured at least 14 days.

D. Architecturally treated concrete surfaces shall conform to the accepted sample in texture, color, and quality. It shall be the CONTRACTOR'S responsibility to maintain and protect the concrete finish.

E. Burlap Finish:

1. Wet and fill all voids using mortar with the same sand-cement ratio as original concrete. Use approximately 20 percent white cement to match concrete color.

2. The freshly applied grout shall be vigorously rubbed into the concrete surface with a wood float filling all small air holes. After all the surface grout has been removed with a steel trowel, the surface shall be allowed to dry.

3. Once dry, strike off all excess mortar flush with the surface using a burlap or canvas cloth with a circular motion.

4. Remove all rough spots and rub with cloth to leave a surface of uniform texture and appearance without any appearance of a paint or grout film.

5. Finish shall result in a coating of mortar that will fill all small voids and air holes, leaving a smooth surface.

6. Cure as specified under "Curing Concrete".

7. The entire cleaning operation for any area shall be completed the day it is started, and no grout shall be left on the surface overnight.

8. Cleaning operations for any given day shall be terminated at panel joints. It is required that the various operations be carefully timed to secure the desired effect.

9. Before beginning any of the final treatment on exposed surfaces, the CONTRACTOR shall treat in a satisfactory manner a trial area of at least 200 square feet in some inconspicuous place

selected by the ENGINEER and shall preserve said trial area undisturbed until the completion of the job.

3.10 PROTECTION:

A. The CONTRACTOR shall protect concrete against damage until final acceptance.

B. Fresh concrete shall be protected from damage due to rain, hail, sleet, or snow. The CONTRACTOR shall provide such protection while the concrete is still plastic and whenever precipitation is imminent or occurring.

3.11 DEFECTIVE SURFACE TREATMENTS:

A. Patching Concrete:

1. Patch all tie holes, honeycombs or other defects with a Portland Cement and sand grout.

2. Defective surfaces to be repaired shall be cut back from trueline a minimum depth of 1/2-inch over the entire area. Feathered edges will not be permitted. Where chipping or cutting tools are not required in order to deepen the area properly, the surface shall be prepared for bonding by the removal of all laitance or soft material, plus not less than 1/32-inch depth of the surface film from all hard portions by means of an efficient sandblast.

3. After cutting and sandblasting, the surface shall be wetted sufficiently in advance of shooting with shotcrete or with cement mortar so that while the repair material is being applied, the surfaces underneath will remain moist but not so wet as to overcome the suction upon which a good bond depends.

4. Holes left by tie-rod cones shall be reamed with suitable toothed reamers so as to leave the surfaces of the holes clean and rough. Holes then shall be repaired in an approved manner with dry-packed cement grout. Holes left by form-tying devices having a rectangular cross-section and other imperfections having a depth greater than their least surface dimension shall not be reamed but shall be repaired in an approved manner with dry-packed cement grout.

5. The grout shall not be richer than one (1) part cement and three (3) parts sand with the amount of mixing water enough to produce a workable mix. For exposed walls, the cement shall contain such a proportion of white Portland cement as is required to make the color of the patch match the color of the surrounding concrete. The patch shall be finished in such a manner as to match the adjoining surfaces.

6. Surfaces of repairs shall receive the same kind and amount of curing treatment as required for the concrete in the repaired section.

B. Defective Concrete:

1. Any concrete which is not formed as shown on the Drawings or does not conform to the Contract tolerances or shows defects which reduce its structural adequacy, shall be removed from the job by the CONTRACTOR at his expense unless the ENGINEER grants written permission to patch the defective area.

C. Exposed Concrete Surfaces:

1. As soon as forms are removed, exposed surfaces shall be carefully examined and all ridges, ribs and other imperfections shall be rubbed with an abrasive stone or ground in a satisfactory manner in order to secure a smooth, uniform and continuous surface. Plastering or coating of surfaces to be smoothed will not be permitted.

2. No repairs shall be made until after inspection by the ENGINEER.

3. In no case will extensive patching of honeycombed concrete be permitted.

4. Concrete containing minor voids, pinholes, honeycombing, or similar depression defects shall be repaired as indicated below.

5. Concrete containing extensive voids, holes, honeycombing, or similar depression defects shall be completely removed and replaced. Repairs and replacements shall be performed promptly.

D. Cracks in Hydraulic Structures:

1. Prior to filling any structure with water, cracks shall be "vee'd" to 1/2-inch deep and 1/4" wide with bond breaker tape applied to the bottom of the "vee" and filled with sealant conforming to the requirements of SECTION 03100 - Concrete Formwork and Accessories. This repair method shall be done on the water bearing face of members. Prior to backfilling, faces of members in contact with fill which are not covered with a waterproofing membrane shall also have cracks repaired as indicated herein.

E. Repairs to Tremie Concrete

1. After the post-placement evaluation, and with the defects clearly identified, and inspected by the ENGINEER, repair can proceed prior to or after the curing period. Concrete must be prevented from dryness before the starting of repair, and if repair is to be completed after curing, the repaired area and the total surface are shall be cured in accordance with these specifications. Plastering or coating of surfaces will not be permitted.

2. Defective surfaces to be repaired shall be cut back from true line a minimum depth of 1/2-inch over the entire area. Feathered edges will not be permitted.

3. Cracks 1/16-inch or wider shall be repaired by injection of epoxy grout, injection procedures shall be as recommended by the grout MANUFACTURER.

4. Laitance, soft materials, voids, and honeycombs shall be completely removed, and cut back to a minimum of 1/2-inch below the sound concrete surface.

5. Depressions greater than 3-inches, including those formed as a result of cut backs of laitance, voids, and honeycombs, shall be repaired with concrete. Depressions less than 3-inches shall be filled with non-shrink grout per SECTION 03600 - Grout. [Depressions less than 3-inches can be filled with concrete when the top slab is poured.]

6. When the compressive strength of the cored concrete specimens failed to meet the acceptance criteria of this SECTION, the ENGINEER may require the CONTRACTOR to take additional cores for further testing, repair, remove, or replace part or all of the concrete at no additional cost to the ENGINEER. All cored holes shall be filled with concrete.

3.12 REINFORCEMENT: Reinforcement shall be in accordance with SECTION 03200 - Concrete Reinforcement, of these Specifications. Concrete protection for the reinforcement shall conform to the requirements ACI 318, paragraph 7.7.1.

3.13 CONSTRUCTION TOLERANCES:

A. The CONTRACTOR shall set and maintain concrete forms and perform finishing operations to ensure that the completed WORK is within tolerances. Surface defects and irregularities are defined as finishes and are to be distinguished from tolerances. Tolerance is the permissible variation from lines, grades, or dimensions indicated on the Drawings. Where tolerances are not stated in the specifications, permissible deviations will be in accordance with ACI 117.

B. The following non-cumulative construction tolerances apply to finished walls and slab unless otherwise indicated:

Item	Tolerance
Variation of the constructed linear outline from the	In 10-feet: 1/4-inch;

established position in plan.	In 20-feet or more: 1/2-inch
Variation from the level or from the grades indicated.	In 10-feet: 1/4-inch; In 20-feet or more: 1/2-inch
Variation from plumb	In 10-feet: 1/4-inch; In 20-feet or more: 1/2-inch
Variation in the thickness of slabs and walls.	Minus 1/4-inch; Plus 1/2-inch
Variation in the locations and sizes of slabs and wall openings	Plus or minus 1/4-inch
Tremie Concrete	Plus or Minus 3-inches

3.14 CARE AND REPAIR OF CONCRETE: The CONTRACTOR shall protect concrete against injury or damage from excessive heat, lack of moisture, overstress, or any other cause until final acceptance. Particular care shall be taken to prevent the drying of concrete and to avoid roughening or otherwise damaging the surface. Any concrete found to be damaged, or which may have been originally defective, or which becomes defective at any time prior to the final acceptance of the completed WORK, or which departs from the established line or grade, or which, for any other reason, does not conform to the requirements of the Contract Documents, shall be satisfactorily repaired or removed and replaced with acceptable concrete.

END OF SECTION

SECTION 03350 COMPACTION GROUTING

PART 1 GENERAL

1. Description. Furnish all supervision, labor, materials, transportation and plant; all grouting materials and other supplies; all operations and equipment to supply, transport, store, mix and pump grout materials for the purpose of achieving the grouting as presented in the plans and specifications or as amended by the Engineer during construction. Monitor the work to insure that damage does not occur to any existing structure due to contractor processes. Keep complete grouting records that include records of volumes, pressures, time and refusal condition for each grout injection for review by the Engineer each working day

2. Materials. Determine the source, kind and quality of the water, cement, soil and chemical admixtures of the materials listed in this section. Submit this information to the Engineer for approval in advance of the scheduled construction start date. Submit mix design and test results of grout mixture to the Engineer for approval 2 weeks prior to the commencement of the work. Submit , for approval by the Engineer, grout proportioning and strength data from prior experience.

A. Cement. Furnish cement conforming to “Hydraulic Cement”. Store cement in weather-tight enclosures or procure in weather-tight bags to protect against dampness and contamination. Do not use material that has been subjected to hydration.

B. Supplementary Cementing Materials.

1. Fly Ash. Furnish fly ash conforming to ASTM C618- Class C or F.

C. Chemical Admixtures. Furnish admixtures conforming to 03300- Cast In Place Concrete, “ 2.05 Admixtures.” Do not use Calcium Chloride. Do not use bentonite or other clay of medium to high plasticity. Add fly ash as approved by the Engineer.

D. Soil. Furnish natural soil that meets the following gradation requirements:

1 Soil Gradation Requirements Sieve Size Percent Passing By Weight

3/8” 100

No. 200 10-30

Soil fines must have a liquid limit of 25 or less and a plasticity index of 10 or less when tested according to AASHTO T 89 and T90, respectively. Natural fines may be supplemented by fly ash to achieve the specified percent passing the No. 200 sieve. Fly ash must conform to the requirements of ASTM C618- Class F. Exact proportions of cement, water and soil are determined by site conditions. The grout mix generally consists of sandy soil with up to 12% cement by weight, and water to form a very stiff mortar-like mixture. Use no admixtures without the approval of the Engineer and previous testing.

E. Water. Mixing Water shall be Potable Water per ACI.

3. Equipment.

A. Compaction Grout Mixer. Furnish a pugmill type grouting mixer to ensure complete mixing of the stiff grout, or a mixer approved by the Engineer. The compaction grout mixer must be of sufficient capacity to continuously deliver grout having a slump of less than 2 in. at pressures up to 1,000 psi, at flow rates ranging from 0.1 to 5.0 cubic feet per minute.

B. Riser. Furnish a riser elbow having a minimum 1 ft. radius curve to minimize the potential for grout blockage.

C. Gauges. Provide gauges at the pump and the grout pipe head to measure pressure and rate of flow. The type and location of gauges must be approved by the Engineer. Provide a dial gauge or meter capable of measuring to 0.5 cu. ft. or less to measure the amount of grout pumped into the hole. Provide a pressure gauge graduated in 10-psi increments or less to measure the applied pressure. All gauges must be certified accurate to within 2%. Submit certification to the Engineer for review prior to any construction activities. Suitably protect gauges and flow meters to prevent grout clogging or damage from handling, vibration or shock.

D. Grout Hose. Furnish a compaction grout hose having a minimum inside diameter of 2 in. with non-restrictive full flow couplings and having sufficient strength for the pressures anticipated and being in good repair.

E. Drilling Equipment. Furnish drilling equipment capable of drilling through the sidewalk slab or the removal and replacement of the sidewalks shall be considered incidental to the grouting operation, asphalt pavement and subsurface materials. The drilling equipment must be capable of installing the casing to be used. Provide flush joint steel casing with a minimum inside diameter of 2 in. The steel casing must have adequate strength to maintain the hole and to withstand the required jacking and pumping pressures.

4. Construction

A. Contractor. The Contractor who does this compaction grouting work must have at least ten years of experience in soil-cement grouting involving pressures above 200 psi. Submit the name of the firm that will do the compaction grouting at the preconstruction conference. Perform no work until the firm is approved by the Engineer. Submit the items listed below with regard to qualification of the Contractor or intended subcontractor to perform the grouting program subject to approval by the Engineer.

1. Provide a list of major components to be used, such as pumps, hoses, pipes, fittings and drilling equipment, manufacturers' data on size, type, pressure rating, capacity and other critical characteristics for each item prior to the commencement of work.

2. Provide a work schedule outlining mobilization, drilling (sequence and location), grouting and demobilization.

3. Provide a description of the program for monitoring the work, including means of pressure measurement and movement detection.

4. Provide a listing of personnel to perform the work that includes the experience and qualification of key personnel.

5. Provide a list of similar work performed in the previous five years, using similar equipment and personnel. Include dates and project locations.

6. Submit copies of drilling and grouting report forms for approval by the Engineer.

7. Submit certification(s) of grout gauges.

B. Grout Pipe Installation. Drill and grout primary holes prior to secondary holes. Use a drilling method that is capable of simultaneously drilling the hole and advancing the casing to prevent collapsing the hole. Install the casing in such a way that there is intimate contact with the drilled hole wall in order to prevent grout leakage and/or premature upward movement of the casing during injection of high pressure compaction grout. Furnish and use external packing or other means of assuring grout delivery to the bottom of the hole as approved by the Engineer. Employ only air or air-injected foam to install grout pipes. No other drilling fluids may be used unless approved by the Engineer. Install all grout pipes to within five degrees of vertical, or as directed by the Engineer.

C. Grout Injection Procedures. Continuously monitor grouting pressure and flow rate at the grout pipe head and at the pump by pressure gauges and flow meters. Begin compaction grouting with the primary holes. Begin the secondary hole compaction grouting after the completion of the primary holes. Inject compaction grout in increments of 2 ft. under continuous pressure by the bottom-up method. Controlled compaction grout pumping rates of 0.1 to 5.0 cubic feet per minute are required. The acceptable rate of injection does not exceed 2.0 cubic feet per minute.

1. Criteria for Raising Grout Pipe.

a. The grout pressure at the gage located at the grout pipe head exceeds 200 psi.

b. More than 2 cu. ft. of grout is injected per 2 ft. interval at a pressure of 100 psi or greater.

c. Wingwall or abutment wall movement occurs, as determined by the Engineer. Tertiary holes are ordered by the Engineer in the field if they are necessary. The drilling and grout quantities of tertiary holes must be no more than 20% of the primary holes. Replace any holes lost due to failure of grouting or drilling equipment at the sole expense of the Contractor.

5. Testing and Quality Control.

A. Drilling Reports. Prepare and provide drilling reports which contain at least the following information: Name of driller, type of drill and method being used, date started, date completed, type of flushing, location of hole, depth of hole and type and depth of material encountered.

B. Grouting Reports. Prepare grouting reports which contain at least the following information: Name of grouting technician, constituents and proportions of grout, log of quantity injected per 5 ft. of hole, date, rate of pumping, grouting pressure at the hole, type of pump, grouting pressure at the pump, and depth of hole. Make drilling reports and grouting reports available to the Engineer at the end of each working day.

6. Measurement.

A. Drilled Holes. Drilled holes are measured by the foot to the bottom of the hole acceptably drilled and cased.

B. Compaction Grouting. Compaction grouting is measured by the cubic feet of grout used in acceptably completed locations.

7. Payment. The work performed and materials furnished in accordance with this Item and measured as provided under “Measurement” will be paid for at the unit price bid for “Compaction Grouting. The price bid for “Compaction Grouting” is full compensation for furnishing materials, hauling, mixing, pumping and installing compaction grouting, equipment, labor, tools and incidentals. Depending on the results of the planned grouting operation, it may be necessary to add grout holes to achieve adequate density of subsurface material. Any additional drilling and grouting work directed by the Engineer is paid for at the contract unit prices.

SECTION 03600 GROUT

PART 1 - GENERAL

1.01 SCOPE:

A. Summary of Work: The CONTRACTOR shall furnish all equipment, labor and material for the proper placement and curing of grout as indicated on the Drawings and as specified herein.

B. Related Work Specified Elsewhere:

1. SECTION 01300 – Submittals
2. SECTION 03100 - Concrete Formwork and Accessories
3. SECTION 03300 - Cast-in-Place Concrete

1.02 APPLICABLE STANDARDS AND PUBLICATIONS: The following standard specifications shall apply to the WORK of this SECTION:

A. American Society of Testing and Materials (ASTM)

1. C109 – Standard Test Method for Compressive Strength of Hydraulic Cement Mortars (Using 2-in or [50-mm] Cube Specimens)
2. C307 - Standard Test Method for Tensile Strength of Chemical-Resistant Mortar, Grouts, and Monolithic Surfacings
3. C496 - Standard Test Method for Splitting Tensile Strength of Cylindrical Concrete Specimens
4. C531 – Standard Test Method for Linear Shrinkage and Coefficient of Thermal Expansion of Chemical-Resistant Mortars, Grouts, Monolithic Surfacings, and Polymer Concretes
5. C579 – Standard Test Methods for Compressive Strength of Chemical-Resistant Mortars, Grouts, Monolithic Surfacings, and Polymer Concretes
6. C580 - Standard Test Method for Flexural Strength and Modulus of ElastiENGINEER of Chemical-Resistant Mortars, Grouts, Monolithic Surfacings, and Polymer Concretes
7. C827 – Standard Test Method for Change in Height at Early Ages of Cylindrical Specimens of Cementitious Mixtures
8. C881 – Standard Specification for Epoxy-Resin-Base Bonding Systems for Concrete
9. C882 - Standard Test Method for Bond Strength of Epoxy-Resin Systems Used with Concrete by Slant Shear
10. C939 - Standard Test Method for Flow of Grout for Preplaced-Aggregate Concrete (Flow Cone Method)
11. C1090 – Standard Test Method for Measuring Changes in Height of Cylindrical Specimens from Hydraulic-Cement Grout
12. C1107 - Standard Specification for Packaged Dry, Hydraulic-Cement Grout (Non-Shrink)
13. C1339 - Standard Test Method for Flowability and Bearing Area of Chemical-Resistant Polymer Machinery Grouts
14. D648 – Standard Test Method for Deflection Temperature of Plastics Under Flexural Load in the Edgewise Position
15. D695 – Standard Test Method for Compressive Properties of Rigid Plastics

B. International Concrete Repair Institute (ICRI)

1. Technical Guide for Selecting and Specifying Concrete Surface preparation for Sealers, Coatings, and Polymer Overlays

C. American Institute of Steel Construction (AISC)

1. Manual of Steel Construction

D. American Concrete Institute (ACI)

1. Building Code Requirements for Structural Concrete (ACI 318, latest edition)

E. International Code Council (ICC), formerly the International Conference of Building Officials (ICBO)

1.03 DEFINITIONS: (Not Applicable)

1.04 SUBMITTALS: The CONTRACTOR shall submit the following:

A. Submittals shall be in accordance with SECTION 01300.

B. MANUFACTURER's literature containing instructions and recommendations on the mixing, handling, placement, curing, and appropriate uses for each type of grout used in the WORK, and location of use.

C. Name and telephone number of grout MANUFACTURER's representative, who will give on-site job service. The representative shall have at least one (1) year of experience with the chosen grouts.

1.05 QUALIFICATIONS:

A. Pre-installation Demonstration and Training:

1. The grout MANUFACTURER shall give a demonstration and training session for all the cement based non-shrink and epoxy grouts to be used on the Project, before any installation of grout is allowed.

2. Training session shall use a minimum of five (5) bags of Cement Based Non-Shrink Class I Grout mixed to fluid consistency. Tests shall be conducted for flow cone and bleed tests. Six (6) cubes for testing at 1, 3, and 28 days shall be made. The remaining grout shall be placed, and curing initiated on actual project placements such as baseplates and tie holes to provide on-the-job training for the CONTRACTOR and ENGINEER. The CONTRACTOR shall have the employees who will be doing the actual WORK participate in this training and demonstration session. The training session shall include methods for curing the grout.

3. The MANUFACTURER shall mix enough Cement Based Non-Shrink Class II Grout for a minimum of 15 tie holes and shall train the CONTRACTOR's employees in how to perform the WORK and cure the grout. The CONTRACTOR shall have the employees assisting in the mixing and sealing of the tie holes.

4. If the Project includes patching, throughbolt holes, epoxy anchors, and/or blockouts, the MANUFACTURER shall also train the CONTRACTOR's employees in the mixing and curing of the epoxy grouts for each of these applications.

5. The CONTRACTOR shall transport the test cubes to an independent test laboratory, obtain the test reports, and report these demonstration and training test cube strengths to the ENGINEER.

B. Adhesive anchor installers shall be trained and qualified at the Site by MANUFACTURER's representative before installing any adhesive anchors. Training and qualification for each installer shall include, but not be limited to:

1. Anchors installed in both the vertical and horizontal positions in a mock-up concrete panel of adequate size and thickness. Anchors shall be tested in tension and shear loading. A minimum of three anchors shall be tested for each installation position.

2. Anchors shall be tested at two times the published allowable load in tension and in shear as indicated by the AISC Manual of Steel Construction.

3. If any of the three test bolts in any installation position fail to reach the test loads, the installer shall be re-tested with the same procedure. Re-testing is required only for the failed installation position.

4. An installer who has three consecutive successful bolt tests in the first or second trial is considered qualified for adhesive anchor installation for this Project. The MANUFACTURER's representative shall issue a certificate to the qualified installer, and a copy of the certificate shall be filed with the CONTRACTOR and be submitted to the ENGINEER.

5. The test anchor size shall be the maximum size adhesive anchor used on the Project. The embedment length shall be long enough to develop the allowable steel strength per AISC Manual of Steel Construction and ACI 318, Appendix D.

6. Each installer shall be re-qualified every six (6) months for the duration of the Project, by the same qualifying procedure.
7. The certification of each qualified installer shall be available for verification at the Special Inspector's request.
8. All defective anchors noted by the Special Inspector shall be replaced and re-installed by the CONTRACTOR without any additional compensation.

1.06 RESPONSIBILITIES:

A. The CONTRACTOR shall assist the ENGINEER in obtaining specimens for testing and shall furnish all materials necessary for fabricating the test specimens.

B. The cost of laboratory tests on grout will be paid by the ENGINEER except where test results show the grout to be defective. In such case, the CONTRACTOR shall pay for the tests, removal and replacement of defective WORK, and re-testing all at no increased cost to the ENGINEER.

C. The MANUFACTURER of prepackaged grouts shall provide on-site technical assistance within 72 hours of request at no cost to the ENGINEER.

1.07 CERTIFICATIONS AND TESTING: The CONTRACTOR shall provide to the ENGINEER three (3) copies of certified test results for all tests required herein.

A. Test results and service report from the field tests and the demonstration and training session verifying the requirements indicated herein.

B. Certification that all grout used on the Project contains no chlorides or other chemicals that cause corrosion.

C. MANUFACTURER's certification that their non-shrink grout does not contain aluminum, zinc, or magnesium powers, used as a method of expansion.

D. ICC certifications for all adhesive anchors.

1.08 INSPECTION COORDINATION: All adhesive anchor installations shall have special inspections as recommended by the ICC report on the adhesive anchors and local codes.

1.09 WARRANTY: The CONTRACTOR shall warrant the WORK against defects for one (1) year from the date of Substantial Completion and as described in Article 13 of Section 00700 - General Terms and Conditions.

PART 2 - PRODUCTS

2.01 APPLICATION:

A. Unless indicated otherwise, grouts shall be provided as listed below whether indicated on the Drawings or not:

TYPE OF GROUT	**APPLICATION**
Cement Grout	Surface repairs
Non-Shrink - Class I	All anchor bolts and reinforcing steel required to be set in grout in which the average working or operating temperature will be over 100 degrees F, or in high fire risk areas.
	Beam and column (1 or 2 story) base plates less than 16 inches in the least dimension.
	Storage tanks and other non-motorized equipment and machinery under 30 horsepower
	Filling blockout spaces for embedded items such as railing posts, gate guide frames, etc. (Where placement time is less than 20 min.)
	Repair of holes and defects in concrete members which are not water bearing and not in contact with soil or other fill material

TYPE OF GROUT	APPLICATION
	Any application not listed, where grout is called for on the Drawings
Non-Shrink - Class II	Column base plates (greater than 2 story or larger than sixteen (16) inches in the least dimension)
	Filling blockout spaces for embedded items such as railing posts, gate guide frames, etc. (where placement time exceeds 20min.)
	Under precast concrete elements
	Repair of holes and defects in concrete members which are water bearing or in contact with soil or other fill materials
Non-Shrink Epoxy	Machinery over 30 horsepower and equipment under 30 horsepower but subject to severe shock loads and high vibration
Epoxy Anchor Grout	All anchor bolts and reinforcing steel required to be set in grout that are not in high temperature or high fire risk areas.
Topping Grout	Toppings and concrete/grout fill less than three (3) inches thick
Structural Concrete per 03300	Toppings and concrete/grout fill greater than three (3) inches thick

2.02 MATERIALS:

A. Cement Grout:

1. Cement grout shall be composed of one (1) part cement, three (3) parts sand, and the minimum amount of water necessary to obtain the desired consistency. Where needed to match the color of adjacent concrete, white portland cement shall be blended with regular cement as needed. The minimum compressive strength at 28 days shall be 4000 psi, unless indicated otherwise.
2. Cement grout materials shall be as indicated in SECTION 03300 – Cast-in-Place Concrete.

B. Non-Shrink Grouts (Cement Based):

1. General:
   a. Cement Based Non-shrink grout shall be a prepackaged, inorganic, fluid, non-gas-liberating, non-ferrous, grout, requiring only the addition of water.
   b. MANUFACTURER's instructions shall be printed on each bag or other container in which the materials are packaged. The specific formulation for each class of non-shrink grout indicated herein shall be that recommended by the MANUFACTURER for the particular application.
   c. Grout shall not contain chlorides or additives, which may contribute to corrosion.
   d. Grout shall be formulated to be used at any consistency from fluid to plastic.
   e. Non-Shrink grout shall have the following minimum properties when tested at a fluid consistency at 28 days:

Tensile Splitting Strength	ASTM C496	500 psi minimum
Flexural Strength	ASTM C580	1000 psi minimum
Bond Strength (concrete to grout)	ASTM C882 modified	1900 psi minimum

   f. Grout shall be certified for use in marine environments

2. Class I Non-Shrink Grout:
   a. Class I Non-Shrink Grout shall have a minimum 28-day compressive strength of 5000 psi, when mixed at a fluid consistency.
   b. Class I Non-Shrink grout shall meet the requirements of ASTM C1107, Grade B or C, when mixed to fluid, flowable and plastic consistencies.

c. Grout shall have a maximum early age height change of 4.0 percent expansion, and shall have no shrinkage (0.0 percent) in accordance with ASTM C827. The grout when tested shall not bleed or segregate at maximum allowed water.

d. Grout shall have no shrinkage (0.0 percent) and a maximum of 0.3 percent expansion in the hardened state when tested in accordance with ASTM C1090.

e. Provide certification together with independent test data that the expansion at 3 or 14 days does not exceed the 28-day expansion and that its non-shrink property is not based on gas production or gypsum expansion.

3. Class II Non-Shrink Grout:

a. Class II Non-Shrink grout shall be a high precision, fluid, extended working time grout. The minimum 28-day compressive strength shall be 7500 psi, when mixed at a fluid consistency.

b. Grout shall have a maximum early age height change of 4.0 percent expansion, and shall have no shrinkage (0.0 percent) in accordance with ASTM C827.

c. Grout shall have no shrinkage (0.0 percent) and a maximum of 0.3 percent expansion in the hardened state when tested in accordance with ASTM C1090.

d. Class II grout shall have an extended working time of 30 minutes minimum when mixed to a fluid consistency as defined in ASTM C827 at temperature extremes of 45 to 90 degrees F in accordance with ASTM C1107.

e. Class II Non-Shrink grouts shall meet the requirements of ASTM C1107; Grade B or C when tested using the amount of water needed to achieve fluid consistency per ASTM C939.

f. The grout when tested shall not bleed or segregate at maximum allowed water.

g. Provide certification that its non-shrink property is not based on gas production or gypsum expansion.

C. Non-Shrink Epoxy Grout:

1. Non-Shrink Epoxy grout shall be a flowable, non-shrink, 100 percent solids system. The epoxy grout system shall have three components: resin, hardener, and specially blended aggregate, all premeasured and prepackaged. The resin component shall not contain any non-reactive diluents. Resins containing butyl glycidyl ether (BGE) or other highly volatile and hazardous reactive diluents are not acceptable. Variation of component ratios is not permitted unless specifically recommended by the MANUFACTURER. MANUFACTURER's instructions shall be printed on each container in which the materials are packaged.

2. Epoxy grout shall have a maximum early age height change of 4.0 percent expansion, and shall have no shrinkage (0.0 percent) in accordance with ASTM C827, (modified for epoxy grouts by using an indicator ball with a specific gravity between 0.9 and 1.1).

3. Epoxy grout shall have a negligible (less than 0.0006 in/in) length change after hardening, and a coefficient of thermal expansion less than 0.00003 in/in F when tested according to ASTM C531.

4. The epoxy grout shall develop a minimum compressive strength of 9000 psi in 24 hours and 13,000 psi in seven days when tested in accordance with ASTM C579, method B.

5. The mixed epoxy grout shall have a minimum working life of 90 to 120 minutes at 70 degrees F.

6. The effective bearing area shall be a minimum of 95% EBA in accordance with ASTM C1339.

7. The chemical formulation of the epoxy grout shall be that recommended by the MANUFACTURER for the particular application. Do not reduce aggregate loading or add solvents to increase flowability.

8. Non-Shrink Epoxy grout shall have the following minimum properties when tested at seven (7) days:

Bond Strength to Concrete	ASTM C882 modified	3000 psi minimum

Bond Strength to Steel	ASTM C882 modified	1700 psi minimum
Flexural Strength	ASTM C580	2500 psi minimum
Tensile Strength	ASTM C307	2000 psi minimum

D. Epoxy Anchor Grout:

1. Epoxy anchor grout shall be a non-sag paste conforming to ASTM C881 Type IV, Class C, Grade 3 with the exception of gel time.
2. Heat deflection temperature per ASTM D648 shall be a minimum 120 degrees F.
3. MANUFACTURER shall certify that the epoxy grout will maintain 90 percent of its strength up to a temperature of 125 degrees F.
4. Grout shall come in a two-chambered cartridge with a metering system that provides the proper ratio of hardener and resin. The grout shall also come with a static mixer nozzle to thoroughly mix the hardener and resin together.
5. Epoxy anchor grout shall be capable of being used in submersed applications once cured.
6. Compressive strength per ASTM D695 shall be 10,000-psi minimum.
7. In vertical and overhead locations, anchor seal plugs shall be used.
8. If the average working or operating temperature will be over 100° F or in a high fire risk area, use cement based non-shrink grout and oversized holes.
9. Embedment of adhesive anchors/rebar shall be deep enough to develop the anchor/rebar. Embedment shall not exceed 67% of the member depth.

E. Topping Grout and Concrete/Grout Fill:

1. Where fill is thicker than three (3) inches, structural concrete, as specified in SECTION 03300, may be used if approved by the ENGINEER.
2. Grout for topping of slabs and concrete/grout fill for built-up surfaces of tank, channel, and basin bottoms shall be composed of cement, fine aggregate, coarse aggregate, water, and admixtures proportioned and mixed as specified herein. All materials and procedures indicated for normal concrete in SECTION 03300, shall apply unless indicated otherwise.
3. Topping grout and concrete/grout fill shall contain a minimum of 564 pounds of cement per cubic yard with a maximum water cement ratio of 0.45.
4. Coarse aggregate shall be graded as follows:

U.S. STANDARD SIEVE SIZE	PERCENT BY WEIGHT PASSING
1/2"	100
3/8"	90-100
No. 4	20-55
No. 8	5-30
No. 16	0-10
No. 30	0

5. Final mix design shall be as determined by trial mix design as indicated in SECTION 03300, except that drying shrinkage tests are not required.
6. Strength: Minimum compressive strength of topping grout and concrete/grout fill at 28 days shall be 4000 psi.

2.03 CURING: Curing materials shall be as specified in SECTION 03300, and as recommended by the MANUFACTURER of prepackaged grouts.

2.04 CONSISTENCY:

A. The consistency of grouts shall be that necessary to completely fill the space to be grouted for the particular application. Dry pack consistency is such that the grout is plastic and moldable but will not flow. Where "dry pack" is called for in the Contract Documents, it shall mean a grout of that consistency; the type of grout to be used shall be as indicated herein for the particular application.

B. The slump for topping grout and concrete/grout fill shall be adjusted to match placement and finishing conditions but shall not exceed four (4) inches.

2.05 MEASUREMENT OF INGREDIENTS:

A. Measurements for cement grout shall be made accurately by volume using containers. Shovel measurements shall not be allowed.

B. Prepackaged grouts shall have ingredients measured by means recommended by the MANUFACTURER.

PART 3 - EXECUTION

3.01 GENERAL:

A. Grout shall not be placed until base concrete or masonry has attained its design strength, unless authorized otherwise by the ENGINEER.

B. When cementitious grouts are used on concrete surfaces, the concrete surface shall be saturated with water for 24 hours prior to placement. Upon completion of saturation period excess water shall be removed with clean, oil free compressed air prior to grouting. Concrete substrate shall not be wet prior to placement of epoxy grouts.

C. Surface preparation, curing, and protection of cement grout shall be in accordance with SECTION 03300. The finish of the grout surface shall match that of the adjacent concrete unless otherwise indicated.

D. All surfaces that will be in contact with grout shall be free of dirt, loose rust, oil, wax, grease, curing compounds, laitance, loose concrete or other deleterious materials.

E. Shade the WORK Sites from sunlight for at least 24 hours before and 48 hours after grouting.

F. Contact the grout MANUFACTURER's representative for assistance on hot and cold weather grouting techniques and precautions if applicable.

3.02 GROUTING PROCEDURES:

A. General: All mixing, surface preparation, handling, placing, consolidation, curing, and other means of execution for prepackaged grouts shall be done according to the instructions and recommendations of the MANUFACTURER.

B. All structural, equipment, tanks, and piping support bases shall be grouted, unless indicated otherwise.

1. The original concrete shall be blocked out or finished off a sufficient distance below the plate to provide for a minimum one-inch thickness of grout, or a thickness as indicated on the Drawings.

2. After the base plate has been set in position at the proper elevation by steel wedges or double nuts on the anchor bolts, the space between the bottom of the plate and the original pour of concrete shall be filled with non-shrink-type grout. The mixture shall be of a fluid consistency and poured continuously into the space between the plate and the base concrete. Forms for grout shall be tight against all surfaces, and joints shall be sealed as recommended by the grout MANUFACTURER to be liquid-tight. Forms shall be coated as recommended by the grout MANUFACTURER for easy form release. Where this method of placement is not practical or where required by the ENGINEER, alternate grouting methods shall be submitted for acceptance by the ENGINEER.

C. Drilled anchors and Reinforcing Bars:

1. General: Drilled anchors and reinforcing bars shall be installed in strict accordance with the MANUFACTURER's instructions. Holes shall be roughened with a brush on a power drill, and cleaned. Drilled anchors shall not be installed until the concrete has reached the required 28-day compressive strength. Anchors shall not be loaded until the grout has reached its indicated strength in accordance with the MANUFACTURER's instructions.

2. Epoxy Adhesive Anchors:

   a. Grout shall be proportioned and mixed with automatic equipment.

   b. Unless otherwise indicated, embedment shall be sufficient to develop the ultimate tensile strength of the anchor or reinforcing bar per the AISC Manual of Steel Construction and ACI 318, Appendix D., but shall not be less than eight (8) diameters for threaded rod, or 12 diameters for reinforcing or smooth bars.

   c. The hole diameter shall be as recommended by the epoxy MANUFACTURER but shall be no larger than 0.25 inch greater than the diameter of the outer surface of the bolt threads or the reinforcing bar deformations.

   d. Holes shall be drilled by methods that do not interfere with the proper bonding of the epoxy.

   e. Existing reinforcing steel in the vicinity of the proposed holes shall be located prior to drilling. The location of holes shall be adjusted to avoid drilling through or nicking any existing reinforcing bars.

   f. Holes shall be blown clean with clean, dry compressed air to remove all dust and loose particles. Holes shall be dry.

   g. Reinforcing bars and anchors shall be installed per the MANUFACTURER's written installation instructions.

3. Cement Based Non-Shrink Grout:

   a. In places of high temperature or fire hazard, anchor bolts shall be grouted in using Cement Based Non-Shrink Grout, Class I.

   b. Unless otherwise indicated, embedment shall be sufficient to develop the ultimate tensile strength of the anchor or reinforcing bar per the AISC Manual of Steel Construction and ACI 318, Appendix D., but shall not be less than 16 diameters for threaded rod, or 24 diameters for reinforcing or smooth bars.

   c. When the bolt diameter is one (1) inch or less, the hole diameter should be a minimum of two inches. When the bolt's diameter is greater than one inch, the hole diameter should be at least twice the bolt diameter.

   d. Drilled holes shall be saturated with water for not less than 24 hours before installation of anchor/rod/rebar.

   e. The non-shrink grout should be placed in the holes in a non-sag (trowellable) consistency. The grout should be placed in the holes before the anchor and then the anchor inserted and vibrated to ensure proper coverage.

D. Topping Grout and Concrete/Grout Fill:

1. All mechanical, electrical, and finish WORK shall be completed prior to placement of topping or concrete/grout fill. To ensure bonding to the base slab, the base slab shall be given an exposed aggregate finish. Alternatively, where accepted by the ENGINEER, the base slab shall be given a roughened textured surface by a close-spaced rake while the surface is green. After curing, high pressure washing shall expose the aggregates and produce not less than a 3/16-inch amplitude roughness. Jackhammers or chipping hammers shall not be used.

2. The minimum thickness of grout topping and concrete/grout fill shall be one inch. Where the finished surface of concrete/grout fill is to form an intersecting angle of less than 45 degrees with the concrete surface it is to be placed against, a key shall be formed in the concrete surface at the intersection point. The key shall be a minimum of 3-1/2-inches wide by 1-1/2-inches deep.

3. The base slab shall be thoroughly cleaned and wetted to saturated surface dry (SSD) condition per International Concrete Repair Institute Standards for Surface Preparations, prior to placing topping and fill. No topping concrete shall be placed until the slab is completely free from standing pools or ponds of water. A thin coat of neat cement grout shall be broomed into the surface of the slab just before topping or fill placement. The neat cement grout shall not be allowed to dry before topping placement. If it does dry, it must be immediately removed using

wet stiff brooms and reapplied. The topping and fill shall be compacted by rolling or thorough tamping, brought to established grade, and floated. Grouted fill for tank and basin bottoms where scraping mechanisms are to be installed shall be screeded by blades attached to the revolving mechanism of the equipment in accordance with the procedures outlined by the equipment MANUFACTURER after the grout is brought to the established grade. Coat surface with evaporation retardant as needed to prevent plastic shrinkage cracks.

4. Topping grout placed on sloping slabs shall proceed uniformly from the bottom of the slab to the top, for the full width of the placement.

5. The surface shall be tested with a straight edge to detect high and low spots, which shall be immediately eliminated. When the topping and/or fill have hardened sufficiently, it shall be steel troweled to a smooth surface free from pinholes and other imperfections. An approved type of mechanical trowel may be used as an assist in this operation, but the last pass over the surface shall be by hand troweling. During finishing, no water, dry cement, or mixture of dry cement and sand shall be applied to the surface.

6. As soon as topping or fill finishing is completed, coat surface with curing compound. After the topping is set and sufficiently hard in clarifiers and where required by the ENGINEER, the tank shall be filled with sufficient water to cover the entire floor for 14 days.

3.03 CONSOLIDATION: Grout shall be placed in such a manner, for the consistency necessary for each application, to assure that the space to be grouted is completely filled.

3.04 CURING: Cement based grouts shall be cured per SECTION 03300 and per the MANUFACTURER's recommendations.

3.05 FIELD TESTING:

A. Compression test specimens will be taken during construction from the first placement of each type of grout, and at intervals thereafter as selected by the ENGINEER to ensure continued compliance with these specifications. The specimens will be made by the ENGINEER or its representative.

B. Compression tests and fabrication of specimens for cement grout and cement based non-shrink grout will be performed in accordance with ASTM C109 (Using 2-in or 50 mm Cube Specimens), at intervals during construction selected by the ENGINEER. A set of three specimens will be made for testing at seven (7) days, 28 days, and each additional time period as appropriate.

C. Compression tests and fabrication of specimens for topping grout, and concrete/grout fill will be performed as specified in SECTION 03300, at intervals during construction as selected by the ENGINEER.

D. All material, already placed, which fails to meet the requirements of these specifications, is subject to removal and replacement at the cost of the CONTRACTOR.

E. The cost of all laboratory tests on mortar and grout will be borne by the ENGINEER, but the CONTRACTOR shall assist the ENGINEER in obtaining specimens for testing. However, the CONTRACTOR shall be charged for the cost of any additional tests and investigation on WORK performed which does not meet the specifications. The CONTRACTOR shall provide all services necessary to conduct the compression tests.

F. Compression tests and fabrication of specimens for epoxy grouts will be performed in accordance with ASTM C579, Method B, at intervals during construction as selected by the ENGINEER. A set of three specimens will be made for testing at seven (7) days, and each earlier time period as appropriate.

3.06 CONSTRUCTION TOLERANCES: Construction tolerances shall be as indicated in SECTION 03300, unless indicated otherwise.

END OF SECTION

SECTION 05060 WELDING

PART 1 - GENERAL

1.01 SCOPE: The CONTRACTOR shall provide all labor, equipment, and materials for all shop and field welding as required by the Drawings and/or Specifications.

1. SECTION 05070 - Bolted Fasteners
2. SECTION 05100 - Structural Steel

1.02 SHOP DRAWINGS AND ERECTION PROCEDURES:

A. Drawing shall include all shop and erection details, including welds. All welds, both shop and field, shall be indicated by standard welding symbols as noted by American Welding Society (AWS) A2.0. Drawings shall show the size, length and type of each weld.

1.03 STANDARD REFERENCES: The following standard specifications shall apply to the WORK of this SECTION as indicated:

A. American Welding Society, Structural Welding Code, (AWS)

B. American Institute of Steel Construction Manual for Steel Construction, 9th Edition, (AISC)

C. American Society for Testing and Materials (ASTM)

D. American Welding Society:

1. D1.1 - Code for Welding in Building Construction

E. Welding shall be in accordance with American Welding Society Standard Code D1.1.

1.04 WELDERS QUALIFICATIONS: All welders, including tack welders, shall be qualified in accordance with Section 5, Part C of AWS D1.1. The CONTRACTOR shall certify by name, to the ENGINEER, the welders so qualified including the code and procedures under which the individual qualified.

A. Welders and Welding Operators, shop and field, shall be qualified by an independent laboratory using test procedures covered by an independent laboratory using test procedures covered in AWS D1.1, and shall have been employed as a welder using the positions for which he is qualified during the previous 90 days. The CONTRACTOR shall provide the ENGINEER and the laboratory inspector with the names of welders to be employed in the shop and field on the WORK, certification of the position, date of the last qualification test and the name of the qualifying laboratory.

1. All welders employed in the shop on the fabrication of the steel work shall be qualified for the most difficult welding position during shop fabrication.
2. All welders employed in the field on the erection of the steel work shall be qualified for the most difficult welding position during field erection.
3. The CONTRACTOR shall require any welder to retake the test, when, in the opinion of the ENGINEER, the WORK of the welder creates a reasonable doubt as to the proficiency of the welder. Recertification of the welder shall be made to the ENGINEER only after the welder has taken and passed the specified test. The ENGINEER may require radiographic or ultrasonic testing or may require coupons to be cut from any location in any joint for testing.
4. Should any two radiographic or ultrasonic tests or coupons cut from the work of any welder show strengths, under tests, less than that of the base metal, it will be considered evidence of negligence or incompetence and such welder shall be removed from the WORK.

5. When coupons are removed from any part of a structure, the members cut shall be repaired, at no additional cost to the ENGINEER, in a neat and workmanlike manner with joints of type to develop the full strength of the members and joints cut, with peening to relieve residual stress. All SECTIONS of welds found defective shall be chipped or cut out to base metal and rewelded before proceeding with the WORK.

6. Costs of all qualifications, tests and retests shall be borne by the CONTRACTOR.

1.05 INSPECTION AND TESTING:

A. Shop inspections and tests shall include fit-up, preparation of surfaces and welding.

B. Field inspections and tests shall include fit-up, preparation of surface and welding.

1.06 WARRANTY:

A. The CONTRACTOR shall warrant the WORK against defects for one year from the date of Substantial Completion and as described in Article 13 of Section 00700 - General Terms and Conditions.

PART 2 - MATERIALS

2.01 WELD METAL: The chemical and mechanical properties of all deposited weld metal shall be compatible to the base metal and conform to AWS specifications for electrodes.

2.02 BASE METAL: The parent structural steel shall be a weldable grade with the chemical and mechanical properties to produce a sound and serviceable welded joint.

2.03 FABRICATION:

A. Surfaces of joints for welded and bolted connections shall be clean, bright metal.

1. Welded connections will be permitted only where indicated on the drawings. Welded construction shall conform to the AISC and AWS Specifications.

PART 3 - EXECUTION

3.01 WELDING METHODS: Unless otherwise approved by the ENGINEER, welding of steel shall be by an electric arc welding process and shall conform to AWS, Structural Welding Code, and the applicable sections of the AISC.

3.02 WELDING EQUIPMENT: Welding equipment shall be capable of providing the welding required by the drawings or specifications herein in accordance with the requirements of joint qualifications in AWS D1.1.

3.03 WELDING ELECTRODES:

A. Electrodes and flux used for submerged arc welding shall be of the same manufacture. The flux shall be free of contamination from dirt, mill scale and foreign material. Fused flux used in welding shall not be reused. Bare electrodes and flux used in combination shall conform to the requirements of AWS D1.1.

B. Electrodes for manual shielded metal-arc welding shall conform to AWS D1.1.

3.04 QUALIFIED WELDS: Only qualified welded joints shall be permitted in accordance with AWS, Structural Welding Code, and applicable sections of AISC.

3.05 PAINTING:

A. After cleaning and connections are approved by the laboratory inspector, all surfaces to be welded shall be given a shop coat of primer. After erection, all field connections shall be cleaned.

B. All connections, including welds and all abraded surfaces on the shop primer shall be painted to give one complete coat primer. Paint for field touch-up shall be the same paint used for the shop coat.

END OF SECTION

SECTION 05070 BOLTED FASTENERS

PART 1 - GENERAL

1.01 SCOPE:

A. Summary of Work: The WORK of this SECTION consists of furnishing all labor, materials and equipment necessary for installation of bolted fasteners as shown on the Drawings.

B. Related Work Specified Elsewhere:

1. SECTION 05060 - Welding
2. SECTION 05100 - Structural Steel

1.02 SHOP DRAWINGS:

A. Shop Drawings shall include bolted connections and the type, size and length of bolts including washers.

1.03 APPLICABLE STANDARDS AND PUBLICATIONS:

A. Standards or Codes: The edition of the publications of the organizations listed below in effect at the time of the advertisement for bids form a part of this specification to the extent referenced. See the various paragraphs for the specified standard. In the case of a conflict between the requirements of this SECTION and those of the listed document, the requirements of this SECTION shall prevail.

1. American Society of Testing Materials (ASTM)
    a. A36 – Standard Specification for Carbon Structural Steel
    b. A153 - Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware
    c. A307 – Standard Specification for Carbon Steel Bolts and Studs, 60,000 psi (pounds per square inch) Tensile Strength
    d. A325 – Standard Specification for Structural Bolts, Steel, Heat Treated, 120/105 ksi (kips per square inch) Minimum Tensile Strength.
    e. A490 – Standard Specification for Structural Bolts, Alloy Steel, Heat Treated, 150 ksi Minimum Tensile Strength
    f. A563 – Standard Specification for Carbon and Alloy Steel Nuts
    g. F1554 - Standard Specification for Anchor Bolts, Steel, 36, 55, and 105-ksi Yield Strength
    h. F436 – Standard Specification for Hardened Steel Washers
    i. F593 - Standard Specification for Stainless Steel Bolts, Hex Cap Screws, and Studs
    j. F594 - Standard Specification for Stainless Steel Nuts
2. American National Standards Institute (ANSI)
    a. B18.2.1 - Square, Hex, Heavy Hex, and Askew Head Bolts and Hex, Heavy Hex, Hex Flange, Lobed Head, and Lag Screws (Inch Series)
    b. B18.2.2 - Nuts for General Applications: Machine Screw Nuts, Hex, Square, Hex Flange, and Coupling Nuts (Inch Series)
    c. B18.2.6 - Metric Fasteners for Use in Structural Applications
3. American Institute of Steel Construction (AISC)

4. Specifications for Structural Joints Using ASTM A325 of A490 bolts, approved April 1978, by the Research Council on Riveted and Bolted Structural Joints of the Engineering Foundation

1.04 WARRANTY:

A. The CONTRACTOR shall warrant the WORK against defects for one (1) year from the date of Substantial Completion and as described in Article 13 of Section 00700 - General Terms and Conditions.

1.05 TEMPLATES:

A. Templates shall be furnished by the Fabricator to the job, together with instructions for the setting of anchors, anchor bolts and bearing plates.

1.06 INSPECTION AND TESTING:

A. Field inspections and tests shall include fit-up, preparation of surface and bolting.

PART 2 - MATERIALS

2.01 GENERAL

A. All bolts, nuts and washers shall be stainless steel unless noted otherwise. All bolts, nuts and washers not designated stainless steel shall comply with ASTM F1554, Grade 105 A325as applicable. [ASTM A325 bolts shall be used for connections as indicated on the Drawings. Appropriate stainless steel connections shall be used for Aluminum.

B. All threaded rods shall comply with ASTM F1554, Grade 105. All stainless steel bolts, nuts and washers shall comply with ASTM [F593]as applicable. ASTM F593 bolts shall be used for connections as indicated on the Drawings.

C. ASTM F593 bolts shall be a group [2 alloy in the CW condition.

2.02 HIGH STRENGTH BOLTS:

A. High strength bolts not designated stainless steel shall conform to the requirements of ASTM A325. The bolt dimensions shall conform to the current requirements of ANSI B18.2.6 for heavy hex structural bolts.

B. Stainless Steel high strength bolts shall conform to the requirements of ASTM F593. All bolts shall be a group 2 alloy in the CW condition. The bolt dimensions shall conform to the current requirements of ANSI B18.2.1 for heavy hex structural bolts.

2.03 ALLOY STEEL BOLTS: Alloy steel bolts shall conform to the requirements of ASTM A490.

2.04 NUTS:

A. Nut dimensions shall conform to ANSI B18.2.2 for heavy hex nuts.

B. Nuts for bolts not designated stainless steel shall conform to ASTM A563.

C. Nuts for stainless steel bolts shall conform to ASTM F594. ASTM F594 nuts alloy group shall match the stainless steel bolt alloy group.

2.05 WASHERS:

A. Flat, circular and square washers for bolts not designated stainless steel shall conform to ASTM F436, Type 1.

B. Compressible-washer type direct tension indicators for all connections shall conform to ASTM A959, Type 325.

C. Flat, circular and square washers for stainless steel bolts shall conform to ASTM F593 and meet the dimensional requirements of ASTM F436. ASTM F593 washers alloy group shall match the stainless steel bolt alloy group.

2.06 TAMPER RESISTANT FASTENERS:

A. Fasteners removable only by use of a special tool.

2.07 ANCHOR BOLTS:

A. Anchor bolts for equipment and machinery, where permanently anchored into concrete, shall be stainless steel, unless otherwise shown. The diameter, length, and any bend dimensions shall be as required by the equipment or machinery MANUFACTURER. Unless otherwise required, use 3/4 inch minimum diameter and other geometry shown on the Drawings. Furnish a minimum of two (2) nuts and a washer of the same material for each bolt. Provide sleeves as required or as shown for location adjustment.

B. Submerged use is defined as any connection to concrete from a point one (1) foot six (6) inches above the maximum water surface in a water-holding basin and any connection below that point.

C. Anchor bolts for other uses to anchor fabricated metalwork or structural building, or structural frame components in areas of wet use or washdown areas shall be stainless steel. Furnish two (2) nuts and one (1) washer per bolt of the same material as the bolt, unless otherwise shown.

2.08 STAINLESS STEEL FASTENERS LUBRICANT (ANTI-SEIZING):

A. Where stainless steel nuts and machined bolts, anchor bolts, concrete anchors, and all other threaded fasteners are used, the CONTRACTOR shall apply an anti-seizing lubricant to the threads prior to making up the connections. The lubricant shall contain substantial amounts of molybdenum disulfide, graphite, mica, talc, or copper.

2.09 ANCHORING SYSTEMS FOR CONCRETE:

A. Expansion (Wedge) Anchors:

1. Expansion anchors shall not be used except in dry areas, unless otherwise indicated on the Drawings.

2. Provide 316 stainless steel anchors; sizes as shown on the Drawings.

3. Expansion anchors shall be: ITW Trubolt Wedge Anchors, manufactured by ITW Redhead, Michigan City, IN; Hilti Kwik Bolt 3, manufactured by Hilti Corporation, Tulsa, OK; Wej-It Anchors, manufactured by Wej-It Fastening Systems, Norwalk, CT; or ENGINEER approved equal.

4. Provide ICC or other similar building code organization recommendations regarding safe allowable design loads.

B. Adhesive Anchors:

1. Adhesive anchors shall be used for anchoring metal components in damp, below grade or submerged locations and where indicated on the Drawings.

2. Adhesive anchors shall be Hilti HIT-RE 500 epoxy anchoring system with **[**316 stainless steel threaded rod, nuts and washers, as manufactured by Hilti Corporation, Tulsa, OK, or ENGINEER approved equal.

2.10 BOLTS AND FASTENERS:

A. Bolts and fasteners not permanently embedded in concrete, but located outdoors in areas subject to the weather; chemical handling areas; equipment rooms subject to drainage, leakage, and washdown; and in galleries and trenches, shall be Type 316 stainless steel as hereinbefore specified.

B. Bolts for flanges of piping, valves, and other similar connections shall be as specified in other sections or as shown on the Drawings.

2.11 FABRICATION:

A. Structural material shall be fabricated and assembled in the shop. Assembled pieces shall be taken apart for the removal of burrs and shavings produced by the reaming operation. Parts not connected in the shop shall be secured by bolts to prevent damage in shipment and handling.

B. Surfaces of joints for bolted connections shall be clean, bright metal. Fit-up of the parts shall be inspected and approved by the laboratory inspector prior to making final connection.

1. Holes for bolts shall be 1/16 inch larger than the diameter of the bolt.

2. ASTM A307 bolts transmitting shear shall be threaded to such a length that no more than one thread will be within the grip of the metal. The bolts shall be of the length that will extend through, but no more than 1/4 inch beyond the nut. Nuts shall be tightened while bolt heads are tapped with a hammer. Tightening shall progress outward from the center of the joint. Nuts shall be locked after final tightening.

3. Bolted connections using ASTM A325 bolts shall conform to the Specifications for Structural Joints using ASTM A325 or A490 bolts. Bolt threads shall be excluded from the shear planes of the contact surfaces between the connected parts and the bolts shall be tightened by the "Turn-of-Nut" method.

PART 3 - EXECUTION

3.01 INSTALLATION:

A. Fasteners shall be tightened in properly aligned holes to provide, when all fasteners in the joint are tight, at least the minimum tension required by AISC Specification for Bolted Connections. The turn-of-the-nut method shall be utilized for all high-strength bolts as defined by AISC Specification for Bolted Fasteners.

B. Anchor Bolts:

1. Anchor bolts and anchors shall be located and built into connecting work. All anchor bolts shall be accurately located and held in place with templates at the time the concrete is poured.

C. Concrete Anchors:

1. Installation shall not begin until the concrete or masonry receiving the anchors has attained its design strength. An anchor shall not be installed closer than six (6) times its diameter to either an edge of the concrete or masonry, or to another anchor, unless specifically detailed otherwise on the Drawings. Install in strict accordance with MANUFACTURER’s written instructions. Use MANUFACTURER’s recommended drills and equipment.

3.02 REUSE:

A. A490 bolts and galvanized A325 bolts shall not be reused. Other A325 bolts may be reused, if approved by the ENGINEER.

3.03 BOLTED PARTS:

A. The slope of the bolted parts in contact with the bolt head and nut shall not exceed 1:20 with respect to a plane normal to the bolt axis. Holes shall be punched and reamed, or drilled, and shall have a diameter nominally 1/16 inch in excess of the nominal bolt diameter. Over-size, short slotted and long slotted holes shall conform to the requirements of AISC Specifications for Structural Joints.

3.04 GALVANIZING:

A. The galvanizing of the bolts, nuts and washers shall conform to the requirements of ASTM A153.

END OF SECTION

SECTION 05100 STRUCTURAL STEEL

PART 1 - GENERAL

1.01 SCOPE:

A. Summary of Work: The WORK of this SECTION shall consist of furnishing all the labor, materials, and equipment necessary for installation of structural steel as shown on the Drawings and as specified herein.

B. Related Work Specified Elsewhere:

1. SECTION 01300 - Submittals
2. SECTION 05070 - Bolted Connections
3. SECTION 05060 - Welding

1.02 SHOP DRAWINGS AND ERECTION PROCEDURES:

A. Prepare and submit shop and erection plans covering all structural steel and related items. All dimensions for checking of structural steel details shall be shown on the Drawings.

B. The CONTRACTOR shall be responsible for the conformation of all steel details to the typical and special details shown on the Drawings. All details, notes and schedules appearing on the Drawings, and giving information for the fabrication and erection of the structural steel and related items shall be shown also on the erection or Shop Drawings. Drawing shall include all shop and erection details, including cuts, copes, connections and holes.

C. Prepare and submit, for information, two copies of a detailed erection procedure with the shop and erection drawings. The procedure shall include the sequence of erection with temporary staying and bracing. No copies of such procedures will be returned.

1.03 APPLICABLE STANDARDS AND PUBLICATIONS:

A. Standards or Codes: The edition of the standards of the organizations listed below in effect at the time of the advertisement for bids form a part of this specification to the extent referenced. See the various paragraphs for the specified standard. In the case of a conflict between the requirements of this SECTION and those of the listed document, the requirements of this SECTION shall prevail.

1. American Institute of Steel Construction (AISC) Publications, with Commentary
    a. Code of Standard Practice for Steel Buildings and Bridges
    b. Specification for the Design, Fabrication and Erection of Structural Steel for Buildings, with Commentary
    c. Manual of Steel Construction
2. American Society for Testing and Materials (ASTM):
    a. A36 – Standard Specifications for Carbon Structural Steel
    b. A53 – Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc Coated, Welded and Seamless
    c. A500 – Standard Specification for Cold-Formed Welded and Seamless Carbon Steel Structural Tubing in Rounds and Shapes.
    d. A501 – Standard Specification for Hot-Formed Welded and Seamless Carbon Steel Structural Tubing

e. A572 – Standard Specification for High-Strength Low-Alloy Columbium-Vanadium Structural Steel

f. A992 – Standard Specification for Structural Steel Shapes

g. E329 - Standard Specification for Agencies Engaged in Construction Inspection, Testing, or Special Inspection

3. American Welding Society (AWS)

a. D1.1 Structural Welding Code - Steel

B. Unless otherwise indicated on the Drawings or specified herein, the Specification for the Design, Fabrication, and Erection of Structural Steel for Buildings of the American Institute of Steel Construction, hereafter designated AISC, shall govern structural steel WORK.

1.04 SUBMITTALS:

A. Submittals shall be in accordance with SECTION 01300.

B. The CONTRACTOR shall submit:

1. Signed and sealed Shop Drawings

2. Mill reports

1.05 SUBSTITUTIONS OF SECTIONS: Substitutions of sections or modifications of details, or both, and the reasons therefore, shall be submitted with the Shop Drawings for approval. Approved substitutions, modifications, and changes in related portions of the WORK shall be coordinated by the CONTRACTOR and shall be accomplished at no additional cost to the ENGINEER.

1.06 RESPONSIBILITY FOR ERRORS: The CONTRACTOR shall be responsible for all errors of detailing, fabrication, and for correct fitting measurements in the field to verify or supplement dimensions shown on the Drawings and shall assume responsibility for fitting new WORK to existing WORK.

1.07 TEMPLATES: Templates shall be furnished by the Fabricator to the job, together with instructions for the setting of anchors, anchor bolts and bearing plates. The CONTRACTOR shall ascertain that the items are set during the progress of the WORK.

1.08 QUALIFICATION:

A. Fabrication Shop and Erection personnel shall have fabricated and erected projects of similar size and complexity for at least five (5) years.

B. Joint Qualification: All joints shall comply with AWS D1.1.

1.09 INSPECTION AND TESTING:

A. Inspections and tests shall be performed by an independent laboratory complying with ASTM E329, selected, directed, and paid by the ENGINEER. All material to be furnished shall be subject to inspections and tests in the shop and field.

B. Reports of shop and field inspections and testing shall be made by the laboratory on a weekly basis and submitted directly as follows: One (1) copy each to the ENGINEER, Inspector, CONTRACTOR, Fabricator and Erector.

1.10 WARRANTY: The CONTRACTOR shall warrant the WORK against defects for one (1) year from the date of Substantial Completion and as described in Article 13 of Section 00700 - General Terms and Conditions.

PART 2 - PRODUCTS

2.01 GENERAL: Materials shall be of domestic manufacture, within trade tolerances, new, undamaged and without splices. Structural material, plain or fabricated, shall be stored above the ground upon platforms, skids or supports. Material shall be kept free of dirt, grease and foreign matter and shall be protected from corrosion.

2.02 STRUCTURAL STEEL:

A. Structural steel shall comply with ASTM A36, A53 Grade B, and A500 Grade B, A501, A572 Grade 50, and A992 as applicable. Refer to the Drawings for the locations of each type of structural steel.

B. The CONTRACTOR shall furnish two (2) copies of all mill reports covering the chemical and physical properties of the steel used.

2.03 PAINT:

A. Paint for both shop or primer coat and field touch-up shall be:

1. Tnemec Company,Incorporated's 99 Green Primer
2. Sherwin-Williams Company's Ken Kromik Metal Primer
3. Pratt & Lambert Incorporated's Noxide #96 Red Primer, or
4. ENGINEER Approved Equal.

B. Paint shall be compatible with Sprayed Fireproofing Systems.

2.04 GROUT:

A. Non-shrink grout beneath base and bearing plates shall be:

1. Five Star Grout by U.S. Grout Corp.
2. Sonogrout by L. Sonneborn Inc.
3. Horn Non-Metallic Grout by A.C. Horn Inc.
4. Non-Ferrous Non-Shrink Grout by the Burke Co., or
5. ENGINEER Approved Equal

2.05 FABRICATION:

A. Structural material shall be fabricated and assembled in the shop. Assembled pieces shall be taken apart for the removal of burrs and shavings produced by the reaming operation. Parts not connected in the shop shall be secured by bolts to prevent damage in shipment and handling.

B. Connections shall be as shown on the Drawings. Connections not indicated shall be made to conform to the AISC Specifications. One-sided or other types of eccentric connections will not be permitted except where shown on the plans. Fit-up of the parts shall be inspected and approved by the laboratory inspector prior to making final connection.

1. Holes shall be cut, drilled or punched at right angles to the surface of the metal and shall not be made or enlarged by burning. Holes in base or bearing plates shall be drilled. Holes shall be clean-cut without torn or ragged edges. Outside burrs resulting from drilling or reaming operation shall be removed

C. Milled surfaces shall comply with the AISC Specifications and the Drawings.

D. Allowance shall be made for draw in all tension bracing.

PART 3 - EXECUTION

3.01 STRUCTURAL STEEL:

A. Splices and field connections shall be made as shown or noted on the Drawings. Errors in shop fabrication of deformation resulting from handling and transportation that prevent the assembly and fitting of parts shall be reported immediately to the ENGINEER for directions as to method of correction. Corrections shall be made at no additional cost to the ENGINEER.

B. Leveling plates shall not be used under base plates.

C. Column bases and bearing plates shall be attached as shown on the Drawings. Plates shall be supported and aligned on steel wedges or shims. After the supported members have been plumbed and positioned and the anchor nuts tightened, the entire bearing area under the plate shall be dry-packed solidly with non-shrink grout. Wedges and shims shall be cut off flush with edge of column base and bearing plates, and shall be left in place.

D. After assembly, the various members forming parts of a completed frame or structure shall be aligned and adjusted before being fastened. Tolerance shall conform to AISC. Fastening of splices of compression members shall be done after the abutting surfaces have been brought completely into contact. Bearing surfaces and surfaces that will be in permanent contact shall be cleaned before the members are assembled. As erection progresses, the WORK shall be fastened to take care of all dead load, wind and erection stresses. Splices will be permitted only where indicated on the Drawings. Erection bolts used in welded construction shall be tightened and left in place. Welding for redrilling will not be permitted.

E. Drift pins may be used only to bring together the several parts, and shall not be used in such manner as to distort or damage the metal.

F. The use of a gas-cutting torch in the field for correcting fabrication errors is prohibited unless the ENGINEER has specifically approved such procedures for each case individually in writing.

3.02 PAINTING:

A. All steel WORK shall be cleaned of loose mill scale, loose rust, accessible weld slag or flux deposit, dirt, and foreign matter. Solvent shall remove oil and grease deposits. No paint shall be applied when steel temperature is below the dew point of the atmosphere. Paint shall be mixed and no pigment shall remain on bottom of can.

B. After cleaning and connections are approved by the laboratory inspector, all steel WORK except that to be encased in concrete, surfaces to be fireproofed, or surfaces to be welded or bolted shall be given a shop coat of primer. The primer shall be applied at a rate to provide a minimum dry film of two (2) mils. The primer shall be applied without holidays or paint runs.

C. After erection, all field connections shall be cleaned. All connections, including welds and bolts, and all abraded surfaces on the shop primer shall be painted to give one complete coat primer. Paint for field touch-up shall be the same paint used for the shop coat.

END OF SECTION

SECTION 08110 HOLLOW METAL DOORS AND FRAMES

PART 1 - GENERAL

1.01 SCOPE:

A. Summary of Work: The CONTRACTOR shall provide steel doors, frames, and related items, complete and operable, in accordance with the Contract Documents.

B. Related Work Specified Elsewhere:

1. SECTION 01300 Submittals
2. SECTION 08700 Finish Hardware and Accessories
3. SECTION 09900 Protective Coatings

1.02 APPLICABLE STANDARDS AND PUBLICATIONS:

A. Standards or Codes: The edition of the standards of the organizations listed below, in effect, at the time of the advertisement for bids form a part of this specification to the extent referenced. See the various paragraphs for the specified standard. In case of a conflict between the requirements of this SECTION and those of the listed document, the requirements of this SECTION shall prevail.

1. American National Standards Institute (ANSI):
    a. A115 Steel Door Preparation Standards
    b. A250.4 Test Procedure and Acceptance Criteria for Physical Endurance for Steel Doors, Frames and Frame Anchors
    c. A250.7 Standard Nomenclature for Standard Steel Doors and Steel Door Frames
    d. A250.8 Specifications for Standard Steel Doors and Frames
    e. A250.10 Test Procedure and Acceptance Criteria for Prime Painted Steel Surfaces for Steel Doors and Frames
2. American Society of Civil Engineers (ASCE):
    a. 7 Minimum Design Loads for Buildings and Other Structures
3. ASTM International (American Society for Testing and Materials International):
    a. A568 Standard Specification for Steel, Sheet, Carbon, Structural, and High-Strength, Low-Alloy, Hot-Rolled and Cold-Rolled, General Requirements
    b. A924 Standard Specification for General Requirements for Steel Sheet, Metallic-Coated by the Hot-Dip Process
    c. A1008 Standard Specification for Steel, Sheet, Cold-Rolled, Carbon, Structural, High-Strength Low-Alloy, High-Strength Low-Alloy with Improved Formability, Solution Hardened, and Bake Hardenable
    d. A1011 Standard Specification for Steel, Sheet and Strip, Hot-Rolled, Carbon, Structural, High-Strength Low-Alloy, High-Strength Low-Alloy with Improved Formability, and Ultra-High Strength
4. Door and Hardware Institute (DHI):
    a. Abbreviations and Symbols
    b. Recommended Procedure for Processing Hardware Schedules and Templates

c. 141 Recommended Locations for Architectural Hardware for Standard Steel Doors and Frames

5. National Fire Protection Association (NFPA):

a. 80 Standard for Fire Doors and Other Opening Protectives

b. 101 Life Safety Code

6. Steel Door Institute (SDI):

a. 111 Recommended Details for Standard Steel Doors, Frames, Accessories and Related Components

b. 113 Standard Practice for Determining the Steady-State Thermal Transmittance of Steel Door and Frame Assemblies

c. 117 Manufacturing Tolerances for Standard Steel Doors and Frames

7. Underwriters Laboratories Inc. (UL):

a. Building Materials Directory

b. 752 Standard for Bullet-Resisting Equipment

8. Florida Building Code (FBC)

a. High VeloENGINEER Hurricane Zone Requirements and Missile Impact Criteria. Exterior doors shall be rated for large missile impact using an 80 ft/sec (Level E) veloENGINEER.

1.03 SUBMITTALS:

A. Submit as specified in SECTION 01300 - Submittals.

B. Include literature and Shop Drawings which contain the following information:

1. MANUFACTURER's specifications and details:

a. Enumerated anchorage illustrations indicating anchors for the wall condition for each type required.

b. Enumerated door and frame elevations.

2. Warranties: Statement of MANUFACTURER's standard conditional warranty.

3. Schedule all hollow metal doors and frames in the format described in SDI-111D or similar:

a. Doors and/or frames shall be entered in numerical order.

b. Format shall include headings for entry of illustrations, elevations, details, gauges, frame depths, and any remarks indicating compliance to special requirements. Where applicable, all such entries shall correspond accurately to the enumerations of the Shop Drawings.

4. MANUFACTURER's instructions and recommendations for handling and storage.

5. Calculations by a Professional Engineer licensed in the State of Florida for any proposed modification of the door, header, jambs, or sill**.**

6. Shop Drawings: Detailed, dimensioned Shop Drawings shall be submitted to the ENGINEER and approved before fabrication, shipment, or WORK specified under this SECTION begins.

a. Product Approval: For exterior doors, submit Florida Product Approval or Miami-Dade Notice of Acceptance (NOA) documentation for use in a High VeloENGINEER Hurricane Zone, meeting small and large missile impact requirements. Exterior doors shall be rated for large missile impact using an 80 ft/sec (Level E) veloENGINEER.

1.04 QUALIFICATIONS:

A. This is a performance specification. Acceptable products are those which comply with the acceptance criteria and recommended standards of the above Applicable Standards, and which satisfy the performance requirements specified in PART 2, PRODUCTS and as indicated.

B. All materials furnished shall be new and suitable for the conditions of service to which they will be subject, and equal to the best of their respective classes. Workmanship shall be of the highest quality and shall be carried out by competent and experienced workmen.

1.05 WARRANTY: The CONTRACTOR shall warrant the WORK against defects for one (1) year from the date of Substantial Completion and as described in Article 13 of SECTION 00700 - General Terms and Conditions.

PART 2 - PRODUCTS

2.01 GENERAL:

A. Doors, frames, and all related components shall conform to their respective applicable standards as specified in the above Applicable Standards and Publications.

B. Assembly Tolerances:

1. Maximum Allowable Clearances:

a. Door edge and frame rabbet surfaces, all sides: 1/8 inch (3.2 mm).

b. Push side door rim and frame stop surfaces, all sides: 1/16 inch (1.6 mm)

c. Standard undercut of doors relative to the bottoms of the matching jambs shall be 5/8 inch, or as specified by the door manufacturer. The maximum clearance is 1/8-inch (3.2 mm), measured from the door bottom to the top of threshold.

2. Manufacturing tolerances for all nominal dimensions shall be as prescribed in SDI-117.

C. Finish: Surfaces of all hollow metal items shall be cleaned, and given one (1) shop coat of inorganic zinc primer as specified in SECTION 09900. Note specific instructions pertaining to finish touch-up of shop modifications and welding procedures.

D. Hardware Preparations: Provide all hollow metal items with the necessary cutouts and reinforcements for the approved hardware. Reinforcement types, gauges and locations shall meet minimum requirements of ANSI A250.4 and the applicable DHI standards. Exact locations of mortise preparations may vary in accordance with MANUFACTURER's regular procedure. Conform to specific location requirements as indicated. Reinforcements concealed in frames and doors for surface-applied hardware such as rim exit devices, closers, surface-bolts, and coordinators shall be of the standard recommended types; suspected omissions or deviations may subject materials to destructive inspection.

E. Fire Rating and Labeling: Doors and frames indicated as fire-rated shall bear a UL label indicating the type of rating for which certified.

F. The nominal design pressure rating specified in the Florida Product Approval or Miami-Dade NOA shall meet or exceed the nominal design pressure shown on the Drawings for the applicable pressure zones.

2.02 FRAMES:

A. Provide frames for doors as indicated. All parts, reinforcements, and components shall be made of steel, unless otherwise indicated.

B. Provide standard 16-gauge (minimum), one-piece double rabbet with 2-inch jamb and 2-inch head, 1/2-inch returns, and 5/8-inch stops, and depth as shown on the Drawings.

C. Provide frames set-up, tabs welded (full backweld acceptable), face joints continuously surface welded, faces ground smooth and spot primed. Where welded material is galvanized, spot coat welded areas with zinc-rich coating (cold galvanize) before priming. Tack weld and filler at face welds is not an acceptable procedure. Provide temporary spreader bars welded or screwed between feet, forming square units.

D. Provide door silencers as required for all door openings utilizing hollow metal frames supplied under this SECTION. Silencers and frame preparations shall be punch type.

E. Anchors:

1. Provide all frames equipped for appropriate opening anchorage.

2. Provide frames with MANUFACTURER's standard anchors of types suited to the wall construction and label condition, welded in place where applicable. Anchor types fulfilling the required function and satisfying labeling requirements with respect to the individual listings of the frames are acceptable.

3. Frames shall be attached as specified in the approved submitted documentation. Anchors shall be spaced in a manner corresponding as closely as practicable to the elevations of the hinge locations, but in no case at variance with listing procedure requirements where applicable.

4. Mortar Guards: Where frames are to be grouted full in installation, provide jambs with hardware mortise preparation covers to prevent mortar from occluding the mortises.

5. Masonry anchors shall be galvanized.

6. Frames shall be cast in place with building where applicable.

F. All finished WORK shall be strong and rigid, neat in appearance, square, true and free of defects, warp or buckle.

2.03 DOORS:

A. Provide 1-3/4-inch thick heavy-duty, Grade 14gauge hollow, metal, insulated steel doors in the size indicated.

B. Doors shall have seamless face sheets with continuously and fully welded seam edges.

C. Core Construction: Structural specifications for each type given in ANSI 250.8 shall be taken as minimum acceptable for the type. Core construction shall be such as to afford a nominal apparent U-factor insulation rating for the door of not more than 0.6, where insulated doors are specified. Internal vertical stiffener type construction, face sheets welded, shall be used where required by MANUFACTURER's recommendations or listings. Fire rated doors shall be solid or fiber mineral core doors as required to meet code and Reference Standard requirements.

D. Doors shall have flush closed tops. Invert channel top doors may be closed by galvanized steel caps, screws tack-welded, and seams completely filled and ground smooth so as to be continuously joined. All exposed surfaces of the modification shall be thoroughly shop primed. Vinyl top caps are not acceptable.

PART 3 - EXECUTION

3.01 DELIVERY AND STORAGE:

A. Conform to MANUFACTURER's printed instructions for handling and storage of materials.

3.02 INSTALLATION:

A. Set frames accurately in position, plumb, square, and true, and securely braced in conformance with ANSI A250.11.

B. For concrete wall erection, back coat frames with fibered emulsion asphaltic coating immediately prior to casting frames into building.

C. Install anchors checking frame positioning and alignment. Space loose anchors in a manner corresponding as closely as practicable to the elevations of the hinge locations.

D. After completion of wall construction, remove temporary braces and spreader bars, leaving surfaces smooth and undamaged.

3.03 ADJUSTMENTS AND CLEANING:

A. Remove dirt and excess sealants, lubricants, and glazing compounds from exposed surfaces.

B. Touch-up marred or abraded surfaces with same type coating and to match original coating.

C. Putty repair of dents is not acceptable.

D. Protect completed installation. Damaged WORK will be rejected and shall be replaced.

END OF SECTION

SECTION 08700 FINISH HARDWARE AND ACCESSORIES

PART 1 - GENERAL

1.01 SCOPE:

A. Summary of Work: The WORK of this SECTION shall consist of furnishing all labor, materials, and equipment necessary for the installation of finish hardware as shown on the Drawings and specified herein.

B. Related Work Specified Elsewhere:

1. SECTION 01300 Submittals
2. SECTION 05550 Fabricated Metals and Casting
3. SECTION 08110 Hollow Metal Doors and Frames
4. SECTION 13120 Precast Concrete Buildings

1.02 APPLICABLE STANDARDS AND PUBLICATIONS:

A. Standards or Codes: The edition of the publications of the organizations listed below in effect at the time of the advertisement for bids form a part of this specification to the extent referenced. In the case of a conflict between the requirements of this SECTION and those of the listed document, the requirements of this SECTION shall prevail.

1. American National Standards Institute (ANSI)/Builders Hardware Manufacturers Association (BHMA):
    a. A156.1 Butts and Hinges
    b. A156.2 Bored and Preassembled Locks and Latches
    c. A156.3 Exit Devices
    d. A156.4 Door Controls-Closers
    e. A156.5 Cylinders and Input Devices for Locks
    f. A156.6 Architectural Door Trim
    g. A156.13 Mortise Locks
    h. A156.23 Electromagnetic Locks
2. National Fire Protection Association (NFPA):
    a. 80 Standard for Fire Doors and Oher Opening Protectives
3. Underwriters Laboratories Inc. (UL)
4. Americans with Disabilities Act (ADA)

1.03 SUBMITTALS:

A. Submit as specified in SECTION 01300.

B. Submittal must be made concurrently with submittal for 08110 Hollow Metal Doors. Submittal must specifically note which hardware is associated with each specific door. Submittals without this will not be reviewed.

C. Hardware Schedule: Before ordering hardware, prepare and submit for review hardware schedule covering all items required for the entire job. Schedule to identify MANUFACTURER of each item

and shall give the type number and finish symbols. Acceptance of hardware schedule shall not relieve the CONTRACTOR from furnishing all necessary hardware.

D. Product Data and Catalog Cuts: Submit catalog cuts or properly identified catalogs for review on each different item of hardware.

E. Templates: Furnish suitable templates, together with finish hardware schedules to CONTRACTOR, for distribution to necessary trades.

F. Furnish three sets of operating and maintenance manuals for all hardware furnished under this SECTION.

G. Upon completion of Project submit written warranty from MANUFACTURERs certifying that all materials will be free from defects for a period of one (1) year from final acceptance of this Project.

H. Samples: Submit samples as requested of any items of hardware for final review.

I. Submit keying schedule as directed by the ENGINEER.

1.04 DELIVERY, STORAGE AND HANDLING:

A. Properly package and mark items according to accepted hardware schedule, complete with necessary screws and accessories, instructions and installation templates for spotting mortising tools. The CONTRACTOR shall check deliveries against the accepted list and provide receipt for them, after which he is responsible for storage and care. Any shortage or damaged goods shall be made good without cost to the ENGINEER.

B. Store in dry protected space on dunnage until installed.

C. No hardware shall be installed until operations causing dampness have been completed.

D. No keys, other than Construction keys and/or temporary keys are to be packed in boxes with locks.

E. At final completion, hardware shall be left clean and free from disfigurement and paint to the satisfaction of the ENGINEER.

F. At completion of the Project check job to determine proper application of hardware according to accepted schedule.

1.05 COORDINATION: Coordinate all requirements of the Contract Documents for items that affect the WORK of this SECTION with related trades. Furnish hardware supplier copies of reviewed Shop Drawings for WORK of other trades requiring lock cylinders and hardware preparation.

1.06 WARRANTY: The CONTRACTOR shall warrant the WORK against defects for one (1) year from the date of Substantial Completion and as described in Article 13 of Section 00700, General Terms and Conditions.

PART 2 - PRODUCTS

2.01 GENERAL REQUIREMENTS:

A. The finish hardware supplier shall verify the suitability and adaptability of all items specified in relation to all details and surrounding conditions. The ENGINEER's attention shall be directed to any item that is not shown and to any typographical or other error so that corrections may be made before the hardware schedule is written for submission.

B. Like items of materials provided hereunder shall be the end products of one MANUFACTURER in order to achieve standardization for appearance, maintenance, and replacement.

C. Furnish permanent lock cylinders and keys directly to the ENGINEER.

D. Items not specifically listed, but incidental to, or required for completion of the Project shall be provided and shall conform in class, quality and type as required for the intended use or as specified in like and similar location. Provide all fastenings and all necessary items scheduled and/or required to complete the Project.

E. All hardware furnished in connection with doors bearing Underwriters' Labels or where necessary to meet special requirements shall be in strict accordance with conditions established by the authority having jurisdiction and shall be subject to approval of that authority.

F. Hand of lock shall be as shown. If door hand is changed during construction, the CONTRACTOR shall make necessary changes at no extra cost to the ENGINEER.

G. Exit doors shall be operable at all times from the inside without the use of key or any special knowledge or effort. The lockset shall not have an interior push button to lock from within.

H. Finishes: To the extent possible, a satin chrome (US26D) or satin stainless steel (US32D) finish shall be used. Other finishes shall match the above in color and texture.

2.02 LOCKSETS:

A. High Security Mortise Locks shall comply with ANSI/BHMA A156.13, Series 1000, Grade 1 specifications.

B. Cylindrical locks and latches shall comply with ANSI/BHMA A156.2, Series 4000, Grade 1 specifications.

C. Locks for fire rated doors shall comply with UL and NFPA 80 requirements.

D. Finish: US 32 satin

E. All locksets shall not have an interior push button to lock from within.

2.03 KEYING:

A. Provide key system as follows:

1. Review the keying system with the ENGINEER and provide the type required (master, grandmaster or great grand master), either new or integrated with the ENGINEER's existing system.

B. All locks, locksets and cylinders shall be registered and keyed at the factory.

C. The CONTRACTOR shall equip all locks with MANUFACTURER's cylinders for interchangeable-core pin tumbler inserts. Furnish only temporary inserts for the construction period and remove these before Substantial Completion. Construction control keys and cores shall not be part of the ENGINEER's permanent keying system. Permanent cores and keys shall be furnished to the ENGINEER prior to Substantial Completion.

D. Visual Key Control shall apply, and all keys shall be furnished with plain bows stamped with keying or keyed alike symbols as per the accepted Keying Schedule.

E. The CONTRACTOR shall stamp the reverse side of all keybows "Do Not Duplicate."

F. The CONTRACTOR shall provide MANUFACTURER's standard restrictive keyways as required.

G. Key Quantity: Provide three (3) keys for each lock. Master and grandmaster locks shall have five (5) keys provided.

H. All keying (except when matching existing keying system or when less than ten (10) locksets are required) shall be done at the factory unless otherwise approved by the ENGINEER.

I. A keying schedule shall be worked out between the ENGINEER, the CONTRACTOR, and the hardware supplier. The CONTRACTOR shall have the hardware supplier submit a keying schedule for approval prior to placing an order for the locks and keying of cylinders.

2.04 HINGES:

A. Hinges shall comply with ANSI/BHMA A156.1 and shall be stainless steel construction.

B. Hinges shall incorporate a security stud to prevent removal of the door in the closed position if the hinge pins are removed.

C. Except as otherwise required to comply with UL and NFPA, provide hinges as follows:

1. Doors up to three (3) feet wide to have size 4-1/2 x 4-1/2

2. Doors over to three (3) feet wide to have size 5 x 4-1/2

D. Number of Hinges:

1. Doors up to seven (7) feet two (2) inches high to have 1-1/2 pair

2. Add an additional hinge for each 2-1/2 feet, or fractions thereof, of additional door height.

E. Hinge Pin Type and Security Screws:

1. All hinges shall have stainless steel, non-removable pins with flush tips.

2. Ball-bearing hinges shall be furnished on all doors having door closers and/or exit devices.

3. Install hinges using spanner head or equivalent security-type screws.

2.05 DOOR CLOSERS:

A. Provide parallel arm or top jamb-mounted door closers, sized per MANUFACTURER's recommendations. Installed with thru-bolts where applicable using security fastener. Finish shall match other door hardware.

B. Closers shall comply with ANSI/BHMA A156.4 specifications.

2.06 DOOR HOLDER:

A. Provide surface-mounted, extra heavy-duty overhead holder, allowing 110-degree door opening, with hold-open feature for all doors unless otherwise indicated on the Drawings. Doors with closers shall include this feature with the closer function. Mounting screws shall be spanner head or security hex socket type. Finish shall match other door hardware.

B. Floor and wall mounted door stops and hold-open devices shall be provided with machine screws and anchors at concrete and masonry conditions; toggle bolts at plaster, gypsum board and wood conditions. Finish shall match other door hardware.

2.07 PLATES AND PULLS:

A. Provide plates, pulls and push bars in compliance with ANSI/BHMA 156.6 specifications.

1. Kick Plate: Ten (10) inches by two (2) inches less than door width US32D finish, 0.062 gauge beveled three (3) edges

2. Pull Plate: Four (4) inches by sixteen (16) inches with US32D finish

3. Push Plate: Four (4) inches by sixteen (16) inches with US32D finish

4. Door Pull: 3/4-inch diameter by 6-3/4 inches with US32D finish

2.08 EXIT DEVICES: Provide rim-type or vertical rod-type exit devices in compliance with ANSI/BHMA A156.3 where indicated on the Drawings.

2.09 ASTRAGALS: The CONTRACTOR shall provide stainless steel astragals at each pair of doors. Fasten astragal to active door leaf with security screws.

2.10 COORDINATORS: The CONTRACTOR shall provide a coordinator for pairs of doors to prevent the active door from closing ahead of the inactive door.

2.11 FLUSH BOLTS: Provide manual flush bolts for the inactive door of double door pairs, top and bottom, with length of rod as required by door height.

2.12 THRESHOLDS:

A. The CONTRACTOR shall provide aluminum thresholds having a fluted surface pattern with a maximum of 1/2-inch rise at all exterior and interior doors.

B. Thresholds shall be five (5) inches wide with countersunk stainless steel screws and expansion shields.

C. Threshold shall comply with ADA requirements, where applicable.

2.13 SILENCERS: All doors shall be provided with silencers, three (3) per strike jamb on single doors and two (2) per head for each pair of doors.

2.14 WEATHERSTRIPPING:

A. Provide weatherstripping at head and jambs of all exterior doors.

PART 3 - EXECUTION

3.01 INSTALLATION:

A. Finish hardware as scheduled shall be furnished by finish hardware supplier and installed by the CONTRACTOR in accordance with the MANUFACTURER's installation recommendations.

B. The CONTRACTOR shall adjust closer backcheck and closing speeds for smooth and proper operation.

3.02 FINISHED INSTALLATION: At final completion, leave hardware clean and free from disfigurement and in proper working order.

END OF SECTION

SECTION 09900 PROTECTIVE COATINGS

PART 1 - GENERAL

1.01 SCOPE:

A. Summary of Work: The CONTRACTOR shall provide coating on exterior and interior surfaces throughout the Project and which are listed in PART 2, with systems specified on "coating system" sheets at the end of this SECTION.

B. Regulatory Requirements: In addition to requirements specified elsewhere for environmental protection, provide coating materials that conform to the restrictions of the local and regional jurisdiction. Notify the ENGINEER of any coating specified herein that fails to conform to the requirements for the location of the Project or location of application.

1. Lead Content: Use only coatings that are totally lead free.
2. Chromate Content: Use only coatings that do not contain zinc-chromate or strontium chromate.
3. Asbestos Content: Materials shall not contain asbestos.
4. Mercury Content: Materials shall not contain mercury or mercury compounds.
5. The specified maximum volatile organic compounds (VOC) content shall apply to the unthinned product except where indicated otherwise.

C. Related Work Specified Elsewhere:

1. SECTION 01300 Submittals
2. Division 3 Concrete
3. Division 5 Metals

1.02 APPLICABLE STANDARDS AND PUBLICATIONS:

A. Standards or Codes: The edition of the publications of the organizations listed below in effect at the time of the advertisement for bids form a part of this specification to the extent referenced. See the various paragraphs for the specified standard. In the case of a conflict between the requirements of this SECTION and those of the listed document, the requirements of this SECTION shall prevail.

1. American National Standards Institute (ANSI):
   a. A13.1 - Scheme for the Identification of Piping Systems
   b. Z535.1 - Safety Colors
2. ASTM International (American Society for Testing and Materials International):
   a. C267 - Standard Test Methods for Chemical Resistance of Mortars, Grouts, and Monolithic Surfacings and Polymer Concretes
   b. D3960 - Standard Practice for Determining Volatile Organic Compound (VOC) Content of Paints and Related Coatings
   c. D4258 - Standard Practice for Surface Cleaning Concrete for Coating
   d. D4259 - Standard Practice for Abrading Concrete
   e. D4260 - Standard Practice for Liquid and Gelled Acid Etching Concrete
   f. D4261 - Standard Practice for Surface Cleaning Concrete Masonry Units for Coating
   g. D5201 - Standard Practice for Calculating Formulation Physical Constants of Paints and Coatings
   h. E84 - Standard Test Method for Surface Burning Characteristics of Building Materials
3. Society for Protective Coatings (SSPC) Coatings and Surface Preparation Specifications:
   a. Paint 20 - Zinc-Rich Coating (Type I, Inorganic and Type II, Organic)
   b. SP 1 - Solvent Cleaning: Removes oil, grease, soil, drawing and cutting compounds, and other soluble contaminants.

c. SP 2 - Hand Tool Cleaning: Removes loose mill scale, loose rust, loose paint and other loose foreign matter.

d. SP 3 - Power Tool Cleaning: Removes loose material. Not intended to remove all scale or rust.

e. SP 5 - White Metal Blast Cleaning: Removes all mill scale, rust, corrosion and other soluble contaminants. Leaves surface gray-white uniform metallic color with no visible residuals.

f. SP 6 - Commercial Blast Cleaning: Two-thirds of each square inch free of all visible residues; remainder only light discoloration.

g. SP 7 - Brush-Off Blast Cleaning: Removes only loose material, remaining surface tight and abraded to give anchor pattern.

h. SP 10 - Near-White Wet Blast: Removes all mill scale, rust, corrosion, and other soluble contaminants. At least 95% of each square inch shall be free of all visible residues.

i. SP 11 - Bare Metal Power Tool Cleaning

j. SP 13 - Surface Preparation of Concrete

k. SP 15 - Commercial Grace Power Tool Cleaning. Similar results to SSPC-SP6

4. International Concrete Repair Institute (ICRI)

a. Guideline #03732 - Surface preparation should comply with ICRI technical guideline number 03732 (selecting and specifying concrete surface preparation for sealers, coatings and polymer overlays)

b. Concrete Surface Preparation - Concrete Surface Preparation Comparator Chips 1-10.

5. United States Army Corps of Engineers (USACE)

a. CRD-C 48 - Standard Test Method for Water Permeability of Concrete

b. CRD-C 163 - Test Method for Water Permeability of Concrete Using Triaxial Cell

1.03 DEFINITIONS:

A. Coating systems include surface preparation, prime coat (first coat), finish coats (second and third coats), inspection, cleaning, and touch-up of surfaces and equipment. Shop preparation, prime coat, and finish coats to be shop-applied may be specified elsewhere or referenced to this SECTION so that a complete system is specified and coordinated.

1. Where surface preparation and first (prime) coat are specified in other SECTIONs to be shop-applied, such as for structural steel, hollow metal doors or equipment, only the touch-up and finish coats are a part of field painting. Surface preparation is the required degree of preparation as instructed by coating MANUFACTURER prior to application of first (prime) coat regardless if done in shop or field.

2. If materials are provided without shop primer such as miscellaneous steel or sheet metal, then surface preparation, first, second, and third coats are a part of field painting.

3. Concealed surfaces are generally not required to have finish-coats unless otherwise specified, but prime coat should be applied and touched up prior to concealment.

4. Where equipment and materials are provided with shop-applied finished coating system, only touch-up is a part of field painting.

5. Refer to applicable SECTIONs to determine whether surface preparation and first coat, or complete coating system, is to be shop-applied.

6. The term "DFT" means minimum dry film thickness, with no tolerance for thinner films.

1.04 SUBMITTALS:

A. Submit as specified in SECTION 01300 - Submittals.

B. Submittals include, but are not limited to, the following:

1. Schedule of products and paint systems to be used. Schedule shall include the following information:
    a. Surfaces for system to be applied
    b. Surface preparation method and degree of cleanliness
    c. Product MANUFACTURER, name, and number
    d. Method of application
    e. Dry film thickness per coat of coating to be applied
2. Applicator's Certification required under 1.05A
3. Applicator's plan for material coating for field cleaning and coating of non-removable features.
4. Product information
    a. MANUFACTURER's data sheet for each product proposed
    b. Technical and performance information that demonstrates compliance with the system performance and material requirements
    c. MANUFACTURER's instructions on surface preparation and application
    d. Compatibility of shop and field applied coatings (where applicable)
    e. Safety Data Sheet (SDS) filled out completely according to the Florida Right-to-Know Law, Chapter 442, Florida Statutes, clearly identifying each product used.
5. Certification signed by coating MANUFACTURERs stating that each coating is suitable for service intended as stated on each coating system sheet, and that the materials to be installed comply in all respects with the requirements of this SECTION.
6. The CONTRACTOR shall certify in writing to the ENGINEER that staff working as applicators have previously applied all the systems in this SECTION and have the ability and equipment to prepare the surfaces and apply the coatings as instructed by the coating MANUFACTURER.
7. Samples
    a. Painted Wood: Eight (8) inch square samples for each color and material on hardboard.
    b. Sample of each paint, finish, and other coating material on 8-1/2 inch by 11 inch sheet metal. Each sheet shall be completely coated over its entire surface with one coating material, type, or color.
    c. Two (2) sets of color samples that match each color selected by the ENGINEER from the MANUFACTURER's color charts. The color designation shall be shown on the back of the color sample.
    d. Two (2) 2 foot by 2 foot concrete panels shall be constructed at the Site in an area designated by the ENGINEER. On one panel, the CONTRACTOR shall apply the coating system required for water-retaining concrete interior surfaces and the system for concrete exterior surfaces on the other panel. The CONTRACTOR shall not begin coating the structure surfaces until the ENGINEER has accepted both panels. If the ENGINEER does not approve either panel, at its own expense the CONTRACTOR shall erect another, coat it, and request ENGINEER approval.

1.05 QUALITY ASSURANCE:

A. Applicator Qualifications:
1. Coating WORK shall be performed by an SSPC certified CONTRACTOR having a minimum of Category QP 1 certification for WORK without hazardous paint removal, and Category QP 2 certification for WORK involving hazardous paint removal. The certified CONTRACTOR shall maintain in effect all required certifications for the duration of the Project. Any request for Project delay due to an expired certification will not be considered.
2. The applicator shall be certified in application of specified products and systems on projects of similar size and scope, as demonstrated by previous successful installations, and shall be

approved by the MANUFACTURER in writing. Certification shall be provided to the ENGINEER prior to contract award.

3. Successful completion of a minimum of five (5) major pump stations projects of similar size and complexity to specified WORK.

B. Manufacturer:

1. Provide products of MANUFACTURER with no less than ten years of experience in manufacturing the materials for the required WORK.

1.06 INSPECTION COORDINATION:

A. Pre-painting Conference shall be held by the CONTRACTOR:

1. Before field painting starts, representatives for the ENGINEER, CONTRACTOR, coating applicator, and coating MANUFACTURER's technical representative shall meet with the ENGINEER's personnel.

2. Agenda for the meeting will include details of surface preparations and coating systems to ensure understanding and agreement by all parties for compliance.

B. In the event a problem occurs with coating system, surface preparation, or application, coating applicator and coating MANUFACTURER’s technical representative shall promptly investigate the problem and submit results to the ENGINEER.

C. Whenever water tightness in a water-retaining structure is dependent upon WORK in other sections, the CONTRACTOR shall assume full responsibility for water tightness of the integrated assembly. Prior to starting WORK, CONTRACTOR shall meet with installers involved and with MANUFACTURERs of all materials involved to review Drawings and Specifications to ensure that materials are being used properly and details are correct. A written report of this meeting shall be submitted to the ENGINEER. The report shall contain at least:

1. Meeting date and names and affiliations of those present and written statements from each installer and MANUFACTURER of their acceptance of Drawings, Specifications and conditions, and of proposed use of their materials as proper for purposes shown.

1.07 WARRANTY:

A. The MANUFACTURER shall warrant the EQUIPMENT, MATERIALS, and PRODUCTS specified in this SECTION against defective materials and workmanship with the MANUFACTURER’s extended warranty, for no less than five (5) years. The extended warranty period will start after the CONTRACTOR’s one (1) year warranty expires; and as described in Article 13 of SECTION 00700 - General Terms and Conditions. The MANUFACTURER shall provide a special MANUFACTURER’s extended warranty for the stipulated period, or a Warranty Bond, to extend the MANUFACTURER’s warranty period for the stipulated period.

B. The CONTRACTOR shall warrant the WORK against defects for one (1) year from the date of Substantial Completion and as described in Article 13 of SECTION 00700 - General Terms and Conditions.

PART 2 - PRODUCTS

2.01 ACCEPTABLE MANUFACTURER:

A. Proprietary names and product numbers are specified in most systems for material identification from these MANUFACTURERs.

1. PPG (Pittsburg Plate Glass Co.)
2. Carboline Company, Inc.
3. BASF Building Systems
4. ICI Devoe Coating Company
5. The Euclid Chemical Company
6. Tnemec Company, Inc.

7. Xypex Chemical, Ltd.
8. Kryton International
9. Sika Corporation
10. Wasser Corporation
11. Polyval Coatings, Inc.
12. Benjamin Moore & Company
13. Sherwin-Williams
14. International Fire Resistant Systems, Inc.
15. Penetron
16. Belzona Inc.
17. Alocit & Enviropeel USA.
18. Insl-x

2.02 GENERAL:

A. CONTRACTOR shall confirm all materials furnished for each coating system must be compatible with the substrate.

B. Single Manufacturer: All materials in each coating system shall be by the same coating MANUFACTURER to assure compatibility of coatings.

C. Compatibility: When shop-painted surfaces are to be field coated, the CONTRACTOR shall ascertain whether finish materials will be compatible with shop coating. Coatings of uncertain composition shall be removed completely before applying new coatings.

D. Colors:

1. Color of finish coatings shall match accepted color samples.
2. When second and finish coats of a system are of same type, CONTRACTOR shall tint or use an easy distinguishable alternate color on second coat to enable visual coverage inspection of the third coat. When first and second coats only are specified and are of same or different types, tint or use an easy distinguishable alternate color on first coat to enable visual coverage inspection of the second coat.

E. Include on label of material containers:

1. MANUFACTURER's name, product name, and number
2. Type of paint and generic name
3. Color name and number
4. Storage and temperature limits
5. Mixing and application instructions, including requirements for precautions which must be taken
6. Drying, recoat, or curing time

2.03 COATING SYSTEMS: Specified on the "Coating System" sheets at the end of this SECTION.

2.04 SURFACES TO BE COATED:

A. All surfaces extending one (1) foot above the maximum design or historical surface water level, whichever is higher and those that are submerged in fresh water or brackish water shall be provided with the following additional protective measures:

1. For all refurbishment/replacement projects or for new, replacement or refurbishment projects use Crystalline Capillary Waterproofing (CCW) as admixture in accordance with SECTIONS 03050 - Concrete Admixture Waterproofing and 03300 - Cast-in-Place Concrete. Coating System C-3 is not in place of CCW admixture.
2. It is not intended to construct with admixture and then coat. The Coating System C-3 shall be used for precast concrete and existing concrete that are or will be installed underwater and one (1) feet above the maximum design or historical surface water elevation, whichever is greater

[Designer shall also specify splash zone(s) or spray zone(s) that are higher (e.g. underside of decks, etc.)].

Generic Description	Specific Surfaces	System
Steel, mild exposure, non-immersion, Interior	1. Hollow metal doors and frames 2. Miscellaneous steel	S-1
Steel, severe exposure, non-immersion, exterior or interior, where only marginal cleaning can be performed	1. Miscellaneous exposed steel surfaces 2. Structural steel	S-2
Steel equipment, prime coated, severe exposure, non-immersion, interior and exterior	1. Carbon steel in fabricated equipment for gate hoists and machinery	S-3
Steel and non-ferrous metal, severe exposure, buried and immersed, interior of tank, and piping and equipment immersed in tank or basin	1. Roller gates and associated steel 2. Steel Sheet Piling, Walls	S-4
Steel, surface temperatures between 350 and 1000 degrees F continuous	1. Exhaust piping and silencer	S-5
Steel tank exterior, severe UV exposure	1. Steel Tanks	S-6
Steel, severe Exposure, Non-Immersion. Exterior or Interior. DTM Acrylic. Safety Yellow.	1. Bollards, guard posts 2. Natural gas lines, diesel fuel lines 3. Crane Bridge	S-7
Concrete and concrete masonry units (CMU), mild exposure, non-immersion, interior and exterior	1. Precast Concrete Control Structure 2. Concrete Masonry Unit Structure	C-1
Concrete and concrete masonry units, severe exposure, non-immersion, interior	1. Miscellaneous concrete walls (eg: chemical storage rooms)	C-2
Existing water-retaining concrete structures, below water level; protection against acid producing bacteria and other elements	1. Channel walls 2. Intake & Discharge Bays 3. Precast Concrete	C-3
Water-retaining concrete structures (waterproofing) , non-immersion	1. Water Control Structures 2. Pump Stations	C-4
Gypsum board, mild exposure, interior	1. Interior walls	W-1
Exterior wood	1. Sign post	W-2
Plywood	1. Plywood back boards (IT Shelter)	W-3
Aluminum in contact with concrete or any other metal except galvanized steel	1. Conduits, pipes, and plates	A-1

2.05 SURFACES NOT TO BE COATED:

A. Factory finished equipment, except for touch-up or noted otherwise

B. Metal surfaces of stainless steel, bronze, aluminum, and fiberglass

C. Concrete, unless listed on specific surfaces above

D. Machined surfaces

E. Grease fittings

F. Glass

G. Equipment nameplates

H. Platform gratings, stair treads, door thresholds, and other walking surfaces unless listed on specific surfaces above

I. Concrete Floors unless listed above

PART 3 - EXECUTION

3.01 DELIVERY, STORAGE, AND HANDLING:

A. Manufacturer Recommendations: Unless this specification requires otherwise, CONTRACTOR shall strictly follow the MANUFACTURER's printed recommendations and instructions for storing and handling coating system materials.

B. Delivery of Materials:

1. Deliver in sealed containers with labels and information legible and intact. Containers shall also have correct labels with required information.
2. CONTRACTOR shall allow sufficient time for testing, if required.

C. Storage of Materials: CONTRACTOR shall store under conditions recommended by the Safety Data Sheets:

1. All protective coating materials shall be used within the MANUFACTURER's recommended shelf life.
2. Store only acceptable materials on Project Site.
3. Store tightly sealed materials off ground and away from moisture, direct sunlight, extreme heat, and freezing temperatures. Provide separate area and suitable containers for storage of coatings and related coating equipment.
4. Dispose of used or leftover containers, thinners, rags, brushes, and rollers in accordance with applicable regulations.

3.02 PREPARATION FOR COATING:

A. General: All surfaces to receive protective coatings shall be clean prior to application of coatings. The CONTRACTOR shall examine all surfaces to be coated, and shall correct all surface defects before application of any coating material. All marred or abraded spots on shop-primed and on factory-finished surfaces shall receive touch-up restoration prior to any coating application. Surfaces to be coated shall be dry and free of visible dust.

B. Protection of surfaces not to be coated: Surfaces that are not to receive protective coatings shall be protected during surface preparation, cleaning, and coating operations.

C. Hardware, lighting fixtures, switch plates, machined surfaces, couplings, shafts, bearings, nameplates on machinery, and other surfaces not to be painted shall be removed, masked, or otherwise protected. Drop cloths shall be provided to prevent coating materials from falling on or marring adjacent surfaces. The working parts of mechanical and electrical equipment shall be protected from damage during surface preparation and coating operations. Openings in motors shall be masked to prevent entry of coating or other materials.

D. Care shall be exercised not to damage adjacent work during blast cleaning operations. Spray painting shall be conducted under carefully controlled conditions. The CONTRACTOR shall be fully responsible for and shall promptly repair any and all damage to adjacent work or adjoining property occurring from blast cleaning or coating operations.

E. Protection of painted surfaces: Cleaning and coating shall be coordinated so that dust and other contaminants from the cleaning process will not fall on wet, newly coated surfaces.

3.03 SURFACE PREPARATION:

A. General

1. Prepare surfaces for each coating system conforming to SSPC or ASTM surface preparation specifications listed.
    a. If grease or oils are present, SSPC-SP1 must precede any other method specified.
    b. Remove surface irregularities such as weld spatter, burrs, or sharp edges, prior to specified surface preparation.
2. Depth of profile shall be as specified for each system, but in no instance shall it exceed one-third of the total dry-film thickness of complete system.
3. Prepare only those areas which will receive the first coat of the system on the same day.

B. Metals

1. The minimum abrasive blasting surface preparation shall be as indicated in the coating system sheets included at the end of this SECTION. Where there is a conflict between these specifications and the coating MANUFACTURER's printed recommendations for the intended service, the higher degree of cleaning shall apply.
2. All sharp edges shall be rounded or chamfered, and all burrs, surface defects, and weld splatter shall be ground smooth prior to blast cleaning.
3. The type and size of abrasive shall be selected to produce a surface profile that meets the system sheet requirements for the particular coating and service conditions. Abrasives for submerged and severe service coating systems shall be clean, hard, sharp cutting crushed slag. Automated blasting systems shall not be used for surfaces that will be in submerged service. Metal shot or grit shall not be used for surfaces that will be in submerged service, even if subsequent abrasive blasting is planned to be one with hard, sharp cutting crushed slag.
4. Abrasive shall not be reused unless an automated blasting system is used for surfaces that will be in non-submerged service. For automated blasting systems, clean oil-free abrasives shall be maintained. The abrasive mix shall include at least 50 percent grit.
5. The CONTRACTOR shall comply with the applicable federal, state, and local air pollution control regulations for blast cleaning.
6. Compressed air for air blast cleaning shall be supplied at adequate pressure from well maintained compressors equipped with oil and moisture separators that remove at least 95 percent of the contaminants.
7. Surfaces shall be cleaned of all dust and residual particles of the cleaning operation by dry air blast cleaning, vacuuming, or another method prior to painting.
8. Enclosed areas and other areas where dust settling is a problem shall be vacuum cleaned and wiped with a tack cloth.
9. Damaged or defective coating shall be removed by the blast cleaning to meet the clean surface requirements before recoating.
10. If the required abrasive blast cleaning will damage adjacent work, the area to be cleaned is less than 100 square feet, and the coated surface will not be submerged in service, then SSPC SP2 or SSPC SP3 may be used. Refer to SSPC SP11 for submerged surfaces.
11. Shop applied coatings of unknown composition shall be completely removed before the indicated coatings are applied. Valves, castings, ductile iron pipe, and fabricated pipe or equipment shall be examined for the presence of shop-applied temporary coatings. Temporary coatings shall be completely removed by solvent cleaning per SSPC SP1 before the abrasive blast cleaning work is started.
12. Shop primed equipment shall be solvent cleaned in the field before finish coats are applied.

C. Concrete and Concrete Masonry Units

1. Surface preparation shall not begin until at least 30 days after the concrete or masonry has been placed.
2. All oil, grease, and form release and curing compounds shall be removed by detergent cleaning per SSPC SP1 before abrasive blast cleaning.
3. Concrete, concrete block masonry surfaces and deteriorated concrete surfaces to be coated shall be abrasive blast cleaned to remove existing coatings, laitance, deteriorated concrete, and to roughen the surface equivalent to the surface of the No. 80 grit flint sandpaper, if required by the coating application instructions.
4. If acid etching is required by the coating application instructions, the treatment shall be made after abrasive blasting. After etching, CONTRACTOR shall rinse surfaces with water and test the pH. The pH shall be between neutral and eight (8).
5. Surfaces shall be clean and as recommended by the coating MANUFACTURER before coating is started.
6. Unless required for proper adhesion, surfaces shall be dry prior to coating. The presence of moisture shall be determined with a moisture detection device such as Delmhorst Model DB, or equal.

3.04 APPLICATION:

A. CONTRACTOR shall apply coatings in compliance with coating MANUFACTURER's procedural guide. Materials shall be thoroughly stirred, strained, and kept at uniform consistency during application. Coatings from different MANUFACTURERs shall not be mixed together.

B. Use MANUFACTURER's specified properly designed brushes, rollers, and spray equipment for all applications.

C. On unprimed surfaces apply first coat of the system the same day as surface preparation, or before the specified degree of cleanliness has deteriorated.

D. Cleaned surfaces and all coats shall be inspected prior to each succeeding coat. The CONTRACTOR shall schedule such inspection with the ENGINEER in advance.

E. Blast cleaned ferrous metal surfaces shall be painted before any rusting or other deterioration of the surface occurs. Blast cleaning shall be limited to only those surfaces that can be coated in the same working day. No cleaned blasted surface shall be left overnight without coating, the surface shall be clean blasted again before coating the next day.

F. Special attention shall be given to edges, angles, weld seams, flanges, nuts and bolts, and other places where insufficient film thicknesses are likely to be present. Use stripe painting for these areas.

G. Dry-film thickness of each system shall be at least as thick as the minimum specified. Maximum dry-film thickness shall not exceed the minimum more than 20% or coating MANUFACTURER's requirements, whichever is less. Where a dry-film thickness range is specified, the thickness shall not be shall not be outside the range.

H. Shop and field painting shall not be applied within three (3) inches of unprepared surface areas to be welded or bolted, except primers are acceptable where specifically specified at these locations.

I. Environmental Conditions:

1. Atmospheric temperature must be 50 degrees Fahrenheit or higher during application, unless approved in writing by coating MANUFACTURER. Do not apply coatings when inclement weather or freezing temperature may occur during the curing time interval.
2. Wind velocities for exterior applications shall be at a minimum to prevent overspray or fallout and not greater than coating MANUFACTURER's limits.
3. Relative humidity must be less than 85% and the temperature of the surface to be painted must be at least five (5) degrees above the dew point.

4. Provide adequate ventilation in all areas of application to ensure that at no time does the content of air exceed the Threshold Limit Value given on the MANUFACTURER's Safety Data Sheets for the specific coatings being applied.

J. Recoat Time: In the event a coating, such as an epoxy, has exceeded its recoat time limit, prepare the previously applied coating in accordance with MANUFACTURER's procedural guide.

K. Protection:

1. Cover or otherwise protect surfaces not to be painted. Remove protective materials when appropriate.
2. Mask, remove, or otherwise protect finish hardware, machined surfaces, grilles, lighting fixtures, and prefinished units as necessary.
3. Provide cover or shields to prevent surface preparation media and coatings from entering orifices in electrical or mechanical equipment. Where ventilation systems must be kept in operation at time of surface preparation, take precautions to shield intakes and exhausts to prevent the materials from entering system or being dispersed.
4. Provide signs to indicate fresh paint areas.
5. Provide daily cleanup of both storage and working areas and removal of all paint refuse, trash, rags, and thinners. Dispose of leftover containers, thinners, rags, brushes, and rollers that cannot be reused in accordance with applicable regulations.
6. Do not remove or paint over equipment data plates, code stamps on piping, or UL fire-rating labels.

3.05 INSPECTION:

A. CONTRACTOR shall provide and use a wet-film gauge to check each application approximately every fifteen (15) minutes in order to immediately correct film thickness under or over that specified.

B. On ferrous surfaces, measurements shall be made with one of the thickness gauges listed below. The gauge shall be calibrated on metal practically identical in composition and surface preparation to that being coated and be of substantially the same thickness, except that for measurements on metal thicker than 1/4-inch, the instrument may be calibrated on metal with a minimum thickness of 1/4-inch. When calibrating any of the gauges for making film measurements of over three (3) mils, the calibrating thickness standards (shims) shall be of non-metallic composition. Where only one thickness criterion is specified, the calibrating shim thickness shall closely approximate the specified thickness, but where both thicknesses are specified, the shim's thickness shall closely approximate an average of the two. Calibrating instructions, thickness standards and, in the case of the Mikrotest gauge, a calibrating tool, should be obtained from the MANUFACTURER or supplier of the gauge. Authorized thickness gauges are:

1. General Electric, Type B, General Electric Company
2. Mikrotest, Elektrophysik - Koln
3. Elcometer, Elcometer Instruments, Ltd.
4. Inspector Gage, Elcometer Instruments, Ltd.
5. Minitector, Elcometer Instruments, Ltd.

C. Use holiday or pinhole detector on systems over metal substrates to detect and correct voids when indicated on system sheet.

D. Furnish a sling psychrometer and perform periodic checks on both relative humidity and temperature limits.

E. Check temperature of the substrate at regular intervals to be certain surface is five (5) degrees Fahrenheit or more above the dew point.

3.06 CLEANING AND REPAIRS:

A. Remove spilled, dripped, or splattered paint from surfaces.

B. Touch up and restore damaged finishes to original condition. This includes surface preparation and application of coatings specified.

South Florida Water Management ENGINEER 3301 Gun Club Road West Palm Beach, FL 33406	**PROTECTIVE COATING SYSTEM** **System S-1**

SERVICE:	Steel, Mild Exposure, Non-Immersion, Interior
Surface Preparation:	Field: SSPC-SP1 and SP6. Clean and dry.
First Coat:	High solids polyamine or polyamide epoxy with minimum 67% solids by volume. Spray Applications; apply at 5.0 - 8.0 mils DFT. Brush applications, apply at 4.0 mils DFT.
Second Coat:	Same as first coat. Note: Second coat required only for brush applications.
Third Coat (Exterior):	Not required.
System Total:	Minimum 8.0 mils dry film thickness.
Volatile Organic Content:	Maximum 3.5 lbs/gal (425 g/l).

COATING MANUFACTURER	**PRODUCT DESIGNATION**	
	FIRST COAT	**SECOND COAT**
PPG	Amerlock 2/400	Same as first coat
Carboline	Carboguard 890	Same as first coat
Devoe Coatings	Devran 224HS	Same as first coat
Tnemec	HIBuild Epoxoline Series 66HS	Same as first coat
Sherwin-Williams	Macropoxy 646 FC	Same as first coat

South Florida Water Management **ENGINEER** 3301 Gun Club Road West Palm Beach, Florida 33406	**PROTECTIVE COATING SYSTEM** **System S-2**

SERVICE:	Steel, Severe Exposure, Non-Immersion, Exterior or Interior, where only marginal cleaning can be performed
Surface Preparation:	SSPC-SP6 or SSPC-SP10 as specified by the manufacturer. Clean and dry.
First Coat:	SSPC Paint 20 zinc-rich primer with a minimum of 82% zinc dust by weight in the dry film. Apply nonweldable primers at 3.0 to 3.5 mils dry film thickness as specified by the manufacturer. Apply weldable primers where specified at locations to be welded in accordance with the manufacturer's instructions.
Second Coat:	High build polyamide epoxy with minimum 65% solids by volume. Apply at 5.0 mils minimum dry film thickness.
Third Coat (Exterior):	High solids aliphatic or acrylic polyurethane gloss enamel with minimum 65% solids by volume. Apply at 2.0 mils minimum dry film thickness.
System Total:	Minimum 10.0 mils dry film thickness, Exterior. Minimum 8.0 mils dry film thickness, Interior.
Volatile Organic Content:	Maximum 2.8 lbs/gal (340 g/l) with or without thinner added.

COATING MANUFACTURER	**PRODUCT DESIGNATION**		
	FIRST COAT	**SECOND COAT**	**THIRD COAT**
Carboline	Carbozinc 11 HS	Carboguard 890	Carbothane 133 VOC
Devoe Coatings	Cathacoat 304V	Devran 224V	Devthane 379H
Tnemec	Tneme-Zinc H90-97	Chembuild 135	Endura-Shield 1074
PPG	Dimetcote 9 H	Amercoat 385	Amercoat 450H
Sherwin-Williams	Zinc Clad II Plus	Macropoxy 646 FC	Acrolon 218 HS Polyurethane

South Florida Water Management **ENGINEER** 3301 Gun Club Road West Palm Beach, Florida 33406	**PROTECTIVE COATING SYSTEM** **System S-3**

SERVICE:	Equipment, Factory Coated, Severe Exposure, Non-Immersion, Exterior or Interior
Surface Preparation:	Field or Shop (if applicable) First Coat: SSPC-SP1 and SP6. Clean and dry.
First Coat: (Field)	Modified vinyl-alkyd or epoxy-mastic, compatible with existing and new finish. Apply at 1.5 to 2.0 mils dry film thickness.
Second Coat Interior:	High build polyamide epoxy with minimum 50% solids by volume. Apply at 5.0 mils dry film thickness.
Second Coat Exterior:	High solids aliphatic or acrylic polyurethane gloss enamel with minimum 52% solids by volume. Apply at 2.0 mils dry film thickness.
System Total:	Interior: 6.5 mils dry film thickness in addition to existing coating. Exterior: 3.5 mils dry film thickness in addition to existing coating. Check for voids with holiday or pinhole detector.
Volatile Organic Content:	Maximum 3.5 lbs/gal (425 g/l).

COATING MANUFACTURER	**PRODUCT DESIGNATION**		
	FIRST COAT	**SECOND COAT (INT)**	**SECOND COAT (EXT)**
PPG	Amercoat 385 or 2/400	Same as first coat	Amercoat 450H
Carboline	Carbomastic 15	Carboguard 890	Carbothane 134 HG
Devoe Coatings	Bar-Rust 231	Devran 224 HS	Devthane 379H
Tnemec	Tneme-Zinc 90G-1K97	Hi-Build Epoxoline 66HS	Endura-Shield 1095
Sherwin-Williams	Macropoxy 646 FC	Macropoxy 646 FC	Acrolon Ultra

South Florida Water Management ENGINEER 3301 Gun Club Road West Palm Beach, Florida 33406	**PROTECTIVE COATING SYSTEM** **System S-4**

SERVICE:	Steel and Non-Ferrous Metals, Severe Exposure. Buried and Immersed, Interior of Tank, Piping or Equipment Immersed in Tank or Basin.
Surface Preparation:	SSPC-1 to remove all grease and oils, soluble salt removal (if necessary) SSPC-5 (white metal) to achieve a surface profile of 1.0 – 2.0 mils
First Coat:	Moisture Cured Urethane Zinc Primer without MIO, minimum 80% Zinc
Second Coat:	Moisture Cured Urethane Coal Tar
Third Coat:	Same as second coat.
System Total:	Minimum 15.00 mils dry film thickness. Check for voids with holiday or pinhole detector.
Volatile Organic Content:	Maximum 2.8 lbs/gal (340 g/l).

COATING MANUFACTURER	**PRODUCT DESIGNATION**		
	FIRST COAT	**SECOND COAT**	**THIRD COAT**
Wasser Coatings	MC-Zinc 100	MC-Tar 100	Same as second coat
Tnemec	Tneme-Zinc 90G-1K97	446 Perma-Shield MCU	Same as second coat
Polyval	Mono Zinc ME III	Mono Guard 6201	Same as second coat

South Florida Water Management ENGINEER 3301 Gun Club Road West Palm Beach, Florida 33406	**PROTECTIVE COATING SYSTEM** **System S-5**

SERVICE:	Steel, Surface Temperatures 350 to 1000 degrees F, Continuous
Surface Preparation:	Shop or Field First Coat: SSPC-1, SP10, and profile depth 1 mil.
	Field Touch-Up: SSPC-6 and profile depth 1 mil.
First Coat:	Silicone aluminum. Aluminum or grey color. Apply at 1.0 to 1.5 mils dry film thickness, or greater as required by manufacturer.
Second Coat:	Same as first coat.
Third Coat:	Not required.
System Total:	Minimum 2.0 to 3.0 mils dry film thickness.
Volatile Organic Content:	Maximum 5.2 lbs/gal (623 g/l).

COATING MANUFACTURER	**PRODUCT DESIGNATION**	
	FIRST COAT	**SECOND COAT**
PPG	Amercoat 878	Amercoat 873/878
Carboline	Carbozinc 11	Thermaline 4700Aluminum
Tnemec	Endura-Heat 1528	Same as first coat
Sherwin-Williams	Heat Flex Hi-Temp 1000	Same as first coat

South Florida Water Management ENGINEER 3301 Gun Club Road West Palm Beach, Florida 33406	PROTECTIVE COATING SYSTEM **System S-6**

SERVICE:	Steel tank exterior, severe UV exposure
Surface Preparation:	SSPC-SP-6, commercial blast clean
First Coat:	single component, zinc rich moisture cure urethane, 4 mils
Second Coat:	single component moisture cure urethane, 4 mils
Third Coat:	single component moisture cure urethane, gloss, 2 mils
System Total:	10 mils
Volatile Organic Content:	2.8 lb per gal (340 g/L)

OATING MANUFACTURER	**PRODUCT DESIGNATION**		
	FIRST COAT	**SECOND COAT**	**THIRD COAT**
Wasser Coatings	MC-Zinc 100	MC-CR 100	MC-Shieldcoat 100
Sherwin Williams	Corothane I Galvapac 1K	Corothane I HS Aliphatic	Same as 2nd coat
PPG	Durethane MCZ	Amerlock 2/400	Amercoat 450H

South Florida Water Management ENGINEER 3301 Gun Club Road West Palm Beach, Florida 33406	**PROTECTIVE COATING SYSTEM** **System S-7**

SERVICE:	Steel; Severe Exposure, Non-Immersion. Exterior or Interior. DTM Acrylic. Safety Yellow.
Surface Preparation:	SSPC-SP1 and SP6. Clean and dry.
First Coat:	Direct to Metal Acrylic Safety Yellow. Apply a minimum of 2.5 mils dry film thickness, or greater as required by MANUFACTURER.
Second Coat:	Same as first coat.
Third Coat:	Not required.
System Total:	5.0 mils dry film thickness.
Volatile Organic Content:	Maximum 2.08 lb per gal (< 250 g/L)

COATING MANUFACTURER	PRODUCT DESIGNATION	
	FIRST COAT	**SECOND COAT**
Benjamin Moore & Co.	DTM Acrylic Gloss Enamel P28-15	Same as 1st coat
Sherwin-Williams	Pro Industrial DTM Acrylic Gloss	Same as 1st coat
Tnemec	Enduratone 1028	Same as 1st Coat

South Florida Water Management ENGINEER 3301 Gun Club Road West Palm Beach, Florida 33406	**PROTECTIVE COATING SYSTEM** **System C-1**

SERVICE:	Concrete walls (interior), CMU walls (interior & exterior), and precast walls with a finned or textured concrete surface (exterior), Mild Exposure, Non-Immersion,
Surface Preparation:	Concrete: ASTM D 4258, clean and dry, free from grease, oil, and any other contamination. Remove protrusions. Fill pits in concrete with patching compound as recommended by coating MANUFACTURER. CMU: ASTM D 4261, clean and dry, free from grease, oil, and any other contamination. Remove protrusions.
First Coat:	Acrylic Latex block filler with minimum 44% solids by volume. Apply at approximately 800 square feet per gallon on concrete and as required to fill pores on CMU.
Second Coat:	Water reducible acrylic coating with minimum 34% solids by volume, gloss finish. Apply at 2.0 mils dry film thickness.
Third Coat:	Same as second coat.
System Total:	Minimum 4.0 mils dry film thickness in addition to filler.
Volatile Organic Content:	Maximum 2.8 lbs/gal (340 g/l).

COATING MANUFACTURER	**PRODUCT DESIGNATION**		
	FIRST COAT	**SECOND COAT**	**THIRD COAT**
PPG	PermaCrete 4-100	PittTech 90-374	Same as second coat
Carboline	Sanitile 100	Carbocrylic 3359	Same as second coat
Devoe Coatings	Bloxfil 4000	Devflex 4208QD	Same as second coat
Tnemec	Masonry Filler 54	Enduratone 1026	Same as second coat
Sika Corporation	Sikagard 62	Sikagard 62	Same as second coat
Sherwin-Williams	CementPlex 875	Pro Industrial DTM Acrylic	Same as second coat

South Florida Water Management ENGINEER 3301 Gun Club Road West Palm Beach, Florida 33406	**PROTECTIVE COATING SYSTEM** **System C-2**

SERVICE:	Concrete and Concrete Masonry Units, Severe Exposure, Non-Immersion, Interior
Surface Preparation:	Concrete: ASTM D4258, clean and dry, free from grease, oil, and any other contamination. Remove protrusions. Fill pits in concrete with patching compound as recommended by coating MANUFACTURER. CMU: ASTM D 4261, clean and dry, free from grease, oil, and any other contamination. Remove protrusions.
First Coat:	Sealer and primer as recommended by manufacturer
Second Coat:	Concrete: High solids epoxy with minimum 75% solids by volume. Apply at 5.0 to 8.0 mils dry film thickness. CMU: High solids epoxy block filler with minimum 60% solids by volume. Apply at 10.0 to 20.0 mils dry film thickness and as required to fill pores.
Third Coat:	Concrete & CMU: High solids epoxy with minimum 75% solids by volume. Apply at 5.0 to 8.0 mils dry film thickness. Semi-gloss or gloss finish.
System Total:	Concrete: Minimum 10.0 mils dry film thickness. CMU: Minimum 15.0 mils dry film thickness.
Volatile Organic Content:	Maximum 3.5 lbs/gal (425 g/l).

COATING MANUFACTURER	**PRODUCT DESIGNATION**		
	FIRST COAT	**SECOND COAT**	**THIRD COAT**
PPG	See * note below	Amerlock 2/400	Same as second coat
Carboline	Carboguard 1340	Carboguard 890	Carboguard 890 or 891
ICI Devoe	Pre-Prime 167	Devran 224 HS	Devran 224 HS
Tnemec	H.S Epoxy 104	HS Epoxy 104	H.S. Epoxy 104
Sika Corporation	Sikagard 62	Sikagard 62	Same as second coat
Wasser Coatings	MC-CR 100^	MC-CR 100	MC-Luster 100
Sherwin-Williams	Corobond 100**	Macropoxy HS Epoxy (80%) Kem Cati Coat Epoxy Block Filler-CMU	Same as second coat

Notes:
*Use Amerlock Sealer for concrete, and Permacrete 4-100 for masonry units
**Epoxy Primer
^ thinned 20%

South Florida Water Management **ENGINEER** 3301 Gun Club Road West Palm Beach, Florida 33406	**PROTECTIVE COATING SYSTEM** **System C-3**

SERVICE:	Existing water-Retaining Concrete Structures, below water level-protection against acid producing bacteria and other elements.
Surface Preparation:	Per MANUFACTURER recommendations
First Coat:	Two coats of cementitious crystalline coating containing catalytic chemicals which migrate into the concrete using moisture present in the concrete as the migrating medium, and which cause the moisture and the unhydrated cement in the concrete to react causing the growth of nonsoluble crystals, thereby rendering the concrete itself waterproof. The concrete becomes permanently sealed against the penetration of liquids from any direction.
Second Coat:	Same as first coat
Third Coat:	Not required
System Total Thickness:	As MANUFACTURER recommends

Crystallizing capability of waterproofing material shall be evidenced by independent SEM (Scanning Electron Microscope) photographs documenting penetration of crystal-forming waterproofing material to a depth of 2 inches.

Independent testing shall be performed for 1. Permeability in accordance with USACE CRD C48/ USACE CRD C163 to a pressure of 200 psi with no measurable leakage exhibited and 2. Chemical resistance in accordance to ASTM C267.

COATING MANUFACTURER	**PRODUCT DESIGNATION**	
	FIRST COAT	**SECOND COAT**
Xypex Chemical, Ltd	Concentrate	Modified
BASF Building Systems	MasterSeal 500	Same as first coat
Kryton International	Krystol T1	Krystol T2

South Florida Water Management **ENGINEER** 3301 Gun Club Road West Palm Beach, Florida 33406	**PROTECTIVE COATING SYSTEM**
	System C-4

SERVICE:	Water - Retaining Concrete Structures (waterproofing), Non-immersion
Surface Preparation:	ASTM D4258, clean and dry, free from grease, oil, and any other contamination. Remove protrusions. Per MANUFACTURER recommendations. For concrete surfaces that have imperfections (i.e., voids, cracks and pores), use breathable high-build, waterproof cement-based coating. Bonding agent shall be mixed with the coating to improve adhesion to substrate. For concrete surfaces that are perfect, breathable, water based, acrylic emulsion coating that will resist ultraviolet light, alkali, acid and mildew.
Primer Coat:	Apply at 4 mils dry film thickness.
First Coat:	Apply at 25 mils dry film thickness.
Second Coat:	Apply at 15 mils dry film thickness.
System Total:	Minimum 44 mils dry film thickness.
Volatile Organic Content:	None

COATING MANUFACTURER	**PRODUCT DESIGNATION**		
Concrete surfaces with imperfections:	**FIRST COAT**	**SECOND COAT**	**THIRD COAT**
BASF	MasterSeal 581	MasterSeal 581	
Enduro	EP Enduro-Seal 100	EP Enduro-Seal 100	
Ultra System Products	USP - 100 Ultra Seal	USP - 100 Ultra Seal	
Sherwin Williams	Corobond 100	Duraplate 5900	
Concrete surfaces without imperfections:			
BASF	MasterProtect HB 200	MasterProtect HB 200	

South Florida Water Management **ENGINEER** 3301 Gun Club Road West Palm Beach, Florida 33406	**PROTECTIVE COATING SYSTEM** **System W-1**

SERVICE:	Gypsum Board and Plaster, Mild Exposure, Interior Walls
Surface Preparation:	Clean and dry.
First Coat:	Acrylic Sealer. Apply at 1.5 to 2.0 mils dry film thickness.
Second Coat:	Water reducible acrylic coating with minimum 34% solids by volume, flat finish for walls and semi-gloss finish for doors and trim. Apply at 1.5 mils dry film thickness.
Third Coat:	Same as second coat
System Total:	Minimum 4.5 mils dry film thickness.
Volatile Organic Content:	Maximum 2.8 lbs/gal (340 g/l).

COATING MANUFACTURER	**PRODUCT DESIGNATION**		
	FIRST COAT	**SECOND COAT**	**THIRD COAT**
PPG	PittTech	PittTech	n/a
Carboline	Sanitile 120	Carbocrylic 3359	Same as second coat
Devoe Coatings	Devflex 4020PF	Devflex 4208QD	Same as second coat
Tnemec	PVA Sealer 51-792	H.B. Tneme-Tufcoat 113	Same as second coat
Sherwin-Williams	Pro Cryl Primer	Pro Industrial WB Catalyzed Epoxy	Same as second coat

South Florida Water Management ENGINEER 3301 Gun Club Road West Palm Beach, Florida 33406	**PROTECTIVE COATING SYSTEM** **System W-2**

SERVICE: Exterior Wood

Surface Preparation: Clean surfaces of dirt, oil, and other foreign substances with scrapers, mineral spirits, and sandpaper, as required. Sand surfaces exposed to view smooth and dust off.

a. Scrape and clean small, dry, seasoned knots, and apply a thin coat of white shellac or other recommended knot sealer before applying primer. After priming, fill holes and imperfections in finish surfaces with putty or plastic wood filler. Sand smooth when dried.
b. Prime, stain, or seal wood to be painted immediately on delivery. Prime edges, ends, faces, undersides, and back sides of wood, including cabinets, counters, and casework.
c. If transparent finish is required, back-prime with non-yellowing varnish.
d. Back-prime paneling on interior partitions where masonry, plaster, or other wet wall construction occurs on backside.
e. Seal tops, bottoms, and cutouts of unprimed wood doors with a heavy coat of varnish or sealer immediately on delivery.
f. Surface must be prepared per paint MANUFACTURER's recommendations.

First Coat: Exterior Wood Primer: Factory-formulated alkyd wood primer for exterior application:
1. Applied at a dry film thickness of not less than 1.3 mils per coat.

Second Coat: Exterior Finish Coats:

1. Exterior Low-Luster Acrylic Paint: Factory-formulated low-sheen (eggshell) acrylic-latex paint for exterior application. (2.3 mils per coat min)

Third Coat: Same as Second Coat.

System Total: 3.6 to 5.0 mils minimum, depending on primer and number of paint coats.

Volatile Organic Content: Maximum 2.72 lbs/gal (326 g/l).

COATING MANUFACTURER	PRODUCT DESIGNATION	
	FIRST COAT	**SECOND COAT**
Sherwin-Williams	Wood Primer: A-100 Exterior Oil, Stain Blocking Primer (Y24W20).	A-100 Exterior Latex Satin, (A82 Series)

South Florida Water Management ENGINEER 3301 Gun Club Road West Palm Beach, Florida 33406	PROTECTIVE COATING SYSTEM System W-3

SERVICE:	Wood: Plywood Back Boards, Interior
Surface Preparation:	ASTM E84, clean and dry, free from grease, oil, and any other contamination. Apply per MANUFACTURERs recommendation
First Coat:	Primer as required / approved by MANUFACTURER
Second Coat:	Intumescent Paint. Apply at 2.5 mills dry film thickness
Third Coat:	Same as second coat. Where indicated.
System Total:	Minimum 5.0 mils dry film thickness.
Volatile Organic Content:	Maximum 50 g/l (untinted)

COATING MANUFACTURER	PRODUCT DESIGNATION		
	FIRST COAT	**SECOND COAT**	**THIRD COAT**
Benjamin Moore & Co.	Fresh Start Alkyd Enamel	FR-110	FR-110
Firefree coatings, Inc.	Mfgr. Approved Primer	Fire Free 88	N/A
PPG Industries, Inc.	Speedhide 6-2 Interior Enamel Under Coater	Speedhide 42-7XI	N/A

South Florida Water Management ENGINEER 3301 Gun Club Road West Palm Beach, Florida 33406	**PROTECTIVE COATING SYSTEM** **System A-1**

SERVICE:	Aluminum in contact with concrete or any other metal except galvanized steel
Surface Preparation:	Field: SSPC-SP1. Clean and dry
First Coat:	High solids polyamine or polyamide epoxy with minimum 67 % solids by volume. Brush apply to surfaces to be in contact at 4.0 mils DFT
Second Coat:	Same as first coat
Third Coat:	Not required
System Total:	Minimum 8 mils DFT
Volatile Organic Content:	Maximum 3.5 lbs/gal (425 g/l)

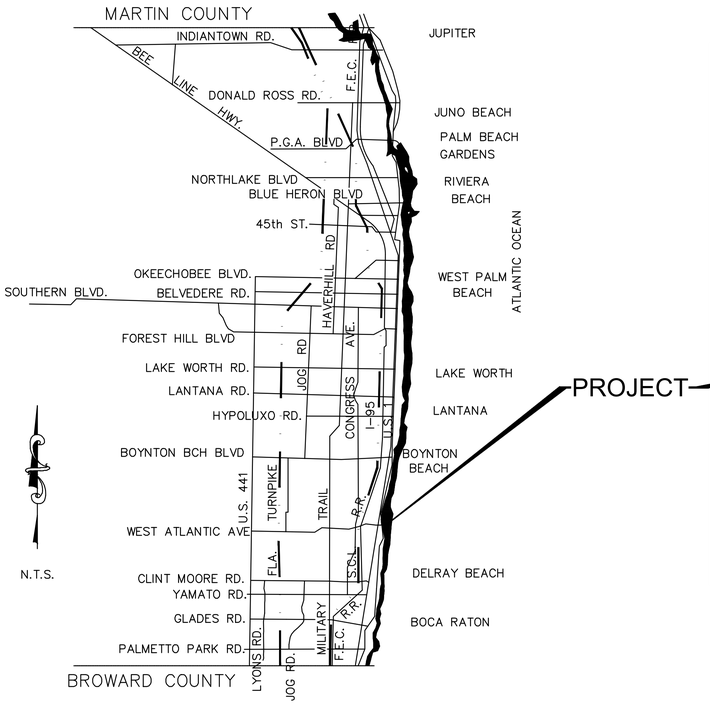
COATING MANUFACTURER	**PRODUCT DESIGNATION**	
	FIRST COAT	**SECOND COAT**
PPG	Amerlock 2/400	Same as first coat
Carboline	Carboguard 890	Same as first coat
Devoe Coatings	Devran 224HS	Same as first coat
Tnemec	Hi-Build Epoxoline 66HS	Same as first coat
Sherwin-Williams	Macropoxy 646 FC	Same as first coat

END OF SECTION

THE CITY OF DELRAY BEACH

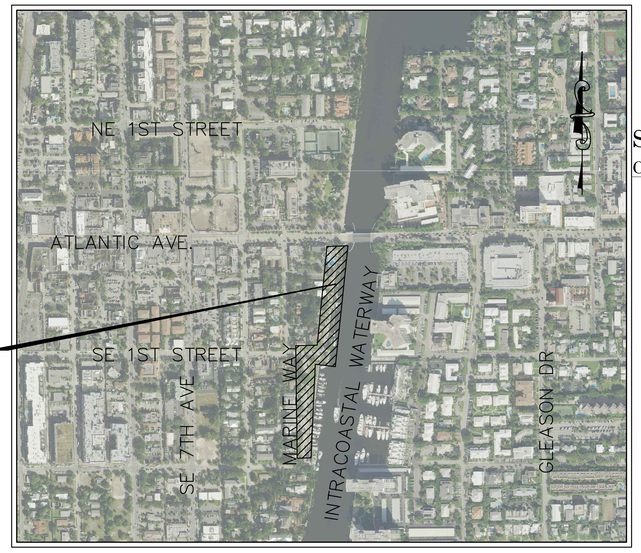
HISTORIC MARINE WAY SEAWALL, ROADWAY, AND DRAINAGE IMPROVEMENT

CITY PROJECT NO. 17-047



VERTICAL DATUM: NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88)

HORIZONTAL DATUM: NORTH AMERICAN DATUM OF 1983, FLORIDA STATE PLANES, EAST ZONE, U.S. FEET (NAD83)



LOCATION MAP

NO SCALE

PROJECT LOCATED IN SECTION 16, TOWNSHIP 46 SOUTH, RANGE 43 EAST

CITY OFFICIALS

MAYOR	SHELLY PETROLIA
VICE MAYOR	RYAN BOYLSTON
DEPUTY VICE MAYOR	ROB LONG
COMMISSIONER	ADAM FRANKEL
COMMISSIONER	ANGELA BURNS
CITY MANAGER	TERRENCE MOORE

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C3.0	KEYSHEET
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C4.2	STORMWATER POLLUTION PREVENTION CROSS-SECTIONS
C5.0 TO C5.1	TYPICAL SECTIONS
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STRUCTURAL SHEETS CONTINUED

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S6.01	ENLARGED MARINE WAY SEAWALL
S6.02	WOOD RAMP FRAMING PLAN
S6.03	WOOD DECK FRAMING PLAN AND SECTION
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E1.6 TO E1.7	ELECTRICAL SITE PLAN - EXISTING DOCK PEDESTAL RECONNECTION
E2.1 TO E2.4	ELECTRICAL RISER DIAGRAM

811 Know what's below. Call before you dig.

PREPARED BY:

WGI

2035 Vista Parkway
West Palm Beach, FL 33411
Phone No. 561.687.2220
Fax No. 561.687.1110
Cert No. 6091 - LB No. 7055

ENGINEER OF RECORD
STEPHEN CHERRY, PE
PE# 83268

HISTORIC MARINE WAY SEAWALL, ROADWAY, AND DRAINAGE IMPROVEMENT
WGI NO.: 2898.01
MARINE WAY - SITE IMPROVEMENTS

PREPARED FOR:

CITY OF DELRAY BEACH
434 S. SWINTON AVE
DELRAY BEACH, FL 33444
561.243.7000

Mcrae, Shuti, P:\2800\2898.01 Marine Way PH 2\CAD\Design\Drawings\289801-civ-COV.dwg ---- Plotted: 3/21/2024 8:41:15 AM Sheet: 1/22/2024 3:07:13 PM

DEFINITIONS

1. CITY – THE CITY OF DELRAY BEACH
2. CONTRACTOR – CONTRACTOR AND ALL UTILITY SUBCONTRACTORS
3. ENGINEER – ENGINEER RESPONSIBLE FOR INSPECTION AND CERTIFICATION

PROCEDURE

1. A PRE–CONSTRUCTION MEETING IS TO BE HELD PRIOR TO DELIVERY OF MATERIALS AND INITIATION OF ANY CONSTRUCTION. THE MEETING SHALL BE ATTENDED BY THE CITY, CONTRACTOR, SUBCONTRACTORS, ENGINEER AND OTHER INTERESTED PARTIES.
2. ANY REVISIONS TO THE APPROVED PLANS MUST BE APPROVED BY THE CITY PRIOR TO THE PRE–CONSTRUCTION MEETING.
3. A MINIMUM OF THREE (3) COPIES OF THE CURRENT APPROVED PRODUCT LIST AND ALL NECESSARY SHOP DRAWINGS SHALL BE SUBMITTED FOR APPROVAL PRIOR TO SCHEDULING THE PRE–CONSTRUCTION MEETING. ALL PIPE MANUFACTURERS SHALL SUBMIT THREE (3) COPIES OF AN AFFIDAVIT THAT THE PIPE AND COATINGS WERE MANUFACTURED IN ACCORDANCE WITH AWWA C151/A21.51–91 AND C900–22.
4. ALL APPLICABLE PERMITS MUST BE OBTAINED WITH COPIES PROVIDED TO THE CITY PRIOR TO COMMENCEMENT OF CONSTRUCTION.
5. THE CONTRACTOR SHALL MAINTAIN A CURRENT APPROVED SET OF CONSTRUCTION DOCUMENTS ON SITE AT ALL TIMES.
6. ALL MATERIALS SUPPLIED SHALL CONFORM TO PRODUCT LIST AND SHOP DRAWINGS AS APPROVED BY THE CITY PRIOR TO CONSTRUCTION. ALL REQUESTS FOR MATERIAL SUBSTITUTION SHALL BE APPROVED BY THE CITY PRIOR TO DELIVERY OF THESE MATERIALS TO THE JOB SITE.
7. THE LOCATION OF THE EXISTING UTILITIES AS SHOWN ON THE PLANS ARE APPROXIMATE ONLY. THE EXACT LOCATIONS SHALL BE DETERMINED BY THE CONTRACTOR PRIOR TO CONSTRUCTION. IN ADDITION, THE CONTRACTOR SHALL BE RESPONSIBLE TO VERIFY IF OTHER UTILITIES (NOT SHOWN ON THE PLAN) EXIST WITHIN THE AREA OF CONSTRUCTION. SHOULD THERE BE UTILITY CONFLICTS, THE CONTRACTOR SHALL INFORM THE CITY AND NOTIFY THE RESPECTIVE UTILITY OWNER TO RESOLVE THE UTILITY CONFLICTS AND PERFORM THE UTILITY ADJUSTMENTS AS REQUIRED.
8. PRIOR TO ANY SANITARY PIPE OR WATER MAIN TESTING, UNDER EXISTING OR FUTURE PAVEMENT, THE ROCK BASE SHALL BE FINISHED AND PRIMED OR FIRST LIFT OF PAVEMENT PLACED.
9. THE CONTRACTOR SHALL BE RESPONSIBLE AT ALL TIMES THROUGHOUT THE DURATION OF CONSTRUCTION FOR THE PROTECTION OF EXISTING AND NEWLY INSTALLED UTILITIES FROM DAMAGE OR DISRUPTION OF SERVICE. THE CONTRACTOR SHALL BE RESPONSIBLE FOR TAKING SUCH MEASURES AS NECESSARY TO PROTECT THE HEALTH, SAFETY, AND WELFARE OF THOSE PERSONS HAVING ACCESS TO THE WORK SITE.
10. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING LOCATIONS OF ALL OTHER UTILITY FACILITIES.
11. THE CONTRACTOR SHALL SCHEDULE INSPECTIONS AND TESTS WITH THE CITY A MINIMUM OF 48 HOURS IN ADVANCE.
12. CONTRACTOR SHALL NOT DISTURB EXISTING CITY MAINS OR STRUCTURES WITHOUT THE PRESENCE OF A CITY INSPECTOR. CITY UTILITY SYSTEM VALVES AND APPURTENANCES MAY ONLY BE OPERATED BY CITY PERSONNEL.
13. FACILITIES PROPOSED HEREIN SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE APPROVED PLANS. DEVIATIONS FROM THE APPROVED PLANS MUST BE APPROVED IN ADVANCE BY THE CITY.
14. UPON COMPLETION OF CONSTRUCTION AND PRIOR TO FINAL ACCEPTANCE OF THE WORK, A FINAL INSPECTION SHALL VERIFY PROPER ADHERENCE TO ALL FACETS OF THE PLANS AND SPECIFICATIONS.
15. PAVING, DRAINAGE AND TRAFFIC CONTROL SHALL CONFORM TO FLORIDA DEPARTMENT OF TRANSPORTATION ROADWAY AND DESIGN STANDARDS, STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION, MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD) AND PALM BEACH COUNTY TYPICAL TP–21 (LATEST REVISION) UNLESS SHOWN OTHERWISE.
16. AS–BUILT DRAWINGS SHALL BE PREPARED BY A REGISTERED LAND SURVEYOR, REGISTERED IN THE STATE OF FLORIDA, AND SUBMITTED BY THE CONTRACTOR TO THE CITY AND APPROVED BY THE REPRESENTATIVE FOR THE CONSTRUCTION ENGINEERING & INSPECTION (CEI) SERVICES PRIOR TO SUBMITTING FINAL PAYMENT. AS THE WORK PROGRESSES, THE ENGINEER OF RECORD (OR THEIR REPRESENTATIVE) SHALL RECORD ON ONE SET OF DRAWINGS THE LOCATION INCLUDING STATION AND OFFSET WITH SUFFICIENT DIMENSIONS AND DISTANCES TO ADEQUATELY DESCRIBE THE LOCATION OF THE IMPROVEMENT FROM THE BASELINE. ELEVATIONS ARE TO BE PROVIDED AT THE TOP OF PIPE AT INCREMENTS OF EVERY 100 FEET ON ALL WATER AND FORCE MAINS. STATIONING IS REQUIRED ON ALL VALVES, FITTINGS, WATER AND SEWER SERVICES AND FIRE HYDRANTS. THE LENGTHS OF ALL WATER SERVICE LINES AND SEWER LATERALS MUST BE NOTED. ON GRAVITY SEWER LINES, ELEVATIONS AND STATIONING ARE TO BE INDICATED ON ALL MANHOLE RIMS AND INVERTS. THE DISTANCE BETWEEN MANHOLES IS TO BE SHOWN ON BOTH THE PLAN AND PROFILE SHEETS UNLESS PLAN VIEW AND PROFILE VIEW ARE ON THE SAME SHEET. THE ENGINEER OF RECORD IS TO SUBMIT ONE CD FOR AS–BUILTS (ELECTRONIC), TWO SETS OF BLUE PRINT RECORD OR AS–BUILT DRAWINGS AND ONE MYLAR TO THE ENGINEERING DEPARTMENT ALONG WITH THE HEALTH DEPARTMENT APPLICATION FOR RELEASE OF THE SYSTEM. ALL "AS–BUILT DRAWINGS" SHALL BE SIGNED, SEALED AND DATED BY THE SURVEYOR. CERTIFICATE OF OCCUPANCY WILL BE HELD UNTIL ACCEPTANCE BY CEI AND THE CITY. PAVING AND DRAINAGE AS–BUILT DRAWINGS SHALL INCLUDE RIM ELEVATIONS, INVERT ELEVATIONS, PIPE SIZES, CONTROL STRUCTURE DIMENSIONS, AS WELL AS, AS–BUILT ELEVATIONS AT EVERY LOCATION A PROPOSED ELEVATION IS INDICATED ON THE CONSTRUCTION PLAN. ADEQUATE AS–BUILT ELEVATIONS SHALL BE PROVIDED ON EMBANKMENTS TO DETERMINE COMPLIANCE WITH MAXIMUM SLOPE REQUIREMENTS.
17. PRIOR TO COMMENCEMENT OF ANY EXCAVATION, THE CONTRACTOR SHALL COMPLY WITH FLORIDA STATUTE 553–851 FOR PROTECTION OF UNDERGROUND GAS PIPE LINES.
18. CONTRACTOR SHALL NOTIFY SUNSHINE STATE ONE CALL OF FLORIDA OR SUNSHINE 811 (1–800–432–4770) 48 HOURS IN ADVANCE OF CONSTRUCTION.
19. GRADES SHOWN ON PLANS ARE FINISHED GRADES. THE CONTRACTOR SHALL BE REQUIRED TO ADJUST EXISTING MANHOLE TOPS AND VALVE BOX COVERS TO FINISHED GRADE.

... PROCEDURE CONTINUED

20. CONTRACTOR SHALL MAINTAIN LOCAL TRAFFIC AT ALL TIMES DURING CONSTRUCTION AND SHALL BE REQUIRED TO PROVIDE ALL BARRICADES, LIGHTING, SIGNAGE AND FLAGMEN AS NECESSARY TO PROVIDE FOR THE SAFETY OF THE PUBLIC IN THE WORK AREA. THE CONTRACTOR SHALL SUBMIT A DETAILED TRAFFIC MAINTENANCE PLAN PRIOR TO CONSTRUCTION.
21. EXISTING BASE MATERIAL THAT IS REMOVED DURING CONSTRUCTION SHALL NOT BE USED IN THE CONSTRUCTION OF NEW BASE.
22. ALL VEGETATION, DEBRIS, CONCRETE OR OTHER UNSUITABLE MATERIAL SHALL BE LEGALLY DISPOSED OF OFF–SITE IN AN AREA AT THE CONTRACTOR'S EXPENSE.
23. CONTRACTOR SHALL USE CONSTRUCTION METHODS AND DEVICES, SUCH AS TURBIDITY SCREENS, CURTAINS AND FLOATING SILT BARRIERS WHERE NECESSARY IN ORDER TO COMPLY WITH ALL STATE AND LOCAL WATER QUALITY STANDARDS.
24. CONTRACTOR SHALL SUBMIT A STORM WATER POLLUTION PREVENTION PLAN. PRIOR TO AND DURING CONSTRUCTION OF ALL SITES, THE CONTRACTOR SHALL IMPLEMENT AND MAINTAIN ALL EROSION AND SEDIMENT CONTROL MEASURES INCLUDED IN A POLLUTION PREVENTION PLAN PROVIDED TO THE CITY OF DELRAY BEACH'S CHIEF BUILDING OFFICIAL.
25. ALL REINFORCED CONCRETE STORM SEWER PIPE SHALL BE CLASS III, UNLESS OTHERWISE NOTED.
26. ALL PAVED SURFACES SHALL BE PROPERLY MARKED PRIOR TO HOURS OF DARKNESS. PERMANENT PAVEMENT PARKING STALLS SHALL BE LAID OUT USING MARKING CHALK. LAYOUT TO BE REVIEWED BY THE CITY PRIOR TO PLACEMENT OF FINAL MARKING.
27. EMBANKMENT (FILL) AND EXCESS MATERIAL REQUIRED FOR ROADWAY RECONSTRUCTION AND UTILITY INSTALLATIONS SHALL BE SUPPLIED AND/OR DISPOSED OF BY THE CONTRACTOR. ALL COSTS ASSOCIATED WITH EARTHWORK REQUIREMENTS TO COMPLETE THE ROADWAY RECONSTRUCTION AND UTILITY IMPROVEMENTS SHALL BE INCLUDED IN THE COSTS OF OTHER APPROPRIATE PAY ITEMS.
28. CONTINUITY OF WATER AND SEWER SERVICE TO CITY UTILITY CUSTOMERS SHALL BE MAINTAINED THROUGHOUT THE DURATION OF THIS PROJECT. IF A BREAK IN SERVICE IS UNAVOIDABLE TO ACCOMMODATE CONNECTION OF NEW FACILITIES, IT SHALL BE SCHEDULED FOR OFF PEAK HOURS WITH THE CITY. DETERMINATION OF SERVICE DISRUPTION REQUIREMENT WILL BE MADE BY THE CITY.
29. SITE INFORMATION IS BASED ON A SURVEY PREPARED BY: WGI.
30. PRIOR TO FINAL PAY REQUEST, CONTRACTOR SHALL CLEAN AND TELEVISE ALL STORM DRAINAGE SYSTEM IN PROJECT AREA.
31. CONTRACTOR SHALL SUBMIT A HEALTH & SAFETY PLAN & EMERGENCY HURRICANE PLAN FOR APPROVAL BY CITY & CEI.
32. CONTRACTOR SHALL ESTABLISH A PUBLIC OUTREACH WEBSITE AND OFFICER TO UPDATE DATABASE WEEKLY.
33. ALL LUMBER SHALL BE ACQ TREATED TO 0.60%.
34. ALL HARDWARE AND FASTENERS SHALL BE 316 STAINLESS STEEL.
35. ALL CONSTRUCTION SHALL BE IN ACCORDANCE ADA CODES & REGULATIONS.
36. CONTRACTOR SHALL SUBMIT A WASTEWATER BY–PASS PIPE DESIGN FOR REVIEW. THIS SHALL INCLUDE TYPE OF PUMP, SIZE OF PIPE, DURATION AND TIMES FOR PUMPING, EMERGENCY ALARM AND CONTACT WITH SOMEONE ON CALL TO RESPOND IN THE EVENT OF THE ALARM GOING OFF.
37. PRIOR TO CONSTRUCTION, CONTRACTOR SHALL PAY AND SUBMIT AND OBTAIN ALL REQUIRED DEWATERING AND SFWMD PERMITS FOR THE PROJECT.
38. CONTRACTOR SHALL SUBMIT HIGH/KING TIDE FLOOD PROTECTION AND A HURRICANE PREPAREDNESS PLAN TO THE CITY IN THE FORM OF A SHOP DRAWING FOR REVIEW AND APPROVAL. FLOOD PROTECTION SHALL BE INSTALLED AND MAINTAINED THROUGHOUT DURATION OF CONSTRUCTION. CONTRACTOR TO COORDINATE WITH THE CITY FOR SCHEDULING, DEPLOYMENT, AND ACCESS/MAINTENANCE. FLOOD PROTECTION WILL BE REQUIRED TO BE ACTIVE DURING NON–CONSTRUCTION HOURS.

GENERAL NOTES, CITY CODES, REGULATIONS, AND STANDARDS

1. REGULATIONS – ALL CONSTRUCTION SHALL BE UNDER THE CONTINUAL SUPERVISION OF A SUPERINTENDENT ON THE JOBSITE AT ALL TIMES, BE DONE IN A WORKMAN LIKE MANNER AND SHALL CONFORM TO ALL CITY, COUNTY, STATE AND FEDERAL REGULATIONS AND CODES INCLUDING BUT NOT LIMITED TO THE CURRENT PALM BEACH COUNTY AND FLORIDA DEPARTMENT OF TRANSPORTATION (FDOT) LATEST REGULATIONS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL PERMITS AND LICENSES TO BEGIN WORK AND PAY ALL REQUIRED FEES ASSOCIATED WITH SAME.
2. VERTICAL DATUM – ELEVATIONS SHOWN HEREON ARE REFERENCED TO THE NORTH AMERICAN VERTICAL DATUM OF 1988, AS ESTABLISHED BY NGS BENCHMARK 14.33 WITH A PUBLISHED ELEVATION OF 12.78' (NAVD 88). NAVD'88 = NGVD'29–1.48.
3. HORIZONTAL DATUM – FLORIDA STATE PLANE COORDINATE SYSTEM, EAST ZONE, NORTH AMERICAN DATUM OF 1983, (2011 ADJUSTMENT)
4. GUARANTEE – THE CONTRACTOR SHALL GUARANTEE ALL WORK AND MATERIAL FOR A PERIOD OF ONE YEAR FROM THE DATE OF PROJECT FINAL ACCEPTANCE, UNLESS SPECIFIED LONGER BY MANUFACTURER, DURING WHICH ALL FAULTY CONSTRUCTION AND/OR MATERIAL SHALL BE REPLACED AT THE CONTRACTOR'S EXPENSE.
5. RESTORATION – THE CONTRACTOR SHALL IMMEDIATELY REPAIR AND RESTORE EXISTING SITE FEATURES INCLUDING PAVEMENT, DRIVEWAYS, PIPES, FENCES, TRAFFIC CONTROL DEVICES, MAILBOXES AND PROPERTY CORNERS DAMAGED AS A RESULT OF CONSTRUCTION ACTIVITIES. THE REPAIR AND RESTORATION SHALL CONFORM TO APPLICABLE STANDARDS AS GOVERNED.
6. ALL FDOT STANDARDS AND SPECIFICATIONS SHALL BE LATEST EDITION FOR INSTALLATION AND MATERIALS AT BID SUBMITTAL.
7. ALL STRIPING AND DELINEATION TO CONFORM TO THE REQUIREMENTS OF THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES, (MUTCD) LATEST EDITION.
8. ALL CROSSWALK SIGNS AND ADVANCED PAVEMENT MESSAGES TO BE DESIGNED AND INSTALLED PER FDOT STANDARD (INDEX NO. 17346).
9. REFERENCE THE FDOT 600 SERIES FOR ALL REQUIRED AND APPLICABLE MOT PLANS.
10. ALL WORK MUST BE PERFORMED WITHIN THE PROJECT LIMITS, UNLESS GIVEN PRIOR WRITTEN AUTHORIZATION FROM THE PROPERTY OWNER.
11. IF THE CONTRACTOR ENCOUNTERS AN EXISTING VALVE BOX THAT IS OUT OF PLUMB, THE CONTRACTOR SHALL RESET THE VALVE BOX TO PROPOSED FINISH GRADE.
12. CONTRACTOR SHALL PROVIDE PHOTO AND VIDEO DOCUMENTATION OF ALL ADJACENT PROPERTY CONDITIONS PRIOR TO CONSTRUCTION.
13. PIPE SEPARATION DIMENSIONS ARE OUTSIDE WALL–TO–WALL.
14. CONTRACTOR SHALL PAY FOR AND COORDINATE ANY AND ALL TESTING LABORATORY (WATER, CONCRETE, DENSITY, PROCTORS, ETC.) REQUIREMENTS. CITY WILL APPROVE TESTING LABORATORY CONSULTANT ONLY.
15. ALL DOCKS SHALL HAVE USACE, FDEP, AND ANY OTHER PERMITS NECESSARY TO BE IN COMPLIANCE WITH REQUIREMENTS FOR DOCKS WITHIN INTRACOASTAL WATERWAY. ALL PERMITS REQUIRED FOR PRIVATE DOCKS SHALL BE THE OWNER'S RESPONSIBILITY.
16. CONTRACTOR SHALL COORDINATE SELECTION AND REVIEW OF ANY PROPOSED STAGING AREAS ASSOCIATED WITH THIS PROJECT WITH THE CITY OF DELRAY. CONTACT CEI AT (561)243–7341.
17. EXISTING UTILITIES SHALL REMAIN IN SERVICE UNTIL PROPOSED UTILITIES (WATER, SEWER, AND DRAINAGE) ARE IN PLACE AND ACTIVE.
18. DURING CONSTRUCTION, CONTRACTOR SHALL ALLOW AND MAINTAIN 24–HOUR PEDESTRIAN INGRESS AND EGRESS TO THE EXISTING DOCKMASTER BUILDING.

FLOOD RESISTANCE

THE FLOOD INSURANCE RATE MAPS (FIRMS) PREPARED BY FEMA HAVE BEEN ADOPTED BY THE CITY AS THE GOVERNING FLOOD HAZARD MAP FOR THE PROJECT LOCATION. BASED ON THE FIRMS, THE PROJECT IS LOCATED IN ZONE AE WITH A BASE FLOOD ELEVATION (BFE) OF 6.0' NAVD. BASED ON THE AMERICAN SOCIETY OF CIVIL ENGINEERS (ASCE), FLOOD RESISTANT DESIGN AND CONSTRUCTION, ASCE 24–14, TABLE 1–1, THE PROJECT'S FLOOD DESIGN CLASS IS 3, RESULTING IN A MINIMUM ELEVATION OF LOWEST FLOOR AND UTILITIES AND EQUIPMENT BEING BFE+1 FT, OR 7.0' NAVD.

THE PROJECT EXCEEDS THE FBC REQUIREMENTS AND APPLICABLE FLOODPLAIN MANAGEMENT REGULATIONS IN THE FOLLOWING WAYS:

- ALL MATERIALS OF CONSTRUCTION HAVE BEEN SELECTED AND DESIGNED TO RESIST THE EFFECTS OF FLOOD HAZARD AND FLOOD LOADS.
- THE OUTFALL PORTION OF THE WETWELL STRUCTURE (INTO THE INTRACOASTAL WATERWAY) INCLUDES THE INSTALLATION OF ROCK RIP RAP PROTECTING THE INTEGRITY OF THE PIPES FROM EROSION AND SCOURING THAT MIGHT AFFECT THEM DUE TO THE LOSS OF SUPPORTING SOILS.
- AN ABOVE GROUND FUEL TANK WILL BE CONSTRUCTED ON–GRADE AND DESIGNED TO BE ANCHORED TO RESIST FLOOD LOADS. THE TOP OF THE TANK AND FUEL AND VENTING PIPING WILL BE LOCATED ABOVE THE BFE+1' REQUIREMENT.
- THE GENERATOR WILL BE HOUSED IN AN OUTDOOR ENCLOSURE WITH THE CONCRETE SLAB AT THE BFE GRADE. THE GENERATOR EQUIPMENT WILL BE LOCATED ABOVE THE BFE+1' REQUIREMENT.
- THE ELECTRICAL AND CONTROLS EQUIPMENT WILL ALL BE INSTALLED ADJACENT TO THE WETWELL STRUCTURE, MOUNTED TO A SITE WALL. ALL OF THE EQUIPMENT WILL BE INSTALLED SO THAT THE BOTTOM OF THE EQUIPMENT IS LOCATED ABOVE THE BFE+1' REQUIREMENT.

LEGEND

PROP S/W
MILL AND RESURFACE
FULL DEPTH PAVEMENT RESTORATION
PROP ASPHALT PAVEMENT
PROP CONCRETE PAVER BRICK
PROP DRAINAGE — SD
PROP WATER — W
PROP SANITARY SEWER — S
PROP ELECTRIC — E
EX WATER — W
EX SANITARY SEWER — S
EX FORCE MAIN — FM
EX DRAINAGE — D
EX OVERHEAD UTILITIES — OH
PROP/EX STREET SIGN
PROP DRAINAGE INLET
WATER FITTINGS
WATER VALVE
FIRE HYDRANT ASSEMBLY
LINESTOP
EX DRAINAGE INLET
BENCHMARK

ABBREVIATIONS

ARV	AIR RELEASE VALVE
ASPH	ASPHALT
CONC	CONCRETE
DIP	DUCTILE IRON PIPE
DRN	DRAINAGE
EL.	ELEVATION
EOP	EDGE OF PAVEMENT
EX	EXISTING
FH	FIRE HYDRANT
FM	SANITARY FORCE MAIN
HDPE	HIGH–DENSITY POLYETHYLENE
INV	INVERT
LF	LINEAR FOOT
LS	LIFT STATION
MH	MANHOLE
OH	OVERHEAD ELECTRIC
OS	OFFSET
PHDPE	PERFORATED HIGH–DENSITY POLYETHYLENE
PRCP	PERFORATED REINFORCED CONCRETE PIPE
PVC	POLYVINYL CHLORIDE
PROP	PROPOSED
RCP	REINFORCED CONCRETE PIPE
RWM	RECLAIMED WATER MAIN
R/W	RIGHT–OF–WAY
SAN	SANITARY SEWER
STRM	STORMWATER
SP	SAMPLE POINT
STA	STATION
S/W	SIDEWALK
TYP	TYPICAL
WM	WATER MAIN

UTILITY CONTACTS

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PHONE 561–329–5451

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BOCA RATON, FL 33407
PHONE 561–454–5851

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APRIL MADISON
9329 S. MILITARY TRAIL
BOYNTON BEACH, FL 33436
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FLORIDA PUBLIC UTILITIES CORP.
IVAN GIBBS
209 N. SAPODILLA AVENUE
WEST PALM BEACH, FL 33401
(561) 723–3459

811 Know what's below. Call before you dig.

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ENGINEER'S SEAL

STEPHEN CHERRY, PE
P.E., LIC. NO. 83268

DESIGNED BY	SCC
DRAWN BY	SCC
CHECKED BY	BNO
QC BY	JWR
DATE	3/21/2024

REVISION	DATE	DESCRIPTION	BY

THE CITY OF DELRAY BEACH
HISTORIC MARINE WAY SEAWALL, ROADWAY, AND DRAINAGE IMPROVEMENT

GENERAL NOTES

PROJECT NO. 17-047
SHEET NO. C2.0
FILE ID. 2898.01

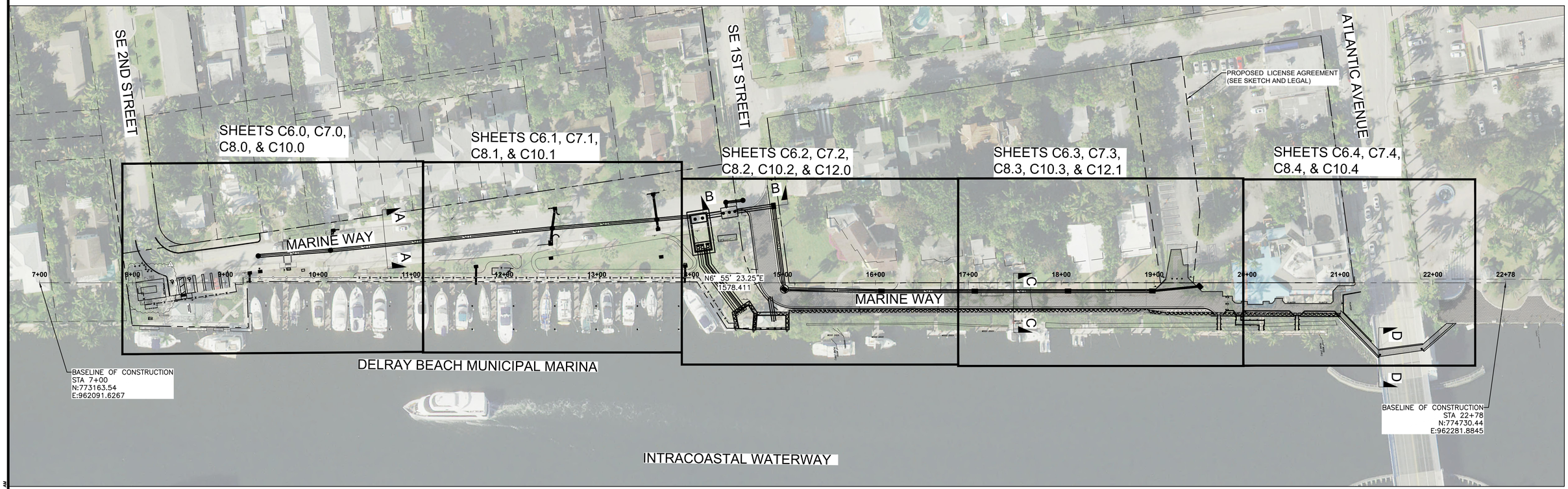
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North

0 25 50 100

SCALE IN FEET

1" = 50'



NOTE:

FOR SECTION A-A THROUGH D-D SEE SHEETS C5.0 AND C5.1

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ENGINEER'S SEAL

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QC BY	JWR
DATE	3/28/2024

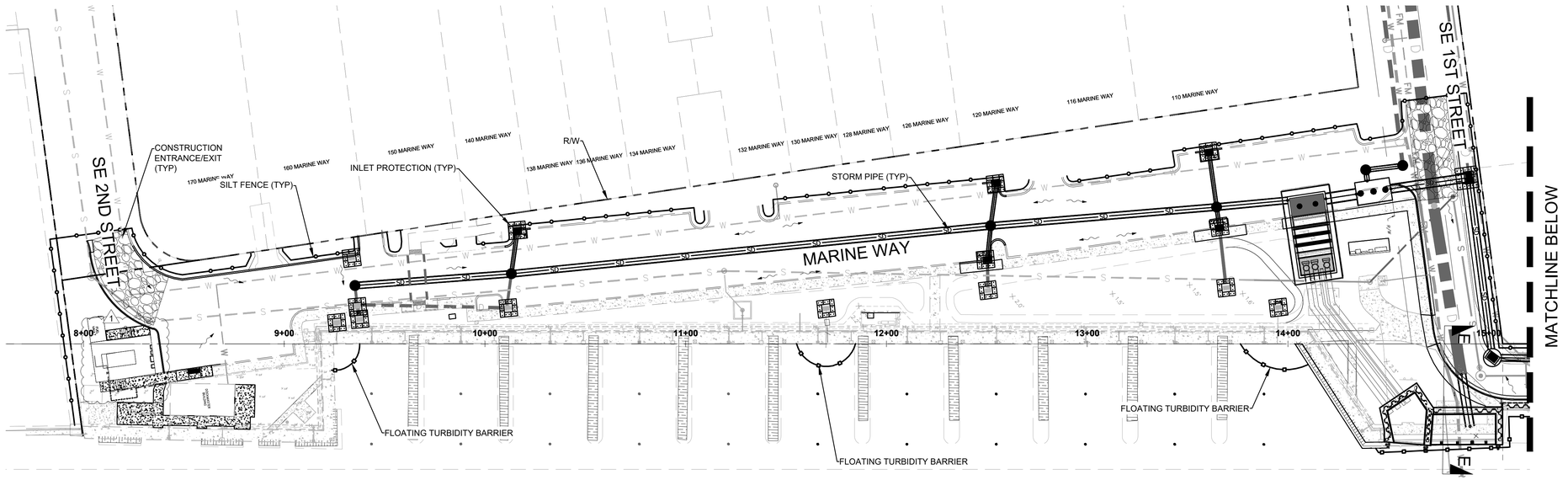
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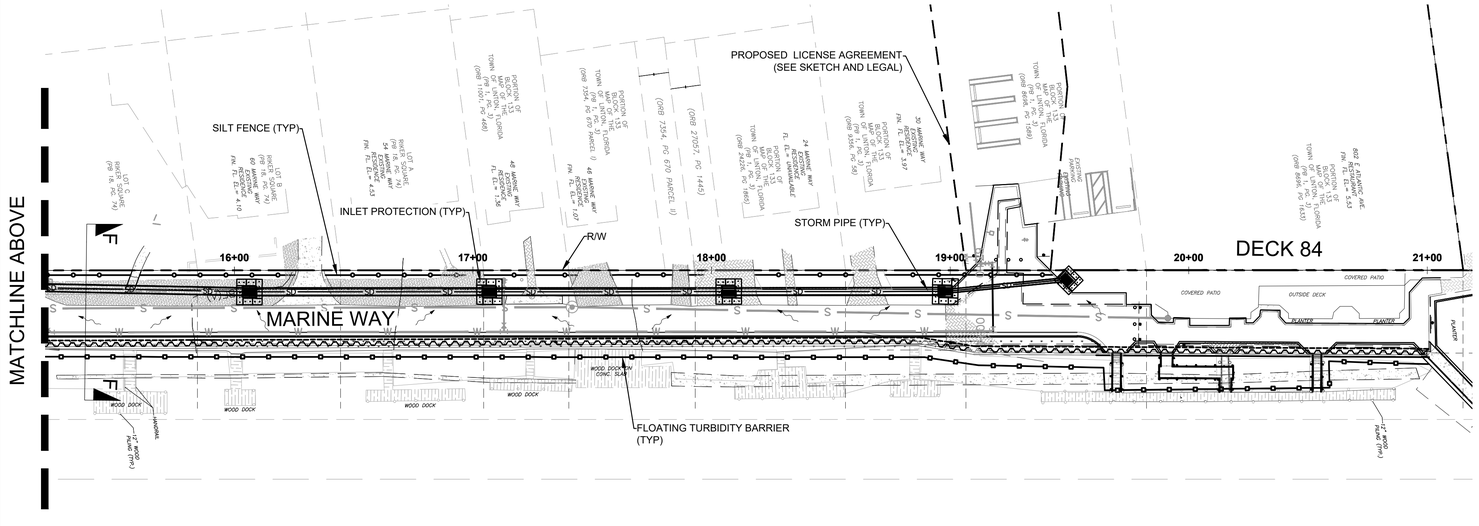
THE CITY OF DELRAY BEACH
HISTORIC MARINE WAY SEAWALL,
ROADWAY, AND DRAINAGE IMPROVEMENT

KEYSHEET

PROJECT NO. 17-047
SHEET NO. C3.0
FILE ID. 2898.01

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North

0 15 30 60

SCALE IN FEET

1" = 30'

LEGEND

- R/W LINE
- PROP DRAINAGE MAIN (SD)
- PROP SEWER MAIN (S)
- PROP WATER MAIN (W)
- EX SEWER MAIN (S)
- EX WATER MAIN (W)
- EX DRAINAGE MAIN (D)
- SILT FENCE
- FLOATING TURBIDITY BARRIER
- INLET PROTECTION

NOTES:

GENERAL: CONTRACTOR SHALL BE RESPONSIBLE FOR DOCUMENTING THE WORK PERFORMED IN THE STORM WATER POLLUTION PREVENTION PLAN IN ACCORDANCE WITH FDOT SPECIFICATION 104 AND FDEP NPDES CRITERIA.

1. SEQUENCE OF MAJOR SOIL DISTURBING ACTIVITIES

THE FOLLOWING SEQUENCE OF MAJOR ACTIVITIES SHALL BE FOLLOWED UNLESS THE CONTRACTOR CAN PROPOSE AN ALTERNATIVE THAT IS EQUAL TO OR EXCEEDS THE EROSION AND SEDIMENT CONTROL BEST MANAGEMENT PRACTICES DESCRIBED IN THIS DOCUMENT, AND IS APPROVED BY THE ENGINEER. THE CONTRACTOR IS RESPONSIBLE FOR PROVIDING A DETAILED SEQUENCE OF CONSTRUCTION FOR ALL CONSTRUCTION ACTIVITIES IN ACCORDANCE WITH THE FDOT SPECIFICATION SECTION 104:

A. PLACEMENT OF ALL EROSION AND SEDIMENTATION CONTROL DEVICES.
B. CLEARING AND GRUBBING, EARTHWORK REQUIRED FOR GRADE ADJUSTMENT.
C. UNDERGROUND CONSTRUCTION: STORM SEWER SHALL GENERALLY BE CONSTRUCTED IN THE UPSTREAM DIRECTION.
D. EARTHWORK AND CONSTRUCTION ASSOCIATED WITH PROJECT.
E. FINAL GRADING, PAVEMENT AND GROUND STABILIZATION (SOD, ETC.).
F. REMOVE ERODED MATERIAL, SEDIMENT AND EROSION CONTROLS.

2. EROSION AND SEDIMENT CONTROLS

THE GENERAL CONTROL PLAN FOR SITE ACTIVITIES IS AS FOLLOWS:

A. INSTALL SOIL TRACKING PREVENTION DEVICES (STPDS) AT COMMON AREAS WHERE CONSTRUCTION VEHICLES WILL BE ENTERING AND EXITING THE CONSTRUCTION SITE IN ACCORDANCE WITH THE FDOT SPECIFICATION SECTION 106.

B. INSTALL TYPE III SILT FENCE AT THE LIMITS OF CONSTRUCTION. ALL SILT FENCE WILL BE PLACED AT THE R/W LINE OR AT THE TOE OF SLOPES.

C. PROTECT THE OUTFALL CONTROL STRUCTURES, HEADWALLS, AND ALL STORM DRAIN INLETS IDENTIFIED IN THE PLANS USING TYPE III SILT FENCE, TURBIDITY BARRIERS, AND HAY BALES.

3. STABILIZATION PRACTICES

TEMPORARY: SOD, SEED, AND MULCH IN ACCORDANCE WITH THE FDOT SPECIFICATION SECTION 104.

PERMANENT: ASPHALT OR CONCRETE SURFACE; SOD IN ACCORDANCE WITH FDOT SPECIFICATION SECTION 570. ALL STABILIZATION PRACTICES SHALL BE INITIATED AS SOON AS PRACTICABLE IN PORTIONS OF THE SITE WHERE CONSTRUCTION ACTIVITIES HAVE TEMPORARILY OR PERMANENTLY CEASED, BUT IN NO CASE MORE THAN FOURTEEN (14) DAYS AFTER THE CONSTRUCTION ACTIVITY IN THAT PORTION OF THE SITE HAS TEMPORARILY OR PERMANENTLY CEASED. THE CONTRACTOR IS ALSO RESPONSIBLE FOR DOCUMENTING THIS PORTION OF THE SWPPP IN ACCORDANCE WITH THE FDOT SPECIFICATION SECTION 104.

4. STRUCTURAL PRACTICES

TEMPORARY: SILT FENCE IN ACCORDANCE WITH STANDARD INDEX 102 AND THE FDOT SPECIFICATION SECTION 104; INLET PROTECTION IN ACCORDANCE WITH FDOT STANDARD INDEX 102 AND AS SHOWN IN THE EROSION CONTROL PLAN. ALL SEDIMENT CONTROLS SHALL BE IN PLACE PRIOR TO ANY SOIL DISTURBING ACTIVITY UPSTREAM OF THE CONTROL.

PERMANENT: STORMWATER PONDS, SWALES, EXFILTRATION TRENCHES

5. OFFSITE VEHICLE TRACKING

SOIL TRACKING PREVENTION DEVICES WILL BE INSTALLED AT ALL LOCATIONS WHERE CONSTRUCTION VEHICLES WILL BE CARRYING SOIL AWAY FROM THE PROJECT SITE. IN ADDITION, CONSTRUCTION VEHICLES WILL BE REQUIRED TO COVER THEIR LOADS TO MINIMIZE LOSS OF LOAD INTO THE AIR. THE CONTRACTOR IS ALSO RESPONSIBLE FOR DOCUMENTING THIS PORTION OF THE SWPPP IN ACCORDANCE WITH THE FDOT INDEX 106.

6. APPROVED STATE AND LOCAL PLANS OR PERMITS

THIS PROJECT IS GOVERNED BY THE CITY OF DELRAY BEACH, PALM BEACH COUNTY, SOUTH FLORIDA WATER MANAGEMENT DISTRICT, AND THE FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION.

7. MAINTENANCE

SILT FENCE - REPLACE WHEN DAMAGED OR AT ONE (1) YEAR INTERVALS IN ACCORDANCE WITH FDOT SPECIFICATION SECTION 104. REMOVE SEDIMENT WHEN IT REACHES A HEIGHT OF 6".

8. INSPECTIONS

QUALIFIED PERSONNEL SHALL INSPECT THE FOLLOWING ITEMS AT LEAST ONCE EVERY SEVEN (7) CALENDAR DAYS AND WITHIN TWENTY-FOUR (24) HOURS OF THE END OF A STORM THAT IS 0.50 INCHES OR GREATER. WHERE SITES HAVE BEEN FINALLY STABILIZED, INSPECTIONS SHALL BE CONDUCTED AT LEAST ONCE EVERY MONTH AT:

A. POINTS OF DISCHARGE TO WATERS OF THE UNITED STATES.
B. POINTS OF DISCHARGE TO MUNICIPAL SEPARATE STORM SEWER SYSTEMS.
C. DISTURBED AREAS OF THE SITE THAT HAVE NOT BEEN FINALLY STABILIZED.
D. AREAS USED FOR STORAGE OF MATERIALS THAT ARE EXPOSED TO PRECIPITATION.
E. STRUCTURAL CONTROLS.
F. STORMWATER MANAGEMENT SYSTEMS.
G. LOCATIONS WHERE VEHICLES ENTER OR EXIT THE SITE.

ALL INSPECTIONS SHALL BE DOCUMENTED AND RETAINED ONSITE FOR INSPECTION BY PERMIT COMPLIANCE PERSONNEL. DAMAGED EROSION AND SEDIMENT CONTROL DEVICES FOUND DURING THESE INSPECTIONS SHALL BE REPAIRED WITHIN TWENTY-FOUR (24) HOURS OF THE INSPECTION AND COMPLETED WITHIN SEVENTY-TWO (72) HOURS.

9. SWPPP CONTROLS ARE SHOWN IN CONCEPTUAL LOCATIONS AND MAY BE SYMBOLIC IN SIZE DUE TO THE SCALE OF THE DRAWING. ACTUAL CONDITIONS, AND LOCATION OF CONSTRUCTION ACCESS POINTS. CONTROLS SHALL BE INSTALLED ACCORDING TO THE CONTRACTORS STORM WATER POLLUTION PREVENTION PLAN.

10. PORTABLE TOILETS, FUEL STATIONS, AND OTHER SOURCES OF POTENTIAL POLLUTION SHALL HAVE BERMS CONSTRUCTED AROUND THEM TO PREVENT DIRECT SURFACE FLOW INTO STORM SEWERS.

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STEPHEN CHERRY, PE
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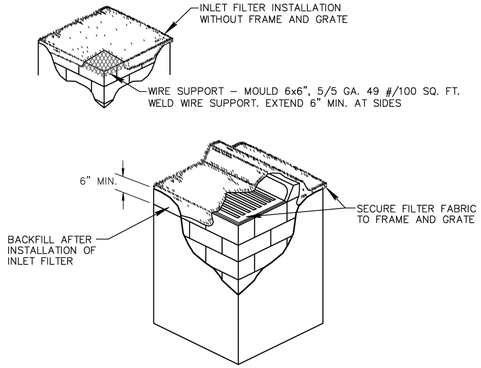
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THE CITY OF DELRAY BEACH
HISTORIC MARINE WAY SEAWALL, ROADWAY, AND DRAINAGE IMPROVEMENT

STORMWATER POLLUTION PREVENTION PLAN

PROJECT NO. 17-047
SHEET NO. C4.0
FILE ID. 2898.01

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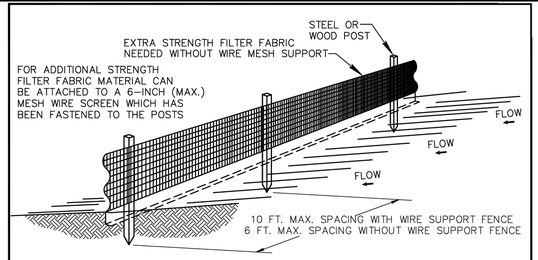
NOTES:

1. CONTRACTOR IS TO CLEAN INLET FILTER AFTER EVERY STORM.
2. CONTRACTOR TO REMOVE FABRIC JUST PRIOR TO PAVING.

A SEDIMENT TRAP WILL BE EXCAVATED BEHIND THE CURB AT THE INLET. THE BASIN SHALL BE AT LEAST 12 TO 14 INCHES IN DEPTH, APPROXIMATELY 36 INCHES IN WIDTH, AND APPROXIMATELY 7 TO 10 FEET IN LENGTH PARALLEL TO THE CURB.

STORM WATER WILL REACH THE SEDIMENT TRAP VIA CURB CUTS ADJACENT TO EACH SIDE OF THE INLET STRUCTURE. THESE OPENINGS SHALL BE AT LEAST 12 INCHES IN LENGTH. STORM WATER MAY ALSO REACH THE BASIN VIA OVERLAND FLOW LAND AREA BEHIND THE CURB. THE CURB CUTS SHALL BE REPAIRED WHEN THE SEDIMENT TRAP IS REMOVED.

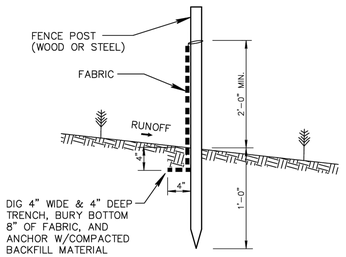
CITY of DELRAY BEACH PUBLIC WORKS DEPARTMENT 434 SOUTH SWINTON AVENUE, DELRAY BEACH, FLORIDA 33444	INLET FILTER DETAIL	DATE: 09-15-2021 D10.0



NOTES:

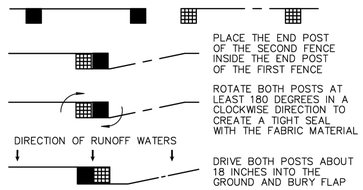
1. THE HEIGHT OF A SILT FENCE SHALL NOT EXCEED 36 INCHES.
2. THE FILTER FABRIC SHALL BE PURCHASED IN A CONTINUOUS ROLL CUT TO THE LENGTH OF THE BARRIER TO AVOID THE USE OF JOINTS.
3. POSTS SHALL BE SPACED A MAXIMUM OF 10 FEET APART AT THE BARRIER LOCATION AND DRIVEN SECURELY INTO THE GROUND A MINIMUM OF 12 INCHES. WHEN EXTRA STRENGTH FABRIC IS USED WITHOUT THE WIRE SUPPORT FENCE, POST SPACING SHALL NOT EXCEED 6 FEET.
4. A TRENCH SHALL BE EXCAVATED APPROXIMATELY 4 INCHES WIDE AND 4 INCHES DEEP ALONG THE LINE OF POSTS AND UPSLOPE FROM THE BARRIER.
5. WHEN STANDARD STRENGTH FILTER FABRIC IS USED, A WIRE MESH SUPPORT FENCE SHALL BE FASTENED SECURELY TO THE UPSLOPE SIDE OF THE POSTS USING HEAVY DUTY WIRE STAPLES AT LEAST 1 INCH LONG, TIE WIRES, OR HOG RINGS. THE WIRE SHALL EXTEND INTO THE TRENCH A MINIMUM OF 2 INCHES AND SHALL NOT EXTEND MORE THAN 36 INCHES ABOVE THE ORIGINAL GROUND SURFACE.
6. THE STANDARD STRENGTH FILTER FABRIC SHALL BE STAPLED OR WIRED TO THE FENCE, AND 8 INCHES OF THE FABRIC SHALL BE EXTENDED INTO THE TRENCH. THE FABRIC SHALL NOT EXTEND MORE THAN 36 INCHES ABOVE THE ORIGINAL GROUND SURFACE.
7. THE TRENCH SHALL BE BACKFILLED AND THE SOIL COMPACTED OVER THE FILTER FABRIC.
8. ALL PROJECTS REQUIRE SUBMITTAL OF POLLUTION PREVENTION PLAN (PPP).
9. ALL PROJECTS 1 AC. OR MORE MUST SUBMIT NOTICE OF INTENT (NOI) TO FDEP.

CITY of DELRAY BEACH PUBLIC WORKS DEPARTMENT 434 SOUTH SWINTON AVENUE, DELRAY BEACH, FLORIDA 33444	SILT FENCE INSTALLATION DETAIL (SHEET 1 of 2)	DATE: 09-15-2021 D12.0



SILT FENCE SECTION

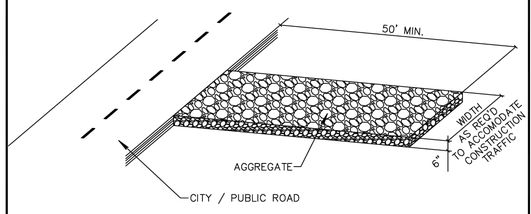
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ATTACHING TWO SILT FENCES

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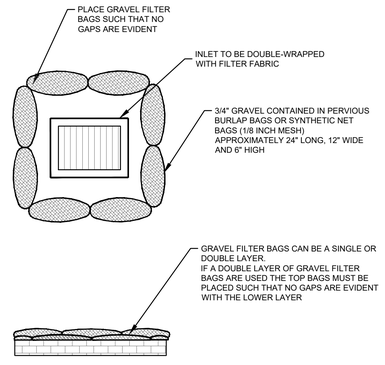
CITY of DELRAY BEACH PUBLIC WORKS DEPARTMENT 434 SOUTH SWINTON AVENUE, DELRAY BEACH, FLORIDA 33444	SILT FENCE INSTALLATION DETAIL (SHEET 2 OF 2)	DATE: 09-15-2021 D 12.1



NOTE:

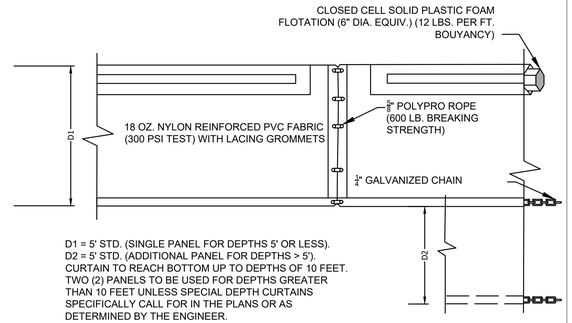
A CONSTRUCTION ENTRANCE SHALL BE CONSTRUCTED AND CONTAIN AN AGGREGATE LAYER (FDOT AGGREGATE NO.1), AT LEAST 6-INCHES THINK. IT MUST EXTEND TO THE WIDTH OF THE VEHICULAR INGRESS AND EGRESS AREA.

CITY of DELRAY BEACH PUBLIC WORKS DEPARTMENT 434 SOUTH SWINTON AVENUE, DELRAY BEACH, FLORIDA 33444	STABILIZED CONSTRUCTION ENTRANCE DETAIL	DATE: 09-15-2021 D 13.0



DITCH/PAVEMENT INLET PROTECTION

SCALE: NONE



D1 = 5' STD. (SINGLE PANEL FOR DEPTHS 5' OR LESS).
D2 = 5' STD. (ADDITIONAL PANEL FOR DEPTHS > 5').
CURTAIN TO REACH BOTTOM UP TO DEPTHS OF 10 FEET.
TWO (2) PANELS TO BE USED FOR DEPTHS GREATER
THAN 10 FEET UNLESS SPECIAL DEPTH CURTAINS
SPECIFICALLY CALL FOR IN THE PLANS OR AS
DETERMINED BY THE ENGINEER.

NOTES:

1. TURBIDITY BARRIERS ARE TO BE USED IN ALL PERMANENT BODIES OF WATER REGARDLESS OF WATER DEPTH.
2. NUMBER AND SPACING OF ANCHORS DEPENDANT ON CURRENT VELOCITIES.
3. DEPLOYMENT OF BARRIER AROUND PILE LOCATIONS MAY VARY TO ACCOMMODATE CONSTRUCTION OPERATIONS.
4. NAVIGATION MAY REQUIRE SEGMENTING BARRIER DURING CONSTRUCTION OPERATIONS.
5. FOR ADDITIONAL INFORMATION SEE SECTION 104 OF THE STANDARD SPECIFICATIONS.
6. FOR ADDITIONAL DETAILS SEE FDOT INDEX NO. 103.

FLOATING TURBIDITY BARRIER

N.T.S.

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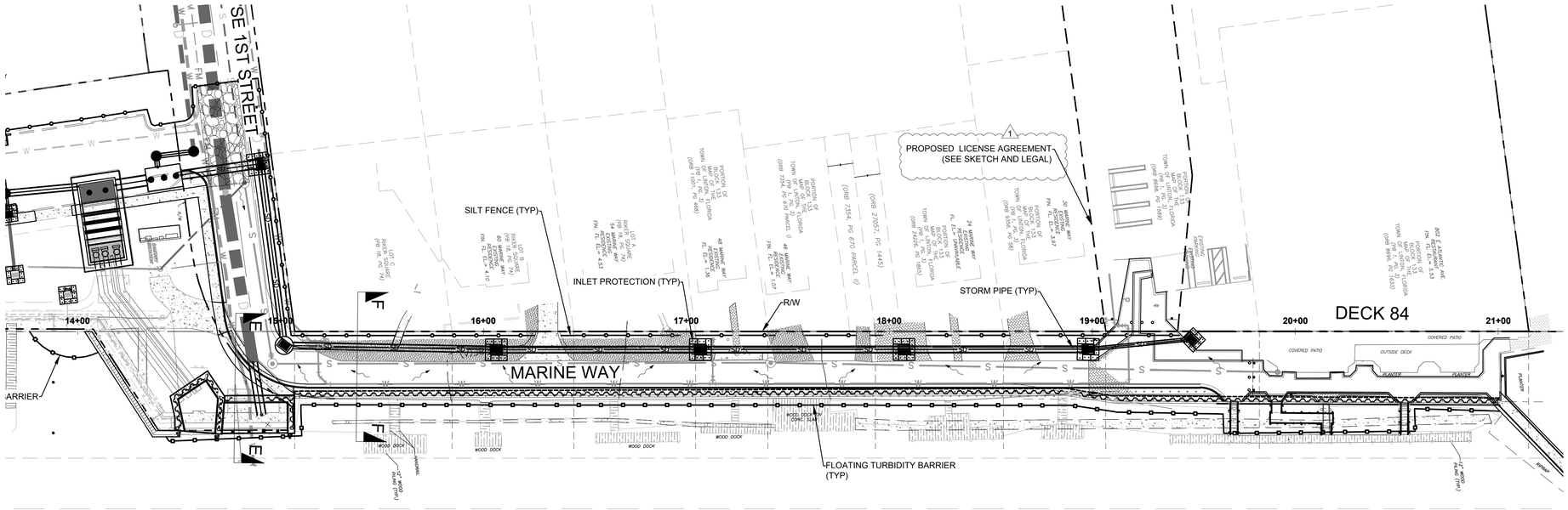
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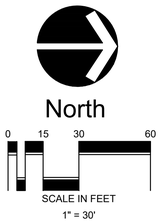
THE CITY OF DELRAY BEACH
HISTORIC MARINE WAY SEAWALL,
ROADWAY, AND DRAINAGE IMPROVEMENT

STORMWATER POLLUTION PREVENTION
DETAILS

PROJECT NO. 17-047
SHEET NO. C4.1
FILE ID. 2898.01

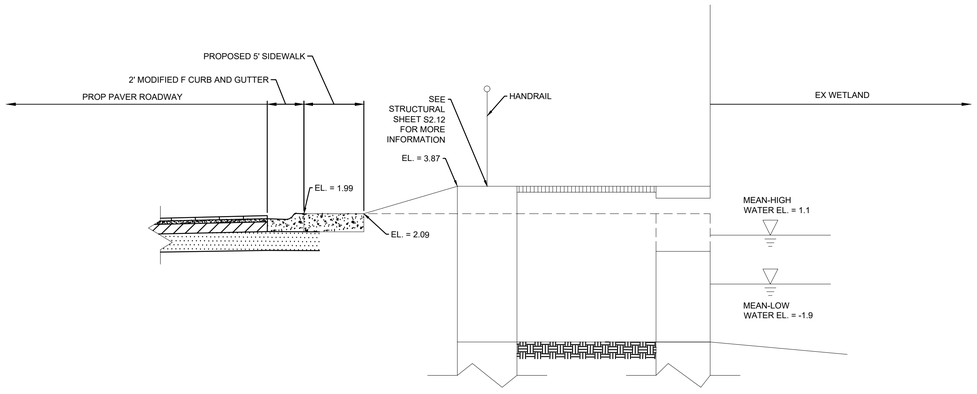
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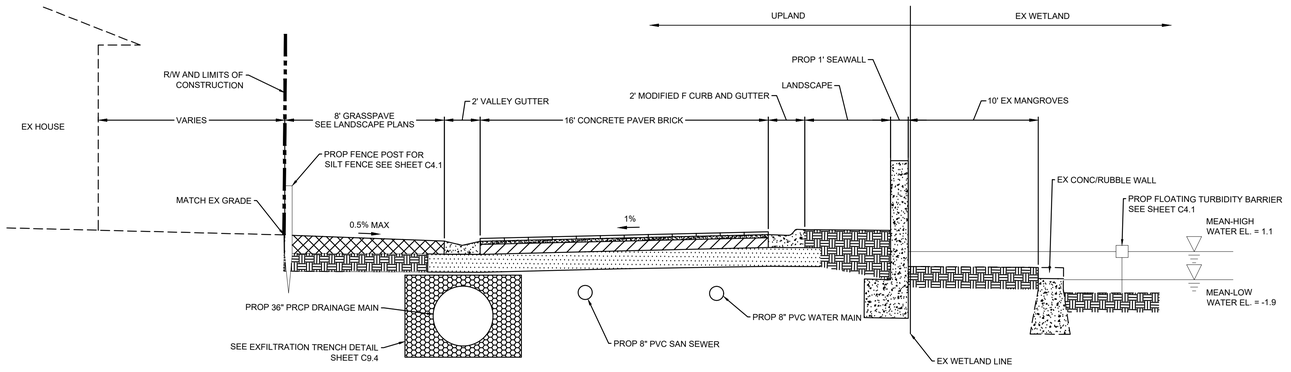
LEGEND

- R/W LINE
- PROP DRAINAGE MAIN
- PROP SEWER MAIN
- PROP WATER MAIN
- EX SEWER MAIN
- EX WATER MAIN
- EX DRAINAGE MAIN
- SILT FENCE
- FLOATING TURBIDITY BARRIER
- INLET PROTECTION



SECTION E-E

SCALE: NTS



NOTE:

1. SEE SHEET C4.1 FOR EROSION CONTROL DETAILS.

SECTION F-F
WETLAND/UPLAND SECTION

SCALE: NTS

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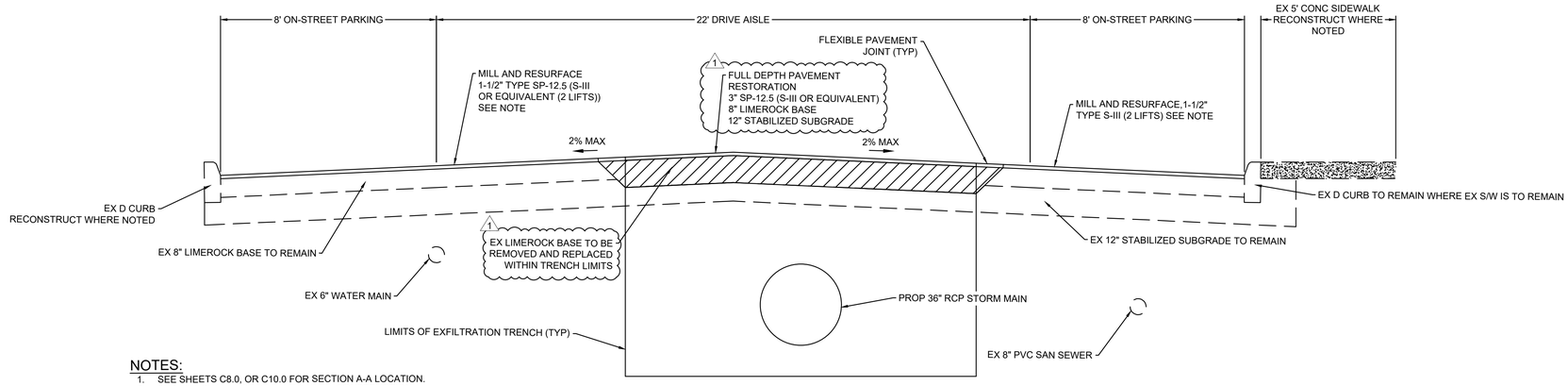
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1	2/26/24	ADDENDUM 5	MAS

THE CITY OF DELRAY BEACH
HISTORIC MARINE WAY SEAWALL, ROADWAY, AND DRAINAGE IMPROVEMENT

STORMWATER POLLUTION PREVENTION CROSS-SECTIONS

PROJECT NO. 17-047
SHEET NO. C4.2
FILE ID. 2898.01

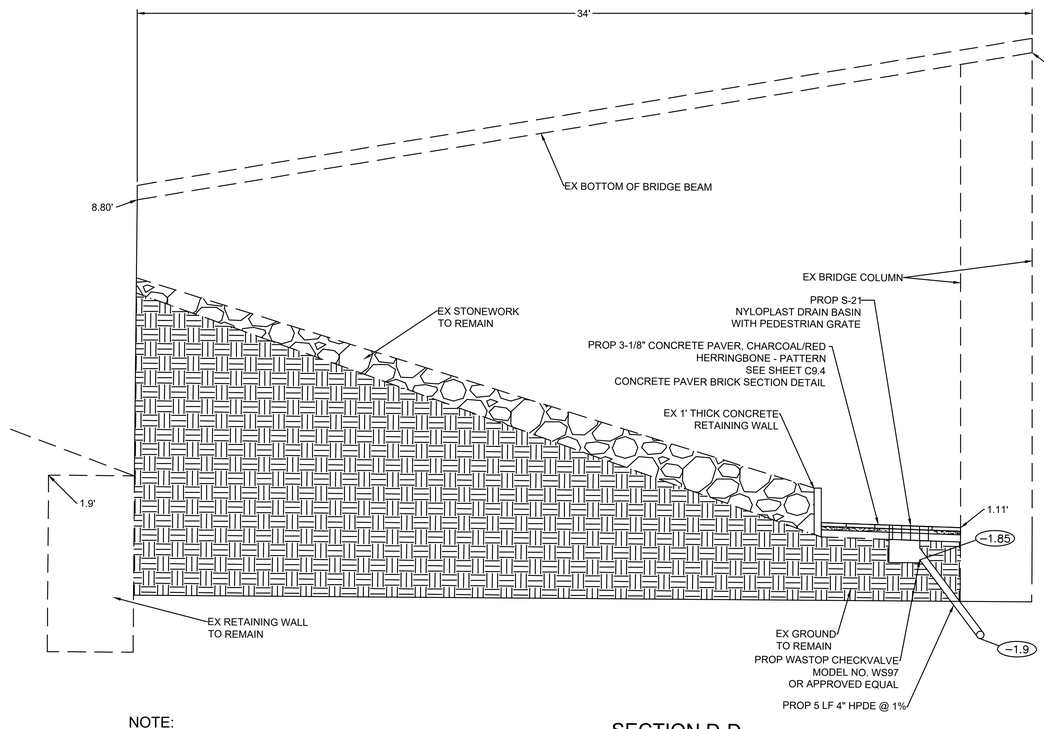
Home: Boca\P:\2800\2898.01 Marine Way_Plot\CAD\Design\Drawings\2898001-CIV-SWPP.dwg ——— Plotted: 3/28/2024 @ 8:36:17 AM Scott: 3/28/2024 8:41:28 AM



NOTES:
1. SEE SHEETS C8.0, OR C10.0 FOR SECTION A-A LOCATION.
2. 2ND LIFT SHALL NOT BE PAVED UNTIL CONSTRUCTION VEHICLES AND EQUIPMENT HAVE COMPLETED WORK.
3. SEE SHEET C9.4 FOR BACKFILL AND PAVEMENT RESTORATION DETAIL.

SECTION A-A
TYPICAL MARINE WAY S OF SE 1ST ST

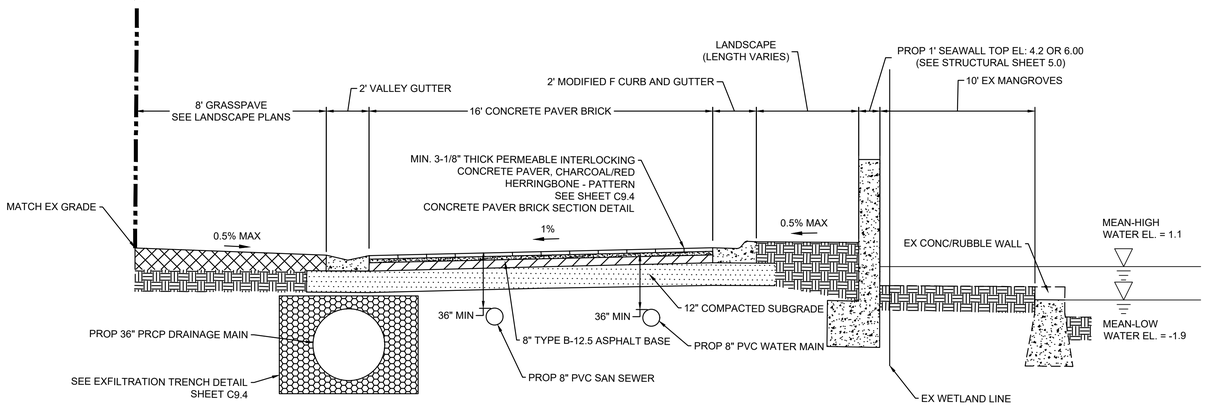
SCALE: NTS
STA = 10+14.57 TO 14+32.10



NOTE:
1. SEE SHEET C8.4 FOR SECTION D-D LOCATION.

SECTION D-D

SCALE: NTS
STA = 21+43.33



NOTE:
1. SEE SHEETS C8.2 AND C8.3 FOR SECTION C-C LOCATION.

SECTION C-C
TYPICAL MARINE WAY N OF SE 1ST ST

SCALE: NTS
STA = 15+11.19 TO 18+99.73

CITY of DELRAY BEACH
PUBLIC WORKS DEPARTMENT
434 SOUTH SWINTON AVENUE, DELRAY BEACH, FLORIDA 33444
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Fax No. 561.687.1110
Cert No. 6091 - LB No. 7055
ENGINEERING // SURVEYING // ENVIRONMENTAL // PLANNING

ENGINEER'S SEAL
STEPHEN CHERRY, PE
P.E., LIC. NO. 83268

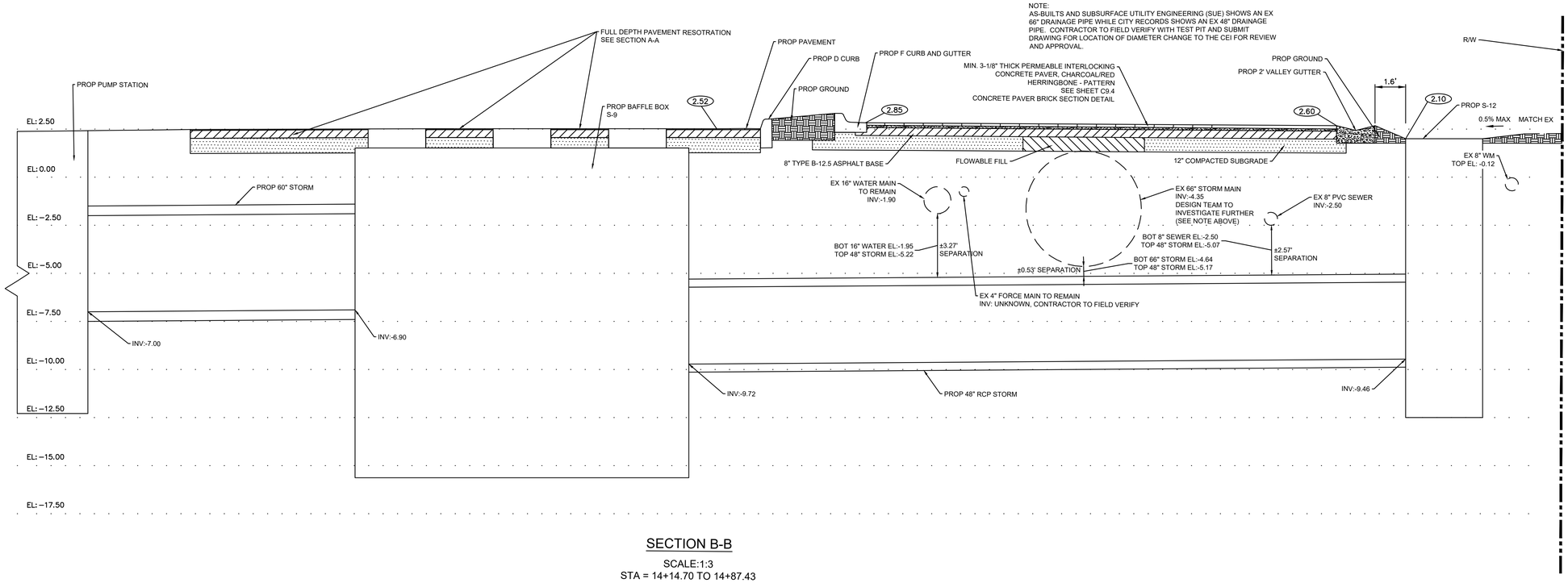
DESIGNED BY	CAC
DRAWN BY	CAC
CHECKED BY	SCC
QC BY	JWR
DATE	3/28/2024

REVISION	DATE	DESCRIPTION	BY
1	2/26/24	ADDENDUM 5	MAS

THE CITY OF DELRAY BEACH
HISTORIC MARINE WAY SEAWALL, ROADWAY, AND DRAINAGE IMPROVEMENT

TYPICAL SECTIONS

PROJECT NO. 17-047
SHEET NO. C5.0
FILE ID. 2898.01



SECTION B-B

SCALE:1:3

STA = 14+14.70 TO 14+87.43

NOTE:

1. SEE SHEET C8.2 FOR SECTION B-B LOCATION.

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STEPHEN CHERRY, PE
P.E., LIC. NO. 83268

DESIGNED BY	CAC
DRAWN BY	CAC
CHECKED BY	SCC
QC BY	JMR
DATE	3/21/2024

REVISION	DATE	DESCRIPTION	BY

THE CITY OF DELRAY BEACH
HISTORIC MARINE WAY SEAWALL, ROADWAY, AND DRAINAGE IMPROVEMENT

TYPICAL SECTIONS

PROJECT NO. 17-047

SHEET NO. C5.1

FILE ID. 2898.01

Mstone, Shelf: P:\2800\2898.01 Marine Way PH 2\CIVIL\Design\Drawings\2898001-CIV--SECTIONS AND DETAILS.dwg ---- Plotted: 3/21/2024 8:43:44 AM Sheet: 3/21/2024 8:26:44 AM

North

0 5 10 20

SCALE IN FEET
1" = 10'

SE 2ND STREET

170 MARINE WAY

160 MARINE WAY

150 MARINE WAY

140 MARINE WAY

138 MARINE WAY

136 MARINE WAY

134 MARINE WAY

MARINE WAY

R/W

LIMITS OF 1" MILL

STA=8+03.91
OFF=56.69 L

STA=8+21.15
OFF=57.50 L

STA=8+24.28
OFF=48.72 L

STA=8+03.66
OFF=45.44 L

STA=8+49.26
OFF=31.69 L

R32'

STA=9+37.19
OFF=53.51 L

STA=9+37.75
OFF=47.15 L

STA=9+35.18
OFF=43.63 L

R4'

STA=10+22.59
OFF=57.03 L

R5'

STA=10+10.05
OFF=48.03 L

R45'

STA=8+09.84
OFF=13.73 L

STA=8+01.92
OFF=12.64 L

STA=8+11.58
OFF=1.62 L

STA=8+03.62
OFF=0.56 L

FUEL FAULT

STA=8+25.35
OFF=8.51 L

STA=8+29.79
OFF=9.13 L

STA=8+32.87
OFF=7.89 L

STA=8+36.02
OFF=7.19 L

STA=8+33.34
OFF=4.52 L

STA=8+37.48
OFF=4.83 L

R3'

BASELINE OF CONSTRUCTION

N6° 55' 23.25"E
1578.411

PROP GENERATOR ENCLOSURE

8+00

9+00

10+00

11+00

30'

20'

17'

PROP BACKUP GENERATOR

16.5'

STA=8+40.29
OFF=14.27 R

STA=8+45.97
OFF=13.37 R

STA=8+54.87
OFF=12.07 R

STA=8+63.78
OFF=10.77 R

STA=8+64.53
OFF=15.90 R

STA=8+06.29
OFF=19.26 R

STA=8+35.98
OFF=15.30 R

STA=8+41.35
OFF=19.37 R

STA=8+35.76
OFF=20.20 R

STA=8+06.69
OFF=24.01 R

STA=8+13.34
OFF=23.41 R

STA=8+26.16
OFF=21.70 R

EX DOCKMASTER BUILDING

STA=8+13.86
OFF=28.27 R

EX GAZEBO

STA=8+34.84
OFF=22.86 R

STA=8+39.83
OFF=23.70 R

STA=8+16.69
OFF=40.15 R

STA=8+26.82
OFF=26.63 R

STA=8+34.82
OFF=29.48 R

STA=8+39.82
OFF=29.57 R

STA=8+39.51
OFF=41.80 R

STA=8+61.38
OFF=42.19 R

STA=8+56.53
OFF=42.10 R

STA=8+83.02
OFF=42.58 R

STA=8+75.06
OFF=42.44 R

SD

MATCHLINE SHEET C6.1

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ENGINEERING // SURVEYING // ENVIRONMENTAL // PLANNING

ENGINEER'S SEAL

STEPHEN CHERRY, PE
P.E., LIC. NO. 83268
DATE 3/28/2024

DESIGNED BY	CAC
DRAWN BY	CAC
CHECKED BY	SCC
QC BY	JWR

REVISION	DATE	DESCRIPTION	BY
1	2/26/24	ADDENDUM 5	MAS

THE CITY OF DELRAY BEACH
HISTORIC MARINE WAY SEAWALL,
ROADWAY, AND DRAINAGE IMPROVEMENT

HORIZONTAL CONTROL PLAN

PROJECT NO. 17-047
SHEET NO. C6.0
FILE ID. 2898.01

Issue Sheet P:\2898\02898.01 Marine Way\dsn\Civil\Drawings\2898201-C1-Horizontal Control.dwg ——— Plotted: 3/28/2024 @ 12:08 AM by Scott, 3/28/2024 8:45:40 AM

132 MARINE WAY
130 MARINE WAY
128 MARINE WAY
126 MARINE WAY
120 MARINE WAY
116 MARINE WAY
110 MARINE WAY
R/W
MARINE WAY
MARINE WAY
MATCHLINE SHEET C6.0
MATCHLINE SHEET C6.2
STA=12+47.85
OFF=79.55 L
STA=12+59.56
OFF=73.22 L
STA=12+36.72
OFF=37.41 L
STA=12+59.37
OFF=49.24 L
STA=12+57.74
OFF=39.67 L
STA=13+53.99
OFF=94.94 L
STA=13+66.98
OFF=96.89 L
STA=13+79.13
OFF=56.97 L
STA=13+53.39
OFF=53.21 L
STA=13+69.18
OFF=47.77 L
STA=13+87.28
OFF=41.38 L
R3'
R4'
R20'
SD
5' WIDE CONC. SIDEWALK
BASELINE OF CONSTRUCTION
N6° 55' 23.25"E
1578.411
12+00
13+00
CONCRETE SEAWALL
CONCRETE SEAWALL
DOCK 1
DOCK 2
DOCK 3
DOCK 4
DOCK 5
DOCK 6
DOCK 7
12" x 12" WOOD PILING (TYP.)
WOOD DOCK (TYP.)
North
0 5 10 20
SCALE IN FEET
1" = 10'

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STEPHEN CHERRY, PE
P.E., LIC. NO. 83268

DESIGNED BY	CAC
DRAWN BY	CAC
CHECKED BY	SCC
QC BY	JMR
DATE	3/21/2024

REVISION	DATE	DESCRIPTION	BY

THE CITY OF DELRAY BEACH
HISTORIC MARINE WAY SEAWALL,
ROADWAY, AND DRAINAGE IMPROVEMENT

HORIZONTAL CONTROL PLAN

PROJECT NO. 17-047
SHEET NO. C6.1
FILE ID. 2898.01

Mason Shell (k:\2800\2898.01 Marine Way Ph 2 (CA)\Design\Roadway\Z2898.01-C2-Horizontal Control.dwg ---- Plotted: 3/21/2024 @ 8:45 AM Shell: 3/21/2024 @ 8:22:00 AM

North

0 5 10 20

SCALE IN FEET
1" = 10'

SE 1ST STREET

R/W

MARINE WAY

STA=14+81.46
OFF=112.93 L

STA=14+50.28
OFF=82.78 L

STA=14+33.15
OFF=80.12 L

STA=14+54.73
OFF=79.25 L

R30'

STA=13+96.61
OFF=75.77 L

PROP 12X20
BAFFLE BOX

STA=14+20.34
OFF=79.30 L

STA=14+64.31
OFF=71.05 L

STA=14+34.89
OFF=68.93 L

STA=14+63.37
OFF=72.09 L

STA=14+44.31
OFF=69.81 L

STA=14+52.01
OFF=71.58 L

PROP
PUMP STATION

STA=13+97.23
OFF=59.62 L

STA=14+30.02
OFF=50.48 L

STA=14+30.81
OFF=43.86 L

STA=14+50.09
OFF=52.50 L

STA=14+50.88
OFF=45.88 L

STA=14+03.53
OFF=29.28 L

STA=14+27.27
OFF=32.82 L

STA=14+01.97
OFF=24.99 L

R6'

STA=13+98.22
OFF=14.43 L

BASELINE OF CONSTRUCTION

14+00

STA=14+72.78
OFF=6.70 L

STA=14+95.10
OFF=1.91 L

R16'

15+00

N6° 55' 23.25"E
1578.411

16+00

STA=14+64.07
OFF=19.50 R

R39'

STA=15+11.19
OFF=10.00 R

STA=15+08.13
OFF=25.76 R

STA=14+72.27
OFF=31.70 R

STA=14+45.67
OFF=31.87 R

STA=15+06.84
OFF=31.49 R

STA=15+06.89
OFF=50.23 R

STA=14+47.95
OFF=48.95 R

SEE STRUCTURAL SHEET S2.01
FOR MORE INFORMATION

STA=14+71.11
OFF=50.64 R

WOOD DOCK

WOOD DOCK

WOOD DOCK

WOOD DOCK

HANDRAIL

12" PILI

LOT C
RIKER SQUARE
(PB 18, PG. 74)

LOT B
RIKER SQUARE
(PB 18, PG. 74)
60 MARINE WAY
EXISTING
RESIDENCE
FIN. FL. EL.= 4.10

LOT A
RIKER SQUARE
(PB 18, PG. 74)
54 MARINE WAY
EXISTING
RESIDENCE
FIN. FL. EL.= 4.53

MATCHLINE SHEET C6.1

MATCHLINE SHEET C6.3

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ENGINEER'S SEAL

STEPHEN CHERRY, PE
P.E., LIC. NO. 83268

DESIGNED BY	CAC
DRAWN BY	CAC
CHECKED BY	SCC
QC BY	JMR
DATE	3/21/2024

REVISION	DATE	DESCRIPTION	BY

THE CITY OF DELRAY BEACH
HISTORIC MARINE WAY SEAWALL,
ROADWAY, AND DRAINAGE IMPROVEMENT

HORIZONTAL CONTROL PLAN

PROJECT NO. 17-047

SHEET NO. C6.2

FILE ID. 2898.01

Mason Scott A:\2800\2898.01 Marine Way PH 3\Civil\Design\Drawings\28981-Civ-Horizontal Control.dwg ---- Plotted: 3/21/2024 8:45:07 AM Scott 3/21/2024 8:22:09 AM

North

0 5 10 20

SCALE IN FEET
1" = 10'

MATCHLINE SHEET C6.2

MATCHLINE SHEET C8.4

PORTION OF BLOCK 133 MAP OF THE TOWN OF LINTON, FLORIDA (PB 1, PG. 3) (ORB 11001, PG 468)

48 MARINE WAY EXISTING RESIDENCE FL. EL.= 1.36

PORTION OF BLOCK 133 MAP OF THE TOWN OF LINTON, FLORIDA (PB 1, PG. 3) (ORB 7354, PG 670 PARCEL I)

46 MARINE WAY EXISTING RESIDENCE FIN. FL. EL.= 1.07

(ORB 27057, PG 1445)

(ORB 7354, PG 670 PARCEL II)

24 MARINE WAY EXISTING RESIDENCE FL. EL.= UNAVAILABLE

PORTION OF BLOCK 133 MAP OF THE TOWN OF LINTON, FLORIDA (PB 1, PG. 3) (ORB 24226, PG 1865)

30 MARINE WAY EXISTING RESIDENCE FIN. FL. EL.= 3.97

PORTION OF BLOCK 133 MAP OF THE TOWN OF LINTON, FLORIDA (PB 1, PG. 3) (ORB 9356, PG 58)

PORTION OF BLOCK 133 MAP OF THE TOWN OF LINTON, FLORIDA (PB 1, PG. 3) (ORB 8698, PG 1589)

PROPOSED LICENSE AGREEMENT (SEE SKETCH AND LEGAL)

EXISTING PARKING

BASELINE OF CONSTRUCTION

R/W

17+00 18+00 19+00

N6° 55' 23.25"E 1578.41'

MARINE WAY

STA=19+27.84 OFF=35.22 L
STA=19+18.79 OFF=34.73 L
STA=19+30.44 OFF=17.83 L
STA=19+35.80 OFF=18.56 L
STA=19+12.49 OFF=4.29 L
STA=19+35.78 OFF=5.32 L
STA=19+00.20 OFF=8.00 R
STA=19+73.14 OFF=10.00 R
STA=19+51.10 OFF=10.00 R
STA=19+73.14 OFF=14.95 R
STA=19+83.63 OFF=14.99 R
STA=19+83.66 OFF=19.01 R
STA=19+53.20 OFF=27.50 R
STA=19+87.03 OFF=22.31 R
STA=19+65.00 OFF=34.44 R
STA=19+88.74 OFF=34.71 R
STA=19+68.03 OFF=34.70 R
STA=19+71.69 OFF=34.71 R
STA=19+92.88 OFF=34.75 R

R15'

SEAWALL
WOOD DOCK ON CONC. SLAB
CONC. SEAWALL
RETAINING WALL
WOOD DOCK
HANDRAIL

CITY of DELRAY BEACH
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P.E., LIC. NO. 83268

DESIGNED BY	CAC
DRAWN BY	CAC
CHECKED BY	SCC
QC BY	JWR
DATE	3/21/2024

REVISION	DATE	DESCRIPTION	BY

THE CITY OF DELRAY BEACH
HISTORIC MARINE WAY SEAWALL,
ROADWAY, AND DRAINAGE IMPROVEMENT

HORIZONTAL CONTROL PLAN

PROJECT NO. 17-047
SHEET NO. C6.3
FILE ID. 2898.01

Issue Set: P:\2020\2898.01 Marine Way Rd (FDOT)\Design\Working\2898.01-Horizontal Control.dwg ---------- Plotted: 3/21/2024 9:45:27 AM Scott 3/21/2024 9:29:09 AM

North

0 5 10 20

SCALE IN FEET
1" = 10'

MATCHLINE SHEET C6.3

R/W

802 E ATLANTIC AVE.
RESTAURANT
FIN. FL. EL.= 5.53

PORTION OF
BLOCK 133
MAP OF THE
TOWN OF LINTON, FLORIDA
(PB 1, PG. 3)
(ORB 8696, PG 1633)

R/M ELEV=3.14'

DECK 84

R/W

BASELINE OF CONSTRUCTION

N6° 55' 23.25"E
1578.411

20+00 21+00 22+00 22+78

N: 774730.4434'
E: 962281.8845'

STA=20+30.44
OFF=19.34 R

STA=20+23.34
OFF=20.55 R

STA=20+30.68
OFF=17.26 R

STA=20+98.11
OFF=3.86 R

STA=21+05.43
OFF=3.77 R

STA=20+93.08
OFF=9.46 R

STA=21+06.20
OFF=9.49 R

COVERED PATIO

OUTSIDE DECK

STA=20+37.65
OFF=17.35 R

STA=20+37.55
OFF=19.49 R

STA=20+93.08
OFF=20.31 R

STA=21+00.57
OFF=10.50 R

STA=19+99.79
OFF=20.62 R

STA=20+17.78
OFF=20.64 R

PLANTER

PLANTER

PLANTER

STA=20+40.48
OFF=22.77 R

STA=20+90.37
OFF=22.93 R

STA=19+96.10
OFF=29.76 R

STA=20+23.32
OFF=22.58 R

STA=20+27.32
OFF=22.69 R

BRICK PAVERS

STA=21+00.69
OFF=29.62 R

STA=20+45.88
OFF=30.03 R

RETAINING WALL

RETAINING WALL

STA=20+61.82
OFF=30.12 R

STA=20+51.93
OFF=35.20 R

STA=20+55.60
OFF=35.17 R

STA=20+94.39
OFF=30.30 R

CONC. SEAWALL

D DOCK

HANDRAIL

HANDRAIL

12" WOOD
PILING (TYP.)

RIPRAP

RIPRAP

SEAWALL

HANDRAIL

ATLANTIC AVENUE
SR 806
(FLDOT RIGHT OF WAY MAP
SEGMENT NO. 41340-1)

C/L

RETAINING WALL

STA=22+14.94
OFF=43.70 R

STA=22+22.55
OFF=43.79 R

STA=21+88.97
OFF=66.40 R

STA=21+41.88
OFF=72.51 R

STA=21+89.42
OFF=72.63 R

STA=21+43.08
OFF=77.46 R

STA=21+87.87
OFF=71.12 R

STA=21+42.10
OFF=79.38 R

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ENGINEER'S SEAL

STEPHEN CHERRY, PE
P.E., LIC. NO. 83268

DESIGNED BY	CAC
DRAWN BY	CAC
CHECKED BY	SCC
QC BY	JMR
DATE	3/21/2024

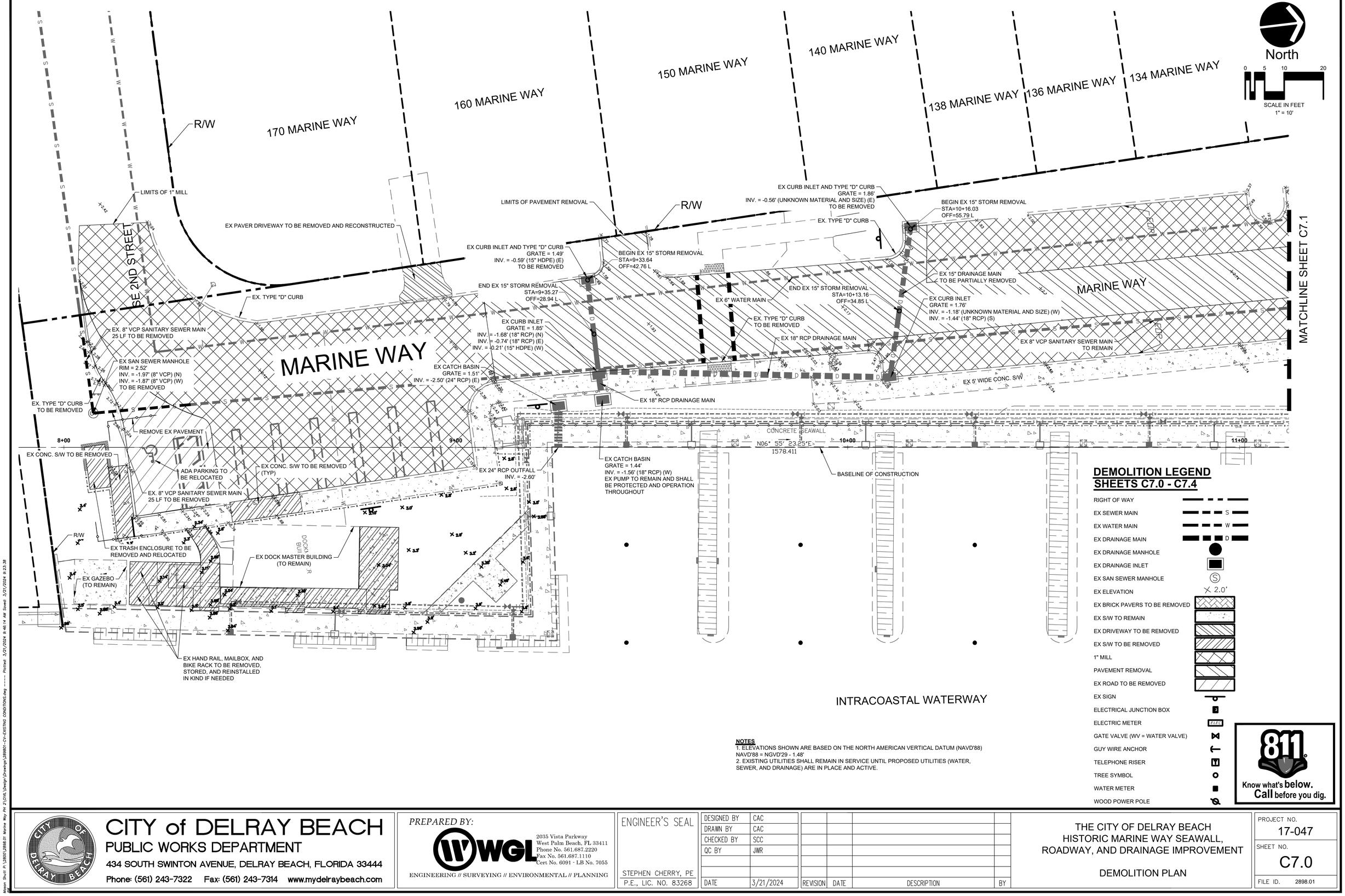
REVISION	DATE	DESCRIPTION	BY

THE CITY OF DELRAY BEACH
HISTORIC MARINE WAY SEAWALL,
ROADWAY, AND DRAINAGE IMPROVEMENT

HORIZONTAL CONTROL PLAN

PROJECT NO. 17-047
SHEET NO. C6.4
FILE ID. 2898.01

Mason Shott, P:\2800\2898.01 Marine Way Ph 3\CIVIL\Design\Drawings\289801-Co-Horizontal Control.dwg ----- Plotted: 3/21/2024 8:45:48 AM by Scott: 3/21/2024 8:22:09 AM



NOTES

1. ELEVATIONS SHOWN ARE BASED ON THE NORTH AMERICAN VERTICAL DATUM (NAVD'88) NAVD'88 = NGVD'29 - 1.48'
2. EXISTING UTILITIES SHALL REMAIN IN SERVICE UNTIL PROPOSED UTILITIES (WATER, SEWER, AND DRAINAGE) ARE IN PLACE AND ACTIVE.

DEMOLITION LEGEND SHEETS C7.0 - C7.4

- RIGHT OF WAY
- EX SEWER MAIN (S)
- EX WATER MAIN (W)
- EX DRAINAGE MAIN (D)
- EX DRAINAGE MANHOLE
- EX DRAINAGE INLET
- EX SAN SEWER MANHOLE (S)
- EX ELEVATION (X 2.0')
- EX BRICK PAVERS TO BE REMOVED
- EX S/W TO REMAIN
- EX DRIVEWAY TO BE REMOVED
- EX S/W TO BE REMOVED
- 1" MILL
- PAVEMENT REMOVAL
- EX ROAD TO BE REMOVED
- EX SIGN
- ELECTRICAL JUNCTION BOX (E)
- ELECTRIC METER (ELEC)
- GATE VALVE (WV = WATER VALVE)
- GUY WIRE ANCHOR
- TELEPHONE RISER
- TREE SYMBOL
- WATER METER
- WOOD POWER POLE

811 Know what's below. Call before you dig.

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STEPHEN CHERRY, PE
P.E., LIC. NO. 83268

DESIGNED BY	CAC
DRAWN BY	CAC
CHECKED BY	SCC
QC BY	JWR
DATE	3/21/2024

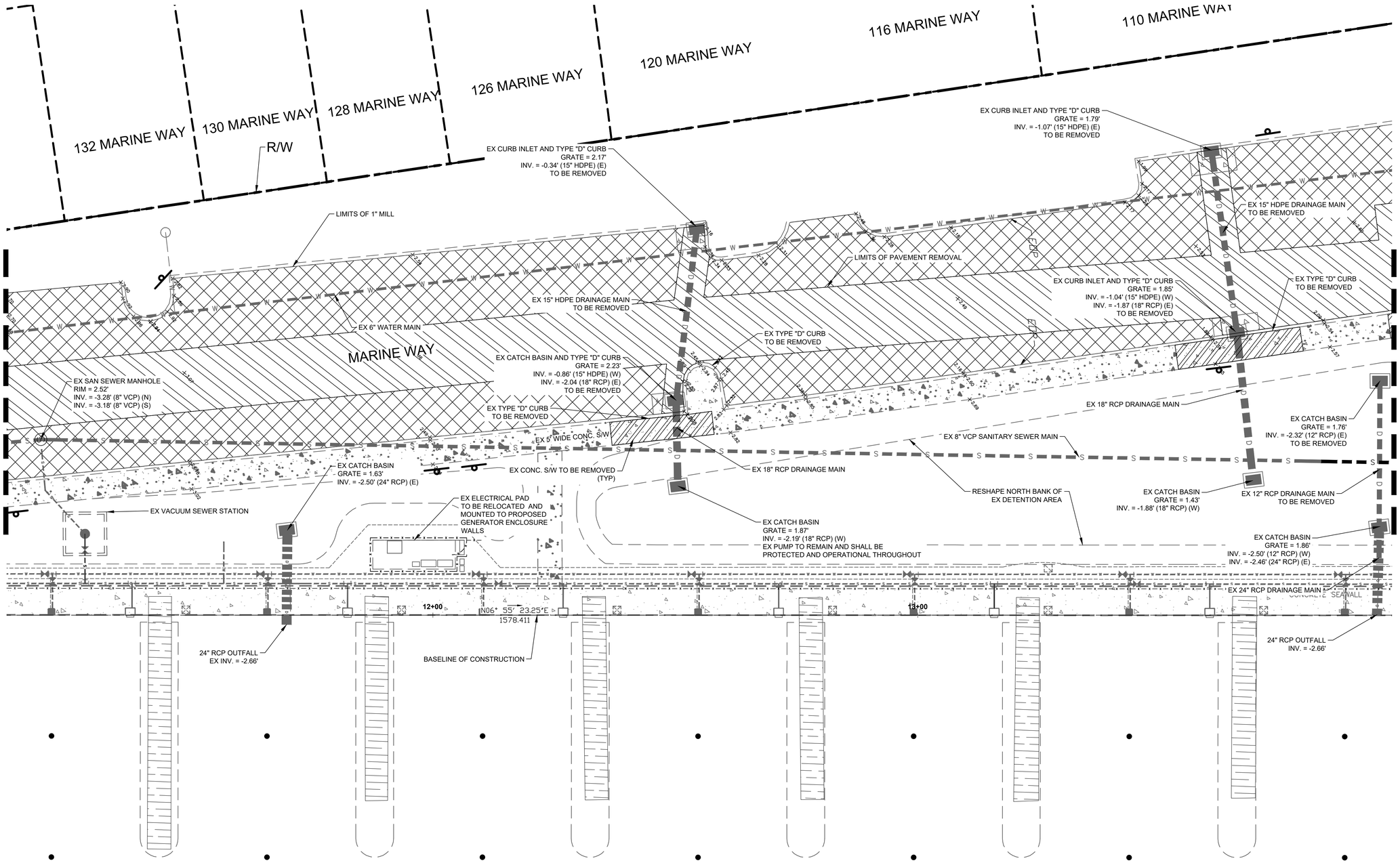
REVISION	DATE	DESCRIPTION	BY

THE CITY OF DELRAY BEACH
HISTORIC MARINE WAY SEAWALL, ROADWAY, AND DRAINAGE IMPROVEMENT

DEMOLITION PLAN

PROJECT NO. 17-047
SHEET NO. C7.0
FILE ID. 2898.01

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North

0 5 10 20

SCALE IN FEET
1" = 10'

DEMOLITION LEGEND
SHEETS C7.0 - C7.4

- RIGHT OF WAY
- EX SEWER MAIN (S)
- EX WATER MAIN (W)
- EX DRAINAGE MAIN (D)
- EX DRAINAGE MANHOLE
- EX DRAINAGE INLET
- EX SAN SEWER MANHOLE (S)
- EX ELEVATION (X 2.0')
- EX BRICK PAVERS TO BE REMOVED
- EX S/W TO REMAIN
- EX DRIVEWAY TO BE REMOVED
- EX S/W TO BE REMOVED
- 1" MILL
- PAVEMENT REMOVAL
- EX ROAD TO BE REMOVED
- EX SIGN
- ELECTRICAL JUNCTION BOX (E)
- ELECTRIC METER (ELEC)
- GATE VALVE (WV = WATER VALVE)
- GUY WIRE ANCHOR
- TELEPHONE RISER (T)
- TREE SYMBOL
- WATER METER
- WOOD POWER POLE

NOTES

1. ELEVATIONS SHOWN ARE BASED ON THE NORTH AMERICAN VERTICAL DATUM (NAVD'88) NAVD'88 = NGVD'29 - 1.48'
2. EXISTING UTILITIES SHALL REMAIN IN SERVICE UNTIL PROPOSED UTILITIES (WATER, SEWER, AND DRAINAGE) ARE IN PLACE AND ACTIVE.

811 Know what's below. Call before you dig.

CITY of DELRAY BEACH
PUBLIC WORKS DEPARTMENT
434 SOUTH SWINTON AVENUE, DELRAY BEACH, FLORIDA 33444
Phone: (561) 243-7322 Fax: (561) 243-7314 www.mydelraybeach.com

PREPARED BY:
WGL ENGINEERING // SURVEYING // ENVIRONMENTAL // PLANNING
2035 Vista Parkway
West Palm Beach, FL 33411
Phone No. 561.687.2220
Fax No. 561.687.1110
Cert No. 6091 - LB No. 7055

ENGINEER'S SEAL

STEPHEN CHERRY, PE
P.E., LIC. NO. 83268

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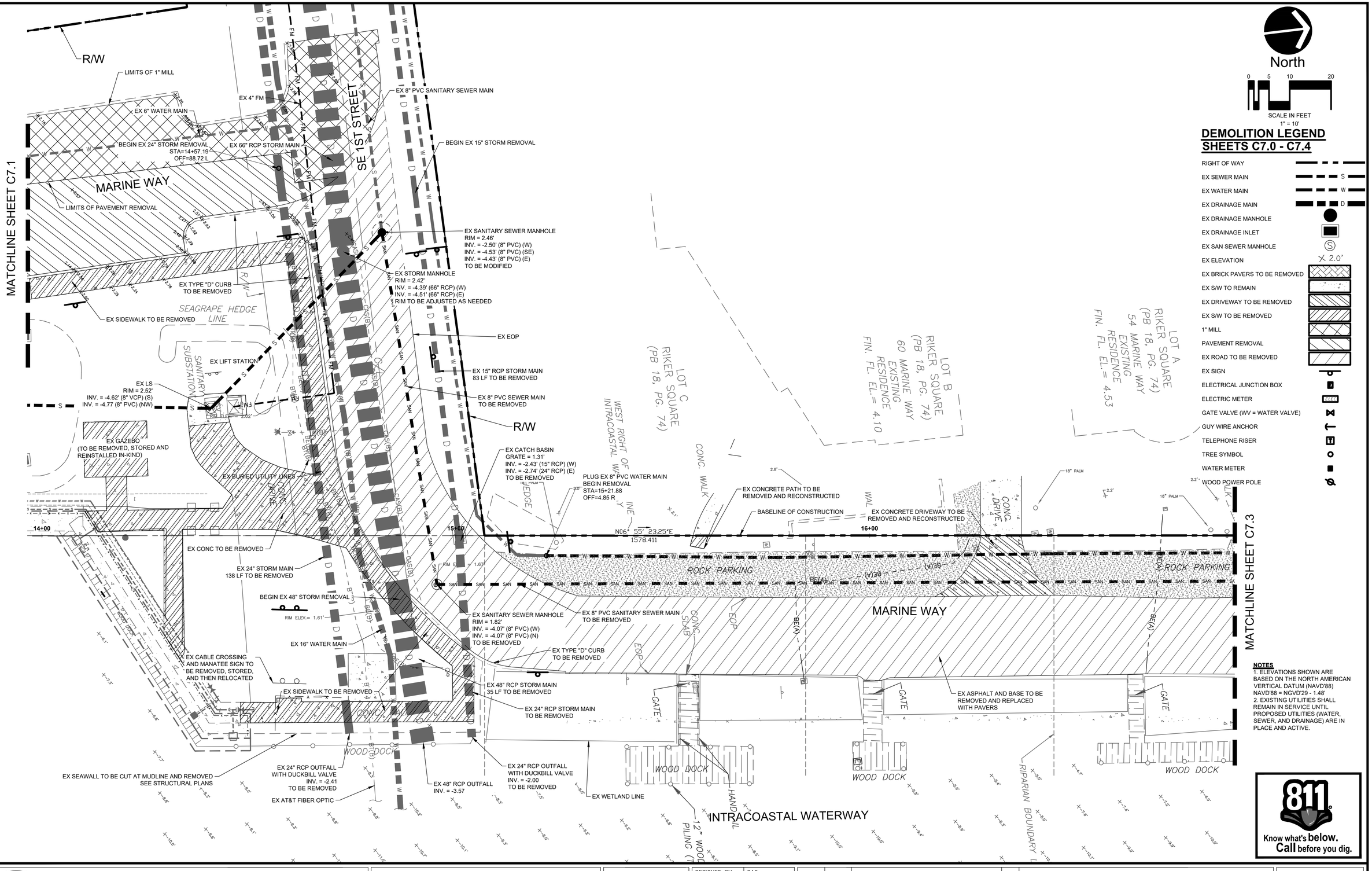
REVISION	DATE	DESCRIPTION	BY

THE CITY OF DELRAY BEACH
HISTORIC MARINE WAY SEAWALL,
ROADWAY, AND DRAINAGE IMPROVEMENT

DEMOLITION PLAN

PROJECT NO. 17-047
SHEET NO. C7.1
FILE ID. 2898.01

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North

0 5 10 20

SCALE IN FEET
1" = 10'

DEMOLITION LEGEND
SHEETS C7.0 - C7.4

- RIGHT OF WAY
- EX SEWER MAIN (S)
- EX WATER MAIN (W)
- EX DRAINAGE MAIN (D)
- EX DRAINAGE MANHOLE
- EX DRAINAGE INLET
- EX SAN SEWER MANHOLE (S)
- EX ELEVATION (X 2.0')
- EX BRICK PAVERS TO BE REMOVED
- EX S/W TO REMAIN
- EX DRIVEWAY TO BE REMOVED
- EX S/W TO BE REMOVED
- 1" MILL
- PAVEMENT REMOVAL
- EX ROAD TO BE REMOVED
- EX SIGN
- ELECTRICAL JUNCTION BOX (E)
- ELECTRIC METER (ELEC)
- GATE VALVE (WV = WATER VALVE)
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- TELEPHONE RISER (T)
- TREE SYMBOL
- WATER METER (W)
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ENGINEER'S SEAL
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DATE	3/21/2024

REVISION	DATE	DESCRIPTION	BY

THE CITY OF DELRAY BEACH
HISTORIC MARINE WAY SEAWALL,
ROADWAY, AND DRAINAGE IMPROVEMENT

DEMOLITION PLAN

PROJECT NO. 17-047
SHEET NO. C7.2
FILE ID. 2898.01

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North

0 5 10 20

SCALE IN FEET
1" = 10'

DEMOLITION LEGEND
SHEETS C7.0 - C7.4

- RIGHT OF WAY
- EX SEWER MAIN (S)
- EX WATER MAIN (W)
- EX DRAINAGE MAIN (D)
- EX DRAINAGE MANHOLE
- EX DRAINAGE INLET
- EX SAN SEWER MANHOLE (S)
- EX ELEVATION (× 2.0')
- EX BRICK PAVERS TO BE REMOVED
- EX S/W TO REMAIN
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- TELEPHONE RISER (T)
- TREE SYMBOL
- WATER METER (W)
- WOOD POWER POLE

MATCHLINE SHEET C7.2

MATCHLINE SHEET C7.4

PORTION OF BLOCK 133 MAP OF THE TOWN OF LINTON, FLORIDA (PB 1, PG. 3) (ORB 11001, PG 468)

PORTION OF BLOCK 133 MAP OF THE TOWN OF LINTON, FLORIDA (PB 1, PG. 3) (ORB 7354, PG 670 PARCEL I)

(ORB 7354, PG 670 PARCEL II)

(ORB 27057, PG 1445)

PORTION OF BLOCK 133 MAP OF THE TOWN OF LINTON, FLORIDA (PB 1, PG. 3) (ORB 24226, PG 1865)

PORTION OF BLOCK 133 MAP OF THE TOWN OF LINTON, FLORIDA (PB 1, PG. 3) (ORB 9356, PG 58)

PORTION OF BLOCK 133 MAP OF THE TOWN OF LINTON, FLORIDA (PB 1, PG. 3) (ORB 8698, PG 1589)

48 MARINE WAY EXISTING RESIDENCE FIN. FL. EL.= 1.36

46 MARINE WAY EXISTING RESIDENCE FIN. FL. EL.= 1.07

24 MARINE WAY EXISTING RESIDENCE FL. EL.= UNAVAILABLE

30 MARINE WAY EXISTING RESIDENCE FIN. FL. EL.= 3.97

EXISTING PARKING

MARINE WAY

R/W

EX EOP

EX ROCK DRIVEWAY TO BE REMOVED AND RECONSTRUCTED

EX PAVER WALKWAY TO BE REMOVED AND RECONSTRUCTED IN-KIND

EX ROCK PATH TO BE REMOVED AND RECONSTRUCTED

EX PAVER DRIVEWAY TO BE REMOVED AND RECONSTRUCTED IN-KIND

EX 8" PVC WATER TO BE REMOVED

EX PAVER WALKWAY TO BE REMOVED AND RECONSTRUCTED IN KIND

EX PAVER DRIVEWAY TO BE REMOVED AND RECONSTRUCTED IN-KIND

BASELINE OF CONSTRUCTION

N06° 55' 23.25"E
1578.411

17+00

18+00

19+00

EX DECK 84 METER APPROXIMATE LOCATION

EX 8" DIP WATER MAIN

EX DECK 84 BACKFLOW PREVENTER APPROXIMATE LOCATION

EX CATCH BASIN GRATE = 2.37' INV. = 1.17' (8" PVC) (E) TO BE REMOVED

EX CATCH BASIN GRATE = 1.53' INV. = 0.47' (8" PVC) (E) TO BE REMOVED

END EX 8" PVC WATER MAIN REMOVAL

EX SANITARY SEWER MANHOLE TO REMAIN RIM = 3.14' INV. = -1.83 (8" PVC) (S)

EX SANITARY SEWER MANHOLE RIM = 1.69' INV. = -2.93 (8" PVC) (N) INV. = -2.93 (8" PVC) (S) TO BE REMOVED

EX 8" PVC SANITARY SEWER MAIN TO BE REMOVED

EX 8" PVC SANITARY SEWER MAIN TO BE REMOVED

EX ASPHALT AND BASE TO BE REMOVED AND REPLACED WITH PAVERS

EX PAVERS TO BE REMOVED

EX 8" PVC DRAINAGE MAIN TO BE REMOVED

EX 8" PVC DRAINAGE MAIN TO BE REMOVED

BEGIN REMOVAL OF EX HEADER CURB

OUTFALL INV EL: 0.41' (8" PVC) TO BE REMOVED

OUTFALL INV EL: 0.87' (8" PVC) TO BE REMOVED

EX WETLAND LINE

WOOD DOCK ON CONC. SLAB

WOOD DOCK

CONC. SEAWALL

RETAINING WALL

INTRACOASTAL WATERWAY

RIPARIAN BOUNDARY LINE (TYP.)

ELECTRIC OUTLET & SWITCH ON POST

ELECTRIC METER ON POSTS

HANDRAIL

EX RAMP TO BE REMOVED AND REPLACED

NOTES

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ENGINEERING // SURVEYING // ENVIRONMENTAL // PLANNING

ENGINEER'S SEAL
STEPHEN CHERRY, PE
P.E., LIC. NO. 83268

DESIGNED BY	CAC
DRAWN BY	CAC
CHECKED BY	SCC
QC BY	JWR
DATE	3/21/2024

REVISION	DATE	DESCRIPTION	BY

THE CITY OF DELRAY BEACH
HISTORIC MARINE WAY SEAWALL, ROADWAY, AND DRAINAGE IMPROVEMENT

DEMOLITION PLAN

PROJECT NO. 17-047
SHEET NO. C7.3
FILE ID. 2898.01

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North

0 5 10 20

SCALE IN FEET
1" = 10'

DEMOLITION LEGEND
SHEETS C7.0 - C7.4

- RIGHT OF WAY
- EX SEWER MAIN (S)
- EX WATER MAIN (W)
- EX DRAINAGE MAIN (D)
- EX DRAINAGE MANHOLE
- EX DRAINAGE INLET
- EX SAN SEWER MANHOLE (S)
- EX ELEVATION (X 2.0')
- EX BRICK PAVERS TO BE REMOVED
- EX S/W TO REMAIN
- EX DRIVEWAY TO BE REMOVED
- EX S/W TO BE REMOVED
- 1" MILL
- PAVEMENT REMOVAL
- EX ROAD TO BE REMOVED
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- GATE VALVE (WV = WATER VALVE)
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QC BY	JWR
DATE	3/28/2024

REVISION	DATE	DESCRIPTION	BY
1	2/26/24	ADDENDUM 5	MAS

THE CITY OF DELRAY BEACH
HISTORIC MARINE WAY SEAWALL, ROADWAY, AND DRAINAGE IMPROVEMENT

DEMOLITION PLAN

PROJECT NO. 17-047
SHEET NO. C7.4
FILE ID. 2898.01

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DRAINAGE STRUCTURES

STRUCTURE	FRAME	INLET TYPE	FDOT INDEX	RIM/GRATE EL.
S-2	USF 576 RING & MR COVER ORS	MH	425-001	1.70
S-4	USF 576 RING & MR COVER ORS	MH	425-001	2.20
S-18	USF 5130-6016	TYPE F	425-024	1.86

North

0 5 10 20

SCALE IN FEET
1" = 10'

SE 2ND STREET

170 MARINE WAY

160 MARINE WAY

150 MARINE WAY

140 MARINE WAY

138 MARINE WAY

136 MARINE WAY

134 MARINE WAY

MARINE WAY

R/W

MATCHLINE SHEET C8.1

BEGIN 1" MILL AND RESURFACE MATCH EX GRADE (SEE ELEVATIONS)

BEGIN PROJECT STA=8+17.55 OFF=47.67

BEGIN TYPE "D" CURB STA=8+24.28 OFF=48.72 L

BEGIN TYPE "D" CURB

PROP TYPE "D" CURB

RECONSTRUCT EX PAVER DRIVEWAY (MATCH EX GRADE)

END MILL AND RESURFACE BEGIN FULL DEPTH PAVEMENT RESTORATION

LIMITS OF FULL DEPTH PAVEMENT RESTORATION (MATCH EX GRADE) (TYP)

END TYPE "D" CURB STA=9+37.16 OFF=53.55 L

REMOVE EX CATCH BASIN RECONSTRUCT D CURB STA=9+33.64 OFF=42.76 L

EX CURB TO REMAIN

MATCH EX

PROP 80 LF 36" RCP STORM @ 0.26%

BEGIN TYPE "D" CURB STA=10+10.05 OFF=48.03 L

S-18 STA=10+16.11 OFF=56.36 L GRATE = 1.86 INV = -2.52 BOT = -4.35

TYPE "D" CURB

CONC APRON (TYP) SEE DETAIL D7.0

END TYPE "D" CURB STA=10+22.59 OFF=57.03 L

MILL AND RESURFACE, INCLUDING PARKING AND STRIPING

PROP 25 LF 18" RCP STORM @ 0.27%

PROP 240 LF 36" RCP STORM @ 0.25%

S-4
6' DIAMETER MANHOLE
STA=10+13.16
OFF=34.85 L
RIM: 2.20
INV = -2.58 (18" RCP) (W)
INV = -4.61 (36" RCP) (N)
INV = -4.61 (36" RCP) (S)
INV = -5.15 (18" RCP) (E)
BOT = -6.98

BOT EX 8" VCP SEWER = -2.89
TOP 18" RCP STORM = -3.40
STA=10+12.05
OFF=26.78 L

LIMITS OF FULL DEPTH PAVEMENT RESTORATION

EX CURBING TO REMAIN WHERE EX S/W IS TO REMAIN

EX CATCH BASIN TO REMAIN

EX CATCH BASIN TO REMAIN

S-2
CUT IN 6' DIAMETER MANHOLE
STA=9+35.27
OFF=28.94 L
RIM: 1.70
INV = -4.41 (36" RCP) (N)
INV = -4.79 (18" RCP) (E)
BOT = -6.24

BASELINE OF CONSTRUCTION

CONCRETE SEAWALL

8+00 9+00 10+00 11+00

N6° 55' 23.25"E
1578.411

BOLLARD (TYP.)

PROP FUEL VAULT LOCATION SEE SHEET E-0.1

PROP STAIRWAY LOCATION (SEE STRUCTURAL PLANS)

GENERATOR ENCLOSURE (30' X 20') FFE: 7.00

EX FPL POLE (REMOVED)

FUEL VAULT

RELOCATED CITY MARINA CABINET PAD

PROP STAIRWAY LOCATION (SEE STRUCTURAL PLANS)

END S/W STA=8+64.16 OFF=13.35 R

S/W RECONSTRUCTION (TYP.)

CURB RAMP TYPE CR-C

PROP TRASH RECEPTACLE LOCATION

EX DOCKMASTER BUILDING FFE: 3.25

MATCH EXISTING DOOR ELEVATION (CONTRACTOR TO VERIFY ELEVATION)

TW: 3.89 BW: 3.23

TW: 3.89 BW: 3.25

CONTRACTOR TO REINSTALL EXISTING TWO (2) CONCRETE STEPS (MATCH EXISTING)

PROPOSED GENERATOR (16.5' X 7') (SEE ELECTRICAL PLANS)

EXISTING HANDRAIL, MAIL BOX, AND BIKE RACK TO BE TEMPORARILY REMOVED IF NEEDED, STORED, AND RE-INSTALLED IN KIND

EX TRASH ENCLOSURE TO BE REMOVED AND RELOCATED

DELRAY BEACH
MUNICIPAL MARINA

INTRACOASTAL WATERWAY

ROADWAY LEGEND
SHEETS C8.0 - C8.4

- R/W LINE
- PROP DRAINAGE MAIN (SD)
- PROP SEWER MAIN (S)
- PROP WATER MAIN (W)
- EX SEWER MAIN (S)
- EX WATER MAIN (W)
- EX DRAINAGE MAIN (D)
- PROP DRAINAGE MANHOLE
- PROP DRAINAGE INLET
- PROP ELEVATION (1.83)
- EX ELEVATION (X 2.0')
- PROP FLOW DIRECTION
- PROP CONCRETE PAVER BRICK
- MILL & RESURFACE
- FULL DEPTH PAVEMENT RESTORATION
- PROP S/W, 6" THICK
- EXFILTRATION TRENCH

NOTES:

1. ELEVATIONS SHOWN ARE REFERENCED TO THE NORTH AMERICAN VERTICAL DATUM OF 1988, AS ESTABLISHED BY NGS BENCHMARK 14.33 WITH A PUBLISHED ELEVATION OF 12.78' (NAVD 88). NAVD'88 = NGVD'29 - 1.48'
2. FOR SECTION A-A SEE SHEET C5.0
3. EX CURBING TO BE RECONSTRUCTED WHERE S/W IS TO BE RECONSTRUCTED.
4. FOR MORE INFORMATION ON LANDSCAPE SCREENING AT THE GENERATOR, SEE LANDSCAPE SHEET L1.1.
5. CONTRACTOR TO FIELD VERIFY EX EOP ELEVATIONS AT PROJECT LIMITS AND AT ALL EXISTING DRIVEWAYS. THE ENGINEER SHALL BE NOTIFIED OF ANY SUBSTANTIAL DEVIATIONS FROM CONDITIONS AS SHOWN ON PLAN.
6. EXISTING UTILITIES SHALL REMAIN IN SERVICE UNTIL PROPOSED UTILITIES (WATER, SEWER, AND DRAINAGE) ARE IN PLACE AND ACTIVE.
7. ADDITIONAL EXISTING SPOT ELEVATIONS BY THE DOCKMASTER BUILDING WERE OBTAINED FROM SURVEY BY TERRAQUATIC DATED 2/6/21.

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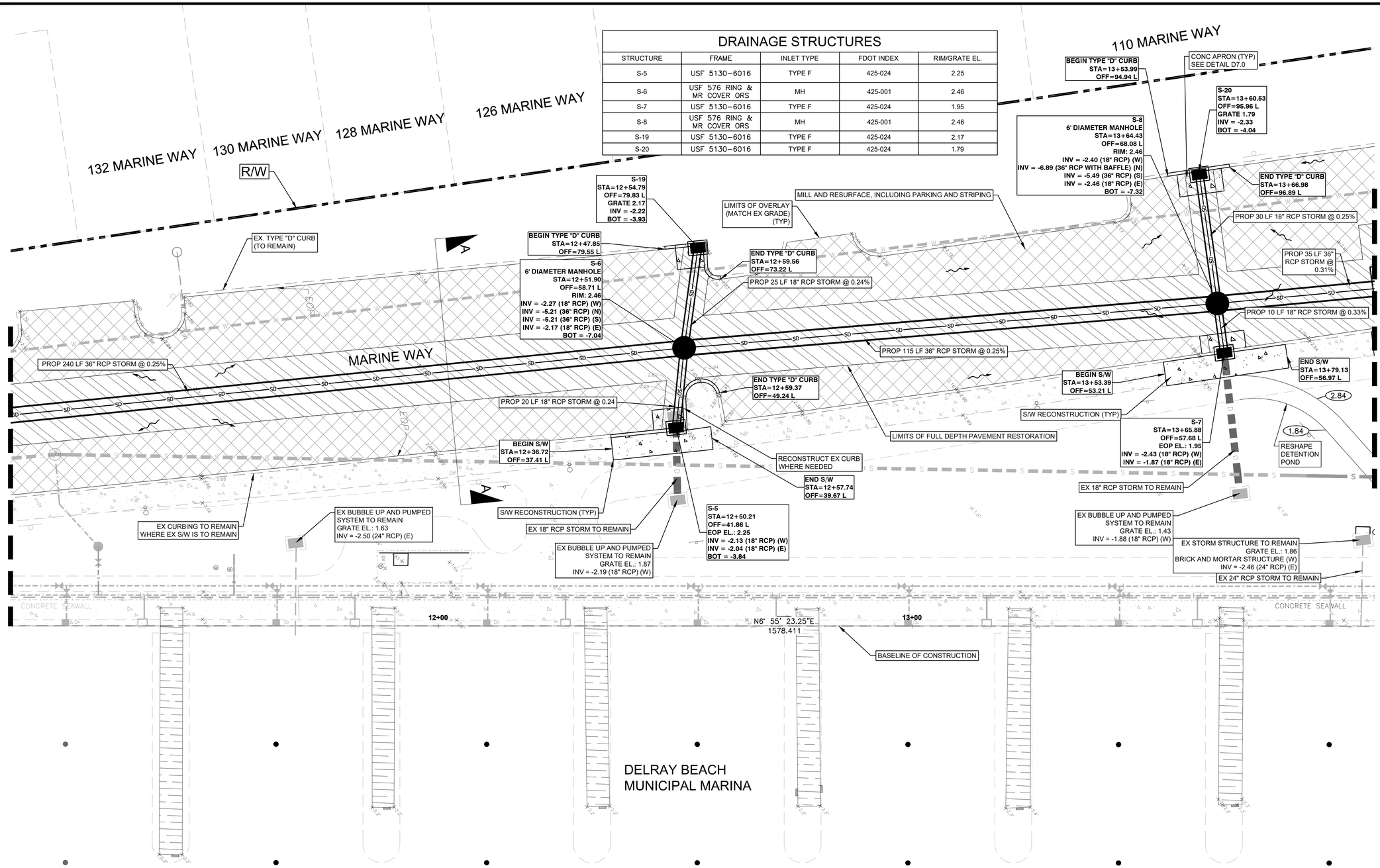
ROADWAY PLAN

PROJECT NO. 17-047
SHEET NO. C8.0
FILE ID. 2898.01

Users: Scott.P \2800\2898.01 Marine Way Rd \Civil\Design\2898.01-C1-PSD.dwg ——— Plotted: 3/28/2024 @ 8:45:44 AM by: Scott.P

DRAINAGE STRUCTURES

STRUCTURE	FRAME	INLET TYPE	FDOT INDEX	RIM/GRATE EL.
S-5	USF 5130–6016	TYPE F	425-024	2.25
S-6	USF 576 RING & MR COVER ORS	MH	425-001	2.46
S-7	USF 5130–6016	TYPE F	425-024	1.95
S-8	USF 576 RING & MR COVER ORS	MH	425-001	2.46
S-19	USF 5130–6016	TYPE F	425-024	2.17
S-20	USF 5130–6016	TYPE F	425-024	1.79



North

0 5 10 20

SCALE IN FEET
1" = 10'

ROADWAY LEGEND
SHEETS C8.0 - C8.4

- R/W LINE
- PROP DRAINAGE MAIN (SD)
- PROP SEWER MAIN (S)
- PROP WATER MAIN (W)
- EX SEWER MAIN (S)
- EX WATER MAIN (W)
- EX DRAINAGE MAIN (D)
- PROP DRAINAGE MANHOLE
- PROP DRAINAGE INLET
- PROP ELEVATION (1.83)
- EX ELEVATION (X 2.0')
- PROP FLOW DIRECTION
- PROP CONCRETE PAVER BRICK
- MILL & RESURFACE
- FULL DEPTH PAVEMENT RESTORATION
- PROP S/W, 6" THICK
- EXFILTRATION TRENCH

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5. EXISTING UTILITIES SHALL REMAIN IN SERVICE UNTIL PROPOSED UTILITIES (WATER, SEWER, AND DRAINAGE) ARE IN PLACE AND ACTIVE.
6. ALL SIDEWALK ADJACENT TO THE PUMP STATION TO BE 6" THICK - 3,000 PSI.

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DATE	3/21/2024

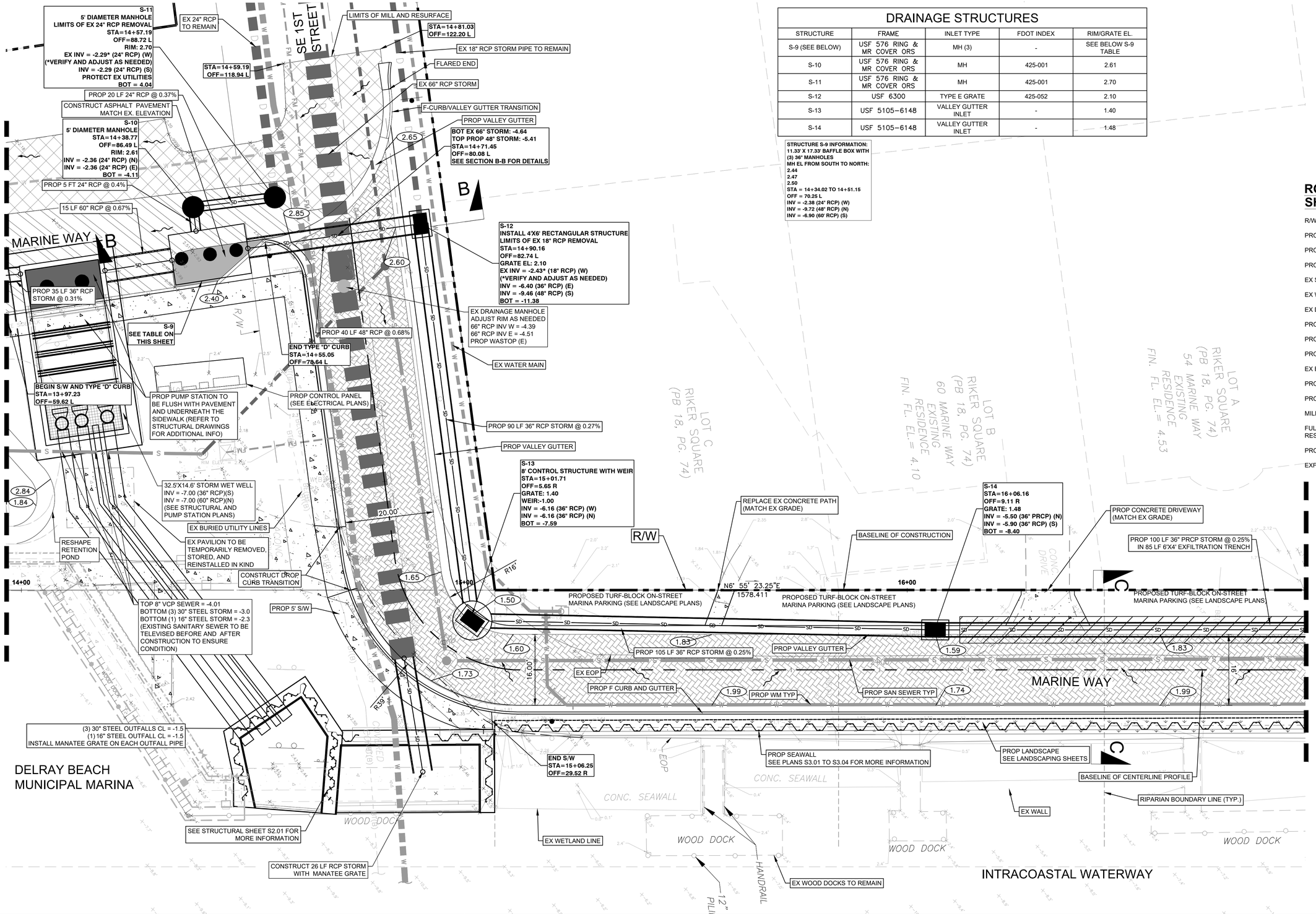
REVISION	DATE	DESCRIPTION	BY

THE CITY OF DELRAY BEACH
HISTORIC MARINE WAY SEAWALL,
ROADWAY, AND DRAINAGE IMPROVEMENT

ROADWAY PLAN

PROJECT NO. 17-047
SHEET NO. C8.1
FILE ID. 2898.01

Plotted: 3/21/2024 9:48:02 AM Scale: 3/21/2024 9:28:39 AM



DRAINAGE STRUCTURES

STRUCTURE	FRAME	INLET TYPE	FDOT INDEX	RIM/GRATE EL.
S-9 (SEE BELOW)	USF 576 RING & MR COVER ORS	MH (3)	-	SEE BELOW S-9 TABLE
S-10	USF 576 RING & MR COVER ORS	MH	425-001	2.61
S-11	USF 576 RING & MR COVER ORS	MH	425-001	2.70
S-12	USF 6300	TYPE E GRATE	425-052	2.10
S-13	USF 5105-6148	VALLEY GUTTER INLET	-	1.40
S-14	USF 5105-6148	VALLEY GUTTER INLET	-	1.48

STRUCTURE S-9 INFORMATION:
11.33' X 17.33' BAFFLE BOX WITH (3) 36" MANHOLES
MH EL FROM SOUTH TO NORTH:
2.44
2.47
2.50
STA = 14+34.02 TO 14+51.15
OFF = 70.25 L
INV = -2.38 (24" RCP) (W)
INV = -9.72 (48" RCP) (N)
INV = -6.90 (60" RCP) (S)

North

0 5 10 20

SCALE IN FEET
1" = 10'

ROADWAY LEGEND SHEETS C8.0 - C8.4

- R/W LINE
- PROP DRAINAGE MAIN (SD)
- PROP SEWER MAIN (S)
- PROP WATER MAIN (W)
- EX SEWER MAIN (S)
- EX WATER MAIN (W)
- EX DRAINAGE MAIN (D)
- PROP DRAINAGE MANHOLE
- PROP DRAINAGE INLET
- PROP ELEVATION (1.83)
- EX ELEVATION (2.0')
- PROP FLOW DIRECTION
- PROP CONCRETE PAVER BRICK
- MILL & RESURFACE
- FULL DEPTH PAVEMENT RESTORATION
- PROP S/W, 6" THICK
- EXFILTRATION TRENCH

NOTES:

1. WALKWAYS AND DRIVEWAYS TO BE REPLACED SHALL BE REPLACED WITH CONCRETE UNLESS OTHERWISE NOTED.
2. SEE SHEET C9.3 FOR DRIVEWAY DETAILS.
3. ELEVATIONS SHOWN ARE REFERENCED TO THE NORTH AMERICAN VERTICAL DATUM OF 1988, AS ESTABLISHED BY NGS BENCHMARK 14.33 WITH A PUBLISHED ELEVATION OF 12.78' (NAVD 88). NAVD'88 = NGVD'29 - 1.48'
4. FOR SECTIONS B-B AND C-C SEE SHEET C5.0.
5. DRAINAGE STRUCTURES STATIONS AND OFFSETS ARE REFERENCING THE BASELINE OF CONSTRUCTION.
6. EXISTING UTILITIES SHALL REMAIN IN SERVICE UNTIL PROPOSED UTILITIES (WATER, SEWER, AND DRAINAGE) ARE IN PLACE AND ACTIVE.
7. ALL SIDEWALK ADJACENT TO THE PUMP STATION TO BE 6" THICK - 3,000 PSI.

CITY of DELRAY BEACH
PUBLIC WORKS DEPARTMENT
434 SOUTH SWINTON AVENUE, DELRAY BEACH, FLORIDA 33444
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Cert No. 6091 - LB No. 7055
ENGINEERING // SURVEYING // ENVIRONMENTAL // PLANNING

ENGINEER'S SEAL
STEPHEN CHERRY, PE
P.E., LIC. NO. 83268

DESIGNED BY	CAC
DRAWN BY	CAC
CHECKED BY	SCC
QC BY	JWR
DATE	3/21/2024

REVISION	DATE	DESCRIPTION	BY

THE CITY OF DELRAY BEACH
HISTORIC MARINE WAY SEAWALL, ROADWAY, AND DRAINAGE IMPROVEMENT

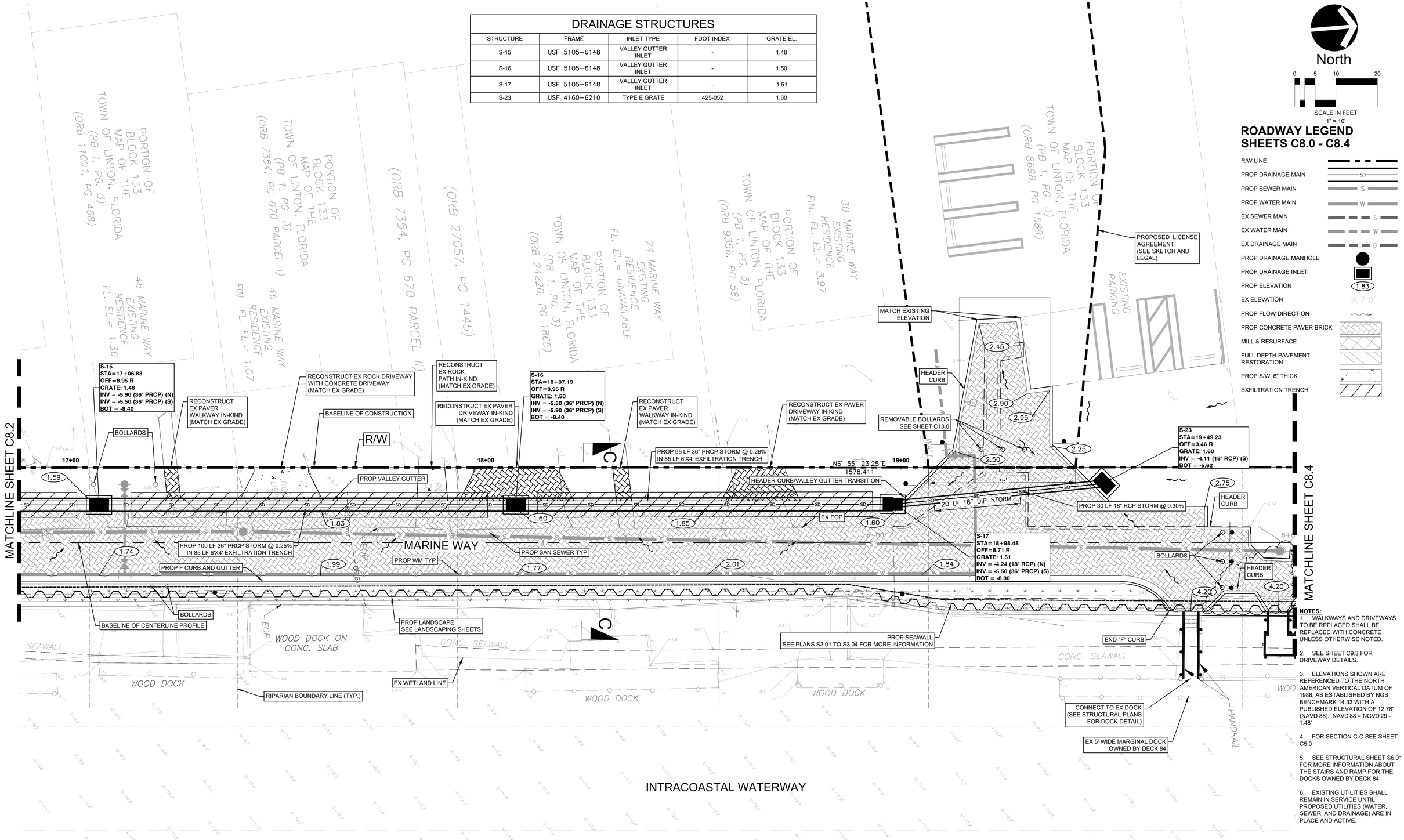
ROADWAY PLAN

PROJECT NO. 17-047
SHEET NO. C8.2
FILE ID. 2898.01

Plotted: 3/21/2024 8:48:39 AM Scott
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DRAINAGE STRUCTURES

STRUCTURE	FRAME	INLET TYPE	FDOT INDEX	GRATE EL.
S-15	USF 5105–6148	VALLEY GUTTER INLET	-	1.48
S-16	USF 5105–6148	VALLEY GUTTER INLET	-	1.50
S-17	USF 5105–6148	VALLEY GUTTER INLET	-	1.51
S-23	USF 4160–6210	TYPE E GRATE	425-052	1.60



NOTES:

1. WALKWAYS AND DRIVEWAYS TO BE REPLACED SHALL BE REPLACED WITH CONCRETE UNLESS OTHERWISE NOTED.
2. SEE SHEET C9.3 FOR DRIVEWAY DETAILS.
3. ELEVATIONS SHOWN ARE REFERENCED TO THE NORTH AMERICAN VERTICAL DATUM OF 1988, AS ESTABLISHED BY NGS BENCHMARK 14.33 WITH A PUBLISHED ELEVATION OF 12.78' (NAVD 88). NAVD'88 = NGVD'29 - 1.48'
4. FOR SECTION C-C SEE SHEET C5.0
5. SEE STRUCTURAL SHEET S6.01 FOR MORE INFORMATION ABOUT THE STAIRS AND RAMP FOR THE DOCKS OWNED BY DECK 84.
6. EXISTING UTILITIES SHALL REMAIN IN SERVICE UNTIL PROPOSED UTILITIES (WATER, SEWER, AND DRAINAGE) ARE IN PLACE AND ACTIVE.

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ENGINEER'S SEAL
STEPHEN CHERRY, PE
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DESIGNED BY	CAC
DRAWN BY	CAC
CHECKED BY	SCC
QC BY	JWR
DATE	3/28/2024

REVISION	DATE	DESCRIPTION	BY
1	2/26/24	ADDENDUM 5	MAS

THE CITY OF DELRAY BEACH
HISTORIC MARINE WAY SEAWALL, ROADWAY, AND DRAINAGE IMPROVEMENT

ROADWAY PLAN

PROJECT NO. 17-047
SHEET NO. C8.3
FILE ID. 2898.01

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DRAINAGE STRUCTURES			
STRUCTURE	TYPE	FDOT INDEX	GRATE EL.
S-21	NYLOPLAST W PEDESTRIAN GRATE	-	1.12
S-22	NYLOPLAST W PEDESTRIAN GRATE	-	1.28

North

0 5 10 20

SCALE IN FEET
1" = 10'

ROADWAY LEGEND
SHEETS C8.0 - C8.4

- R/W LINE
- PROP DRAINAGE MAIN (SD)
- PROP SEWER MAIN (S)
- PROP WATER MAIN (W)
- EX SEWER MAIN (S)
- EX WATER MAIN (W)
- EX DRAINAGE MAIN (D)
- PROP DRAINAGE MANHOLE
- PROP DRAINAGE INLET
- PROP ELEVATION (1.83)
- EX ELEVATION (× 2.0')
- PROP FLOW DIRECTION
- PROP CONCRETE PAVER BRICK
- MILL & RESURFACE
- FULL DEPTH PAVEMENT RESTORATION
- PROP S/W, 6" THICK
- EXFILTRATION TRENCH

NOTES:

1. FOR SECTION D-D SEE SHEET C5.0
2. SEE STRUCTURAL SHEET S6.01 FOR MORE INFORMATION ABOUT THE STAIRS AND RAMP FOR THE DOCKS OWNED BY DECK 84.
3. FOR STEEL PEDESTRIAN RAILING, REFER TO FDOT STANDARD PLANS FY 2023-24, INDEX 515-062 FOR MORE INFORMATION.

MATCHLINE SHEET C8.3

DECK 84

802 E ATLANTIC AVE. RESTAURANT FIN. FL. EL.= 5.53

PORTION OF BLOCK 133 MAP OF THE TOWN OF LINTON, FLORIDA (PB 1, PG. 3) (ORB 8896, PG 1633)

RIM ELEV.=3.14'

BASELINE OF CONSTRUCTION

R/W

20+00

21+00

22+00

N6° 55' 23.25"E
1578.411

N:774652.6041
E:962272.4330

FIELD FORM HEADER TO MATCH FIRST EXISTING STEP ELEVATION

BEGIN ALUMINUM PEDESTRIAN RAILING

END ALUMINUM PEDESTRIAN RAILING

BEGIN ALUMINUM PEDESTRIAN RAILING

BEGIN ALUMINUM PEDESTRIAN RAILING

END PROPOSED PAVER RECONSTRUCTION MATCH EXISTING ELEVATION

EX PAVERS TO BE REPLACED

END ALUMINUM PEDESTRIAN RAILING

RIPARIAN BOUNDARY LINE (TYP.)

HEADER CURB

COVERED PATIO

COVERED PATIO

OUTSIDE DECK

EOP

PLANTER

PLANTER

BRICK PAVERS

ALUMINUM WALL

CONC. SEAWALL

D DOCK

3.90

3.00

3.94

2.50

4.20

1%

1%

1%

PLANTER

RETAINING WALL

RETAINING WALL

ATLANTIC AVENUE
SR 806
(FLDOT RIGHT OF WAY AP
SEGMENT NO. 413840 1)

C/L

END PROJECT
STA=22+18.71
OFF=43.71R

PAVERBRICK PATHWAY

EX WETLAND LINE

MODIFY EX WING WALL SEE STRUCTURAL PLANS

CONNECT TO EX DOCK (SEE STRUCTURAL PLANS FOR DOCK DETAILS SHEET S6.01)

PROP ADA ACCESS RAMP (SEE STRUCTURAL PLANS FOR DOCK DETAILS SHEET S6.01)

EX 5' WIDE MARGINAL DOCK OWNED BY DECK 84

PROP SEAWALL SEE PLANS S3.01 TO S3.04 FOR MORE INFORMATION

HANDRAIL

HANDRAIL

12" WOOD PILING (TYP.)

RIPRAP

RIPRAP

INTRACOASTAL WATERWAY

S-21
PROP NYLOPLAST DRAIN BASIN WITH PEDESTRIAN GRATE: 1.12
INV. -1.85

5 LF 4" HDPE @ 1.00% WITH WASTOP INLINE CHECK VALVE

INV. -1.9

S-22
PROP NYLOPLAST DRAIN BASIN WITH PEDESTRIAN GRATE: 1.28
INV. -1.85

5 LF 4" HDPE @ 1.00% WITH WASTOP INLINE CHECK VALVE

INV. -1.9

MATCH EX ELEVATION AT VETERANS PARK

1.16 1.10 1.30 1.17 1.24 1.36

D D

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DATE	3/28/2024

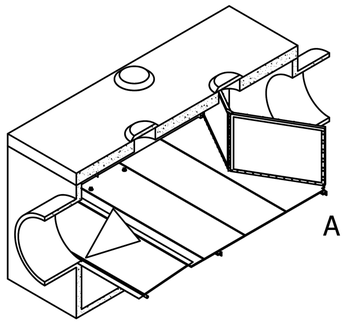
REVISION	DATE	DESCRIPTION	BY
1	2/26/24	ADDENDUM 5	MAS

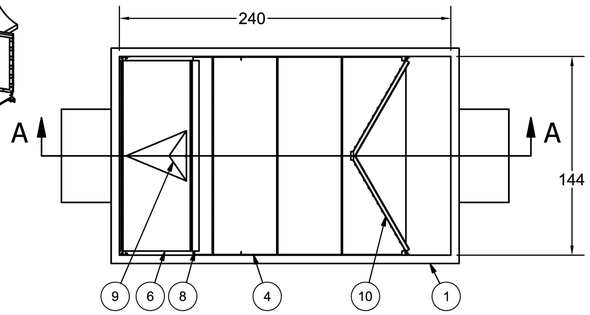
THE CITY OF DELRAY BEACH
HISTORIC MARINE WAY SEAWALL, ROADWAY, AND DRAINAGE IMPROVEMENT

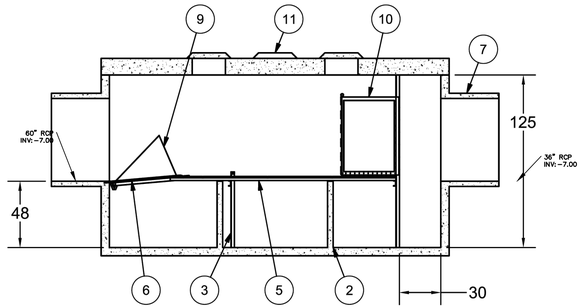
ROADWAY PLAN

PROJECT NO. 17-047
SHEET NO. C8.4
FILE ID. 2898.01

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EQUIPMENT PERFORMANCE

Max. Treatment Flow Rate = 162 cfs
Typical Treatment Flow Rate = 80 cfs
Open orifice area of screen system = 167.3 sq.ft.
Min. Screenings Storage capacity = 35.0 yd3
Min. Sediment storage volume = 35.4 yd3

Parts List

ITEM	QTY	SIZE	DESCRIPTION
1	1	12 ft x 20 ft	VAULT
2	2		BAFFLES
3	4		MOUNTING BRACKETS
4	3		HORZ. SCREEN PANELS
5	1		FRAME
6	1		INLET SCREEN PANEL
7	2	60 in	INLET/OUTLET PIPES (BY OTHERS)
8	1		TRANSITION CONNECTOR
9	1		FLOW SPREADER
10	2		VERT. SCREEN WEIR
11	3	30 in	FRAME AND COVER

Notes

1. MANHOLE WALL AND SLAB THICKNESSES ARE NOT TO SCALE.
2. CONTACT HYDRO INTERNATIONAL FOR A BOTTOM OF STRUCTURE ELEVATION PRIOR TO SETTING HYDRO DRYSCREEN SYSTEMS.
3. CONTRACTOR TO CONFIRM RIM, PIPE INVERTS, PIPE DIA. AND PIPE ORIENTATION PRIOR TO RELEASE OF UNIT TO FABRICATION.

REV	BY	DATE	DESCRIPTION
	JF	1/15/15	FIRST ISSUE

REVISION HISTORY

Date	Scale
1/15/15	NTS

Drawn	Checked	Approved
JF		

Title

DRYSCREEN
12' x 20' VAULT

GENERAL ARRANGEMENT

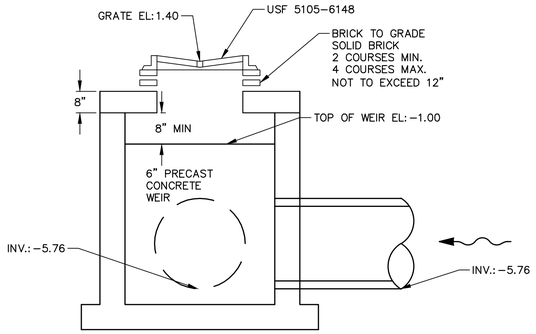
Hydro International

Stormwater Solutions
94 Hutchins Drive
Portland, Maine 04102
Tel: (207) 756-6200
Fax: (207) 756-6212
stormwaterinquiry@hydro-int.com

CAD Ref: DS-12x24
Project No. xx-xxxx
Drawing No. DS-12x24 Rev.

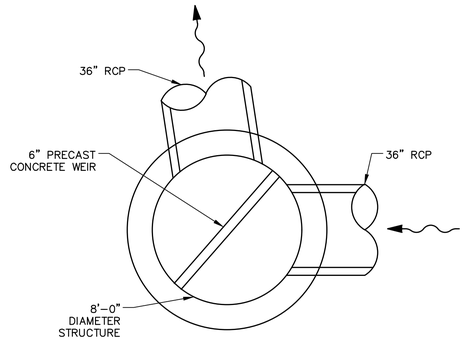
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S-13 CONTROL STRUCTURE DETAIL

SCALE: NONE



SECTION

WAPRO

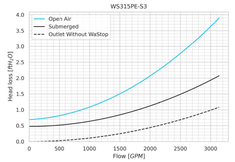
WASTOP® PLASTIC SERIES

TECHNICAL SPECIFICATION

Model no.	WS315PE-I
Nominal Pipe Size	NPS/OD 12
Available valve body mtrl.	PE
Fasteners mtrl.	AISI 316, Marine grade Stainless Steel
Valve body length	8.30 in
Valve body diameter	3.80 in
Host pipe min.diameter	3.90 in
Host pipe max.diameter	4.20 in
Weight	24.30 lb
Max flow (velocity)	9.80 fps
Max flow (volumetric)	3138.40 gpm

Membrane	**S3**
Max Back pressure (ft_2O<)	16.40
Horizontal opening pressure (inH_2O)	8.30
Horizontal closing pressure (inH_2O)	4.70
Submerged opening pressure (inH_2O)	5.70
Submerged closing pressure (inH_2O)	1.80
Vertical opening pressure (inH_2O)	13.20
Vertical closing pressure (inH_2O)	7.70
Available membrane mtrl.	EPDM

- Tests performed at room temperature (16-20°C).
- Actual values may vary within +/- 15%.
- Reference point measured from bottom of pipe.
- Higher flows requires custom valve, contact Wapro
- Flange installation is highly recommended at flows above 6.5 f/s



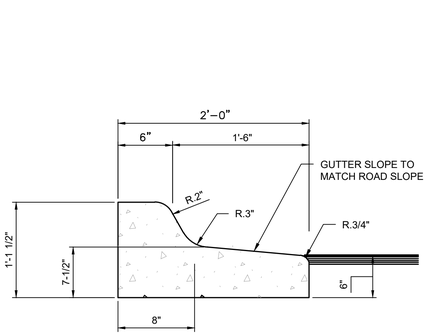
In the submerged case, opening pressure [mmH2O/inH2O] is the difference between the water level upstream and the water level downstream and in the open-air case to the inverted pipe.
In vertical applications, the vertical opening pressure is measured from the outlet of the WaStop.

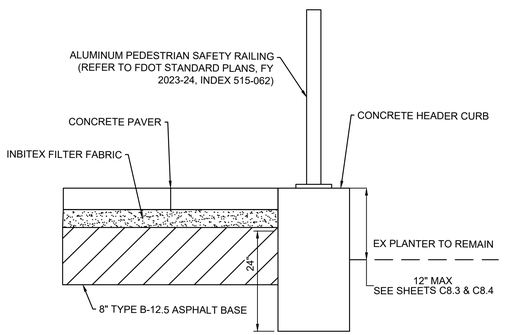
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150 North Michigan Ave
Chicago IL 60601

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wapro@wapro.com

HOLDING BACK
THE FLOOD





ONSITE MODIFIED TYPE "F" CURB AND GUTTER

SCALE: NONE

1

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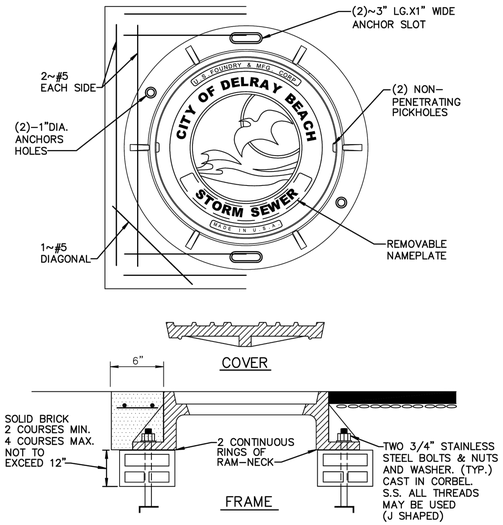
REVISION	DATE	DESCRIPTION	BY
1	2/26/24	ADDENDUM 5 - DETAIL REMOVED	MAS

THE CITY OF DELRAY BEACH
HISTORIC MARINE WAY SEAWALL,
ROADWAY, AND DRAINAGE IMPROVEMENT

PAVING, GRADING, AND DRAINAGE DETAILS

PROJECT NO. 17-047
SHEET NO. C9.0
FILE ID. 2898.01

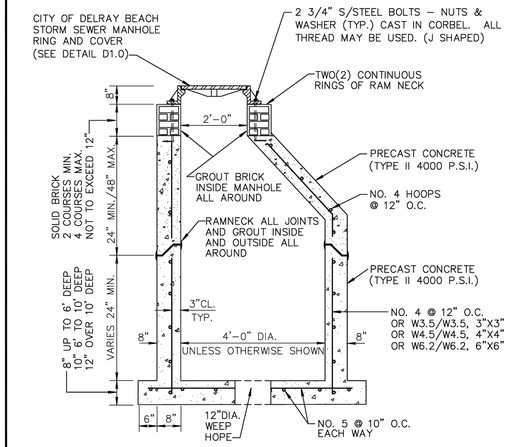
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NOTES:

1. COLLAR IS REQUIRED ONLY WHEN MANHOLE IS OUT OF PAVEMENT.
2. FRAME AND COVER SHALL BE U.S. FOUNDRY MR-ORS AND RING SHALL BE USF 576
3. MANHOLE ADJUSTING RINGS SHALL BE CAST IRON, USF TYPE B.
4. CITY LOGO LID TO BE USED ON CITY MAINTAINED STORM SEWER ONLY. STANDARD NO. 576BH IS TO BE USED ON PRIVATELY MAINTAINED STORM SEWER.

CITY of DELRAY BEACH PUBLIC WORKS DEPARTMENT 434 SOUTH SWINTON AVENUE, DELRAY BEACH, FLORIDA 33444	STORM SEWER MANHOLE FRAME & COVER	DATE: 09-15-2021 D 1.0

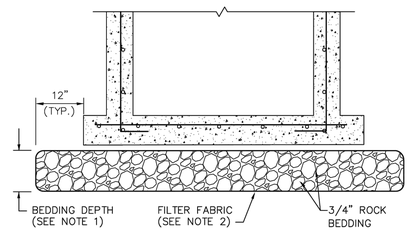


* SEE TYPICAL BACKFILL DETAIL GU 2.0

NOTES:

1. FOR PIPES UP TO 36" R.C.P.
2. 12" DIA. WEEP HOLE REQUIRED ON ALL STRUCTURES WHICH HAVE BOTTOM ELEVATIONS ABOVE THE WATER TABLE. HARDWARE CLOTH SHALL BE PROVIDED ABOVE BEDDING ROCK AND UNDER WEEP HOLE. EXCEPT IN WELL FIELDS.
3. 18" SUMP REQUIRED ON ALL STRUCTURES.
4. IF THE STRUCTURE IS INSTALLED IN WATER TABLE MUST HAVE BEDDING. (SEE DETAIL BEDDING D 4.0)

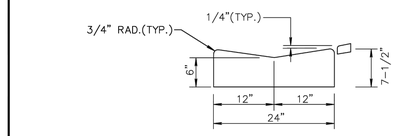
CITY of DELRAY BEACH PUBLIC WORKS DEPARTMENT 434 SOUTH SWINTON AVENUE, DELRAY BEACH, FLORIDA 33444	STORM SEWER MANHOLE	DATE: 09-15-2021 D 2.0



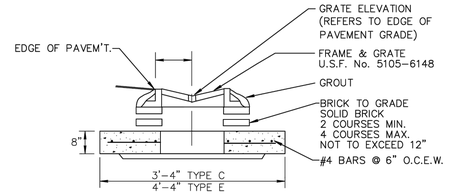
NOTES:

1. BEDDING DEPTH SHALL BE 10" UNDER DRAINAGE STRUCTURES AND 18" UNDER SANITARY STRUCTURES.
2. ROCK SHALL BE WRAPPED IN FILTER FABRIC THAT MEETS THE REQUIREMENTS OF F.D.O.T. SPECIFICATION SECTION 985.

CITY of DELRAY BEACH PUBLIC WORKS DEPARTMENT 434 SOUTH SWINTON AVENUE, DELRAY BEACH, FLORIDA 33444	STANDARD BEDDING DETAIL	DATE: 09-15-2021 D 4.0

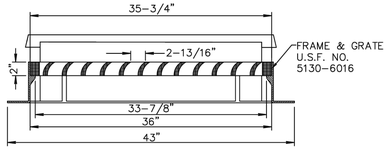


2' VALLEY CURB
NOT TO SCALE

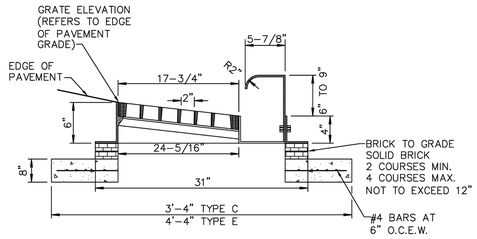


VALLEY GUTTER FRAME & GRATE
NOT TO SCALE

CITY of DELRAY BEACH PUBLIC WORKS DEPARTMENT 434 SOUTH SWINTON AVENUE, DELRAY BEACH, FLORIDA 33444	TYPE C & E INLET VALLEY GUTTER & GRATE DETAILS	DATE: 09-15-2021 D 5.0



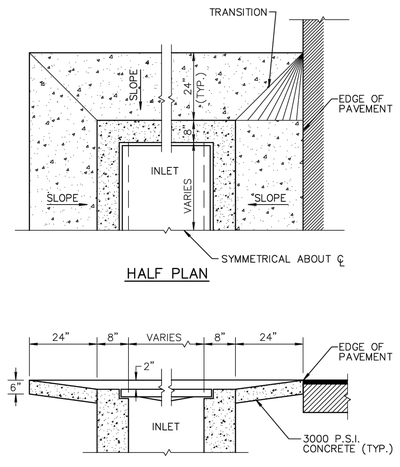
TYPE "F" FRAME & GRATE
NOT TO SCALE



TYPE "F" FRAME & GRATE PROFILE
NOT TO SCALE

1. U.S.F. NO. 6016 GRATE MAY BE INSTALLED WITH VANE SLOTS FOR LEFT OR RIGHT FLOW.

CITY of DELRAY BEACH PUBLIC WORKS DEPARTMENT 434 SOUTH SWINTON AVENUE, DELRAY BEACH, FLORIDA 33444	TYPE C & E INLET TYPE "F" CURB FRAME & GRATE	DATE: 09-15-2021 D6.0

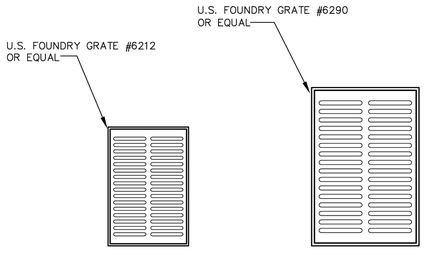


HALF PLAN

SECTION

CITY of DELRAY BEACH PUBLIC WORKS DEPARTMENT 434 SOUTH SWINTON AVENUE, DELRAY BEACH, FLORIDA 33444	INLET APRON DETAIL	DATE: 09-15-2021 D7.0

INLET TYPE	DIMENSIONS		GRATE TYPE	MAX. PIPE SIZE	
	A	B		WALL A	WALL B
'C'	2'-0"	3'-1"	U.S. FOUNDRY No. 6212	15" R.C.P.	24" R.C.P.
'E'	3'-0"	4'-5"	U.S. FOUNDRY No. 6290	24" R.C.P.	36" R.C.P.

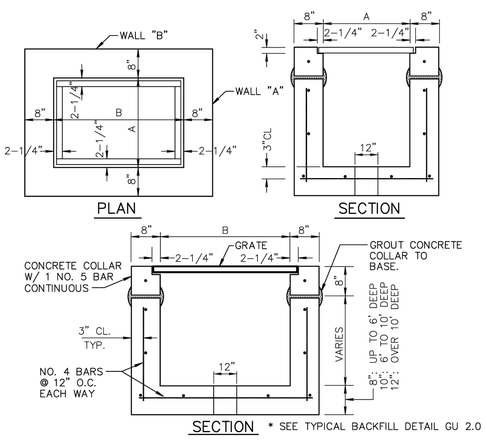


TYPE "C" TYPE "E"

NOTES:

1. ALL GRATES SHALL BE SUITABLE FOR H-20 LOADING (HIGHWAY TRAFFIC LOADS)
2. WHEN INSTALLED IN PAVEMENT OR WITHIN 6' OF PAVEMENT USE U.S.F. 4160-6210

CITY of DELRAY BEACH PUBLIC WORKS DEPARTMENT 434 SOUTH SWINTON AVENUE, DELRAY BEACH, FLORIDA 33444	TYPE C & E INLET GRATE DETAIL	DATE: 09-15-2021 D8.0



SECTION * SEE TYPICAL BACKFILL DETAIL GU 2.0

INLET TYPE	DIMENSIONS		GRATE TYPE	MAX. PIPE SIZE	
	A	B		WALL A	WALL B
'C'	2'0"	3'1"	U.S. FOUNDRY NO. 6212	15" R.C.P.	24" R.C.P.
'E'	3'0"	4'6"	U.S. FOUNDRY NO. 6290	24" R.C.P.	36" R.C.P.

NOTES:

1. INLET TO BE PRECAST WITH CLASS 'A' 4000 P.S.I. CONCRETE.
2. ALL EXPOSED CORNERS AND EDGES TO BE CHAMFERED 3/4".
3. 12" DIAMETER WEEP HOLE REQUIRED ON ALL STRUCTURES WHICH HAVE A BOTTOM ELEVATION ABOVE THE WATER TABLE EXCEPT IN WELLFIELDS.
4. 18" SUMP REQUIRED IN ALL DRAINAGE STRUCTURES.
5. SEE BEDDING DETAIL D 3.0
6. ALL STRUCTURES TO BE 4 SIDED ANGLE SHOULDERS.

CITY of DELRAY BEACH PUBLIC WORKS DEPARTMENT 434 SOUTH SWINTON AVENUE, DELRAY BEACH, FLORIDA 33444	TYPE C & E DITCH BOTTOM INLETS DETAIL	DATE: 09-15-2021 D9.0

CITY of DELRAY BEACH
PUBLIC WORKS DEPARTMENT
434 SOUTH SWINTON AVENUE, DELRAY BEACH, FLORIDA 33444
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Fax No. 561.687.1110
Cert No. 6091 - LB No. 7055
ENGINEERING // SURVEYING // ENVIRONMENTAL // PLANNING

ENGINEER'S SEAL

STEPHEN CHERRY, PE
P.E., LIC. NO. 83268

DESIGNED BY	CAC
DRAWN BY	CAC
CHECKED BY	SCC
QC BY	JWR
DATE	3/21/2024

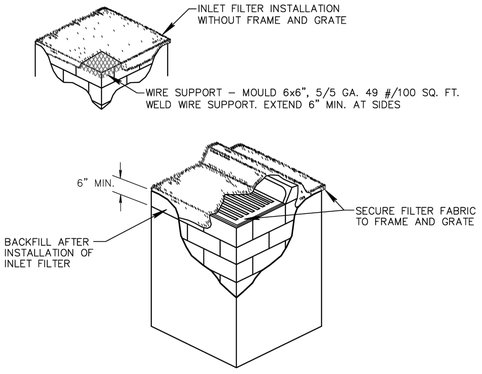
REVISION	DATE	DESCRIPTION	BY

THE CITY OF DELRAY BEACH
HISTORIC MARINE WAY SEAWALL, ROADWAY, AND DRAINAGE IMPROVEMENT

PAVING, GRADING, AND DRAINAGE DETAILS

PROJECT NO. 17-047
SHEET NO. C9.1
FILE ID. 2898.01

Mapp, Shutt, P:\2800\2898.01 Marine Way Pkl 21\GIS\Desktop\Drawings\2898D1-Civ-SECTIONS AND DETAILS.dwg ---- Plotted: 3/21/2024 9:50:12 AM Saved: 3/21/2024 9:26:14 AM



NOT TO SCALE

NOTES:

1. CONTRACTOR IS TO CLEAN INLET FILTER AFTER EVERY STORM.
2. CONTRACTOR TO REMOVE FABRIC JUST PRIOR TO PAVING.

A SEDIMENT TRAP WILL BE EXCAVATED BEHIND THE CURB AT THE INLET. THE BASIN SHALL BE AT LEAST 12 TO 14 INCHES IN DEPTH, APPROXIMATELY 36 INCHES IN WIDTH, AND APPROXIMATELY 7 TO 10 FEET IN LENGTH PARALLEL TO THE CURB.

STORM WATER WILL REACH THE SEDIMENT TRAP VIA CURB CUTS ADJACENT TO EACH SIDE OF THE INLET STRUCTURE. THESE OPENINGS SHALL BE AT LEAST 12 INCHES IN LENGTH. STORM WATER MAY ALSO REACH THE BASIN VIA OVERLAND FLOW LAND AREA BEHIND THE CURB. THE CURB CUTS SHALL BE REPAIRED WHEN THE SEDIMENT TRAP IS REMOVED.

CITY of DELRAY BEACH
PUBLIC WORKS DEPARTMENT
434 SOUTH SWINTON AVENUE, DELRAY BEACH, FLORIDA 33444

INLET FILTER DETAIL

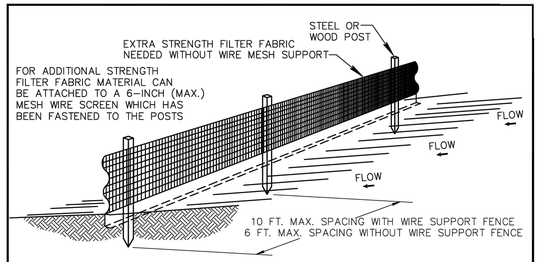
DATE: 09-15-2021
D10.0

1. THE INTENT OF EROSION CONTROL MEASURES INDICATED GRAPHICALLY ON PLANS IS TO PROVIDE A BARRIER TO CONTAIN SILT AND SEDIMENT ON THE PROJECT SITE. THIS REPRESENTATION IS PROVIDED FOR THE CONVENIENCE OF THE CONTRACTOR. THE TEST OF EROSION CONTROL EFFECTIVENESS IS NOT TO BE DETERMINED BY ADHERENCE TO THE REPRESENT SET FORTH ON THE DRAWINGS AND SPECIFICATIONS, BUT BY MEETING THE REGULATIONS SET FORTH BY THE AUTHORITY HAVING JURISDICTION OVER WATER QUALITY CONTROL AND OTHER SEDIMENTATION RESTRICTION REQUIREMENTS IN THE REGION.
2. APPROVED EROSION AND SEDIMENT CONTROL MEASURES SHALL BE INSTALLED PRIOR TO ANY CLEARING GRADING, EXCAVATION, FILLING, OR OTHER LAND DISTURBANCE ACTIVITIES, EXCEPT THOSE OPERATIONS NEEDED TO INSTALL SUCH MEASURES.
3. INSPECTION OF ALL EROSION CONTROL MEASURES SHALL BE CONDUCTED WEEKLY, OR AFTER EACH RAINFALL EVENT. REPAIR, AND/OR REPLACEMENT OF SUCH MEASURES SHALL BE MADE PROMPTLY, AS NEEDED.
4. KEEP DUST WITHIN TOLERABLE LIMITS BY SPRINKLING OR OTHER ACCEPTABLE MEANS.
5. ADDITIONAL EROSION AND SEDIMENT CONTROL MEASURES MAY BE REQUIRED IF DEEMED NECESSARY BY ONSITE INSPECTION.
6. FAILURE TO PROPERLY INSTALL AND MAINTAIN EROSION CONTROL PRACTICES SHALL RESULT IN CONSTRUCTION BEING HALTED.
7. DRAINAGE INLETS SHALL BE PROTECTED BY FILTER AND GRADED ROCK AS PER INLET PROTECTION DETAIL.
8. ANY ACCESS ROUTES TO SITE SHALL BE BASED WITH CRUSHED STONE, WHERE PRACTICAL.
9. EROSION CONTROL MEASURES ARE TO BE MAINTAINED UNTIL PERMANENT GROUND COVER IS ESTABLISHED.
10. WHENEVER FEASIBLE, NATURAL VEGETATION SHALL BE RETAINED AND PROTECTED.
11. ALL WORK IS TO BE IN COMPLIANCE WITH THE RULES AND REGULATIONS SET FORTH BY THE STATE OF FLORIDA, DEPARTMENT OF ENVIRONMENTAL PROTECTION AND THE CITY OF DELRAY BEACH.
12. DISCHARGE FROM DEWATERING OPERATIONS SHALL BE RETAINED ONSITE IN A CONTAINMENT AREA.

CITY of DELRAY BEACH
PUBLIC WORKS DEPARTMENT
434 SOUTH SWINTON AVENUE, DELRAY BEACH, FLORIDA 33444

EROSION CONTROL NOTES DETAIL

DATE: 09-15-2021
D 11.0



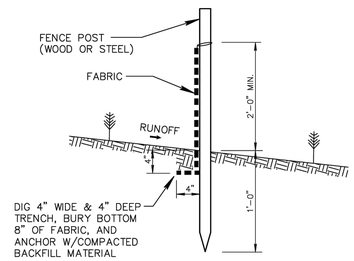
NOTES:

1. THE HEIGHT OF A SILT FENCE SHALL NOT EXCEED 36 INCHES.
2. THE FILTER FABRIC SHALL BE PURCHASED IN A CONTINUOUS ROLL CUT TO THE LENGTH OF THE BARRIER TO AVOID THE USE OF JOINTS.
3. POSTS SHALL BE SPACED A MAXIMUM OF 10 FEET APART AT THE BARRIER LOCATION AND DRIVEN SECURELY INTO THE GROUND A MINIMUM OF 12 INCHES. WHEN EXTRA STRENGTH FABRIC IS USED WITHOUT THE WIRE SUPPORT FENCE, POST SPACING SHALL NOT EXCEED 6 FEET.
4. A TRENCH SHALL BE EXCAVATED APPROXIMATELY 4 INCHES WIDE AND 4 INCHES DEEP ALONG THE LINE OF POSTS AND UPSLOPE FROM THE BARRIER.
5. WHEN STANDARD STRENGTH FILTER FABRIC IS USED, A WIRE MESH SUPPORT FENCE SHALL BE FASTENED SECURELY TO THE UPSLOPE SIDE OF THE POSTS USING HEAVY DUTY WIRE STAPLES AT LEAST 1 INCH LONG, TIE WIRES, OR HOG RINGS. THE WIRE SHALL EXTEND INTO THE TRENCH A MINIMUM OF 2 INCHES AND SHALL NOT EXTEND MORE THAN 36 INCHES ABOVE THE ORIGINAL GROUND SURFACE.
6. THE STANDARD STRENGTH FILTER FABRIC SHALL BE STAPLED OR WIRED TO THE FENCE, AND 8 INCHES OF THE FABRIC SHALL BE EXTENDED INTO THE TRENCH. THE FABRIC SHALL NOT EXTEND MORE THAN 36 INCHES ABOVE THE ORIGINAL GROUND SURFACE.
7. THE TRENCH SHALL BE BACKFILLED AND THE SOIL COMPACTED OVER THE FILTER FABRIC.
8. ALL PROJECTS REQUIRE SUBMITTAL OF POLLUTION PREVENTION PLAN (PPP).
9. ALL PROJECTS 1 AC. OR MORE MUST SUBMIT NOTICE OF INTENT (NOI) TO FDEP.

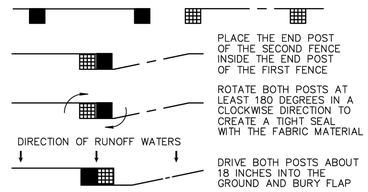
CITY of DELRAY BEACH
PUBLIC WORKS DEPARTMENT
434 SOUTH SWINTON AVENUE, DELRAY BEACH, FLORIDA 33444

SILT FENCE INSTALLATION DETAIL
(SHEET 1 of 2)

DATE: 09-15-2021
D12.0



SILT FENCE SECTION
NOT TO SCALE

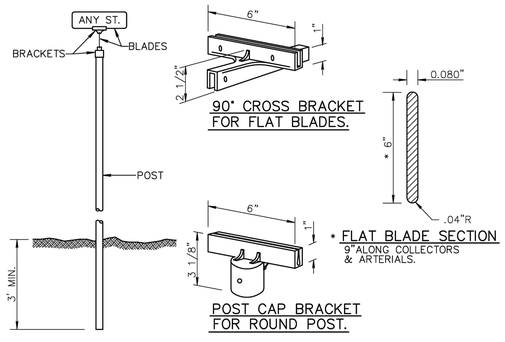


ATTACHING TWO SILT FENCES
NOT TO SCALE

CITY of DELRAY BEACH
PUBLIC WORKS DEPARTMENT
434 SOUTH SWINTON AVENUE, DELRAY BEACH, FLORIDA 33444

SILT FENCE INSTALLATION DETAIL
(SHEET 2 OF 2)

DATE: 09-15-2021
D 12.1



GENERAL SPECIFICATIONS:

* BLADE: ALCOA NO.86054,6063–T6 ALLOY, ETCHED, DEGREASED, AND DEBURRED WITH NO.1200 ALDOLINE FINISH WITH HIGH INTENSITY GREEN BACKGROUND DIMENSIONS: 6" OR 9" IN HEIGHT, AND 24", 30", OR 36" IN LENGTH

* LETTERS: NAME 4" SERIES "B" HIGH INTENSITY (SILVER) SUFFIX 2" SERIES "B" HIGH INTENSITY (SILVER) ALL LETTERS FOR SIGNS ALONG COLLECTOR OR ARTERIAL ROADWAYS SHALL BE 7" SERIES "B" WITH 4" SERIES "B" SUFFIX ON 9" HIGH BLADES.

* POST: STEEL FLANGED GALVANIZED CHANNEL. PER A.S.T.M. A123 WITHOUT ANCHOR PLATES.

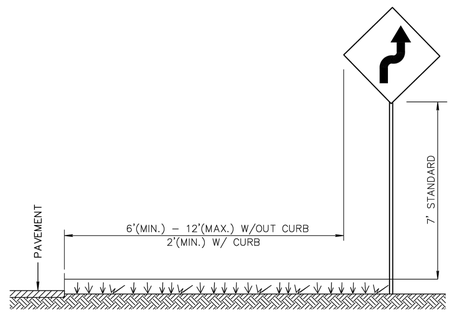
* BRACKETS: DIE CAST HIGH STRENGTH ALUMINUM ALLOY, MIN. TENSILE STRENGTH 45,000 P.S.I., DEGREASED, TUMBLED, AND POLISHED SIDES OF ALL SLOTS SHALL BE SOLID METAL WITH TWO HOLES PER SLOT (SAME SIDE) DRILLED TO 7/32" AND TAPPED TO 1/4" TO RECEIVE STAINLESS STEEL ALLENHEAD SET SCREWS, SKIRT OF POST CAP BRACKET TO BE DRILLED AND TAPPED FOR 3 SCREWS OF WHICH NO TWO IS TO BE LESS THAN 90° OR MORE THAN 135° APART. (METRO HUSKEY NO.6 OR EQUAL.)

CITY of DELRAY BEACH
PUBLIC WORKS DEPARTMENT
434 SOUTH SWINTON AVENUE, DELRAY BEACH, FLORIDA 33444

STREET SIGN DETAIL
(SHEET 1 of 2)

DATE: 09-15-2021
RT 6.0

TYPICAL SIGN. PLAN SYMBOL :



NOTES:

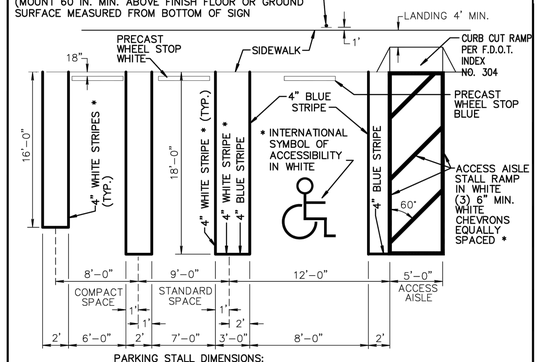
1. ALL SIGNS SHALL BE SPECIFIED USING THE M.U.T.C.D. DESIGNATION.
2. ALL SIGNS SHALL BE FACED WITH HIGH INTENSITY SHEETING MATERIAL OR BETTER.
3. SIGNS SHALL BE MANUFACTURED WITH 0.080" ALUMINUM BLANK.
4. POSTS SHALL BE PER DETAIL RT 6.0.
5. USE SHALL FOLLOW THE M.U.T.C.D. AND F.D.O.T. STANDARD DESIGN SPECIFICATIONS
6. ANY DEVIATION FROM THIS TYPICAL SHALL BE APPROVED BY THE CITY ENGINEER PRIOR TO INSTALLATION.
7. REFLECTIVE POSTS MAY BE USED IF M.U.T.C.D. STANDARD IS FOLLOWED.

CITY of DELRAY BEACH
PUBLIC WORKS DEPARTMENT
434 SOUTH SWINTON AVENUE, DELRAY BEACH, FLORIDA 33444

STREET SIGN DETAIL
(SHEET 2 of 2)

DATE: 09-15-2021
RT 7.0

ACCESSIBLE PARKING SIGN FTP–21–06 AND FTP–22–06
(MOUNT 60 IN. MIN. ABOVE FINISH FLOOR OR GROUND
SURFACE MEASURED FROM BOTTOM OF SIGN



PARKING STALL DIMENSIONS:

STANDARD	9'x 18'
COMPACT	8'x 16'
ACCESSIBLE	12'x 18' PLUS 5' ACCESS AISLE

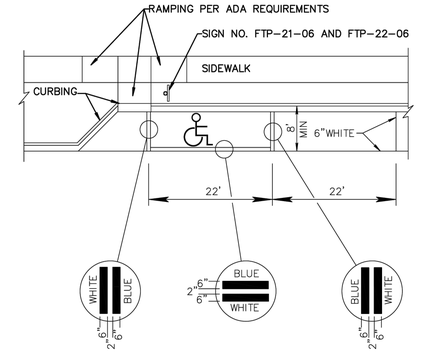
* NOTES:

1. ON LIGHT COLORED SURFACE I.E. CONCRETE ALL ACCESSIBLE MARKINGS SHALL BE BLUE AND STANDARD PARKING STRIPING SHALL BE 3" WHITE WITH 1" BLACK BORDER.
2. ALL STRIPING WITHIN PUBLIC RIGHT–OF–WAY SHALL BE 6 INCHES.
3. ALL MEASUREMENTS ARE FROM CENTER LINE.
4. ALL COMPACT SPACES MUST HAVE "COMPACT" STENCILED WITH BLACK PAINT ON WHEEL STOP.
5. BLUE STRIPE & INTERNATIONAL SYMBOL OF ACCESSIBILITY AND WALKWAY ON CONCRETE.
6. 24" STOP BAR BETWEEN ALL PARKING LOTS AND PUBLIC R/W SHALL BE THERMOPLASTIC AND PER FDOT SPECIFICATIONS AND STOP SIGN R1–1 THERMOPLASTIC AND PER FDOT SPECIFICATIONS AND STOP SIGN R1–1
7. CHANGES IN LEVEL ARE NOT PERMITTED IN ACCESSIBLE PARKING STALLS AND ACCESS AISLES SERVING THE STALLS. SLOPES NOT STEEPER THAN 1:48 SHALL BE PERMITTED.

CITY of DELRAY BEACH
PUBLIC WORKS DEPARTMENT
434 SOUTH SWINTON AVENUE, DELRAY BEACH, FLORIDA 33444

TYPICAL PARKING SPACES
(1 OF 3)

DATE: 09-15-2021
RT 16.0



NOTE:

1. WHERE ADJACENT SIDEWALK IS LESS THAN 14' WIDE, PARALLEL PARKING SPACES ARE REQUIRED TO BE LOCATED AT THE END OF THE BLOCK AND SHOULD NOT HAVE AN CURB RAMP TO GET SOMEONE FROM THE ACCESSIBLE PARKING STALL TO THE SIDEWALK.
2. WHEN PARKING SPACE IS ADJACENT TO LANDSCAPE ISLAND, SPACE MAY BE REDUCED TO 20' FROM THE STANDARD 22' LENGTH.

CITY of DELRAY BEACH
PUBLIC WORKS DEPARTMENT
434 SOUTH SWINTON AVENUE, DELRAY BEACH, FLORIDA 33444

TYPICAL PARKING SPACES
(3 OF 3)

DATE: 09-15-2021
RT 16.2

CITY of DELRAY BEACH
PUBLIC WORKS DEPARTMENT
434 SOUTH SWINTON AVENUE, DELRAY BEACH, FLORIDA 33444
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ENGINEERING // SURVEYING // ENVIRONMENTAL // PLANNING

ENGINEER'S SEAL

STEPHEN CHERRY, PE
P.E., LIC. NO. 83268

DESIGNED BY	CAC
DRAWN BY	CAC
CHECKED BY	SCC
QC BY	JWR
DATE	3/21/2024

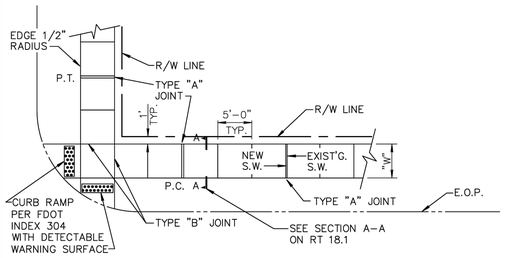
REVISION	DATE	DESCRIPTION	BY

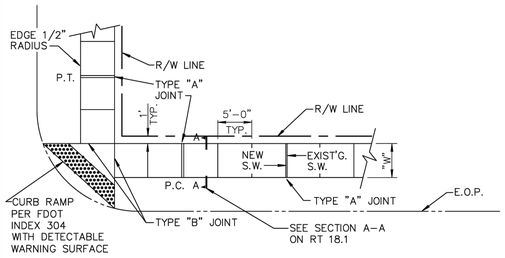
THE CITY OF DELRAY BEACH
HISTORIC MARINE WAY SEAWALL,
ROADWAY, AND DRAINAGE IMPROVEMENT

PAVING, GRADING, AND DRAINAGE DETAILS

PROJECT NO. 17-047
SHEET NO. C9.2
FILE ID. 2898.01

Mayor, Shutt, P:\2800\2898.01 Marine Way Rd 21\Civil\Drawings\289801-Civ-SECTIONS AND DETAILS.dwg ---- Plotted: 3/21/2024 9:30:23 AM Saved: 3/21/2024 9:29:14 AM



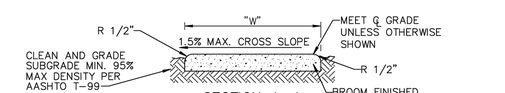


PLAN

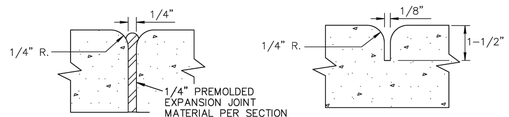
CITY of DELRAY BEACH
PUBLIC WORKS DEPARTMENT
434 SOUTH SWINTON AVENUE, DELRAY BEACH, FLORIDA 33444

SIDEWALK CONSTRUCTION DETAIL

DATE: 09-15-2021
RT 18.0



SECTION A-A



TYPE "A" TYPE "B"

SIDEWALK JOINTS

NOTE:
1. ALL SIDEWALKS SHALL BE CONSTRUCTED THRU DRIVEWAYS.
2. ALL SIDEWALKS SHALL INCLUDE ADA COMPLIANT RAMPS @ INTERSECTIONS.
3. ALL SIDEWALKS SHALL INCLUDE CROSS SLOPE AND RUNNING SLOPE IN ACCORDANCE WITH ADA REQUIREMENTS.
4. CURB RAMP DETECTABLE WARNING SURFACE SHALL EXTEND THE FULL WIDTH OF THE RAMP AND 24" DEEP

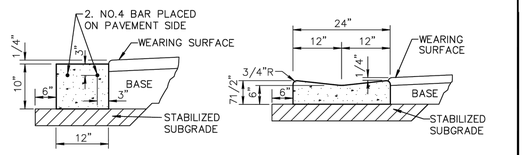
TABLE OF SIDEWALK THICKNESS – "T"	
GENERAL AREAS	4"
WITHIN 10' OF CROSS-STREETS, AT DRIVEWAYS & OTHER AREAS	6",9" @ E.O.P.
TABLE OF SIDEWALK WIDTHS – "W"	
SINGLE-FAMILY AREAS	5'
MULTI-FAMILY AREAS	5'
OTHER AREAS AS SPECIFIED BY THE CITY ENGINEER.	

TABLE OF SIDEWALK JOINTS	
TYPE	LOCATION
"A"	P.C. AND P.T. OF CURVES JUNCTION OF EXISTING & NEW SIDEWALKS & EVERY 30'
"B"	5'-0" CENTER TO CENTER ON SIDEWALKS SCORED DURING PLACEMENT OR SAWCUT WITHIN 24 HOURS OF PLACEMENT.
"A"	WHERE SIDEWALK ABUTS CONCRETE CURBS, DRIVEWAYS, AND SIMILAR STRUCTURES.

CITY of DELRAY BEACH
PUBLIC WORKS DEPARTMENT
434 SOUTH SWINTON AVENUE, DELRAY BEACH, FLORIDA 33444

SIDEWALK CONSTRUCTION

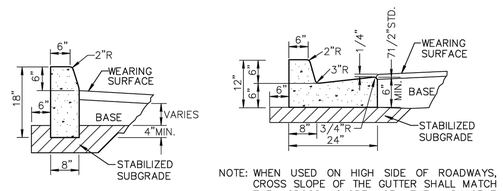
DATE: 09-15-2021
RT 18.1



CONCRETE HEADER CURB
NOT TO SCALE

VALLEY GUTTER
NOT TO SCALE

NOTE: SAWCUTS REQUIRED AT 10' ON CENTER.



F.D.O.T. TYPE "D" CONCRETE CURB
NOT TO SCALE

NOTE: WHEN USED ON HIGH SIDE OF ROADWAYS, CROSS SLOPE OF THE GUTTER SHALL MATCH THE CROSS SLOPE OF THE ADJACENT PAVEMENT AND THE THICKNESS OF THE LIP SHALL BE 6" MIN.

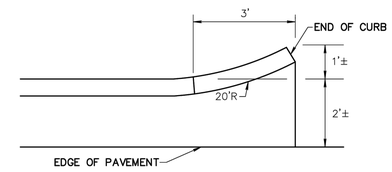
F.D.O.T. TYPE "F" CONCRETE CURB AND GUTTER
NOT TO SCALE

NOTES:
1. ROADWAY SUBGRADE SHALL IN ALL CASES EXTEND BELOW CURBING.
2. SAWCUTS AT 10' ON CENTER SHALL BE MADE WITHIN 24 HOURS OF CONCRETE PLACEMENT.

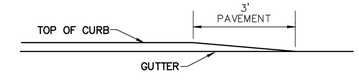
CITY of DELRAY BEACH
PUBLIC WORKS DEPARTMENT
434 SOUTH SWINTON AVENUE, DELRAY BEACH, FLORIDA 33444

CURB AND GUTTER SECTIONS

DATE: 9-15-2021
RT 19.0



PLAN

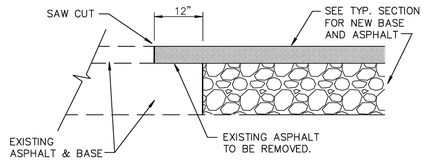


PROFILE

CITY of DELRAY BEACH
PUBLIC WORKS DEPARTMENT
434 SOUTH SWINTON AVENUE, DELRAY BEACH, FLORIDA 33444

FLARED END FOR CURB AND GUTTER

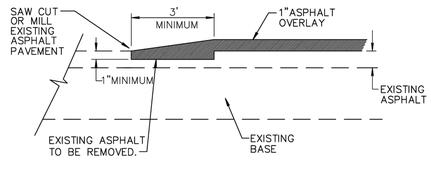
DATE: 09-15-2021
RT 20.0



NEW CONSTRUCTION PAVEMENT JOINT

NOTE:

THIS METHOD OF PAVEMENT JOINT SHALL BE USED FOR ANY APPLICATION OR CONSTRUCTION WHERE PROPOSED PAVEMENT AND BASE WILL BE CONNECTED TO EXISTING PAVEMENT AND BASE.



NEW OVERLAY PAVEMENT JOINT

NOTE:

THIS METHOD OF PAVEMENT JOINT SHALL BE USED FOR ANY APPLICATION OR CONSTRUCTION WHERE PROPOSED PAVEMENT WILL BE CONNECTED TO EXISTING PAVEMENT.

CITY of DELRAY BEACH
PUBLIC WORKS DEPARTMENT
434 SOUTH SWINTON AVENUE, DELRAY BEACH, FLORIDA 33444

PAVEMENT JOINT DETAIL

DATE: 09-15-2021
RT 21.0

PAVEMENT MARKING SPECIFICATIONS

All Pavement markings to be installed per these typicals, plans and specifications, and as directed by the City Engineer and shall conform to the requirements of F.D.O.T. and the manual on uniform traffic control devices, (MUTCD).

PERMANENT MARKINGS

Installation:
- All markings shall be installed by the extruded method.
- Markings shall be free of weaves, bows, drips, drags, and other degrading items.
- Chalk shall be used for all layout markings

Materials:
- All materials shall be alkyd or hydrocarbon thermoplastic meeting all FDOT specifications.

Thickness:
- All markings shall be installed to yield 90 mils of material measured above the pavement surface.

Spheres:
- Reflective glass sheres are to be applied to all stripes and markings per FDOT specifications.

Alternate Material:
- STAYMARK marking tape, or equivalent may be used, as approved or directed by the City Engineer.

Layout:
- Layout shall be made using marking chalk.
- It is recommended that marking layout be inspected by the City Engineer prior to the placement of final markings.

TEMPORARY MARKINGS

Temporary markings may be used only as specified in this section, or as approved or directed by the City Engineer.

Final Pavement Surface:
- Only foil backed marking tape is allowed.
- All tape shall be totally removed concurrent with permanent marking placement.

Other Pavement Surfaces:
- Intermediate pavement surfaces may be marked with FDOT approved materials, designs, and specifications.

CITY of DELRAY BEACH
PUBLIC WORKS DEPARTMENT
434 SOUTH SWINTON AVENUE, DELRAY BEACH, FLORIDA 33444

PAVEMENT MARKING SPECIFICATIONS (SHEET 1 OF 2)

DATE: 09-15-2021
RT 22.0

ALL PAVEMENT MARKINGS

All paved surfaces shall be properly marked prior to the hours of darkness.

RAISED PAVEMENT MARKERS

- R.P.M.s shall be installed on all lane lines and centerlines, spaced at 20' or 40'.
- R.P.M.s shall be a 4 x 4 type class "B" marker meeting F.D.O.T. specifications and shall be approved by the City Engineer prior to use.
- R.P.M.'s shall be installed using alkyd thermoplastic on asphalt and epoxy on concrete.

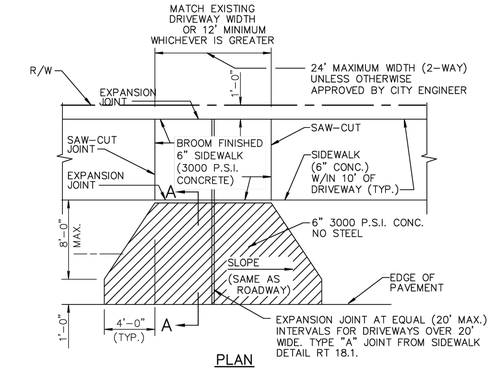
OTHER NOTES

- All Materials within right-of-way shall be thermoplastic and per F.D.O.T. specifications.
- Pavement marking within private parking lots may be painted according to F.D.O.T. specifications, except for all stop bars adjacent to public right-of-way.

CITY of DELRAY BEACH
PUBLIC WORKS DEPARTMENT
434 SOUTH SWINTON AVENUE, DELRAY BEACH, FLORIDA 33444

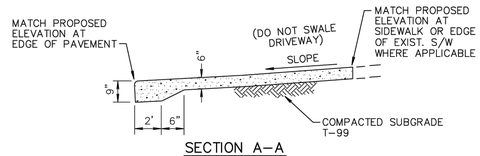
PAVEMENT MARKING SPECIFICATIONS (SHEET 2 OF 2)

DATE: 09-15-2021
RT 22.1



PLAN

NOTE: SIDEWALK SHALL BE CONSTRUCTED THROUGH DRIVEWAY PER DETAILS 18.0 AND 18.1.



SECTION A-A
NOT TO SCALE

NOTE: ALL SIDEWALKS WITH CENTRAL BUSINESS DISTRICT SHALL BE A MINIMUM WIDTH OF 8'

CITY of DELRAY BEACH
PUBLIC WORKS DEPARTMENT
434 SOUTH SWINTON AVENUE, DELRAY BEACH, FLORIDA 33444

CONCRETE DRIVEWAY APRON

DATE: 09-15-2021
RT 23.0

CITY of DELRAY BEACH
PUBLIC WORKS DEPARTMENT
434 SOUTH SWINTON AVENUE, DELRAY BEACH, FLORIDA 33444
Phone: (561) 243-7322 Fax: (561) 243-7314 www.mydelraybeach.com

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Phone No. 561.687.2220
Fax No. 561.687.1110
Cert No. 6091 - LB No. 7055
ENGINEERING // SURVEYING // ENVIRONMENTAL // PLANNING

ENGINEER'S SEAL

STEPHEN CHERRY, PE
P.E., LIC. NO. 83268

DESIGNED BY	CAC
DRAWN BY	CAC
CHECKED BY	SCC
QC BY	JWR
DATE	3/21/2024

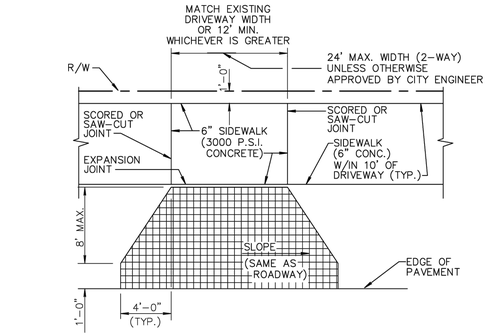
REVISION	DATE	DESCRIPTION	BY

THE CITY OF DELRAY BEACH
HISTORIC MARINE WAY SEAWALL, ROADWAY, AND DRAINAGE IMPROVEMENT

PAVING, GRADING, AND DRAINAGE DETAILS

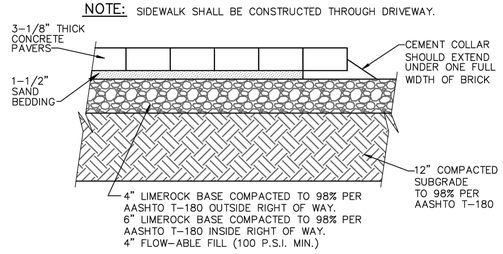
PROJECT NO. 17-047
SHEET NO. C9.3
FILE ID. 2898.01

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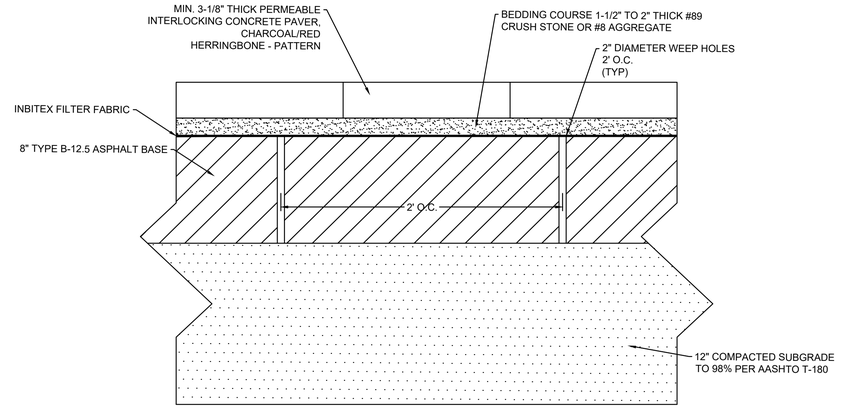
PLAN

NOTE: SIDEWALK SHALL BE CONSTRUCTED THROUGH DRIVEWAY.

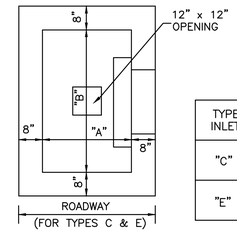


SECTION

CITY of DELRAY BEACH PUBLIC WORKS DEPARTMENT 434 SOUTH SWINTON AVENUE, DELRAY BEACH, FLORIDA 33444	PAVER BRICK DRIVEWAY APRON	DATE: 09-15-2021 RT 28.0

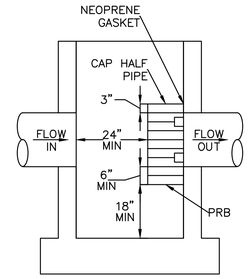


CONCRETE PAVER BRICK
(PAVER BRICK) DETAIL
NTS

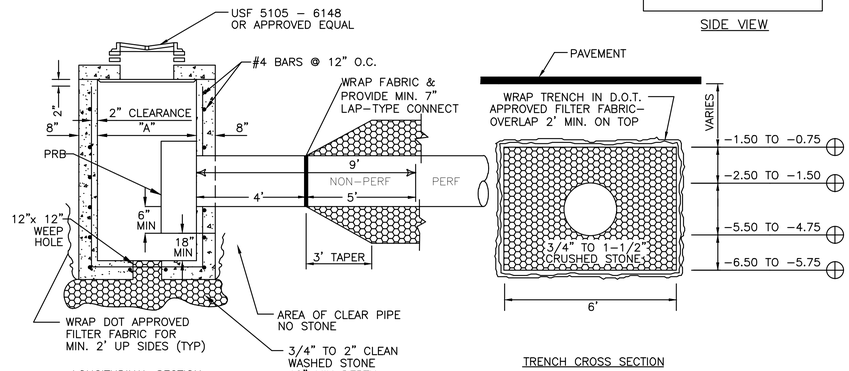


PLAN

TYPE INLET	DIMENSIONS		MAX. DIAM. PIPE	
	"A"	"B"	SHORT SIDE	LONG SIDE
"C"	2'-0"	3'-1"	18"	24"
"E"	3'-0"	4'-5"	24"	36"



SIDE VIEW



LONGITUDINAL SECTION

TRENCH CROSS SECTION

NOTES:
COMPACT TRENCH BACKFILL AND SOIL WITHIN MIN. 5' OF TRENCH TO MIN. 98% OF MAX. DRY DENSITY PER ASTM D-1557.

PROVIDE EYEBOLT PER F.D.O.T. INDEX 201

INLET NOTES

BEVELED EDGES: ALL EXPOSED CORNERS AND EDGES TO BE CHAMFERED 3/4".

FOUNDATION MATERIAL: WHERE MATERIAL UNSATISFACTORY FOR FOUNDATION IS ENCOUNTERED, ALL SUCH MATERIAL MUST BE REMOVED DOWN TO SATISFACTORY MATERIAL AND BACKFILLED TO SUBGRADE WITH CLEAN SAND.

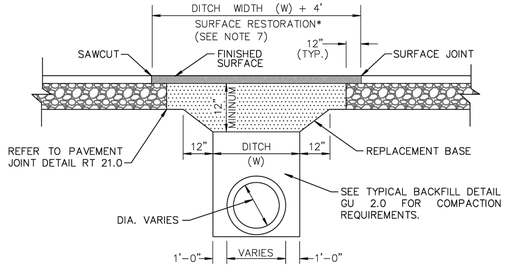
GRATE: CAST IRON IN ACCORDANCE WITH F.D.O.T. SPECIFICATIONS. GRATE TO BE USF 5105-6148 OR EQUAL.

INLET TYPES: INLETS ARE TO BE CONSTRUCTED TO THE DIMENSIONS SHOWN HEREON. INLETS RECEIVING PIPE LARGER THAN 42" DIAMETER SHALL BE IN ACCORDANCE WITH F.D.O.T. STANDARDS MATERIAL: INLET WALLS AND BASES MAY EITHER BE CAST-IN-PLACE CLASS I, 2500 P.S.I. CONCRETE OR PRECAST CLASS II, 4000 (MIN.) P.S.I. CONCRETE.

PRB SHALL BE C.M.P. OR C.A.P. SECTION (OUTFALL DIAMETER PLUS 6"), CLOSED TOP AND OPEN BOTTOM.

EXFILTRATION TRENCH DETAIL

SCALE: NONE



1. REPLACEMENT BASE TO BE AT MIN. 12" THICK.

2a. BASE MATERIAL SHALL BE PLACED IN TWO LIFTS AND EACH LIFT COMPACTED TO 98% MAXIMUM DENSITY PER AASHTO T-180 (MAX. LIFT THICKNESS = 6").

2b. 24" EXCAVATABLE FLOWABLE FILL MIN. 100 P.S.I. MAY BE USED IN LIEU OF 12" BASE.

3. ASPHALT CONCRETE PAVEMENT JOINTS SHALL BE MECHANICALLY SAWED.

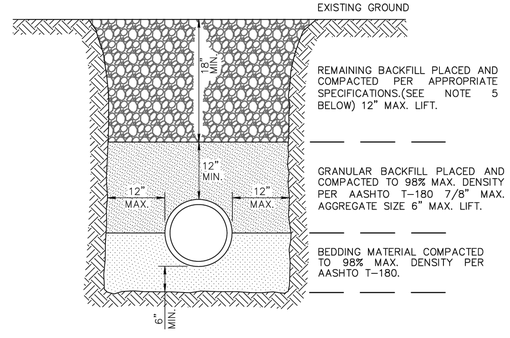
4. ALL DISTURBED PAVEMENT MARKINGS SHALL BE RESTORED IN ACCORDANCE WITH CITY STANDARDS.

5. SURFACE MATERIAL SHALL BE S-III ASPHALTIC CONCRETE (THICKNESS SHOULD BE TWICE THE THICKNESS OF THE ADJACENT EXISTING ASPHALT).

6. ANY PAVEMENT CUTS SHALL BE COLD PATCHED AT END OF EACH WORKING DAY TO FACILITATE UNHINDERED TRAFFIC FLOW.

7. ROADWAYS SHALL BE MILLED AND RESURFACED 50' IN EACH DIRECTION AT TIME OF PAVEMENT REPAIR THE SURFACE RESTORATION SHALL EXTEND 50' IN EACH DIRECTION.

CITY of DELRAY BEACH PUBLIC WORKS DEPARTMENT 434 SOUTH SWINTON AVENUE, DELRAY BEACH, FLORIDA 33444	PAVEMENT REPAIR DETAIL	DATE: 09-15-2021 GU 1.0



NOTES:

1. UNSUITABLE IN-SITU MATERIALS SUCH AS MUCK, DEBRIS AND LARGE ROCKS SHALL BE REMOVED OFF SITE AND DISPOSED IN A PROPER LANDFILL; BEDDING MATERIAL AND BACKFILL CONSISTING OF WASHED AND GRADED LIMEROCK 3/8" -7/8" SIZING.

2. THE PIPE AND/OR STRUCTURE SHALL BE FULLY SUPPORTED FOR ITS ENTIRE LENGTH WITH APPROPRIATE COMPACTION UNDER THE PIPE HAUNCHES.

3. THE PIPE AND/OR STRUCTURE SHALL BE PLACED IN A DRY TRENCH.

4. BACKFILL SHALL BE FREE OF UNSUITABLE MATERIAL SUCH AS LARGE ROCK, MUCK, AND DEBRIS.

5. COMPACT BACKFILL TO 98% DENSITY UNDER PAVEMENT AND TO 95% DENSITY ELSEWHERE.(AASHTO T-180)

6. COMPACTION AND DENSITY TESTS SHALL BE COMPLETED DURING BACKFILL OPERATIONS, CONTRACTORS NOT FOLLOWING THIS PROCEDURE, FOR WHATEVER REASONS, SHALL BE REQUIRED TO RE-EXCAVATE THE AREA IN QUESTION, DOWN TO THE BEDDING MATERIAL, THEN BACKFILL FOLLOWING THE ABOVE PROCEDURES.

CITY of DELRAY BEACH PUBLIC WORKS DEPARTMENT 434 SOUTH SWINTON AVENUE, DELRAY BEACH, FLORIDA 33444	TYPICAL BACKFILL DETAIL	DATE: 09-15-2021 GU 2.0

CITY of DELRAY BEACH
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ENGINEERING // SURVEYING // ENVIRONMENTAL // PLANNING

ENGINEER'S SEAL

STEPHEN CHERRY, PE
P.E., LIC. NO. 83268

DESIGNED BY	CAC
DRAWN BY	CAC
CHECKED BY	SCC
QC BY	JWR
DATE	3/21/2024

REVISION	DATE	DESCRIPTION	BY

THE CITY OF DELRAY BEACH
HISTORIC MARINE WAY SEAWALL, ROADWAY, AND DRAINAGE IMPROVEMENT

PAVING, GRADING, AND DRAINAGE DETAILS

PROJECT NO. 17-047
SHEET NO. C9.4
FILE ID. 2898.01

Mayor, Shutt P:\2800\2898.01 Marine Way PH 2\CIVIL\Design\Drawings\2898DI-CIV-SECTIONS AND DETAILS.dwg ---- Plotted: 3/21/2024 9:50:45 AM Saved: 3/21/2024

NOTE:

1.- CONTRACTOR TO VERIFY THAT BAFFLE WILL FIT STRUCTURE I.D.

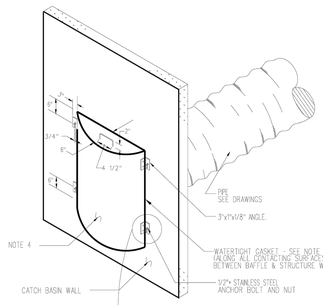
2.- DEBRIS BAFFLE REQUIRED AT CATCH BASINS CONNECTED DIRECTLY TO PROPOSED DRAIN FIELD.

3.- PROVIDE NEOPRENE GASKET SIDES AND TOP

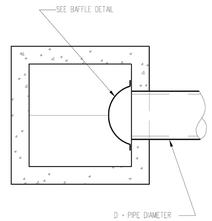
4.- SECTION OF A.C.M.P. CUT IN HALF OR EQUIVALENT PREFABRICATED FIBERGLASS. BAFFLE DIAMETER TO BE AS PER TABLE 1

5.- 1/2" GALVANIZED LAG BOLT IN LEAD SHIELD

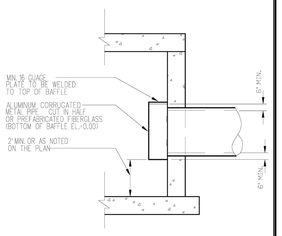
6.- WELD OR 2-1/4" THRU BOLTS.



BRACKET DETAIL

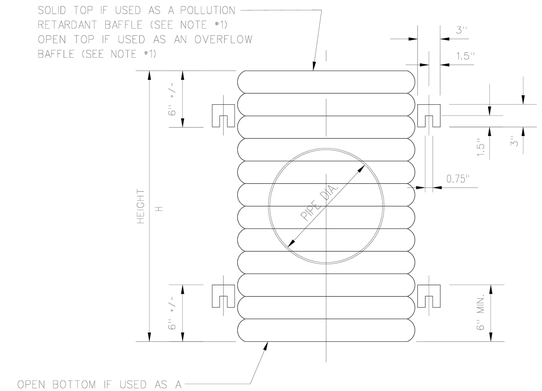


PLAN

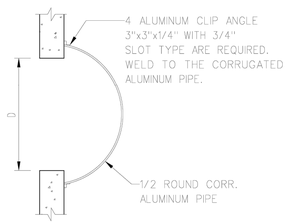


ELEVATION

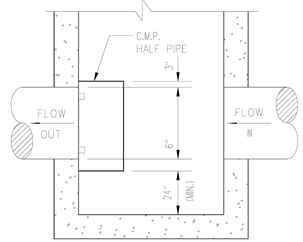
TABLE 1	
D	BAFFLE DIA.
10"	15"
15"	24"
18"	30"
24"	36"
30"	48"
36"	54"



FRONT VIEW



TOP VIEW



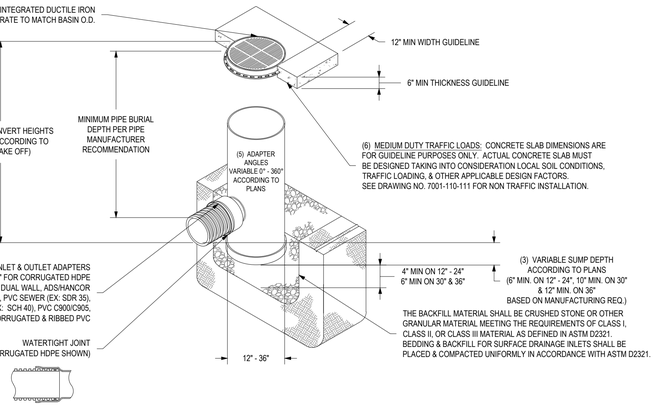
SIDE VIEW

STANDARD DIMENSIONS			
PIPE DIA.	D (INCHES)	T (GAUGE)	H (INCHES)
10"	15"	16	15"
15"	24"	16	21"
18"	30"	16	27"
24"	36"	16	33"
30"	42"	14	39"
36"	48"	14	45"
42"	54"	14	51"

NOTES:

1. ALUMINUM SHEET OF SAME THICKNESS (GAGE) AS PIPE SHALL BE WELDED TO CLOSE OPENING.
2. BAFFLE SHALL BE AS MANUFACTURED BY SOUTHERN CULVERT OR ENGINEER'S APPROVED EQUAL.
3. NEOPRENE GASKET (3/8"x 2") SHALL BE INSTALLED AT ALL BAFFLES.

NYLOPLAST DRAIN BASIN WITH PEDESTRIAN GRATE



1 - 12" - 30" PEDESTRIAN GRATES SHALL BE DUCTILE IRON PER ASTM A536 GRADE 70-50-05.
2 - 12" - 30" FRAMES SHALL BE DUCTILE IRON PER ASTM A536 GRADE 70-50-05.
3 - DRAIN BASIN TO BE CUSTOM MANUFACTURED ACCORDING TO PLAN DETAILS. RISERS ARE NEEDED FOR BASINS OVER 84" DUE TO SHIPPING RESTRICTIONS. SEE DRAWING NO. 7001-110-065.
4 - DRAINAGE CONNECTION STUB JOINT TIGHTNESS SHALL CONFORM TO ASTM D3212 FOR CORRUGATED HDPE (ADS N-12/HANCOR DUAL WALL, N-12 HP, & PVC SEWER (4" - 36").
5 - ADAPTERS CAN BE MOUNTED 0° TO 360°. TO DETERMINE MINIMUM ANGLE BETWEEN ADAPTERS SEE DRAWING NO. 7001-110-012.
6 - 12" - 24" PEDESTRIAN GRATES SHALL MEET H-10 LOAD RATING. 30" PEDESTRIAN GRATE SHALL MEET H-20 LOAD RATING (SEE DRAWING NO. 7001-110-144 FOR H-20 TRAFFIC LOAD GUIDELINES).

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DRAWN BY	EBC	MATERIAL	PVC
DATE	4-20-07		
REVISED BY	NMH	PROJECT NO./NAME	
DATE	06-12-18		
DWG SIZE	A	SCALE 1:40	SHEET 1 OF 1

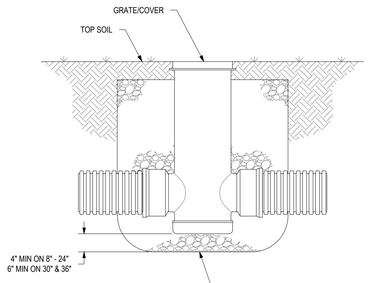
ADS Nyloplast — 3130 VERONA AVE BUFORD, GA 30518 PHN (770) 932-2443 FAX (770) 932-2490 www.nyloplast-us.com

TITLE: DRAIN BASIN WITH PEDESTRIAN GRATE QUICK SPEC INSTALLATION DETAIL

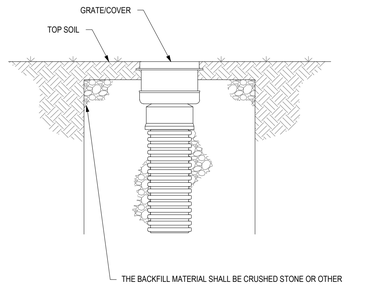
DWG NO. 7001-110-283 REV E

NON TRAFFIC INSTALLATION

DRAIN BASIN



INLINE DRAIN



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DATE	9-30-99		
REVISED BY	NMH	PROJECT NO./NAME	
DATE	03-11-16		
DWG SIZE	A	SCALE 1:25	SHEET 1 OF 1

ADS Nyloplast — 3130 VERONA AVE BUFORD, GA 30518 PHN (770) 932-2443 FAX (770) 932-2490 www.nyloplast-us.com

TITLE: DRAIN BASIN & INLINE DRAIN NON TRAFFIC INSTALLATION

DWG NO. 7001-110-111 REV F

Section 2721

Engineered Surface Drainage Products

GENERAL

PVC surface drainage inlets shall include the drain basin type as indicated on the contract drawing and referenced within the contract specifications. The ductile iron grates for each of these fittings are to be considered an integral part of the surface drainage inlet and shall be furnished by the same manufacturer. The surface drainage inlets shall be as manufactured by Nyloplast a division of Advanced Drainage Systems, Inc., or prior approved equal.

MATERIALS

The drain basins required for this contract shall be manufactured from PVC pipe stock, utilizing a thermoforming process to reform the pipe stock to the specified configuration. The drainage pipe connection stubs shall be manufactured from PVC pipe stock and formed to provide a watertight connection with the specified pipe system. This joint tightness shall conform to ASTM D3212 for joints for drain and sewer plastic pipe using flexible elastomeric seals. The flexible elastomeric seals shall conform to ASTM F477. The pipe bell spigot shall be joined to the main body of the drain basin or catch basin. The raw material used to manufacture the pipe stock that is used to manufacture the main body and pipe stubs of the surface drainage inlets shall conform to ASTM D1784 cell class 12454.

The grates and frames furnished for all surface drainage inlets shall be ductile iron for structure sizes 8", 10", 12", 15", 18", 24", 30" and 36" and shall be made specifically for each basin so as to provide a round bottom flange that closely matches the diameter of the surface drainage inlet. Grates for drain basins shall be capable of supporting various wheel loads as specified by Nyloplast. 12" and 15" square grates will be hinged to the frame using pins. Ductile iron used in the manufacture of the castings shall conform to ASTM A536 grade 70-50-05. Grates and covers shall be provided painted black.

INSTALLATION

The specified PVC surface drainage inlet shall be installed using conventional flexible pipe backfill materials and procedures. The backfill material shall be crushed stone or other granular material meeting the requirements of class 1, class 2, or class 3 material as defined in ASTM D2321. Bedding and backfill for surface drainage inlets shall be well placed and compacted uniformly in accordance with ASTM D2321. The drain basin body will be cut at the time of the final grade. No brick, stone or concrete block will be required to set the grate to the final grade height. For load rated installations, a concrete slab shall be poured under and around the grate and frame. The concrete slab must be designed taking into consideration local soil conditions, traffic loading, and other applicable design factors. For other installation considerations such as migration of fines, ground water, and soft foundations refer to ASTM D2321 guidelines.

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DWG SIZE	A	SCALE 1:1	SHEET 1 OF 1

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TITLE: 8 IN - 36 IN DRAIN BASIN SPECIFICATIONS

DWG NO. 7001-110-011 REV J

CITY of DELRAY BEACH
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Cert No. 6091 - LB No. 7055
ENGINEERING // SURVEYING // ENVIRONMENTAL // PLANNING

ENGINEER'S SEAL

STEPHEN CHERRY, PE
P.E., LIC. NO. 83268

DESIGNED BY	CAC
DRAWN BY	CAC
CHECKED BY	SCC
QC BY	JWR
DATE	3/21/2024

REVISION	DATE	DESCRIPTION	BY

THE CITY OF DELRAY BEACH
HISTORIC MARINE WAY SEAWALL, ROADWAY, AND DRAINAGE IMPROVEMENT

PAVING, GRADING, AND DRAINAGE DETAILS

PROJECT NO. 17-047
SHEET NO. C9.5
FILE ID. 2898.01

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North

0 5 10 20

SCALE IN FEET
1" = 10'

170 MARINE WAY

160 MARINE WAY

150 MARINE WAY

140 MARINE WAY

138 MARINE WAY

136 MARINE WAY

134 MARINE WAY

SE 2ND STREET

R/W

DETECTABLE WARNING STRIP (TYP.)

EX PARKING BY PERMIT ONLY SIGN TO REMAIN

EX EOP

MARINE WAY

MATCHLINE SHEET C10.1

PROP STORM STRUCTURE (TYP)

12" WHITE

7'

6" WHITE (TYP)

EX EOP

22' (TYP)

8' (TYP)

EX DIRECTIONAL ARROW AND CASE 1 YELLOW REFLECTOR SIGN TO BE RELOCATED

BLUE RPM

EX STREET SIGN TO BE RELOCATED

EX DIRECTIONAL ARROW AND CASE 1 YELLOW REFLECTOR SIGN TO BE RELOCATED

MARINE WAY

EX DOG WASTE PICKUP SIGN TO REMAIN

STA=8+10.28
OFF=21.20 L

STA=8+13.96
OFF=17.07 L

STA=8+17.38
OFF=13.92 L

6" WHITE (TYP)

5'

12'

9'

1'

9'

2' TYP

9'

9'

FUEL VAULT

30'

16.5'

PROP BACKUP GENERATOR

20'

7'

N: 773262.8118
E: 962103.6805

8+00

9+00

10+00

11+00

4" WHITE (TYP)

DETECTABLE WARNING STRIP (TYP.)

STA=9+63.53
OFF=13.85 L

STA=9+69.33
OFF=47.65 L

BASELINE OF CONSTRUCTION

PRECAST WHEEL STOP BLUE (TYP)

PRECAST WHEEL STOP WHITE (TYP)

4" BLUE (TYP)

EX PARKING BY PERMIT ONLY SIGN TO REMAIN

STA=8+64.38
OFF=18.51 R

STA=8+47.75
OFF=19.66 R

EX DOCKMASTER BUILDING

CR-C RAMP AND DETECTABLE WARNING STRIP

PROP GENERATOR ENCLOSURE

DELRAY BEACH
MUNICIPAL MARINA

SIGN LEGEND

DESIGNATIONS USED IN THE PLANS TO INDICATE THE TYPE OF SIGN TO BE INSTALLED ARE:

1. R1-1 — STOP
2. FTP 21-06 — PARKING BY DISABLED PERMIT ONLY
3. D-3 — MARINE WAY
3A. D-3 — SE 1ST STREET
4. W11-2 W16-7PL
5. W14-2 — NO OUTLET
6. R7-1 — NO PARKING ANY TIME
7. OM1-1
8. W1-6R
9. W1-6L
10. LOCAL TRAFFIC ONLY

NOTES:

1. PAVEMENT MARKINGS & SIGNING SHALL BE IN ACCORDANCE WITH THE MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES FOR STREETS & HIGHWAYS.
2. EX SIGNAGE SHALL BE MAINTAINED UNLESS SPECIFICALLY NOTED ON THE PLAN.
3. SEE SHEET C9.2 FOR TYPICAL PARKING DETAILS.

811 Know what's below. Call before you dig.

CITY of DELRAY BEACH
PUBLIC WORKS DEPARTMENT
434 SOUTH SWINTON AVENUE, DELRAY BEACH, FLORIDA 33444
Phone: (561) 243-7322 Fax: (561) 243-7314 www.mydelraybeach.com

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ENGINEER'S SEAL

STEPHEN CHERRY, PE
P.E., LIC. NO. 83268

DESIGNED BY	CAC
DRAWN BY	CAC
CHECKED BY	SCC
QC BY	JWR
DATE	3/28/2024

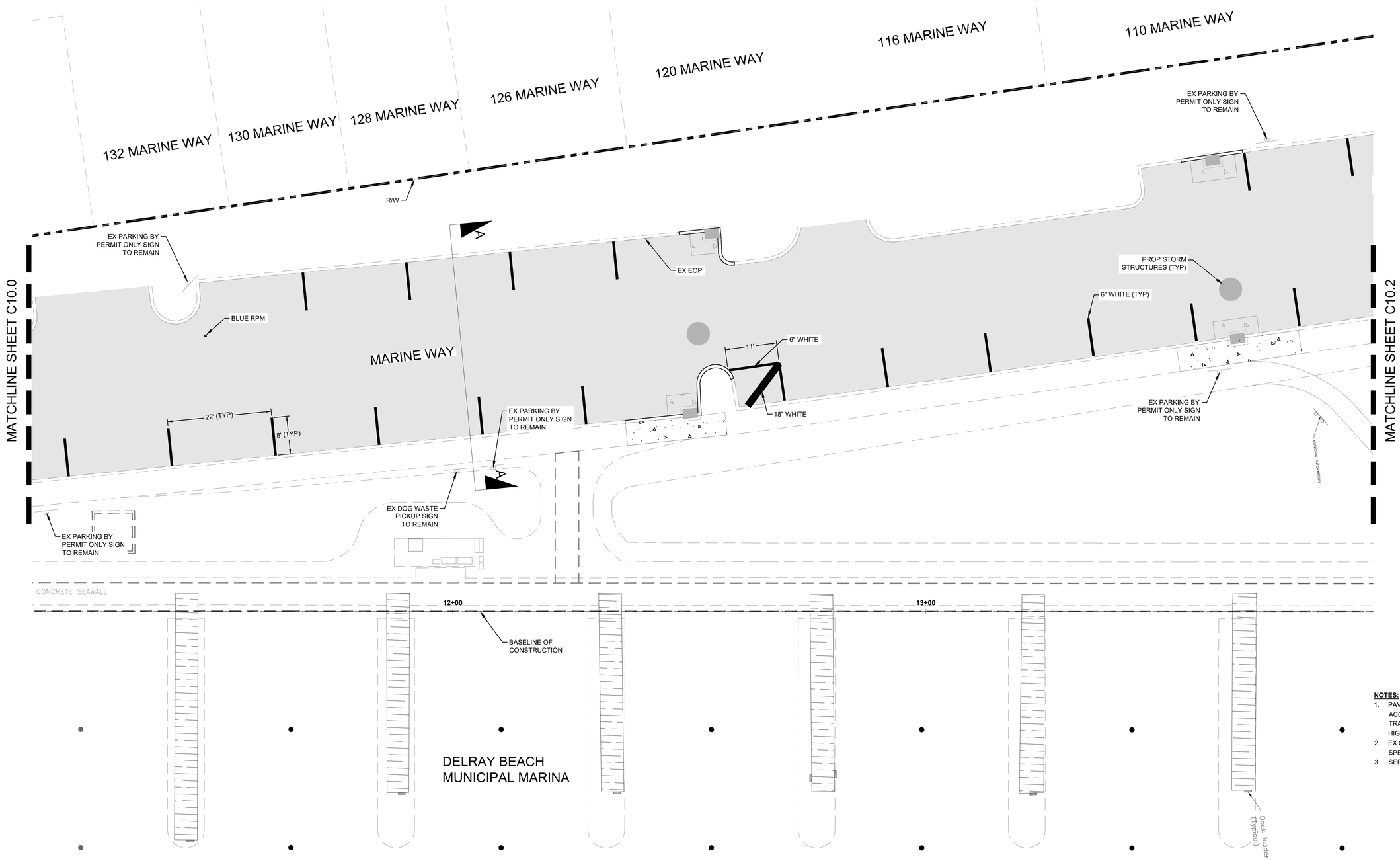
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1	2/26/24	ADDENDUM 5	MAS

THE CITY OF DELRAY BEACH
HISTORIC MARINE WAY SEAWALL,
ROADWAY, AND DRAINAGE IMPROVEMENT

SIGNING AND MARKING PLAN

PROJECT NO. 17-047
SHEET NO. C10.0
FILE ID. 2898.01

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North

0 5 10 20

SCALE IN FEET
1" = 10'

SIGN LEGEND

DESIGNATIONS USED IN THE PLANS TO INDICATE THE TYPE OF SIGN TO BE INSTALLED ARE:

1	R1-1	STOP
2	FTP 21-06	PARKING BY DISABLED PERMIT ONLY
3	D-3	MARINE WAY
3A		SE 1ST STREET
4	W11-2 W16-7PL	
5	W14-2	NO OUTLET
6	R7-1	NO PARKING ANY TIME
7	OM1-1	
8	W1-6R	
9	W1-6L	
10		LOCAL TRAFFIC ONLY

NOTES:

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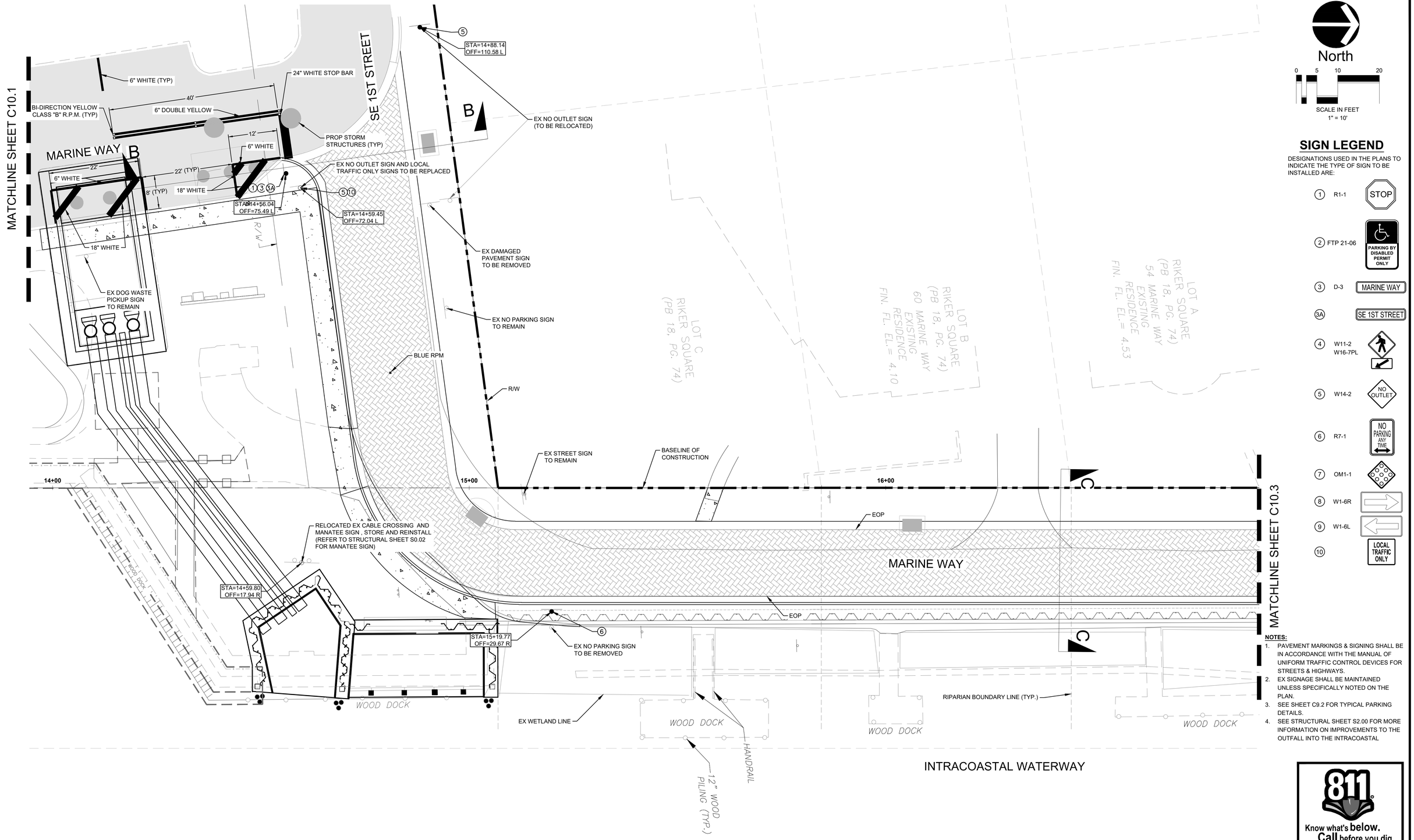
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THE CITY OF DELRAY BEACH
HISTORIC MARINE WAY SEAWALL,
ROADWAY, AND DRAINAGE IMPROVEMENT

SIGNING AND MARKING PLAN

PROJECT NO. 17-047
SHEET NO. C10.1
FILE ID. 2898.01

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North

0 5 10 20

SCALE IN FEET
1" = 10'

SIGN LEGEND

DESIGNATIONS USED IN THE PLANS TO INDICATE THE TYPE OF SIGN TO BE INSTALLED ARE:

1	R1-1	STOP
2	FTP 21-06	PARKING BY DISABLED PERMIT ONLY
3	D-3	MARINE WAY
3A		SE 1ST STREET
4	W11-2 W16-7PL	
5	W14-2	NO OUTLET
6	R7-1	NO PARKING ANY TIME
7	OM1-1	
8	W1-6R	
9	W1-6L	
10		LOCAL TRAFFIC ONLY

NOTES:

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2. EX SIGNAGE SHALL BE MAINTAINED UNLESS SPECIFICALLY NOTED ON THE PLAN.
3. SEE SHEET C9.2 FOR TYPICAL PARKING DETAILS.
4. SEE STRUCTURAL SHEET S2.00 FOR MORE INFORMATION ON IMPROVEMENTS TO THE OUTFALL INTO THE INTRACOASTAL

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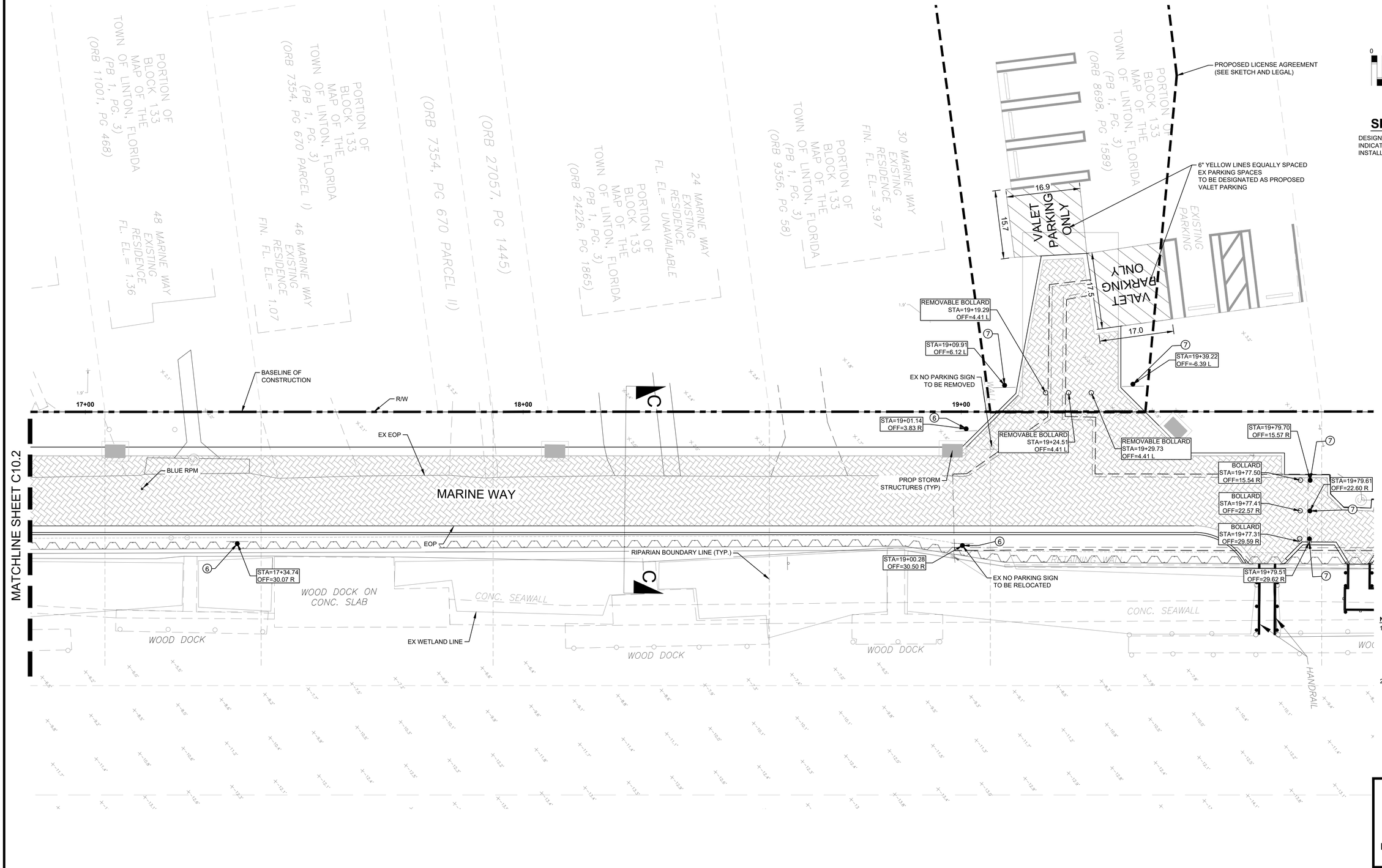
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THE CITY OF DELRAY BEACH
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SIGNING AND MARKING PLAN

PROJECT NO. 17-047
SHEET NO. C10.2
FILE ID. 2898.01

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SIGN LEGEND

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1	R1-1	STOP
2	FTP 21-06	PARKING BY DISABLED PERMIT ONLY
3	D-3	MARINE WAY
3A		SE 1ST STREET
4	W11-2 W16-7PL	
5	W14-2	NO OUTLET
6	R7-1	NO PARKING ANY TIME
7	OM1-1	
8	W1-6R	
9	W1-6L	
10		LOCAL TRAFFIC ONLY

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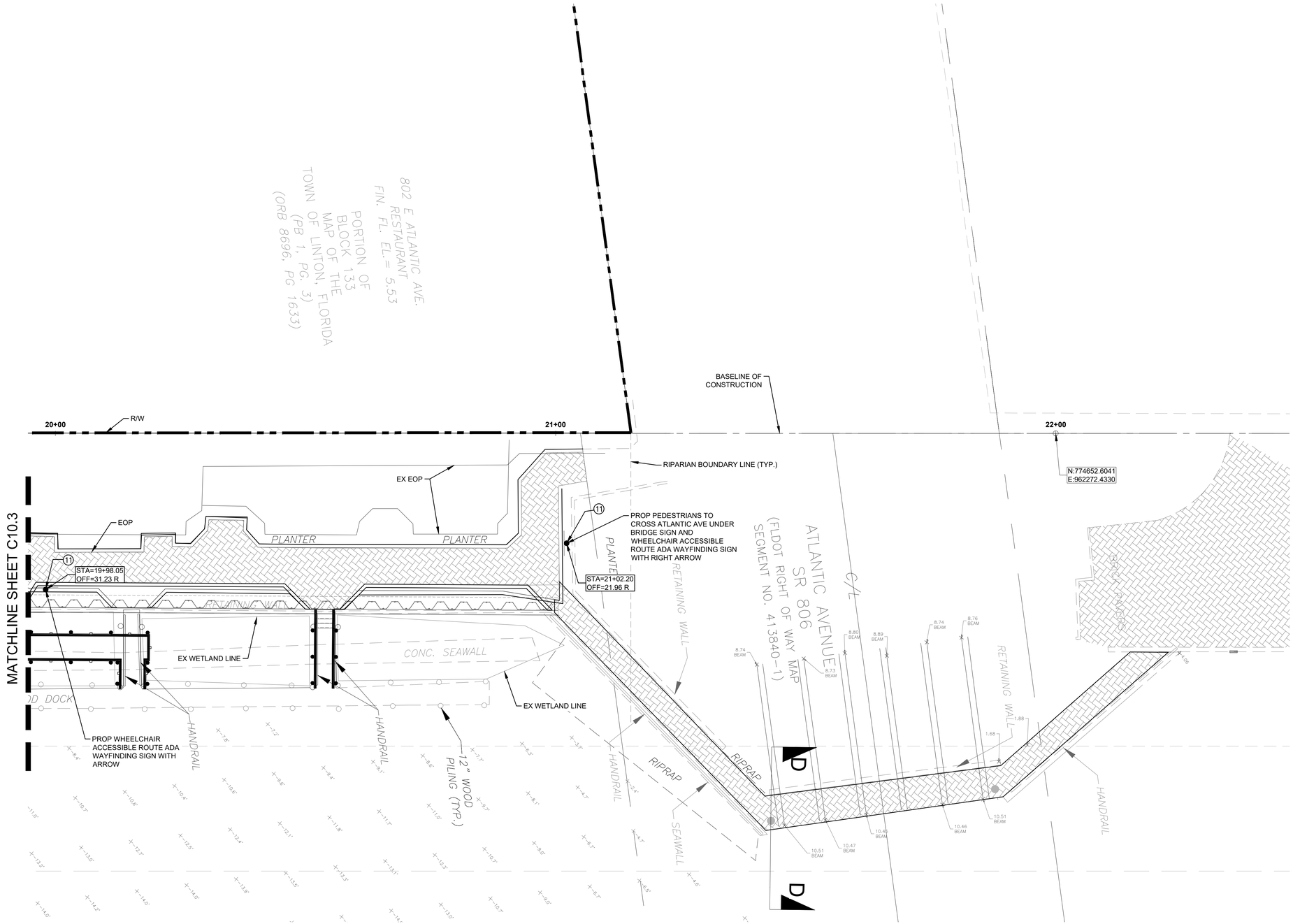
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THE CITY OF DELRAY BEACH
HISTORIC MARINE WAY SEAWALL, ROADWAY, AND DRAINAGE IMPROVEMENT

SIGNING AND MARKING PLAN

PROJECT NO. 17-047
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FILE ID. 2898.01

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North

0 5 10 20

SCALE IN FEET
1" = 10'

SIGN LEGEND

DESIGNATIONS USED IN THE PLANS TO INDICATE THE TYPE OF SIGN TO BE INSTALLED ARE:

1	R1-1	STOP
2	FTP 21-06	PARKING BY DISABLED PERMIT ONLY
3	D-3	MARINE WAY
3A		SE 1ST STREET
4	W11-2 W16-7PL	
5	W14-2	NO OUTLET
6	R7-1	NO PARKING ANY TIME
7	OM1-1	
8	W1-6R	
9	W1-6L	
10		LOCAL TRAFFIC ONLY
11	R7-ACCRT	ACCESSIBLE ROUTE / ACCESSIBLE ROUTE

NOTES:

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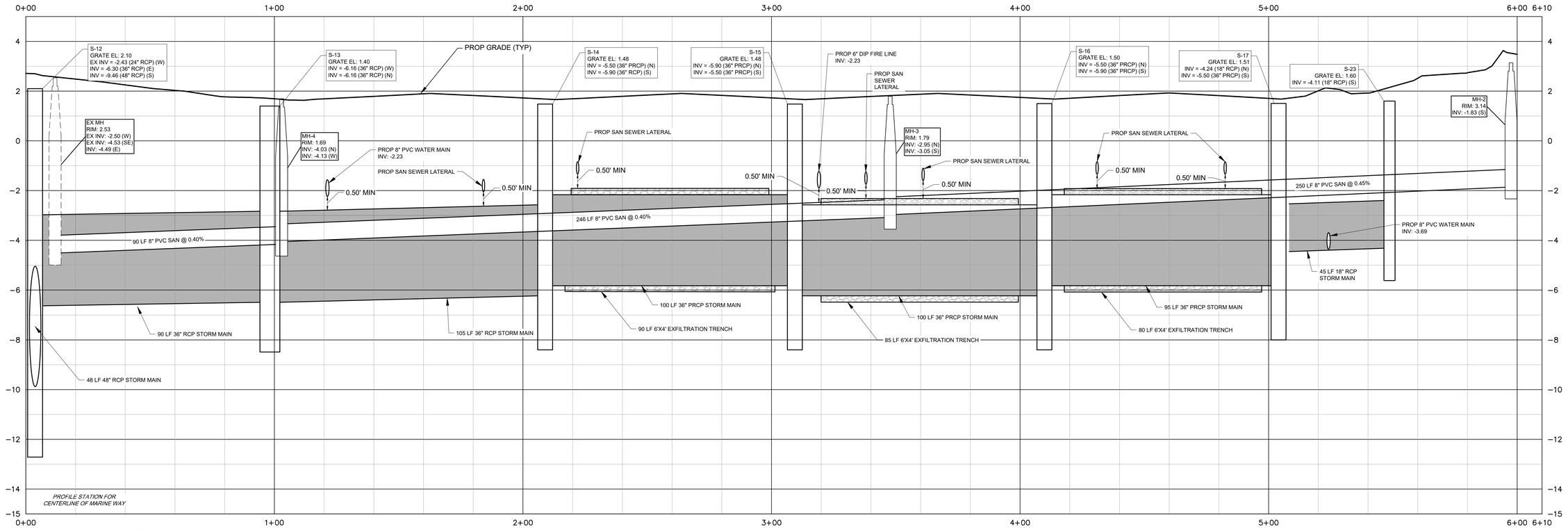
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THE CITY OF DELRAY BEACH
HISTORIC MARINE WAY SEAWALL,
ROADWAY, AND DRAINAGE IMPROVEMENT

SIGNING AND MARKING PLAN

PROJECT NO.	17-047
SHEET NO.	C10.4
FILE ID.	2898.01

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MARINE WAY WATERMAIN CROSSING
HOR. 1" = 20'
VER. 1" = 2'

NOTE:
PROPOSED DRAINAGE MAIN SHADED.

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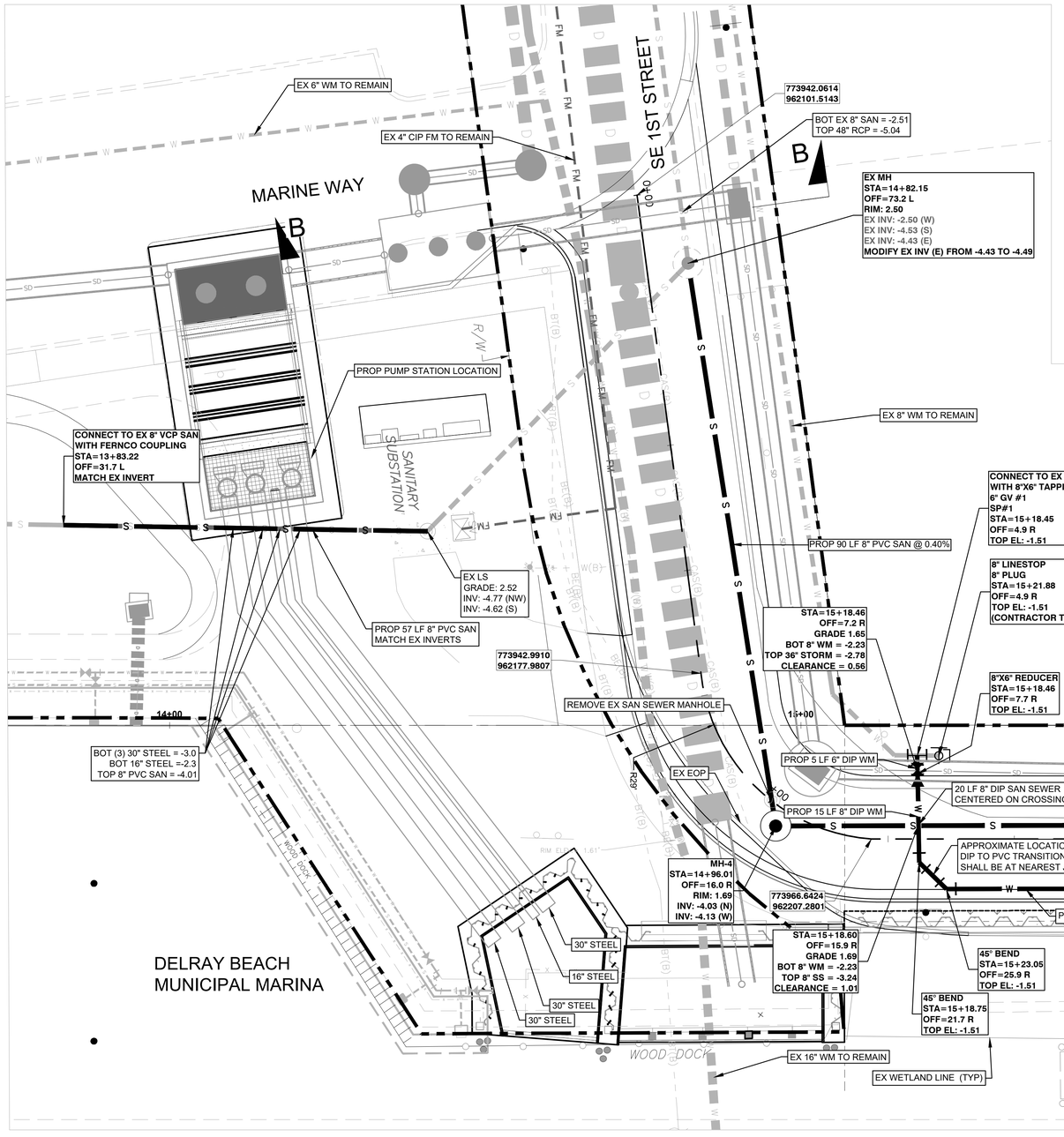
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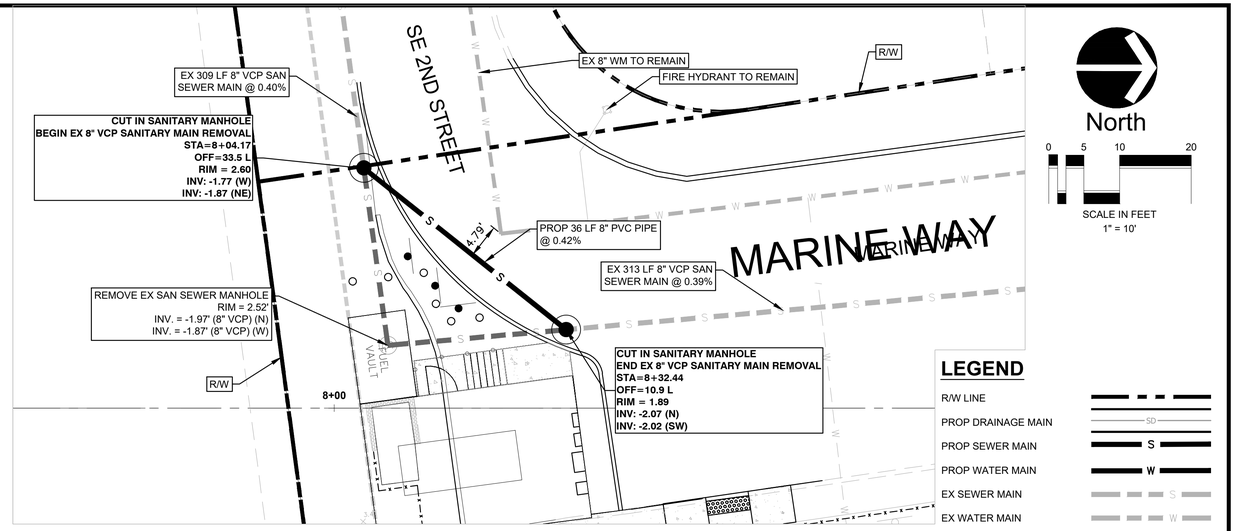
THE CITY OF DELRAY BEACH
HISTORIC MARINE WAY SEAWALL,
ROADWAY, AND DRAINAGE IMPROVEMENT

MARINE WAY PROFILE

PROJECT NO. 17-047
SHEET NO. C11.0
FILE ID. 2898.01

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North

0 5 10 20

SCALE IN FEET
1" = 10'

LEGEND

- R/W LINE
- PROP DRAINAGE MAIN
- PROP SEWER MAIN
- PROP WATER MAIN
- EX SEWER MAIN
- EX WATER MAIN
- EX DRAINAGE MAIN
- PROP SEWER MANHOLE
- PROP WATER SERVICE
- PROP SEWER SERVICE

SE 2ND STREET & MARINE WAY SANITARY IMPROVEMENTS

NOTES:

1. CONTRACTOR SHALL SUBMIT BY-PASS PIPE SEWER DESIGN FOR REVIEW.
2. WATER SERVICES SHALL BE 2" HDPE (MIN)
3. SEE SHEET C13.2 FOR SANITARY SEWER REPAIR DETAIL.
4. ALL EXISTING METERS AND FIRE HYDRANTS THAT ARE BEING REPLACED SHALL BE DELIVERED TO THE CITY.
5. EXISTING UTILITIES SHALL REMAIN IN SERVICE UNTIL PROPOSED UTILITIES (WATER, SEWER, AND DRAINAGE) ARE IN PLACE AND ACTIVE.

CITY of DELRAY BEACH
PUBLIC WORKS DEPARTMENT
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ENGINEER'S SEAL

STEPHEN CHERRY, PE
P.E., LIC. NO. 83268

DESIGNED BY	CAC
DRAWN BY	CAC
CHECKED BY	TEM
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DATE	3/21/2024

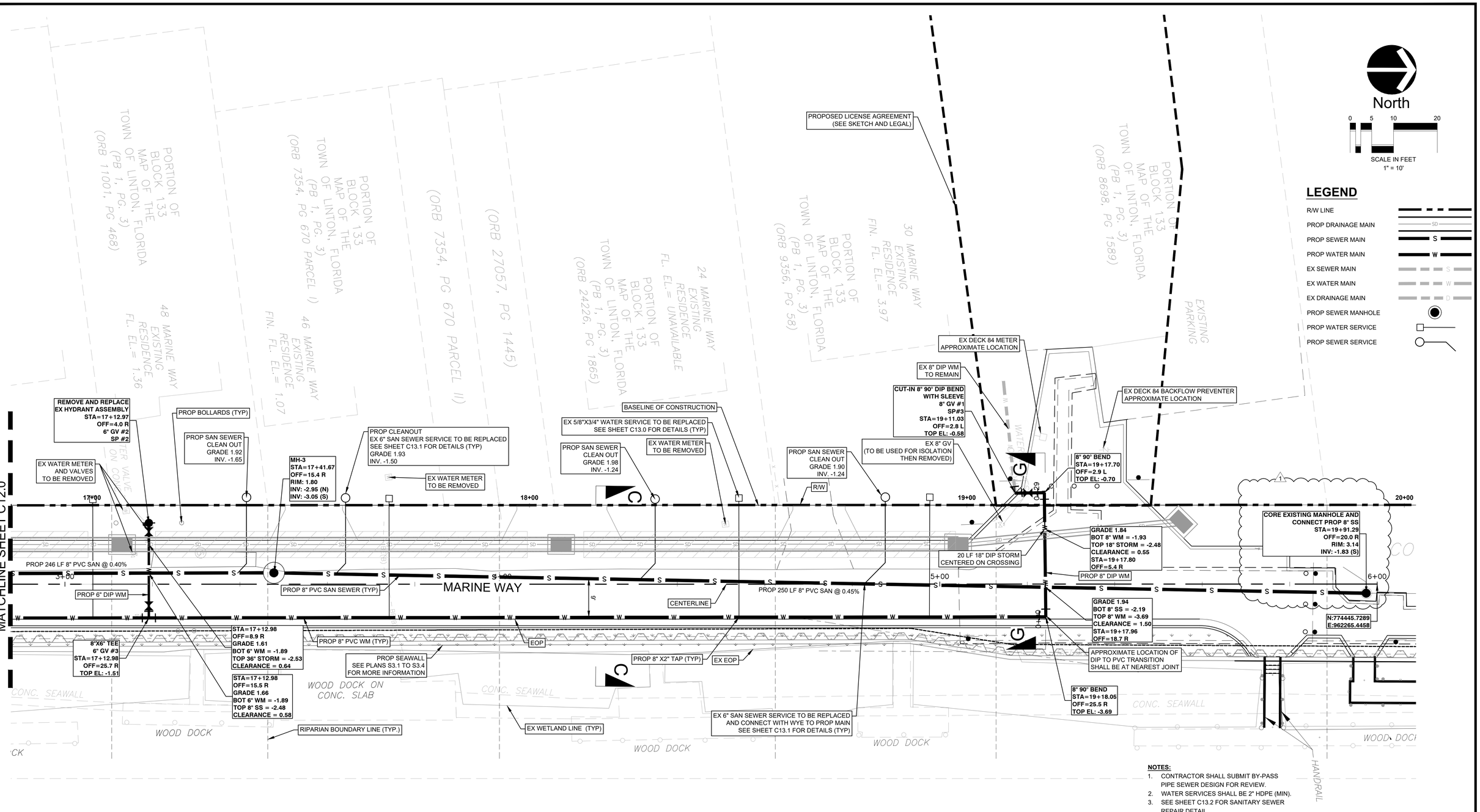
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THE CITY OF DELRAY BEACH
HISTORIC MARINE WAY SEAWALL,
ROADWAY, AND DRAINAGE IMPROVEMENT

WATER & WASTEWATER PLAN

PROJECT NO. 17-047
SHEET NO. C12.0
FILE ID. 2898.01

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NOTES:

1. CONTRACTOR SHALL SUBMIT BY-PASS PIPE SEWER DESIGN FOR REVIEW.
2. WATER SERVICES SHALL BE 2" HDPE (MIN).
3. SEE SHEET C13.2 FOR SANITARY SEWER REPAIR DETAIL.
4. ALL EXISTING METERS AND FIRE HYDRANTS THAT ARE BEING REPLACED SHALL BE DELIVERED TO THE CITY.
5. SEE SHEET C13.2 FOR SECTION G-G.
6. EXISTING UTILITIES SHALL REMAIN IN SERVICE UNTIL PROPOSED UTILITIES (WATER, SEWER, AND DRAINAGE) ARE IN PLACE AND ACTIVE.

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Cert No. 6091 - LB No. 7055
ENGINEERING // SURVEYING // ENVIRONMENTAL // PLANNING

ENGINEER'S SEAL
STEPHEN CHERRY, PE
P.E., LIC. NO. 83268

DESIGNED BY	CAC
DRAWN BY	CAC
CHECKED BY	TEM
QC BY	JWR
DATE	3/28/2024

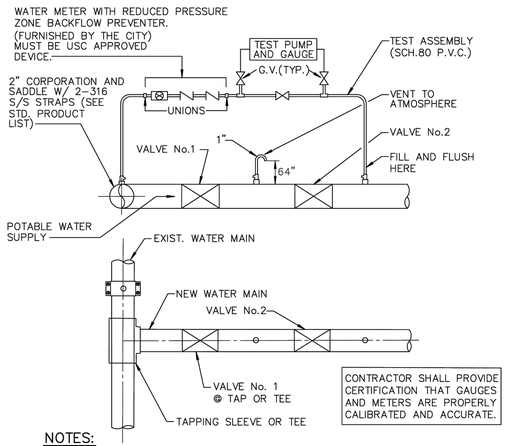
REVISION	DATE	DESCRIPTION	BY
1	2/26/24	ADDENDUM 5	MAS

THE CITY OF DELRAY BEACH
HISTORIC MARINE WAY SEAWALL, ROADWAY, AND DRAINAGE IMPROVEMENT

WATER & WASTEWATER PLAN

PROJECT NO. 17-047
SHEET NO. C12.1
FILE ID. 2898.01

Plotted: 3/28/2024 8:58:29 AM Scott: 3/28/2024 8:58:29 AM



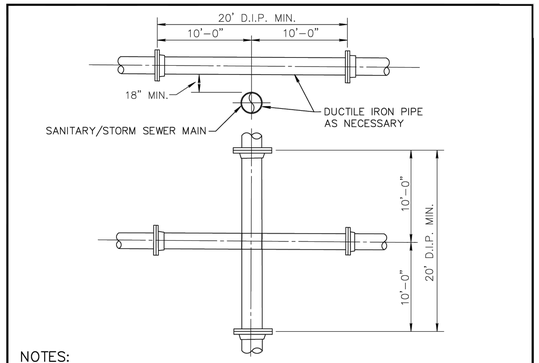
NOTES:

1. BOTH VALVES SHALL BE KEPT CLOSED UNTIL FILLING, FLUSHING, AND BACTERIOLOGICAL TESTING IS COMPLETED AND APPROVED.
2. GAUGE AND RISER TO BE REMOVED AFTER PRESSURE TEST.
3. CITY SHALL BE NOTIFIED BEFORE FILLING AND FLUSHING.
4. AFTER RELEASE FROM THE HEALTH DEPARTMENT, BOTH VALVES TO BE LEFT OPEN WITH VALVE BOX INSTALLED ON BOTH VALVES.
5. PRESSURE TEST PUMP MAY CONNECT TO SERVICE LINE, FIRE HYDRANTS OR BLOWOFF. NO EXTRA TAPS ARE PERMITTED SOLELY FOR TESTING PURPOSES UNLESS PRECEEDING ARE NOT PRESENT IN TEST SECTION.
6. TAPPING SADDLE OR SLEEVE (PER CURRENT CITY PRODUCT LIST) IS REQUIRED ON EXISTING MAIN.
7. SETUP FOR ALL DOUBLE VALVE CONNECTIONS TO INCLUDE ATMOSPHERE VENTS AS SHOWN ABOVE.
8. OUTLET ON VENT TO ATMOSPHERE A MINIMUM 24" ABOVE EXISTING GRADE.

CITY of DELRAY BEACH
PUBLIC WORKS DEPARTMENT
434 SOUTH SWINTON AVENUE, DELRAY BEACH, FLORIDA 33444

FILL & FLUSH DETAIL

DATE: 09-15-2021
PW 1.0



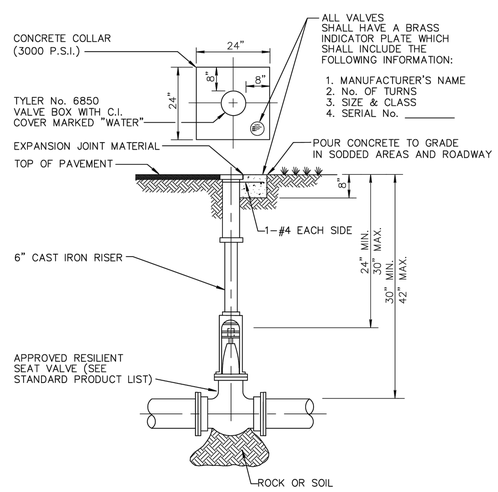
NOTES:

1. STORM AND SANITARY SEWERS CROSSING UNDER WATER MAINS SHALL BE LAID TO PROVIDE A MINIMUM VERTICAL DISTANCE OF 18 INCHES BETWEEN THE INVERT OF THE UPPER PIPE AND THE CROWN OF THE LOWER PIPE. WHERE THIS MINIMUM SEPARATION CANNOT BE MAINTAINED, THE CROSSING SHALL BE ARRANGED SO THAT THE SEWER PIPE JOINTS AND WATER MAIN JOINTS ARE EQUIDISTANT FROM POINT OF CROSSING WITH NO LESS THAN (10) FEET BETWEEN ANY TWO JOINTS AND BOTH PIPES SHALL BE D.I.P., AND THE MINIMUM VERTICAL SEPARATION SHALL BE 6 INCHES. WHERE THERE IS NO ALTERNATIVE TO SEWER PIPES CROSSING OVER A WATER MAIN, THE CRITERIA FOR MINIMUM 18" VERTICAL SEPARATION BETWEEN LINES AND JOINT ARRANGEMENT, AS STARTED ABOVE, SHALL BE REQUIRED AND BOTH PIPES SHALL BE CLASS 350 D.I.P. IRRESPECTIVE OF SEPARATION. D.I.P. IS NOT REQUIRED FOR STORM SEWERS.
2. MAINTAIN (10) FEET HORIZONTAL DISTANCE BETWEEN WATER MAIN AND STORM OR SANITARY SEWER MAIN, AS A MINIMUM.
3. FORCE MAIN CROSSING WATER MAIN SHALL BE LAID TO PROVIDE A MINIMUM VERTICAL DISTANCE OF 18 INCHES BETWEEN THE OUTSIDE OF THE FORCE MAIN AND THE OUTSIDE OF THE WATER MAIN WITH WATER MAIN CROSSING OVER FORCE MAIN.
4. SEWER SERVICE LATERALS SHALL CROSS UNDER WATERMAINS WITH A MINIMUM VERTICAL SEPARATION OF EIGHTEEN (18) INCHES. IF EIGHTEEN (18) INCHES VERTICAL SEPARATION CANNOT BE MAINTAINED, THEN THE WATERMAIN SHALL BE D.I.P. AND THE SANITARY LATERAL C-900 SDR18 OR BETTER AND THE MINIMUM SEPARATION SHALL BE SIX (6) INCHES.
5. WHEN IT IS NOT POSSIBLE FOR THE WATER MAIN TO CROSS OVER THE SEWER SERVICE LATERAL A MINIMUM VERTICAL SEPARATION OF AT LEAST TWELVE (12) INCHES MUST BE MAINTAINED. THE WATERMAIN SHALL BE D.I.P. AND THE SEWER LATERAL SHALL BE C-900 SDR-18 OR BETTER.

CITY of DELRAY BEACH
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WATER MAIN & SEWER CONFLICTS

DATE: 09-15-2021
PW 2.0



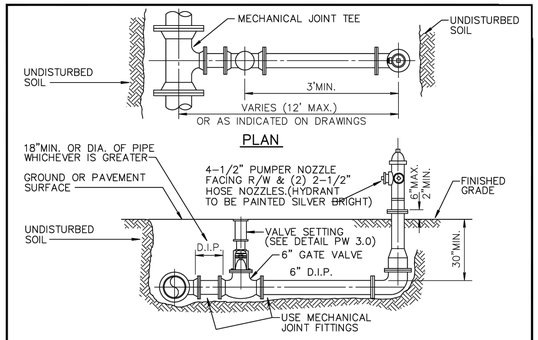
NOTES:

1. WHEN VALVE IS DEEPER THAN 30" AN EXTENSION WITH UNIVERSAL JOINT SHALL BE REQUIRED TO BRING OPERATING NUT 24"-30" BELOW FINISHED GRADE EXTENSION BOLTS & NUTS SHALL BE 316 STAINLESS STEEL. A 316 STAINLESS STEEL CENTERING PLATE SHALL ALSO BE REQUIRED.
2. AT DEAD END OR WHERE MAIN LINES CHANGE DIRECTION, VALVES SHALL BE RESTRAINED USING MECHANICAL JOINT RESTRAINTS, TIE RODS, OR OTHER RESTRAINT APPROVED BY UTILITIES DEPARTMENT (NO THRUST BLOCKS ALLOWED).

CITY of DELRAY BEACH
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TYPICAL GATE VALVE DETAIL 4" THRU 12"

DATE: 09-15-2021
PW 3.0



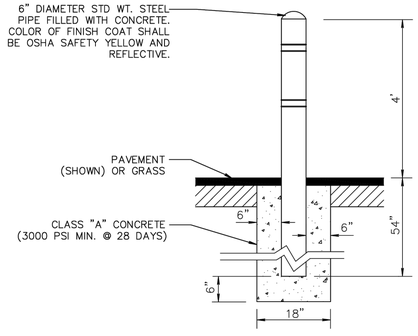
NOTES:

1. HYDRANT SHALL BE INSTALLED PLUMB AND TRUE IN UNOBSTRUCTED LOCATION. (7.5' CLEARANCE ON THREE SIDES, 4' CLEARANCE AT REAR, WITH 3' ACCESS LANE)
2. NO BARREL EXTENSION SHALL BE PERMITTED.
3. VALVE SHALL BE PLACED ADJACENT TO MAIN.
4. ANCHOR TEES AND FITTINGS ARE PERMITTED.
5. HYDRANT SHALL BE MUELLER SUPER CENTURION, AA423 5¼" WITH TRAFFIC BREAKAWAY FLANGE AND 5¼" VALVE.
6. HYDRANTS SHALL NOT ENCROACH IN SIDEWALKS, ROADWAYS, OR BIKE PATHS.
7. ON RUNS LONGER THAN 20 FEET A SECOND VALVE IS REQUIRED AT THE HYDRANT.
8. ALL HYDRANT INSTALLATION SHALL BE IN ACCORDANCE WITH CITY OF DELRAY BEACH FIRE PREVENTION CODE SEC. 96.05.
9. IN CERTAIN SITUATIONS, PROTECTIVE BOLLARDS MAY BE REQUIRED AS DIRECTED BY THE ENGINEERING DEPT. (SEE BOLLARD DETAIL PW 7.0)
10. FIRE HYDRANTS INSTALLED BUT NOT YET IN SERVICE SHALL BE COVERED WITH A BURLAP, OR PLASTIC SACK, OR HAVE OUT OF SERVICE RING IN PLACE.
11. ALL HYDRANT LEADS GREATER THAN 20-FEET MUST HAVE AUTOMATIC FLUSHER INSTALLED AT HYDRANT END (KUPFERLE #9400-WC STANDARD).
12. REMOVE CHAINS FROM HYDRANT AND PAINT SHERWIN WILLIAMS SILVER BRITE.
13. NO THRUST BLOCKS SHALL BE PERMITTED.

CITY of DELRAY BEACH
PUBLIC WORKS DEPARTMENT
434 SOUTH SWINTON AVENUE, DELRAY BEACH, FLORIDA 33444

TYPICAL FIRE HYDRANT INSTALLATION

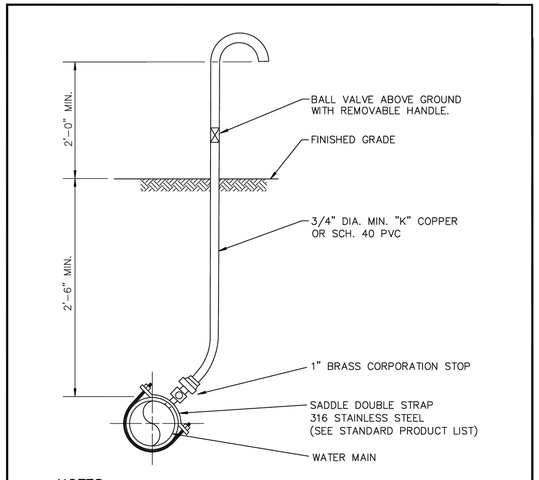
DATE: 09-15-2021
PW 6.0



CITY of DELRAY BEACH
PUBLIC WORKS DEPARTMENT
434 SOUTH SWINTON AVENUE, DELRAY BEACH, FLORIDA 33444

BOLLARD DETAIL

DATE: 09-15-2021
PW 7.1



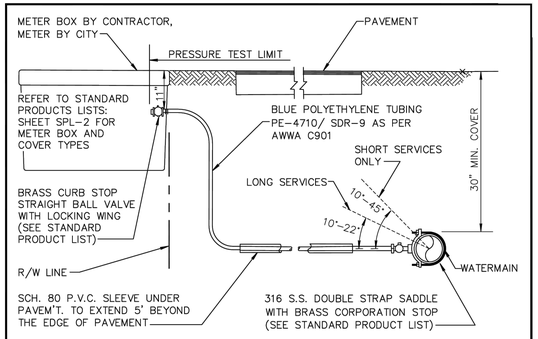
NOTES:

1. SAMPLE POINT SHOULD BE AT SERVICE LINE OR FIRE HYDRANT IF POSSIBLE.
2. IF SAMPLE POINT IS NOT AT SERVICE LINE OR FIRE HYDRANT, CORP. STOP SHALL BE SHUT OFF AT MAIN AND ALL TUBING SHALL BE REMOVED, AND CORP. STOP SHALL HAVE A BRASS PLUG OR CAP INSTALLED AFTER RELEASE OF WATER MAIN BY PALM BEACH COUNTY HEALTH DEPARTMENT.
3. IF AT ALL POSSIBLE SAMPLE POINT SHALL NOT BE LOCATED IN A TRAFFIC AREA.
4. SAMPLE POINTS SHALL KEEP RUNNING UNTIL PALM BEACH COUNTY HEALTH DEPARTMENT RELEASE AND ALL MAIN LINE VALVES ARE OPENED.

CITY of DELRAY BEACH
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TYPICAL SAMPLE POINT

DATE: 09-15-2021
PW 10.0



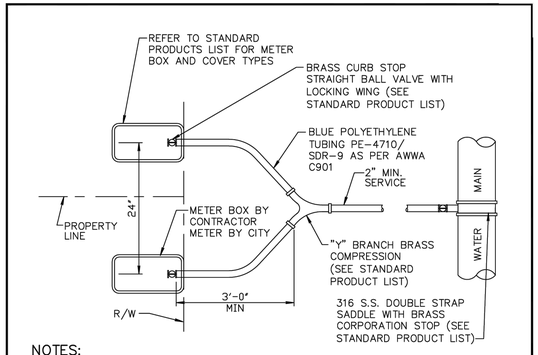
NOTES:

1. SUCCESSIVE TAPS INTO THE WATER MAIN SHALL BE SPACED A MINIMUM OF 18" ON CENTER.
2. SERVICE LINES SHALL NOT BE PLACED UNDER DRIVEWAYS.
3. ALL METERS REQUIRE A LOCKING BRASS CURB STOP WITH LOCK WING (1"MIN.).
4. NO FITTINGS BETWEEN CORPORATION STOP AND BRANCH ASSEMBLY.
5. MAXIMUM SERVICE LENGTH IS 100' TO METER.
6. CASING PIPE I.D. SHALL BE SERVICE O.D. PLUS 1" MINIMUM.
7. MINIMUM BEND RADIUS ON SERVICES SHALL BE 14" ON ALL SERVICES BEHIND METER.
8. METER SIZE WILL BE DETERMINED BY PUBLIC UTILITIES DEPT. UPON APPLICATION FOR SERVICE.
9. ALL VALVES TO BE BALL VALVES.
10. METER BOX SHALL BE PROVIDED AND INSTALLED BY CONTRACTOR.
11. ALL SERVICES UNDER ROADWAYS ARE TO BE INSTALLED BY TRENCHLESS METHOD, UNLESS OTHERWISE APPROVED.
12. ALL EXISTING SERVICES TO BE FIELD VERIFIED BY BUILDER/CONTRACTOR/ DEVELOPER; IF EXISTING SERVICE IS GALVANIZED, BUILDER/CONTRACTOR/ DEVELOPER SHALL REPLACE WITH POLYETHYLENE PIPING FROM MAIN TO THE METER.
13. ALL COMMERCIAL WATER SERVICE SHALL BE A MINIMUM OF 2".
14. WATER METERS SHALL BE LOCATED OUTSIDE ANY DRIVEWAYS BY 2'

CITY of DELRAY BEACH
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TYPICAL URBAN/REDEVELOPMENT AREA SERVICE CONNECTION IN DRIVEWAYS

DATE: 09-15-2021
PW 13.0



NOTES:

1. SUCCESSIVE TAPS INTO THE WATER MAIN SHALL BE SPACED A MINIMUM OF 18" ON CENTER.
2. SERVICE LINES SHALL NOT BE PLACED UNDER DRIVEWAYS.
3. ALL METERS REQUIRE A LOCKING BRASS CURB STOP WITH LOCK WING (1" MIN.).
4. NO FITTINGS BETWEEN CORPORATION STOP AND BRANCH ASSEMBLY.
5. MAXIMUM SERVICE LENGTH IS 100' TO METER.
6. CASING PIPE I.D. SHALL BE SERVICE O.D. PLUS 1" MINIMUM.
7. MINIMUM BEND RADIUS ON SERVICES SHALL BE 14" ON ALL SERVICES BEHIND METER.
8. METER SIZE WILL BE DETERMINED BY PUBLIC UTILITIES DEPT. UPON APPLICATION FOR SERVICE.
9. ALL VALVES TO BE BALL VALVES.
10. METER BOX SHALL BE PROVIDED AND INSTALLED BY CONTRACTOR.
11. ABOVE CONFIGURATION APPLIES TO PLACEMENT AT SINGLE FAMILY RESIDENCES. FOR DOUBLE SERVICES PLACED AT MULTI-FAMILY RESIDENCES THE TWO SERVICES SHALL BE PLACED WITHIN A DOUBLE METER BOX.
12. ALL EXISTING SERVICES TO BE FIELD VERIFIED BY BUILDER/CONTRACTOR/DEVELOPER; IF EXISTING SERVICE IS GALVANIZED, BUILDER/CONTRACTOR/DEVELOPER SHALL REPLACE WITH POLYETHYLENE PIPING FROM MAIN TO METER.

CITY of DELRAY BEACH
PUBLIC WORKS DEPARTMENT
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TYPICAL DOUBLE SERVICE CONNECTION

DATE: 09-15-2021
PW 15.0

CITY of DELRAY BEACH
PUBLIC WORKS DEPARTMENT
434 SOUTH SWINTON AVENUE, DELRAY BEACH, FLORIDA 33444
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ENGINEER'S SEAL
STEPHEN CHERRY, PE
P.E., LIC. NO. 83268

DESIGNED BY	CAC				
DRAWN BY	CAC				
CHECKED BY	SCC				
QC BY	JWR				
DATE	3/21/2024	REVISION	DATE	DESCRIPTION	BY

THE CITY OF DELRAY BEACH
HISTORIC MARINE WAY SEAWALL, ROADWAY, AND DRAINAGE IMPROVEMENT

WATER AND WASTEWATER STANDARD DETAILS

PROJECT NO. 17-047
SHEET NO. C13.0
FILE ID. 2898.01

Users: Scott A.\2020\2898.01 Marine Way\Z-PLOTS\Design\Details\V2\2898.01-C13.dgn ——— Plotted: 3/21/2024 8:34:07 AM Scott 3/13/2020 8:37:54 PM

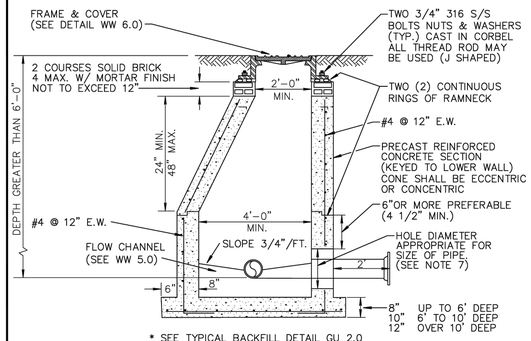
GRAVITY SEWER NOTES

1. MANHOLES SHALL BE INSPECTED BY THE ENGINEER BEFORE PLACEMENT AND SURFACE TREATMENT.
2. ALL OPENINGS IN PRECAST MANHOLES SHALL BE CAST AT TIME OF MANUFACTURE. CONNECTIONS TO EXISTING MANHOLES SHALL BE CORE ENTRY ONLY.
3. ALL MANHOLES SHALL BE SET PLUMB TO LINE AND GRADE.
4. (PVC) GRAVITY SEWER PIPE SHALL CONFORM TO ASTM D 3034, SDR 35, LATEST REVISIONS, WITH PUSH ON RUBBER GASKET JOINTS.
5. (DIP) GRAVITY SEWER PIPE SHALL BE CLASS 350, 401 EPOXY LINED OR AS OTHERWISE APPROVED BY UTILITIES DEPARTMENT.
6. NO SERVICE CONNECTIONS, WYES, SERVICES OR VALVES WILL BE PERMITTED IN RESIDENTIAL DRIVEWAYS.
7. MANHOLE FRAMES SHALL BE ATTACHED TO THE PRECAST STRUCTURE WITH A MINIMUM OF TWO 3/4" 316 STAINLESS STEEL BOLTS, NUTS AND WASHERS. FRAMES SHALL BE SEALED WITH A MINIMUM OF TWO 1/2" BEADS OF RAM-NEK CAULKING.
8. TRENCHES SHALL BE DE-WATERED TO ENABLE PIPE AND APPURTENANCES TO BE INSTALLED FREE OF WATER ON UNDISTURBED SOIL. IF UNSUITABLE SUBSURFACE MATERIAL IS ENCOUNTERED, EXCAVATE EXTRA 6" AND BACKFILL WITH 3/4" GRAVEL.
9. PVC SHALL BE LAID IN STRICT CONFORMANCE TO MANUFACTURER'S SPEC (JOHNS MANVILLE RING TITE PVC PIPE INSTALLATION GUIDE OR EQUAL). BACKFILLING OF UTILITY TRENCHES WILL NOT BE ALLOWED UNTIL INSPECTED BY THE ENGINEER.
10. BACKFILL MATERIAL FOR SEWER MAIN AND LINES SHALL BE NON-COHESIVE, NON PLASTIC MATERIAL FREE OF ALL DEBRIS , LUMPS AND ORGANIC MATTER. BACKFILL MATERIAL PLACED WITHIN ONE (1) FOOT OF PIPING AND APPURTENANCES SHALL NOT CONTAIN ANY STONES LARGER THAN TWO (2) INCHES IN DIAMETER (1" FOR PVC PIPE) AND NO STONES LARGER THAN SIX (6) INCHES IN DIAMETER WILL BE PERMITTED IN ANY BACKFILL.
11. ALL EXCAVATION IN EXISTING RIGHT OF WAY SHALL BE BACKFILLED AND STABILIZED AT THE END OF EACH DAY TO PERMIT PEDESTRIAN AND VEHICULAR TRAFFIC PRIOR TO THE CONTRACTOR LEAVING THE SITE.
12. WHERE SEWER IS NOT WITHIN PUBLIC R/W, IT IS TO BE LOCATED IN A 12' UTILITY EASEMENT. CITY MAINTENANCE RESPONSIBILITY IS MANHOLE TO MANHOLE ONLY.
13. UPON COMPLETION OF THE WORK AND PRIOR TO PLACEMENT OF ASPHALT A VISUAL INSPECTION BY THE ENGINEER SHALL BE MADE OF THE COMPLETED SYSTEM ALONG WITH A LOW PRESSURE AIR TEST, AFTER ROCK BASE FINISHED & PRIMED, OR 1ST LIFT OF ASPHALT PLACED. AFTER ALL OTHER TESTING HAS BEEN COMPLETED, A CD VIDEO RECORDING SHALL BE MADE BY THE CONTRACTOR AND APPROVED BY THE ENGINEER, BEFORE THE LENGTHS ARE ACCEPTED FOR MAINTENANCE.
14. EACH LINE SEGMENT SHALL BE LAMPED TO DETERMINE PROPER ROUNDNESS.
15. COMPLETE "AS BUILT" INFORMATION RELATIVE TO MANHOLES, VALVES, SERVICES FITTINGS, PIPE LENGTHS, INVERTS AND SLOPES SHALL BE ACCURATELY RECORDED & SUBMITTED TO THE ENGINEER CITY SIGNED AND SEALED BY A REGISTERED LAND SURVEYOR.
16. AT THE END OF THE ONE (1) YEAR WARRANTY PERIOD THE DEVELOPER/CONTRACTOR WILL T.V. INSPECT, AIR TEST EVERY JOINT, AND CHECK MANHOLE JOINTS AND CONNECTIONS TO DETERMINE IF REPAIRS ARE NECESSARY BEFORE THE WARRANTY BOND IS RELEASED.
17. NO PROPOSED STRUCTURES SHALL BE INSTALLED WITHIN A HORIZONTAL DISTANCE OF 10-FEET FROM ANY EXISTING OR PROPOSED SANITARY SEWER FACILITY.
18. ANY PIPE INTRODUCED INTO AN EXISTING MANHOLE MUST HAVE CARBOLINE BITUMASTIC 300M OR APPROVED EQUAL APPLIED EXTERNALLY WITHIN A MINIMUM 2-FOOT RADIUS OF OPENING AND THE ENTIRE MANHOLE MUST HAVE SEWPER COAT OR APPROVED EQUAL APPLIED INTERNALLY.
19. ANY REHABILITATION TO AN EXISTING MANHOLE MUST BE INTERNALLY STRIPPED AND LINED WITH SEWPER COAT OR APPROVED EQUAL.

CITY of DELRAY BEACH
PUBLIC WORKS DEPARTMENT
434 SOUTH SWINTON AVENUE, DELRAY BEACH, FLORIDA 33444

GRAVITY SEWER NOTES

DATE: 09-15-2021
WW 1.0



* SEE TYPICAL BACKFILL DETAIL GU 2.0

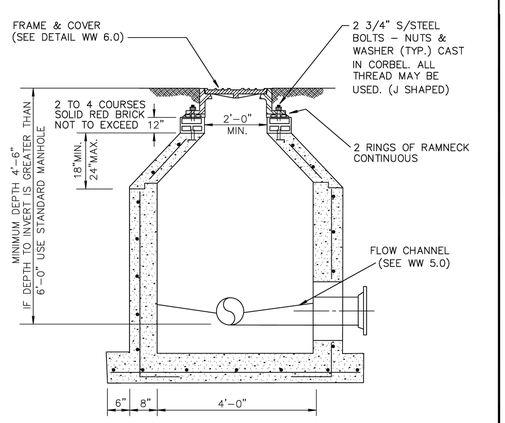
NOTES:

1. PRECAST CONCRETE TYPE II 4000 P.S.I.
2. RAMNECK AT ALL RISER JOINTS WITH GROUT ON INSIDE AND OUTSIDE AT ALL RISER JOINTS.
3. ALL OPENINGS SHALL BE SEALED WITH A WATERPROOF NON-SHRINKING GROUT.
4. FLOW CHANNELS SHALL BE CONSTRUCTED TO DIRECT INFLUENT INTO FLOW STREAM.
5. LIFT HOLES SHALL BE FILLED WITH EXPANDABLE GROUT.
6. ALL PIPE HOLES SHALL BE PRECAST.
7. CAST IN PLACE FLEXIBLE PIPE-TO MANHOLE CONNECTOR (LOCK JOINT FLEXIBLE SLEEVE ELASTOMER EPDM OR RUBBER GASKET WITH GLASS FIBER REINFORCED NYLON 6/6 INTERNAL EXPANSION RING) INSTALLED PER MANUFACTURER.
8. PAINT MANHOLE INSIDE AND OUTSIDE WITH ONE (1) COAT RED CARBOLINE BITUMASTIC 300M THEN ONE (1) COAT BLACK OR APPROVED EQUAL, to 8-10 MILS D.F.T/COAT, FIRST COAT RED THEN BLACK.
9. MANHOLE FABRICATION SHALL BE IN ACCORDANCE W/ ASTM C-478, LATEST STANDARD.
10. IF THE STRUCTURE IS INSTALLED IN WATER TABLE MUST HAVE BEDDING. (SEE DETAIL BEDDING WW 11.0)

CITY of DELRAY BEACH
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STANDARD MANHOLE DETAIL

DATE: 09-15-2021
WW 2.0



* SEE TYPICAL BACKFILL DETAIL GU 2.0

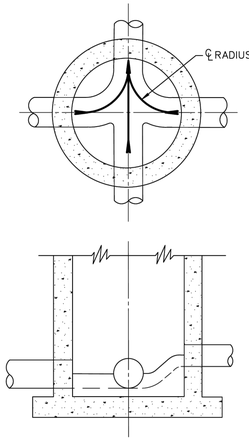
NOTE:

ALL STANDARD MANHOLE NOTES AND DETAILS ARE APPLICABLE (DETAIL WW 2.0).

CITY of DELRAY BEACH
PUBLIC WORKS DEPARTMENT
434 SOUTH SWINTON AVENUE, DELRAY BEACH, FLORIDA 33444

SHALLOW MANHOLE DETAIL

DATE: 09-15-2021
WW 3.0



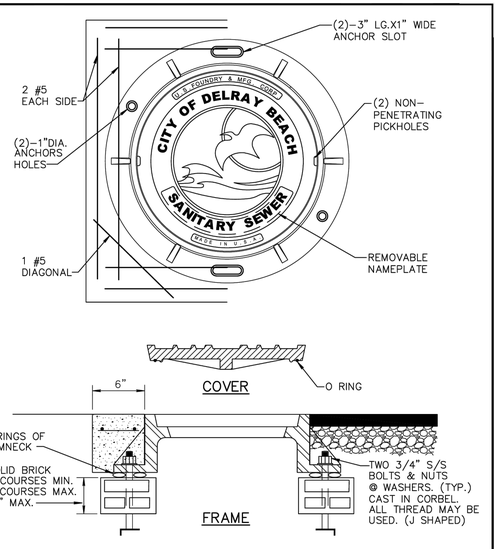
NOTES:

1. ALL INVERT CHANNELS ARE TO BE CONSTRUCTED FOR SMOOTH FLOW WITHOUT OBSTRUCTION OR TURBULENCE.
2. PROPERLY SHAPED SPILLWAYS SHALL BE CONSTRUCTED BETWEEN PIPES WITH DIFFERENT INVERT ELEVATIONS TO PROVIDE FOR SMOOTH FLOWS.
3. SERVICE LATERALS SHALL NOT ENTER MANHOLES.
4. 2500 PSI CONCRETE ONLY PERMITTED AS FLOW CHANNEL BUILDUP.
5. NO DOG HOUSE MANHOLE ALLOWED.

CITY of DELRAY BEACH
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434 SOUTH SWINTON AVENUE, DELRAY BEACH, FLORIDA 33444

INVERT FLOW CHANNELS

DATE: 09-15-2021
WW 5.0



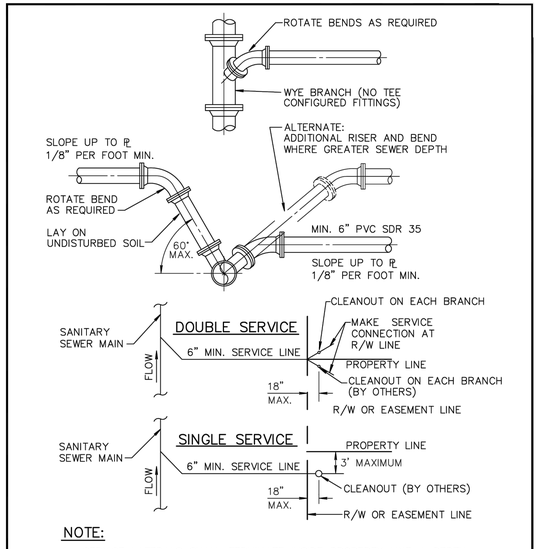
NOTES:

1. COLLAR IS REQUIRED ONLY WHEN MANHOLE IS OUT OF PAVEMENT.
2. COVER SHALL BE U.S. MR-ORS AND RING SHALL BE USF 576 RING WITH BITUMASTIC COAL TAR.
3. MANHOLE ADJUSTING RINGS SHALL BE CAST IRON, USF TYPE MR.

CITY of DELRAY BEACH
PUBLIC WORKS DEPARTMENT
434 SOUTH SWINTON AVENUE, DELRAY BEACH, FLORIDA 33444

SANITARY SEWER MANHOLE FRAME AND COVER

DATE: 09-15-2021
WW 6.0



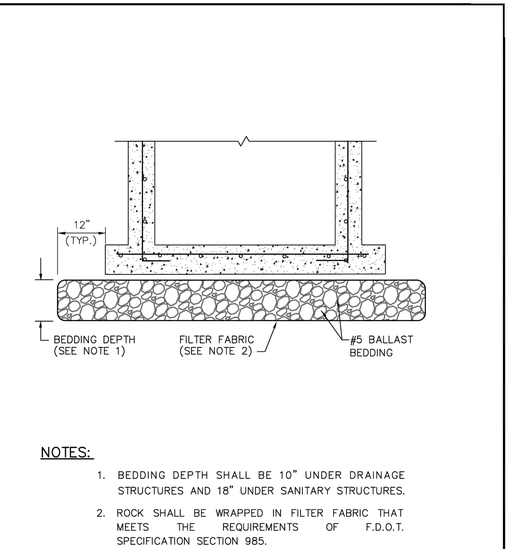
NOTE:

1. SERVICE LATERALS SHALL TERMINATE INSIDE PROPERTY LINE A DEPTH OF 3 FEET AND MARKED WITH A 2"X 4" TREATED STAKE.
2. CLEANOUT INSTALLATION SHALL BE PROPERTY OWNERS RESPONSIBILITY AND SHALL BE INSTALLED BY LICENSED PLUMBER.
3. SEE DETAIL PW 2.0 FOR SEPARATION REQUIREMENTS.

CITY of DELRAY BEACH
PUBLIC WORKS DEPARTMENT
434 SOUTH SWINTON AVENUE, DELRAY BEACH, FLORIDA 33444

SEWER SERVICE CONNECTION

DATE: 09-15-2021
WW 8.0



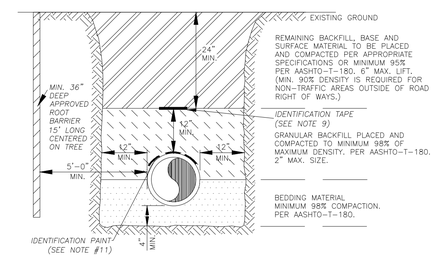
NOTES:

1. BEDDING DEPTH SHALL BE 10" UNDER DRAINAGE STRUCTURES AND 18" UNDER SANITARY STRUCTURES.
2. ROCK SHALL BE WRAPPED IN FILTER FABRIC THAT MEETS THE REQUIREMENTS OF F.D.O.T. SPECIFICATION SECTION 985.

CITY of DELRAY BEACH
PUBLIC WORKS DEPARTMENT
434 SOUTH SWINTON AVENUE, DELRAY BEACH, FLORIDA 33444

STANDARD BEDDING DETAIL

DATE: 09-15-2021
WW 11.0



NOTES:

1. BEDDING SHALL CONSIST OF IN-SITU GRANULAR MATERIAL OR WASHED AND GRADED LIMEROCK 3/8"- 7/8" SIZING. UNSUITABLE IN-SITU MATERIALS SUCH AS MUCK, DEBRIS AND LARGER ROCKS SHALL BE REMOVED.
2. THE PIPE SHALL BE FULLY SUPPORTED FOR ITS ENTIRE LENGTH WITH APPROPRIATE COMPACTION UNDER THE PIPE HAUNCHES.
3. THE PIPE SHALL BE PLACED IN A DRY TRENCH.
4. BACKFILL SHALL BE FREE OF UNSUITABLE MATERIAL SUCH AS LARGE ROCK, MUCK AND DEBRIS.
5. DENSITY TESTS ARE REQUIRED IN 1 FOOT LIFTS ABOVE THE PIPE AT INTERVALS OF 400' MAXIMUM, MINIMUM 1 SET OF TESTS FOR EACH WASTEWATER GRAVITY MAIN RUN, OR AS DIRECTED BY THE INSPECTOR.
6. THE DEVELOPER/CONTRACTOR SHALL BE RESPONSIBLE TO COMPLY WITH ALL TRENCH SAFETY LAWS AND REGULATIONS.
7. SEE SEPARATE DETAILS FOR "PIPE INSTALLATION UNDER EXISTING PAVEMENT - OPEN CUT."
8. THE AFFECTED AREA SHALL BE RESTORED TO EQUAL OR BETTER CONDITION OR AS SPECIFIED IN PERMIT/CONTRACT DOCUMENTS.
9. *APPROVED MAGNETIC TAPE IS REQUIRED FOR: ALL POTABLE WATER MAINS, FORCE MAINS AND RECLAIMED WATER MAINS. THE TAPE SHALL BE INSTALLED MAX. 24" BELOW FINISHED GRADE.*
10. ROOT BARRIER IS REQUIRED FOR APPROVED TREE INSTALLATION CLOSER THAN 10 FEET FROM UTILITY FACILITIES.
11. *CONTINUOUS 4" WIDE PAINT STRIPING IS REQUIRED FOR DIP/PCCP WATER MAINS (BLUE), DIP SEWER MAINS (GREEN), AND DIP RECLAIMED WATER MAINS (PURPLE).*
12. *PERMANENT ABOVE GROUND UTILITY MARKER SHALL BE INSTALLED IF REQUIRED BY PROPERTY OWNER GRANTING THE PIPE INSTALLATION PERMIT.*
13. *FOR PIPE INSTALLATIONS IN ROAD RIGHTS-OF-WAY, ROAD OWNER'S PERMIT SPECIFICATIONS SHALL APPLY.*
14. *ALL WATER PIPE, INCLUDING FITTINGS, SHALL BE SHALL BE COLOR CODED OR MARKED BLUE PER FAC62-555.320(21)(B)(3)*

TYPICAL TRENCH DETAIL/ ROOT BARRIER INSTALLATION DETAIL

CITY of DELRAY BEACH
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Cert No. 6091 - LB No. 7055
ENGINEERING // SURVEYING // ENVIRONMENTAL // PLANNING

ENGINEER'S SEAL

STEPHEN CHERRY, PE
P.E., LIC. NO. 83268

DESIGNED BY	CAC
DRAWN BY	CAC
CHECKED BY	CAC
QC BY	JWR
DATE	3/21/2024

REVISION	DATE	DESCRIPTION	BY

THE CITY OF DELRAY BEACH
HISTORIC MARINE WAY SEAWALL, ROADWAY, AND DRAINAGE IMPROVEMENT

WATER AND WASTEWATER STANDARD DETAILS

PROJECT NO. 17-047
SHEET NO. C13.1
FILE ID. 2898.01

Plotted: 3/21/2024 8:54:15 AM Saved: 3/13/2024 8:37:54 PM

PRESSURE PIPE NOTES:

1. FOR PIPE SIZES 4"–8" THERE SHALL BE 30" MINIMUM COVER FROM FINISHED GRADE TO TOP OF PIPE. FOR PIPE SIZE 10" AND LARGER THERE SHALL BE 36" MINIMUM COVER.

2.a. DUCTILE IRON PIPE (DIP) FOR FORCE MAINS SHALL BE CLASS 350 WITH 401 EPOXY LINED IN ACCORDANCE WITH AWWA C550.

2.b. DUCTILE IRON PIPE (DIP) FOR WATER MAINS SHALL BE CLASS 350 IN ACCORDANCE WITH AWWA C151 (ANSI A21.51), AND SHALL HAVE AN INTERNAL LINING OF CEMENT MORTAR IN ACCORDANCE WITH AWWA C104/ A21.4.

3. C–900 PVC PRESSURE PIPE MAY BE USED IN LIEU OF DIP WATER MAIN WITH METAL TAPE AND WIRE ABOVE THE PIPE.

4. ALL FITTINGS FOR FORCE MAIN SHALL BE CLASS 350 DUCTILE IRON WITH MECHANICAL JOINTS AND 401 EPOXY LINING.

5. WATER MAIN VALVES 12 INCHES AND SMALLER SHALL BE RESILIENT–SEAL WEDGE GATE VALVES IN ACCORDANCE WITH AWWA C509. WATER MAIN VALVES LARGER THAN 12 INCHES SHALL BE BUTTERFLY VALVES IN ACCORDANCE WITH AWWA C504. SEWAGE FORCE MAIN VALVES SHALL BE RESILIENT–SEAL PLUG VALVES IN ACCORDANCE WITH AWWA C517.

6. ALL TRENCHING, PIPE–LAYING, BACKFILL, PRESSURE TESTING, AND DISINFECTION MUST COMPLY WITH CITY AND LOCAL GOVERNMENTAL REGULATIONS AND STANDARDS.

7. WATER AND FORCE MAINS SHALL BE PIGGED A MINIMUM OF TWO TIMES, AND ADDITIONALLY, IF REQUIRED BY ENGINEER OF RECORD, AS WELL AS, PRESSURE TESTED FOR A PERIOD OF NOT LESS THAN TWO HOURS AT 150 PSI IN ACCORDANCE WITH ANSI/AWWA C600 LATEST STANDARDS. ALLOWABLE LEAKAGE SHALL BE DETERMINED AS FOLLOWS:

$$L = \frac{SD\sqrt{P}}{148{,}000}$$

WHERE:

L = ALLOWABLE LEAKAGE (GALLONS PER HOUR)
S = PIPE LENGTH (FEET)
D = NOMINAL DIAMETER OF PIPE (INCHES)
P = AVERAGE TEST PRESSURE (PSI)

8. RESTRAINTS SHALL BE PROVIDED AT ALL FITTINGS AS SHOWN ON PP 2.0 AND 2.1

9. PRIOR TO ANY TESTING UNDER FUTURE PAVEMENT, ROCK SHALL BE FINISHED & PRIMED OR 1ST LIFT OF ASPHALT PLACED.

10. PIG SIZE SHALL BE PIPE DIAMETER PLUS 2" OR NEXT LARGER DIAMETER.

11. NO PROPOSED STRUCTURES SHALL BE INSTALLED WITHIN A HORIZONTAL DISTANCE OF 10–FEET FROM ANY EXISTING OR PROPOSED WATER OR FORCE MAINS.

12. LINE STOPS SHALL BE INSTALLED A MINIMUM OF 3 PIPE LENGTHS FROM LOCATION OF PIPE REMOVED AND PROVIDE NECESSARY JOINT RESTRAINTS.

CITY of DELRAY BEACH
PUBLIC WORKS DEPARTMENT
434 SOUTH SWINTON AVENUE, DELRAY BEACH, FLORIDA 33444

PRESSURE PIPE NOTES

DATE: 09–15–2021
PP 1.0

MINIMUM LENGTHS OF PIPE (FT) TO BE RESTRAINED

FITTING TYPE		PIPE SIZE 4"	6"	8"	10"	12"	16"	20"	24"
90° HORIZ. BEND		14	20	25	30	35	45	54	62
45° HORIZ. BEND		6	8	11	13	15	19	22	26
22.5° HORIZ. BEND		3	4	5	6	7	9	11	12
11.25° HORIZ. BEND		1	2	3	3	4	4	5	6
90° VERT. OFFSET	UPPER BEND	55	79	103	125	147	189	228	266
	LOWER BEND	22	38	49	59	69	88	106	123
45° VERT. OFFSET	UPPER BEND	22	32	42	51	60	77	93	109
	LOWER BEND	10	14	19	23	28	35	43	50
22.5° VERT. OFFSET	UPPER BEND	7	12	17	21	26	34	42	49
	LOWER BEND	2	4	6	8	10	14	17	21
11.25° VERT. OFFSET	UPPER BEND	3	4	6	9	11	15	19	22
	LOWER BEND	1	1	1	2	3	5	7	8
PLUG (DEAD END)		32	45	59	70	83	107	129	151
INLINE VALVE		32	45	59	70	83	107	129	151
TEE (BRANCH RESTRAINT)	4" X ø"	23							
	6" X ø"	21	35						
	8" X ø"	18	34	47					
	10" X ø"	16	32	46	58				
	12" X ø"	13	30	44	57	69			
	16" X ø"	7	26	41	55	67	90		
	20" X ø"	1	21	38	52	65	88	109	
	24" X ø"	1	16	34	49	62	86	108	129
REDUCER (LARGER PIPE RESTRAINT)	6" X ø"	23							
	8" X ø"	38	25						
	10" X ø"	57	43	24					
	12" X ø"	72	60	44	41				
	16" X ø"	99	90	78	75	45			
	20" X ø"	123	116	107	105	81	45		
	24" X ø"	146	140	132	131	111	82	45	

RESTRAIN PIPE ONE BELL PAST MINIMUM DISTANCE

CITY of DELRAY BEACH
PUBLIC WORKS DEPARTMENT
434 SOUTH SWINTON AVENUE, DELRAY BEACH, FLORIDA 33444

PIPE RESTRAINT TABLE
PRESSURE PIPE
(SHEET 1 OF 2)

DATE: 09–15–2021
PP 2.0

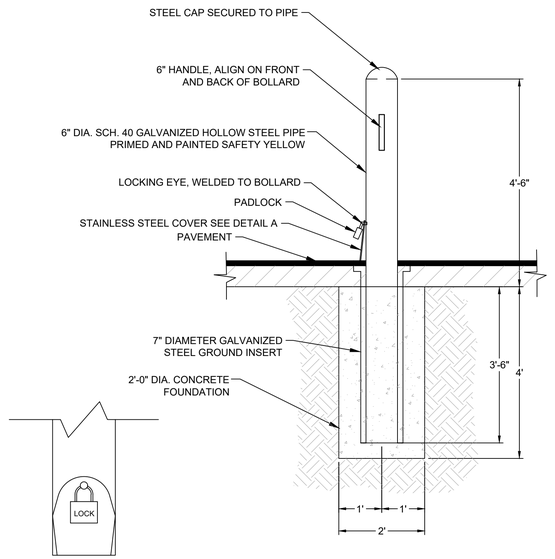
NOTES:

1. THE DATA IN THE PREVIOUS TABLE IS BASED UPON THE FOLLOWING INSTALLATION CONDITIONS:
   SOIL TYPE .....SAND
   TEST PRESSURE .....150 PSI, 200 PSI FOR PIPES LARGER THAN 24"
   DEPTH OF BURY .....3'
   TRENCH TYPE 3
   SAFETY FACTOR 1.5
   VERTICAL OFF–SET .....3'
   MINIMUM PIPE LENGTHS
   ALONG TEE RUN .....5'
2. THE RESTRAINED PIPE LENGTHS APPLY TO DUCTILE IRON PIPE AND PVC PIPE.
3. ALL JOINTS BETWEEN UPPER AND LOWER BENDS SHALL BE RESTRAINED.
4. RESTRAINED PIPE LENGTHS FOR VALVES APPLY TO PIPE ON BOTH SIDES OF VALVES
5. THE PREVIOUS TABLE SHALL SERVE AS A GENERAL DESIGN GUIDE ONLY. IT IS THE ENGINEER OF RECORD'S RESPONSIBILITY TO JUSTIFY AND DOCUMENT ANY DEVIATIONS FROM THE PIPE LENGTHS SPECIFIED IN THE PREVIOUS TABLE.
6. SOURCES: EBAA IRON RESTRAINT LENGTH CALCULATION PROGRAM FOR PVC PIPE, RELEASE 3.1 (LATEST EDITION) AND DIPRA RESTRAINT FOR DUCTILE IRON PIPE, RELEASE 3.2 (LATEST EDITION).
7. RESTRAINED JOINTS SHALL EXTEND ONE JOINT BEYOND MINIMUM LENGTH REQUIRED.

CITY of DELRAY BEACH
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434 SOUTH SWINTON AVENUE, DELRAY BEACH, FLORIDA 33444

PIPE RESTRAINT TABLE
PRESSURE PIPE
(SHEET 2 OF 2)

DATE: 09–15–2021
PP 2.1

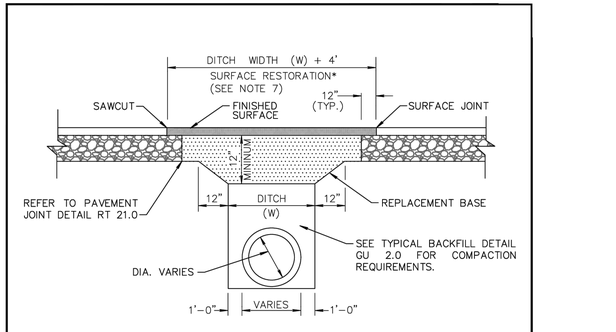


DETAIL A

REMOVABLE BOLLARD DETAIL

SCALE: NONE

NOTES:
1. CONTRACTOR TO SUBMIT SHOP DRAWINGS TO CITY AND ENGINEER FOR APPROVAL PRIOR TO CONSTRUCTION.



1. REPLACEMENT BASE TO BE AT MIN. 12" THICK.

2a. BASE MATERIAL SHALL BE PLACED IN TWO LIFTS AND EACH LIFT COMPACTED TO 98% MAXIMUM DENSITY PER AASHTO T–180 (MAX. LIFT THICKNESS = 6").

2b. 24" EXCAVATABLE FLOWABLE FILL MIN. 100 P.S.I. MAY BE USED IN LIEU OF 12" BASE.

3. ASPHALT CONCRETE PAVEMENT JOINTS SHALL BE MECHANICALLY SAWED.

4. ALL DISTURBED PAVEMENT MARKINGS SHALL BE RESTORED IN ACCORDANCE WITH CITY STANDARDS.

5. SURFACE MATERIAL SHALL BE S–III ASPHALTIC CONCRETE (THICKNESS SHOULD BE TWICE THE THICKNESS OF THE ADJACENT EXISTING ASPHALT).

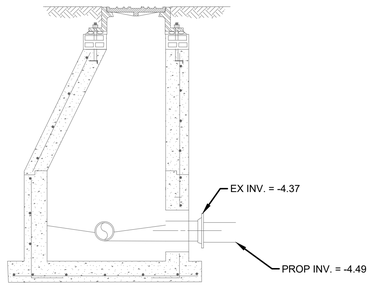
6. ANY PAVEMENT CUTS SHALL BE COLD PATCHED AT END OF EACH WORKING DAY TO FACILITATE UNHINDERED TRAFFIC FLOW.

7. ROADWAYS SHALL BE MILLED AND RESURFACED 50' IN EACH DIRECTION AT TIME OF PAVEMENT REPAIR THE SURFACE RESTORATION SHALL EXTEND 50' IN EACH DIRECTION.

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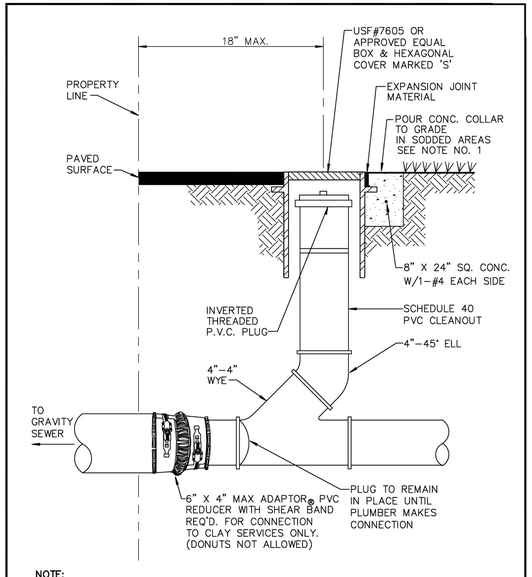
PAVEMENT REPAIR DETAIL

DATE: 09–15–2021
GU 1.0



NOTES:
1. CONTRACTOR TO MODIFY EX SANITARY MANHOLE TO ACCOMMODATE PROPOSED 8" PCP PIPE FROM EAST SIDE.
2. CONTRACTOR SHALL ENSURE THAT COMPLETED MANHOLE MEETS CITY OF DELRAY BEACH STANDARDS AS SHOWN IN STANDARD MANHOLE DETAIL WW 2.0.

SANITARY SEWER REPAIR DETAIL



NOTE:
1. INVERTED BRASS CAP SHALL BE USED IN GRASS AREAS IN LIEU OF CASTING AND CONE COLLAR.
2. MINIMUM DEPTH OF SERVICE LATERAL SHALL BE 3 FEET.

CITY of DELRAY BEACH
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434 SOUTH SWINTON AVENUE, DELRAY BEACH, FLORIDA 33444

TYPICAL RESIDENTIAL CLEANOUT

DATE: 09–15–2021
WW 9.0

MARINE WAY WATERMAIN CROSSING
HOR. 1" = 20'
VER. 1" = 2'

SECTION G-G

CITY of DELRAY BEACH
PUBLIC WORKS DEPARTMENT
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Cert No. 6091 - LB No. 7055
ENGINEERING // SURVEYING // ENVIRONMENTAL // PLANNING

ENGINEER'S SEAL

STEPHEN CHERRY, PE
P.E., LIC. NO. 83268

DESIGNED BY	CAC
DRAWN BY	CAC
CHECKED BY	CAC
QC BY	JWR
DATE	3/21/2024

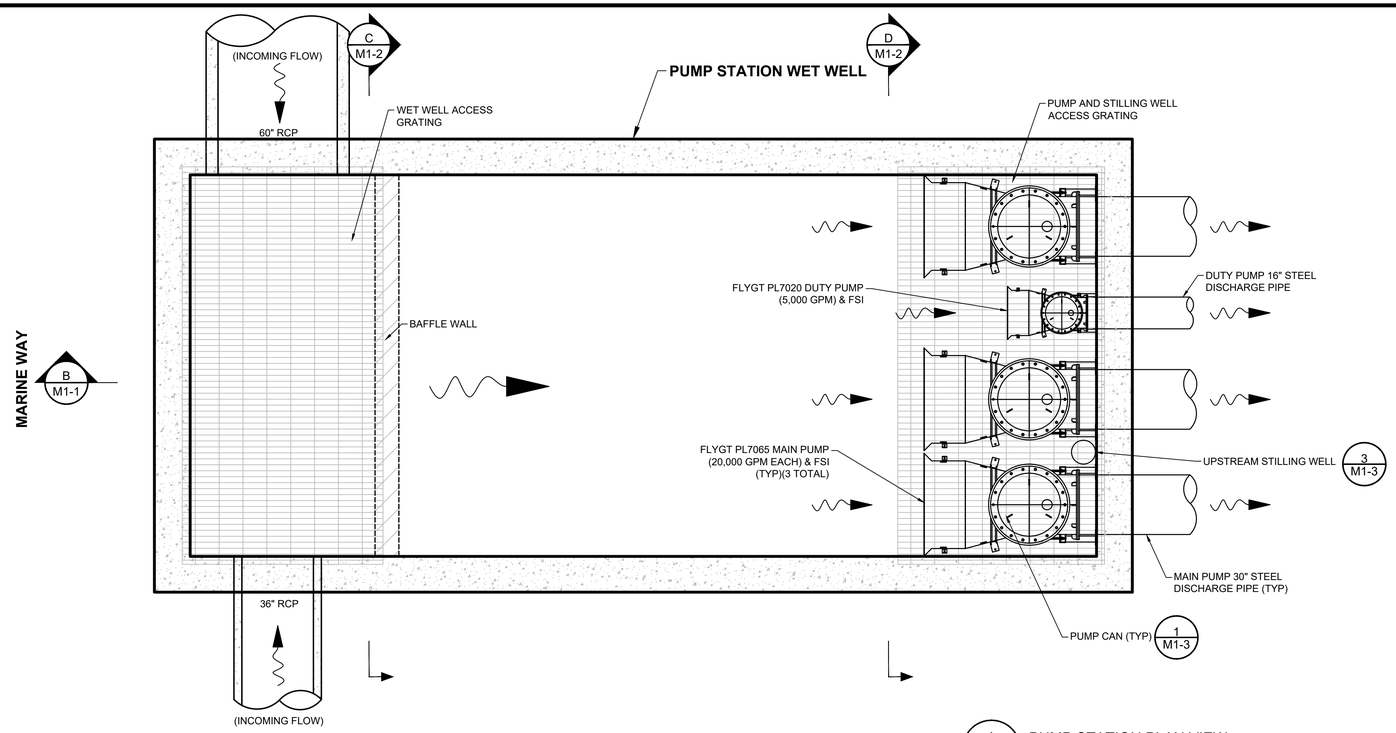
REVISION	DATE	DESCRIPTION	BY

THE CITY OF DELRAY BEACH
HISTORIC MARINE WAY SEAWALL, ROADWAY, AND DRAINAGE IMPROVEMENT

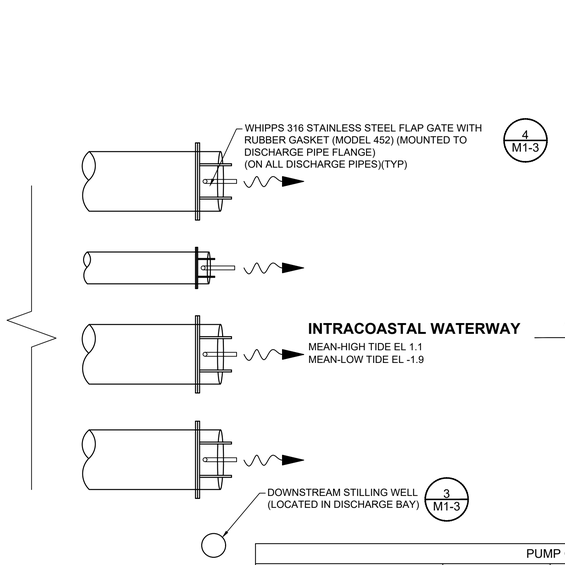
WATER AND WASTEWATER STANDARD DETAILS

PROJECT NO. 17-047
SHEET NO. C13.2
FILE ID. 2898.01

Plotted: 3/21/2024 8:34:22 AM Scout: 7/13/2023 8:37:54 PM



A M1-1 PUMP STATION PLAN VIEW
1" = 3'



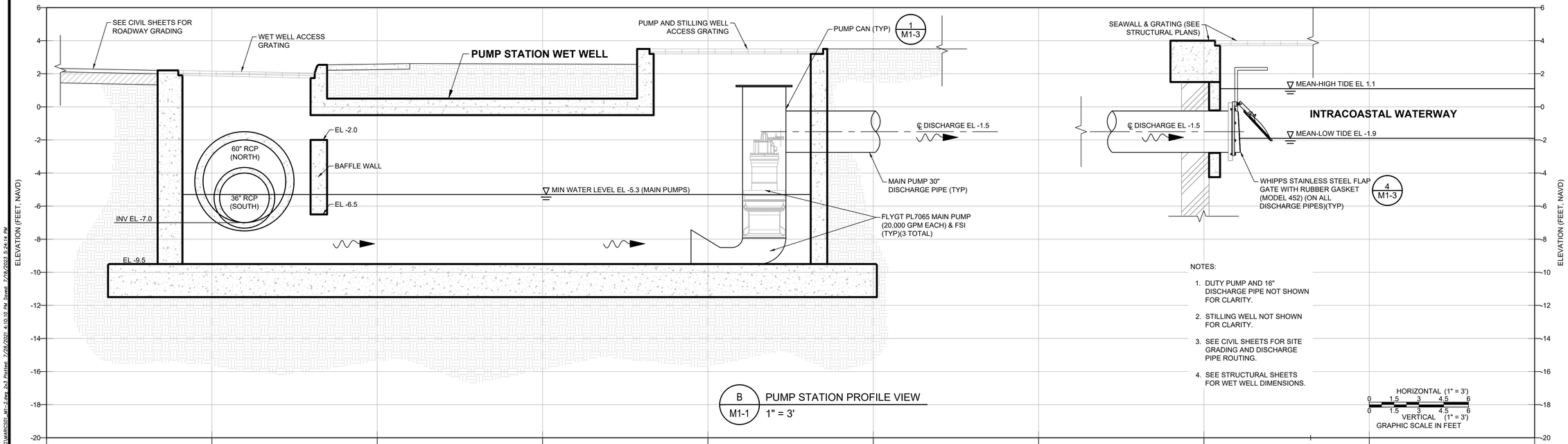
NOTES:

1. SEE CIVIL SHEETS FOR SITE GRADING AND DISCHARGE PIPE ROUTING.
2. SEE STRUCTURAL SHEETS FOR WET WELL DIMENSIONS.

PUMP OPERATION				
UPSTREAM STAGES		DOWNSTREAM STAGES		
PUMP ON	PUMP OFF	PUMP OFF	VFD OPERATION	ACTION
-4.0	-5.0/-3.0	---	70% <= -4.0 TO 100% >= -3.5	DUTY PUMP
-3.0	-5.0	---	70% <= -3.0 TO 100% >= -2.0	MAIN PUMP #1
-2.0	-4.0	---	70% <= -2.0 TO 100% >= -1.0	MAIN PUMP #2
---	-5.3	---	---	MAIN PUMPS SAFETY LEVEL CUT OFF

FSI = FORMED SUCTION INTAKE

** ONLY 2 MAIN PUMPS OPERATE SIMULTANEOUSLY.



B M1-1 PUMP STATION PROFILE VIEW
1" = 3'

NOTES:

1. DUTY PUMP AND 16" DISCHARGE PIPE NOT SHOWN FOR CLARITY.
2. STILLING WELL NOT SHOWN FOR CLARITY.
3. SEE CIVIL SHEETS FOR SITE GRADING AND DISCHARGE PIPE ROUTING.
4. SEE STRUCTURAL SHEETS FOR WET WELL DIMENSIONS.

HORIZONTAL (1" = 3')
0 1.5 3 4.5 6
0 1.5 3 4.5 6
VERTICAL (1" = 3')
GRAPHIC SCALE IN FEET

ELEVATIONS SHOWN IN NAVD88 DATUM

FL CA NO 48 FL LB NO 48
MOCK•ROOS
CONSULTING ENGINEERS
DWG NO 46-43-16-07
DWG PA B7021.20
5720 CORPORATE WAY, WPB, FL 33407
561-683-3113

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ENGINEER'S SEAL
PATRICK V. KIRBY
P.E., LIC. NO. 44013

DESIGNED BY	PVK
DRAWN BY	MCV
CHECKED BY	GGG
QC BY	SJC
DATE	JULY 2023

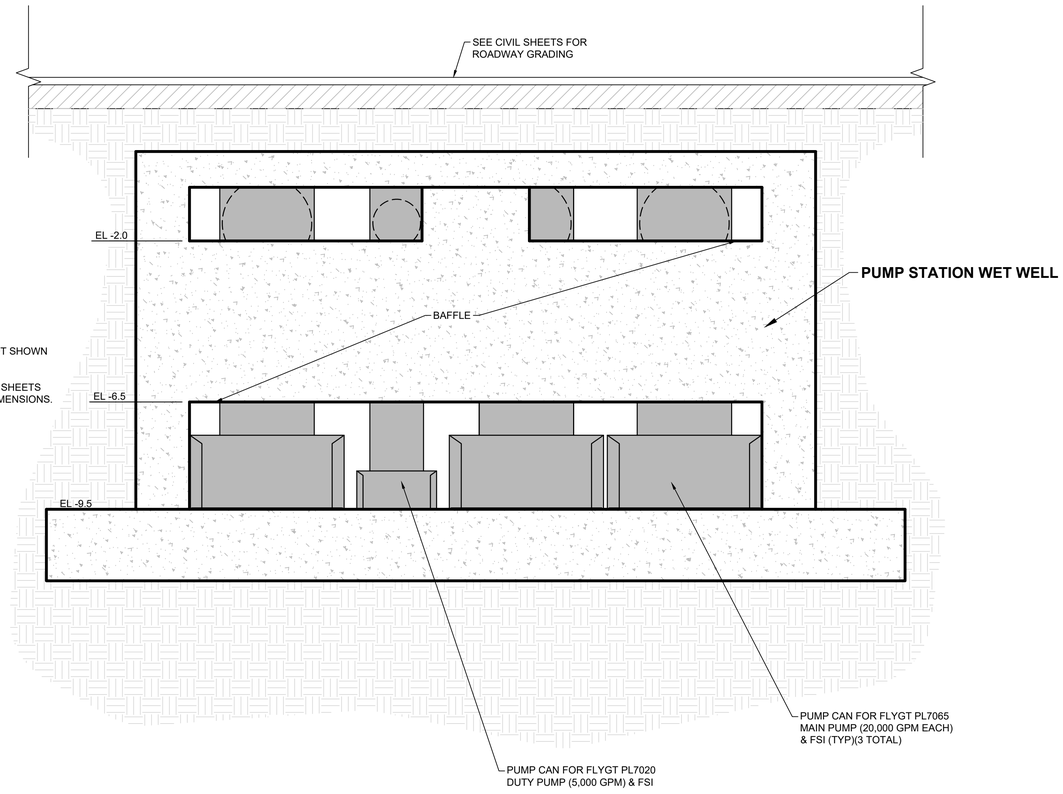
REVISION	DATE	DESCRIPTION	BY

THE CITY OF DELRAY BEACH
HISTORIC MARINE WAY SEAWALL, ROADWAY, AND DRAINAGE IMPROVEMENTS

PUMP STATION PLAN & PROFILE VIEWS

PROJECT NO. 17-047
SHEET NO. M1-1
FILE ID. 2898.01

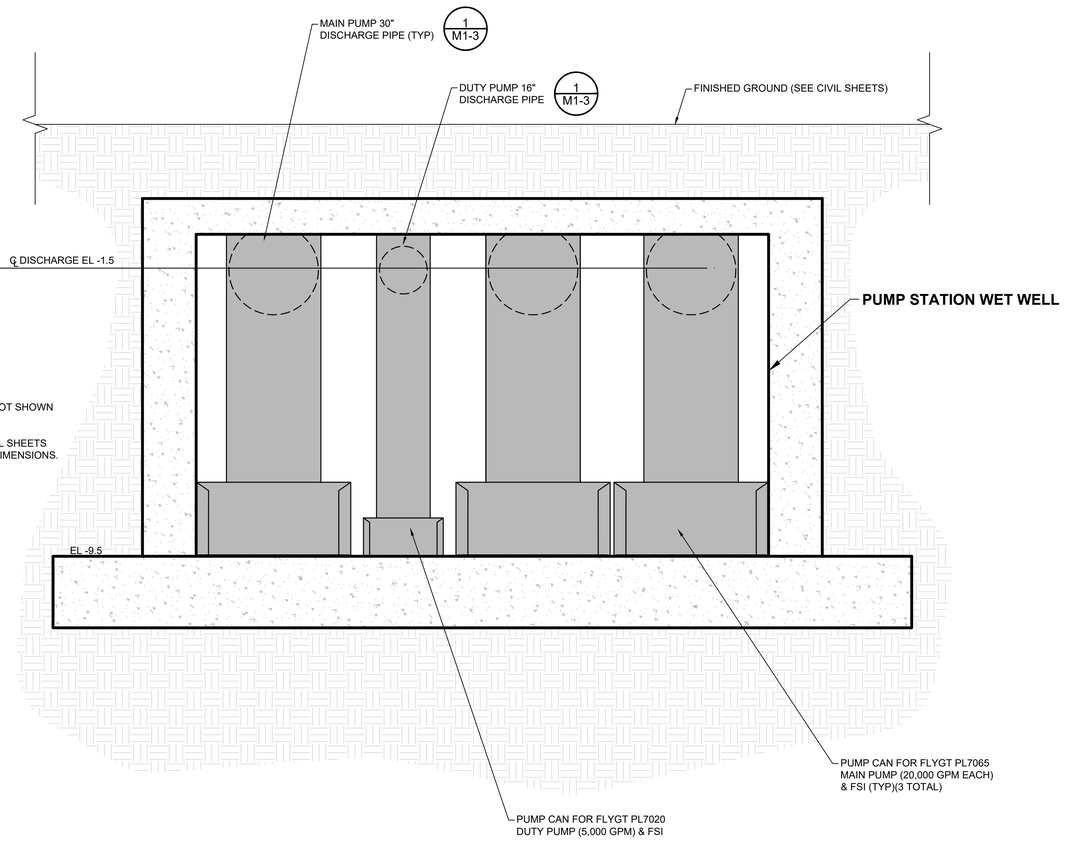
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NOTE:

1. STILLING WELL NOT SHOWN FOR CLARITY.
2. SEE STRUCTURAL SHEETS FOR WET WELL DIMENSIONS.

C / M1-2 PUMP STATION SECTION VIEW
1" = 2'



NOTE:

1. STILLING WELL NOT SHOWN FOR CLARITY.
2. SEE STRUCTURAL SHEETS FOR WET WELL DIMENSIONS.

D / M1-2 PUMP STATION SECTION VIEW
1" = 2'

ELEVATIONS SHOWN IN NAVD88 DATUM

FSI = FORMED SUCTION INTAKE

FL CA NO 48 FL LB NO 48
MOCK•ROOS
CONSULTING ENGINEERS
DWG NO. AE-43-16-07
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ENGINEER'S SEAL

PATRICK V. KIRBY
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DATE	JULY 2023

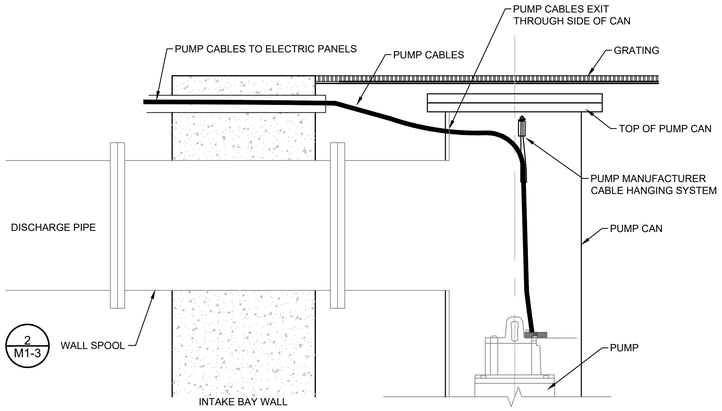
REVISION	DATE	DESCRIPTION	BY

THE CITY OF DELRAY BEACH
HISTORIC MARINE WAY SEAWALL, ROADWAY, AND DRAINAGE IMPROVEMENTS

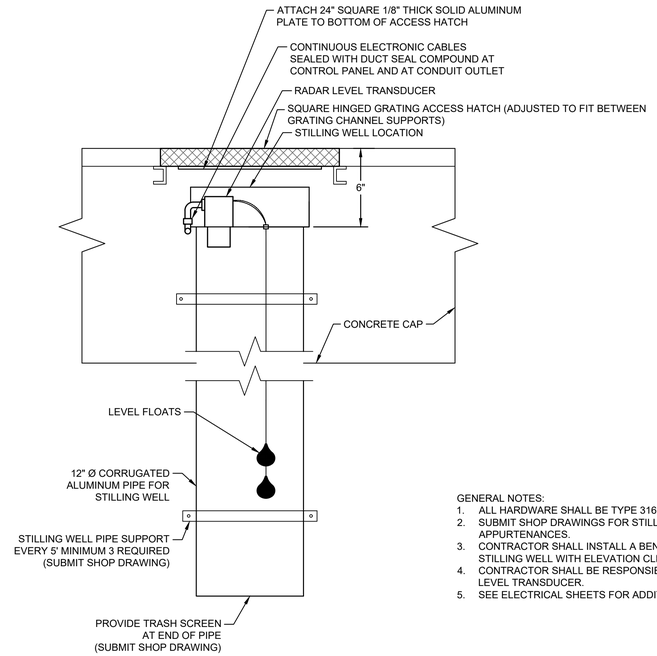
PUMP STATION SECTION VIEWS

PROJECT NO. 17-047
SHEET NO. M1-2
FILE ID. 2898.01

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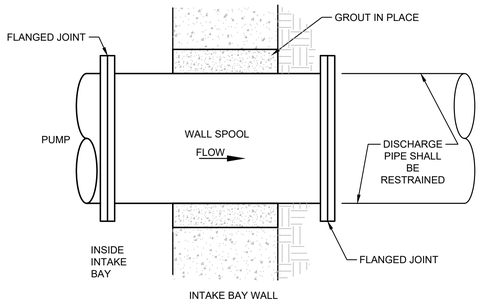


1 M1-3 PUMP CAN DETAIL
NTS



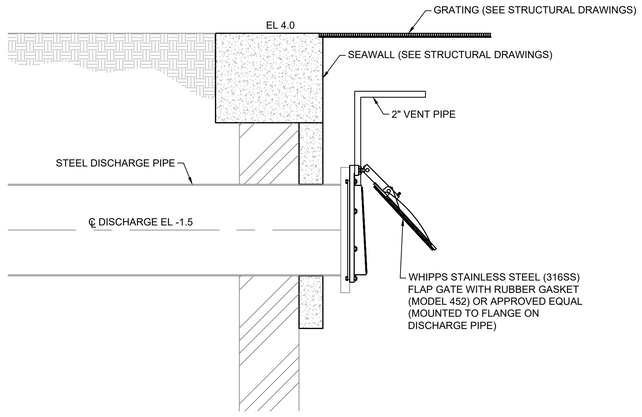
GENERAL NOTES:
1. ALL HARDWARE SHALL BE TYPE 316 STAINLESS STEEL.
2. SUBMIT SHOP DRAWINGS FOR STILLING WELL AND ALL APPURTENANCES.
3. CONTRACTOR SHALL INSTALL A BENCHMARK WITHIN 2 FEET OF STILLING WELL WITH ELEVATION CLEARLY LABELED.
4. CONTRACTOR SHALL BE RESPONSIBLE FOR INSTALLATION OF LEVEL TRANSDUCER.
5. SEE ELECTRICAL SHEETS FOR ADDITIONAL INFORMATION.

3 M1-3 STILLING WELL DETAIL
NTS

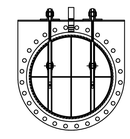


NOTE:
CONTRACTOR SHALL CONFIRM FLANGE BOLT PATTERN OF PUMPS MATCHES FLANGE BOLT PATTERN OF WALL SPOOL.

2 M1-3 PUMP DISCHARGE SPOOL DETAIL
NTS



SECTION VIEW



FLAP GATE END VIEW

4 M1-3 FLAP GATE DETAIL
NTS

ELEVATIONS SHOWN IN NAVD88 DATUM

FL CA NO 48 FL LB NO 48
MOCK•ROOS
CONSULTING ENGINEERS
DWG NO 46-43-16-07
DWG PA B7021.20
5720 CORPORATE WAY, WPB, FL 33407
561-683-3113

CITY of DELRAY BEACH
PUBLIC WORKS DEPARTMENT
434 SOUTH SWINTON AVENUE, DELRAY BEACH, FLORIDA 33444
Phone: (561) 243-7322 Fax: (561) 243-7314 www.mydelraybeach.com

PREPARED BY:
WGL
2035 Vista Parkway
West Palm Beach, FL 33411
Phone No. 561.687.2220
Fax No. 561.687.1110
Cert No. 6091 - LB No. 7055
ENGINEERING // SURVEYING // ENVIRONMENTAL // PLANNING

ENGINEER'S SEAL
PATRICK V. KIRBY
P.E., LIC. NO. 44013

DESIGNED BY	PVK
DRAWN BY	MCV
CHECKED BY	GGG
QC BY	SJC
DATE	JULY 2023

REVISION	DATE	DESCRIPTION	BY

THE CITY OF DELRAY BEACH
HISTORIC MARINE WAY SEAWALL, ROADWAY, AND DRAINAGE IMPROVEMENTS

PUMP STATION DETAILS

PROJECT NO. 17-047
SHEET NO. M1-3
FILE ID. 2898.01

User: E. Thompson (Black Rhino) P:\Civil_Work\mxm\Civil\Dwg\MARKSHOP_M1-3.dwg 2x3 Plotted: 7/28/2023 4:10:16 PM Sheet: 7/28/2023 4:23:51 PM

3/8/2024 2:05:09 PM

GENERAL NOTES

GENERAL SPECIFICATIONS:

FLORIDA DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION. (JULY 2023)

CODES AND STANDARDS:

FLORIDA BUILDING CODE 2020, 7TH EDITION (FBC)
ACI 318-14 BUILDING CODE REQUIREMENT FOR STRUCTURAL CONCRETE.
ACI 350: CODE REQUIREMENTS FOR ENVIRONMENTAL ENGINEERING CONCRETE STRUCTURES

DESIGN LOADING:

LIVE LOAD = 100 PSF

WIND DESIGN IN ACCORDANCE WITH ASCE 7-16:

VELOCITY/ULT = 170 MPH (3 SEC.)
VELOCITY/ASD = 133 MPH (3 SEC.)
RISK CATEGORY III
EXPOSURE = D
k/z = 1.03
k/ze = 1.0
kd = 0.85
q/z = 38.8 PSF (SERVICE)

SEISMIC DESIGN DATA:

RISK CATEGORY
I/e = 1.0
S/s = 0.05
S/1 = 0.03
SITE CLASS = D
S/Ds = 0.053
S/D1 = 0.048
SEISMIC DESIGN CATEGORY = A
R = 1.25
C/s = 0.043
V = 0.043W

GROUND SNOW LOAD = 0 PSF

FLOOD ZONE AE (EL. 6 NAVD)

GEOTECHNICAL:

1. SEE GEOTECHNICAL BORINGS ON SHEET S0.03 - S0.04.

2. THE CONTRACTOR IS TO REVIEW THE SOIL BORINGS AVAILABLE. THE CONTRACTOR, AT THEIR OWN EXPENSE, MAY PERFORM ADDITIONAL SOIL INVESTIGATION, EXPLORATION, AND/OR SOIL BORINGS.

3. THE CONTRACTOR SHALL USE ANY METHOD NECESSARY TO INSTALL THE PILES PER THE CONTRACT DOCUMENTS. NO ADDITIONAL CONTRACT DAYS(TIME) OR COMPENSATION WILL BE PROVIDED FOR METHODS CHOSEN OR DUE TO PILES NOT MEETING REQUIREMENTS.

CONCRETE NOTES:

1. MINIMUM 28 DAY STRENGTH (f'c) = 5,500 PSI

2. MAXIMUM WATER TO CEMENT RATIO (W/C) = 0.41

3. MINIMUM CONCRETE COVER SHALL BE: (INCHES)
SLAB: 2.5
BEAMS AND COLUMNS: 2
EXPOSED UNPROTECTED CONCRETE: 3
FORMED CONCRETE BELOW GRADE: 4
UNFORMED CONCRETE BELOW GRADE: 4.5

4. CONCRETE CONSTRUCTION TECHNIQUES SHALL CONFORM TO THE "SPECIFICATIONS FOR STRUCTURAL CONCRETE FOR BUILDINGS" (ACI 301).

5. PROVIDE 3/4 INCH CHAMFERS ON ALL EXPOSED EDGES AND CORNERS EXCEPT AS OTHERWISE NOTED.

6.CONSTRUCTION JOINTS WILL BE PERMITTED ONLY AT THE LOCATIONS INDICATED ON THE PLANS, ADDITIONAL CONSTRUCTION JOINTS OR ALTERATIONS TO THOSE SHOWN WILL REQUIRE APPROVAL BY THE ENGINEER.

7. CONTROL JOINTS SHALL BE SPACED AT A MAXIMUM OF 25' ON CENTER.

8. EXPANSION JOINTS SHALL BE SPACED AT A MAXIMUM OF 100'-0" ON CENTER.

CONCRETE MASONRY NOTES:

1. REINFORCED CONCRETE MASONRY CONSTRUCTION SHALL CONFORM TO THE "BUILDING CODE REQUIREMENTS FOR CONCRETE MASONRY STRUCTURES" (ACI 530).

2. VERTICAL CELLS TO BE GROUTED SHALL HAVE VERTICAL ALIGNMENT SUFFICIENT TO MAINTAIN A CLEAR, UNOBSTRUCTED CONTINUOUS CELL.

3. CLEANOUT OPENINGS SHALL BE PROVIDED AT THE BOTTOM OF GROUTED CELLS AT EACH LIFT. CLEANOUTS SHALL BE SEALED AFTER CLEANING AND INSPECTION, AND BEFORE GROUTING.

4. REINFORCING STEEL SHALL BE LAPPED 48 BAR DIAMETER MINIMUM WHERE SPLICED AND SHALL BE EITHER SEPARATED BY ONE BARCDIAMETER OR WIRED TOGETHER.

5. WHEN GROUTING IS STOPPED FOR ONE (1) HOUR OR LONGER, THE GROUT SHALL BE STOPPED 1-1/2" BELOW THE TOP OF THE UPPERMOST UNIT. CONCRETE MASONRY NOTES (CONTINUED):

6. GROUT SHALL BE PLACED IN LIFTS NOT TO EXCEED 12'-0" MAXIMUM.

7. VERTICAL WALL REINFORCING SHALL BE DOWELED TO SLAB BELOW AND TO BEAM ABOVE.

8. MASONRY SHALL BE ANCHORED TO SUPPORTING BEAMS AND COLUMNS UNLESS OTHERWISE NOTED. MASONRY UNITS LAID TO CONCRETE SHALL BE SUPPORTED BY DOVETAIL ANCHORS SPACED AT 16" OR WITH AN EQUIVALENT SYSTEM.

9. MASONRY WALLS SHALL BE BRACED TO RESIST LATERAL LOADS UNTIL ADEQUATE BRACING IS PROVIDED BY THE OTHER COMPONENTS OF THE STRUCTURE.

10. GROUTED CELLS WITH A #6 REINFORCING BAR SHALL BE PLACED AT ALL DOOR, LOUVER AND WINDOW JAMBS AND AS OTHERWISE INDICATED.

11. FILL MASONRY CELLS AT DOORS AND WINDOW JAMBS SOLID WITH MORTAR OR GROUT.

12. MASONRY GROUT SHALL BE MIXED WITH SUFFICIENT WATER TO GIVE A FLUID CONSISTENCY WITHOUT SEGREGATION OF MATERIALS.

13. GROUT SLUMP TO BE MAINTAINED BETWEEN 10" AND 11".

14. CONCRETE MASONRY 28-DAY COMPRESSIVE STRENGTH OF AVERAGE OF THREE UNITS (NET AREA) = 2,000 PSI; MAXIMUM WATER ABSORPTION = 13 LBS/FT3.

15. MASONRY UNITS SHALL CONFORM TO ASTM C90 GRADE N-1.

16. MORTAR TYPE M - ASTM C270 TYPE M (2,500 PSI).

17. MASONRY GROUT SHALL CONFORM TO ASTM C476 (3,000 PSI 28-DAY STRENGTH).

18. ALL CELLS WITH PIPE PENETRATIONS SHALL BE GROUT

REINFORCEMENT:

1. REINFORCEMENT SHALL BE HOT DIPPED GALV. ASTM A615, GRADE 60.

2. ALL DIMENSIONS PERTAINING TO LOCATION OF REINFORCING ARE TO CENTERLINE OF BARS EXCEPT WHERE THE CLEAR DIMENSION IS SHOWN TO FACE OF CONCRETE.

3. REINFORCEMENT DETAIL DIMENSIONS ARE OUT-TO-OUT OF BARS.

POST-INSTALLED ANCHORS:

1. MECHANICAL ANCHORS (EXPANSION ANCHOR) SYSTEMS INTO CONCRETE:

A. KWIK BOLT TZ BY HILTI
B. STRONG-BOLT 2 BY SIMPSON STRONGTIE
C. POWER-STUD+ SD2 BY DEWALT

2. MECHANICAL ANCHORS (EXPANSION ANCHOR) SYSTEM INTO CONCRETE MASONRY:

A. KWIK BOLT 3 BY HILTI
B. WEDGE-ALL BY SIMPSON STRONGTIE
C. POWER-STUD SD1 BY DEWALT
3. ADHESIVE ANCHOR SYSTEM INTO CONCRETE:

A. ULTRABOND HS-1CC (ICC ES ESR-4094) BY ADHESIVE TECHNOLOGY
B. HILTI HIT-RE 500 V3 (ICC ES ESR-3814) BY HILTI
C. SET-XP (ICC ES ESR-2508) BY SIMPSON STRONGTIE
D. PURE 110+ (ICC ES ESR-3298) BY DEWALT

4. ADHESIVE ANCHOR SYSTEM INTO CONCRETE MASONRY:

A. HILTI HIT-HY 200A (ICC ES ESR-3963) BY HILTI
B. SET -XP (ICC ES ESR-265) BY SIMPSON STRONGTIE
C. PE 1000+ (ICC ES ESR-2583) BY DEWALT

5. POST-INSTALLED ANCHORS SHALL BE INSTALLED USING A PRODUCT SPECIFIED ABOVE OR AN ENGINEER APPROVED EQUIVALENT.

6. ALL POST-INSTALLED ANCHORS SHALL BE INSTALLED IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS. INSTALLERS SHALL BE TRAINED BY THE MANUFACTURER'S REPRESENTATIVE.

STRUCTURAL STEEL:

1. ALL STEEL DETAILS AND CONNECTION SHALL BE IN ACCORDANCE WITH REQUIREMENTS OF AISC "SPECIFICATION FOR STRUCTURAL STEEL BUILDINGS" LOAD AND RESISTANCE FACTOR DESIGN (LRFD).

2. STEEL MATERIAL AND CONNECTION MATERIAL SHALL CONFORM TO THE FOLLOWING MINIMUM REQUIREMENTS UNLESS NOTED OTHERWISE:

A. ANGLES: ASTM A276 TYPE 316
B. PLATES: ASTM A240 TYPE 316
C. TUBES: ASTM A554 TYPE 316
C. BOLTS: ASTM F593 TYPE 316; OR ASTM 325 TYPE 3 WHERE INDICATED
D. NUTS: ASTM F594 TYPE 316
E. WASHERS: SS316
F. ANCHOR RODS: ASTM F593 TYPE 316
G. HEADED STUDS ASTM F593 TYPE 316
H. WELD ELECTRODES: E316-XX

3. ALL STEEL TUBES TO HAVE 1/4" END CLOSURE PLATES

4. SPLICES ONLY ALLOWED AT THE LOCATION SPECIFICALLY INDICATED ON THE STRUCTURAL DRAWINGS.

5. SHOW ALL COPES, HOLES, OPENING AND MODIFICATION REQUIRED IN STRUCTURAL STEEL MEMBERS FOR ERECTION OR THE WORK OF OTHER TRADES ON THE SHOP DRAWINGS FOR APPROVAL BY STRUCTURAL ENGINEER.

6. FIELD MODIFICATION OF STRUCTURAL STEEL IS PROHIBITED WITHOUT PRIOR APPROVAL OF THE ENGINEER OF RECORD.

7. SHOP DRAWINGS SHALL BE PREPARED UNDER THE SUPERVISION OF A REGISTERED PROFESSIONAL ENGINEER IN THE STATE OF FLORIDA, INCLUDING COMPLETE DETAILS AND SCHEDULES FOR FABRICATION AND ASSEMBLY OF STRUCTURAL STEEL MEMBERS WITH PROCEDURES AND DIAGRAMS.

8. SUBMIT CONNECTIONS NOT SPECIFICALLY DETAILED ON THE DRAWINGS TO ENGINEER OF RECORD FOR REVIEW BEFORE THE REVIEW OF SHOP DRAWINGS.

9. BOLTED CONNECTIONS SHALL BE F593 TYPE 316 BEARING-TYPE CONNECTIONS UNLESS OTHERWISE NOTED.

10. ALL WELDING SHALL CONFORM TO THE REQUIREMENT OF THE STRUCTURAL WELDING CODE, ANSI/AWS D1.1.

11. TRAFFIC GRATING

A. TRAFFIC GRATING SHALL BE LOAD RATED FOR HS-20 LOADING AND SHALL BE MINIMUM 3/8" X 4" BEARING BARS @15/16" O.C. WITH CROSS BARS @ 2" O.C. ALL COMPONENTS SHALL BE SS TYPE 316

12. PEDESTRIAN GRATING

B. PEDESTRIAN SHALL BE MCNICHOLS® FIBERGLASS GRATING PULTRUDED, I-BAR, MS-I-4015 - DURAGRID®, ADA, FIBERGLASS, SPF POLYESTER RESIN, GRAY, 1.500" HEIGHT X 0.60W" TOP FLANGE WIDTH I-BAR
OR ENGINEER APPROVED EQUIVALENT

STRUCTURAL ALUMINUM NOTES:

1. DESIGN OF THE ALUMINUM STRUCTURES SHALL CONFORM TO THE CURRENT EDITION OF THE ALUMINUM ASSOCIATION
SPECIFICATIONS AND GUIDELINES FOR ALUMINUM STRUCTURES.

2. FABRICATE ALL STRUCTURAL ALUMINUM IN ACCORDANCE WITH THE ALUMINUM ASSOCIATION AA ASM 35, ALUMINUM SHEET METAL
WORK IN BUILDING CONSTRUCTION, AND AA ADM 1, ALUMINUM DESIGN MANUAL.

3. ALL ALUMINUM CONSTRUCTION USING 6000 SERIES ALUMINUM ALLOYS. STRUCTURAL MEMBERS TO BE 6061-T6, ALUMINUM ALLOY, MILL FINISH, UNLESS NOTED OTHERWISE.

4. WELDING SHALL BE IN ACCORDANCE WITH ANSI/ASW D1.2/D1.2M-2014 GAS METAL ARC WELDING (GMAW) PROCESS BY EXPERIENCEDOPERATORS.

5. ALL FASTENERS TO BE 18-8 (SERIES 316) STAINLESS STEEL UNLESS NOTED OTHERWISE.

6. ALL SURFACES, MEMBERS AND THEIR WELDED JOINTS SHALL BE SMOOTH AND FREE FROM SHARP OR JAGGED EDGES.

7. COAT ALL ALUMINUM IN CONTACT WITH CONCRETE AND OTHER DISSIMILAR METALS WITH BITUMINOUS PAINT ON THE CONTACT SURFACE, 30# FELT, OR NEOPRENE BEARING MATERIAL.

WOOD:

1. ALL WOOD SHALL BE PRESSURE TREATED SOUTHERN YELLOW PINE (E= 1,600 KSI MIN) 19% MOISTURE CONTENT.

2. WOOD PRESERVATIVE AND RETENTION SHALL BE FROM THE "SAWN PRODUCTS - UC5C" IN COMMODITY SPECIFICATION A AND IN TABLE 1 OF SECTION 4 IN THE AMERICAN WOOD PRODUCTION ASSOCIATION STANDARD U1-20. LUMBER ACQ TREATED SOUTHERN YELLOW PINE (SYP NO. 1). TREATED WITH ACQ A MINIMUM OF 0.6 POUNDS PER CUBIC FOOT.

3. METAL CONNECTIONS SHALL BE FASTENED IN ACCORDANCE WITH THE MANUFACTURERS' INSTRUCTIONS TO DEVELOP THE MAXIMUM PUBLISHED CAPACITY.

4. ALL WOOD TO WOOD CONNECTION SHALL EMPLOY METAL ANCHORS. INSTALL ALL THE MANUFACTURER SPECIFIED NAILS IN THE MEMBER CONNECTED. ALTERNATE MANUFACTURER CONNECTORS MAY BE SUBMITTED FOR REVIEW.

5. ALL BOLTS SHALL BE FURNISHED WITH STANDARD NUT WASHER. FASTENERS IN CONTACT WITH TREATED WOOD, INCLUDING BOLTS AND NAILS AT SILL PLATES SHALL BE STAINLESS STEEL TYPE 316, UNLESS NOTED OTHERWISE.

6. ALL NAILS TO BE STAINLESS STEEL TYPE 316. COORDINATE BLOCKING LOCATION WITH SHEATHING EDGE AS REQUIRED. ALL NAILS SHALL BE COMMON WIRE NAILS.

7. WOOD BEARING ON WOOD SHALL HAVE A GRACE VYCOR DECKING PROTECTOR INSTALLED. ON BEARING SURFACE. GRACE SHALL ALSO BE INSTALLED AT CONNECTORS PER MANUFACTURER RECOMMENDATIONS.

8. NO ADDITIONAL CONTRACT TIME WILL BE GIVEN FOR PRESSURE TREATED WOOD.

STEEL SHEET PILES:

1. ALL PERMANENT STEEL SHEET PILE SHALL BE AZ26-700 OR NZ26 AND SHALL MEET THE FOLLOWING MINIMUM PROPERTIES:
MIN. Sx = 48.5 IN3/ FT
MIN. Ix = 419.9 IN4/ FT
STEEL GRADE SHALL BE ASTM A572, GRADE 60

2. THE TOP 15 FT. OF BOTH SIDES SHALL BE COATED WITH A COAL TAR EPOXY COATING EXCEPT SECTIONS THAT ARE INDICATED TO BE CAST WITH A CONCRETE FASCIA (THICKNESS IN ACCORDANCE WITH FDOT. APL PRODUCT SPECIFICATIONS FOR AGGRESSIVE/ HARSH ENVIRONMENT. ALL STEEL SHEET PILING SHALL BE INSTALLED USING HYDRAULIC RAM (PRESS-IN METHOD), USE OF VIBRATORY HAMMER WILL NOT BE PERMITTED.

JET GROUTING:

SEE SPECIFICATIONS SECTION 02261

JET GROUT WALL SHALL HAVE THE FOLLOWING CHARACTERISTICS:

1. DEPTH OF WALL = -32.00 (MIN) NAVD

2. THICKNESS OF WALL = 3.5 FT (MIN)

3. PERMEABILITY OF WALL = 10^{-7} GAL/DAY/FT^2

4. STIFFNESS OF WALL = 13,725,700 (K*IN^2)/FT

PROJECT NOTES:

1. ELEVATIONS SHOWN HEREON ARE BASED ON NAVD '88 DATUM. TO CONVERT TO NGVD '29 ADD 1.535' TO THE NAVD VALUE.

2. EXISTING LOCATIONS AND ELEVATIONS ARE BASED ON SURVEY BY: WGI, INC. PROJECT NO. 41011004.16, DATED 08/31/2016.

3. THE CONTRACTOR SHALL TAKE ALL NECESSARY PRECAUTIONS TO PREVENT FLOATATION OF STRUCTURES UNTIL CONSTRUCTION IS COMPLETE AND BACKFILL IN PLACED AND COMPACTED

4. CONTRACTOR WILL OPERATE WITH EXTREME CARE AND CAUTION AT AND AROUND UNDERGROUND & SUBAQUEOUS UTILITIES.

5. CONTRACTOR SHALL BE RESPONSIBLE FOR LOCATING AND VERIFICATION OF EXISTING UTILITIES INCLUDING UNDERGROUND AND SUBAQUEOUS UTILITIES.

6. CONTRACTOR SHALL REMOVE ANY AND ALL DEBRIS AND RESTORE THE SITE TO ITS PRE-CONSTRUCTION CONDITION AFTER THE WORK IS COMPLETE.

7. ONLY LIGHT EQUIPMENT IS TO BE USED FOR BACK FILLING, COMPACTING, AND FINAL GRADING (E.G. BOBCAT AND HAND OPERATED COMPACTOR). MECHANICAL EQUIPMENT NOT TO COME IN CONTACT WITH NEW CAP.

8. MONITOR EXISTING STRUCTURES IN ACCORDANCE WITH SECTION 108 OF THE STANDARD SPECS.

CONCRETE PILE DATA:
ALL CONCRETE PILES SHALL BE MINIMUM 14" SQUARE PER FDOT INDEX 455-014, 455-001
30 TON BEARING (SERVICE)
15' MINIMUM EMBEDMENT

MANUFACTURER'S REFERENCES AND SUBSTITUTIONS:

1. REFERENCE TO A PARTICULAR MANUFACTURER, TRADE NAME, OR CATALOG NUMBER ESTABLISHES THE QUALITY STANDARDS OF MATERIAL AND EQUIPMENT REQUIRED FOR THIS INSTALLATION IN ACCORDANCE WITH THE FDOT QUALIFIED PRODUCTS LIST, ETC. AND IS NOT INTENDED TO EXCLUDE OR SOLE-SOURCE PRODUCTS EQUAL/EQUIVALENT/SIMILAR IN QUALITY AND DESIGN. WHENEVER THE PLANS SPECIFY A PROPRIETARY PRODUCT, MATERIAL, EQUIPMENT, ETC. AND THE TERM "OR APPROVED EQUAL" IS NOT USED, "OR APPROVED EQUAL" SHALL BE IMPLIED.

2. EQUIVALENT PRODUCTS, MATERIALS, EQUIPMENT, ETC. MAY BE SUBMITTED BY THE CONTRACTOR TO THE ENGINEER FOR REVIEW AND APPROVAL AT THE TIME OF CONSTRUCTION (IE: AFTER THE BID), PROVIDED THAT THE CHANGE IS AT NO ADDITIONAL COST TO THE OWNER. ALL STRUCTURAL, ETC. DETAILS SHALL BE REVISED BY THE CONTRACTOR AS REQUIRED TO SUIT THE CERTIFIED DIMENSIONS, SPECIFICATIONS, ETC. OF THE COMPONENTS ACTUALLY BEING FURNISHED AS A RESULT OF A SUBSTITUTION APPROVED BY THE ENGINEER.

QUANTITIES
1. ALL QUANTITIES ARE TO BE VERIFIED BY THE CONTRACTOR PRIOR TO BID.

HELICAL PILES
1. CONTRACTOR SHALL SUBMIT HELICAL PILE CALCULATIONS AND DRAWINGS SEALED AND SIGNED BY SPECIALTY ENGINEER REGISTERED IN THE STATE OF FLORIDA.

2. PILES SHALL BE INSTALLED TO PROVIDE A MINIMUM SERVICE AXIAL COMPRESSIVE CAPACITY OF 25 KIPS.

3. TOP OF THE HELICAL PILE TO HAVE A CHANCE UNDERPINNING BRACKET WITH 2~1/2"ø CONCRETE ANCHORS X 6" LONG MINIMUM, UNLESS NOTED OTHERWISE.

4. MINIMUM EMBEDMENT INTO SUBSTRATE SHALL BE MINIMUM 25' OR TO ROCK, WHICHEVER IS LESS OR OR PER HELICAL PILE ENGINEER RECOMMENDED DESIGN EMBEDMENT.

5. FINAL DESIGN SHALL BE SIGNED AND SEALED BY SPECIALTY ENGINEER.

SHEET LIST

SHEET NUMBER	SHEET NAME
S0.01	GENERAL NOTES
S0.02	GENERAL NOTES
S0.03	SOIL LOG DATA
S0.04	SOIL LOG DATA
S1.00	OVERALL PLAN
S2.00	PHASING PLANS OVERVIEW
S2.01	ENLARGED PHASE I PUMP STATION PLAN
S2.02	ENLARGED PHASE IIA PUMP STATION PLAN
S2.03	ENLARGED PHASE IIB PUMP STATION PLAN
S2.04	ENLARGED PHASE IIIA PUMP STATION PLAN
S2.05	ENLARGED PHASE IIIB PUMP STATION PLAN
S2.06	ENLARGED PHASE IV PUMP STATION PLAN
S2.07	DISCHARGE BAY AND PUMP STATION AREA PLAN VIEW @ -4.0 NAVD
S2.08	PHASE IIIB DISCHARGE BAY/ UTILITY PLAN
S2.09	PHASE IV DISCHARGE/ UTILITY BAY PLAN
S2.10	SEAWALL & DECKING DETAILS
S2.11	FLOOR SLAB BEAM DETAILS, CLOSURE POUR
S2.12	UTILITY BAY DETAILS
S2.13	GENERATOR PLAN AND SECTIONS
S2.14	BACK-UP GENERATOR SECTIONS AND DETAILS
S2.15	PROPOSED HELICAL PILES PLAN
S3.01	ENLARGED MARINE WAY SEAWALL
S3.02	ENLARGED MARINE WAY SEAWALL
S3.03	ENLARGED MARINE WAY SEAWALL
S3.04	ENLARGED MARINE WAY SEAWALL
S4.00	PUMP STATION FOUNDATION PLAN
S4.01	PUMP STATION TOP SLAB PLAN
S4.02	LONGITUTIONAL WALL ELEVATIONS
S4.03	TRANSVERSE WALL ELEVATIONS & BAFFLE WALLS
S4.04	TOP SLAB FRAMING & REINFORCEMENT (1 of 3)
S4.05	TOP SLAB FRAMING & REINFORCEMENT (2 of 3)
S4.06	TOP SLAB FRAMING & REINFORCEMENT (3 of 3)
S5.00	MARINE WAY DETAILS
S5.01	MARINE WAY DETAILS
S6.00	ENLARGED MARINE WAY SEAWALL-DEMO
S6.01	ENLARGED MARINE WAY DOCKS
S6.02	WOOD RAMP FRAMING PLAN
S6.03	WOOD DECK FRAMING PLAN AND SECTION
S6.04	WOOD STAIRS AND ACCESS SECTIONS
S6.05	WOOD DECK FRAMING DETAILS
S6.06	WOOD SPLICE DETAILS

LIST OF FREQUENTLY USED ABBREVIATIONS

ACI	-AMERICAN CONCRETE INSTITUTE
ACQ	-ALKALINE COPPER QUATERNARY
AISC	-AMERICAN INSTITUTE OF STEEL CONSTRUCTION
ANSI	-AMERICAN NATIONAL STANDARDS INSTITUTE
ASCE	-AMERICAN SOCIETY OF CIVIL ENGINEERS
ASD	-ALLOWABLE STRESS DESIGN
ASTM	- AMERICAN SOCIETY FOR TESTING AND MATERIALS
CAP	-CORRUGATED ALUMINUM PIPE
CCA	-CHROMATED COPPER ARSENATE
CIP	-CAST-IN-PLACE
C/L, ℄	-CENTERLINE
CLR	-CLEAR
CMP	-CORRUGATED METAL PIPE
CPP	-CORRUGATED PLASTIC PIPE
DIA., ∅	-DIAMETER
EL., ELEV.	-ELEVATION
EMBED	-EMBEDMENT
EQ.	-EQUAL
EX., EXIST.	-EXISTING
FAC	-FLORIDA ADMINISTRATIVE CODE
FBC	-FLORIDA BUILDING CODE
FDOT	-FLORIDA DEPARTMENT OF TRANSPORTATION
FRP	-FIBER REINFORCED POLYMER
FT	-FOOT
GALV	-GALVANIZED
GFRP	-GLASS FIBER REINFORCED POLYMER
GR	-GRADE
INV.	-INVERT
KSI	-KILOPOUNDS PER SQUARE INCH
LB(S)	-POUND(S)
LF	-LINEAR FEET
LRFD	-LOAD RESISTANCE FACTOR DESIGN
MAX.	-MAXIMUM
MIN.	-MINIMUM
NAVD '88	-NORTH AMERICAN VERTICAL DATUM OF 1988
NGVD '29	-NATIONAL GEODETIC VERTICAL DATUM OF 1929
NTS	-NOT TO SCALE
O.C.	-ON CENTER
O.D.	-OUTSIDE DIAMETER
PCF	-PER CUBIC FOOT
PCI	-PER CUBIC INCH
PL, ℔	-PLATE
PSF	-PER SQUARE FOOT
PSI	-PER SQUARE INCH
RCP	-REINFORCED CONCRETE PIPE
R/W	-RIGHT OF WAY
SEC	-SECONDS
SHW	-SEASONAL HIGH WATER
SIM	-SIMILAR
SPA	-SPACING, SPACES
SYP	-SOUTHERN YELLOW PINE
TYP	-TYPICAL
T&B	-TOP AND BOTTOM
UON	-UNLESS OTHERWISE NOTED

Know what's below. Call before you dig.

PILE CRITERIA

TYPE	PILE CUTOFF ELEVATION NAVD (FT.)	BEARING REQUIRED (SERVICE) (TONS)	MINIMUM TIP ELEVATION NAVD (FT.)	NOTES
12 INCH ROUND WOOD DOCK PILES	2.00	15	-35.00	PLUMB AND ALIGNED
12 INCH ROUND WOOD FENDER PILES	15.00	20	-45.00	3 PILE CLUSTER, BATTERED (H:V = 1:6)
14 INCH SQUARE CONCRETE PILES	2.50	30	-23.00	PLUMB
STEEL SHEET PILES	2.50	NA	-32.50	PLUMB AND ALIGNED
HELICAL PILES	N/A	12.5	SEE GENERAL NOTES SECTION 'HELICAL PILES'	DELEGATED DESIGN. CONTRACTOR TO PROVIDE SUBMITTAL FOR ENGINEER REVIEW

100% SUBMITTAL

CITY of DELRAY BEACH
PUBLIC WORKS DEPARTMENT
434 SOUTH SWINTON AVENUE, DELRAY BEACH, FLORIDA 33444
Phone: (561) 243-7322 FAX: (561) 243-7314 www.mydelraybeach.com

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WGI
2035 Vista Parkway
West Palm Beach, FL 33411
Phone No. 561.687.2220
Fax No. 561.687.1110
Registry No. 33574

JEFFREY R. BERGMANN
P.E., LIC. NO. 50159

DESIGNED BY	JRB
DRAWN BY	DAB
CHECK BY	AS
DATE	07/14/23

REVISION	DATE	DESCRIPTION
	7/14/2023	100% CD SET

THE CITY OF DELRAY BEACH
HISTORIC MARINE WAY SEAWALL, ROADWAY, AND DRAINAGE IMPROVEMENT

GENERAL NOTES

PROJECT NO. 17-047
SHEET NO. S0.01
FILE ID. 17-047

BIM 360://Marine Way/2898.01 Marine Way PH 2.rvt

3/8/2024 2:05:09 PM

ENVIRONMENTAL NOTES:

1. THE CONTRACTOR SHALL SUBMIT AN EROSION CONTROL PLAN IN ACCORDANCE WITH SECTION 104 OF THE FDOT STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION. THE PLAN SHALL INCLUDE, BUT NOT BE LIMITED TO, MEASURES TO CONTROL TURBIDITY, CONTAINMENT AND DISPOSAL OF CONSTRUCTION DEBRIS, AND A SPILL CONTROL REPORTING PLAN.

2. IF SUSPECT CONTAMINATED OR HAZARDOUS MATERIAL IS FOUND ON THE PROJECT OR ENCOUNTERED DURING CONSTRUCTION THE CONTRACTOR SHALL CEASE OPERATION IN THAT AREA. IMMEDIATELY NOTIFY FDEP AND THE PROJECT ENGINEER AND PROTECT THE IMMEDIATE AREA OF SUSPECT CONTAMINATED OR HAZARDOUS MATERIAL FROM FURTHER ACCESS. CONSTRUCTION COORDINATION WILL ARRANGE FOR THE INVESTIGATION, IDENTIFICATION AND/OR REMOVAL/REMEDIATION OF THE MATERIAL IN QUESTION AS NEEDED.

3. THE CONTRACTOR SHALL NOT BRING ANY HAZARDOUS MATERIALS ONTO THE PROJECT. SHOULD THE CONTRACTOR REQUIRE SUCH FOR PERFORMING THE CONTRACTED WORK, THE CONTRACTOR SHALL REQUEST WRITTEN PERMISSION FROM FDEP AND THE PROJECT ENGINEER. THE CONTRACTOR SHALL PROVIDE A COPY OF THE REQUEST TO THE FDEP AND THE PROJECT ENGINEER. THE CONTRACTOR SHALL PROVIDE THE FDEP AND THE PROJECT ENGINEER WITH A COPY OF THE MATERIAL SAFETY DATA SHEET (MSDS) FOR EACH HAZARDOUS MATERIAL PROPOSED FOR USE, AND PROVIDE A DESCRIPTION OF THE SPECIFIC MANNER IN WHICH THE MATERIAL WILL BE USED. THE PROJECT ENGINEER SHALL COORDINATE WITH THE FDEP PRIOR TO ISSUING WRITTEN APPROVAL TO THE CONTRACTOR. BECAUSE STATE LAW DOES NOT TREAT PETROLEUM PRODUCTS THAT ARE PROPERLY CONTAINERIZED AS HAZARDOUS MATERIALS, SUCH PRODUCTS DO NOT REQUIRE AN MSDS SUBMITTAL. ALL BULK PETROLEUM PRODUCTS STORED ON SITE SHALL REQUIRE PROPER STORAGE WHICH INCLUDES SECONDARY CONTAINMENT.

4. THE CONTRACTOR SHALL INSTRUCT ALL PERSONNEL OF THE POTENTIAL PRESENCE OF PROTECTED MAMMALS, REPTILES AND BIRDS. THE CONTRACTOR SHALL COMPLY WITH ALL FEDERAL AND STATE REQUIREMENTS AND CHAPTER 7-1.4 OF THE FDOT STANDARD SPECIFICATIONS FOR PROTECTED SPECIES.

5. SPECIFIC REQUIREMENTS FOR UNEXPECTED INTERACTION WITH CERTAIN PROTECTED SPECIES DURING WORK ACTIVITIES MAY BE FOUND AT: http://www.dot.state.fl.us/programmanagement/Implemented/URLinSpecs/files/endangeredwildlifeguidelines.pdf

6. THE CONTRACTOR SHALL LEGALLY DISPOSE OF SPOILS OFF SITE AND NOT IN THE ADJACENT WATER BODIES.

EROSION CONTROL NOTES:

1. ALL EROSION AND SEDIMENTATION CONTROLS SHALL BE INSTALLED PRIOR TO ANY LAND DISTURBING ACTIVITIES.

2. ALL EROSION AND SEDIMENTATION CONTROLS SHALL BE INSPECTED DAILY AND REPAIRS MADE AS NECESSARY TO ENSURE THE PROPER AND CONTINUED FUNCTION OF THE CONTROL(S).

3. ALL EROSION AND SEDIMENTATION CONTROL SHALL REMAIN IN PLACE UNTIL A PERMANENT VEGETATIVE COVER HAS BEEN ESTABLISHED.

4. UNDER NO CIRCUMSTANCES SHALL SEDIMENTS BE PERMITTED TO EXIT THE PROJECT LIMITS, INCLUDING TRACKING BY VEHICLES ONTO PAVED ROADWAYS. THE CONTRACTOR SHALL MAKE IMMEDIATE REPAIRS OR ENHANCEMENTS TO ANY EROSION CONTROL SYSTEM THAT ALLOWS THE RELEASE OF SEDIMENTS.

STANDARD MANATEE CONDITIONS FOR IN-WATER WORK - 2011:

THE PERMITTEE SHALL COMPLY WITH THE FOLLOWING CONDITIONS INTENDED TO PROTECT MANATEES FROM DIRECT PROJECT EFFECTS:

a. ALL PERSONNEL ASSOCIATED WITH THE PROJECT SHALL BE INSTRUCTED ABOUT THE PRESENCE OF MANATEES AND MANATEE SPEED ZONES, AND THE NEED TO AVOID COLLISIONS WITH AND INJURY TO MANATEES. THE PERMITTEE SHALL ADVISE ALL CONSTRUCTION PERSONNEL THAT THERE ARE CIVIL AND CRIMINAL PENALTIES FOR HARMING, HARASSING, OR KILLING MANATEES WHICH ARE PROTECTED UNDER THE MARINE MAMMAL PROTECTION ACT, THE ENDANGERED SPECIES ACT, AND THE FLORIDA MANATEE SANCTUARY ACT.

b. ALL VESSELS ASSOCIATED WITH THE CONSTRUCTION PROJECT SHALL OPERATE AT "IDLE SPEED/NO WAKE" AT ALL TIMES WHILE IN THE IMMEDIATE AREA AND WHILE IN WATER WHERE THE DRAFT OF THE VESSEL PROVIDES LESS THAN A FOUR-FOOT CLEARANCE FROM THE BOTTOM. ALL VESSELS WILL FOLLOW ROUTES OF DEEP WATER WHENEVER POSSIBLE.

c. SILTATION OR TURBIDITY BARRIERS SHALL BE MADE OF MATERIAL IN WHICH MANATEES CANNOT BECOME ENTANGLED, SHALL BE PROPERLY SECURED, AND SHALL BE REGULARLY MONITORED TO AVOID MANATEE ENTANGLEMENT OR ENTRAPMENT. BARRIERS MUST NOT IMPEDE MANATEE MOVEMENT.

d. ALL ON-SITE PROJECT PERSONNEL ARE RESPONSIBLE FOR OBSERVING WATER-RELATED ACTIVITIES FOR THE PRESENCE OF MANATEE(S). ALL IN-WATER OPERATIONS, INCLUDING VESSELS, MUST BE SHUTDOWN IF A MANATEE(S) COMES WITHIN 50 FEET OF THE OPERATION. ACTIVITIES WILL NOT RESUME UNTIL THE MANATEE(S) HAS MOVED BEYOND THE 50-FOOT RADIUS OF THE PROJECT OPERATION, OR UNTIL 30 MINUTES ELAPSES IF THE MANATEE(S) HAS NOT REAPPEARED WITHIN 50 FEET OF THE OPERATION. ANIMALS MUST NOT BE HERDED AWAY OR HARASSED INTO LEAVING.

e. ANY COLLISION WITH OR INJURY TO A MANATEE SHALL BE REPORTED IMMEDIATELY TO THE FWC HOTLINE AT 1-888-404-3922. COLLISION AND/OR INJURY SHOULD ALSO BE REPORTED TO THE U.S. FISH AND WILDLIFE SERVICE IN JACKSONVILLE (1-904-731-3336) FOR NORTH FLORIDA OR VERO BEACH (1-772-562-3909) FOR SOUTH FLORIDA, AND TO FWC AT ImperiledSpecies@myFWC.com

f. TEMPORARY SIGNS CONCERNING MANATEES SHALL BE POSTED PRIOR TO AND DURING ALL IN-WATER PROJECT ACTIVITIES. ALL SIGNS ARE TO BE REMOVED BY THE PERMITTEE UPON COMPLETION OF THE PROJECT. TEMPORARY SIGNS THAT HAVE ALREADY BEEN APPROVED FOR THIS USE BY THE FLORIDA FISH AND WILDLIFE CONSERVATION COMMISSION (FWC) MUST BE USED (SEE MYFWC.COM/MANATEE). ONE SIGN WHICH READS CAUTION: BOATERS MUST BE POSTED. A SECOND SIGN MEASURING AT LEAST 8.5 BY 11 INCHES EXPLAINING THE REQUIREMENTS FOR "IDLE SPEED/NO WAKE" AND THE SHUT DOWN OF IN-WATER OPERATIONS MUST BE POSTED IN A LOCATION PROMINENTLY VISIBLE TO ALL PERSONNEL ENGAGED IN WATER-RELATED ACTIVITIES. QUESTIONS CONCERNING THESE SIGNS CAN BE SENT TO THE EMAIL ADDRESS LISTED ABOVE.

g. FLOATING TURBIDITY BARRIER WITH FINE MESH SHALL BE USED IN ACCORDANCE WITH FDOT STANDARD SPECIFICATIONS, SECTION 104.

ENVIRONMENTAL NOTES:

1. THE CONTRACTOR SHALL INSTRUCT ALL PERSONNEL OF THE POTENTIAL PRESENCE OF PROTECTED MAMMALS, REPTILES AND BIRDS. THE CONTRACTOR SHALL COMPLY WITH ALL FEDERAL AND STATE REQUIREMENTS AND CHAPTER 7-1.4 OF THE FDOT STANDARD SPECIFICATIONS FOR PROTECTED SPECIES.

2. SPECIFIC REQUIREMENTS FOR UNEXPECTED INTERACTION WITH CERTAIN PROTECTED SPECIES DURING WORK ACTIVITIES MAY BE FOUND AT: http://www.dot.state.fl.us/programmanagement/Implemented/URLinSpecs/files/endangered_wildlifeguidelines.pdf

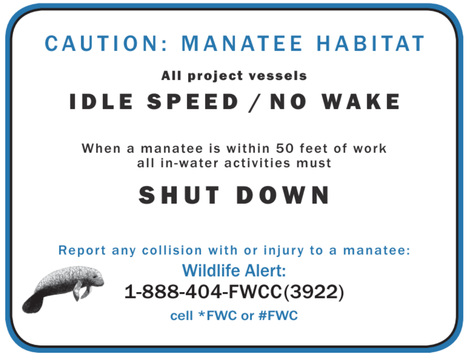
3. THE CONTRACTOR SHALL LEGALLY DISPOSE OF SPOILS OFF SITE AND NOT IN THE INTRACOASTAL WATERWAY.

EROSION CONTROL NOTES:

1. THE CONTRACTOR IS RESPONSIBLE FOR THE CONTROL OF SEDIMENTATION RUNOFF RESULTING FROM STORM EVENTS DURING THE CONSTRUCTION PHASE.

2. THE CONTRACTOR SHALL SUBMIT AN EROSION CONTROL PLAN IN ACCORDANCE WITH SECTION 104 OF THE FDOT STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION. THE PLAN SHALL INCLUDE, BUT NOT BE LIMITED TO, MEASURES TO CONTROL TURBIDITY, CONTAINMENT AND DISPOSAL OF CONSTRUCTION DEBRIS, AND A SPILL CONTROL REPORTING PLAN.

3. EROSION CONTROL FACILITIES, SUCH AS HAY BALES, SILT SCREENS, FLOATING TURBIDITY BARRIERS, OR OTHER APPROVED METHODS AS REQUIRED, SHALL BE INSTALLED EARLY DURING THE CONSTRUCTION PERIOD SO AS TO PREVENT THE TRANSPORT OF SEDIMENT INTO THE INTRACOASTAL WATERWAY.



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Registry No. 33574

JEFFREY R. BERGMANN
P.E., LIC. NO. 50159

DESIGNED BY	JRB
DRAWN BY	DAB
CHECK BY	AS
DATE	07/14/23

REVISION	DATE	DESCRIPTION
	7/14/2023	100% CD SET

THE CITY OF DELRAY BEACH
HISTORIC MARINE WAY SEAWALL, ROADWAY, AND DRAINAGE IMPROVEMENT

GENERAL NOTES

PROJECT NO. 17-047
SHEET NO. S0.02
FILE ID. 17-047

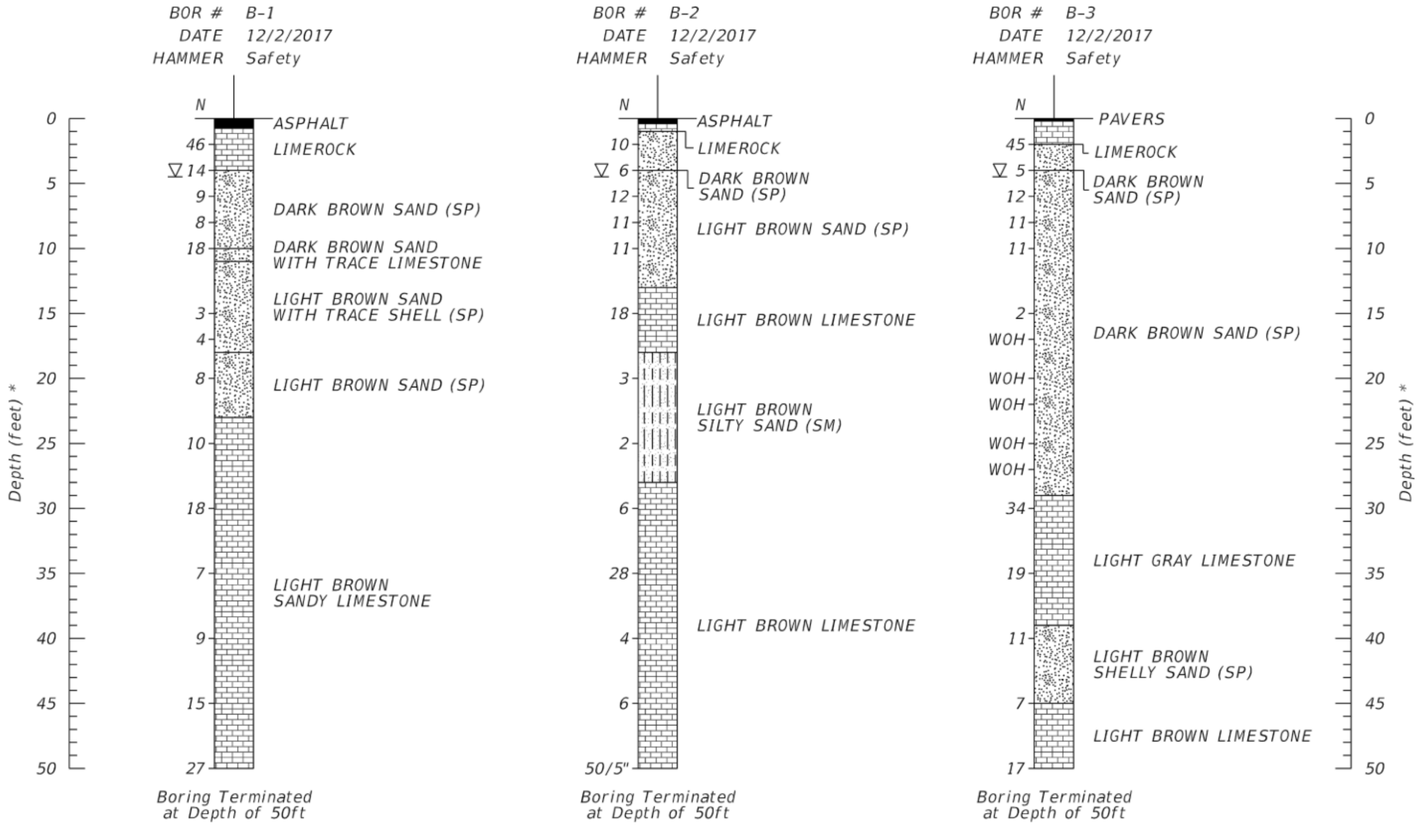
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BORING LOCATION PLAN

- Approximate Location of SPT Boring
- Approximate Location of Pavement Core Test



811 Know what's below. Call before you dig.

SOIL BORING FOR REFERENCE ONLY

LEGEND

- Asphalt/Pavers
- Limestone
- Sand
- Silty Sand

NOTES

- ∇ ENCOUNTERED GROUNDWATER TABLE
- N NUMBERS TO THE LEFT OF BORINGS INDICATE SPT VALUE FOR 12" PENETRATION AND THEY WERE OBTAINED USING AN SAFETY HAMMER. (UNLESS OTHERWISE NOTED.)
- * DENOTES DEPTH IN FEET FROM EXISTING GROUND SURFACE

DRAWN BY:	APPROVED BY:	ENGINEER OF RECORD:		SCALE:	PROJECT NUMBER:	GEOTECHNICAL ENGINEERING SERVICES	Sheet:
JO	RK	Raj Krishnasamy, P.E. Florida License No.: 53567	Raj Krishnasamy, P.E. P.E. License Number 53567 Tierra South Florida, Inc. 2765 Vista Parkway, S-10 West Palm Beach, Fl 33411 Certificade of Authorization 28073	NTS	7111-17-427	Marine Way Delray Beach, Florida	1
CHECKED BY: FT	DATE: 12/13/2017						

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THE CITY OF DELRAY BEACH
HISTORIC MARINE WAY SEAWALL, ROADWAY, AND DRAINAGE IMPROVEMENT
SOIL LOG DATA

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SHEET NO. S0.03
FILE ID. 17-047

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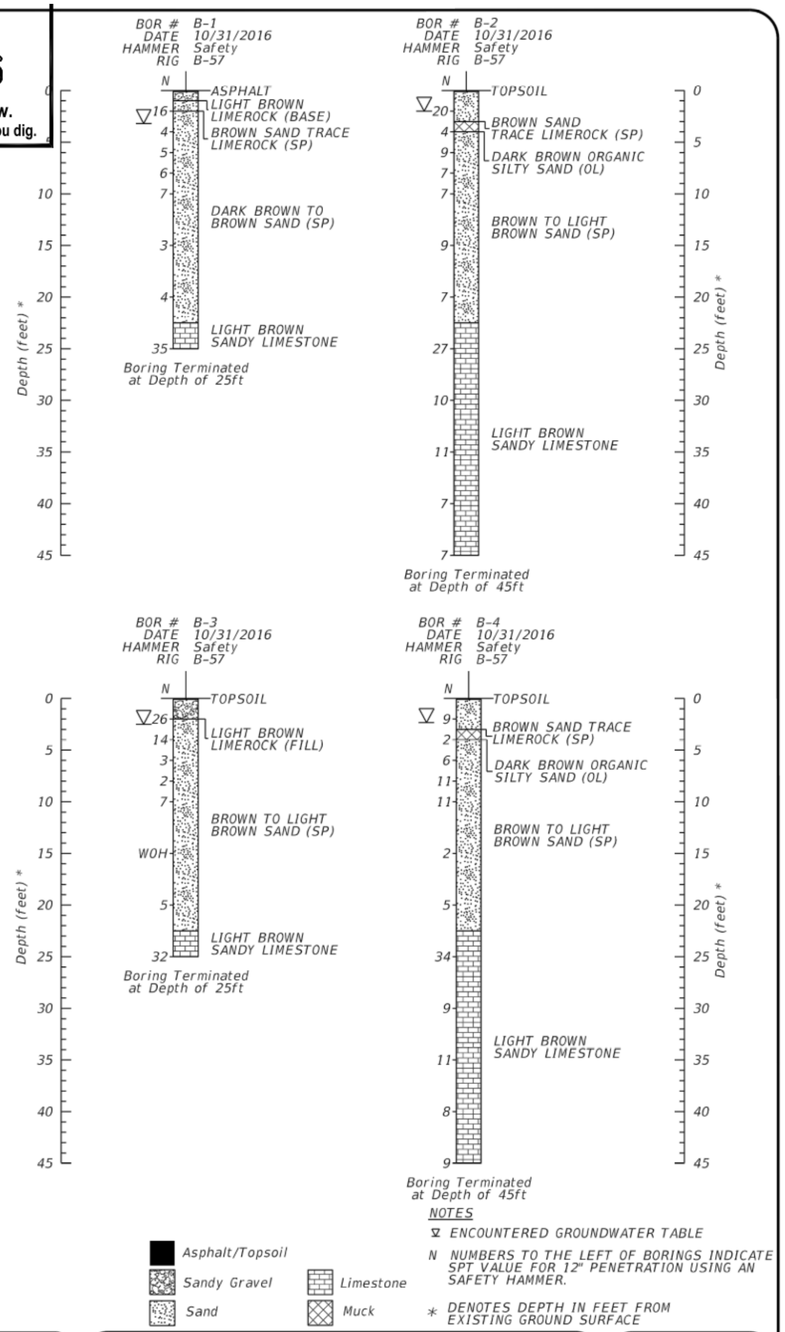
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BORING LOCATION PLAN
Approximate Location of SPT Boring

SOIL BORING FOR
REFERENCE ONLY

Know what's **below.** **Call** before you dig. 811



NOTES

⧖ ENCOUNTERED GROUNDWATER TABLE

N NUMBERS TO THE LEFT OF BORINGS INDICATE SPT VALUE FOR 12" PENETRATION USING AN SAFETY HAMMER.

* DENOTES DEPTH IN FEET FROM EXISTING GROUND SURFACE

Asphalt/Topsoil
Sandy Gravel
Sand
Limestone
Muck

DRAWN BY: NG	APPROVED BY: RK	ENGINEER OF RECORD: RAJ KRISHNASAMY, P.E.	RAJ KRISHNASAMY, P.E. P.E. LICENSE NUMBER 53567 TIERRA SOUTH FLORIDA 2765 VISTA PARKWAY, S-10 WEST PALM BEACH, FL 33411 CERTIFICATE OF AUTHORIZATION 28073	SCALE: NTS	PROJECT NUMBER: 7111-16-354	GEOTECHNICAL ENGINEERING SERVICES **DELRAY BEACH MARINA** DELRAY BEACH, FLORIDA	Sheet: 1
CHECKED BY: KV	DATE: 11-02-2016	FLORIDA LICENSE NO.: 53567					

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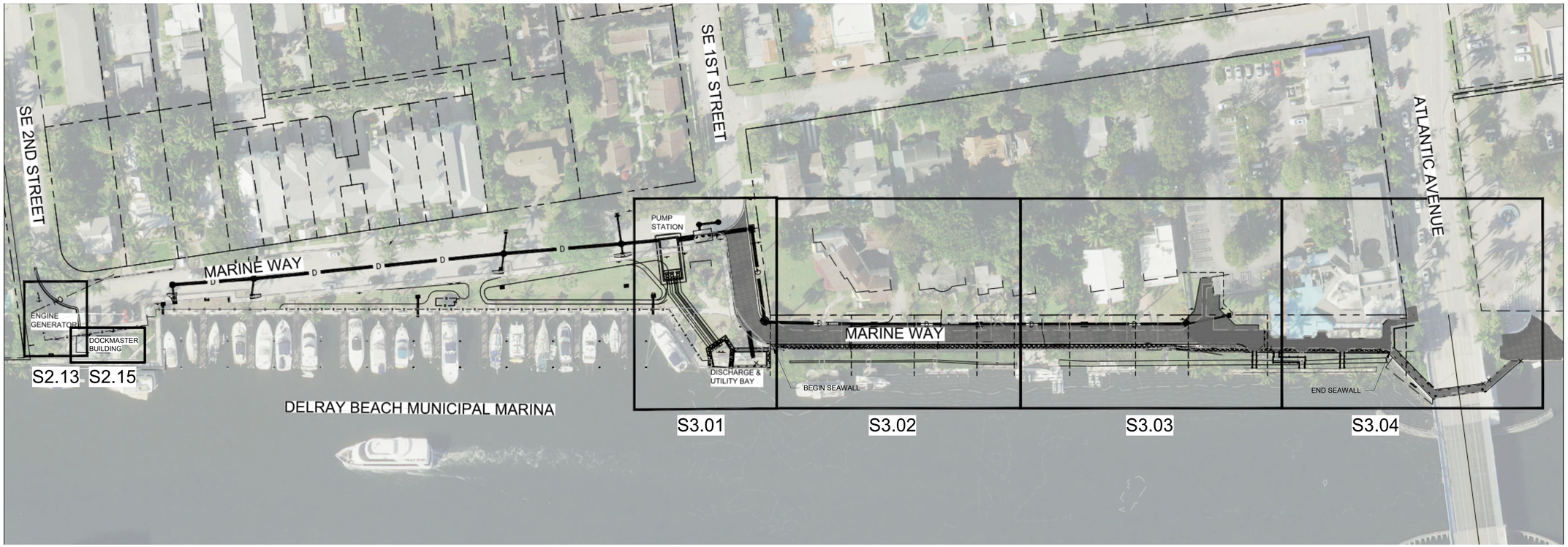
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THE CITY OF DELRAY BEACH
HISTORIC MARINE WAY SEAWALL, ROADWAY, AND DRAINAGE IMPROVEMENT
SOIL LOG DATA

PROJECT NO. 17-047
SHEET NO. S0.04
FILE ID. 17-047

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1 PROPOSED PLAN-OVERALL
NTS

NORTH

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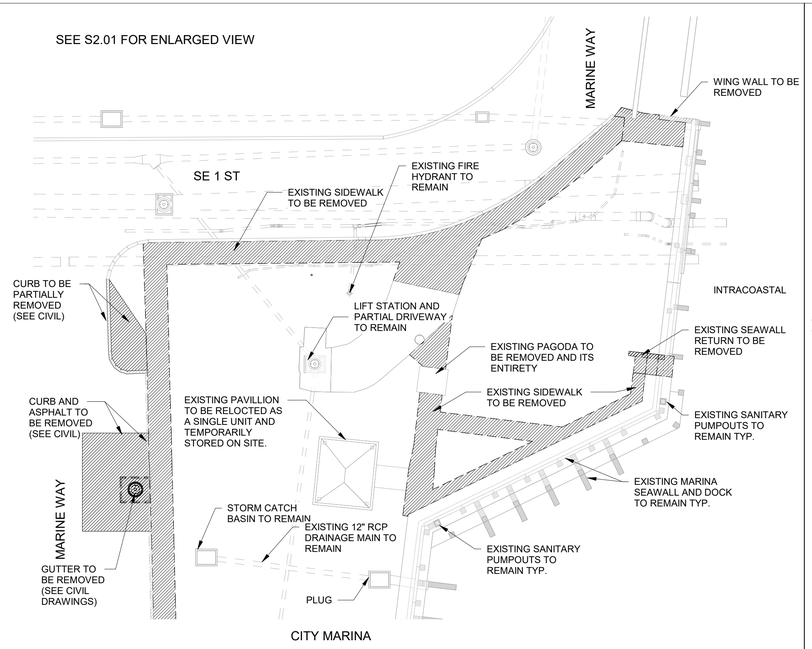
THE CITY OF DELRAY BEACH
HISTORIC MARINE WAY SEAWALL, ROADWAY, AND DRAINAGE IMPROVEMENT

OVERALL PLAN

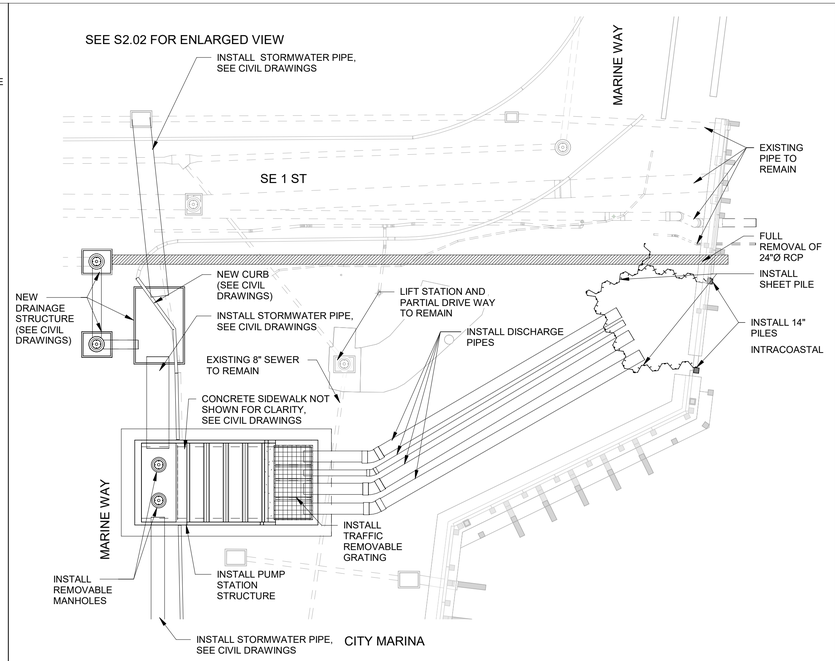
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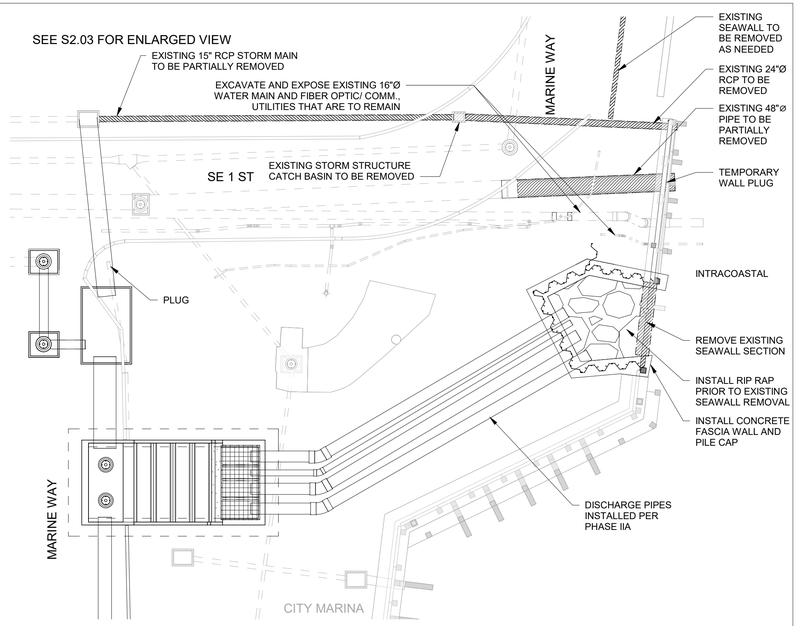
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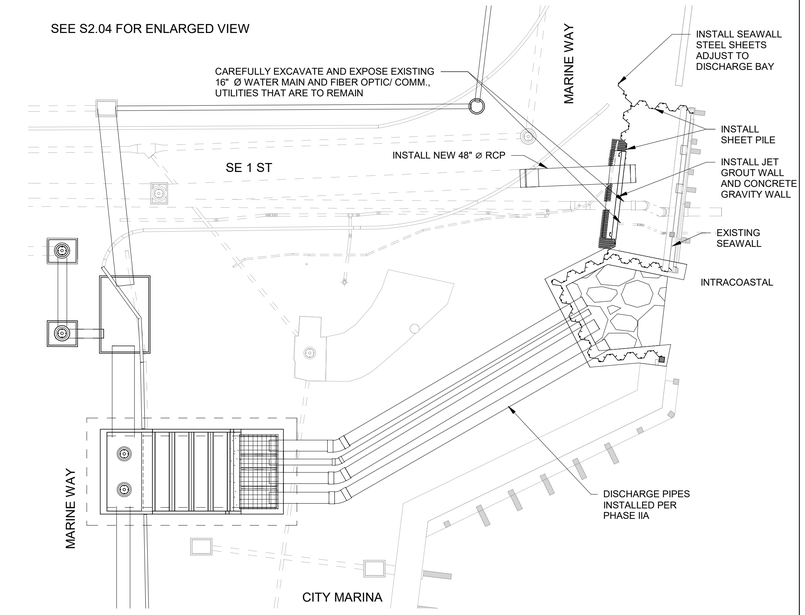
1 PUMP STATION AREA PHASE I
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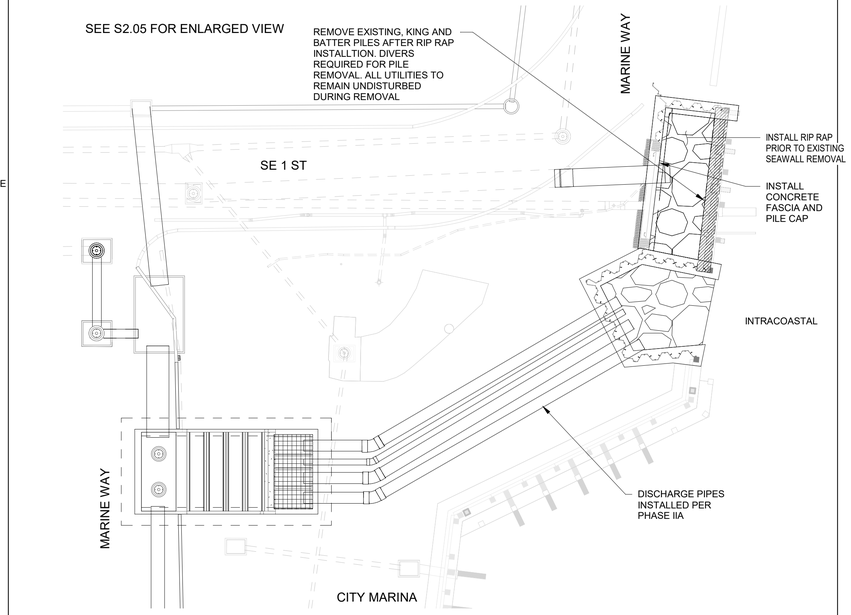
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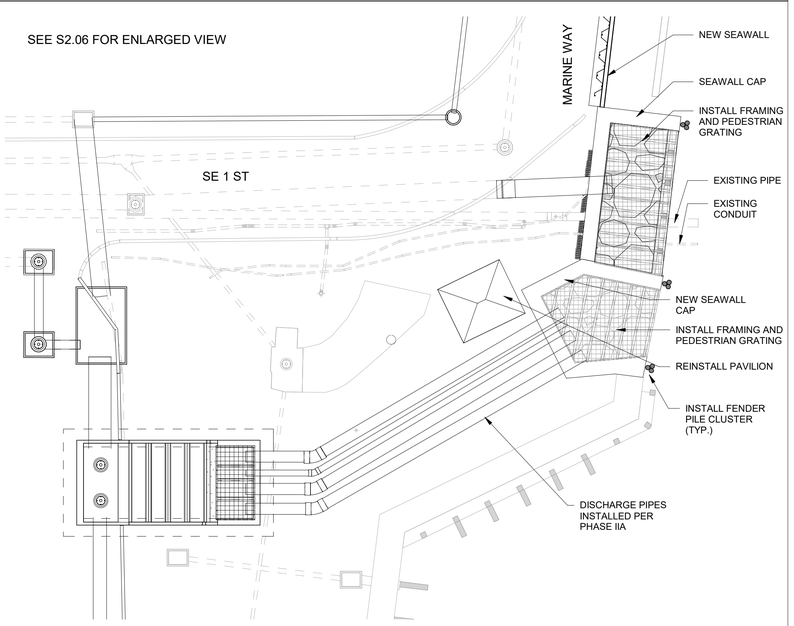
3 PUMP STATION AREA PHASE IIB
NTS



4 PUMP STATION AREA PHASE IIIA
NTS



5 PUMP STATION AREA PHASE IIIB
NTS



6 PUMP STATION AREA PHASE IV
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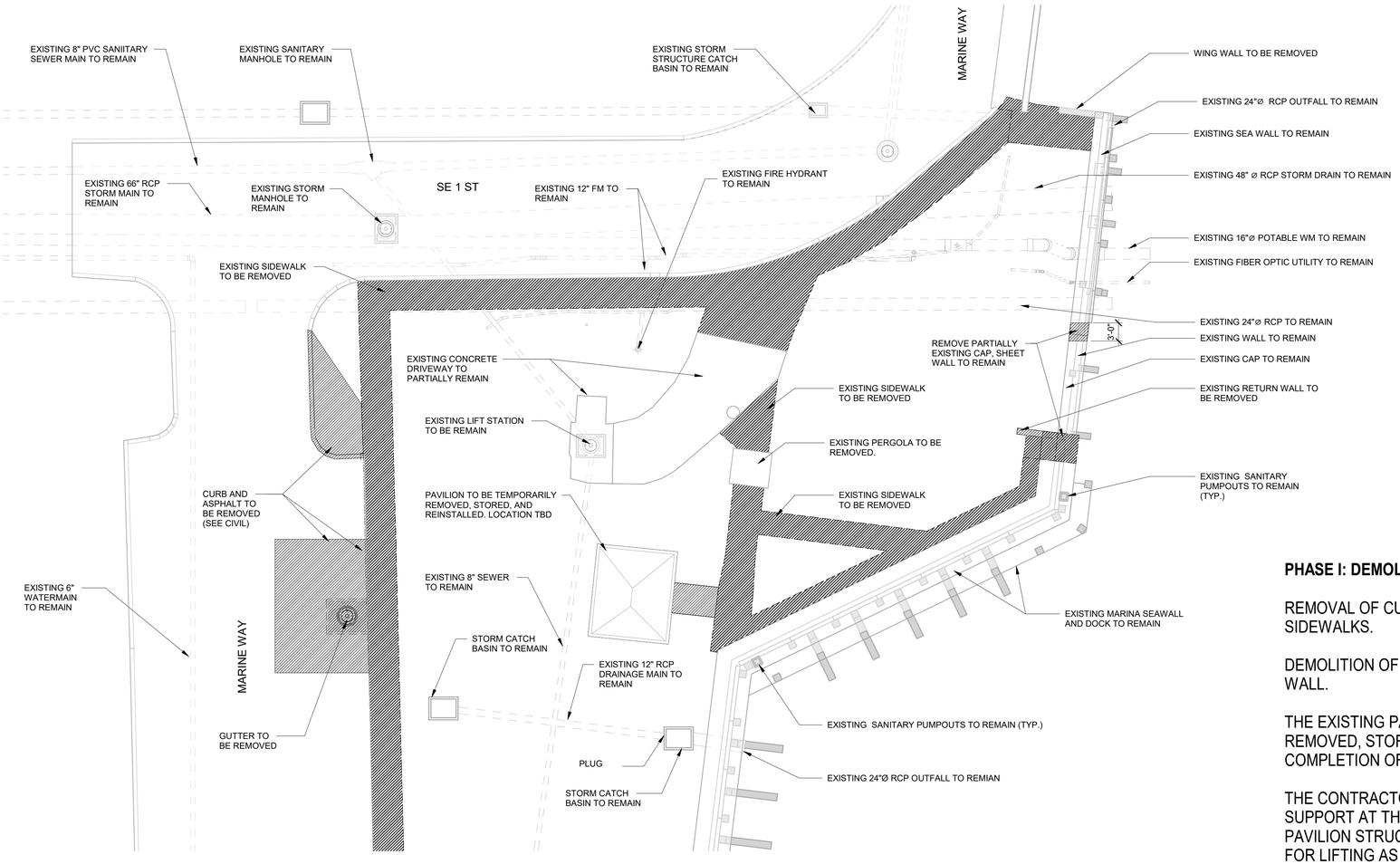
JEFFREY R. BERGMANN
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CHECK BY	AS
DATE	07/14/23

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THE CITY OF DELRAY BEACH
HISTORIC MARINE WAY SEAWALL, ROADWAY, AND DRAINAGE IMPROVEMENT
PHASING PLANS OVERVIEW

PROJECT NO. 17-047
SHEET NO. S2.00
FILE ID. 17-047



1 EXISTING ENLARGED PHASE I
3/32" = 1'-0"

PHASE I: DEMOLITION OF EXISTING ABOVE GROUND FEATURES

REMOVAL OF CURB, GUTTER, PAVEMENT, THE PERGOLA, AND SIDEWALKS.

DEMOLITION OF THE EXISTING SEAWALL RETURN WALL.

THE EXISTING PAVILION SHALL BE CAREFULLY TEMPORARILY REMOVED, STORAGE AND REINSTALLATION FOLLOWING THE COMPLETION OF PHASE IV.

THE CONTRACTOR SHALL PROVIDE STRUCTURAL SUPPORT AT THE BASE OF THE PAVILION STRUCTURE, RIG THE PAVILION STRUCTURE FOR LIFTING AS A SINGLE UNIT AND TEMPORARILY STORING THE STRUCTURE, WITHIN THE PARK AREA TO THE SOUTH AS FAR AS POSSIBLE. CONTRACTOR TO SUBMIT RELOCATION/RIGGING PLAN FOR INFORMATIONAL PURPOSES ONLY

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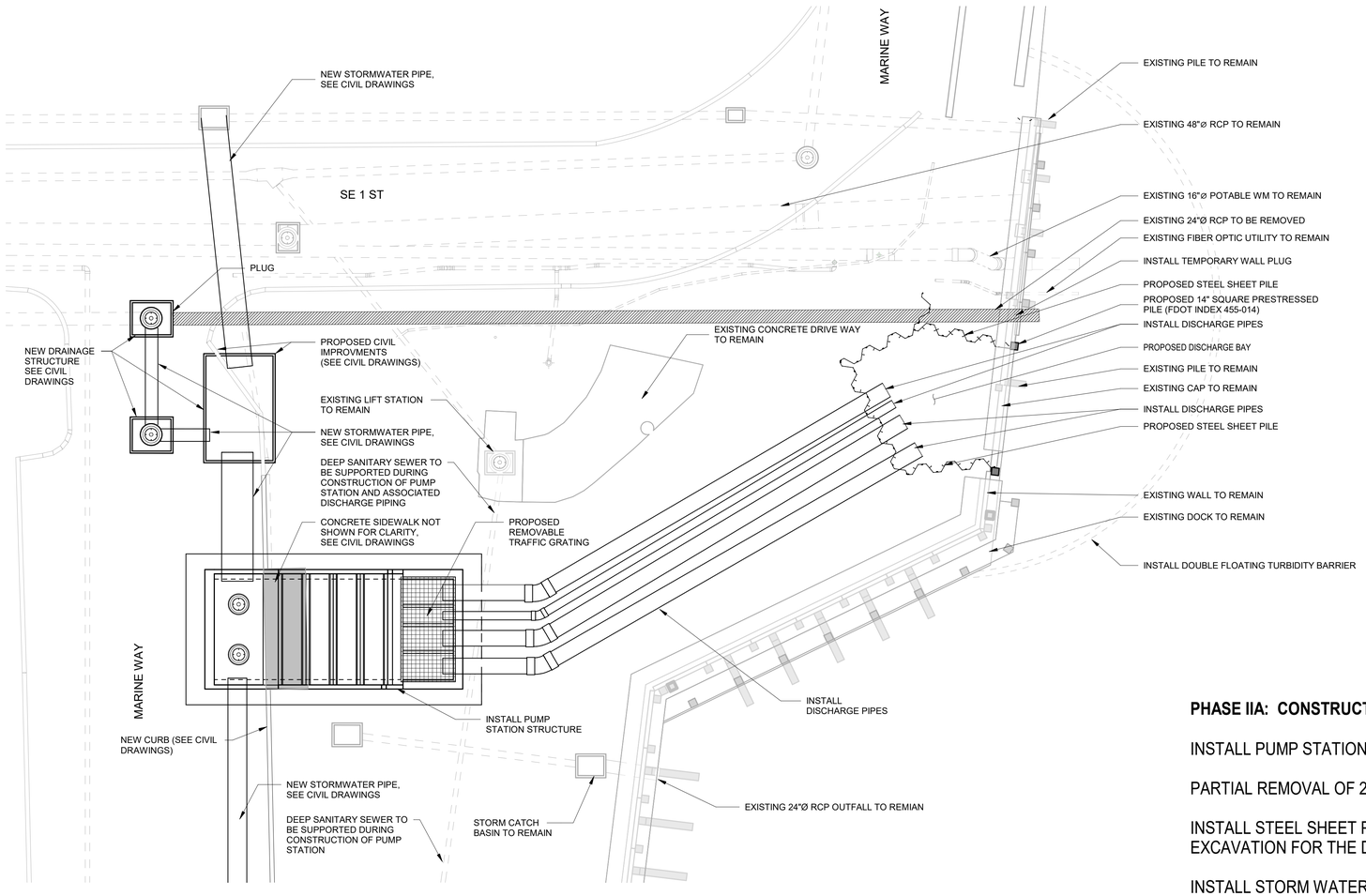
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THE CITY OF DELRAY BEACH
HISTORIC MARINE WAY SEAWALL, ROADWAY, AND DRAINAGE IMPROVEMENT

ENLARGED PHASE I PUMP STATION PLAN

PROJECT NO. 17-047
SHEET NO. S2.01
FILE ID. 17-047

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1 ENLARGED PHASE IIA
3/32" = 1'-0"

NORTH

PHASE IIA: CONSTRUCT PUMP STATION, GENERATOR AND DISCHARGE BAY

INSTALL PUMP STATION BAFFLE BOX STRUCTURE

PARTIAL REMOVAL OF 24" Ø RCP

INSTALL STEEL SHEET PILING,14" FDOT CONCRETE PILE (2) LOCATIONS, PARTIAL EXCAVATION FOR THE DISCHARGE BAY

INSTALL STORM WATER PIPES, INCLUDING THE PUMP DISCHARGE PIPES, PUMPS AND MECHANICAL SYSTEMS, ELECTRICAL SYSTEMS, PERMANENT OR TEMPORARY POWER, ENGINE GENERATOR

DEEP SANITARY SEWER TO BE SUPPORTED DURING CONSTRUCTION OF PUMP STATION.

INSTALL PUMP STATION BEAMS, CLOSURE POURS, AND GRATING

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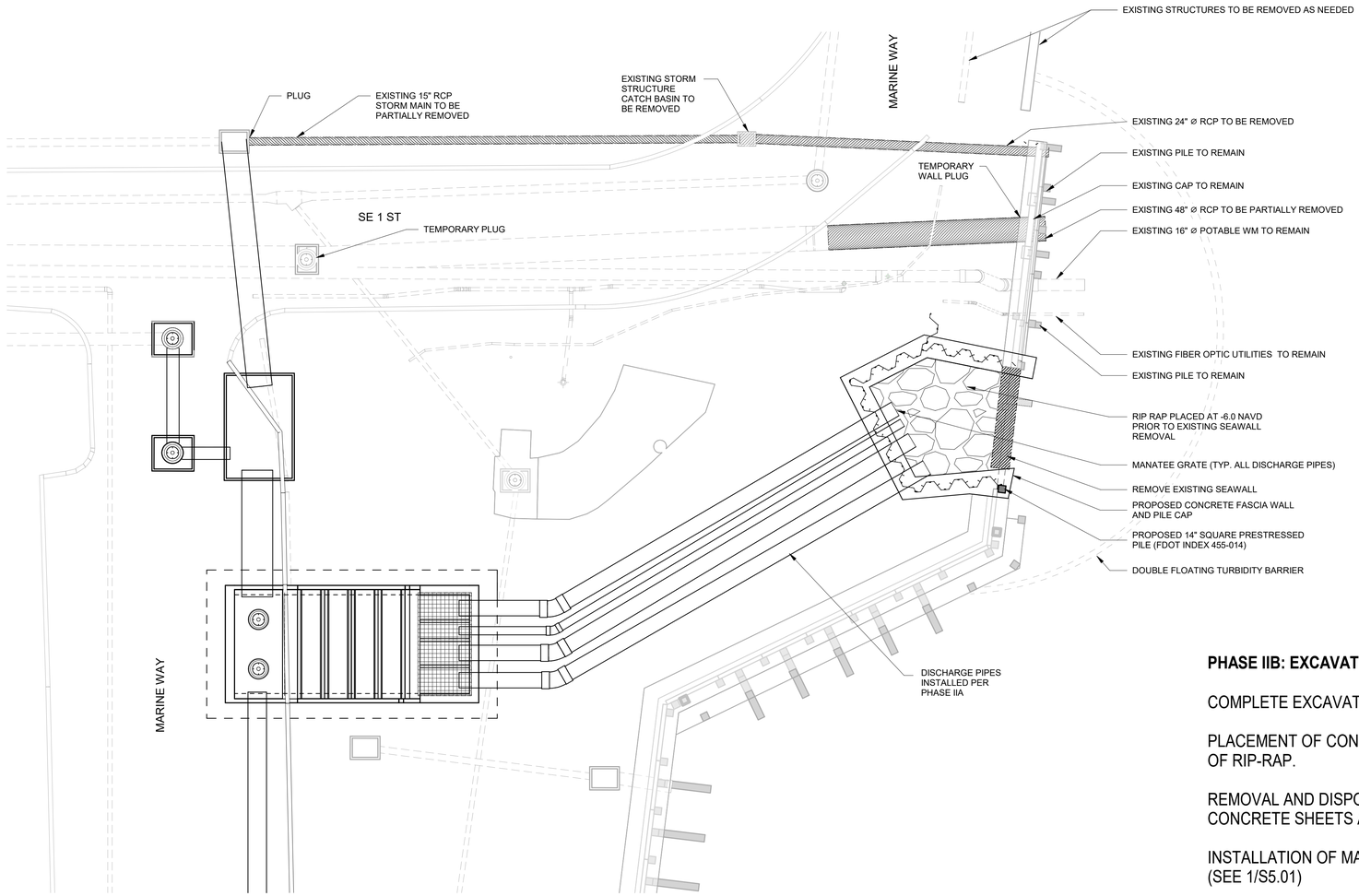
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THE CITY OF DELRAY BEACH
HISTORIC MARINE WAY SEAWALL, ROADWAY, AND DRAINAGE IMPROVEMENT

ENLARGED PHASE IIA PUMP STATION PLAN

PROJECT NO. 17-047
SHEET NO. S2.02
FILE ID. 17-047

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1 ENLARGED PHASE IIB
3/32" = 1'-0"

PHASE IIB: EXCAVATE DISCHARGE BAY AND REMOVE EXISTING SEAWALL

COMPLETE EXCAVATION OF THE DISCHARGE BAY TO ELEVATION -6.0 NAVD

PLACEMENT OF CONCRETE FASCIA WALL CONCRETE CAP, AND, PLACEMENT OF RIP-RAP.

REMOVAL AND DISPOSAL OF THE EXISTING SEAWALL CONCRETE CAP, CONCRETE SHEETS AND CONCRETE PILES.

INSTALLATION OF MANATEE GRATE ON DISCHARGE BAY PIPE OPENINGS (SEE 1/S5.01)

THE PUMP STATION SHALL BE UTILIZED FOR STORMWATER WATER PROTECTION

PERMANENT OR TEMPORARY PUMPS SHALL BE PROVIDED AND THE EXISTING OUTFALL PIPES (1) 24", AND (1) 48" SHALL BE PLUGGED AT THE EXISTING CATCH BASIN AND REMOVED AS DETAILED.LL

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DESIGNED BY	JRB
DRAWN BY	DAB
CHECK BY	AS
DATE	07/14/23

REVISION	DATE	DESCRIPTION
	7/14/2023	100% CD SET

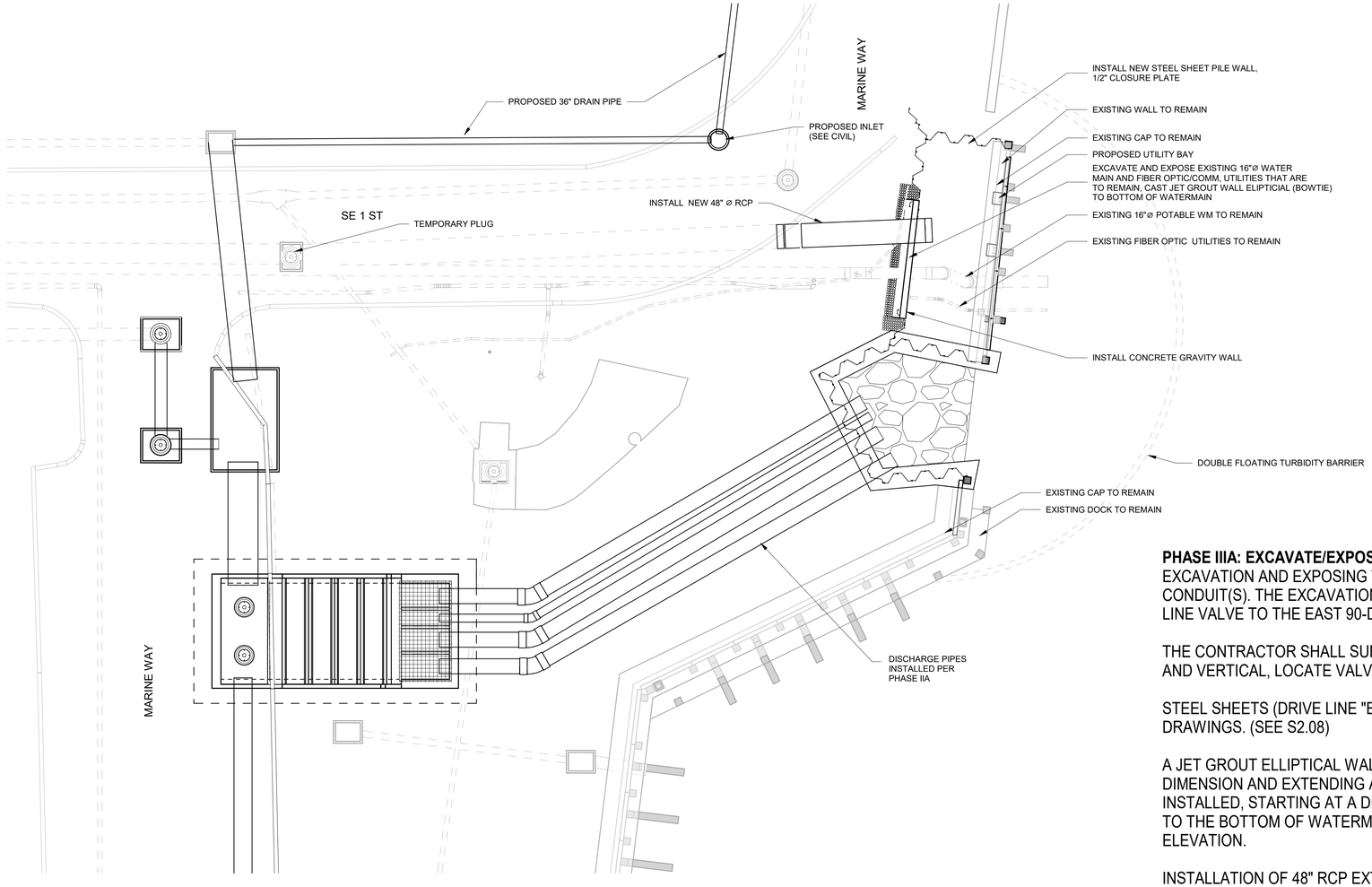
THE CITY OF DELRAY BEACH
HISTORIC MARINE WAY SEAWALL, ROADWAY, AND DRAINAGE IMPROVEMENT

ENLARGED PHASE IIB PUMP STATION PLAN

PROJECT NO. 17-047
SHEET NO. S2.03
FILE ID. 17-047

BIM 360://Marine Way/2898.01 Marine Way PH 2.rvt

3/8/2024 2:05:16 PM



1 ENLARGED PHASE IIIA
3/32" = 1'-0"

NORTH

PHASE IIIA: EXCAVATE/EXPOSE WATERMAIN AND FIBER OPTIC UTILITY
EXCAVATION AND EXPOSING THE EXISTING 16" Ø WATERMAIN AND FIBER OPTIC CONDUIT(S). THE EXCAVATION SHALL EXTEND FROM 10-FOOT WEST OF THE IN-LINE VALVE TO THE EAST 90-DEGREE VERTICAL FITTING.

THE CONTRACTOR SHALL SURVEY THE PIPE AND CONDUITS BOTH HORIZONTAL AND VERTICAL, LOCATE VALVES, FITTINGS, AND OTHER APPURTENANCES.

STEEL SHEETS (DRIVE LINE "E") SHALL BE INSTALLED AS INDICATED ON THE DRAWINGS. (SEE S2.08)

A JET GROUT ELLIPTICAL WALL APPROXIMATELY 4'-0" WIDE IN THE EAST WEST DIMENSION AND EXTENDING AS INDICATED ON THE DRAWINGS SHALL BE INSTALLED, STARTING AT A DEPTH OF (-) 32.0 NAVD
TO THE BOTTOM OF WATERMAIN PIPE AND FIBER OPTIC CONDUIT ELEVATION.

INSTALLATION OF 48" RCP EXTENSION

FORM AND POUR, A REINFORCED CONCRETE GRAVITY WALL ABOVE THE JET GROUT WALL, AS INDICATED ON THE DRAWINGS.

INSTALLATION OF MANATEE GRATE ON UTILITY BAY PIPE OPENINGS
(SEE 1/S5.01)

100% SUBMITTAL

CITY of DELRAY BEACH
PUBLIC WORKS DEPARTMENT
434 SOUTH SWINTON AVENUE, DELRAY BEACH, FLORIDA 33444
Phone: (561) 243-7322 FAX: (561) 243-7314 www.mydelraybeach.com

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2035 Vista Parkway
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Fax No. 561.687.1110
Registry No. 33574

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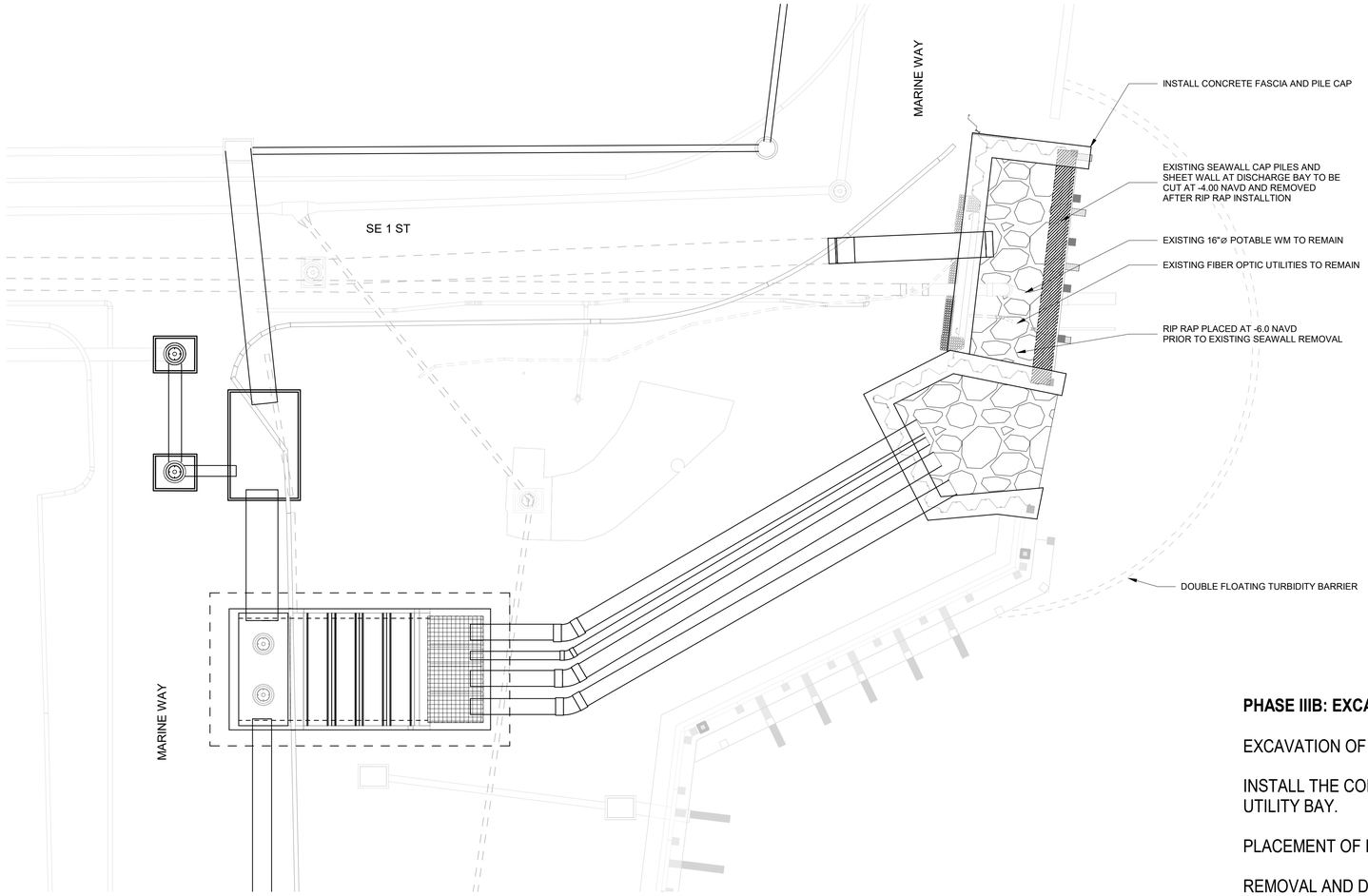
THE CITY OF DELRAY BEACH
HISTORIC MARINE WAY SEAWALL, ROADWAY, AND DRAINAGE IMPROVEMENT

ENLARGED PHASE IIIA PUMP STATION PLAN

PROJECT NO. 17-047
SHEET NO. S2.04
FILE ID. 17-047

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3/8/2024 2:05:17 PM



1 ENLARGED PHASE IIIB
3/32" = 1'-0"

NORTH

PHASE IIIB: EXCAVATE UTILITY BAY AND REMOVE EXISTING SEAWALL

EXCAVATION OF THE UTILITY BAY TO ELEVATION -4.00 NAVD

INSTALL THE CONCRETE FASCIA WALL AND CONCRETE PILE CAP WITHIN THE UTILITY BAY.

PLACEMENT OF RIPRAP

REMOVAL AND DISPOSAL OF THE EXISTING SEAWALL CONCRETE CAP, CONCRETE SHEET PILES AND CONCRETE PILES.
THE CONCRETE SHEET PILES AND PILES SHALL BE SAWCUT UNDERWATER AT ELEVATION -4.00 NAVD AND THE REMAINING CONCRETE SHEET PILES AND PILES BELOW -4.00 NAVD ABANDONED IN PLACE.

EXTREME CARE SHALL BE TAKEN WHILE WORKING IN THE VICINITY OF THE WATERMAIN AND FIBER OPTIC UTILITIES.

100% SUBMITTAL

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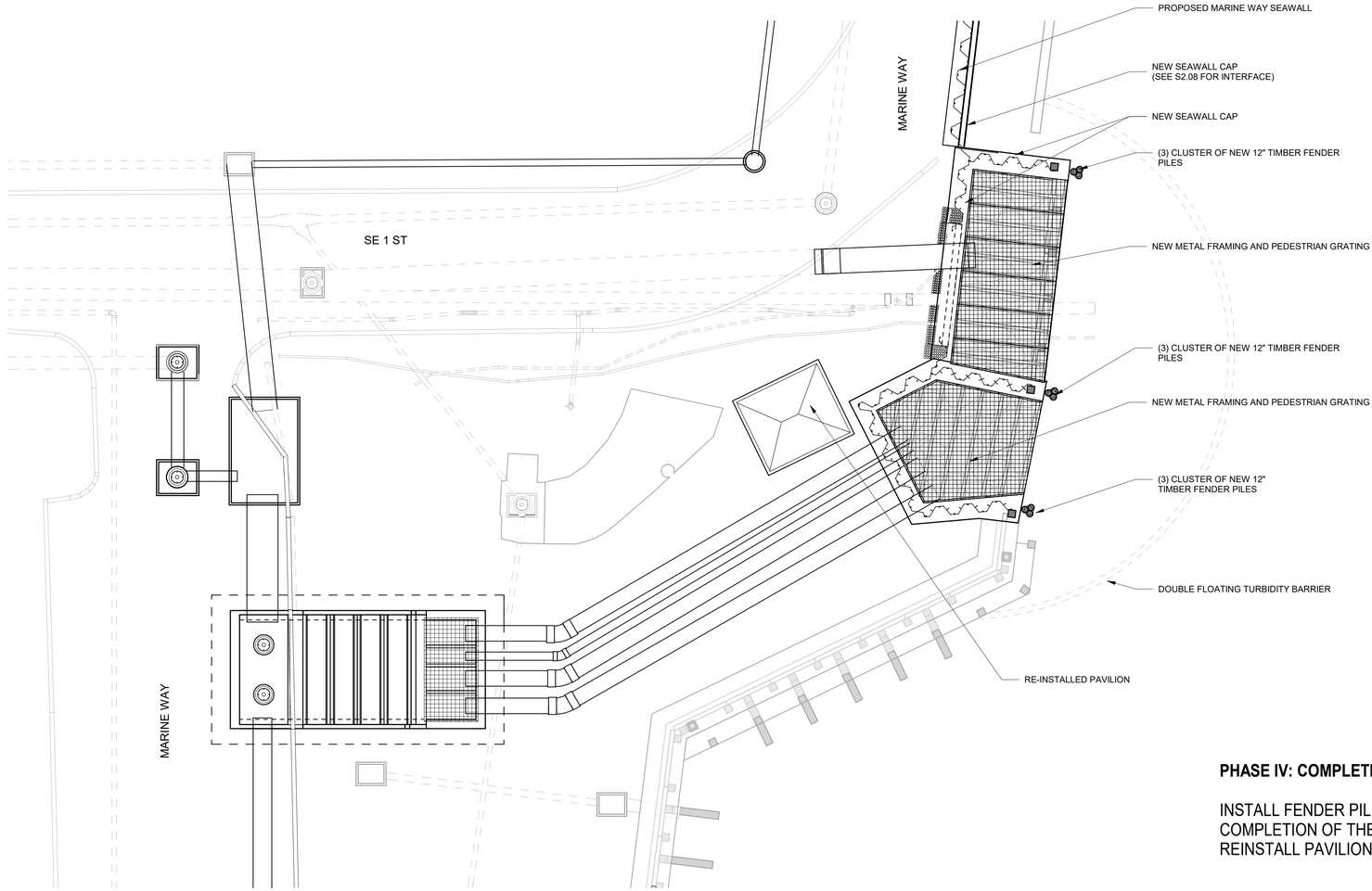
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THE CITY OF DELRAY BEACH
HISTORIC MARINE WAY SEAWALL, ROADWAY, AND DRAINAGE IMPROVEMENT

ENLARGED PHASE IIIB PUMP STATION PLAN

PROJECT NO. 17-047
SHEET NO. S2.05
FILE ID. 17-047

3/8/2024 2:05:18 PM



1 ENLARGED PHASE IV
3/32" = 1'-0"

NORTH

PHASE IV: COMPLETE ABOVE GRADE IMPROVEMENTS

INSTALL FENDER PILE CLUSTERS
COMPLETION OF THE CONCRETE CAP, FRAMING MEMBERS AND GRATING.
REINSTALL PAVILION

100% SUBMITTAL

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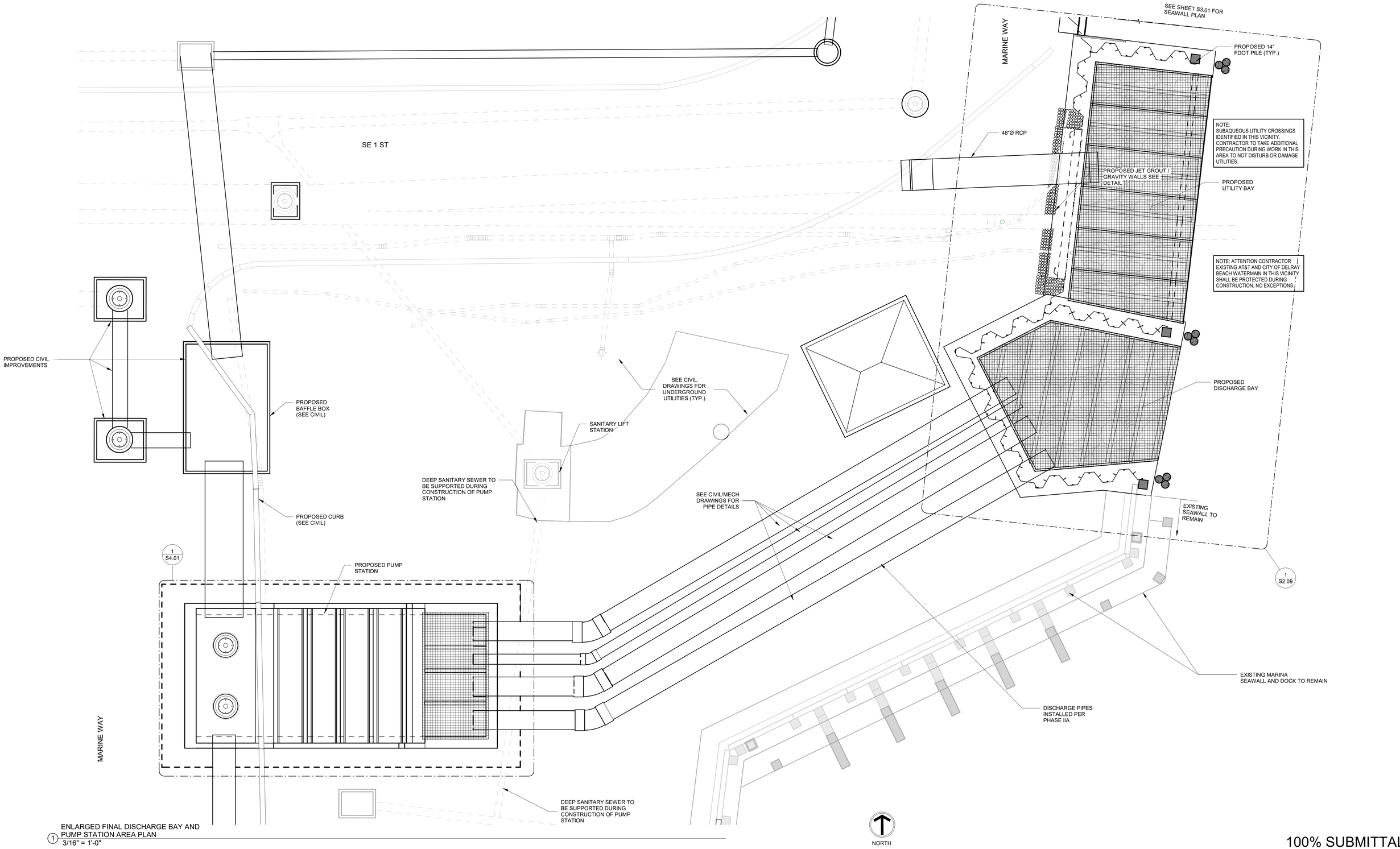
THE CITY OF DELRAY BEACH
HISTORIC MARINE WAY SEAWALL, ROADWAY, AND DRAINAGE IMPROVEMENT

ENLARGED PHASE IV PUMP STATION PLAN

PROJECT NO. 17-047
SHEET NO. S2.06
FILE ID. 17-047

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3/8/2024 2:05:19 PM



1 ENLARGED FINAL DISCHARGE BAY AND PUMP STATION AREA PLAN
3/16" = 1'-0"

100% SUBMITTAL

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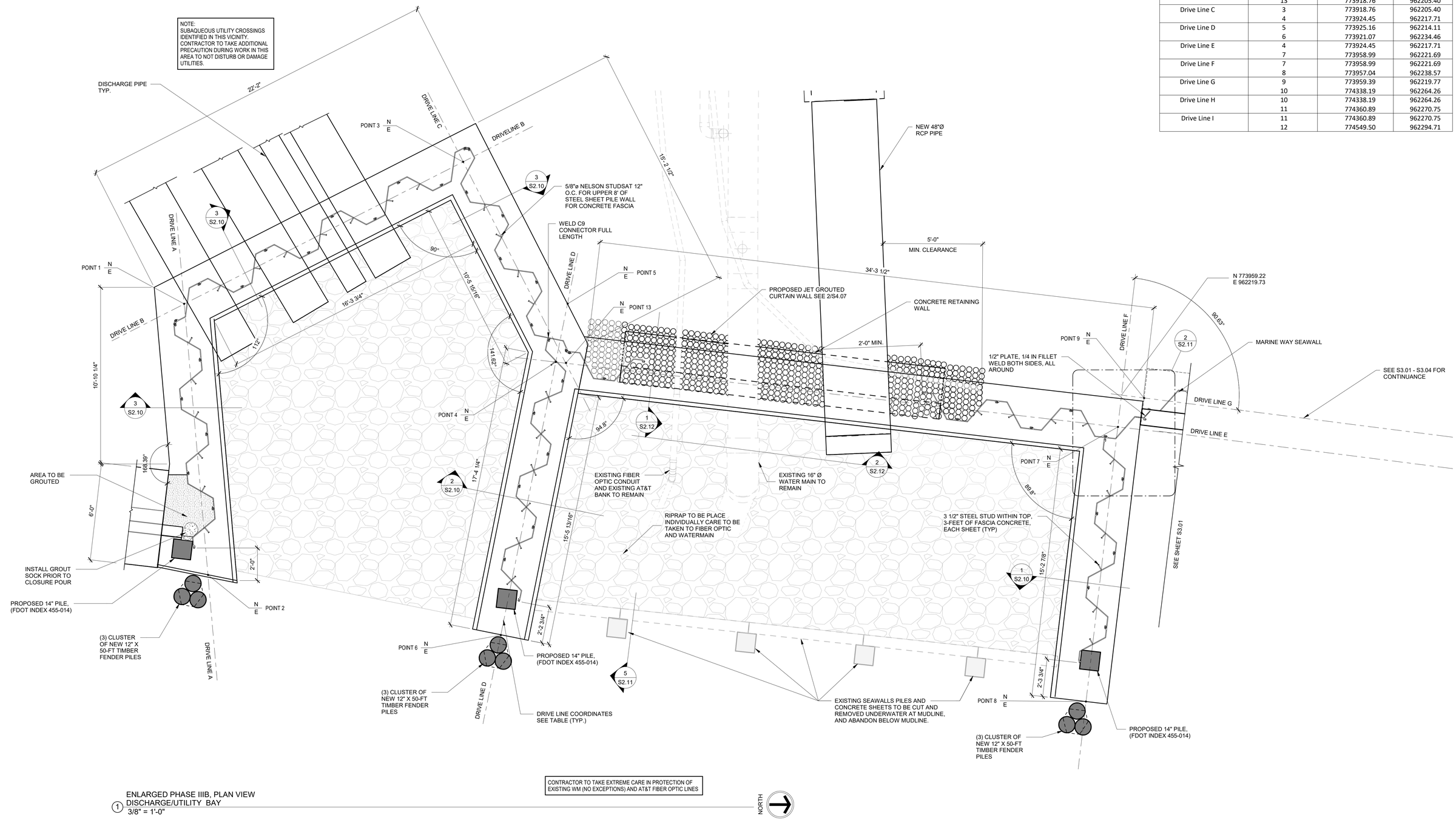
THE CITY OF DELRAY BEACH
HISTORIC MARINE WAY SEAWALL, ROADWAY, AND DRAINAGE IMPROVEMENT

DISCHARGE BAY AND PUMP STATION AREA PLAN VIEW @ -4.0 NAVD

PROJECT NO. 17-047
SHEET NO. S2.07
FILE ID. 17-047

3/8/2024 2:05:20 PM

Sheet Pile Drive Line	Point	Northing	Easting
Drive Line A	1	773901.61	962214.12
	2	773903.06	962230.82
Drive Line B	1	773901.61	962214.12
	13	773918.76	962205.40
Drive Line C	3	773918.76	962205.40
	4	773924.45	962217.71
Drive Line D	5	773925.16	962214.11
	6	773921.07	962234.46
Drive Line E	4	773924.45	962217.71
	7	773958.99	962221.69
Drive Line F	7	773958.99	962221.69
	8	773957.04	962238.57
Drive Line G	9	773959.39	962219.77
	10	774338.19	962264.26
Drive Line H	10	774338.19	962264.26
	11	774360.89	962270.75
Drive Line I	11	774360.89	962270.75
	12	774549.50	962294.71



1 ENLARGED PHASE IIIB, PLAN VIEW
DISCHARGE/UTILITY BAY
3/8" = 1'-0"

100% SUBMITTAL

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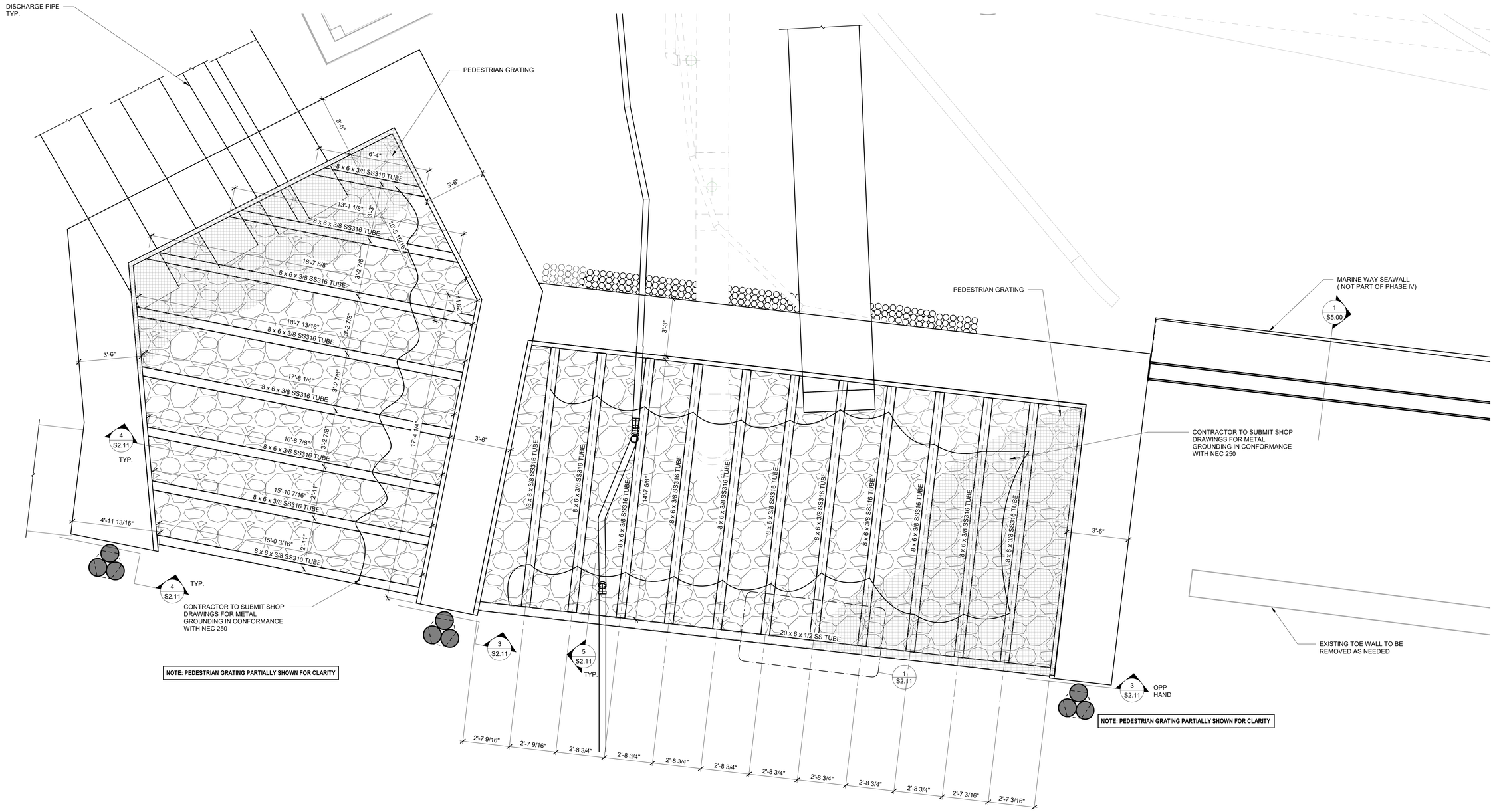
THE CITY OF DELRAY BEACH
HISTORIC MARINE WAY SEAWALL, ROADWAY, AND DRAINAGE IMPROVEMENT

PHASE IIIB DISCHARGE BAY/ UTILITY PLAN

PROJECT NO. 17-047
SHEET NO. S2.08
FILE ID. 17-047

3/8/2024 2:05:21 PM

NOTE:
SUBAQUEOUS UTILITY CROSSINGS IDENTIFIED IN THIS VICINITY. CONTRACTOR TO TAKE ADDITIONAL PRECAUTION DURING WORK IN THIS AREA TO NOT DISTURB OR DAMAGE UTILITIES.



1 ENLARGED PHASE IV, PLAN VIEW
DISCHARGE/ UTILITY BAY
3/8" = 1'-0"

NORTH

100% SUBMITTAL

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THE CITY OF DELRAY BEACH

HISTORIC MARINE WAY SEAWALL, ROADWAY, AND DRAINAGE IMPROVEMENT

PHASE IV DISCHARGE/ UTILITY BAY PLAN

PROJECT NO. 17-047

SHEET NO. S2.09

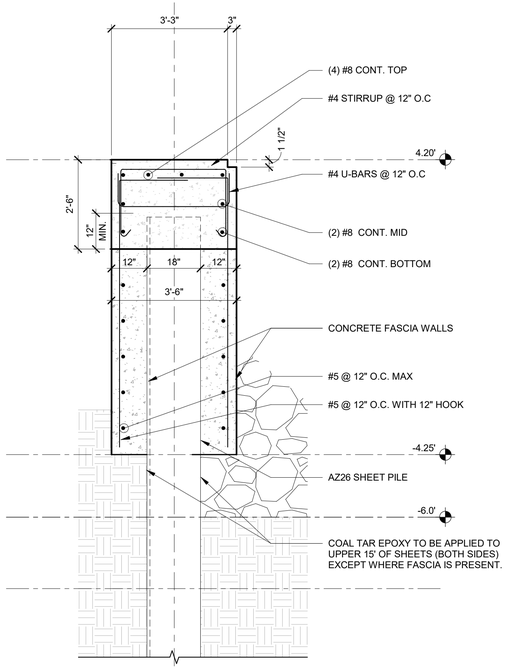
FILE ID. 17-047

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DRIVE LINE F

NOTE:
GRATING AND FRAMING AND HEADED STUDS NOT SHOWN FOR CLARITY.

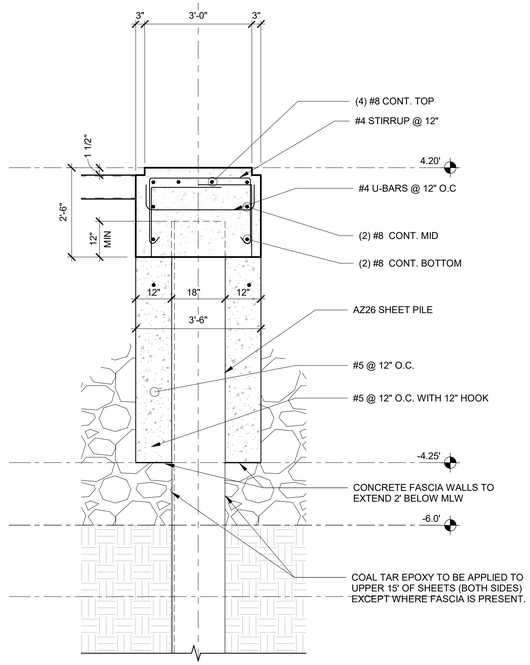


① SEAWALL SECTION
1/2" = 1'-0"

DRIVE LINE D

NOTE:
INSTALL CONCRETE FASCIA TO 2'-0" BELOW MEAN LOW WATER ELEVATION (MLW)

NOTE:
GRATING AND FRAMING AND HEADED STUDS NOT SHOWN FOR CLARITY.

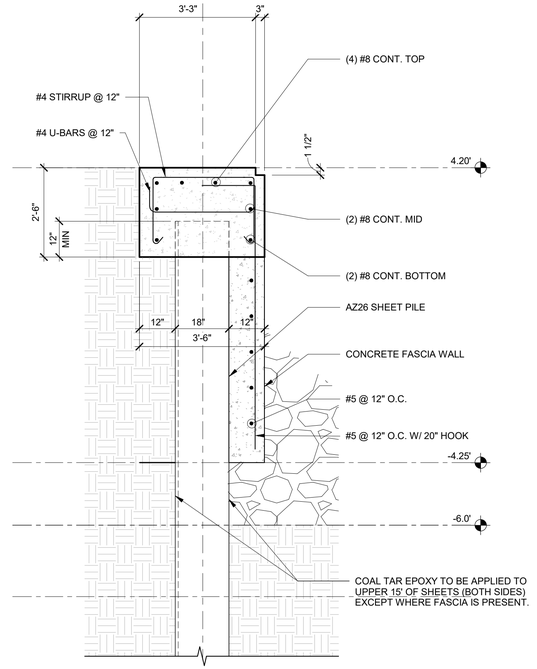


② SEAWALL SECTION
1/2" = 1'-0"

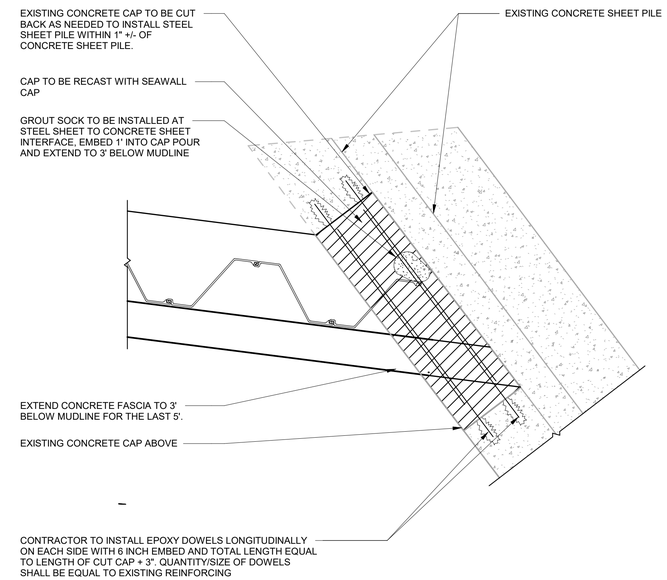
DRIVE LINE A, B, C

NOTE:
INSTALL CONCRETE FASCIA TO 2'-0" BELOW MEAN LOW WATER ELEVATION (MLW)

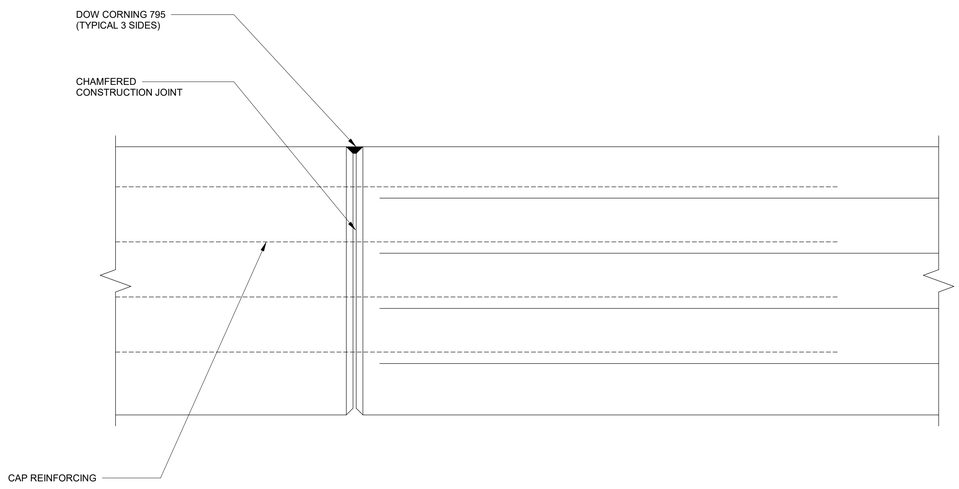
NOTE:
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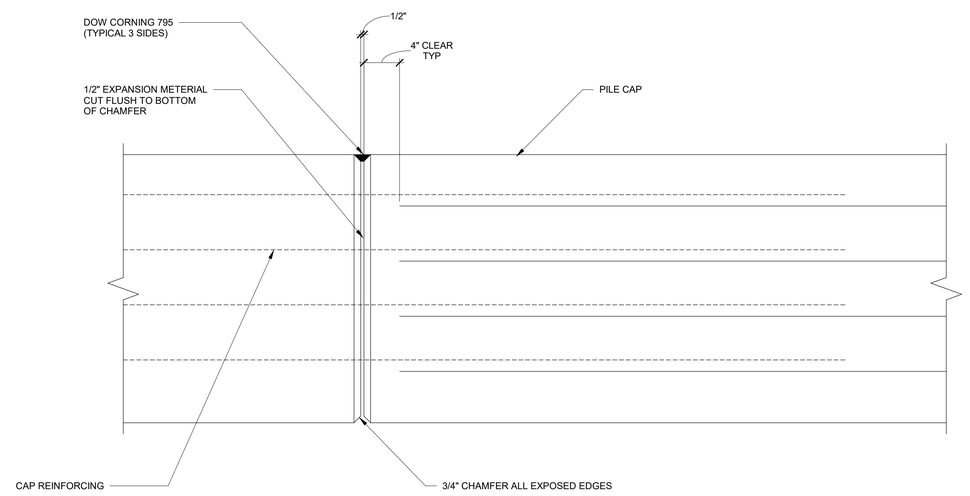
③ SECTION
1/2" = 1'-0"



⑤ ENLARGED PLAN
1/2" = 1'-0"



⑥ TYPICAL SEAWALL CAP CONSTRUCTION JOINT DETAIL
NTS



⑦ TYPICAL SEAWALL CAP EXPANSION JOINT DETAIL
NTS

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CITY of DELRAY BEACH
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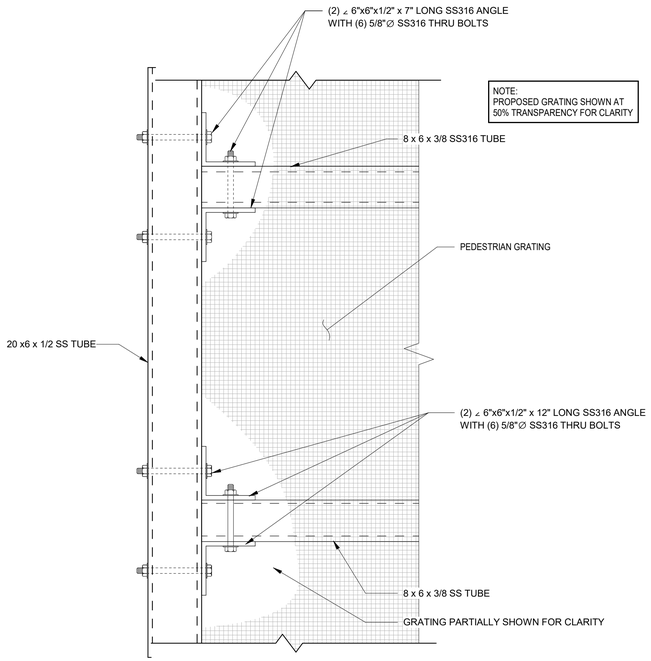
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THE CITY OF DELRAY BEACH
HISTORIC MARINE WAY SEAWALL, ROADWAY, AND DRAINAGE IMPROVEMENT

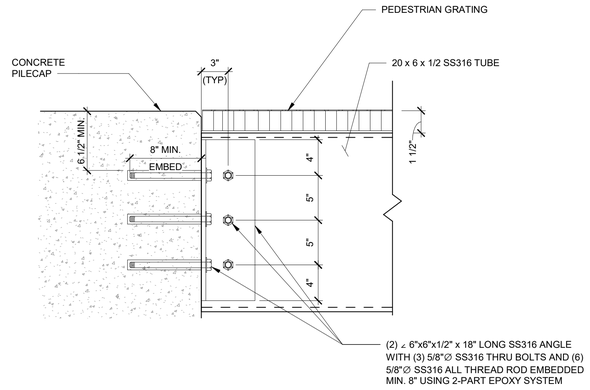
SEAWALL & DECKING DETAILS

PROJECT NO. 17-047
SHEET NO. S2.10
FILE ID. 17-047

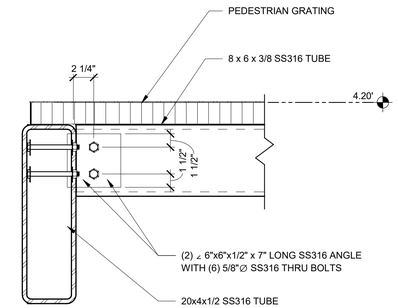
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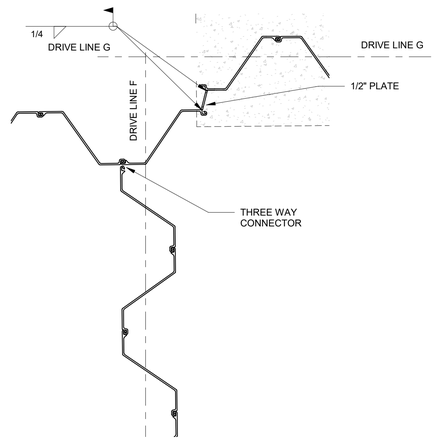
1 GRATING FRAMING DETAIL
1 1/2" = 1'-0"



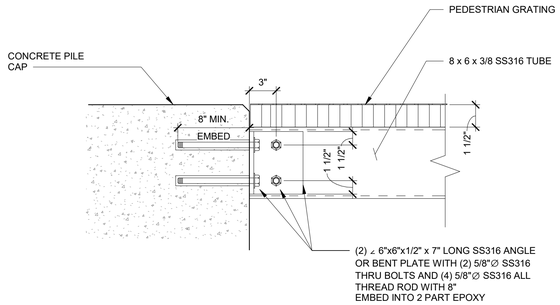
3 GRATING DETAIL
1 1/2" = 1'-0"



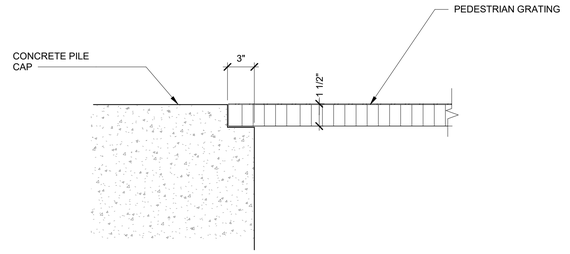
5 GRATING DETAIL
1 1/2" = 1'-0"



2 SHEET PILE CONNECTION DETAIL
NTS



4 STAINLESS STEEL GRATING DETAIL
1 1/2" = 1'-0"



6 GRATING SUPPORT DETAIL
1 1/2" = 1'-0"

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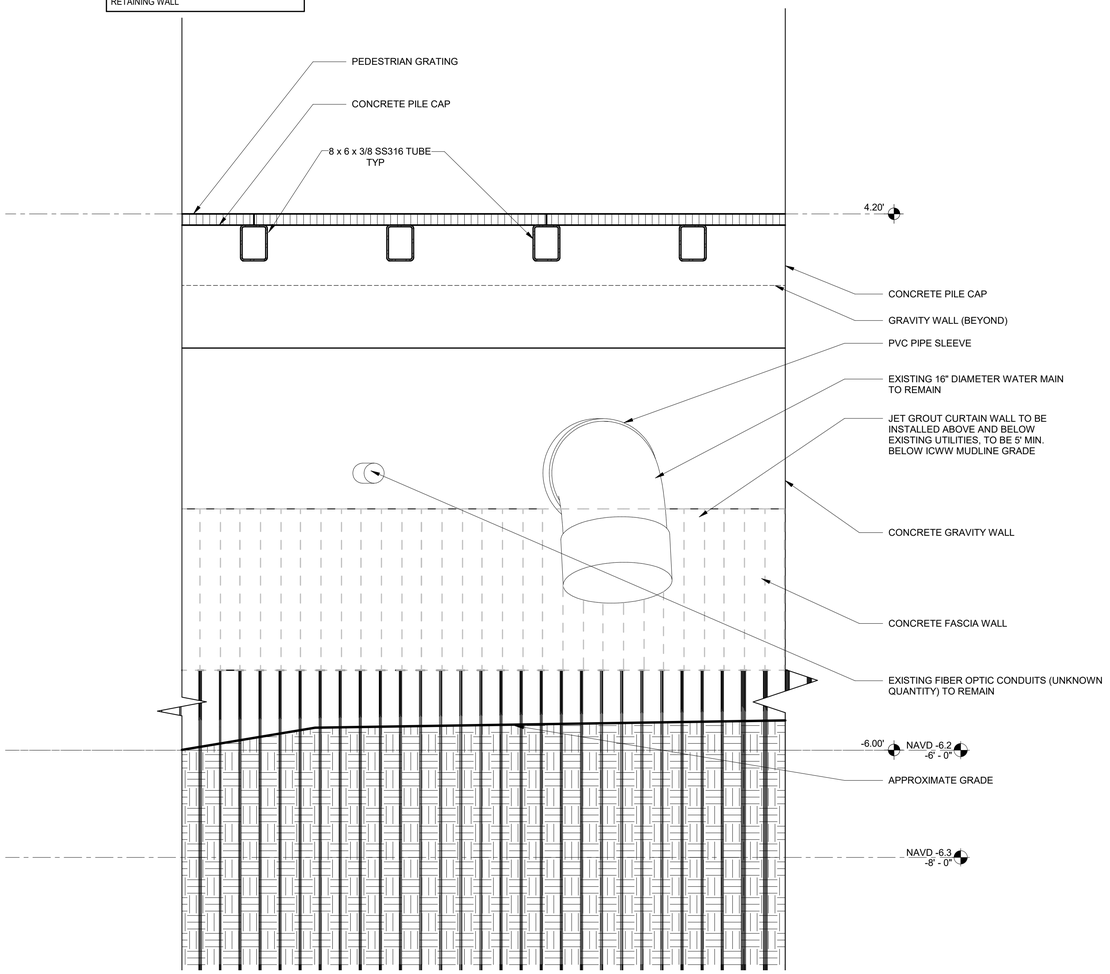
THE CITY OF DELRAY BEACH
HISTORIC MARINE WAY SEAWALL, ROADWAY, AND DRAINAGE IMPROVEMENT

FLOOR SLAB BEAM DETAILS, CLOSURE POUR

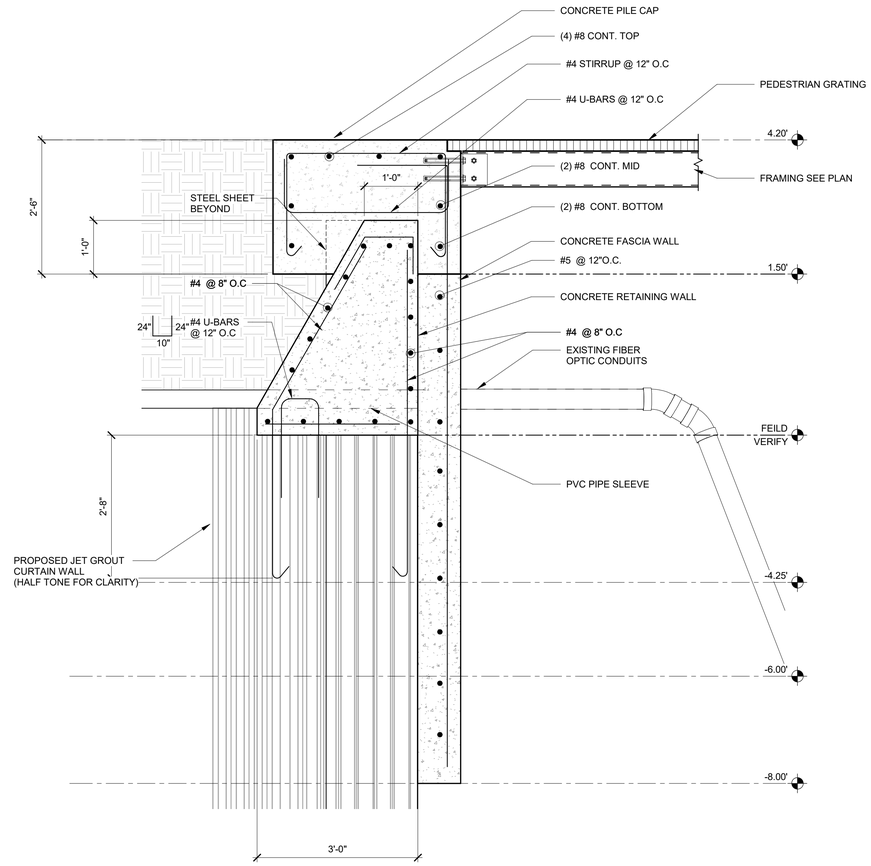
PROJECT NO. 17-047
SHEET NO. S2.11
FILE ID. 17-047

3/8/2024 2:05:23 PM

NOTE: CONTRACTOR TO BRACE EXITING UTILITES AS NEED UNTIL CONFINED BY JET GROUT WALL AND RETAINING WALL



2 UTILITY BAY ELEVATION
3/4" = 1'-0"



1 SEAWALL AND GRATING FRAMING
3/4" = 1'-0"

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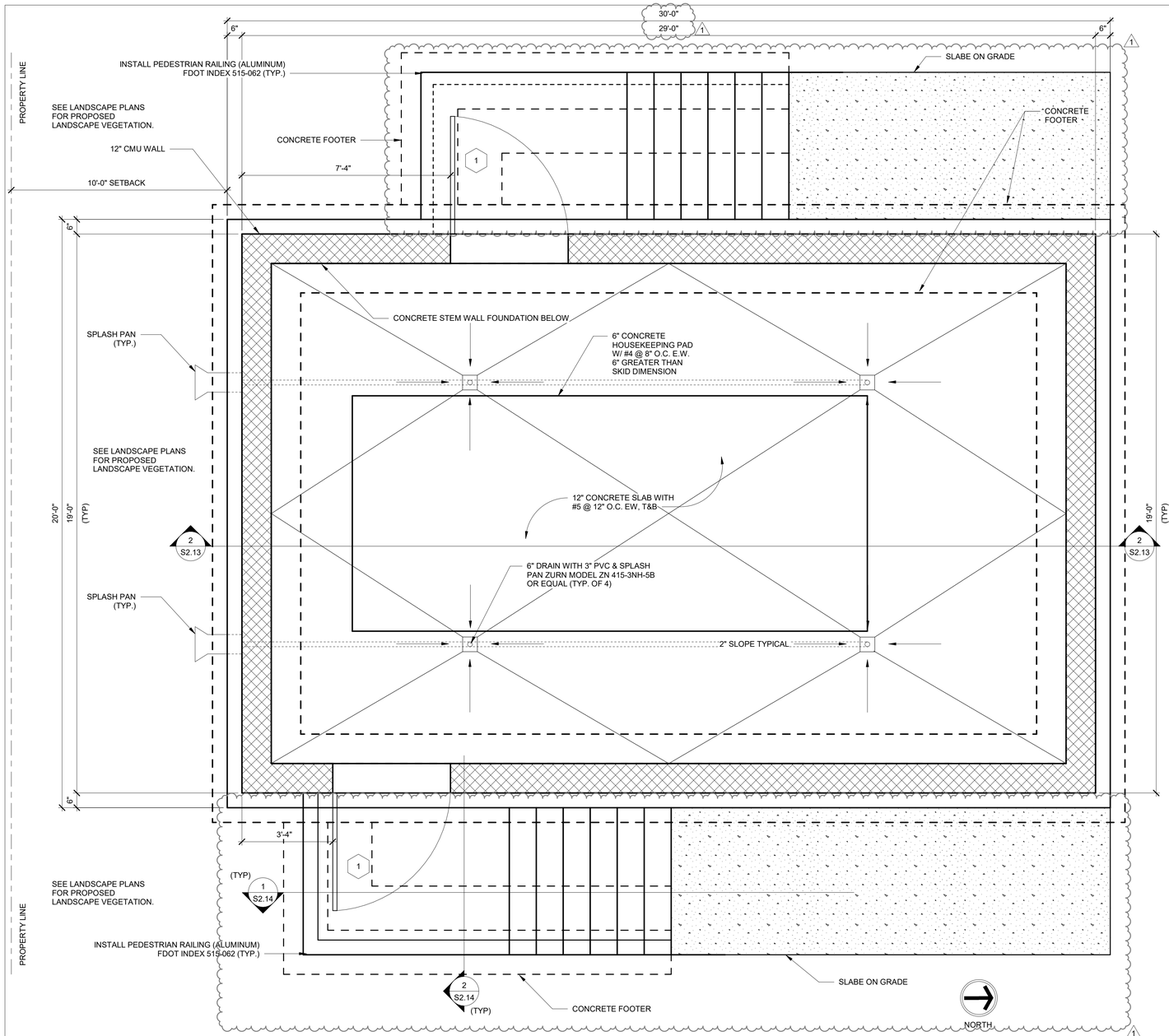
THE CITY OF DELRAY BEACH
HISTORIC MARINE WAY SEAWALL, ROADWAY, AND DRAINAGE IMPROVEMENT

UTILITY BAY DETAILS

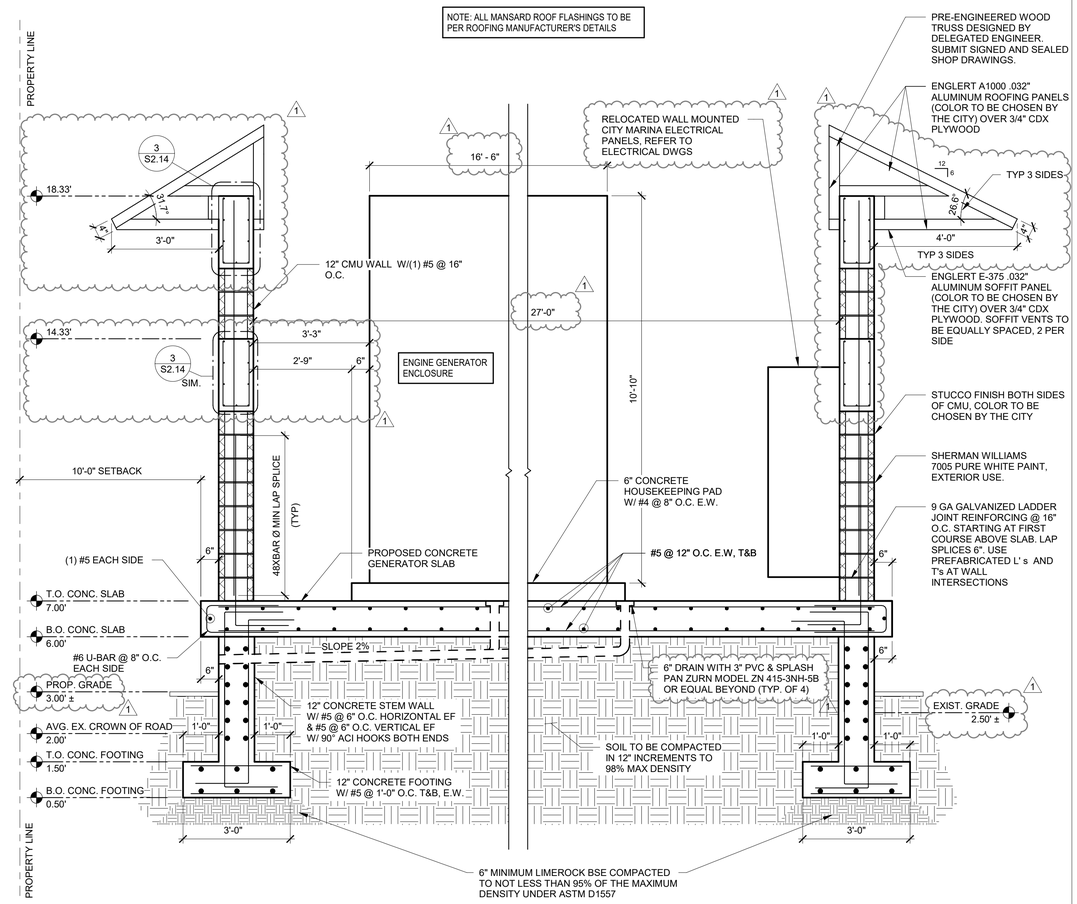
PROJECT NO. 17-047
SHEET NO. S2.12
FILE ID. 17-047

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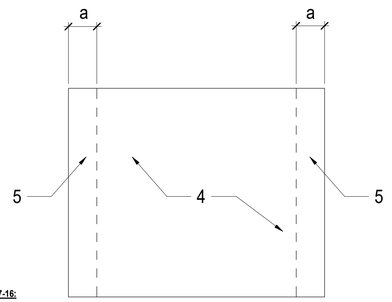
1 GENERATOR FOUNDATION PLAN
1/2" = 1'-0"



2 GENERATOR SECTION LOOKING WEST
NTS

WALL SERVICE WIND PRESSURE (PSF) COMPONENTS AND CLADING				
EFFECTIVE AREA (SQ FT)	ZONE 4		ZONE 5	
10	56.34	-59.88	56.34	-70.32
25	53.88	-57.42	53.88	-65.4
50	52.02	-55.56	52.02	-61.68
75	50.94	-54.42	50.94	-59.52
100	50.16	-53.7	50.16	-58.02

ROOF SERVICE WIND PRESSURE (PSF) COMPONENTS AND CLADING		
EFFECTIVE WIND AREA (SQ FT)	OVERHANG	OVERHANG CORNER
10	-106.6	-126.3
25	-101.1	-108.5
50	-96.9	-95.1
75	-94.4	-87.2
100	-92.7	-81.6



ELEVATION

WIND DESIGN IN ACCORDANCE WITH ASCE 7-16:

VELOCITY/ULT = 170 MPH (3 SEC.)
VELOCITY/ASD = 133 MPH (3 SEC.)
RISK CATEGORY III
EXPOSURE = D
k/z = 1.03
k/ze = 1.0
kd = 0.85
q/z = 38.8 PSF (SERVICE)
a = 3ft

DOOR SCHEDULE

DOOR NO	DOOR SIZE W X H	DOOR HAEDWARE GROUP	DOOR					FRAME		AREA (SQ FT)	C & C DESIGN PRESSURE (PSF)	MIAMI-DADE NOA NUMBER/ FLORIDA APPROVED NUMBER	DOOR HAEDWARE GROUP
			DOOR	FRAME	THICKNESS	MATERIAL	FINISH	MATERIAL	FINISH				
1	4' X 8'	1	A	A	1.75"	METAL	MFGR	METAL	GALV	32	+53.2 / -56.8	20-1123.23 OR ENGINEER APPROVED EQUAL (1)	SINGLE MAN DOOR

100% SUBMITTAL

CITY of DELRAY BEACH
PUBLIC WORKS DEPARTMENT
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Fax No. 561.687.1110
Registry No. 33574

JEFFREY R. BERGMANN
P.E., LIC. NO. 50159

DESIGNED BY	JRB
DRAWN BY	DAB
CHECK BY	TJT
DATE	03/28/24

REVISION	DATE	DESCRIPTION
	7/14/2023	100% CD SET
	1/22/2024	HISTORIC BOARD COMMENTS
1	3/28/2024	ADDENDUM 5

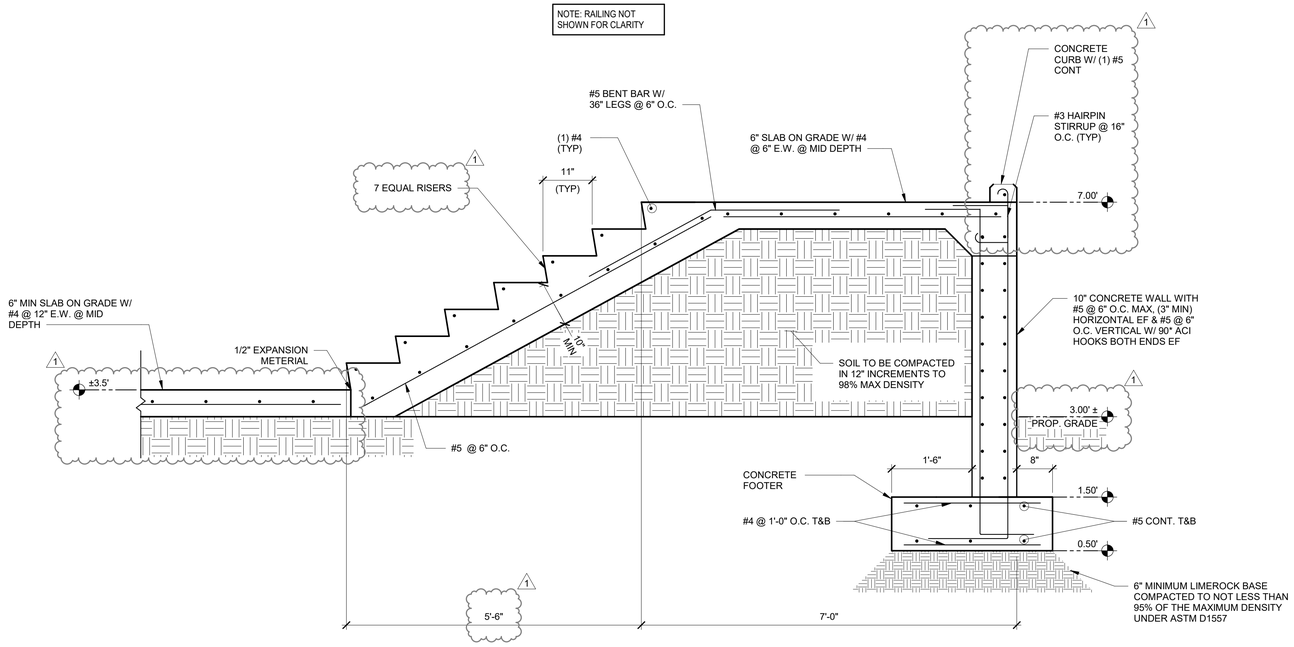
THE CITY OF DELRAY BEACH
HISTORIC MARINE WAY SEAWALL, ROADWAY, AND DRAINAGE IMPROVEMENT

GENERATOR PLAN AND SECTIONS

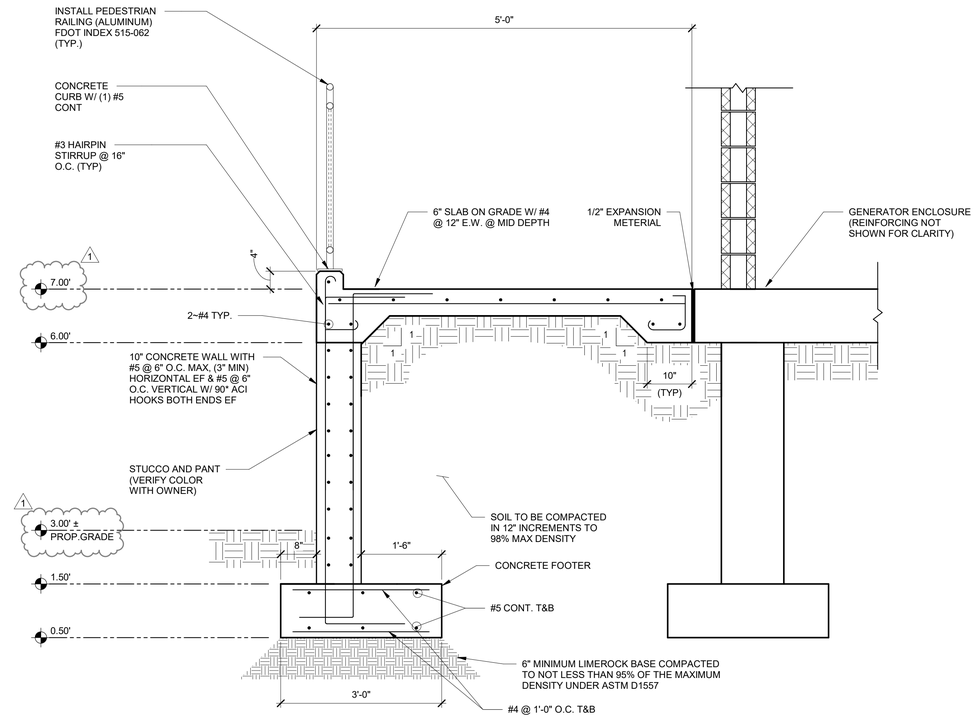
PROJECT NO. 17-047
SHEET NO. S2.13
FILE ID. 17-047

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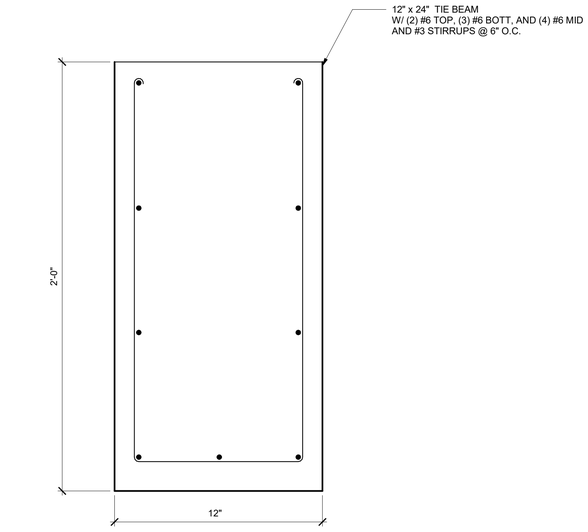
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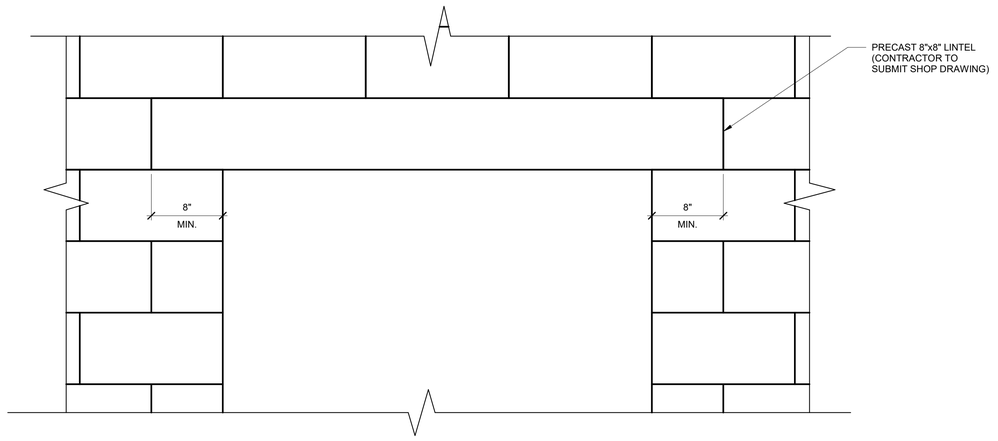
1 STAIR SECTION
3/4" = 1'-0"



2 LANDING WITH CURB SECTION
3/4" = 1'-0"



3 ENLARGED SECTION
NTS



4 LINTEL DETAIL
NTS

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	1/22/2024	HISTORIC BOARD COMMENTS
1	3/28/2024	ADDENDUM 5

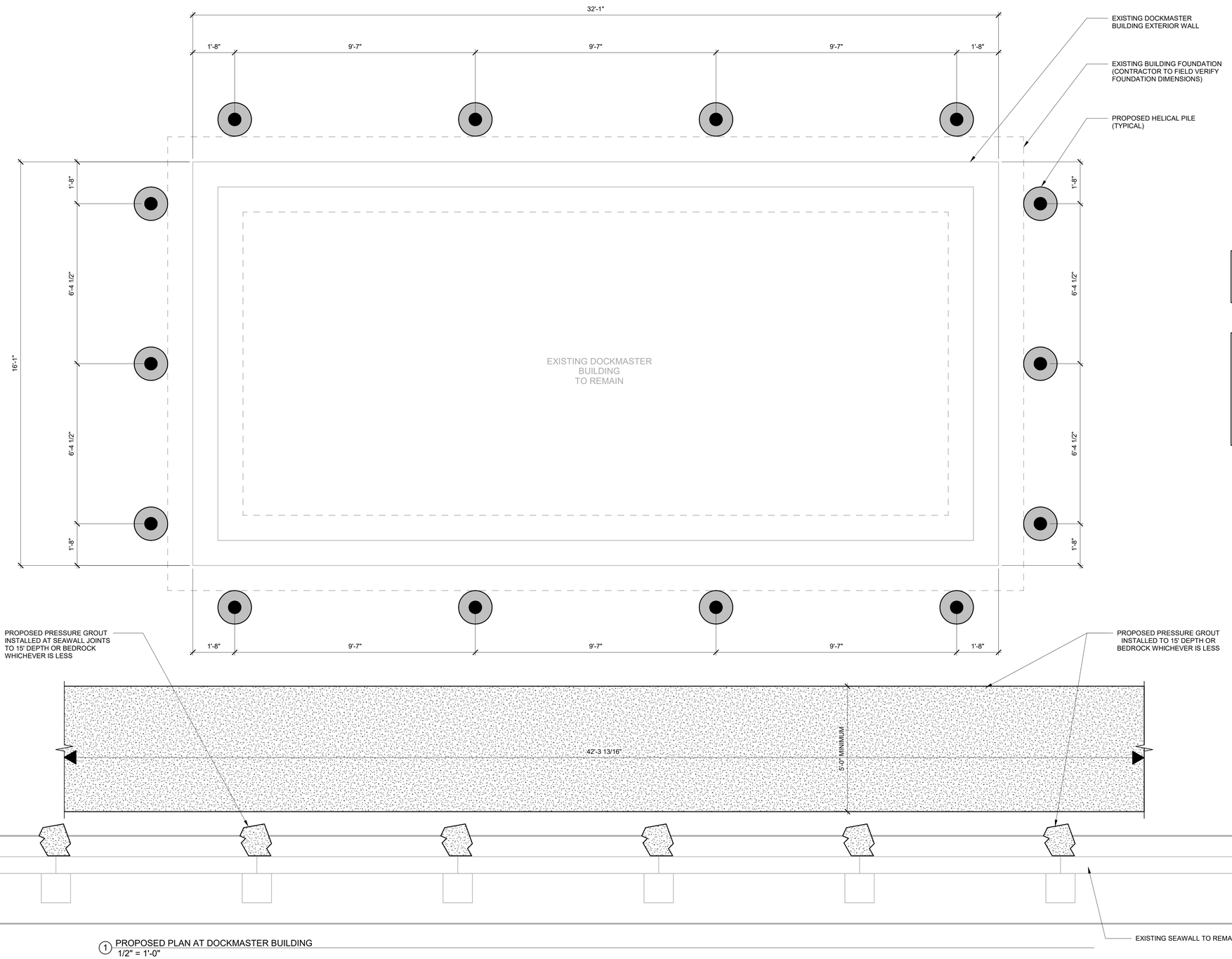
THE CITY OF DELRAY BEACH
HISTORIC MARINE WAY SEAWALL, ROADWAY, AND DRAINAGE IMPROVEMENT

BACK-UP GENERATOR SECTIONS AND DETAILS

PROJECT NO. 17-047
SHEET NO. S2.14
FILE ID. 17-047

BIM 360://Marine Way/2898.01 Marine Way PH 2.rvt

3/8/2024 2:05:24 PM



1 PROPOSED PLAN AT DOCKMASTER BUILDING
1/2" = 1'-0"

LEGEND

HELICAL PILE

PILE NOTES:

- PILES SHALL BE INSTALLED TO PROVIDE A MINIMUM SERVICE AXIAL COMPRESSIVE CAPACITY OF 25 KIPS.

PRESSURE GROUT NOTES:

- CONTRACTOR TO BID PRESURE GROUT ON UNIT PRICE BASIS PER CUBIC YARD.
- BASE BID SHALL BE FOR 5CY TOTAL.
- CONTRACTOR TO GROUT AT SEAWALL JOINTS AND AT AREAS OF SETTLEMENT AROUND ADJACENT DOCKMASTER BUILDING

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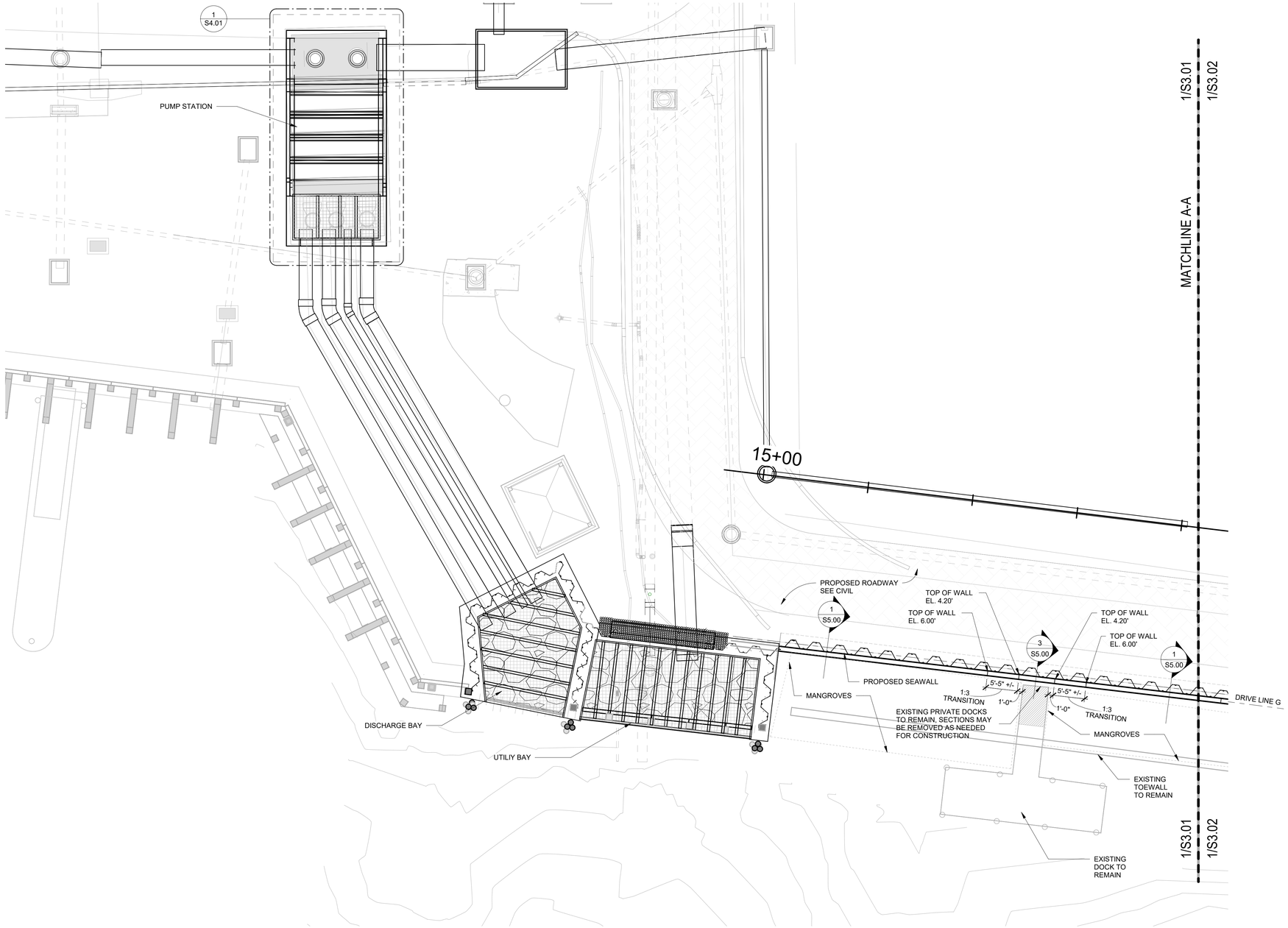
THE CITY OF DELRAY BEACH
HISTORIC MARINE WAY SEAWALL, ROADWAY, AND DRAINAGE IMPROVEMENT

PROPOSED HELICAL PILES PLAN

PROJECT NO. 17-047
SHEET NO. S2.15
FILE ID. 17-047

BIM 360://Marine Way/2898.01 Marine Way PH 2.rvt

3/8/2024 2:05:25 PM



1 ENLARGED PLAN - AA
1" = 10'-0"

NORTH

100% SUBMITTAL

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	7/14/2023	100% CD SET

THE CITY OF DELRAY BEACH

HISTORIC MARINE WAY SEAWALL, ROADWAY, AND DRAINAGE IMPROVEMENT

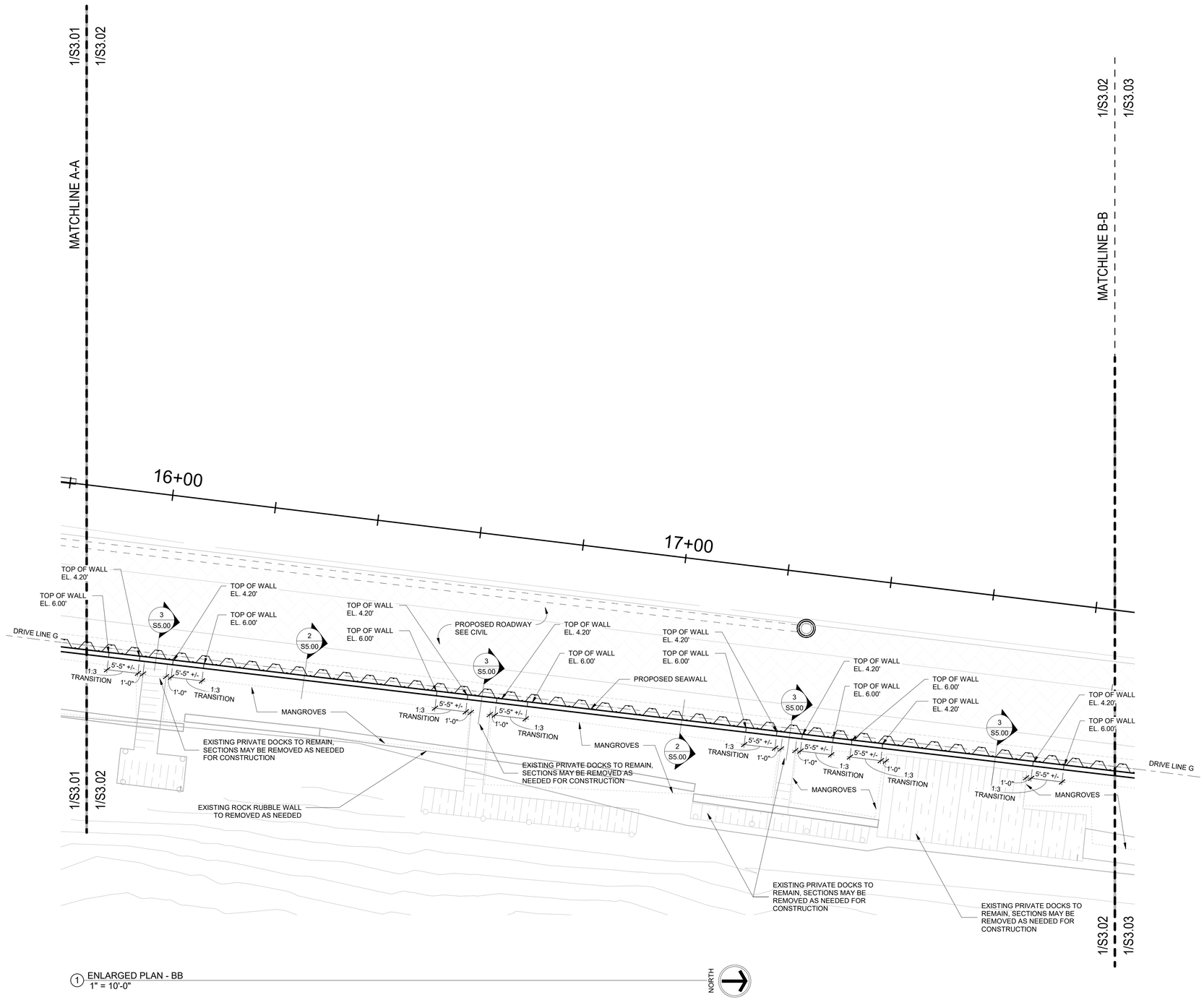
ENLARGED MARINE WAY SEAWALL

PROJECT NO. 17-047

SHEET NO. S3.01

FILE ID. 17-047

3/8/2024 2:05:26 PM



1 ENLARGED PLAN - BB
1" = 10'-0"

NORTH

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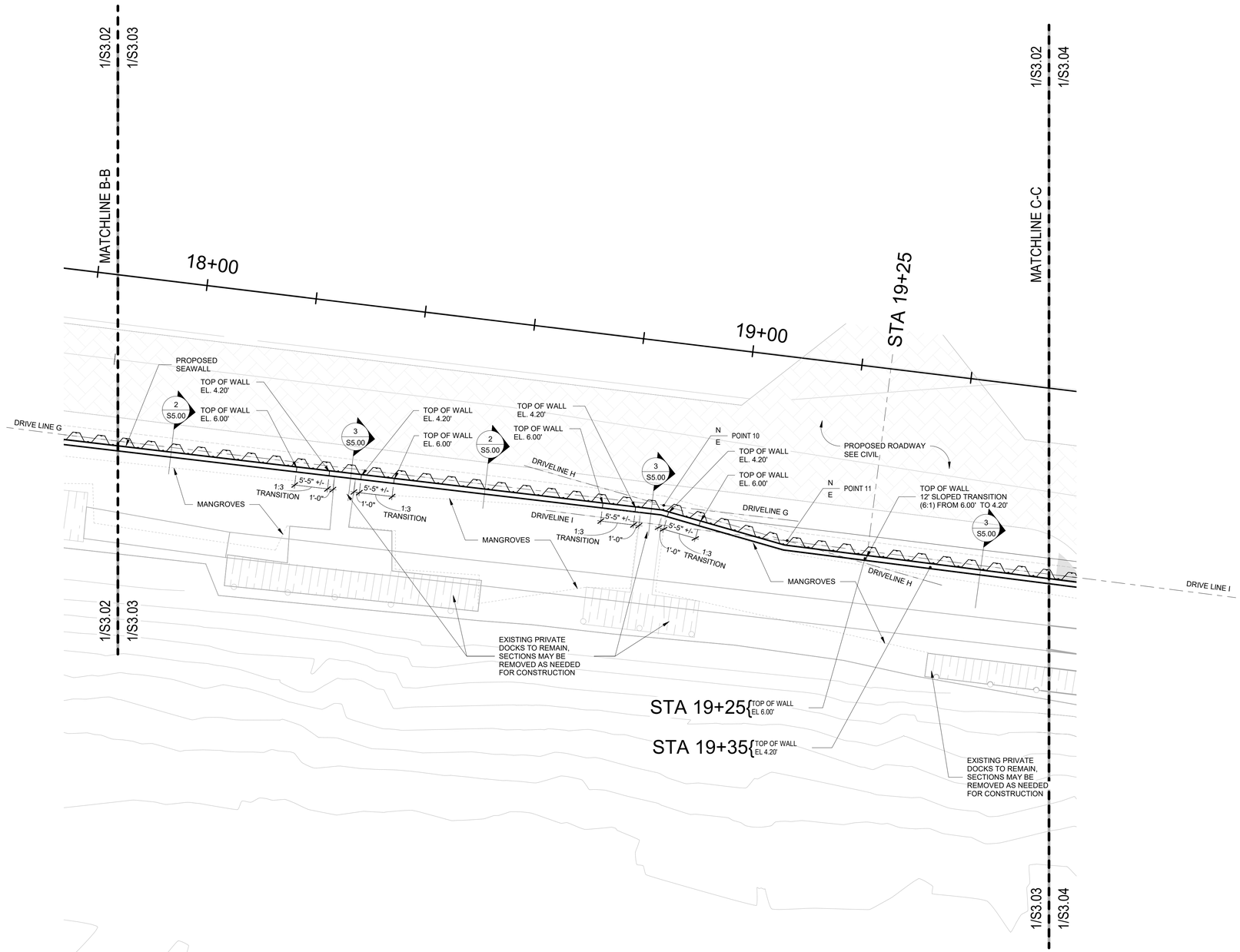
THE CITY OF DELRAY BEACH
HISTORIC MARINE WAY SEAWALL, ROADWAY, AND DRAINAGE IMPROVEMENT

ENLARGED MARINE WAY SEAWALL

PROJECT NO. 17-047
SHEET NO. S3.02
FILE ID. 17-047

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3/8/2024 2:05:26 PM



1 ENLARGED PLAN - CC
1" = 10'-0"

NORTH

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REVISION	DATE	DESCRIPTION

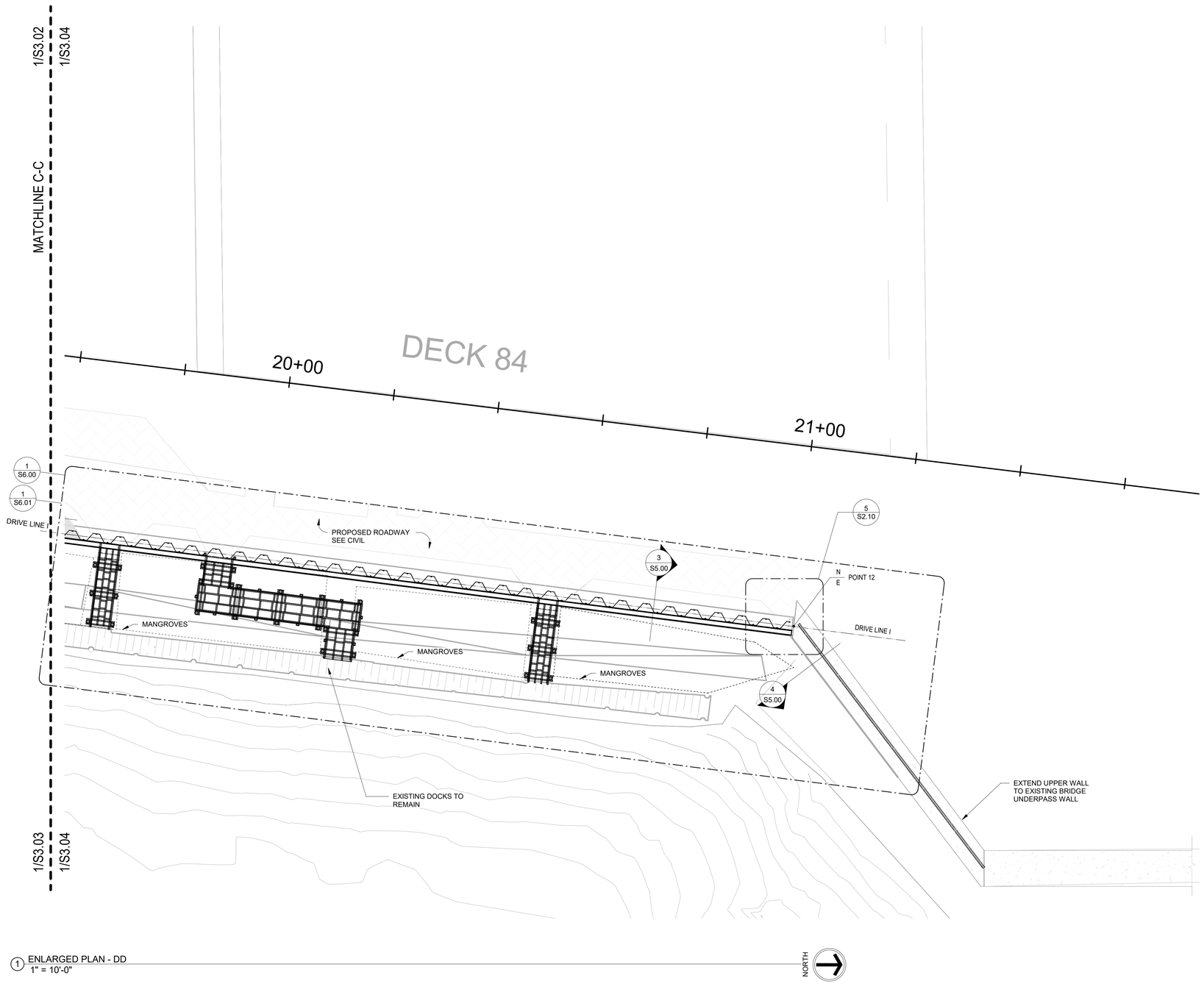
THE CITY OF DELRAY BEACH
HISTORIC MARINE WAY SEAWALL, ROADWAY, AND DRAINAGE IMPROVEMENT

ENLARGED MARINE WAY SEAWALL

PROJECT NO. 17-047
SHEET NO. S3.03
FILE ID. 17-047

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3/8/2024 2:05:27 PM



1 ENLARGED PLAN - DD
1" = 10'-0"

NORTH

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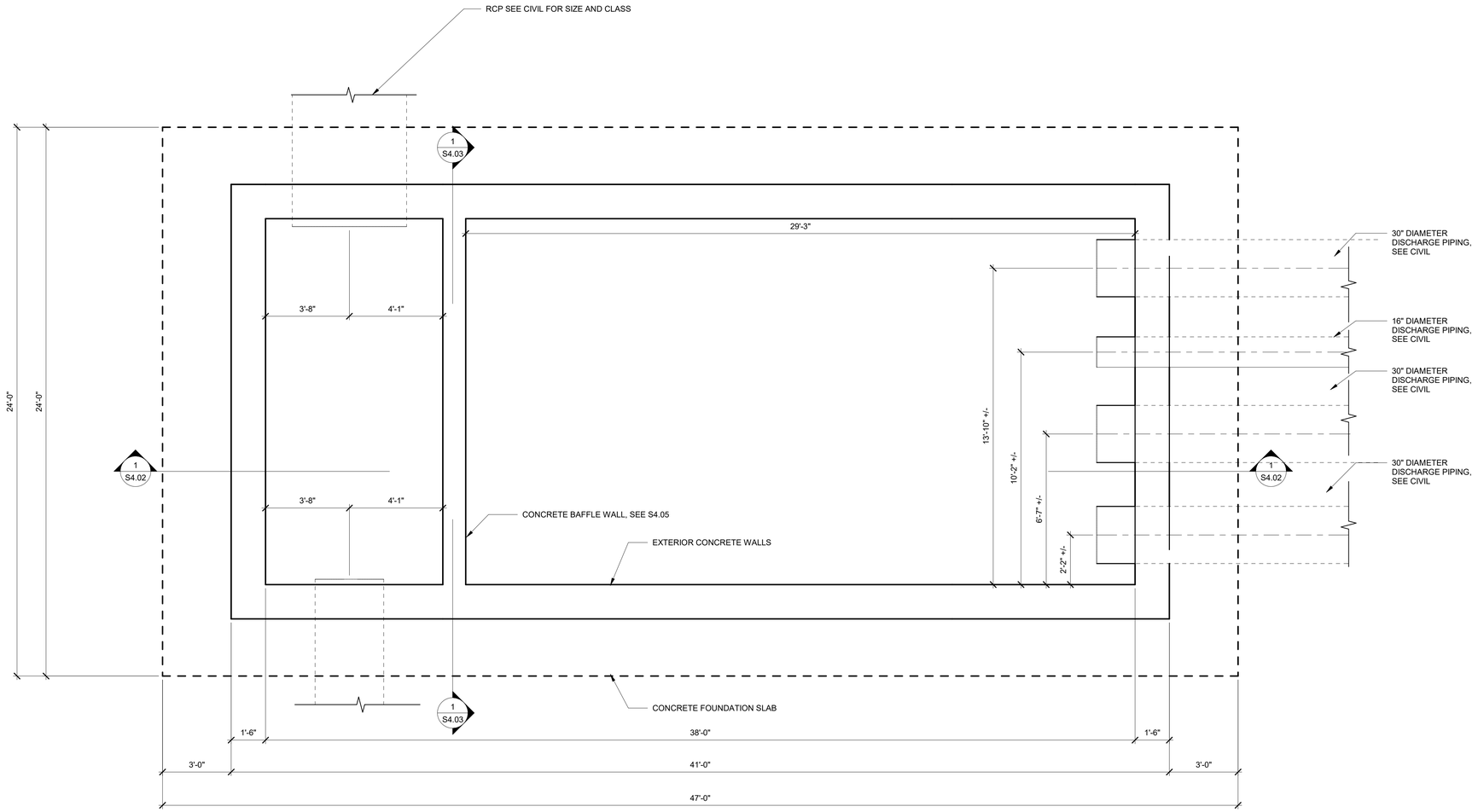
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THE CITY OF DELRAY BEACH
HISTORIC MARINE WAY SEAWALL, ROADWAY, AND DRAINAGE IMPROVEMENT

ENLARGED MARINE WAY SEAWALL

PROJECT NO. 17-047
SHEET NO. S3.04
FILE ID. 17-047

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ENLARGED PUMP STATION
FOUNDATION FLOOR PLAN THROUGH
BAFFLE WALL
1 3/8" = 1'-0"

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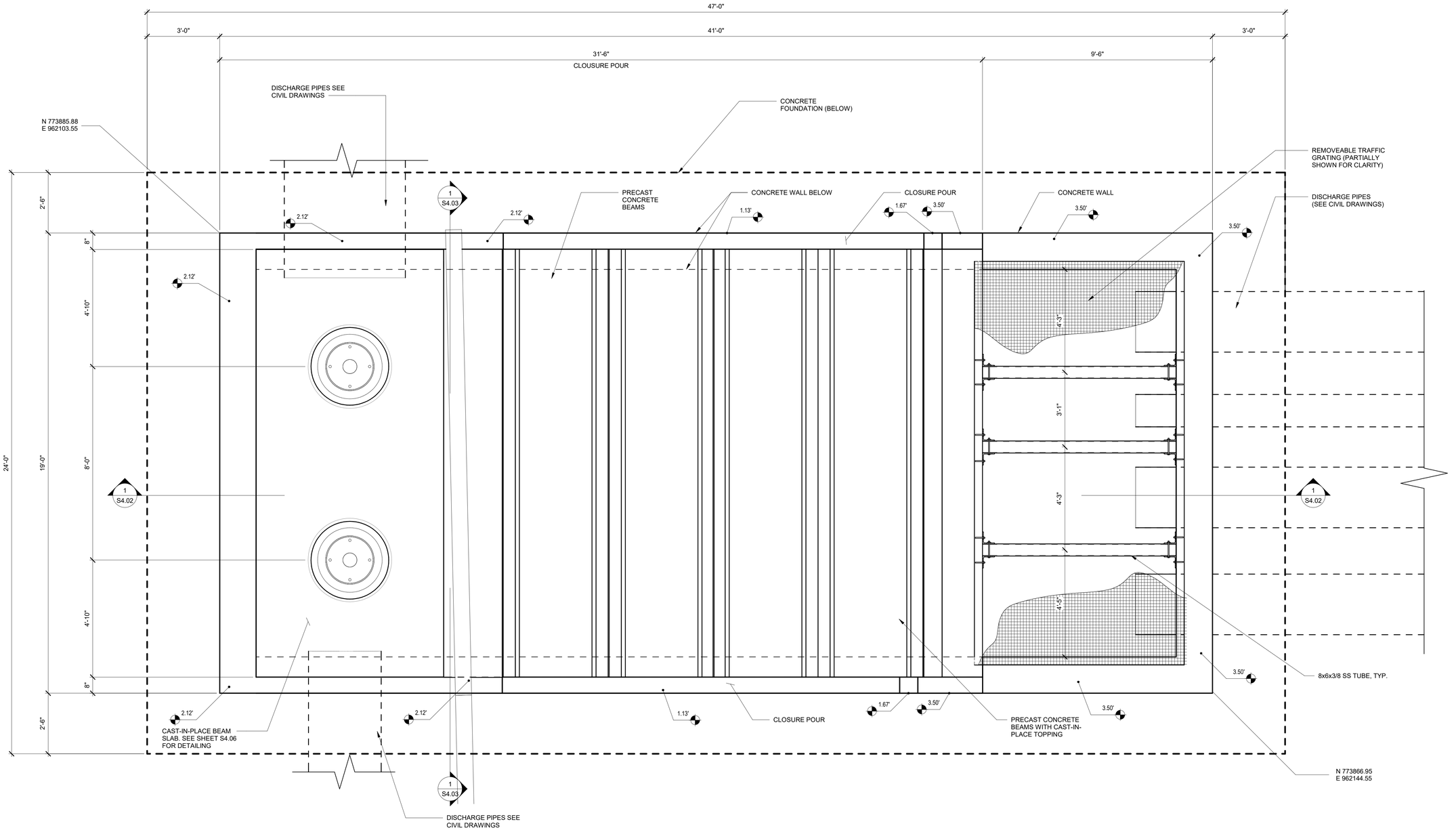
DESIGNED BY	JRB
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REVISION	DATE	DESCRIPTION
	7/14/2023	100% CD SET

THE CITY OF DELRAY BEACH
HISTORIC MARINE WAY SEAWALL, ROADWAY, AND DRAINAGE IMPROVEMENT

PUMP STATION FOUNDATION PLAN

PROJECT NO. 17-047
SHEET NO. S4.00
FILE ID. 17-047



1 ENLARGED PUMP STATION PLAN
1/2" = 1'-0"

100% SUBMITTAL

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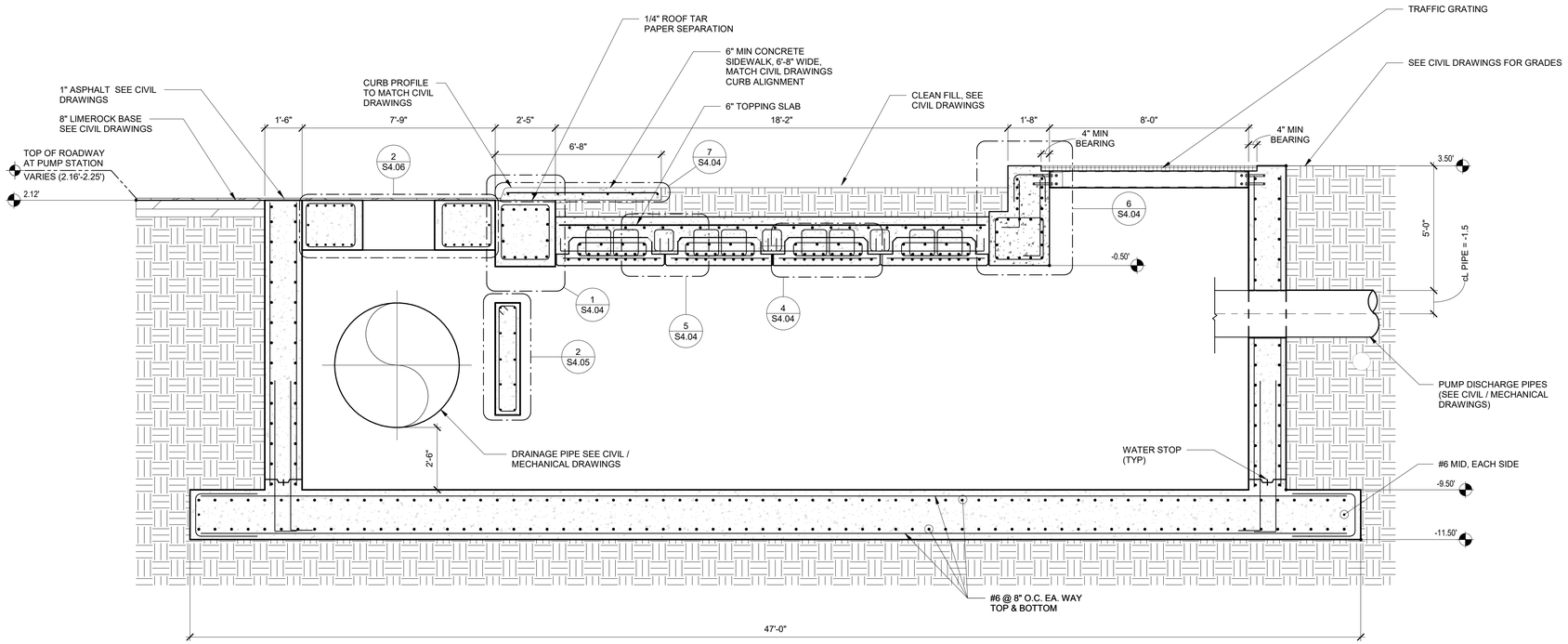
REVISION	DATE	DESCRIPTION
	7/14/2023	100% CD SET

THE CITY OF DELRAY BEACH
HISTORIC MARINE WAY SEAWALL, ROADWAY, AND DRAINAGE IMPROVEMENT

PUMP STATION TOP SLAB PLAN

PROJECT NO. 17-047
SHEET NO. S4.01
FILE ID. 17-047

3/8/2024 2:05:28 PM



1 PUMP STATION SECTION
3/8" = 1'-0"

100% SUBMITTAL

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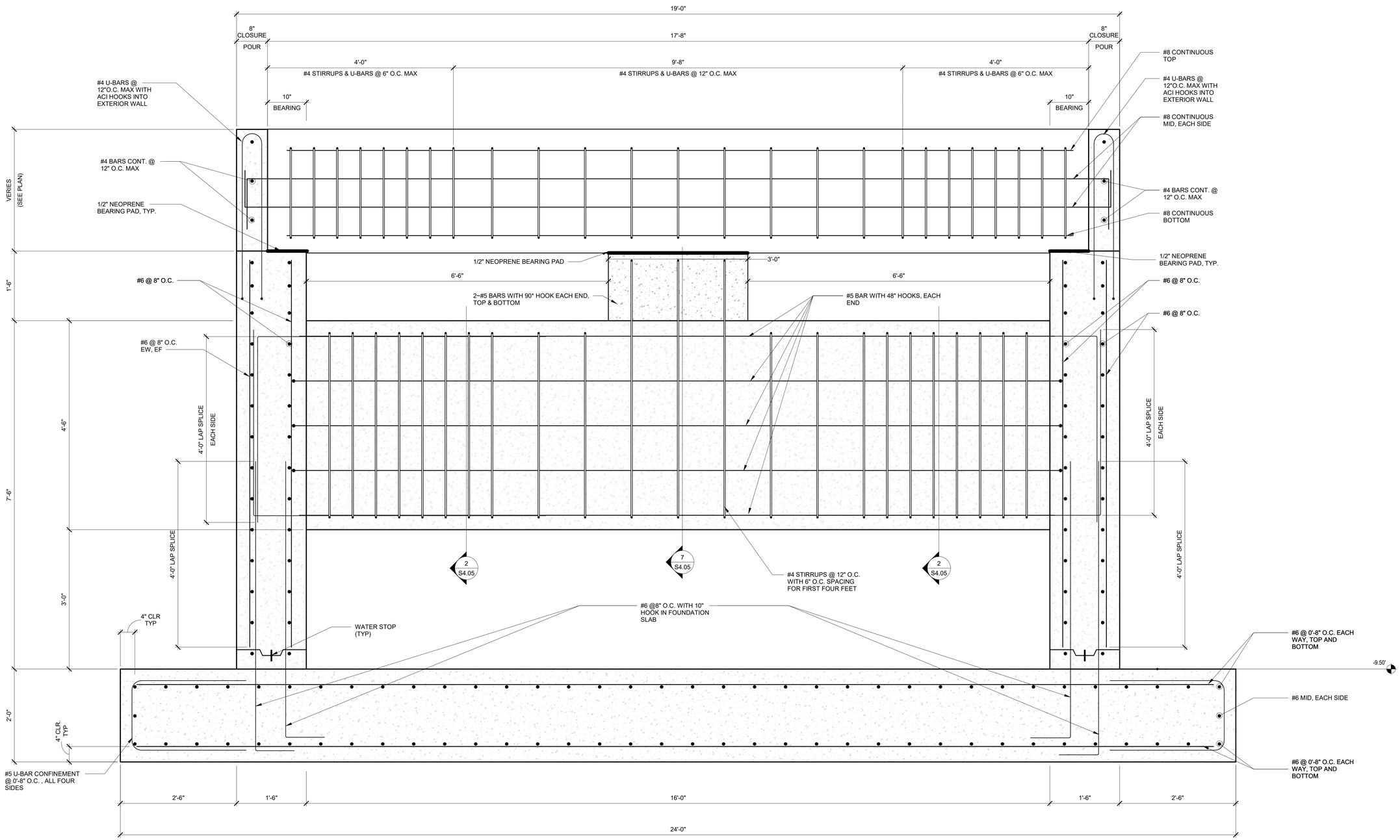
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	7/14/2023	100% CD SET

THE CITY OF DELRAY BEACH
HISTORIC MARINE WAY SEAWALL, ROADWAY, AND DRAINAGE IMPROVEMENT

LONGITUTIONAL WALL ELEVATIONS

PROJECT NO. 17-047
SHEET NO. S4.02
FILE ID. 17-047

BIM 360://Marine Way/2898.01 Marine Way PH 2.rvt



1 PUMP STATION SECTION
1" = 1'-0"

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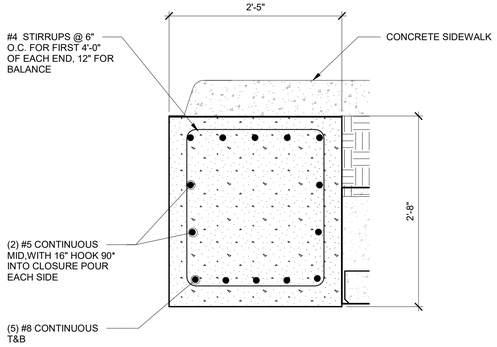
THE CITY OF DELRAY BEACH
HISTORIC MARINE WAY SEAWALL, ROADWAY, AND DRAINAGE IMPROVEMENT

TRANSVERSE WALL ELEVATIONS & BAFFLE WALLS

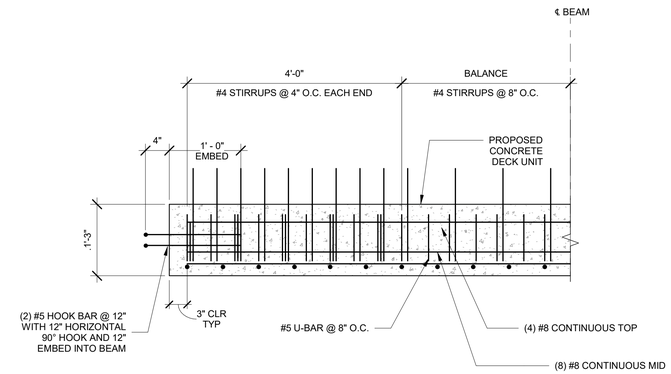
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SHEET NO. S4.03
FILE ID. 17-047

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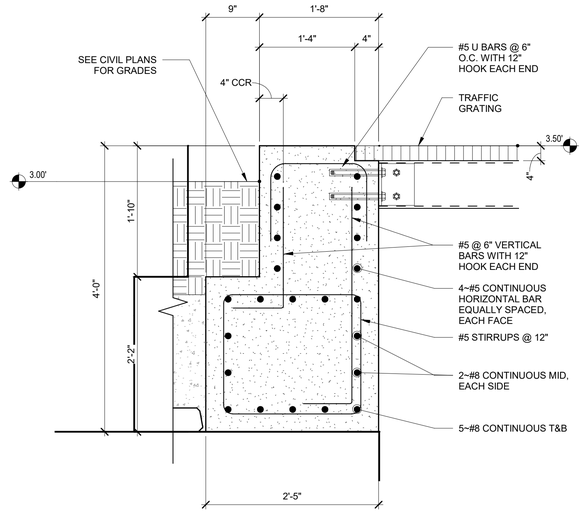
3/4" CHAMFER ALL BEAM CORNERS (TYP.)



1 CONCRETE BEAM ENLARGED SECTION
1" = 1'-0"



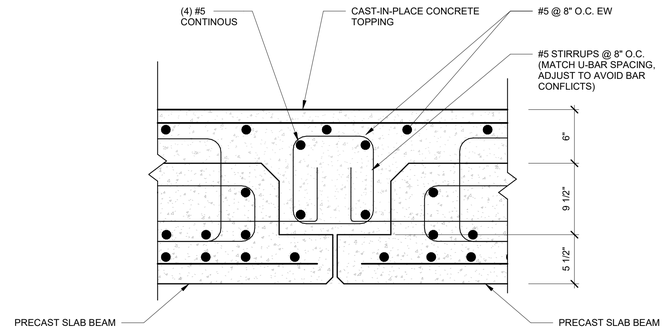
3 PRECAST SLAB BEAM ELEVATION
1" = 1'-0"



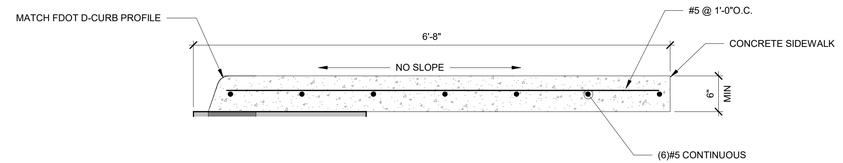
6 ENLARGED SECTION
1" = 1'-0"

2 TYPICAL DECK UNIT PLAN VIEW
1/2" = 1'-0"

4 PRECAST SLAB BEAM DETAIL
1" = 1'-0"



5 PRECAST SLAB BEAM TOPPING POCKET DETAIL
1 1/2" = 1'-0"



7 SIDEWALK SECTION
1" = 1'-0"

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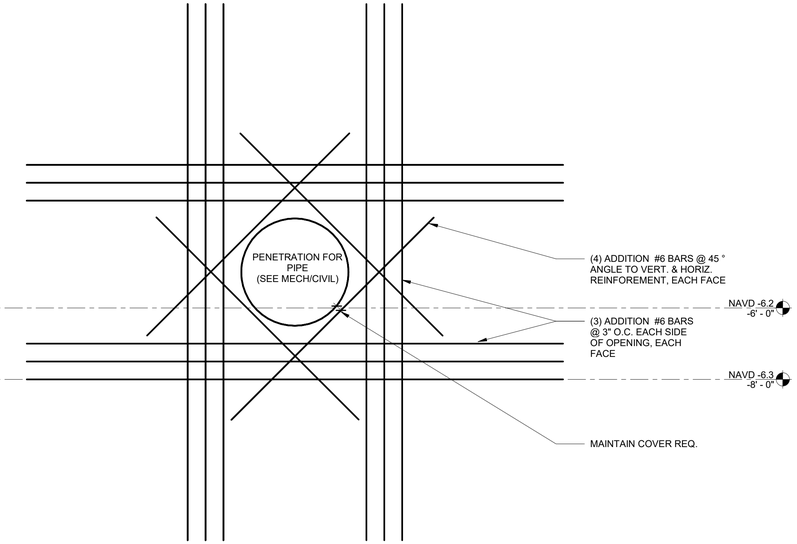
DESIGNED BY	JRB
DRAWN BY	DAB
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DATE	07/14/23

REVISION	DATE	DESCRIPTION
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THE CITY OF DELRAY BEACH
HISTORIC MARINE WAY SEAWALL, ROADWAY, AND DRAINAGE IMPROVEMENT

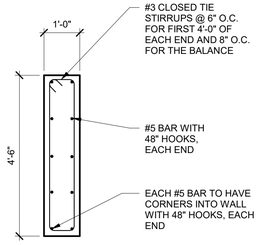
TOP SLAB FRAMING & REINFORCEMENT
(1 of 3)

PROJECT NO. 17-047
SHEET NO. S4.04
FILE ID. 17-047

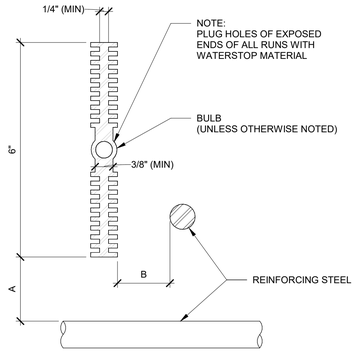


NOTE: SEE MECHANICAL DRAWINGS FOR PENETRATION THIMBLE

1 WALL PIPE PENETRATION DETAIL
NTS

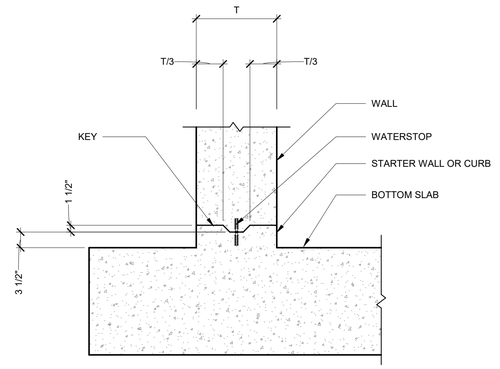


2 BAFFLE WALL SECTION
NTS

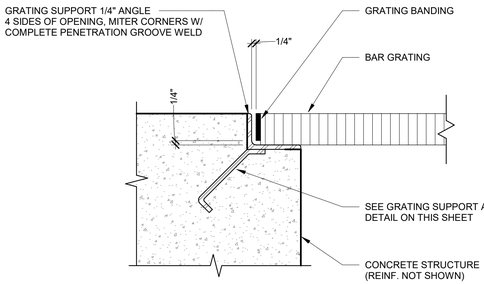


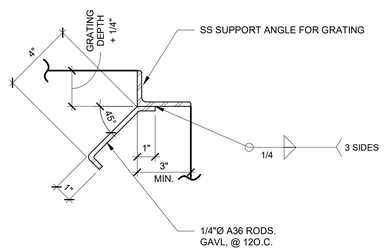
NOTE:
1. MINIMUM CLEARANCE (A OR B) BETWEEN REINFORCING STELL AND THE WATERSTOP SHALL BE TWICE THE MAXIMUM AGGREGATE SIZE
2. WATERSTOPD SHALL BE SIKA GREENSTREAK PVC WATER STOP NO. 717 OR ENGINEER APPROVED EQUIVALENT

3 WATERSTOP DETAIL
NTS

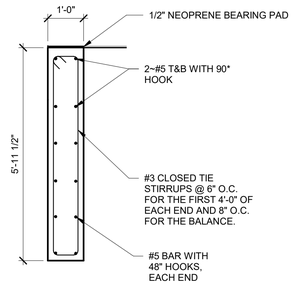


4 TYPICAL FOUNDATION KEY
NTS

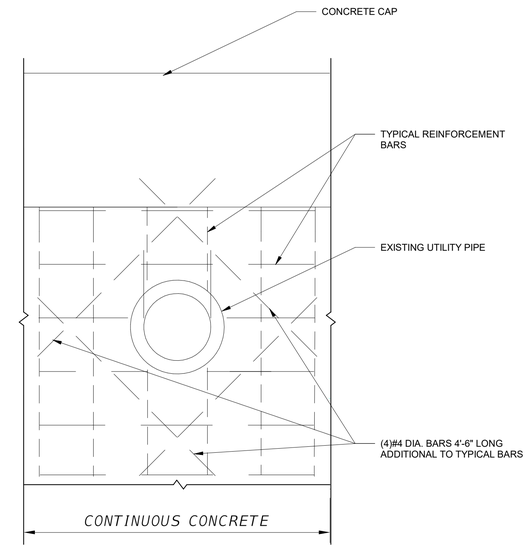




5 GRATING SUPPORT ANGLE
NTS



7 BAFFLE WALL SECTION
NTS



6 TYPICAL COLLAR CONNECTION ELEVATION DETAIL
NTS

100% SUBMITTAL

CITY of DELRAY BEACH
PUBLIC WORKS DEPARTMENT
434 SOUTH SWINTON AVENUE, DELRAY BEACH, FLORIDA 33444
Phone: (561) 243-7322 FAX: (561) 243-7314 www.mydelraybeach.com

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2035 Vista Parkway
West Palm Beach, FL 33411
Phone No. 561.687.2220
Fax No. 561.687.1110
Registry No. 33574

JEFFREY R. BERGMANN
P.E., LIC. NO. 50159

DESIGNED BY	JRB
DRAWN BY	DAB
CHECK BY	AS
DATE	07/14/23

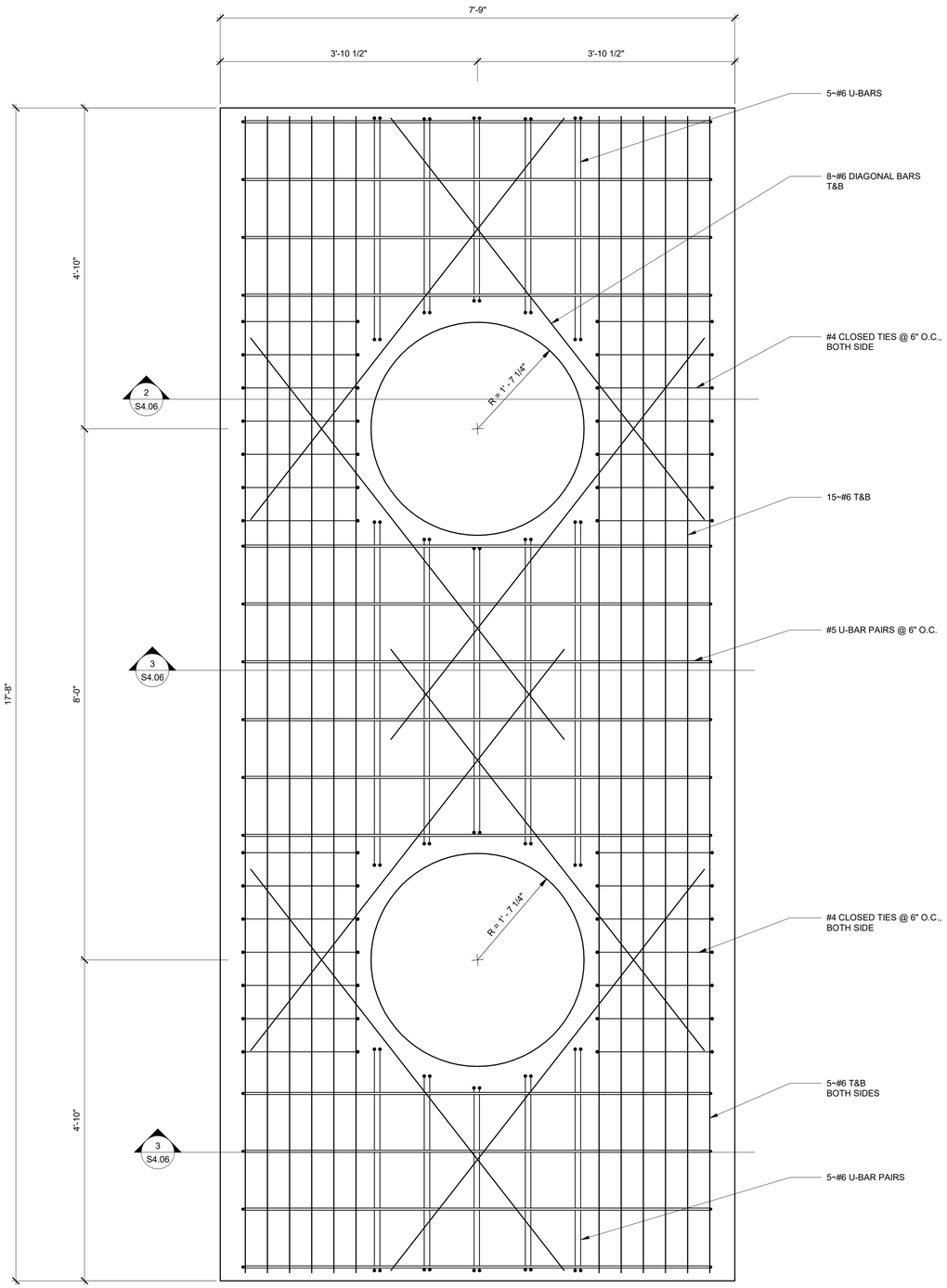
REVISION	DATE	DESCRIPTION
	7/14/2023	100% CD SET

THE CITY OF DELRAY BEACH
HISTORIC MARINE WAY SEAWALL, ROADWAY, AND DRAINAGE IMPROVEMENT
TOP SLAB FRAMING & REINFORCEMENT
(2 of 3)

PROJECT NO. 17-047
SHEET NO. S4.05
FILE ID. 17-047

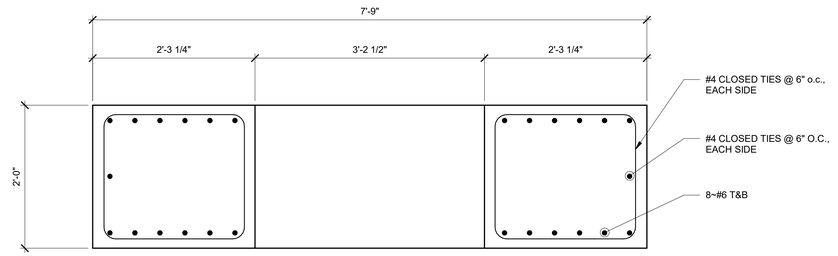
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3/8/2024 2:05:30 PM



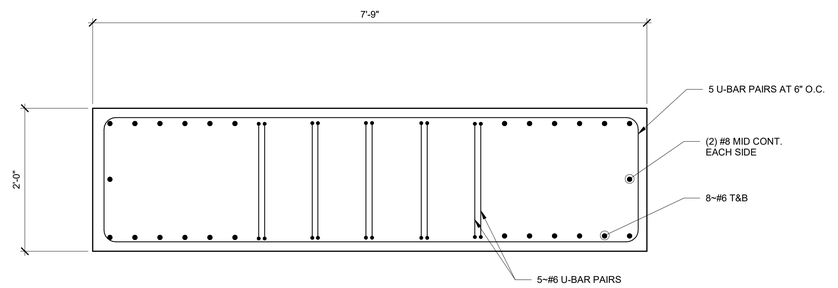
1 BEAM-SLAB REINFORCEMENT PLAN
1" = 1'-0"

NOTE: DIAGONAL BARS NOT SHWON FOR CLARITY



2 BEAM-SLAB SECTION
1" = 1'-0"

NOTE: DIAGONAL BARS NOT SHWON FOR CLARITY



3 BEAM-SLAB SECTION
1" = 1'-0"

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REVISION	DATE	DESCRIPTION

THE CITY OF DELRAY BEACH

HISTORIC MARINE WAY SEAWALL, ROADWAY, AND DRAINAGE IMPROVEMENT

TOP SLAB FRAMING & REINFORCEMENT
(3 of 3)

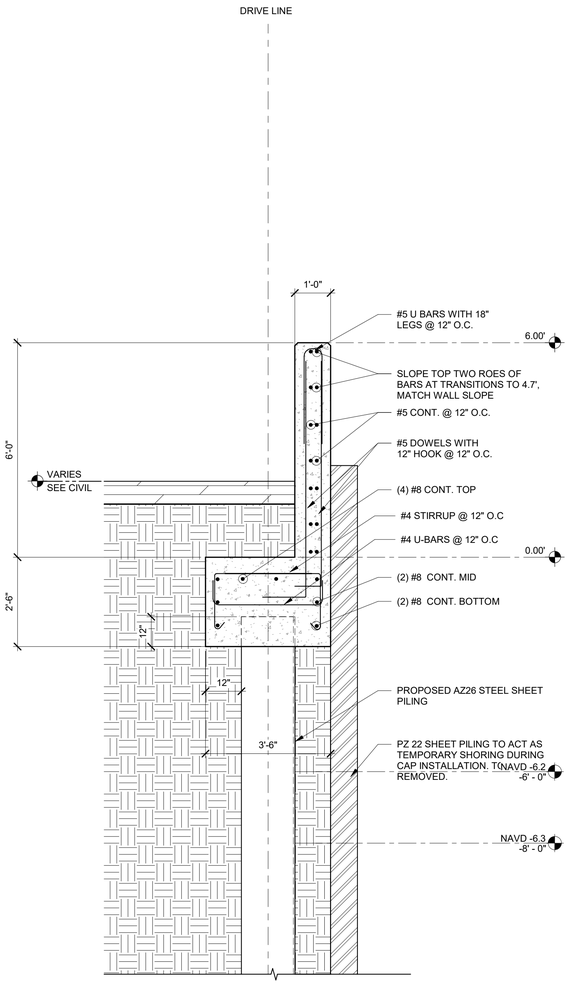
PROJECT NO. 17-047

SHEET NO. S4.06

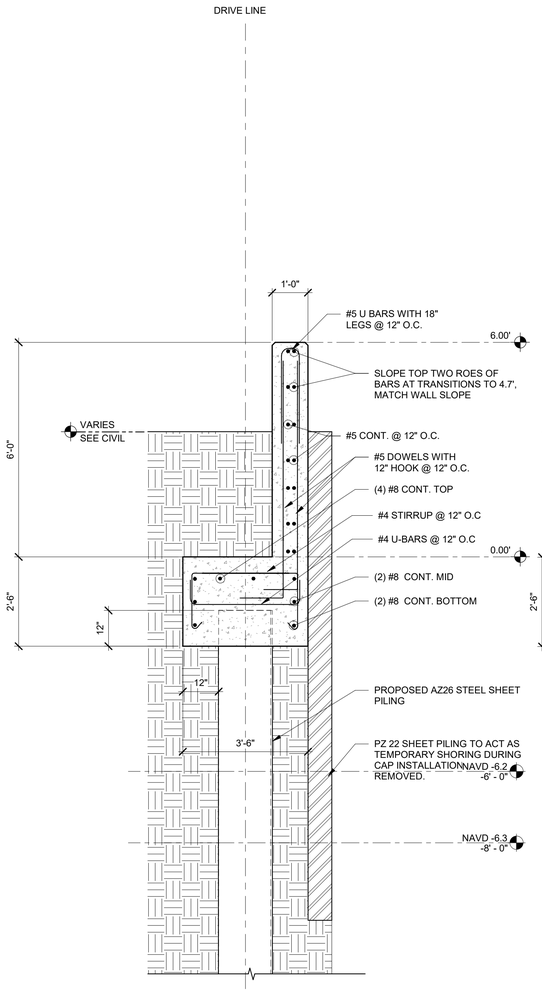
FILE ID. 17-047

BIM 360://Marine Way/2898.01 Marine Way PH 2.rvt

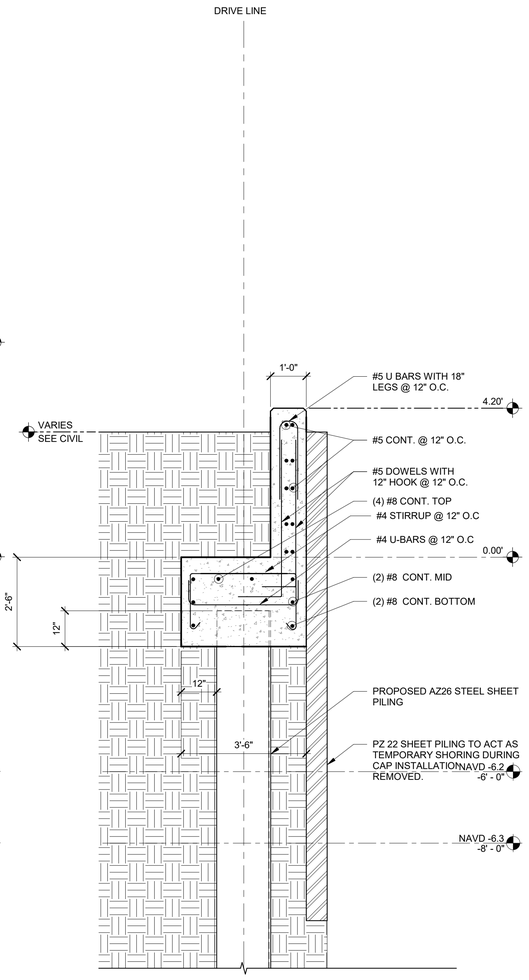
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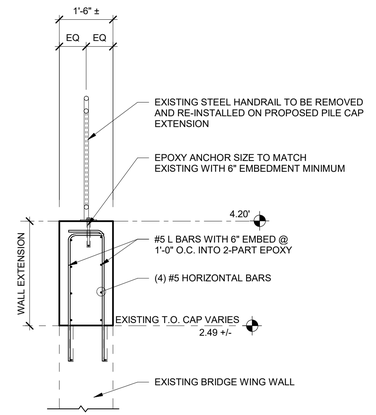
1 SEAWALL SECTION
1/2" = 1'-0"



2 SEAWALL- SECTION
1/2" = 1'-0"



3 SEAWALL- SECTION
1/2" = 1'-0"



4 SECTION
1/2" = 1'-0"

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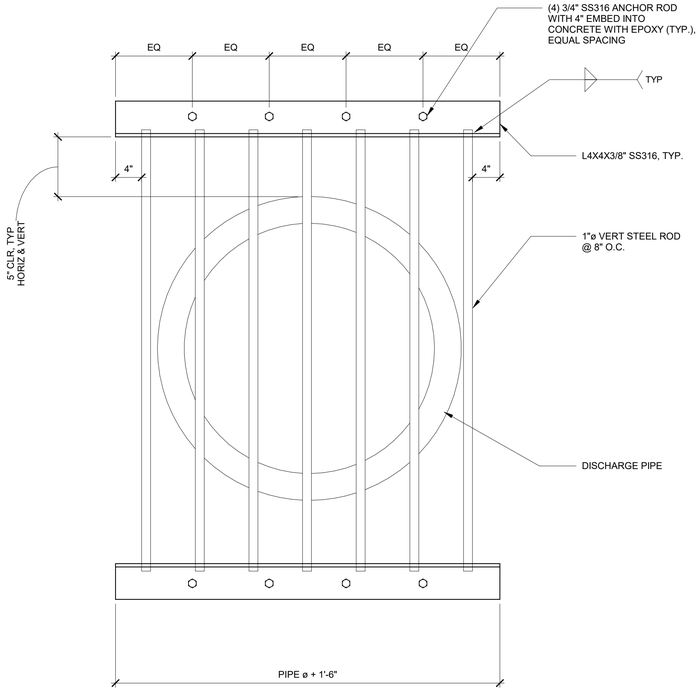
REVISION	DATE	DESCRIPTION
	7/14/2023	100% CD SET

THE CITY OF DELRAY BEACH
HISTORIC MARINE WAY SEAWALL, ROADWAY, AND DRAINAGE IMPROVEMENT
MARINE WAY DETAILS

PROJECT NO. 17-047
SHEET NO. S5.00
FILE ID. 17-047

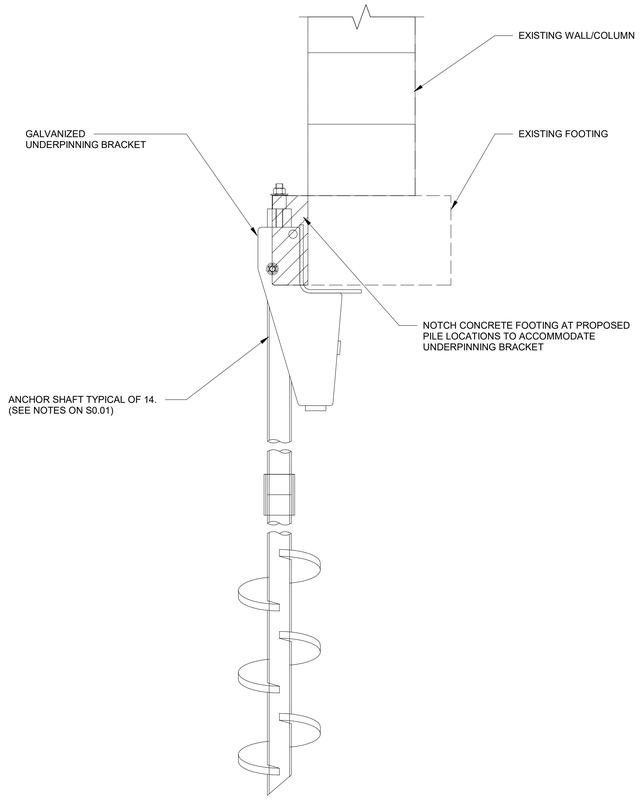
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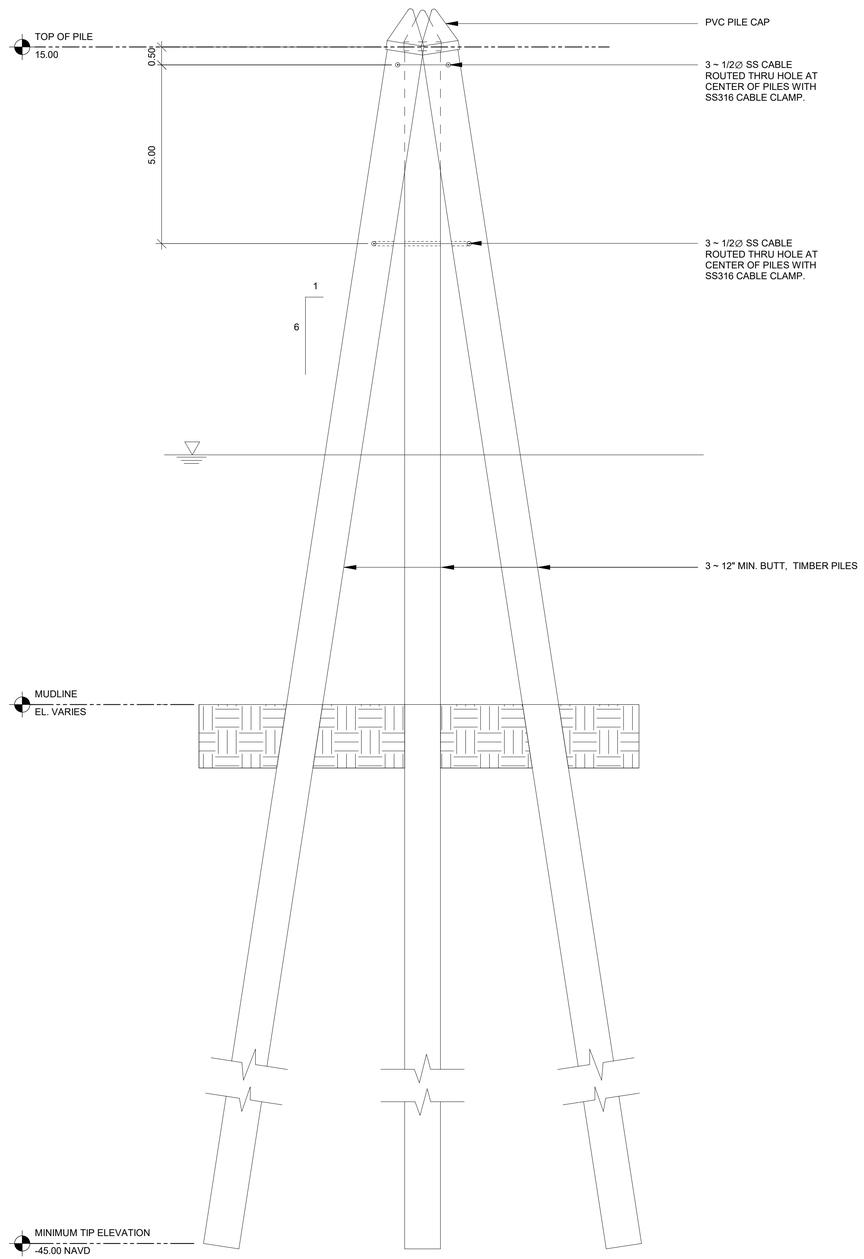


NOTE: MANATEE GRATE SHALL BE IN ACCORDANCE WITH FDOT DESIGN STANDARD INDEX NO. 280.

1 MANTEE GRATE DETAIL
NTS



2 TYPICAL POST-INSTALLED HELICAL PILE
NTS



3 TIMBER DOLPHIN FENDER SYSTEM
NTS

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REVISION	DATE	DESCRIPTION

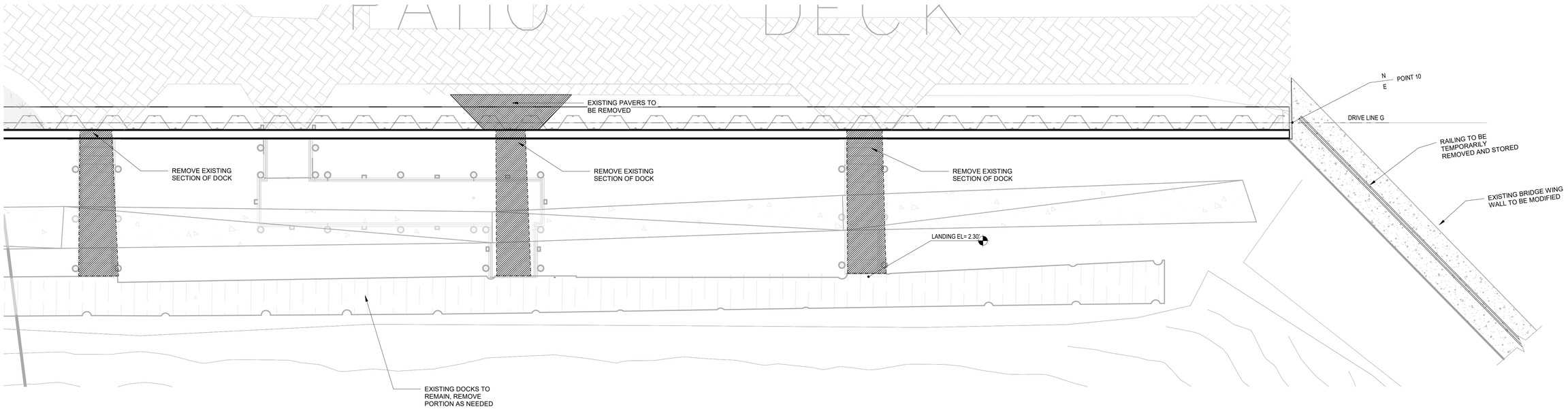
THE CITY OF DELRAY BEACH
HISTORIC MARINE WAY SEAWALL, ROADWAY, AND DRAINAGE IMPROVEMENT

MARINE WAY DETAILS

PROJECT NO. 17-047
SHEET NO. S5.01
FILE ID. 17-047

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3/8/2024 2:05:32 PM



1 ENLARGED PLAN - CC - DEMO
3/16" = 1'-0"

100% SUBMITTAL

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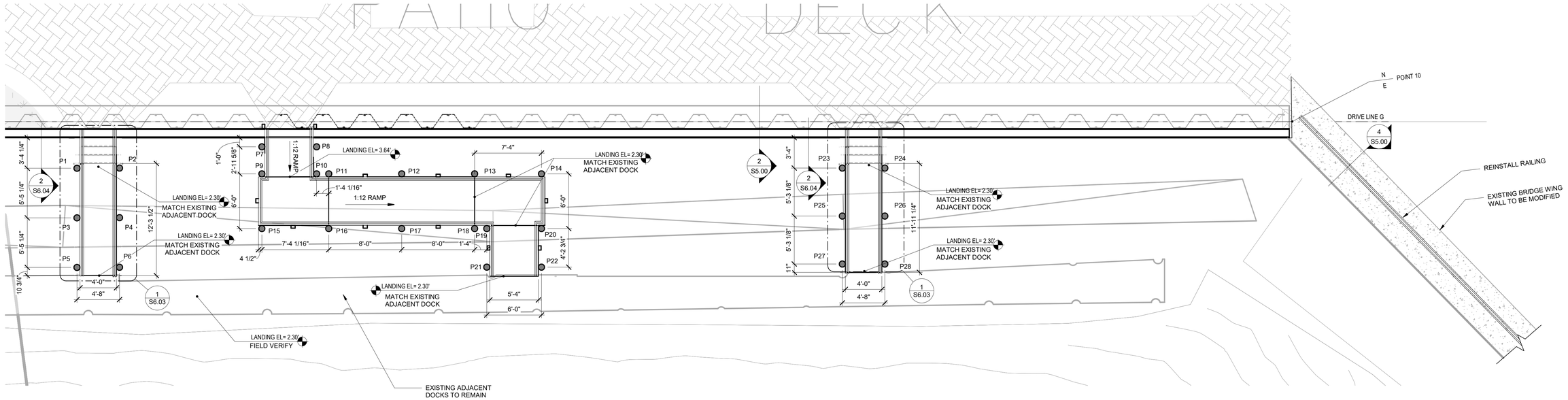
THE CITY OF DELRAY BEACH
HISTORIC MARINE WAY SEAWALL, ROADWAY, AND DRAINAGE IMPROVEMENT

ENLARGED MARINE WAY
SEAWALL-DEMO

PROJECT NO. 17-047
SHEET NO. S6.00
FILE ID. 17-047

3/8/2024 2:05:33 PM

PILE NUMBER	NORTHING	EASTING
P1	774416.95	962283.04
P2	774421.58	962283.61
P3	774416.26	962288.43
P4	774420.90	962289.00
P5	774415.58	962293.83
P6	774420.21	962294.40
P7	774437.36	962283.26
P8	774443.32	962284.02
P9	774436.99	962286.21
P10	774442.94	962286.96
P11	774444.27	962287.13
P12	774452.20	962288.14
P13	774460.14	962289.15
P14	774467.41	962290.07
P15	774436.23	962292.16
P16	774443.51	962293.08
P17	774451.45	962294.09
P18	774459.38	962295.10
P19	774460.71	962295.27
P20	774466.66	962296.02
P21	774460.17	962299.46
P22	774466.13	962300.22
P23	774500.23	962293.60
P24	774504.86	962294.19
P25	774499.57	962298.82
P26	774504.20	962299.41
P27	774498.90	962304.04
P28	774503.53	962304.63



1 ENLARGED PLAN - CC - PROPOSED
3/16" = 1'-0"

100% SUBMITTAL

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DATE	07/14/23

REVISION	DATE	DESCRIPTION
	7/14/2023	100% CD SET

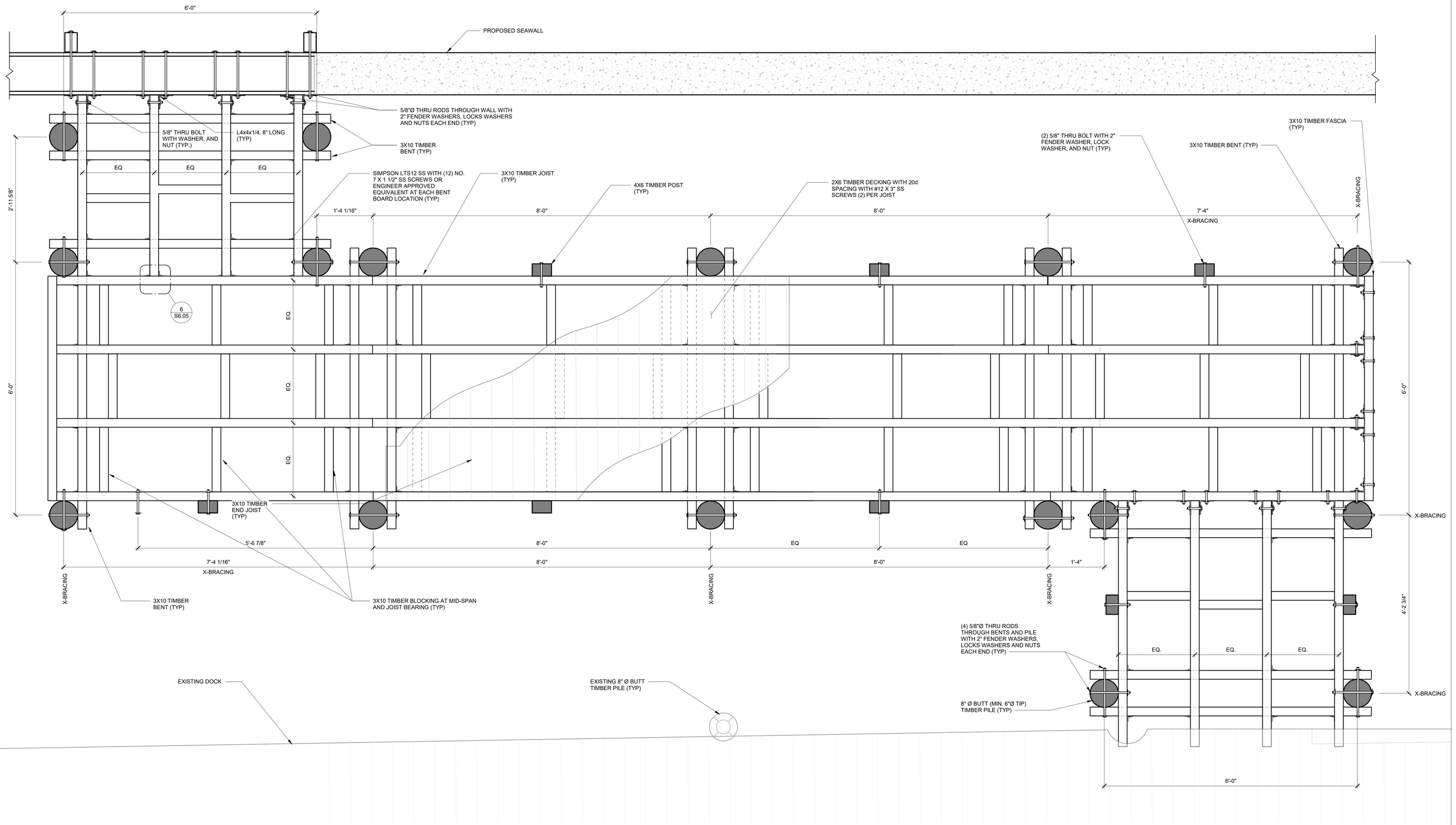
THE CITY OF DELRAY BEACH
HISTORIC MARINE WAY SEAWALL, ROADWAY, AND DRAINAGE IMPROVEMENT

ENLARGED MARINE WAY DOCKS

PROJECT NO. 17-047
SHEET NO. S6.01
FILE ID. 17-047

BIM 360://Marine Way/2898.01 Marine Way PH 2.rvt

3/8/2024 2:05:34 PM



1 ENLARGED RAMP FRAMING PLAN
1" = 1'-0"

100% SUBMITTAL

CITY of DELRAY BEACH

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	7/14/2023	100% CD SET

THE CITY OF DELRAY BEACH

HISTORIC MARINE WAY SEAWALL, ROADWAY, AND DRAINAGE IMPROVEMENT

WOOD RAMP FRAMING PLAN

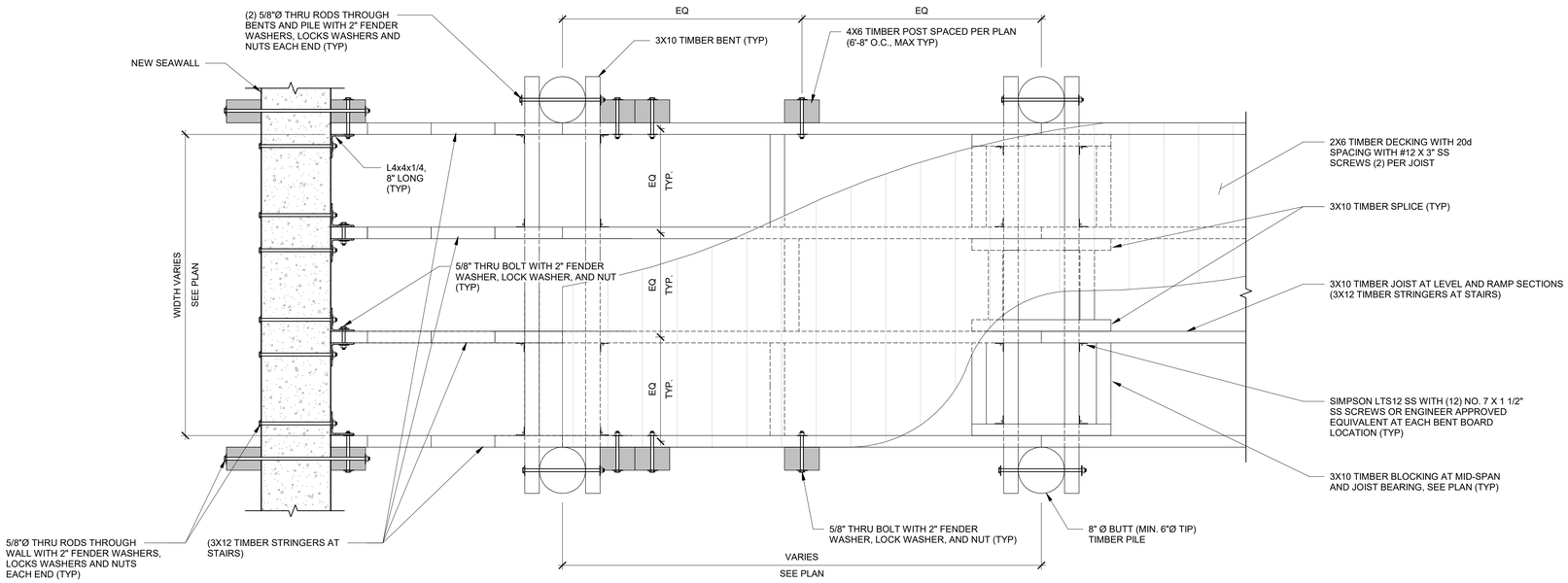
PROJECT NO. 17-047

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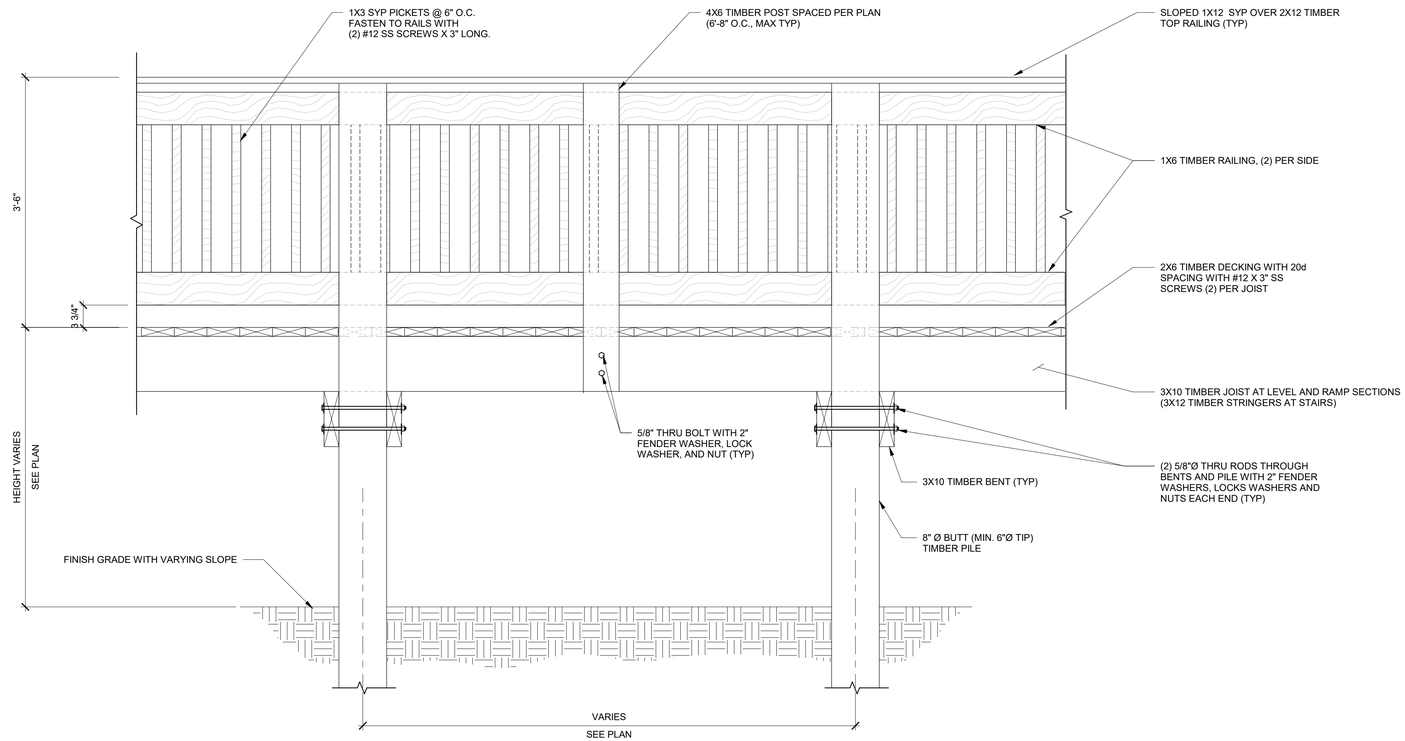
FILE ID. 17-047

BIM 360://Marine Way/2898.01 Marine Way PH 2.rvt

3/8/2024 2:05:34 PM



1 TYPICAL ACCESS ENLARGED PLAN VIEW
1" = 1'-0"



2 TYPICAL ACCESS ELEVATION
1" = 1'-0"

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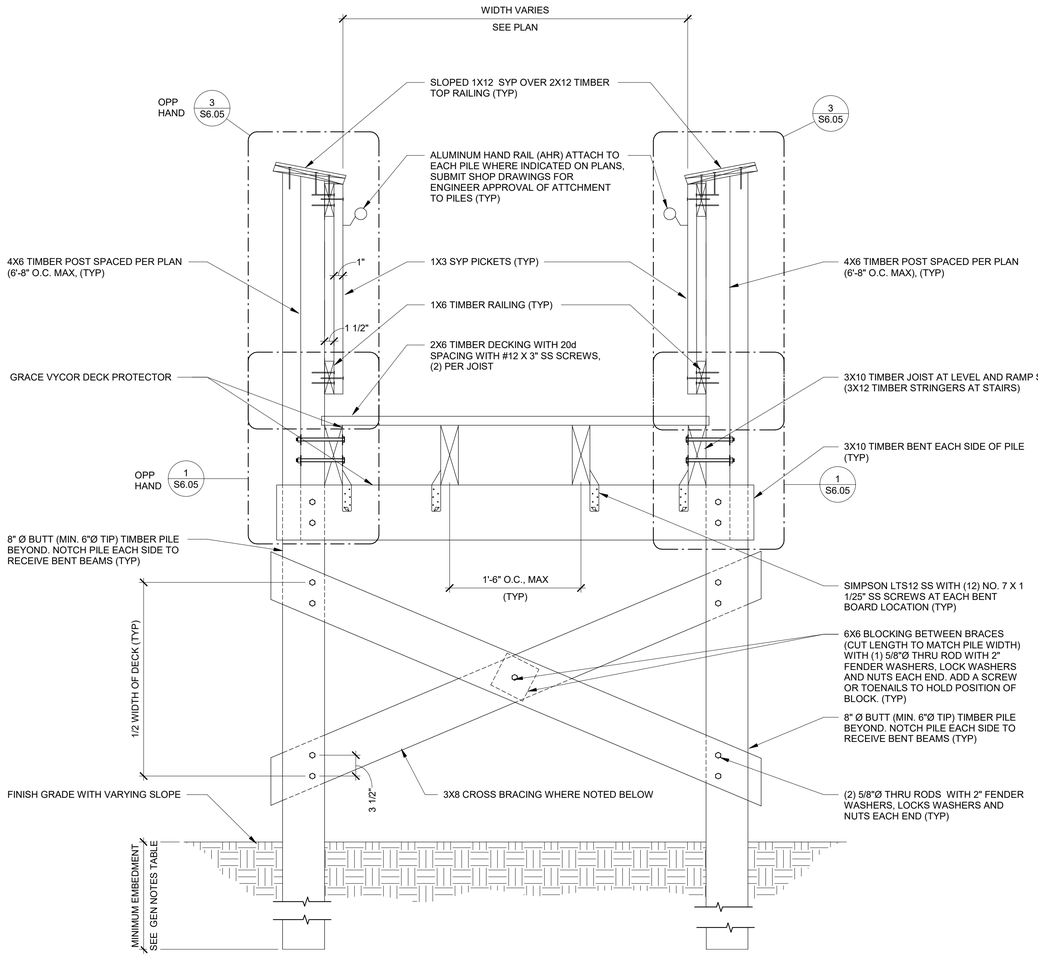
DESIGNED BY	JRB
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THE CITY OF DELRAY BEACH
HISTORIC MARINE WAY SEAWALL, ROADWAY, AND DRAINAGE IMPROVEMENT

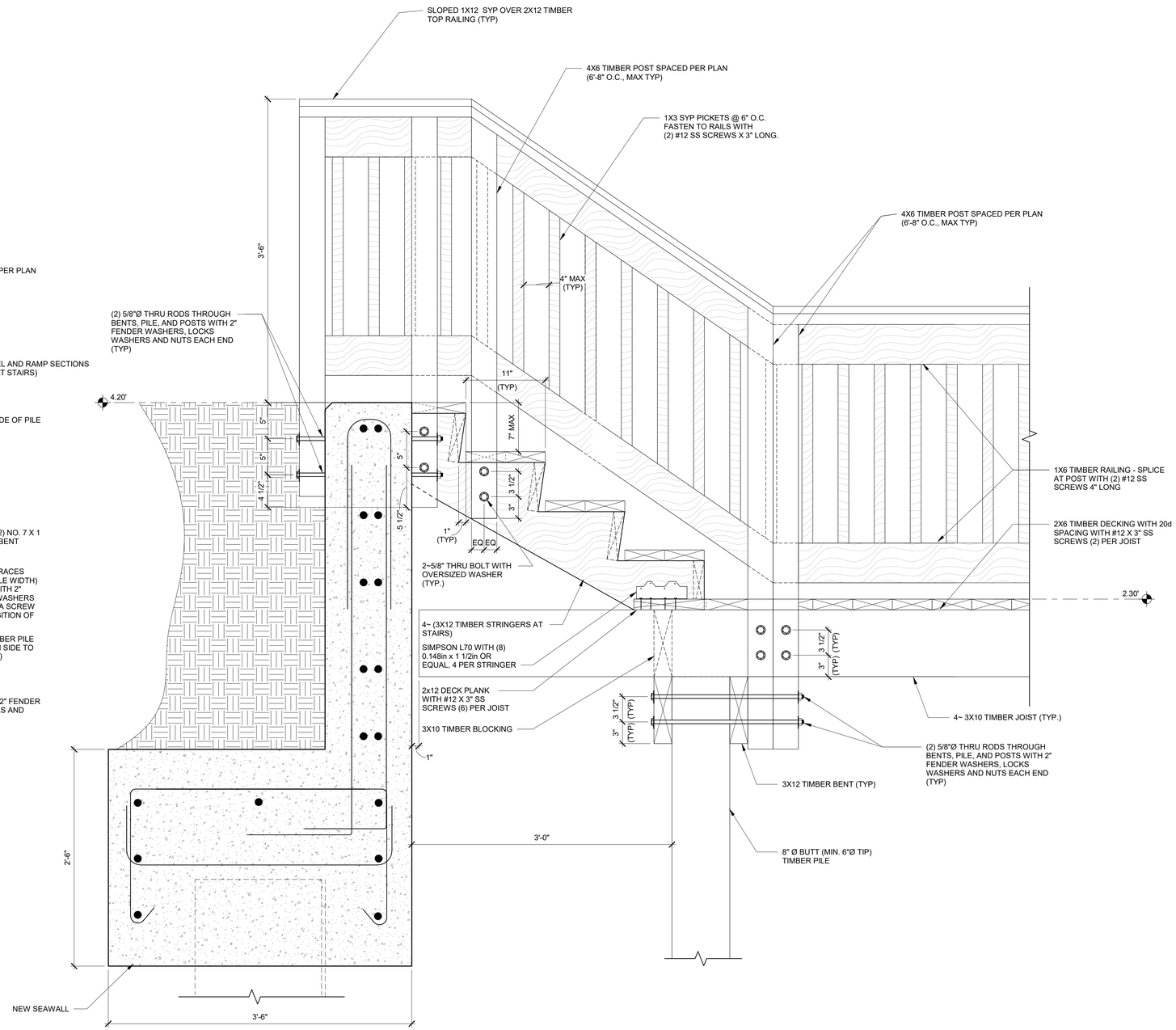
WOOD DECK FRAMING PLAN AND SECTION

PROJECT NO. 17-047
SHEET NO. S6.03
FILE ID. 17-047



NOTE:
X-BRACING AT TOP AND BOTTOM OF STAIRS RUNS AND AT EVERY OTHER BENT.
BURY INTO SAND TO HOLD DIMENSIONS.
EXCEPTION: NO BRACING REQUIRED IF BOTTOM OF BENT BEAM IS LESS THAN 2 FOOT ABOVE GROUND

1 TYPICAL SECTION THROUGH ACCESS AT PILES
1" = 1'-0"



2 TYPICAL BOARDWALK STAIR SECTION
1 1/2" = 1'-0"

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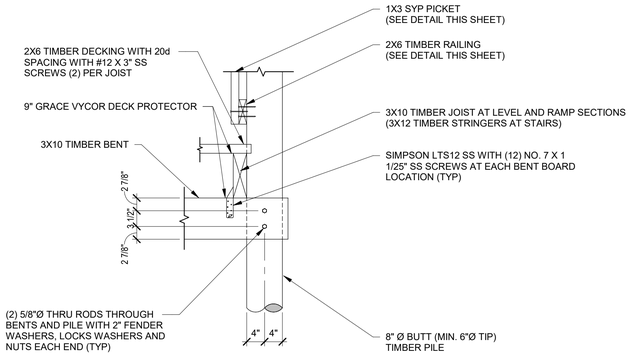
REVISION	DATE	DESCRIPTION
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THE CITY OF DELRAY BEACH
HISTORIC MARINE WAY SEAWALL, ROADWAY, AND DRAINAGE IMPROVEMENT

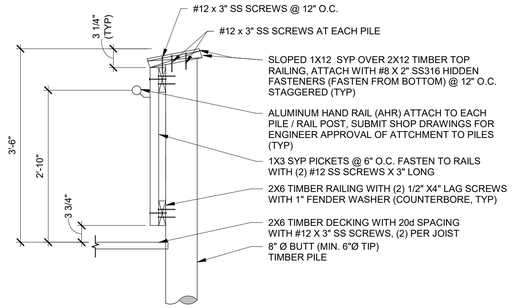
WOOD STAIRS AND ACCESS SECTIONS

PROJECT NO. 17-047
SHEET NO. S6.04
FILE ID. 17-047

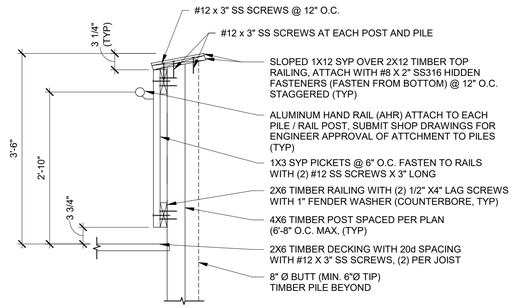
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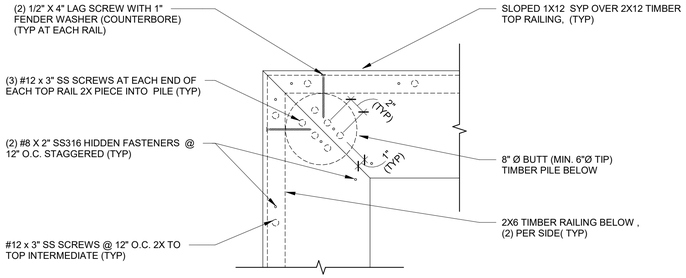
1 PILE CONNECTION WITHOUT 4X6 POST
3/4" = 1'-0"



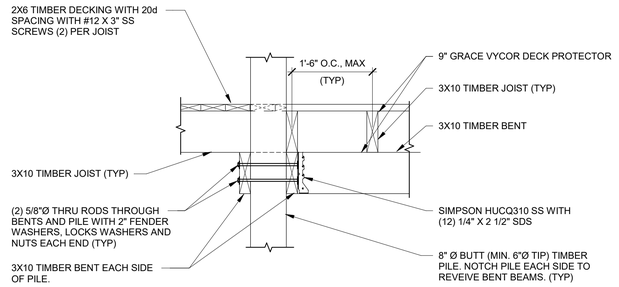
2 TYPICAL RAILING SECTION
3/4" = 1'-0"



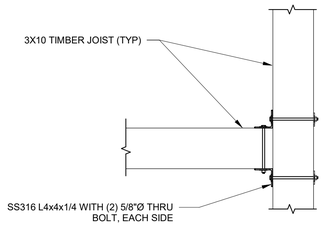
3 TYPICAL RAILING SECTION AT POST
3/4" = 1'-0"



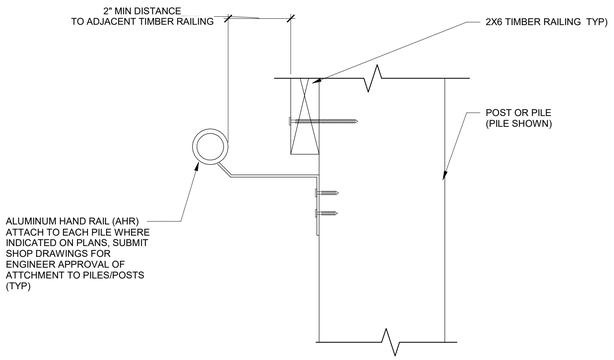
4 TYPICAL RAILING SECTION CORNER
1 1/2" = 1'-0"



5 FRAMING SECTION
3/4" = 1'-0"



6 TYPICAL JOIST TO JOIST CONNECTION DETAIL
3/4" = 1'-0"



7 TYPICAL HAND RAIL DETAIL
3" = 1'-0"

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Phone No. 561.687.2220
Fax No. 561.687.1110
Registry No. 33574

JEFFREY R. BERGMANN
P.E., LIC. NO. 50159

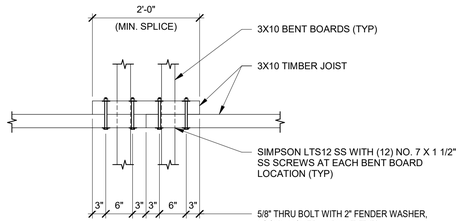
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DRAWN BY	DAB
CHECK BY	AS
DATE	07/14/23

REVISION	DATE	DESCRIPTION
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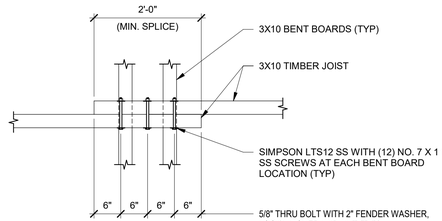
THE CITY OF DELRAY BEACH
HISTORIC MARINE WAY SEAWALL, ROADWAY, AND DRAINAGE IMPROVEMENT
WOOD DECK FRAMING DETAILS

PROJECT NO. 17-047
SHEET NO. S6.05
FILE ID. 17-047

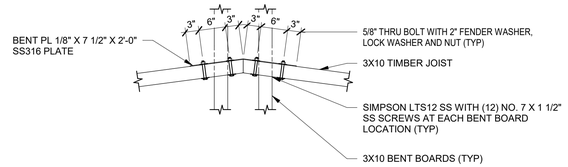
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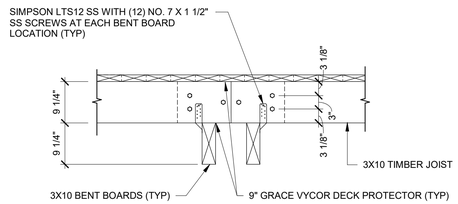
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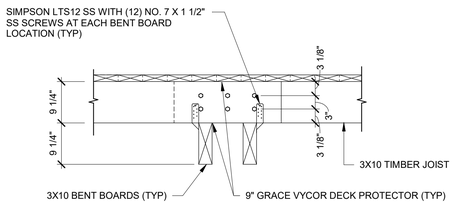
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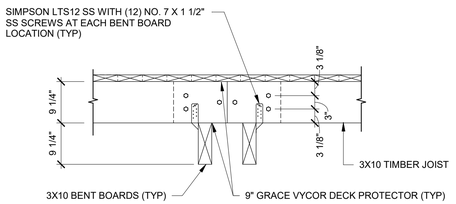
OPTION #3



OPTION #1



OPTION #2



OPTION #3

① TYPICAL SPLICE DETAILS
3/4" = 1'-0"

100% SUBMITTAL

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PUBLIC WORKS DEPARTMENT
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Registry No. 33574

JEFFREY R. BERGMANN
P.E., LIC. NO. 50159

DESIGNED BY	JRB
DRAWN BY	DAB
CHECK BY	AS
DATE	07/14/23

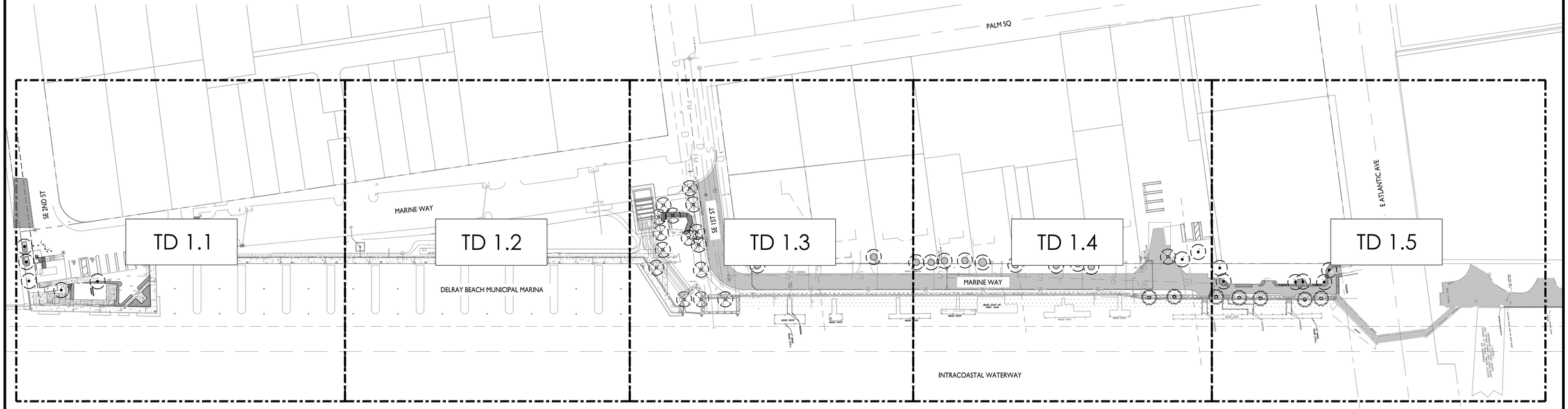
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THE CITY OF DELRAY BEACH
HISTORIC MARINE WAY SEAWALL, ROADWAY, AND DRAINAGE IMPROVEMENT

WOOD SPLICE DETAILS

PROJECT NO. 17-047
SHEET NO. S6.06
FILE ID. 17-047

North



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LANDSCAPE ARCHITECT'S SEAL

KIRSTEN SIEGEL, PLA
LIC. NO. LA6667375

DESIGNED BY	DN/JM
DRAWN BY	DN/VQ
CHECKED BY	KS
QC BY	JM
DATE	03/06/2024

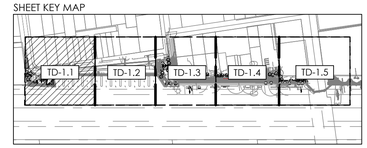
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THE CITY OF DELRAY BEACH
HISTORIC MARINE WAY SEAWALL, ROADWAY, AND DRAINAGE IMPROVEMENT
OVERALL TREE DISPOSITION PLAN

PROJECT NO. 17-047
SHEET NO. TD 1.0
FILE ID. 2898.01

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SHEET KEY MAP



North

0 5 10 20

SCALE IN FEET

EXISTING LANDSCAPE TO BE PROTECTED AND PRESERVED

SE 2ND ST

EXISTING DATE PALM CLUSTER TO BE PROTECTED AND PRESERVED

EXISTING FISHTAIL PALM CLUSTER TO BE PROTECTED AND PRESERVED

EXISTING SEAGRAPE TO BE REMOVED

MARINE WAY

EXISTING WALKING IRIS TO BE PROTECTED AND PRESERVED

FUEL VAULT

GENERATOR ENCLOSURE

EXISTING VARIEGATED SCHEFFLERA TO BE PROTECTED AND PRESERVED

DELRAY BEACH MUNICIPAL MARINA

45

46

47

48

49

ROCK BULKHEAD

EXISTING VARIEGATED FLAX LILY TO BE REMOVED

EXISTING VARIEGATED FLAX LILY TO BE PROTECTED AND PRESERVED

EXISTING FICUS GREEN ISLAND TO BE PROTECTED AND PRESERVED

INTRACOASTAL WATERWAY

MATCHLINE SHEET TD 1.2

LEGEND

- TREE / PALM TO BE PRESERVED
- ROYAL PALM TO BE PRESERVED
- TREE / PALM TO BE REMOVED
- TREE / PALM TO BE RELOCATED
- SEAGRAPE TO BE REMOVED
- SEAGRAPE TO BE PRESERVED
- MANGROVES TO BE PRESERVED

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KIRSTEN SIEGEL, PLA
LIC. NO. LA6667375

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QC BY	JM
DATE	03/06/2024

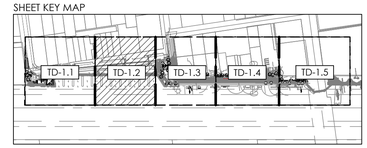
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1	2/26/24	ADDENDUM 5	ks

THE CITY OF DELRAY BEACH
HISTORIC MARINE WAY SEAWALL, ROADWAY, AND DRAINAGE IMPROVEMENT
TREE DISPOSITION PLAN

PROJECT NO. 17-047
SHEET NO. TD 1.1
FILE ID. 2898.01

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SHEET KEY MAP



North

0 5 10 20

SCALE IN FEET

MARINE WAY

DELRAY BEACH MUNICIPAL MARINA

MATCHLINE SHEET TD 1.1

MATCHLINE SHEET TD 1.3

ALL EXISTING LANDSCAPE TO REMAIN ON THIS SHEET

INTRACOASTAL WATERWAY

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QC BY	JM
DATE	03/06/2024

REVISION	DATE	DESCRIPTION	BY

THE CITY OF DELRAY BEACH
HISTORIC MARINE WAY SEAWALL, ROADWAY, AND DRAINAGE IMPROVEMENT
TREE DISPOSITION PLAN

PROJECT NO. 17-047
SHEET NO. TD 1.2
FILE ID. 2898.01

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MARINE WAY

EXISTING SEAGRAPE TO BE REMOVED

EXISTING SEAGRAPES TO BE PROTECTED AND PRESERVED

SE 1ST ST

SANITARY SEWER LIFT STATION

RESIDENCE

RESIDENCE

RESIDENCE

MARINE WAY

EXISTING MANGROVES

PROTECT EXISTING MANGROVE FROM CONSTRUCTION DAMAGE

SEAWALL

WOOD DOCK

WOOD DOCK

WOOD DO

HANDRAIL

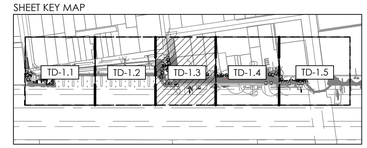
12" WOOD PILING (TYP.)

INTRACOASTAL WATERWAY

MATCHLINE SHEET TD 1.2

MATCHLINE SHEET TD 1.4

SHEET KEY MAP



North

0 5 10 20

SCALE IN FEET

LEGEND

- TREE / PALM TO BE PRESERVED
- ROYAL PALM TO BE PRESERVED
- TREE / PALM TO BE REMOVED
- TREE / PALM TO BE RELOCATED
- SEAGRAPE TO BE REMOVED
- SEAGRAPE TO BE PRESERVED
- MANGROVES TO BE PRESERVED

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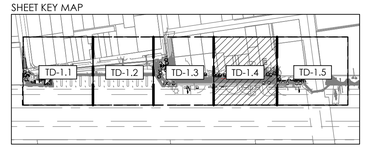
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THE CITY OF DELRAY BEACH
HISTORIC MARINE WAY SEAWALL, ROADWAY, AND DRAINAGE IMPROVEMENT
TREE DISPOSITION PLAN

PROJECT NO. 17-047
SHEET NO. TD 1.3
FILE ID. 2898.01

Plotted By: Siegel, Kirsten - Plot Date: 3/6/2024 5:18:27 PM - Scale: 1:1 - Plotted: 3/6/2024 5:18:27 PM - Plot Style: Full Size.ctb - Layout: TD1.3 - Xrefs: - C:\Users\ksiegel\Documents\Projects\2898.01 Marine Way\Civil\Drawings\Tree Disposition\2898.01 TD Plans.dwg

SHEET KEY MAP



North

0 5 10 20

SCALE IN FEET

MATCHLINE SHEET TD 1.3

MATCHLINE SHEET TD 1.5

RESIDENCE

RESIDENCE

RESIDENCE

RESIDENCE

RESIDENCE

WATER VALVE

WATER VALVE

PARKING

MARINE WAY

18 19 20 21 22 23 24 25 26 29 30 31 32 33

WOOD DOCK ON CONC. SLAB

WOOD DOCK

WOOD DOCK

WOOD DOCK

WOOD DOCK

EXISTING MANGROVES

PROTECT EXISTING MANGROVE FROM CONSTRUCTION DAMAGE

SEAWALL

INTRACOASTAL WATERWAY

LEGEND

- TREE / PALM TO BE PRESERVED
- ROYAL PALM TO BE PRESERVED
- TREE / PALM TO BE REMOVED
- TREE / PALM TO BE RELOCATED
- SEAGRAPE TO BE REMOVED
- SEAGRAPE TO BE PRESERVED
- MANGROVES TO BE PRESERVED

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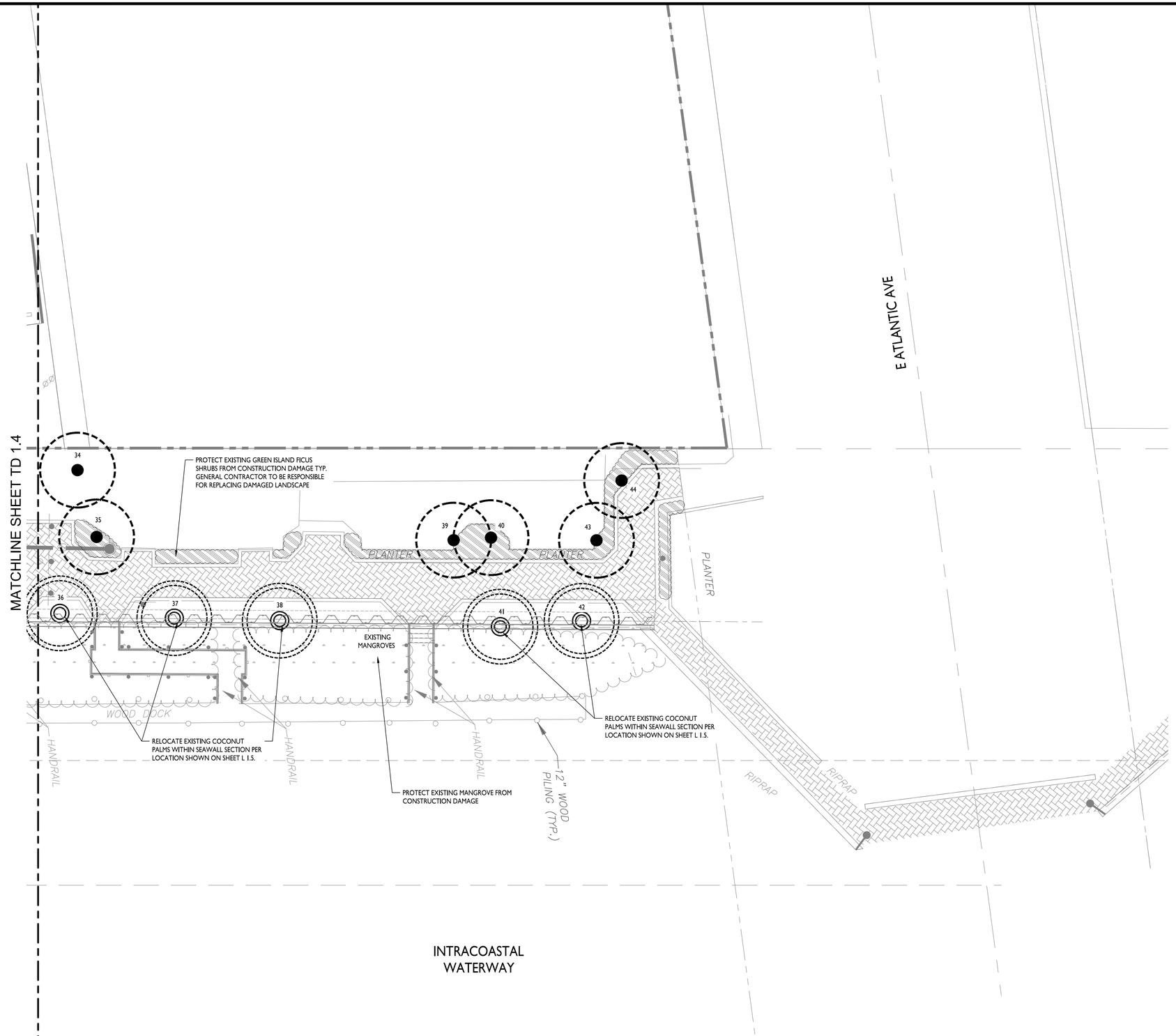
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DRAWN BY	DN/VQ
CHECKED BY	KS
QC BY	JM
DATE	03/06/2024

REVISION	DATE	DESCRIPTION	BY

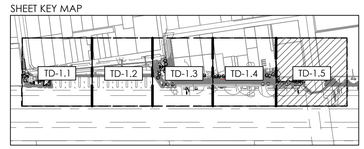
THE CITY OF DELRAY BEACH
HISTORIC MARINE WAY SEAWALL, ROADWAY, AND DRAINAGE IMPROVEMENT
TREE DISPOSITION PLAN

PROJECT NO. 17-047
SHEET NO. TD 1.4
FILE ID. 2898.01

Plotted: 3/6/2024, 5:26:06 PM Scale: 1/6/2024, 5:18:27 PM



SHEET KEY MAP



North

0 5 10 20

SCALE IN FEET

LEGEND

Tag #	Common Name	Scientific Name	Clear Trunk Height (feet)	Disposition
1	Sabal Palm	*Sabal palmetto*	13'	Remove
2	Sabal Palm	*Sabal palmetto*	13'	Remove
3	Coconut Palm	*Cocos nucifera*	25'	Remove
4	Sabal Palm	*Sabal palmetto*	18'	Remove
5	Sabal Palm	*Sabal palmetto*	18'	Remove
6	Sabal Palm	*Sabal palmetto*	10'	Remove
7	Sabal Palm	*Sabal palmetto*	13'	Remove
8	Sabal Palm	*Sabal palmetto*	13'	Remove
9	Foxtail Palm	*Wodyetia bifurcata*	5'	Remove
10	Sabal Palm	*Sabal palmetto*	13'	Remove
11	Sabal Palm	*Sabal palmetto*	10'	Remove
12	Sabal Palm	*Sabal palmetto*	12'	Remove
13	Coconut Palm	*Cocos nucifera*	15'	Remove
14	Coconut Palm	*Cocos nucifera*	15'	Remove
15	Coconut Palm	*Cocos nucifera*	15'	Remove
16	Royal Palm	*Roystonia regia*	25'	Preserve
17	Royal Palm	*Roystonia regia*	25'	Preserve
18	Royal Palm	*Roystonia regia*	30'	Preserve
19	Royal Palm	*Roystonia regia*	25'	Preserve
20	Royal Palm	*Roystonia regia*	30'	Preserve
21	Royal Palm	*Roystonia regia*	20'	Preserve
22	Royal Palm	*Roystonia regia*	30'	Preserve
23	Royal Palm	*Roystonia regia*	30'	Preserve
24	Royal Palm	*Roystonia regia*	20'	Preserve
25	Royal Palm	*Roystonia regia*	22'	Preserve
26	Royal Palm	*Roystonia regia*	22'	Preserve
29	Coconut Palm	*Cocos nucifera*	12'	Remove
30	Coconut Palm	*Cocos nucifera*	23'	Preserve
31	Coconut Palm	*Cocos nucifera*	23'	Preserve
32	Coconut Palm	*Cocos nucifera*	23'	Relocate
33	Coconut Palm	*Cocos nucifera*	25'	Relocate
34	Coconut Palm	*Cocos nucifera*	23'	Preserve
35	Coconut Palm	*Cocos nucifera*	20'	Preserve
36	Coconut Palm	*Cocos nucifera*	20'	Relocate
37	Coconut Palm	*Cocos nucifera*	27'	Relocate
38	Coconut Palm	*Cocos nucifera*	25'	Relocate
39	Coconut Palm	*Cocos nucifera*	25'	Preserve
40	Coconut Palm	*Cocos nucifera*	30'	Preserve
41	Coconut Palm	*Cocos nucifera*	27'	Relocate
42	Coconut Palm	*Cocos nucifera*	27'	Relocate
43	Coconut Palm	*Cocos nucifera*	30'	Preserve
44	Coconut Palm	*Cocos nucifera*	30'	Preserve
45	Coconut Palm	*Cocos nucifera*	15'	Preserve
46	Coconut Palm	*Cocos nucifera*	15'	Preserve
47	Coconut Palm	*Cocos nucifera*	15'	Preserve
48	Royal Palm	*Roystonia regia*	40'	Preserve
49	Royal Palm	*Roystonia regia*	30'	Preserve
			Palms Removed:	16
			Palms Relocated:	7
			Palms Preserved:	24

LEGEND

- TREE / PALM TO BE PRESERVED
- ROYAL PALM TO BE PRESERVED
- TREE / PALM TO BE REMOVED
- TREE / PALM TO BE RELOCATED
- SEAGRAPE TO BE REMOVED
- SEAGRAPE TO BE PRESERVED
- MANGROVES TO BE PRESERVED

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LANDSCAPE ARCHITECT'S SEAL
KIRSTEN SIEGEL, PLA
LIC. NO. LA6667375

DESIGNED BY	DN/JM
DRAWN BY	DN/VQ
CHECKED BY	KS
QC BY	JM
DATE	03/06/2024

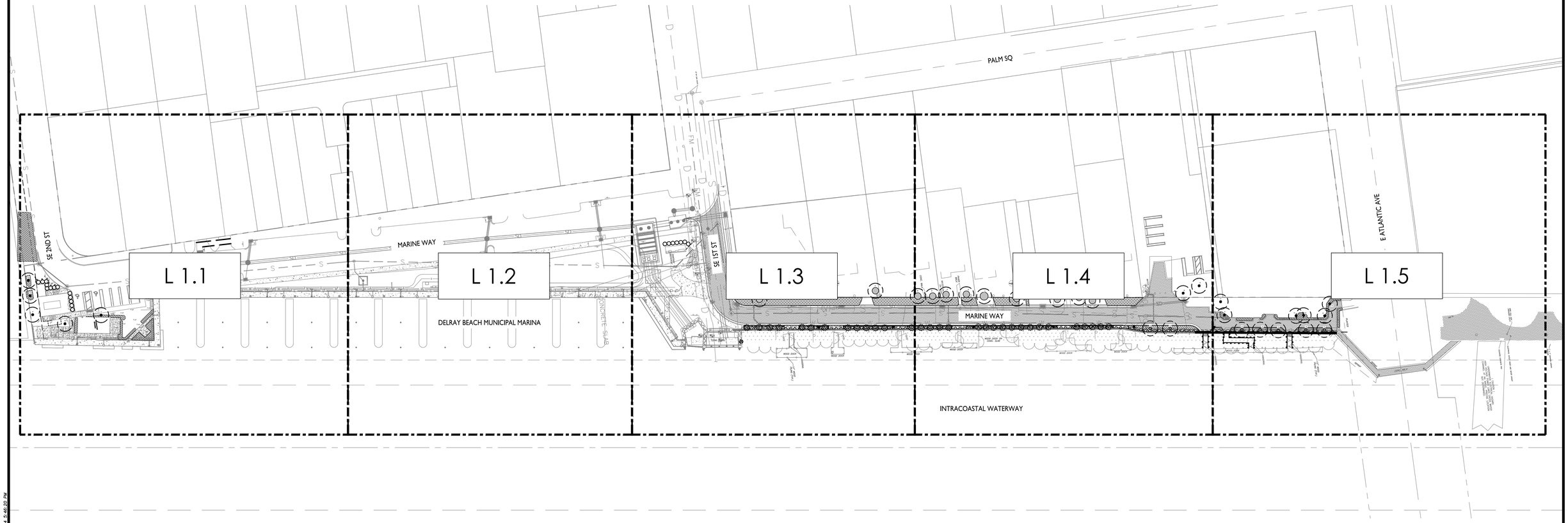
REVISION	DATE	DESCRIPTION	BY

THE CITY OF DELRAY BEACH
HISTORIC MARINE WAY SEAWALL, ROADWAY, AND DRAINAGE IMPROVEMENT
TREE DISPOSITION PLAN

PROJECT NO. 17-047
SHEET NO. TD 1.5
FILE ID. 2898.01

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North



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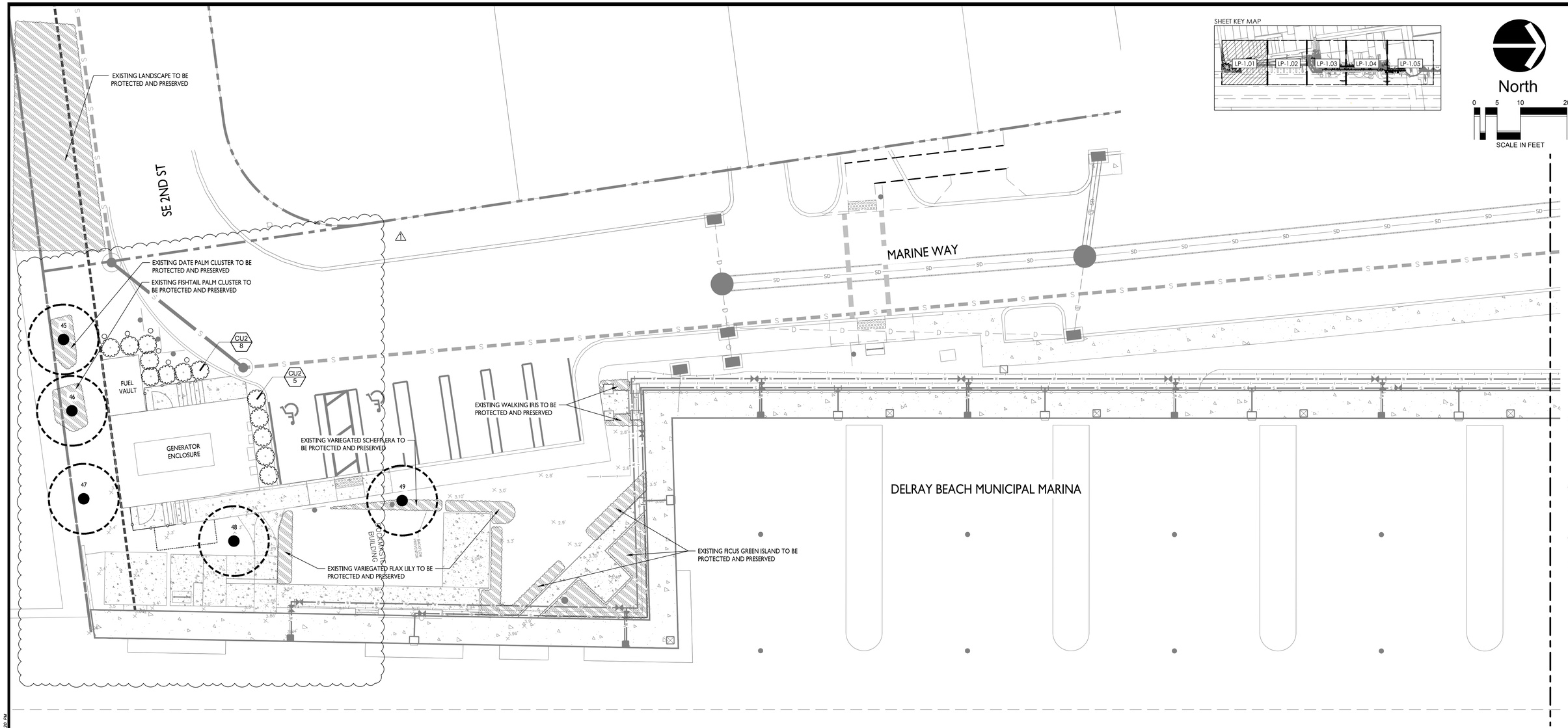
REVISION	DATE	DESCRIPTION	BY

THE CITY OF DELRAY BEACH HISTORIC MARINE WAY SEAWALL, ROADWAY, AND DRAINAGE IMPROVEMENT

OVERALL LANDSCAPE PLAN

PROJECT NO. 17-047
SHEET NO. L 1.0
FILE ID. 2898.01

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PLANT SCHEDULE

	QTY	COMMON NAME	BOTANICAL NAME	NATIVE	DROUGHT TOLERANCE	SALT TOLERANCE	REMARKS
TREES CP-R	7	Relocated Coconut Palm	Relocated Coconut Palm	YES	HIGH	HIGH	See Tree Disposition Schedule on Page TD-1.5 for Palm Size
PALM TREES TR	31	Florida Thatch Palm	Thrinax radiata	Yes	HIGH	HIGH	18' HT
SHRUBS CU2	20	Sea Grape	Coccoloba uvifera	Yes	HIGH	HIGH	8' HT; FULL TO BASE, FULL SCREEN HEDGE
SHRUB AREAS CI FI	358 134	Red Tip Cocoplum Green Island Ficus	Chrysobalanus icaco Ficus microcarpa 'Green Island'	Yes No	High High	High High	24" HT, 24" SPRD, 24" O.C. 24" HT, 24" SPRD, 24" O.C.
GROUND COVERS SOD	2,558 sf	St. Augustine Grass	Stenotaphrum secundatum	NO	High	High	

NOTE:
1. ALL LANDSCAPE MATERIAL TO BE SUBMITTED TO LANDSCAPE ARCHITECT FOR APPROVAL PRIOR TO INSTALLATION.
2. CONTRACTOR IS RESPONSIBLE FOR MANUAL WATERING THROUGH ESTABLISHMENT AND WARRANTY PERIOD FOR ALL PLANTING AREAS WITHOUT PROPOSED IRRIGATION. REFER TO IRRIGATION PLANS.
3. CONTRACTOR SHALL REPLACE ALL EXISTING LANDSCAPE THAT IS DAMAGED BY CONSTRUCTION.

LEGEND

- PRESERVED TREE / PALM
- ROYAL PALM TO BE PRESERVED
- RELOCATED TREE / PALM
- ROOT BARRIER
- PROPOSED GRASSPAVE
- MANGROVE TO BE PRESERVED
- PRESERVED SEAGRAPES

CITY of DELRAY BEACH
PUBLIC WORKS DEPARTMENT
434 SOUTH SWINTON AVENUE, DELRAY BEACH, FLORIDA 33444
Phone: (561) 243-7322 Fax: (561) 243-7314 www.mydelraybeach.com

PREPARED BY:
WGL
2035 Vista Parkway
West Palm Beach, FL 33411
Phone No. 561.687.2220
Fax No. 561.687.1110
Cert No. 6091 - LB No. 7055
ENGINEERING // SURVEYING // ENVIRONMENTAL // PLANNING

LANDSCAPE ARCHITECT'S SEAL
KIRSTEN SIEGEL, PLA
LIC. NO. LA6667375

DESIGNED BY	DN/JM
DRAWN BY	DN/VQ
CHECKED BY	KS
QC BY	JM
DATE	03/06/2024

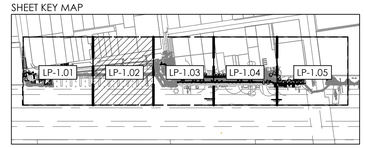
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1	2/26/24	ADDENDUM 5	ks

THE CITY OF DELRAY BEACH
HISTORIC MARINE WAY SEAWALL, ROADWAY, AND DRAINAGE IMPROVEMENT
LANDSCAPE PLAN

PROJECT NO. 17-047
SHEET NO. L 1.1
FILE ID. 2898.01

I:\Site Sheet Data\2898\2898.01 Marine Way Rd_SW\Drawings\Landscape\2898.01-Plans ------ Printed: 3/6/2024 8:34:20 PM By: Scott Hall 3/6/2024 8:46:20 PM

SHEET KEY MAP



North

0 5 10 20

SCALE IN FEET

MARINE WAY

SD

RIM ELEV. = 2.34'

RIM ELEV. = 2.26'

CONCRETE SLAB

DELRAY BEACH MUNICIPAL MARINA

MATCHLINE SHEET L 1.1

MATCHLINE SHEET L 1.3

NO PROPOSED LANDSCAPE ON THIS SHEET

INTRACOASTAL WATERWAY

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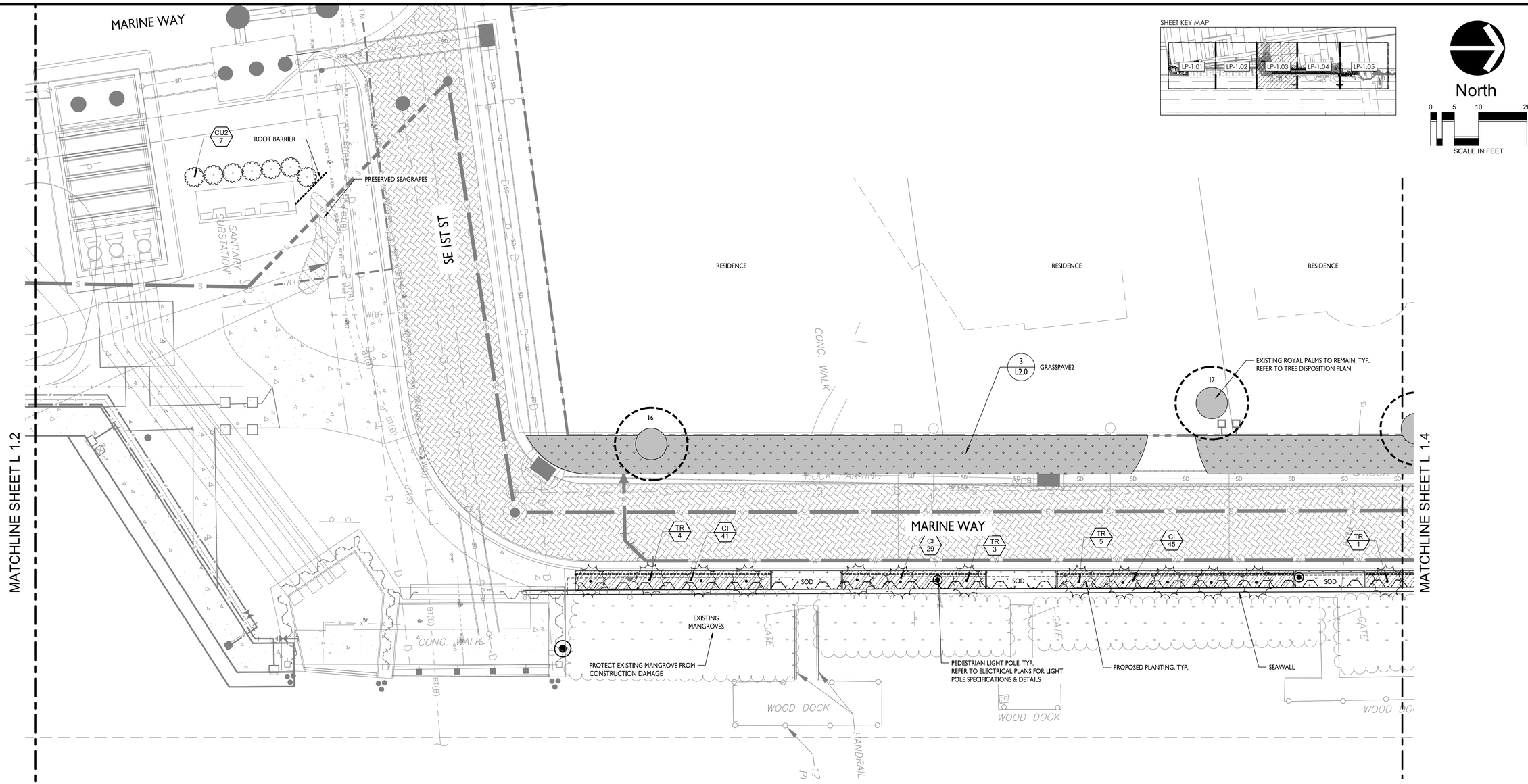
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DRAWN BY	DN/VQ
CHECKED BY	KS
QC BY	JM
DATE	03/06/2024

REVISION	DATE	DESCRIPTION	BY

THE CITY OF DELRAY BEACH
HISTORIC MARINE WAY SEAWALL, ROADWAY, AND DRAINAGE IMPROVEMENT
LANDSCAPE PLAN

PROJECT NO. 17-047
SHEET NO. L 1.2
FILE ID. 2898.01

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PLANT SCHEDULE

	QTY	COMMON NAME	BOTANICAL NAME	NATIVE	DROUGHT TOLERANCE	SALT TOLERANCE	REMARKS
TREES CP-R	7	Relocated Coconut Palm	Relocated Coconut Palm	YES	HIGH	HIGH	See Tree Disposition Schedule on Page TD-1.5 for Palm Size
PALM TREES TR	31	Florida Thatch Palm	Thrinax radiata	Yes	HIGH	HIGH	18' HT
SHRUBS CU2	20	Sea Grape	Coccoloba uvifera	Yes	HIGH	HIGH	8' HT; FULL TO BASE, FULL SCREEN HEDGE
SHRUB AREAS CI FI	358 134	Red Tip Cocoplum Green Island Ficus	Chrysobalanus icaco Ficus microcarpa 'Green Island'	Yes No	High High	High High	24" HT, 24" SPRD, 24" O.C. 24" HT, 24" SPRD, 24" O.C.
GROUND COVERS SOD	2,558 sf	St. Augustine Grass	Stenotaphrum secundatum	NO	High	High	

NOTE:
1. ALL LANDSCAPE MATERIAL TO BE SUBMITTED TO LANDSCAPE ARCHITECT FOR APPROVAL PRIOR TO INSTALLATION.
2. CONTRACTOR IS RESPONSIBLE FOR MANUAL WATERING THROUGH ESTABLISHMENT AND WARRANTY PERIOD FOR ALL PLANTING AREAS WITHOUT PROPOSED IRRIGATION. REFER TO IRRIGATION PLANS.
3. CONTRACTOR SHALL REPLACE ALL EXISTING LANDSCAPE THAT IS DAMAGED BY CONSTRUCTION.

LEGEND

- PRESERVED TREE / PALM
- ROYAL PALM TO BE PRESERVED
- RELOCATED TREE / PALM
- ROOT BARRIER
- PROPOSED GRASSPAVE
- MANGROVE TO BE PRESERVED
- PRESERVED SEAGRAPES

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KIRSTEN SIEGEL, PLA
LIC. NO. LA6667375

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QC BY	JM
DATE	03/06/2024

REVISION	DATE	DESCRIPTION	BY
1	2/26/24	ADDENDUM 5	ks

THE CITY OF DELRAY BEACH
HISTORIC MARINE WAY SEAWALL, ROADWAY, AND DRAINAGE IMPROVEMENT
LANDSCAPE PLAN

PROJECT NO. 17-047
SHEET NO. L 1.3
FILE ID. 2898.01

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SHEET KEY MAP



North

0 5 10 20

SCALE IN FEET

MATCHLINE SHEET L 1.3

MATCHLINE SHEET L 1.5

RESIDENCE

RESIDENCE

RESIDENCE

RESIDENCE

RESIDENCE

CONC. WALK

WATER VALVE ON CONC.

PAVER WALK

EXISTING ROYAL PALMS TO REMAIN. PROTECT DURING CONSTRUCTION, TYP.

3 L2.0 GRASSPAVE2

PROTECT EXISTING PALMS DURING CONSTRUCTION. INSTALL GROUNDCOVER PLANTER, TYP.

EXISTING COCONUT PALMS TO REMAIN; PROTECT DURING CONSTRUCTION, TYP.

18 19 20 21 22 23 24 25 26 30 31

SD

MARINE WAY

CI 39 | TR 4 | CI 70 | TR 9 | TR 5 | CI 29 | CI 105 | CP-R 2

SOD

32 33

WOOD DOCK ON CONC. SLAB

WOOD DOCK

PEDESTRIAN LIGHT POLE, TYP. REFER TO ELECTRICAL PLANS FOR LIGHT POLE SPECIFICATIONS & DETAILS

PROPOSED PLANTING, TYP.

EXISTING MANGROVES

PROTECT EXISTING MANGROVE FROM CONSTRUCTION DAMAGE

WOOD DOCK

WOOD DOCK

SEAWALL

INTRACOASTAL WATERWAY

PLANT SCHEDULE

	QTY	COMMON NAME	BOTANICAL NAME	NATIVE	DROUGHT TOLERANCE	SALT TOLERANCE	REMARKS
TREES							
CP-R	7	Relocated Coconut Palm	Relocated Coconut Palm	YES	HIGH	HIGH	See Tree Disposition Schedule on Page TD-1.5 for Palm Size
PALM TREES	QTY	COMMON NAME	BOTANICAL NAME	NATIVE	DROUGHT TOLERANCE	SALT TOLERANCE	REMARKS
TR	31	Florida Thatch Palm	Thrinax radiata	Yes	HIGH	HIGH	18' HT
SHRUBS	QTY	COMMON NAME	BOTANICAL NAME	NATIVE	DROUGHT TOLERANCE	SALT TOLERANCE	REMARKS
CU2	20	Sea Grape	Coccoloba uvifera	Yes	HIGH	HIGH	8' HT; FULL TO BASE, FULL SCREEN HEDGE
SHRUB AREAS	QTY	COMMON NAME	BOTANICAL NAME	NATIVE	DROUGHT TOLERANCE	SALT TOLERANCE	REMARKS
CI	358	Red Tip Cocoplum	Chrysobalanus icaco	Yes	High	High	24" HT, 24" SPRD, 24" O.C.
FI	134	Green Island Ficus	Ficus microcarpa 'Green Island'	No	High	High	24" HT, 24" SPRD, 24" O.C.
GROUND COVERS	QTY	COMMON NAME	BOTANICAL NAME	NATIVE	DROUGHT TOLERANCE	SALT TOLERANCE	REMARKS
SOD	2,558 sf	St. Augustine Grass	Stenotaphrum secundatum	NO	High	High	

NOTE:
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- MANGROVE TO BE PRESERVED
- PRESERVED SEAGRAPES

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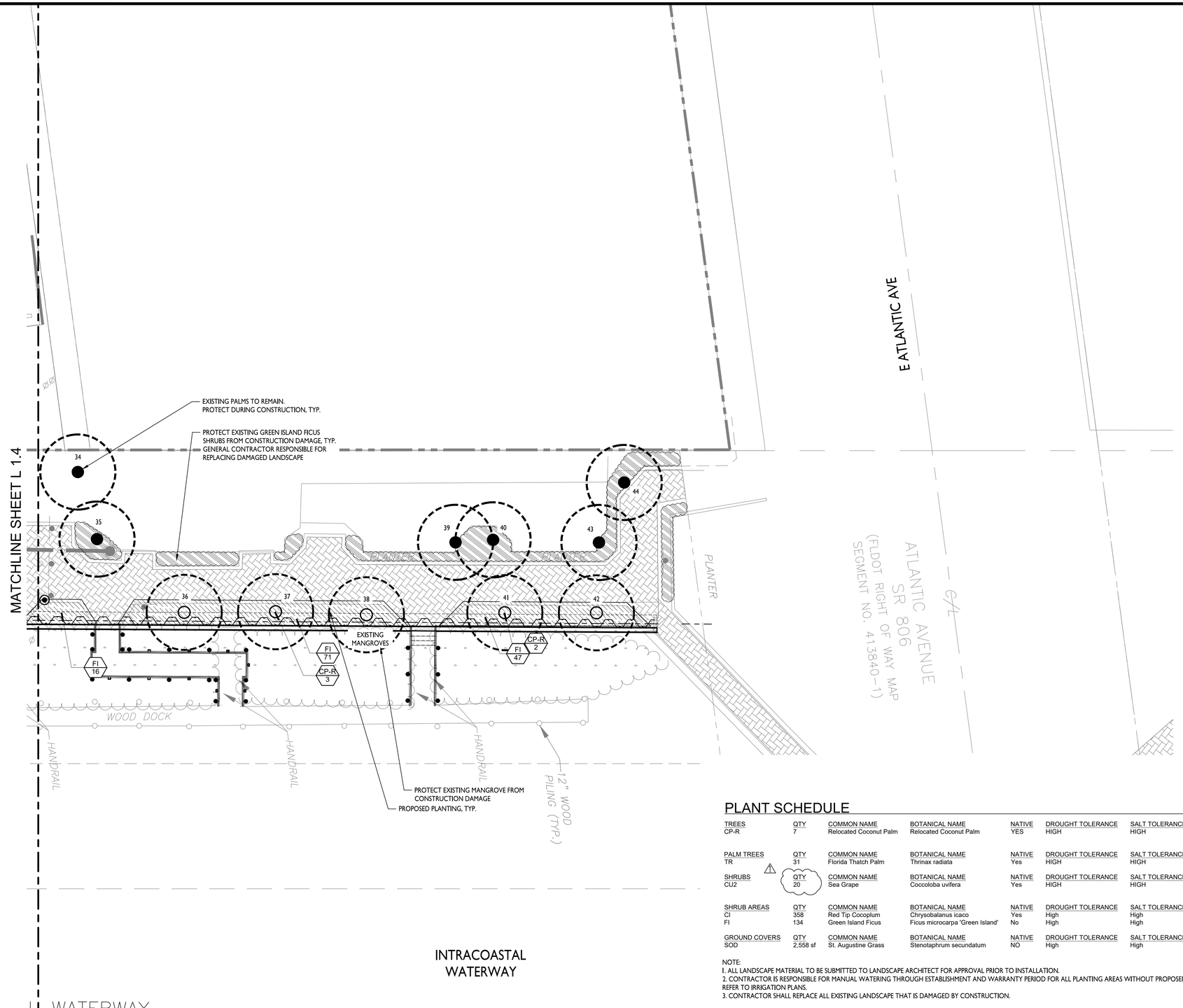
DESIGNED BY	DN/JM
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QC BY	JM
DATE	03/06/2024

REVISION	DATE	DESCRIPTION	BY
1	2/26/24	ADDENDUM 5	ks

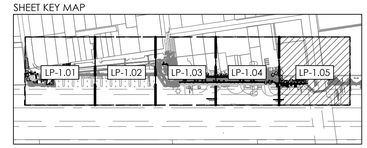
THE CITY OF DELRAY BEACH
HISTORIC MARINE WAY SEAWALL, ROADWAY, AND DRAINAGE IMPROVEMENT
LANDSCAPE PLAN

PROJECT NO. 17-047
SHEET NO. L 1.4
FILE ID. 2898.01

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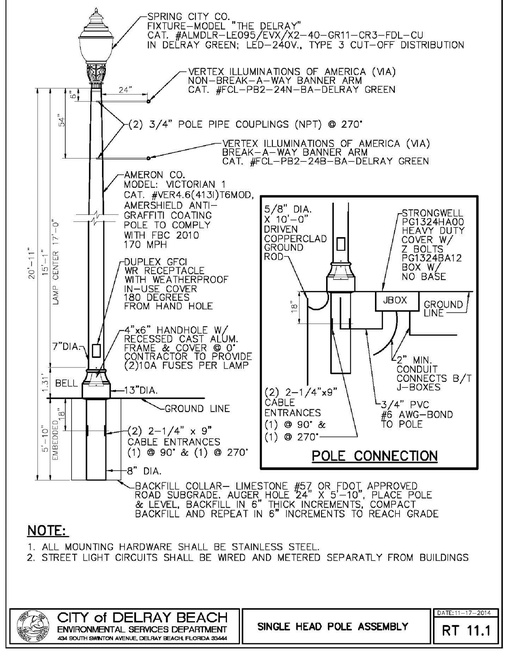
SHEET KEY MAP



North

0 5 10 20

SCALE IN FEET



NOTE:

1. ALL MOUNTING HARDWARE SHALL BE STAINLESS STEEL.
2. STREET LIGHT CIRCUITS SHALL BE WIRED AND METERED SEPARATLY FROM BUILDINGS

CITY of DELRAY BEACH ENVIRONMENTAL SERVICES DEPARTMENT 434 SOUTH SWINTON AVENUE, DELRAY BEACH, FLORIDA 33444	SINGLE HEAD POLE ASSEMBLY	DATE: 11-17-2014 RT 11.1

NOTE:
LIGHT POLE DETAIL PROVIDED FOR DESIGN INTENT ONLY. REFER TO ELECTRICAL DRAWINGS FOR ALL CONSTRUCTION DETAILS AND SPECIFICATIONS.

PLANT SCHEDULE

	QTY	COMMON NAME	BOTANICAL NAME	NATIVE	DROUGHT TOLERANCE	SALT TOLERANCE	REMARKS
TREES CP-R	7	Relocated Coconut Palm	Relocated Coconut Palm	YES	HIGH	HIGH	See Tree Disposition Schedule on Page TD-1.5 for Palm Size
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SHRUB AREAS CI FI	358 134	Red Tip Cocoplum Green Island Ficus	Chrysobalanus icaco Ficus microcarpa 'Green Island'	Yes No	High High	High High	24" HT, 24" SPRD, 24" O.C. 24" HT, 24" SPRD, 24" O.C.
GROUND COVERS SOD	2,558 sf	St. Augustine Grass	Stenotaphrum secundatum	NO	High	High	

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- ROOT BARRIER
- PROPOSED GRASSPAVE
- MANGROVE TO BE PRESERVED
- PRESERVED SEAGRAPES

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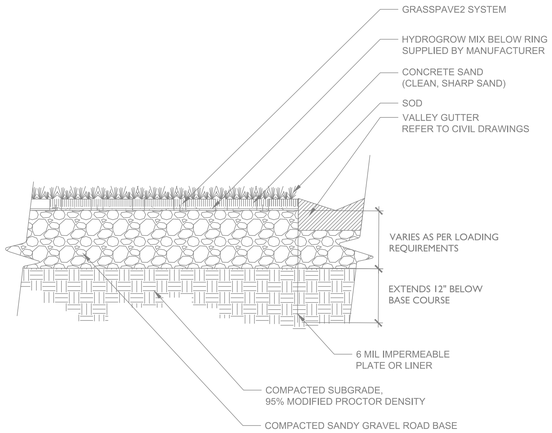
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DRAWN BY	DN/VQ
CHECKED BY	KS
QC BY	JM
DATE	03/06/2024

REVISION	DATE	DESCRIPTION	BY
1	2/26/24	ADDENDUM 5	ks

THE CITY OF DELRAY BEACH
HISTORIC MARINE WAY SEAWALL, ROADWAY, AND DRAINAGE IMPROVEMENT
LANDSCAPE PLAN

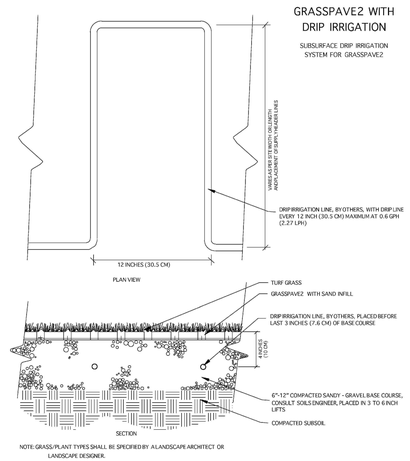
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SHEET NO. L 1.5
FILE ID. 2898.01

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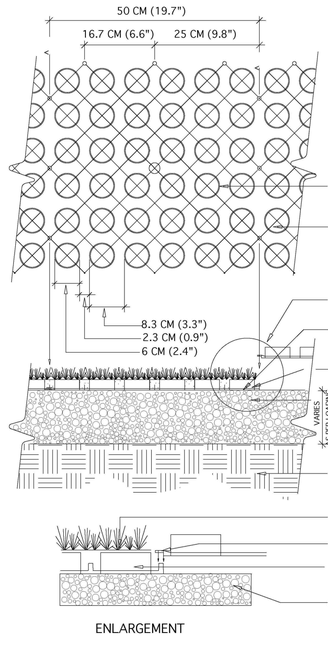
1 GRASSPAVE2 TYPICAL SECTION

NOT TO SCALE



2 GRASSPAVE2 WITH DRIP IRRIGATION

NOT TO SCALE



SPECIFICATIONS

UNIT SIZE - 50 CM X 50 CM X 2.5 CM OR 1 M X 1 M X 2.5 CM (20" X 20" X 1" OR 40" X 40" X 1")

AVAILABLE IN 9 STANDARD ROLL SIZES

UNIT WEIGHT - 510 GRAMS (18 OZ.) OR 2.0 KG (4.5 POUNDS)

STRENGTH - 1121 KG/CM²(15,940 PSI)

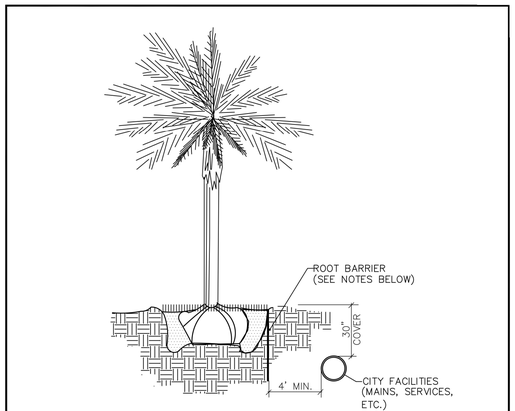
COLOR - BLACK

RESIN - 100% RECYCLED HDPE

NOTE: GRASS/PLANT TYPES SHALL BE SPECIFIED BY A LANDSCAPE ARCHITECT OR LANDSCAPE DESIGNER.

3 GRASSPAVE2 DETAIL

NOT TO SCALE



NOTES:

1. ALL ROOT BARRIERS SHALL BE 4' MINIMUM FROM ALL CITY FACILITIES.
2. THE INSTALLATION OF ROOT BARRIERS SHALL BE COORDINATED WITH CITY AND INSPECTED BY CITY PRIOR TO BACKFILLING. ALL ROOT BARRIERS SHALL EXTEND UP TO FINISHED GRADE.
3. ROOT BARRIERS SHALL BE MINIMUM 36" DEEP. APPROVED PRODUCTS INCLUDE "DEEP ROOT" AND "ROOT SOLUTIONS". FLEXIBLE BARRIERS SHALL BE 36" PANELS MANUFACTURED BY BIOBARRIER.
4. ALL ROOT BARRIERS SHALL BE INSTALLED IN ACCORDANCE WITH MANUFACTURERS WRITTEN INSTRUCTIONS.

CITY of DELRAY BEACH
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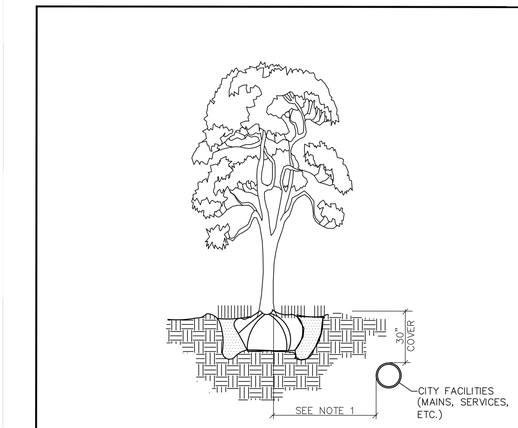
TYPICAL TREE WITH ROOT BARRIER

DATE: 09-15-2021

LD 1.0

4 TYPICAL TREE WITH ROOT BARRIER DETAIL

NOT TO SCALE



NOTES:

1. THIS DISTANCE SHALL BE 10' MINIMUM FROM ALL CITY FACILITIES IF NO ROOT BARRIER IS USED.

CITY of DELRAY BEACH
PUBLIC WORKS DEPARTMENT
434 SOUTH SWINTON AVENUE, DELRAY BEACH, FLORIDA 33444

TYPICAL TREE WITHOUT ROOT BARRIER

DATE: 9-15-2021

LD 2.0

5 TYPICAL TREE WITHOUT ROOT BARRIER DETAIL

NOT TO SCALE

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CHECKED BY	KS
QC BY	JM
DATE	03/06/2024

REVISION	DATE	DESCRIPTION	BY

THE CITY OF DELRAY BEACH
HISTORIC MARINE WAY SEAWALL, ROADWAY, AND DRAINAGE IMPROVEMENT
LANDSCAPE DETAILS

PROJECT NO. 17-047

SHEET NO. L 2.0

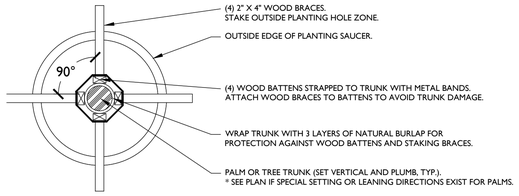
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LARGE PALM OR TREE STAKING PLAN

NOTE:
1. APPLICABLE TO ALL MULTI-TRUNK PALMS AND PALMS WITH CALIPER SIZE OF SIX (6) INCHES OR GREATER.
2. ALL TREE SUPPORTS MATERIALS ARE TO BE REMOVED FROM EACH TREE ONCE IT IS ESTABLISHED. TYPICALLY SIX MONTHS FOR SHADE TREES OR ONE YEAR FOR PALMS.

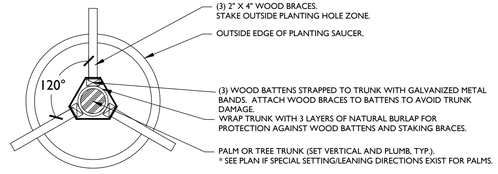
NTS.



SMALL PALM STAKING PLAN

NOTE:
1. APPLICABLE TO ALL PALMS WITH CALIPER SIZE OF LESS THAN SIX (6) INCHES.
2. ALL TREE SUPPORTS MATERIALS ARE TO BE REMOVED FROM EACH TREE ONCE IT IS ESTABLISHED. TYPICALLY SIX MONTHS FOR SHADE TREES OR ONE YEAR FOR PALMS.

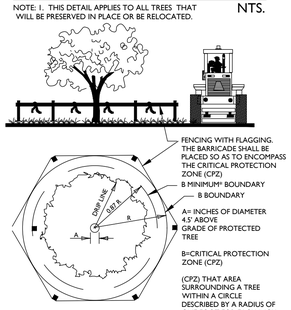
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TREE PROTECTION DETAIL

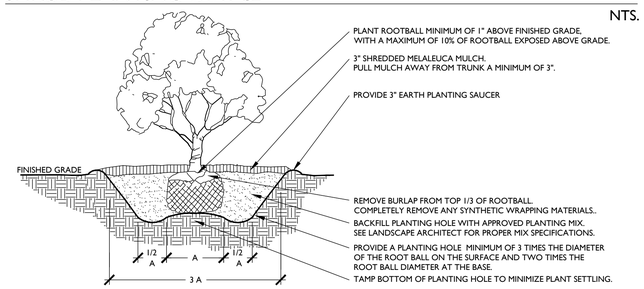
NOTE: 1. THIS DETAIL APPLIES TO ALL TREES THAT WILL BE PRESERVED IN PLACE OR BE RELOCATED.

NTS.



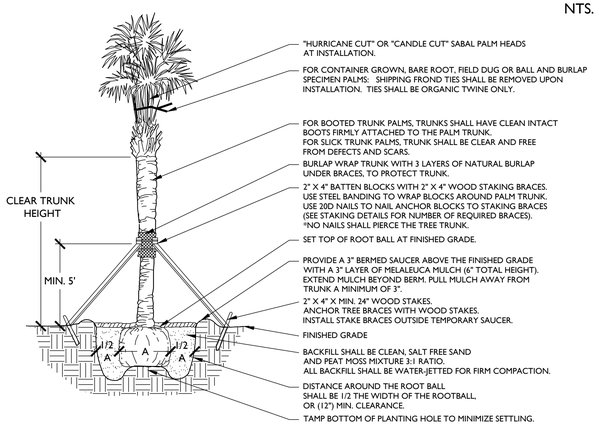
SHRUB PLANTING DETAIL

NTS.



PALM PLANTING DETAIL

NTS.

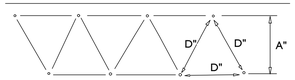


PLANT SPACING DETAIL

NTS.

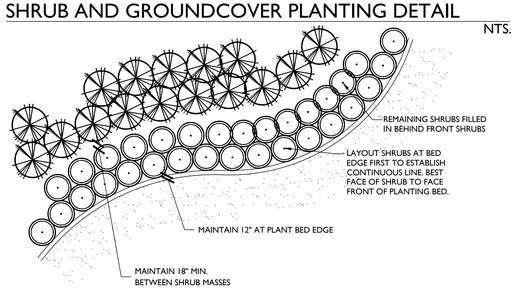
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6" O.C.	5.2"
8" O.C.	6.93"
10" O.C.	8.66"
12" O.C.	10.4"
18" O.C.	15.6"
24" O.C.	20.8"
30" O.C.	26.0"
36" O.C.	31.2"
48" O.C.	41.6"

PLANT SPACING CHART



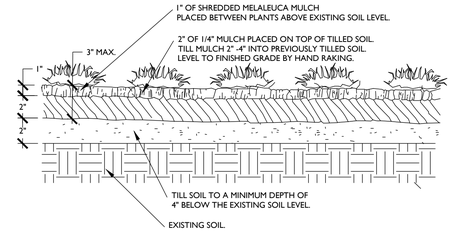
SHRUB AND GROUNDCOVER PLANTING DETAIL

NTS.



GROUNDCOVER DETAIL

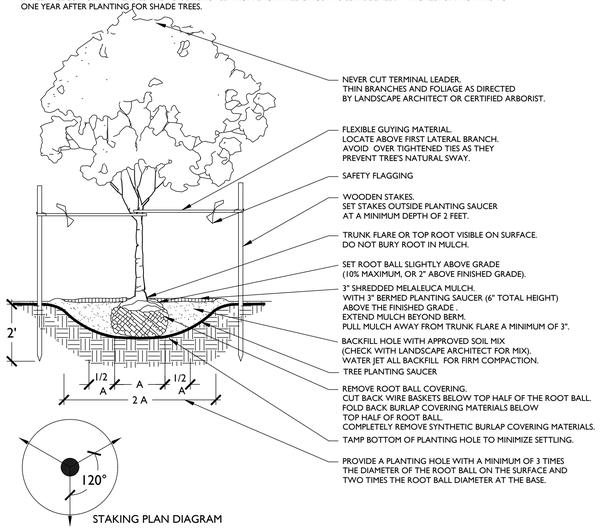
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TREE PLANTING DETAIL

NOTE:
1. ALL TREE SUPPORT MATERIALS ARE TO BE REMOVED FROM EACH TREE ONCE IT IS ESTABLISHED. TYPICALLY SIX MONTHS TO ONE YEAR AFTER PLANTING FOR SHADE TREES.

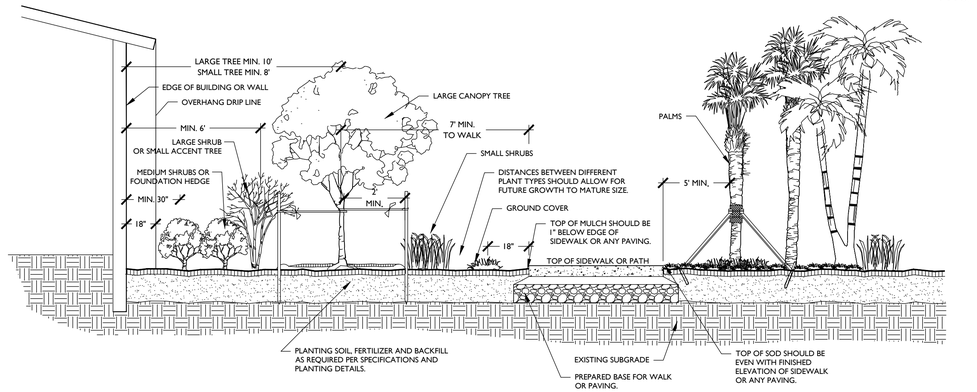
NTS.



STAKING PLAN DIAGRAM

TYPICAL PLANTING DIAGRAM

NTS.



LANDSCAPE NOTES:

1. STRUCTURAL ELEMENTS AND HARDSCAPE FEATURES INDICATED ON LANDSCAPE PLANS ARE FOR INFORMATIONAL PURPOSES ONLY. LANDSCAPE PLANS ARE TO BE UTILIZED FOR LOCATION OF LIVING PLANT MATERIAL ONLY. LANDSCAPE PLANS SHOULD NOT BE UTILIZED FOR STAKING AND LAYOUT OR LOCATION OF ANY STRUCTURAL SITE FEATURES INCLUDING BUT NOT LIMITED TO: BUILDINGS, SIGNAGE, PATHWAYS, EASEMENTS, BERMS, WALL, FENCES, UTILITIES OR ROADWAYS.
2. CONTRACTOR SHALL ACQUIRE ALL APPLICABLE FEDERAL, STATE, LOCAL, JURISDICTIONAL OR UTILITY COMPANY PERMITS REQUIRED PRIOR TO REMOVAL, RELOCATION, AND/OR INSTALLATION OF LANDSCAPE MATERIALS INDICATED WITHIN PLAN DOCUMENTS. THE CONTRACTOR SHALL HAVE PERMITS "IN HAND" PRIOR TO STARTING WORK. LANDSCAPE ARCHITECT SHALL BEAR NO RESPONSIBILITY FOR WORK PERFORMED WITHOUT PERMITTED DRAWINGS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL CHANGES TO THE WORK, AT NO ADDITIONAL COST TO THE OWNER, AS A RESULT OF UNAUTHORIZED WORK PRIOR TO RECEIPT OF PERMIT.
3. TREES SHOWN ON THIS PLAN ARE FOR GRAPHIC REPRESENTATION ONLY. TREE SPACING IS BASED ON DESIGN REQUIREMENTS AND THE TREES SHOWN ON THESE PLANS ATTEMPT TO ACCOMPLISH THAT SPACING WHILE MAINTAINING THE REQUIRED SETBACKS FROM UTILITIES. IN THE EVENT OF A CONFLICT, AFFECTED PLANT MATERIAL SHALL BE FIELD ADJUSTED WITH THE APPROVAL OF THE LANDSCAPE ARCHITECT TO AVOID CONFLICTS WITH THE WITH EXISTING AND PROPOSED UTILITIES, LIGHT POLES, DRAINAGE STRUCTURES OR LINES, LAKE MAINTENANCE EASEMENTS OR OTHER AFFECTED SITE FEATURES.
4. ANY PLANTING WITHIN THE SIGHT TRIANGLES SHALL PROVIDE UNOBSTRUCTED VIEWS AT A LEVEL BETWEEN 30" AND 8' ABOVE THE PAVEMENT.
5. ALL UTILITY BOXES/ STRUCTURES TO BE SCREENED ON 3 SIDES W/ APPROVED PLANTING MATERIAL.
6. IRRIGATION IS REQUIRED FOR GRASSPAVE PARKING, REFER TO IRRIGATION PLANS. IRRIGATION IS REQUIRED TO PROVIDE 100% COVERAGE WITH A MAXIMUM OF 50% OVERLAP, AN AUTOMATIC RAIN SENSOR MUST BE INCLUDED.
7. CONTRACTOR IS RESPONSIBLE FOR MANUAL WATERING THROUGH ESTABLISHMENT AND WARRANTY PERIOD FOR ALL PLANTING AREAS WITHOUT PROPOSED IRRIGATION. REFER TO IRRIGATION PLANS.
8. ALL PLANT MATERIAL TO BE INSTALLED SHALL CONFORM TO FLORIDA POWER AND LIGHT'S (FPL'S) RIGHT TREE RIGHT PLACE GUIDELINES.
9. IN CASE OF DISCREPANCIES PLANS TAKE PRECEDENCE OVER PLANT LIST.
10. LANDSCAPE CONTRACTOR RESPONSIBLE FOR VERIFICATION OF ALL QUANTITIES PRIOR TO BIDDING.
11. REMOVAL OF EXISTING VEGETATION IS RESPONSIBILITY OF LANDSCAPE CONTRACTOR.
12. RELOCATION OF EXISTING VEGETATION IS RESPONSIBILITY OF LANDSCAPE CONTRACTOR. REFER TO SPECIFICATIONS FOR RELOCATION INSTRUCTIONS.
13. ALL PLANT MATERIAL TO BE FLORIDA GRADE #1 AT TIME OF INSTALLATION UNLESS OTHERWISE NOTED.
14. ALL SHRUB MATERIAL TO BE 7 GALLONS MINIMUM.
15. ALL LANDSCAPE MATERIAL TO BE SUBMITTED TO LANDSCAPE ARCHITECT FOR APPROVAL PRIOR TO INSTALLATION.

CITY of DELRAY BEACH
PUBLIC WORKS DEPARTMENT
434 SOUTH SWINTON AVENUE, DELRAY BEACH, FLORIDA 33444
Phone: (561) 243-7322 Fax: (561) 243-7314 www.mydelraybeach.com

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West Palm Beach, FL 33411
Phone No. 561.687.2220
Fax No. 561.687.1110
Cert No. 6091 - LB No. 7055
ENGINEERING // SURVEYING // ENVIRONMENTAL // PLANNING

LANDSCAPE ARCHITECT'S SEAL
KIRSTEN SIEGEL, PLA
LIC. NO. LA6667375

DESIGNED BY	DN/JM
DRAWN BY	DN/VQ
CHECKED BY	KS
QC BY	JM
DATE	03/06/2024

REVISION	DATE	DESCRIPTION	BY

THE CITY OF DELRAY BEACH
HISTORIC MARINE WAY SEAWALL, ROADWAY, AND DRAINAGE IMPROVEMENT
LANDSCAPE DETAILS

PROJECT NO. 17-047
SHEET NO. L 3.0
FILE ID. 2898.01

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Landscape Planting - Part I. General

I. Description of Work
A. Provide all exterior planting as shown on the drawings or inferable therefrom and/or as specified in accordance with the requirements of the Contract Documents. Landscape plans provided indicate the proposed location of living plant material only. Structural elements and hardscape features indicated on the landscape plans are for information purposes only. Landscape plans are not to be utilized for staking and layout or location of any structural site features including but not limited to, buildings, signage, pathways, easements, utilities or roadways.
B. These specifications include standards necessary for and incidental to the execution and completion of planting as indicated on the prepared drawings and specified herein.
C. All applicable federal, state and local permits shall be attained prior to the removal, relocation, or installation of plant materials indicated within the plan documents.
D. Protection of existing features. During construction, protect all existing trees, shrubs, and other specified vegetation, site features and improvements, structures, and utilities specified herein and/or on submitted drawings. Removal or destruction of existing plantings is prohibited unless specifically authorized by the owner, and with permit as required by associated federal, state and local government agencies.

II. Applicable Standards
A. American National Standards for Tree Care Operations, ANSI A300. American National Standards Institute, 11 West 42nd Street, New York, N.Y. 10036.
B. American Standard for Nursery Stock, ANSI Z60.1, American Nursery and Landscape Association, 1250 Eye Street. NW, Suite 500, Washington, D.C. 20005.
C. Hortus Third, The Staff of the L.H. Bailey Hortorium. 1976. MacMillan Publishing Co., New York.
D. Florida Department of Agriculture "Grades and Standards for Nursery Plants", most recent addition.
E. National Arborist Associations- Pruning Standards for Shade Trees
F. All standards shall include the latest additions and amendments as of the date of advertisement for bids

III. Qualifications
A. Landscape planting and related work shall be performed by a firm with a minimum of five years experience specializing in this type of work. All contractors and their sub-contractors who will be performing any landscape work included in this section of the specification shall be approved by the landscape architect.
B. Landscape Contractor shall be licensed and shall carry any necessary insurance and shall protect the Landscape Architect and Owner against all liabilities, claims or demands for injuries or damage to any person or property growing out of the performance of the work under this contract. All workers shall be covered by Workman's Compensation Insurance.

IV. Requirements of Regulatory Agencies
A. Certificates of inspection shall accompany the invoice for each shipment of plants as may be required by law for transportation. File certificates with the landscape architect prior to acceptance of the material. Inspection by federal or state authorities at place of growth does not preclude rejection of the plants at the site.

V. Submittals
A. Manufacturer's Data: Submit copies of the manufacturer's and/or source data for all materials specified, including soils, soil amendments and fertilizer materials. Comply with regulations applicable to landscape materials.
B. Samples: Submit samples of all topsoil, soil mixes, mulches, and organic materials. Samples shall weigh 1 kg (2 lb) and be packaged in plastic bags. Samples shall be typical of the lot of material to be delivered to the site and provide an accurate indication of color, texture, and organic makeup of the material.
C. Nursery Sources: Submit a list of all nurseries that will supply plants, along with a list of the plants they will provide and the location of the nursery.
D. Soil Test: Submit soil test analysis report for each sample of topsoil and planting mix from a soil testing laboratory approved by the landscape architect.
1. Provide a particle size analysis, including the following gradient of mineral content:

USDA Designation	Size in mm
Gravel	>2 mm
Very Course Sand	1-2 mm
Coarse Sand	0.5-1 mm
Medium Sand	0.25-0.5 mm
Fine Sand	0.1-0.25 mm
Very fine sand	0.05-0.1 mm
Silt	0.002-0.05 mm
Clay	smaller than 0.002

2. Provide a chemical analysis, including the following:
a. pH and buffer pH
b. Percentage of organic content by oven-dried weight.
c. Nutrient levels by parts per million, including phosphorus, potassium magnesium, manganese, iron, zinc, and calcium. Nutrient test shall include the testing laboratory recommendations for supplemental additions to the soil based on the requirements of horticultural plants.
d. Soluble salt by electrical conductivity of a 1:2, soil: water, sample measured in millimho per cm.
e. Cation exchange capacity (CEC).
E. Material Testing: Submit the manufacturers particle size analysis, and the pH analysis and provide a description and source location for the content material of all organic materials.
F. Maintenance Instructions: Prior to the end of maintenance period, Landscape Contractor shall furnish three copies of written maintenance instructions to the Landscape Architect for transmittal to the Owner for maintenance and care of installed plants through their full growing season.

VI. Utility Verification
A. The contractor shall contact the local utility companies for verification of the location of all underground utility lines in the area of the work. The contractor shall be responsible for all damage resulting from neglect or failure to comply with this requirement.

Part 2. Materials

I. Plants
A. Plants shall be true to species and variety specified and nursery-grown in accordance with good horticultural practices under climatic conditions similar to those in the locality of the project for at least two years. They shall have been freshly dug.
1. All plant names and descriptions shall be as defined in Hortus Third.
2. All plants shall be grown and harvested in accordance with the American Standard for Nursery Stock and Florida Department of Agriculture Grades and Standards for Nursery Plants.
3. Unless approved by the landscape architect, plants shall have been grown at a latitude not more than 325 km (200 miles) north or south of the latitude of the project unless the provenance of the plant can be documented to be compatible with the latitude and cold hardiness zone of the planting location.
B. Unless specifically noted, all plants shall be exceptionally heavy, symmetrical, and so trained or favored in development and appearance as to be unquestionably and outstandingly superior in form, compactness, and symmetry. They shall be sound, healthy, vigorous, well branched, and densely foliated when in leaf; free of disease and insects, eggs, or larvae; and shall have healthy, well-developed root systems. They shall be free from physical damage or other conditions that would prevent vigorous growth.
1. Trees with multiple leaders, unless specified, will be rejected. Trees with a damaged or crooked leader, bark abrasions, sunscald, disfiguring knots, insect damage, or cuts of limbs over 20 mm (3/4 in.) in diameter that are not completely closed will be rejected.
C. Plants shall conform to the measurements specified, except that plants larger than those specified may be used if approved by the landscape architect. Use of larger plants shall not increase the contract price. If larger plants are approved, the root ball shall be increased in proportion to the size of the plant.
1. Caliper measurements shall be taken on the trunk 150 mm (6 in.) above the natural ground line for trees up to and including 100 mm (4 in.) in caliper, and 300 mm (12 in.) above the natural ground line for trees over 100 mm (4 in.) in caliper. Height and spread dimensions specified refer to the main body of the plant and not from branch tip to branch tip. Plants shall be measured when branches are in their normal position. If a range of sizes is given, no plant shall be less than the minimum size, and no less than 50 percent of the plants shall be as large as the maximum size specified. Measurements specified are minimum sizes acceptable after pruning, where pruning is required. Plants that meet measurements but do not possess a standard relationship between height and spread, according to the Florida Department of Agriculture Grades and Standards for Nursery Plants, shall be rejected.
D. Substitutions of plant materials will not be permitted unless authorized in writing by the landscape architect. If proof is submitted in writing that a plant specified is not obtainable, consideration will be given to the nearest available size or similar variety, with a corresponding adjustment of the contract price.
E. The plant schedule provided at the end of this section, or on the drawing, is for the contractor's information only, and no guarantee is expressed or implied that quantities therein are correct or that the list is complete. The contractor shall ensure that all plant materials shown on the drawings are included in his or her bid.
F. All plants shall be labeled by plant name. Labels shall be attached securely to all plants, bundles, and containers of plant materials when delivered. Plant labels shall be durable and legible, with information given in weather-resistant ink or embossed process lettering.
G. Selection and Tagging
1. Plants shall be subject to inspection for conformity to specification requirements and approval by the landscape architect at their place of growth and upon delivery. Such approval shall not impair the right of inspection and rejection during progress of the work.
2. A written request for the inspection of plant material at their place of growth shall be submitted to the landscape architect at least ten calendar days prior to digging. This request shall state the place of growth and the quantity of plants to be inspected. The landscape architect may refuse inspection at this time if, in his or her judgment, sufficient quantities of plants are not available for inspection or landscape architect deems inspection is not required.
3. All field grown deciduous trees shall be marked to indicate the trees north orientation in the nursery. Place a 1-in. diameter spot of white paint onto the north side of the tree trunk within the bottom 12 inches of the trunk.
H. Anti-Desiccants
1. Anti-desiccants, if specified, are to be applied to plants in full leaf immediately before digging or as required by the landscape architect. Anti-desiccants are to be sprayed so that all leaves and branches are covered with a continuous protective film.
I. Balled and Burlapped (B&B) Plant Materials
1. Trees designated B&B shall be properly dug with firm, natural balls of soil retaining as many fibrous roots as possible, in sizes and shapes as specified in the Florida Department of Agriculture Grades and Standards for Nursery Plants. Balls shall be firmly wrapped with synthetic, natural, or treated burlap, and/or wire. All synthetic fabric should be removed from the rootball prior to planting. True biodegradable burlap can be left around the root ball. The root collar shall be apparent at surface of ball. Trees with loose, broken, processed, or manufactured root balls will not be accepted, except with special written approval before planting.
J. Container Plants
1. Plants grown in containers shall be of appropriate size for the container as specified in the most recent edition of the Florida Department of Agriculture Grades and Standards for Nursery Plants and be free of circling roots on the exterior and interior of the root ball.
2. Container plants shall have been grown in the container long enough to have established roots throughout the growing medium.
K. Bareroot and Collected Plants
1. Plants designated as bareroot or collected plants shall conform to the American Standard for Nursery Stock.
2. Bareroot material shall not be dug or installed after bud break or before dormancy.
3. Collected plant material that has not been taken from active nursery operations shall be dug with a root ball spread at least 1/3 greater than nursery grown plants. When specified or approved, shall be in good health, free from disease, insect or weed infestation and shall not be planted before inspection and acceptance at the site. Testing may be required at the discretion of the Landscape Architect and/or the Owner and shall be provided at no additional cost.
L. Specimen Material: Plant material specified as specimens are to be approved by the Landscape Architect before being brought to the site. Unless otherwise noted on the drawings, these plants shall be Florida Fancy.
M. Palms
1. Coconut Palms shall be grown from a certified seed.
2. All palm species except Sabal palmetto shall have roots adequately wrapped before transporting.
3. Sabal palms shall have a hurricane cut. Sabal palms shall be installed on site at the earliest opportunity in the construction process. All Sabal palms shall be from Palm Beach County or other sandy soils. All Sabal palms shall be Florida Fancy.
4. For booted trunk palms, trunks shall have clean intact boots firmly attached to the palm trunk. For slick trunk palms, trunk shall be clear and free from defect and scars.
5. The Contractor shall treat all palms as required to prevent infestation by the palmetto weevil.
N. Sod
1. Sod shall be graded #1 or better. Sod shall be loam or muck grown with a firm, full texture and good root development. Sod shall be thick, healthy and free from defects and debris including but not limited to dead thatch, insects, fungus, diseases and contamination by weeds, other grass varieties or objectionable plant material.
2. Sod shall be sufficiently thick to insure a dense stand of live grass. Sod shall be live, fresh, and uninjured at the time of planting. Plant sod within 48 hours after harvesting.
3. Sod area shall be all areas not otherwise identified and shall include the area beyond the property line to the edge of pavement and/or edge of water.
O. Immediately after harvesting plants, protect from drying and damage until shipped and delivered to the planting site. Rootballs shall be checked regularly and watered sufficiently to maintain root viability.
P. Transportation and Storage of Plant Material
1. Branches shall be tied with rope or twine only, and in such a manner that no damage will occur to the bark or branches.
2. During transportation of plant material, the contractor shall exercise care to prevent injury and drying out of the trees. Should the roots be dried out, large branches broken, balls of earth broken or loosened, or areas of bark torn, the landscape architect may reject the injured tree(s) and order them replaced at no additional cost to the owner. All loads of plants shall be covered at all times with tarpaulin or canvas. Loads that are not protected will be rejected.
3. All bareroot stock sent from the storage facility shall be adequately covered with wet soil, sawdust, woodchips, moss, peat, straw, hay, or other acceptable moisture-holding medium, and shall be covered with a tarpaulin or canvas. Loads that are not protected in the above manner may be rejected.
4. Plants must be protected at all times from sun or drying winds. Those that cannot be planted immediately on delivery shall be kept in the shade, well protected with soil, wet mulch, or other acceptable material, and kept well watered. Plants shall not remain unplanted any longer than three days after delivery. Plants shall not be bound with wire or rope at any time so as to damage the bark or break branches. Plants shall be lifted and handled with suitable support of the soil ball to avoid damaging it.
Q. Mechanized Tree Spade Requirements
Trees may be moved and planted with an approved mechanical tree spade, The tree spade shall move trees limited to the maximum size allowed for a similar B&B root-ball diameter according to the American Standard for Nursery Stock or the manufacturer's maximum size recommendation for the tree spade being used, whichever is smaller. The machine shall be approved by the landscape architect prior to use. Trees shall be planted at the designated locations in the manner shown in the plans and in accordance with applicable sections of the specifications.

II Materials for Planting
A. Mulch: Except as otherwise specified, mulch shall be shredded Melaleuca mulch - grade "A". All Melaleuca mulch shall be made entirely from the wood and bark of the Melaleuca quinquinerva tree. It shall not contain more than 10% bark (by volume). Shreds and chips shall not be larger the ¼" diameter and 1½" in length. Mulch shall be free of weeds, seeds, and any other organic or inorganic material other than Melaleuca wood and bark. It shall not contain stones or other foreign material that will prevent its eventual decay. This shall be applied to all planted areas where indicated so that, after installation, the mulch thickness will not be less than 3". Submit sample for approval.
B. Peat: Shall be horticultural peat composed of not less than 60% decomposed organic matter by weight, on an oven dried basis. Peat shall be delivered to the site in a workable condition free from lumps.
C. Gravel Mulch: Use only where specifically indicated on the plans of the size and type shown. Unless otherwise specified it shall be water-worn, hard durable gravel, washed free of loam, sand, clay and other foreign substances. It shall be a minimum of 3" deep and shall be contained with edging or other approved gravel stop as indicated on the plans. It shall be a maximum of 1 1/2", a minimum of 3/4" and of a readily-available natural gravel color range. Provide geotextile filter fabric below aggregate rock.
Submit sample for approval.
D. Root Barrier: Where specified, root barriers shall be installed on all tree and palm material in accordance with the root barrier detail provided within the plan drawings.
Root barriers shall comply with all requirements of the municipality within which they are located as well as with any utility holder requirements of any affected utilities. In the event that conflicting requirements exist between the root barrier detail provided within the plan documents and the municipality/utility holder requirements, the more stringent of the requirements shall be applicable.
E. Planter Edging: Use only where specifically indicated on plans. Edging shall be the color black.
F. Anti-desiccant: shall be an emulsion specifically manufactured for agricultural use, which provides a protective film over plant surfaces. Anti-desiccants shall be delivered in containers of the manufacturer and shall be mixed according to the manufacturer's directions. Submit manufacturer literature for approval.

III. Materials for Soil Amendment
A. Pine Bark: Horticultural-grade milled pine bark, with 80 percent of the material by volume sized between 0.1 and 15.0 mm.
1. Pine bark shall be aged sufficiently to break down all woody material. Pine bark shall be screened.
2. pH shall range between 4 and 7.0.
3. Submit manufacturer literature for approval.
B. Organic Matter: Leaf matter and yard waste composted sufficiently to break down all woody fibers, seeds, and leaf structures, and free of toxic and nonorganic matter. Organic matter shall be commercially prepared compost. Submit 0.5 kg (1 lb) sample and suppliers literature for approval.
C. Course Sand: Course concrete sand, ASTM C-33 Fine Aggregate, with a Fines Modulus Index of 2.75 or greater.
1. Sands shall be clean, sharp, natural sands free of limestone, shale and slate particles.
2. Provide the following particle size distribution:

Sieve	Percentage Passing
3/8 in (9.5 mm)	100
No. 4 (4.75 mm)	95-100
No. 8 (2.36 mm)	80-100
No. 16 (1.18 mm)	50-85
No. 30 (0.60 mm)	25-60
No. 50 (0.30 mm)	10-30
No. 100 (0.15 mm)	2-10

D. Lime: shall be ground, pelletized, or pulverized lime manufactured to meet agricultural standards and contain a maximum of 60 percent oxide (i.e. calcium oxide plus magnesium oxide). Submit manufacturer literature for approval.
E. Sulfur: shall be flowers of sulfur, pelletized or granular sulfur, or iron sulfate. Submit manufacturer literature for approval.
F. Fertilizer: Agricultural fertilizer of a formula indicated by the soil test. Fertilizers shall be organic, slow-release compositions whenever applicable. Submit manufacturer literature for approval.

IV. Planting Mix
A. Planting Mix
1. Planting Mix for Trees, Shrubs, Groundcovers and vines: Check with landscape architect for appropriate mixture.
2. Planting Mix for Palms: Mixture of course sand and peat mixed to the following proportion:

Component	Percent by Volume
Coarse Sand	75%
Peat	25%

B. Planting mix shall be thoroughly mixed, screened, and shredded.
C. Prior to beginning the mixing process, submit a 1-kg (2-lb) sample of the proposed mix with soil test results that indicate the mix ratio and the results achieved.
D. During the mixing process but prior to installing the mix, submit a 1-kg (2-lb) sample for each 200 cubic meters (250 cubic yards) of planting mix, taken randomly from the finished soil mix, with soil test results for approval. In the event that the test results do not meet the required particle size distribution, remix and resubmit a revised planting mix.
E. Make all amendments of lime/sulfur and fertilizer indicated by the soil test results at the time of mixing.
F. All mixing shall take place in the contractors yard, using commercial mixing equipment sufficient to thoroughly mix all components uniformly
G. Protect the planting mix from erosion prior to installation.

Part 3. Execution

I. Excavation of Planted Areas
A. Locations for plants and/or outlines of areas to be planted are to be staked out at the site. Locate and mark all subsurface utility lines. Approval of the stakeout by the landscape architect is required before excavation begins.
B. Tree, shrub, and groundcover beds are to be excavated to the depth and widths indicated on the landscape plan detail drawings. If the planting area under any tree is initially dug too deep, the soil added to bring it up to the correct level should be thoroughly tamped.
1. The sides of the excavation of all planting areas shall be sloped at a 45 degrees. The bottom of all beds shall slope parallel to the proposed grades or toward any subsurface drain lines within the planting bed. The bottom of the planting bed directly under any tree shall be horizontal such that the tree sits plumb.
2. Maintain all required angles of repose of the adjacent materials as shown on the drawings. Do not excavate compacted subgrades of adjacent pavement or structures.
3. Subgrade soils shall be separated from the topsoil, removed from the area, and not used as backfill in any planted or lawn area. Excavations shall not be left uncovered or unprotected overnight.
C. For trees and shrubs planted in individual holes in areas of good soil that is to remain in place and/or to receive amendment in the top 150-mm (6 in.) layer, excavate the hole to the depth of the root ball and to widths shown on the drawing. Slope the sides of the excavation at a 45 degree angle up and away from the bottom of the excavation.
1. In areas of slowly draining soils, the root ball may be set up to 75 mm (3 in.) or 1/8 of the depth of the root ball above the adjacent soil level.
2. Save the existing soil to be used as backfill around the tree.
3. On steep slopes, the depth of the excavation shall be measured at the center of the hole and the excavation dug as shown on the drawings.
D. Detrimental soil conditions: The landscape architect is to be notified, in writing, of soil conditions encountered, including poor drainage, that the contractor considers detrimental to the growth of plant material. When detrimental conditions are uncovered, planting shall be discontinued until instructions to resolve the conditions are received from the landscape architect.
E. Obstructions: If rock, underground construction work, utilities, tree roots, or other obstructions are encountered in the excavation of planting areas, alternate locations for any planting shall be determined by the landscape architect.

II. Installation of Planting Mix
A. Prior to the installation of the planting mix, install subsurface drains, irrigation main lines, lateral lines, and irrigation risers shown on the drawings.
B. The landscape architect shall review the preparation of subgrades prior to the installation of planting mix.
C. Do not proceed with the installation of planting mix until all utility work in the area has been installed.
D. Protect adjacent walls, walks, and utilities from damage or staining by the soil. Use 12-mm (1/2 in.) plywood and/or plastic sheeting as directed to cover existing concrete, metal, masonry work, and other items as directed during the progress of the work.
1. Clean up any soil or dirt spilled on any paved surface at the end of each working day.
2. Any damage to the paving or architectural work caused by the soils installation contractor shall be repaired by the general contractor at the soils installation contractors expense.
E. Till the subsoil into the bottom layer of topsoil or planting mix.
1. Loosen the soil of the subgrade to a depth of 50 to 75 mm (2 to 3 in.) with a rototiller or other suitable device.
2. Spread a layer of the specified topsoil or planting mix 50 mm (2 in.) deep over the subgrade. Thoroughly till the planting mix and the subgrade together.
3. Immediately install the remaining topsoil or planting mix in accordance with the following specifications. Protect the tilled area from traffic. DO NOT allow the tilled subgrade to become compacted.
4. In the event that the tilled area becomes compacted, till the area again prior to installing the planting mix.
F. Install the remaining topsoil or planting mix in 200- to 250-mm (8- to 10-in.) lifts to the depths and shown on the drawing details. The depths and grades shown on the drawings are the final grades after soil settlement and shrinkage of the organic material. The contractor shall install the soil at a higher level to anticipate this reduction of soil volume, depending on predicted settling properties for each type of soil.
1. Phase the installation of the soil such that equipment does not have to travel over already-installed topsoil or planting mixes.
2. Compact each lift sufficiently to reduce settling but not enough to prevent the movement of water and feeder roots through the soil. The soil in each lift should feel firm to the foot in all areas and make only slight heel prints. Overcompaction shall be determined by the following field percolation test.
a. Dig a hole 250 mm (10 in.) in diameter and 250 mm (10 in.) deep.
b. Fill the hole with water and let it drain completely. Immediately refill the hole with water, and measure the rate of fall in the water level.
c. In the event that the water drains at a rate less than 25 mm (1 in.) per hour, till the soil to a depth required to break the overcompaction.
d. The landscape architect shall determine the need for, and the number and location of percolation tests based on observed field conditions of the soil.
3. Maintain moisture conditions within the soils during installation to allow for satisfactory compaction. Suspend installation operations if the soil becomes wet. Do not place soils on wet subgrade.
4. Provide adequate equipment to achieve consistent and uniform compaction of the soils. Use the smallest equipment that can reasonably perform the task of spreading and compaction.
5. Add lime, sulfur, fertilizer, and other amendments during soil installation. Spread the amendments over the top layer of soil and till into the top 100 mm (4 in.) of soil. Soil amendments may be added at the same time that organic matter, when required, is added to the top layer of soil.
6. Protect soil from overcompaction after placement. An area that becomes overcompacted shall be tilled to a depth of 125 mm (6 in.). Uneven or settled areas shall be filled and regraded.

III. Fine Grading
A. It shall be the responsibility of the Contractor to finish grade (min. 6" below adjacent F.F.E.). Finish grades in planting areas shall be one inch lower than adjacent paving and are to include 3" of mulching. New earthwork shall blend smoothly into the existing earthwork, and grades shall pitch evenly between spot grades. All planted areas must pitch to drain at a minimum of 1/4" per foot. Any discrepancies not allowing this to occur shall be reported to the Landscape Architect prior to continuing work.
B. Fill all dips and remove any bumps in the overall plane of the slope.
1. The tolerance for dips and bumps in lawn areas shall be a 12-mm (1/2 in.) deviation from the plane in 3,000 mm (10 ft).
2. The tolerance for dips and bumps in shrub planting areas shall be a 25-mm (1 in.) deviation from the plane in 3,000 mm (10 ft).
3. All fine grading shall be inspected and approved by the landscape architect prior to planting, mulching, sodding, or seeding.
C. Berming shall not be placed within 10' of any existing tree nor will it be allowed to encroach upon any utility, drainage, or maintenance easement. Berming shall not impede or obstruct any necessary swales needed to drain other areas for the property.

IV. Planting Operations
A. Plants shall be set on flat-tamped or unexcavated pads at the same relationship to finished grade as they were to the ground from which they were dug, unless otherwise noted on the drawings. Plants must be set plumb and braced in position until topsoil or planting mix has been placed and tamped around the base of the root ball. Improper compacting of the soil around the root ball may result in the tree settling or leaning. Plants shall be set so that they will be at the same depth and so that the root ball does not shift or move laterally one year later.
1. Determine the elevation of the root flare and ensure that it is planted at grade. This may require that the tree be set higher than the grade in the nursery.
2. If the root flare is less than 50 mm (2 in.) below the soil level of the root ball, plant the tree the appropriate level above the grade to set the flare even with the grade. If the flare is more than 50 mm (2 in) at the center of the root ball the tree shall be rejected.
B. Lift plants only from the bottom of the root balls or with belts or lifting harnesses of sufficient width not to damage the root balls. Do not lift trees by their trunk or use the trunk as a lever in positioning or moving the tree in the planting area.
C. Remove plastic, paper, or fiber pots from containerized plant material. Pull roots out of the root mat. Loosen the potting medium and shake away from the root mat. Immediately after removing the container, install the plant such that the roots do not dry out. Pack planting mix around the exposed roots while planting.
D. The roots of bare-root trees shall be pruned at the time of planting to remove damaged or undesirable roots (those likely to become a detriment to future growth of the root system). Bare-root trees shall have the roots spread to approximate the natural position of the roots and shall be centered in the planting pit. The planting-soil backfill shall be worked firmly into and around the roots, with care taken to fill in completely with no air pockets.
E. Cut ropes or strings from the top of shrub root balls and trees smaller than 3 in. caliper after plant has been set. Remove burlap or cloth wrapping and any wire baskets from around top half of balls. Do not turn under and bury portions of burlap at top of ball.
1. Do not immediately remove the ropes and burlap from trees larger than 3 in. caliper. Return to each tree three months after planting and cut all ropes around the trunks and tops of the root balls of these trees.
2. Completely remove any waterproof or water-repellant strings or wrappings from the root ball and trunk before backfilling.
F. Set balled and burlapped trees in the hole with the north marker facing north unless otherwise approved by the landscape architect.
G. Place native soil, topsoil, or planting mix into the area around the tree, tamping lightly to reduce settlement.
1. For plants planted in individual holes in existing soil, add any required soil amendments to the soils, as the material is being backfilled around the plant. Ensure that the amendments are thoroughly mixed into the backfill.
2. For plants planted in large beds of prepared soil, add soil amendments during the soil installation process.
3. Ensure that the backfill immediately around the base of the root ball is tamped with foot pressure sufficient to prevent the root ball from shifting or leaning.
H. Solid sod shall be laid with closely abutting joints with a tamped or rolled, even surface. Stagger strips to offset joints in adjacent courses. Bring the sod edge in a neat, clean manner to the edge of all paving and shrub areas. Sod along slopes or banks a wood peg acceptable to the Landscape Architect shall be used at no additional cost to the Owner. If, in the opinion of the Landscape Architect, top-dressing is necessary after rolling, clean sand will be evenly applied over the entire surface and thoroughly washed in without additional charge.
I. Thoroughly water all plants immediately after planting. Apply water by hose directly to the root ball and the adjacent soil.
J. Remove all tags, labels, strings, etc. from all plants.
K. Remove any excess soil, debris, and planting material from the job site at the end of each workday.
L. Form watering saucers 100 mm (4 in.) high immediately outside the area of the root ball of each tree as indicated on the drawings.

V. Relocation of Existing Material:
A. Landscape Contractor shall root prune trees which are to be relocated in accordance with approved horticultural practices and the following procedures.
1. Select a healthy tree
2. Selectively trim the canopy removing dead limbs, cross branching over crowned areas, and lower undesirable limbs. Fertilize and water trees before pruning.
3. Root prune 50% of the root system approximately 18"-2' deep (depending upon species and size). This is done by hand with sharp hand tools or a root pruning saw. The diameter of the root ball to be pruned is 8-12 inches per every one inch of diameter at breast height of the tree.
4. Back fill the existing soil with peat moss to stimulate new root growth of the pruned roots.
5. Water in thoroughly and treat with a mycorrhizae and a low nitrogen fertilizer (so not to burn the pruned roots). Brace trees if deemed necessary.
6. The root pruned tree should be watered every day (especially during warm months of the season), the equivalent of 5 gallons for every DBH of tree per day.
7. Root pruned trees should be let to stand for a minimum of 6 weeks for trees less than 8" DBH and as long as 3 months for larger specimens prior to transplanting.
8. For best results and survivorship, new root growth should be evident on root pruned trees prior to transplanting.
9. Upon transplanting, water should be applied every day as outlined in step 6 for at least one year.

VI. Staking and Guying
A. The Contractor shall stake all trees and palms in accordance with the tree and palm staking details provided within the plan drawings. Alternate methods of guying or staking may be employed with the prior approval of the Landscape Architect.
B. The Contractor shall be responsible for the replacement or adjustment of all trees, palms or shrubs that fall or lean during the guarantee period. The Contractor shall be responsible for any damage caused by the falling or leaning of trees.
C. Stakes and guys shall be installed immediately upon approval or planting, and shall be removed in accordance with the staking details provide within the plan drawings. Any tree that is not stable at the end of the warranty period shall be rejected.

VII. Pruning
A. Plants shall not be heavily pruned at the time of planting. Pruning is required at planting time to correct defects in the tree structure, including removal of injured branches, waterspouts, suckers, and interfering branches. Healthy lower branches and interior small twigs should not be removed except as necessary to clear walks and roads. In no case should more than one-quarter of the branching structure be removed. Retain the normal or natural shape of the plant.
B. All pruning shall be completed using clean, sharp tools. All cuts shall be clean and smooth, with the bark intact with no rough edges or tears.
C. Pruning of large trees shall be done from a hydraulic man-lift such that it is not necessary to climb the tree.

VIII. Mulching
A. All trees, palms, shrubs, and other plantings will be mulched with mulch previously approved by the landscape architect, The mulch shall be a minimum 3" thick layer over all tree, shrub and ground cover planting areas, unless otherwise specified. All mulch layers shall be of the specified thickness at the time of the final acceptance of the work. Mulch must not be placed within 3 inches of the trunks of trees, palms or shrubs.
B. Place mulch at least 3" in depth in a circle around all trees located in lawn areas. The diameter of the circle shall be 18" in diameter larger than the ball of the plant provided. Mulch must not be placed within 3 inches of the trunks of trees, palms or shrubs.

IX. Maintenance of Trees, Shrubs, and Vines
A. Maintenance shall begin immediately after each plant is planted and continue until its acceptance has been confirmed by the landscape architect.
B. Maintenance shall consist of pruning, watering, cultivating, weeding, mulching, fertilizing, tightening and repairing guys and stakes, resetting plants to proper grades or upright position, restoring of the planting saucer, and furnishing and applying such sprays or other materials as necessary to keep plantings free of insects and diseases and in vigorous condition.
C. Planting areas and plants shall be protected at all times against trespassing and damage of all kinds for the duration of the maintenance period. If a plant becomes damaged or injured, it shall be treated or replaced as directed by the landscape architect at no additional cost.
D. Watering: Contractor shall irrigate as required to maintain vigorous and healthy tree growth. Overwatering or flooding shall not be allowed. The contractor shall monitor, adjust, and use existing irrigation facilities, if available, and furnish any additional material, equipment, or water to ensure adequate irrigation. Root balls of all trees and large shrubs shall be spot watered using handheld hoses during the first four months after planting, as required to ensure adequate water within the root ball.
E. During periods of restricted water usage, all governmental regulations (permanent and temporary) shall be followed. The contractor may have to transport water from ponds or other sources, at no additional expense to the owner when irrigation systems are unavailable.
F. Remove soil ridges from around watering basins prior to end of maintenance period, as directed by Landscape Architect

X. Acceptance
A. The landscape architect shall inspect all work for acceptance upon written request of the contractor. The request shall be received at least ten calendar days before the anticipated date of inspection.
B. Acceptance of plant material shall be for general conformance to specified size, character, and quality and shall not relieve the contractor of responsibility for full conformance to the contract documents, including correct species.
C. Upon completion and re-inspection of all repairs or renewals necessary in the judgment of the landscape architect, the landscape architect shall certify in writing that the work has been accepted.

XI. Acceptance in Part
A. Work may be accepted in parts when the landscape architect and contractor deem that practice to be in their mutual interest. Approval must be given in writing by the landscape architect to the contractor verifying that the work is to be completed in parts. Acceptance of work in parts shall not waive any other provision of this contract.

XII. Guarantee Period and Replacements
A. The guarantee period for trees and shrubs shall begin at the date of acceptance.
B. The contractor shall guarantee all plant material to be in healthy and flourishing condition for a period of one year from the date of acceptance.
C. When work is accepted in parts, the guarantee periods extend from each of the partial acceptances to the terminal date of the guarantee of the last acceptance. Thus, all guarantee periods terminate at one time.
D. The contractor shall replace, without cost, as soon as weather conditions permit, and within a specified planting period, all plants determined by the landscape architect to be dead or in an unacceptable condition during and at the end of the guarantee period. To be considered acceptable, plants shall be free of dead or dying branches and branch tips and shall bear foliage of normal density, size, and color. Replacements shall closely match adjacent specimens of the same species. Replacements shall be subject to all requirements stated in this specification.
E. The guarantee of all replacement plants shall extend for an additional period of one year from the date of their acceptance after replacement. In the event that a replacement plant is not acceptable during or at the end of said extended guarantee period, the landscape architect may elect subsequent replacement or credit for that item.
F. At the end of the guarantee, the contractor shall reset grades that have settled below the proposed grades on the drawings.
G. The contractor shall make periodic inspections, at no extra cost, during the guarantee period to determine what changes, if any, should be made in the maintenance program. If changes are recommended, they shall be submitted in writing to the landscape architect. Claims by the contractor that the owners maintenance practices or lack of maintenance resulted in dead or dying plants will not be considered if such claims have not been documented by the contractor during the guarantee period.

XIII. Final Inspection and Final Acceptance
At the end of the guarantee period and upon written request of the contractor, the landscape architect will inspect all guaranteed work for final acceptance. The request shall be received at least ten calendar days before the anticipated date for final inspection. Upon completion and re-inspection of all repairs or renewals necessary in the judgment of the landscape architect at that time, the landscape architect shall certify, in writing, that the project has received final acceptance.

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LANDSCAPE ARCHITECT'S SEAL
KIRSTEN SIEGEL, PLA
LIC. NO. LA6667375

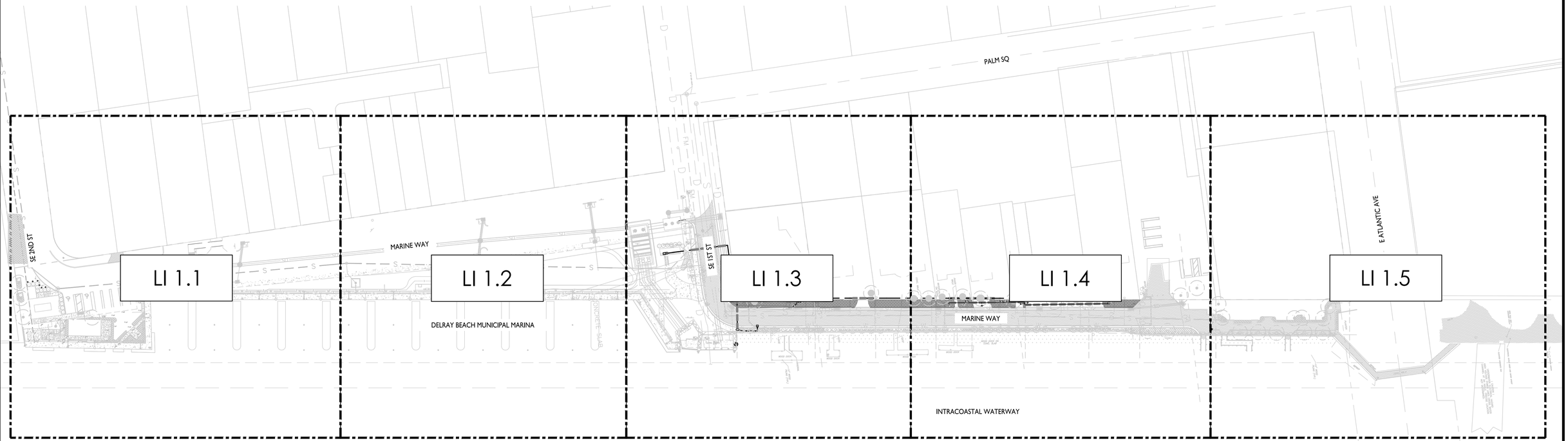
DESIGNED BY	DN/JM
DRAWN BY	DN/VQ
CHECKED BY	KS
QC BY	JM
DATE	03/06/2024

REVISION	DATE	DESCRIPTION	BY

THE CITY OF DELRAY BEACH
HISTORIC MARINE WAY SEAWALL, ROADWAY, AND DRAINAGE IMPROVEMENT
LANDSCAPE SPECIFICATIONS

PROJECT NO. 17-047
SHEET NO. L 3.1
FILE ID. 2898.01

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REVISION	DATE	DESCRIPTION	BY

THE CITY OF DELRAY BEACH
HISTORIC MARINE WAY SEAWALL, ROADWAY, AND DRAINAGE IMPROVEMENT
OVERALL IRRIGATION PLAN

PROJECT NO. 17-047
SHEET NO. LI 1.0
FILE ID. 2898.01

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SHEET KEY MAP



SE 2ND ST

MARINE WAY

FUEL VAULT

GENERATOR ENCLOSURE

DELRAY BEACH MUNICIPAL MARINA

MATCHLINE SHEET L 1.2

NO PROPOSED IRRIGATION ON THIS SHEET

INTRACOASTAL WATERWAY

NOTE:
1. CONTRACTOR IS RESPONSIBLE FOR MANUAL WATERING THROUGH ESTABLISHMENT AND WARRANTY PERIOD FOR ALL PLANTING AREAS WITHOUT PROPOSED IRRIGATION.
2. CONTRACTOR IS RESPONSIBLE FOR RESTORING AND KEEPING ALL EXISTING IRRIGATION OPERATIONAL DURING AND AFTER CONSTRUCTION.

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LANDSCAPE ARCHITECT'S SEAL

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DRAWN BY	DN/VQ
CHECKED BY	KS
QC BY	JM
DATE	03/06/2024

REVISION	DATE	DESCRIPTION	BY
1	2/26/24	ADDENDUM 5	ks

THE CITY OF DELRAY BEACH
HISTORIC MARINE WAY SEAWALL, ROADWAY, AND DRAINAGE IMPROVEMENT
IRRIGATION PLAN

PROJECT NO. 17-047
SHEET NO. LI 1.1
FILE ID. 2898.01

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SHEET KEY MAP



MARINE WAY

MATCHLINE SHEET L 1.1

MATCHLINE SHEET L 1.3

DELRAY BEACH MUNICIPAL MARINA

CONCRETE SLAB

RIM ELEV. = 2.34'

RIM ELEV. = 2.66'

GR. EL. = 4
C = 1.7'
TOP EL. = 1

NO PROPOSED IRRIGATION
ON THIS SHEET

INTRACOASTAL
WATERWAY

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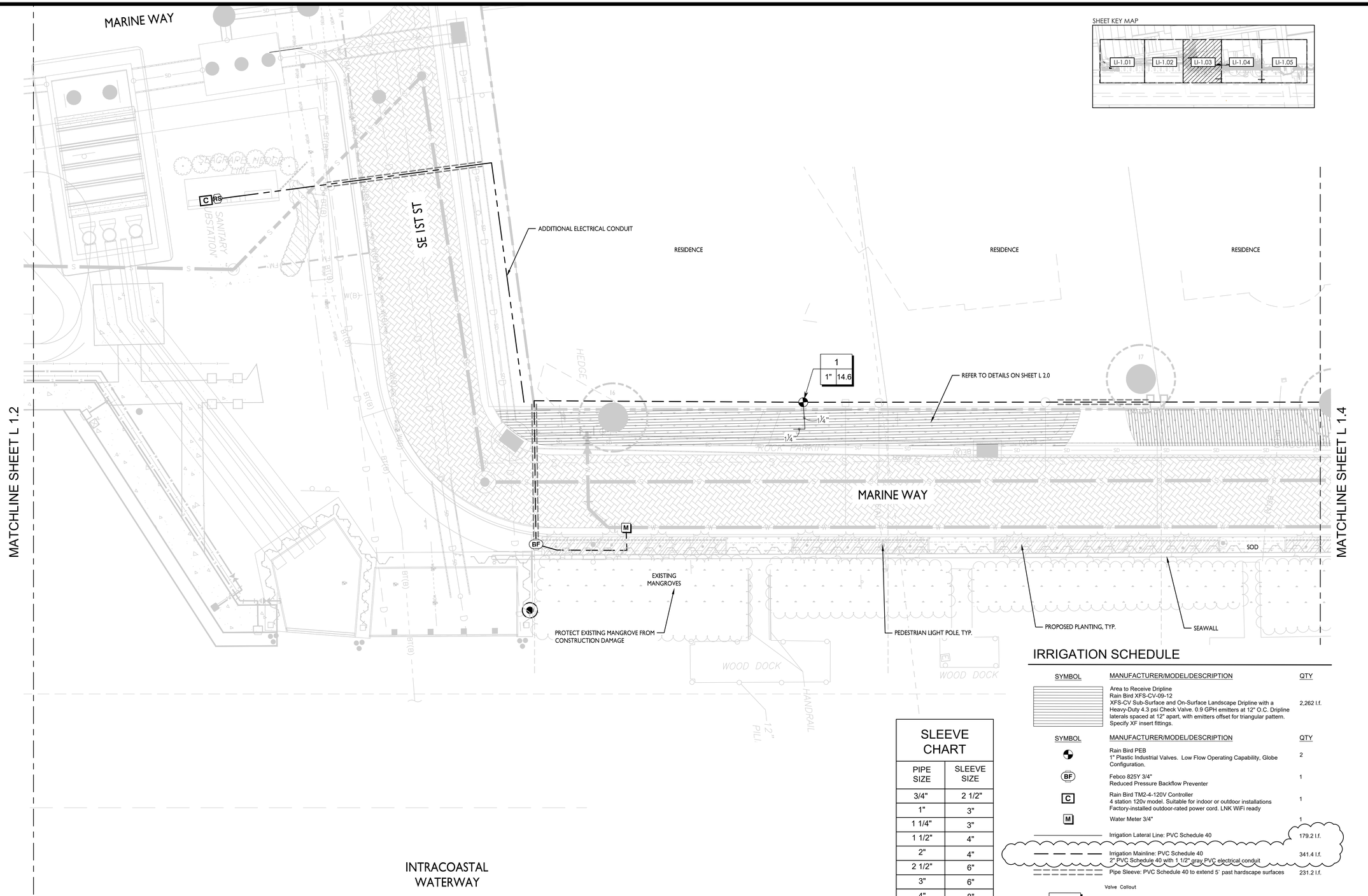
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DRAWN BY	DN/VQ
CHECKED BY	KS
QC BY	JM
DATE	03/06/2024

REVISION	DATE	DESCRIPTION	BY

THE CITY OF DELRAY BEACH
HISTORIC MARINE WAY SEAWALL, ROADWAY, AND DRAINAGE IMPROVEMENT
IRRIGATION PLAN

PROJECT NO. 17-047
SHEET NO. LI 1.2
FILE ID. 2898.01

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SHEET KEY MAP

SLEEVE CHART

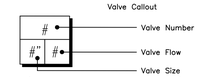
PIPE SIZE	SLEEVE SIZE
3/4"	2 1/2"
1"	3"
1 1/4"	3"
1 1/2"	4"
2"	4"
2 1/2"	6"
3"	6"
4"	8"
6"	10"
8"	12"

IRRIGATION SCHEDULE

SYMBOL	MANUFACTURER/MODEL/DESCRIPTION	QTY
	Area to Receive Dripline Rain Bird XFS-CV-09-12 XFS-CV Sub-Surface and On-Surface Landscape Dripline with a Heavy-Duty 4.3 psi Check Valve. 0.9 GPH emitters at 12" O.C. Dripline laterals spaced at 12" apart, with emitters offset for triangular pattern. Specify XF insert fittings.	2,262 l.f.

SYMBOL	MANUFACTURER/MODEL/DESCRIPTION	QTY
	Rain Bird PEB 1" Plastic Industrial Valves. Low Flow Operating Capability, Globe Configuration.	2
BF	Febco 825Y 3/4" Reduced Pressure Backflow Preventer	1
C	Rain Bird TM2-4-120V Controller 4 station 120v model. Suitable for indoor or outdoor installations Factory-installed outdoor-rated power cord. LNK WiFi ready	1
M	Water Meter 3/4"	1
	Irrigation Lateral Line: PVC Schedule 40	179.2 l.f.
	Irrigation Mainline: PVC Schedule 40 2" PVC Schedule 40 with 1 1/2" gray PVC electrical conduit	341.4 l.f.
	Pipe Sleeve: PVC Schedule 40 to extend 5' past hardscape surfaces	231.2 l.f.

Valve Callout



NOTE:
1. CONTRACTOR IS RESPONSIBLE FOR MANUAL WATERING THROUGH ESTABLISHMENT AND WARRANTY PERIOD FOR ALL PLANTING AREAS WITHOUT PROPOSED IRRIGATION.
2. CONTRACTOR IS RESPONSIBLE FOR RESTORING AND KEEPING ALL EXISTING IRRIGATION OPERATIONAL DURING AND AFTER CONSTRUCTION.
3. MAINLINE AND VALVES SHOWN FOR GRAPHIC CLARITY, INSTALL WITHIN PROPERTY BOUNDARY AND IN PERVIOUS AREAS, EXCEPT WHERE SLEEVING IS SHOWN.

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LANDSCAPE ARCHITECT'S SEAL
KIRSTEN SIEGEL, PLA
LIC. NO. LA6667375

DESIGNED BY	DN/JM
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QC BY	JM
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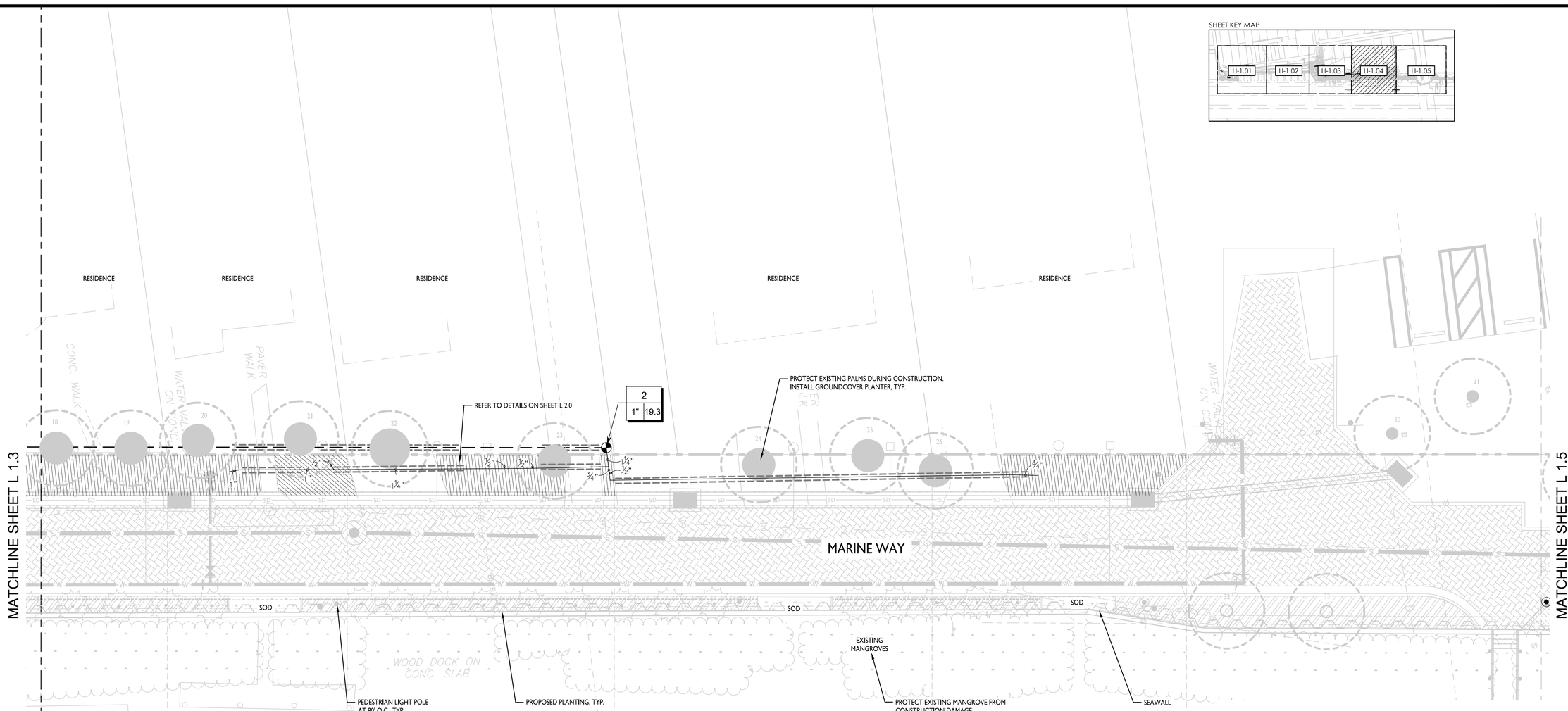
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1	2/26/24	ADDENDUM 5	ks

THE CITY OF DELRAY BEACH
HISTORIC MARINE WAY SEAWALL, ROADWAY, AND DRAINAGE IMPROVEMENT
IRRIGATION PLAN

PROJECT NO. 17-047
SHEET NO. LI 1.3
FILE ID. 2898.01

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SHEET KEY MAP



NOTE:
1. CONTRACTOR IS RESPONSIBLE FOR MANUAL WATERING THROUGH ESTABLISHMENT AND WARRANTY PERIOD FOR ALL PLANTING AREAS WITHOUT PROPOSED IRRIGATION.
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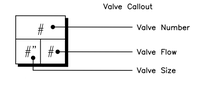
SLEEVE CHART

PIPE SIZE	SLEEVE SIZE
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1 1/2"	4"
2"	4"
2 1/2"	6"
3"	6"
4"	8"
6"	10"
8"	12"

IRRIGATION SCHEDULE

SYMBOL	MANUFACTURER/MODEL/DESCRIPTION	QTY
	Area to Receive Dripline Rain Bird XFS-CV-09-12 XFS-CV Sub-Surface and On-Surface Landscape Dripline with a Heavy-Duty 4.3 psi Check Valve. 0.9 GPH emitters at 12" O.C. Dripline laterals spaced at 12" apart, with emitters offset for triangular pattern. Specify XF insert fittings.	2,262 l.f.

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	Irrigation Lateral Line: PVC Schedule 40	179.2 l.f.
	Irrigation Mainline: PVC Schedule 40 2" PVC Schedule 40 with 1 1/2" gray PVC electrical conduit	341.4 l.f.
	Pipe Sleeve: PVC Schedule 40 to extend 5' past hardscape surfaces	231.2 l.f.



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LANDSCAPE ARCHITECT'S SEAL
KIRSTEN SIEGEL, PLA
LIC. NO. LA6667375

DESIGNED BY	DN/JM
DRAWN BY	DN/VQ
CHECKED BY	KS
QC BY	JM
DATE	03/06/2024

REVISION	DATE	DESCRIPTION	BY
1	2/26/24	ADDENDUM 5	ks

THE CITY OF DELRAY BEACH
HISTORIC MARINE WAY SEAWALL, ROADWAY, AND DRAINAGE IMPROVEMENT
IRRIGATION PLAN

PROJECT NO. 17-047
SHEET NO. LI 1.4
FILE ID. 2898.01

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SHEET KEY MAP



MATCHLINE SHEET L 1.4

E ATLANTIC AVE

ATLANTIC AVENUE
SR 806
(FLDOT RIGHT OF WAY MAP
SEGMENT NO. 41340-1)

PLANTER

PROTECT EXISTING SHRUBS AND IRRIGATION FROM CONSTRUCTION DAMAGE, GENERAL CONTRACTOR RESPONSIBLE TO RESTORE ALL DAMAGED LANDSCAPE AND IRRIGATION

EXISTING MANGROVES

PROTECT EXISTING MANGROVE FROM CONSTRUCTION DAMAGE

PROPOSED PLANTING, TYP.

CONTRACTOR IS RESPONSIBLE TO RESTORE ALL OPERATIONAL AND NON-OPERATIONAL IRRIGATION ADJACENT TO DECK 84 TO MAINTAIN PROPOSED, RELOCATED AND EXISTING LANDSCAPE. ITEMIZED COST TO BE PROVIDED TO CITY, EOR, AND LANDSCAPE ARCHITECT FOR APPROVAL.

12" WOOD PILING (TYP.)

RIPRAP

RIPRAP

CONC. WALK

INTRACOASTAL WATERWAY

NOTE:
1. CONTRACTOR IS RESPONSIBLE FOR MANUAL WATERING THROUGH ESTABLISHMENT AND WARRANTY PERIOD FOR ALL PLANTING AREAS WITHOUT PROPOSED IRRIGATION.
2. CONTRACTOR IS RESPONSIBLE FOR RESTORING AND KEEPING ALL EXISTING IRRIGATION OPERATIONAL DURING AND AFTER CONSTRUCTION.

CITY of DELRAY BEACH
PUBLIC WORKS DEPARTMENT
434 SOUTH SWINTON AVENUE, DELRAY BEACH, FLORIDA 33444
Phone: (561) 243-7322 Fax: (561) 243-7314 www.mydelraybeach.com

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West Palm Beach, FL 33411
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Cert No. 6091 - LB No. 7055
ENGINEERING // SURVEYING // ENVIRONMENTAL // PLANNING

LANDSCAPE ARCHITECT'S SEAL
KIRSTEN SIEGEL, PLA
LIC. NO. LA6667375

DESIGNED BY	DN/JM
DRAWN BY	DN/VQ
CHECKED BY	KS
QC BY	JM
DATE	03/06/2024

REVISION	DATE	DESCRIPTION	BY

THE CITY OF DELRAY BEACH
HISTORIC MARINE WAY SEAWALL, ROADWAY, AND DRAINAGE IMPROVEMENT
IRRIGATION PLAN

PROJECT NO. 17-047
SHEET NO. LI 1.5
FILE ID. 2898.01

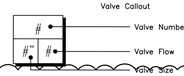
J:\Data Base\2-Projects\2898.01 Marine Way Rdy JV\4 Drawings\Irrigation\2898.01-Marine Way Rdy JV.dwg ---- Plotted: 3/6/2024 4:53:49 PM By: Vince Quaglia

IRRIGATION SCHEDULE

SYMBOL	MANUFACTURER/MODEL/DESCRIPTION	QTY
	Area to Receive Dripline Rain Bird XFS-CV-09-12 XFS-CV Sub-Surface and On-Surface Landscape Dripline with a Heavy-Duty 4.3 psi Check Valve. 0.9 GPH emitters at 12" O.C. Dripline laterals spaced at 12" apart, with emitters offset for triangular pattern. Specify XF insert fittings.	2,262 l.f.

SYMBOL	MANUFACTURER/MODEL/DESCRIPTION	QTY
	Rain Bird PEB 1" Plastic Industrial Valves. Low Flow Operating Capability, Globe Configuration.	2
BF	Febco 825Y 3/4" Reduced Pressure Backflow Preventer	1
C	Rain Bird TM2-4-120V Controller 4 station 120v model. Suitable for indoor or outdoor installations Factory-installed outdoor-rated power cord. LNK WiFi ready	1
M	Water Meter 3/4"	1
	Irrigation Lateral Line: PVC Schedule 40	179.2 l.f.
	Irrigation Mainline: PVC Schedule 40 2" PVC Schedule 40 with 1 1/2" gray PVC electrical conduit	341.4 l.f.
	Pipe Sleeve: PVC Schedule 40 to extend 5' past hardscape surfaces	231.2 l.f.

Valve Callout



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VALVE SCHEDULE

NUMBER	MODEL	SIZE	TYPE	GPM	PSI
1	Rain Bird PEB	1"	Area for Dripline	14.61	32.4
2	Rain Bird PEB	1"	Area for Dripline	19.31	34.4

IRRIGATION NOTES

SYSTEM DESCRIPTION

THIS IS A PROPOSED SYSTEM SOURCED BY A METER TO IRRIGATE SOD. ⚠

WORK

THE IRRIGATION CONTRACTOR SHALL BE CERTIFIED AS A CERTIFIED IRRIGATION CONTRACTOR BY THE IRRIGATION ASSOCIATION. SUBMIT CERTIFICATION TO THE OWNER'S REPRESENTATIVE PRIOR TO PRE-CONSTRUCTION MEETING.

FOLLOW THESE NOTES IN ADDITION TO CITY AND COUNTY REQUIREMENTS AND DESIGN STANDARDS. IMMEDIATELY NOTIFY THE OWNER'S REPRESENTATIVE OF ANY CONFLICTS BETWEEN THE PLANS AND CITY/COUNTY REQUIREMENTS.

VERIFY SITE CONDITIONS BEFORE BIDDING. INSTALLATIONS MAY REQUIRE ADDITIONAL EQUIPMENT FOR SPECIFIC SITE CONDITIONS. INCLUDE ALL COSTS TO COMPLETE THE SCOPE OF WORK IN BID.

INCLUDE ALL REQUIRED PERMIT FEES IN BID. OBTAIN ALL REQUIRED PERMITS AT NO ADDITIONAL CHARGE.

IMMEDIATELY REPAIR AND/OR REPLACE ANY ITEM DAMAGED BY CONSTRUCTION OF THE IRRIGATION SYSTEM AT NO CHARGE.

GUARANTEE MATERIALS AND WORKMANSHIP FOR ONE-YEAR FROM FINAL ACCEPTANCE. CORRECT DEFICIENCIES AT NO CHARGE

INSTALLATIONS

PROVIDE MANUFACTURER CUT SHEETS FOR EVERY ITEM TO BE INSTALLED FOR APPROVAL.

PROVIDE ONLY NEW EQUIPMENT AND AS SPECIFIED WITHIN THE PLANS.

ELECTRICAL SERVICE CONNECTIONS AND REQUIREMENTS INDICATED WITHIN THE PLANS ARE PRIOR TO ELECTRICAL PROVIDERS DESIGN. COORDINATE FINAL ELECTRICAL DESIGN REQUIREMENTS WITH THE ELECTRICAL PROVIDER PRIOR TO BID. PROVIDE ANY ADDITIONAL REQUIRED EQUIPMENT AT NO ADDITIONAL COST.

ELECTRICAL SERVICE CONNECTIONS AND ALL OTHER ELECTRICAL WORK IS TO COMPLY WITH THE NATIONAL ELECTRICAL CODE AND ANY OTHER APPLICABLE ELECTRICAL CODES, LAWS AND REGULATIONS. COORDINATE ELECTRICAL SERVICE CONNECTION WITH THE ELECTRICAL PROVIDER. PERFORM ELECTRICAL SERVICE CONNECTIONS BY A LICENSED ELECTRICIAN.

PLAN ADJUSTMENTS:
PLAN LAYOUT IS SCHEMATIC FOR GRAPHIC CLARITY. INSTALL IN PERVIOUS AREAS, EXCEPT WHERE SLEEVING IS SHOWN.

AS-BUILT PLANS:
PREPARE AS-BUILT PLANS AS THE WORK PROGRESSES, INDICATING THE ACTUAL LOCATION OF EQUIPMENT. KEEP THE AS-BUILT PLAN SET ON SITE DURING CONSTRUCTION. SUBMIT FINAL AS-BUILT TO THE OWNER'S REPRESENTATIVE.

TRENCHING AND PIPE INSTALLATION:
INSTALL PIPE ON A STABLE FOUNDATION. IF NECESSARY, REMOVE UNSTABLE SOIL OR MUCK FROM THE TRENCH BOTTOM AND INSTALL A 6 INCH FOUNDATION OF COMPACTED CLASS 1 BEDDING MATERIAL. REMOVE WATER FROM THE TRENCH BEFORE BACKFILLING. EXCAVATE 6 INCHES BELOW THE PIPE BOTTOM WHEN TRENCHING THROUGH ROCK AND INSTALL CLASS 1 BEDDING MATERIAL. BACKFILL TRENCHES AND COMPACT TO FINISHED GRADE WITH EXISTING SOILS FREE OF DEBRIS, ROOTS, ROCKS OR OBJECTS THAT COULD DAMAGE THE PIPE. TUNNEL UNDER TREE ROOTS. ADJUST HEAD LAYOUT FOR CONFLICTS WITH PROPOSED ROOTBALLS AS REQUIRED. INSTALL MAINLINE AND LATERAL PIPE MINIMUM OF 18 INCHES TO

MAKE PVC SOLVENT WELD CONNECTIONS IN ACCORDANCE WITH ASTM D2855. APPLY PURPLE COLORED PVC PRIMER IN ACCORDANCE WITH ASTM F656. APPLY PVC CEMENT IN ACCORDANCE WITH ASTM D2564.

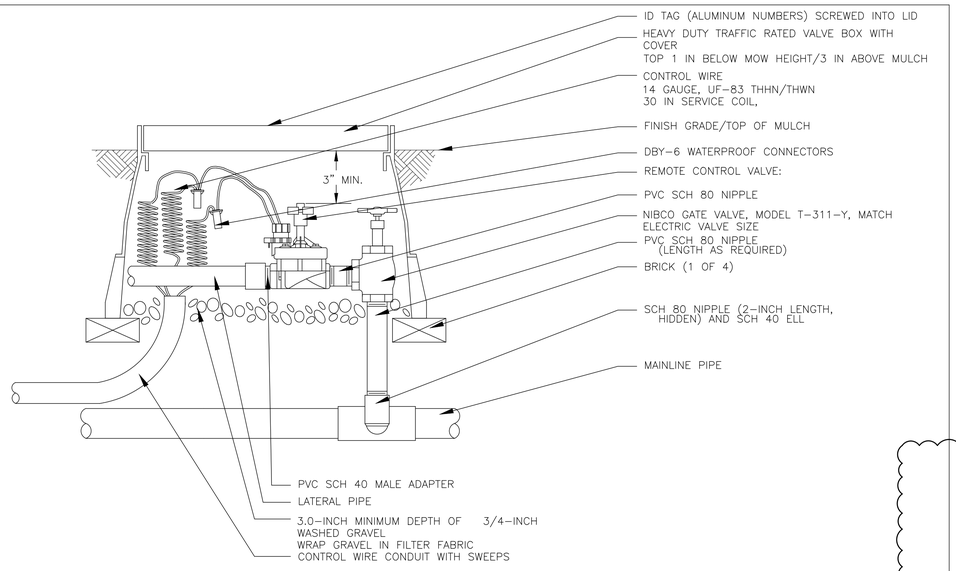
FLUSHING:
PRIOR TO INSTALLATION OF THE VALVES, FLUSH MAINLINES FOR A MINIMUM OF 10 MINUTES OR UNTIL LINES ARE CLEAR OF DEBRIS; WHICHEVER IS LONGER.
PRIOR TO INSTALLATION OF THE HEADS, FLUSH LATERAL LINES FOR A MINIMUM OF 10 MINUTES OR UNTIL LINES ARE CLEAR OF DEBRIS; WHICHEVER IS LONGER.

IRRIGATION HEAD PRESSURE TEST:
PERFORM PRESSURE TEST ON EACH ZONE AT THE FIRST AND LAST IRRIGATION HEADS. THE MAXIMUM ALLOWABLE PRESSURE DEVIATION IS 10 PERCENT.

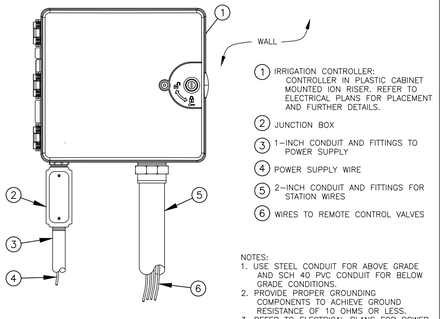
FINAL ACCEPTANCE

FINAL ACCEPTANCE OF THE IRRIGATION SYSTEM WILL BE GIVEN ONLY AFTER THE FOLLOWING HAS BEEN COMPLETED AND APPROVED:

1. FINAL WALK THROUGH WITH THE OWNER'S REPRESENTATIVE AND CREATION OF FINAL PUNCH LIST.
2. FINAL PUNCH LIST ITEMS HAVE BEEN CORRECTED AND ACCEPTED.
3. COMPLETION AND ACCEPTANCE OF THE 'AS-BUILT' DRAWINGS.



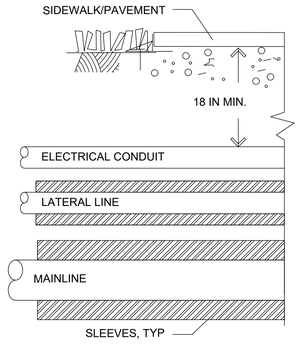
VALVE ASSEMBLY



1. IRRIGATION CONTROLLER: CONTROLLER IN PLASTIC CABINET MOUNTED ION RISER. REFER TO ELECTRICAL PLANS FOR PLACEMENT AND FURTHER DETAILS.
2. JUNCTION BOX
3. 1-INCH CONDUIT AND FITTINGS TO POWER SUPPLY
4. POWER SUPPLY WIRE
5. 2-INCH CONDUIT AND FITTINGS FOR STATION WIRES
6. WIRES TO REMOTE CONTROL VALVES

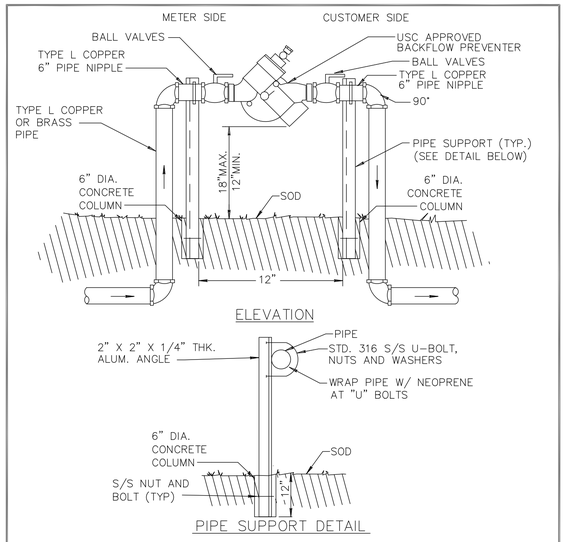
NOTES:
1. USE STEEL CONDUIT FOR ABOVE GRADE AND SCH 40 PVC CONDUIT FOR BELOW GRADE CONDITIONS.
2. PROVIDE PROPER GROUNDING COMPONENTS TO ACHIEVE GROUND RESISTANCE OF 10 OHMS OR LESS.
3. REFER TO ELECTRICAL PLANS FOR POWER SOURCE.

CONTROLLER MOUNTING



SLEEVES

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ELEVATION

PIPE SUPPORT DETAIL

NOTES:

1. FOR ALL SERVICES LESS THAN OR EQUAL TO 2" DIA.
2. ABOVE GRADE PIPING SHALL BE BRASS OR TYPE "L" COPPER OR BRASS TUBING.
3. ALL COPPER JOINTS SHALL BE MADE WITH 95/5 SOLDER.
4. USC APPROVED RPZ BACKFLOW PREVENTER IS REQUIRED IN ACCORDANCE WITH CITY OF DELRAY BEACH CODE OF ORDINANCES TITLE V, CHAPTER 52.83.
5. USC APPROVED RPZ BACKFLOW PREVENTER IS REQUIRED FOR ALL COMMERCIAL PROPERTIES AND ALL RESIDENTIAL PROPERTIES WITH FIRE SPRINKLER SYSTEMS.

CITY of DELRAY BEACH
PUBLIC WORKS DEPARTMENT
434 SOUTH SWINTON AVENUE, DELRAY BEACH, FLORIDA 33444

REDUCED PRESSURE ZONE BACKFLOW PREVENTER

DATE: 09-15-2021
PW 17.0

CITY of DELRAY BEACH
PUBLIC WORKS DEPARTMENT
434 SOUTH SWINTON AVENUE, DELRAY BEACH, FLORIDA 33444
Phone: (561) 243-7322 Fax: (561) 243-7314 www.mydelraybeach.com

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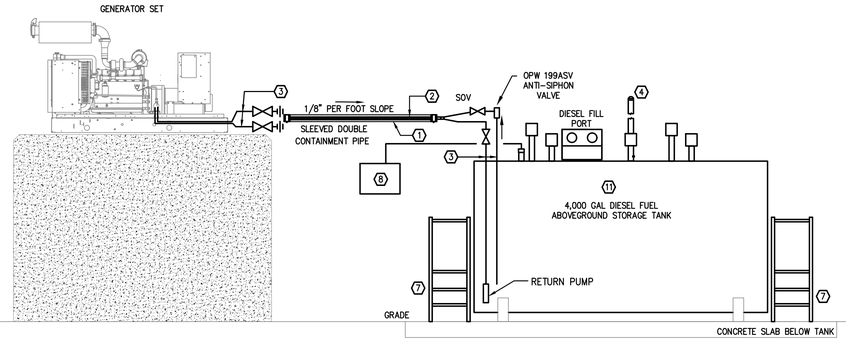
DESIGNED BY	DN/JM
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QC BY	JM
DATE	03/06/2024

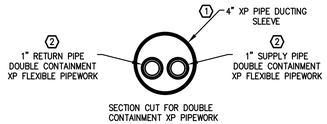
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THE CITY OF DELRAY BEACH
HISTORIC MARINE WAY SEAWALL, ROADWAY, AND DRAINAGE IMPROVEMENT
IRRIGATION SCHEDULE & DETAILS

PROJECT NO. 17-047
SHEET NO. LI 2.0
FILE ID. 2898.01

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GENERAL NOTES

A.	ALL WORK TO BE DONE PER FBC, NFA 110, 37, 30 AND LOCAL AUTHORITY HAVING JURISDICTION..
B.	MATERIAL INSTALLATION TO BE PER STANDARDS AND INSTALLATION INSTRUCTIONS PROVIDED BY MANUFACTURES INCLUDING BY NOT LIMITED TO CONVALT, PRYCO, AND FRANKLIN INC.
C.	COORDINATE WITH MANUFACTURER FOR SITE VISIT INSPECTIONS, AND START UPS.
D.	COORDINATE FINAL LOCATION OF EQUIPMENT IN THE FIELD.
	PIPES INSTALLED ON THE OUTSIDE MUST BE PAINTED TO AVOID CORROSION. DO NOT USE GALVANIZED PIPES FOR FUEL LINES

DETAIL KEY NOTES

(1)	4" FRANKLIN XP PIPE DUCTING SLEEVE.
(2)	1" FRANKLIN DOUBLE CONTAINMENT XP FLEXIBLE PIPEWORK.
(3)	(TWO PIPES) ONE SUPPLY AND ONE RETURN 1" SCHEDULE 40 STEEL PIPING.
(4)	VENT RISER, 2" SCHEDULE 40 STEEL WITH OPW 523 SCREENED VENT CAP. TERMINATE OUTSIDE A MIN OF 12' AFG.
(5)	FUEL SUPPLY LINE SHALL CONNECT TO GENERATOR INTERIOR PUMP PORT TO SUPPLY THE GENERATOR WITH FUEL FROM THE ABOVE GROUND FUEL TANK. CONNECT RETURN LINE FROM THE GENERATOR RETURN PORT TO THE RETURN PORT ON THE ABOVE GROUND FUEL TANK PUMP SYSTEM.
(6)	PROVIDE CONVAULT 4,000 GALLONS DIESEL ABOVEGROUND CONCRETE STORAGE TANK, SHOP FABRICATED MEETING UL 2085 TANK. PROVIDE WITH TWO ADDITIONAL 4" OPENING AND TWO 2" OPENING FOR A REMOTE GENERATOR.
(7)	LADDER INDUSTRIES MODEL AP336 STEPS OR EQUIVALENT TO BE PROVIDED FOR ACCESS TO THE FUEL DISPENSING PUMPS.
(8)	PROVIDE VEEDER ROOT OVERFILL ALARM 790091-001 WITH ALARM ACKNOWLEDGEMENT SWITCH. MOUNT @ 5' A.F.G. PROVIDE CONTROL WIRING TO FUEL TANK FOR MONITORING.

DIESEL FUEL PIPING DETAIL FOR GENERATOR SET AND ABOVE GROUND TANK

N.T.S.

GENERATOR FUEL TANK NOTES

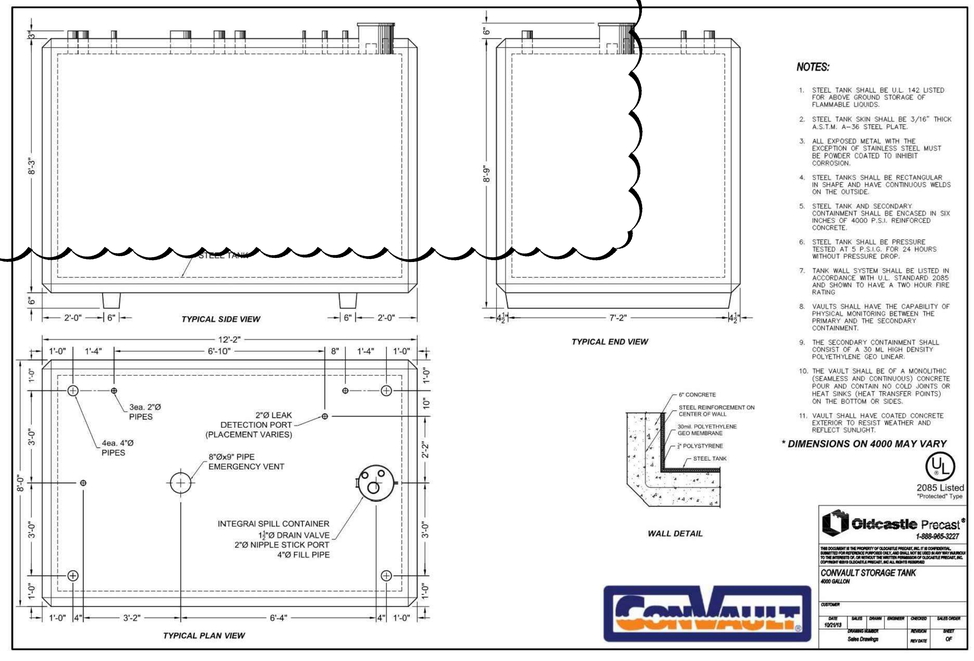
GENERATOR SUPPLY AND RETURN FUEL

THE GENERATOR FUEL PUMP SHALL DRAW FUEL FROM THE TANK. THE TANK PUMP SHALL RETURN FUEL TO THE TANK. CONTROLS SHALL BE PROVIDED TO ALLOW THE GENERATOR TO OPERATE WITH THE TANK.

SYSTEM MUST BE ABLE TO STOP PUMPS IN CASE OF HIGH LIMITS. SONELOID VALVE MUST CLOSE THE INLET TO TANK IN CASE OF CRITICAL LEVEL. ALARM BELL MUST SOUND IN CRITICAL LEVEL. CONDUITS BETWEEN PUMPS, CONTROLLER, AND SENSORS TO BE COORDINATED BY CONTRACTOR PER EQUIPMENT REQUIREMENTS.

TANK MONITORING SYSTEM

SEE ELECTRICAL PLANS. CONTRACTOR TO PROVIDE A TANK MONITORING SYSTEM BY VEEDER ROOT OR EQUIVALENT.



NOTES:

1. STEEL TANK SHALL BE U.L. 142 LISTED FOR ABOVE GROUND STORAGE OF FLAMMABLE LIQUIDS.
2. STEEL TANK SKIN SHALL BE 3/16" THICK A.S.T.M. A-36 STEEL PLATE.
3. ALL EXPOSED METAL WITH THE EXCEPTION OF STAINLESS STEEL MUST BE POWDER COATED TO INHIBIT CORROSION.
4. STEEL TANKS SHALL BE RECTANGULAR IN SHAPE AND HAVE CONTINUOUS WELDS ON THE OUTSIDE.
5. STEEL TANK AND SECONDARY CONTAINMENT SHALL BE ENCASED IN SIX INCHES OF 4000 P.S.I. REINFORCED CONCRETE.
6. STEEL TANK SHALL BE PRESSURE TESTED AT 5 P.S.I.G. FOR 24 HOURS WITHOUT PRESSURE DROP.
7. TANK WALL SYSTEM SHALL BE LISTED IN ACCORDANCE WITH U.L. STANDARD 2085 AND SHOWN TO HAVE A TWO HOUR FIRE RATING
8. VAULTS SHALL HAVE THE CAPABILITY OF PHYSICAL MONITORING BETWEEN THE PRIMARY AND THE SECONDARY CONTAINMENT
9. THE SECONDARY CONTAINMENT SHALL CONSIST OF A 30 MIL HIGH DENSITY POLYETHYLENE GEO LINEAR.
10. THE VAULT SHALL BE OF A MONOLITHIC (SEAMLESS AND CONTINUOUS) CONCRETE POUR AND CONTAIN NO COLD JOINTS OR HEAT SINKS (HEAT TRANSFER POINTS) ON THE BOTTOM OR SIDES.
11. VAULT SHALL HAVE COATED CONCRETE EXTERIOR TO RESIST WEATHER AND REFLECT SUNLIGHT.

***DIMENSIONS ON 4000 MAY VARY**

UL 2085 Listed "Protected" Type

Oldcastle Precast® 1-888-965-3227

CONVAULT STORAGE TANK 4000 GALLON

CUSTOMER					
DATE 10/01/12	SALES	DRAWN	ENGINEER	CHECKED	SALES ORDER
PROJECT NUMBER Sales Drawings			REVISION #01/2012	SHEET OF	

ELECTRICAL SYMBOL LIST

S	WALL SWITCH – 1 POLE – 125V – 20 AMP. MOUNT 46" A.F.F. 42" A.F.F. @ COUNTERTOPS OR AS NOTED. QUIET TYPE.
GFI	DUPLEX RECEPTACLE ON GROUND FAULT INTERRUPTER CIRCUIT. 125V – 20 AMP – NEMA 5–20R
④	JUNCTION BOX MOUNTED ABOVE CEILING.
②	MOTOR – NUMBER DENOTES HORSEPOWER.
	PANELBOARD
	DISTRIBUTION PANEL
3P NF 30	NON–FUSED DISCONNECT SWITCH.
3P 20 30	FUSED DISCONNECT SWITCH OR CIRCUIT BREAKER ENCLOSURE.
	PUSH BUTTON
W.P.	WEATHERPROOF
V.P.	VAPOR PROOF
I.G.	ISOLATED GROUND
N.L.	NIGHT LIGHT
EM.	EMERGENCY
	ELECTRICAL CONDUIT CONCEALED IN WALLS OR IN CONCRETE
	ELECTRICAL CONDUIT UNDERGROUND
	ELECTRICAL CONTROL WIRING
#C	ELECTRICAL WIRE HOME–RUN, 1ST HASH MARK REPRESENTS THE HOT, SECOND HASH MARK WITH A DOT REPRESENTS THE NEUTRAL, ARC WIRE MARK REPESENTS THE GROUND
#C	ELECTRICAL MULTI–WIRE HOME–RUN, HASH MARKS WITHOUT DOT REPRESENTS THE NUMBER OF HOT'S, HASH MARK WITH A DOT REPRESENTS THE NEUTRAL, ARC WIRE MARK REPRESENTS THE GROUND, NUMBER OF ARROWS INDICATE NUMBER OF CIRCUITS
#C	ELECTRICAL WIRE HOME–RUN, HASH MARKS WITHOUT DOT REPRESENTS THE NUMBER OF HOT'S, ARC WIRE MARK REPRESENTS THE GROUND

ELECTRICAL NOTES

1. THE CONTRACTOR SHALL BE FULLY COGNIZANT OF THE LATEST EDITION OF THE 2023 FBC, 2020 NEC, 2021 NFPA101, 2019 NFPA72, 2023 FLORIDA FIRE PREVENTION CODE AND ALL LOCAL CODES, ORDINANCES OF THE AUTHORITIES HAVING JURISDICTION AND PERFORM ALL WORK IN ACCORDANCE WITH THE INTENT AND REQUIREMENTS OF THESE CODES, ORDINANCES AND AUTHORITIES.
2. DO NOT SCALE DRAWINGS: VERIFY DIMENSIONS IN FIELD PRIOR TO COMMENCEMENT OF ALL WORK. THE DRAWINGS ARE DIAGRAMMATIC AND INDICATE GENERAL LAYOUT OF ELECTRICAL SYSTEMS.
3. WHEREVER THE WORD "PROVIDE" IS USED, IT SHALL MEAN TO "FURNISH AND INSTALL".
4. FINAL CONNECTIONS TO EQUIPMENT SHALL BE PER MANUFACTURERS APPROVED WIRING DIAGRAMS, DETAILS AND INSTRUCTIONS. IT SHALL BE THE CONTRACTORS RESPONSIBILITY TO PROVIDE MATERIALS AND EQUIPMENT COMPATABLE WITH EQUIPMENT ACTUALLY SUPPLIED.
5. PROVIDE WITH SHOP DRAWING SUBMITTAL, 1/4" SCALE LAYOUT DRAWINGS OF AREAS WITH ELECTRICAL SWITCHGEAR AND TRANSFORMERS. LAYOUT SHALL SHOW LOCATIONS OF AND SHALL BE COORDINATED WITH MECHANICAL EQUIPMENT AND MECHANICAL EQUIPMENT SHALL BE DRAWN TO SCALE.
6. IT IS THE INTENT OF THESE DRAWINGS AND SPECIFICATIONS TO ESTABLISH A STANDARD OF QUALITY. THE ENGINEER RESERVES THE RIGHT TO APPROVE METHODS AND MATERIALS NOT REFLECTED HEREIN.
7. THE CONTRACTOR SHALL REVIEW ARCHITECTURAL, STRUCTURAL AND MECHANICAL DRAWINGS AND SHALL PROVIDE LIGHTS, SWITCHES, RECEPTACLES, TELEPHONE OUTLETS, EQUIPMENT CONNECTIONS, ETC. AND ASSOCIATED CIRCUITING IN NEW AND REMODELED AREAS, EVEN IF SUCH AREAS ARE NOT SHOWN ON THE ELECTRICAL DRAWINGS. LAYOUTS, FIXTURE TYPES, QUANTITIES AND SPACING SHALL BE IN ACCORDANCE WITH SIMILAR AREAS ON THIS PROJECT. THE CONTRACTOR SHALL INCLUDE COSTS FOR THE ABOVE IN HIS BID. IN ADDITION, THE CONTRACTOR SHALL PROVIDE LAYOUT DRAWINGS FOR WORK IN SUCH AREAS AND SUBMIT FOR APPROVAL PRIOR TO ROUGH–IN.
8. THE CONTRACTOR SHALL REVIEW ARCHITECTURAL, STRUCTURAL, MECHANICAL AND OTHER DRAWINGS PRIOR TO BID AND SHALL COORDINATE ALL TRADES TO PROVIDE A COMPLETE PRODUCT TO AVOID CONFLICTS BETWEEN TRADES, AND TO DETERMINE WHICH TRADE IS TO PERFORM THE NECESSARY WORK. COORDINATION BETWEEN TRADES SHALL INCLUDE LOW VOLTAGE WIRING.
9. PROVIDE SUBSTITUTIONS OF ELECTRICAL EQUIPMENT OR REQUEST FOR "OR EQUIVALENT" OR "APPROVED EQUIVALENT" LISTING SHALL BE SUBMITTED TO THE ARCHITECT NOT LESS THAN TEN (10) WORKING DAYS PRIOR TO BID. REFER TO SPECIFICATIONS FOR ADDITIONAL INFORMATION.
10. WORK SHALL BE PERFORMED IN A WORKMANLIKE MANNER, CONSISTENT WITH THE HIGHEST LEVEL OF STANDARDS AND TO THE SATISFACTION OF THE ARCHITECT.
11. ALL EQUIPMENT AND MATERIALS PROVIDED SHALL BE NEW AND IN CONFORMANCE WITH APPLICABLE PROVISIONS OF NEMA, ANSI U.L., ETC AND SHALL BEAR AN APPROVED TESTING AGENCY LABEL WHERE APPLICABLE.
12. PROVIDE PERMITS AND INSPECTIONS AS REQUIRED.
13. GUARANTEE THE INSTALLATION AGAINST DEFECTS IN MATERIALS AND WORKMANSHIP WHICH MAY OCCUR UNDER NORMAL USAGE FOR A PERIOD OF ONE YEAR AFTER OWNER'S ACCEPTANCE. DEFECTS SHALL BE PROMPTLY REMEDIED WITHOUT COST TO THE OWNER.
14. PROVIDE RECORD DRAWINGS TO THE BUILDING OWNER AND ARCHITECT WITHIN 30 DAYS AFTER SYSTEM ACCEPTANCE, PER FBC 13–413.1.ABC.2.1. DRAWINGS SHALL INCLUDE ALL ADDENDUM ITEMS, CHANGE ORDERS, ALTERATIONS, REROUTINGS, ETC.
15. VERIFY EXACT LOCATION OF EQUIPMENT TO BE FURNISHED BY OTHERS PRIOR TO ROUGH–IN. MODIFICATIONS REQUIRED DUE TO LACK OF COORDINATION BY CONTRACTORS, WILL BE DONE AT NO ADDITIONAL COST TO THE OWNER.
16. SYSTEMS SHALL BE TESTED FOR PROPER OPERATION. IF TESTS SHOW THAT WORK IS DEFECTIVE, THE CONTRACTOR SHALL MAKE CORRECTIONS NECESSARY AT NO COST TO THE OWNER.
17. THE CONTRACTOR SHALL PROVIDE OPERATING MANUALS TO THE OWNER, PER FBC 13–413.1.ABC.2.2.
18. THE CONTRACTOR SHALL BE RESPONSIBLE FOR INSTALLING FPL FURNISHED CONDUIT FOR THE PRIMARY CONDUCTORS FROM THE PRIMARY POINT OF CONNECTION TO THE PAD MOUNT TRANSFORMER, PROVIDING A CONCRETE PAD PER FPL REQUIREMENTS, AND TO COORDINATE WITH FPL ALL REQUIREMENTS FOR CONDUIT ENTRY AND CABLE TERMINATIONS IN THE UTILITY TRANSFORMER. ANY CONFLICTS SHALL BE BROUGHT TO THE ATTENTION OF THE ARCHITECT/ ENGINEER PRIOR TO COMMENCEMENT OF WORK.
19. WIRE SHALL BE COPPER, 75 DEGREES C RATED FOR GENERAL USE, FOR HID FIXTURES AND WIRING WITHIN 3 INCHES OF FLUORESCENT BALLAST WIRE SHALL BE COPPER, MINIMUM 90 DEGREES C RATED. SIZES INDICATED ARE FOR INSTALLATION IN A MAXIMUM 30 DEGREES C AMBIENT. CONDUCTOR AMPACITY SHALL BE DERATED FOR HIGHER AMBIENT INSTALLATIONS. THE CONTRACTOR SHALL INCREASE THE SIZE OF THE CONDUCTOR TO MEET VOLTAGE DROP REQUIREMENTS WHERE FIELD CONDITIONS INCREASE THE CONDUIT RUN LENGTH SUCH THAT THE VOLTAGE DROP IS EFFECTED.
20. ALL EMPTY RACEWAY SYSTEMS SHALL HAVE A #12 PULL WIRE OR EQUIVALENT AND SHALL BE IDENTIFIED AT ALL JUNCTION, PULL AND TERMINATION POINTS, USING PERMANENT METALLIC TAGS. TAG SHALL INDICATE INTENDED USE OF CONDUIT, ORIGINATION AND TERMINATION POINTS OF EACH INDIVIDUAL CONDUIT.
21. PRESENT SHOP DRAWING SUBMITTAL DATA AT ONE TIME, SUBMITTAL SHALL BE SUBMITTED IN PDF FORM WITH CONTRACTOR APPROVAL PRIOR TO SUBMITTAL. PARTIAL SUBMITTALS WILL NOT BE ACCEPTED. SUBMITTALS SHALL INCLUDE, BUT NOT BE LIMITED TO: LIGHTING FIXTURES, SWITCHGEAR, PANELBOARDS, WIRING DEVICES, SAFETY SWITCHES, FUSES, MOTOR STARTERS, LAMPS, CONDUIT, CONDUIT FITTINGS AND TRANSFORMERS.
22. CONTRACTOR SHALL BE RESPONSIBLE FOR REPLACING EQUIPMENT WHICH IS DAMAGED DUE TO INCORRECT FIELD WIRING PROVIDED UNDER THIS SECTION OR FACTORY WIRING IN EQUIPMENT PROVIDED UNDER THIS SECTION.
23. CONTRACTOR'S FAILURE TO ORDER OR RELEASE ORDER FOR MATERIALS AND/OR EQUIPMENT WILL NOT BE ACCEPTED AS A REASON TO SUBSTITUTE ALTERNATE MATERIAL, EQUIPMENT OR INSTALLATION METHODS.
24. SYSTEMS SHALL BE COMPLETE, OPERABLE AND READY FOR CONTINUOUS OPERATION. LIGHTS, SWITCHES, RECEPTACLES, MOTORS, ETC., SHALL BE CONNECTED AND OPERABLE.
25. ALL ELECTRICAL SYSTEMS COMPONENTS SHALL BE LISTED OR LABELED BY U.L. OR OTHER RECOGNIZED TESTING FACILITIES
26. VOLTAGE DROP CALCULATIONS ON ALL FEEDERS AND BRANCH CIRCUITS HAVE BEEN PERFORMED IN ACCORDANCE WITH THE STATE OF FLORIDA ENERGY CODE CHAPTER 13 (C405.7.3.1 & C405.7.3.2). THE CONTRACTOR IS RESPONSIBLE TO BE FAMILIAR WITH CHAPTER 13 AND SHALL UPSIZE THE CONDUCTORS FOR FEEDER AND BRANCH CIRCUITS BASED ON THE ACTUAL ROUTING IN THE FIELD.
27. ALL WIRING SHALL BE INSTALLED IN LISTED METALLIC RACEWAYS. RACEWAYS IN SLAB–ON–GRADE OR BELOW GRADE SHALL BE SCHEDULE 40 PVC. TRANSITIONS FROM BELOW TO ABOVE GRADE SHALL BE WITH RIGD STEEL ELBOWS WITH P.V.C. JACKET OR APPROVED EQUIVALENT PROTECTION. MET FITTINGS SHALL BE MALLEABLE IRON OR STEEL. CONNECTORS SHALL BE INSULATED THROAT TYPE.
28. NON–METALLIC AND FLEXIBLE CONDUITS SHALL HAVE A CODE SIZED COPPER GROUNDING CONDUCTOR. INCREASE CONDUIT SIZE AS REQUIRED.
28. PROVIDE EXPANSION FITTINGS IN CONDUIT RUNS CROSSING STRUCTURAL EXPANSION JOINTS.
30. FINAL CONNECTIONS TO MOTORS, TRANSFORMERS AND OTHER VIBRATING EQUIPMENT SHALL BE WITH SEAL TITE FLEX AND APPROVED FITTINGS. DO NOT SECURE CONDUITS, DISCONNECTS OR DEVICES TO DUCTWORK OR MECHANICAL EQUIPMENT.
31. WIRE TERMINATION PROVISIONS FOR PANELBOARDS, CIRCUIT BREAKERS, SAFETY SWITCHES, AND ALL OTHER ELECTRICAL APPARATUS SHALL BE LISTED AS SUITABLE FOR 75 DEGREE C.
32. ELECTRICAL CONTRACTOR SHALL PROVIDE CONTROLS, INTERLOCKS, ACCESSORIES, ETC., IN MOTOR CONTROL STARTERS AS REQUIRED BY THE TEMPERATURE CONTROL CONTRACTOR. STARTERS SHALL CONTAIN 120V CONTROL TRANSFORMER, PILOT LIGHT, AND PUSH BUTTONS OR SELECTOR SWITCH AS REQUIRED, IN ADDITION TO OTHER ITEMS (AUXILIARY CONTACTS, DOOR SWITCHES, RELAYS, ETC.) REQUIRED. SUBMIT ELEMENTARY CONTROL DIAGRAMS FOR APPROVAL. SUBMITTALS SHALL INCLUDE INDICATION OF PRIOR REVIEW AND ACCEPTANCE BY TEMPERATURE CONTROL CONTRACTOR. REFER TO DIV. 15 DRAWINGS AND TEMPERATURE CONTROL DIAGRAMS FOR ADDITIONAL CONDUIT, WIRE, RELAYS, TRANSFORMERS, CONNECTIONS, ETC. REQUIRED FOR A COMPLETE AND OPERABLE SYSTEM.
33. PANEL DIRECTORIES SHALL BE REMOVABLE. SUBMIT PROPOSED SCHEDULE OF DIRECTORIES TO OWNER FOR APPROVAL. ROOM NAMES AND NUMBERS SHALL BE AS DIRECTED BY OWNER. DIRECTORIES SHALL BE TYPED AND INSTALLED UNDER CLEAR PLASTIC COVERS.
34. DISCONNECT SWITCHES SHALL BE HEAVY DUTY TYPE. FUSIBLE SWITCHES SHALL ACCEPT CLASS "R" FUSES ONLY AND REJECT ALL OTHERS.
35. PROVIDE DYMO–TAPE TAG INSIDE COVER OF EACH FUSIBLE SWITCH, INDICATING SIZE AND TYPE OF FUSES PROVIDED.
36. GENERATOR SYSTEM SHALL BE COMPLETE AND OPERABLE AND SHALL INCLUDE REQUIRED ACCESSORIES, FUEL TANKS, PIPING, MUFFLER, BLOCK HEATER, BATTERY CHARGER, ETC. THE CONTRACTOR SHALL COORDINATE THE LOCATION FOR A REMOTE CONTROL PANEL.
37. SPLICES IN EXTERIOR PULL BOXES AND MANHOLES SHALL BE MADE WATER PROOF USING "SCOTCHCAST" SPLICE KIT OR APPROVED EQUIVALENT. SEAL ENDS OF CONDUITS AND DUCTS WITH "DUCT SEAL" OR APPROVED EQUIVALENT
38. CIRCUIT BREAKERS SHALL BE BOLT–ON TYPE AND FUSES SHALL BE BUSSMANN OR LITTLEFUSE.
39. VERIFY EXACT LOCATIONS OF EXISTING AND NEW UNDERGROUND UTILITIES, PIPING AND RACEWAY SYSTEMS PRIOR TO TRENCHING. PROVIDE NECESSARY TRENCHING, BACKFILL, EXCAVATION, SUPPORTS, SERVICE FEEDERS (CONDUIT AND/OR WIRE), PULL BOXES, TRANSFORMER PAD, SAW CUTTING AND PATCHING, CONCRETE/PAVING, ETC., REQUIRED BACKFILL TRENCHED TO 90% COMPACTION AND PATCH TO MATCH EXISTING. CONTRACTOR SHALL OBTAIN AND VERIFY EXACT UTILITY COMPANY DRAWINGS AND REQUIREMENTS.
40. PULL BOXES, CABINETS, ETC., MOUNTED ON THE EXTERIOR AT GRADE LEVEL, SHALL BE WEATHER PROOF TYPE WITH HINGED LOCKABLE COVERS SECURED WITH TAMPER–PROOF SCREWS.
41. SWITCHBOARDS, (DISTRIBUTION BOARDS), PANELBOARDS, DISCONNECT SWITCHES, MOTOR CONTROL CENTERS, SHALL BE MANUFACTURED BY CUTLER HAMMER, GENERAL ELECTRIC, SIEMENS (ITE) OR SQUARE "D". BOLT FREE STANDING EQUIPMENT TO 4" HIGH CONCRETE HOUSEKEEPING PADS.
42. DRY TYPE TRANSFORMERS SHALL BE 150 DEGREES C RISE WITH 220 DEGREES C INSULATION. MOUNT ON RUBBER–IN–SHEAR ISOLATORS. MANUFACTURERS SHALL BE ASEA BROWN BOVERI, CUTLER HAMMER, GENERAL ELECTRIC, SIEMENS (ITE), OR SORREL (SQ. D).
43. PROVIDE ENGRAVED NAMEPLATES ON SWITCHBOARDS, PANELBOARDS DISCONNECT SWITCHES, MOTOR CONTROL CENTERS, TRANSFORMERS, ETC., INDICATING EQUIPMENT DESIGNATION (OR DESIGNATION OF EQUIPMENT SERVED) AND VOLTAGE.
44. PROVIDE TWO (2) SETS OF THREE (3) SPARE FUSES FOR EACH SIZE AND TYPE PROVIDED ON THIS PROJECT. INSTALL FUSES IN A HINGED DOOR, SHEET METAL STORAGE CABINET EQUIPPED WITH CLIPS OR CUBICLES, EACH MARKED WITH THE SIZE AND TYPE FUSE STORED THEREIN. PROVIDE NAMEPLATE "SPARE FUSES". INSTALL IN LOCATIONS AS DIRECTED BY OWNER.
45. PROVIDE 4" HIGH CONCRETE EQUIPMENT PADS BENEATH SWITCHBOARDS, MOTOR CONTROL CENTERS, TRANSFORMERS, ETC., AND 8" HIGH CONCRETE EQUIPMENT AND BENEATH GENSET.
46. ADDITIONAL NOTES FOR NEW PANELBOARDS:
    - A. PROVIDE LIGHTING AND RECEPTACLE PANELS AS INDICATED ON THE PLANS AND AS SPECIFIED HEREIN. ALL PANELS SHALL BE DEAD FRONT, CIRCUIT BREAKER TYPE, AND SHALL BEAR THE U.L. LABEL AS WELL AS MEET ALL APPLICABLE NEMA REQUIREMENTS.
    - B. UNLESS OTHERWISE NOTED, TOP OF PANELS SHALL BE MOUNTED 6'–0" A.F.F.
    - C. ALL PANELS SHALL HAVE TYPEWRITTEN CIRCUIT DIRECTORIES MOUNTED INSIDE OF DOOR.
    - D. PANELS SHALL BE SUITABLE FOR THE SERVICE RATING AND THE A.I.C. RATING INDICATED ON THE PANEL SCHEDULES.
    - E. ALL BREAKERS SHALL BE FULL SPACE, INDIVIDUAL FRAME TYPE, BOLT–ON E. TYPE. NO "PIGGY–BACK" OR TANDEM BREAKERS WILL BE PERMITTED
    - F. CONTRACTOR SHALL PROVIDE ON ALL FLUSH (RECESSED) MOUNTED PANELS TWO (2), SPARE 2" CONDUITS STUBBED INTO THE CEILING SPACE.
    - G. ALL CURRENT CARRYING BUS BARS SHALL BE COPPER.

ELECTRICAL DRAWING LIST

DRAWING NUMBER	DRAWING NAME
E0.1	ELECTRICAL NOTES, LEGEND
E0.2	ELECTRICAL DETAILS
E1.1	ELECTRICAL SITE PLAN– GENERATOR/MARINA POWER
E1.2	ELECTRICAL SITE PLAN– PUMP STATION
E1.3	ELECTRICAL SITE PLAN– MARINE WAY PHOTMETRICS
E1.4	ELECTRICAL SITE PLAN– MARINE WAY PHOTMETRICS
E1.5	ELECTRICAL SITE PLAN– MARINE WAY PHOTMETRICS
E1.6	PARTIAL ELECTRICAL SITE PLAN– MARINE WAY
E1.7	PARTIAL ELECTRICAL SITE PLAN– MARINE WAY
E2.1	ELECTRICAL RISER DIAGRAM PUMP STATION
E2.2	ELECTRICAL DETAILS
E2.3	ELECTRICAL RISER DIAGRAM, MARINA
E2.4	ELECTRICAL DETAILS

NOTE

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TYEG HVAC PLUMBING ELECTRICAL
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Cert No. 6091 - LB No. 7055
ENGINEERING // SURVEYING // ENVIRONMENTAL // PLANNING

ANDREW J. YOUNGROSS LICENSE NO. 51758 STATE OF FLORIDA PROFESSIONAL ENGINEER

DESIGNED BY	AJY
DRAWN BY	AJY
CHECKED BY	AJY
QC BY	AJY
DATE	03/30/2023

REVISION	DATE	DESCRIPTION	BY
1	02–19–24	ADDENDUM 5	AJY

THE CITY OF DELRAY BEACH
HISTORIC MARINE WAY SEAWALL, ROADWAY, AND DRAINAGE IMPROVEMENT

ELECTRICAL NOTES, LEGEND

PROJECT NO. 17-047/21152
SHEET NO. E0.1
FILE ID.

Andrew Youngross Z:\TEC Projects 2021\21152_(DELRAY BEACH MARINE WAY PUMP STATION)\21152–E.dwg —— Printed: 3/27/2024 10:03:28 PM Saved: 3/27/2024 9:28:07

1) FINIAL: CAST ALUMINUM, 356 ALLOY, SECURED WITH (1) 1/4"-20 THREADED ROD

2) UPPER ROOF SPINNING: 13 GUAGE (0.0720" THK.) SPUN ALUMINUM

3) LOWER ROOF SPINNING: 13 GUAGE (0.0720" THK.) SPUN ALUMINUM

4) COOLCAST™ HEAT DISSIPATING ROOF: CAST ALUMINUM, 356 ALLOY, SECURED WITH (4) 10-24 ROUND HEAD MACHINE SCREWS

5) CROSSFIRE™ GENERATION TWO OPTICAL SYSTEM: INJECTION MOLDED REFRACTIVE ACRYLIC, TYPE III (ASYMMETRIC) DISTRIBUTION

6) 1 WATT CREE XTE LED CHIPS (54 CHIPS REQUIRED PER FIXTURE, POSITIONED IN 3 ROWS OF 9 PER BOARD X 2 BOARDS)

7) LUMINAIRE RING: CAST ALUMINUM, 356 ALLOY

8) GASKET: SILICONE GASKET

9) GLOBE: 118 STYLE GLASS GLOBE WITH SMOOTH EXTERIOR SURFACE AND RIBBED INTERNAL SURFACE

10) TIE-ROD: (2) MACHINED ALUMINUM STAND OFF TO SECURE LUMINAIRE RING AND GLOBE TO CASING

11) GLOBE RING: CAST ALUMINUM, 356 ALLOY, WELDED CONNECTION TO FITTER

12) FITTER: CAST ALUMINUM, 356 ALLOY, SECURED TO TENON WITH (4) 1/4-20 SET SCREWS

13) BRACKET: 16 GAUGE, GALVANIZED STEEL DRIVER BRACKET, SECURED WITH (2) 10-24 MACHINE SCREWS

14) LED DRIVER: DRIVER TO BE DETERMINED (BASED ON REQUIRED WATTAGE), SECURED WITH (1) 10-24 MACHINE SCREW

15) DRIVER CHAMBER: LOWER CHAMBER HOUSING DRIVER ASSEMBLY AND WIRING ACCESS

16) GASKET: SILICONE GASKET

17) DRIVER COVER: 16 GAUGE, GALVANIZED STEEL COVER, SECURED WITH (3) 10-24 MACHINE SCREWS

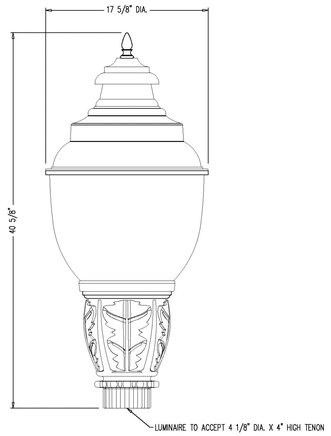
18) POWER CABLE: BUNDLED POWER CABLE WIRE

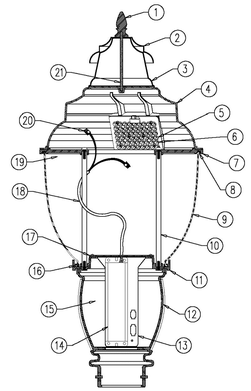
19) OPTICAL CHAMBER: IP66 RATED SEALED UPPER CHAMBER HOUSING LED ASSEMBLY, GLOBE ASSEMBLY AND WIRING

20) QUICK DISCONNECTS: ELECTRICAL COMPONENTS SUPPLIED WITH QUICK DISCONNECTS

21) THREADED ROD: 1/4-20 THREADED ROD, SECURED TO CAST ALUMINUM ROOF

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LUMINAIRE SPECIFICATIONS

STYLE:	DELRAY
HEIGHT:	40 5/8"
WIDTH:	17 5/8" DIAMETER
MATERIAL:	CAST ALUMINUM ALLOY A.N.S.I. 356, PER A.S.T.M. B26-95
GLOBE:	SMOOTH EXTERIOR GLASS
FINISH:	POWDER COATED – DELRAY GREEN TEXTURE
LAMPING:	SYSTEM WATT: 95 WATT CREE LED SYSTEM
VOLTAGE:	ELECTRONIC MIXED AT 120-277 VOLTS
COLOR TEMPERATURE:	4000K COLOR TEMP.
DISTRIBUTION:	TYPE III (ASYMMETRIC) DISTRIBUTION
CATALOG NO WITHOUT HOUSE SIDE SHIELD:	ALMDLR-LE095/EVX/X2-40-GR18-CR3-FDL-OJ-DELRAY GREEN

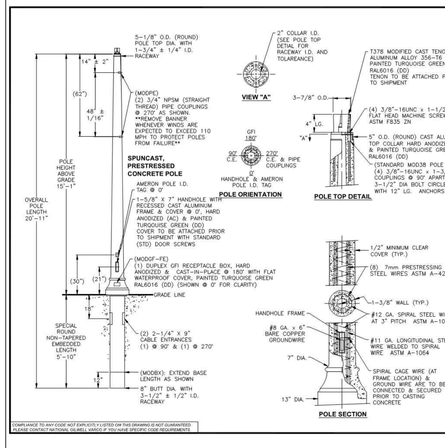
PROJECTED AREAS AND WEIGHT

SECTION	PROJ. AREA	Cd	E.P.A.
HOLDER	2.83 Sq. Ft.	0.50	1.41 Sq. Ft.
	TOTAL ASSEMBLY WEIGHT		56 LBS.

Spring City Electrical Mfg. Co.
HALL AND MAIN STREETS – P.O. BOX 19 – SPRING CITY, PA. 19475
PHONE (610) 948-4000 – FAX (610) 948-5077 – WWW.SPRINGCITY.COM

DESCRIPTION	THE DELRAY LED LUMINAIRE WITH THE CROSSFIRE™ GENERATION TWO LED OPTICAL SYSTEM
CUSTOMER / JOB	DELRAY BEACH, FL

SCALE	DRAWN BY:	DATE	DRAWING NO.
N.T.S.	B.K.R.	6-18-19	FIX-28512



REV.	DATE	DESCRIPTION	DRN.	APPR.
A	05/2019	MOVED GFI TO BELL	A.F.	
B	05/2019	ADDED HH AND TENON P/Ns	J.M.	

"F" LEVEL CONFIG CODES		
OPTION CLASS	ENTRY	INFO
COATING	1	
HH COVER	66516EACDD	
DOOR SCR	STD	
MISC MOD	MODFE	NOTE#7

"F" LEVEL CONFIG CODES		
OPTION CLASS	ENTRY	INFO
MX	41	
FINISH	3	
COLLAR	65825EACDD	ROUND
POLE TOP CON	MOD38	
ELEC ACC	MODGF-FE	
CAST-IN-MOD	MODPE	
SPL POLE LG	MODBX	SPECIAL
STRUCT MOD	MOD00	NOTE#5

VICTORIAN (I) EMBEDDED ROUND POLE

POLE DESIGNATION	POLE HEIGHT ABOVE GRADE	SPECIAL EMBEDDED DEPTH	POLE OVERALL LENGTH	BASE DIAMETER	ULTIMATE G.L. MOMENT (ft-lbs.)	POLE WEIGHT (lbs.)
VER04.65PL	15'-1"	5'-10"	20'-11"	13"	15,000	850

L.) POLES REQUIRED, EACH WITH:
(1) MOUNTED TEN CAST ALUMINUM TENON ASSEMBLY 3.59" O.D. X 4" LG. (P/N: 4557MEMDA)
(2) 3" DIA. HANDHOLES (STD)
(1) FLAT WATERPROOF COVER (P/N: 4559WDD)

NOTES:
1. **SKIN (AY-S): GREEN NATURAL, EXPOSED AGGREGATE FINISH WITH AMERISHIELD ANTI-GRAFFITI COATING.**
2. **STRENGTH: 6,500 PSI @ 28 DAYS CEMENT.**
3. **Fc @ 56 DAYS = 7,500 PSI, USING SPUN CYLINDER TEST.**
4. **Fc @ 28 DAYS = 5,000 PSI, USING ASTM C31 CYLINDER TEST.**
5. **POLES MANUFACTURED PER ASTM C1089-13 SPECIFICATIONS.**
6. **PROTECTIVE COAT EXPOSED P.C. WIRES AT POLE ENDS.**
7. **MODIFIED FOR ADDITIONAL PROTECTION FOR FREEZING OR CORROSIVE COASTAL ENVIRONMENTS, SEE DOCUMENTATION.**
8. **MODCC: CORROSION INHIBITOR MIX MODIFICATION**
9. **THE POLE IS ALSO DESIGNED TO WITHSTAND THE LOADS IMPARTED BY A SIGN DRAWING IS DESIGNED TO WITHSTAND THE LOADS IMPARTED BY A 21' OPPOSING ARM (NOT TO EXCEED 1.0 SQ. FT. EPA, 20 LBS. PER SIDE) WITH EACH ARM HOLDING A SINGLE LUMINAIRE (NOT TO EXCEED 1.0 SQ. FT. EPA, 15 LBS EACH) AS DESIGNED PER THE ASCE 7-10 & 2017 FLORIDA BUILDING CODE USING A 110 MPH WIND ZONE (3-SECOND GUST), CATEGORY II NON-BUILDING STRUCTURE, EXPOSURE C, SURFACE ROUGHNESS C, SITE CLASS D, NO HILL OR ESCARPMENT. THE POLE IS ALSO DESIGNED TO WITHSTAND THE LOADS IMPARTED BY THE TWIN ARM, LUMINAIRES & (1) FIXED 24" X 48" BANNER (NOT TO EXCEED 14.4 SQ. FT. EPA, 20 LBS. PER SIDE) AS DESIGNED PER THE ASCE 7-10 & 2017 FLORIDA BUILDING CODE USING A 110 MPH WIND ZONE (3-SECOND GUST), CATEGORY II NON-BUILDING STRUCTURE, EXPOSURE C, SURFACE ROUGHNESS C, SITE CLASS D, NO HILL OR ESCARPMENT. PLEASE CONTACT & ADVISE MANUFACTURER IF THE INTENDED LOADING EXCEEDS THESE VALUES.**

COMPLIANCE TO ANY CODE NOT EXPLICITLY LISTED ON THIS DRAWING IS NOT GUARANTEED. PLEASE CONTACT FACTORY AS NEEDED, WHERE AHJ HAVE SPECIFIC CODE REQUIREMENTS.

APPROVED BY _____ DATE _____

CITY OF DELRAY BEACH
DELRAY BEACH, FL
VER04.65PL POLE WITH TENON ASSEMBLY & COUPLINGS

THIS SUBMITTED CONTENT INFORMATION MADE IS PROPRIETARY TO AMERON, SHALL SPECIFY IT SHALL NOT BE REPRODUCED, USED OR DISCLOSED TO ANYONE WITHOUT THE PRIOR WRITTEN PERMISSION OF AMERON, SHALL MARCH.

Ameron | DRAWN: A.F. | DATE: 05/21/2018 | SCALE: N.T.S. | DWG. NO. 1805-046 | REV B

Statistics

Description	Symbol	Avg	Max	Min	Max/Min	Avg/Min
Calc Zone #1	+	1.2 fc	2.8 fc	0.4 fc	6.84	3.04

Schedule

Symbol	Label	Image	Quantity	Manufacturer	Catalog Number	Description	Number Lamps	Lumens Per Lamp	Light Loss Factor	Wattage	Plot
	A		4	Spring City Electrical Manufacturing Co	DLR-LE095-X2-40-CR3-GR18	n/a	1	8136	0.95	95	

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HVAC
PLUMBING
ELECTRICAL
THOMPSON & YOUNGROSS ENGINEERING CONSULTANTS, LLC
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ANDREW J. YOUNGROSS LICENSE NO. 51758 STATE OF FLORIDA PROFESSIONAL ENGINEER

DESIGNED BY	AJY
DRAWN BY	AJY
CHECKED BY	AJY
QC BY	AJY
DATE	03/30/2023

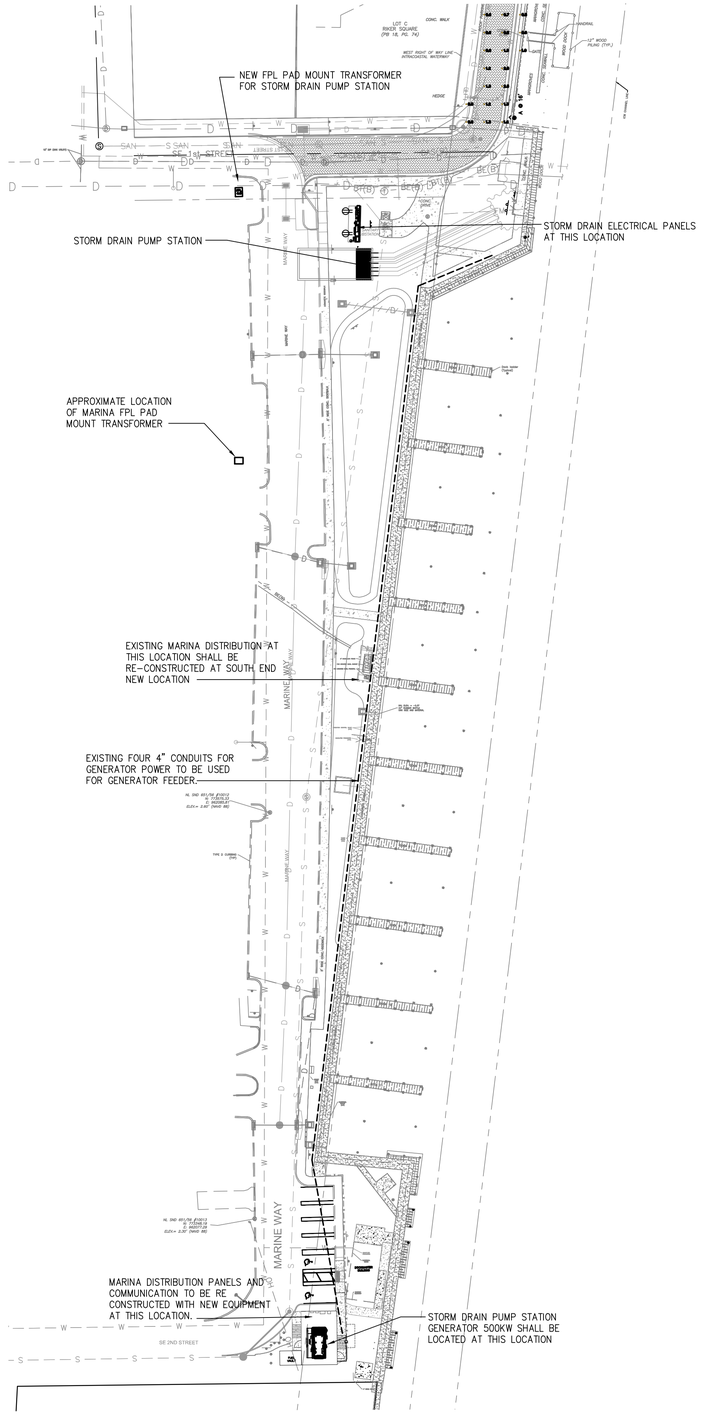
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1	02-19-24	CITY COMMENTS	AJY

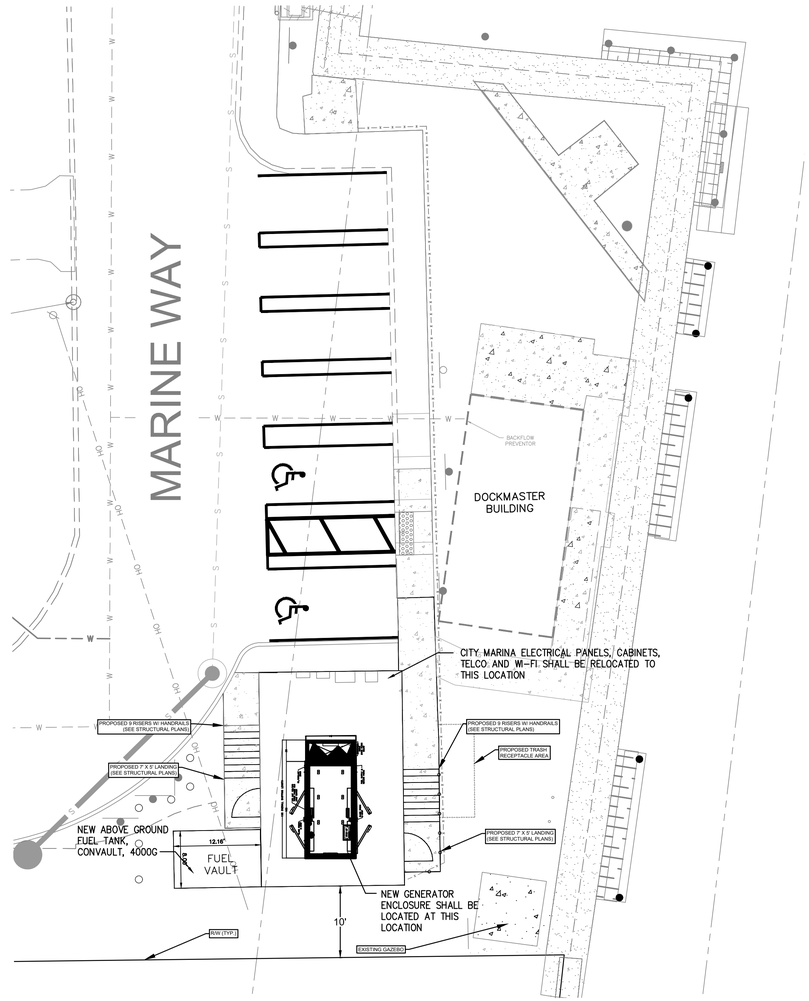
THE CITY OF DELRAY BEACH
HISTORIC MARINE WAY SEAWALL, ROADWAY, AND DRAINAGE IMPROVEMENT

ELECTRICAL DETAILS

PROJECT NO. 17-047/21152
SHEET NO. E0.2
FILE ID.

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ANDREW J. YOUNGROSS LICENSE NO. 57758 STATE OF FLORIDA PROFESSIONAL ENGINEER

DESIGNED BY	AJY
DRAWN BY	AJY
CHECKED BY	AJY
QC BY	AJY
DATE	03/30/2023

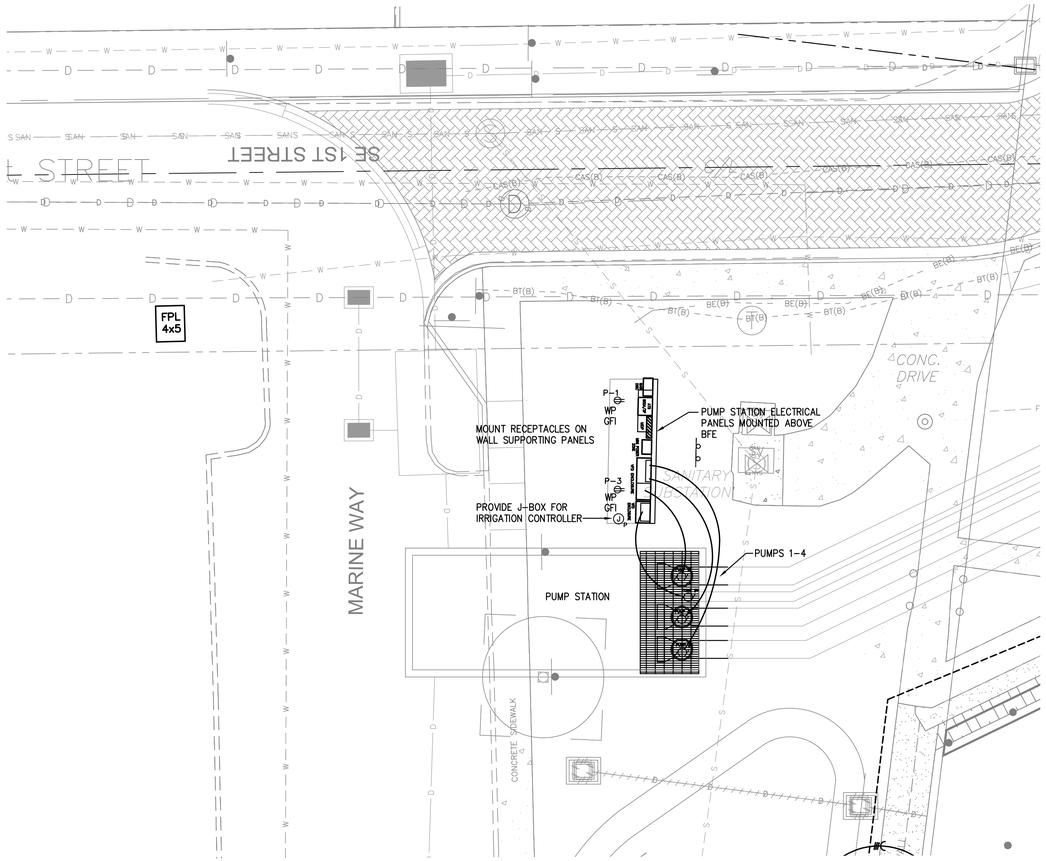
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1	02-19-24	CITY COMMENTS	AJY

THE CITY OF DELRAY BEACH
HISTORIC MARINE WAY SEAWALL, ROADWAY, AND DRAINAGE IMPROVEMENT

ELECTRICAL SITE PLAN- PUMP STATION

PROJECT NO. 17-047/21152
SHEET NO. E1.1
FILE ID.

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NOTE

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TYEC
HVAC
PLUMBING
ELECTRICAL

THOMPSON & YOUNGROSS ENGINEERING CONSULTANTS, LLC

CERTIFICATE of AUTHORIZATION NO. 25996

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Cert No. 6091 - LB No. 7055
ENGINEERING // SURVEYING // ENVIRONMENTAL // PLANNING

ANDREW J. YOUNGROSS LICENSE NO. 57758 STATE OF FLORIDA PROFESSIONAL ENGINEER

DESIGNED BY	AJY
DRAWN BY	AJY
CHECKED BY	AJY
QC BY	AJY
DATE	03/30/2023

REVISION	DATE	DESCRIPTION	BY
1	02-19-24	CITY COMMENTS	AJY

THE CITY OF DELRAY BEACH
HISTORIC MARINE WAY SEAWALL,
ROADWAY, AND DRAINAGE IMPROVEMENT

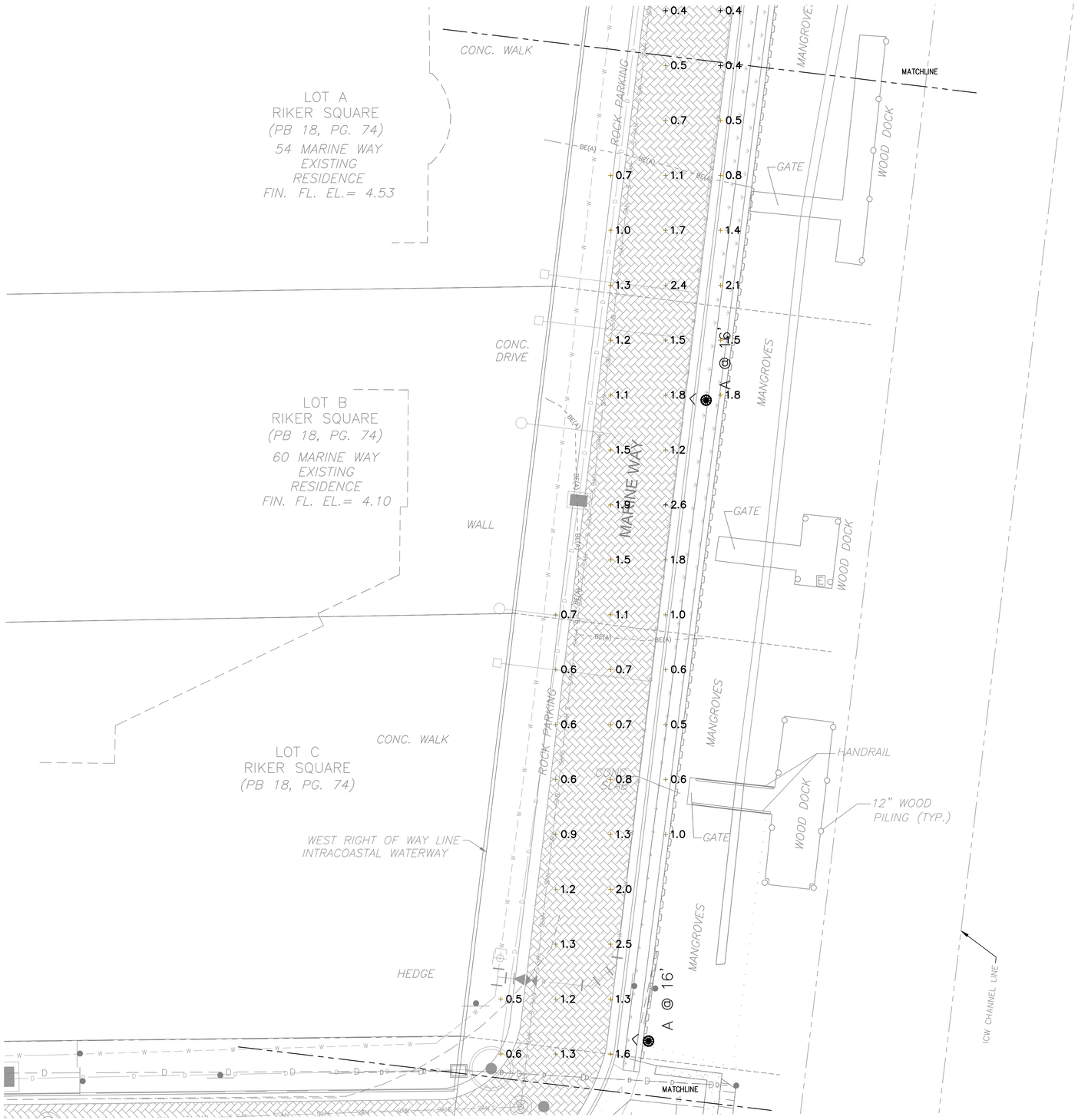
ELECTRICAL SITE PLAN- PUMP STATION

PROJECT NO.
17-047/21152

SHEET NO.
E1.2

FILE ID.

Andrew Youngross Z:\TEC Projects 2021\21152_DELRAY BEACH MARINE WAY PUMP STATION\21152-E.dwg ——— Plotted: 3/1/2024 2:58:53 PM Scroll: 3/1/2024 2:58:06 PM



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THE CITY OF DELRAY BEACH
HISTORIC MARINE WAY SEAWALL,
ROADWAY, AND DRAINAGE IMPROVEMENT

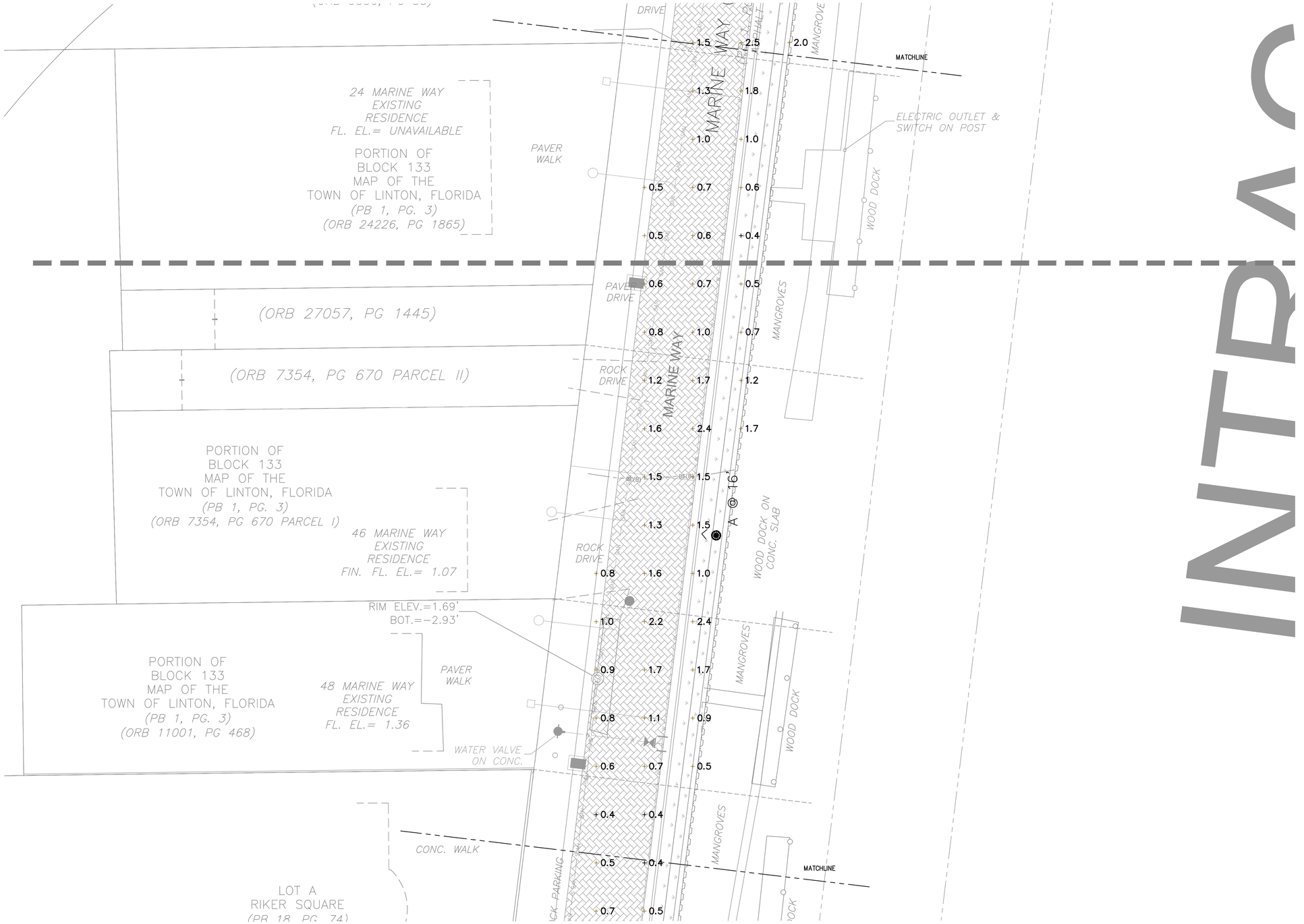
ELECTRICAL SITE PLAN- MARINE WAY LIGHTING

PROJECT NO.
17-047/21152

SHEET NO.
E1.3

FILE ID.

Andrew Youngross & TYEG Projects 2021\21152-DELRAY BEACH MARINE WAY PUMP STATION\21152-E.dwg ——— Plotted: 3/1/2024 2:58:28 PM Saved: 3/1/2024 2:58:04 PM



CONSTRUCTION

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ANDREW J. YOUNGROSS LICENSE NO. 51758 STATE OF FLORIDA PROFESSIONAL ENGINEER

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THE CITY OF DELRAY BEACH
HISTORIC MARINE WAY SEAWALL,
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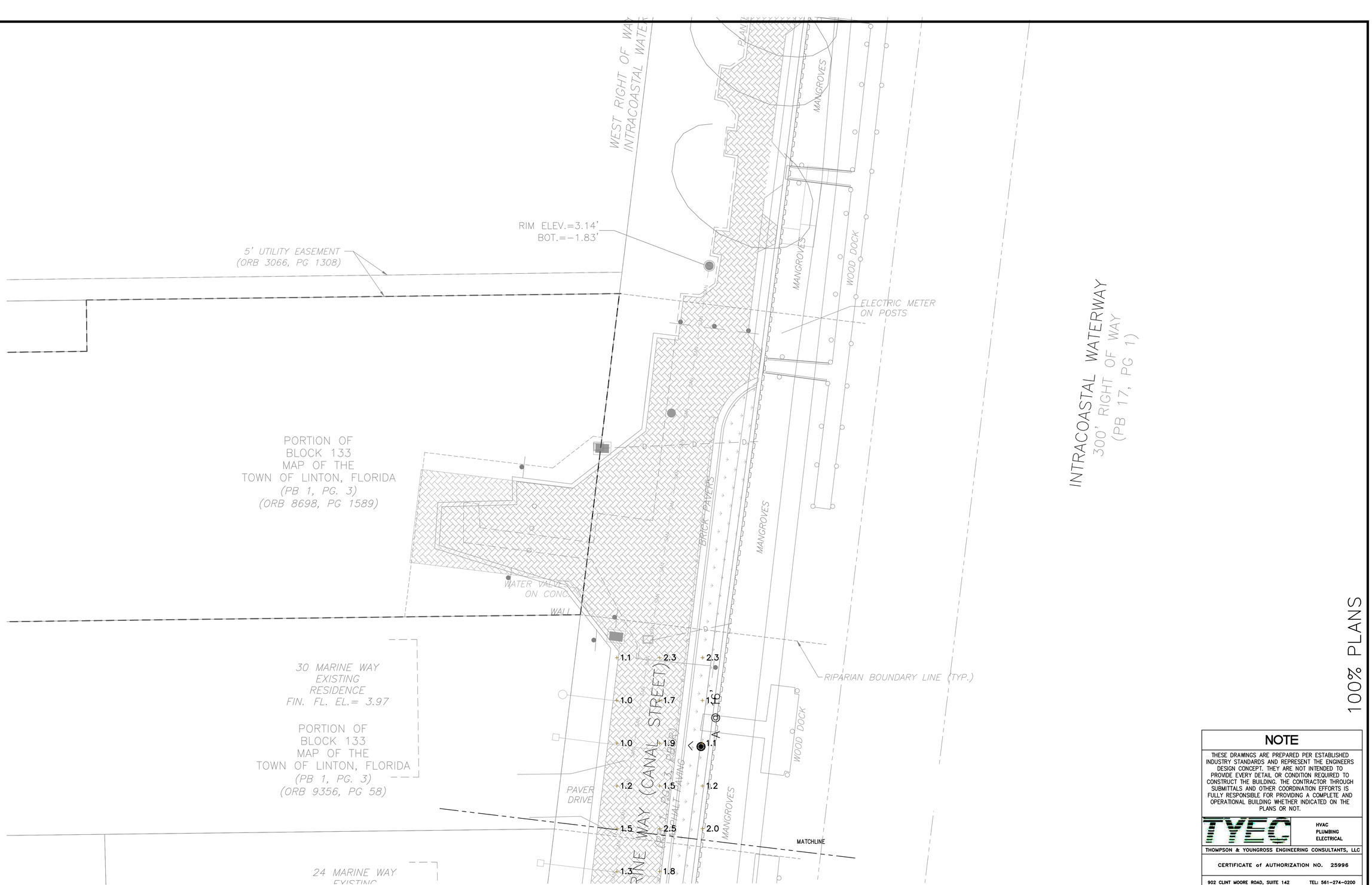
ELECTRICAL SITE PLAN- MARINE WAY LIGHTING

PROJECT NO.
17-047/21152

SHEET NO.
E1.4

FILE ID.

Andrew Youngross S:\TYEG Projects 2021\21152 (DELRAY BEACH) MARINE WAY PUMP STATION\21152-E.dwg ——— Plotted: 3/1/2024 2:56:28 PM Saved: 3/1/2024 2:56:06 PM



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THE CITY OF DELRAY BEACH
HISTORIC MARINE WAY SEAWALL,
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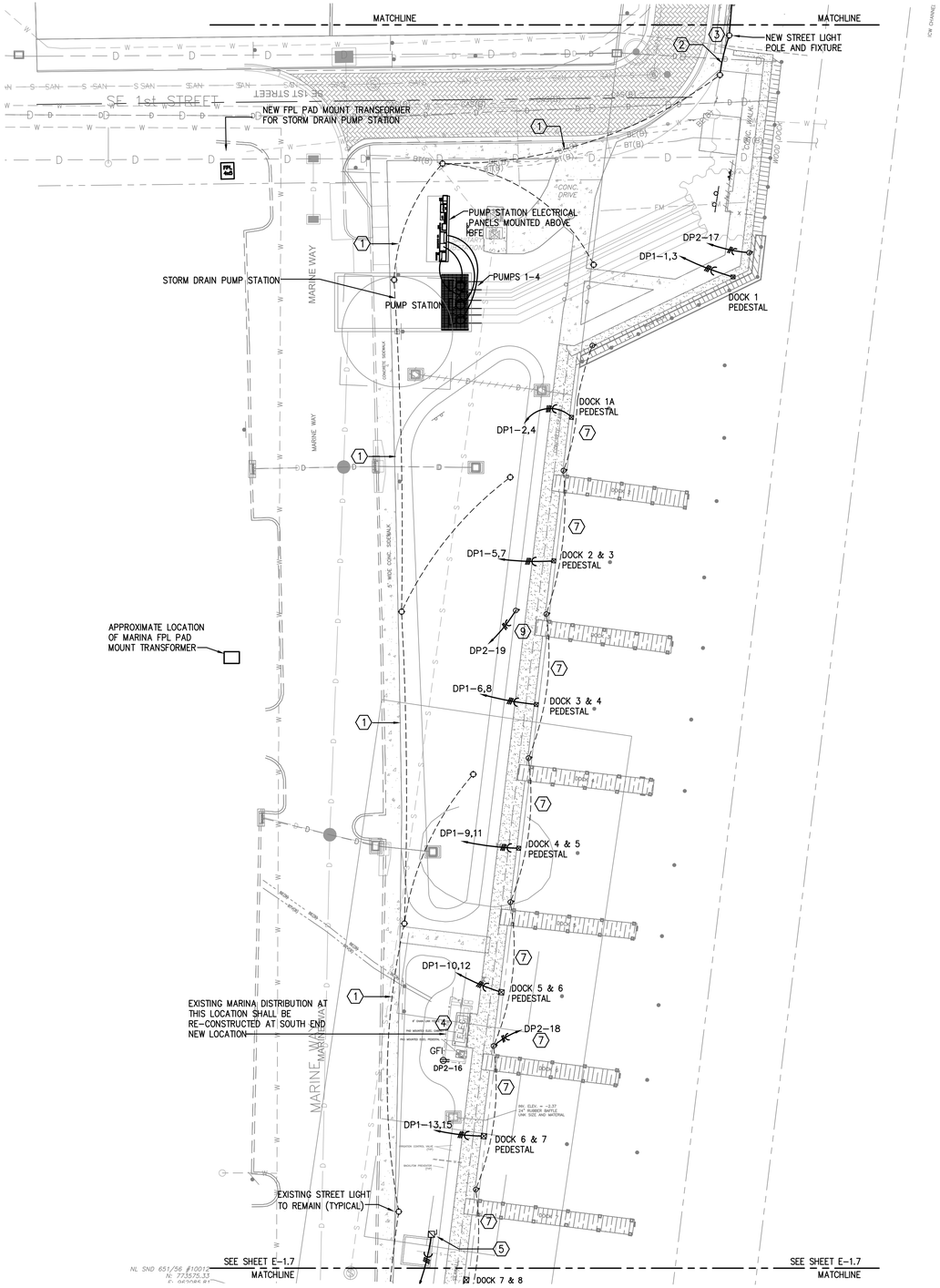
ELECTRICAL SITE PLAN- MARINE WAY LIGHTING

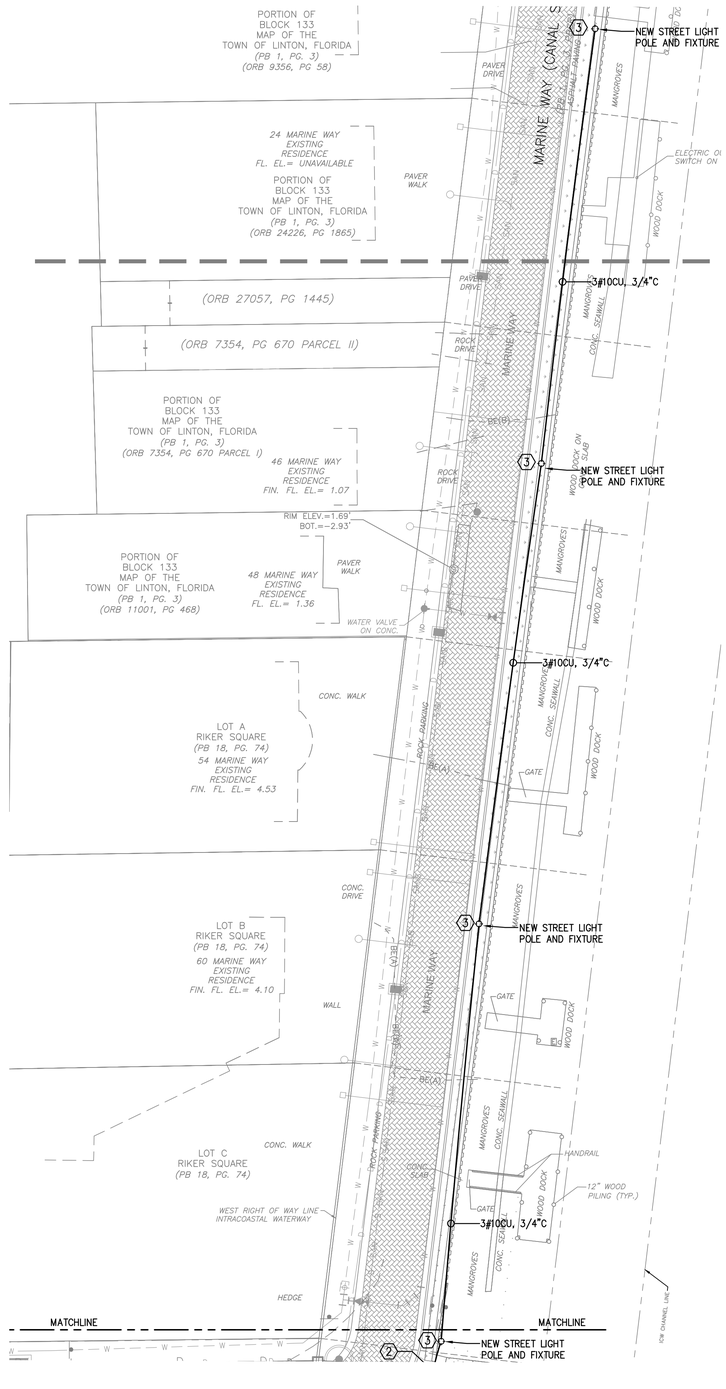
PROJECT NO. 17-047/21152

SHEET NO. E1.5

FILE ID.

Andrew Youngross Z:\TYEG Projects 2021\21152 - DELRAY BEACH MARINE WAY PUMP STATION\21152-E.dwg ---- Plotted: 3/1/2024 2:58:31 PM Scaled: 3/1/2024 2:58:04 PM





KEY NOTES - SITE ELECTRICAL

1	EXISTING STREETLIGHT CIRCUIT CONNECTED TO PANEL DP1. THE CONTRACTOR SHALL PROVIDE NEW 3#10 CU, 3/4"C AS REQUIRED TO RE-FEED THE EXISTING STREET LIGHTING CIRCUIT TO RELOCATED PANEL DP1
2	PROVIDE NEW 3#10, 3/4"C FROM EXISTING LIGHT POLE TO NEW LIGHT POLE. CONNECT TO EXISTING STREET LIGHT CIRCUIT
3	PROVIDE NEW CITY STANDARD POLE LIGHT FIXTURE. CONNECT TO EXISTING STREET LIGHT CIRCUIT AS INDICATED
4	EXISTING PANEL DP1 & DP2, TELCO CABINET, MARINA WI-FI CABINET SHALL BE RELOCATED TO THE SOUTH END OF THE PROJECT AT THE GENERATOR ENCLOSURE. ALL WIRING, CONDUITS, OUTLETS THAT ARE IN THE EXISTING ENCLOSURE SHALL BE RELOCATED AND RECONNECTED FOR OPERATION. PROVIDE NEW WIRE AND CONDUIT AS REQUIRED. PROVIDE NEW DATA WIRING AS REQUIRED.
5	EXISTING LOCATION OF SEWAGE PUMP CONTROLLER. PROVIDE NEW 3#10CU, 1"C TO RELOCATED PANEL DP1.
6	EXISTING REPEATER STATION. RECONNECT TO RELOCATED PANELS. PROVIDE NEW WIRE AND CONDUIT AS REQUIRED.
7	EXISTING FIREHOUSE ALARM AND EMERGENCY SIGNALING SERVICE PEDESTAL LOCATION. EXISTING J-BOX/WP OUTLET FOR PEDESTAL POWER CONNECTION FOR LIGHT AND LOCAL ALARM. PROVIDE NEW WIRE AND CONDUIT AS REQUIRED TO CONNECT TO RELOCATED PANEL DP2.

EXISTING MARINA SCOPE OF WORK:

THE EXISTING MARINA POWER PANELS, DP1, DP2, AND THE TELCO/WI-FI CABINETS ARE TO BE RELOCATED TO THE SOUTH END OF THE MARINA ON THE EST SIDE OF THE GENERATOR. THE CONTRACTOR IS TO COORDINATE WITH THE MARINA AS TO THE RELOCATION/RE-BUILD OF THE PANELS. THE PANELS SHALL BE PLACED ON A PLATFORM SUCH THAT THE PANELS ARE 1' ABOVE B.F.E.

ALL EXISTING DOCK PEDESTALS ARE TO BE RECONNECTED TO THE PANELS DP1 & DP2. PROVIDE NEW WIRE AND CONDUIT AS REQUIRED TO RECONNECT THE POWER AND DATA/WI-FI.

100% PLANS

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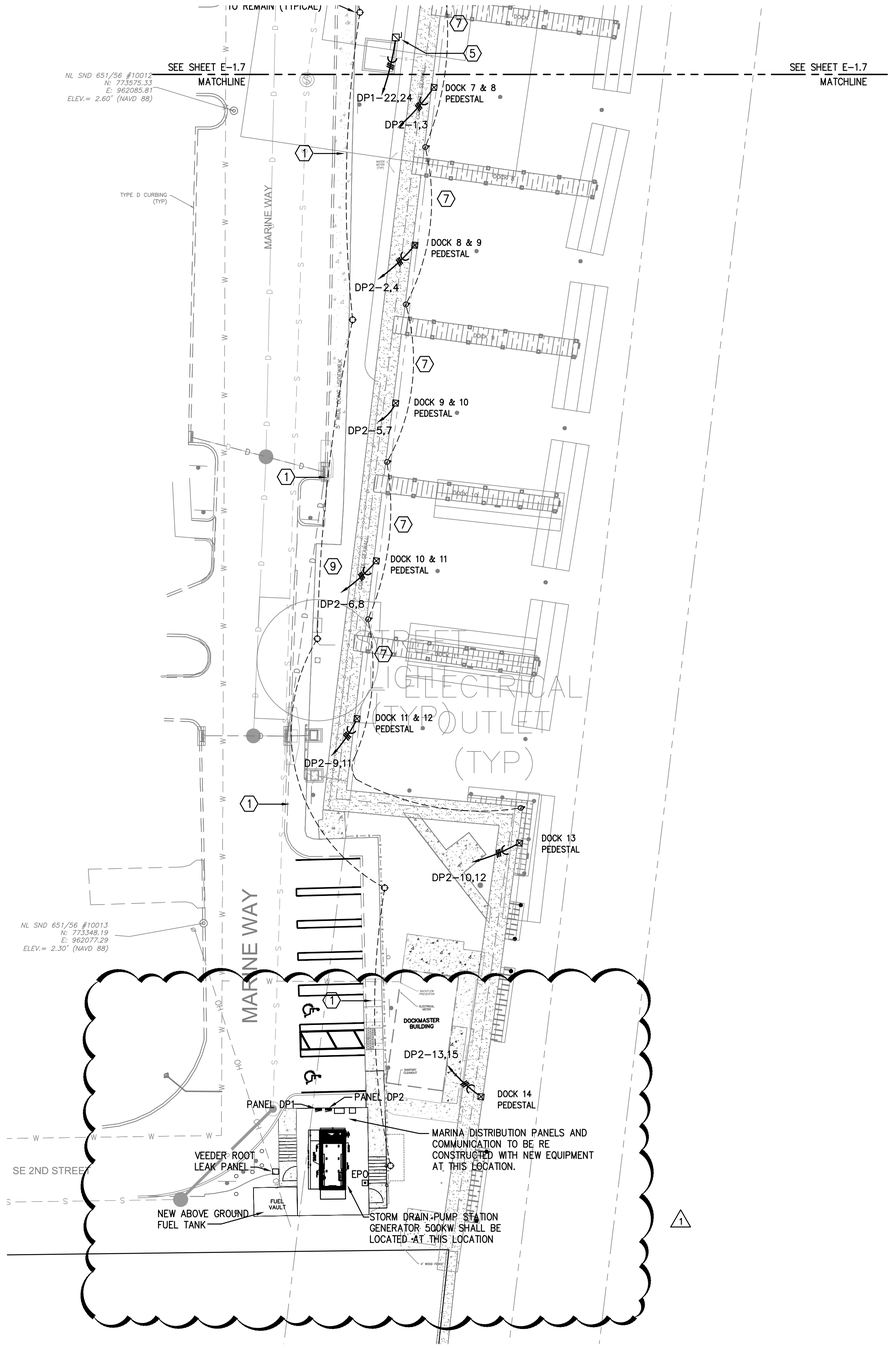
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DATE	03/30/2023

REVISION	DATE	DESCRIPTION	BY
1	02-19-24	CITY COMMENTS	AJY

THE CITY OF DELRAY BEACH
HISTORIC MARINE WAY SEAWALL, ROADWAY, AND DRAINAGE IMPROVEMENT
ELECTRICAL SITE PLAN- EXISTING DOCK PEDESTAL RECONNECTION

PROJECT NO. 17-047/21152
SHEET NO. E1.6
FILE ID.

Andrew Youngross Z:\TEC Projects 2021\21152 -DELRAY BEACH MARINE WAY PUMP STATION\21152-E.dwg ——— Plotted: 3/1/2024 2:56:38 PM Saved: 3/1/2024 2:56:08 PM



KEY NOTES - SITE ELECTRICAL

1	EXISTING STREETLIGHT CIRCUIT CONNECTED TO PANEL DP1. THE CONTRACTOR SHALL PROVIDE NEW 3#10 CU, 3/4"C AS REQUIRED TO RE-FEED THE EXISTING STREET LIGHTING CIRCUIT TO RELOCATED PANEL DP1
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100% PLANS

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CHECKED BY	AJY
QC BY	AJY
DATE	03/30/2023

REVISION	DATE	DESCRIPTION	BY
1	02-19-24	ADDENDUM 5	AJY

THE CITY OF DELRAY BEACH
HISTORIC MARINE WAY SEAWALL, ROADWAY, AND DRAINAGE IMPROVEMENT
ELECTRICAL SITE PLAN- EXISTING DOCK PEDESTAL RECONNECTION

PROJECT NO. 17-047/21152
SHEET NO. E1.7
FILE ID.

Author: Youngross 2:\TEC Projects 2021\21152_DELRAY BEACH MARINE WAY PUMP STATION\21152-E.dwg —— Plotted: 3/27/2024 12:04:07 PM Stored: 3/21/2024 8:28:07

ELECTRICAL RISER KEY NOTES

①	F.P.L. CO. PAD MTD TRANSFORMER. COORDINATE WITH F.P.L. FOR COMPLETE INSTALLATION OF TRANSFORMER, SECONDARY CONDUCTOR & CONDUIT ENTRY. THE CONTRACTOR SHALL INSTALL PRIMARY CONDUITS TO POINT OF PRIMARY SERVICE CONNECTION. COORDINATE WITH FPL FOR CT'S IN TRANSFORMER.
②	500 KW STANDBY GENERATOR. REFER TO POWER PLAN FOR ADDITIONAL CONDUIT REQUIREMENTS. CAT C15 IS BASIS OF DESIGN.
③	800A/3P, SERVICE RATED MAIN DISCONNECT SWITCH. NEMA-3R. 65K AIC RATED. PROVIDE 800A/3P ENCLOSED CIRCUIT BREAKER.
④	THE CONTRACTOR SHALL PROVIDE A 277/480V, 3ø, 4W, 800A AUTOMATIC TRANSFER SWITCH (ASCO 300 GROUP G) OR APPROVED EQUIVALENT. REFER TO SEQUENCE OF OPERATION.
⑤	277/480V, 3ø, 4W, 800 AMP MAIN DISTRIBUTION PANEL. SEE PANEL SCHEDULE. SQ-D "I-LINE" TYPE OR EQUAL.
⑥	VFD TYPE MOTOR STARTER RATED FOR 135 HP.
⑦	VFD TYPE MOTOR STARTER RATED FOR 40 HP.
⑧	CONTRACTOR SHALL PROVIDE A SQ-D MPZB30T2F25K, 480-120/208V, 30KVA, 3P MINI POWER ZONE WITH 100A MCB NQ PANELBOARD INTERIOR, OR APPROVED EQUIVALENT.
⑨	PROVIDE 3/4" DIA. x 10'-0"LG. COPPER CLAD STEEL GROUND RODS SPACED 10'-0" APART. SEE EQUIPMENT GROUNDING CONDUCTOR.
⑩	PROVIDE REMOTE GENERATOR ALARM PANEL. COORDINATE FINAL LOCATION PRIOR TO INSTALLATION. PROVIDE CONDUIT AND ALL WIRING FOR ALARM FUNCTION. PROVIDE DATA PORT FOR REMOTE MONITORING BY THE CITY.

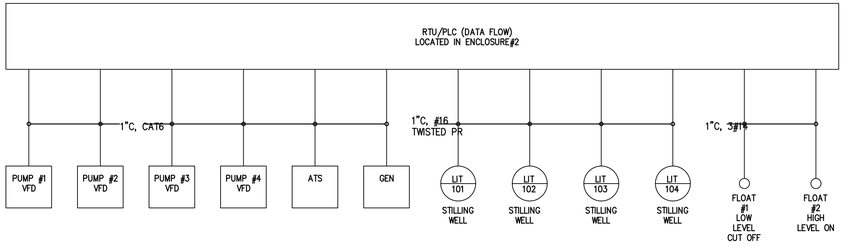
CIRCUIT WIRE SIZE (COPPER CONDUCTORS)

BREAKER SIZE	WIRE SIZE	GND SIZE	COND SIZE
20A	#12	#12	1/2"
30A	#10	#10	1/2"
40A	#8	#10	3/4"
50A	#8	#10	3/4"
60A	#6	#10	1"
70A	#4	#8	1-1/4"
80A	#4	#8	1-1/4"
90A	#3	#8	1-1/2"
100A	#3	#6	1-1/2"
110A	#2	#6	1-1/2"
125A	#1	#6	2"
150A	1/0	#6	2"
175A	2/0	#6	2"
200A	3/0	#6	2-1/2"

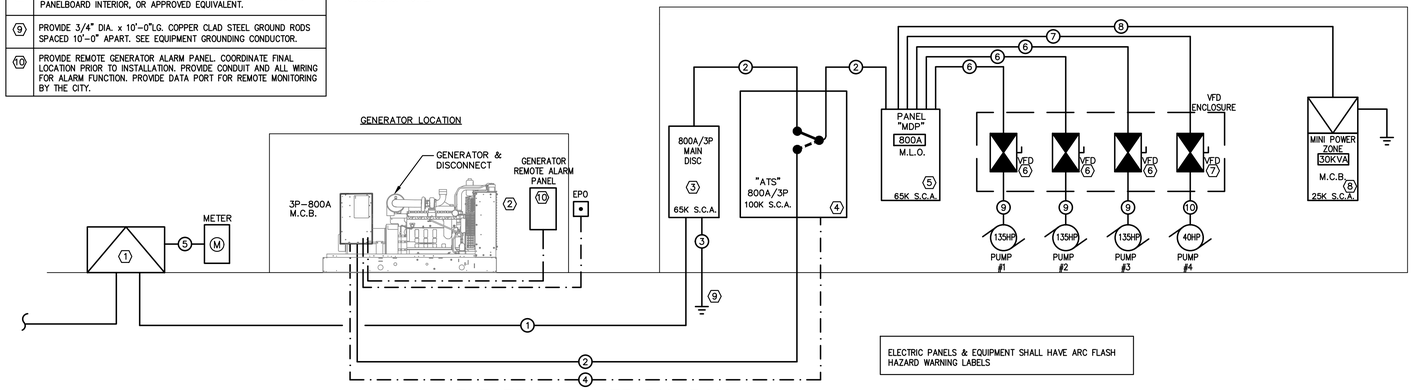
THE WIRE SIZE IS BASED ON TABLE 310.15, 75°, THHN COPPER. THE CONTRACTOR SHALL INCREASE THE WIRE TO LIMIT THE VOLTAGE DROP: THE WIRE FOR FEEDERS AND BRANCH CIRCUITS COMBINED SHALL BE SIZED FOR A MAXIMUM OF 5 PERCENT VOLTAGE DROP TOTAL.

CONDUIT & WIRE SCHEDULE

1. (2) SETS OF 4 #600MCM, EACH IN 4"C.
2. (2) SETS OF 4 #600MCM, 1#1/0 GRD, EACH IN 4"C.
3. PROVIDE 1#3/0 GROUNDING ELECTRODE CONDUCTOR,
4. PROVIDE ONE 1" CONDUIT FOR GENERATOR CONTROL WIRING (IE START/STOP).
5. PROVIDE ONE 1-1/2"C WITH PULL CORD
6. 3#4/0, 1#4 GND IN 2-1/2"C.
7. 3#6, 1#8 GND IN 1"C.
8. 3#8, 1#10 GND IN 1"C.
9. 3#4/0, 1#4 PUMP CABLE IN 3"C
10. 3#6, 1#8G PUMP CABLE IN 1-1/4"C



INSTRUMENTATION RISER DIAGRAM



ELECTRICAL RISER DIAGRAM

F.P.L. CO. SECONDARY: 277/480V-3ø-4W

ELECTRIC PANELS & EQUIPMENT SHALL HAVE ARC FLASH HAZARD WARNING LABELS

STAND-BY GENERATOR SPECIFICATIONS

DIESEL GENERATOR, 500KW, 277/480V, 3ø, 4W, EPA TIER 3
WITH 2500 GALLON ABOVE GROUND TANK
INCLUDE ALL REQUIRED ACCESSORIES TO MAKE GENERATOR COMPLIANT: INCLUDING FACTORY TESTING, COMMISSIONING, ETC.

THE GENERATOR SHALL BE PROVIDED WITH THE FOLLOWING:
OVERLOAD PROTECTION CIRCUIT BREAKER
EMERGENCY STOP PUSHBUTTON
ENGINE INSTRUMENTS SHOWING:
- ENGINE WATER TEMPERATURE
- LUBE OIL PRESSURE
- LUBE OIL TEMPERATURE
- ENGINE RUNNING HOURMETER
- BATTERY CHARGING INDICATOR
- ENGINE FAULT INDICATORS

ENGINE MOUNTED RADIATOR
SAFETY CONTROLS TO SHUT DOWN THE ENGINE FOR THE FOLLOWING:
- LOW LUBRICATING OIL PRESSURE
- LOW WATER LEVEL
- HIGH/LOW WATER JACKET TEMPERATURE
- ENGINE OVER SPEED
- ENGINE OVERCRANK

LEVEL 2 WEATHER SOUND ENCLOSURE
RESIDENTIAL GRADE SILENCER
WATER JACKET HEATER, 1500W MINIMUM
ISOCHRONOUS GOVENERON
BATTERY CHARGER (10 AMPS), LEAD ACID BATTERIES, BATTERY RACK, CABLES & CLAMPS.

GENERATOR CONTROL PANEL WITH THE FOLLOWING:
- RECESSED FRONT PANEL HINGED
- RUBBER ISOLATOR
- A.C. VOLTMETER, AMMETER, DIAL TYPE FREQUENCY METER
- FUSES
- THREE POSITION SELECTOR SWITCH: MANUAL, OFF/RESET & AUTO
- BATTERY CHARGING VOLTMETER
- ENGINE WATER TEMPERATURE GAUGE
- OIL PRESSURE GAUGE
- D.C. CIRCUIT BREAKER
- SHUTDOWN INDICATORS FOR ALARMS INDICATED ABOVE

1 YEARS MANUFACTURERS WARRANTY AND A 5 YEAR ENGINE WARRANTY

PROVIDE LOW LEVEL ALARM ANNUNCIATION TO ALERT THE CITY THAT THE FUEL LEVEL HAS 8 HOURS LEFT FOR RUN TIME.

FUEL TANK SIZE: 4000G. FUEL CONSUMPTION @100% 36.2GPH
TOTAL RUN TIME FOR GENERATOR @100% LOAD: 110 HOURS.
LOW LEVEL ALARM TO OCCUR WHEN THE FUEL LEVEL REACHES: 289.6G LEFT IN TANK.

THE GENERATOR SHALL BE PROVIDED WITH AN AUTOMATIC STARTING SYSTEM TO PROVIDE MUTLIPLE CRANK/RESET CYCLES. OPERATION SHALL BE INITIATED THROUGH CLOSING OF CONTACTS IN THE AUTOMATIC TRANSFER SWITCH.

THE ENTIRE STANDBY SYSTEM SHALL BE TESTED WITH A DRY RESISTIVE LOAD BANK WHICH IS CAPABLE OF INCREMENTAL LOADING AND INCORPORATES A.C. VOLTMETER, AMP METER, FREQUENCY METER AND KILOWATT METER SO THAT NAME-PLATE RATINGS OF GENERATOR SET MAY BE VERIFIED. TEST SYSTEM AT FULL RATED OUTPUT FOR A PERIOD OF 4 HOURS.

TRANSFER SWITCH SEQUENCE OF OPERATION

800A, 3P, 4 WIRE TRANSFER SWITCH, ASCO SERIES 7000 SERIES, NEMA4X (OR APPROVED EQUIVALENT)

COMMERCIAL POWER LOSS:
THE TRANSFER SWITCH SHALL MONITOR COMMERCIAL POWER. UPON COMMERCIAL POWER LOSS. THE TRANSFER SWITCH SHALL SEND A START SIGNAL TO THE GENERATOR. THE GENERATOR SHALL START, UPON CORRECT VOLTAGE & FREQUENCY, THE TRANSFER SWITCH SHALL TRANSFER ALL LOADS TO THE GENERATOR. ALL LOADS MUST BE TRANSFERRED WITHIN 10 SECONDS OF POWER LOSS.

PHASE LOSS:
THE TRANSFER SWITCH SHALL MONITOR COMMERCIAL POWER FOR PHASE LOSS. UPON COMMERCIAL POWER SOURCE LOSS OF ANY PHASE, THE TRANSFER SWITCH SHALL SEND A START SIGNAL TO THE GENERATOR. UPON CORRECT VOLTAGE AND FREQUENCY OF THE GENERATOR SOURCE, THE TRANSFER SWITCH WILL TRANSFER ALL LOADS TO THE GENERATOR WITHIN 10 SECONDS OF PHASE LOSS.

COMMERCIAL SOURCE RETURN:
UPON RETURN OF COMMERCIAL SOURCE, THE TRANSFER SWITCH SHALL MONITOR COMMERCIAL POWER SOURCE FOR 25 MINUTES. IF AFTER 25 MINUTES, COMMERCIAL POWER IS STABLE, THE TRANSFER SWITCH SHALL RE-TRANSFER ALL BUILDING LOADS TO COMMERCIAL POWER AND SHALL START A 5 MINUTE COOL-DOWN OF THE GENERATOR. AFTER 5 MINUTES OF COOL-DOWN, THE TRANSFER SWITCH WILL STOP THE GENERATOR.

THE ENTIRE STANDBY SYSTEM SHALL BE TESTED WITH A DRY RESISTIVE LOAD BANK WHICH IS CAPABLE OF INCREMENTAL LOADING AND INCORPORATES A.C. VOLTMETER, AMP METER, FREQUENCY METER AND KILOWATT METER SO THAT NAME-PLATE RATINGS OF GENERATOR SET MAY BE VERIFIED. TEST SYSTEM AT FULL RATED OUTPUT FOR A PERIOD OF 4 HOURS.

DISTRIBUTION BOARD MDP

277/480 VOLTS — 3 ϕ 4 W — 800 A AMP MLO — 800 A AMP BUS — 65000 A.I.C. RATING — SURFACE MOUNTED

CKT NO.	TRIP/ POLES	DESCRIPTION	DEMAND LOAD VA	WIRE SIZE
1	250/3	PUMP #1	282600	3x<None>;-;1x<None>;-
2	250/3	PUMP #2	282600	3x<None>;-;1x<None>;-
3	250/3	PUMP #3	282600	3x<None>;-;1x<None>;-
4	250/3	PUMP #4	86400	3x<None>;-;1x<None>;-
5	50/3	PANEL P via Transformer	3638	<Undefined>
6	225/3	SPACE	0	<Undefined>
7	225/3	SPACE	0	<Undefined>
8	60/3	SURE PROTECTOR	0	<Undefined>

Load Category	Connected Load (KVA) x	Demand Factor =	Demand Load (KVA)		
Equipment	3.0	1.00	3.0	TOTAL CONN. LOAD:	937.8 KVA
Lighting	0.0	1.25	0.0	TOTAL DEMAND LOAD:	973.2 KVA
Motors	792.9	1.00	792.9	TOTAL DEMAND LOAD:	1170.6 AMPS
Motors (Largest)	141.3	1.25	176.6	SPARE CAPACITY:	-370.6 AMPS
Receptacles (0 - 10 KVA)	0.6	1.00	0.6		

PANEL P

VOLTAGE (L-N): 120 — ENCLOSURE TYPE: NEMA 3R
VOLTAGE (L-L): 208 — MOUNTING: SURFACE
PHASES, WIRES: 3 ϕ 4 W — AIC RATING (A): 22000
MINIMUM BUS CAPACITY (A): 100 A — NOTES: ----
MAIN O.C. DEVICE (A): 100 A

CKT NO	DESCRIPTION	TRIP AMPS	POLE	PHASE LOADS (VA) A		PHASE LOADS (VA) B		PHASE LOADS (VA) C		POLE	TRIP AMPS	DESCRIPTION	CKT NO
1	RECPT	20	1	200	30					1	20	RACK LTG	2
3	RECPT	20	1			400	1500			1	20	VFD ENCLOSURE 1	4
5	SPACE	20	1					0	1500	1	20	VFD ENCLOSURE 2	6
7	SPACE	20	1	0	0					1	20	SPACE	8
9	SPACE	20	1			0	0			1	20	SPACE	10
11	SPACE	20	1					0	0	1	20	SPACE	12
13	SPACE	20	1	0	0					1	20	SPACE	14
15	SPACE	20	1			0	0			1	20	SPACE	16
17	SPACE	20	1					0	0	1	20	SPACE	18
19	SPACE	20	1	0	0					1	20	SPACE	20
21	SPACE	20	1			0	0			1	20	SPACE	22
23	SPACE	20	1					0	0	1	20	SPACE	24
				CONNECTED LOAD PHASE TOTALS (VA)									
				230		1900		1500					

	CONNECTED LOAD (KVA)	DEMAND FACTOR	DEMAND LOAD (KVA)
Equipment	3.0	1.00	3.0
Lighting	0.0	1.25	0.0
Receptacles (0 - 10 KVA)	0.6	1.00	0.6
TOTAL:	3.6		3.6
LOAD (AMPS):	10.1		10.1

DEMAND LOAD	3.6 KVA
SPARE CAPACITY	32.4 KVA
SPARE CAPACITY	89.9 AMPS
SPARE CAPACITY	90 %
PHASE BALANCE	
A TO B	12 %
B TO C	79 %
C TO A	15 %

100% PLANS

NOTE

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ANDREW J. YOUNGROSS LICENSE NO. 51758 STATE OF FLORIDA PROFESSIONAL ENGINEER

DESIGNED BY	AJY
DRAWN BY	AJY
CHECKED BY	AJY
QC BY	AJY
DATE	03/30/2023

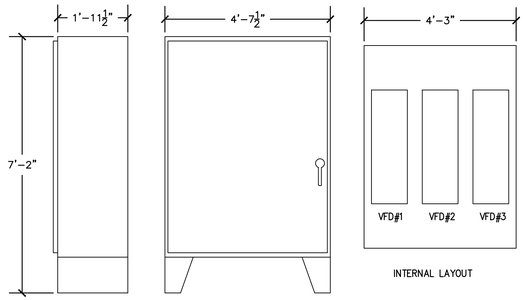
REVISION	DATE	DESCRIPTION	BY
1	02-19-24	CITY COMMENTS	AJY

THE CITY OF DELRAY BEACH
HISTORIC MARINE WAY SEAWALL, ROADWAY, AND DRAINAGE IMPROVEMENT

ELECTRICAL RISER DIAGRAM

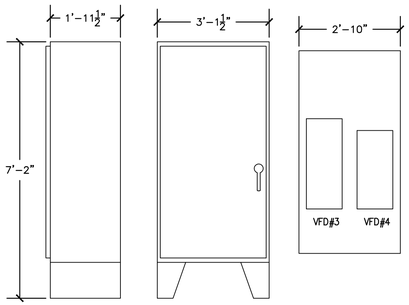
PROJECT NO. 17-047/21152
SHEET NO. E2.1
FILE ID.

Andrew Youngross Z:\TYEG Projects 2021\21152_DELRAY BEACH MARINE WAY PUMP STATION\21152-E.dwg ——— Plotted: 3/1/2024 2:58:43 PM Saved: 3/1/2024 2:58:06 PM



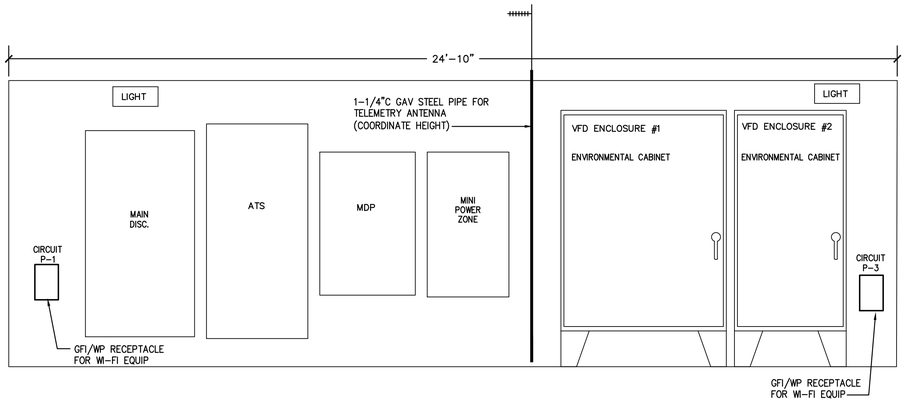
VAV ENCLOSURE #1

SCALE: 1/2" = 1'-0"



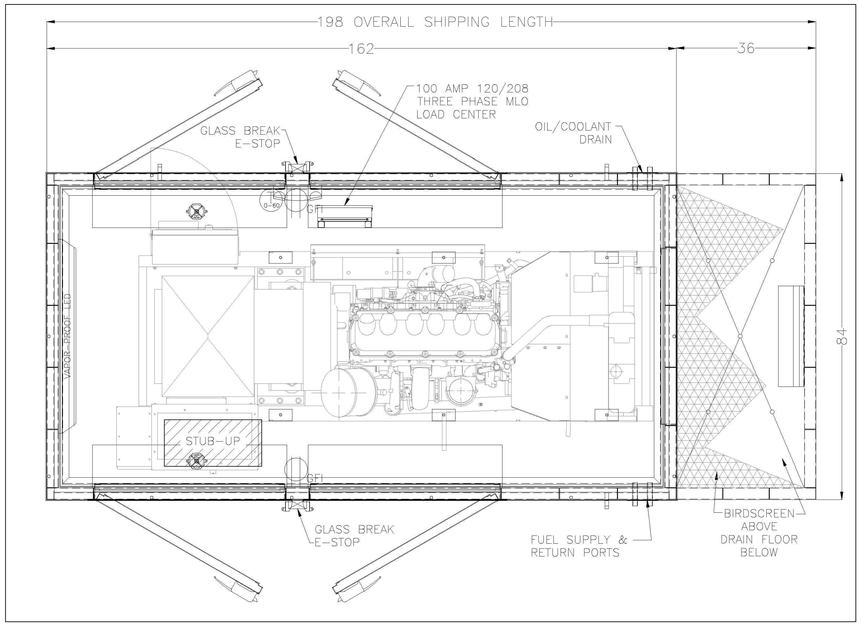
VAV ENCLOSURE #2

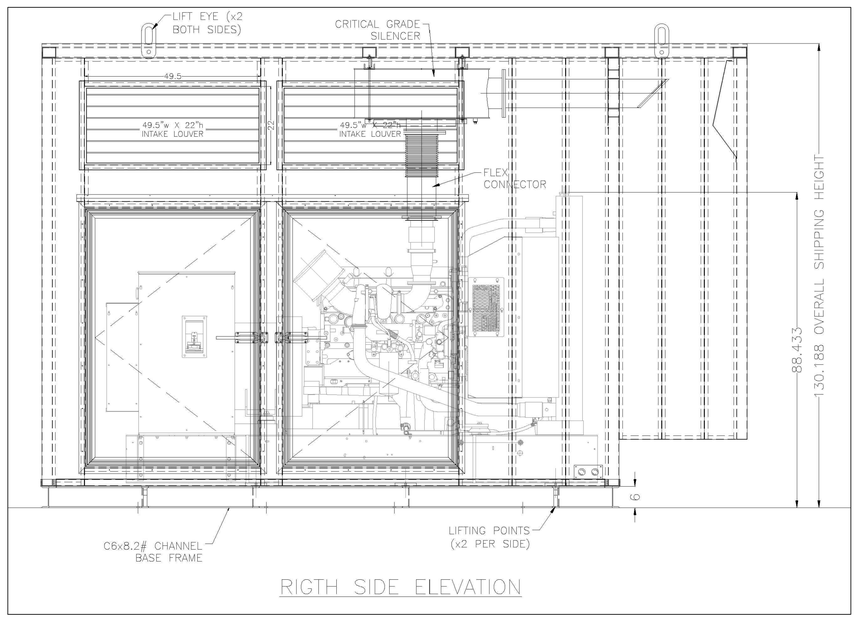
SCALE: 1/2" = 1'-0"



ELECTRICAL PANELS - ELEVATION

SCALE: 1/2" = 1'-0"





RIGTH SIDE ELEVATION

1 SOUND ATTENUATED ENCLOSURE AND FUEL BASE TANK FOR A CAT C15 500KW

COASTLINE POWER SOLUTIONS TO PROVIDE THE FOLLOWING:
WEATHER PROTECTIVE, LEVEL 2 SOUND ATTENUATED, ALUMINUM HVHZ ENCLOSURE:

- ENCLOSURE EXTERIOR TO BE OF .090",5052-H32 ALUMINUM, FORMED, PANEL CONSTRUCTION, PAINTED FINISH (COLOR TO BE DETERMINED) ,5052-H32 ALUMINUM, FORMED, PANEL CONSTRUCTION, PAINTED FINISH (COLOR TO BE DETERMINED)
- AIR INTAKE: SOUND ATTENUATED INTAKE SCOOPS WITH HVHZ RATED LOUVERS AND BIRD SCREEN : SOUND ATTENUATED INTAKE SCOOPS WITH HVHZ RATED LOUVERS AND BIRD SCREEN
- AIR DISCHARGE: SOUND ATTENUATED DISCHARGE HOOD WITH GRAVITY DAMPERS AND BIRD SCREEN : SOUND ATTENUATED DISCHARGE HOOD WITH GRAVITY DAMPERS AND BIRD SCREEN
- 3" SOUND ATTENUATING FIRE BLANKET IN WALLS, DOORS, HOODS AND CEILINGS. INSULATION RETAINED WITH .032" PERFORATED ALUMINUM LINER. ENCLOSURE IS DESIGNED SOUND ATTENUATING FIRE BLANKET IN WALLS, DOORS, HOODS AND CEILINGS. INSULATION RETAINED WITH .032" PERFORATED ALUMINUM LINER, ENCLOSURE IS DESIGNED PERFORATED ALUMINUM LINER. ENCLOSURE IS DESIGNED TO REDUCE SOURCE SPL TO < 65 DB (A) @ 40' IN A FREE-FIELD ENVIRONMENT.
- (4) SINGLE, ACCESS DOORS WITH PADLOCKING PROVISIONS, PANIC RELEASE AND CORROSION RESISTANT HARDWARE.
- ENCLOSURE EXTERNAL FASTENERS TO BE STAINLESS STEEL.
- SILENCER SUPPORTS FOR CPS FURNISHED INTERIOR MOUNTED, INTERNALLY INSULATED, CRITICAL GRADE SILENCER.
- INSTALL CPS PROVIDED EXHAUST DISCHARGE MITERED STACK.
- INSTALL CPS PROVIDED EXHAUST FLEX CONNECTORS, EXHAUST GASKETS AND BOLT KITS.
- HEAT THIMBLE AT EXHAUST PENETRATION IN HOOD.
- EXTEND OIL AND COOLANT DRAINS TO EXTERIOR OF ENCLOSURE.
- INSTALL SUPPLY & RETURN PORTS
- CAMBERED ROOF DESIGN TO AID IN WATER SHEDDING.
- ENCLOSURE SUITABLE FOR 200 MPH WIND LOADING
- ENCLOSURE TO BEAR THE INSIGNIA OF THE FLORIDA DEPARTMENT OF BUSINESS AND PROFESSIONAL REGULATION TO DOCUMENT COMPLIANCE WITH THE 2017 FLORIDA BUILDING CODE.
- ENCLOSURE COMPONENTS TO MEET THE HVHZ LARGE MISSILE IMPACT REQUIREMENT OF SECTION 1626 OF THE FBC
- STATE OF FLORIDA HVHZ APPROVAL NUMBERS: FL11418-R3 - STRUCTURAL WALL, FL11419-R3 - EXTERIOR WALL, FL11420-R3 - ROOF DECK & FL 3281.1 - LOUVER.
- PE CERTIFICATES ARE INCLUDED

GENERATOR ENCLOSURE ELECTRICAL PACKAGE:

- PROVIDE, INSTALL AND WIRE (1) 100A, 120/208V 3 PHASE MLO LOAD CENTER WITH BRANCH CIRCUIT BREAKERS.
- PROVIDE, INSTALL AND WIRE (1) 48" LED LIGHT FIXTURES WITH (2) 3-WAY SWITCHES LOCATED BY ENTRANCE DOORS. LED LIGHT FIXTURES WITH (2) 3-WAY SWITCHES LOCATED BY ENTRANCE DOORS.
- PROVIDE, INSTALL AND WIRE (2) DC LIGHT FIXTURES WITH (1) 60 MINUTE TIMER SWITCH LOCATED BY ENTRANCE DOOR. PROVIDE, INSTALL AND WIRE (1) E-STOP BUTTON WITH BREAK GLASS COVERS.
- PROVIDE, INSTALL AND WIRE (2) 20A, 125V DUPLEX GFCI RECEPTACLES LOCATED BY ENTRANCE DOORS.
- WIRE CUSTOMER PROVIDED AND INSTALLED JACKET WATER HEATERS TO LOAD CENTER.
- WIRE CUSTOMER PROVIDED AND INSTALLED GENERATOR STRIP HEATERS TO LOAD CENTER.
- MOUNT AND WIRE CUSTOMER PROVIDED BATTERY CHARGER TO LOAD CENTER AND DCOUTPUT TO BATTERIES.
- ALL ELECTRICAL TO BE RUN IN EMT OR FLEXIBLE CONDUIT TO MEET NFPA 70.

UNITIZING STRUCTURAL STEEL BASE FRAME:

- CABLE STUB UP OPENING UNDER CIRCUIT BREAKER
- GENERATOR MOUNTING PADS
- 2 LIFTING POINTS PER SIDE (4 TOTAL) FOR LIFTING GENERATOR SET, ENCLOSURE AND BASE
- BASE COATED WITH TWO PART EPOXY PRIMER AND PAINTED GLOSS BLACK

SYSTEM INTEGRATION:

- UNLOAD CUSTOMER SUPPLIED GENERATOR SET AND COMPONENTS FROM TRUCKS.
- INSTALL GENERATOR TO FUEL TANK BASE.
- ATTACH ENCLOSURE TO DOUBLE WALL BASE/ FUEL TANK.
- INSTALL CPS SUPPLIED EXHAUST SILENCER AND COMPONENTS.
- LOAD UNIT ONTO CUSTOMER PROVIDED TRUCKS FOR SHIPMENT.

CUSTOMER TO PROVIDE:

- CAT 500KW PACKAGED GENERATOR SET WITH FACTORY INSTALLED RADIATOR AND ALL SPECIFIED OPTIONS
- BATTERY CHARGER
- UNIT MOUNTED MLCB
- VIBRATION ISOLATORS (INTERNALLY ISOLATED)

100% PLANS

NOTE

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ANDREW J. YOUNGROSS LICENSE NO. 57758 STATE OF FLORIDA PROFESSIONAL ENGINEER

DESIGNED BY	AJY
DRAWN BY	AJY
CHECKED BY	AJY
QC BY	AJY
DATE	03/30/2023

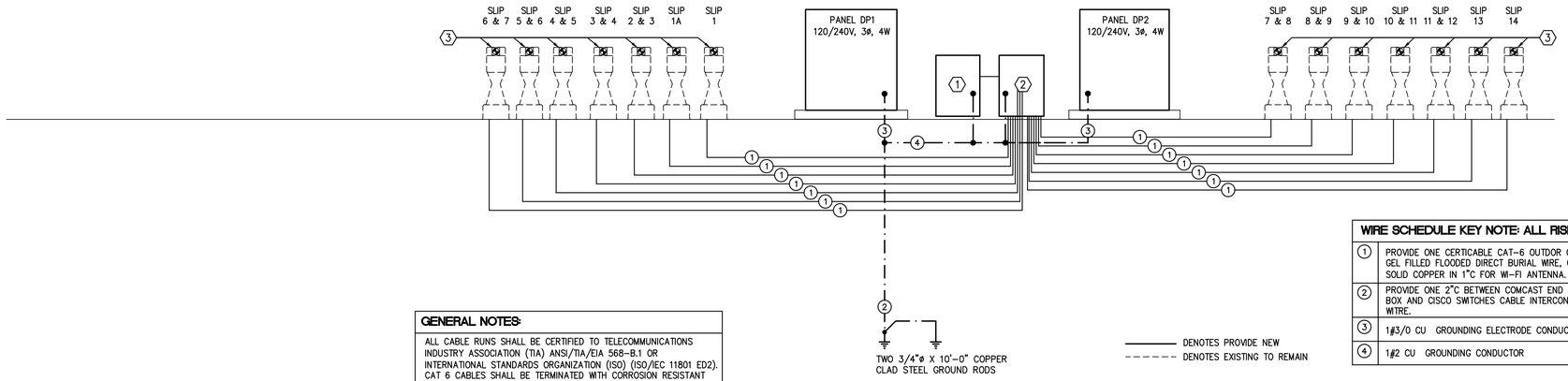
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THE CITY OF DELRAY BEACH
HISTORIC MARINE WAY SEAWALL,
ROADWAY, AND DRAINAGE IMPROVEMENT

ELECTRICAL RISER DIAGRAM

PROJECT NO. 17-047/21152
SHEET NO. E2.2
FILE ID.

Andrew Youngross Z:\TYEC Projects 2021\21152_DELRAY BEACH MARINE WAY PUMP STATION\21152-E.dwg ——— Plotted: 3/1/2024 2:58:47 PM Saved: 3/1/2024 2:58:06 PM



GENERAL NOTES:

ALL CABLE RUNS SHALL BE CERTIFIED TO TELECOMMUNICATIONS INDUSTRY ASSOCIATION (TIA) ANSI/TIA/EIA 568-B.1 OR INTERNATIONAL STANDARDS ORGANIZATION (ISO) (ISO/IEC 11801 ED2). CAT 6 CABLES SHALL BE TERMINATED WITH CORROSION RESISTANT RJ45 (GOLD PLATED) AT EACH END.

CONTRACTOR SHALL COORDINATE WITH THE CITY'S IT DEPARTMENT AND COMCAST FOR SERVICE CONNECTION REQUIREMENTS. THE CITY SHALL BE RESPONSIBLE FOR PURCHASING COMCAST SERVICE.

SCOPE OF WORK:

THE EXISTING MARINA TELCO & CATV CABINET ARE TO BE RELOCATED TO A NEW LOCATION. THE CONTRACTOR SHALL PROVIDE NEW CAT6 CABLES FROM THE RELOCATED BOX TO EACH EXISTING DOCK PEDESTAL.

WIRE SCHEDULE KEY NOTE: ALL RISERS

1	PROVIDE ONE CERTICABLE CAT-6 OUTDOR CABLE, GEL FILLED FLOODED DIRECT BURIAL WIRE, OSP SOLID COPPER IN 1"C FOR WI-FI ANTENNA.
2	PROVIDE ONE 2"C BETWEEN COMCAST END USER BOX AND CISCO SWITCHES CABLE INTERCONNECT MITRE.
3	1#3/0 CU GROUNDING ELECTRODE CONDUCTOR
4	1#2 CU GROUNDING CONDUCTOR

KEY NOTES - ALL RISER DIAGRAMS

1	THE CONTRACTOR SHALL RELOCATE THE EXISTING COMCAST END USER DEVICE, 14"x10"x3". MOUNT NEXT TO NEW ELECTRICAL PANEL ON RACK SUPPORT SYSTEM. PROVIDE ONE 20A/1P RECEPTACLE (WP) NEXT TO BOX TO POWER THE DEVICE.
2	THE CONTRACTOR SHALL RELOCATE EXISTING CISCO INDUSTRIAL ETHERNET (IE) 4010 SERIES SWITCHES (TWO) WITH 28 GIABIT ETHERNET INTERFACES. SWITCHES ARE HIGH PERFORMANCE, LAYER 2/3 WITH HIGH-DENSITY POWER OVER ETHERNET (POE) CAPABILITIES. MOUNT ONE 20A/1P RECEPTACLE (WP) NEXT TO SWITCHES FOR POWER.
3	EXISTING WI-FI ANTENNA TO REMAIN AND BE RECONNECTED.

MARINA DOCK COMMUNITCATIONS RISER DIAGRAM

WIRE SCHEDULE KEY NOTE: ALL RISERS

1	3 SETS OF 3#500MCM CU, 4" PVC C
2	1#3/0 CU GROUNDING ELECTRODE CONDUCTOR
3	3#1, 1#6G CU, 1-1/4" PVC C
4	3#1/0, 1#6G CU, 1-1/4" PVC C
5	ONE 1-1/2" PVC CONDUIT FOR METER WIRE

KEY NOTES - ALL RISER DIAGRAMS

1	THE CONTRACTOR SHALL COORDINATE WITH FPL FOR EXISTING TRANSFORMER LOCATION WEST SIDE OF MARINE WAY , CONDUCTOR ENTRY INTO THE TRANSFORMER.
2	PROVIDE NEW PANELBOARD IN EXISTING LOCATION AS EXISTING PANELBOARD. NEW PANEL SHALL BE ELEVATED AS REQUIRED TO MEET NEW GRADE. PROVIDE 6" HOUSE KEEPING PAD BELOW PANEL.

SCOPE OF WORK:

THE EXISTING MARINA POWER PANELBOARDS (2) ARE TO BE REPLACED WITH NEW PANELBOARDS AT A NEW LOCATION. NEW BRANCH WIRE AND CONDUIT SHALL BE ROUTED TO THE EXISTING PEDESTALS AND CONNECTED FOR OPERATION. WHERE THE EXISTING WIRE AND CONDUIT IS LOCATED SUCH THAT THE NEW WIRE CAN BE CONNECTED TO THE EXISTING, THE CONTRACTOR MAY UTILIZE THE EXISTING CONDUIT. REMOVE ALL EXISTING WIRE..

MARINA DOCK ELECTRICAL RISER DIAGRAM

100% PLANS

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DESIGNED BY	AJY
DRAWN BY	AJY
CHECKED BY	AJY
QC BY	AJY
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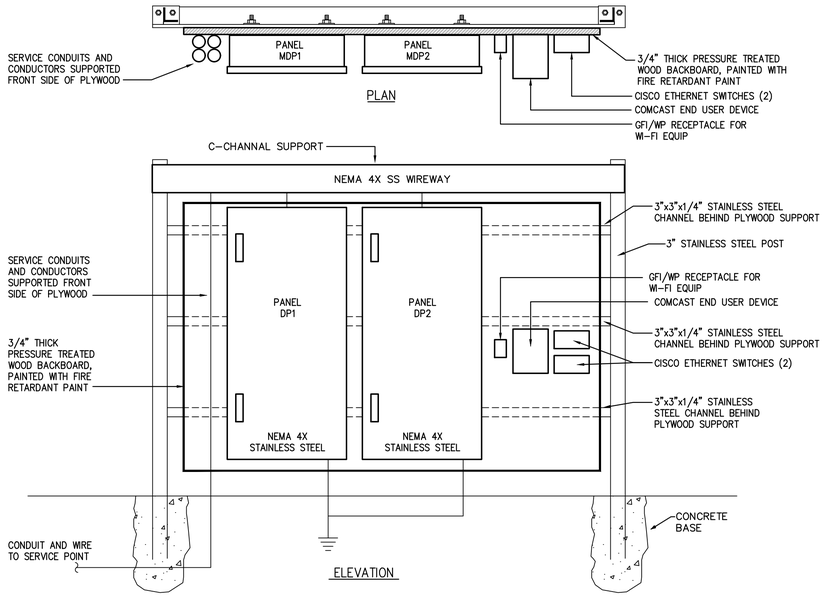
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1	02-19-24	CITY COMMENTS	AJY

THE CITY OF DELRAY BEACH
HISTORIC MARINE WAY SEAWALL, ROADWAY, AND DRAINAGE IMPROVEMENT

ELECTRICAL RISER DIAGRAM

PROJECT NO. 17-047/21152
SHEET NO. E2.3
FILE ID.

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NOTE:
ADJUST OVERALL WIDTH OF SUPPORT TO FIT THE TWO PANELS, SERVICE CONDUITS.

PANELBOARD MOUNTING DETAIL

NOT TO SCALE

PANEL DP1

VOLTAGE (L-N):	120					ENCLOSURE TYPE:	NEMA 3R				
VOLTAGE (L-L):	240					MOUNTING:	SURFACE				
PHASES, WIRES:	1 ϕ, 3 W					AIC RATING:	65000				
MINIMUM BUS CAPACITY (A):	600 A					NOTES:	----				
MAIN O.C. DEVICE (A):	600 A										

CKT NO	DESCRIPTION	TRIP AMPS	POLE	PHASE LOADS (VA) A		PHASE LOADS (VA) B		POLE	TRIP AMPS	DESCRIPTION	CKT NO
1,3	SLIP 1	100	2	9600	9600			2	100	SLIP 1A	2,4
1,3	SLIP 1	100	2			9600	9600	2	100	SLIP 1A	2,4
5,7	SLIP 2 & 3	100	2	9600	9600			2	100	SLIP 3 & 4	6,8
5,7	SLIP 2 & 3	100	2			9600	9600	2	100	SLIP 3 & 4	6,8
9,11	SLIP 4 & 5	100	2	9600	9600			2	100	SLIP 5 & 6	10,12
9,11	SLIP 4 & 5	100	2			9600	9600	2	100	SLIP 5 & 6	10,12
13,15	SLIP 6 & 7	100	2	9600	0			2	20	SPACE	14,16
13,15	SLIP 6 & 7	100	2			9600	0	2	20	SPACE	14,16
17,19	SPACE	20	2	0	1500			1	20	FUEL TANK PUMP/VEEDER ROOT	18
17,19	SPACE	20	2			0	0	1	20	SPACE	20
21,23	STREET LIGHTS	20	2	650	1500			2	20	PUMP STATION	22,24
21,23	STREET LIGHTS	20	2			650	1500	2	20	PUMP STATION	22,24
				CONNECTED LOAD		PHASE TOTALS (VA)					
				70850		69350					

	CONNECTED LOAD (KVA)	DEMAND FACTOR	DEMAND LOAD (KVA)
Equipment	3.0	1.00	3.0
Lighting	1.3	1.25	1.6
Receptacles (0 - 10 KVA)	1.5	1.00	1.5
Marina	134.4	0.80	107.5
TOTAL:	140.2		113.6
LOAD (AMPS):	584.2		473.5

DEMAND LOAD 113.6 KVA
SPARE CAPACITY 30.4 KVA
SPARE CAPACITY 126.5 AMPS
SPARE CAPACITY 21%

PANEL DP2

VOLTAGE (L-N):	120					ENCLOSURE TYPE:	NEMA 3R				
VOLTAGE (L-L):	240					MOUNTING:	SURFACE				
PHASES, WIRES:	1 ϕ, 3 W					AIC RATING:	65000				
MINIMUM BUS CAPACITY (A):	600 A					NOTES:	----				
MAIN O.C. DEVICE (A):	600 A										

CKT NO	DESCRIPTION	TRIP AMPS	POLE	PHASE LOADS (VA) A		PHASE LOADS (VA) B		POLE	TRIP AMPS	DESCRIPTION	CKT NO
1,3	SLIP 7 & 8	100	2	9600	9600			2	100	SLIP 8 & 9	2,4
1,3	SLIP 7 & 8	100	2			9600	9600	2	100	SLIP 8 & 9	2,4
5,7	SLIP 9 & 10	100	2	9600	9600			2	100	SLIP 10 & 11	6,8
5,7	SLIP 9 & 10	100	2			9600	9600	2	100	SLIP 10 & 11	6,8
9,11	SLIP 11 & 12	100	2	9600	9600			2	100	SLIP 13	10,12
9,11	SLIP 11 & 12	100	2			9600	9600	2	100	SLIP 13	10,12
13,15	SLIP 14	100	2	9600	1200			1	20	GENERATOR BATT CHARGER	14
13,15	SLIP 14	100	2			9600	1200	1	20	WI-FI EQUIP	16
17	CREDIT CARD CHARGER	20	1	600	780			1	20	RESCUE PEDESTAL	18
19	REPEATER STATION	20	1			200	1500	1	20	WTR JKT HTR	20
				CONNECTED LOAD		PHASE TOTALS (VA)					
				69780		70100					

	CONNECTED LOAD (KVA)	DEMAND FACTOR	DEMAND LOAD (KVA)
Receptacles (0 - 10 KVA)	5.5	1.00	5.5
Marina	134.4	0.80	107.5
TOTAL:	139.9		113.0
LOAD (AMPS):	582.8		470.8

DEMAND LOAD 113.0 KVA
SPARE CAPACITY 31.0 KVA
SPARE CAPACITY 129.2 AMPS
SPARE CAPACITY 22 %

100% PLANS

NOTE

THESE DRAWINGS ARE PREPARED PER ESTABLISHED INDUSTRY STANDARDS AND REPRESENT THE ENGINEERS DESIGN CONCEPT. THEY ARE NOT INTENDED TO PROVIDE EVERY DETAIL OR CONDITION REQUIRED TO CONSTRUCT THE BUILDING. THE CONTRACTOR THROUGH SUBMITTALS AND OTHER COORDINATION EFFORTS IS FULLY RESPONSIBLE FOR PROVIDING A COMPLETE AND OPERATIONAL BUILDING WHETHER INDICATED ON THE PLANS OR NOT.

TYEG
HVAC
PLUMBING
ELECTRICAL
THOMPSON & YOUNGROSS ENGINEERING CONSULTANTS, LLC
CERTIFICATE of AUTHORIZATION NO. 25996
902 CLINT MOORE ROAD, SUITE 142
BOCA RATON, FLORIDA 33487
www.tecfla.com
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E-MAIL: tec@tecfla.com

CITY of DELRAY BEACH
PUBLIC WORKS DEPARTMENT
434 SOUTH SWINTON AVENUE, DELRAY BEACH, FLORIDA 33444
Phone: (561) 243-7322 Fax: (561) 243-7314 www.mydelraybeach.com

PREPARED BY:
WGI
2035 Vista Parkway
West Palm Beach, FL 33411
Phone No. 561.687.2220
Fax No. 561.687.1110
Cert No. 6091 - LB No. 7055
ENGINEERING // SURVEYING // ENVIRONMENTAL // PLANNING

ANDREW J. YOUNGROSS LICENSE NO. 51758 STATE OF FLORIDA PROFESSIONAL ENGINEER

DESIGNED BY	AJY
DRAWN BY	AJY
CHECKED BY	AJY
QC BY	AJY
DATE	03/30/2023

REVISION	DATE	DESCRIPTION	BY
1	02-19-24	ADDENDUM 5	AJY

THE CITY OF DELRAY BEACH
HISTORIC MARINE WAY SEAWALL,
ROADWAY, AND DRAINAGE IMPROVEMENT

ELECTRICAL RISER DIAGRAM

PROJECT NO. 17-047/21152
SHEET NO. E2.4
FILE ID.

Andrew Youngross Z:\TYEC Projects 2021\21152_DELRAY BEACH MARINE WAY PUMP STATION\21152-E.dwg ——— Plotted: 3/27/2024 12:02:43 PM Saved: 3/21/2024 8:20:07

NOTIFICATION OF ACCEPTANCE OF USE OF A GENERAL PERMIT/PERMIT ISSUANCE

PERMITTEE:
Daisy Zheng, P.E.
Project Manager
City of Delray Beach
434 S. Swinton Ave
Delray Beach, FL 33444
zhengx@mydelraybeach.com

PERMIT NUMBER: 138274-548-DWC
ISSUE DATE: 10/20/2022
EXPIRATION DATE: 10/19/2027
COUNTY: Palm Beach
PROJECT NAME: Marine Way Seawall Improvements Phase 2
WASTEWATER TREATMENT: SCRWWTP
FACILITY ID: FL0035980

Dear Ms. Zheng:

This letter acknowledges receipt of your Notification/Application for Constructing a Domestic Wastewater Collection/Transmission System for the subject project. Our Office received the Notice on October 12, 2022.

This is to advise you that the Florida Department of Health Palm Beach County (Department), as the delegated agent of the Florida Department of Environmental Protection, does not object to your use of such general permit and that you are hereby authorized to perform the work shown on the approved plan(s) attached hereto and made a part hereof.

Please note the attached requirements apply to your use of this general permit for constructing the proposed domestic wastewater collection/transmission system.

You are further advised that the construction activity must conform to the description contained in your Notification/Application for Constructing a Domestic Wastewater Collection/Transmission System and that any deviation will subject the permittee to enforcement action and possible penalties.

Sincerely,
For the Division Director

Jorge R. Patino, P.E.
Environmental Administrator
Division of Environmental Public Health

MP/JH/JP
c: engineer-of-record: Stephen Cherry, P.E.
utility: Doug Levine

REQUIREMENTS FOR USE OF THE GENERAL PERMIT FOR DOMESTIC WASTEWATER COLLECTION/TRANSMISSION SYSTEMS:

1. This general permit is subject to the general permit conditions of Rule 62-4.540, F.A.C., as applicable. [62-4.540]

2. This general permit does not relieve the permittee of the responsibility for obtaining a dredge and fill permit where it is required. [62-604.600(6)(b)1]

3. This general permit cannot be revised, except to transfer the permit. [62-604.600(6)(b)2]

4. This general permit will expire five years from the date of issuance. If the project has been started and not completed by that time, a new permit must be obtained before the expiration date in order to continue work on the project. [62-4.030]

5. Upon completion of construction of the collection/transmission system project, and before placing the facilities into operation for any purpose other than testing for leaks or testing equipment operation, the permittee shall submit Form 62-604.300(3)(b), Notification of Completion of Construction for a Domestic Wastewater Collection/Transmission System. The form shall be submitted electronically by using the Department's Business Portal at https://www.fldepportal.com/go/ (via "Submit" then "Registration/Notification" and "Submit Notifications to DEP." The submission is "Division of Water Resource Management Domestic/Industrial Wastewater" and the submittal type is "Notification of Completion of Construction for a Domestic Wastewater Collection/Transmission System."). This form is available at the Department's Internet site at: https://floridadep.gov/water/domestic-wastewater/content/domestic-wastewater-forms. [62-604.700(2)]

6. Abnormal events shall be reported to the Department's ***Error! Reference source not found.*** District Office in accordance with Rule 62-604.550, F.A.C. For unauthorized spills of wastewater in excess of 1000 gallons per incident, or where information indicates that public health or the environment may be endangered, oral reports shall be provided to the STATE WATCH OFFICE TOLL FREE NUMBER (800)320-0519 as soon as practical, but no later than 24 hours from the time the permittee or other designee becomes aware of the circumstances. Unauthorized releases or spills less than 1000 gallons per incident are to be reported orally to the Department's ***Error! Reference source not found.*** District Office within 24 hours from the time the permittee, or other designee becomes aware of the circumstances.

   The oral notification shall be followed by a written submission, which shall be provided within five days of the time that the owner/operator becomes aware of the circumstances. The written submission shall contain: a description of the spill, release or abnormal event and its cause; the period and duration of noncompliance including exact dates and times, and if the noncompliance has not been corrected, the anticipated time it is expected to continue; clean-up actions taken and status; steps taken or planned to reduce, eliminate, and prevent recurrence; the type of sanitary sewer overflow structure (e.g., manhole); the discharge location address and latitude/longitude; type of water discharged; discharge volumes and volumes recovered; volume discharged to surface waters and receiving

waterbody name; types of human health and environmental impacts of the sanitary sewer overflow (e.g., beach closure); whether the noncompliance was caused by a third party (e.g., contractor); and, whether the sanitary sewer overflow was related to wet weather. The written submission shall be provided electronically. Electronic submission is available using the Department's Business Portal at https://www.fldepportal.com/go/ (via "Submit" followed by "Report" or "Registration/Notification").

In accordance with Section 403.077, F.S., unauthorized releases or spills reportable to the State Watch Office shall also require a public notice of pollution report. Reporting may be made or by reporting electronically using the Department's Business Portal at https://www.fldepportal.com/go/ (via "Submit" followed by "Report" or "Registration/Notification") and selecting the option to also submit the public notice of pollution report, or reporting may be made to the Department's Public Notice of Pollution web page at https://floridadep.gov/pollutionnotice. [62-604.550]

ADDITIONAL INFORMATION:

Once a collection/transmission system is cleared for operation, the provisions below shall be met by the owner/operator of the system in accordance with Rule 62-604.500, F.A.C.

1. All collection/transmission systems shall be operated and maintained to provide uninterrupted service. All pump stations shall be operated and maintained to provide the emergency pumping capability requirements in paragraph 62-604.400(2)(a), F.A.C., the lightning and transient voltage surge protections in paragraph 62-604.400(2)(b), F.A.C., and the design and signage requirements in paragraph 62-604.400(2)(d), F.A.C. Also, all equipment, pipes, manholes, pump stations, and other appurtenances necessary for the collection/transmission of domestic wastewater, including equipment provided pursuant to subsection 62-604.400(2), F.A.C., shall be maintained to function as intended. [62-604.500(2) and (3)]

2. The owner/operator of a collection/transmission system shall evaluate and update the emergency response plan portion of the operation and maintenance manual annually. The emergency response plan shall assess system security including cybersecurity; water quality monitoring for sanitary sewer overflows affecting surface waters; and, hurricane and severe storm preparedness and response. [62-604.500(4)]

3. Collection/transmission systems shall be maintained to minimize excessive infiltration and inflow into the collection/transmission system, as well as excessive leakage from the collection/transmission system. The owner/operator of a collection/transmission system shall take corrective actions when infiltration, inflow, or leakage is excessive. Infiltration and inflow are considered excessive if one or both cause or contribute to sanitary sewer overflows. Leakage, or exfiltration, is considered excessive if it causes or contributes to a violation of surface water quality standards or ground water quality standards. [62-604.500(5)]

4. All collection/transmission systems shall be operated and maintained to prevent sanitary sewer overflows. Owners/operators shall evaluate the cause of all sanitary sewer overflows and evaluate potential corrective measures to avoid future sanitary sewer overflows. Corrective actions shall be taken by the owner/operator of the collection/transmission system if excessive inflow and infiltration causes or contributes to a sanitary sewer overflow. The owner/operator of a satellite collection system shall take corrective actions for a sanitary sewer overflow in the receiving collection system caused by excessive inflow and infiltration in the satellite collection system. [62-604.500(6)]

5. The approved Operation and Maintenance Manual and emergency response plan pursuant to Rule 62-604.500(4), F.A.C., shall be kept available at a site convenient for use by operation and maintenance personnel and for inspection by the Florida Department of Environmental Protection personnel.

Palm Beach County Ordinance No. 97-58 Requirements

PBC 1.It shall be the responsibility of the permittee to retain a professional engineer, registered in Florida, to observe that the construction is in accordance with the submitted plans.

PBC 2.This permit does not include construction of any conflict manholes. The construction shall be strictly in accordance with the "Standard Water and Sewer Separation Statement" and other design specifications noted on the engineering plans. If field conditions require deviations from the proposed design, the project engineer shall consult with the Department prior to construction.

PBC 3.Prior to construction, all required permits or approvals must be obtained for all aspects of the project from the appropriate agencies.

PBC 4.Applications for abandonment of all septic systems serving this property must be submitted prior to final approval for use.

138274-548-DWC

Florida Department of Environmental Protection

Notification/Application for Constructing a Domestic Wastewater Collection/Transmissions System

Part I - General

Subpart A: Permit Application Type (Check only one)*

☐ Individual permit for a domestic wastewater collection/transmission system serving **10 or greater** equivalent dwelling units (EDU). An EDU is equal to 3.5 persons. Criteria for an individual permit are contained in Rule 62-604.600(7), F.A.C.
Application fee: $500

☐ Individual permit for a domestic wastewater collection/transmission system serving **less than 10** equivalent dwelling units (EDU). An EDU is equal to 3.5 persons. Criteria for an individual permit are contained in Rule 62-604.600(7), F.A.C.
Application fee: $300

☐ Minor revision to an individual permit for a domestic wastewater collection/transmission system.
Application fee: $250

☑ Notice of Intent to use the general permit for a domestic wastewater collection/transmission system. Criteria for a general permit are contained in Rule 62-604.600(6), F.A.C. Projects not meeting the criteria in Rule 62-604.600(6), F.A.C., must apply for an individual permit.
Application fee: $250

*Note: Each non-contiguous project (i.e., projects that are not interconnected or are not located on adjacent streets or in the same neighborhood) requires a separate application and fee.

Subpart B: Instructions

(1) This form shall be completed for all public and private domestic wastewater collection/transmission system construction projects as follows:
- If this is a Notice of Intent to use the general permit, this notification shall be submitted to the Department **at least 30 days prior to initiating construction.**
- If this is an application for an individual permit, the permit must be obtained prior to initiating construction.

(2) One copy of the completed form shall be submitted to the appropriate DEP district office or delegated local program along with the appropriate fee, and one copy of the following supporting documents. Checks should be made payable to the Florida Department of Environmental Protection, or the name of the appropriate delegated local program. Forms and documents may be submitted electronically in accordance with the Wastewater Electronic Document Submission instructions available from DEP's website.
- If this is a Notice of Intent to use the general permit, attach a site plan or sketch showing the size and approximate location of new or altered gravity sewers, pump stations and force mains; showing the approximate location of manholes and isolation valves; and showing how the proposed project ties into the existing or proposed wastewater facilities. The site plan or sketch shall be signed and sealed by a professional engineer registered in Florida.
- If this is an application for an individual permit, one set of plans and specifications shall be submitted with this application. The plans and specifications shall include lift station design calculations if a lift station is proposed. Chapters 10 and 20 of *Recommended Standards for Wastewater Facilities*, 2014, provide helpful guidance on the proper preparation of plans and specifications. The plans and specifications shall be signed and sealed by a Professional Engineer registered in Florida.

(3) All information shall be typed or printed in ink if submitting paper forms. Where attached sheets (or other technical documentation) are utilized in lieu of the blank spaces provided, indicate appropriate cross-references on the form. For Items (1) through (4) of Part II of this application form, if an item is not applicable to your project, indicate "NA" in the appropriate space provided.

RECEIVED
OCT 12 2022
Florida Department of Health - PBC
Plan Review

Part II – Project Documentation

(1) Collection/Transmission System Permittee

Name Daisy Zheng, PE Title Project Manager

Company Name The City of Delray Beach

Address 434 S. Swinton Ave

City Delray Beach State FL Zip 33444

Telephone (561)243-7324 Cell Fax

Email zhengx@mydelraybeach.com

(2) General Project Information

Project Name Marine Way Seawall, Drainage, and Roadway Improvements Phase 2

Project Address Intersection of Marine Way and SE 1st Street

City Delray Beach State FL Zip 33483

County Palm Beach Latitude 26° 27 35.6" N Longitude 80° 03' 52.7" W

Project Description and Purpose (including the total length and material of each diameter of proposed gravity sewers and forcemains, total number of manholes, total number of pump stations, and connections to existing system):

Installation of sanitary sewer system composed of approximately 590 LF of 8" PVC gravity sewer main, approximately 110 LF of 6" PVC service line to service 7 houses, and 4 manholes.

Estimated date for: Start of construction May 2023 Completion of Construction November 2023

Number of connections to existing system or treatment plant 1

(3) Project Capacity

Type of Unit	Number of Units	Population Per Unit	Total Population (Number of Units x Population Per Unit)	Per Capita Flow in Gallons per Day (GPD)	Total Average Daily Flow in GPD (Total Population x Per Capita Flow)	Peak hour flow in Gallons Per Minute (GPM)
Single-Family Home						
Mobile Home						
Apartment						
Commercial, Institutional, or Industrial Facility*						
Total	NA	NA		NA		

* Description of commercial, institutional, and industrial facilities and explanation of method used to estimate per capita flow for these facilities:

This project is replacing the existing sewer and as such has no added flows.

(4) Pump Station Data (attached additional sheets as necessary

Location	Type	Maximum Estimated Flow to the Station (GPD)	Average Estimated Flow to the Station (GPD)	Minimum Estimated Flow to the Station (GPD)	Operating Conditions [GPM @ FT (TDH)]

(5) Collection/Transmission System Design Information

A. This information must be completed for all projects by the applicant's professional engineer, and if applicable, those professional engineers in other disciplines who assisted with the design of the project. The checklist below shall be used for conventional collection/transmission systems while Attachment I to this form shall be used for low pressure sewer systems, including septic tank effluent pump (STEP) systems, and Attachment II shall be used for vacuum sewer systems (include Attachments I or II with the submittal of this form as applicable). These checklists cover important items but are not necessarily completely comprehensive of collection system construction and do not relieve the engineer from designing the collection system following sound engineering practices.

Complete the tables below (or Attachments I or II as applicable) as follows:

- The engineer shall initial each requirement if the project has been designed to comply with the standard or criteria.
- Mark "NA" if the requirement does not apply to this project and provide an explanation in section (5)B.
- Mark "NC" if the project has not been designed to comply with the requirement and provide an explanation in section (5)B, including any rule references.

Note, if the project has not been designed in accordance with the standards and criteria set forth in Rules 62-604.400(1) and (2), F.A.C., an application for an individual permit shall be submitted. However, if Rules 62-604.400(1) and (2), F.A.C., specifically allow for another alternative that will result in an equivalent level of reliability and public health protection, the project can be constructed using the general permit. Also note that each requirement below and in Attachments I and II includes a reference to guidance or rule for further information. The guidance documents given in the checklists are as follows:

- "RSWF" – Recommended Standards for Wastewater Facilities (2014). Health Research, Inc., Health Education Services Division, P.O. Box 7126, Albany, NY 12224, www.healthresearch.org
- "MOPFD-12" – Alternative Sewer Systems, Manual of Practice No. FD-12. Alternative Sewer Systems (1986). Water Environment Federation, 602 Wythe Street, Alexandria, VA 22314, www.wef.org.
- "FL DSG" – Design and Specification Guidelines for Low Pressure Sewer Systems (1981). Department of Environmental Protection, 2600 Blair Stone Road, MS 3540, Tallahassee, FL 32399-2400, www.floridadep.gov.
- "EPA ACS" - Alternative Wastewater Collection Systems (1991). EPA/625/1-91/024. NTIS# PB93-1162591N2; National Technical Information Service. 5285 Port Royal Road, Springfield, VA 22161, www.ntis.gov.

General Requirements

Initials (or "NA" or "NC")	Item Number	Requirement
	1	The project is designed based on an average daily flow of 100 gallons per capita plus wastewater flow from industrial plants and major institutional and commercial facilities unless water use data or other justification is used to better estimate the flow. The design includes an appropriate peaking factor, which covers I/I contributions and non-wastewater connections to those service lines.(Note, see Attachment I for low pressure sewer systems) [RSWF 11.243]
	2	Procedures are specified for operation of the collection/transmission system during construction if work is performed on a system currently in operation. [RSWF20.15]
	3	The project is designed to be located on public rights-of-way, land owned by the permittee, or easements and to be located no closer than 100 feet from a public drinking water supply well and no closer than 75 feet from a private drinking water supply well; or documentation is provided in Part II.(5)B., showing that another alternative will result in an

Initials (or "NA" or "NC")	Item Number	Requirement
		equivalent level of reliability and public health protection. [62-604.400(1)(b) and (c), F.A.C.]
	4	The project is designed with no physical connections between a public or private potable water supply system and a sewer or force main and with no water pipes passing through or coming into contact with any part of a sewer manhole. [RSFW 38.1]
	5	The project is designed to preclude the deliberate introduction of storm water, surface water, groundwater, roof runoff, subsurface drainage, swimming pool drainage, air conditioning system condensate water, non-contact cooling water except as provided by Rule 62-610.668(1), F.A.C., and sources of uncontaminated wastewater, except to augment the supply of reclaimed water in accordance with Rule 62-610.472(3)(c), F.A.C. [62-604.400(1)(d), F.A.C.]
	6	The project is designed so that all new or relocated, buried sewers and force mains, are located in accordance with the separation requirements from water mains and reclaimed water lines of Rules 62-604.400(2)(g) and (h), F.A.C. Note, if the criteria of Rules 62-604.400(2)(g) 4. or (2)(h)3., F.A.C., are used, describe in Part II.(5)B. alternative construction features that will be provided to afford a similar level of reliability and public health protection. [62-604.400(2)(g) and (h), F.A.C.; 62-555.314, F.A.C.]

Gravity Sewers

Initials (or "NA" or "NC")	Item Number	Requirement
	7	The project is designed with no public gravity sewer conveying raw wastewater less than 8 inches in diameter. [RSWF 33.1]
	8	The design considers buoyancy of sewers, and appropriate construction techniques are specified to prevent flotation of the pipe where high groundwater conditions are anticipated. [RSWF 33.3]
	9	All sewers are designed with slopes to give mean velocities, when flowing full, of not less than 2.0 feet per second, based on Manning's formula using an "n" value of 0.013; or if it is not practicable to maintain these minimum slopes and the depth of flow will be 0.3 of the diameter or greater for design average flow, the owner of the system has been notified that additional sewer maintenance will be required. The pipe diameter and slope are selected to obtain the greatest practical velocities to minimize solids deposition problems. Oversized sewers are not specified to justify flatter slopes. [RSWF 33.41, 33.42, and 33.43]
	10	Sewers are designed with uniform slope between manholes. [RWSF 33.44]
NA	11	Where velocities greater than 10 fps are designed, provisions to protect against displacement by erosion and impact are specified. [RSWF 33.45]
NA	12	Sewers on 20% slopes or greater are designed to be anchored securely with concrete, or equal, anchors spaced as follows: not over 36 feet center to center on grades 20% and up to 35%; not over 24 feet center to center on grades 35% and up to 50%; and not over 16 feet center to center on grades 50% and over. [RSWF 33.46]
	13	Sewers 24 inches or less are designed with straight alignment between manholes. Where curvilinear sewers are proposed for sewers greater than 24 inches, the design specifies compression joints; ASTM or specific pipe manufacturer's maximum allowable pipe joint deflection limits are not exceeded; and curvilinear sewers are limited to simple curves which start and end at manholes. [RSWF 33.5]
NA	14	Suitable couplings complying with ASTM specifications are required for joining dissimilar materials [RSWF 33.7]
	15	Sewers are designed to prevent damage from superimposed loads. [RSWF 33.7]
SC	16	Appropriate specifications for the pipe and methods of bedding and backfilling are provided so as not to damage the pipe or its joints, impede cleaning operations and future tapping, nor create excessive side fill pressures and ovalation of the pipe, nor seriously impair flow capacity. [RSWF 33.81]
	17	Appropriate deflection tests are specified for all flexible pipe including PVC. Testing is

Initials (or "NA" or "NC")	Item Number	Requirement
SL		required after the final backfill has been in place at least 30 days to permit stabilization of the soil-pipe system. Testing requirements specify: 1) no pipe shall exceed a deflection of 5%; 2) using a rigid ball or mandrel for the deflection test with a diameter not less than 95% of the base inside diameter or average inside diameter of the pipe, depending on which is specified in the ASTM specification, including the appendix, to which the pipe is manufactured; and 3) performing the test without mechanical pulling devices. [RSWF 33.85]
SL	18	Leakage tests are specified requiring that: 1) the leakage exfiltration or infiltration does not exceed 100 gallons per inch of pipe diameter per mile per day for any section of the system; 2) exfiltration or infiltration tests be performed with a minimum positive head of 2 feet; and 3) air tests, as a minimum, conform to the test procedure described in ASTM C-828 for clay pipe, ASTM C 924 for concrete pipe, ASTM F-1417 for plastic pipe, and for other materials appropriate test procedures. [RSWF 33.93, 33.94, and 33.95]
NA	19	If an inverted siphon is proposed, documentation of its need is provided in Part II.(5)8. Inverted siphons are designed with: 1) at least two barrels; 2) a minimum pipe size of 6 inches; 3) necessary appurtenances for maintenance, convenient flushing, and cleaning equipment; and 4) inlet and discharge structures having adequate clearances for cleaning equipment, inspection, and flushing. Design provides sufficient head and appropriate pipe sizes to secure velocities of at least 3.0 fps for design average flows. The inlet and outlet are designed so that the design average flow may be diverted to one barrel, and that either barrel may be cut out of service for cleaning. [RSWF 35]

Manholes

Initials (or "NA" or "NC")	Item Number	Requirement
SL	20	The project is designed with manholes at the end of each line; at all changes in grade, size, or alignment; at all intersections; and at distances not greater than 400 feet for sewers 15 inches or less and 500 feet for sewers 18 inches to 30 inches, except in the case where adequate modern cleaning equipment is available at distances not greater than 600 feet. [RSWF 34.1]
SL	21	Design requires drop pipes to be provided for sewers entering manholes at elevations of 24 inches or more above the manhole invert. Where the difference in elevation between the incoming sewer and the manhole invert is less than 24 inches, the invert is designed with a fillet to prevent solids deposition. Inside drop connections (when necessary) are designed to be secured to the interior wall of the manhole and provide access for cleaning. Design requires the entire outside drop connection be encased in concrete. [RSWF 34.2]
SL	22	Manholes are designed with a minimum diameter of 48 inches and a minimum access diameter of 24 inches. [RSWF 34.3]
SL	23	Design requires that a bench be provided on each side of any manhole channel when the pipe diameter(s) are less than the manhole diameter and that no lateral sewer, service connection, or drop manhole pipe discharges onto the surface of the bench. [RSWF 34.5]
SL	24	Design requires: 1) manhole lift holes and grade adjustment rings be sealed with non-shrinking mortar or other appropriate material; 2) inlet and outlet pipes be joined to the manhole with a gasketed flexible watertight connection or another watertight connection arrangement that allows differential settlement of the pipe and manhole wall; and 3) watertight manhole covers be used wherever the manhole tops may be flooded by street runoff or high water. [RSWF 34.6]
SL	25	Manhole inspection and testing for water-tightness or damage prior to placing into service are specified. Air testing, if specified for concrete sewer manholes, conforms to the test procedures described in ASTM C-1244. [RSWF 34.7]
NA	26	Electrical equipment specified for use in manholes is consistent with Item 46 of this checklist. [RSWF 34.9]

Stream Crossings

Initials (or "NA" or "NC")	Item Number	Requirement
NA	27	Sewers and force mains entering or crossing streams are designed to be constructed of ductile iron pipe with mechanical joints or so they will remain watertight and free from changes in alignment or grade or constructed of HDPE with fused joints for directional drilling. Appropriate materials which will not readily erode, cause siltation, damage pipe during placement, or corrode the pipe are specified to backfill the trench. [RSWF 36.21]
NA	28	Stream crossings are designed to incorporate valves or other flow regulating devices (which may include pump stations) on the shoreline or at such distances from the shoreline to prevent discharge in the event the line is damaged. [62- 604.400(2)(j)5., F.A.C.]
NA	29	Sewers and force mains entering or crossing streams are designed at a sufficient depth below the natural bottom of the stream bed to protect the line. At a minimum, the project is designed with subaqueous lines to be buried at least three feet below the design or actual bottom, whichever is deeper, of a canal and other dredged waterway or the natural bottom of streams, rivers, estuaries, bays, and other natural water bodies; or if it is not practicable to design the project with less than three-foot minimum cover, alternative construction features (e.g. a concrete cap, sleeve, or some other properly engineered device to insure adequate protection of the line) are described in Part II.C. [62-604.400(2)(j)1., F.A.C., and RSWF 36.11]
NA	30	Specifications require permanent warning signs be placed on the banks of canals, streams, and rivers clearly identifying the nature and location (including depths below design or natural bottom) of subaqueous crossings and suitably fixed signs be placed at the shore, for subaqueous crossings of lakes, bays, and other large bodies of water, and in any area where anchoring is normally expected. [62-604.400(2)(j)2., F.A.C.]
NA	31	Provisions for testing the integrity of subaqueous lines are specified. [62-604.400(2)(j)4., F.A.C.]
NA	32	Supports are designed for all joints in pipes utilized for aerial crossings and to prevent overturning andsettlement. Expansion jointing is specified between above ground and below ground sewers and force mains. The design considers the impact of floodwaters and debris. [RSWF 37]
NA	33	Aerial crossings are designed to maintain existing or required navigational capabilities within the waterway and to reserve riparian rights of adjacent property owners. [62-604.400(2)(j)3., F.A.C.]

Pump Stations

Initials (or "NA" or "NC")	Item Number	Requirement
NA	34	In areas with high water tables, pump stations are designed to withstand flotation forces when empty. When siting the pump station, the design considers the potential for damage or interruption of operation because of flooding. Pump station structures and electrical and mechanical equipment are designed to be protected from physical damage by the 100-year flood. Pump stations are designed to remain fully operational and accessible during the 25-year flood unless lesser flood levels are appropriate based on local considerations, but not less than the 10-year flood. [62-604.400(2)(e), F.A.C.]
NA	35	Pump stations are designed to be readily accessible by maintenance vehicles during all weather conditions. [RSWF41.2]
NA	36	Wet well and pump station piping is designed to avoid operational problems from the accumulation of grit. [RSWF 41.3]
NA	37	Dry wells, including their superstructure, are designed to be completely separated from the wet well. Common walls are designed to be gas tight. [RSWF 42.21]
NA	38	The design includes provisions to facilitate removing pumps, motors, and other mechanical and electrical equipment. [RSWF 42.22]
NA	39	The design includes provisions for: 1) suitable and safe means of access for persons wearing self-

Initials (or "NA" or "NC")	Item Number	Requirement
		contained breathing apparatus are provided to dry wells, and to wet wells; 2) stairway access to wet wells more than 4 feet deep containing either bar screens or mechanical equipment requiring inspection or maintenance; 3) for built-in-place pump stations, a stairway to the dry well with rest landings at vertical intervals not to exceed 12 feet; 4) for factory-built pump stations over 15 feet deep, a rigidly fixed landing at vertical intervals not to exceed 10 feet unless a manlift or elevator is provided; and 5) where a landing is used, a suitable and rigidly fixed barrier to prevent an individual from falling past the intermediate landing to a lower level. If a manlift or elevator is provided, emergency access is included in the design. [RSWF 42.23]
NA	40	Specified construction materials are appropriate under conditions of exposure to hydrogen sulfide and other corrosive gases, greases, oils, and other constituents frequently present in wastewater. [RSWF 42.25]
NA	41	Multiple pumps are specified, and each pump has an individual intake. Where only two units are specified, they are of the same size. Specified units have capacity such that, with any unit out of service, the remaining units will have capacity to handle the design peak hourly flow. [RSWF 42.31 and 42.36]
NA	42	Bar racks are specified for pumps handling wastewater from 30 inch or larger diameter sewers. Where a bar rack is specified, a mechanical hoist is also provided. The design includes provisions for appropriate protection from clogging for small pump stations. [RSWF 42.322]
NA	43	Pumps handling raw wastewater are designed to pass spheres of at least 3 inches in diameter. Pump suction and discharge openings are designed to be at least 4 inches in diameter. Note, this provision is not applicable to grinder pumps. [RSWF 42.33]
NA	44	The design requires pumps be placed such that under normal operating conditions they will operate under a positive suction head, unless pumps are suction-lift pumps. [RSWF 42.34]
NA	45	The design requires: 1) pump stations be protected from lightning and transient voltage surges; and 2) pump stations be equipped with lightning arrestors, surge capacitors, or other similar protection devices and phase protection. Note, small pump stations serving a single building are not required to provide surge protection devices if not necessary because the pump station is protected by the surge protection device of the single building. [62-604.400(2)(b), F.A.C.]
NA	46	The design requires 1) electrical systems and components (e.g., motors, lights, cables, conduits, switch boxes, control circuits, etc.) in raw wastewater wet wells, or in enclosed or partially enclosed spaces where hazardous concentrations of flammable gases or vapors may be present, comply with the National Electrical Code requirements; 2) electrical equipment located in wet wells be suitable for use under corrosive conditions; 3) each flexible cable be provided with a watertight seal and separate strain relief; 4) a fused disconnect switch located above ground be provided for the main power feed for all pump stations; 5) electrical equipment exposed to weather to meet the requirements of weatherproof equipment NEMA 3R or 4; 6) a 110 volt power receptacle to facilitate maintenance be provided inside the control panel for pump stations that have control panels outdoors; and 7) ground fault interruption protection be provided for all outdoor outlets. [RSWF 42.35]
NA	47	The design requires a sump pump equipped with dual check valves be provided in dry wells to remove leakage or drainage with discharge above the maximum high water level of the wet well. [RSWF42.37]
NA	48	Pump/pump station design capacities are based on the peak hourly flow and are adequate to maintain a minimum velocity of 2 feet per second in the force main. [RSWF 42.38]
NA	49	The design includes provisions to automatically alternate the pumps in use. [RSWF 42.4]
NA	50	The design requires: 1) suitable shutoff valves be placed on the suction line of pumps/dry pit pumps; 2) suitable shutoff and check valves be placed on the discharge line of each pump (except on screw pumps); 3) a check valve be located between the shutoff valve and the pump; 4) check valves be suitable for the material being handled; 5) check valves be placed on the horizontal portion of discharge piping (except for ball checks, which may be placed in the vertical run); 6) all valves be capable of withstanding normal pressure and

Initials (or "NA" or "NC")	Item Number	Requirement
		water hammer; and 7) all shutoff and check valves be operable from the floor level and accessible for maintenance. [RSWF 42.5]
NA	51	The effective volume of wet wells is based on design average flows and a filling time not to exceed 30 minutes unless the facility is designed to provide flow equalization. The pump manufacturer's duty cycle recommendations were utilized in selecting the minimum cycle time. [RSWF 42.62]
NA	52	The design requires wet well floors have a minimum slope of 1 to 1 to the hopper bottom and the horizontal area of hopper bottoms be no greater than necessary for proper installation and function of the inlet. [RSWF 42.63]
NA	53	For covered wet wells, the design provides for air displacement to the atmosphere, such as an inverted "j" tube or other means. [RSWF 42.64]
NA	54	The design provides for adequate ventilation at all pump stations. Mechanical ventilation shall be provided where the dry well is below the ground surface. Permanently installed ventilation shall be provided if screens or mechanical equipment requiring maintenance or inspection are located in the wet well. Pump stations are designed with no interconnection between the wet well and dry well ventilation systems. [RSWF 42.71]
NA	55	The design requires all intermittently operated ventilation equipment to be interconnected with the respective pit lighting system and the manual lighting/ventilation switch to override the automatic controls. [RSWF 42.73]
NA	56	The design requires the fan wheels of ventilation systems be fabricated from non-sparking material and automatic heating and dehumidification equipment be provided in all dry wells. [RSWF 42.74]
NA	57	If wet well ventilation is continuous, design provides for at least 12 complete 100% fresh air changes per hour; if wet well ventilation is intermittent, design provides for at least 30 complete 100% fresh air changes per hour; and design requires air to be forced into wet wells by mechanical means rather than solely exhausted from the wet well. [RSWF 42.75]
NA	58	If dry well ventilation is continuous, design provides at least 12 complete 100% fresh air changes per hour; and dry well ventilation is intermittent, design provides for at least 30 complete 100% fresh air changes per hour, unless a system of two speed ventilation with an initial ventilation rate of 30 changes per hour for 10 minutes and automatic switch over to 6 changes per hour is used to conserve heat. [RSWF 42.76]
NA	59	Pump stations are designed and located on the site to minimize adverse effects from odors, noise, and lighting. [62- 604.400(2)(c), F.A.C.]
NA	60	The design requires pump stations be enclosed with a fence or otherwise designed with appropriate features to discourage the entry of animals and unauthorized persons. Posting of an unobstructed sign made of durable weather resistant material at a location visible to the public with a telephone number for a point of contact in case of emergency is specified. [62-604.400(2)(d), F.A.C.]
NA	61	The design requires suitable devices for measuring wastewater flow at all pump stations. Indicating, totalizing, and recording flow measurement are specified for pump stations with a 350 gpm or greater design peak flow. [RSWF 42.8]
NA	62	The project is designed with no physical connections between any potable water supplies and pump stations. If a potable water supply is brought to a station, reduced-pressure principle backflow prevention assemblies are specified. [RSWF 42.9 and 62-555.30(4), F.A.C.]

Additional Items to be Completed for Suction-Lift Pump Stations

Initials (or "NA" or "NC")	Item Number	Requirement
NA	63	The design requires all suction-lift pumps to be either self-priming or vacuum-priming and the combined total of dynamic suction-lift at the "pump off" elevation and required net positive suction head at design operating conditions not to exceed 22 feet. For self-priming

Initials (or "NA" or "NC")	Item Number	Requirement
		pumps, the design requires: 1) pumps be capable of rapid priming and repriming at the "lead pump on" elevation with self-priming and repriming accomplished automatically under design operating conditions; 2) suction piping not to exceed the size of the pump suction or 25 feet in total length; and 3) priming lift at the "lead pump on" elevation to include a safety factor of at least 4 feet from the maximum allowable priming lift for the specific equipment at design operating conditions. For vacuum-priming pump stations, the design requires dual vacuum pumps capable of automatically and completely removing air from the suction-lift pumps and the vacuum pumps be adequately protected from damage due to wastewater. [RSWF 43.1]
NA	64	The design requires: 1) suction-lift pump equipment compartments to be above grade or offset and to be effectively isolated from the wet well to prevent a hazardous and corrosive sewer atmosphere from entering the equipment compartment; 2) wet well access not to be through the equipment compartment and to be at least 24 inches in diameter; 3) gasketed replacement plates be provided to cover the opening to the wet well for pump units to be remove for service; and 4) no valving be located in the wet well. [RSWF 43.2]

Additional Items to be Completed for Submersible Pump Stations

Initials (or "NA" or "NC")	Item Number	Requirement
NA	65	Submersible pumps and motors are designed specifically for raw wastewater use, including totally submerged operation during a portion of each pump cycle and to meet the requirements of the National Electrical Code for such units. Provisions for detecting shaft seal failure or potential seal failure are included in the design. [RSWF 44.1]
NA	66	The design requires submersible pumps be readily removable and replaceable without dewatering the wet well or disconnecting any piping in the wet well. [RSWF 44.2]
NA	67	In submersible pump stations, electrical supply, control, and alarm circuits are designed to provide strain relief; to allow disconnection from outsice the wet well; and to protect terminals and connectors from corrosion by location outside the wet well or through use of watertight seals. [RSWF 44.31]
NA	68	In submersible pump stations, the design requires the motor control center to be located outside the wet well, readily accessible, and protected by a conduit seal or other appropriate measures meeting the requirements of the National Electrical Code, to prevent the atmosphere of the wet well from gaining access to the control center. If a seal is specified, the motor can be removed and electrically disconnected without disturbing the seal. The design requires control equipment exposed to weather to meet the requirements of weatherproof equipment NEMA 3R or 4. [RSWF 44.32]
NA	69	In submersible pump stations, the design requires: 1) pump motor power cords be flexible and serviceable under conditions of extra hard usage and to meet the requirements of the National Electrical Code standards for flexible cords in wastewater pump stations; 2) ground fault interruption protection be used to de-energize the circuit in the event of any failure in the electrical integrity of the cable; and 3) power cord terminal fittings be corrosion-resistant and constructed in a manner to prevent the entry of moisture into the cable, provided with strain relief appurtenances, and designed to facilitate field connecting. [RSWF 44.33]
NA	70	In submersible pump stations, the design requires all shut-off and check valves be located in a separate valve pit. Provisions to remove or drain accumulated water from the valve pit are included in the design. [RSWF 44.4]

Emergency Operations for Pump Stations

Initials (or "NA" or "NC")	Item Number	Requirement
NA	71	Pump stations are designed with an alarm system which activates in cases of power failure, sump pump failure, pump failure, unauthorized entry, or any cause of pump station malfunction. Pump station alarms are designed to be telemetered to a facility that is manned 24 hours a day. If such a facility is not available and a 24-hour holding capacity is not provided, the alarm is designed to be telemetered to utility offices during normal working hours and to the home of the responsible person(s) in charge of the lift station during off-duty hours. Note, if an audio-visual alarm system with a self-contained power supply is provided in lieu of a telemetered system, documentation is provided in Part II.(5)B. showing an equivalent level of reliability and public health protection. [RSWF 46]
NA	72	The design requires emergency pumping capability be provided for all pump stations. For pump stations that receive flow from one or more pump stations through a force main or pump stations discharging through pipes 12 inches or larger, the design requires uninterrupted pumping capability be provided, including an in-place emergency generator. Where portable pumping and/or generating equipment or manual transfer is used, the design includes sufficient storage capacity with an alarm system to allow time for detection of pump station failure and transportation and connection of emergency equipment. [62-604.400(2)(a)1. and 2., F.A.C., and RSWF 47.423 and 47.433]
NA	73	The design requires: 1) emergency standby systems to have sufficient capacity to start up and maintain the total rated running capacity of the station, including lighting, ventilation, and other auxiliary equipment necessary for safety and proper operation; 2) special sequencing controls be provided to start pump motors unless the generating equipment has capacity to start all pumps simultaneously with auxiliary equipment operating; 3) a riser from the force main with rapid connection capabilities and appropriate valving be provided for all pump stations to hook up portable pumps; and 4) all pump station reliability design features be compatible with the available temporary service power generating and pumping equipment of the authority responsible for operation and maintenance of the collection/transmission system. [62-604.400(2)(a)3., F.A.C., and RSWF 47.431]
NA	74	The design provides for emergency equipment to be protected from operation conditions that would result in damage to the equipment and from damage at the restoration of regular electrical power. [RSWF 47.411, 47.417, and 47.432]
NA	75	Where independent substations are used for emergency power, each separate substation and its associated transmission lines is designed to be capable of starting and operating the pump station at itsrated capacity. [RSWF 47.44]

Force Mains

Initials (or "NA" or "NC")	Item Number	Requirement
NA	76	Force mains are designed to maintain, at design pumping rates, a cleansing velocity of at least 2 feet per second. The minimum force main diameter specified for raw wastewater is not less than 4 inches. (Not applicable to low pressure sewer systems) [RSWF49.1]
NA	77	The design requires: 1) branches of intersecting force mains be provided with appropriate valves such that one branch may be shut down for maintenance and repair without interrupting the flow of other branches; and 2) stub-outs on force mains, placed in anticipation of future connections, be equipped with a valve to allow such connection without interruption of service. [62-604.400(2)(f), F.A.C.]
NA	78	The design requires air relief valves be placed at high points in the force main to prevent air locking. [RSWF 49.2]
NA	79	Specified force main pipe and joints are equal to water main strength materials suitable for design conditions. The force main, reaction blocking, and station piping are designed to withstand water hammer pressures and stresses associated with the cycling of wastewater

Initials (or "NA" or "NC")	Item Number	Requirement
		pump stations. [RSWF 49.4]
NA	80	When the Hazen and Williams formula is used to calculate friction losses through force mains, the value for "C" is 100 for unlined iron or steel pipe for design. For other smooth pipe materials, such as PVC, polyethylene, lined ductile iron, the value for C does not exceed 120 (130 for PVC and HDPE) for design. (Not applicable to low pressure sewer systems) [RSWF 49.61]
NA	81	Where force mains are constructed of material, which might cause the force main to be confused with potable water mains, specifications require the force main to be clearly identified. [RSWF 49.7]
NA	82	Leakage tests for force mains are specified including testing methods and leakage limits. [RSWF 49.8]

Note, if this project is an alternative collection system (i.e. a low pressure sewer system or a vacuum sewer system), complete the checklist items on Attachment I for low pressure sewer systems or Attachment II for vacuum sewer systems. Include the attachment with the submittal. For any items marked "NA" or "NC," provide an explanation in section 5(B).

B. Explanation for Requirements or Standards Marked "NA" or "NC" in II(5)A above, which includes Attachments I and II (attach additional sheets if necessary):

11. No velocities greater than 15fps anticipated.
12. No slopes greater than 20%.
14. No joining of dissimilar materials.
19. No inverted siphons.
26. No electrical equipment.
27-33. No stream crossings.
34-75. No pump stations.
76-82. No force mains.

PART III - Certifications

(1) Collection/Transmission System Permittee

I, the undersigned owner or authorized representative* of The City of Delray Beach am fully aware that the statements made in this application for a construction permit are true, correct and complete to the best of my knowledge and belief. I agree to retain the design engineer or another professional engineer registered in Florida, to conduct on-site observation of construction, to prepare a certification of completion of construction, and to review record drawings for adequacy. Further, I agree to provide an appropriate operation and maintenance manual for the facilities pursuant to Rule 62-604.500(4), F.A.C., and to retain a professional engineer registered in Florida to examine (or to prepare if desired) the manual. I am fully aware that Department approval must be obtained before this project is placed into service for any purpose other than testing for leaks and testing equipment operation.

Signed xinmin zheng Date 09/20/2022

Name Daisy Zheng Title Project Manager

Attach a letter of authorization.

RH

(2) Owner of Collection/Transmission System

I, the undersigned owner or authorized representative* of the City of Delray Beach certify that we will be the Owner of this project after it is placed into service. I agree that we will operate and maintain this project** in a manner that will comply with applicable Department rules. Also, I agree that we will promptly notify the Department if we sell or legally transfer ownership of this project.

Signed _____ Date 10-11-22

Name Hassan Hadjimiry, PE Title Utilities Director

Company Name The City of Delray Beach

Address 434 S. Swinton Ave

City Delray Beach State FL Zip 33444

Telephone 561-243-7303 Cell _____ Fax _____

Email hadjimiryh@mydelraybeach.com

* *Attach a letter of authorization*

**Description of the owner's portion if split _____

Second Owner of Collection/Transmission System (if system is divided with different owners

I, the undersigned owner or authorized representative* of _____ certify that we will be the Owner of this project after it is placed into service. I agree that we will operate and maintain this project in a manner that will comply with applicable Department rules. Also, I agree that we will promptly notify the Department if we sell or legally transfer ownership of this project.

Signed _____ Date _____

Name _____ Title _____

Company Name _____

Address _____

City _____ State _____ Zip _____

Telephone _____ Cell _____ Fax _____

Email _____

* *Attach a letter of authorization*

**Description of the second owner portion if split _____

(3) Wastewater Facility Serving Collection/Transmission System**

If this is a Notice of Intent to use a general permit, check here:

☒ The undersigned owner or authorized representative* of the South Central Regional WWTP wastewater facility

hereby certifies that the above referenced facility has the capacity to receive the wastewater generated by the proposed collection system; is in compliance with the capacity analysis report requirements of Rule 62-600.405, F.A.C.; is not under a Department order associated with effluent violations or the ability to treat wastewater adequately; and will provide the necessary treatment and disposal as required by Chapter 403, F.S., and applicable Department rules.

If this is an application for an individual permit, check one:

☐ The undersigned owner or authorized representative* of the _____ wastewater facility hereby certifies that the above referenced facility has and will have adequate reserve capacity to accept the flow from this project and will provide the necessary treatment and disposal as required by Chapter 403, F.S., and applicable Department rules.

☐ The undersigned owner or authorized representative* of the _____ wastewater facility hereby certifies that the above referenced facility currently does not have, but will have prior to placing the proposed project into operation, adequate reserve capacity to accept the flow from this project and will provide the necessary treatment and disposal as required by Chapter 403, F.S., and applicable Department rules.

Name of Treatment Plant Serving Project South Central Regional WWTP

County Palm Beach City Delray Beach

DEP Facility ID: FL 0035980

Maximum monthly average daily flow over the last 12 month period 19.11 MGD Month(s) used June 2022

Maximum three-month average daily flow over the last 12 month period 18.22 MGD Month(s) used Nov 21 - Jan 22

Current permitted capacity 24.0 MGD ■ AADF ☐ MADF ☐ TMADF

Current outstanding flow commitments (including this project) against treatment plant capacity _____ MGD

Signed _____ Date 9/27/2022

Name Doug Levine Title Plant Manager

Company Name City of Delray Beach

Address 1801 North Congress Ave

City Delray Beach State FL Zip 33444

Telephone 561-272-7061 Cell _____ Fax _____

Email dlevine@scrwwtp.org

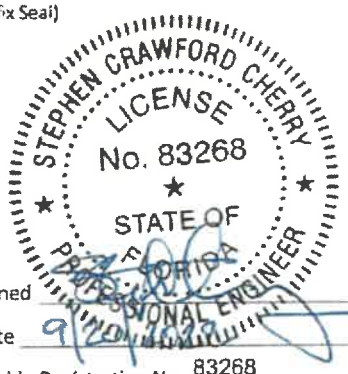
** Attach a letter of authorization*

*** If there is an intermediate satellite collection system between the project and the final receiving facility collection system, a letter shall be attached certifying that the intermediate downstream satellite collection system has adequate reserve capacity to accept the flow from this project.*

(4) Professional Engineer Registered in Florida

I, the undersigned professional engineer registered in Florida, certify that I am in responsible charge of the preparation and production of engineering documents for this project; that plans and specifications for this project have been completed; that I have expertise in the design of wastewater collection/transmission systems; and that, to the best of my knowledge and belief, the engineering design for this project complies with the requirements of Chapter 62-604, F.A.C.

(Affix Seal)



Signed _____

Date 9/20/2023

Name Stephen Cherry, PE Florida Registration No. 83268

Company Name WGI, Inc

Address 2035 Vista Parkway

City West Palm Beach State FL Zip 33411

Telephone (561) 687-2220 Cell (561) 714-3563 Fax _____

Email 33411

Portion of the project for which responsible: Wastewater Collection System

Second Engineer (if applicable)

(Affix Seal)

Signed _____

Date _____

Name _____ Florida Registration No. _____

Company Name _____

Address _____

City _____ State _____ Zip _____

Telephone _____ Cell _____ Fax _____

Email _____

Portion of the Project for Which Responsible _____

Third Engineer (if applicable) (Affix Seal)

Signed _____

Date _____

Name _____ Florida Registration No. _____

Company Name _____

Address _____

City _____ State _____ Zip _____

Telephone _____ Cell _____ Fax _____

Email _____

Portion of the Project for Which Responsible: _____

Fourth Engineer (if applicable) (Affix Seal)

Signed _____

Date _____

Name _____ Florida Registration No. _____

Company Name _____

Address _____

City _____ State _____ Zip _____

Telephone _____ Cell _____ Fax _____

Email _____

Portion of the Project for Which Responsible: _____

Notification of Acceptance of Use of a General Permit

Permitee:
Daisy Zheng, P.E.
Project Manager
City of Delray Beach
434 S. Swinton Ave
Delray Beach, FL 33444
zhengx@mydelraybeach.com

Permit Number: 138274-547-DSGP
Issue Date: 10/20/2022
Expiration Date: 10/19/2027
County: Palm Beach
Project: Marine Way Seawall Improv. Phase 2
Water Supplier: City of Delray Beach
PWS ID: 450 0351

Dear Ms. Zheng:

On October 12, 2022 the Florida Department of Health-Palm Beach County, as an approved local program of the Florida Department of Environmental Protection, received a "*Notice of Intent to Use the General Permit for Construction of Water Main Extensions for PWSs*" [DEP Form No. 62-555.900(7)], under the provisions of Rule 62-4.530 and Chapter 62-555, Florida Administrative Code (F.A.C.). The proposed project includes :

Construction of approximately 456 LF of 8" PVC water main, 28 LF of 6" DIP water main, (2) fire hydrants, and 2 sample points located along Marine Way at the intersection of SE 1st street going north, in the City of Delray Beach, Florida.

Based upon the submitted Notice and accompanying documentation, this correspondence is being sent to advise that the Department does not object to the use of such general permit at this time. Please be advised that the permittee is required to abide by Rule 62-555.405, F.A.C., all applicable rules in Chapters 62-4, 62-550, 62-555, F.A.C., and the General Conditions for All General Drinking Water Permits (found in 62-4.540, F.A.C.).

When any existing asbestos cement (AC) pipes are replaced under this permit, the permittee shall do so in accordance with the applicable rules of the Federal Asbestos Regulation and Florida DEP requirements. For specific requirements applicable to AC pipes, the permittee should contact the Air and Waste Management section managers prior to commencing any such activities at (561) 837-5900 #3. Please be aware that a notification is required to be submitted to the Department for a regulated project.

The permittee shall comply with all sampling requirements specific to this project. These requirements are attached for review and implementation. Pursuant to Rule 62-555.345, F.A.C., the permittee shall submit a certification of construction completion [DEP Form No. 62-555.900(9)] to the Department and obtain approval, or clearance, from the Department before placing any water main extension constructed under this general permit into operation for any purpose other than disinfection or testing for leaks.

Within 30 days after the sale or legal transfer of ownership of the permitted project that has not been cleared for service in total by the Department, both the permittee and the proposed permittee shall sign and submit an application for transfer of the permit using Form 62-555.900(8), F.A.C., with the appropriate fee. The permitted construction is not authorized past the 30-day period unless the permit has been transferred.

This permit will expire five years from the date of issuance. If the project has been started and not completed by that time, a new permit must be obtained before the expiration date in order to continue work on the project, per Rule 62-4.030, F.A.C.

Sincerely,
For the Division Director

Jorge R. Patino, P.E.,
Environmental Administrator
Division of Environmental Public Health

MP/JH/JP

c: Project Engineer: Stephen Cherry, P.E.
Utility: Hassan Hadjimiry, P.E.

PERMITTEE: City of Delray Beach
Daisy Zheng, P.E.

Permit/Certification No.: 138274-547-DSGP

Civil Penalty May Be Incurred
if this project is placed into operation before obtaining a clearance from this office.

Requirements for clearance upon completion of projects are as follows:

1) Clearance Form
Submission of a fully completed Department of Environmental Protection (DEP) Form 62-555.900(9) *Certification of Construction Completion and Request for Clearance to Place Permitted PWS Components into Operation*.

2) Record Drawings
Submission of the portion of record drawings showing deviations from the DEP construction permit, including preliminary design report or drawings an specifications, if there are any deviations from said permit (Note that it is necessary to submit a copy of only the portion of record drawings showing deviations and not a complete set of record drawings.).

3) Bacteriological Results
Copies of satisfactory bacteriological analysis (a.k.a. Main Clearance), taken within sixty (60) days of completion of construction, from locations within the distribution system or water main extension to be cleared, in accordance with Rules 62-555.315(6), 62-555.340, and 62-555.330, F.A.C. and American Water Works Association (AWWA) Standard C 651-92, as follows:

- Connection to an existing system
- The end point of the proposed addition
- Any water lines branching off a main extension
- Every 1,200 feet on straight runs of pipe

Each location shall be sampled on two consecutive days, with sample points and chlorine residual readings clearly indicated on the report. A sketch or description of all bacteriological sampling locations must also be provided. **All samples shall be collected by an employee of a state certified laboratory or a certified operator and be reported on DEP Reporting Format 62-550.730.**

For further clarification contact:
Mark Peters
Engineering Specialist III
Florida Department of Health Palm Beach
Plan Review & Permit Section
800 Clematis Street, 4th Floor
West Palm Beach, FL 33401
561-837-5934

138274-547-DSGP

NOTICE OF INTENT TO USE THE GENERAL PERMIT FOR CONSTRUCTION OF WATER MAIN EXTENSIONS FOR PWSs

INSTRUCTIONS: This notice shall be completed and submitted by persons proposing to construct projects permitted under the "General Permit for Construction of Water Main Extensions for Public Water Systems" in Rule 62-555.405, F.A.C. AT LEAST 30 DAYS BEFORE BEGINNING CONSTRUCTION OF A WATER MAIN EXTENSION PROJECT, complete and submit one copy of this notice to the appropriate Department of Environmental Protection (DEP) District Office or Approved County Health Department (ACHD) along with payment of the proper permit processing fee. (When completed, Part II of this notice serves as the preliminary design report for a water main extension project, and thus, it is unnecessary to submit a separate preliminary design report or drawings, specifications, and design data with this notice.) All information provided in this notice shall be typed or printed in ink. The DEP permit processing fee for projects requiring the services of a professional engineer during design is $650, and the DEP permit processing fee for projects not requiring the services of a professional engineer during design is $500.* Some ACHDs charge a county permit processing fee in addition to the DEP permit processing fee. Checks for permit processing fees shall be made payable to the Department of Environmental Protection or the appropriate ACHD. NOTE THAT A SEPARATE NOTIFICATION AND A SEPARATE PERMIT PROCESSING FEE ARE REQUIRED FOR EACH NON-CONTIGUOUS PROJECT.†

* *Except as noted in paragraphs 62-555.520(3)(a) and (b), F.A.C., projects shall be designed under the responsible charge of one or more professional engineers licensed in Florida.*

† *Non-contiguous projects are projects that are neither interconnected nor located nearby one another (i.e., on the same site, on adjacent streets, or in the same neighborhood).*

I. General Project Information

A. Name of Project: Marine Way Seawall, Drainage, and Roadway Improvements Phase 2

B. Description of Project and Its Purpose:

Construction of approximately 456 LF of 8" PVC water main tying into an 8" existing main at the corner of Marine Way. There is also an additional 28 LF of 6" DIP water main to service two proposed fire hydrants.

RECEIVED
OCT 12 2022
Florida Department of Health - PBC
Plan Review

C. Location of Project

1. County Where Project Located: Palm Beach County
2. Description of Project Location:

Along Marine Way starting at the intersection of SE 1st Street and Marine Way and going north.

D. Estimate of Cost to Construct Project: $120,000

E. Estimate of Dates for Starting and Completing Construction of Project:
Upon issuance of construction permit - November 2023

F. Permittee

PWS/Company Name: The City of Delray Beach			PWS Identification No.:* 4500351
PWS Type:* ☒ Community	☐ Non-Transient Non-Community	☐ Transient Non-Community	☐ Consecutive
Contact Person: Daisy Zheng, PE		Contact Person's Title: Project Manager	
Contact Person's Mailing Address: 434 S. Swinton Ave			
City: Delray Beach		State: FL	Zip Code: 33444
Contact Person's Telephone Number: 561-243-7324		Contact Person's Fax Number:	
Contact Person's E-Mail Address: zhengx@mydelraybeach.com			

* *This information is required only if the permittee is a public water system (PWS).*

G. Public Water System (PWS) Supplying Water to Project

PWS Name: City of Delray Beach Utilities			PWS Identification No.: 4500351
PWS Type: ☒ Community	☐ Non-Transient Non-Community	☐ Transient Non-Community	☐ Consecutive
PWS Owner: City of Delray BeachUtilities			
Contact Person: Hassan Hadjimiry, P.E.		Contact Person's Title: Utilities Director	
Contact Person's Mailing Address: 434 S Swinton Ave			
City: Delray Beach		State: FL	Zip Code: 33444
Contact Person's Telephone Number: 561-243-7303		Contact Person's Fax Number:	
Contact Person's E-Mail Address: hadjimiryh@mydelraybeach.com			

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Effective August 28 2003
(Updated September 8 2015)

NOTICE OF INTENT TO USE THE GENERAL PERMIT FOR CONSTRUCTION OF WATER MAIN EXTENSIONS FOR PWSs

Project Name: Marine Way Seawall, Drainage, and Roadway Improvements Phase 2	Permittee: The City of Delray Beach

H. Public Water System (PWS) that Will Own Project After It Is Placed into Permanent Operation

PWS Name: City of Delray Beach Utilities		PWS Identification No.:* 4500351
PWS Type:* ☒ Community ☐ Non-Transient Non-Community ☐ Transient Non-Community ☐ Consecutive		
PWS Owner: City of Delray Beach Utilities		
Contact Person: Hassan Hadjimity, P.E.		Contact Person's Title: Utilities Director
Contact Person's Mailing Address: 434 S. Swinton Ave.		
City: Delray Beach	State: FL	Zip Code: 33444
Contact Person's Telephone Number: 561-243-7303		Contact Person's Fax Number:
Contact Person's E-Mail Address: hadjimityh@mydelraybeach.com		

* *This information is required only if the owner/operator is an existing PWS.*

I. Professional Engineer(s) or Other Person(s) in Responsible Charge of Designing Project*

Company Name: WGI, Inc	
Designer(s): Stephen Cherry, PE	Title(s) of Designer(s): Project Manager
Qualifications of Designer(s): ☒ Professional Engineer(s) Licensed in Florida – License Number(s): 83268 ☐ Public Officer(s) Employed by State, County, Municipal, or Other Governmental Unit of State† ☐ Plumbing Contractor(s) Licensed in Florida – License Number(s):^	
Mailing Address of Designer(s): 2035 Vista Parkway	
City: West Palm Beach	State: FL Zip Code: 33411
Telephone Number of Designer(s): (561)687-2220	Fax Number of Designer(s):
E-Mail Address(es) of Designer(s): stephen.cherry@wginc.com	

* *Except as noted in paragraphs 62-555.520(3)(a) and (b), F.A.C., projects shall be designed under the responsible charge of one or more professional engineers licensed in Florida.*

† *Attach a detailed construction cost estimate showing that the cost to construct this project is $10,000 or less.*

^ *Attach documentation showing that this project will be installed by the plumbing contractor(s) designing this project, documentation showing that this project involves a public water system serving a single property and fewer than 250 fixture units, and a detailed construction cost estimate showing that the cost to construct this project is $50,000 or less.*

II. Preliminary Design Report for Project*

A. Service Area, Water Use, and Service Pressure Information

1. Design Type and Number of Service Connections, and Average Daily Water Demands and Maximum-Day Water Demands, in the Entire Area to Be Served by the Water Mains Being Constructed Under this Project:

A = Type of Service Connection	B = Number of Service Connections	C = Average Daily Water Demand Per Service Connection, gpd	D = Total Average Daily Water Demand[a], gpd (Columns BxC for Residential Service Connections)	E = Total Maximum-Day Water Demand[b], gpd
Single-Family Home			0	
Mobile Home			0	
Apartment			0	
Commercial, Institutional, or Industrial Facility[a]				0
Total	0		0	0

a. Description of Commercial, Institutional, or Industrial Facilities and Explanation of Method(s) Used to Estimate Average Daily Water Demand for These Facilities:

This project is relocating watermain and as such there is no additional flow.

b. Explanation of Peaking Factor(s) or Method(s) Used to Estimate Maximum-Day Water Demand:

NA

NOTICE OF INTENT TO USE THE GENERAL PERMIT FOR CONSTRUCTION OF WATER MAIN EXTENSIONS FOR PWSs

Project Name: Manne Way Seawall, Drainage, and Roadway Improvements Phase 2	Permittee: The City of Delray Beach

2. Explanation of Peaking Factor(s) or Method(s) Used to Estimate Design Peak-Hour Water Demand and, for Small Water Systems that Use Hydropneumatic Tanks or that Are Not Designed to Provide Fire Protection, Peak Instantaneous Water Demand:

   Peak Hour Demand estimated at 3.0 times average daily demand

3. Design Fire-Flow Rate and Duration:
   1,000 GPM @ 2 hr duration
4. Design Service Pressure Range:
   20-60 PSI

B. Project Site Information

1. ATTACH A SITE PLAN OR SKETCH SHOWING THE SIZE AND APPROXIMATE LOCATION OF NEW OR ALTERED WATER MAINS, SHOWING THE APPROXIMATE LOCATION OF HYDRANTS, VALVES, METERS, AND BLOW-OFFS IN SAID MAINS, AND SHOWING HOW SAID MAINS CONNECT TO THE PUBLIC WATER SYSTEM SUPPLYING WATER FOR THE PROJECT.
2. Description of Any Areas Where New or Altered Water Mains Will Cross Above or Under Surface Water or Be Located in Soil that Is Known to Be Aggressive:

   N/A

C. Information About Compliance with Design and Construction Requirements

1. If this project is being designed to comply with the following requirements, initial in ink before the requirements. If any of the following requirements do not apply to this project or if this project includes exceptions to any of the following requirements as allowed by rule, mark "X" before the requirements and complete Part II.C.2 below. *RSWW = Recommended Standards for Water Works* as incorporated into Rule 62-555.330, F.A.C.

   a. This project is being designed to keep existing water mains and service lines in operation during construction or to minimize interruption of water service during construction. [*RSWW* 1.3.a; exceptions allowed under FAC 62-555.330]

   b. All pipe, pipe fittings, pipe joint packing and jointing materials, valves, fire hydrants, and meters installed under this project will conform to applicable American Water Works Association (AWWA) standards. [FAC 62-555.320(21)(b), *RSWW* 8.0, and AWWA standards as incorporated into FAC 62-555.330; exceptions allowed under FAC 62-555.320(21)(c)]

   c. All public water system components, excluding fire hydrants, that will be installed under this project and that will come into contact with drinking water will conform to NSF International Standard 61 as adopted in Rule 62-555.335, F.A.C., or other applicable standards, regulations, or requirements referenced in paragraph 62-555.320(3)(b), F.A.C. [FAC 62-555.320(3)(b); exceptions allowed under FAC 62-555.320(3)(d)]

   d. All pipe and pipe fittings installed under this project will contain no more than 8.0% lead, and any solder or flux used in this project will contain no more than 0.2% lead. [FAC 62-555.322]

   e. All pipe and pipe fittings installed under this project will be color coded or marked in accordance with subparagraph 62-555.320(21)(b)3, F.A.C., using blue as a predominant color. (Underground plastic pipe will be solid-wall blue pipe, will have a co-extruded blue external skin, or will be white or black pipe with blue stripes incorporated into, or applied to, the pipe wall; and underground metal or concrete pipe will have blue stripes applied to the pipe wall. Pipe striped during manufacturing of the pipe will have continuous stripes that run parallel to the axis of the pipe, that are located at no greater than 90-degree intervals around the pipe, and that will remain intact during and after installation of the pipe. If tape or paint is used to stripe pipe during installation of the pipe, the tape or paint will be applied in a continuous line that runs parallel to the axis of the pipe and that is located along the top of the pipe; for pipe with an internal diameter of 24 inches or greater, tape or paint will be applied in continuous lines along each side of the pipe as well as along the top of the pipe. Aboveground pipe will be painted blue or will be color coded or marked like underground pipe.) [FAC 62-555.320(21)(b)3]

   f. All new or altered water mains included in this project are sized after a hydraulic analysis based on flow demands and pressure requirements. ATTACH A HYDRAULIC ANALYSIS JUSTIFYING THE SIZE OF ANY NEW OR ALTERED WATER MAINS WITH AN INSIDE DIAMETER OF LESS THAN THREE INCHES. [FAC 62-555.320(21)(b) and *RSWW* 8.1]

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(Updated September 8, 2015)

NOTICE OF INTENT TO USE THE GENERAL PERMIT FOR CONSTRUCTION OF WATER MAIN EXTENSIONS FOR PWSs

Project Name: Marine Way Seawall, Drainage, and Roadway Improvements Phase 2	Permittee: The City of Delray Beach

g. The inside diameter of new or altered water mains that are included in this project and that are being designed to provide fire protection and serve fire hydrants will be at least six inches. [FAC 62-555.320(21)(b) and *RSWW* 8.1.2]

h. New or altered water mains that are included in this project and that are not being designed to carry fire flows do not have fire hydrants connected to them. [FAC 62-555.320(21)(b) and *RSWW* 8.1.5]

i. This project is being designed to minimize dead-end water mains by making appropriate tie-ins where practical. [FAC 62-555.320(21)(b) and *RSWW* 8.1.6.a]

j. New or altered dead-end water mains included in this project will be provided with a fire or flushing hydrant or blow-off for flushing purposes. [FAC 62-555.320(21)(b) and *RSWW* 8.1.6.b]

k. Sufficient valves will be provided on new or altered water mains included in this project so that inconvenience and sanitary hazards will be minimized during repairs. [FAC 62-555.320(21)(b) and *RSWW* 8.2]

l. New or altered fire hydrant leads included in this project will have an inside diameter of at least six inches and will include an auxiliary valve. [FAC 62-555.320(21)(b) and *RSWW* 8.3.3]

m. All fire hydrants that will be installed under this project and that will have unplugged, underground drains will be located at least three feet from any existing or proposed storm sewer, stormwater force main, pipeline conveying reclaimed water regulated under Part III of Chapter 62-610, F.A.C., or vacuum-type sanitary sewer; at least six feet from any existing or proposed gravity- or pressure-type sanitary sewer, wastewater force main, or pipeline conveying reclaimed water not regulated under Part III of Chapter 62-10, F.A.C.; and at least ten feet from any existing or proposed "on-site sewage treatment and disposal system." [FAC 62-555.314(4)]

x n. At high points where air can accumulate in new or altered water mains included in this project, provisions will be made to remove the air by means of air relief valves, and automatic air relief valves will not be used in situations where flooding of the valve manhole or chamber may occur. [FAC 62-555.320(21)(b) and *RSWW* 8.4.1]

x o. The open end of the air relief pipe from all automatic air relief valves installed under this project will be extended to at least one foot above grade and will be provided with a screened, downward-facing elbow. [FAC 62-555.320(21)(b) and *RSWW* 8.4.2]

x p. New or altered chambers, pits, or manholes that contain valves, blow-offs, meters, or other such water distribution system appurtenances and that are included in this project will not be connected directly to any sanitary or storm sewer, and blow-offs or air relief valves installed under this project will not be connected directly to any sanitary or storm sewer. [FAC 62-555.320(21)(b) and *RSWW* 8.4.3]

q. New or altered water mains included in this project will be installed in accordance with applicable AWWA standards or in accordance with manufacturers' recommended procedures. [FAC 62-555.320(21)(b), *RSWW* 8.5.1, and AWWA standards as incorporated into FAC 62-555.330]

r. A continuous and uniform bedding will be provided in trenches for underground pipe installed under this project; backfill material will be tamped in layers around underground pipe installed under this project and to a sufficient height above the pipe to adequately support and protect the pipe; and unsuitably sized stones (as described in applicable AWWA standards or manufacturers' recommended installation procedures) found in trenches will be removed for a depth of at least six inches below the bottom of underground pipe installed under this project. [FAC 62-555.320(21)(b), *RSWW* 8.5.2]

s. All water main tees, bends, plugs, and hydrants installed under this project will be provided with thrust blocks or restrained joints to prevent movement. [FAC 62-555.320(21)(b) and *RSWW* 8.5.4]

t. New or altered water mains that are included in this project and that will be constructed of asbestos-cement or polyvinyl chloride pipe will be pressure and leakage tested in accordance with AWWA Standard C603 or C605, respectively, as incorporated into Rule 62-555.330, F.A.C., and all other new or altered water mains included in this project will be pressure and leakage tested in accordance with AWWA Standard C600 as incorporated into Rule 62-555.330. [FAC 62-555.320(21)(b)1 and AWWA standards as incorporated into FAC 62-555.330]

u. New or altered water mains, including fire hydrant leads and including service lines that will be under the control of a public water system and that have an inside diameter of three inches or greater, will be disinfected and bacteriologically evaluated in accordance with Rule 62-555.340, F.A.C. [FAC 62-555.320(21)(b)2 and FAC 62-555.340]

x v. New or altered water mains that are included in this project and that will be installed in areas where there are known aggressive soil conditions will be protected through use of corrosion-resistant water main materials, through encasement of the water mains in polyethylene, or through provision of cathodic protection. [FAC 62-555.320(21)(b) and *RSWW* 8.5.7 d]

w. New or relocated, underground water mains included in this project will be laid to provide a horizontal distance of at least three feet between the outside of the water main and the outside of any existing or proposed vacuum-type sanitary sewer, storm sewer, stormwater force main, or pipeline conveying reclaimed water regulated under Part III of Chapter 62-610, F.A.C.; a horizontal distance of at least six feet between the outside of the water main and the outside of any existing or proposed gravity-type sanitary sewer (or a horizontal distance of at least three feet between the outside of the water main and the outside of any existing or proposed gravity-type sanitary sewer if the bottom of the water main will be laid at least six inches above the top of the sewer); a horizontal distance of at least six feet between the outside of the water main and the outside of any existing or proposed pressure-type sanitary sewer, wastewater force main, or pipeline conveying reclaimed water not regulated under Part III of Chapter 62-610, F.A.C.; and a horizontal distance of at least ten feet between the outside of the water main and all parts of any existing or proposed "on-site sewage treatment and disposal system." [FAC 62-555.314(1); exceptions allowed under FAC 62-555.314(5)]

x. New or relocated, underground water mains that are included in this project and that will cross any existing or proposed gravity- or vacuum-type sanitary sewer or storm sewer will be laid so the outside of the water main is at least six inches above the other pipeline or at least 12 inches below the other pipeline; and new or relocated, underground water mains that are included in this project and that will cross any existing or proposed pressure-type sanitary sewer, wastewater or stormwater force main, or pipeline conveying reclaimed water will be laid so the outside of the water main is at least 12 inches above or below the other pipeline. [FAC 62-555.314(2); exceptions allowed under FAC 62-555.314(5)]

y. At the utility crossings described in Part II.C.1.w above, one full length of water main pipe will be centered above or below the other pipeline so the water main joints will be as far as possible from the other pipeline or the pipes will be arranged so that all water main joints are at least three feet from all joints in vacuum-type sanitary sewers, storm sewers, stormwater force mains, or pipelines conveying reclaimed water regulated under Part III of Chapter 62-610, F.A.C., and at least six feet from all joints in gravity- or pressure-type sanitary sewers, wastewater force mains, or pipelines conveying reclaimed water not regulated under Part III of Chapter 62-610, F.A.C. [FAC 62-555.314(2); exceptions allowed under FAC 62-555.314(5)]

x z. New or altered water mains that are included in this project and that will cross above surface water will be adequately supported and anchored, protected from damage and freezing, and accessible for repair or replacement. [FAC 62-555.320(21)(b) and *RSWW* 8.7.1]

x aa. New or altered water mains that are included in this project and that will cross under surface water will have a minimum cover of two feet. [FAC 62-555.320(21)(b) and *RSWW* 8.7.2]

x bb. New or altered water mains that are included in this project and that will cross under surface water courses greater than 15 feet in width will have flexible or restrained, watertight pipe joints and will include valves at both ends of the water crossing so the underwater main can be isolated for testing and repair; the aforementioned isolation valves will be easily accessible and will not be subject to flooding; the isolation valve closest to the water supply source will be in a manhole; and permanent taps will be provided on each side of the isolation valve within the manhole to allow for insertion of a small meter to determine leakage from the underwater main and to allow for sampling of water from the underwater main. [FAC 62-555.320(21)(b) and *RSWW* 8.7.2]

cc. This project is being designed to include proper backflow protection at those new or altered service connections where backflow protection is required or recommended under Rule 62-555.360, F.A.C., or in *Recommended Practice for Backflow Prevention and Cross-Connection Control*, AWWA Manual M14, as incorporated into Rule 62-555.330, F.A.C.; or the public water system that will own this project after it is placed into operation has a cross-connection control program requiring water customers to install proper backflow protection at those service connections where backflow protection is required or recommended under Rule 62-555.360, F.A.C., or in AWWA Manual M14. [FAC 62-555.360 and AWWA Manual M14 as incorporated into FAC 62-555.330]

x dd. Neither steam condensate, cooling water from engine jackets, nor water used in conjunction with heat exchangers will be returned to the new or altered water mains included in this project. [FAC 62-555.320(21)(b) and *RSWW* 8.8.2]

NOTICE OF INTENT TO USE THE GENERAL PERMIT FOR CONSTRUCTION OF WATER MAIN EXTENSIONS FOR PWSs

Project Name: Manne Way Seawall, Drainage, and Roadway Improvements Phase 2	Permittee: The City of Delray Beach

2. Explanation for Requirements Marked "X" in Part II.C 1 Above, Including Justification, Documentation, Assurances, and/or Alternatives as Required by Rule for Exceptions to Requirements in Part II.C.1.

N,O: No proposed air relief valves
P: No proposed chamber pits or manholes
V: No known aggressive soils
Z: No water mains above surface waters
AA, BB: No water mains under surface waters.
DD: No proposed engine jackets or heat exchangers

I completed Part II of this notice, and the information provided in Part II and on the attachment(s) to Part II is true and accurate to the best of my knowledge and belief.

Signature, Seal, and Date of Professional Engineer (PE) or Signature and Date of Other Person in Responsible Charge of Designing Project:*	Signature, Seal, and Date of Professional Engineer (PE) or Signature and Date of Other Person in Responsible Charge of Designing Project:*
	
Printed/Typed Name: Stephen Cherry, PE	Printed/Typed Name:
License Number of PE or License Number or Title of Other Person in Responsible Charge of Designing Project:* 83268	License Number of PE or License Number or Title of Other Person in Responsible Charge of Designing Project:*
Portion of Preliminary Design Report for Which Responsible: Water Main Design	Portion of Preliminary Design Report for Which Responsible:

* *Except as noted in paragraphs 62-555.520(3)(a) and (b), F.A.C., projects shall be designed under the responsible charge of one or more PEs licensed in Florida. If this project is being designed under the responsible charge of one or more PEs licensed in Florida, Part II of this notice shall be completed, signed, sealed, and dated by the PE(s) in responsible charge. If this project is <u>not</u> being designed under the responsible charge of one or more PEs licensed in Florida, Part II shall be completed, signed, and dated by the person(s) in responsible charge of designing this project.*

NOTICE OF INTENT TO USE THE GENERAL PERMIT FOR CONSTRUCTION OF WATER MAIN EXTENSIONS FOR PWSs

Project Name: Marine Way Seawall, Drainage, and Roadway Improvements Phase 2	Permittee: The City of Delray Beach

III. Certifications

A. Certification by Permittee

I am duly authorized to sign this notice on behalf of the permittee identified in Part I.F of this notice. I certify that, to the best of my knowledge and belief, this project complies with Chapter 62-555, F.A.C. I also certify that construction of this project has not begun yet and that, to the best of my knowledge and belief, this project does not include any of the following construction work:

- construction of water mains conveying raw or partially treated drinking water;
- construction of drinking water treatment, pumping, or storage facilities or conflict manholes;
- construction of water mains in areas contaminated by low-molecular-weight petroleum products or organic solvents;
- construction of an interconnection between previously separate public water systems or construction of water mains that create a "new system" as described under subsection 62-555.525(1), F.A.C.; or
- construction of water mains that will remain dry following completion of construction.

(A specific construction permit is required for each project involving any of the above listed construction work.)

I understand that, if this project is designed under the responsible charge of one or more professional engineers (PEs) licensed in Florida, the permittee must retain a Florida-licensed PE to take responsible charge of inspecting construction of this project for the purpose of determining in general if the construction proceeds in compliance with the Department of Environmental Protection construction permit, including the approved preliminary design report, for this project. I understand that the permittee must have complete record drawings prepared for this project. I also understand that the permittee must submit a certification of construction completion to the Department and obtain written approval, or clearance, from the Department before the permittee places this project into operation for any purpose other than disinfection or testing for leaks.

Signature and Date	Printed or Typed Name	Title
kinmin zheng 09/20/2022	Daisy Zheng, PE	Project Manager

B. Certification by PWS Supplying Water to Project

I am duly authorized to sign this notice on behalf of the PWS identified in Part I.G of this notice. I certify that said PWS will supply the water necessary to meet the design water demands for this project. As indicated below, the water treatment plant(s) to which this project will be connected has(have) the capacity necessary to meet the design water demands for this project, and I certify that all other PWS components affected by this project also have the capacity necessary to meet the design water demands for this project. I certify that said PWS is in compliance with applicable planning requirements in Rule 62-555.348, F.A.C.; applicable cross-connection control requirements in Rule 62-555.360, F.A.C.; and to the best of my knowledge and belief, all other applicable rules in Chapters 62-550, 62-555, and 62-699, F.A.C.; furthermore, I certify that, to the best of my knowledge and belief, said PWS's connection to this project will not cause said PWS to be in noncompliance with Chapter 62-550 or 62-555, F.A.C. I also certify that said PWS has reviewed the preliminary design report for this project and that said PWS considers the connection(s) between this project and said PWS acceptable as designed.

- Name(s) of Water Treatment Plant(s) to Which this Project Will Be Connected:

  City of Delray Beach Water Treatment Plant

- Total Permitted Maximum Day Operating Capacity of Plant(s), gpd: 26 MGD
- Total Maximum Day Flow at Plant(s) as Recorded on Monthly Operating Reports During Past 12 Months, gpd:

  17.956 MGD

RH

Signature and Date	Printed or Typed Name	Title
10-11-22	Hassan Hadjimiry, P.E.	Utilities Director

C. Certification by PWS that Will Own Project After It Is Placed into Permanent Operation

I am duly authorized to sign this notice on behalf of the PWS identified in Part I.H of this notice. I certify that said PWS will own this project after it is placed into permanent operation. I also certify that said PWS has reviewed the preliminary design report for this project ~~and that said PWS~~ considers this project acceptable as designed.

RH

Signature and Date	Printed or Typed Name	Title
10-11-22	Hassan Hadjimiry, P.E	Utilities Director

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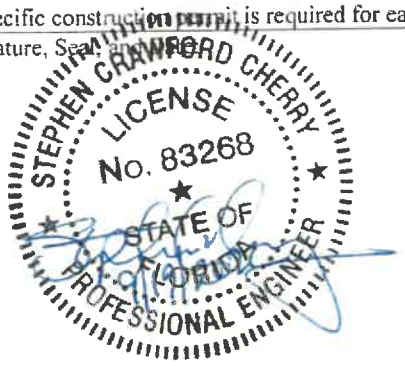
Project Name: Marine Way Seawall, Drainage, and Roadway Improvements Phase 2	Permittee: The City of Delray Beach

D. Certification by Professional Engineer(s) in Responsible Charge of Designing Project*

I, the undersigned professional engineer licensed in Florida, am in responsible charge of designing this project. I certify that, to the best of my knowledge and belief, the design of this project complies with Chapter 62-555, F.A.C. I also certify that, to the best of my knowledge and belief, this project is not being designed to include any of the following construction work:

- construction of water mains conveying raw or partially treated drinking water;
- construction of drinking water treatment, pumping, or storage facilities or conflict manholes;
- construction of water mains in areas contaminated by low-molecular-weight petroleum products or organic solvents;
- construction of an interconnection between previously separate public water systems or construction of water mains that create a "new system" as described under subsection 62-555.525(1), F.A.C.; or
- construction of water mains that will remain dry following completion of construction.

(A specific construction permit is required for each project involving any of the above listed construction work.)

Signature, Seal, and Date:	Signature, Seal, and Date:
	
Printed/Typed Name: Stephen Cherry, PE	Printed/Typed Name:
License Number: 83268	License Number:
Portion of Preliminary Design Report for Which Responsible: Water Main Design	Portion of Preliminary Design Report for Which Responsible:

* *Except as noted in paragraphs 62-555.520(3)(a) and (b), F.A.C., projects shall be designed under the responsible charge of one or more professional engineers (PEs) licensed in Florida. If this project is being designed under the responsible charge of one or more PEs licensed in Florida, Part III.D of this notice shall be completed by the PE(s) in responsible charge. If this project is not being designed under the responsible charge of one or more PEs licensed in Florida, Part III.D does not have to be completed.*

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(Updated September 8, 2015)

DEPARTMENT OF THE ARMY PERMIT

Permittee: City of Delray Beach
c/o Missy Barletto
434 S. Swinton Ave
Delray Beach, FL 33444

Permit No: **SAJ-2022-03311(SP-JLM)**

Issuing Office: **U.S. Army Engineer District, Jacksonville**

NOTE: The term "you" and its derivatives, as used in this permit, means the permittee or any future transferee. The term "this office" refers to the appropriate district or division office of the U.S. Army Corps of Engineers (Corps) having jurisdiction over the permitted activity or the appropriate official of that office acting under the authority of the commanding officer.

You are authorized to perform work in accordance with the terms and conditions specified below.

Project Description:

The applicant seeks authorization to construct a new bulkhead, remove and replace sections of an existing dock, and improve flood control within and adjacent to Marine Way and the Deck 84 Restaurant. Specifically, the proposed activities include:

1. Remove a 24 linear foot section of seawall associated with the proposed discharge bay associated with the upland pump station and partially remove a 36 linear foot section of seawall for the proposed utility bay. Existing 48-inch diameter stormwater outfall pipe to be partially removed.

2. Install 500 square feet of metal pedestrian grating over proposed utility bay; and install 382 square feet of metal pedestrian grating over proposed discharge bay.

3. Install three 14-inch concrete square pilings associated with the proposed discharge bay and utility bay.

4. Install three clusters of three 12-inch wooden pilings to be used as fenders at the proposed discharge and utility bays.

5. Install 417 linear feet of new seawall, and 184 linear feet of replacement seawall, all with a 3.5-foot-wide concrete cap at elevation 6.0 feet North American Vertical Datum of 1988 (NAVD88). Notches will be built into the seawall to reduce the cap elevation from 6.0 feet NAVD88 to 4.2 feet NAVD88 at each dock access point. The seawall replacement will impact approximately 158.85 square feet of waters of the United States

(WOTUS), including 2 square feet of mangrove wetlands.

6. Install a 595 linear foot temporary sheet pile wall waterward of the proposed seawall cap. The temporary sheet pile wall will be removed after construction of the seawall cap.

7. Remove three existing access walkways associated with the Deck 84 Restaurant Dock, total of 188 square feet.

8. Construct two new 62 square foot non-American Disabilities Act (ADA) compliant public access walkways for an existing dock associated with the Deck 84 Restaurant and impacting 5.52 square feet of mangroves wetlands. The southern access walkway measures 15.5 feet long by 4 feet wide and the second non-ADA access walkway (northern) measures 14.75 feet long by 4 feet wide.

9. Construct a new 222 square foot ADA-compliant public access ramp associated with the Deck 84 Restaurant Dock, impacting 191.05 square feet of mangroves.

10.Installation of a 4-inch HDPE drainage pipe under the Atlantic Avenue Bridge and reconstruction of one existing 4-inch HDPE drainage pipe under the Atlantic Avenue Bridge.

The work described above is to be completed in accordance with the 37 pages of drawings and 8 attachments affixed at the end of this permit instrument.

Project Location: The project would affect waters of the United States associated with the Intracoastal Waterway. The project site is located at the City of Delray Beach Marina located on Marine Way, Section 16, Township 46 South, Range 43 East, Delray Beach, Palm Beach County, Florida.

Directions to site: Take I-95 to Atlantic Avenue, go east to Palm Square, head south to Southeast 1st Street, turn left and the site will be straight ahead.

Approximate Central Coordinates: Latitude: 26.4605 North
Longitude: -80.0644 West

Permit Conditions

General Conditions:

1. The time limit for completing the work authorized ends on June 20, 2029.
If you find that you need more time to complete the authorized activity, submit your

request for a time extension to this office for consideration at least one month before the above date is reached.

2. You must maintain the activity authorized by this permit in good condition and in conformance with the terms and conditions of this permit. You are not relieved of this requirement if you abandon the permitted activity, although you may make a good faith transfer to a third party in compliance with General Condition 4 below. Should you wish to cease to maintain the authorized activity or should you desire to abandon it without a good faith transfer, you must obtain a modification of this permit from this office, which may require restoration of the area.

3. If you discover any previously unknown historic or archeological remains while accomplishing the activity authorized by this permit, you must immediately notify this office of what you have found. We will initiate the Federal and State coordination required to determine if the remains warrant a recovery effort or if the site is eligible for listing in the National Register of Historic Places.

4. If you sell the property associated with this permit, you must obtain the signature and the mailing address of the new owner in the space provided and forward a copy of the permit to this office to validate the transfer of this authorization.

5. If a conditioned water quality certification has been issued for your project, you must comply with the conditions specified in the certification as special conditions to this permit. For your convenience, a copy of the certification is attached if it contains such conditions (Attachment 2).

6. You must allow representatives from this office to inspect the authorized activity at any time deemed necessary to ensure that it is being or has been accomplished in accordance with the terms and conditions of your permit.

Special Conditions:

1. **Reporting Address:** The Permittee shall submit all reports, notifications, documentation and correspondence required by the general and special conditions of this permit to either (not both) of the following addresses:

    a. For electronic mail (preferred): SAJ-RD-Enforcement@usace.army.mil (not to exceed 15 MB).
    b. For standard mail: U.S. Army Corps of Engineers, Regulatory Division, Enforcement Section, P.O. Box 4970, Jacksonville, Florida 32232-0019.

The Permittee shall reference this permit number, SAJ-2022-03311(SP-JLM), on all submittals.

2. **Commencement Notification:** Within 10 days from the date of initiating the work authorized by this permit the Permittee shall submit a completed "Commencement Notification" Form (Attachment 3).

3. **As-Built with X-Y Coordinates:** Within 60 days of completion of the authorized work, the Permittee shall submit as-built drawings of the authorized work and a completed As-Built Certification Form (Attachment 4) to the Corps. The drawings shall be signed and sealed by a surveyor licensed under Florida Statute 472 and include the following:

   a. A plan view drawing of the location of the authorized work footprint (as shown on the permit drawings) on 8½-inch by 11-inch paper. The drawings shall include the X & Y State Plane coordination points of the most waterward point of the structure and a point at the mean high water line (MHWL) or the face of the bulkhead/seawall, if present. The drawings shall include: the dimensions of the structure, depth of water (at mean low water) at the waterward end of the structure, and the distance from the waterward end of the structure to the near bottom edge of the channel.

   b. Listing of any deviations between the work authorized by this permit and the work as constructed. In the event the completed work deviates, in any manner, from the authorized work, describe on the As-Built Certification Form the deviations between the work authorized by this permit and the work as constructed. Clearly indicate on the as-built drawings any deviations that have been listed. Please note the depiction and/or description of any deviations on the drawings and/or As-Built Certification Form does not constitute approval of any deviations by the U.S. Army Corps of Engineers.
   c. Placement of the Department of the Army Permit number on all sheets submitted.

4. **Assurance of Navigation and Maintenance:** The Permittee understands and agrees that, if future operations by the United States require the removal, relocation, or other alteration, of the structures or work herein authorized, or if, in the opinion of the Secretary of the Army or his authorized representative, said structure or work shall cause unreasonable obstruction to the free navigation of the navigable waters, the Permittee will be required, upon due notice from the U.S. Army Corps of Engineers, to remove, relocate, or alter the structural work or

obstructions caused thereby, without expense to the United States. No claim shall be made against the United States on account of any such removal or alteration.

5. **Federal Channel Setback:** The most waterward edge of the authorized project shall be constructed no closer than 41.4-feet from the near edge of the federal channel.

6. **Consent to Easement:** A portion of the authorized work may be located within the Federal right-of-way and therefore, may require a Department of the Army Consent to Easement. The Permittee shall complete the "Application for Consent to Cross U.S. Government Easement" (Attachment 5) and submit to the Corps Real Estate Division SAJ-RE-Consent@usace.army.mil or Post Office Box 4970, Jacksonville, Florida 32232-0019 or by telephone at 904-570-4514. The application should include a boundary survey map along with the authorized construction plans and specifications for the project. Prior to commencement of construction, the Permittee shall provide a copy of the Corps approved Consent to Easement, or correspondence from the Real Estate Division indicating that a Consent to Easement is not required, to the address identified in the **Reporting Address Special Condition**.

7. **Jacksonville District Programmatic Biological Opinion (JAXBO):** Structures and activities authorized under this permit will be constructed and operated in accordance with all applicable PDCs contained in the JAXBO, based on the permitted activity. Johnson's seagrass and its critical habitat were delisted from the Endangered Species Act on May 16, 2022. Therefore, JAXBO PDCs required to minimize adverse effects to Johnson's seagrass and its critical habitat are no longer applicable to any project. Failure to comply with applicable PDCs will constitute noncompliance with this permit. In addition, failure to comply with the applicable PDCs, where a take of listed species occurs, would constitute an unauthorized take. The NMFS is the appropriate authority to determine compliance with the Endangered Species Act. The most current version of JAXBO can be accessed at the Jacksonville District Regulatory Division website in the Endangered Species section of the Sourcebook located at:http://www.saj.usace.army.mil/Missions/Regulatory/SourceBook.aspx JAXBO may be subject to revision at any time. The most recent version of the JAXBO must be utilized during the design and construction of the permitted work.

8. **Manatee Conditions:** The Permittee shall comply with the "Standard Manatee Conditions for In-Water Work – 2011" (Attachment 6). The most recent version of

the Manatee Conditions must be utilized.

9. **Manatee Grates**: All culverts 8 inches to 8 feet in diameter must be grated to prevent manatee entrapment. Grates must be permanently fixed, spaced a maximum of 8 inches apart (may be less for culverts smaller than 16 inches in diameter) and may be installed diagonally, horizontally or vertically. For new culverts, grates must be attached prior to installation of the culverts. Culverts less than 8 inches or greater than 8 feet in diameter are exempt from this requirement.

10. **Cultural Resources/Historic Properties:**
    a. No structure or work shall adversely affect impact or disturb properties listed in the National Register of Historic Places (NRHP) or those eligible for inclusion in the NRHP.

    b. If, during permitted activities, items that may have historic or archaeological origin are observed the Permittee shall immediately cease all activities adjacent to the discovery that may result in the destruction of these resources and shall prevent his/her employees from further removing, or otherwise damaging, such resources. The applicant shall notify both the Florida Department of State, Division of Historical Resources, Compliance Review Section at (850)-245-6333 and the Corps, of the observations within the same business day (8 hours). Examples of submerged historical, archaeological or cultural resources include shipwrecks, shipwreck debris fields (such as steam engine parts, or wood planks and beams), anchors, ballast rock, concreted iron objects, concentrations of coal, prehistoric watercraft (such as log "dugouts"), and other evidence of human activity. The materials may be deeply buried in sediment, resting in shallow sediments or above them, or protruding into water. The Corps shall coordinate with the Florida State Historic Preservation Officer (SHPO) to assess the significance of the discovery and devise appropriate actions. Project activities shall not resume without verbal and/or written authorization from the Corps.

    c. Additional cultural resources assessments may be required of the permit area in the case of unanticipated discoveries as referenced in accordance with the above Special Condition and, if deemed necessary by the SHPO or Corps, in accordance with 36 CFR 800 or 33 CFR 325, Appendix C (5). Based on the circumstances of the discovery, equity to all parties, and considerations of the public interest, the Corps may modify, suspend, or revoke the permit in accordance with 33 CFR Part 325.7. Such activity

shall not resume on non-federal lands without written authorization from the SHPO for finds under his or her jurisdiction, and from the Corps.

d. In the unlikely event that unmarked human remains are identified on non-federal lands; they will be treated in accordance with Section 872.05 Florida Statutes. All work and ground disturbing activities within a 100-meter diameter of the unmarked human remains shall immediately cease and the Permittee shall immediately notify the medical examiner, Corps, and State Archaeologist within the same business day (8-hours). The Corps shall then notify the appropriate SHPO. Based on the circumstances of the discovery, equity to all parties, and considerations of the public interest, the Corps may modify, suspend, or revoke the permit in accordance with 33 CFR Part 325.7. Such activity shall not resume without written authorization from the SHPO and from the Corps.

11. **Turbidity Barriers:** Prior to the initiation of any of the work authorized by this permit, the Permittee shall install floating turbidity barriers with weighted skirts that extend within 1 foot of the bottom around all work areas that are in, or adjacent to, surface waters. The turbidity barriers shall remain in place and be maintained daily until the authorized work has been completed and turbidity within the construction area has returned to ambient levels. Turbidity barriers shall be removed upon stabilization of the work area.

12. **Fill Material:** The Permittee shall use only clean fill material for this project. The fill material shall be free from items such as trash, debris, automotive parts, asphalt, construction materials, concrete block with exposed reinforcement bars, and soils contaminated with any toxic substance in toxic amounts, in accordance with Section 307 of the Clean Water Act.

13. **Notice of Permit:** The Permittee shall complete and record the "Notice of Department of the Army Authorization" form (Attachment 7) with the Clerk of the County Court, Registrar of Deeds or other appropriate official charged with the responsibility of maintaining records of title to or interest in real property within the county of the authorized activity. No later than 90 days from the effective date of this permit, the Permittee shall provide a copy of the recorded Notice of Permit to the Corps clearly showing a stamp from the appropriate official indicating the book and page at which the Notice of Permit is recorded in the official records and the date of recording.

14. **Posting of Permit**: The Permittee shall have available and maintain for review a copy of this permit and approved plans at the construction site.

15. **Eastern Indigo Snake Protection Measures and Inspection:** Permittee shall comply with U.S. Fish and Wildlife Service's "Standard Protection Measures for the Eastern Indigo Snake" dated August 12, 2013, as provided in Attachment 8 of this permit. All gopher tortoise burrows, active or inactive, shall be evacuated prior to site manipulation in the vicinity of the burrow. If excavating potentially occupied burrows, active or inactive, individuals must first obtain state authorization via a Florida Fish and Wildlife Conservation Commission (FWC) Authorized Gopher Tortoise Agent permit. The excavation method selected shall minimize the potential for injury of an indigo snake. The Permittee shall follow the excavation guidance provided in the most current FWC Gopher Tortoise Permitting Guidelines found at http://myfwc.com/gophertortoise. If an indigo snake is encountered, the snake must be allowed to vacate the area prior to additional site manipulation in the vicinity. Holes, cavities, and snake refugia other than gopher tortoise burrows shall be inspected each morning before planned site manipulation of a particular area, and if occupied by an indigo snake, no work shall commence until the snake has vacated the vicinity of the proposed work.

16. **Individual Section 408 Approval**: It has been determined that the activities authorized do not impair the usefulness of the Intracoastal Waterway and are not injurious to the public interest. The Permittee shall adhere to the conditions and limitations referenced in the Section 408 approval memo attached to this permit. All documentation required in the Section 408 approval memo, including certification that the work was completed in accordance with the approved plans and specifications, GPS readings for the limits of the work performed, as built drawings, and the date the work started and was completed shall be submitted either electronically by email at ENPermits.CESAJ@usace.army.mil or by standard mail at Post Office Box 4970, Jacksonville Florida 32232-0019. For all questions related to the Section 408 approval, contact the Corps, Jacksonville Engineering Division by telephone at 904-232-1604. Engineering Division is the appropriate authority to determine compliance with the terms and conditions of Section 408 approval.

Further Information:

1. Congressional Authorities: You have been authorized to undertake the activity described above pursuant to:

(X) Section 10 of the Rivers and Harbors Act of 1899 (33 U.S.C. 403)

(X) Section 404 of the Clean Water Act (33 U.S.C. 1344)

( ) Section 103 of the Marine Protection, Research and Sanctuaries Act of 1972 (33 U.S.C. 1413)

(X) Section 14 of the Rivers and Harbors Act of 1899 (33 U.S.C. 408)

2. Limits of this authorization.

a. This permit does not obviate the need to obtain other Federal, State, or local authorizations required by law.

b. This permit does not grant any property rights or exclusive privileges.

c. This permit does not authorize any injury to the property or rights of others.

d. This permit does not authorize interference with any existing or proposed Federal projects.

3. Limits of Federal Liability. In issuing this permit, the Federal Government does not assume any liability for the following:

a. Damages to the permitted project or uses thereof as a result of other permitted or unpermitted activities or from natural causes.

b. Damages to the permitted project or uses thereof as a result of current or future activities undertaken by or on behalf of the United States in the public interest.

c. Damages to persons, property, or to other permitted or unpermitted activities or structures caused by the activity authorized by this permit.

d. Design or construction deficiencies associated with the permitted work.

e. Damage claims associated with any future modification, suspension, or revocation of this permit.

4. Reliance on Applicant's Data: The determination of this office that issuance of this permit is not contrary to the public interest was made in reliance on the information you provided.

5. Reevaluation of Permit Decision: This office may reevaluate its decision on this permit at any time the circumstances warrant. Circumstances that could require a reevaluation include, but are not limited to, the following:

a. You fail to comply with the terms and conditions of this permit.

b. The information provided by you in support of your permit application proves to have been false, incomplete, or inaccurate (see 4 above).

c. Significant new information surfaces which this office did not consider in reaching the original public interest decision.

Such a reevaluation may result in a determination that it is appropriate to use the suspension, modification, and revocation procedures contained in 33 CFR 325.7 or enforcement procedures such as those contained in 33 CFR 326.4 and 326.5. The referenced enforcement procedures provide for the issuance of an administrative order requiring you comply with the terms and conditions of your permit and for the initiation of legal action where appropriate. You will be required to pay for any corrective measures ordered by this office, and if you fail to comply with such directive, this office may in certain situations (such as those specified in 33 CFR 209.170) accomplish the corrective measures by contract or otherwise and bill you for the cost.

6. Extensions: General Condition 1 establishes a time limit for the completion of the activity authorized by this permit. Unless there are circumstances requiring either a prompt completion of the authorized activity or a reevaluation of the public interest decision, the Corps will normally give favorable consideration to a request for an extension of this time limit.

Your signature below, as permittee, indicates that you accept and agree to comply with the terms and conditions of this permit.

Missie Barletto
(PERMITTEE)

6/20/24
(DATE)

Missie Barletto
(PERMITTEE NAME-PRINTED)

This permit becomes effective when the Federal official, designated to act for the Secretary of the Army, has signed below.

Alisa A. Zarbo

Date: June 20, 2024

for: JAMES L. BOOTH
Colonel, U.S. Army
District Commander

When the structures or work authorized by this permit are still in existence at the time the property is transferred, the terms and conditions of this permit will continue to be binding on the new owner(s) of the property. To validate the transfer of this permit and the associated liabilities associated with compliance with its terms and conditions, have the transferee sign and date below.

_____ _____

(TRANSFEREE-SIGNATURE) (DATE)

_____

(NAME-PRINTED)

_____

(ADDRESS)

_____

(CITY, STATE, AND ZIP CODE)

Attachments to Department of the Army Permit Number SAJ-2022-03311

1. PERMIT DRAWINGS: 37 pages, dated May 2023

2. WATER QUALITY CERTIFICATION: Specific Conditions of the water quality permit/certification in accordance with General Condition number 5 on page 2 of this DA permit. 18 pages.

3. NOTICE OF COMMENCEMENT FORM: 1 page

4. AS-BUILT CERTIFICATION FORM: 2 pages

5. CONSENT TO EASEMENT FORM: 1 page

6. MANATEE CONDITIONS: 2 pages, *Standard Manatee Conditions for In-Water Work – 2011*

7. RECORD PERMIT FORM: 2 pages

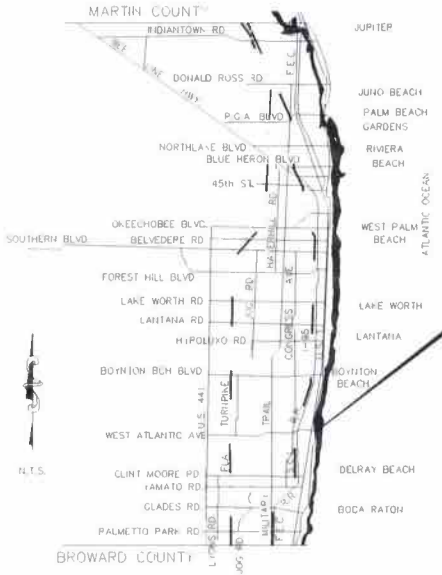
8. EASTERN INDIGO SNAKE CONDITIONS: 6 pages

9. SECTION 408 APPROVAL LETTER: 4 pages

THE CITY OF DELRAY BEACH

HISTORIC MARINE WAY SEAWALL, ROADWAY, AND DRAINAGE IMPROVEMENT

CITY PROJECT NO. 17-047





LOCATION MAP
NO SCALE
PROJECT LOCATED IN SECTION 16, TOWNSHIP 46 SOUTH, RANGE 43 EAST

VERTICAL DATUM: NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88)

HORIZONTAL DATUM: NORTH AMERICAN DATUM OF 1983, FLORIDA STATE PLANES, EAST ZONE, U.S. FEET (NAD83)

811 Know what's below. Call before you dig.

PREPARED BY:

WGI
2035 Vista Parkway
West Palm Beach, FL 33411
Phone No. 561.687.2220
Fax No. 561.687.1110
Cert No. 6091 - LB No. 7055

ENGINEER OF RECORD
STEPHEN CHERRY, PE
PE# 83268

HISTORIC MARINE WAY SEAWALL, ROADWAY, AND DRAINAGE IMPROVEMENT
WGI NO.: 2898.01
MARINE WAY - SITE IMPROVEMENTS

PREPARED FOR:

CITY OF DELRAY BEACH
434 S. SWINTON AVE
DELRAY BEACH, FL 33444
561.243.7000

CITY OFFICIALS

MAYOR	SHELLY PETROLIA
VICE MAYOR	ADAM FRANKEL
DEPUTY VICE MAYOR	JULI CASALE
COMMISSIONER	SHIRLEY JOHNSON
COMMISSIONER	RYAN BOYLSTON
CITY MANAGER	TERRENCE MOORE

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C2.0	GENERAL NOTES
C3.0	KEYSHEET
C4.0	STORMWATER POLLUTION PREVENTION PLAN
C4.1	STORMWATER POLLUTION PREVENTION DETAILS
C4.2	STORMWATER POLLUTION PREVENTION CROSS-SECTIONS
C5.0 TO C5.1	TYPICAL SECTIONS
C8.0 TO C8.4	HORIZONTAL CONTROL PLAN
C7.0 TO C7.4	DEMOLITION PLAN
C8.0 TO C8.4	ROADWAY PLAN
C9.0 TO C9.5	PAVING, GRADING, AND DRAINAGE DETAILS
C10.0 TO C10.4	SIGNING AND MARKING PLAN
C11.0	MARINE WAY CENTERLINE PROFILE
C12.0 TO C12.1	WATER & WASTEWATER PLAN
C13.0 TO C13.2	WATER AND WASTEWATER STANDARD DETAILS

PUMP STATION SHEETS

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M1-2	PUMP STATION SECTION VIEWS
M1-3	PUMP STATION DETAILS

STRUCTURAL SHEETS

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S0.03 TO S0.04	SOIL LOG DATA
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S2.00	PHASING PLANS OVERVIEW
S2.01 TO S2.06	ENLARGED PHASING PLANS
S2.07 TO S.2.09	DISCHARGE BAY PLANS
S2.10	SEAWALL & DECKING DETAILS
S2.11	FLOOR SLAB BEAM DETAILS, CLOSURE POUR
S2.12	UTILITY BAY DETAILS
S2.13	GENERATOR PLAN AND SECTIONS
S2.14	BACK-UP GENERATOR SECTIONS AND DETAILS
S3.01 TO S3.04	ENLARGED MARINE WAY SEAWALL
S4.00	PUMP STATION FOUNDATION PLAN
S4.01	PUMP STATION TOP SLAB PLAN
S4.02	LONGITUDINAL WALL ELEVATIONS
S4.03	TRANSVERSE WALL ELEVATIONS & BAFFLE WALLS
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S5.00 TO S5.01	MARINE WAY DETAILS

SHEET INDEX CONTINUED

STRUCTURAL SHEETS CONTINUED

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U.S. Army Corps of Engineers
SAJ-2022-03311(SP-JLM)
ATTACHMENT 1
Sheet 1 of 37
06/03/2024

DEFINITIONS

1. CITY – THE CITY OF DELRAY BEACH
2. CONTRACTOR – CONTRACTOR AND ALL UTILITY SUBCONTRACTORS
3. ENGINEER – ENGINEER RESPONSIBLE FOR INSPECTION AND CERTIFICATION

PROCEDURE

1. A PRE-CONSTRUCTION MEETING IS TO BE HELD PRIOR TO DELIVERY OF MATERIALS AND INITIATION OF ANY CONSTRUCTION. THE MEETING SHALL BE ATTENDED BY THE CITY, CONTRACTOR, SUBCONTRACTORS, ENGINEER AND OTHER INTERESTED PARTIES.
2. ANY REVISIONS TO THE APPROVED PLANS MUST BE APPROVED BY THE CITY PRIOR TO THE PRE-CONSTRUCTION MEETING.
3. A MINIMUM OF THREE (3) COPIES OF THE CURRENT APPROVED PRODUCT LIST AND ALL NECESSARY SHOP DRAWINGS SHALL BE SUBMITTED FOR APPROVAL PRIOR TO SCHEDULING THE PRE-CONSTRUCTION MEETING. ALL PIPE MANUFACTURERS SHALL SUBMIT THREE (3) COPIES OF AN AFFIDAVIT THAT THE PIPE AND COATINGS WERE MANUFACTURED IN ACCORDANCE WITH AWWA C151/A21.51-91 AND C100-89.
4. ALL APPLICABLE PERMITS MUST BE OBTAINED WITH COPIES PROVIDED TO THE CITY PRIOR TO COMMENCEMENT OF CONSTRUCTION
5. THE CONTRACTOR SHALL MAINTAIN A CURRENT APPROVED SET OF CONSTRUCTION DOCUMENTS ON SITE AT ALL TIMES.
6. ALL MATERIALS SUPPLIED SHALL CONFORM TO PRODUCT LIST AND SHOP DRAWINGS AS APPROVED BY THE CITY PRIOR TO CONSTRUCTION. ALL REQUESTS FOR MATERIAL SUBSTITUTION SHALL BE APPROVED BY THE CITY PRIOR TO DELIVERY OF THESE MATERIALS TO THE JOB SITE.
7. THE LOCATION OF THE EXISTING UTILITIES AS SHOWN ON THE PLANS ARE APPROXIMATE ONLY. THE EXACT LOCATIONS SHALL BE DETERMINED BY THE CONTRACTOR PRIOR TO CONSTRUCTION. IN ADDITION, THE CONTRACTOR SHALL BE RESPONSIBLE TO VERIFY IF OTHER UTILITIES (NOT SHOWN ON THE PLAN) EXIST WITHIN THE AREA OF CONSTRUCTION. SHOULD THERE BE UTILITY CONFLICTS, THE CONTRACTOR SHALL INFORM THE CITY AND NOTIFY THE RESPECTIVE UTILITY OWNER TO RESOLVE THE UTILITY CONFLICTS AND PERFORM THE UTILITY ADJUSTMENTS AS REQUIRED.
8. PRIOR TO ANY SANITARY PIPE OR WATER MAIN TESTING, UNDER EXISTING OR FUTURE PAVEMENT, THE ROCK BASE SHALL BE FINISHED AND PRIMED OR FIRST LIFT OF PAVEMENT PLACED.
9. THE CONTRACTOR SHALL BE RESPONSIBLE AT ALL TIMES THROUGHOUT THE DURATION OF CONSTRUCTION FOR THE PROTECTION OF EXISTING AND NEWLY INSTALLED UTILITIES FROM DAMAGE OR DISRUPTION OF SERVICE. THE CONTRACTOR SHALL BE RESPONSIBLE FOR TAKING SUCH MEASURES AS NECESSARY TO PROTECT THE HEALTH, SAFETY, AND WELFARE OF THOSE PERSONS HAVING ACCESS TO THE WORK SITE.
10. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING LOCATIONS OF ALL OTHER UTILITY FACILITIES.
11. THE CONTRACTOR SHALL SCHEDULE INSPECTIONS AND TESTS WITH THE CITY A MINIMUM OF 48 HOURS IN ADVANCE.
12. CONTRACTOR SHALL NOT DISTURB EXISTING CITY MAINS OR STRUCTURES WITHOUT THE PRESENCE OF A CITY INSPECTOR. CITY UTILITY SYSTEM VALVES AND APPURTENANCES MAY ONLY BE OPERATED BY CITY PERSONNEL.
13. FACILITIES PROPOSED HEREIN SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE APPROVED PLANS. DEVIATIONS FROM THE APPROVED PLANS MUST BE APPROVED IN ADVANCE BY THE CITY.
14. UPON COMPLETION OF CONSTRUCTION AND PRIOR TO FINAL ACCEPTANCE OF THE WORK, A FINAL INSPECTION SHALL VERIFY PROPER ADHERENCE TO ALL FACETS OF THE PLANS AND SPECIFICATIONS.
15. PAVING, DRAINAGE AND TRAFFIC CONTROL SHALL CONFORM TO FLORIDA DEPARTMENT OF TRANSPORTATION ROADWAY AND DESIGN STANDARDS, STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION, MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD) AND PALM BEACH COUNTY TYPICAL T-3-89-004-PS (LATEST REVISION) UNLESS SHOWN OTHERWISE.
16. AS-BUILT DRAWINGS SHALL BE PREPARED BY A REGISTERED LAND SURVEYOR, REGISTERED IN THE STATE OF FLORIDA, AND SUBMITTED BY THE CONTRACTOR TO THE CITY AND APPROVED BY THE CEI PRIOR TO SUBMITTING FINAL PAYMENT. AS THE WORK PROGRESSES, THE ENGINEER OF RECORD (OR THEIR REPRESENTATIVE) SHALL RECORD ON ONE SET OF DRAWINGS THE LOCATION INCLUDING STATION AND OFFSET WITH SUFFICIENT DIMENSIONS AND DISTANCES TO ADEQUATELY DESCRIBE THE LOCATION OF THE IMPROVEMENT FROM THE BASELINE. ELEVATIONS ARE TO BE PROVIDED AT THE TOP OF PIPE AT INCREMENTS OF EVERY 100 FEET ON ALL WATER AND FORCE MAINS. STATIONING IS REQUIRED ON ALL VALVES, FITTINGS, WATER AND SEWER SERVICES AND FIRE HYDRANTS. THE LENGTHS OF ALL WATER SERVICE LINES AND SEWER LATERALS MUST BE NOTED. ON GRAVITY SEWER LINES, ELEVATIONS AND STATIONING ARE TO BE INDICATED ON ALL MANHOLE RIMS AND INVERTS. THE DISTANCE BETWEEN MANHOLES IS TO BE SHOWN ON BOTH THE PLAN AND PROFILE SHEETS UNLESS PLAN VIEW AND PROFILE VIEW ARE ON THE SAME SHEET. THE ENGINEER OF RECORD IS TO SUBMIT TWO SETS OF BLUE PRINT RECORD OR AS-BUILT DRAWINGS, AND ONE MYLAR TO THE ENGINEERING DEPARTMENT ALONG WITH THE HEALTH DEPARTMENT APPLICATION FOR RELEASE OF THE SYSTEM. ALL "AS-BUILT DRAWINGS" SHALL BE SIGNED, SEALED AND DATED BY THE SURVEYOR. CERTIFICATE OF OCCUPANCY WILL BE HELD UNTIL ACCEPTANCE BY CEI AND THE CITY. PAVING AND DRAINAGE AS-BUILT DRAWINGS SHALL INCLUDE RIM ELEVATIONS, INVERT ELEVATIONS, PIPE SIZES, CONTROL STRUCTURE DIMENSIONS, AS WELL AS AS-BUILT ELEVATIONS AT EVERY LOCATION A PROPOSED ELEVATION IS INDICATED ON THE CONSTRUCTION PLAN. ADEQUATE AS-BUILT ELEVATIONS SHALL BE PROVIDED ON EMBANKMENTS TO DETERMINE COMPLIANCE WITH MAXIMUM SLOPE REQUIREMENTS.
17. PRIOR TO COMMENCEMENT OF ANY EXCAVATION, THE CONTRACTOR SHALL COMPLY WITH FLORIDA STATUTE 553-851 FOR PROTECTION OF UNDERGROUND GAS PIPE LINES.
18. CONTRACTOR SHALL NOTIFY SUNSHINE STATE ONE CALL OF FLORIDA OR SUNSHINE 811 (1-800-432-4770) 48 HOURS IN ADVANCE OF CONSTRUCTION.
19. GRADES SHOWN ON PLANS ARE FINISHED GRADES. THE CONTRACTOR SHALL BE REQUIRED TO ADJUST EXISTING MANHOLE TOPS AND VALVE BOX COVERS TO FINISHED GRADE.

PROCEDURE CONTINUED

20. CONTRACTOR SHALL MAINTAIN LOCAL TRAFFIC AT ALL TIMES DURING CONSTRUCTION AND SHALL BE REQUIRED TO PROVIDE ALL BARRICADES, LIGHTING, SIGNAGE AND FLAGMEN AS NECESSARY TO PROVIDE FOR THE SAFETY OF THE PUBLIC IN THE WORK AREA. THE CONTRACTOR SHALL SUBMIT A DETAILED TRAFFIC MAINTENANCE PLAN PRIOR TO CONSTRUCTION.
21. EXISTING BASE MATERIAL THAT IS REMOVED DURING CONSTRUCTION SHALL NOT BE USED IN THE CONSTRUCTION OF NEW BASE.
22. ALL VEGETATION, DEBRIS, CONCRETE OR OTHER UNSUITABLE MATERIAL SHALL BE LEGALLY DISPOSED OF OFF-SITE IN AN AREA AT THE CONTRACTOR'S EXPENSE.
23. CONTRACTOR SHALL USE CONSTRUCTION METHODS AND DEVICES, SUCH AS TURBIDITY SCREENS, CURTAINS AND FLOATING SILT BARRIERS WHERE NECESSARY IN ORDER TO COMPLY WITH ALL STATE AND LOCAL WATER QUALITY STANDARDS.
24. CONTRACTOR SHALL SUBMIT A STORM WATER POLLUTION PREVENTION PLAN, PRIOR TO AND DURING CONSTRUCTION OF ALL SITES. THE CONTRACTOR SHALL IMPLEMENT AND MAINTAIN ALL EROSION AND SEDIMENT CONTROL MEASURES INCLUDED IN A POLLUTION PREVENTION PLAN PROVIDED TO THE CITY OF DELRAY BEACH'S CHIEF BUILDING OFFICIAL.
25. ALL REINFORCED CONCRETE STORM SEWER PIPE SHALL BE CLASS III, UNLESS OTHERWISE NOTED.
26. ALL PAVED SURFACES SHALL BE PROPERLY MARKED PRIOR TO HOURS OF DARKNESS. PERMANENT PAVEMENT PARKING STALLS SHALL BE LAID OUT USING MARKING CHALK. LAYOUT TO BE REVIEWED BY THE CITY PRIOR TO PLACEMENT OF FINAL MARKING.
27. EMBANKMENT (FILL) AND EXCESS MATERIAL REQUIRED FOR ROADWAY RECONSTRUCTION AND UTILITY INSTALLATIONS SHALL BE SUPPLIED AND/OR DISPOSED OF BY THE CONTRACTOR. ALL COSTS ASSOCIATED WITH EARTHWORK REQUIREMENTS TO COMPLETE THE ROADWAY RECONSTRUCTION AND UTILITY IMPROVEMENTS SHALL BE INCLUDED IN THE COSTS OF OTHER APPROPRIATE PAY ITEMS.
28. CONTINUITY OF WATER AND SEWER SERVICE TO CITY UTILITY CUSTOMERS SHALL BE MAINTAINED THROUGHOUT THE DURATION OF THIS PROJECT. IF A BREAK IN SERVICE IS UNAVOIDABLE TO ACCOMMODATE CONNECTION OF NEW FACILITIES, IT SHALL BE SCHEDULED FOR OFF PEAK HOURS WITH THE CITY. DETERMINATION OF SERVICE DISRUPTION REQUIREMENT WILL BE MADE BY THE CITY.
29. SITE INFORMATION IS BASED ON A SURVEY PREPARED BY: WGI.
30. PRIOR TO FINAL PAY REQUEST, CONTRACTOR SHALL CLEAN AND TELEVISE ALL STORM DRAINAGE SYSTEM IN PROJECT AREA.
31. CONTRACTOR SHALL SUBMIT A HEALTH & SAFETY PLAN & EMERGENCY HURRICANE PLAN FOR APPROVAL BY CITY & CEI.
32. CONTRACTOR SHALL ESTABLISH A PUBLIC OUTREACH WEBSITE AND OFFICER TO UPDATE DATABASE WEEKLY.
33. ALL LUMBER SHALL BE ACQ TREATED TO .80%.
34. ALL HARDWARE AND FASTENERS SHALL BE 316 STAINLESS STEEL.
35. ALL CONSTRUCTION SHALL BE IN ACCORDANCE ADA CODES & REGULATIONS.
36. CONTRACTOR SHALL SUBMIT A WASTEWATER BY-PASS PIPE DESIGN FOR REVIEW. THIS SHALL INCLUDE TYPE OF PUMP, SIZE OF PIPE, DURATION AND TIMES FOR PUMPING, EMERGENCY ALARM AND CONTACT WITH SOMEONE ON CALL TO RESPOND IN THE EVENT OF THE ALARM GOING OFF.
37. PRIOR TO CONSTRUCTION, CONTRACTOR SHALL SUBMIT AND OBTAIN ALL REQUIRED DEWATERING PERMITS FOR THE PROJECT.

GENERAL NOTES, CITY CODES, REGULATIONS, AND STANDARDS

1. REGULATIONS – ALL CONSTRUCTION SHALL BE DONE IN A WORKMAN LIKE MANNER AND SHALL CONFORM TO ALL CITY, COUNTY, STATE AND FEDERAL REGULATIONS AND OR CODES INCLUDING BUT NOT LIMITED TO THE CURRENT PALM BEACH COUNTY AND FLORIDA DEPARTMENT OF TRANSPORTATION (FDOT) LATEST REGULATIONS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL PERMITS AND LICENSES TO BEGIN WORK AND PAY ALL REQUIRED FEES ASSOCIATED WITH SAME.
2. VERTICAL DATUM – ELEVATIONS SHOWN HEREON ARE REFERENCED TO THE NORTH AMERICAN VERTICAL DATUM OF 1988, AS ESTABLISHED BY NGS BENCHMARK 14 33 WITH A PUBLISHED ELEVATION OF 12.78' (NAVD 88). NAVD'88 = NGVD'29-1.48.
3. HORIZONTAL DATUM – FLORIDA STATE PLANE COORDINATE SYSTEM, EAST ZONE, NORTH AMERICAN DATUM OF 1983, (2011 ADJUSTMENT)
4. GUARANTEE – THE CONTRACTOR SHALL GUARANTEE ALL WORK AND MATERIAL FOR A PERIOD OF ONE YEAR FROM THE DATE OF PROJECT ACCEPTANCE, UNLESS SPECIFIED LONGER BY MANUFACTURER, DURING WHICH ALL FAULTY CONSTRUCTION AND/OR MATERIAL SHALL BE REPLACED AT THE CONTRACTOR'S EXPENSE.
5. RESTORATION – THE CONTRACTOR SHALL IMMEDIATELY REPAIR AND RESTORE EXISTING SITE FEATURES INCLUDING PAVEMENT, DRIVEWAYS, PIPES, FENCES, TRAFFIC CONTROL DEVICES, MAILBOXES AND PROPERTY CORNERS DAMAGED AS A RESULT OF CONSTRUCTION ACTIVITIES. THE REPAIR AND RESTORATION SHALL CONFORM TO APPLICABLE STANDARDS AS GOVERNED.
6. ALL FDOT STANDARDS AND SPECIFICATIONS SHALL BE LATEST EDITION FOR INSTALLATION AND MATERIALS AT BID SUBMITTAL.
7. ALL STRIPING AND DELINEATION TO CONFORM TO THE REQUIREMENTS OF THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES, (MUTCD) LATEST EDITION.
8. ALL CROSSWALK SIGNS AND ADVANCED PAVEMENT MESSAGES TO BE DESIGNED AND INSTALLED PER FDOT STANDARD (INDEX NO. 17346).
9. REFERENCE THE FDOT 600 SERIES FOR ALL REQUIRED AND APPLICABLE MOT PLANS.
10. ALL WORK MUST BE PERFORMED WITHIN THE PROJECT LIMITS, UNLESS GIVEN PRIOR WRITTEN AUTHORIZATION FROM THE PROPERTY OWNER.
11. IF THE CONTRACTOR ENCOUNTERS AN EXISTING VALVE BOX THAT IS OUT OF PLUMB, THE CONTRACTOR SHALL COORDINATE WITH THE CITY TO ADJUST THE VALVE BOX.
12. CONTRACTOR SHALL PROVIDE PHOTO AND VIDEO DOCUMENTATION OF ALL ADJACENT PROPERTY CONDITIONS PRIOR TO CONSTRUCTION.
13. PIPE SEPARATION DIMENSIONS ARE OUTSIDE WALL-TO-WALL.
14. CONTRACTOR SHALL PAY FOR AND COORDINATE ANY AND ALL TESTING LABORATORY (WATER, CONCRETE, DENSITY, PROCTORS, ETC.) REQUIREMENTS. CITY WILL APPROVE TESTING LABORATORY CONSULTANT ONLY.
15. ALL DOCKS SHALL HAVE USACE, FDEP, AND ANY OTHER PERMITS NECESSARY TO BE IN COMPLIANCE WITH REQUIREMENTS FOR DOCKS WITHIN INTRACOASTAL WATERWAY.
16. CONTRACTOR SHALL COORDINATE SELECTION AND REVIEW OF ANY PROPOSED STAGING AREAS ASSOCIATED WITH THIS PROJECT WITH THE CITY OF DELRAY. CONTACT CEI AT (561)243-7341.

FLOOD RESISTANCE

THE FLOOD INSURANCE RATE MAPS (FIRMS) PREPARED BY FEMA HAVE BEEN ADOPTED BY THE CITY AS THE GOVERNING FLOOD HAZARD MAP FOR THE PROJECT LOCATION. BASED ON THE FIRMS, THE PROJECT IS LOCATED IN ZONE AE WITH A BASE FLOOD ELEVATION (BFE) OF 6.0' NAVD. BASED ON THE AMERICAN SOCIETY OF CIVIL ENGINEERS (ASCE), FLOOD RESISTANT DESIGN AND CONSTRUCTION, ASCE 24-14, TABLE 1-1, THE PROJECT'S FLOOD DESIGN CLASS IS 3, RESULTING IN A MINIMUM ELEVATION OF LOWEST FLOOR AND UTILITIES AND EQUIPMENT BEING BFE+1 FT, OR 7.0' NAVD.

THE PROJECT EXCEEDS THE FBC REQUIREMENTS AND APPLICABLE FLOODPLAIN MANAGEMENT REGULATIONS IN THE FOLLOWING WAYS:

- ALL MATERIALS OF CONSTRUCTION HAVE BEEN SELECTED AND DESIGNED TO RESIST THE EFFECTS OF FLOOD HAZARD AND FLOOD LOADS.
- THE OUTFALL PORTION OF THE WETWELL STRUCTURE (INTO THE INTRACOASTAL WATERWAY) INCLUDES THE INSTALLATION OF ROCK RIP RAP PROTECTING THE INTEGRITY OF THE PIPES FROM EROSION AND SCOURING THAT MIGHT AFFECT THEM DUE TO THE LOSS OF SUPPORTING SOILS.
- AN ABOVE GROUND FUEL TANK WILL BE CONSTRUCTED ON-GRADE AND DESIGNED TO BE ANCHORED TO RESIST FLOOD LOADS. THE TOP OF THE TANK AND FUEL AND VENTING PIPING WILL BE LOCATED ABOVE THE BFE+1' REQUIREMENT.
- THE GENERATOR WILL BE HOUSED IN AN OUTDOOR ENCLOSURE WITH THE CONCRETE SLAB AT THE BFE GRADE. THE GENERATOR EQUIPMENT WILL BE LOCATED ABOVE THE BFE+1' REQUIREMENT.
- THE ELECTRICAL AND CONTROLS EQUIPMENT WILL ALL BE INSTALLED ADJACENT TO THE WETWELL STRUCTURE, MOUNTED TO A SITE WALL. ALL OF THE EQUIPMENT WILL BE INSTALLED SO THAT THE BOTTOM OF THE EQUIPMENT IS LOCATED ABOVE THE BFE+1' REQUIREMENT.

LEGEND

- PROPOSED SIDEWALK
- MILL AND RESURFACE
- PAVEMENT RECONSTRUCTION
- PROPOSED ASPHALT PAVEMENT
- PROPOSED BRICK PAVER PAVEMENT
- PROPOSED DRAINAGE — D —
- PROPOSED WATER — W —
- PROPOSED WASTEWATER — S —
- PROPOSED ELECTRIC — E —
- EXISTING WATER — W —
- EXISTING SANITARY SEWER
- EXISTING FORCE MAIN — FM —
- EXISTING DRAINAGE
- EXISTING OVERHEAD UTILITIES — OH —
- PROPOSED/EXISTING STREET SIGN
- PROPOSED DRAINAGE INLET
- WATER FITTINGS
- FIRE HYDRANT ASSEMBLY
- LINESTOP
- EXISTING DRAINAGE INLET
- BENCHMARK

ABBREVIATIONS

ARV	AIR RELEASE VALVE
ASPH	ASPHALT
CONC	CONCRETE
DIP	DUCTILE IRON PIPE
DRN	DRAINAGE
EL.	ELEVATION
EOP	EDGE OF PAVEMENT
EX	EXISTING
FH	FIRE HYDRANT
FM	SANITARY FORCE MAIN
HDPE	HIGH-DENSITY POLYETHYLENE
INV	INVERT
LF	LINEAR FOOT
LS	LIFT STATION
MH	MANHOLE
OH	OVERHEAD ELECTRIC
OS	OFFSET
PHDPE	PERFORATED HIGH-DENSITY POLYETHYLENE
PRCP	PERFORATED REINFORCED CONCRETE PIPE
PVC	POLYVINYL CHLORIDE
PROP	PROPOSED
RCP	REINFORCED CONCRETE PIPE
RWM	RECLAIMED WATER MAIN
R/W	RIGHT-OF-WAY
SAN	SANITARY SEWER
STRM	STORMWATER
SP	SAMPLE POINT
STA	STATION
S/W	SIDEWALK
TYP	TYPICAL
WM	WATER MAIN

UTILITY CONTACTS

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PHONE 561-329-5451

COMCAST
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FLORIDA POWER AND LIGHT
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BOYNTON BEACH, FL 33436
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FLORIDA PUBLIC UTILITIES CORP
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209 N. SAPODILLA AVENUE
WEST PALM BEACH, FL 33401
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811 Know what's below. Call before you dig.

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Cert No. 6091 Lic No. 7988

ENGINEER'S SEAL
STEPHEN CHERRY, PE
P.E., LIC. NO. 83268

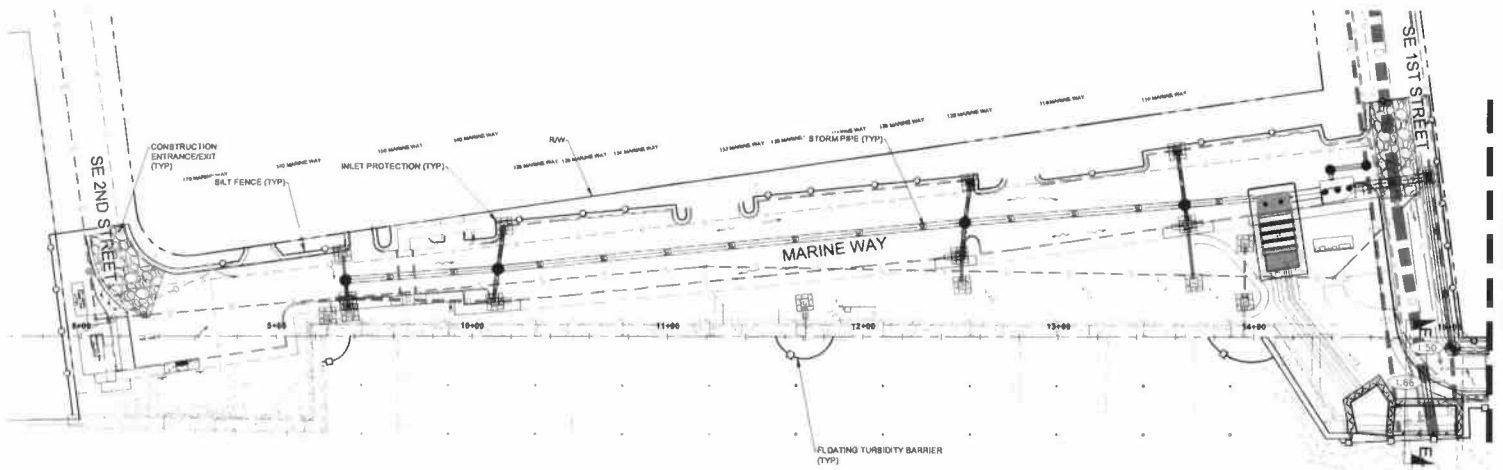
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CHECKED BY	BNO
QC BY	CJH
DATE	5/2/2023

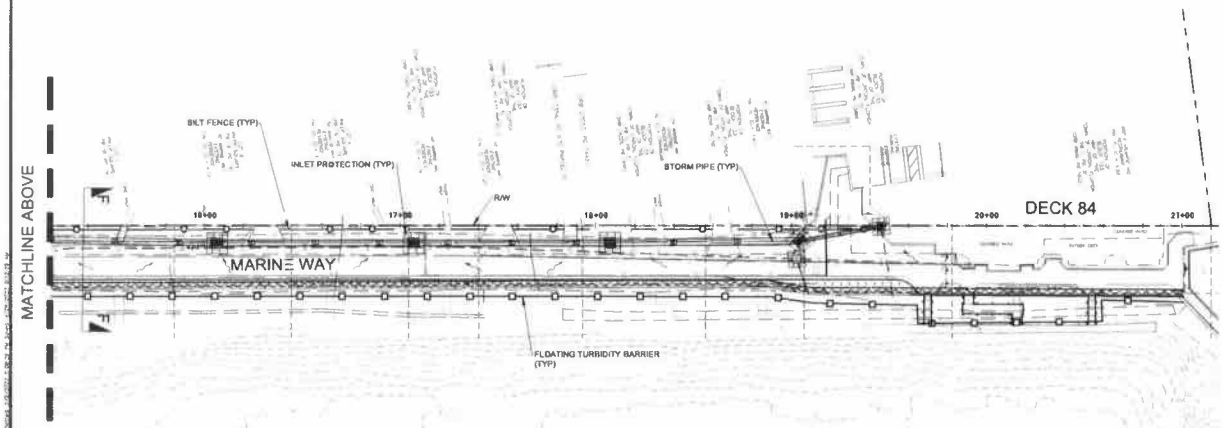
REVISION	DATE	DESCRIPTION	BY

THE CITY OF DELRAY BEACH
HISTORIC MARINE WAY SEAWALL, ROADWAY, AND DRAINAGE IMPROVEMENT

GENERAL NOTES

PROJECT NO. 17-047
SHEET NO. C2.0
FILE ID 2698.01





North

0 15 30 60

SCALE IN FEET
1" = 30'

LEGEND

- R/W LINE
- PROP DRAINAGE MAIN
- PROP SEWER MAIN
- PROP WATER MAIN
- EX SEWER MAIN
- EX WATER MAIN
- EX DRAINAGE MAIN
- SILT FENCE
- FLOATING TURBIDITY BARRIER
- INLET PROTECTION

NOTES:

GENERAL: CONTRACTOR SHALL BE RESPONSIBLE FOR DOCUMENTING THE WORK PERFORMED IN THE STORM WATER POLLUTION PREVENTION PLAN IN ACCORDANCE WITH FDOT SPECIFICATION 104 AND FDEP NPDES CRITERIA.

1. SEQUENCE OF MAJOR SOIL DISTURBING ACTIVITIES

THE FOLLOWING SEQUENCE OF MAJOR ACTIVITIES SHALL BE FOLLOWED UNLESS THE CONTRACTOR CAN PROPOSE AN ALTERNATIVE THAT IS EQUAL TO OR EXCEEDS THE EROSION AND SEDIMENT CONTROL BEST MANAGEMENT PRACTICES DESCRIBED IN THIS DOCUMENT, AND IS APPROVED BY THE ENGINEER. THE CONTRACTOR IS RESPONSIBLE FOR PROVIDING A DETAILED SEQUENCE OF CONSTRUCTION FOR ALL CONSTRUCTION ACTIVITIES IN ACCORDANCE WITH THE FDOT SPECIFICATION SECTION 104:

A. PLACEMENT OF ALL EROSION AND SEDIMENTATION CONTROL DEVICES
B. CLEARING AND GRUBBING, EARTHWORK REQUIRED FOR GRADE ADJUSTMENT
C. UNDERGROUND CONSTRUCTION: STORM SEWER SHALL GENERALLY BE CONSTRUCTED IN THE UPSTREAM DIRECTION
D. EARTHWORK AND CONSTRUCTION ASSOCIATED WITH PROJECT
E. FINAL GRADING, PAVEMENT AND GROUND STABILIZATION (SOD, ETC.)
F. REMOVE ERODED MATERIAL, SEDIMENT AND EROSION CONTROLS

2. EROSION AND SEDIMENT CONTROLS

THE GENERAL CONTROL PLAN FOR SITE ACTIVITIES IS AS FOLLOWS:

A. INSTALL SOIL TRACKING PREVENTION DEVICES (STPDS) AT COMMON AREAS WHERE CONSTRUCTION VEHICLES WILL BE ENTERING AND EXITING THE CONSTRUCTION SITE IN ACCORDANCE WITH THE FDOT SPECIFICATION SECTION 106
B. INSTALL TYPE III SILT FENCE AT THE LIMITS OF CONSTRUCTION. ALL SILT FENCE WILL BE PLACED AT THE R/W LINE OR AT THE TOE OF SLOPES
C. PROTECT THE OUTFALL CONTROL STRUCTURES, HEADWALLS, AND ALL STORM DRAIN INLETS IDENTIFIED IN THE PLANS USING TYPE III SILT FENCE AND HAY BALES

3. STABILIZATION PRACTICES

TEMPORARY: SOD, SEED, AND MULCH IN ACCORDANCE WITH THE FDOT SPECIFICATION SECTION 104

PERMANENT: ASPHALT OR CONCRETE SURFACE; SOD IN ACCORDANCE WITH FDOT SPECIFICATION SECTION 570. ALL STABILIZATION PRACTICES SHALL BE INITIATED AS SOON AS PRACTICABLE IN PORTIONS OF THE SITE WHERE CONSTRUCTION ACTIVITIES HAVE TEMPORARILY OR PERMANENTLY CEASED, BUT IN NO CASE MORE THAN FOURTEEN (14) DAYS AFTER THE CONSTRUCTION ACTIVITY IN THAT PORTION OF THE SITE HAS TEMPORARILY OR PERMANENTLY CEASED. THE CONTRACTOR IS ALSO RESPONSIBLE FOR DOCUMENTING THIS PORTION OF THE SWPPP IN ACCORDANCE WITH THE FDOT SPECIFICATION SECTION 104.

4. STRUCTURAL PRACTICES

TEMPORARY: SILT FENCE IN ACCORDANCE WITH STANDARD INDEX 102 AND THE FDOT SPECIFICATION SECTION 104, INLET PROTECTION IN ACCORDANCE WITH FDOT STANDARD INDEX 102 AND AS SHOWN IN THE EROSION CONTROL PLAN. ALL SEDIMENT CONTROLS SHALL BE IN PLACE PRIOR TO ANY SOIL DISTURBING ACTIVITY UPSTREAM OF THE CONTROL.

PERMANENT: STORMWATER PONDS, SWALES, EXFILTRATION TRENCHES

5. OFFSITE VEHICLE TRACKING

SOIL TRACKING PREVENTION DEVICES WILL BE INSTALLED AT ALL LOCATIONS WHERE CONSTRUCTION VEHICLES WILL BE CARRYING SOIL AWAY FROM THE PROJECT SITE. IN ADDITION, CONSTRUCTION VEHICLES WILL BE REQUIRED TO COVER THEIR LOADS TO MINIMIZE LOSS OF LOAD INTO THE AIR. THE CONTRACTOR IS ALSO RESPONSIBLE FOR DOCUMENTING THIS PORTION OF THE SWPPP IN ACCORDANCE WITH THE FDOT INDEX 106.

6. APPROVED STATE AND LOCAL PLANS OR PERMITS

THIS PROJECT IS GOVERNED BY THE CITY OF DELRAY BEACH, PALM BEACH COUNTY, SOUTH FLORIDA WATER MANAGEMENT DISTRICT, AND THE FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION

7. MAINTENANCE

SILT FENCE - REPLACE WHEN DAMAGED OR AT ONE (1) YEAR INTERVALS IN ACCORDANCE WITH FDOT SPECIFICATION SECTION 104. REMOVE SEDIMENT WHEN IT REACHES A HEIGHT OF 6"

8. INSPECTIONS

QUALIFIED PERSONNEL SHALL INSPECT THE FOLLOWING ITEMS AT LEAST ONCE EVERY SEVEN (7) CALENDAR DAYS AND WITHIN TWENTY-FOUR (24) HOURS OF THE END OF A STORM THAT IS 0.50 INCHES OR GREATER. WHERE SITES HAVE BEEN FINALLY STABILIZED, INSPECTIONS SHALL BE CONDUCTED AT LEAST ONCE EVERY MONTH AT:

A. POINTS OF DISCHARGE TO WATERS OF THE UNITED STATES
B. POINTS OF DISCHARGE TO MUNICIPAL SEPARATE STORM SEWER SYSTEMS
C. DISTURBED AREAS OF THE SITE THAT HAVE NOT BEEN FINALLY STABILIZED
D. AREAS USED FOR STORAGE OF MATERIALS THAT ARE EXPOSED TO PRECIPITATION
E. STRUCTURAL CONTROLS
F. STORMWATER MANAGEMENT SYSTEMS
G. LOCATIONS WHERE VEHICLES ENTER OR EXIT THE SITE

ALL INSPECTIONS SHALL BE DOCUMENTED AND RETAINED ONSITE FOR INSPECTION BY PERMIT COMPLIANCE PERSONNEL. DAMAGED EROSION AND SEDIMENT CONTROL DEVICES FOUND DURING THESE INSPECTIONS SHALL BE REPAIRED WITHIN TWENTY-FOUR (24) HOURS OF THE INSPECTION AND COMPLETED WITHIN SEVENTY-TWO (72) HOURS.

9. SWPPP CONTROLS ARE SHOWN IN CONCEPTUAL LOCATIONS AND MAY BE SYMBOLIC IN SIZE DUE TO THE SCALE OF THE DRAWING. ACTUAL CONDITIONS, AND LOCATION OF CONSTRUCTION ACCESS POINTS. CONTROLS SHALL BE INSTALLED ACCORDING TO THE CONTRACTORS STORM WATER POLLUTION PREVENTION PLAN.

10. PORTABLE TOILETS, FUEL STATIONS, AND OTHER SOURCES OF POTENTIAL POLLUTION SHALL HAVE BERMS CONSTRUCTED AROUND THEM TO PREVENT DIRECT SURFACE FLOW INTO STORM SEWERS.

U.S. Army Corps of Engineers
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06/03/2024

CITY of DELRAY BEACH
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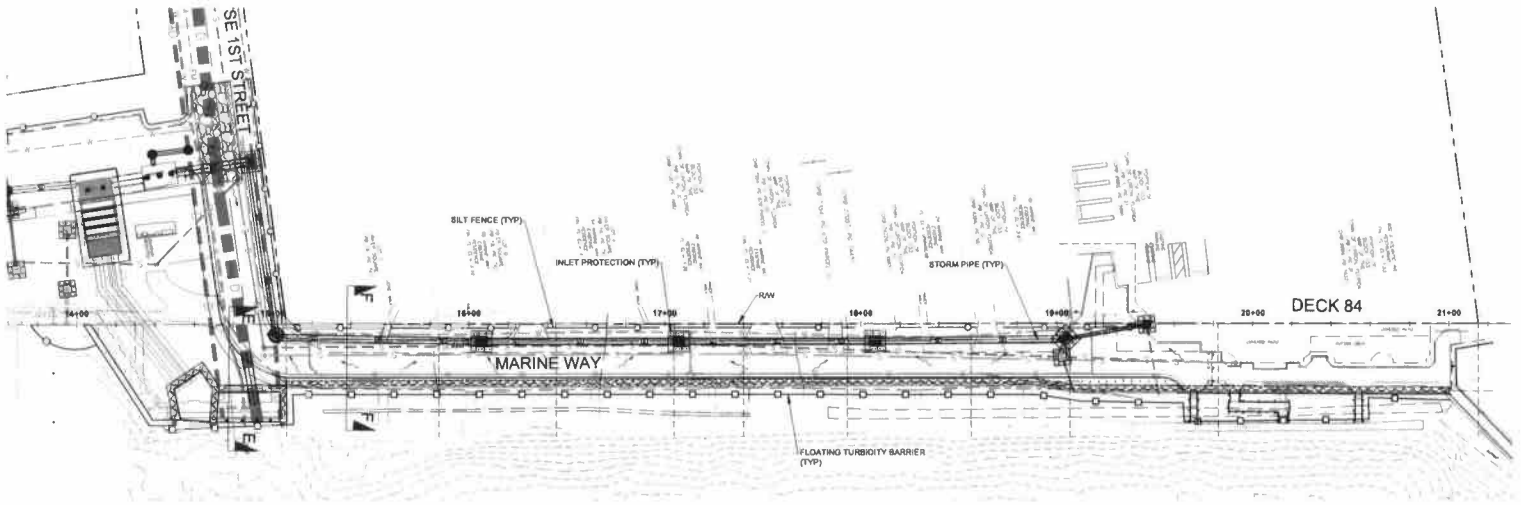
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QC BY	CJH
DATE	5/2/2023

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THE CITY OF DELRAY BEACH
HISTORIC MARINE WAY SEAWALL, ROADWAY, AND DRAINAGE IMPROVEMENT

STORMWATER POLLUTION PREVENTION PLAN

PROJECT NO. 17-047
SHEET NO. C4.0
FILE ID. 2808.01



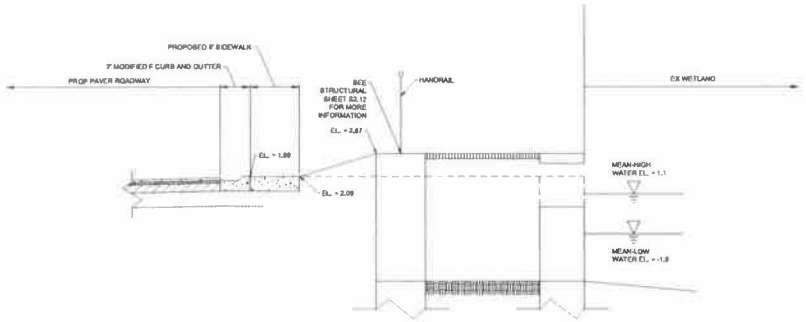
North

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SCALE IN FEET
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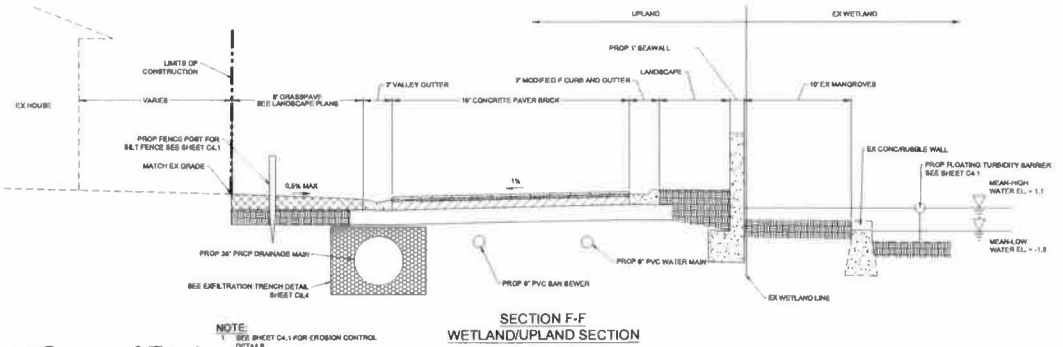
LEGEND

- R/W LINE
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- PROP WATER MAIN
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- EX WATER MAIN
- EX DRAINAGE MAIN
- SILT FENCE
- FLOATING TURBIDITY BARRIER
- INLET PROTECTION



SECTION E-E

SCALE: NTS



NOTE:
1. SEE SHEET C4.1 FOR EROSION CONTROL DETAILS

SECTION F-F
WETLAND/UPLAND SECTION

SCALE: NTS

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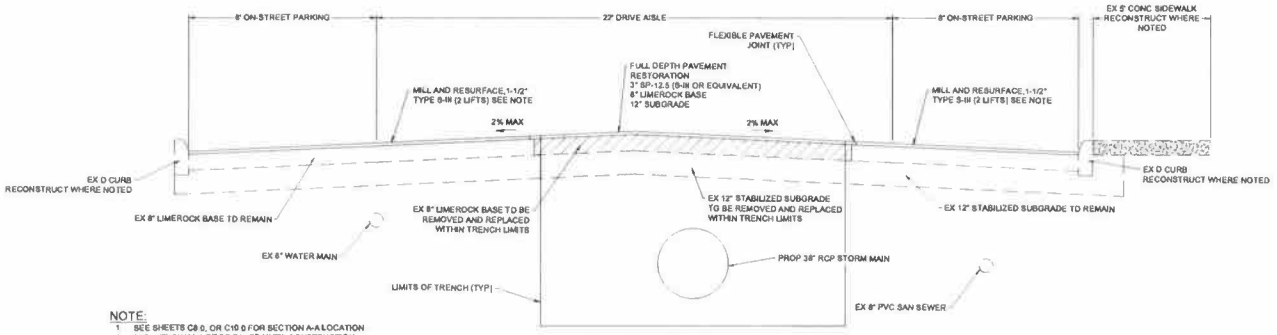
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THE CITY OF DELRAY BEACH
HISTORIC MARINE WAY SEAWALL, ROADWAY, AND DRAINAGE IMPROVEMENT

STORMWATER POLLUTION PREVENTION
CROSS-SECTIONS

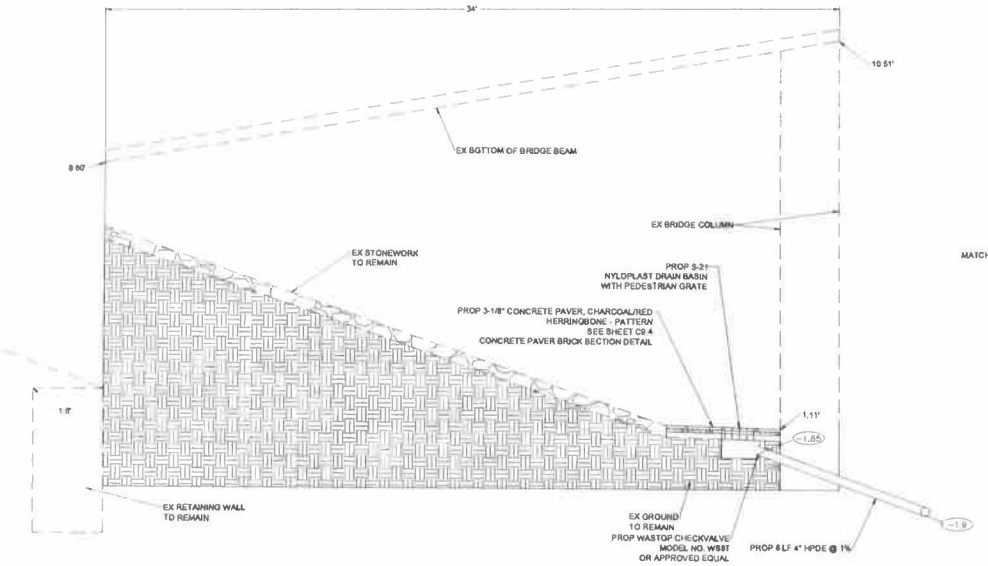
PROJECT NO. 17-047
SHEET NO. C4.2
FILE ID 2686.01



NOTE:
1. SEE SHEETS C8.0, OR C10.0 FOR SECTION A-A LOCATION
2. 2ND LIFT SHALL NOT BE PAVED UNTIL CONSTRUCTION VEHICLES AND EQUIPMENT HAVE COMPLETED WORK.
3. SEE SHEET C9.4 FOR BACKFILL AND PAVEMENT RESTORATION DETAIL.

SECTION A-A
TYPICAL MARINE WAY S OF SE 1ST ST

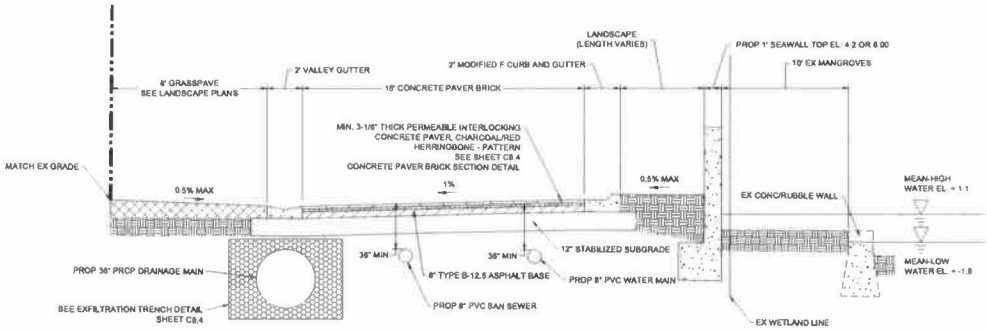
SCALE: NTS
STA = 10+14.57 TO 14+32.10



NOTE:
1. SEE SHEET C8.4 FOR SECTION D-D LOCATION.

SECTION D-D

SCALE: NTS
STA = 21+43.33



NOTE:
1. SEE SHEETS C8.2 AND C8.3 FOR SECTION C-C LOCATION

SECTION C-C
TYPICAL MARINE WAY N OF SE 1ST ST

SCALE: NTS
STA = 15+11.19 TO 18+99.73

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CITY of DELRAY BEACH
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ENGINEER'S SEAL
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P.E. LIC. NO. 83268

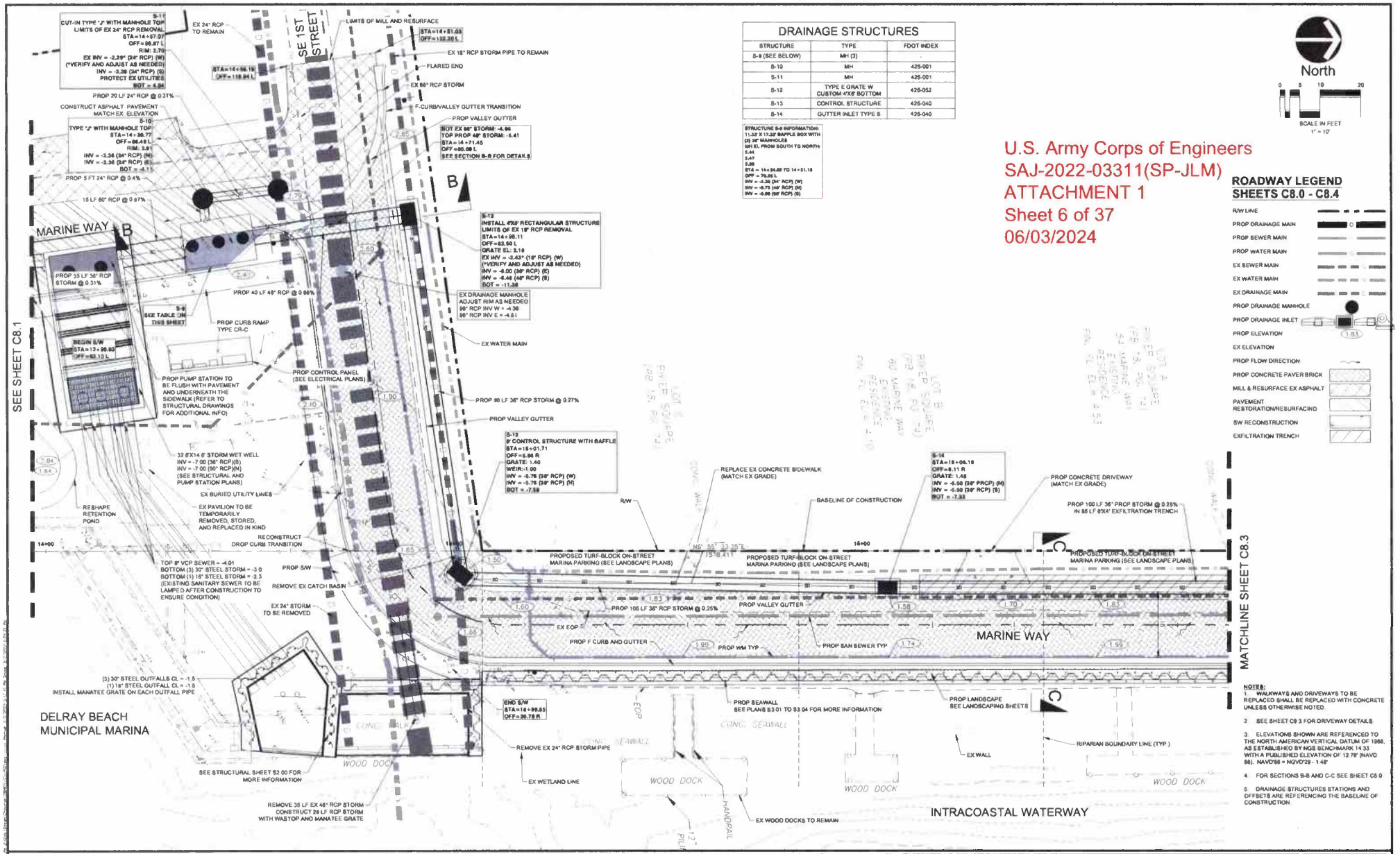
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CHECKED BY	SCC
QC BY	CJH
DATE	5/2/2023

REVISION	DATE	DESCRIPTION	BY

THE CITY OF DELRAY BEACH
HISTORIC MARINE WAY SEAWALL, ROADWAY, AND DRAINAGE IMPROVEMENT

TYPICAL SECTIONS

PROJECT NO. 17-047
SHEET NO. C5.0
FILE ID 2805.01



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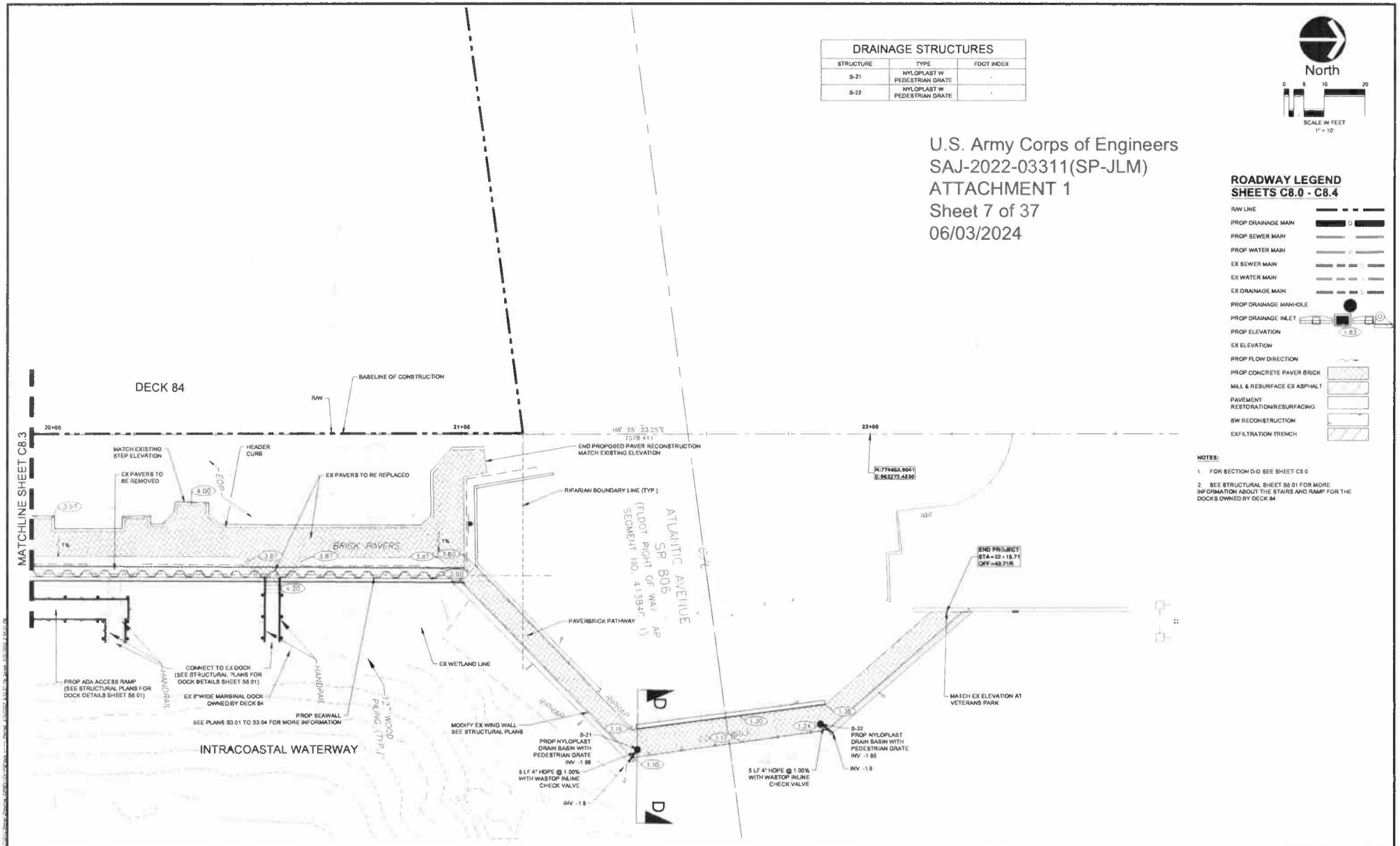
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THE CITY OF DELRAY BEACH
HISTORIC MARINE WAY SEAWALL, ROADWAY, AND DRAINAGE IMPROVEMENT

ROADWAY PLAN

PROJECT NO. 17-047
SHEET NO. C8.2
FILE ID. 2898.01



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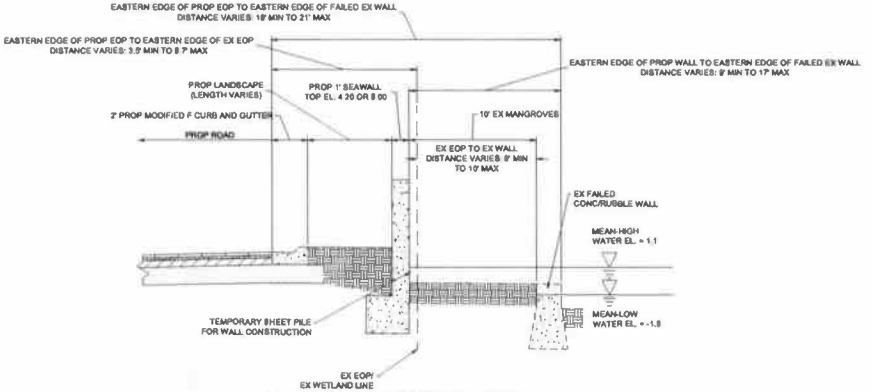
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THE CITY OF DELRAY BEACH
HISTORIC MARINE WAY SEAWALL,
ROADWAY, AND ORAINAGE IMPROVEMENT

ROADWAY PLAN

PROJECT NO. 17-047
SHEET NO. C8.4
FILE ID 2896 01



DIMENSIONS FROM EX TO PROP

SCALE: NTS

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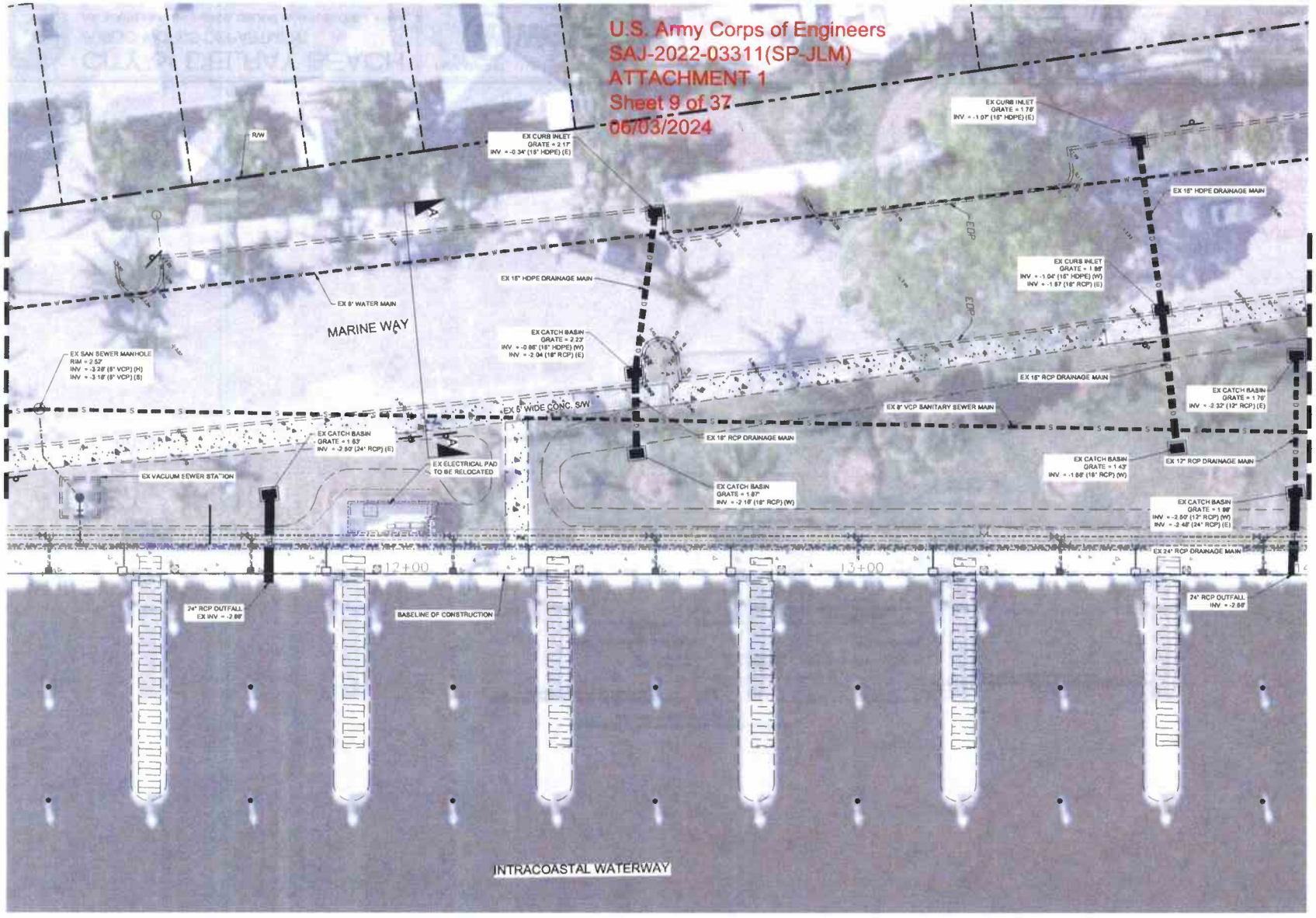
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THE CITY OF DELRAY BEACH
HISTORIC MARINE WAY SEAWALL,
ROADWAY, AND DRAINAGE IMPROVEMENT

SECTION

PROJECT NO. 17-047
SHEET NO. EX-1
FILE ID 2000.01

U.S. Army Corps of Engineers
SAJ-2022-03311(SP-JLM)
ATTACHMENT 1
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North

0 5 10 20
SCALE IN FEET
1" = 10'

LEGEND

- RIGHT OF WAY
- EX. SEWER MAIN (S)
- EX. WATER MAIN (W)
- EX. DRAINAGE MAIN (D)
- EX. DRAINAGE MANHOLE
- EX. DRAINAGE INLET
- EX. SAN SEWER MANHOLE (S)
- EX. ELEVATION 2.0'
- EX. BRICK PAVERS
- EX. CONCRETE
- EX. DRIVEWAY TO BE REMOVED
- EX. SIGN
- ELECTRICAL JUNCTION BOX
- ELECTRIC METER
- GATE VALVE (WV = WATER VALVE)
- GUY WIRE ANCHOR
- TELEPHONE RISER
- TREE SYMBOL
- WATER METER
- WOOD POWER POLE

NOTE
1. ELEVATIONS SHOWN ARE BASED ON THE NORTH AMERICAN VERTICAL DATUM (NAVD'88)
NAVD'88 = NGVD'29 - 1.48'

811 Know what's below. Call before you dig.

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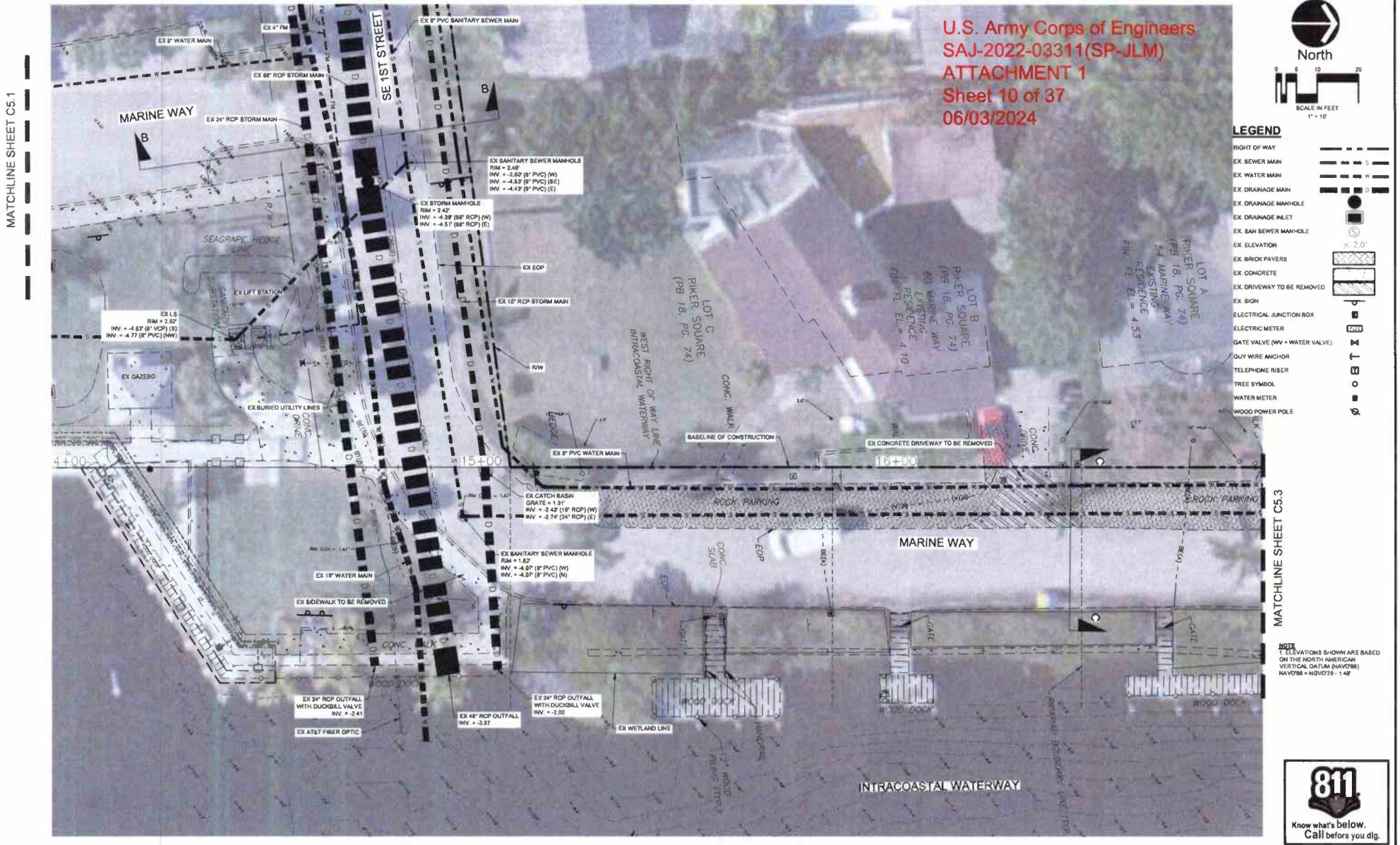
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THE CITY OF DELRAY BEACH
MARINE WAY SEAWALL, DRAINAGE, AND ROADWAY IMPROVEMENTS PHASE II

EXISTING CONDITIONS

PROJECT NO. 17-047
SHEET NO. CEX-1
FILE ID 2886.01

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SAJ-2022-03311(SP-JLM)
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North

SCALE IN FEET
1" = 10'

LEGEND

- RIGHT OF WAY
- EX. SEWER MAIN
- EX. WATER MAIN
- EX. DRAINAGE MAIN
- EX. DRAINAGE MANHOLE
- EX. DRAINAGE INLET
- EX. SAN SEWER MANHOLE
- EX. ELEVATION
- EX. BRICK PAVERS
- EX. CONCRETE
- EX. DRIVEWAY TO BE REMOVED
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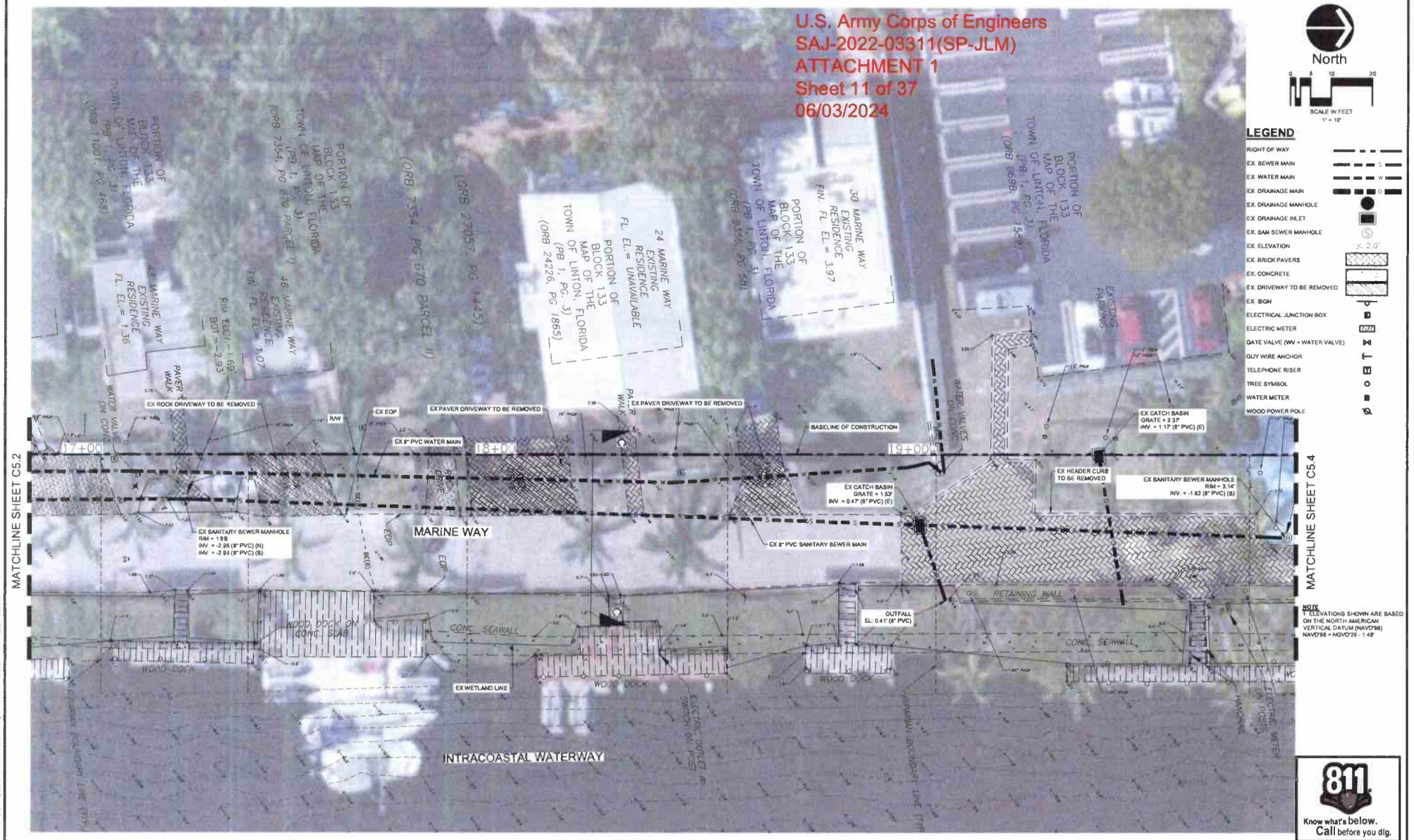
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THE CITY OF DELRAY BEACH
MARINE WAY SEAWALL, DRAINAGE, AND ROADWAY IMPROVEMENTS PHASE II

EXISTING CONDITIONS

PROJECT NO. 17-047
SHEET NO. CEX-2
FILE ID: 2008.01

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SAJ-2022-03311(SP-JLM)
ATTACHMENT 1
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06/03/2024



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THE CITY OF DELRAY BEACH
MARINE WAY SEAWALL, DRAINAGE, AND ROADWAY IMPROVEMENTS PHASE II

EXISTING CONDITIONS

PROJECT NO 17-047
SHEET NO CEX-3
FILE ID 7698.01

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SAJ-2022-03311(SP-JLM)
ATTACHMENT 1
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06/03/2024



North

0 5 10 20
SCALE IN FEET
1" = 10'

LEGEND

- RIGHT OF WAY
- EX. SEWER MAIN (S)
- EX. WATER MAIN (W)
- EX. DRAINAGE MAIN (D)
- EX. DRAINAGE MANHOLE
- EX. DRAINAGE INLET
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- EX. DRIVEWAY TO BE REMOVED
- EX. SIGN
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DATE	3/10/2023

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THE CITY OF DELRAY BEACH
MARINE WAY SEAWALL, DRAINAGE, AND ROADWAY IMPROVEMENTS PHASE II

EXISTING CONDITIONS

PROJECT NO. 17-047
SHEET NO. CEX-4
FILE ID. 2006 01

GENERAL NOTES

GENERAL SPECIFICATIONS:

FLORIDA DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION, (JULY 2022)

DESIGN SPECIFICATION:

FLORIDA BUILDING CODE IS 20, 7TH EDITION (FBC)
ACI 318-14 BUILDING CODE REQUIREMENT FOR STRUCTURAL CONCRETE.
ACI 350 CODE REQUIREMENTS FOR ENVIRONMENTAL ENGINEERING CONCRETE STRUCTURES

DESIGN LOADING:

LIVE LOAD = 100 PSF

WIND DESIGN IN ACCORDANCE WITH ASCE 7-16:

VELOCITY ULT = 170 MPH (3 SEC.)
VELOCITY ASD = 133 MPH (3 SEC.)
RISK CATEGORY II
EXPOSURE = D
k_{zt} = 1.00
k_{d} x = 1.0
k_{d} = 0.85
q_{z} = 28.6 PSF (SERVICE)

SEISMIC DESIGN DATA:

RISK CATEGORY
I_{e} = 1.0
S_{DS} = 0.05
S_{D1} = 0.03
SITE CLASS = D
S_{DS} = 0.063
S_{D1} = 0.048
SEISMIC DESIGN CATEGORY = A
R = 1.25
C_{s} = 0.043
V = S 043W

GROUND SNOW LOAD = 0 PSF

FLOOD ZONE AE (EL. 8 NAVD)

GEOTECHNICAL:

1. SEE GEOTECHNICAL BORINGS ON SHEET S0.00 - S0.06.

2. THE CONTRACTOR IS TO REVIEW THE SOIL BORINGS AVAILABLE. THE CONTRACTOR, AT THEIR OWN EXPENSE, MAY PERFORM ADDITIONAL SOIL INVESTIGATION, EXPLORATION, AND/OR SOIL BORINGS.

3. THE CONTRACTOR SHALL USE ANY METHOD NECESSARY TO INSTALL THE PILES PER THE CONTRACT DOCUMENTS. NO ADDITIONAL CONTRACT DAYS(TIME) OR COMPENSATION WILL BE PROVIDED FOR METHODS CHOSEN OR DUE TO PILES NOT MEETING REQUIREMENTS.

CONCRETE NOTES

1. MINIMUM 28 DAY STRENGTH (f'c) = 5,000 PSI

2. MAXIMUM WATER TO CEMENT RATIO (W/C) = 0.41

3. MINIMUM CONCRETE COVER SHALL BE: (INCHES)
SLAB 2.5
BEAMS AND COLUMNS 3
EXPOSED UNPROTECTED CONCRETE 3
FORMED CONCRETE BELOW GRADE 4
UNFORMED CONCRETE BELOW GRADE 4.5

4. CONCRETE CONSTRUCTION TECHNIQUES SHALL CONFORM TO THE "SPECIFICATIONS FOR STRUCTURAL CONCRETE FOR BUILDINGS" (ACI 301).

5. PROVIDE 3/4 INCH CHAMFERS ON ALL EXPOSED EDGES AND CORNERS EXCEPT AS OTHERWISE NOTED.

6. CONSTRUCTION JOINTS WILL BE PERMITTED ONLY AT THE LOCATIONS INDICATED ON THE PLANS. ADDITIONAL CONSTRUCTION JOINTS OR ALTERATIONS TO THOSE SHOWN WILL REQUIRE APPROVAL BY THE ENGINEER.

7. CONTROL JOINTS SHALL BE SPACED AT A MAXIMUM OF 20' ON CENTER.

8. EXPANSION JOINTS SHALL BE SPACED AT A MAXIMUM OF 100'-0" ON CENTER.

CONCRETE MASONRY NOTES:

1. REINFORCED CONCRETE MASONRY CONSTRUCTION SHALL CONFORM TO THE "BUILDING CODE REQUIREMENTS FOR CONCRETE MASONRY STRUCTURES" (ACI 530).

2. VERTICAL CELLS TO BE GROUTED SHALL HAVE VERTICAL ALIGNMENT SUFFICIENT TO MAINTAIN A CLEAR, UNOBSTRUCTED CONTINUOUS CELL.

3. CLEANOUT OPENINGS SHALL BE PROVIDED AT THE BOTTOM OF GROUTED CELLS AT EACH LIFT. CLEANOUTS SHALL BE SEALED AFTER CLEANING AND INSPECTION, AND BEFORE GROUTING.

4. REINFORCING STEEL SHALL BE LAPPED 48 BAR DIAMETER MINIMUM WHERE SPLICED AND SHALL BE EITHER SEPARATED BY ONE BARCOMMETER OR WIRED TOGETHER.

5. WHEN GROUTING IS STOPPED FOR ONE (1) HOUR OR LONGER, THE GROUT SHALL BE STOPPED 1-1/2" BELOW THE TOP OF THE UPPERMOST UNIT. CONCRETE MASONRY NOTES (CONTINUED)

6. GROUT SHALL BE PLACED IN LIFTS NOT TO EXCEED 12'-0" MAXIMUM.

7. VERTICAL WALL REINFORCING SHALL BE DOWELED TO SLAB BELOW AND TO BEAM ABOVE.

8. MASONRY SHALL BE ANCHORED TO SUPPORTING BEAMS AND COLUMNS UNLESS OTHERWISE NOTED. MASONRY UNITS LAID TO CONCRETE SHALL BE SUPPORTED BY DOVETAIL ANCHORS SPACED AT 16" OR WITH AN EQUIVALENT SYSTEM.

9. MASONRY WALLS SHALL BE BRACED TO RESIST LATERAL LOADS UNTIL ADEQUATE BRACING IS PROVIDED BY THE OTHER COMPONENTS OF THE STRUCTURE.

10. GROUTED CELLS WITH A #8 REINFORCING BAR SHALL BE PLACED AT ALL DOOR, LOUVER AND WINDOW JAMBS AND AS OTHERWISE INDICATED.

11. FILL MASONRY CELLS AT DOORS AND WINDOW JAMBS SOLID WITH MORTAR OR GROUT.

12. MASONRY GROUT SHALL BE MIXED WITH SUFFICIENT WATER TO GIVE A FLUID CONSISTENCY WITHOUT SEGREGATION OF MATERIALS.

13. GROUT SLUMP TO BE MAINTAINED BETWEEN 10" AND 11".

14. CONCRETE MASONRY 28-DAY COMPRESSIVE STRENGTH OF AVERAGE OF THREE UNITS (NET AREA) = 3,000 PSI, MAXIMUM WATER ABSORPTION = 13 LBS/FT3.

15. MASONRY UNITS SHALL CONFORM TO ASTM C90 GRADE N-1.

16. MORTAR TYPE M - ASTM C270 TYPE M (2,500 PSI).

17. MASONRY GROUT SHALL CONFORM TO ASTM C476 (3,000 PSI 28-DAY STRENGTH).

18. ALL CELLS WITH PIPE PENETRATIONS SHALL BE GROUT

REINFORCEMENT:

1. REINFORCEMENT SHALL BE HOT DIPPED GALV. ASTM A615, GRADE 60.

3. ALL DIMENSIONS PERTAINING TO LOCATION OF REINFORCING ARE TO CENTERLINE OF BARS EXCEPT WHERE THE CLEAR DIMENSION IS SHOWN TO FACE OF CONCRETE.

3. REINFORCEMENT DETAIL DIMENSIONS ARE OUT-TO-OUT OF BARS.

POST-INSTALLED ANCHORS:

1. MECHANICAL ANCHORS (EXPANSION ANCHOR) SYSTEMS INTO CONCRETE:

A. KWIK BOLT TZ BY HILTI
B. STRONG-BOLT 2 BY SIMPSON STRONGTIE
C. POWER-STUD+ SD3 BY DEWALT

2. MECHANICAL ANCHORS (EXPANSION ANCHOR) SYSTEM INTO CONCRETE MASONRY:

A. KWIK BOLT 3 BY HILTI
B. WEDGE-ALL BY SIMPSON STRONGTIE
C. POWER-STUD SD1 BY DEWALT
3. ADHESIVE ANCHOR SYSTEM INTO CONCRETE:

A. ULTRABOND HS-1CC (ICC ES ESR-4964) BY ADHESIVE TECHNOLOGY
B. HILTI HIT-RE 500 V3 (ICC ES ESR-3814) BY HILTI
C. SET-XP (ICC ES ESR-3298) BY SIMPSON STRONGTIE
D. PURE 110+ (ICC ES ESR-3298) BY DEWALT

4. ADHESIVE ANCHOR SYSTEM INTO CONCRETE MASONRY:

A. HILTI HIT-HY 200A (ICC ES ESR-3963) BY HILTI
B. SET-XP (ICC ES ESR-3162) BY SIMPSON STRONGTIE
C. PE 1000+ (ICC ES ESR-3583) BY DEWALT

5. POST-INSTALLED ANCHORS SHALL BE INSTALLED USING A PRODUCT SPECIFIED ABOVE OR AN ENGINEER APPROVED EQUIVALENT.

6. ALL POST-INSTALLED ANCHORS SHALL BE INSTALLED IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS. INSTALLERS SHALL BE TRAINED BY THE MANUFACTURER'S REPRESENTATIVE.

STRUCTURAL STEEL:

1. ALL STEEL DETAILS AND CONNECTION SHALL BE IN ACCORDANCE WITH REQUIREMENTS OF AISC "SPECIFICATION FOR STRUCTURAL STEEL BUILDINGS" LOAD AND RESISTANCE FACTOR DESIGN (LRFD).

2. STEEL MATERIAL AND CONNECTION MATERIAL SHALL CONFORM TO THE FOLLOWING MINIMUM REQUIREMENTS UNLESS NOTED OTHERWISE:

A. ANGLES: ASTM A276 TYPE 316
B. PLATES: ASTM A240 TYPE 316
C. TUBES: ASTM A554 TYPE 316
C. BOLTS: ASTM F593 TYPE 316; OR ASTM 325 TYPE 3 WHERE INDICATED
D. NUTS: ASTM F594 TYPE 316
E. WASHERS: 18316
P. ANCHOR RODS: ASTM F593 TYPE 316
O. HEADED STUDS ASTM F593 TYPE 316
N. WELD ELECTRODES: E316-XX

3. ALL STEEL TUBES TO HAVE 1/4" END CLOSURE PLATES

4. SPLICES ONLY ALLOWED AT THE LOCATION SPECIFICALLY INDICATED ON THE STRUCTURAL DRAWINGS.

5. SHOW ALL COPES, HOLES, OPENING AND MODIFICATION REQUIRED IN STRUCTURAL STEEL MEMBERS FOR ERECTION OR THE WORK OF OTHER TRADES ON THE SHOP DRAWINGS FOR APPROVAL BY STRUCTURAL ENGINEER.

6. FIELD MODIFICATION OF STRUCTURAL STEEL IS PROHIBITED WITHOUT PRIOR APPROVAL OF THE ENGINEER OF RECORD.

7. SHOP DRAWINGS SHALL BE PREPARED UNDER THE SUPERVISION OF A REGISTERED PROFESSIONAL ENGINEER IN THE STATE OF FLORIDA, INCLUDING COMPLETE DETAILS AND SCHEDULES FOR FABRICATION AND ASSEMBLY OF STRUCTURAL STEEL MEMBERS WITH PROCEDURES AND DIAGRAMS.

8. SUBMIT CONNECTIONS NOT SPECIFICALLY DETAILED ON THIS DRAWINGS TO ENGINEER OF RECORD FOR REVIEW BEFORE THE REVIEW OF SHOP DRAWINGS.

9. BOLTED CONNECTIONS SHALL BE F963 TYPE 316 BEARING-TYPE CONNECTIONS UNLESS OTHERWISE NOTED.

10. ALL WELDING SHALL CONFORM TO THE REQUIREMENT OF THE STRUCTURAL WELDING CODE, ANSI/AWS D1.1.

11. TRAFFIC GRATING

A. TRAFFIC GRATING SHALL BE LOAD RATED FOR HS-30 LOADING AND SHALL BE MINIMUM 3/6" X 4" BEARING BARS @1-9/16" O.C. WITH CROSS BARS @ 2" O.C. ALL COMPONENTS SHALL BE 88 TYPE 316

12. PEDESTRIAN GRATING

B. PEDESTRIAN SHALL BE RATED FOR 300 PSF AND BE MINIMUM 3/6" X 2" BEARING BARS @1-15/16" O.C. WITH CROSS BARS @ 4" O.C. ALL COMPONENTS SHALL BE 88 TYPE 316 STAINLESS STEEL

STRUCTURAL ALUMINUM NOTES:

1. DESIGN OF THE ALUMINUM STRUCTURES SHALL CONFORM TO THE CURRENT EDITION OF THE ALUMINUM ASSOCIATION
SPECIFICATIONS AND GUIDELINES FOR ALUMINUM STRUCTURES.

2. FABRICATE ALL STRUCTURAL ALUMINUM IN ACCORDANCE WITH THE ALUMINUM ASSOCIATION AA ASM 35, ALUMINUM SHEET METAL
WORK IN BUILDING CONSTRUCTION, AND AA ADM 1, ALUMINUM DESIGN MANUAL.

3. ALL ALUMINUM CONSTRUCTION USING 6000 SERIES ALUMINUM ALLOYS. STRUCTURAL MEMBERS TO BE 6061-T6, ALUMINUM ALLOY, MILL FINISH, UNLESS NOTED OTHERWISE.

4. WELDING SHALL BE IN ACCORDANCE WITH ANSI/AWS D1.2/D1.2M-2014 GAS METAL ARC WELDING (GMAW) PROCESS BY EXPERIENCED OPERATORS.

5. ALL FASTENERS TO BE 18-8 (SERIES 316) STAINLESS STEEL UNLESS NOTED OTHERWISE.

6. ALL SURFACES, MEMBERS AND THEIR WELDED JOINTS SHALL BE SMOOTH AND FREE FROM SHARP OR JAGGED EDGES.

7. COAT ALL ALUMINUM IN CONTACT WITH CONCRETE AND OTHER DISSIMILAR METALS WITH BITUMINOUS PAINT ON THE CONTACT SURFACE, 30# FELT, OR NEOPRENE BEARING MATERIAL.

WOOD:

1. ALL WOOD SHALL BE PRESSURE TREATED SOUTHERN YELLOW PINE (K= 1,500 KSI MIN) 19% MOISTURE CONTENT.

2. WOOD PRESERVATIVE AND RETENTION SHALL BE FROM THE "SAWN PRODUCTS - UCSC" IN COMMODITY SPECIFICATION A AND IN TABLE 1 OF SECTION 4 IN THE AMERICAN WOOD PRODUCTION ASSOCIATION STANDARD U1-20. SUBMIT PRESERVATIVE TREATMENT AND RETENTION FOR APPROVAL.

3. METAL CONNECTORS SHALL BE FASTENED IN ACCORDANCE WITH THE MANUFACTUREMS' INSTRUCTIONS TO DEVELOP THE MAXIMUM PUBLISHED CAPACITY.

4. ALL WOOD TO WOOD CONNECTION SHALL EMPLOY METAL ANCHORS. INSTALL ALL THE MANUFACTURER SPECIFIED NAILS IN THE MEMBER CONNECTED. ALTERNATE
MANUFACTURER CONNECTORS MAY BE SUBMITTED FOR REVIEW.

5. ALL BOLTS SHALL BE FURNISHED WITH STANDARD NUT WASHER. FASTENERS IN CONTACT WITH TREATED WOOD, INCLUDING BOLTS AND NAILS AT SILL PLATES SHALL BE STAINLESS STEEL TYPE 316, UNLESS NOTED OTHERWISE.

6. ALL NAILS TO BE STAINLESS STEEL TYPE 316. COORDINATE BLOCKING LOCATION WITH SHEATHING EDGE AS REQUIRED. ALL NAILS SHALL BE COMMON WIRE NAILS.

7. WOOD BEARING ON WOOD SHALL HAVE A GRACE VYCOR DECKING PROTECTOR INSTALLED.

8. NO ADDITIONAL TIME WILL BE GIVEN FOR PRESSURE TREATED WOOD.

STEEL SHEET PILES:

1. ALL PERMANENT STEEL SHEET PILE SHALL BE AZ26-700 OR AZ36 AND MEET THE FOLLOWING MINIMUM PROPERTIES:
MIN. Sx = 46.5 IN3/ FT
MIN. Ix = 416.9 IN4/ FT
STEEL GRADE SHALL BE ASTM A572, GRADE 60

2. THE TOP 15 FT. OF BOTH SIDES SHALL BE COATED WITH A COAL TAR EPOXY COATING EXCEPT SECTIONS THAT ARE INDICATED TO BE CAST WITH A CONCRETE FASCIA (THICKNESS IN ACCORDANCE WITH FDOT. APL PRODUCT SPECIFICATIONS FOR AGGRESSIVE/ HARSH ENVIRONMENT. ALL STEEL SHEET PILING SHALL BE INSTALLED USING HYDRAULIC RAM (PRESS-IN METHOD), USE OF VIBRATORY HAMMER WILL NOT BE PERMITTED.

JET GROUTING:

SEE SPECIFICATIONS SECTION 02361

JET GROUT WALL SHALL HAVE THE FOLLOWING CHARACTERISTICS:

1. DEPTH OF WALL = -32.00 (MIN) NAVD
2. THICKNESS OF WALL = 3.0 FT (MIN)
3. PERMEABILITY OF WALL = 10^{-7} GALDAY/FT^2
4. STIFFNESS OF WALL = 13,725,700 (K*IN^4)/FT

PROJECT NOTES:

1. ELEVATIONS SHOWN HEREON ARE BASED ON NAVD '88 DATUM. TO CONVERT TO NGVD '29 ADD 1.53' TO THE NGVD VALUE.

2. EXISTING LOCATIONS AND ELEVATIONS ARE BASED ON SURVEY BY: WGI, INC. PROJECT NO. 4191804.18, DATED 09/21/2018.

3. THE CONTRACTOR SHALL TAKE ALL NECESSARY PRECAUTIONS TO PREVENT FLOATATION OF STRUCTURES UNTIL CONSTRUCTION IS COMPLETE AND BACKFILL IN PLACED AND COMPACTED

4. CONTRACTOR WILL OPERATE WITH EXTREME CARE AND CAUTION AT AND AROUND UNDERGROUND & SUBAQUEOUS UTILITIES.

5. CONTRACTOR SHALL BE RESPONSIBLE FOR LOCATING AND VERIFICATION OF EXISTING UTILITIES INCLUDING UNDERGROUND AND SUBAQUEOUS UTILITIES.

6. CONTRACTOR SHALL REMOVE ANY AND ALL DEBRIS AND RESTORE THE SITE TO ITS PRE-CONSTRUCTION CONDITION AFTER THE WORK IS COMPLETE.

7. ONLY LIGHT EQUIPMENT IS TO BE USED FOR BACK FILLING, COMPACTING, AND FINAL GRADING (E.G. BOBCAT AND HAND OPERATED COMPACTOR). MECHANICAL EQUIPMENT NOT TO COME IN CONTACT WITH NEW CAP.

8. MONITOR EXISTING STRUCTURES IN ACCORDANCE WITH SECTION 105 OF THE STANDARD SPECS.

CONCRETE PILE DATA:
ALL CONCRETE PILES SHALL BE MINIMUM 14" SQUARE PER FDOT INDEX 455-914, 455-901
30 TON BEARING (SERVICE)
15' MINIMUM EMBEDMENT

MANUFACTURER'S REFERENCES AND SUBSTITUTIONS:

1. REFERENCE TO A PARTICULAR MANUFACTURER, TRADE NAME, OR CATALOG NUMBER ESTABLISHES THE QUALITY STANDARDS OF MATERIAL AND EQUIPMENT REQUIRED FOR THIS INSTALLATION IN ACCORDANCE WITH THE FDOT QUALIFIED PRODUCTS LIST, ETC. AND IS NOT INTENDED TO EXCLUDE OR SOLE-SOURCE PRODUCTS EQUAL/EQUIVALENT/SIMILAR IN QUALITY AND DESIGN. WHENEVER THE PLANS SPECIFY A PROPRIETARY PRODUCT, MATERIAL, EQUIPMENT, ETC. AND THE TERM "OR APPROVED EQUAL" IS NOT USED, "OR APPROVED EQUAL" SHALL BE IMPLIED.

2. EQUIVALENT PRODUCTS, MATERIALS, EQUIPMENT, ETC. MAY BE SUBMITTED BY THE CONTRACTOR TO THE ENGINEER FOR REVIEW AND APPROVAL AT THE TIME OF CONSTRUCTION (IE: AFTER THE BID), PROVIDED THAT THE CHANGES IN AT NO ADDITIONAL COST TO THE OWNER. ALL STRUCTURAL, ETC. DETAILS SHALL BE REVISED BY THE CONTRACTOR AS REQUIRED TO SUIT THE CERTIFIED DRAWINGS, SPECIFICATIONS, ETC. OF THE COMPONENTS ACTUALLY BEING FURNISHED AS A RESULT OF A SUBSTITUTION APPROVED BY THE ENGINEER.

QUANTITIES
1. ALL QUANTITIES ARE TO BE VERIFIED BY THE CONTRACTOR PRIOR TO BID.

SHEET LIST

SHEET NUMBER	SHEET NAME
S0.01	GENERAL NOTES
S0.02	GENERAL NOTES
S0.03	SOIL LOG DATA
S0.04	SOIL LOG DATA
S1.00	OVERALL PLAN
S2.00	PHASING PLANS OVERVIEW
S2.01	ENLARGED PHASE I PUMP STATION PLAN
S2.02	ENLARGED PHASE IA PUMP STATION PLAN
S2.03	ENLARGED PHASE IB PUMP STATION PLAN
S2.04	ENLARGED PHASE IIA PUMP STATION PLAN
S2.05	ENLARGED PHASE IIB PUMP STATION PLAN
S2.06	ENLARGED PHASE IV PUMP STATION PLAN
S2.07	DISCHARGE BAY AND PUMP STATION AREA PLAN VIEW @ -4.0 NAVD
S2.08	PHASE IIB DISCHARGE BAY/ UTILITY PLAN
S2.09	PHASE IV DISCHARGE/ UTILITY BAY PLAN
S2.10	SEAWALL & DECKING DETAILS
S2.11	FLOOR SLAB BEAM DETAILS, CLOSURE POUR
S2.12	UTILITY BAY DETAILS
S2.13	GENERATOR PLAN AND SECTIONS
S3.14	BACK-UP GENERATOR SECTIONS AND DETAILS
S3.01	ENLARGED MARINE WAY SEAWALL
S3.02	ENLARGED MARINE WAY SEAWALL
S3.03	ENLARGED MARINE WAY SEAWALL
S3.04	ENLARGED MARINE WAY SEAWALL
S4.00	PUMP STATION FOUNDATION PLAN
S4.01	PUMP STATION TOP SLAB PLAN
S4.02	LONGITUDINAL WALL ELEVATIONS
S4.04	TOP SLAB FRAMING & REINFORCEMENT (1 of 3)
S4.05	TOP SLAB FRAMING & REINFORCEMENT (2 of 3)
S4.06	TOP SLAB FRAMING & REINFORCEMENT (3 of 3)
S5.00	MARINE WAY DETAILS
S5.01	MARINE WAY DETAILS
S6.00	ENLARGED MARINE WAY SEAWALL DEMO
S6.01	ENLARGED MARINE WAY DOCKS
S6.02	WOOD RAMP FRAMING PLAN
S6.03	WOOD DECK FRAMING PLAN AND SECTION
S6.04	WOOD STAIRS AND ACCESS SECTIONS
S6.05	WOOD DECK FRAMING DETAILS
S6.06	WOOD SPLICE DETAILS

LIST OF FREQUENTLY USED ABBREVIATIONS

ACI	- AMERICAN CONCRETE INSTITUTE
ACQ	- ALKALINE COPPER QUATERNARY
AISC	- AMERICAN INSTITUTE OF STEEL CONSTRUCTION
ANSI	- AMERICAN NATIONAL STANDARDS INSTITUTE
ASCE	- AMERICAN SOCIETY OF CIVIL ENGINEERS
ASD	- ALLOWABLE STRESS DESIGN
ASTM	- AMERICAN SOCIETY FOR TESTING AND MATERIALS
CAP	- CORRUGATED ALUMINUM PIPE
CCA	- CHROMATED COPPER ARSENATE
CIP	- CAST-IN-PLACE
CL, ℄	- CENTERLINE
CLR	- CLEAR
CMP	- CORRUGATED METAL PIPE
CPP	- CORRUGATED PLASTIC PIPE
DIA, Ø	- DIAMETER
EL, ELEV.	- ELEVATION
EMBED	- EMBEDMENT
EQ.	- EQUAL
EX., EXIST.	- EXISTING
FAC	- FLORIDA ADMINISTRATIVE CODE
FBC	- FLORIDA BUILDING CODE
FDOT	- FLORIDA DEPARTMENT OF TRANSPORTATION
FRP	- FIBER REINFORCED POLYMER
FT	- FOOT
GALV	- GALVANIZED
GFRP	- GLASS FIBER REINFORCED POLYMER
GR	- GRADE
INV.	- INVERT
KSI	- KILOPOUNDS PER SQUARE INCH
LB(S)	- POUND(S)
LF	- LINEAR FEET
LRFD	- LOAD RESISTANCE FACTOR DESIGN
MAX.	- MAXIMUM
MIN.	- MINIMUM
NAVD '88	- NORTH AMERICAN VERTICAL DATUM OF 1988
NGVD '29	- NATIONAL GEODETIC VERTICAL DATUM OF 1929
R/W	- RIGHT OF WAY
SEC	- SECONDS
SHW	- SEASONAL HIGH WATER
SIM.	- SIMILAR
SPA	- SPACING, SPACES
SYP	- SOUTHERN YELLOW PINE
TYP.	- TYPICAL
UON	- UNLESS OTHERWISE NOTED

Know what's below. Call before you dig.

PILE CRITERIA

TYPE	PILE CUTOFF ELEVATION NAVD (FT.)	BEARING REQUIRED (SERVICE) (TONS)	MINIMUM TIP ELEVATION NAVD (FT.)	NOTES
13 INCH ROUND WOOD DOCK PILES	2.00	15	-35.00	PLUMB AND ALIGNED
12 INCH ROUND WOOD FENDER PILES	10.00	20	-45.00	3 PILE CLUSTER, BATTERED (H:V = 1:6)
14 INCH SQUARE CONCRETE PILES	2.50	30	-23.00	PLUMB
STEEL SHEET PILES	2.50	NA	-32.50	PLUMB AND ALIGNED

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CITY of DELRAY BEACH
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WGI
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Phone No. 561.687.2220
Fax No. 561.687.1110
Registry No. 33574

DESIGNED BY	JRB
DRAWN BY	DAB
CHECK BY	AS
DATE	12/23/22

REVISION	DATE	DESCRIPTION
	12/23/22	80% CD SET

THE CITY OF DELRAY BEACH
HISTORIC MARINE WAY SEAWALL, ROADWAY, AND DRAINAGE IMPROVEMENT

GENERAL NOTES

PROJECT NO 17-047
SHEET NO S0.01
FILE ID 17-047

ENVIRONMENTAL NOTES:

1. THE CONTRACTOR SHALL SUBMIT AN EROSION CONTROL PLAN IN ACCORDANCE WITH SECTION 104 OF THE FDOT STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION. THE PLAN SHALL INCLUDE, BUT NOT BE LIMITED TO, MEASURES TO CONTROL TURBIDITY, CONTAINMENT AND DISPOSAL OF CONSTRUCTION DEBRIS, AND A SPILL CONTROL REPORTING PLAN.

2. IF SUSPECT CONTAMINATED OR HAZARDOUS MATERIAL IS FOUND ON THE PROJECT OR ENCOUNTERED DURING CONSTRUCTION THE CONTRACTOR SHALL CEASE OPERATION IN THAT AREA. IMMEDIATELY NOTIFY FDEP AND THE PROJECT ENGINEER AND PROTECT THE IMMEDIATE AREA OF SUSPECT CONTAMINATED OR HAZARDOUS MATERIAL FROM FURTHER ACCESS. CONSTRUCTION COORDINATION WILL ARRANGE FOR THE INVESTIGATION, IDENTIFICATION AND/OR REMOVAL/REMEDIATION OF THE MATERIAL IN QUESTION AS NEEDED.

3. THE CONTRACTOR SHALL NOT BRING ANY HAZARDOUS MATERIALS ONTO THE PROJECT. SHOULD THE CONTRACTOR REQUIRE SUCH FOR PERFORMING THE CONTRACTED WORK, THE CONTRACTOR SHALL REQUEST WRITTEN PERMISSION FROM FDEP AND THE PROJECT ENGINEER. THE CONTRACTOR SHALL PROVIDE A COPY OF THE REQUEST TO THE FDEP AND THE PROJECT ENGINEER. THE CONTRACTOR SHALL PROVIDE THE FDEP AND THE PROJECT ENGINEER WITH A COPY OF THE MATERIAL SAFETY DATA SHEET (MSDS) FOR EACH HAZARDOUS MATERIAL PROPOSED FOR USE, AND PROVIDE A DESCRIPTION OF THE SPECIFIC MANNER IN WHICH THE MATERIAL WILL BE USED. THE PROJECT ENGINEER SHALL COORDINATE WITH THE FDEP PRIOR TO ISSUING WRITTEN APPROVAL TO THE CONTRACTOR BECAUSE STATE LAW DOES NOT TREAT PETROLEUM PRODUCTS THAT ARE PROPERLY CONTAINERIZED AS HAZARDOUS MATERIALS, SUCH PRODUCTS DO NOT REQUIRE AN MSDS SUBMITTAL. ALL BULK PETROLEUM PRODUCTS STORED ON SITE SHALL REQUIRE PROPER STORAGE WHICH INCLUDES SECONDARY CONTAINMENT.

4. THE CONTRACTOR SHALL INSTRUCT ALL PERSONNEL OF THE POTENTIAL PRESENCE OF PROTECTED MAMMALS, REPTILES AND BIRDS. THE CONTRACTOR SHALL COMPLY WITH ALL FEDERAL AND STATE REQUIREMENTS AND CHAPTER 7-14 OF THE FDOT STANDARD SPECIFICATIONS FOR PROTECTED SPECIES.

5. SPECIFIC REQUIREMENTS FOR UNEXPECTED INTERACTION WITH CERTAIN PROTECTED SPECIES DURING WORK ACTIVITIES MAY BE FOUND AT: http://www.dot.state.fl.us/programmanagement/Implemented/URLinSpecs/files/endangeredwildlifeguidelines.pdf

9. THE CONTRACTOR SHALL LEGALLY DISPOSE OF SPOILS OFF SITE AND NOT IN THE ADJACENT WATER BODIES.

EROSION CONTROL NOTES:

1. ALL EROSION AND SEDIMENTATION CONTROLS SHALL BE INSTALLED PRIOR TO ANY LAND DISTURBING ACTIVITIES.

2. ALL EROSION AND SEDIMENTATION CONTROLS SHALL BE INSPECTED DAILY AND REPAIRS MADE AS NECESSARY TO ENSURE THE PROPER AND CONTINUED FUNCTION OF THE CONTROL(S).

3. ALL EROSION AND SEDIMENTATION CONTROL SHALL REMAIN IN PLACE UNTIL A PERMANENT VEGETATIVE COVER HAS BEEN ESTABLISHED.

4. UNDER NO CIRCUMSTANCES SHALL SEDIMENTS BE PERMITTED TO EXIT THE PROJECT LIMITS, INCLUDING TRACKING BY VEHICLES ONTO PAVED ROADWAYS. THE CONTRACTOR SHALL MAKE IMMEDIATE REPAIRS OR ENHANCEMENTS TO ANY EROSION CONTROL SYSTEM THAT ALLOWS THE RELEASE OF SEDIMENTS.

STANDARD MANATEE CONDITIONS FOR IN-WATER WORK - 2011.

THE PERMITTEE SHALL COMPLY WITH THE FOLLOWING CONDITIONS INTENDED TO PROTECT MANATEES FROM DIRECT PROJECT EFFECTS.

a. ALL PERSONNEL ASSOCIATED WITH THE PROJECT SHALL BE INSTRUCTED ABOUT THE PRESENCE OF MANATEES AND MANATEE SPEED ZONES, AND THE NEED TO AVOID COLLISIONS WITH AND INJURY TO MANATEES. THE PERMITTEE SHALL ADVISE ALL CONSTRUCTION PERSONNEL THAT THERE ARE CIVIL AND CRIMINAL PENALTIES FOR HARMING, HARASSING, OR KILLING MANATEES WHICH ARE PROTECTED UNDER THE MARINE MAMMAL PROTECTION ACT, THE ENDANGERED SPECIES ACT, AND THE FLORIDA MANATEE SANCTUARY ACT.

b. ALL VESSELS ASSOCIATED WITH THE CONSTRUCTION PROJECT SHALL OPERATE AT "IDLE SPEED/NO WAKE" AT ALL TIMES WHILE IN THE IMMEDIATE AREA AND WHILE IN WATER WHERE THE DRAFT OF THE VESSEL PROVIDES LESS THAN A FOUR-FOOT CLEARANCE FROM THE BOTTOM. ALL VESSELS WILL FOLLOW ROUTES OF DEEP WATER WHENEVER POSSIBLE.

c. SILTATION OR TURBIDITY BARRIERS SHALL BE MADE OF MATERIAL IN WHICH MANATEES CANNOT BECOME ENTANGLED, SHALL BE PROPERLY SECURED, AND SHALL BE REGULARLY MONITORED TO AVOID MANATEE ENTANGLEMENT OR ENTRAPMENT. BARRIERS MUST NOT IMPEDE MANATEE MOVEMENT.

d. ALL ON-SITE PROJECT PERSONNEL ARE RESPONSIBLE FOR OBSERVING WATER-RELATED ACTIVITIES FOR THE PRESENCE OF MANATEE(S). ALL IN-WATER OPERATIONS, INCLUDING VESSELS, MUST BE SHUTDOWN IF A MANATEE(S) COMES WITHIN 50 FEET OF THE OPERATION. ACTIVITIES WILL NOT RESUME UNTIL THE MANATEE(S) HAS MOVED BEYOND THE 50-FOOT RADIUS OF THE PROJECT OPERATION, OR UNTIL 30 MINUTES ELAPSES IF THE MANATEE(S) HAS NOT REAPPEARED WITHIN 50 FEET OF THE OPERATION. ANIMALS MUST NOT BE HERDED AWAY OR HARASSED INTO LEAVING.

e. ANY COLLISION WITH OR INJURY TO A MANATEE SHALL BE REPORTED IMMEDIATELY TO THE FWC HOTLINE AT 1-888-404-3922. COLLISION AND/OR INJURY SHOULD ALSO BE REPORTED TO THE U.S. FISH AND WILDLIFE SERVICE IN JACKSONVILLE (1-904-731-3336) FOR NORTH FLORIDA OR VERO BEACH (1-772-562-3909) FOR SOUTH FLORIDA, AND TO FWC AT ImperiledSpecies@myFWC.com.

f. TEMPORARY SIGNS CONCERNING MANATEES SHALL BE POSTED PRIOR TO AND DURING ALL IN-WATER PROJECT ACTIVITIES. ALL SIGNS ARE TO BE REMOVED BY THE PERMITTEE UPON COMPLETION OF THE PROJECT. TEMPORARY SIGNS THAT HAVE ALREADY BEEN APPROVED FOR THIS USE BY THE FLORIDA FISH AND WILDLIFE CONSERVATION COMMISSION (FWC) MUST BE USED (SEE MYFWC.COM/MANATEE). ONE SIGN WHICH READS CAUTION: BOATERS MUST BE POSTED. A SECOND SIGN MEASURING AT LEAST 8.5 BY 11 INCHES EXPLAINING THE REQUIREMENTS FOR "IDLE SPEED/NO WAKE" AND THE SHUT DOWN OF IN-WATER OPERATIONS MUST BE POSTED IN A LOCATION PROMINENTLY VISIBLE TO ALL PERSONNEL ENGAGED IN WATER-RELATED ACTIVITIES. QUESTIONS CONCERNING THESE SIGNS CAN BE SENT TO THE EMAIL ADDRESS LISTED ABOVE.

g. FLOATING TURBIDITY BARRIER WITH FINE MESH SHALL BE USED IN ACCORDANCE WITH FDOT STANDARD SPECIFICATIONS, SECTION 104.

ENVIRONMENTAL NOTES:

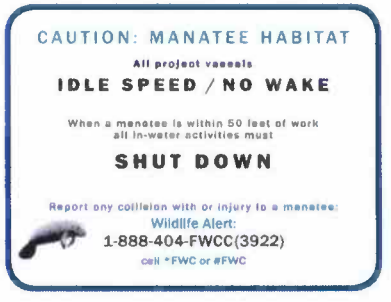
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2. SPECIFIC REQUIREMENTS FOR UNEXPECTED INTERACTION WITH CERTAIN PROTECTED SPECIES DURING WORK ACTIVITIES MAY BE FOUND AT: http://www.dot.state.fl.us/programmanagement/Implemented/URLinSpecs/files/endangeredwildlifeguidelines.pdf
3. THE CONTRACTOR SHALL LEGALLY DISPOSE OF SPOILS OFF SITE AND NOT IN THE INTRACOASTAL WATERWAY.

EROSION CONTROL NOTES:

1. THE CONTRACTOR IS RESPONSIBLE FOR THE CONTROL OF SEDIMENTATION RUNOFF RESULTING FROM STORM EVENTS DURING THE CONSTRUCTION PHASE.

2. THE CONTRACTOR SHALL SUBMIT AN EROSION CONTROL PLAN IN ACCORDANCE WITH SECTION 104 OF THE FDOT STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION. THE PLAN SHALL INCLUDE, BUT NOT BE LIMITED TO, MEASURES TO CONTROL TURBIDITY, CONTAINMENT AND DISPOSAL OF CONSTRUCTION DEBRIS, AND A SPILL CONTROL REPORTING PLAN.

3. EROSION CONTROL FACILITIES, SUCH AS HAY BALES, SILT SCREENS, FLOATING TURBIDITY BARRIERS, OR OTHER APPROVED METHODS AS REQUIRED, SHALL BE INSTALLED EARLY DURING THE CONSTRUCTION PERIOD SO AS TO PREVENT THE TRANSPORT OF SEDIMENT INTO THE INTRACOASTAL WATERWAY.



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Fax No. 561.687.1110
Registry No. 33574

DESIGNED BY	JRB
DRAWN BY	DAB
CHECK BY	AS
DATE	12/23/22

REVISION	DATE	DESCRIPTION
	12/23/22	90% CD SET

THE CITY OF DELRAY BEACH
HISTORIC MARINE WAY SEAWALL, ROADWAY, AND DRAINAGE IMPROVEMENT
GENERAL NOTES

PROJECT NO. 17-047
SHEET NO. S0.02
FILE ID 17-047



1 PROPOSED PLAN-OVERALL
NTS

NORTH

U.S. Army Corps of Engineers
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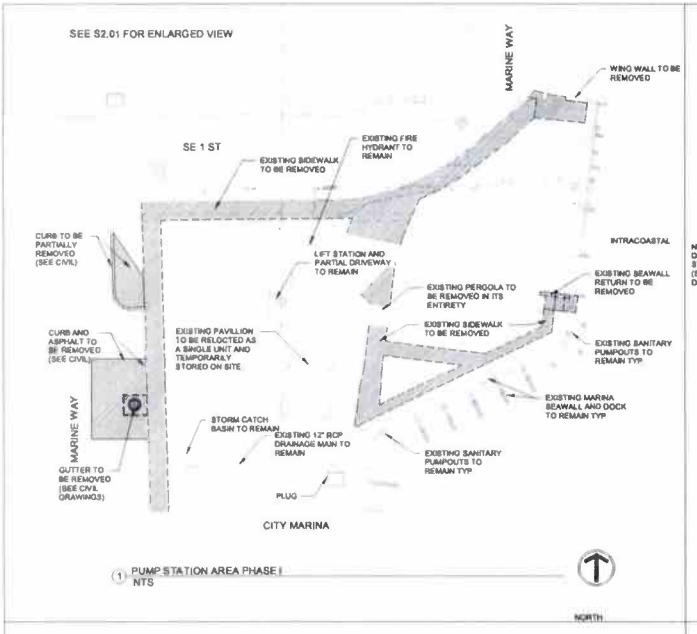
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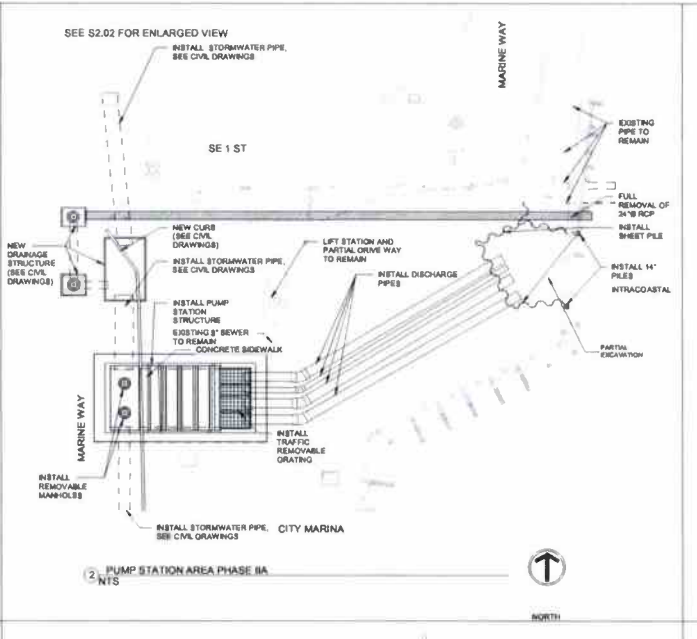
REVISION	DATE	DESCRIPTION
	12/23/22	90% CD SET

THE CITY OF DELRAY BEACH
HISTORIC MARINE WAY SEAWALL, ROADWAY, AND DRAINAGE IMPROVEMENT
OVERALL PLAN

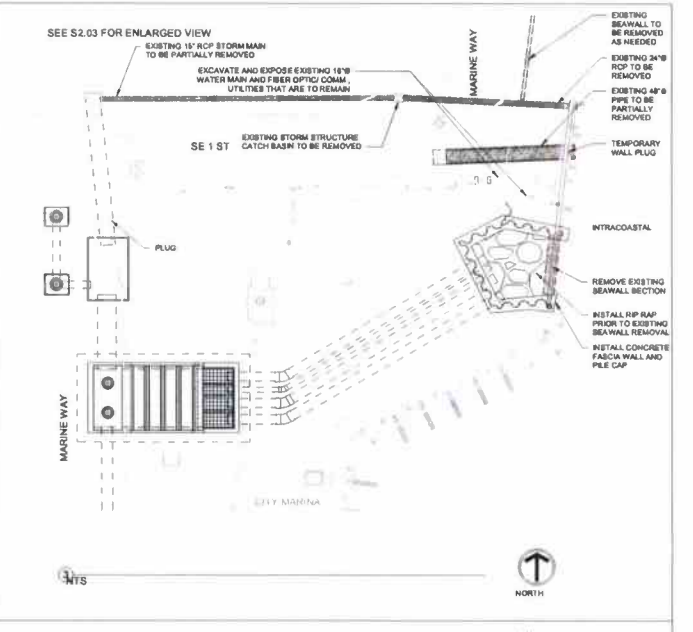
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SHEET NO S1.00
FILE ID 17-047



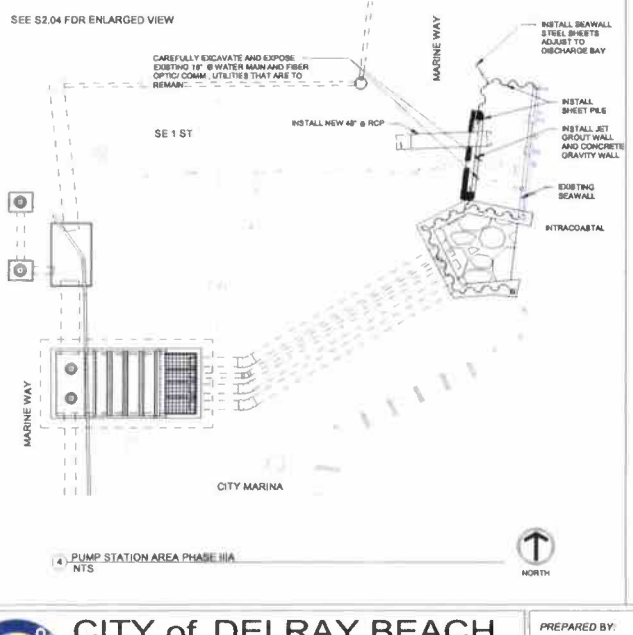
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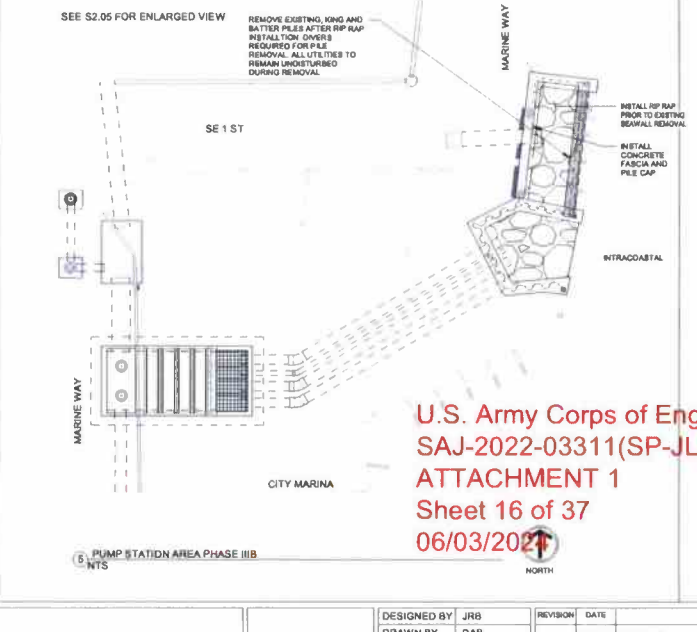
2 PUMP STATION AREA PHASE IIA
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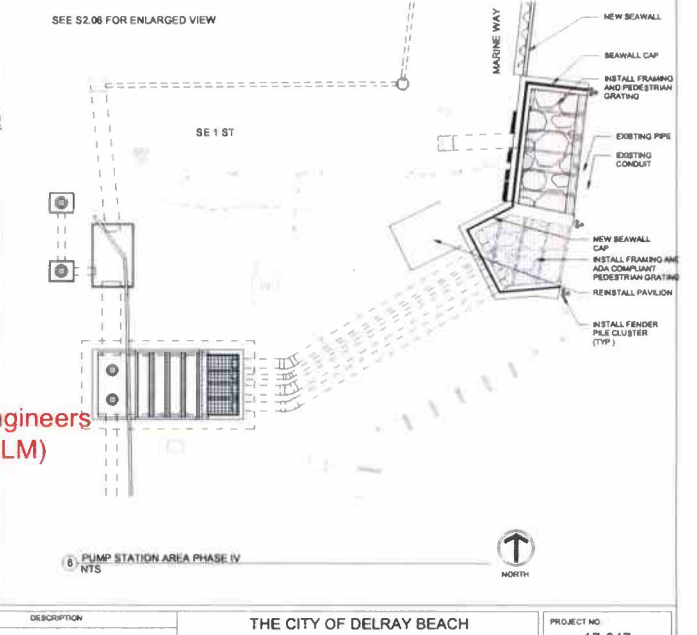
3 NTS



4 PUMP STATION AREA PHASE IIIA
NTS



5 PUMP STATION AREA PHASE IIIB
NTS



6 PUMP STATION AREA PHASE IV
NTS

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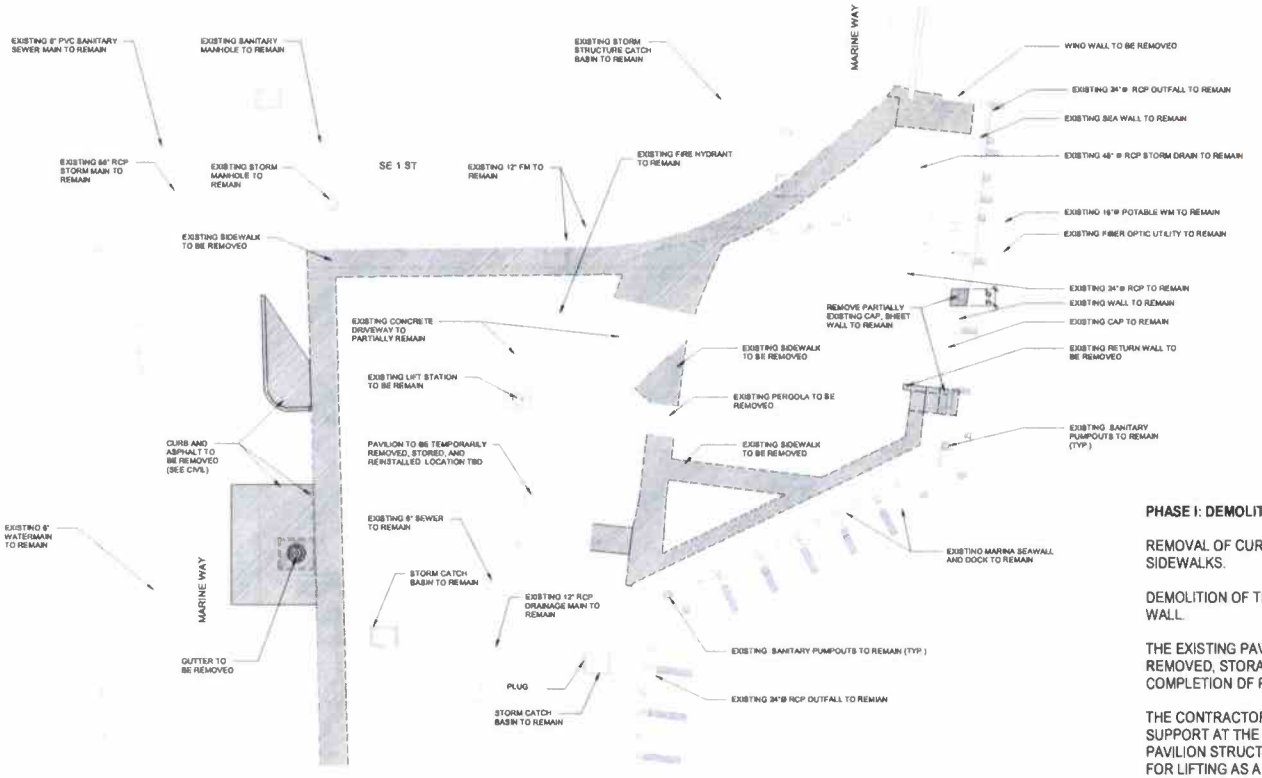
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THE CITY OF DELRAY BEACH
HISTORIC MARINE WAY SEAWALL, ROADWAY, AND DRAINAGE IMPROVEMENT

PHASING PLANS OVERVIEW

PROJECT NO. 17-047
SHEET NO. S2.00
FILE ID 17-047

U.S. Army Corps of Engineers
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Sheet 17 of 37
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1 PUMP STATION AREA ENLARGED PHASE I
3/32" = 1'-0"

PHASE I: DEMOLITION OF EXISTING ABOVE GROUND FEATURES

REMOVAL OF CURB, GUTTER, PAVEMENT, THE PERGOLA, AND SIDEWALKS.

DEMOLITION OF THE EXISTING SEAWALL RETURN WALL.

THE EXISTING PAVILION SHALL BE CAREFULLY TEMPORARILY REMOVED, STORAGE AND REINSTALLATION FOLLOWING THE COMPLETION DF PHASE IV.

THE CONTRACTOR SHALL PROVIDE STRUCTURAL SUPPORT AT THE BASE OF THE PAVILION STRUCTURE FOR LIFTING AS A SINGLE UNIT AND TEMPORARILY STORING THE STRUCTURE, WITHIN THE PARK AREA TD THE SOUTH AS FAR AS POSSIBLE. CONTRACTOR TO SUBMIT RELOCATION/RIGGING PLAN FOR INFORMATIONAL PURPOSES ONLY

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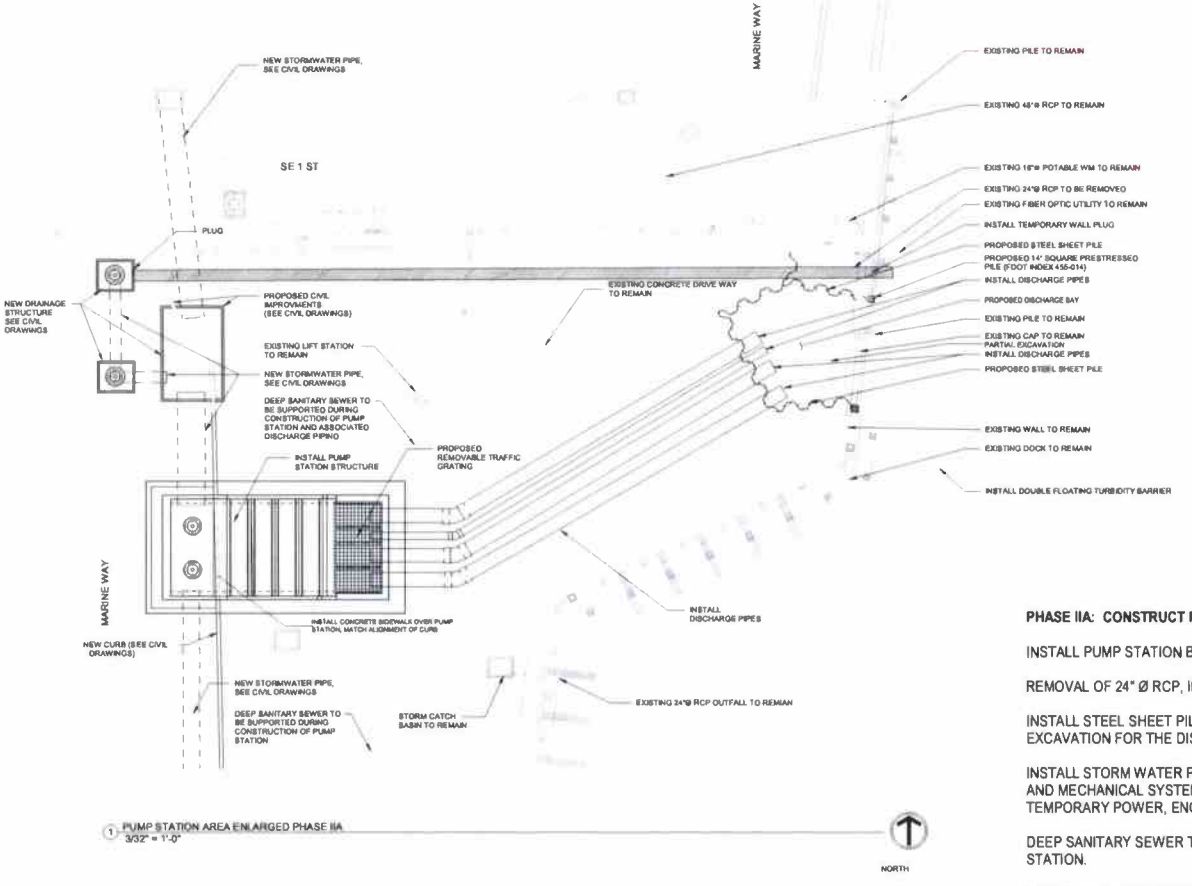
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THE CITY OF DELRAY BEACH
HISTORIC MARINE WAY SEAWALL, ROADWAY, AND DRAINAGE IMPROVEMENT

ENLARGED PHASE I PUMP STATION PLAN

PROJECT NO 17-047
SHEET NO S2.01
FILE ID 17-047



PHASE IIA: CONSTRUCT PUMP STATION, GENERATOR AND DISCHARGE BAY

INSTALL PUMP STATION BAFFLE BOX STRUCTURE

REMOVAL OF 24" Ø RCP, INSTALL TEMPORARY WALL PLUG WHERE PIPE REMOVED

INSTALL STEEL SHEET PILING,14" FDOT CONCRETE PILE (2) LOCATIONS, PARTIAL EXCAVATION FOR THE DISCHARGE BAY TO FACILITATE DISCHARGE PIPE INSTALLS

INSTALL STORM WATER PIPES, INCLUDING THE PUMP DISCHARGE PIPES, PUMPS AND MECHANICAL SYSTEMS, ELECTRICAL SYSTEMS, PERMANENT OR TEMPORARY POWER, ENGINE GENERATOR

DEEP SANITARY SEWER TO BE SUPPORTED DURING CONSTRUCTION OF PUMP STATION.

INSTALL PUMP STATION BEAMS, CLOSURE POURS, AND GRATING

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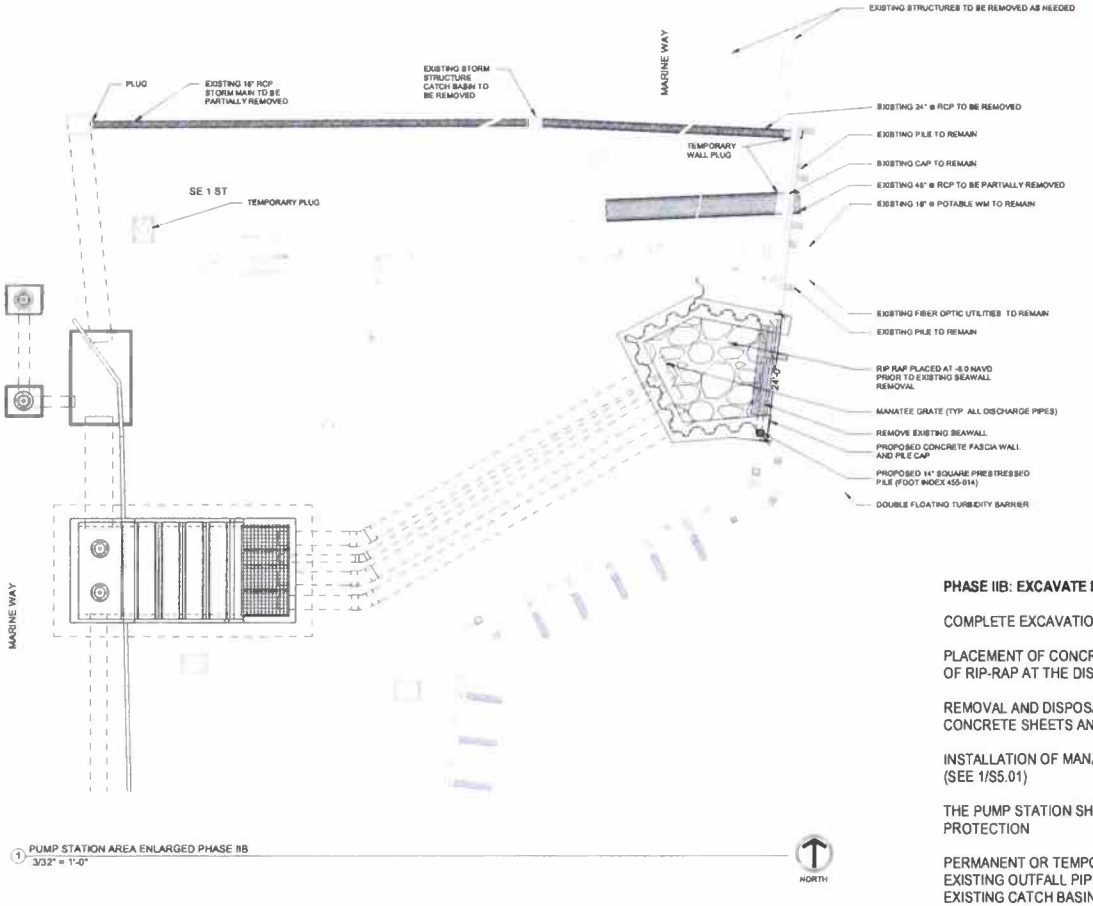
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THE CITY OF DELRAY BEACH
HISTORIC MARINE WAY SEAWALL, ROADWAY, AND DRAINAGE IMPROVEMENT

ENLARGED PHASE IIA PUMP STATION PLAN

PROJECT NO. 17-047
SHEET NO. S2.02
FILE ID. 17-047



1 PUMP STATION AREA ENLARGED PHASE IIB
3/32" = 1'-0"

PHASE IIB: EXCAVATE DISCHARGE BAY AND REMOVE EXISTING SEAWALL

COMPLETE EXCAVATION OF THE DISCHARGE BAY TO ELEVATION -6.0 NAVD

PLACEMENT OF CONCRETE FASCIA WALL CONCRETE CAP, AND, PLACEMENT OF RIP-RAP AT THE DISCHARGE BAY.

REMOVAL AND DISPOSAL OF THE EXISTING SEAWALL CONCRETE CAP, CONCRETE SHEETS AND CONCRETE PILES.

INSTALLATION OF MANATEE GRATE ON DISCHARGE BAY PIPE OPENINGS (SEE 1/S5.01)

THE PUMP STATION SHALL BE UTILIZED FOR STORMWATER WATER PROTECTION

PERMANENT OR TEMPORARY PUMPS SHALL BE PROVIDED AND THE EXISTING OUTFALL PIPES (1) 24", AND (1) 48" SHALL BE PLUGGED AT THE EXISTING CATCH BASIN/SEAWALL AND REMOVED AS DETAILED.

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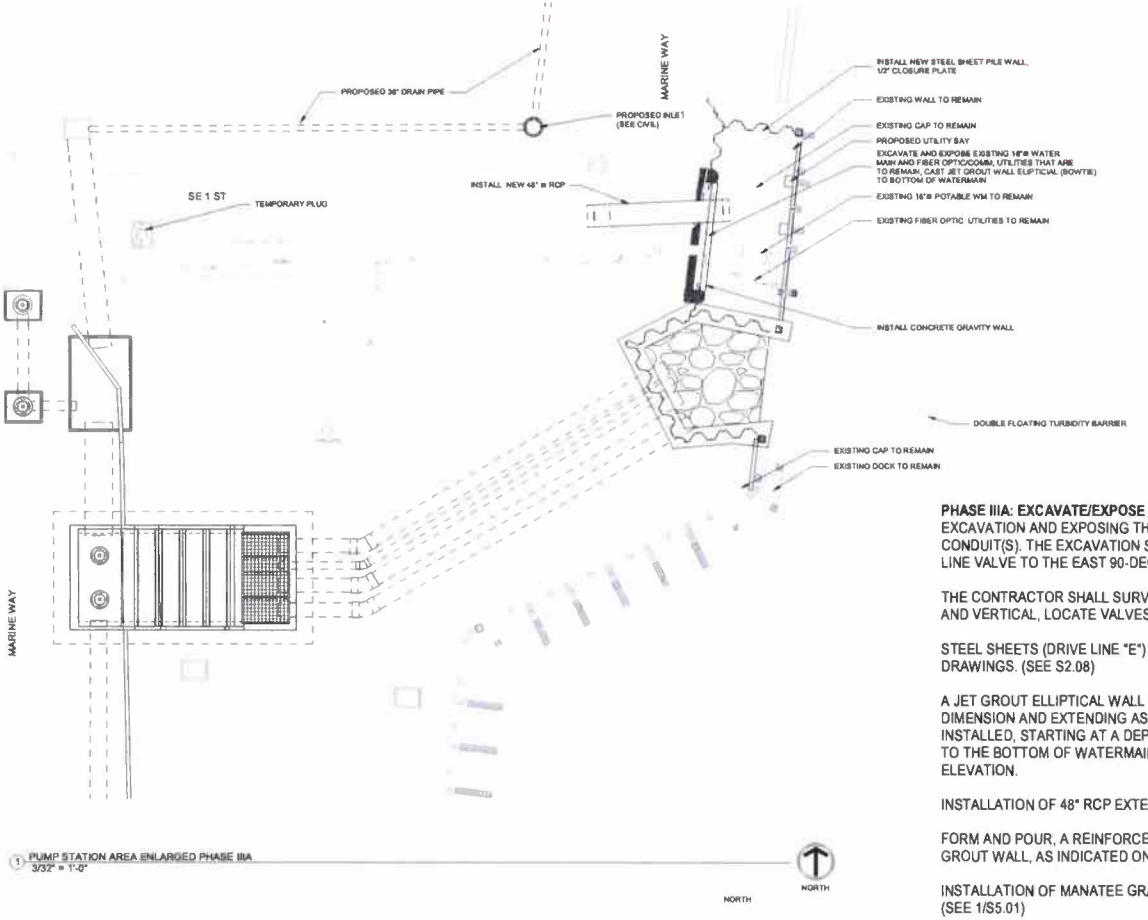
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HISTORIC MARINE WAY SEAWALL, ROADWAY, AND DRAINAGE IMPROVEMENT

ENLARGED PHASE IIB PUMP STATION PLAN

PROJECT NO 17-047
SHEET NO S2.03
FILE ID 17-047



1 PUMP STATION AREA ENLARGED PHASE IIIA
3/32" = 1'-0"

PHASE IIIA: EXCAVATE/EXPOSE WATERMAIN AND FIBER OPTIC UTILITY
EXCAVATION AND EXPOSING THE EXISTING 16" Ø WATERMAIN AND FIBER OPTIC CONDUIT(S). THE EXCAVATION SHALL EXTEND FROM 10-FOOT WEST OF THE IN-LINE VALVE TO THE EAST 90-DEGREE VERTICAL FITTING.

THE CONTRACTOR SHALL SURVEY THE PIPE AND CONDUITS BOTH HORIZONTAL AND VERTICAL, LOCATE VALVES, FITTINGS, AND OTHER APPURTENANCES.

STEEL SHEETS (DRIVE LINE "E") SHALL BE INSTALLED AS INDICATED ON THE DRAWINGS. (SEE S2.08)

A JET GROUT ELLIPTICAL WALL APPROXIMATELY 4'-0" WIDE IN THE EAST WEST DIMENSION AND EXTENDING AS INDICATED ON THE DRAWINGS SHALL BE INSTALLED, STARTING AT A DEPTH OF (-) 32.0 NAVD TO THE BOTTOM OF WATERMAIN PIPE AND FIBER OPTIC CONDUIT ELEVATION.

INSTALLATION OF 48" RCP EXTENSION

FORM AND POUR, A REINFORCED CONCRETE GRAVITY WALL ABOVE THE JET GROUT WALL, AS INDICATED ON THE DRAWINGS.

INSTALLATION OF MANATEE GRATE ON UTILITY BAY PIPE OPENINGS (SEE 1/S5.01)

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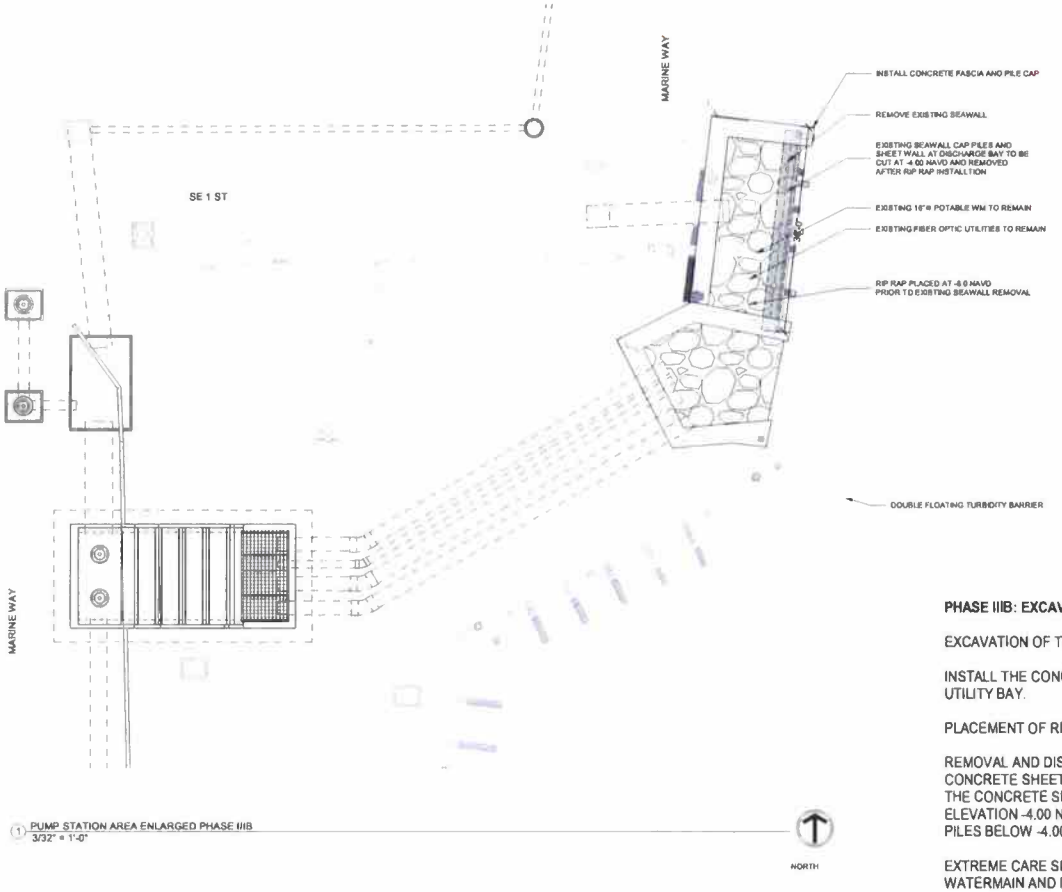
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HISTORIC MARINE WAY SEAWALL, ROADWAY, AND DRAINAGE IMPROVEMENT
ENLARGED PHASE IIIA PUMP STATION PLAN

PROJECT NO 17-047
SHEET NO. S2.04
FILE ID. 17-047



1 PUMP STATION AREA ENLARGED PHASE IIIB
3/32" = 1'-0"

PHASE IIIB: EXCAVATE UTILITY BAY AND REMOVE EXISTING SEAWALL

EXCAVATION OF THE UTILITY BAY TO ELEVATION -4.00 NAVD

INSTALL THE CONCRETE FASCIA WALL AND CONCRETE PILE CAP WITHIN THE UTILITY BAY.

PLACEMENT OF RIPRAP IN THE UTILITY BAY

REMOVAL AND DISPOSAL OF THE EXISTING SEAWALL CONCRETE CAP, CONCRETE SHEET PILES AND CONCRETE PILES.
THE CONCRETE SHEET PILES AND PILES SHALL BE SAWCUT UNDERWATER AT ELEVATION -4.00 NAVD AND THE REMAINING CONCRETE SHEET PILES AND PILES BELOW -4.00 NAVD ABANDONED IN PLACE.

EXTREME CARE SHALL BE TAKEN WHILE WORKING IN THE VICINITY OF THE WATERMAIN AND FIBER OPTIC UTILITIES.

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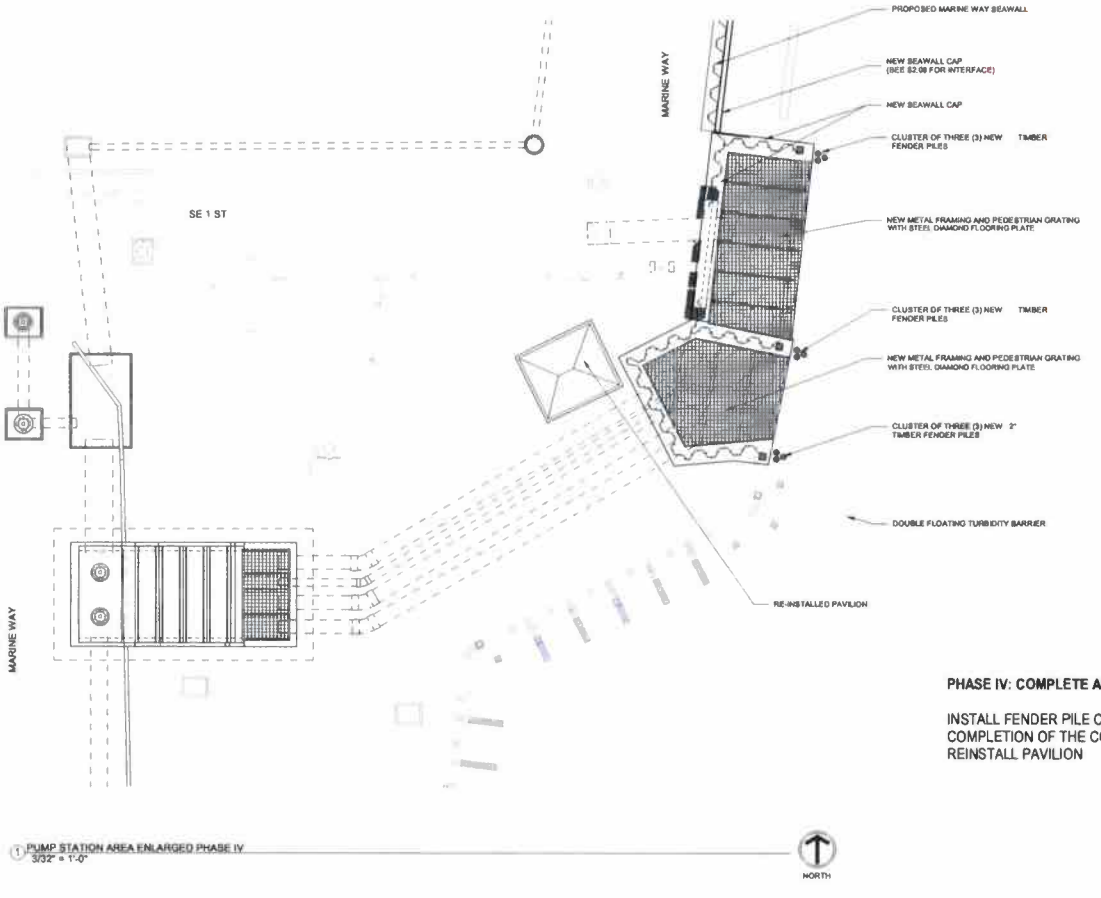
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ENLARGED PHASE IIIB PUMP STATION PLAN

PROJECT NO 17-047
SHEET NO S2.05
FILE ID 17-047

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1 PUMP STATION AREA ENLARGED PHASE IV
3/32" = 1'-0"

PHASE IV: COMPLETE ABOVE GRADE IMPROVEMENTS

INSTALL FENDER PILE CLUSTERS
COMPLETION OF THE CONCRETE CAP, FRAMING MEMBERS AND GRATING.
REINSTALL PAVILION

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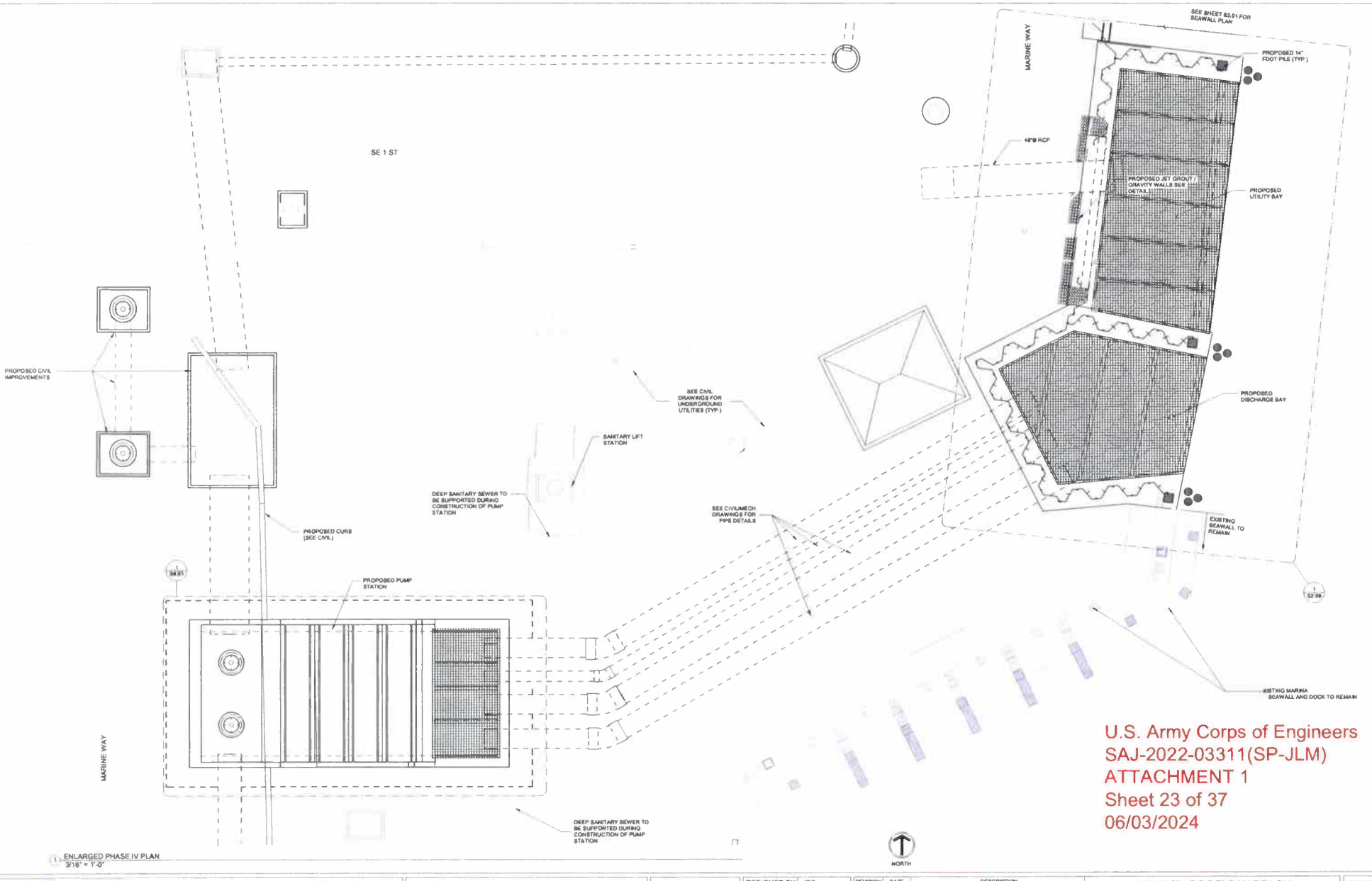
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HISTORIC MARINE WAY SEAWALL, ROADWAY, AND DRAINAGE IMPROVEMENT
ENLARGED PHASE IV PUMP STATION PLAN

PROJECT NO 17-047
SHEET NO S2.06
FILE ID 17-047



1 ENLARGED PHASE IV PLAN
3/16" = 1'-0"

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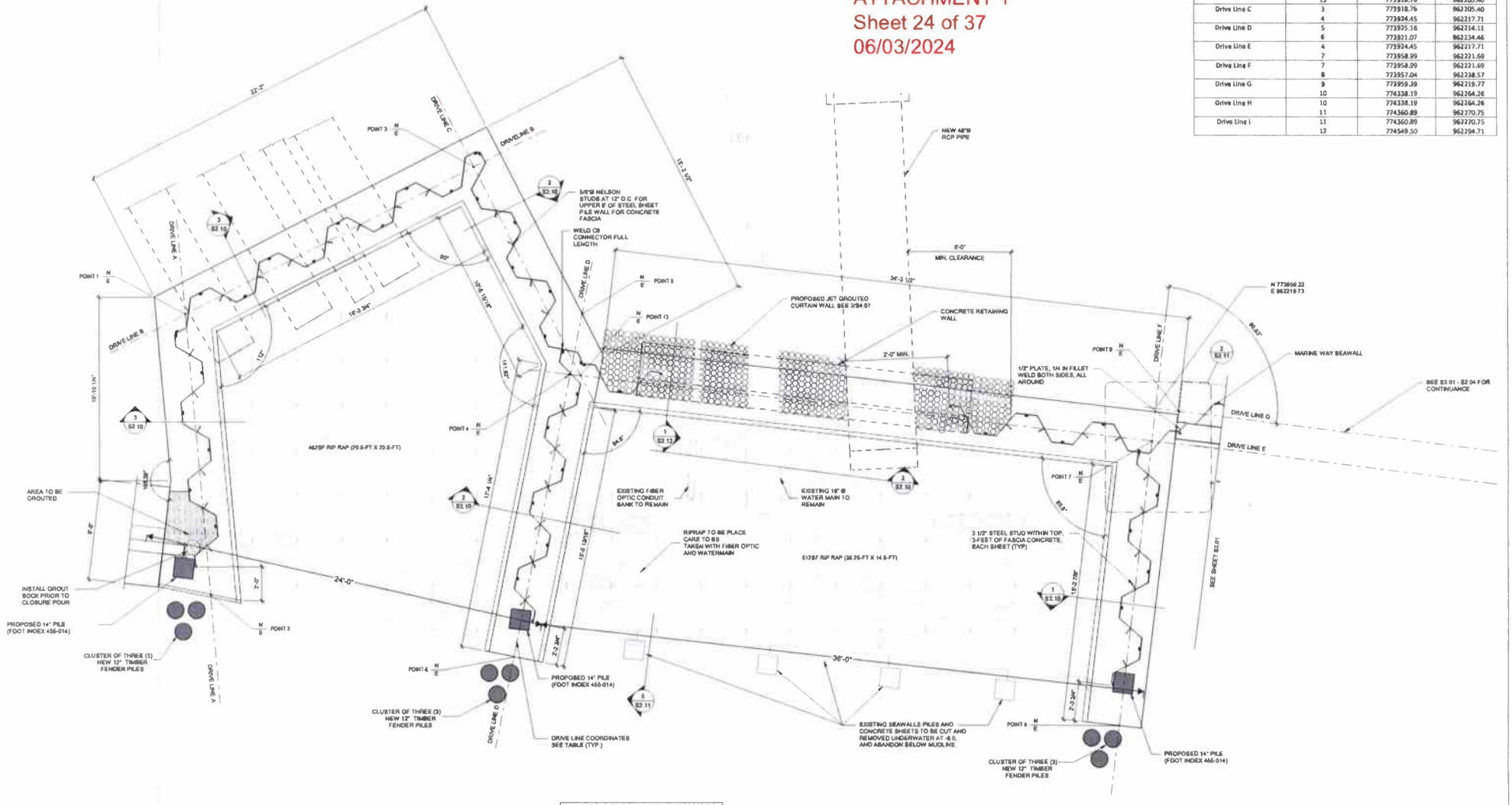
THE CITY OF DELRAY BEACH
HISTORIC MARINE WAY SEAWALL, ROADWAY, AND DRAINAGE IMPROVEMENT

DISCHARGE BAY AND PUMP STATION
AREA PLAN VIEW @ -4.0 NAVD

PROJECT NO 17-047
SHEET NO S2.07
FILE ID 17-047

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SAJ-2022-03311(SP-JLM)
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06/03/2024

Sheet Pile Drive Line	Point	Northing	Easting
Drive Line A	1	773901.61	962214.12
	2	773903.06	962230.82
Drive Line B	1	773901.61	962214.12
	13	773918.76	962205.40
Drive Line C	3	773918.76	962205.40
	4	773924.45	962217.71
Drive Line D	5	773925.16	962214.11
	6	773921.07	962234.46
Drive Line E	4	773924.45	962217.71
	7	773958.99	962221.69
Drive Line F	7	773958.99	962221.69
	8	773957.04	962238.57
Drive Line G	9	773959.39	962219.77
	10	774338.19	962264.26
Drive Line H	10	774338.19	962264.26
	11	774360.89	962270.75
Drive Line I	11	774360.89	962270.75
	12	774549.50	962294.71



CONTRACTOR TO TAKE EXTREME CARE IN PROTECTION OF EXISTING WM (NO EXCEPTIONS) AND AT&T FIBER OPTIC LINES

1 ENLARGED PHASE IIIB PLAN VIEW AT DISCHARGE/UTILITY BAY
3/8" = 1'-0"

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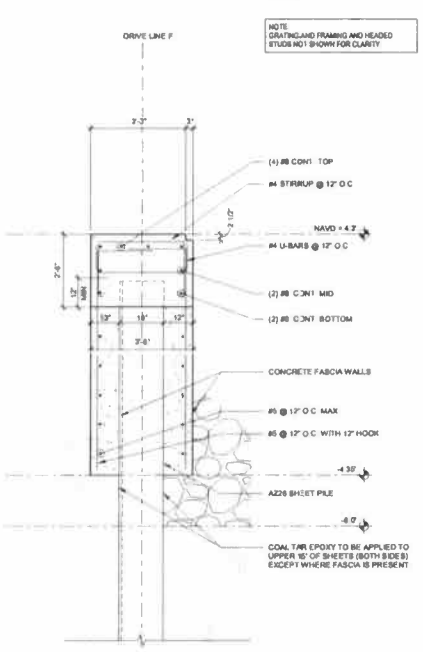
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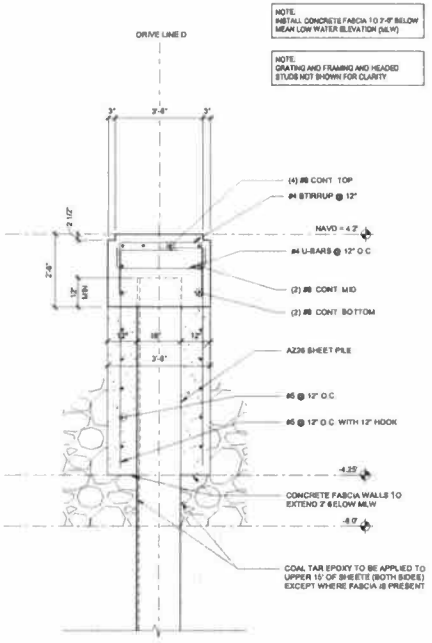
PHASE IIIB DISCHARGE BAY/ UTILITY PLAN

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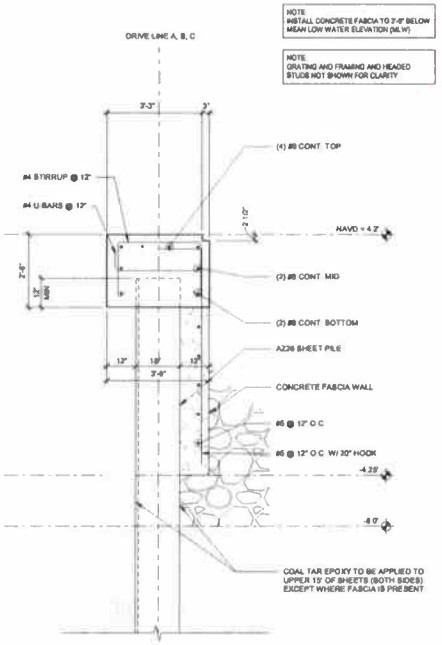
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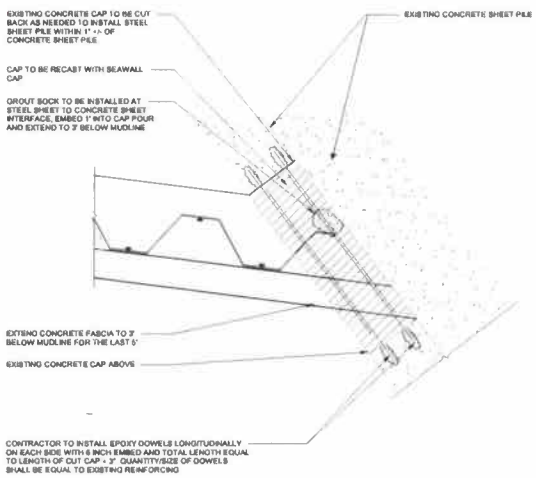
1 SEAWALL SECTION
1/2" = 1'-0"



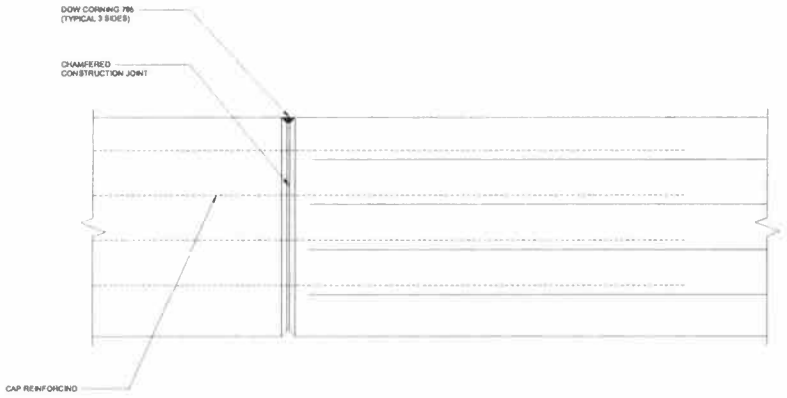
2 SEAWALL SECTION
1/2" = 1'-0"



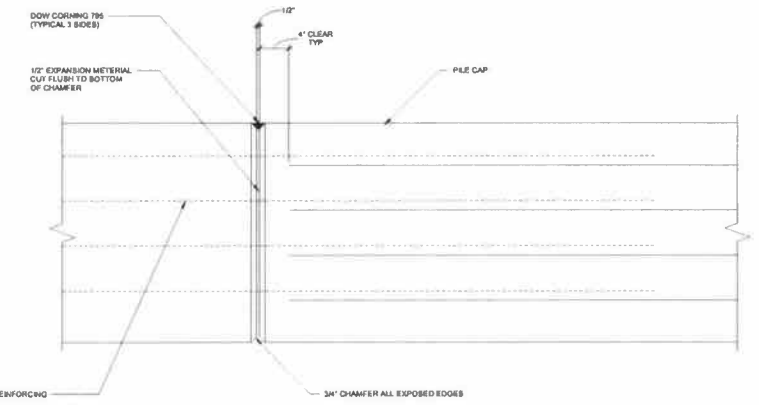
3 SECTION
1/2" = 1'-0"



5 ENLARGED PLAN
1/2" = 1'-0"



6 TYPICAL SEAWALL CAP CONSTRUCTION JOINT DETAIL
NTS



7 TYPICAL SEAWALL CAP EXPANSION JOINT DETAIL
NTS

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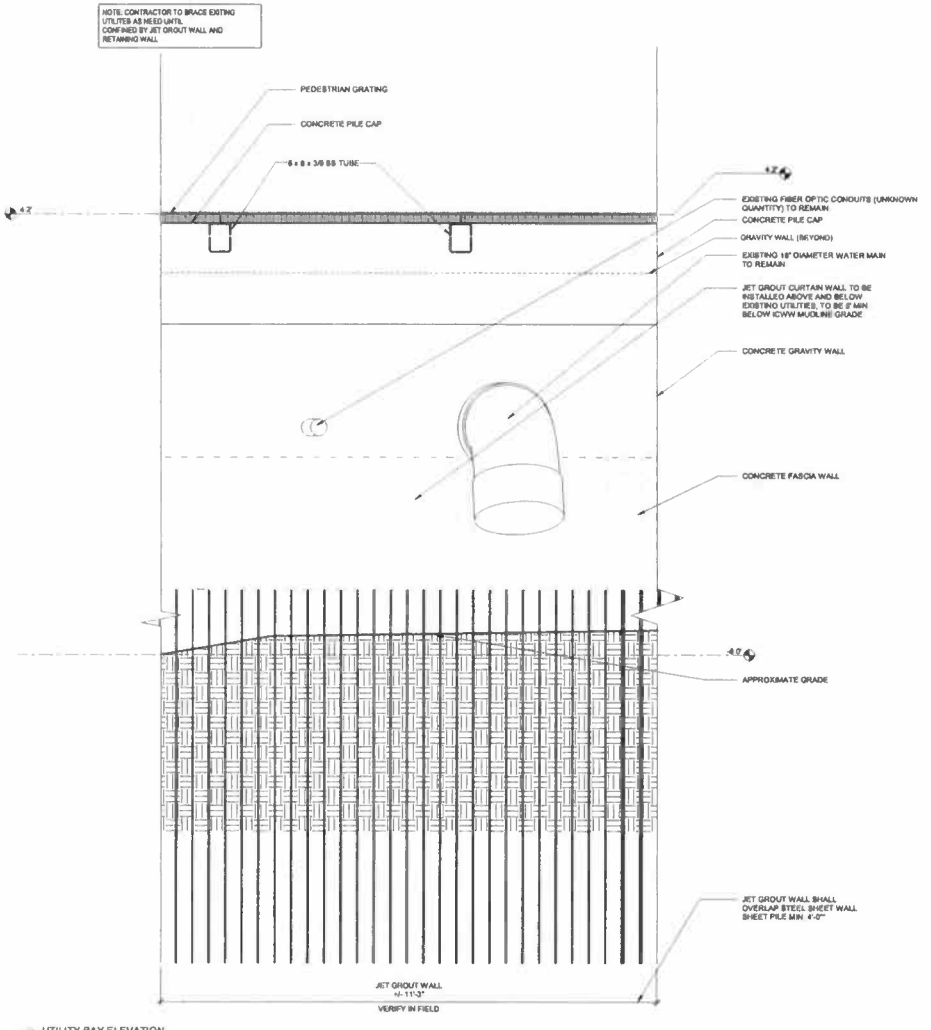
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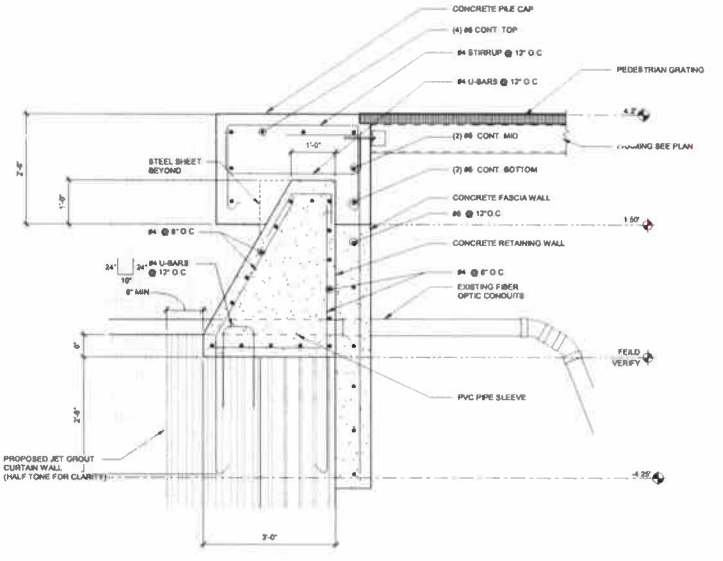
THE CITY OF DELRAY BEACH
HISTORIC MARINE WAY SEAWALL, ROADWAY, AND DRAINAGE IMPROVEMENT

SEAWALL & DECKING DETAILS

PROJECT NO: 17-047
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FILE ID: 17-047



2 UTILITY BAY ELEVATION
3/4" = 1'-0"



1 SEAWALL AND GRATING FRAMING
3/4" = 1'-0"

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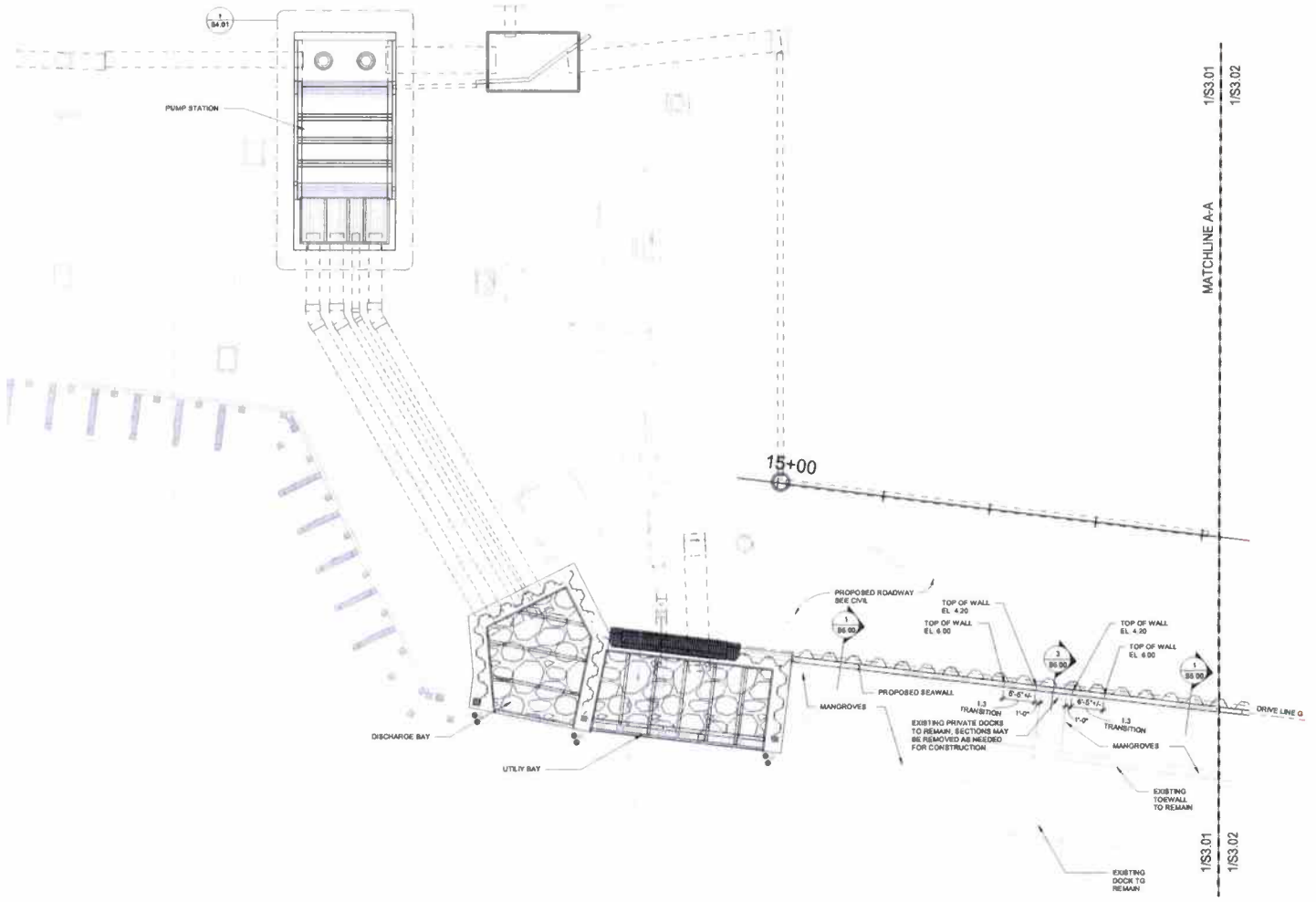
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THE CITY OF DELRAY BEACH
HISTORIC MARINE WAY SEAWALL, ROADWAY, AND DRAINAGE IMPROVEMENT

UTILITY BAY DETAILS

PROJECT NO 17-047
SHEET NO S2.12
FILE ID 17-047

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1 ENLARGED PLAN - AA
1" = 10'-0"

NORTH

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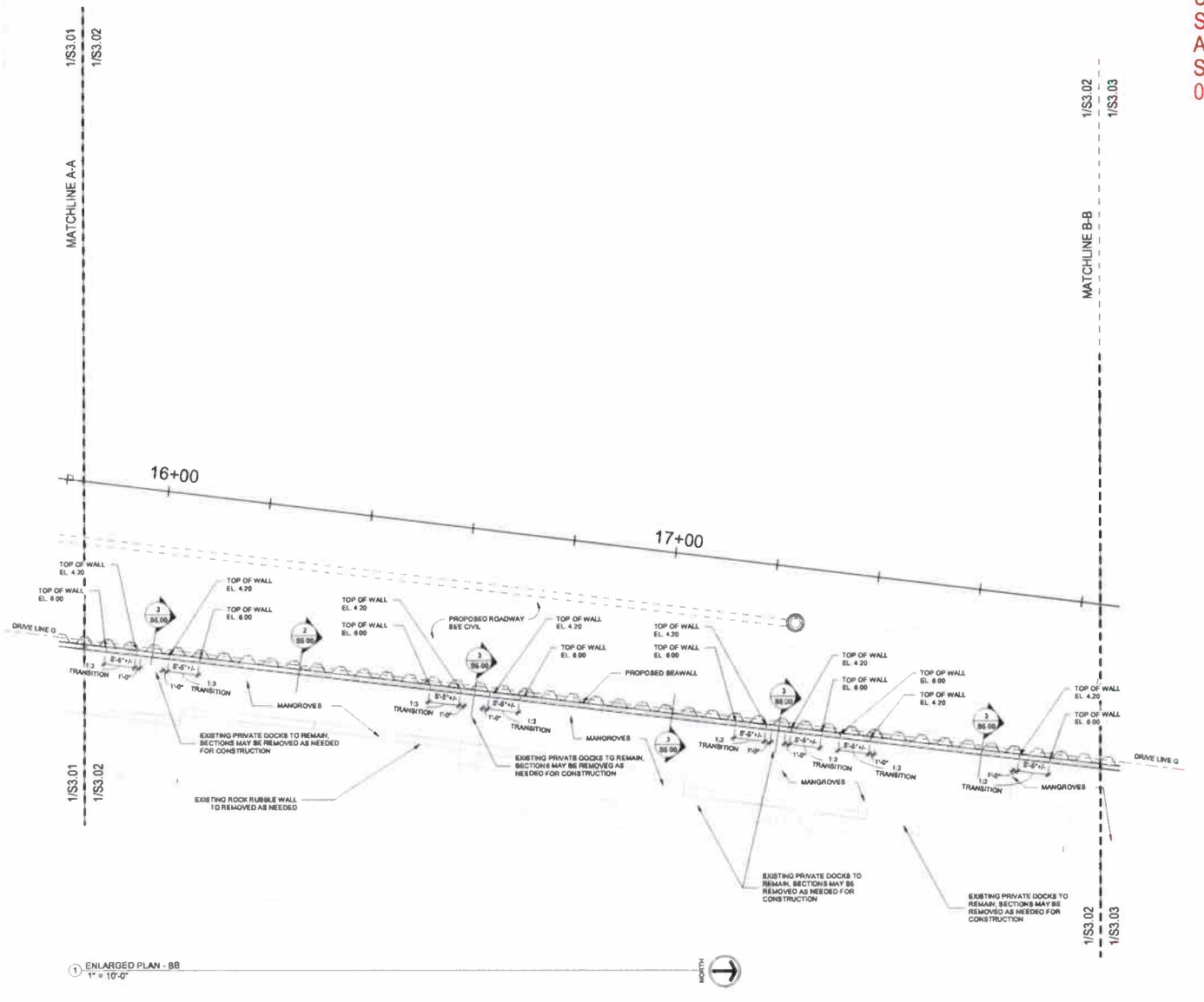
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THE CITY OF DELRAY BEACH
HISTORIC MARINE WAY SEAWALL, ROADWAY, AND DRAINAGE IMPROVEMENT

ENLARGED MARINE WAY SEAWALL

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SHEET NO S3.01
FILE ID 17-047

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① ENLARGED PLAN - BB
1" = 10'-0"

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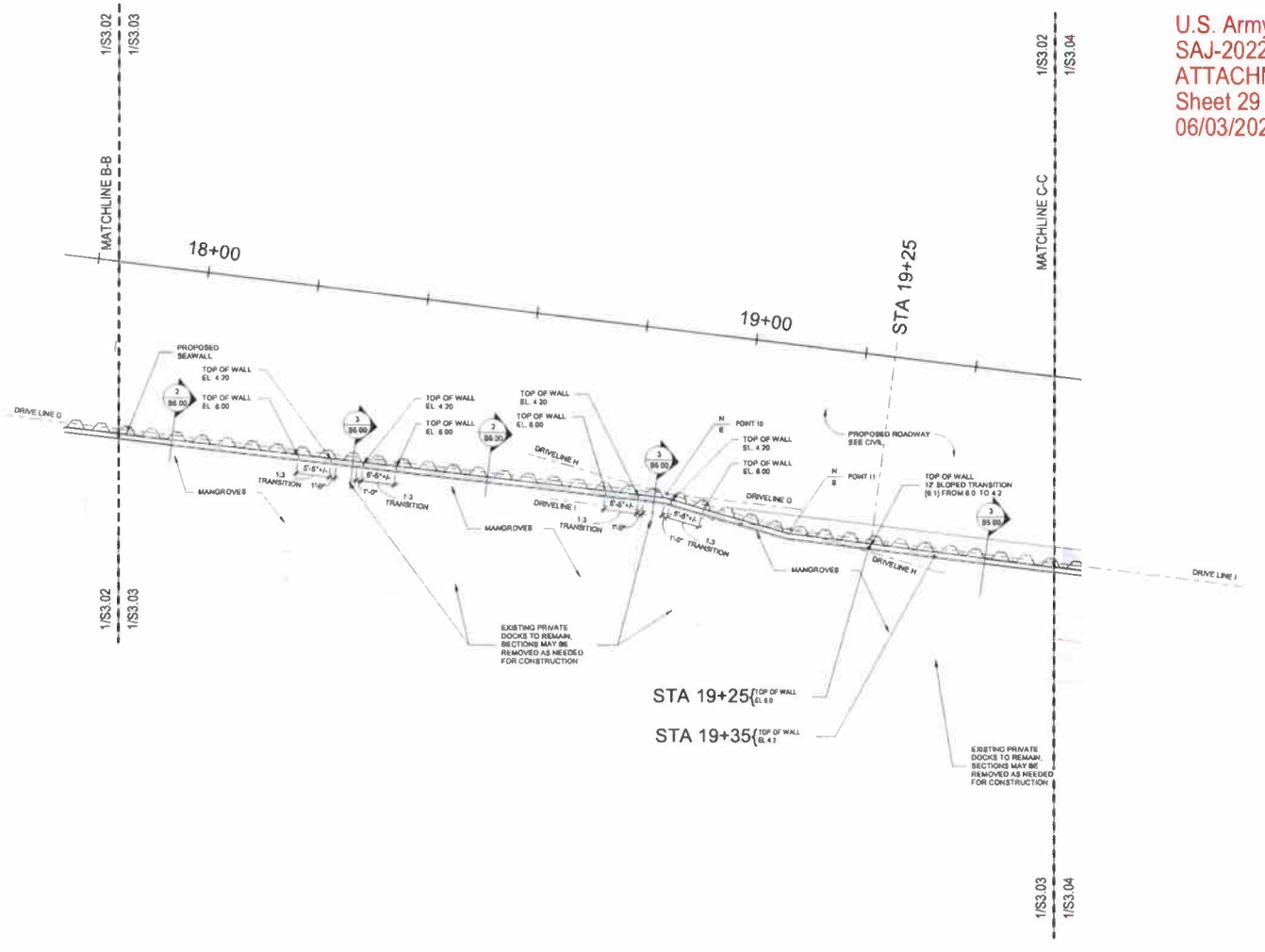
REVISION	DATE	DESCRIPTION
	12/23/22	90% CD SET

THE CITY OF DELRAY BEACH
HISTORIC MARINE WAY SEAWALL, ROADWAY, AND DRAINAGE IMPROVEMENT

ENLARGED MARINE WAY SEAWALL

PROJECT NO 17-047
SHEET NO S3.02
FILE ID 17-047

U.S. Army Corps of Engineers
SAJ-2022-03311(SP-JLM)
ATTACHMENT 1
Sheet 29 of 37
06/03/2024

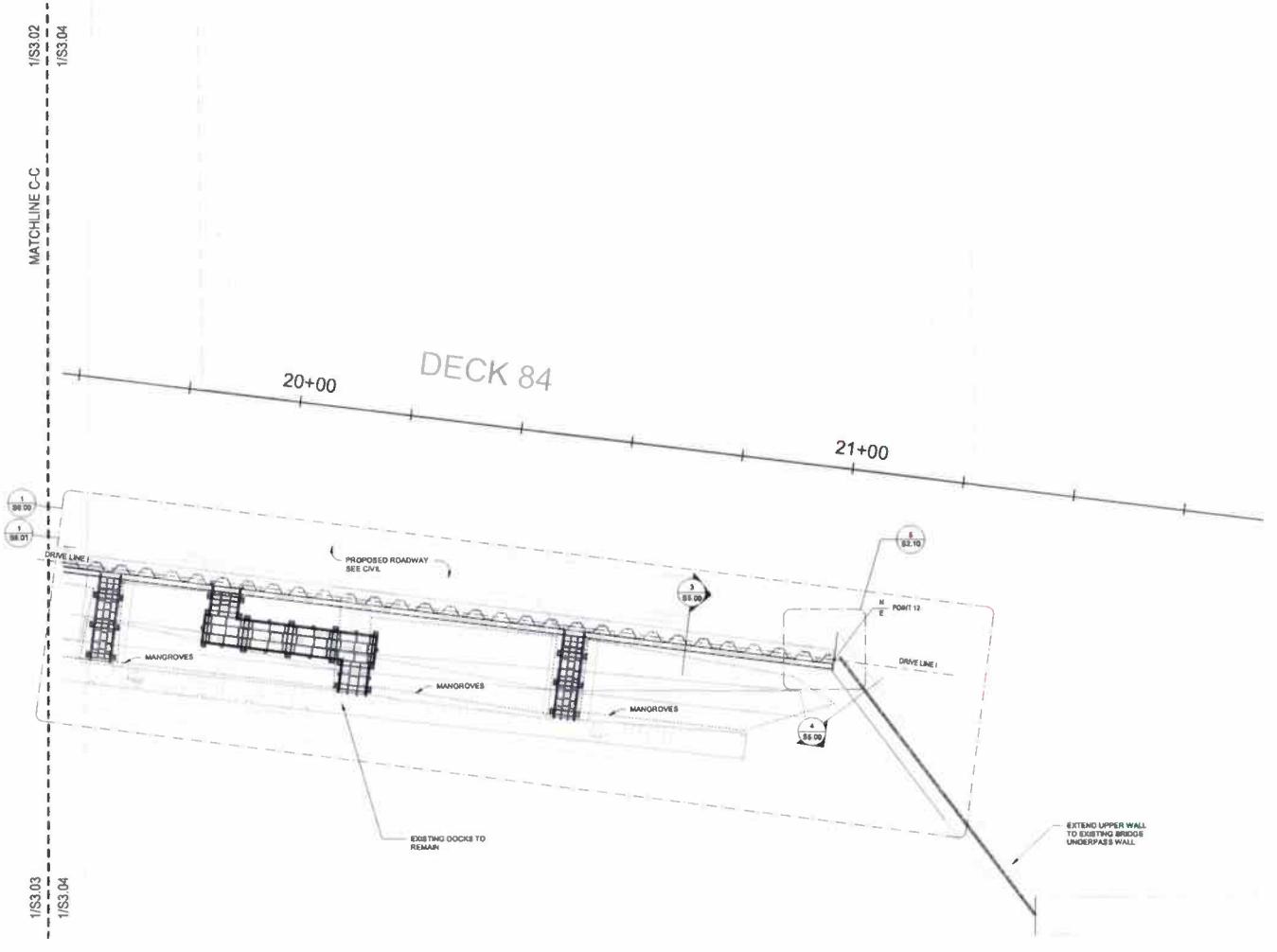


1 ENLARGED PLAN - CC
1" = 10'-0"

NORTH

CITY of DELRAY BEACH PUBLIC WORKS DEPARTMENT 434 SOUTH SWINTON AVENUE, DELRAY BEACH, FLORIDA 33444 Phone: (561) 243-7322 FAX: (561) 243-7314 www.mydelraybeach.com	PREPARED BY: WGI 2035 Vista Parkway West Palm Beach, FL 33411 Phone No. 561.687.2220 Fax No. 561.687.1110 Registry No. 33574	DESIGNED BY JRB DRAWN BY DAB CHECK BY AS DATE 12/23/22	REVISION / DATE / DESCRIPTION	THE CITY OF DELRAY BEACH HISTORIC MARINE WAY SEAWALL, ROADWAY, AND DRAINAGE IMPROVEMENT ENLARGED MARINE WAY SEAWALL	PROJECT NO 17-047 SHEET NO S3.03 FILE ID 17-047

U.S. Army Corps of Engineers
SAJ-2022-03311(SP-JLM)
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1 ENLARGED PLAN - DD
1" = 10'-0"

NORTH

CITY of DELRAY BEACH
PUBLIC WORKS DEPARTMENT
434 SOUTH SWINTON AVENUE, DELRAY BEACH, FLORIDA 33444
Phone: (561) 243-7322 FAX: (561) 243-7314 www.mydelraybeach.com

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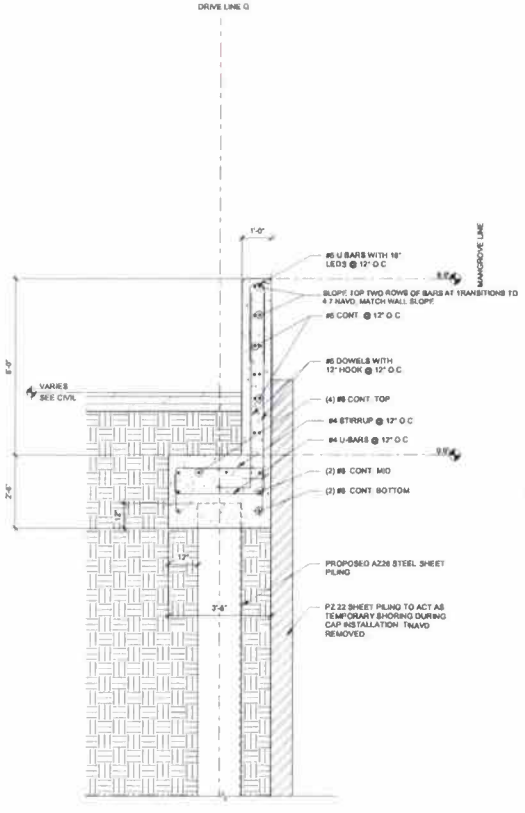
DESIGNED BY	JRS
DRAWN BY	DAB
CHECK BY	AS
DATE	12/23/22

REVISION	DATE	DESCRIPTION
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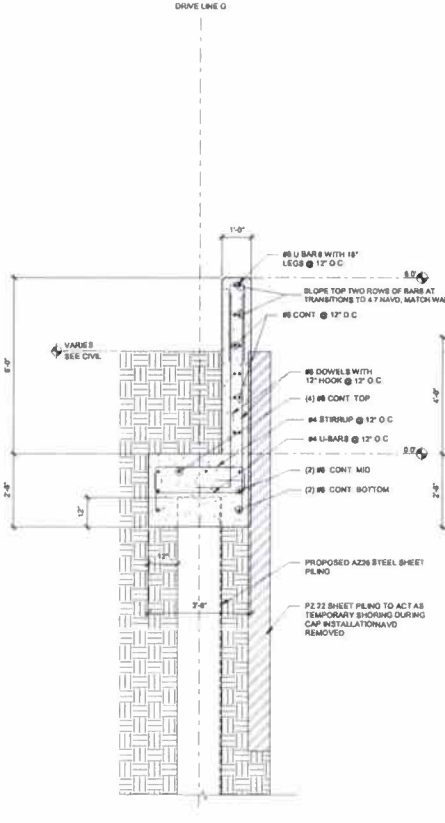
THE CITY OF DELRAY BEACH
HISTORIC MARINE WAY SEAWALL, ROADWAY, AND DRAINAGE IMPROVEMENT

ENLARGED MARINE WAY SEAWALL

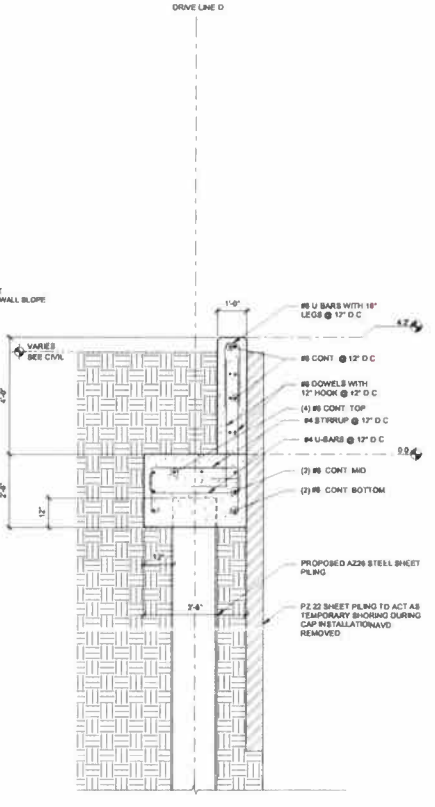
PROJECT NO 17-047
SHEET NO S3.04
FILE ID 17-047



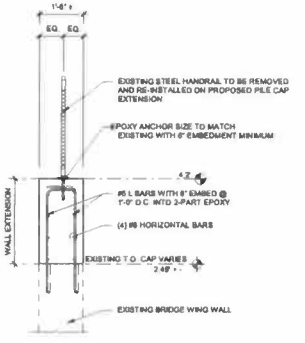
1 SEAWALL SECTION
1/2" = 1'-0"



2 SEAWALL - SECTION
1/2" = 1'-0"



3 SEAWALL - SECTION
1/2" = 1'-0"



4 SECTION
1/2" = 1'-0"

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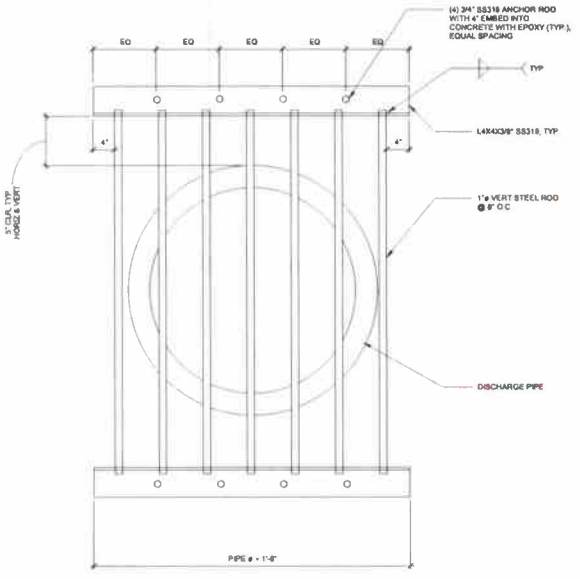
DESIGNED BY	JRB
DRAWN BY	DAB
CHECK BY	AS
DATE	12/23/22

REVISION	DATE	DESCRIPTION
	12/23/22	90% CD SET

THE CITY OF DELRAY BEACH
HISTORIC MARINE WAY SEAWALL, ROADWAY, AND DRAINAGE IMPROVEMENT

MARINE WAY DETAILS

PROJECT NO 17-047
SHEET NO S5.00
FILE ID 17-047



NOTE: MANATEE GRATE SHALL BE IN ACCORDANCE WITH FDOT DESIGN STANDARD INDEX NO. 280

① MANTEE GRATE DETAIL
NTS

CITY of DELRAY BEACH
PUBLIC WORKS DEPARTMENT
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Phone: (561) 243-7322 FAX: (561) 243-7314 www.mydelraybeach.com

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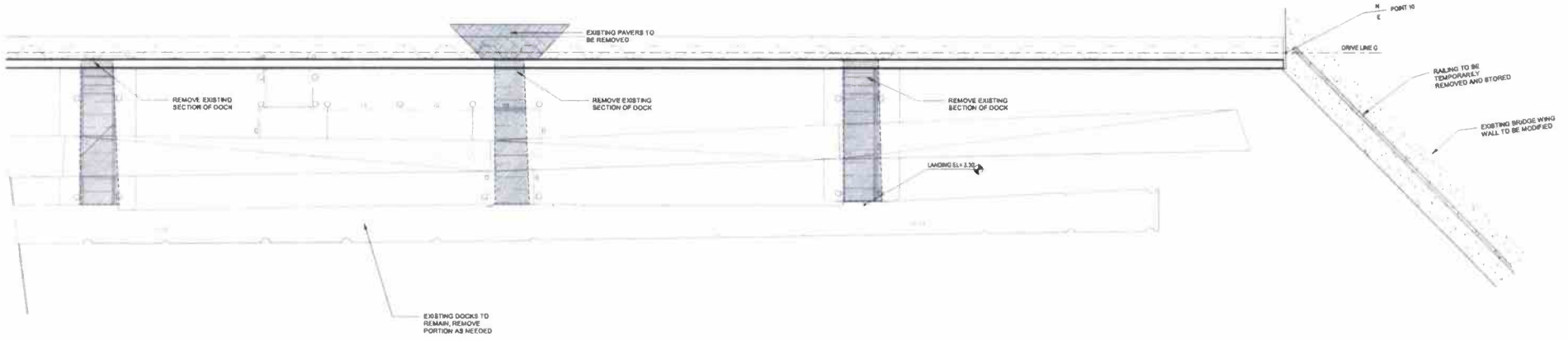
REVISION	DATE	DESCRIPTION

THE CITY OF DELRAY BEACH
HISTORIC MARINE WAY SEAWALL, ROADWAY, AND DRAINAGE IMPROVEMENT

MARINE WAY DETAILS

PROJECT NO. 17-047
SHEET NO. S5.01
FILE ID 17-047

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1 ENLARGED PLAN - CC - DEMO
3/16" = 1'-0"

CITY of DELRAY BEACH
PUBLIC WORKS DEPARTMENT
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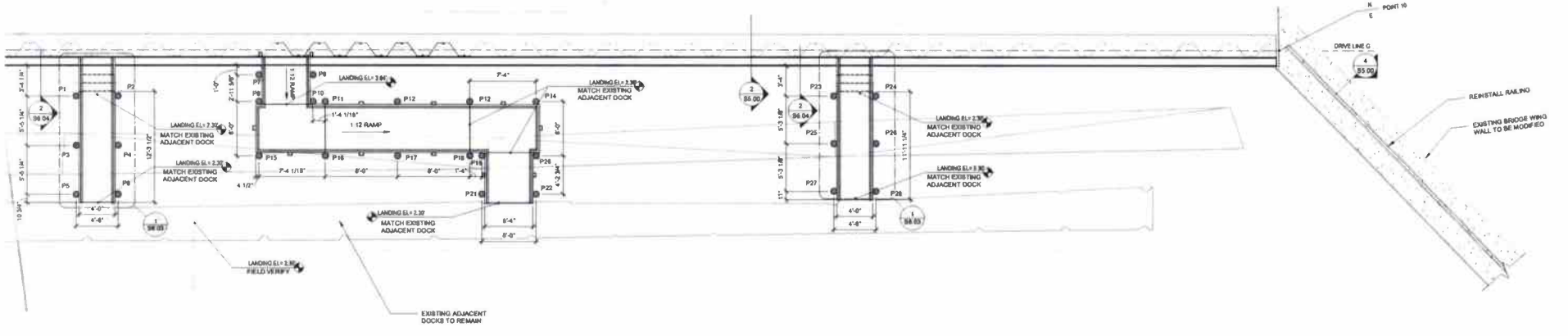
REVISION	DATE	DESCRIPTION
	12/23/22	90% CD SET

THE CITY OF DELRAY BEACH
HISTORIC MARINE WAY SEAWALL, ROADWAY, AND DRAINAGE IMPROVEMENT

ENLARGED MARINE WAY SEAWALL-DEMO

PROJECT NO 17-047
SHEET NO S6.00
FILE ID 17-047

PILE NUMBER	NORTHING	EASTING
P1	774416.95	962283.04
P2	774421.58	962283.61
P3	774416.26	962288.43
P4	774420.90	962289.00
P5	774415.58	962293.83
P6	774420.21	962294.40
P7	774437.36	962283.26
P8	774443.32	962284.02
P9	774436.99	962286.21
P10	774442.94	962286.96
P11	774444.27	962287.13
P12	774452.20	962288.14
P13	774460.14	962289.15
P14	774467.41	962290.07
P15	774436.23	962292.16
P16	774443.51	962293.08
P17	774451.45	962294.09
P18	774459.38	962295.10
P19	774460.71	962295.27
P20	774466.66	962296.02
P21	774460.17	962299.46
P22	774466.13	962300.22
P23	774500.23	962293.60
P24	774504.86	962294.19
P25	774499.57	962298.82
P26	774504.20	962299.41
P27	774498.90	962304.04
P28	774503.53	962304.63



1 ENLARGED PLAN - CC - PROPOSED
3/16" = 1'-0"

U.S. Army Corps of Engineers
SAJ-2022-03311(SP-JLM)
ATTACHMENT 1
Sheet 34 of 37
06/03/2024

CITY of DELRAY BEACH
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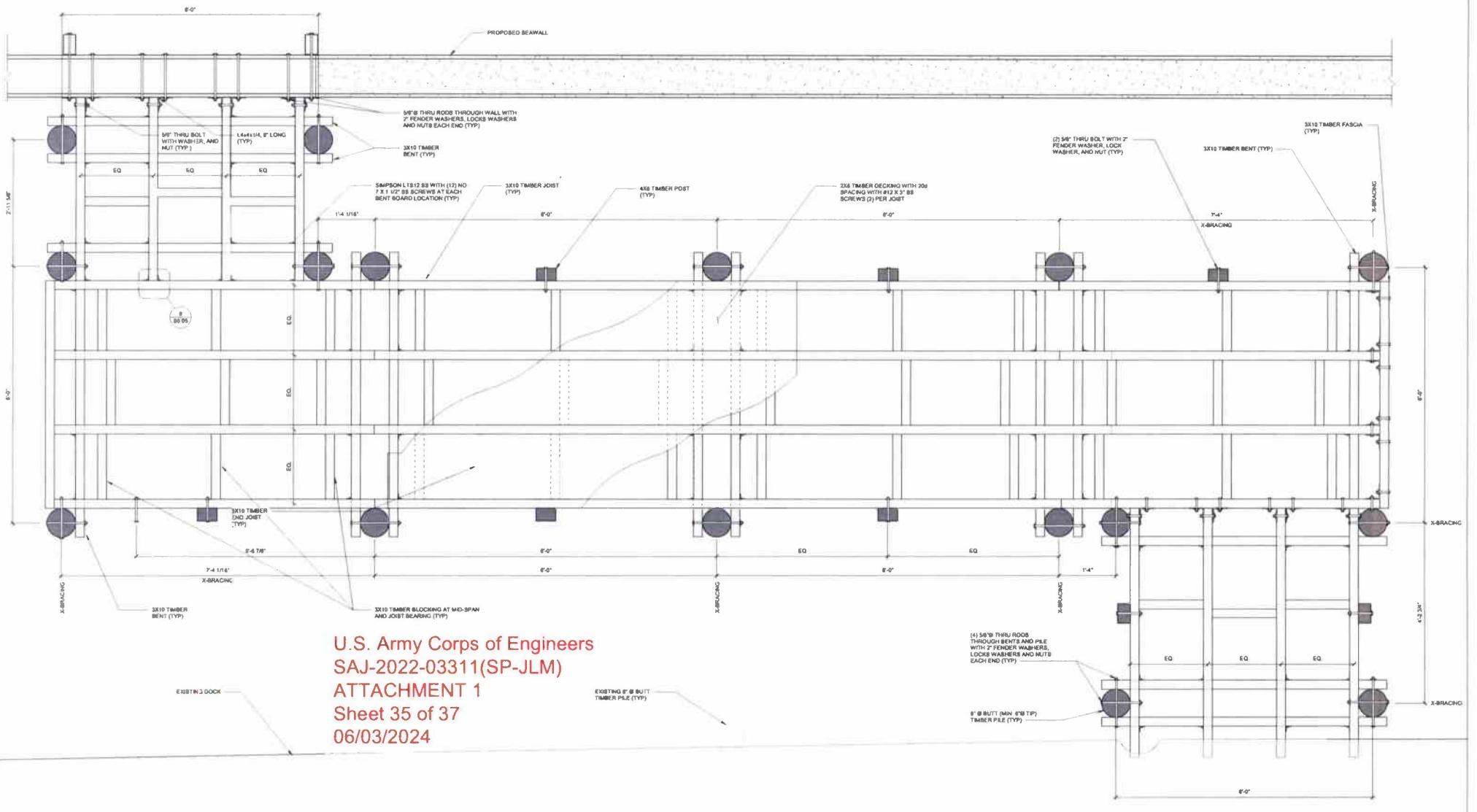
PREPARED BY:
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Phone No. 561.687.2220
Fax No. 561.687.1110
Registry No. 33574

DESIGNED BY	JRB
DRAWN BY	DAB
CHECK BY	AS
DATE	12/23/22

REVISION	DATE	DESCRIPTION
	12/23/22	90% CD SET

THE CITY OF DELRAY BEACH
HISTORIC MARINE WAY SEAWALL, ROADWAY, AND DRAINAGE IMPROVEMENT
ENLARGED MARINE WAY DOCKS

PROJECT NO 17-047
SHEET NO S6.01
FILE ID 17-047



U.S. Army Corps of Engineers
SAJ-2022-03311(SP-JLM)
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PUBLIC WORKS DEPARTMENT
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1 ENLARGED RAMP FRAMING PLAN
1" = 4'-0"

PREPARED BY
WGI
2035 Vista Parkway
West Palm Beach, FL 33411
Phone No. 561.687.2220
Fax No. 561.687.1110
Registry No. 33574

DESIGNED BY	JRB
DRAWN BY	DAB
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DATE	12/23/22

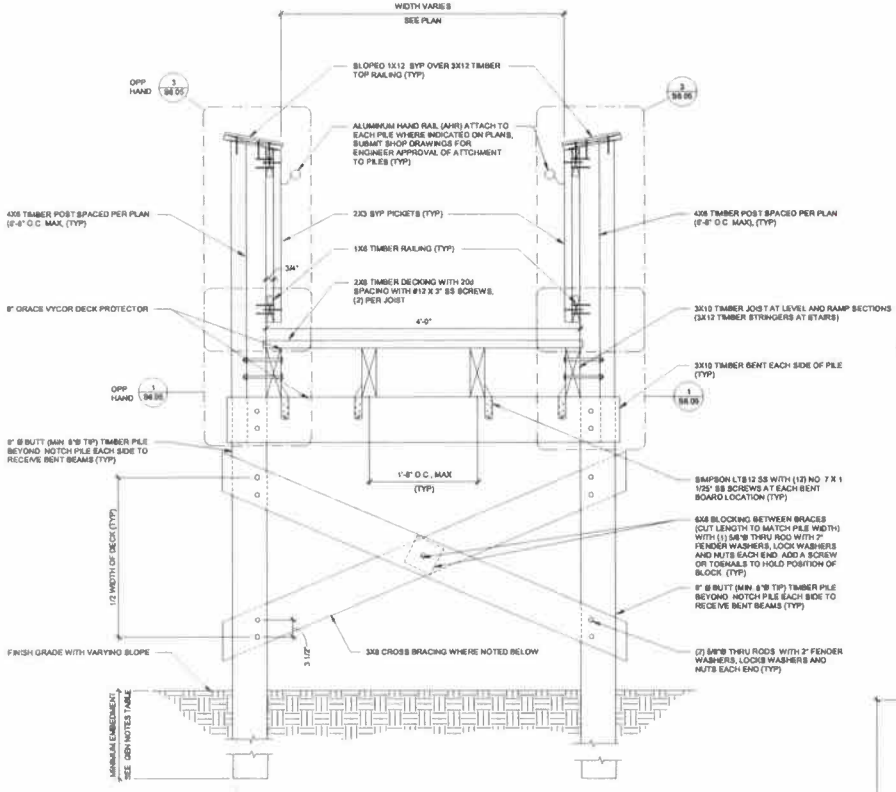
REVISION	DATE	DESCRIPTION
	12/23/22	90% CD SET

THE CITY OF DELRAY BEACH
HISTORIC MARINE WAY SEAWALL, ROADWAY, AND DRAINAGE IMPROVEMENT

WOOD RAMP FRAMING PLAN

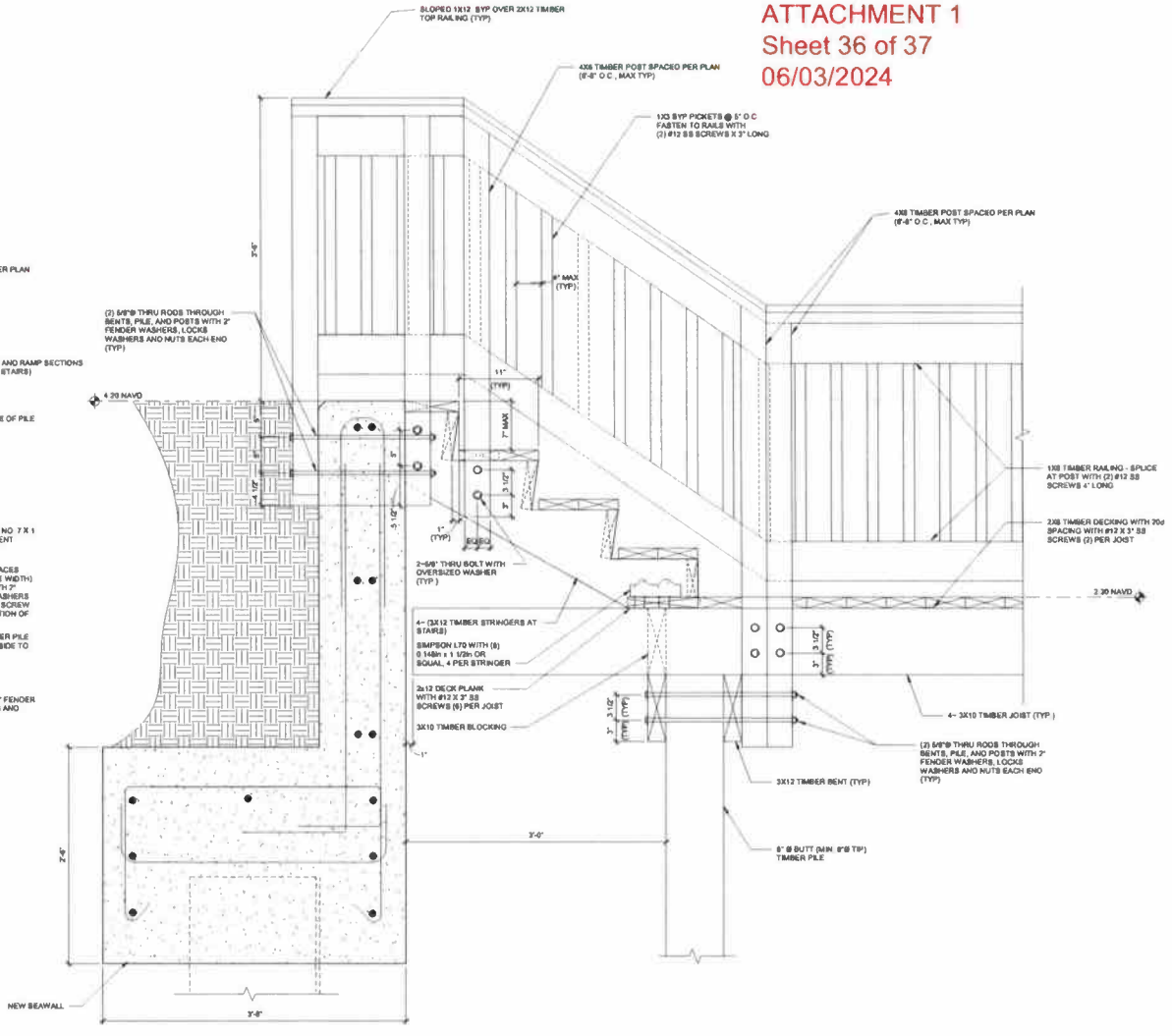
PROJECT NO 17-047
SHEET NO S6.02
FILE ID 17-047

U.S. Army Corps of Engineers
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ATTACHMENT 1
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NOTE:
X-BRACING AT TOP AND BOTTOM OF STAIRS RUNS AND AT EVERY OTHER BENT.
BURY INTO SAND TO HOLD DIMENSIONS.
EXCEPTION: NO BRACING REQUIRED IF BOTTOM OF BENT BEAM IS LESS THAN 2 FOOT ABOVE GROUND

1 TYPICAL SECTION THROUGH ACCESS AT PILES
1" = 1'-0"



2 TYPICAL BOARDWALK STAIR SECTION
1 1/2" = 1'-0"

CITY of DELRAY BEACH
PUBLIC WORKS DEPARTMENT
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Phone: (561) 243-7322 FAX: (561) 243-7314 www.mydelraybeach.com

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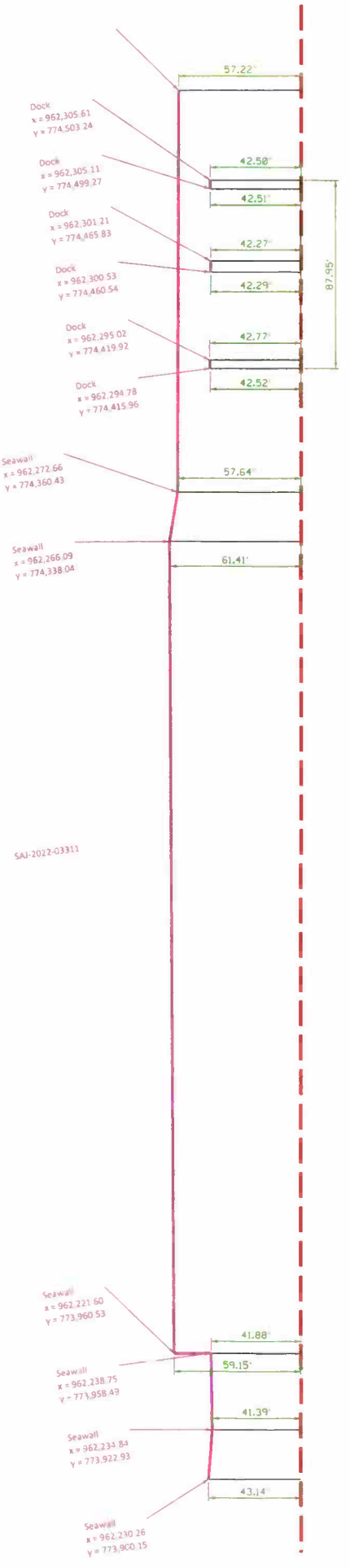
DESIGNED BY	JRB
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DATE	12/23/22

REVISION	DATE	DESCRIPTION
	12/23/22	90% CD SET

THE CITY OF DELRAY BEACH
HISTORIC MARINE WAY SEAWALL, ROADWAY, AND DRAINAGE IMPROVEMENT

WOOD STAIRS AND ACCESS SECTIONS

PROJECT NO 17-047
SHEET NO S6.04
FILE ID 17-047



U.S. Army Corps of Engineers
SAJ-2022-03311(SP-JLM)
ATTACHMENT 1
Sheet 37 of 37
06/03/2024

Attachment 2: SAJ-2022-03311

South Florida Water Management District
Individual Environmental Resource Permit No. 50-107902-P
Date Issued: March 14, 2023

Permittee: City Of Delray Beach
434 S Swinton Ave
Delray Beach, FL 33444

Project: Marine Way Seawall, Drainage, and Roadway Improvements Phase

Application No. 221101-36450

Location: Palm Beach County, See Exhibit 1

Your application for an Individual Environmental Resource Permit is approved. This action is taken based on Chapter 373, Part IV, of Florida Statutes (F.S.) and the rules in Chapter 62-330, Florida Administrative Code (F.A.C.). Unless otherwise stated, this permit constitutes certification of compliance with state water quality standards under section 401 of the Clean Water Act, 33 U.S.C. 1341, and a finding of consistency with the Florida Coastal Management Program. Please read this entire agency action thoroughly and understand its contents.

This permit is subject to:

- Not receiving a filed request for a Chapter 120, F.S., administrative hearing.
- The attached General Conditions for Environmental Resource Permits.
- The attached Special Conditions.
- All referenced Exhibits.

All documents are available online through the District's ePermitting site at www.sfwmd.gov/ePermitting.

If you object to these conditions, please refer to the attached "Notice of Rights" which addresses the procedures to be followed if you desire a public hearing or other review of the proposed agency action. Please contact this office if you have any questions concerning this matter. If we do not hear from you in accordance with the "Notice of Rights", we will assume that you concur with the District's action.

The District does not publish notices of action. If you wish to limit the time within which a person may request an administrative hearing regarding this action, you are encouraged to publish, at your own expense, a notice of agency action in the legal advertisement section of a newspaper of general circulation in the county or counties where the activity will occur. Legal requirements and instructions for publishing a notice of agency action, as well as a noticing format that can be used, are available upon request. If you publish a notice of agency action, please send a copy of the affidavit of publication provided by the newspaper to the District's West Palm Beach office for retention in this file.

If you have any questions regarding your permit or need any other information, please call us at 1-800-432-2045 or email epermits@sfwmd.gov.

Gary R. Priest, P.E.
Engineering Section Administrator, Environmental Resource Bureau

South Florida Water Management District
Individual Environmental Resource Permit No. 50-107902-P

Date Issued: March 14, 2023	**Expiration Date:** March 14, 2028
Project Name:	Marine Way Seawall, Drainage, and Roadway Improvements Phase
Permittee:	City Of Delray Beach 434 S Swinton Ave Delray Beach, FL 33444
Operating Entity:	City Of Delray Beach 434 S Swinton Ave Delray Beach, FL 33444
Location:	Palm Beach County
Permit Acres:	0.22 acres
Project Land Use:	Transportation
Special Drainage District:	N/A
Water Body Classification:	CLASS III
FDEP Water Body ID:	3226F3
Conservation Easement to District:	No
Sovereign Submerged Lands:	No

Project Summary
This Environmental Resource Permit (ERP) authorizes Construction and Operation of a stormwater management (SWM) system serving 0.22 acres of flood improvement known as Marine Way Seawall, Drainage, and Roadway Improvements Phase.

The proposed project is for the reconstruction of the Marine Way seawall, addition of pedestrian accessibility along Marine Way, drainage improvements and a pump station to alleviate localized flooding. Please refer to the Engineering Evaluation and Exhibit Nos. 2.0A-2.0C and 2.1 for additional details.

This permit is issued pursuant to the water quality net improvement provisions of Chapter 62-330.062, F.A.C.; therefore, state water quality certification is waived.

Site Description
The site is located south of East Atlantic Ave., adjacent to the western coastlineof the Intracoastal Waterway, along Marine Way, in Delray Beach, Palm Beach County. Please see Exhibit No. 1.0 for a location map.

For information on wetland and other surface water (OSW) impacts, please see the Wetlands and OSWs section of this permit.

Ownership, Operation and Maintenance

Perpetual operation and maintenance of the SWM system will be the responsibility of the City of Delray Beach. Upon conveyance or division of ownership or control of the property or the system, the permittee must notify the Agency in writing within 30 days, and the new owner must request transfer of the permit.

Engineering Evaluation:

Water Quality
The pump station upgrades include the installation of 255 L-F of exfiltration trench. The project provides 0.12 ac-feet of water quality treatment.

The project includes implementation of a Turbidity and Erosion Control Plan (Exhibit No. 2.0) as additional reasonable assurance of compliance with water quality criteria during construction.

Water Quantity
The project is intended to reduce peak flood stages and flooding duration within the Marine Way Basin. Please refer to Exhibit No. 2.1 for additional details.

Certification, Operation, and Maintenance
Pursuant to Chapter 62-330.310, F.A.C., Individual Permits will not be converted from the construction phase to the operation phase until construction completion certification of the project is submitted to and accepted by the District. This includes compliance with all permit conditions, except for any long term maintenance and monitoring requirements. It is suggested that the permittee retain the services of an appropriate professional registered in the State of Florida for periodic observation of construction of the project.

For projects permitted with an operating entity that is different from the permittee, it should be noted that until the construction completion certification is accepted by the District and the permit is transferred to an acceptable operating entity pursuant to Sections 12.1 - 12.3, ERP AH Vol. I and Section 62-330.310, F.A.C., the permittee is liable for operation and maintenance in compliance with the terms and conditions of this permit.

In accordance with Section 373.416(2), F.S., unless revoked or abandoned, all SWM systems and works permitted under Part IV of Chapter 373, F.S., must be operated and maintained in perpetuity.

The efficiency of SWM systems, dams, impoundments, and most other project components will decrease over time without periodic maintenance. The operation and maintenance entity must perform periodic inspections to identify if there are any deficiencies in structural integrity, degradation due to insufficient maintenance, or improper operation of projects that may endanger public health, safety, or welfare, or the water resources. If deficiencies are found, the operation and maintenance entity is responsible for correcting the deficiencies in a timely manner to prevent compromises to flood protection and water quality. See Section 12.4, ERP AH Vol. I for Minimum Operation and Maintenance Standards.

Notable project components requiring routine inspection and maintenance may include but are not limited to:

- Side slopes for stormwater lakes and ponds – maintain side slopes no steeper than 4:1 (horizontal:vertical) to a depth of 2.0 feet below the control elevation and nurtured or planted from 2.0 feet below to 1.0 feet above the control elevation pursuant to Section 5.4.2, ERP AH Vol. II.

- Conveyance pipes, conveyance structures and discharge structures – all pipes and structures must be inspected for structural integrity and be maintained clear of trash, sediment and vegetative debris.

- Exfiltration trenches – all pipes and structures must be inspected for structural integrity and be maintained clear of trash, sediment and vegetative debris.

- Swales – maintain the permitted cross-section and vegetative cover.

- Underground storage facilities – all facilities must be inspected for structural integrity and be maintained

clear of trash, sediment and vegetative debris.

- Pumps – float switches should be inspected and any obstructions removed to ensure proper operation; intake and discharge pipes should be maintained clear of trash, sediment and vegetative debris; motors should be maintained to ensure proper operation.

Attachment 2: SAJ-2022-03311

Engineering Evaluation Tables:

Water Quality

Basin	Treatment Type	Treatment System	Volume Required (ac-ft)	Volume Provided (ac-ft)	Length Required (ft)	Length Provided (ft)
Site	Treatment	EXFILTRATION TRENCH	0.12	0.12	255.00	255.00

Pump*

Basin	Structure #	Structure Type	Count	Capacity (gpm)	On/Off EL (ft, NAVD88)
Site	Pump 1	Discharge	1	13250.00	-4.00/-5.00
	Pump 2		1	12125.00	-3.00/-3.50

* Additional Pump Information can be found in Exhibit No. 2.0C.

Environmental Evaluation:

Wetlands and Other Surface Waters
The project site contains a 0.17-acre linear and maintained mangrove fringe along an asphalt road. The project will result in 355.425 sq. feet of impacts to the mangrove fringe for the addition of the sheet pile seawall and relocation of an access ramp. The sheet pile seawall is proposed to be constructed within the existing pavement to avoid impacts to the remaining mangrove fringe.

No work is proposed in other surface waters and any proposed work for dock removal and the pump station will be conducted from the uplands.

Direct impacts have been minimized by placing the construction of the new seawall landward of the existing mangroves to the greatest extent possible and by placing new public access ramps within the footprint of existing public access ramps to the greatest extent possible.

Because of the small size and location, along the asphalt road, the mangrove area provides very minimal ecological functions; therefore, the impacts are considered de minimis and mitigation for the proposed work is not required. Additionally, the creation of the discharge bay will have submerged riprap which will provide potential habitat for submerged resources and mangrove recruitment.

Fish, Wildlife, and Listed Species
The other surface waters located directly adjacent to the upland project site are within the known range of, and contain preferred habitat for, the West Indian manatee (Trichechus manatus latirostris), a listed endangered species by the U.S. Fish and Wildlife Service (USFWS), which has been adopted by the Florida Fish and Wildlife Conservation Commission (FWC).

This project does not include any in-water project construction activities. However, in order to ensure that manatees cannot become entrapped in the stormwater outfall pipe and discharge bay, the permittee will install manatee exclusion grates at the downstream end of the stormwater outfall pipe and within the discharge bay as depicted in Exhibit No. 2.0. Additionally, to protect manatees during in-water work, the permittee will also adhere to the 2011 Standard Manatee Protection Conditions for In-Water Work.

This permit does not relieve the permittee from complying with all applicable rules and any other agencies' requirements if, in the future, endangered or threatened species or species of special concern are discovered on the site.

Related Concerns:

Water Use Permit Status
The permittee has indicated that irrigation is not required for the project.

The permittee has indicated that dewatering may be required for construction of this project. If dewatering is required, prior to construction the permittee shall submit a Water Use permit for dewatering or shall demonstrate that the dewatering qualifies for a Permit by Rule in accordance with subsection 40E-2.061, F.A.C. Please refer to the special conditions section of this permit.

This permit does not release the permittee from obtaining all necessary Water Use authorization(s) prior to the commencement of activities which will require such authorization, including construction dewatering and irrigation.

Historical/ Archeological Resources
The District has received correspondence from the Florida Department of State, Division of Historical Resources indicating that no significant archaeological or historical resources are recorded on the project site; therefore, the project is unlikely to have an effect upon any such resources.

This permit does not release the permittee from complying with any other agencies requirements in the event that historical and/or archaeological resources are found on the site.

Attachment 2: SAJ-2022-03311

General Conditions for Individual Environmental Resource Permits, 62-330.350, F.A.C.

1. All activities shall be implemented following the plans, specifications and performance criteria approved by this permit. Any deviations must be authorized in a permit modification in accordance with rule 62-330.315, F.A.C. Any deviations that are not so authorized may subject the permittee to enforcement action and revocation of the permit under Chapter 373, F.S.

2. A complete copy of this permit shall be kept at the work site of the permitted activity during the construction phase, and shall be available for review at the work site upon request by the Agency staff. The permittee shall require the contractor to review the complete permit prior to beginning construction.

3. Activities shall be conducted in a manner that does not cause or contribute to violations of state water quality standards. Performance-based erosion and sediment control best management practices shall be installed immediately prior to, and be maintained during and after construction as needed, to prevent adverse impacts to the water resources and adjacent lands. Such practices shall be in accordance with the State of Florida Erosion and Sediment Control Designer and Reviewer Manual (Florida Department of Environmental Protection and Florida Department of Transportation, June 2007), and the Florida Stormwater Erosion and Sedimentation Control Inspector's Manual (Florida Department of Environmental Protection, Nonpoint Source Management Section, Tallahassee, Florida, July 2008), which are both incorporated by reference in subparagraph 62-330.050(9)(b)5., F.A.C., unless a project-specific erosion and sediment control plan is approved or other water quality control measures are required as part of the permit.

4. At least 48 hours prior to beginning the authorized activities, the permittee shall submit to the Agency a fully executed Form 62-330.350(1), "Construction Commencement Notice," (October 1, 2013), (http://www.flrules.org/Gateway/reference.asp?No=Ref-02505), incorporated by reference herein, indicating the expected start and completion dates. A copy of this form may be obtained from the Agency, as described in subsection 62-330.010(5), F.A.C., and shall be submitted electronically or by mail to the Agency. However, for activities involving more than one acre of construction that also require a NPDES stormwater construction general permit, submittal of the Notice of Intent to Use Generic Permit for Stormwater Discharge from Large and Small Construction Activities, DEP Form 62-621.300(4)(b), shall also serve as notice of commencement of construction under this chapter and, in such a case, submittal of Form 62-330.350(1) is not required.

5. Unless the permit is transferred under rule 62-330.340, F.A.C., or transferred to an operating entity under rule 62-330.310, F.A.C., the permittee is liable to comply with the plans, terms, and conditions of the permit for the life of the project or activity.

6. Within 30 days after completing construction of the entire project, or any independent portion of the project, the permittee shall provide the following to the Agency, as applicable:
   a. For an individual, private single-family residential dwelling unit, duplex, triplex, or quadruplex- "Construction Completion and Inspection Certification for Activities Associated With a Private Single-Family Dwelling Unit"[Form 62-330.310(3)]; or
   b. For all other activities- "As-Built Certification and Request for Conversion to Operational Phase" [Form 62-330.310(1)].
   c. If available, an Agency website that fulfills this certification requirement may be used in lieu of the form.

7. If the final operation and maintenance entity is a third party:
   a. Prior to sales of any lot or unit served by the activity and within one year of permit issuance, or within 30 days of as-built certification, whichever comes first, the permittee shall submit, as applicable, a copy of the operation and maintenance documents (see sections 12.3 thru 12.3.4 of Volume I) as filed with the Florida Department of State, Division of Corporations, and a copy of any easement, plat, or deed restriction needed to operate or maintain the project, as recorded with the Clerk of the Court in the

County in which the activity is located.
b. Within 30 days of submittal of the as-built certification, the permittee shall submit "Request for Transfer of Environmental Resource Permit to the Perpetual Operation and Maintenance Entity" [Form 62-330.310(2)] to transfer the permit to the operation and maintenance entity, along with the documentation requested in the form. If available, an Agency website that fulfills this transfer requirement may be used in lieu of the form.

8. The permittee shall notify the Agency in writing of changes required by any other regulatory agency that require changes to the permitted activity, and any required modification of this permit must be obtained prior to implementing the changes.

9. This permit does not:
a. Convey to the permittee any property rights or privileges, or any other rights or privileges other than those specified herein or in Chapter 62-330, F.A.C.;
b. Convey to the permittee or create in the permittee any interest in real property;
c. Relieve the permittee from the need to obtain and comply with any other required federal, state, and local authorization, law, rule, or ordinance; or
d. Authorize any entrance upon or work on property that is not owned, held in easement, or controlled by the permittee.

10. Prior to conducting any activities on state-owned submerged lands or other lands of the state, title to which is vested in the Board of Trustees of the Internal Improvement Trust Fund, the permittee must receive all necessary approvals and authorizations under Chapters 253 and 258, F.S. Written authorization that requires formal execution by the Board of Trustees of the Internal Improvement Trust Fund shall not be considered received until it has been fully executed.

11. The permittee shall hold and save the Agency harmless from any and all damages, claims, or liabilities that may arise by reason of the construction, alteration, operation, maintenance, removal, abandonment or use of any project authorized by the permit.

12. The permittee shall notify the Agency in writing:
a. Immediately if any previously submitted information is discovered to be inaccurate; and
b. Within 30 days of any conveyance or division of ownership or control of the property or the system, other than conveyance via a long-term lease, and the new owner shall request transfer of the permit in accordance with Rule 62-330.340, F.A.C. This does not apply to the sale of lots or units in residential or commercial subdivisions or condominiums where the stormwater management system has been completed and converted to the operation phase.

13. Upon reasonable notice to the permittee, Agency staff with proper identification shall have permission to enter, inspect, sample and test the project or activities to ensure conformity with the plans and specifications authorized in the permit.

14. If prehistoric or historic artifacts, such as pottery or ceramics, projectile points, stone tools, dugout canoes, metal implements, historic building materials, or any other physical remains that could be associated with Native American, early European, or American settlement are encountered at any time within the project site area, the permitted project shall cease all activities involving subsurface disturbance in the vicinity of the discovery. The permittee or other designee shall contact the Florida Department of State, Division of Historical Resources, Compliance Review Section (DHR), at (850)245-6333, as well as the appropriate permitting agency office. Project activities shall not resume without verbal or written authorization from the Division of Historical Resources. If unmarked human remains are encountered, all work shall stop immediately and the proper authorities notified in accordance with section 872.05, F.S. For project activities subject to prior consultation with the DHR and as an alternative to the above requirements, the permittee may follow procedures for unanticipated discoveries as set forth within a cultural resources assessment survey determined complete and sufficient by DHR and included as a specific permit condition herein.

15. Any delineation of the extent of a wetland or other surface water submitted as part of the permit application, including plans or other supporting documentation, shall not be considered binding unless a specific condition of this permit or a formal determination under Rule 62-330.201, F.A.C., provides otherwise.

16. The permittee shall provide routine maintenance of all components of the stormwater management system to remove trapped sediments and debris. Removed materials shall be disposed of in a landfill or other uplands in a manner that does not require a permit under Chapter 62-330, F.A.C., or cause violations of state water quality standards.

17. This permit is issued based on the applicant's submitted information that reasonably demonstrates that adverse water resource-related impacts will not be caused by the completed permit activity. If any adverse impacts result, the Agency will require the permittee to eliminate the cause, obtain any necessary permit modification, and take any necessary corrective actions to resolve the adverse impacts.

18. A Recorded Notice of Environmental Resource Permit may be recorded in the county public records in accordance with Rule 62-330.090(7), F.A.C. Such notice is not an encumbrance upon the property.

Special Conditions for Individual Environmental Resource Permits, 62-330.350, F.A.C.

1. The construction authorization for this permit shall expire on the date shown on page 2.

2. Operation and maintenance of the SWM system shall be the responsibility of City of Delray Beach. The permittee shall notify the Agency in writing within 30 days of any conveyance or division of ownership or control of the property of the system, and the new owner must request transfer of the permit in accordance with Rule 62-330.340, F.A.C.

3. A stable, permanent and accessible elevation reference shall be established on or within 100 feet of all permitted discharge structures no later than the submission of the certification report. The location of the elevation reference must be noted on or with the certification report.

4. Prior to initiating construction activities associated with this ERP, the permittee is required to hold a pre-construction meeting with field representatives, consultants, contractors, District Environmental Resource Bureau (ERB) staff, and any other local government entities as necessary. The purpose of the pre-construction meeting is to discuss construction methods, sequencing, best management practices, identify work areas, staking and roping of preserves where applicable, and to facilitate coordination and assistance amongst relevant parties. To schedule a pre-construction meeting, please contact ERB staff from the West Palm Beach Office at (561) 686-8800 or via e-mail at: precon@sfwmd.gov. When sending a request for a pre-construction meeting, please include the application number, permit number, and contact name and phone number.

5. This permit does not authorize the permittee to cause any adverse impact to or "take" of state listed species and other regulated species of fish and wildlife. Compliance with state laws regulating the take of fish and wildlife is the responsibility of the owner or permittee associated with this project. Please refer to Chapter 68A-27, F.A.C. for definitions of "take" and a list of fish and wildlife species. If listed species are observed onsite, FWC staff are available to provide decision support information or assist in obtaining the appropriate FWC permits. Most marine endangered and threatened species are statutorily protected and a "take" permit cannot be issued. Requests for further information or review can be sent to: FWCConservationPlanningServices@MyFWC.com.

6. The District reserves the right to require remedial measures to be taken by the permittee if monitoring or other information demonstrates that adverse impacts to onsite or offsite wetlands or OSWs have occurred due to project related activities.

7. Prior to commencement of construction, a Consumptive Use permit for dewatering shall be obtained or demonstration that the work qualifies for the permit by rule under Rule 40E-2.061, F.A.C. shall be provided.

8. STANDARD MANATEE CONDITIONS FOR IN-WATER WORK (2011) The permittee shall comply with the following conditions intended to protect manatees from direct project effects:

   a. All personnel associated with the project shall be instructed about the presence of manatees and manatee speed zones, and the need to avoid collisions with and injury to manatees. The permittee shall advise all construction personnel that there are civil and criminal penalties for harming, harassing, or killing manatees which are protected under the Marine Mammal Protection Act, the Endangered Species

Act, and the Florida Manatee Sanctuary Act.

b. All vessels associated with the construction project shall operate at "Idle Speed/No Wake" at all times while in the immediate area and while in water where the draft of the vessel provides less than a 4.0 foot clearance from the bottom. All vessels will follow routes of deep water whenever possible.

c. Siltation or turbidity barriers shall be made of material in which manatees cannot become entangled, shall be properly secured, and shall be regularly monitored to avoid manatee entanglement or entrapment. Barriers must not impede manatee movement.

d. All on-site project personnel are responsible for observing water-related activities for the presence of manatee(s). All in-water operations, including vessels, must be shutdown if a manatee(s) comes within 50 feet of the operation. Activities will not resume until the manatee(s) has moved beyond the 50-foot radius of the project operation, or until 30 minutes elapses if the manatee(s) has not reappeared within 50 feet of the operation. Animals must not be herded away or harassed into leaving.

e. Any collision with or injury to a manatee shall be reported immediately to the FWC Hotline at 1-888-404-3922. Collision and/or injury should also be reported to the USFWS in Jacksonville (1-904-731-3336) for north Florida or Vero Beach (1-772-562-3909) for south Florida, and to FWC at ImperiledSpecies@myFWC.com

f. Temporary signs concerning manatees shall be posted prior to and during all in-water project activities. All signs are to be removed by the permittee upon completion of the project. Temporary signs that have already been approved for this use by the FWC must be used. One sign which reads Caution: Boaters must be posted. A second sign measuring at least 8.5 inches by 11.0 inches explaining the requirements for "Idle Speed/No Wake" and the shut down of in-water operations must be posted in a location prominently visible to all personnel engaged in water-related activities. These signs can be viewed at MyFWC.com/manatee. Questions concerning these signs can be sent to the email address listed above.

Project Work Schedule for Permit No. 50-107902-P

The following activities are requirements of this Permit and shall be completed in accordance with the Project Work Schedule below. Please refer to General Conditions, Special Conditions and/or Specific Conditions for more information. Any deviation from these time frames will require prior approval from the District's Environmental Resources Bureau and may require a modification to this permit. Such requests must be made in writing and shall include: (1) reason for the change, (2) proposed start/finish and/or completion dates, and (3) progress report on the status of the project.

Condition No.	Date Added	Description (Application Number)	Due Date	Date Satisfied
GC 4	03/14/2023	Construction Commencement Notice	Prior to Construction	
GC 6	03/14/2023	Submit Certification	30 Days After Construction Completion	
SC 4	03/14/2023	Pre-Construction Meeting	Prior to Construction	
SC 7	03/14/2023	Obtain a Water Use Permit for Dewatering	Prior to Construction	

GC = General Condition

SC = Special Condition

Attachment 2: SAJ-2022-03311

Distribution List

Greg Griffith, WGI

Nathan Leach

Div of Recreation and Park - District 5

US Army Corps of Engineers - Permit Section

Lake Worth Drainage District

Palm Beach County - Environmental Resource Management

Palm Beach County Engineer

City Of Greenacres

Exhibits

The following exhibits to this permit are incorporated by reference. The exhibits can be viewed by clicking on the links below or by visiting the District's ePermitting website at http://my.sfwmd.gov/ePermitting and searching under this application number 221101-36450.

Exhibit No. 1.0 Location Map

Exhibit No. 2.0A SWM Plans Part 1

Exhibit No. 2.0B SWM Plans Part 2

Exhibit No. 2.0C Pump Station Plans

Exhibit No. 2.1 Calculations

NOTICE OF RIGHTS

As required by Chapter 120, Florida Statutes, the following provides notice of the opportunities which may be available for administrative hearing pursuant to Sections 120.569 and 120.57, Florida Statutes, or judicial review pursuant to Section 120.68, Florida Statutes, when the substantial interests of a party are determined by an agency. Please note that this Notice of Rights is not intended to provide legal advice. Some of the legal proceedings detailed below may not be applicable or appropriate for your situation. You may wish to consult an attorney regarding your legal rights.

RIGHT TO REQUEST ADMINISTRATIVE HEARING

A person whose substantial interests are or may be affected by the South Florida Water Management District's (District) action has the right to request an administrative hearing on that action pursuant to Sections 120.569 and 120.57, Florida Statutes. Persons seeking a hearing on a District decision which affects or may affect their substantial interests shall file a petition for hearing in accordance with the filing instructions set forth herein within 21 days of receipt of written notice of the decision unless one of the following shorter time periods apply: (1) within 14 days of the notice of consolidated intent to grant or deny concurrently reviewed applications for environmental resource permits and use of sovereign submerged lands pursuant to Section 373.427, Florida Statutes; or (2) within 14 days of service of an Administrative Order pursuant to Section 373.119(1), Florida Statutes. "Receipt of written notice of agency decision" means receipt of written notice through mail, electronic mail, posting, or publication that the District has taken or intends to take final agency action. Any person who receives written notice of a District decision and fails to file a written request for hearing within the timeframe described above waives the right to request a hearing on that decision.

If the District takes final agency action that materially differs from the noticed intended agency decision, persons who may be substantially affected shall, unless otherwise provided by law, have an additional point of entry pursuant to Rule 28-106.111, Florida Administrative Code.

Any person to whom an emergency order is directed pursuant to Section 373.119(2), Florida Statutes, shall comply therewith immediately, but on petition to the board shall be afforded a hearing as soon as possible.

A person may file a request for an extension of time for filing a petition. The District may grant the request for good cause. Requests for extension of time must be filed with the District prior to the deadline for filing a petition for hearing. Such requests for extension shall contain a certificate that the moving party has consulted with all other parties concerning the extension and whether the District and any other parties agree to or oppose the extension. A timely request for an extension of time shall toll the running of the time period for filing a petition until the request is acted upon.

FILING INSTRUCTIONS

A petition for administrative hearing must be filed with the Office of the District Clerk. Filings with the Office of the District Clerk may be made by mail, hand-delivery, or e-mail. Filings by facsimile will not be accepted. A petition for administrative hearing or other document is deemed filed upon receipt during normal business hours by the Office of the District Clerk at the District's headquarters in West Palm Beach, Florida. The District's normal business hours are 8:00 a.m. – 5:00 p.m., excluding weekends and District holidays. Any document received by the Office of the District Clerk after 5:00 p.m. shall be deemed filed as of 8:00 a.m. on the next regular business day.

Additional filing instructions are as follows:

- Filings by mail must be addressed to the Office of the District Clerk, 3301 Gun Club Road, West Palm Beach, Florida 33406.

- Filings by hand-delivery must be delivered to the Office of the District Clerk. Delivery of a petition to the District's security desk does not constitute filing. It will be necessary to request that the District's security officer contact the Office of the District Clerk. An employee of the District's Clerk's office will receive and process the petition.
- Filings by e-mail must be transmitted to the Office of the District Clerk at clerk@sfwmd.gov. The filing date for a document transmitted by electronic mail shall be the date the Office of the District Clerk receives the complete document.

INITIATION OF ADMINISTRATIVE HEARING

Pursuant to Sections 120.54(5)(b)4. and 120.569(2)(c), Florida Statutes, and Rules 28-106.201 and 28-106.301, Florida Administrative Code, initiation of an administrative hearing shall be made by written petition to the District in legible form and on 8 1/2 by 11 inch white paper. All petitions shall contain:

1. Identification of the action being contested, including the permit number, application number, District file number or any other District identification number, if known.
2. The name, address, any email address, any facsimile number, and telephone number of the petitioner, petitioner's attorney or qualified representative, if any.
3. An explanation of how the petitioner's substantial interests will be affected by the agency determination.
4. A statement of when and how the petitioner received notice of the District's decision.
5. A statement of all disputed issues of material fact. If there are none, the petition must so indicate.
6. A concise statement of the ultimate facts alleged, including the specific facts the petitioner contends warrant reversal or modification of the District's proposed action.
7. A statement of the specific rules or statutes the petitioner contends require reversal or modification of the District's proposed action.
8. If disputed issues of material fact exist, the statement must also include an explanation of how the alleged facts relate to the specific rules or statutes.
9. A statement of the relief sought by the petitioner, stating precisely the action the petitioner wishes the District to take with respect to the District's proposed action.

MEDIATION

The procedures for pursuing mediation are set forth in Section 120.573, Florida Statutes, and Rules 28-106.111 and 28-106.401–.405, Florida Administrative Code. The District is not proposing mediation for this agency action under Section 120.573, Florida Statutes, at this time.

RIGHT TO SEEK JUDICIAL REVIEW

Pursuant to Section 120.68, Florida Statutes, and in accordance with Florida Rule of Appellate Procedure 9.110, a party who is adversely affected by final District action may seek judicial review of the District's final decision by filing a notice of appeal with the Office of the District Clerk in accordance with the filing instructions set forth herein within 30 days of rendition of the order to be reviewed, and by filing a copy of the notice with the appropriate district court of appeals via the Florida Courts E-Filing Portal.

ATTACHMENT 3: SAJ-2022-03311

COMMENCEMENT NOTIFICATION

Within ten (10) days of initiating the authorized work, submit this form via electronic mail to saj-rd-enforcement@usace.army.mil (preferred, not to exceed 15 MB) ***or*** *by standard mail to U.S. Army Corps of Engineers, Enforcement Section, P.O. Box 4970, Jacksonville, FL 32232-0019.*

1. **Department of the Army Permit Number**: SAJ-2022-03311(SP-JLM)

2. **Permittee Information**:

   Name: _____

   Email: _____

   Address: _____

   _____

   Phone: _____

3. **Construction Start Date**: _____

4. **Contact to Schedule Inspection**:

   Name: _____

   Email: _____

   Phone: _____

_____
Signature of Permittee

_____
Printed Name of Permittee

_____
Date

ATTACHMENT 4: SAJ-2022-03311

AS-BUILT CERTIFICATION BY PROFESSIONAL ENGINEER

*Within sixty (60) days of completion of the authorized work, submit this form and one set of as-built engineering drawings via electronic mail to saj-rd-enforcement@usace.army.mil (preferred, but not to exceed 15 MB) **or** by standard mail to U.S. Army Corps of Engineers, Enforcement Section, P.O. Box 4970, Jacksonville, FL 32232-0019. If you have questions regarding this requirement, please contact the Enforcement Branch at 904-232-3697.*

1. Department of the Army Permit Number: SAJ- - (-)

2. Permittee Information:

Name: _____

Address: _____

_____

3. Project Site Identification (physical location/address):

_____

_____

_____

4. As-Built Certification: I hereby certify that the authorized work, including any mitigation required by Special Conditions to the permit, has been accomplished in accordance with the Department of the Army permit with any deviations noted below. This determination is based upon on-site observation, scheduled and conducted by me or by a project representative under my direct supervision. I have enclosed one set of as-built engineering drawings.

_____ _____

Signature of Engineer Name (*Please type*)

_____ _____

(FL, PR, or VI) Reg. Number Company Name

_____ _____ _____

City State ZIP

(Affix Seal)

_____ _____

Date Telephone Number

Date Work Started:_____ Date Work Completed:_____

Identify any deviations from the approved permit drawings and/or special conditions (attach additional pages if necessary):

Appendix A

APPLICATION FOR CONSENT TO CROSS U.S. GOVERNMENT EASEMENT

APPLICATION IS MADE for a Department of the Army Consent to Easement to construct, maintain, control, operate and repair a (state type of structure) _____

_____

_____ over, under, across, in, or upon the Easement vested in the United States of America as shown on the attached [include boundary survey map with legal description/construction plans and specifications of project], and situated in Section___, Township___ South, Range___ East, County of_____, Florida.

Names and Mailing Addresses of Record Owners: _____

_____

_____

Physical Address (location of project work): _____

_____

Email Address_____

Applicant understands that permanent structures affixed to the land or otherwise constructed or situated in a manner lasting or meant to last indefinitely and not expected to change in status, condition, or place are not permitted within the U.S. Easement. Unauthorized structures include, but are not limited to, residential and commercial buildings, swimming pools, patios, outbuildings, fences, gazebos, satellite dishes, oil and gas wells, boat ramps and seawall enclosures of docking areas or other structures as defined in CFR Title 36, Section 327.20. Noncompliance may subject the Applicant to possible removal and enforcement action.

The undersigned agrees that construction of the facility or structure involved in this application shall not begin until the Consent to Cross U.S. Government Easement, herein applied for, shall have been granted and appropriate rights shall have been acquired from the record owners and encumbrances of the underlying fee in the land involved.

_____	_____
Property Owner(s) Name (Print)	Property Owner(s) Name (Print)
_____	_____
(Signature)	(Signature)

DATE: _____

RETURN TO: US Army Corps of Engineers, Jacksonville District
ATTN: Real Estate Division
P.O. Box 4970
Jacksonville, FL 32232-0019

ATTACHMENT 6: SAJ-2022-03311

STANDARD MANATEE CONDITIONS FOR IN-WATER WORK

2011

The permittee shall comply with the following conditions intended to protect manatees from direct project effects:

a. All personnel associated with the project shall be instructed about the presence of manatees and manatee speed zones, and the need to avoid collisions with and injury to manatees. The permittee shall advise all construction personnel that there are civil and criminal penalties for harming, harassing, or killing manatees which are protected under the Marine Mammal Protection Act, the Endangered Species Act, and the Florida Manatee Sanctuary Act.

b. All vessels associated with the construction project shall operate at "Idle Speed/No Wake" at all times while in the immediate area and while in water where the draft of the vessel provides less than a four-foot clearance from the bottom. All vessels will follow routes of deep water whenever possible.

c. Siltation or turbidity barriers shall be made of material in which manatees cannot become entangled, shall be properly secured, and shall be regularly monitored to avoid manatee entanglement or entrapment. Barriers must not impede manatee movement.

d. All on-site project personnel are responsible for observing water-related activities for the presence of manatee(s). All in-water operations, including vessels, must be shutdown if a manatee(s) comes within 50 feet of the operation. Activities will not resume until the manatee(s) has moved beyond the 50-foot radius of the project operation, or until 30 minutes elapses if the manatee(s) has not reappeared within 50 feet of the operation. Animals must not be herded away or harassed into leaving.

e. Any collision with or injury to a manatee shall be reported immediately to the Florida Fish and Wildlife Conservation Commission (FWC) Hotline at 1-888-404-3922. Collision and/or injury should also be reported to the U.S. Fish and Wildlife Service in Jacksonville (1-904-731-3336) for north Florida or Vero Beach (1-772-562-3909) for south Florida, and to FWC at ImperiledSpecies@myFWC.com

f. Temporary signs concerning manatees shall be posted prior to and during all in-water project activities. All signs are to be removed by the permittee upon completion of the project. Temporary signs that have already been approved for this use by the FWC must be used. One sign which reads *Caution: Boaters* must be posted. A second sign measuring at least 8 ½" by 11" explaining the requirements for "Idle Speed/No Wake" and the shut down of in-water operations must be posted in a location prominently visible to all personnel engaged in water-related activities. These signs can be viewed at MyFWC.com/manatee. Questions concerning these signs can be sent to the email address listed above.

CAUTION: MANATEE HABITAT

All project vessels

IDLE SPEED / NO WAKE

When a manatee is within 50 feet of work
all in-water activities must

SHUT DOWN

Report any collision with or injury to a manatee:



Wildlife Alert:

1-888-404-FWCC(3922)

cell *FWC or #FWC

ATTACHMENT 7: SAJ-2022-03311

Prepared by:

Permittee: _____

Address: _____

_____

Phone:_____

NOTICE OF DEPARTMENT OF THE ARMY PERMIT

TAKE NOTICE the United States Army Corps of Engineers (Corps) has issued a permit or verification _____ to _____ (Permittee) on , , authorizing work in navigable waters of the United States in accordance with Section 10 of the Rivers and Harbors Act of 1899 (33 U.S.C 403) on a parcel of land known as Folio/Parcel ID: _____ located at _____.

Within 30 days of any transfer of interest or control of said property, the Permittee must notify the Corps in writing of the property transfer by submitting the completed permit transfer page included with the issued permit or verification. The subject permit or verification concerns only that portion of the property determined to fall within the jurisdiction of the Corps and this notice is applicable only to those portions of the subject property in, over, under, or affecting navigable waters of the United States.

Conditions of the Permit/Verification: The permit or verification is subject to General Conditions and Special Conditions which may affect the use of the work authorized in Intracoastal Waterway. Accordingly, interested parties should closely examine the entire permit or verification, all associated applications, and any subsequent modifications.

To obtain a copy of the authorization in its entirety submit a written request to:
U.S. Army Corps of Engineers
Regulatory Division - Special Projects & Enforcement Branch
Post Office Box 4970
Jacksonville, Florida 32232-0019

Questions regarding compliance with these conditions should be directed to:
U.S. Army Corps of Engineers
Enforcement Section
Post Office Box 4970
Jacksonville, Florida 32232-0019

Conflict Between Notice and Permit
This Notice of Authorization is not a complete summary of the issued permit or verification. Provisions in this Notice of Permit shall not be used in interpreting the permit or verification provisions. In the event of conflict between this Notice of Permit and the permit or verification, the permit or verification shall control.

This Notice is Not an Encumbrance
This Notice is for informational purposes only. It is not intended to be a lien, encumbrance, or cloud on the title of the premises.

Release
This Notice may not be released or removed from the public records without the prior written consent of the Corps.

This Notice of Authorization is executed on this _____ day of _____, _____. This document is being submitted for recordation in the Public Records of Palm Beach County, Florida as part of the requirement imposed by the authorization SAJ-2014-01517 issued by Corps.

Permittee:

_____

Address:

_____

_____

Phone:_____

STATE OF FLORIDA
COUNTY OF _____

The foregoing instrument was acknowledged before me this _____day of _____, 20____, by _____, who is personally known to me or has produced _____ as identification.

_____
Notary Public (Seal)

_____
Print

My Commission Expires_____

STANDARD PROTECTION MEASURES FOR THE EASTERN INDIGO SNAKE
U.S. Fish and Wildlife Service
August 12, 2013

The eastern indigo snake protection/education plan (Plan) below has been developed by the U.S. Fish and Wildlife Service (USFWS) in Florida for use by applicants and their construction personnel. At least **30 days prior** to any clearing/land alteration activities, the applicant shall notify the appropriate USFWS Field Office via e-mail that the Plan will be implemented as described below (North Florida Field Office: jaxregs@fws.gov; South Florida Field Office: verobeach@fws.gov; Panama City Field Office: panamacity@fws.gov). As long as the signatory of the e-mail certifies compliance with the below Plan (including use of the attached poster and brochure), no further written confirmation or "approval" from the USFWS is needed and the applicant may move forward with the project.

If the applicant decides to use an eastern indigo snake protection/education plan other than the approved Plan below, written confirmation or "approval" from the USFWS that the plan is adequate must be obtained. At least 30 days prior to any clearing/land alteration activities, the applicant shall submit their unique plan for review and approval. The USFWS will respond via e-mail, typically within 30 days of receiving the plan, either concurring that the plan is adequate or requesting additional information. A concurrence e-mail from the appropriate USFWS Field Office will fulfill approval requirements.

The Plan materials should consist of: 1) a combination of posters and pamphlets (see **Poster Information** section below); and 2) verbal educational instructions to construction personnel by supervisory or management personnel before any clearing/land alteration activities are initiated (see **Pre-Construction Activities** and **During Construction Activities** sections below).

POSTER INFORMATION

Posters with the following information shall be placed at strategic locations on the construction site and along any proposed access roads (a final poster for Plan compliance, to be printed on 11" x 17" or larger paper and laminated, is attached):

DESCRIPTION: The eastern indigo snake is one of the largest non-venomous snakes in North America, with individuals often reaching up to 8 feet in length. They derive their name from the glossy, blue-black color of their scales above and uniformly slate blue below. Frequently, they have orange to coral reddish coloration in the throat area, yet some specimens have been reported to only have cream coloration on the throat. These snakes are not typically aggressive and will attempt to crawl away when disturbed. Though indigo snakes rarely bite, they should NOT be handled.

SIMILAR SNAKES: The black racer is the only other solid black snake resembling the eastern indigo snake. However, black racers have a white or cream chin, thinner bodies, and WILL BITE if handled.

LIFE HISTORY: The eastern indigo snake occurs in a wide variety of terrestrial habitat types throughout Florida. Although they have a preference for uplands, they also utilize some wetlands

and agricultural areas. Eastern indigo snakes will often seek shelter inside gopher tortoise burrows and other below- and above-ground refugia, such as other animal burrows, stumps, roots, and debris piles. Females may lay from 4 - 12 white eggs as early as April through June, with young hatching in late July through October.

PROTECTION UNDER FEDERAL AND STATE LAW: The eastern indigo snake is classified as a Threatened species by both the USFWS and the Florida Fish and Wildlife Conservation Commission. "Taking" of eastern indigo snakes is prohibited by the Endangered Species Act without a permit. "Take" is defined by the USFWS as an attempt to kill, harm, harass, pursue, hunt, shoot, wound, trap, capture, collect, or engage in any such conduct. Penalties include a maximum fine of $25,000 for civil violations and up to $50,000 and/or imprisonment for criminal offenses, if convicted.

Only individuals currently authorized through an issued Incidental Take Statement in association with a USFWS Biological Opinion, or by a Section 10(a)(1)(A) permit issued by the USFWS, to handle an eastern indigo snake are allowed to do so.

IF YOU SEE A <u>LIVE</u> EASTERN INDIGO SNAKE ON THE SITE:

- Cease clearing activities and allow the live eastern indigo snake sufficient time to move away from the site without interference;
- Personnel must NOT attempt to touch or handle snake due to protected status.
- Take photographs of the snake, if possible, for identification and documentation purposes.
- Immediately notify supervisor or the applicant's designated agent, **and** the appropriate USFWS office, with the location information and condition of the snake.
- If the snake is located in a vicinity where continuation of the clearing or construction activities will cause harm to the snake, the activities must halt until such time that a representative of the USFWS returns the call (within one day) with further guidance as to when activities may resume.

IF YOU SEE A <u>DEAD</u> EASTERN INDIGO SNAKE ON THE SITE:

- Cease clearing activities and immediately notify supervisor or the applicant's designated agent, **and** the appropriate USFWS office, with the location information and condition of the snake.
- Take photographs of the snake, if possible, for identification and documentation purposes.
- Thoroughly soak the dead snake in water and then freeze the specimen. The appropriate wildlife agency will retrieve the dead snake.

Telephone numbers of USFWS Florida Field Offices to be contacted if a live or dead eastern indigo snake is encountered:

North Florida Field Office – (904) 731-3336
Panama City Field Office – (850) 769-0552
South Florida Field Office – (772) 562-3909

PRE-CONSTRUCTION ACTIVITIES

1. The applicant or designated agent will post educational posters in the construction office and throughout the construction site, including any access roads. The posters must be clearly visible to all construction staff. A sample poster is attached.

2. Prior to the onset of construction activities, the applicant/designated agent will conduct a meeting with all construction staff (annually for multi-year projects) to discuss identification of the snake, its protected status, what to do if a snake is observed within the project area, and applicable penalties that may be imposed if state and/or federal regulations are violated. An educational brochure including color photographs of the snake will be given to each staff member in attendance and additional copies will be provided to the construction superintendent to make available in the onsite construction office (a final brochure for Plan compliance, to be printed double-sided on 8.5" x 11" paper and then properly folded, is attached). Photos of eastern indigo snakes may be accessed on USFWS and/or FWC websites.

3. Construction staff will be informed that in the event that an eastern indigo snake (live or dead) is observed on the project site during construction activities, all such activities are to cease until the established procedures are implemented according to the Plan, which includes notification of the appropriate USFWS Field Office. The contact information for the USFWS is provided on the referenced posters and brochures.

DURING CONSTRUCTION ACTIVITIES

1. During initial site clearing activities, an onsite observer may be utilized to determine whether habitat conditions suggest a reasonable probability of an eastern indigo snake sighting (example: discovery of snake sheds, tracks, lots of refugia and cavities present in the area of clearing activities, and presence of gopher tortoises and burrows).

2. If an eastern indigo snake is discovered during gopher tortoise relocation activities (i.e. burrow excavation), the USFWS shall be contacted within one business day to obtain further guidance which may result in further project consultation.

3. Periodically during construction activities, the applicant's designated agent should visit the project area to observe the condition of the posters and Plan materials, and replace them as needed. Construction personnel should be reminded of the instructions (above) as to what is expected if any eastern indigo snakes are seen.

POST CONSTRUCTION ACTIVITIES

Whether or not eastern indigo snakes are observed during construction activities, a monitoring report should be submitted to the appropriate USFWS Field Office within 60 days of project completion. The report can be sent electronically to the appropriate USFWS e-mail address listed on page one of this Plan.



ATTENTIC

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THIS SITE!!

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Killing, harming, or harassing indigo snakes is strictly prohibited and punishable under

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- Take photographs of the snake, if possible, for identification and documentation purposes.
- Immediately notify supervisor or the applicant's designated agent, **and** the appropriate U.S. Fish and Wildlife Service (USFWS) office, with the location information and condition of the snake.
- If the snake is located in a vicinity where continuation of the clearing or construction activities will cause harm to the snake, the activities must halt until such time that a representative of the USFWS returns the call (within one day) with further guidance as to when activities may resume.

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Killing, harming, or harassing indigo snakes is strictly prohibited and punishable under State and Federal Law.

Only individuals currently authorized through an issued Incidental Take Statement in association with a USFWS Biological Opinion, or by a Section 10(a)(1)(A) permit issued by the USFWS, to handle an eastern indigo snake are allowed to do so.

LEGAL STATUS: The eastern indigo snake is classified as a Threatened species by both the USFWS and the Florida Fish and Wildlife Conservation Commission. "Taking" of eastern indigo snakes is prohibited by the Endangered Species Act without a permit. "Take" is defined by the USFWS as an attempt to kill, harm, harass, pursue, hunt, shoot, wound, trap, capture, collect, or engage in any such conduct. Penalties include a maximum fine of $25,000 for civil violations and up to $50,000 and/or imprisonment for criminal offenses, if convicted.

August 12, 2013

ATTENTION:

THREATENED EASTERN INDIGO SNAKES MAY BE PRESENT ON THIS SITE!!!



Please read the following information provided by the U.S. Fish and Wildlife Service to become familiar with standard protection measures for the eastern indigo snake.

ATTACHMENT 9: SAJ-2022-03311

CESAJ-EN 11 June 2024

MEMORANDUM FOR Chief, Regulatory Division

SUBJECT: Marine Way Drainage Improvements, Bulkhead and Docks, Intracoastal Waterway, SAJ-2022-03311

1. Reference Regulatory Division email dated 01 January 2024, requesting Engineering Division review the permit package for SAJ-2022-03311, Marine Way Drainage Improvements, Bulkhead and Docks, Intracoastal Waterway, 408 Request 2024-0002. The applicant proposes to remove a 24-linear-foot section of seawall associated with the proposed discharge bay associated with the upland pump station and partially remove a 36-linear-foot seawall for the proposed utility bay, install 500 square feet of metal pedestrian grating over proposed utility bay and install 382 square feet of metal pedestrian grating over proposed discharge bay, install three 14-inch concrete square pilings associated with the proposed discharge bay and utility bay, install three clusters of three 12-inch wooden pilings to be used as fenders at the proposed discharge and utility bays, install a 595-linear-foot seawall with a 3.5-foot-wide concrete cap with a 4.2-foot to 6-foot-tall notch along the waterward face of the cap, install a 595-linear-foot temporary sheet pile wall waterward of the proposed seawall cap, remove three existing access walkways associated with the Deck 84 Restaurant Dock, total of 188 square feet, construct two new 62-square-foot public non-American Disabilities Act (ADA) Access walkways for an existing dock associated with the Deck 84 Restaurant and impacting 5.52 square feet of mangroves wetlands, construct a new 222-square-foot public ADA access ramp associated with Deck 84's Restaurant Dock, impacting 191.05 square feet of mangroves, install a 4-inch HDPE drainage pipe under the Atlantic Avenue Bridge and reconstruct one existing 4-inch HDPE drainage pipe under the Atlantic Avenue Bridge.

2. Engineering Division does not object to the issuance of the permit and approves the request for SAJ-2022-03311, Marine Way Drainage Improvements, Bulkhead and Docks, Intracoastal Waterway, 408 Request 2024-0002, as referenced herein, as the proposed meets SAJ criteria and will not impact the federal project.

3. Approval of these modifications to the Intracoastal Waterway is in accordance with 33 U.S.C. 408. It also complies with the National Environmental Policy Act as the proposed modifications were previously analyzed in the Department of Army Permit SAJ-2022-03311.

4. The applicant shall comply with Engineering Circular 1165-2-220, dated 10 September 2018, Policy and Procedural Guidance for Processing Requests to Alter U.S. Army Corps of Engineers Civil Works Projects Pursuant to 33 U.S.C. 408, Appendix K, Standard Terms and Conditions (enclosed) and the time limit for completing the work authorized in Department of Army Permit SAJ-2022-03311. The applicant is responsible for quality control for performance of the work and for ensuring these actions do not interfere with the functioning of the Intracoastal Waterway. Documentation of the completed work must be furnished to USACE after completion of the work for our records, per the Standard Terms and Conditions (enclosed).

5. If you have any questions, please feel free to contact the Engineering Division POC Josinell Serrano Canals at 904-232-1112 or by email to josinell.m.serrano-canals@usace.army.mil.

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Laureen A. Borochaner, P.E.
Chief, Engineering Division

Enclosure

STANDARD TERMS AND CONDITIONS[1]

LIMITS OF THE AUTHORIZATION

1. This permission only authorizes you, the requester, to undertake the activity described herein under the authority provided in Section 14 of the Rivers and Harbors Act of 1899, as amended (33 U.S.C. 408). This permission does not obviate the need to obtain other federal, state, or local authorizations required by law. This permission does not grant any property rights or exclusive privileges, and you must have appropriate real estate instruments in place prior to construction and/or installation.
2. The time limit for completing the work authorized is as referenced in the main approval letter. If you find that you need more time to complete the authorized activity, submit your request for a time extension to this office for consideration at least one month before the permit date is reached.
3. Without prior written approval of the USACE, you must neither transfer nor assign this permission nor sublet the premises or any part thereof, nor grant any interest, privilege, or license whatsoever in connection with this permission. Failure to comply with this condition will constitute noncompliance for which the permission may be revoked immediately by USACE.
4. The requester understands and agrees that, if future operations by the United States require the removal, relocation, or other alteration of the work herein authorized, or if, in the opinion of the Secretary of the Army or an authorized representative, said work will cause unreasonable conditions and/or obstruction of USACE project authorized design, the requester will be required upon due notice from the USACE, to remove, relocate, or alter the structural work or obstructions caused thereby, without expense to the United States. No claim can be made against the United States on account of any such removal or alteration.

INDEMNIFICATION AND HOLD HARMLESS

5. The United States will in no case be liable for:
   a. any damage or injury to the structures or work authorized by this permission that may be caused or result from future operations undertaken by the United States, and no claim or right to compensation will accrue from any damage; or
   b. damage claims associated with any future modification, suspension, or revocation of this permission.
6. The United States will not be responsible for damages or injuries which may arise from or be incident to the construction, maintenance, and use of the project requested by you, nor for damages to the property or injuries to your officers, agents, servants, or employees, or others who may be on your premises or project

[1] EC 1165-2-220, Policy and Procedural Guidance for Processing Requests to Alter US Army Corps of Engineers Civil Works Projects Pursuant to 33 USC 408, Appendix K, 10 SEP 2018

work areas or the federal project(s) rights-of-way. By accepting this permission, you hereby agree to fully defend, **indemnify**, and **hold harmless** the United States and USACE from any and all such claims, subject to any limitations in law. Any damage to the water resources development project or other portions of any federal project(s) resulting from your activities must be repaired at your expense.

REEVALUATION OF PERMISSION

7. The determination that the activity authorized by this permission would not impair the usefulness of the federal project and would not be injurious to the public interest was made in reliance on the information you provided.
8. This office, at its sole discretion, may reevaluate its decision to issue this permission at any time circumstances warrant, which may result in a determination that it is appropriate or necessary to modify or revoke this permission. Circumstances that could require a reevaluation include, but are not limited to, the following:
   a. you fail to comply with the terms and conditions of this permission;
   b. the information provided in support of your application for permission proves to have been inaccurate or incomplete; or
   c. significant new information surfaces which this office did not consider in reaching the original decision that the activity would not impair the usefulness of the water resources development project and would not be injurious to the public interest.

CONDUCT OF WORK UNDER THIS PERMISSION

9. You are responsible for implementing any requirements for mitigation, reasonable and prudent alternatives, or other conditions or requirements imposed as a result of environmental compliance.
10. Work/usage allowed under this permission must proceed in a manner that avoids interference with the inspection, operation, and maintenance of the federal project.
11. In the event of any deficiency in the design or construction of the requested activity, you are solely responsible for taking remedial action to correct the deficiency.
12. The right is reserved to the USACE to enter upon the premises at any time and for any purpose necessary or convenient in connection with government purposes, to make inspections, to operate and/or to make any other use of the lands as may be necessary in connection with government purposes, and you will have no claim for damages on account thereof against the United States or any officer, agent or employee thereof.
13. You must provide copies of pertinent design, construction, and/or usage submittals/documents. USACE may request that survey and photographic documentation of the alteration work and the impacted project area be provided before, during, and after construction and/or installation.
14. You may be required to perform an inspection of the federal project with the USACE, prior to your use of the structure, to document existing conditions.

15. USACE shall not be responsible for the technical sufficiency of the alteration design nor for the construction and/or installation work.
16. You must schedule a final inspection with the Jacksonville District within 60 days after completion of the work.
17. You must submit documentation of the completed work to USACE within 90 days after completion of the work showing the new work as it relates to identifiable features of the federal project. This documentation must include a certification that the work was completed in accordance with the approved plans and specifications, GPS readings for the limits of the work performed, electronic "as-built" drawings, and the date the work was started and completed.

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
Standard Grant Agreement

This Agreement is entered into between the Parties named below, pursuant to Section 215.971, Florida Statutes:

1. Project Title (Project): **City of Delray Beach Marine Way Drainage Improvements**
   Agreement Number: **23FRP42**

2. Parties: **State of Florida Department of Environmental Protection, 3900 Commonwealth Boulevard, Tallahassee, Florida 32399-3000** (Department)

   Grantee Name: **City of Delray Beach** Entity Type: **Local Government**

   Grantee Address: **100 NW 1st Avenue, Delray Beach, Florida 33444** FEID: **59-6000308** (Grantee)

3. Agreement Begin Date: **Upon Execution**
   Date of Expiration: **9/30/2026**

4. Project Number: **23FRP42** *(If different from Agreement Number)*
   Project Location(s): **Palm Beach County**

   Project Description: **The Project will construct a new seawall, pump station, roads, stormwater pipes, water mains and sanitary sewer pipes.**

5. Total Amount of Funding: **$ 10,000,000.00**

Funding Source?	Award #s or Line Item Appropriations:	Amount per Source(s):
☐ State ☒ Federal	**197-H 23**	$ **10,000,000.00**
☐ State ☐ Federal		$
☒ Grantee Match		$ **10,000,000.00**
	Total Amount of Funding + Grantee Match, if any:	$ **20,000,000.00**

6. Department's Grant Manager
   Name: **Charles Neuhauser** or successor
   Address: **Resilient Florida Program**, **2600 Blair Stone Road, MS235**, **Tallahassee, Florida 32399**
   Phone: **850-245-2138**
   Email: **Charles.Neuhauser@FloridaDEP.gov**

   Grantee's Grant Manager
   Name: **Missie Barletto** or successor
   Address: **100 NW 1st Avenue**, **Delray Beach, Florida 33444**
   Phone: **561-243-7000 (ext. 4104)**
   Email: **barlettom@mydelraybeach.com**

7. The Parties agree to comply with the terms and conditions of the following attachments and exhibits which are hereby incorporated by reference:

- ☒ Attachment 1: Standard Terms and Conditions Applicable to All Grants Agreements
- ☒ Attachment 2: Special Terms and Conditions
- ☒ Attachment 3: Grant Work Plan
- ☒ Attachment 4: Public Records Requirements
- ☒ Attachment 5: Special Audit Requirements
- ☒ Attachment 6: Program-Specific Requirements
- ☐ Attachment 7: Grant Award Terms (Federal) *Copy available at https://facts.fldfs.com, in accordance with §215.985, F.S.
- ☒ Attachment 8: Federal Regulations and Terms (Federal)
- ☐ Additional Attachments (if necessary):
- ☒ Exhibit A: Progress Report Form
- ☐ Exhibit B: Property Reporting Form
- ☒ Exhibit C: Payment Request Summary Form
- ☐ Exhibit D: Quality Assurance Requirements
- ☐ Exhibit E: Advance Payment Terms and Interest Earned Memo
- ☒ Exhibit J: Common Carrier or Contracted Carrier Attestation Form PUR1808
- ☒ Additional Exhibits (if necessary): **Exhibit F: Final Report Form, Exhibit G: Photographer Release Form, and Exhibit H: Contractual Services Certification**

8.	The following information applies to Federal Grants only and is identified in accordance with 2 CFR 200.331 (a) (1):
Federal Award Identification Number(s) (FAIN):	**SLFRP0125**
Federal Award Date to Department:	**2/6/2023**
Total Federal Funds Obligated by this Agreement:	**$10,000,000**
Federal Awarding Agency:	**U.S. Department of Treasury**
Award R&D?	☐ Yes ☒ N/A

IN WITNESS WHEREOF, this Agreement shall be effective on the date indicated by the Agreement Begin Date unless another date is specified in the grant documents.

City of Delray Beach — **GRANTEE**

By _____ 9/18/2023

Shelly Petrolia, Mayor — Date Signed

Print Name and Title of Person Signing

State of Florida Department of Environmental Protection — **DEPARTMENT**

By Alex Reed — 10/2/2023

Secretary or Designee — Date Signed

Alex Reed, Director of the Office of Resilience and Coastal Protection

Print Name and Title of Person Signing

☒ Additional signatures attached on separate page.

ORCP Additional Signatures

Charles Neuhauser Digitally signed by Charles Neuhauser
Date: 2023.09.29 13:23:47 -04'00'

DEP Grant Manager, Charles Neuhauser

Hanna Tillotson Digitally signed by: Hanna Tillotson
DN: CN = Hanna Tillotson email = Hanna.Tillotson@FloridaDEP.gov C = AD O = Florida DEP
Date: 2023.09.29 12:50:11 -04'00'

DEP QC Reviewer, Hanna Tillotson

Grantee may add additional signatures below, if needed.

ATTEST:

Katerri Johnson, City Clerk

CITY OF DELRAY BEACH SEAL FLORIDA

Approved as to Form and Legal Sufficiency:

Lynn Gelin, City Attorney

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
STANDARD TERMS AND CONDITIONS
APPLICABLE TO GRANT AGREEMENTS

ATTACHMENT 1

1. Entire Agreement.

This Grant Agreement, including any Attachments and Exhibits referred to herein and/or attached hereto (Agreement), constitutes the entire agreement between the parties with respect to the subject matter hereof and supersedes all prior agreements, whether written or oral, with respect to such subject matter. Any terms and conditions included on Grantee's forms or invoices shall be null and void.

2. Grant Administration.

a. Order of Precedence. If there are conflicting provisions among the documents that make up the Agreement, the order of precedence for interpretation of the Agreement is as follows:
   i. Standard Grant Agreement
   ii. Attachments other than Attachment 1, in numerical order as designated in the Standard Grant Agreement
   iii. Attachment 1, Standard Terms and Conditions
   iv. The Exhibits in the order designated in the Standard Grant Agreement

b. All approvals, written or verbal, and other written communication among the parties, including all notices, shall be obtained by or sent to the parties' Grant Managers. All written communication shall be by electronic mail, U.S. Mail, a courier delivery service, or delivered in person. Notices shall be considered delivered when reflected by an electronic mail read receipt, a courier service delivery receipt, other mail service delivery receipt, or when receipt is acknowledged by recipient. If the notice is delivered in multiple ways, the notice will be considered delivered at the earliest delivery time.

c. If a different Grant Manager is designated by either party after execution of this Agreement, notice of the name and contact information of the new Grant Manager will be submitted in writing to the other party and maintained in the respective parties' records. A change of Grant Manager does not require a formal amendment or change order to the Agreement.

d. This Agreement may be amended, through a formal amendment or a change order, only by a written agreement between both parties. A formal amendment to this Agreement is required for changes which cause any of the following:
   (1) an increase or decrease in the Agreement funding amount;
   (2) a change in Grantee's match requirements;
   (3) a change in the expiration date of the Agreement; and/or
   (4) changes to the cumulative amount of funding transfers between approved budget categories, as defined in Attachment 3, Grant Work Plan, that exceeds or is expected to exceed twenty percent (20%) of the total budget as last approved by Department.
   A change order to this Agreement may be used when:
   (1) task timelines within the current authorized Agreement period change;
   (2) the cumulative transfer of funds between approved budget categories, as defined in Attachment 3, Grant Work Plan, are less than twenty percent (20%) of the total budget as last approved by Department;
   (3) changing the current funding source as stated in the Standard Grant Agreement; and/or
   (4) fund transfers between budget categories for the purposes of meeting match requirements.
   This Agreement may be amended to provide for additional services if additional funding is made available by the Legislature.

e. All days in this Agreement are calendar days unless otherwise specified.

3. Agreement Duration.

The term of the Agreement shall begin and end on the dates indicated in the Standard Grant Agreement, unless extended or terminated earlier in accordance with the applicable terms and conditions. The Grantee shall be eligible for reimbursement for work performed on or after the date of execution through the expiration date of this Agreement, unless otherwise specified in Attachment 2, Special Terms and Conditions. However, work performed prior to the execution of this Agreement may be reimbursable or used for match purposes if permitted by the Special Terms and Conditions.

4. Deliverables.

The Grantee agrees to render the services or other units of deliverables as set forth in Attachment 3, Grant Work Plan. The services or other units of deliverables shall be delivered in accordance with the schedule and at the pricing outlined in the Grant Work Plan. Deliverables may be comprised of activities that must be completed prior to Department making payment on that deliverable. The Grantee agrees to perform in accordance with the terms and conditions set forth in this Agreement and all attachments and exhibits incorporated by the Standard Grant Agreement.

5. Performance Measures.

The Grantee warrants that: (1) the services will be performed by qualified personnel; (2) the services will be of the kind and quality described in the Grant Work Plan; (3) the services will be performed in a professional and workmanlike manner in accordance with industry standards and practices; (4) the services shall not and do not knowingly infringe upon the intellectual property rights, or any other proprietary rights, of any third party; and (5) its employees, subcontractors, and/or subgrantees shall comply with any security and safety requirements and processes, if provided by Department, for work done at the Project Location(s). The Department reserves the right to investigate or inspect at any time to determine whether the services or qualifications offered by Grantee meet the Agreement requirements. Notwithstanding any provisions herein to the contrary, written acceptance of a particular deliverable does not foreclose Department's remedies in the event deficiencies in the deliverable cannot be readily measured at the time of delivery.

6. Acceptance of Deliverables.

a. Acceptance Process. All deliverables must be received and accepted in writing by Department's Grant Manager before payment. The Grantee shall work diligently to correct all deficiencies in the deliverable that remain outstanding, within a reasonable time at Grantee's expense. If Department's Grant Manager does not accept the deliverables within 30 days of receipt, they will be deemed rejected.

b. Rejection of Deliverables. The Department reserves the right to reject deliverables, as outlined in the Grant Work Plan, as incomplete, inadequate, or unacceptable due, in whole or in part, to Grantee's lack of satisfactory performance under the terms of this Agreement. The Grantee's efforts to correct the rejected deliverables will be at Grantee's sole expense. Failure to fulfill the applicable technical requirements or complete all tasks or activities in accordance with the Grant Work Plan will result in rejection of the deliverable and the associated invoice. Payment for the rejected deliverable will not be issued unless the rejected deliverable is made acceptable to Department in accordance with the Agreement requirements. The Department, at its option, may allow additional time within which Grantee may remedy the objections noted by Department. The Grantee's failure to make adequate or acceptable deliverables after a reasonable opportunity to do so shall constitute an event of default.

7. Financial Consequences for Nonperformance.

a. Withholding Payment. In addition to the specific consequences explained in the Grant Work Plan and/or Special Terms and Conditions, the State of Florida (State) reserves the right to withhold payment when the Grantee has failed to perform/comply with provisions of this Agreement. None of the financial consequences for nonperformance in this Agreement as more fully described in the Grant Work Plan shall be considered penalties.

b. Invoice reduction
If Grantee does not meet a deadline for any deliverable, the Department will reduce the invoice by 1% for each day the deadline is missed, unless an extension is approved in writing by the Department.

c. Corrective Action Plan. If Grantee fails to correct all the deficiencies in a rejected deliverable within the specified timeframe, Department may, in its sole discretion, request that a proposed Corrective Action Plan (CAP) be submitted by Grantee to Department. The Department requests that Grantee specify the outstanding deficiencies in the CAP. All CAPs must be able to be implemented and performed in no more than sixty (60) calendar days.
    i. The Grantee shall submit a CAP within ten (10) days of the date of the written request from Department. The CAP shall be sent to the Department's Grant Manager for review and approval. Within ten (10) days of receipt of a CAP, Department shall notify Grantee in writing whether the CAP proposed has been accepted. If the CAP is not accepted, Grantee shall have ten (10) days from receipt of Department letter rejecting the proposal to submit a revised proposed CAP. Failure to obtain Department approval of a CAP as specified above may result in Department's termination of this Agreement for cause as authorized in this Agreement.
    ii. Upon Department's notice of acceptance of a proposed CAP, Grantee shall have ten (10) days to commence implementation of the accepted plan. Acceptance of the proposed CAP by Department does not relieve Grantee of any of its obligations under the Agreement. In the event the CAP fails to correct or eliminate performance deficiencies by Grantee, Department shall retain the right to

require additional or further remedial steps, or to terminate this Agreement for failure to perform. No actions approved by Department or steps taken by Grantee shall preclude Department from subsequently asserting any deficiencies in performance. The Grantee shall continue to implement the CAP until all deficiencies are corrected. Reports on the progress of the CAP will be made to Department as requested by Department's Grant Manager.

iii. Failure to respond to a Department request for a CAP or failure to correct a deficiency in the performance of the Agreement as specified by Department may result in termination of the Agreement.

8. Payment.

a. Payment Process. Subject to the terms and conditions established by the Agreement, the pricing per deliverable established by the Grant Work Plan, and the billing procedures established by Department, Department agrees to pay Grantee for services rendered in accordance with section 215.422, Florida Statutes (F.S.).

b. Taxes. The Department is exempted from payment of State sales, use taxes and Federal excise taxes. The Grantee, however, shall not be exempted from paying any taxes that it is subject to, including State sales and use taxes, or for payment by Grantee to suppliers for taxes on materials used to fulfill its contractual obligations with Department. The Grantee shall not use Department's exemption number in securing such materials. The Grantee shall be responsible and liable for the payment of all its FICA/Social Security and other taxes resulting from this Agreement.

c. Maximum Amount of Agreement. The maximum amount of compensation under this Agreement, without an amendment, is described in the Standard Grant Agreement. Any additional funds necessary for the completion of this Project are the responsibility of Grantee.

d. Reimbursement for Costs. The Grantee shall be paid on a cost reimbursement basis for all eligible Project costs upon the completion, submittal, and approval of each deliverable identified in the Grant Work Plan. Reimbursement shall be requested on Exhibit C, Payment Request Summary Form. To be eligible for reimbursement, costs must be in compliance with laws, rules, and regulations applicable to expenditures of State funds, including, but not limited to, the Reference Guide for State Expenditures, which can be accessed at the following web address: https://www.myfloridacfo.com/docs-sf/accounting-and-auditing-libraries/state-agencies/reference-guide-for-state-expenditures.pdf.

e. Invoice Detail. All charges for services rendered or for reimbursement of expenses authorized by Department pursuant to the Grant Work Plan shall be submitted to Department in sufficient detail for a proper pre-audit and post-audit to be performed. The Grantee shall only invoice Department for deliverables that are completed in accordance with the Grant Work Plan.

f. State Funds Documentation. Pursuant to section 216.1366, F.S., if Contractor meets the definition of a non-profit organization under section 215.97(2)(m), F.S., Contractor must provide the Department with documentation that indicates the amount of state funds:

i. Allocated to be used during the full term of the contract or agreement for remuneration to any member of the board of directors or an officer of Contractor.

ii. Allocated under each payment by the public agency to be used for remuneration of any member of the board of directors or an officer of the Contractor.

The documentation must indicate the amounts and recipients of the remuneration. Such information must be posted on the State's the contract tracking system and maintained pursuant to section 215.985, F.S., and must be posted on the Contractor's website, if Contractor maintains a website.

g. Interim Payments. Interim payments may be made by Department, at its discretion, if the completion of deliverables to date have first been accepted in writing by Department's Grant Manager.

h. Final Payment Request. A final payment request should be submitted to Department no later than sixty (60) days following the expiration date of the Agreement to ensure the availability of funds for payment. However, all work performed pursuant to the Grant Work Plan must be performed on or before the expiration date of the Agreement.

i. Annual Appropriation Contingency. The State's performance and obligation to pay under this Agreement is contingent upon an annual appropriation by the Legislature. This Agreement is not a commitment of future appropriations. Authorization for continuation and completion of work and any associated payments may be rescinded, with proper notice, at the discretion of Department if the Legislature reduces or eliminates appropriations.

j. Interest Rates. All interest rates charged under the Agreement shall be calculated on the prevailing rate used by the State Board of Administration. To obtain the applicable interest rate, please refer to: https://www.myfloridacfo.com/division/aa/local-governments/judgement-interest-rates.

k. Refund of Payments to the Department. Any balance of unobligated funds that have been advanced or paid must be refunded to Department. Any funds paid in excess of the amount to which Grantee or subgrantee is entitled under the terms of the Agreement must be refunded to Department. If this Agreement is funded with federal funds and the Department is required to refund the federal government, the Grantee shall refund the Department its share of those funds.

9. Documentation Required for Cost Reimbursement Grant Agreements and Match.

If Cost Reimbursement or Match is authorized in Attachment 2, Special Terms and Conditions, the following conditions apply. Supporting documentation must be provided to substantiate cost reimbursement or match requirements for the following budget categories:

a. Salary/Wages. Grantee shall list personnel involved, position classification, direct salary rates, and hours spent on the Project in accordance with Attachment 3, Grant Work Plan in their documentation for reimbursement or match requirements.

b. Overhead/Indirect/General and Administrative Costs. If Grantee is being reimbursed for or claiming match for multipliers, all multipliers used (i.e., fringe benefits, overhead, indirect, and/or general and administrative rates) shall be supported by audit. If Department determines that multipliers charged by Grantee exceeded the rates supported by audit, Grantee shall be required to reimburse such funds to Department within thirty (30) days of written notification. Interest shall be charged on the excessive rate.

c. Contractual Costs (Subcontractors). Match or reimbursement requests for payments to subcontractors must be substantiated by copies of invoices with backup documentation identical to that required from Grantee. Subcontracts which involve payments for direct salaries shall clearly identify the personnel involved, salary rate per hour, and hours spent on the Project. All eligible multipliers used (i.e., fringe benefits, overhead, indirect, and/or general and administrative rates) shall be supported by audit. If Department determines that multipliers charged by any subcontractor exceeded the rates supported by audit, Grantee shall be required to reimburse such funds to Department within thirty (30) days of written notification. Interest shall be charged on the excessive rate. Nonconsumable and/or nonexpendable personal property or equipment costing $5,000 or more purchased for the Project under a subcontract is subject to the requirements set forth in chapters 273 and/or 274, F.S., and Chapter 69I-72, Florida Administrative Code (F.A.C.) and/or Chapter 69I-73, F.A.C., as applicable. The Grantee shall be responsible for maintaining appropriate property records for any subcontracts that include the purchase of equipment as part of the delivery of services. The Grantee shall comply with this requirement and ensure its subcontracts issued under this Agreement, if any, impose this requirement, in writing, on its subcontractors.

    i. For fixed-price (vendor) subcontracts, the following provisions shall apply: The Grantee may award, on a competitive basis, fixed-price subcontracts to consultants/contractors in performing the work described in Attachment 3, Grant Work Plan. Invoices submitted to Department for fixed-price subcontracted activities shall be supported with a copy of the subcontractor's invoice and a copy of the tabulation form for the competitive procurement process (e.g., Invitation to Bid, Request for Proposals, or other similar competitive procurement document) resulting in the fixed-price subcontract. The Grantee may request approval from Department to award a fixed-price subcontract resulting from procurement methods other than those identified above. In this instance, Grantee shall request the advance written approval from Department's Grant Manager of the fixed price negotiated by Grantee. The letter of request shall be supported by a detailed budget and Scope of Services to be performed by the subcontractor. Upon receipt of Department Grant Manager's approval of the fixed-price amount, Grantee may proceed in finalizing the fixed-price subcontract.

    ii. If the procurement is subject to the Consultant's Competitive Negotiation Act under section 287.055, F.S. or the Brooks Act, Grantee must provide documentation clearly evidencing it has complied with the statutory or federal requirements.

d. Travel. All requests for match or reimbursement of travel expenses shall be in accordance with section 112.061, F.S.

e. Direct Purchase Equipment. For the purposes of this Agreement, Equipment is defined as capital outlay costing $5,000 or more. Match or reimbursement for Grantee's direct purchase of equipment is subject to specific approval of Department, and does not include any equipment purchased under the delivery of services to be completed by a subcontractor. Include copies of invoices or receipts to document purchases, and a properly completed Exhibit B, Property Reporting Form.

f. Rental/Lease of Equipment. Match or reimbursement requests for rental/lease of equipment must include copies of invoices or receipts to document charges.

g. Miscellaneous/Other Expenses. If miscellaneous or other expenses, such as materials, supplies, non-excluded phone expenses, reproduction, or mailing, are reimbursable or available for match or reimbursement under the

terms of this Agreement, the documentation supporting these expenses must be itemized and include copies of receipts or invoices. Additionally, independent of Grantee's contract obligations to its subcontractor, Department shall not reimburse any of the following types of charges: cell phone usage; attorney's fees or court costs; civil or administrative penalties; or handling fees, such as set percent overages associated with purchasing supplies or equipment.

h. Land Acquisition. Reimbursement for the costs associated with acquiring interest and/or rights to real property (including access rights through ingress/egress easements, leases, license agreements, or other site access agreements; and/or obtaining record title ownership of real property through purchase) must be supported by the following, as applicable: Copies of Property Appraisals, Environmental Site Assessments, Surveys and Legal Descriptions, Boundary Maps, Acreage Certification, Title Search Reports, Title Insurance, Closing Statements/Documents, Deeds, Leases, Easements, License Agreements, or other legal instrument documenting acquired property interest and/or rights. If land acquisition costs are used to meet match requirements, Grantee agrees that those funds shall not be used as match for any other Agreement supported by State or Federal funds.

10. Status Reports.

The Grantee shall submit status reports quarterly, unless otherwise specified in the Attachments, on Exhibit A, Progress Report Form, to Department's Grant Manager describing the work performed during the reporting period, problems encountered, problem resolutions, scheduled updates, and proposed work for the next reporting period. Quarterly status reports are due no later than twenty (20) days following the completion of the quarterly reporting period. For the purposes of this reporting requirement, the quarterly reporting periods end on March 31, June 30, September 30 and December 31. The Department will review the required reports submitted by Grantee within thirty (30) days.

11. Retainage.

The following provisions apply if Department withholds retainage under this Agreement:

a. The Department reserves the right to establish the amount and application of retainage on the work performed under this Agreement up to the maximum percentage described in Attachment 2, Special Terms and Conditions. Retainage may be withheld from each payment to Grantee pending satisfactory completion of work and approval of all deliverables.

b. If Grantee fails to perform the requested work or fails to perform the work in a satisfactory manner, Grantee shall forfeit its right to payment of the retainage associated with the work. Failure to perform includes, but is not limited to, failure to submit the required deliverables or failure to provide adequate documentation that the work was actually performed. The Department shall provide written notification to Grantee of the failure to perform that shall result in retainage forfeiture. If the Grantee does not correct the failure to perform within the timeframe stated in Department's notice, the retainage will be forfeited to Department.

c. No retainage shall be released or paid for incomplete work while this Agreement is suspended.

d. Except as otherwise provided above, Grantee shall be paid the retainage associated with the work, provided Grantee has completed the work and submits an invoice for retainage held in accordance with the invoicing procedures under this Agreement.

12. Insurance.

a. Insurance Requirements for Sub-Grantees and/or Subcontractors. The Grantee shall require its sub-grantees and/or subcontractors, if any, to maintain insurance coverage of such types and with such terms and limits as described in this Agreement. The Grantee shall require all its sub-grantees and/or subcontractors, if any, to make compliance with the insurance requirements of this Agreement a condition of all contracts that are related to this Agreement. Sub-grantees and/or subcontractors must provide proof of insurance upon request.

b. Deductibles. The Department shall be exempt from, and in no way liable for, any sums of money representing a deductible in any insurance policy. The payment of such deductible shall be the sole responsibility of the Grantee providing such insurance.

c. Proof of Insurance. Upon execution of this Agreement, Grantee shall provide Department documentation demonstrating the existence and amount for each type of applicable insurance coverage ***prior to*** performance of any work under this Agreement. Upon receipt of written request from Department, Grantee shall furnish Department with proof of applicable insurance coverage by standard form certificates of insurance, a self-insured authorization, or other certification of self-insurance.

d. Duty to Maintain Coverage. In the event that any applicable coverage is cancelled by the insurer for any reason, or if Grantee cannot get adequate coverage, Grantee shall immediately notify Department of such cancellation and shall obtain adequate replacement coverage conforming to the requirements herein and provide proof of such replacement coverage within ten (10) days after the cancellation of coverage.

e. Insurance Trust. If the Grantee's insurance is provided through an insurance trust, the Grantee shall instead add the Department of Environmental Protection, its employees, and officers as an additional covered party everywhere the Agreement requires them to be added as an additional insured.

13. Termination.

a. Termination for Convenience. When it is in the State's best interest, Department may, at its sole discretion, terminate the Agreement in whole or in part by giving 30 days' written notice to Grantee. The Department shall notify Grantee of the termination for convenience with instructions as to the effective date of termination or the specific stage of work at which the Agreement is to be terminated. The Grantee must submit all invoices for work to be paid under this Agreement within thirty (30) days of the effective date of termination. The Department shall not pay any invoices received after thirty (30) days of the effective date of termination.

b. Termination for Cause. The Department may terminate this Agreement if any of the events of default described in the Events of Default provisions below occur or in the event that Grantee fails to fulfill any of its other obligations under this Agreement. If, after termination, it is determined that Grantee was not in default, or that the default was excusable, the rights and obligations of the parties shall be the same as if the termination had been issued for the convenience of Department. The rights and remedies of Department in this clause are in addition to any other rights and remedies provided by law or under this Agreement.

c. Grantee Obligations upon Notice of Termination. After receipt of a notice of termination or partial termination unless as otherwise directed by Department, Grantee shall not furnish any service or deliverable on the date, and to the extent specified, in the notice. However, Grantee shall continue work on any portion of the Agreement not terminated. If the Agreement is terminated before performance is completed, Grantee shall be paid only for that work satisfactorily performed for which costs can be substantiated. The Grantee shall not be entitled to recover any cancellation charges or lost profits.

d. Continuation of Prepaid Services. If Department has paid for any services prior to the expiration, cancellation, or termination of the Agreement, Grantee shall continue to provide Department with those services for which it has already been paid or, at Department's discretion, Grantee shall provide a refund for services that have been paid for but not rendered.

e. Transition of Services Upon Termination, Expiration, or Cancellation of the Agreement. If services provided under the Agreement are being transitioned to another provider(s), Grantee shall assist in the smooth transition of Agreement services to the subsequent provider(s). This requirement is at a minimum an affirmative obligation to cooperate with the new provider(s), however additional requirements may be outlined in the Grant Work Plan. The Grantee shall not perform any services after Agreement expiration or termination, except as necessary to complete the transition or continued portion of the Agreement, if any.

14. Notice of Default.

If Grantee defaults in the performance of any covenant or obligation contained in the Agreement, including, any of the events of default, Department shall provide notice to Grantee and an opportunity to cure that is reasonable under the circumstances. This notice shall state the nature of the failure to perform and provide a time certain for correcting the failure. The notice will also provide that, should the Grantee fail to perform within the time provided, Grantee will be found in default, and Department may terminate the Agreement effective as of the date of receipt of the default notice.

15. Events of Default.

Provided such failure is not the fault of Department or outside the reasonable control of Grantee, the following non-exclusive list of events, acts, or omissions, shall constitute events of default:

a. The commitment of any material breach of this Agreement by Grantee, including failure to timely deliver a material deliverable, failure to perform the minimal level of services required for a deliverable, discontinuance of the performance of the work, failure to resume work that has been discontinued within a reasonable time after notice to do so, or abandonment of the Agreement;

b. The commitment of any material misrepresentation or omission in any materials, or discovery by the Department of such, made by the Grantee in this Agreement or in its application for funding;

c. Failure to submit any of the reports required by this Agreement or having submitted any report with incorrect, incomplete, or insufficient information;

d. Failure to honor any term of the Agreement;

e. Failure to abide by any statutory, regulatory, or licensing requirement, including an entry of an order revoking the certificate of authority granted to the Grantee by a state or other licensing authority;

f. Failure to pay any and all entities, individuals, and furnishing labor or materials, or failure to make payment to any other entities as required by this Agreement;

g. Employment of an unauthorized alien in the performance of the work, in violation of Section 274 (A) of the Immigration and Nationality Act;
h. Failure to maintain the insurance required by this Agreement;
i. One or more of the following circumstances, uncorrected for more than thirty (30) days unless, within the specified 30-day period, Grantee (including its receiver or trustee in bankruptcy) provides to Department adequate assurances, reasonably acceptable to Department, of its continuing ability and willingness to fulfill its obligations under the Agreement:
    i. Entry of an order for relief under Title 11 of the United States Code;
    ii. The making by Grantee of a general assignment for the benefit of creditors;
    iii. The appointment of a general receiver or trustee in bankruptcy of Grantee's business or property; and/or
    iv. An action by Grantee under any state insolvency or similar law for the purpose of its bankruptcy, reorganization, or liquidation.

16. Suspension of Work.

The Department may, in its sole discretion, suspend any or all activities under the Agreement, at any time, when it is in the best interest of the State to do so. The Department shall provide Grantee written notice outlining the particulars of suspension. Examples of reasons for suspension include, but are not limited to, budgetary constraints, declaration of emergency, or other such circumstances. After receiving a suspension notice, Grantee shall comply with the notice. Within 90 days, or any longer period agreed to by the parties, Department shall either: (1) issue a notice authorizing resumption of work, at which time activity shall resume; or (2) terminate the Agreement. If the Agreement is terminated after 30 days of suspension, the notice of suspension shall be deemed to satisfy the thirty (30) days' notice required for a notice of termination for convenience. Suspension of work shall not entitle Grantee to any additional compensation.

17. Force Majeure.

The Grantee shall not be responsible for delay resulting from its failure to perform if neither the fault nor the negligence of Grantee or its employees or agents contributed to the delay and the delay is due directly to acts of God, wars, acts of public enemies, strikes, fires, floods, or other similar cause wholly beyond Grantee's control, or for any of the foregoing that affect subcontractors or suppliers if no alternate source of supply is available to Grantee. In case of any delay Grantee believes is excusable, Grantee shall notify Department in writing of the delay or potential delay and describe the cause of the delay either (1) within ten days after the cause that creates or will create the delay first arose, if Grantee could reasonably foresee that a delay could occur as a result; or (2) if delay is not reasonably foreseeable, within five days after the date Grantee first had reason to believe that a delay could result. **THE FOREGOING SHALL CONSTITUTE THE GRANTEE'S SOLE REMEDY OR EXCUSE WITH RESPECT TO DELAY**. Providing notice in strict accordance with this paragraph is a condition precedent to such remedy. No claim for damages, other than for an extension of time, shall be asserted against Department. The Grantee shall not be entitled to an increase in the Agreement price or payment of any kind from Department for direct, indirect, consequential, impact or other costs, expenses or damages, including but not limited to costs of acceleration or inefficiency, arising because of delay, disruption, interference, or hindrance from any cause whatsoever. If performance is suspended or delayed, in whole or in part, due to any of the causes described in this paragraph, after the causes have ceased to exist Grantee shall perform at no increased cost, unless Department determines, in its sole discretion, that the delay will significantly impair the value of the Agreement to Department, in which case Department may: (1) accept allocated performance or deliveries from Grantee, provided that Grantee grants preferential treatment to Department with respect to products subjected to allocation; (2) contract with other sources (without recourse to and by Grantee for the related costs and expenses) to replace all or part of the products or services that are the subject of the delay, which purchases may be deducted from the Agreement quantity; or (3) terminate Agreement in whole or in part.

18. Indemnification.

a. The Grantee shall be fully liable for the actions of its agents, employees, partners, or subcontractors and shall fully indemnify, defend, and hold harmless Department and its officers, agents, and employees, from suits, actions, damages, and costs of every name and description arising from or relating to:
    i. personal injury and damage to real or personal tangible property alleged to be caused in whole or in part by Grantee, its agents, employees, partners, or subcontractors; provided, however, that Grantee shall not indemnify for that portion of any loss or damages proximately caused by the negligent act or omission of Department;
    ii. the Grantee's breach of this Agreement or the negligent acts or omissions of Grantee.

b. The Grantee's obligations under the preceding paragraph with respect to any legal action are contingent upon Department giving Grantee: (1) written notice of any action or threatened action; (2) the opportunity to take over and settle or defend any such action at Grantee's sole expense; and (3) assistance in defending the action at Grantee's sole expense. The Grantee shall not be liable for any cost, expense, or compromise incurred or made by Department in any legal action without Grantee's prior written consent, which shall not be unreasonably withheld.

c. Notwithstanding sections a. and b. above, the following is the sole indemnification provision that applies to Grantees that are governmental entities: Each party hereto agrees that it shall be solely responsible for the negligent or wrongful acts of its employees and agents. However, nothing contained herein shall constitute a waiver by either party of its sovereign immunity or the provisions of section 768.28, F.S. Further, nothing herein shall be construed as consent by a state agency or subdivision of the State to be sued by third parties in any matter arising out of any contract or this Agreement.

d. No provision in this Agreement shall require Department to hold harmless or indemnify Grantee, insure or assume liability for Grantee's negligence, waive Department's sovereign immunity under the laws of Florida, or otherwise impose liability on Department for which it would not otherwise be responsible. Any provision, implication or suggestion to the contrary is null and void.

19. Limitation of Liability.

The Department's liability for any claim arising from this Agreement is limited to compensatory damages in an amount no greater than the sum of the unpaid balance of compensation due for goods or services rendered pursuant to and in compliance with the terms of the Agreement. Such liability is further limited to a cap of $100,000.

20. Remedies.

Nothing in this Agreement shall be construed to make Grantee liable for force majeure events. Nothing in this Agreement, including financial consequences for nonperformance, shall limit Department's right to pursue its remedies for other types of damages under the Agreement, at law or in equity. The Department may, in addition to other remedies available to it, at law or in equity and upon notice to Grantee, retain such monies from amounts due Grantee as may be necessary to satisfy any claim for damages, penalties, costs and the like asserted by or against it.

21. Waiver.

The delay or failure by Department to exercise or enforce any of its rights under this Agreement shall not constitute or be deemed a waiver of Department's right thereafter to enforce those rights, nor shall any single or partial exercise of any such right preclude any other or further exercise thereof or the exercise of any other right.

22. Statutory Notices Relating to Unauthorized Employment and Subcontracts.

a. The Department shall consider the employment by any Grantee of unauthorized aliens a violation of Section 274A(e) of the Immigration and Nationality Act. If Grantee/subcontractor knowingly employs unauthorized aliens, such violation shall be cause for unilateral cancellation of this Agreement. The Grantee shall be responsible for including this provision in all subcontracts with private organizations issued as a result of this Agreement.

b. Pursuant to sections 287.133, 287.134, and 287.137 F.S., the following restrictions apply to persons placed on the convicted vendor list, discriminatory vendor list, or the antitrust violator vendor list:

   i. Public Entity Crime. A person or affiliate who has been placed on the convicted vendor list following a conviction for a public entity crime may not submit a bid, proposal, or reply on a contract to provide any goods or services to a public entity; may not submit a bid, proposal, or reply on a contract with a public entity for the construction or repair of a public building or public work; may not submit bids, proposals, or replies on leases of real property to a public entity; may not be awarded or perform work as a Grantee, supplier, subcontractor, or consultant under a contract with any public entity; and may not transact business with any public entity in excess of the threshold amount provided in section 287.017, F.S., for CATEGORY TWO for a period of 36 months following the date of being placed on the convicted vendor list.

   ii. Discriminatory Vendors. An entity or affiliate who has been placed on the discriminatory vendor list may not submit a bid, proposal, or reply on a contract to provide any goods or services to a public entity; may not submit a bid, proposal, or reply on a contract with a public entity for the construction or repair of a public building or public work; may not submit bids, proposals, or replies on leases of real property to a public entity; may not be awarded or perform work as a contractor, supplier, subcontractor, or consultant under a contract with any public entity; and may not transact business with any public entity.

   iii. Antitrust Violator Vendors. A person or an affiliate who has been placed on the antitrust violator vendor list following a conviction or being held civilly liable for an antitrust violation may not submit a bid, proposal, or reply on any contract to provide any good or services to a public entity;

may not submit a bid, proposal, or reply on any contract with a public entity for the construction or repair of a public building or public work; may not submit a bid, proposal, or reply on leases of real property to a public entity; may not be awarded or perform work as a Grantee, supplier, subcontractor, or consultant under a contract with a public entity; and may not transact new business with a public entity.

iv. Notification. The Grantee shall notify Department if it or any of its suppliers, subcontractors, or consultants have been placed on the convicted vendor list, the discriminatory vendor list, or antitrust violator vendor list during the life of the Agreement. The Florida Department of Management Services is responsible for maintaining the discriminatory vendor list and the antitrust violator vendor list and posts the list on its website. Questions regarding the discriminatory vendor list or antitrust violator vendor list may be directed to the Florida Department of Management Services, Office of Supplier Diversity, at (850) 487-0915.

23. Compliance with Federal, State and Local Laws.

a. The Grantee and all its agents shall comply with all federal, state and local regulations, including, but not limited to, nondiscrimination, wages, social security, workers' compensation, licenses, and registration requirements. The Grantee shall include this provision in all subcontracts issued as a result of this Agreement.

b. No person, on the grounds of race, creed, color, religion, national origin, age, gender, or disability, shall be excluded from participation in; be denied the proceeds or benefits of; or be otherwise subjected to discrimination in performance of this Agreement.

c. This Agreement shall be governed by and construed in accordance with the laws of the State of Florida.

d. Any dispute concerning performance of the Agreement shall be processed as described herein. Jurisdiction for any damages arising under the terms of the Agreement will be in the courts of the State, and venue will be in the Second Judicial Circuit, in and for Leon County. Except as otherwise provided by law, the parties agree to be responsible for their own attorney fees incurred in connection with disputes arising under the terms of this Agreement.

24. Build America, Buy America Act (BABA) - Infrastructure Projects with Federal Funding.

This provision does not apply to Agreements that are wholly funded by Coronavirus State and Local Fiscal Recovery Funds under the American Rescue Plan Act. Also, this provision does not apply where there is a valid waiver in place. However, the provision may apply to funds expended before the waiver or after expiration of the waiver.

If applicable, Recipients or Subrecipients of an award of Federal financial assistance from a program for infrastructure are required to comply with the Build America, Buy America Act (BABA), including the following provisions:

a. All iron and steel used in the project are produced in the United States--this means all manufacturing processes, from the initial melting stage through the application of coatings, occurred in the United States;

b. All manufactured products used in the project are produced in the United States-this means the manufactured product was manufactured in the United States; and the cost of the components of the manufactured product that are mined, produced, or manufactured in the United States is greater than 55 percent of the total cost of all components of the manufactured product, unless another standard for determining the minimum amount of domestic content of the manufactured product has been established under applicable law or regulation; and

c. All construction materials are manufactured in the United States-this means that all manufacturing processes for the construction material occurred in the United States.

The Buy America preference only applies to articles, materials, and supplies that are consumed in, incorporated into, or affixed to an infrastructure project. As such, it does not apply to tools, equipment, and supplies, such as temporary scaffolding, brought to the construction site and removed at or before the completion of the infrastructure project. Nor does a Buy America preference apply to equipment and furnishings, such as movable chairs, desks, and portable computer equipment, that are used at or within the finished infrastructure project but are not an integral part of the structure or permanently affixed to the infrastructure project.

25. Investing in America

Grantees of an award for construction projects in whole or in part by the Bipartisan Infrastructure Law or the Inflation Reduction Act, including the following provision:

a. Signage Requirements

a. Investing in America Emblem: The recipient will ensure that a sign is placed at construction sites supported in whole or in part by this award displaying the official Investing in America emblem and must identify the project as a "project funded by President Biden's Bipartisan

Infrastructure Law" or "project funded by President Biden's Inflation Reduction Act" as applicable. The sign must be placed at construction sites in an easily visible location that can be directly linked to the work taking place and must be maintained in good condition throughout the construction period.

The recipient will ensure compliance with the guidelines and design specifications provided by EPA for using the official Investing in America emblem available at: https://www.epa.gov/invest/investing-america-signage.

b. Procuring Signs: Consistent with section 6002 of RCRA, 42 U.S.C. 6962, and 2 CFR 200.323, recipients are encouraged to use recycled or recovered materials when procuring signs. Signage costs are considered an allowable cost under this assistance agreement provided that the costs associated with signage are reasonable. Additionally, to increase public awareness of projects serving communities where English is not the predominant language, recipients are encouraged to translate the language on signs (excluding the official Investing in America emblem or EPA logo or seal) into the appropriate non-English language(s). The costs of such translation are allowable, provided the costs are reasonable.

26. Scrutinized Companies.

a. Grantee certifies that it is not on the Scrutinized Companies that Boycott Israel List or engaged in a boycott of Israel. Pursuant to section 287.135, F.S., the Department may immediately terminate this Agreement at its sole option if the Grantee is found to have submitted a false certification; or if the Grantee is placed on the Scrutinized Companies that Boycott Israel List or is engaged in the boycott of Israel during the term of the Agreement.

b. If this Agreement is for more than one million dollars, the Grantee certifies that it is also not on the Scrutinized Companies with Activities in Sudan, Scrutinized Companies with Activities in the Iran Petroleum Energy Sector List, or engaged with business operations in Cuba or Syria as identified in section 287.135, F.S. Pursuant to section 287.135, F.S., the Department may immediately terminate this Agreement at its sole option if the Grantee is found to have submitted a false certification; or if the Grantee is placed on the Scrutinized Companies with Activities in Sudan List, or Scrutinized Companies with Activities in the Iran Petroleum Energy Sector List, or engaged with business operations in Cuba or Syria during the term of the Agreement.

c. As provided in subsection 287.135(8), F.S., if federal law ceases to authorize these contracting prohibitions, then they shall become inoperative.

27. Lobbying and Integrity.

The Grantee agrees that no funds received by it under this Agreement will be expended for the purpose of lobbying the Legislature or a State agency pursuant to section 216.347, F.S., except that pursuant to the requirements of section 287.058(6), F.S., during the term of any executed agreement between Grantee and the State, Grantee may lobby the executive or legislative branch concerning the scope of services, performance, term, or compensation regarding that agreement. The Grantee shall comply with sections 11.062 and 216.347, F.S.

28. Record Keeping.

The Grantee shall maintain books, records and documents directly pertinent to performance under this Agreement in accordance with United States generally accepted accounting principles (US GAAP) consistently applied. The Department, the State, or their authorized representatives shall have access to such records for audit purposes during the term of this Agreement and for five (5) years following the completion date or termination of the Agreement. In the event that any work is subcontracted, Grantee shall similarly require each subcontractor to maintain and allow access to such records for audit purposes. Upon request of Department's Inspector General, or other authorized State official, Grantee shall provide any type of information the Inspector General deems relevant to Grantee's integrity or responsibility. Such information may include, but shall not be limited to, Grantee's business or financial records, documents, or files of any type or form that refer to or relate to Agreement. The Grantee shall retain such records for the longer of: (1) three years after the expiration of the Agreement; or (2) the period required by the General Records Schedules maintained by the Florida Department of State (available at: http://dos.myflorida.com/library-archives/records-management/general-records-schedules/).

29. Audits.

a. Inspector General. The Grantee understands its duty, pursuant to section 20.055(5), F.S., to cooperate with the inspector general in any investigation, audit, inspection, review, or hearing. The Grantee will comply with this duty and ensure that its sub-grantees and/or subcontractors issued under this Agreement, if any, impose this requirement, in writing, on its sub-grantees and/or subcontractors, respectively.

b. Physical Access and Inspection. Department personnel shall be given access to and may observe and inspect work being performed under this Agreement, with reasonable notice and during normal business hours, including by any of the following methods:
    i. Grantee shall provide access to any location or facility on which Grantee is performing work, or storing or staging equipment, materials or documents;
    ii. Grantee shall permit inspection of any facility, equipment, practices, or operations required in performance of any work pursuant to this Agreement; and,
    iii. Grantee shall allow and facilitate sampling and monitoring of any substances, soils, materials or parameters at any location reasonable or necessary to assure compliance with any work or legal requirements pursuant to this Agreement.

c. Special Audit Requirements. The Grantee shall comply with the applicable provisions contained in Attachment 5, Special Audit Requirements. Each amendment that authorizes a funding increase or decrease shall include an updated copy of Exhibit 1, to Attachment 5. If Department fails to provide an updated copy of Exhibit 1 to include in each amendment that authorizes a funding increase or decrease, Grantee shall request one from the Department's Grants Manager. The Grantee shall consider the type of financial assistance (federal and/or state) identified in Attachment 5, Exhibit 1 and determine whether the terms of Federal and/or Florida Single Audit Act Requirements may further apply to lower tier transactions that may be a result of this Agreement. For federal financial assistance, Grantee shall utilize the guidance provided under 2 CFR §200.331 for determining whether the relationship represents that of a subrecipient or vendor. For State financial assistance, Grantee shall utilize the form entitled "Checklist for Nonstate Organizations Recipient/Subrecipient vs Vendor Determination" (form number DFS-A2-NS) that can be found under the "Links/Forms" section appearing at the following website: https:\\apps.fldfs.com\fsaa.

d. Proof of Transactions. In addition to documentation provided to support cost reimbursement as described herein, Department may periodically request additional proof of a transaction to evaluate the appropriateness of costs to the Agreement pursuant to State guidelines (including cost allocation guidelines) and federal, if applicable. Allowable costs and uniform administrative requirements for federal programs can be found under 2 CFR 200. The Department may also request a cost allocation plan in support of its multipliers (overhead, indirect, general administrative costs, and fringe benefits). The Grantee must provide the additional proof within thirty (30) days of such request.

e. No Commingling of Funds. The accounting systems for all Grantees must ensure that these funds are not commingled with funds from other agencies. Funds from each agency must be accounted for separately. Grantees are prohibited from commingling funds on either a program-by-program or a project-by-project basis. Funds specifically budgeted and/or received for one project may not be used to support another project. Where a Grantee's, or subrecipient's, accounting system cannot comply with this requirement, Grantee, or subrecipient, shall establish a system to provide adequate fund accountability for each project it has been awarded.
    i. If Department finds that these funds have been commingled, Department shall have the right to demand a refund, either in whole or in part, of the funds provided to Grantee under this Agreement for non-compliance with the material terms of this Agreement. The Grantee, upon such written notification from Department shall refund, and shall forthwith pay to Department, the amount of money demanded by Department. Interest on any refund shall be calculated based on the prevailing rate used by the State Board of Administration. Interest shall be calculated from the date(s) the original payment(s) are received from Department by Grantee to the date repayment is made by Grantee to Department.
    ii. In the event that the Grantee recovers costs, incurred under this Agreement and reimbursed by Department, from another source(s), Grantee shall reimburse Department for all recovered funds originally provided under this Agreement and interest shall be charged for those recovered costs as calculated on from the date(s) the payment(s) are recovered by Grantee to the date repayment is made to Department.
    iii. Notwithstanding the requirements of this section, the above restrictions on commingling funds do not apply to agreements where payments are made purely on a cost reimbursement basis.

30. Conflict of Interest.

The Grantee covenants that it presently has no interest and shall not acquire any interest which would conflict in any manner or degree with the performance of services required.

31. Independent Contractor.

The Grantee is an independent contractor and is not an employee or agent of Department.

32. Subcontracting.

a. Unless otherwise specified in the Special Terms and Conditions, all services contracted for are to be performed solely by Grantee.
b. The Department may, for cause, require the replacement of any Grantee employee, subcontractor, or agent. For cause, includes, but is not limited to, technical or training qualifications, quality of work, change in security status, or non-compliance with an applicable Department policy or other requirement.
c. The Department may, for cause, deny access to Department's secure information or any facility by any Grantee employee, subcontractor, or agent.
d. The Department's actions under paragraphs b. or c. shall not relieve Grantee of its obligation to perform all work in compliance with the Agreement. The Grantee shall be responsible for the payment of all monies due under any subcontract. The Department shall not be liable to any subcontractor for any expenses or liabilities incurred under any subcontract and Grantee shall be solely liable to the subcontractor for all expenses and liabilities incurred under any subcontract.
e. The Department will not deny Grantee's employees, subcontractors, or agents access to meetings within the Department's facilities, unless the basis of Department's denial is safety or security considerations.
f. The Department supports diversity in its procurement program and requests that all subcontracting opportunities afforded by this Agreement embrace diversity enthusiastically. The award of subcontracts should reflect the full diversity of the citizens of the State. A list of minority-owned firms that could be offered subcontracting opportunities may be obtained by contacting the Office of Supplier Diversity at (850) 487-0915.
g. The Grantee shall not be liable for any excess costs for a failure to perform, if the failure to perform is caused by the default of a subcontractor at any tier, and if the cause of the default is completely beyond the control of both Grantee and the subcontractor(s), and without the fault or negligence of either, unless the subcontracted products or services were obtainable from other sources in sufficient time for Grantee to meet the required delivery schedule.

33. Guarantee of Parent Company.

If Grantee is a subsidiary of another corporation or other business entity, Grantee asserts that its parent company will guarantee all of the obligations of Grantee for purposes of fulfilling the obligations of Agreement. In the event Grantee is sold during the period the Agreement is in effect, Grantee agrees that it will be a requirement of sale that the new parent company guarantee all of the obligations of Grantee.

34. Survival.

The respective obligations of the parties, which by their nature would continue beyond the termination or expiration of this Agreement, including without limitation, the obligations regarding confidentiality, proprietary interests, and public records, shall survive termination, cancellation, or expiration of this Agreement.

35. Third Parties.

The Department shall not be deemed to assume any liability for the acts, failures to act or negligence of Grantee, its agents, servants, and employees, nor shall Grantee disclaim its own negligence to Department or any third party. This Agreement does not and is not intended to confer any rights or remedies upon any person other than the parties. If Department consents to a subcontract, Grantee will specifically disclose that this Agreement does not create any third-party rights. Further, no third parties shall rely upon any of the rights and obligations created under this Agreement.

36. Severability.

If a court of competent jurisdiction deems any term or condition herein void or unenforceable, the other provisions are severable to that void provision, and shall remain in full force and effect.

37. Grantee's Employees, Subcontractors and Agents.

All Grantee employees, subcontractors, or agents performing work under the Agreement shall be properly trained technicians who meet or exceed any specified training qualifications. Upon request, Grantee shall furnish a copy of technical certification or other proof of qualification. All employees, subcontractors, or agents performing work under Agreement must comply with all security and administrative requirements of Department and shall comply with all controlling laws and regulations relevant to the services they are providing under the Agreement.

38. Assignment.

The Grantee shall not sell, assign, or transfer any of its rights, duties, or obligations under the Agreement, or under any purchase order issued pursuant to the Agreement, without the prior written consent of Department. In the event of any assignment, Grantee remains secondarily liable for performance of the Agreement, unless Department expressly waives such secondary liability. The Department may assign the Agreement with prior written notice to Grantee of its intent to do so.

39. Compensation Report.

If this Agreement is a sole-source, public-private agreement or if the Grantee, through this agreement with the State, annually receive 50% or more of their budget from the State or from a combination of State and Federal funds, the

Grantee shall provide an annual report, including the most recent IRS Form 990, detailing the total compensation for the entities' executive leadership teams. Total compensation shall include salary, bonuses, cashed-in leave, cash equivalents, severance pay, retirement benefits, deferred compensation, real-property gifts, and any other payout. The Grantee must also inform the Department of any changes in total executive compensation between the annual reports. All compensation reports must indicate what percent of compensation comes directly from the State or Federal allocations to the Grantee.

40. Execution in Counterparts and Authority to Sign.

This Agreement, any amendments, and/or change orders related to the Agreement, may be executed in counterparts, each of which shall be an original and all of which shall constitute the same instrument. In accordance with the Electronic Signature Act of 1996, electronic signatures, including facsimile transmissions, may be used and shall have the same force and effect as a written signature. Each person signing this Agreement warrants that he or she is duly authorized to do so and to bind the respective party to the Agreement.

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
Special Terms and Conditions
AGREEMENT NO. 23FRP42

ATTACHMENT 2

These Special Terms and Conditions shall be read together with general terms outlined in the Standard Terms and Conditions, Attachment 1. Where in conflict, these more specific terms shall apply.

1. Scope of Work.
The Project funded under this Agreement is City of Delray Beach Marine Way Drainage Improvements. The Project is defined in more detail in Attachment 3, Grant Work Plan.

2. Duration.
a. Reimbursement Period. The reimbursement period for this Agreement is the same as the term of the Agreement.
b. Extensions. There are extensions available for this Project.
c. Service Periods. Additional service periods may be added in accordance with 2.a above and are contingent upon proper and satisfactory technical and administrative performance by the Grantee and the availability of funding.

3. Payment Provisions.
a. Compensation. This is a cost reimbursement Agreement. The Grantee shall be compensated under this Agreement as described in Attachment 3.
b. Invoicing. Invoicing will occur as indicated in Attachment 3.
c. Advance Pay. Advance Pay is not authorized under this Agreement.

4. Cost Eligible for Reimbursement or Matching Requirements.
Reimbursement for costs or availability for costs to meet matching requirements shall be limited to the following budget categories, as defined in the Reference Guide for State Expenditures, as indicated:

Reimbursement	Match	Category
☐	☐	Salaries/Wages
		Overhead/Indirect/General and Administrative Costs:
☐	☐	a. Fringe Benefits, N/A.
☐	☐	b. Indirect Costs, N/A.
☒	☒	Contractual (Subcontractors)
☐	☐	Travel, in accordance with Section 112, F.S.
☐	☐	Equipment
☐	☐	Rental/Lease of Equipment
☐	☐	Miscellaneous/Other Expenses
☐	☐	Land Acquisition

5. Equipment Purchase.
No Equipment purchases shall be funded under this Agreement.

6. Land Acquisition.
There will be no Land Acquisitions funded under this Agreement.

7. Match Requirements
The Agreement requires at least a 50% match on the part of the Grantee. Therefore, the Grantee is responsible for providing $10,000,000.00 through cash or third party in-kind towards the project funded under this Agreement. The Grantee may claim allowable project expenditures made on July 1, 2021 or after for purposes of meeting its match requirement as identified above.

Each payment request submitted shall document all matching funds and/or match efforts (i.e., in-kind services) provided during the period covered by each request. The final payment will not be processed until the match requirement has been met.

8. Insurance Requirements

Required Coverage. At all times during the Agreement the Grantee, at its sole expense, shall maintain insurance coverage of such types and with such terms and limits described below. The limits of coverage under each policy maintained by the Grantee shall not be interpreted as limiting the Grantee's liability and obligations under the Agreement. All insurance policies shall be through insurers licensed and authorized to issue policies in Florida, or alternatively, Grantee may provide coverage through a self-insurance program established and operating under the laws of Florida. Additional insurance requirements for this Agreement may be required elsewhere in this Agreement, however the minimum insurance requirements applicable to this Agreement are:

a. Commercial General Liability Insurance.
The Grantee shall provide adequate commercial general liability insurance coverage and hold such liability insurance at all times during the Agreement. The Department, its employees, and officers shall be named as an additional insured on any general liability policies. The minimum limits shall be $250,000 for each occurrence and $500,000 policy aggregate.

b. Commercial Automobile Insurance.
If the Grantee's duties include the use of a commercial vehicle, the Grantee shall maintain automobile liability, bodily injury, and property damage coverage. Insuring clauses for both bodily injury and property damage shall provide coverage on an occurrence basis. The Department, its employees, and officers shall be named as an additional insured on any automobile insurance policy. The minimum limits shall be as follows:

$200,000/300,000	Automobile Liability for Company-Owned Vehicles, if applicable
$200,000/300,000	Hired and Non-owned Automobile Liability Coverage

c. Workers' Compensation and Employer's Liability Coverage.
The Grantee shall provide workers' compensation, in accordance with Chapter 440, F.S. and employer liability coverage with minimum limits of $100,000 per accident, $100,000 per person, and $500,000 policy aggregate. Such policies shall cover all employees engaged in any work under the Grant.

d. Other Insurance. None.

9. Quality Assurance Requirements.

There are no special Quality Assurance requirements under this Agreement.

10. Retainage.

Retainage is permitted under this Agreement. Retainage may be up to a maximum of 5% of the total amount of the Agreement.

11. Subcontracting.

The Grantee may subcontract work under this Agreement without the prior written consent of the Department's Grant Manager except for certain fixed-price subcontracts pursuant to this Agreement, which require prior approval. The Grantee shall submit a copy of the executed subcontract to the Department prior to submitting any invoices for subcontracted work. Regardless of any subcontract, the Grantee is ultimately responsible for all work to be performed under this Agreement.

12. State-owned Land.

The work will not be performed on State-owned land.

13. Office of Policy and Budget Reporting.

There are no special Office of Policy and Budget reporting requirements for this Agreement.

14. Common Carrier.

a. Applicable to contracts with a common carrier – firm/person/corporation that as a regular business transports people or commodities from place to place. If applicable, Contractor must also fill out and return PUR 1808 before contract execution. If Contractor is a common carrier pursuant to section

908.111(1)(a), Florida Statutes, the Department will terminate this contract immediately if Contractor is found to be in violation of the law or the attestation in PUR 1808.

b. Applicable to solicitations for a common carrier – Before contract execution, the winning Contractor(s) must fill out and return PUR 1808, and attest that it is not willfully providing any service in furtherance of transporting a person into this state knowing that the person unlawfully present in the United States according to the terms of the federal Immigration and Nationality Act, 8 U.S.C. ss. 1101 et seq. The Department will terminate a contract immediately if Contractor is found to be in violation of the law or the attestation in PUR 1808.

15. Additional Terms.

Documentary Evidence Requirement for Subcontractor(s). If any work associated with this Agreement is completed by a subcontractor(s), the Grantee shall require that such subcontractor(s) submit documentary evidence (e.g., workshop agendas; meeting recordings) to Grantee demonstrating that the subcontractor(s) has fully performed its Project obligation(s). The Grantee shall forward copies of all such documentary evidence to the Department with the Grantee's relevant deliverable(s), using the approved Project Timeline set forth in Attachment 3 to this Agreement (Grant Work Plan).

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
GRANT WORK PLAN
AGREEMENT NO. 23FRP42

ATTACHMENT 3

PROJECT TITLE: City of Delray Beach Marine Way Drainage Improvements

PROJECT LOCATION: The Project is located in the City of Delray Beach within Palm Beach County, Florida.

PROJECT DESCRIPTION:
The City of Delray Beach (Grantee) will construct the City of Delray Beach Marine Way Drainage Improvements project (Project) to reduce flooding, efficiently pump out stormwater and create a pedestrian friendly waterfront area. The Project includes the installation of 735-ft of concrete capped sheetpile seawall and a new stormwater pump station with onsite water treatment, upgrading local water utility infrastructure and site restoration including roads, paver paths and mangrove area.

TASKS AND DELIVERABLES:

Task 1 – Construction

Description: The Grantee will acquire professional services to construct a new seawall, storm water pump station, roadway, stormwater infrastructure, water mains, and sanitary improvements in accordance with the construction contract documents. Project costs associated with the Construction task include work approved through the construction bids and/or construction-phase engineering and monitoring services contracts. Eligible activities may include mobilization, demobilization, construction observation or inspection services, physical and environmental surveys, and mitigation projects Construction shall be conducted in accordance with all local, state, and federal permits.

Deliverables: The Grantee will submit:

- **1.1** List of permit type, number, and issuing entity for all local, state, and federal permits required for the Project;
- **1.2** A copy of the final design and record (as-built) drawings;
- **1.3** A Certificate of Completion signed by a Florida-registered Professional Engineer;
- **1.4** Coordinate final site visit with Department and submit the Closeout Site Visit Form received from assigned Field Agent.

PERFORMANCE MEASURES: The Grantee will submit all deliverables for each task to the Department's Grant Manager on or before the Task Due Date listed in the Project Timeline. The Department's Grant Manager will review the deliverable(s) to verify that they meet the specifications in the Grant Work Plan and the task description, to include any work being performed by any subcontractor(s), and will provide written acceptance or denial of the deliverable(s) to the Grantee within thirty (30) calendar days. Tasks may include multiple deliverables to be completed. The Department will accept partial and full deliverables. Incomplete deliverables will not be accepted. A "partial deliverable" is defined as a deliverable consisting of one (1) or more (but not all) subcomponents listed in the deliverable list for a single task, where such subcomponent(s) are delivered to the Department at one hundred percent (100%) completion. A "full deliverable" is defined as a deliverable comprising all subcomponents listed in the deliverable list for a single task, all delivered to the Department at one hundred percent (100%) completion.

An "incomplete deliverable" is defined as a deliverable for which one hundred percent (100%) completion has not been achieved for any of the subcomponents listed in the deliverable list for a single task. A task is considered one hundred percent (100%) complete upon the Department's receipt and approval of all deliverable(s) listed within the task and the Department's approval provided by the Deliverable Acceptance Letter.

CONSEQUENCES FOR NON-PERFORMANCE: For each task deliverable not received by the Department at one hundred percent (100%) completion and by the specified due date listed in the Agreement's most recent Project Timeline, the Department will reduce the relevant Task Funding Amount(s) paid to Grantee in proportion to the percentage of the deliverable(s) not fully completed and/or submitted to the Department in a timely manner.

PAYMENT REQUEST SCHEDULE: Following the Grantee's full or partial completion of a task's deliverable(s) and acceptance by the Department's Grant Manager, the Grantee may submit a payment request for cost reimbursement using the Exhibit C, Payment Request Summary Form. All payment requests must be accompanied by the Deliverable Acceptance Letter; the Exhibit A, Progress Report Form, detailing all progress made in the invoice period; and supporting fiscal documentation including match, if applicable. Interim payments will not be accepted. Upon the Department's receipt of the aforementioned documents and supporting fiscal documentation, the Department's Grant Manager will have ten (10) working days to review and approve or deny the payment request.

PROJECT TIMELINE AND BUDGET DETAIL: The tasks must be completed by, and all deliverables received by, the corresponding task due date listed in the table below. Cost-reimbursable grant funding must not exceed the budget amounts indicated below. Requests for any change(s) must be submitted prior to the current task due date listed in the Project Timeline. Requests are to be sent via email to the Department's Grant Manager, with the details of the request and the reason for the request made clear.

Task No.	Task Title	Budget Category	DEP Amount	Match Amount	Total Amount	Task Start Date	Task Due Date
1	Construction	Contractual Services	$10,000,000	$10,000,000	$20,000,000	Upon Execution	6/30/2026
		Total:	**$10,000,000**	**$10,000,000**	**$20,000,000**		

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
Public Records Requirements

Attachment 4

1. **Public Records.**

a. If the Agreement exceeds $35,000.00, and if Grantee is acting on behalf of Department in its performance of services under the Agreement, Grantee must allow public access to all documents, papers, letters, or other material, regardless of the physical form, characteristics, or means of transmission, made or received by Grantee in conjunction with the Agreement (Public Records), unless the Public Records are exempt from section 24(a) of Article I of the Florida Constitution or section 119.07(1), F.S.

b. The Department may unilaterally terminate the Agreement if Grantee refuses to allow public access to Public Records as required by law.

2. **Additional Public Records Duties of Section 119.0701, F.S., If Applicable.**
For the purposes of this paragraph, the term "contract" means the "Agreement." If Grantee is a "contractor" as defined in section 119.0701(1)(a), F.S., the following provisions apply and the contractor shall:

a. Keep and maintain Public Records required by Department to perform the service.

b. Upon request, provide Department with a copy of requested Public Records or allow the Public Records to be inspected or copied within a reasonable time at a cost that does not exceed the cost provided in Chapter 119, F.S., or as otherwise provided by law.

c. A contractor who fails to provide the Public Records to Department within a reasonable time may be subject to penalties under section 119.10, F.S.

d. Ensure that Public Records that are exempt or confidential and exempt from Public Records disclosure requirements are not disclosed except as authorized by law for the duration of the contract term and following completion of the contract if the contractor does not transfer the Public Records to Department.

e. Upon completion of the contract, transfer, at no cost, to Department all Public Records in possession of the contractor or keep and maintain Public Records required by Department to perform the service. If the contractor transfers all Public Records to Department upon completion of the contract, the contractor shall destroy any duplicate Public Records that are exempt or confidential and exempt from Public Records disclosure requirements. If the contractor keeps and maintains Public Records upon completion of the contract, the contractor shall meet all applicable requirements for retaining Public Records. All Public Records stored electronically must be provided to Department, upon request from Department's custodian of Public Records, in a format specified by Department as compatible with the information technology systems of Department. These formatting requirements are satisfied by using the data formats as authorized in the contract or Microsoft Word, Outlook, Adobe, or Excel, and any software formats the contractor is authorized to access.

f. **IF THE CONTRACTOR HAS QUESTIONS REGARDING THE APPLICATION OF CHAPTER 119, F.S., TO THE CONTRACTOR'S DUTY TO PROVIDE PUBLIC RECORDS RELATING TO THE CONTRACT, CONTACT THE DEPARTMENT'S CUSTODIAN OF PUBLIC RECORDS AT:**

Telephone: **(850) 245-2118**
Email: public.services@floridadep.gov
Mailing Address: **Department of Environmental Protection**
ATTN: Office of Ombudsman and Public Services
Public Records Request
3900 Commonwealth Boulevard, MS 49
Tallahassee, Florida 32399

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
Special Audit Requirements
(State and Federal Financial Assistance)

Attachment 5

The administration of resources awarded by the Department of Environmental Protection *(which may be referred to as the "Department", "DEP", "FDEP" or "Grantor", or other name in the agreement)* to the recipient *(which may be referred to as the "Recipient", "Grantee" or other name in the agreement)* may be subject to audits and/or monitoring by the Department of Environmental Protection, as described in this attachment.

MONITORING

In addition to reviews of audits conducted in accordance with 2 CFR Part 200, Subpart F-Audit Requirements, and Section 215.97, F.S., as revised (see "AUDITS" below), monitoring procedures may include, but not be limited to, on-site visits by DEP Department staff, limited scope audits as defined by 2 CFR 200.425, or other procedures. By entering into this Agreement, the recipient agrees to comply and cooperate with any monitoring procedures/processes deemed appropriate by the Department of Environmental Protection. In the event the Department of Environmental Protection determines that a limited scope audit of the recipient is appropriate, the recipient agrees to comply with any additional instructions provided by the Department to the recipient regarding such audit. The recipient further agrees to comply and cooperate with any inspections, reviews, investigations, or audits deemed necessary by the Chief Financial Officer (CFO) or Auditor General.

AUDITS

PART I: FEDERALLY FUNDED

This part is applicable if the recipient is a State or local government or a non-profit organization as defined in 2 CFR §200.330

1. A recipient that expends $750,000 or more in Federal awards in its fiscal year, must have a single or program-specific audit conducted in accordance with the provisions of 2 CFR Part 200, Subpart F. EXHIBIT 1 to this Attachment indicates Federal funds awarded through the Department of Environmental Protection by this Agreement. In determining the federal awards expended in its fiscal year, the recipient shall consider all sources of federal awards, including federal resources received from the Department of Environmental Protection. The determination of amounts of federal awards expended should be in accordance with the guidelines established in 2 CFR 200.502-503. An audit of the recipient conducted by the Auditor General in accordance with the provisions of 2 CFR Part 200.514 will meet the requirements of this part.

2. For the audit requirements addressed in Part I, paragraph 1, the recipient shall fulfill the requirements relative to auditee responsibilities as provided in 2 CFR 200.508-512.

3. A recipient that expends less than $750,000 in federal awards in its fiscal year is not required to have an audit conducted in accordance with the provisions of 2 CFR Part 200, Subpart F-Audit Requirements. If the recipient expends less than $750,000 in federal awards in its fiscal year and elects to have an audit conducted in accordance with the provisions of 2 CFR 200, Subpart F-Audit Requirements, the cost of the audit must be paid from non-federal resources (i.e., the cost of such an audit must be paid from recipient resources obtained from other federal entities.

4. The recipient may access information regarding the Catalog of Federal Domestic Assistance (CFDA) via the internet at https://sam.gov/content/assistance-listings.

PART II: STATE FUNDED

This part is applicable if the recipient is a nonstate entity as defined by Section 215.97(2), Florida Statutes.

1. In the event that the recipient expends a total amount of state financial assistance equal to or in excess of $750,000 in any fiscal year of such recipient (for fiscal years ending June 30, 2017, and thereafter), the recipient must have a State single or project-specific audit for such fiscal year in accordance with Section 215.97, F.S.; Rule Chapter 69I-5, F.A.C., State Financial Assistance; and Chapters 10.550 (local governmental entities) or 10.650 (nonprofit and for-profit organizations), Rules of the Auditor General. EXHIBIT 1 to this form lists the state financial assistance awarded through the Department of Environmental Protection by this agreement. In determining the state financial assistance expended in its fiscal year, the recipient shall consider all sources of state financial assistance, including state financial assistance received from the Department of Environmental Protection, other state agencies, and other nonstate entities. State financial assistance does not include federal direct or pass-through awards and resources received by a nonstate entity for Federal program matching requirements.

2. In connection with the audit requirements addressed in Part II, paragraph 1; the recipient shall ensure that the audit complies with the requirements of Section 215.97(8), Florida Statutes. This includes submission of a financial reporting package as defined by Section 215.97(2), Florida Statutes, and Chapters 10.550 (local governmental entities) or 10.650 (nonprofit and for-profit organizations), Rules of the Auditor General.

3. If the recipient expends less than $750,000 in state financial assistance in its fiscal year (for fiscal year ending June 30, 2017, and thereafter), an audit conducted in accordance with the provisions of Section 215.97, Florida Statutes, is not required. In the event that the recipient expends less than $750,000 in state financial assistance in its fiscal year, and elects to have an audit conducted in accordance with the provisions of Section 215.97, Florida Statutes, the cost of the audit must be paid from the non-state entity's resources (i.e., the cost of such an audit must be paid from the recipient's resources obtained from other than State entities).

4. For information regarding the Florida Catalog of State Financial Assistance (CSFA), a recipient should access the Florida Single Audit Act website located at https://apps.fldfs.com/fsaa for assistance. In addition to the above websites, the following websites may be accessed for information: Legislature's Website at http://www.leg.state.fl.us/Welcome/index.cfm, State of Florida's website at http://www.myflorida.com/, Department of Financial Services' Website at http://www.fldfs.com/and the Auditor General's Website at http://www.myflorida.com/audgen/.

PART III: OTHER AUDIT REQUIREMENTS

(NOTE: This part would be used to specify any additional audit requirements imposed by the State awarding entity that are solely a matter of that State awarding entity's policy (i.e., the audit is not required by Federal or State laws and is not in conflict with other Federal or State audit requirements). Pursuant to Section 215.97(8), Florida Statutes, State agencies may conduct or arrange for audits of State financial assistance that are in addition to audits conducted in accordance with Section 215.97, Florida Statutes. In such an event, the State awarding agency must arrange for funding the full cost of such additional audits.)

PART IV: REPORT SUBMISSION

1. Copies of reporting packages for audits conducted in accordance with 2 CFR Part 200, Subpart F-Audit Requirements, and required by PART I of this form shall be submitted, when required by 2 CFR 200.512, by or on behalf of the recipient directly to the Federal Audit Clearinghouse (FAC) as provided in 2 CFR 200.36 and 200.512

   A. The Federal Audit Clearinghouse designated in 2 CFR §200.501(a) (the number of copies required by 2 CFR §200.501(a) should be submitted to the Federal Audit Clearinghouse), at the following address:

By Mail:

Federal Audit Clearinghouse
Bureau of the Census
1201 East 10th Street
Jeffersonville, IN 47132

Submissions of the Single Audit reporting package for fiscal periods ending on or after January 1, 2008, must be submitted using the Federal Clearinghouse's Internet Data Entry System which can be found at http://harvester.census.gov/facweb/

2. Copies of financial reporting packages required by PART II of this Attachment shall be submitted by or on behalf of the recipient directly to each of the following:

A. The Department of Environmental Protection at one of the following addresses:

By Mail:
Audit Director
Florida Department of Environmental Protection
Office of Inspector General, MS 40
3900 Commonwealth Boulevard
Tallahassee, Florida 32399-3000

Electronically:
FDEPSingleAudit@dep.state.fl.us

B. The Auditor General's Office at the following address:

Auditor General
Local Government Audits/342
Claude Pepper Building, Room 401
111 West Madison Street
Tallahassee, Florida 32399-1450

The Auditor General's website (http://flauditor.gov/) provides instructions for filing an electronic copy of a financial reporting package.

3. Copies of reports or management letters required by PART III of this Attachment shall be submitted by or on behalf of the recipient directly to the Department of Environmental Protection at one of the following addresses:

By Mail:
Audit Director
Florida Department of Environmental Protection
Office of Inspector General, MS 40
3900 Commonwealth Boulevard
Tallahassee, Florida 32399-3000

Electronically:
FDEPSingleAudit@dep.state.fl.us

4. Any reports, management letters, or other information required to be submitted to the Department of Environmental Protection pursuant to this Agreement shall be submitted timely in accordance with 2 CFR 200.512, section 215.97, F.S., and Chapters 10.550 (local governmental entities) or 10.650 (nonprofit and for-profit organizations), Rules of the Auditor General, as applicable.

5. Recipients, when submitting financial reporting packages to the Department of Environmental Protection for audits done in accordance with 2 CFR 200, Subpart F-Audit Requirements, or Chapters 10.550 (local governmental entities) and 10.650 (non and for-profit organizations), Rules of the Auditor General, should indicate the date and the reporting package was delivered to the recipient correspondence accompanying the reporting package.

PART V: RECORD RETENTION

The recipient shall retain sufficient records demonstrating its compliance with the terms of the award and this Agreement for a period of **five (5)** years from the date the audit report is issued, and shall allow the Department of Environmental Protection, or its designee, Chief Financial Officer, or Auditor General access to such records upon request. The recipient shall ensure that audit working papers are made available to the Department of Environmental Protection, or its designee, Chief Financial Officer, or Auditor General upon request for a period of **three (3)** years from the date the audit report is issued, unless extended in writing by the Department of Environmental Protection.

EXHIBIT – 1

FUNDS AWARDED TO THE RECIPIENT PURSUANT TO THIS AGREEMENT CONSIST OF THE FOLLOWING:

Note: If the resources awarded to the recipient represent more than one federal program, provide the same information shown below for each federal program and show total federal resources awarded

Federal Resources Awarded to the Recipient Pursuant to this Agreement Consist of the Following:					
Federal Program A	Federal Agency	CFDA Number	CFDA Title	Funding Amount	State Appropriation Category
Original Agreement	U.S. Department of Treasury	21.027	SLFRP0125	$10,000,000.00	197-H23
Federal Program B	Federal Agency	CFDA Number	CFDA Title	Funding Amount	State Appropriation Category
				$	

Note: Of the resources awarded to the recipient represent more than one federal program, list applicable compliance requirements for each federal program in the same manner as shown below:

Federal Program A	First Compliance requirement: i.e.: (what services of purposes resources must be used for)	
	Second Compliance requirement: i.e.:(eligibility requirement for recipients of the resources)	
	Etc.	
	Etc.	
Federal Program B	First Compliance requirement: i.e.: (what services of purposes resources must be used for)	
	Second Compliance requirement: i.e.: (eligibility requirement for recipients of the resources)	
	Etc.	
	Etc.	

Note: If the resources awarded to the recipient for matching represent more than one federal program, provide the same information shown below for each federal program and show total state resources awarded for matching.

State Resources Awarded to the Recipient Pursuant to this Agreement Consist of the Following Matching Resources for Federal Programs:					
Federal Program A	Federal Agency	CFDA	CFDA Title	Funding Amount	State Appropriation Category
Federal Program B	Federal Agency	CFDA	CFDA Title	Funding Amount	State Appropriation Category

Note: If the resources awarded to the recipient represent more than one state project, provide the same information shown below for each state project and show total state financial assistance awarded that is subject to section 215.97, F.S.

State Resources Awarded to the Recipient Pursuant to this Agreement Consist of the Following Resources Subject to Section 215.97, F.S.:						
State Program A	State Awarding Agency	State Fiscal Year[1]	CSFA Number	CSFA Title or Funding Source Description	Funding Amount	State Appropriation Category
State Program B	State Awarding Agency	State Fiscal Year[2]	CSFA Number	CSFA Title or Funding Source Description	Funding Amount	State Appropriation Category

Total Award	$10,000,000.00	

Note: List applicable compliance requirement in the same manner as illustrated above for federal resources. For matching resources provided by the Department for DEP for federal programs, the requirements might be similar to the requirements for the applicable federal programs. Also, to the extent that different requirements pertain to different amount for the non-federal resources, there may be more than one grouping (i.e. 1, 2, 3, etc.) listed under this category.

For each program identified above, the recipient shall comply with the program requirements described in the Catalog of Federal Domestic Assistance (CFDA) [https://sam.gov/content/assistance-listings] and/or the Florida Catalog of State Financial Assistance (CSFA) [https://apps.fldfs.com/fsaa/searchCatalog.aspx], and State Projects Compliance Supplement (Part Four: State Projects Compliance Supplement [https://apps.fldfs.com/fsaa/state_project_compliance.aspx]. The services/purposes for which the funds are to be used are included in the Agreement's Grant Work Plan. Any match required by the Recipient is clearly indicated in the Agreement.

[1] Subject to change by Change Order.
[2] Subject to change by Change Order.

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
PROGRAM-SPECIFIC REQUIREMENTS
RESILIENT FLORIDA PROGRAM

ATTACHMENT 6

1. Sea Level Impact Projection Study Requirement. If the project is within the designated area, pursuant to Section 161.551, F.S. and Chapter 62S-7, *Florida Administrative Code*, the Grantee is responsible for performing a Sea Level Impact Projection (SLIP) study and submitting the resulting report to the Department. The SLIP study report must be received by the Department, approved by the Department, and be published on the Department's website for at least thirty (30) days before construction can commence. This rule went into effect July 1, 2021, and applies to certain state-funded construction projects located in the coastal building zone as defined in the rule.

2. Permits. The Grantee acknowledges that receipt of this grant does not imply nor guarantee that a federal, state, or local permit will be issued for a particular activity. The Grantee agrees to ensure that all necessary permits are obtained prior to implementation of any grant-funded activity that may fall under applicable federal, state, or local laws. Further, the Grantee shall abide by all terms and conditions of each applicable permit for any grant-funded activity. Upon request, the Grantee must provide a copy of all acquired and approved permits for the project.

3. Attachment 3, Grant Work Plan, Performance Measures. All deliverables and reports submitted to the Department should be submitted electronically and must be compliant with the Americans with Disabilities Act, also known as "508 Compliant," in all formats provided.

4. Copyright, Patent and Trademark. The Department reserves a royalty-free, nonexclusive, and irrevocable license to reproduce, publish or otherwise use, and to authorize others to use, for state government purposes:

   a. The copyright in any work developed under this Agreement; and
   b. Any rights or copyright to which the Grantee or subcontractor purchases ownership with grant support.

5. Grant funds may not be used to support ongoing efforts to comply with legal requirements, including permit conditions, mitigation, and settlement agreements.

6. Funding Source. With the exception of audiovisuals not intended for presentation to the general public that are produced either as research instruments or for documenting experimentation or findings (unless otherwise required under the special terms of this Agreement), Grantee agrees to include the Department's logo (which can be found on the Department's website at: https://floridadep.gov or by contacting the Grant Manager for a copy) on all publications, printed reports, maps, audiovisuals (including videos, slides, and websites), and similar materials, as well as the following language:

   "This work was funded in part through a grant agreement from the Florida Department of Environmental Protection's Office of Resilience and Coastal Protection Resilient Florida Program. The views, statements, findings, conclusions, and recommendations expressed herein are those of the author(s) and do not necessarily reflect the views of the State of Florida or any of its subagencies."

   The next printed line must identify the month and year of the publication.

7. Final Project Report. The Grantee must submit Exhibit F, Final Project Report Form, prior to requesting final payment. The Final Project Report may be submitted in lieu of the final quarterly status report, only in instances where the next quarterly report falls after the project's completion date.

8. Project Photos. The Grantee must submit Exhibit G, Photo Release Form, with the first submission of deliverables and reports (Exhibit A and F) that include photos.

9. Contractual Services. For all grant agreements that include Contractual Services as an expenditure category, the Grantee must submit Exhibit H, Contractual Services Certification, and all required supporting documentation for all contractors conducting work under the grant agreement, prior to requesting payment that includes contractual services.

10. Vulnerability Assessments. For all Planning grant agreements (Resilient Florida Grant Program and Regional Resilience Entities), the Grantee must submit Exhibit I, Vulnerability Assessment Compliance Checklist Certification, with the final grant deliverable(s).

11. Geographic Information System (GIS) files and associated metadata. All GIS files and associated metadata must adhere to the Resilient Florida Program's GIS Data Standards (found on the Resilient Florida Program website: https://floridadep.gov/rcp/resilient-florida-program/documents/resilient-florida-program-gis-data-standards), and raw data sources shall be defined within the associated metadata.

12. State and Local Fiscal Recovery Funds. For all grant agreements funded with the Coronavirus State and Local Fiscal Recovery Funds (SLFRF) under the American Rescue Plan Act, the Grantee must submit the SLFRF Reporting Requirements Form upon execution of the grant agreement.

ATTACHMENT 8
Contract Provisions for Coronavirus State and Local Fiscal Recovery Funds (SLFRF) Agreements

The Department, as a Non-Federal Entity as defined by 2 CFR §200.69, shall comply with the following provisions, where applicable. For purposes of this Grant Agreement between the Department and the Grantee, the term "Recipient" shall mean "Grantee."

Further, the Department, as a pass-through entity, also requires the Grantee to pass on these requirements to all lower tier subrecipients/contractors, and to comply with the provisions of the award, the SLFRF implementing regulation, including applicable provisions of the OMB Uniform Guidance (2 CFR Part 200), and all associated terms and conditions. Therefore, Grantees must include these requirements in all related subcontracts and/or sub-awards. Grantees can include these requirements by incorporating this Attachment in the related subcontract and/or sub-awards, however for all such subcontracts and sub-awards, the Grantee shall assume the role of the Non-Federal Entity and the subrecipients shall assume the role of the Recipient.

2 CFR PART 200 APPENDIX 2 REQUIREMENTS

1. Administrative, Contractual, and Legal Remedies

The following provision is required if the Agreement is for more than $150,000. In addition to any of the remedies described elsewhere in the Agreement, if the Recipient materially fails to comply with the terms and conditions of this Contract, including any Federal or State statutes, rules, or regulations, applicable to this Contract, the Non-Federal Entity may take one or more of the following actions.

A. Temporarily withhold payments pending correction of the deficiency by the Recipient.
B. Disallow (that is, deny both use of funds and any applicable matching credit for) all or part of the cost of the activity or action not in compliance.
C. Wholly or partly suspend or terminate this Contract.
D. Take other remedies that may be legally available.

The remedies identified above, do not preclude the Recipient from being subject to debarment and suspension under Presidential Executive Orders 12549 and 12689. The Non-Federal entity shall have the right to demand a refund, either in whole or part, of the funds provided to the Recipient for noncompliance with the terms of this Agreement.

2. Termination for Cause and Convenience

Termination for Cause and Convenience are addressed elsewhere in the Agreement.

3. Equal Opportunity Clause

The following provision applies if the agreement meets the definition of "federally assisted construction contract" as defined by 41 CFR Part 60-1.3:

During the performance of this Agreement, the Recipient agrees as follows:

A. The Recipient will not discriminate against any employee or applicant for employment because of race, color, religion, sex, sexual orientation, gender identity, or national origin. The Recipient will take affirmative action to ensure that applicants are employed, and that employees are treated during employment without regard to their race, color, religion, sex, sexual orientation, gender identity, or national origin. Such action shall include, but not be limited to the following:
    i. Employment, upgrading, demotion, or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship. The Recipient agrees to post in conspicuous places, available to employees and applicants for employment, notices to be provided setting forth the provisions of this nondiscrimination clause.
B. The Recipient will, in all solicitations or advertisements for employees placed by or on behalf of the Recipient, state that all qualified applicants will receive consideration for employment without regard to race, color, religion, sex, sexual orientation, gender identity, or national origin.
C. The Recipient will not discharge or in any other manner discriminate against any employee or applicant for employment because such employee or applicant has inquired about, discussed, or disclosed the compensation of the employee or applicant or another employee or applicant. This provision shall not apply to instances in which an employee who has access to the compensation information of other employees or applicants as a part of such employee's

essential job functions discloses the compensation of such other employees or applicants to individuals who do not otherwise have access to such information, unless such disclosure is in response to a formal complaint or charge, in furtherance of an investigation, proceeding, hearing, or action, including an investigation conducted by the employer, or is consistent with the Recipient's legal duty to furnish information.

D. The Recipient will send to each labor union or representative of workers with which he has a collective bargaining agreement or other Agreement or understanding, a notice to be provided advising the said labor union or workers' representatives of the Recipient's commitments under this section, and shall post copies of the notice in conspicuous places available to employees and applicants for employment.

E. The Recipient will comply with all provisions of Executive Order 11246 of September 24, 1965, and of the rules, regulations, and relevant orders of the Secretary of Labor.

F. The Recipient will furnish all information and reports required by Executive Order 11246 of September 24, 1965, and by rules, regulations, and orders of the Secretary of Labor, or pursuant thereto, and will permit access to his books, records, and accounts by the administering agency and the Secretary of Labor for purposes of investigation to ascertain compliance with such rules, regulations, and orders.

G. In the event of the Recipient's noncompliance with the nondiscrimination clauses of this Agreement or with any of the said rules, regulations, or orders, this Agreement may be canceled, terminated, or suspended in whole or in part and the Recipient may be declared ineligible for further Government contracts or federally assisted construction contracts in accordance with procedures authorized in Executive Order 11246 of September 24, 1965, and such other sanctions may be imposed and remedies invoked as provided in Executive Order 11246 of September 24, 1965, or by rule, regulation, or order of the Secretary of Labor, or as otherwise provided by law.

H. The Recipient will include the portion of the sentence immediately preceding paragraph (1) and the provisions of paragraphs (1) through (8) in every subcontract or purchase order unless exempted by rules, regulations, or orders of the Secretary of Labor issued pursuant to section 204 of Executive Order 11246 of September 24, 1965, so that such provisions will be binding upon each subcontractor or vendor. The Recipient will take such action with respect to any subcontractor purchase order as the administering agency may direct as a means of enforcing such provisions, including sanctions for noncompliance.

4. Contract Work Hours and Safety Standards Act

Where applicable, if the Agreement is in excess of $100,000 and involves the employment of mechanics or laborers, the Recipient must comply with 40 U.S.C. 3702 and 3704, as supplemented by Department of Labor regulations (29 CFR Part 5). Under 40 U.S.C. 3702 of the Act, each Recipient must be required to compute the wages of every mechanic and laborer on the basis of a standard work week of 40 hours. Work in excess of the standard work week is permissible provided that the worker is compensated at a rate of not less than one and a half times the basic rate of pay for all hours worked in excess of 40 hours in the work week. The requirements of 40 U.S.C. 3704 are applicable to construction work and provide that no laborer or mechanic must be required to work in surroundings or under working conditions which are unsanitary, hazardous, or dangerous. These requirements do not apply to the purchases of supplies or materials or articles ordinarily available on the open market, or contracts for transportation or transmission of intelligence.

5. Rights to Inventions Made Under Agreement

If the Federal award meets the definition of "funding agreement" under 37 CFR §401.2 (a) and the Non- Federal Entity or subrecipient wishes to enter into a contract with a small business firm or nonprofit organization regarding the substitution of parties, assignment or performance of experimental, developmental, or research work under that "funding agreement," the Non-Federal Entity or subrecipient must comply with the requirements of 37 CFR Part 401, "Rights to Inventions Made by Nonprofit Organizations and Small Business Firms Under Government Grants, Contracts and Cooperative Agreements," and any implementing regulations issued by the awarding agency.

6. Clean air Act (42 U.S. C. 7401-7671q.), the Federal Water Pollution Control Act (33 U.S.C. 1251-1387), and EPA Regulations

If the Agreement is in excess of $100,000, the Recipient shall comply with all applicable standards, orders or regulations issued pursuant to the Clean Air Act (42 U.S.C. 7401-7671q) and the Federal Water Pollution Control

Act as amended (33 U.S.C. 1251-1387), and by the EPA (40 CFR Part 15). Violations must be reported to the Federal Awarding Agency and the Regional Office of the Environmental Protection Agency (EPA).

i. The Grantee shall include these requirements for the Clean Air Act and the Federal Water Pollution Act in each subcontract exceeding $100,000 financed in whole or in part with SLFRF funds.

7. Debarment and Suspension (Executive Orders 12549 and 12689)

The Recipient certifies that it is not listed on the governmentwide exclusions in the System for Award Management (SAM), in accordance with the OMB guidelines at 2 CFR 180 and 2 CF 1200 that implement Executive Orders 12549 (3 CFR part 1986 Comp., p. 189) and 12689 (3 CFR part 1989 Comp., p. 235), "Debarment and Suspension."

8. Byrd Anti-Lobbying Amendment (31 U.S.C. 1352)

The Recipient certifies that it will not and has not used Federal appropriated funds to pay any person or organization for influencing or attempting to influence an officer or employee of any agency, a member of Congress, officer or employee of Congress, or an employee of a member of Congress in connection with obtaining any Federal contract, grant or any other award covered by 31 U.S.C. 1352. If applicable, the Recipient shall disclose any lobbying with non-Federal funds that takes place in connection with obtaining any Federal award, using form SF-LLL, available at:
https://apply07.grants.gov/apply/forms/sample/SFLLL_1_2_P-V1.2.pdf.

i. Grantees who apply or bid for an award of $100,000 or more shall file the required certification. Each tier certifies to the tier above that it will not and has not used federal appropriated funds to pay any person or organization for influencing or attempting to influence an officer or employee of any agency, a member of Congress, officer or employee of Congress, or an employee of a member of Congress in connection with obtaining any federal contract, grant, or any other award covered by 31 U.S.C. § 1352. Each tier shall also disclose any lobbying with non-federal funds that takes place in connection with obtaining any federal award. Such disclosures are forwarded from tier to tier, up to the recipient.

9. Procurement of Recovered Materials

The Recipient must comply with Section 6002 of the Solid Waste Disposal Act, as amended by the Resource Conservation and Recovery Act as described in 2 CFR part 200.322.

10. Prohibition on Certain Telecommunications and Video Surveillance Services or Equipment

The Recipients and subrecipients are prohibited from obligating or expending loan or grant funds to procure or obtain; extend or renew a contract to procure or obtain; or enter into a contract (or extend or renew a contract) to procure or obtain equipment, services, or systems that uses covered telecommunications equipment or services as a substantial or essential component of any system, or as critical technology as partof any system. See Section 889 of Public Law 115-232 (National Defense Authorization Act 2019). Also, see 2 CFR 200.216 and 200.471.

11. Domestic Preferences for Procurement

The Recipients and subrecipients must, to the greatest extent practical, give preference to the purchase, acquisition, or use of goods, products, or materials produced in the United States in accordance with 2 CFR 200.322.

ADMINISTRATIVE

1. General Federal Regulations

Recipients shall comply with the regulations listed in 2 CFR 200, 48 CFR 31, and 40 U.S.C. 1101 *et seq.*

2. Rights to Patents and Inventions Made Under a Contract or Agreement

Rights to inventions made under this assistance agreement are subject to federal patent and licensing regulations, which are codified at Title 37 CFR Part 401 and Title 35 U.S.C. 200 through 212.

3. Compliance with the Trafficking Victims Protection Act of 2000 (2 CFR Part 175)

Recipients, their employees, subrecipients under this award, and subrecipients' employees may not:

A. Engage in severe forms of trafficking in persons during the period of time that the award is in effect;
B. Procure a commercial sex act during the period of time that the award is in effect; or
C. Use forced labor in the performance of the award or subawards under the award.

4. Whistleblower Protection

Recipients shall comply with U.S.C. §4712, Enhancement of Recipient and Subrecipient Employee Whistleblower Protection. This requirement applies to all awards issued after July 1, 2013 and effective December 14, 2016 has been permanently extended (Public Law (P.L.) 114-261).

A. This award, related subawards, and related contracts over the simplified acquisition threshold and all employees working on this award, related subawards, and related contracts over the simplified acquisition threshold are subject to the whistleblower rights and remedies in the pilot program on award recipient employee whistleblower protections established at 41 U.S.C. 4712 by section 828 of the National Defense Authorization Act for Fiscal Year 2013 (P.L. 112-239).

B. Recipients, their subrecipients, and their contractors awarded contracts over the simplified acquisition threshold related to this award, shall inform their employees in writing, in the predominant language of the workforce, of the employee whistleblower rights and protections under 41 U.S.C. 4712.

C. The Recipient shall insert this clause, including this paragraph C, in all subawards and in contracts over the simplified acquisition threshold related to this award; best efforts should be made to include this clause, including this paragraph C in any subawards and contracts awarded prior to the effective date of this provision.

5. Notification of Termination (2 CFR § 200.340)

In accordance with 2 CFR § 200.340, in the event that the Agreement is terminated prior to the end of the period of performance due to the Recipient's or subcontractor's material failure to comply with Federal statutes, regulations or the terms and conditions of this Agreement or the Federal award, the termination shall be reported to the Office of Management and Budget (OMB)-designated integrity and performance system, accessible through System for Award Management (SAM) currently the Federal Awardee Performance and Integrity Information System (FAPIIS). The Non-Federal Entity will notify the Recipient of the termination and the Federal requirement to report the termination in FAPIIS. See 2 CFR § 200.340 for the requirements of the notice and the Recipient's rights upon termination and following termination.

6. Additional Lobbying Requirements

A. The Recipient certifies that no funds provided under this Agreement have been used or will be used to engage in the lobbying of the Federal Government or in litigation against the United States unless authorized under existing law.

B. The Lobbying Disclosure Act of 1995, as amended (2 U.S.C. §1601 et seq.), prohibits any organization described in Section 501(c)(4) of the Internal Revenue Code, from receiving federal funds through an award, grant (and/or subgrant) or loan unless such organization warrants that it does not, and will not engage in lobbying activities prohibited by the Act as a special condition of such an award, grant (and/or subgrant), or loan. This restriction does not apply to loans made pursuant to approved revolving loan programs or to contracts awarded using proper procurement procedures.

C. Pursuant to 2 CFR §200.450 and 2 CFR §200.454(e), the Recipient is hereby prohibited from using funds provided by this Agreement for membership dues to any entity or organization engaged in lobbying activities.

7. Increasing Seat Belt Use in the United States

Pursuant to Executive Order 13043, 62 FR 19217 (Apr. 18, 1997), Grantee is encouraged to adopt and enforce on-the-job seat belt policies and programs for its employees when operating company-owned, rented or personally owned vehicles.

8. Reducing Text Messaging While Driving

Pursuant to Executive Order 13513, 74 FR 51225 (Oct. 6, 2009), Grantee is encouraged to adopt and enforce policies that ban text messaging while driving and establish workplace safety policies to decrease accidents caused by distracted drivers.

9. Uniform Relocation Assistance and Real Property Acquisitions Act of 1970

Where applicable, 42 U.S.C. §§ 4601-4655 and implementing regulations apply to this Agreement.

COMPLIANCE WITH ASSURANCES

1. Assurances

Recipients shall comply with all applicable assurances made by the Department or the Recipient to the Federal Government during the Grant application process.

FEDERAL REPORTING REQUIREMENTS

1. FFATA

Grant Recipients awarded a new Federal grant greater than or equal to $30,000 awarded on or after October1, 2015, are subject to the FFATA the Federal Funding Accountability and Transparency Act ("FFATA") of 2006. The FFATA legislation requires that information on federal awards (federal financial assistance and expenditures) be made available to the public via a single, searchable website, which is www.USASpending.gov.

The Grantee agrees to provide the information necessary, within one (1) month of execution, for the Department to comply with this requirement.

DEPARTMENT OF TREASURY-SPECIFIC

1. Civil Rights Compliance

Recipients of Federal financial assistance from the Treasury are required to meet legal requirements relating to nondiscrimination and nondiscriminatory use of Federal funds. Those requirements include ensuring that entities receiving Federal financial assistance from the Treasury do not deny benefits or services or otherwise discriminate on the basis of race, color, national origin, (including limited English proficiency), disability, age, or sex (including sexual orientation and gender identity), in accordance with the following: Title VI of Civil Rights Acts of 1973 (Section 504), Public Law 93-112, as amended by Public Law 93-516, 29 U.S.C. 794; Title IX of the Education Amendments of 1972 (Title IX), 20 U.S.C. 1681 et seq., and the Department's implementing regulations, 31 CFR 28; Age Discrimination Act of 1975, Public Law 94-135, 42 U.S.C. 6101 et seq., and the Department of Treasury implementing regulations at 31 CFR part 23.

The Department of Treasury will request information on recipients' compliance with Title VI of the Civil Rights Act of 1964, as applicable, on an annual basis. This information may include a narrative descripting the recipient's compliance with Title VI, along with other questions and assurances.

SLFRF-SPECIFIC

1. Period of Performance

All funds from SLFRF must be obligated by December 31, 2024 and expended by December 31, 2026.

2. Equipment and Real Property Management

Any purchase of equipment or real property with SLFRF funds must be consistent with the Uniform Guidance at 2 CFR Part 200, Subpart D. Equipment and real property acquired under this program must be used for the originally authorized purpose. Consistent with 2 CFR 200.311 and 2 CFR 200.313, any equipment or real property acquired using SLFRF funds shall vest in the non-Federal entity. Any acquisition and maintenance of equipment or real property must also be in compliance with relevant laws and regulations.

SLFRF INFRASTRUCTURE PROJECTS

For all infrastructure projects, the Grantee shall provide the following project information on a quarterly basis to the Department:

i. Projected/actual construction start date (month/year)
ii. Projected/actual initiation of operation date (month/year)
iii. Location details

SLFRF INFRASTRUCTURE PROJECTS OVER $10 MILLION

For infrastructure projects over $10 million, the following provisions apply:

1. Wage Certification

Grantees may provide a certification that all laborers and mechanics employed by Grantee in the performance of such project are paid wages at the rates not less than those prevailing, as determined by the U.S. Secretary of Labor in accordance with the Davis-Bacon Act, for the corresponding classes of laborers and mechanics employed projected of a character similar to the contract work in the civil subdivision of Florida in which the work is to be performed. If the Grantee does not provide such certification, the Grantee must provide a project employment and local impact report detailing:

i. The number of employees of contractors and sub-contractors working on the project;
ii. The number of employees on the project hired directly and hired through a third party;
iii. The wages and benefits of workers on the project by classification; and
iv. Whether those wages are at rates less than those prevailing.

Grantee must maintain sufficient records to substantiate this information upon request.

2. Project Labor Agreements

Grantees may provide a certification that the project includes a project labor agreement, meaning a pre-hire collective bargaining agreement consistent with the section 8(f) of the National Labor Relations Act (29 U.S.C. 158(f)). If the Grantee does not provide such certification, the Grantee must provide a project

workforce continuity plan, detailing:

i. How the Grantee will ensure the project has ready access to a sufficient supply of appropriately skilled and unskilled labor to ensure high-quality construction throughout the life of the project;

ii. How the Grantee will minimize risks of labor disputes and disruptions that would jeopardize timeliness and cost-effectiveness of the project;

iii. How the Grantee will provide a safe and healthy workplace that avoids delays and costs associatedwith workplace illnesses, injuries, and fatalities;

iv. Whether workers on the project will receive wages and benefits that will secure and appropriately skilled workforce in the context of the local or regional labor market; and

v. Whether the project has completed a labor agreement.

3. Other Reporting Requirements

Grantees must report whether the project prioritizes local hires and whether the project has Community Benefit Agreement, with a description of any such agreement, if applicable.

SLFRF WATER & SEWER PROJECTS

For water and sewer projects, Grantees shall provide the following information to the Department once the project starts, as appliable:

i. National Pollutant Discharge Elimination System (NPDES) Permit Number, for projects aligned with the Clean Water State Revolving Fund

ii. Public Water System (PWS) ID number, for projects aligned with the Drinking Water State Revolving Fund.

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
RESILIENT FLORIDA GRANT PROGRAM
EXHIBIT A
PROGRESS REPORT FORM

The current **Exhibit A, Progress Report Form** for the Resilient Florida Program grant agreements can be found on the Department's website at the link below. Each payment request must be submitted on the current form. The Department will notify grantees of any substantial changes to Exhibit A that occur during the grant agreement period.

https://floridadep.gov/Resilient-Florida-Program/Grants

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
RESILIENT FLORIDA GRANT PROGRAM
EXHIBIT C
PAYMENT REQUEST SUMMARY FORM

The current **Exhibit C, Payment Request Summary Form** for the Resilient Florida Program grant agreements can be found on the Department's website at the link below. Each payment request must be submitted on the current form. The Department will notify grantees of any substantial changes to Exhibit C that occur during the grant agreement period.

https://floridadep.gov/Resilient-Florida-Program/Grants

EXHIBIT F

DEP AGREEMENT NO. 23FRP42

CITY OF DELRAY BEACH MARINE WAY DRAINAGE IMPROVEMENTS

City of Delray Beach

Final Project Report

Insert Month & Year

This report is funded in part through a grant agreement from the Florida Department of Environmental Protection. The views, statements, findings, conclusions, and recommendations expressed herein are those of the author(s) and do not necessarily reflect the views of the State of Florida or any of its subagencies.

Part I. Executive Summary

Part II. Methodology

Part III. Outcome

Include the following: 1) evaluation of project's ability to meet goals and expected performance measures and provide explanation for why goals were not met, if applicable; 2) identify successful outcomes, areas for improvement, and quantifiable metrics (including the assigned metric in Exhibit A, if applicable) as a result of the project; and 3) final project photos, if an implementation construction project.

Part IV. Further Recommendations

Instructions for completing Exhibit F Final Project Report Form:

DEP AGREEMENT NO.: This is the number on your grant agreement.

GRANTEE NAME: Enter the name of the grantee's agency.

PROJECT TITLE: Enter the title shown on the first page of the grant agreement.

MONTH & YEAR: Enter month and year of publication

The final Project Report must contain the following sections: Executive Summary, Methodology, Outcome, and Further Recommendations. The Final Project Report must comply with the publication requirements in the grant agreement. Please limit the final project report to no more than five (5) pages. One electronic copy shall be submitted to the Department's Grant Manager for approval. Final payment will be held until receipt and approval of the Final Project Report.

Questions regarding completion of the Final Project Report should be directed to the Department's Grant Manager, identified in paragraph 18 of this agreement.

Florida Department of Environmental Protection

EXHIBIT G

PHOTOGRAPHER RELEASE FORM
FOR PHOTOGRAPHS, VIDEOS, AUDIO RECORDINGS AND ARTWORKS

DEP AGREEMENT NO: 23FRP42

RELEASE FORM FOR PHOTOGRAPHS, VIDEOS, AUDIO RECORDINGS AND ARTWORKS

Owner/Submitter's Name: _____

Address: _____

City: _____ **State:** _____ **Zip:** _____

Phone Number: (_____) _____ **Email:** _____

License and Indemnification

I certify that I am the owner of the photograph(s), video(s), audio recording(s) and/or artwork(s) being submitted and am eighteen (18) years of age or older.

I hereby grant to the Florida Department of Environmental Protection the royalty-free and non-exclusive right to distribute, publish and use the photograph(s), video(s), audio recording(s) and art work(s) submitted herewith (the "Work") to promote the Florida Department of Environmental Protection. Uses may include, but are not limited to:

1. Promotion of FDEP (including, but limited to publications, websites, social media venues, advertisements, etc.); and
2. Distribution to the media; and
3. Use in commercial products.

The Florida Department of Environmental Protection reserves the right to use/not use any Work as deemed appropriate by the Florida Department of Environmental Protection. No Work will be returned once submitted.

I hereby acknowledge that the Florida Department of Environmental Protection shall bear no responsibility whatsoever for protecting the Work against third-party infringement of my copyright interest or other intellectual property rights or other rights I may hold in such Work, and in no way shall be responsible for any losses I may suffer as a result of any such infringement; and I hereby represent and warrant that the Work does not infringe the rights of any other individual or entity.

I hereby unconditionally release, hold harmless and indemnify the Florida Department of Environmental Protection, its employees, volunteers, and representatives of and from all claims, liabilities and losses arising out of or in connection with the Florida Department of Environmental Protection's use of the Work. This release and indemnification shall be binding upon me, and my heirs, executors, administrators and assigns.

I have read and understand the terms of this release.

Owner signature: _____ **Date:** _____

Photo/video/audio/artwork/recording file name(s): _____

Location of photo/video/audio recording/artwork: _____

Name of person accepting Work submission _____

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
RESILIENT FLORIDA GRANT PROGRAM
CONTRACTUAL SERVICES CERTIFICATION

Exhibit H

Required for all grant agreements that include Contractual Services as an expenditure category.

DEP Agreement Number: 23FRP42

Project Title: City of Delray Beach Marine Way Drainage Improvements

Grantee: City of Delray Beach

Prior to making a request for payment of contractual services, the Grantee must provide the following to the Department Grant Manager then responsible for the Grantee's Resilient Florida Grant Program grant agreement:

1. Documentation of the Grantee's procurement process, as consistent with Attachment 1, Paragraph 9(c) and Attachment 2, Paragraph 11;
2. A list of all subcontractor quote and/or bid amounts (as applicable), including the company name and address for each subcontractor;
3. An explanation of how and why the Grantee made their determination(s) for the subcontractor(s) selected to perform certain task(s) under the Grantee's relevant grant agreement; and
4. This Exhibit H, signed and dated by the Grantee's own (non-Departmental) grant manager.

By signing below, I certify that, on behalf of the Grantee, I have provided all the information required by items 1. through 3. of this exhibit, as stated above, to the Department Grant Manager currently responsible for the Grantee's Resilient Florida Grant Program grant agreement. I also certify that the procurement process the Grantee utilized follows all of said Grantee's non-Departmental policies and procedures for subcontractors.

_____
Grantee's Grant Manager Signature

_____
Print Name

_____
Date

COMMON CARRIER OR CONTRACTED CARRIER ATTESTATION FORM
(PUR 1808)

This form must be completed by a Common Carrier or contracted carrier and submitted to the Governmental Entity with which a Contract being is executed, amended, or renewed. Capitalized terms used herein have the definitions ascribed in section 908.111, F.S.

_____ is not willfully providing and will not willfully provide any service during the Contract term in furtherance of transporting a person into this state knowing that the person is an Unauthorized Alien, except to facilitate the detention, removal, or departure of the person from this state or the United States.

Under penalties of perjury, I declare that I have read the foregoing statement and that the facts stated in it are true.

Printed Name:

Title:

Signature: Date:

AMENDMENT NO. 1
TO AGREEMENT NO. 23FRP42
BETWEEN
FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION
AND
CITY OF DELRAY BEACH

This Amendment to Agreement No. 23FRP42 (Agreement) is made by and between the Department of Environmental Protection (Department), an agency of the State of Florida, and City of Delray Beach (Grantee), on the date last signed below.

WHEREAS, the Department entered into the Agreement with the Grantee for City of Delray Beach Marine Way Drainage Improvements (Project), effective October 2, 2023; and,

WHEREAS, the Department has requested an update to the funding source from Line Item 197-H of the FY 22-23 General Appropriations Act to Line Item 1853 of the FY 24-25 General Appropriations Act; and,

WHEREAS, both parties have agreed to an extension of the Agreement Expiration Date for the Grantee to complete the required tasks in the Project and,

WHEREAS, the Department has requested an update to the Match Requirements in Attachment 2; and,

WHEREAS, the Department has requested an update to the Payment Request Schedule and Project Timeline in Attachment 3; and,

WHEREAS, the Department has requested an update to the funding source from Federal Resources to State Resources in Attachment 5; and,

WHEREAS, the Department has requested an update to Attachment 1, Attachment 2, Attachment 4, Attachment 6, Attachment 8 and Exhibit H following updates from the Office of the General Counsel.

WHEREAS, other changes to the Agreement are necessary.

NOW THEREFORE, the Department and Grantee hereby agree as follows:

1. Section 3. of the Standard Grant Agreement is hereby revised to change the Date of Expiration to April 30, 2028. The Department and the Grantee shall continue to perform their respective duties during this extension period pursuant to the same terms and conditions provided in the Agreement.

2. Section 5. of the Standard Grant Agreement is hereby revised to the following:

Total Amount of Funding:	**Funding Source?**	**Award #s or Line Item Appropriations:**	**Amount per Source(s):**
$ 10,000,000.00	☑ State ☐ Federal	FY 24-25 GAA Line Item #1853	$ 10,000,000.00
	☐ State ☐ Federal		
	☐ State ☐ Federal		
	☑ Grantee Match		$10,000,000.00
		Total Amount of Funding + Grantee Match, if any:	$20,000,000.00

3. Section 6. of the Standard Grant Agreement is hereby revised to the following:

Department's Grant Manager
Name: Karley Reyes

Address: 3900 Commonwealth Blvd, MS#230
Tallahassee, FL 32399
Phone: 850-245-8449
Email: Karley.Reyes@FloridaDEP.gov

4. Attachment 1, Standard Terms and Conditions, is hereby deleted in its entirety and replaced with Attachment 1-A, Revised Standard Terms and Conditions, as attached to this Amendment and hereby incorporated into the Agreement. All references in the Agreement to Attachment 1 shall hereinafter refer to Attachment 1-A, Revised Standard Terms and Conditions.

5. Attachment 2, Special Terms and Conditions, is hereby deleted in its entirety and replaced with Attachment 2-A, Revised Special Terms and Conditions, as attached to this Amendment and hereby incorporated into the Agreement. All references in the Agreement to Attachment 2 shall hereinafter refer to Attachment 2-A, Revised Special Terms and Conditions.

6. Attachment 3, Grant Work Plan, is hereby deleted in its entirety and replaced with Attachment 3-A, Revised Grant Work Plan, as attached to this Amendment and hereby incorporated into the Agreement. All references in the Agreement to Attachment 3 shall hereinafter refer to Attachment 3-A, Revised Grant Work Plan.

7. Attachment 4, Public Records Requirements, is hereby deleted in its entirety and replaced with Attachment 4-A, Revised Public Records Requirements, attached hereto and made a part of the Agreement. All references in the Agreement to Attachment 4, shall hereinafter refer to Attachment 4-A, Revised Public Records Requirements.

8. Attachment 5, Special Audit Requirements, is hereby deleted in its entirety and replaced with Attachment 5-A, Revised Special Audit Requirements, attached hereto and made a part of the Agreement. All references in the Agreement to Attachment 5, shall hereinafter refer to Attachment 5-A, Revised Special Audit Requirements.

9. Attachment 6, Program Specific Requirements, is hereby deleted in its entirety and replaced with Attachment 6-A, Revised Program Specific Requirements, attached hereto and made a part of the Agreement. All references in the Agreement to Attachment 6, shall hereinafter refer to Attachment 6-A, Revised Program Specific Requirements.

10. Attachment 8, Contract Provisions for Coronavirus State and Local Fiscal Recovery Funds (SLFRF) Agreements, is hereby deleted in its entirety and replaced with Attachment 8-A, Revised Contract Provisions for Coronavirus State and Local Fiscal Recovery Funds (SLFRF) Agreements, attached hereto and made a part of the Agreement. All references in the Agreement to Attachment 8, shall hereinafter refer to Attachment 8-A, Revised Contract Provisions for Coronavirus State and Local Fiscal Recovery Funds (SLFRF) Agreements.

11. Exhibit H, Contractual Services Certification, is hereby deleted in its entirety and replaced with Exhibit H-1, Revised Contractual Services Certification, attached hereto and made a part of the Agreement. All references in the Agreement to Exhibit H, shall hereinafter refer to Exhibit H-1, Revised Contractual Services Certification.

12. All other terms and conditions of the Agreement remain in effect. If and to the extent that any inconsistency may appear between the Agreement and this Amendment, the provisions of this Amendment shall control.

REMAINDER OF PAGE INTENTIONALLY LEFT BLANK

The parties agree to the terms and conditions of this Amendment and have duly authorized their respective representatives to sign it on the dates indicated below.

CITY OF DELRAY BEACH

By: _____
Authorized Representative or Designee

Terrence R. Moore, ICMA-CM
Print Name and Title

Date: 10/1/2024

FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION

By: _____
Secretary or Designee

Alex Reed, Director of the Office of Resilience and Coastal Protection
Print Name and Title

Date: 10/11/2024

ATTEST:

Alexis Givings, Interim City Clerk

CITY OF DELRAY BEACH SEAL FLORIDA

Approved as to form and legal sufficiency:

Lynn Gelin, City Attorney

List of attachments/exhibits included as part of this Amendment:

Specify Type	Letter/ Number	Description
Attachment	1-A	Revised Standard Terms and Conditions (14 pages)
Attachment	2-A	Revised Special Terms and Conditions (3 pages)
Attachment	3-A	Revised Grant Work Plan (2 pages)
Attachment	4-A	Revised Public Records Requirements (1 page)
Attachment	5-A	Revised Special Audit Requirements (6 pages)
Attachment	6-A	Revised Program Specific Requirements (2 pages)
Attachment	8-A	Revised Contract Provisions for Coronavirus State and Local Fiscal Recovery Funds (SLFRF) Agreements (6 pages)
Exhibit	H-1	Revised Contractual Services Certification (1 page)

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
REVISED STANDARD TERMS AND CONDITIONS
APPLICABLE TO GRANT AGREEMENTS

ATTACHMENT 1-A

1. Entire Agreement.

This Grant Agreement, including any Attachments and Exhibits referred to herein and/or attached hereto (Agreement), constitutes the entire agreement between the parties with respect to the subject matter hereof and supersedes all prior agreements, whether written or oral, with respect to such subject matter. Any terms and conditions included on Grantee's forms or invoices shall be null and void.

2. Grant Administration.

a. Order of Precedence. If there are conflicting provisions among the documents that make up the Agreement, the order of precedence for interpretation of the Agreement is as follows:
   i. Standard Grant Agreement
   ii. Attachments other than Attachment 1, in numerical order as designated in the Standard Grant Agreement
   iii. Attachment 1, Standard Terms and Conditions
   iv. The Exhibits in the order designated in the Standard Grant Agreement

b. All approvals, written or verbal, and other written communication among the parties, including all notices, shall be obtained by or sent to the parties' Grant Managers. All written communication shall be by electronic mail, U.S. Mail, a courier delivery service, or delivered in person. Notices shall be considered delivered when reflected by an electronic mail read receipt, a courier service delivery receipt, other mail service delivery receipt, or when receipt is acknowledged by recipient. If the notice is delivered in multiple ways, the notice will be considered delivered at the earliest delivery time.

c. If a different Grant Manager is designated by either party after execution of this Agreement, notice of the name and contact information of the new Grant Manager will be submitted in writing to the other party and maintained in the respective parties' records. A change of Grant Manager does not require a formal amendment or change order to the Agreement.

d. This Agreement may be amended, through a formal amendment or a change order, only by a written agreement between both parties. A formal amendment to this Agreement is required for changes which cause any of the following:
   (1) an increase or decrease in the Agreement funding amount;
   (2) a change in Grantee's match requirements;
   (3) a change in the expiration date of the Agreement; and/or
   (4) changes to the cumulative amount of funding transfers between approved budget categories, as defined in Attachment 3, Grant Work Plan, that exceeds or is expected to exceed twenty percent (20%) of the total budget as last approved by Department.
   A change order to this Agreement may be used when:
   (1) task timelines within the current authorized Agreement period change;
   (2) the cumulative transfer of funds between approved budget categories, as defined in Attachment 3, Grant Work Plan, are less than twenty percent (20%) of the total budget as last approved by Department;
   (3) changing the current funding source as stated in the Standard Grant Agreement; and/or
   (4) fund transfers between budget categories for the purposes of meeting match requirements.
   This Agreement may be amended to provide for additional services if additional funding is made available by the Legislature.

e. All days in this Agreement are calendar days unless otherwise specified.

3. Agreement Duration.

The term of the Agreement shall begin and end on the dates indicated in the Standard Grant Agreement, unless extended or terminated earlier in accordance with the applicable terms and conditions. The Grantee shall be eligible for reimbursement for work performed on or after the date of execution through the expiration date of this Agreement, unless otherwise specified in Attachment 2, Special Terms and Conditions. However, work performed prior to the execution of this Agreement may be reimbursable or used for match purposes if permitted by the Special Terms and Conditions.

4. Deliverables.

The Grantee agrees to render the services or other units of deliverables as set forth in Attachment 3, Grant Work Plan. The services or other units of deliverables shall be delivered in accordance with the schedule and at the pricing outlined in the Grant Work Plan. Deliverables may be comprised of activities that must be completed prior to Department making payment on that deliverable. The Grantee agrees to perform in accordance with the terms and conditions set forth in this Agreement and all attachments and exhibits incorporated by the Standard Grant Agreement.

5. Performance Measures.

The Grantee warrants that: (1) the services will be performed by qualified personnel; (2) the services will be of the kind and quality described in the Grant Work Plan; (3) the services will be performed in a professional and workmanlike manner in accordance with industry standards and practices; (4) the services shall not and do not knowingly infringe upon the intellectual property rights, or any other proprietary rights, of any third party; and (5) its employees, subcontractors, and/or subgrantees shall comply with any security and safety requirements and processes, if provided by Department, for work done at the Project Location(s). The Department reserves the right to investigate or inspect at any time to determine whether the services or qualifications offered by Grantee meet the Agreement requirements. Notwithstanding any provisions herein to the contrary, written acceptance of a particular deliverable does not foreclose Department's remedies in the event deficiencies in the deliverable cannot be readily measured at the time of delivery.

6. Acceptance of Deliverables.

a. Acceptance Process. All deliverables must be received and accepted in writing by Department's Grant Manager before payment. The Grantee shall work diligently to correct all deficiencies in the deliverable that remain outstanding, within a reasonable time at Grantee's expense. If Department's Grant Manager does not accept the deliverables within 30 days of receipt, they will be deemed rejected.

b. Rejection of Deliverables. The Department reserves the right to reject deliverables, as outlined in the Grant Work Plan, as incomplete, inadequate, or unacceptable due, in whole or in part, to Grantee's lack of satisfactory performance under the terms of this Agreement. The Grantee's efforts to correct the rejected deliverables will be at Grantee's sole expense. Failure to fulfill the applicable technical requirements or complete all tasks or activities in accordance with the Grant Work Plan will result in rejection of the deliverable and the associated invoice. Payment for the rejected deliverable will not be issued unless the rejected deliverable is made acceptable to Department in accordance with the Agreement requirements. The Department, at its option, may allow additional time within which Grantee may remedy the objections noted by Department. The Grantee's failure to make adequate or acceptable deliverables after a reasonable opportunity to do so shall constitute an event of default.

7. Financial Consequences for Nonperformance.

a. Withholding Payment. In addition to the specific consequences explained in the Grant Work Plan and/or Special Terms and Conditions, the State of Florida (State) reserves the right to withhold payment when the Grantee has failed to perform/comply with provisions of this Agreement. None of the financial consequences for nonperformance in this Agreement as more fully described in the Grant Work Plan shall be considered penalties.

b. Invoice reduction

If Grantee does not meet a deadline for any deliverable, the Department will reduce the invoice by 1% for each day the deadline is missed, unless an extension is approved in writing by the Department.

c. Corrective Action Plan. If Grantee fails to correct all the deficiencies in a rejected deliverable within the specified timeframe, Department may, in its sole discretion, request that a proposed Corrective Action Plan (CAP) be submitted by Grantee to Department. The Department requests that Grantee specify the outstanding deficiencies in the CAP. All CAPs must be able to be implemented and performed in no more than sixty (60) calendar days.

   i. The Grantee shall submit a CAP within ten (10) days of the date of the written request from Department. The CAP shall be sent to the Department's Grant Manager for review and approval. Within ten (10) days of receipt of a CAP, Department shall notify Grantee in writing whether the CAP proposed has been accepted. If the CAP is not accepted, Grantee shall have ten (10) days from receipt of Department letter rejecting the proposal to submit a revised proposed CAP. Failure to obtain Department approval of a CAP as specified above may result in Department's termination of this Agreement for cause as authorized in this Agreement.

   ii. Upon Department's notice of acceptance of a proposed CAP, Grantee shall have ten (10) days to commence implementation of the accepted plan. Acceptance of the proposed CAP by Department

does not relieve Grantee of any of its obligations under the Agreement. In the event the CAP fails to correct or eliminate performance deficiencies by Grantee, Department shall retain the right to require additional or further remedial steps, or to terminate this Agreement for failure to perform. No actions approved by Department or steps taken by Grantee shall preclude Department from subsequently asserting any deficiencies in performance. The Grantee shall continue to implement the CAP until all deficiencies are corrected. Reports on the progress of the CAP will be made to Department as requested by Department's Grant Manager.

iii. Failure to respond to a Department request for a CAP or failure to correct a deficiency in the performance of the Agreement as specified by Department may result in termination of the Agreement.

8. Payment.

a. Payment Process. Subject to the terms and conditions established by the Agreement, the pricing per deliverable established by the Grant Work Plan, and the billing procedures established by Department, Department agrees to pay Grantee for services rendered in accordance with section 215.422, Florida Statutes (F.S.).

b. Taxes. The Department is exempted from payment of State sales, use taxes and Federal excise taxes. The Grantee, however, shall not be exempted from paying any taxes that it is subject to, including State sales and use taxes, or for payment by Grantee to suppliers for taxes on materials used to fulfill its contractual obligations with Department. The Grantee shall not use Department's exemption number in securing such materials. The Grantee shall be responsible and liable for the payment of all its FICA/Social Security and other taxes resulting from this Agreement.

c. Maximum Amount of Agreement. The maximum amount of compensation under this Agreement, without an amendment, is described in the Standard Grant Agreement. Any additional funds necessary for the completion of this Project are the responsibility of Grantee.

d. Reimbursement for Costs. The Grantee shall be paid on a cost reimbursement basis for all eligible Project costs upon the completion, submittal, and approval of each deliverable identified in the Grant Work Plan. Reimbursement shall be requested on Exhibit C, Payment Request Summary Form. To be eligible for reimbursement, costs must be in compliance with laws, rules, and regulations applicable to expenditures of State funds, including, but not limited to, the Reference Guide for State Expenditures, which can be accessed at the following web address: https://www.myfloridacfo.com/docs-sf/accounting-and-auditing-libraries/state-agencies/reference-guide-for-state-expenditures.pdf.

e. Rural Communities and Rural Areas of Opportunity. If Grantee is a county or municipality that qualifies as a "rural community" or "rural area of opportunity" (RAO) as defined in subsection 288.0656(2), F.S., such Grantee may request from the Department that all invoice payments under this Agreement be directed to the relevant county or municipality or to the RAO itself. The Department will agree to Grantee's request if:

i. Grantee demonstrates that it is a county or municipality that qualifies as a "rural community" or "rural area of opportunity" under subsection 288.0656(2), F.S.;

ii. Grantee demonstrates current financial hardship using one (1) or more of the "economic distress" factors defined in subsection 288.0656(2)(c), F.S.;

iii. Grantee's performance has been verified by the Department, which has determined that Grantee is eligible for invoice payments and that Grantee's performance has been completed in accordance with this Agreement's terms and conditions; and

iv. Applicable federal and state law(s), rule(s) and regulation(s) allow for such payments.

This subsection may not be construed to alter or limit any other applicable provisions of federal or state law, rule, or regulation. A current list of Florida's designated RAOs can be accessed at the following web address: https://floridajobs.org/community-planning-and-development/rural-community-programs/rural-areas-of-opportunity.

f. Invoice Detail. All charges for services rendered or for reimbursement of expenses authorized by Department pursuant to the Grant Work Plan shall be submitted to Department in sufficient detail for a proper pre-audit and post-audit to be performed. The Grantee shall only invoice Department for deliverables that are completed in accordance with the Grant Work Plan.

g. State Funds Documentation. Pursuant to section 216.1366, F.S., if Contractor meets the definition of a non-profit organization under section 215.97(2)(m), F.S., Contractor must provide the Department with documentation that indicates the amount of state funds:

i. Allocated to be used during the full term of the contract or agreement for remuneration to any member of the board of directors or an officer of Contractor.

ii. Allocated under each payment by the public agency to be used for remuneration of any member of the board of directors or an officer of the Contractor.

The documentation must indicate the amounts and recipients of the remuneration. Such information must be posted on the State's the contract tracking system and maintained pursuant to section 215.985, F.S., and must be posted on the Contractor's website, if Contractor maintains a website.

h. Interim Payments. Interim payments may be made by Department, at its discretion, if the completion of deliverables to date have first been accepted in writing by Department's Grant Manager.

i. Final Payment Request. A final payment request should be submitted to Department no later than sixty (60) days following the expiration date of the Agreement to ensure the availability of funds for payment. However, all work performed pursuant to the Grant Work Plan must be performed on or before the expiration date of the Agreement.

j. Annual Appropriation Contingency. The State's performance and obligation to pay under this Agreement is contingent upon an annual appropriation by the Legislature. This Agreement is not a commitment of future appropriations. Authorization for continuation and completion of work and any associated payments may be rescinded, with proper notice, at the discretion of Department if the Legislature reduces or eliminates appropriations.

k. Interest Rates. All interest rates charged under the Agreement shall be calculated on the prevailing rate used by the State Board of Administration. To obtain the applicable interest rate, please refer to: https://www.myfloridacfo.com/division/aa/local-governments/judgement-interest-rates.

l. Refund of Payments to the Department. Any balance of unobligated funds that have been advanced or paid must be refunded to Department. Any funds paid in excess of the amount to which Grantee or subgrantee is entitled under the terms of the Agreement must be refunded to Department. If this Agreement is funded with federal funds and the Department is required to refund the federal government, the Grantee shall refund the Department its share of those funds.

9. Documentation Required for Cost Reimbursement Grant Agreements and Match.

If Cost Reimbursement or Match is authorized in Attachment 2, Special Terms and Conditions, the following conditions apply. Supporting documentation must be provided to substantiate cost reimbursement or match requirements for the following budget categories:

a. Salary/Wages. Grantee shall list personnel involved, position classification, direct salary rates, and hours spent on the Project in accordance with Attachment 3, Grant Work Plan in their documentation for reimbursement or match requirements.

b. Overhead/Indirect/General and Administrative Costs. If Grantee is being reimbursed for or claiming match for multipliers, all multipliers used (i.e., fringe benefits, overhead, indirect, and/or general and administrative rates) shall be supported by audit. If Department determines that multipliers charged by Grantee exceeded the rates supported by audit, Grantee shall be required to reimburse such funds to Department within thirty (30) days of written notification. Interest shall be charged on the excessive rate.

c. Contractual Costs (Subcontractors). Match or reimbursement requests for payments to subcontractors must be substantiated by copies of invoices with backup documentation identical to that required from Grantee. Subcontracts which involve payments for direct salaries shall clearly identify the personnel involved, salary rate per hour, and hours spent on the Project. All eligible multipliers used (i.e., fringe benefits, overhead, indirect, and/or general and administrative rates) shall be supported by audit. If Department determines that multipliers charged by any subcontractor exceeded the rates supported by audit, Grantee shall be required to reimburse such funds to Department within thirty (30) days of written notification. Interest shall be charged on the excessive rate. Nonconsumable and/or nonexpendable personal property or equipment costing $5,000 or more purchased for the Project under a subcontract is subject to the requirements set forth in chapters 273 and/or 274, F.S., and Chapter 69I-72, Florida Administrative Code (F.A.C.) and/or Chapter 69I-73, F.A.C., as applicable. The Grantee shall be responsible for maintaining appropriate property records for any subcontracts that include the purchase of equipment as part of the delivery of services. The Grantee shall comply with this requirement and ensure its subcontracts issued under this Agreement, if any, impose this requirement, in writing, on its subcontractors.

i. For fixed-price (vendor) subcontracts, the following provisions shall apply: The Grantee may award, on a competitive basis, fixed-price subcontracts to consultants/contractors in performing the work described in Attachment 3, Grant Work Plan. Invoices submitted to Department for fixed-price subcontracted activities shall be supported with a copy of the subcontractor's invoice and a copy of the tabulation form for the competitive procurement process (e.g., Invitation to Bid, Request for Proposals, or other similar competitive procurement document) resulting in the fixed-price

subcontract. The Grantee may request approval from Department to award a fixed-price subcontract resulting from procurement methods other than those identified above. In this instance, Grantee shall request the advance written approval from Department's Grant Manager of the fixed price negotiated by Grantee. The letter of request shall be supported by a detailed budget and Scope of Services to be performed by the subcontractor. Upon receipt of Department Grant Manager's approval of the fixed-price amount, Grantee may proceed in finalizing the fixed-price subcontract.

ii. If the procurement is subject to the Consultant's Competitive Negotiation Act under section 287.055, F.S. or the Brooks Act, Grantee must provide documentation clearly evidencing it has complied with the statutory or federal requirements.

d. Travel. All requests for match or reimbursement of travel expenses shall be in accordance with section 112.061, F.S.

e. Direct Purchase Equipment. For the purposes of this Agreement, Equipment is defined as capital outlay costing $5,000 or more. Match or reimbursement for Grantee's direct purchase of equipment is subject to specific approval of Department, and does not include any equipment purchased under the delivery of services to be completed by a subcontractor. Include copies of invoices or receipts to document purchases, and a properly completed Exhibit B, Property Reporting Form**.**

f. Rental/Lease of Equipment. Match or reimbursement requests for rental/lease of equipment must include copies of invoices or receipts to document charges.

g. Miscellaneous/Other Expenses. If miscellaneous or other expenses, such as materials, supplies, non-excluded phone expenses, reproduction, or mailing, are reimbursable or available for match or reimbursement under the terms of this Agreement, the documentation supporting these expenses must be itemized and include copies of receipts or invoices. Additionally, independent of Grantee's contract obligations to its subcontractor, Department shall not reimburse any of the following types of charges: cell phone usage; attorney's fees or court costs; civil or administrative penalties; or handling fees, such as set percent overages associated with purchasing supplies or equipment.

h. Land Acquisition. Reimbursement for the costs associated with acquiring interest and/or rights to real property (including access rights through ingress/egress easements, leases, license agreements, or other site access agreements; and/or obtaining record title ownership of real property through purchase) must be supported by the following, as applicable: Copies of Property Appraisals, Environmental Site Assessments, Surveys and Legal Descriptions, Boundary Maps, Acreage Certification, Title Search Reports, Title Insurance, Closing Statements/Documents, Deeds, Leases, Easements, License Agreements, or other legal instrument documenting acquired property interest and/or rights. If land acquisition costs are used to meet match requirements, Grantee agrees that those funds shall not be used as match for any other Agreement supported by State or Federal funds.

10. Status Reports.

The Grantee shall submit status reports quarterly, unless otherwise specified in the Attachments, on Exhibit A, Progress Report Form**,** to Department's Grant Manager describing the work performed during the reporting period, problems encountered, problem resolutions, scheduled updates, and proposed work for the next reporting period. Quarterly status reports are due no later than twenty (20) days following the completion of the quarterly reporting period. For the purposes of this reporting requirement, the quarterly reporting periods end on March 31, June 30, September 30 and December 31. The Department will review the required reports submitted by Grantee within thirty (30) days.

11. Retainage.

The following provisions apply if Department withholds retainage under this Agreement:

a. The Department reserves the right to establish the amount and application of retainage on the work performed under this Agreement up to the maximum percentage described in Attachment 2, Special Terms and Conditions. Retainage may be withheld from each payment to Grantee pending satisfactory completion of work and approval of all deliverables.

b. If Grantee fails to perform the requested work or fails to perform the work in a satisfactory manner, Grantee shall forfeit its right to payment of the retainage associated with the work. Failure to perform includes, but is not limited to, failure to submit the required deliverables or failure to provide adequate documentation that the work was actually performed. The Department shall provide written notification to Grantee of the failure to perform that shall result in retainage forfeiture. If the Grantee does not correct the failure to perform within the timeframe stated in Department's notice, the retainage will be forfeited to Department.

c. No retainage shall be released or paid for incomplete work while this Agreement is suspended.

d. Except as otherwise provided above, Grantee shall be paid the retainage associated with the work, provided Grantee has completed the work and submits an invoice for retainage held in accordance with the invoicing procedures under this Agreement.

12. Insurance.

a. Insurance Requirements for Sub-Grantees and/or Subcontractors. The Grantee shall require its sub-grantees and/or subcontractors, if any, to maintain insurance coverage of such types and with such terms and limits as described in this Agreement. The Grantee shall require all its sub-grantees and/or subcontractors, if any, to make compliance with the insurance requirements of this Agreement a condition of all contracts that are related to this Agreement. Sub-grantees and/or subcontractors must provide proof of insurance upon request.

b. Deductibles. The Department shall be exempt from, and in no way liable for, any sums of money representing a deductible in any insurance policy. The payment of such deductible shall be the sole responsibility of the Grantee providing such insurance.

c. Proof of Insurance. Upon execution of this Agreement, Grantee shall provide Department documentation demonstrating the existence and amount for each type of applicable insurance coverage ***prior to*** performance of any work under this Agreement. Upon receipt of written request from Department, Grantee shall furnish Department with proof of applicable insurance coverage by standard form certificates of insurance, a self-insured authorization, or other certification of self-insurance.

d. Duty to Maintain Coverage. In the event that any applicable coverage is cancelled by the insurer for any reason, or if Grantee cannot get adequate coverage, Grantee shall immediately notify Department of such cancellation and shall obtain adequate replacement coverage conforming to the requirements herein and provide proof of such replacement coverage within ten (10) days after the cancellation of coverage.

e. Insurance Trust. If the Grantee's insurance is provided through an insurance trust, the Grantee shall instead add the Department of Environmental Protection, its employees, and officers as an additional covered party everywhere the Agreement requires them to be added as an additional insured.

13. Termination.

a. Termination for Convenience. When it is in the State's best interest, Department may, at its sole discretion, terminate the Agreement in whole or in part by giving 30 days' written notice to Grantee. The Department shall notify Grantee of the termination for convenience with instructions as to the effective date of termination or the specific stage of work at which the Agreement is to be terminated. The Grantee must submit all invoices for work to be paid under this Agreement within thirty (30) days of the effective date of termination. The Department shall not pay any invoices received after thirty (30) days of the effective date of termination.

b. Termination for Cause. The Department may terminate this Agreement if any of the events of default described in the Events of Default provisions below occur or in the event that Grantee fails to fulfill any of its other obligations under this Agreement. If, after termination, it is determined that Grantee was not in default, or that the default was excusable, the rights and obligations of the parties shall be the same as if the termination had been issued for the convenience of Department. The rights and remedies of Department in this clause are in addition to any other rights and remedies provided by law or under this Agreement.

c. Grantee Obligations upon Notice of Termination. After receipt of a notice of termination or partial termination unless as otherwise directed by Department, Grantee shall not furnish any service or deliverable on the date, and to the extent specified, in the notice. However, Grantee shall continue work on any portion of the Agreement not terminated. If the Agreement is terminated before performance is completed, Grantee shall be paid only for that work satisfactorily performed for which costs can be substantiated. The Grantee shall not be entitled to recover any cancellation charges or lost profits.

d. Continuation of Prepaid Services. If Department has paid for any services prior to the expiration, cancellation, or termination of the Agreement, Grantee shall continue to provide Department with those services for which it has already been paid or, at Department's discretion, Grantee shall provide a refund for services that have been paid for but not rendered.

e. Transition of Services Upon Termination, Expiration, or Cancellation of the Agreement. If services provided under the Agreement are being transitioned to another provider(s), Grantee shall assist in the smooth transition of Agreement services to the subsequent provider(s). This requirement is at a minimum an affirmative obligation to cooperate with the new provider(s), however additional requirements may be outlined in the Grant Work Plan. The Grantee shall not perform any services after Agreement expiration or termination, except as necessary to complete the transition or continued portion of the Agreement, if any.

14. Notice of Default.

If Grantee defaults in the performance of any covenant or obligation contained in the Agreement, including, any of the events of default, Department shall provide notice to Grantee and an opportunity to cure that is reasonable under the circumstances. This notice shall state the nature of the failure to perform and provide a time certain for correcting the failure. The notice will also provide that, should the Grantee fail to perform within the time provided, Grantee will be found in default, and Department may terminate the Agreement effective as of the date of receipt of the default notice.

15. Events of Default.

Provided such failure is not the fault of Department or outside the reasonable control of Grantee, the following non-exclusive list of events, acts, or omissions, shall constitute events of default:

a. The commitment of any material breach of this Agreement by Grantee, including failure to timely deliver a material deliverable, failure to perform the minimal level of services required for a deliverable, discontinuance of the performance of the work, failure to resume work that has been discontinued within a reasonable time after notice to do so, or abandonment of the Agreement;
b. The commitment of any material misrepresentation or omission in any materials, or discovery by the Department of such, made by the Grantee in this Agreement or in its application for funding;
c. Failure to submit any of the reports required by this Agreement or having submitted any report with incorrect, incomplete, or insufficient information;
d. Failure to honor any term of the Agreement;
e. Failure to abide by any statutory, regulatory, or licensing requirement, including an entry of an order revoking the certificate of authority granted to the Grantee by a state or other licensing authority;
f. Failure to pay any and all entities, individuals, and furnishing labor or materials, or failure to make payment to any other entities as required by this Agreement;
g. Employment of an unauthorized alien in the performance of the work, in violation of Section 274 (A) of the Immigration and Nationality Act;
h. Failure to maintain the insurance required by this Agreement;
i. One or more of the following circumstances, uncorrected for more than thirty (30) days unless, within the specified 30-day period, Grantee (including its receiver or trustee in bankruptcy) provides to Department adequate assurances, reasonably acceptable to Department, of its continuing ability and willingness to fulfill its obligations under the Agreement:
    i. Entry of an order for relief under Title 11 of the United States Code;
    ii. The making by Grantee of a general assignment for the benefit of creditors;
    iii. The appointment of a general receiver or trustee in bankruptcy of Grantee's business or property; and/or
    iv. An action by Grantee under any state insolvency or similar law for the purpose of its bankruptcy, reorganization, or liquidation.

16. Suspension of Work.

The Department may, in its sole discretion, suspend any or all activities under the Agreement, at any time, when it is in the best interest of the State to do so. The Department shall provide Grantee written notice outlining the particulars of suspension. Examples of reasons for suspension include, but are not limited to, budgetary constraints, declaration of emergency, or other such circumstances. After receiving a suspension notice, Grantee shall comply with the notice. Within 90 days, or any longer period agreed to by the parties, Department shall either: (1) issue a notice authorizing resumption of work, at which time activity shall resume; or (2) terminate the Agreement. If the Agreement is terminated after 30 days of suspension, the notice of suspension shall be deemed to satisfy the thirty (30) days' notice required for a notice of termination for convenience. Suspension of work shall not entitle Grantee to any additional compensation.

17. Force Majeure.

The Grantee shall not be responsible for delay resulting from its failure to perform if neither the fault nor the negligence of Grantee or its employees or agents contributed to the delay and the delay is due directly to acts of God, wars, acts of public enemies, strikes, fires, floods, or other similar cause wholly beyond Grantee's control, or for any of the foregoing that affect subcontractors or suppliers if no alternate source of supply is available to Grantee. In case of any delay Grantee believes is excusable, Grantee shall notify Department in writing of the delay or potential delay and describe the cause of the delay either (1) within ten days after the cause that creates or will create the delay first arose, if Grantee could reasonably foresee that a delay could occur as a result; or (2) if delay is not reasonably foreseeable, within five days after the date Grantee first had reason to believe that a delay could result. **THE FOREGOING SHALL CONSTITUTE THE GRANTEE'S SOLE REMEDY OR EXCUSE WITH RESPECT**

TO DELAY. Providing notice in strict accordance with this paragraph is a condition precedent to such remedy. No claim for damages, other than for an extension of time, shall be asserted against Department. The Grantee shall not be entitled to an increase in the Agreement price or payment of any kind from Department for direct, indirect, consequential, impact or other costs, expenses or damages, including but not limited to costs of acceleration or inefficiency, arising because of delay, disruption, interference, or hindrance from any cause whatsoever. If performance is suspended or delayed, in whole or in part, due to any of the causes described in this paragraph, after the causes have ceased to exist Grantee shall perform at no increased cost, unless Department determines, in its sole discretion, that the delay will significantly impair the value of the Agreement to Department, in which case Department may: (1) accept allocated performance or deliveries from Grantee, provided that Grantee grants preferential treatment to Department with respect to products subjected to allocation; (2) contract with other sources (without recourse to and by Grantee for the related costs and expenses) to replace all or part of the products or services that are the subject of the delay, which purchases may be deducted from the Agreement quantity; or (3) terminate Agreement in whole or in part.

18. Indemnification.

a. The Grantee shall be fully liable for the actions of its agents, employees, partners, or subcontractors and shall fully indemnify, defend, and hold harmless Department and its officers, agents, and employees, from suits, actions, damages, and costs of every name and description arising from or relating to:
    i. personal injury and damage to real or personal tangible property alleged to be caused in whole or in part by Grantee, its agents, employees, partners, or subcontractors; provided, however, that Grantee shall not indemnify for that portion of any loss or damages proximately caused by the negligent act or omission of Department;
    ii. the Grantee's breach of this Agreement or the negligent acts or omissions of Grantee.

b. The Grantee's obligations under the preceding paragraph with respect to any legal action are contingent upon Department giving Grantee: (1) written notice of any action or threatened action; (2) the opportunity to take over and settle or defend any such action at Grantee's sole expense; and (3) assistance in defending the action at Grantee's sole expense. The Grantee shall not be liable for any cost, expense, or compromise incurred or made by Department in any legal action without Grantee's prior written consent, which shall not be unreasonably withheld.

c. Notwithstanding sections a. and b. above, the following is the sole indemnification provision that applies to Grantees that are governmental entities: Each party hereto agrees that it shall be solely responsible for the negligent or wrongful acts of its employees and agents. However, nothing contained herein shall constitute a waiver by either party of its sovereign immunity or the provisions of section 768.28, F.S. Further, nothing herein shall be construed as consent by a state agency or subdivision of the State to be sued by third parties in any matter arising out of any contract or this Agreement.

d. No provision in this Agreement shall require Department to hold harmless or indemnify Grantee, insure or assume liability for Grantee's negligence, waive Department's sovereign immunity under the laws of Florida, or otherwise impose liability on Department for which it would not otherwise be responsible. Any provision, implication or suggestion to the contrary is null and void.

19. Limitation of Liability.

The Department's liability for any claim arising from this Agreement is limited to compensatory damages in an amount no greater than the sum of the unpaid balance of compensation due for goods or services rendered pursuant to and in compliance with the terms of the Agreement. Such liability is further limited to a cap of $100,000.

20. Remedies.

Nothing in this Agreement shall be construed to make Grantee liable for force majeure events. Nothing in this Agreement, including financial consequences for nonperformance, shall limit Department's right to pursue its remedies for other types of damages under the Agreement, at law or in equity. The Department may, in addition to other remedies available to it, at law or in equity and upon notice to Grantee, retain such monies from amounts due Grantee as may be necessary to satisfy any claim for damages, penalties, costs and the like asserted by or against it.

21. Waiver.

The delay or failure by Department to exercise or enforce any of its rights under this Agreement shall not constitute or be deemed a waiver of Department's right thereafter to enforce those rights, nor shall any single or partial exercise of any such right preclude any other or further exercise thereof or the exercise of any other right.

22. Statutory Notices Relating to Unauthorized Employment and Subcontracts.

a. The Department shall consider the employment by any Grantee of unauthorized aliens a violation of Section 274A(e) of the Immigration and Nationality Act. If Grantee/subcontractor knowingly employs unauthorized

aliens, such violation shall be cause for unilateral cancellation of this Agreement. The Grantee shall be responsible for including this provision in all subcontracts with private organizations issued as a result of this Agreement.

b. Pursuant to sections 287.133, 287.134, and 287.137 F.S., the following restrictions apply to persons placed on the convicted vendor list, discriminatory vendor list, or the antitrust violator vendor list:

   i. Public Entity Crime. A person or affiliate who has been placed on the convicted vendor list following a conviction for a public entity crime may not submit a bid, proposal, or reply on a contract to provide any goods or services to a public entity; may not submit a bid, proposal, or reply on a contract with a public entity for the construction or repair of a public building or public work; may not submit bids, proposals, or replies on leases of real property to a public entity; may not be awarded or perform work as a Grantee, supplier, subcontractor, or consultant under a contract with any public entity; and may not transact business with any public entity in excess of the threshold amount provided in section 287.017, F.S., for CATEGORY TWO for a period of 36 months following the date of being placed on the convicted vendor list.

   ii. Discriminatory Vendors. An entity or affiliate who has been placed on the discriminatory vendor list may not submit a bid, proposal, or reply on a contract to provide any goods or services to a public entity; may not submit a bid, proposal, or reply on a contract with a public entity for the construction or repair of a public building or public work; may not submit bids, proposals, or replies on leases of real property to a public entity; may not be awarded or perform work as a contractor, supplier, subcontractor, or consultant under a contract with any public entity; and may not transact business with any public entity.

   iii. Antitrust Violator Vendors. A person or an affiliate who has been placed on the antitrust violator vendor list following a conviction or being held civilly liable for an antitrust violation may not submit a bid, proposal, or reply on any contract to provide any good or services to a public entity; may not submit a bid, proposal, or reply on any contract with a public entity for the construction or repair of a public building or public work; may not submit a bid, proposal, or reply on leases of real property to a public entity; may not be awarded or perform work as a Grantee, supplier, subcontractor, or consultant under a contract with a public entity; and may not transact new business with a public entity.

   iv. Notification. The Grantee shall notify Department if it or any of its suppliers, subcontractors, or consultants have been placed on the convicted vendor list, the discriminatory vendor list, or antitrust violator vendor list during the life of the Agreement. The Florida Department of Management Services is responsible for maintaining the discriminatory vendor list and the antitrust violator vendor list and posts the list on its website. Questions regarding the discriminatory vendor list or antitrust violator vendor list may be directed to the Florida Department of Management Services, Office of Supplier Diversity, at (850) 487-0915.

23. Compliance with Federal, State and Local Laws.

a. The Grantee and all its agents shall comply with all federal, state and local regulations, including, but not limited to, nondiscrimination, wages, social security, workers' compensation, licenses, and registration requirements. The Grantee shall include this provision in all subcontracts issued as a result of this Agreement.

b. No person, on the grounds of race, creed, color, religion, national origin, age, gender, or disability, shall be excluded from participation in; be denied the proceeds or benefits of; or be otherwise subjected to discrimination in performance of this Agreement.

c. This Agreement shall be governed by and construed in accordance with the laws of the State of Florida.

d. Any dispute concerning performance of the Agreement shall be processed as described herein. Jurisdiction for any damages arising under the terms of the Agreement will be in the courts of the State, and venue will be in the Second Judicial Circuit, in and for Leon County. Except as otherwise provided by law, the parties agree to be responsible for their own attorney fees incurred in connection with disputes arising under the terms of this Agreement.

24. Build America, Buy America Act (BABA) - Infrastructure Projects with Federal Funding.
This provision does not apply to Agreements that are wholly funded by Coronavirus State and Local Fiscal Recovery Funds under the American Rescue Plan Act. Also, this provision does not apply where there is a valid waiver in place. However, the provision may apply to funds expended before the waiver or after expiration of the waiver.

If applicable, Recipients or Subrecipients of an award of Federal financial assistance from a program for infrastructure are required to comply with the Build America, Buy America Act (BABA), including the following provisions:

a. All iron and steel used in the project are produced in the United States--this means all manufacturing processes, from the initial melting stage through the application of coatings, occurred in the United States;

b. All manufactured products used in the project are produced in the United States-this means the manufactured product was manufactured in the United States; and the cost of the components of the manufactured product that are mined, produced, or manufactured in the United States is greater than 55 percent of the total cost of all components of the manufactured product, unless another standard for determining the minimum amount of domestic content of the manufactured product has been established under applicable law or regulation; and

c. All construction materials are manufactured in the United States-this means that all manufacturing processes for the construction material occurred in the United States.

The Buy America preference only applies to articles, materials, and supplies that are consumed in, incorporated into, or affixed to an infrastructure project. As such, it does not apply to tools, equipment, and supplies, such as temporary scaffolding, brought to the construction site and removed at or before the completion of the infrastructure project. Nor does a Buy America preference apply to equipment and furnishings, such as movable chairs, desks, and portable computer equipment, that are used at or within the finished infrastructure project but are not an integral part of the structure or permanently affixed to the infrastructure project.

25. Investing in America

Grantees of an award for construction projects in whole or in part by the Bipartisan Infrastructure Law or the Inflation Reduction Act, including the following provision:

a. Signage Requirements

a. Investing in America Emblem: The recipient will ensure that a sign is placed at construction sites supported in whole or in part by this award displaying the official Investing in America emblem and must identify the project as a "project funded by President Biden's Bipartisan Infrastructure Law" or "project funded by President Biden's Inflation Reduction Act" as applicable. The sign must be placed at construction sites in an easily visible location that can be directly linked to the work taking place and must be maintained in good condition throughout the construction period.

The recipient will ensure compliance with the guidelines and design specifications provided by EPA for using the official Investing in America emblem available at: https://www.epa.gov/invest/investing-america-signage.

b. Procuring Signs: Consistent with section 6002 of RCRA, 42 U.S.C. 6962, and 2 CFR 200.323, recipients are encouraged to use recycled or recovered materials when procuring signs. Signage costs are considered an allowable cost under this assistance agreement provided that the costs associated with signage are reasonable. Additionally, to increase public awareness of projects serving communities where English is not the predominant language, recipients are encouraged to translate the language on signs (excluding the official Investing in America emblem or EPA logo or seal) into the appropriate non-English language(s). The costs of such translation are allowable, provided the costs are reasonable.

26. Scrutinized Companies.

a. Grantee certifies that it is not on the Scrutinized Companies that Boycott Israel List or engaged in a boycott of Israel. Pursuant to section 287.135, F.S., the Department may immediately terminate this Agreement at its sole option if the Grantee is found to have submitted a false certification; or if the Grantee is placed on the Scrutinized Companies that Boycott Israel List or is engaged in the boycott of Israel during the term of the Agreement.

b. If this Agreement is for more than one million dollars, the Grantee certifies that it is also not on the Scrutinized Companies with Activities in Sudan, Scrutinized Companies with Activities in the Iran Petroleum Energy Sector List, or engaged with business operations in Cuba or Syria as identified in section 287.135, F.S. Pursuant to section 287.135, F.S., the Department may immediately terminate this Agreement at its sole option if the Grantee is found to have submitted a false certification; or if the Grantee is placed on the Scrutinized Companies with Activities in Sudan List, or Scrutinized Companies with Activities in the Iran Petroleum Energy Sector List, or engaged with business operations in Cuba or Syria during the term of the Agreement.

c. As provided in subsection 287.135(8), F.S., if federal law ceases to authorize these contracting prohibitions, then they shall become inoperative.

27. Lobbying and Integrity.

The Grantee agrees that no funds received by it under this Agreement will be expended for the purpose of lobbying the Legislature or a State agency pursuant to section 216.347, F.S., except that pursuant to the requirements of section 287.058(6), F.S., during the term of any executed agreement between Grantee and the State, Grantee may lobby the executive or legislative branch concerning the scope of services, performance, term, or compensation regarding that agreement. The Grantee shall comply with sections 11.062 and 216.347, F.S.

28. Record Keeping.

The Grantee shall maintain books, records and documents directly pertinent to performance under this Agreement in accordance with United States generally accepted accounting principles (US GAAP) consistently applied. The Department, the State, or their authorized representatives shall have access to such records for audit purposes during the term of this Agreement and for five (5) years following the completion date or termination of the Agreement. In the event that any work is subcontracted, Grantee shall similarly require each subcontractor to maintain and allow access to such records for audit purposes. Upon request of Department's Inspector General, or other authorized State official, Grantee shall provide any type of information the Inspector General deems relevant to Grantee's integrity or responsibility. Such information may include, but shall not be limited to, Grantee's business or financial records, documents, or files of any type or form that refer to or relate to Agreement. The Grantee shall retain such records for the longer of: (1) three years after the expiration of the Agreement; or (2) the period required by the General Records Schedules maintained by the Florida Department of State (available at: http://dos.myflorida.com/library-archives/records-management/general-records-schedules/).

29. Audits.

a. Inspector General. The Grantee understands its duty, pursuant to section 20.055(5), F.S., to cooperate with the inspector general in any investigation, audit, inspection, review, or hearing. The Grantee will comply with this duty and ensure that its sub-grantees and/or subcontractors issued under this Agreement, if any, impose this requirement, in writing, on its sub-grantees and/or subcontractors, respectively.

b. Physical Access and Inspection. Department personnel shall be given access to and may observe and inspect work being performed under this Agreement, with reasonable notice and during normal business hours, including by any of the following methods:
   i. Grantee shall provide access to any location or facility on which Grantee is performing work, or storing or staging equipment, materials or documents;
   ii. Grantee shall permit inspection of any facility, equipment, practices, or operations required in performance of any work pursuant to this Agreement; and,
   iii. Grantee shall allow and facilitate sampling and monitoring of any substances, soils, materials or parameters at any location reasonable or necessary to assure compliance with any work or legal requirements pursuant to this Agreement.

c. Special Audit Requirements. The Grantee shall comply with the applicable provisions contained in Attachment 5, Special Audit Requirements. Each amendment that authorizes a funding increase or decrease shall include an updated copy of Exhibit 1, to Attachment 5. If Department fails to provide an updated copy of Exhibit 1 to include in each amendment that authorizes a funding increase or decrease, Grantee shall request one from the Department's Grants Manager. The Grantee shall consider the type of financial assistance (federal and/or state) identified in Attachment 5, Exhibit 1 and determine whether the terms of Federal and/or Florida Single Audit Act Requirements may further apply to lower tier transactions that may be a result of this Agreement. For federal financial assistance, Grantee shall utilize the guidance provided under 2 CFR §200.331 for determining whether the relationship represents that of a subrecipient or vendor. For State financial assistance, Grantee shall utilize the form entitled "Checklist for Nonstate Organizations Recipient/Subrecipient vs Vendor Determination" (form number DFS-A2-NS) that can be found under the "Links/Forms" section appearing at the following website: https:\\apps.fldfs.com\fsaa.

d. Proof of Transactions. In addition to documentation provided to support cost reimbursement as described herein, Department may periodically request additional proof of a transaction to evaluate the appropriateness of costs to the Agreement pursuant to State guidelines (including cost allocation guidelines) and federal, if applicable. Allowable costs and uniform administrative requirements for federal programs can be found under 2 CFR 200. The Department may also request a cost allocation plan in support of its multipliers (overhead, indirect, general administrative costs, and fringe benefits). The Grantee must provide the additional proof within thirty (30) days of such request.

e. No Commingling of Funds. The accounting systems for all Grantees must ensure that these funds are not commingled with funds from other agencies. Funds from each agency must be accounted for separately. Grantees are prohibited from commingling funds on either a program-by-program or a project-by-project basis. Funds specifically budgeted and/or received for one project may not be used to support another project. Where a Grantee's, or subrecipient's, accounting system cannot comply with this requirement, Grantee, or subrecipient, shall establish a system to provide adequate fund accountability for each project it has been awarded.

i. If Department finds that these funds have been commingled, Department shall have the right to demand a refund, either in whole or in part, of the funds provided to Grantee under this Agreement for non-compliance with the material terms of this Agreement. The Grantee, upon such written notification from Department shall refund, and shall forthwith pay to Department, the amount of money demanded by Department. Interest on any refund shall be calculated based on the prevailing rate used by the State Board of Administration. Interest shall be calculated from the date(s) the original payment(s) are received from Department by Grantee to the date repayment is made by Grantee to Department.

ii. In the event that the Grantee recovers costs, incurred under this Agreement and reimbursed by Department, from another source(s), Grantee shall reimburse Department for all recovered funds originally provided under this Agreement and interest shall be charged for those recovered costs as calculated on from the date(s) the payment(s) are recovered by Grantee to the date repayment is made to Department.

iii. Notwithstanding the requirements of this section, the above restrictions on commingling funds do not apply to agreements where payments are made purely on a cost reimbursement basis.

30. Conflict of Interest.

The Grantee covenants that it presently has no interest and shall not acquire any interest which would conflict in any manner or degree with the performance of services required.

31. Independent Contractor.

The Grantee is an independent contractor and is not an employee or agent of Department.

32. Subcontracting.

a. Unless otherwise specified in the Special Terms and Conditions, all services contracted for are to be performed solely by Grantee.

b. The Department may, for cause, require the replacement of any Grantee employee, subcontractor, or agent. For cause, includes, but is not limited to, technical or training qualifications, quality of work, change in security status, or non-compliance with an applicable Department policy or other requirement.

c. The Department may, for cause, deny access to Department's secure information or any facility by any Grantee employee, subcontractor, or agent.

d. The Department's actions under paragraphs b. or c. shall not relieve Grantee of its obligation to perform all work in compliance with the Agreement. The Grantee shall be responsible for the payment of all monies due under any subcontract. The Department shall not be liable to any subcontractor for any expenses or liabilities incurred under any subcontract and Grantee shall be solely liable to the subcontractor for all expenses and liabilities incurred under any subcontract.

e. The Department will not deny Grantee's employees, subcontractors, or agents access to meetings within the Department's facilities, unless the basis of Department's denial is safety or security considerations.

f. The Department supports diversity in its procurement program and requests that all subcontracting opportunities afforded by this Agreement embrace diversity enthusiastically. The award of subcontracts should reflect the full diversity of the citizens of the State. A list of minority-owned firms that could be offered subcontracting opportunities may be obtained by contacting the Office of Supplier Diversity at (850) 487-0915.

g. The Grantee shall not be liable for any excess costs for a failure to perform, if the failure to perform is caused by the default of a subcontractor at any tier, and if the cause of the default is completely beyond the control of both Grantee and the subcontractor(s), and without the fault or negligence of either, unless the subcontracted products or services were obtainable from other sources in sufficient time for Grantee to meet the required delivery schedule.

33. Guarantee of Parent Company.

If Grantee is a subsidiary of another corporation or other business entity, Grantee asserts that its parent company will guarantee all of the obligations of Grantee for purposes of fulfilling the obligations of Agreement. In the event Grantee is sold during the period the Agreement is in effect, Grantee agrees that it will be a requirement of sale that the new parent company guarantee all of the obligations of Grantee.

34. Survival.
The respective obligations of the parties, which by their nature would continue beyond the termination or expiration of this Agreement, including without limitation, the obligations regarding confidentiality, proprietary interests, and public records, shall survive termination, cancellation, or expiration of this Agreement.

35. Third Parties.
The Department shall not be deemed to assume any liability for the acts, failures to act or negligence of Grantee, its agents, servants, and employees, nor shall Grantee disclaim its own negligence to Department or any third party. This Agreement does not and is not intended to confer any rights or remedies upon any person other than the parties. If Department consents to a subcontract, Grantee will specifically disclose that this Agreement does not create any third-party rights. Further, no third parties shall rely upon any of the rights and obligations created under this Agreement.

36. Severability.
If a court of competent jurisdiction deems any term or condition herein void or unenforceable, the other provisions are severable to that void provision, and shall remain in full force and effect.

37. Grantee's Employees, Subcontractors and Agents.
All Grantee employees, subcontractors, or agents performing work under the Agreement shall be properly trained technicians who meet or exceed any specified training qualifications. Upon request, Grantee shall furnish a copy of technical certification or other proof of qualification. All employees, subcontractors, or agents performing work under Agreement must comply with all security and administrative requirements of Department and shall comply with all controlling laws and regulations relevant to the services they are providing under the Agreement.

38. Assignment.
The Grantee shall not sell, assign, or transfer any of its rights, duties, or obligations under the Agreement, or under any purchase order issued pursuant to the Agreement, without the prior written consent of Department. In the event of any assignment, Grantee remains secondarily liable for performance of the Agreement, unless Department expressly waives such secondary liability. The Department may assign the Agreement with prior written notice to Grantee of its intent to do so.

39. Compensation Report.
If this Agreement is a sole-source, public-private agreement or if the Grantee, through this agreement with the State, annually receive 50% or more of their budget from the State or from a combination of State and Federal funds, the Grantee shall provide an annual report, including the most recent IRS Form 990, detailing the total compensation for the entities' executive leadership teams. Total compensation shall include salary, bonuses, cashed-in leave, cash equivalents, severance pay, retirement benefits, deferred compensation, real-property gifts, and any other payout. The Grantee must also inform the Department of any changes in total executive compensation between the annual reports. All compensation reports must indicate what percent of compensation comes directly from the State or Federal allocations to the Grantee.

40. Disclosure of Gifts from Foreign Sources.
If the value of the grant under this Agreement is $100,000 or more, Grantee shall disclose to Department any current or prior interest of, any contract with, or any grant or gift received from a foreign country of concern, as defined in section 286.101, F.S., if such interest, contract, or grant or gift has a value of $50,000 or more and such interest existed at any time or such contract or grant or gift was received or in force at any time during the previous 5 years. Such disclosure shall include the name and mailing address of the disclosing entity, the amount of the contract or grant or gift or the value of the interest disclosed, the applicable foreign country of concern and, if applicable, the date of termination of the contract or interest, the date of receipt of the grant or gift, and the name of the agent or controlled entity that is the source or interest holder. If the disclosure requirement is applicable as described above, then within 1 year before applying for any grant, Grantee must also provide a copy of such disclosure to the Department of Financial Services.

41. Food Commodities.
To the extend authorized by federal law, the Department, its grantees, contractors and subcontractors shall give preference to food commodities grown or produced in this state when purchasing food commodities, including farm products as defined in section 823.14, F.S., of any class, variety, or use thereof in their natural state or as processed by a farm operation or processor for the purpose of marketing such product.

42. Anti-human Trafficking.
If the Grantee is a nongovernmental entity, the Grantee must provide the Department with an affidavit signed by an officer or a representative of the Grantee under penalty of perjury attesting that the Grantee does not use coercion for labor or services as defined in section 787.06, F.S.

43. Iron and Steel for Public Works Projects.

If this Agreement funds a "public works project" as defined in section 255.0993, F.S., or the purchase of materials to be used in a public works project, any iron or steel permanently incorporated in the Project must be "produced in the United States," as defined in section 255.0993, F.S. This requirement does not apply if the Department determines that any of the following circumstances apply to the Project:

(1) iron or steel products produced in the United States are not produced in sufficient quantities, reasonably available, or of satisfactory quality;

(2) the use of iron or steel products produced in the United States will increase the total cost of the project by more than twenty percent (20%); or

(3) complying with this requirement is inconsistent with the public interest.

Further, this requirement does not prevent the Contractor's minimal use of foreign steel and iron materials if:

(1) such materials are incidental or ancillary to the primary product and are not separately identified in the project specifications; and

(2) the "cost" of such materials, as defined in section 255.0993, F.S., does not exceed one-tenth of one percent (1%) of the total Project Cost under this Agreement or $2,500, whichever is greater.

Electrical components, equipment, systems, and appurtenances, including supports, covers, shielding, and other appurtenances related to an electrical system that are necessary for operation or concealment (excepting transmission and distribution poles) are not considered to be iron or steel products and are, therefore, exempt from the requirements of this paragraph.

This provision shall be applied in a manner consistent with and may not be construed to impair the state's obligations under any international agreement.

44. Execution in Counterparts and Authority to Sign.

This Agreement, any amendments, and/or change orders related to the Agreement, may be executed in counterparts, each of which shall be an original and all of which shall constitute the same instrument. In accordance with the Electronic Signature Act of 1996, electronic signatures, including facsimile transmissions, may be used and shall have the same force and effect as a written signature. Each person signing this Agreement warrants that he or she is duly authorized to do so and to bind the respective party to the Agreement.

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
Revised Special Terms and Conditions
AGREEMENT NO. 23FRP42

ATTACHMENT 2-A

These Special Terms and Conditions shall be read together with general terms outlined in the Standard Terms and Conditions, Attachment 1. Where in conflict, these more specific terms shall apply.

1. Scope of Work.
The Project funded under this Agreement is City of Delray Beach Marine Way Drainage Improvements. The Project is defined in more detail in Attachment 3, Grant Work Plan.

2. Duration.
a. Reimbursement Period. The reimbursement period for this Agreement is the same as the term of the Agreement.
b. Extensions. There are extensions available for this Project.
c. Service Periods. Additional service periods may be added in accordance with 2.a above and are contingent upon proper and satisfactory technical and administrative performance by the Grantee and the availability of funding.

3. Payment Provisions.
a. Compensation. This is a cost reimbursement Agreement. The Grantee shall be compensated under this Agreement as described in Attachment 3.
b. Invoicing. Invoicing will occur as indicated in Attachment 3.
c. Advance Pay. Advance Pay is not authorized under this Agreement.

4. Cost Eligible for Reimbursement or Matching Requirements.
Reimbursement for costs or availability for costs to meet matching requirements shall be limited to the following budget categories, as defined in the Reference Guide for State Expenditures, as indicated:

Reimbursement	Match	Category
☐	☐	Salaries/Wages
		Overhead/Indirect/General and Administrative Costs:
☐	☐	a. Fringe Benefits, N/A.
☐	☐	b. Indirect Costs, N/A.
☒	☒	Contractual (Subcontractors)
☐	☐	Travel, in accordance with Section 112, F.S.
☐	☐	Equipment
☐	☐	Rental/Lease of Equipment
☐	☐	Miscellaneous/Other Expenses
☐	☐	Land Acquisition

5. Equipment Purchase.
No Equipment purchases shall be funded under this Agreement.

6. Land Acquisition.
There will be no Land Acquisitions funded under this Agreement.

7. Match Requirements
The Agreement requires at least a 50.00% match on the part of the Grantee. Therefore, the Grantee is responsible for providing $10,000,000.00 through cash or third party in-kind towards the work funded under this Agreement. The Grantee may claim allowable project expenditures made on July 1, 2021 or after for purposes of meeting its match requirement as identified above.

Each payment request submitted shall document all matching funds and/or match efforts (i.e., in-kind services) provided during the period covered by each request. The final payment will not be processed until the match requirement has been met.

If, upon completion of this Project, actual Project costs are less than the total estimated Project costs, and there are no pending payment requests, the Grantee's required match may be reduced proportionately, as long as at least a 50.00% match of the actual total cost of the Project is provided by the Grantee and the reduced amount satisfies statutory and program requirements.

8. Insurance Requirements

Required Coverage. At all times during the Agreement the Grantee, at its sole expense, shall maintain insurance coverage of such types and with such terms and limits described below. The limits of coverage under each policy maintained by the Grantee shall not be interpreted as limiting the Grantee's liability and obligations under the Agreement. All insurance policies shall be through insurers licensed and authorized to issue policies in Florida, or alternatively, Grantee may provide coverage through a self-insurance program established and operating under the laws of Florida. Additional insurance requirements for this Agreement may be required elsewhere in this Agreement, however the minimum insurance requirements applicable to this Agreement are:

a. Commercial General Liability Insurance.
The Grantee shall provide adequate commercial general liability insurance coverage and hold such liability insurance at all times during the Agreement. The Department, its employees, and officers shall be named as an additional insured on any general liability policies. The minimum limits shall be $250,000 for each occurrence and $500,000 policy aggregate.

b. Commercial Automobile Insurance.
If the Grantee's duties include the use of a commercial vehicle, the Grantee shall maintain automobile liability, bodily injury, and property damage coverage. Insuring clauses for both bodily injury and property damage shall provide coverage on an occurrence basis. The Department, its employees, and officers shall be named as an additional insured on any automobile insurance policy. The minimum limits shall be as follows:

$200,000/300,000	Automobile Liability for Company-Owned Vehicles, if applicable
$200,000/300,000	Hired and Non-owned Automobile Liability Coverage

c. Workers' Compensation and Employer's Liability Coverage.
The Grantee shall provide workers' compensation, in accordance with Chapter 440, F.S. and employer liability coverage with minimum limits of $100,000 per accident, $100,000 per person, and $500,000 policy aggregate. Such policies shall cover all employees engaged in any work under the Grant.

d. Other Insurance. None.

9. Quality Assurance Requirements.

There are no special Quality Assurance requirements under this Agreement.

10. Retainage.

No retainage is required under this Agreement.

11. Subcontracting.

The Grantee may subcontract work under this Agreement without the prior written consent of the Department's Grant Manager except for certain fixed-price subcontracts pursuant to this Agreement, which require prior approval. The Grantee shall submit a copy of the executed subcontract to the Department prior to submitting any invoices for subcontracted work. Regardless of any subcontract, the Grantee is ultimately responsible for all work to be performed under this Agreement.

12. State-owned Land.

The work will not be performed on State-owned land.

13. Office of Policy and Budget Reporting.

There are no special Office of Policy and Budget reporting requirements for this Agreement.

14. Common Carrier.

a. Applicable to contracts with a common carrier – firm/person/corporation that as a regular business transports people or commodities from place to place. If applicable, Contractor must also fill out and return PUR 1808 before contract execution. If Contractor is a common carrier pursuant to section 908.111(1)(a), Florida Statutes, the Department will terminate this contract immediately if Contractor is found to be in violation of the law or the attestation in PUR 1808.

b. Applicable to solicitations for a common carrier – Before contract execution, the winning Contractor(s) must fill out and return PUR 1808, and attest that it is not willfully providing any service in furtherance of transporting a person into this state knowing that the person unlawfully present in the United States according to the terms of the federal Immigration and Nationality Act, 8 U.S.C. ss. 1101 et seq. The Department will terminate a contract immediately if Contractor is found to be in violation of the law or the attestation in PUR 1808.

15. Financial Assistance and Payment of Invoices to Rural Communities or Rural Areas of Opportunity
This agreement does not provide federal or state financial assistance to a county or municipality that is a rural community or rural area of opportunity as those terms are defined in s. 288.0656(2).

16. Additional Terms.

None.

Any terms added here must be approved by the Office of General Counsel.

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
REVISED GRANT WORK PLAN
AGREEMENT NO. 23FRP42

ATTACHMENT 3-A

PROJECT TITLE: City of Delray Beach Marine Way Drainage Improvements

PROJECT LOCATION: The Project is located in City of Delray Beach within Palm Beach County, Florida.

PROJECT DESCRIPTION:
The City of Delray Beach (Grantee) will construct the City of Delray Beach Marine Way Drainage Improvements project (Project) to reduce flooding, efficiently pump out stormwater and create a pedestrian friendly waterfront area. The Project includes the installation of 735-ft of concrete capped sheetpile seawall and a new stormwater pump station with onsite water treatment, upgrading local water utility infrastructure and site restoration including roads, paver paths and mangrove area.

TASKS AND DELIVERABLES

Task 1: Construction

Description: The Grantee will acquire professional services to construct a new seawall, storm water pump station, roadway, stormwater infrastructure, water mains, and sanitary improvements in accordance with the construction contract documents. Project costs associated with the Construction task include work approved through the construction bids and/or construction-phase engineering and monitoring services contracts. Eligible activities may include mobilization, demobilization, construction observation or inspection services, physical and environmental surveys, and mitigation projects Construction shall be conducted in accordance with all local, state, and federal permits. Project Management activities may include field engineering services, site meetings with construction contractor(s) and design professionals, and overall project coordination and supervision.

Deliverables: The Grantee will submit:

- **1.1:** List of permit type, number, and issuing entity for all local, state, and federal permits required for the Project. This should include any permits listed in the original project application;
- **1.2:** A copy of the final design and record (as-built) drawings.
- **1.3:** A Certificate of Completion signed by a Florida-registered Professional Engineer or authorized individual in responsible charge of project;
- **1.4:** Coordinate final site visit with Department and submit the Closeout Site Visit Form received from assigned Field Agent; and
- **1.5:** Project administration and management report(s) signed by a Florida-registered Professional Engineer or authorized individual in responsible charge of project. The report(s) must cover the performance period of the task and can be submitted no more frequently than quarterly during the performance period of the task. The report(s) must include:
    - A summary of project and site inspection(s);
    - Meeting minutes to all attended meetings; and
    - Field notes.

PERFORMANCE MEASURES: The Grantee will submit all deliverables for each task to the Department's Grant Manager on or before the Task Due Date listed in the Project Timeline. The

Department's Grant Manager will review the deliverable(s) to verify that they meet the specifications in the Grant Work Plan and the task description, to include any work being performed by any subcontractor(s), and will provide written acceptance or denial of the deliverable(s) to the Grantee within thirty (30) calendar days. Tasks may include multiple deliverables to be completed. The Department will accept partial and full deliverables. Incomplete deliverables will not be accepted. A "partial deliverable" is defined as a deliverable consisting of one (1) or more (but not all) subcomponents listed in the deliverable list for a single task, where such subcomponent(s) are delivered to the Department at one hundred percent (100%) completion. A "full deliverable" is defined as a deliverable comprising all subcomponents listed in the deliverable list for a single task, all delivered to the Department at one hundred percent (100%) completion. An "incomplete deliverable" is defined as a deliverable for which one hundred percent (100%) completion has not been achieved for any of the subcomponents listed in the deliverable list for a single task. A task is considered one hundred percent (100%) complete upon the Department's receipt and approval of all deliverable(s) listed within the task and the Department's approval provided by the Deliverable Acceptance Letter.

CONSEQUENCES FOR NON-PERFORMANCE: For each task deliverable not received by the Department at one hundred percent (100%) completion and by the specified due date listed in the Agreement's most recent Project Timeline, the Department will reduce the relevant Task Funding Amount(s) paid to Grantee in proportion to the percentage of the deliverable(s) not fully completed and/or submitted to the Department in a timely manner.

PAYMENT REQUEST SCHEDULE: Following the Grantee's full or partial completion of a task's deliverable(s) and acceptance by the Department's Grant Manager, the Grantee may submit a payment request for cost reimbursement using the Exhibit C, Payment Request Summary Form. All payment requests must be accompanied by the Deliverable Acceptance Letter; the Exhibit A, Progress Report Form, detailing all progress made in the invoice period; and supporting fiscal documentation including match, if applicable. Interim payments will not be accepted. Payment requests will not be accepted until all required Exhibit A, Progress Report Forms, have been submitted to the Department's Grant Manager for all reporting periods dating back to the Agreement Begin Date. Upon the Department's receipt of the aforementioned documents and supporting fiscal documentation, the Department's Grant Manager will have ten (10) working days to review and approve or deny the payment request.

PROJECT TIMELINE AND BUDGET DETAIL: The tasks must be completed by, and all deliverables received by, the corresponding task due date listed in the table below. Cost-reimbursable grant funding must not exceed the budget amounts indicated below. Requests for any change(s) must be submitted prior to the current task due date listed in the Project Timeline. Requests are to be sent via email to the Department's Grant Manager, with the details of the request and the reason for the request made clear.

Task No.	Task Title	Budget Category	DEP Amount	Match Amount	Total Amount	Task Start Date	Task Due Date
1	Construction	Contractual Services	$10,000,000	$10,000,000	$20,000,000	Upon Execution	1/31/2028
		Total:	**$10,000,000**	**$10,000,000**	**$20,000,000**		

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
Revised Public Records Requirements

Attachment 4-A

1. **Public Records.**

a. If the Agreement exceeds $35,000.00, and if Grantee is acting on behalf of Department in its performance of services under the Agreement, Grantee must allow public access to all documents, papers, letters, or other material, regardless of the physical form, characteristics, or means of transmission, made or received by Grantee in conjunction with the Agreement (Public Records), unless the Public Records are exempt from section 24(a) of Article I of the Florida Constitution and section 119.07(1), F.S.

b. The Department may unilaterally terminate the Agreement if Grantee refuses to allow public access to Public Records as required by law.

2. **Additional Public Records Duties of Section 119.0701, F.S., If Applicable.**
For the purposes of this paragraph, the term "contract" means the "Agreement." If Grantee is a "contractor" as defined in section 119.0701(1)(a), F.S., the following provisions apply and the contractor shall:

a. Keep and maintain Public Records required by Department to perform the service.

b. Upon request, provide Department with a copy of requested Public Records or allow the Public Records to be inspected or copied within a reasonable time at a cost that does not exceed the cost provided in Chapter 119, F.S., or as otherwise provided by law.

c. A contractor who fails to provide the Public Records to Department within a reasonable time may be subject to penalties under section 119.10, F.S.

d. Ensure that Public Records that are exempt or confidential and exempt from Public Records disclosure requirements are not disclosed except as authorized by law for the duration of the contract term and following completion of the contract if the contractor does not transfer the Public Records to Department.

e. Upon completion of the contract, transfer, at no cost, to Department all Public Records in possession of the contractor or keep and maintain Public Records required by Department to perform the service. If the contractor transfers all Public Records to Department upon completion of the contract, the contractor shall destroy any duplicate Public Records that are exempt or confidential and exempt from Public Records disclosure requirements. If the contractor keeps and maintains Public Records upon completion of the contract, the contractor shall meet all applicable requirements for retaining Public Records. All Public Records stored electronically must be provided to Department, upon request from Department's custodian of Public Records, in a format specified by Department as compatible with the information technology systems of Department. These formatting requirements are satisfied by using the data formats as authorized in the contract or Microsoft Word, Outlook, Adobe, or Excel, and any software formats the contractor is authorized to access.

f. **IF THE CONTRACTOR HAS QUESTIONS REGARDING THE APPLICATION OF CHAPTER 119, F.S., TO THE CONTRACTOR'S DUTY TO PROVIDE PUBLIC RECORDS RELATING TO THE CONTRACT, CONTACT THE DEPARTMENT'S CUSTODIAN OF PUBLIC RECORDS AT:**

Telephone: **(850) 245-2118**
Email: public.services@floridadep.gov
Mailing Address: **Department of Environmental Protection**
ATTN: Office of Ombudsman and Public Services
Public Records Request
3900 Commonwealth Boulevard, MS 49
Tallahassee, Florida 32399

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
Revised Special Audit Requirements
(State and Federal Financial Assistance)

Attachment 5-A

The administration of resources awarded by the Department of Environmental Protection *(which may be referred to as the "Department", "DEP", "FDEP" or "Grantor", or other name in the agreement*) to the recipient *(which may be referred to as the "Recipient", "Grantee" or other name in the agreement)* may be subject to audits and/or monitoring by the Department of Environmental Protection, as described in this attachment.

MONITORING

In addition to reviews of audits conducted in accordance with 2 CFR Part 200, Subpart F-Audit Requirements, and Section 215.97, F.S., as revised (see "AUDITS" below), monitoring procedures may include, but not be limited to, on-site visits by DEP Department staff, limited scope audits as defined by 2 CFR 200.425, or other procedures. By entering into this Agreement, the recipient agrees to comply and cooperate with any monitoring procedures/processes deemed appropriate by the Department of Environmental Protection. In the event the Department of Environmental Protection determines that a limited scope audit of the recipient is appropriate, the recipient agrees to comply with any additional instructions provided by the Department to the recipient regarding such audit. The recipient further agrees to comply and cooperate with any inspections, reviews, investigations, or audits deemed necessary by the Chief Financial Officer (CFO) or Auditor General.

AUDITS

PART I: FEDERALLY FUNDED

This part is applicable if the recipient is a State or local government or a non-profit organization as defined in 2 CFR §200.330

1. A recipient that expends $750,000 or more in Federal awards in its fiscal year, must have a single or program-specific audit conducted in accordance with the provisions of 2 CFR Part 200, Subpart F. EXHIBIT 1 to this Attachment indicates Federal funds awarded through the Department of Environmental Protection by this Agreement. In determining the federal awards expended in its fiscal year, the recipient shall consider all sources of federal awards, including federal resources received from the Department of Environmental Protection. The determination of amounts of federal awards expended should be in accordance with the guidelines established in 2 CFR 200.502-503. An audit of the recipient conducted by the Auditor General in accordance with the provisions of 2 CFR Part 200.514 will meet the requirements of this part.

2. For the audit requirements addressed in Part I, paragraph 1, the recipient shall fulfill the requirements relative to auditee responsibilities as provided in 2 CFR 200.508-512.

3. A recipient that expends less than $750,000 in federal awards in its fiscal year is not required to have an audit conducted in accordance with the provisions of 2 CFR Part 200, Subpart F-Audit Requirements. If the recipient expends less than $750,000 in federal awards in its fiscal year and elects to have an audit conducted in accordance with the provisions of 2 CFR 200, Subpart F-Audit

Requirements, the cost of the audit must be paid from non-federal resources (i.e., the cost of such an audit must be paid from recipient resources obtained from other federal entities.

4. The recipient may access information regarding the Catalog of Federal Domestic Assistance (CFDA) via the internet at https://sam.gov/content/assistance-listings.

PART II: STATE FUNDED

This part is applicable if the recipient is a nonstate entity as defined by Section 215.97(2), Florida Statutes.

1. In the event that the recipient expends a total amount of state financial assistance equal to or in excess of $750,000 in any fiscal year of such recipient (for fiscal years ending June 30, 2017, and thereafter), the recipient must have a State single or project-specific audit for such fiscal year in accordance with Section 215.97, F.S.; Rule Chapter 69I-5, F.A.C., State Financial Assistance; and Chapters 10.550 (local governmental entities) or 10.650 (nonprofit and for-profit organizations), Rules of the Auditor General. EXHIBIT 1 to this form lists the state financial assistance awarded through the Department of Environmental Protection by this agreement. In determining the state financial assistance expended in its fiscal year, the recipient shall consider all sources of state financial assistance, including state financial assistance received from the Department of Environmental Protection, other state agencies, and other nonstate entities. State financial assistance does not include federal direct or pass-through awards and resources received by a nonstate entity for Federal program matching requirements.

2. In connection with the audit requirements addressed in Part II, paragraph 1; the recipient shall ensure that the audit complies with the requirements of Section 215.97(8), Florida Statutes. This includes submission of a financial reporting package as defined by Section 215.97(2), Florida Statutes, and Chapters 10.550 (local governmental entities) or 10.650 (nonprofit and for-profit organizations), Rules of the Auditor General.

3. If the recipient expends less than $750,000 in state financial assistance in its fiscal year (for fiscal year ending June 30, 2017, and thereafter), an audit conducted in accordance with the provisions of Section 215.97, Florida Statutes, is not required. In the event that the recipient expends less than $750,000 in state financial assistance in its fiscal year, and elects to have an audit conducted in accordance with the provisions of Section 215.97, Florida Statutes, the cost of the audit must be paid from the non-state entity's resources (i.e., the cost of such an audit must be paid from the recipient's resources obtained from other than State entities).

4. For information regarding the Florida Catalog of State Financial Assistance (CSFA), a recipient should access the Florida Single Audit Act website located at https://apps.fldfs.com/fsaa for assistance. In addition to the above websites, the following websites may be accessed for information: Legislature's Website at http://www.leg.state.fl.us/Welcome/index.cfm, State of Florida's website at http://www.myflorida.com/, Department of Financial Services' Website at http://www.fldfs.com/and the Auditor General's Website at http://www.myflorida.com/audgen/.

PART III: OTHER AUDIT REQUIREMENTS

(NOTE: This part would be used to specify any additional audit requirements imposed by the State awarding entity that are solely a matter of that State awarding entity's policy (i.e., the audit is not required by Federal or State laws and is not in conflict with other Federal or State audit requirements). *Pursuant to Section 215.97(8), Florida Statutes, State agencies may conduct or arrange for audits of State financial assistance that are in addition to audits conducted in accordance with Section 215.97, Florida Statutes. In such an event, the State awarding agency must arrange for funding the full cost of such additional audits.)*

PART IV: REPORT SUBMISSION

1. Copies of reporting packages for audits conducted in accordance with 2 CFR Part 200, Subpart F-Audit Requirements, and required by PART I of this form shall be submitted, when required by 2 CFR 200.512, by or on behalf of the recipient directly to the Federal Audit Clearinghouse (FAC) as provided in 2 CFR 200.36 and 200.512

   A. The Federal Audit Clearinghouse designated in 2 CFR §200.501(a) (the number of copies required by
   2 CFR §200.501(a) should be submitted to the Federal Audit Clearinghouse), at the following address:

   By Mail:

   Federal Audit Clearinghouse
   Bureau of the Census
   1201 East 10th Street
   Jeffersonville, IN 47132

   Submissions of the Single Audit reporting package for fiscal periods ending on or after January 1, 2008, must be submitted using the Federal Clearinghouse's Internet Data Entry System which can be found at http://harvester.census.gov/facweb/

2. Copies of financial reporting packages required by PART II of this Attachment shall be submitted by or on behalf of the recipient directly to each of the following:

   A. The Department of Environmental Protection at one of the following addresses:

   By Mail:
   Audit Director
   Florida Department of Environmental Protection
   Office of Inspector General, MS 40
   3900 Commonwealth Boulevard
   Tallahassee, Florida 32399-3000

   Electronically:
   FDEPSingleAudit@dep.state.fl.us

   B. The Auditor General's Office at the following address:

   Auditor General
   Local Government Audits/342
   Claude Pepper Building, Room 401

111 West Madison Street
Tallahassee, Florida 32399-1450

The Auditor General's website (http://flauditor.gov/) provides instructions for filing an electronic copy of a financial reporting package.

3. Copies of reports or management letters required by PART III of this Attachment shall be submitted by or on behalf of the recipient directly to the Department of Environmental Protection at one of the following addresses:

By Mail:
Audit Director
Florida Department of Environmental Protection
Office of Inspector General, MS 40
3900 Commonwealth Boulevard
Tallahassee, Florida 32399-3000

Electronically:
FDEPSingleAudit@dep.state.fl.us

4. Any reports, management letters, or other information required to be submitted to the Department of Environmental Protection pursuant to this Agreement shall be submitted timely in accordance with 2 CFR 200.512, section 215.97, F.S., and Chapters 10.550 (local governmental entities) or 10.650 (nonprofit and for-profit organizations), Rules of the Auditor General, as applicable.

5. Recipients, when submitting financial reporting packages to the Department of Environmental Protection for audits done in accordance with 2 CFR 200, Subpart F-Audit Requirements, or Chapters 10.550 (local governmental entities) and 10.650 (non and for-profit organizations), Rules of the Auditor General, should indicate the date and the reporting package was delivered to the recipient correspondence accompanying the reporting package.

PART V: RECORD RETENTION

The recipient shall retain sufficient records demonstrating its compliance with the terms of the award and this Agreement for a period of **five (5)** years from the date the audit report is issued, and shall allow the Department of Environmental Protection, or its designee, Chief Financial Officer, or Auditor General access to such records upon request. The recipient shall ensure that audit working papers are made available to the Department of Environmental Protection, or its designee, Chief Financial Officer, or Auditor General upon request for a period of **three (3)** years from the date the audit report is issued, unless extended in writing by the Department of Environmental Protection.

EXHIBIT – 1

FUNDS AWARDED TO THE RECIPIENT PURSUANT TO THIS AGREEMENT CONSIST OF THE FOLLOWING:

Note: If the resources awarded to the recipient represent more than one federal program, provide the same information shown below for each federal program and show total federal resources awarded

Federal Resources Awarded to the Recipient Pursuant to this Agreement Consist of the Following:					
Federal Program A	Federal Agency	CFDA Number	CFDA Title	Funding Amount	State Appropriation Category
				$	
Federal Program B	Federal Agency	CFDA Number	CFDA Title	Funding Amount	State Appropriation Category
				$	

Note: Of the resources awarded to the recipient represent more than one federal program, list applicable compliance requirements for each federal program in the same manner as shown below:

Federal Program A	First Compliance requirement: i.e.: (what services of purposes resources must be used for)	
	Second Compliance requirement: i.e.:(eligibility requirement for recipients of the resources)	
	Etc.	
	Etc.	
Federal Program B	First Compliance requirement: i.e.: (what services of purposes resources must be used for)	
	Second Compliance requirement: i.e.: (eligibility requirement for recipients of the resources)	
	Etc.	
	Etc.	

Note: If the resources awarded to the recipient for matching represent more than one federal program, provide the same information shown below for each federal program and show total state resources awarded for matching.

State Resources Awarded to the Recipient Pursuant to this Agreement Consist of the Following Matching Resources for Federal Programs:					
Federal Program A	Federal Agency	CFDA	CFDA Title	Funding Amount	State Appropriation Category
Federal Program B	Federal Agency	CFDA	CFDA Title	Funding Amount	State Appropriation Category

Note: If the resources awarded to the recipient represent more than one state project, provide the same information shown below for each state project and show total state financial assistance awarded that is subject to section 215.97, F.S.

State Resources Awarded to the Recipient Pursuant to this Agreement Consist of the Following Resources Subject to Section 215.97, F.S.:						
State Program A	State Awarding Agency	State Fiscal Year[1]	CSFA Number	CSFA Title or Funding Source Description	Funding Amount	State Appropriation Category
Amendment 1	Florida Department of Environmental Protection	24-25	37.098	Resilient Florida Programs	$10,000,000.00	140065
State Program B	State Awarding Agency	State Fiscal Year[2]	CSFA Number	CSFA Title or Funding Source Description	Funding Amount	State Appropriation Category

Total Award	$10,000,000.00	

Note: List applicable compliance requirement in the same manner as illustrated above for federal resources. For matching resources provided by the Department for DEP for federal programs, the requirements might be similar to the requirements for the applicable federal programs. Also, to the extent that different requirements pertain to different amount for the non-federal resources, there may be more than one grouping (i.e. 1, 2, 3, etc.) listed under this category.

For each program identified above, the recipient shall comply with the program requirements described in the Catalog of Federal Domestic Assistance (CFDA) [https://sam.gov/content/assistance-listings] and/or the Florida Catalog of State Financial Assistance (CSFA) [https://apps.fldfs.com/fsaa/searchCatalog.aspx], and State Projects Compliance Supplement (Part Four: State Projects Compliance Supplement [https://apps.fldfs.com/fsaa/state_project_compliance.aspx]. The

[1] Subject to change by Change Order.
[2] Subject to change by Change Order.

services/purposes for which the funds are to be used are included in the Agreement's Grant Work Plan. Any match required by the Recipient is clearly indicated in the Agreement.

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
REVISED PROGRAM-SPECIFIC REQUIREMENTS
RESILIENT FLORIDA PROGRAM

ATTACHMENT 6-A

General

1. Deliverable and Payment Request Submissions. All grant deliverables and payment requests (Exhibit C) must be submitted to ResilientFloridaGrants@FloridaDEP.gov.

2. Contractual Services. For all grant agreements that include Contractual Services as an expenditure category, the Grantee must submit Exhibit H, Contractual Services Certification, and all required supporting documentation for all contractors conducting work under the grant agreement, prior to submitting a payment request for contractual services.

3. Grantee Match Form. If the grant agreement includes match requirements in Attachment 2, the Grantee must submit the Grantee Match Form upon execution of the grant agreement and at any time there are changes to the match funding amount and/or funding source throughout the grant agreement period.

4. Project Photos. The Grantee must submit Exhibit G, Photo Release Form, with the first submission of deliverables and reports (Exhibit A and F) that include photos.

5. DEP Logo and Funding Source Disclaimer. The final Vulnerability Assessment Report, Adaptation Plan report or document, and any permanent signage created for an implementation project included on the Statewide Flooding and Sea Level Rise Resilience Plan must include the Department's logo (which can be found on the Department's website at: https://floridadep.gov or by contacting the Grant Manager for a copy) as well as the following language:

   "This work was funded in part through a grant agreement from the Florida Department of Environmental Protection's Office of Resilience and Coastal Protection Resilient Florida Program. The views, statements, findings, conclusions, and recommendations expressed herein are those of the author(s) and do not necessarily reflect the views of the State of Florida or any of its subagencies."

6. Final Project Report. The Grantee must submit Exhibit F, Final Project Report Form, prior to requesting final payment. The Final Project Report may be submitted in lieu of the final quarterly status report, only in instances where the next quarterly report falls after the project's completion date. For projects that are not completed by the Agreement End Date, Exhibit F must be submitted to ResilientFloridaGrants@FloridaDEP.gov upon completion of the project, which may be after the Agreement End Date.

7. Copyright, Patent and Trademark. The Department reserves a royalty-free, nonexclusive, and irrevocable license to reproduce, publish or otherwise use, and to authorize others to use, for state government purposes:
   a. The copyright in any work developed under this Agreement; and
   b. Any rights or copyright to which the Grantee or subcontractor purchases ownership with grant support.

8. State and Local Fiscal Recovery Funds. For all grant agreements funded with the Coronavirus State and Local Fiscal Recovery Funds (SLFRF) under the American Rescue Plan Act, the Grantee must submit the SLFRF Reporting Requirements Form upon execution of the grant agreement.

9. Geographic Information System (GIS) files and associated metadata. All GIS files and associated metadata

must adhere to the Resilient Florida Program's GIS Data Standards (found on the Resilient Florida Program website: https://floridadep.gov/rcp/resilient-florida-program/documents/resilient-florida-program-gis-data-standards), and raw data sources shall be defined within the associated metadata.

Implementation Grants

10. Sea Level Impact Projection Study Requirement. If a state-funded construction project is located within an area where a Sea Level Impact Protection (SLIP) study is required pursuant to Section 380.0937, Florida Statutes, the Grantee is responsible for conducting such a SLIP study and submitting the resulting report to the Department. The SLIP study report must be received by the Department, approved by the Department, and published on the Department's website for at least thirty (30) days before construction can commence. Upon submission to the Department, SLIP study reports must meet all relevant statutory requirements, as well as the standards and criteria indicated in Chapter 62S-7, Florida Administrative Code.

11. Permits. The Grantee acknowledges that receipt of this grant does not imply nor guarantee that a federal, state, or local permit will be issued for a particular activity. The Grantee agrees to ensure that all necessary permits are obtained prior to implementation of any grant-funded activity that may fall under applicable federal, state, or local laws. Further, the Grantee shall abide by all terms and conditions of each applicable permit for any grant-funded activity. Upon request, the Grantee must provide a copy of all required, acquired, and approved permits for the project.

12. Grant funds may not be used to support ongoing efforts to comply with certain legal requirements or actions that were unanticipated, non-existent, or unknown to the Department at the time of this Agreement's execution, including regulatory and permit compliance requirements, non-compliance and citation fees, fees resulting from unanticipated permit conditions, settlement agreements, and compliance with formal or informal enforcement actions to resolve violations of applicable rules and statutes (including consent orders, Closed Without Official Enforcement agreements, and similar enforcement actions). Grant funds may be utilized to support ongoing efforts to comply with permit-required conditions, as approved by the Resilient Florida Program (e.g., pre-, during-, and post-construction monitoring and mitigation efforts).

ATTACHMENT 8-A
Revised Contract Provisions for Coronavirus State and Local Fiscal Recovery Funds (SLFRF) Agreements

The Department, as a Non-Federal Entity as defined by 2 CFR §200.69, shall comply with the following provisions, where applicable. For purposes of this Grant Agreement between the Department and the Grantee, the term "Recipient" shall mean "Grantee."

Further, the Department, as a pass-through entity, also requires the Grantee to pass on these requirements to all lower tier subrecipients/contractors, and to comply with the provisions of the award, the SLFRF implementing regulation, including applicable provisions of the OMB Uniform Guidance (2 CFR Part 200), and all associated terms and conditions. Therefore, Grantees must include these requirements in all related subcontracts and/or sub-awards. Grantees can include these requirements by incorporating this Attachment in the related subcontract and/or sub-awards, however for all such subcontracts and sub-awards, the Grantee shall assume the role of the Non-Federal Entity and the subrecipients shall assume the role of the Recipient.

2 CFR PART 200 APPENDIX 2 REQUIREMENTS

1. Administrative, Contractual, and Legal Remedies

The following provision is required if the Agreement is for more than $150,000. In addition to any of the remedies described elsewhere in the Agreement, if the Recipient materially fails to comply with the terms and conditions of this Contract, including any Federal or State statutes, rules, or regulations, applicable to this Contract, the Non-Federal Entity may take one or more of the following actions.

A. Temporarily withhold payments pending correction of the deficiency by the Recipient.
B. Disallow (that is, deny both use of funds and any applicable matching credit for) all or part of the cost of the activity or action not in compliance.
C. Wholly or partly suspend or terminate this Contract.
D. Take other remedies that may be legally available.

The remedies identified above, do not preclude the Recipient from being subject to debarment and suspension under Presidential Executive Orders 12549 and 12689. The Non-Federal entity shall have the right to demand a refund, either in whole or part, of the funds provided to the Recipient for noncompliance with the terms of this Agreement.

2. Termination for Cause and Convenience

Termination for Cause and Convenience are addressed elsewhere in the Agreement.

3. Equal Opportunity Clause

The following provision applies if the agreement meets the definition of "federally assisted construction contract" as defined by 41 CFR Part 60-1.3:

During the performance of this Agreement, the Recipient agrees as follows:

A. The Recipient will not discriminate against any employee or applicant for employment because of race, color, religion, sex, sexual orientation, gender identity, or national origin. The Recipient will take affirmative action to ensure that applicants are employed, and that employees are treated during employment without regard to their race, color, religion, sex, sexual orientation, gender identity, or national origin. Such action shall include, but not be limited to the following:
   i. Employment, upgrading, demotion, or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship. The Recipient agrees to post in conspicuous places, available to employees and applicants for employment, notices to be provided setting forth the provisions of this nondiscrimination clause.
B. The Recipient will, in all solicitations or advertisements for employees placed by or on behalf of the Recipient, state that all qualified applicants will receive consideration for employment without regard to race, color, religion, sex, sexual orientation, gender identity, or national origin.
C. The Recipient will not discharge or in any other manner discriminate against any employee or applicant for employment because such employee or applicant has inquired about, discussed, or disclosed the compensation of the employee or applicant or another employee or applicant. This provision shall not apply to instances in which an employee who has access to the compensation information of other employees or applicants as a part of such employee's

essential job functions discloses the compensation of such other employees or applicants to individuals who do not otherwise have access to such information, unless such disclosure is in response to a formal complaint or charge, in furtherance of an investigation, proceeding, hearing, or action, including an investigation conducted by the employer, or is consistent with the Recipient's legal duty to furnish information.

D. The Recipient will send to each labor union or representative of workers with which he has a collective bargaining agreement or other Agreement or understanding, a notice to be provided advising the said labor union or workers' representatives of the Recipient's commitments under this section, and shall post copies of the notice in conspicuous places available to employees and applicants for employment.

E. The Recipient will comply with all provisions of Executive Order 11246 of September 24, 1965, and of the rules, regulations, and relevant orders of the Secretary of Labor.

F. The Recipient will furnish all information and reports required by Executive Order 11246 of September 24, 1965, and by rules, regulations, and orders of the Secretary of Labor, or pursuant thereto, and will permit access to his books, records, and accounts by the administering agency and the Secretary of Labor for purposes of investigation to ascertain compliance with such rules, regulations, and orders.

G. In the event of the Recipient's noncompliance with the nondiscrimination clauses of this Agreement or with any of the said rules, regulations, or orders, this Agreement may be canceled, terminated, or suspended in whole or in part and the Recipient may be declared ineligible for further Government contracts or federally assisted construction contracts in accordance with procedures authorized in Executive Order 11246 of September 24, 1965, and such other sanctions may be imposed and remedies invoked as provided in Executive Order 11246 of September 24, 1965, or by rule, regulation, or order of the Secretary of Labor, or as otherwise provided by law.

H. The Recipient will include the portion of the sentence immediately preceding paragraph (1) and the provisions of paragraphs (1) through (8) in every subcontract or purchase order unless exempted by rules, regulations, or orders of the Secretary of Labor issued pursuant to section 204 of Executive Order 11246 of September 24, 1965, so that such provisions will be binding upon each subcontractor or vendor. The Recipient will take such action with respect to any subcontractor purchase order as the administering agency may direct as a means of enforcing such provisions, including sanctions for noncompliance.

4. Contract Work Hours and Safety Standards Act

Where applicable, if the Agreement is in excess of $100,000 and involves the employment of mechanics or laborers, the Recipient must comply with 40 U.S.C. 3702 and 3704, as supplemented by Department of Labor regulations (29 CFR Part 5). Under 40 U.S.C. 3702 of the Act, each Recipient must be required to compute the wages of every mechanic and laborer on the basis of a standard work week of 40 hours. Work in excess of the standard work week is permissible provided that the worker is compensated at a rate of not less than one and a half times the basic rate of pay for all hours worked in excess of 40 hours in the work week. The requirements of 40 U.S.C. 3704 are applicable to construction work and provide that no laborer or mechanic must be required to work in surroundings or under working conditions which are unsanitary, hazardous, or dangerous. These requirements do not apply to the purchases of supplies or materials or articles ordinarily available on the open market, or contracts for transportation or transmission of intelligence.

5. Rights to Inventions Made Under Agreement

If the Federal award meets the definition of "funding agreement" under 37 CFR §401.2 (a) and the Non- Federal Entity or subrecipient wishes to enter into a contract with a small business firm or nonprofit organization regarding the substitution of parties, assignment or performance of experimental, developmental, or research work under that "funding agreement," the Non-Federal Entity or subrecipient must comply with the requirements of 37 CFR Part 401, "Rights to Inventions Made by Nonprofit Organizations and Small Business Firms Under Government Grants, Contracts and Cooperative Agreements," and any implementing regulations issued by the awarding agency.

6. Clean air Act (42 U.S. C. 7401-7671q.), the Federal Water Pollution Control Act (33 U.S.C. 1251-1387), and EPA Regulations

If the Agreement is in excess of $100,000, the Recipient shall comply with all applicable standards, orders or regulations issued pursuant to the Clean Air Act (42 U.S.C. 7401-7671q) and the Federal Water Pollution Control

Act as amended (33 U.S.C. 1251-1387), and by the EPA (40 CFR Part 15). Violations must be reported to the Federal Awarding Agency and the Regional Office of the Environmental Protection Agency (EPA).

i. The Grantee shall include these requirements for the Clean Air Act and the Federal Water Pollution Act in each subcontract exceeding $100,000 financed in whole or in part with SLFRF funds.

7. Debarment and Suspension (Executive Orders 12549 and 12689)

The Recipient certifies that it is not listed on the governmentwide exclusions in the System for Award Management (SAM), in accordance with the OMB guidelines at 2 CFR 180 and 2 CF 1200 that implement Executive Orders 12549 (3 CFR part 1986 Comp., p. 189) and 12689 (3 CFR part 1989 Comp., p. 235), "Debarment and Suspension."

8. Byrd Anti-Lobbying Amendment (31 U.S.C. 1352)

The Recipient certifies that it will not and has not used Federal appropriated funds to pay any person or organization for influencing or attempting to influence an officer or employee of any agency, a member of Congress, officer or employee of Congress, or an employee of a member of Congress in connection with obtaining any Federal contract, grant or any other award covered by 31 U.S.C. 1352. If applicable, the Recipient shall disclose any lobbying with non-Federal funds that takes place in connection with obtaining any Federal award, using form SF-LLL, available at: https://apply07.grants.gov/apply/forms/sample/SFLLL_1_2_P-V1.2.pdf.

i. Grantees who apply or bid for an award of $100,000 or more shall file the required certification. Each tier certifies to the tier above that it will not and has not used federal appropriated funds to pay any person or organization for influencing or attempting to influence an officer or employee of any agency, a member of Congress, officer or employee of Congress, or an employee of a member of Congress in connection with obtaining any federal contract, grant, or any other award covered by 31 U.S.C. § 1352. Each tier shall also disclose any lobbying with non-federal funds that takes place in connection with obtaining any federal award. Such disclosures are forwarded from tier to tier, up to the recipient.

9. Procurement of Recovered Materials

The Recipient must comply with Section 6002 of the Solid Waste Disposal Act, as amended by the Resource Conservation and Recovery Act as described in 2 CFR part 200.322.

10. Prohibition on Certain Telecommunications and Video Surveillance Services or Equipment

The Recipients and subrecipients are prohibited from obligating or expending loan or grant funds to procure or obtain; extend or renew a contract to procure or obtain; or enter into a contract (or extend or renew a contract) to procure or obtain equipment, services, or systems that uses covered telecommunications equipment or services as a substantial or essential component of any system, or as critical technology as partof any system. See Section 889 of Public Law 115-232 (National Defense Authorization Act 2019). Also, see 2 CFR 200.216 and 200.471.

11. Domestic Preferences for Procurement

The Recipients and subrecipients must, to the greatest extent practical, give preference to the purchase, acquisition, or use of goods, products, or materials produced in the United States in accordance with 2 CFR 200.322.

ADMINISTRATIVE

1. General Federal Regulations

Recipients shall comply with the regulations listed in 2 CFR 200, 48 CFR 31, and 40 U.S.C. 1101 *et seq.*

2. Rights to Patents and Inventions Made Under a Contract or Agreement

Rights to inventions made under this assistance agreement are subject to federal patent and licensing regulations, which are codified at Title 37 CFR Part 401 and Title 35 U.S.C. 200 through 212.

3. Compliance with the Trafficking Victims Protection Act of 2000 (2 CFR Part 175)

Recipients, their employees, subrecipients under this award, and subrecipients' employees may not:

A. Engage in severe forms of trafficking in persons during the period of time that the award is in effect;
B. Procure a commercial sex act during the period of time that the award is in effect; or
C. Use forced labor in the performance of the award or subawards under the award.

4. Whistleblower Protection

Recipients shall comply with U.S.C. §4712, Enhancement of Recipient and Subrecipient Employee Whistleblower Protection. This requirement applies to all awards issued after July 1, 2013 and effective December 14, 2016 has been permanently extended (Public Law (P.L.) 114-261).

A. This award, related subawards, and related contracts over the simplified acquisition threshold and all employees working on this award, related subawards, and related contracts over the simplified acquisition threshold are subject to the whistleblower rights and remedies in the pilot program on award recipient employee whistleblower protections established at 41 U.S.C. 4712 by section 828 of the National Defense Authorization Act for Fiscal Year 2013 (P.L. 112-239).

B. Recipients, their subrecipients, and their contractors awarded contracts over the simplified acquisition threshold related to this award, shall inform their employees in writing, in the predominant language of the workforce, of the employee whistleblower rights and protections under 41 U.S.C. 4712.

C. The Recipient shall insert this clause, including this paragraph C, in all subawards and in contracts over the simplified acquisition threshold related to this award; best efforts should be made to include this clause, including this paragraph C in any subawards and contracts awarded prior to the effective date of this provision.

5. Notification of Termination (2 CFR § 200.340)

In accordance with 2 CFR § 200.340, in the event that the Agreement is terminated prior to the end of the period of performance due to the Recipient's or subcontractor's material failure to comply with Federal statutes, regulations or the terms and conditions of this Agreement or the Federal award, the termination shall be reported to the Office of Management and Budget (OMB)-designated integrity and performance system, accessible through System for Award Management (SAM) currently the Federal Awardee Performance and Integrity Information System (FAPIIS). The Non-Federal Entity will notify the Recipient of the termination and the Federal requirement to report the termination in FAPIIS. See 2 CFR § 200.340 for the requirements of the notice and the Recipient's rights upon termination and following termination.

6. Additional Lobbying Requirements

A. The Recipient certifies that no funds provided under this Agreement have been used or will be used to engage in the lobbying of the Federal Government or in litigation against the United States unless authorized under existing law.

B. The Lobbying Disclosure Act of 1995, as amended (2 U.S.C. §1601 et seq.), prohibits any organization described in Section 501(c)(4) of the Internal Revenue Code, from receiving federal funds through an award, grant (and/or subgrant) or loan unless such organization warrants that it does not, and will not engage in lobbying activities prohibited by the Act as a special condition of such an award, grant (and/or subgrant), or loan. This restriction does not apply to loans made pursuant to approved revolving loan programs or to contracts awarded using proper procurement procedures.

C. Pursuant to 2 CFR §200.450 and 2 CFR §200.454(e), the Recipient is hereby prohibited from using funds provided by this Agreement for membership dues to any entity or organization engaged in lobbying activities.

7. Increasing Seat Belt Use in the United States

Pursuant to Executive Order 13043, 62 FR 19217 (Apr. 18, 1997), Grantee is encouraged to adopt and enforce on-the-job seat belt policies and programs for its employees when operating company-owned, rented or personally owned vehicles.

8. Reducing Text Messaging While Driving

Pursuant to Executive Order 13513, 74 FR 51225 (Oct. 6, 2009), Grantee is encouraged to adopt and enforce policies that ban text messaging while driving and establish workplace safety policies to decrease accidents caused by distracted drivers.

9. Uniform Relocation Assistance and Real Property Acquisitions Act of 1970

Where applicable, 42 U.S.C. §§ 4601-4655 and implementing regulations apply to this Agreement.

COMPLIANCE WITH ASSURANCES

1. Assurances

Recipients shall comply with all applicable assurances made by the Department or the Recipient to the Federal Government during the Grant application process.

FEDERAL REPORTING REQUIREMENTS

1. FFATA

Grant Recipients awarded a new Federal grant greater than or equal to $30,000 awarded on or after October1, 2015, are subject to the FFATA the Federal Funding Accountability and Transparency Act ("FFATA") of 2006. The FFATA legislation requires that information on federal awards (federal financial assistance and expenditures) be made available to the public via a single, searchable website, which is www.USASpending.gov.

The Grantee agrees to provide the information necessary, within one (1) month of execution, for the Department to comply with this requirement.

DEPARTMENT OF TREASURY-SPECIFIC

1. Civil Rights Compliance

Recipients of Federal financial assistance from the Treasury are required to meet legal requirements relating to nondiscrimination and nondiscriminatory use of Federal funds. Those requirements include ensuring that entities receiving Federal financial assistance from the Treasury do not deny benefits or services or otherwise discriminate on the basis of race, color, national origin, (including limited English proficiency), disability, age, or sex (including sexual orientation and gender identity), in accordance with the following: Title VI of Civil Rights Acts of 1973 (Section 504), Public Law 93-112, as amended by Public Law 93-516, 29 U.S.C. 794; Title IX of the Education Amendments of 1972 (Title IX), 20 U.S.C. 1681 et seq., and the Department's implementing regulations, 31 CFR 28; Age Discrimination Act of 1975, Public Law 94-135, 42 U.S.C. 6101 et seq., and the Department of Treasury implementing regulations at 31 CFR part 23.

The Department of Treasury will request information on recipients' compliance with Title VI of the Civil Rights Act of 1964, as applicable, on an annual basis. This information may include a narrative descripting the recipient's compliance with Title VI, along with other questions and assurances.

SLFRF-SPECIFIC

1. Period of Performance

The Department must obligate all funds from SLFRF by December 31, 2024, and all such obligated funds must be expended by December 31, 2026. As such, the Contractor must submit all invoices by September 30, 2026, unless approved in writing by the Department.

2. Equipment and Real Property Management

Any purchase of equipment or real property with SLFRF funds must be consistent with the Uniform Guidance at 2 CFR Part 200, Subpart D. Equipment and real property acquired under this program must be used for the originally authorized purpose. Consistent with 2 CFR 200.311 and 2 CFR 200.313, any equipment or real property acquired using SLFRF funds shall vest in the non-Federal entity. Any acquisition and maintenance of equipment or real property must also be in compliance with relevant laws and regulations.

SLFRF INFRASTRUCTURE PROJECTS

For all infrastructure projects, the Grantee shall provide the following project information on a quarterly basis to the Department:

i. Projected/actual construction start date (month/year)
ii. Projected/actual initiation of operation date (month/year)
iii. Location details

SLFRF INFRASTRUCTURE PROJECTS OVER $10 MILLION

For infrastructure projects over $10 million, the following provisions apply:

1. Wage Certification

Grantees may provide a certification that all laborers and mechanics employed by Grantee in the performance of such project are paid wages at the rates not less than those prevailing, as determined by the U.S. Secretary of Labor in accordance with the Davis-Bacon Act, for the corresponding classes of laborers and mechanics employed projected of a character similar to the contract work in the civil subdivision of Florida in which the work is to be performed. If the Grantee does not provide such certification, the Grantee must provide a project employment and local impact report detailing:

i. The number of employees of contractors and sub-contractors working on the project;
ii. The number of employees on the project hired directly and hired through a third party;
iii. The wages and benefits of workers on the project by classification; and
iv. Whether those wages are at rates less than those prevailing.

Grantee must maintain sufficient records to substantiate this information upon request.

2. Project Labor Agreements

Grantees may provide a certification that the project includes a project labor agreement, meaning a pre-hire

collective bargaining agreement consistent with the section 8(f) of the National Labor Relations Act (29 U.S.C. 158(f)). If the Grantee does not provide such certification, the Grantee must provide a project workforce continuity plan, detailing:

i. How the Grantee will ensure the project has ready access to a sufficient supply of appropriately skilled and unskilled labor to ensure high-quality construction throughout the life of the project;
ii. How the Grantee will minimize risks of labor disputes and disruptions that would jeopardize timeliness and cost-effectiveness of the project;
iii. How the Grantee will provide a safe and healthy workplace that avoids delays and costs associatedwith workplace illnesses, injuries, and fatalities;
iv. Whether workers on the project will receive wages and benefits that will secure and appropriately skilled workforce in the context of the local or regional labor market; and
v. Whether the project has completed a labor agreement.

3. Other Reporting Requirements

Grantees must report whether the project prioritizes local hires and whether the project has Community Benefit Agreement, with a description of any such agreement, if applicable.

SLFRF WATER & SEWER PROJECTS

For water and sewer projects, Grantees shall provide the following information to the Department once the project starts, as appliable:

i. National Pollutant Discharge Elimination System (NPDES) Permit Number, for projects aligned with the Clean Water State Revolving Fund

ii. Public Water System (PWS) ID number, for projects aligned with the Drinking Water State Revolving Fund.

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
RESILIENT FLORIDA GRANT PROGRAM
REVISED CONTRACTUAL SERVICES CERTIFICATION

Exhibit H-1

Required for all grant agreements that include Contractual Services as an expenditure category.

DEP Agreement Number: 23FRP42

Project Title: City of Delray Beach Marine Way Drainage Improvements

Grantee: City of Delray Beach

Subcontractor: _____

Note: Submit separate Exhibit H Certification for each additional subcontractor.

Prior to making a request for payment of contractual services, the Grantee must provide the following to the Department Grant Manager then responsible for the Grantee's Resilient Florida Grant Program grant agreement:

1. Documentation of the Grantee's procurement process, as consistent with Attachment 1, Paragraph 9(c) and Attachment 2, Paragraph 11;
2. A list of all subcontractor quote and/or bid amounts (as applicable), including the company name and address for each subcontractor;
3. An explanation of how and why the Grantee made their determination(s) for the subcontractor(s) selected to perform certain task(s) under the Grantee's relevant grant agreement;
4. A copy of the Grantee's executed subcontract agreement, as required by Attachment 2, Paragraph 11; and
5. This Exhibit H, signed and dated by the Grantee's own (non-Departmental) grant manager.

By signing below, I certify that, on behalf of the Grantee, I have provided all the information required by items 1. through 4. of this exhibit, as stated above, to the Department Grant Manager currently responsible for the Grantee's Resilient Florida Grant Program grant agreement. I also certify that the procurement process the Grantee utilized follows all of said Grantee's non-Departmental policies and procedures for subcontractors.

_____
Grantee's Grant Manager Signature

_____
Print Name

_____
Date

THE CITY OF DELRAY BEACH

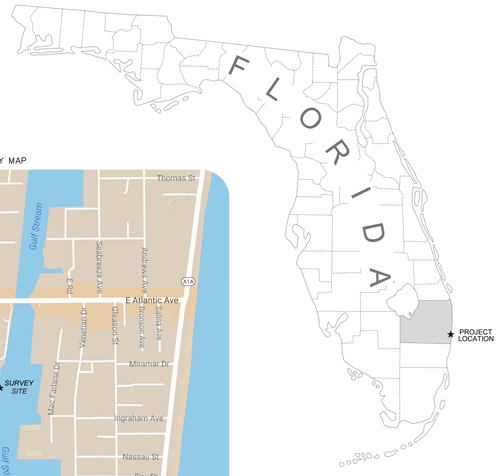
CITY MARINA: SEAWALL, DOCK, AND SITE IMPROVEMENTS

CITY PROJECT NO. 16-098

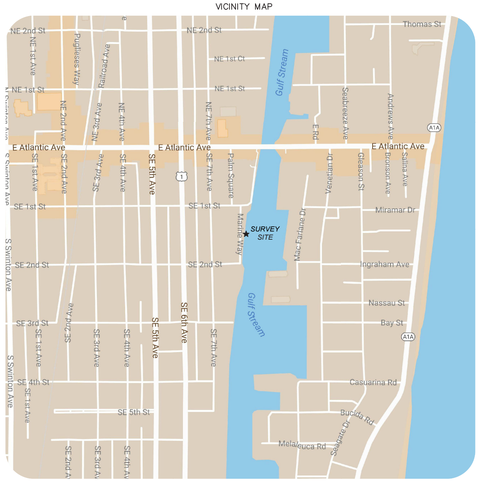
ASBUILT SURVEY

CITY of DELRAY BEACH
PUBLIC WORKS DEPARTMENT
434 SOUTH SWINTON AVENUE, DELRAY BEACH, FLORIDA 33444
Phone: (561) 243-7322 Fax: (561) 243-7060

PROJECT LOCATION



VICINITY MAP



SURVEY NOTES:

1. THIS IS A ASBUILT SURVEY AS DEFINED IN THE STANDARDS OF PRACTICE FOR SURVEYING AND MAPPING IN CHAPTER SJ-17 FLORIDA ADMINISTRATIVE CODE.
2. THIS SURVEY IS CERTIFIED TO THE CITY OF DELRAY BEACH AND B&M MARINE CONSTRUCTION.
3. THIS SURVEY IS INTENDED EXCLUSIVELY FOR THE USE BY THOSE TO WHOM IT IS CERTIFIED. IT IS NOT TO BE USED BY OTHERS FOR CONSTRUCTION, PERMITTING, DESIGN OR ANY OTHER USE WITHOUT THE WRITTEN CONSENT OF TERRAQUATIC, INC.
4. THIS SURVEY, AND ANY REPRODUCTION THEREOF, IS NOT VALID WITHOUT AN ORIGINAL OR VERIFIED DIGITAL SIGNATURE AND SEAL OF A FLORIDA REGISTERED SURVEYOR. ADDITIONALLY, THIS SURVEY IS NOT VALID IF PRINTED BEARING A DIGITAL SIGNATURE AND SEAL.
5. THIS MAP IS INTENDED TO BE DISPLAYED AT A SCALE OF 1" = 15' OR SMALLER.
6. EXISTING UNDERGROUND UTILITIES WERE NOT LOCATED AS PART OF THIS SURVEY.
7. GEOGRAPHIC AND PLANE COORDINATES SHOWN HERON ARE RELATIVE TO THE NORTH AMERICA DATUM OF 1983, FLORIDA STATE PLANE, ZONE 901, TRANSVERSE MERCATOR PROJECTION IN THE U.S. SURVEY FOOT UNIT OF MEASUREMENT.
8. LOCATIONS OF IMPROVEMENTS WERE OBTAINED USING A TRIMBLE S7 ROBOTIC TOTAL STATION. SURVEY CONTROL WAS SET UTILIZING REAL TIME KINEMATIC GPS METHODOLOGIES WITH BROADCAST CORRECTIONS FROM THE FLORIDA DEPARTMENT OF TRANSPORTATION REFERENCE NETWORK AND ARE ACCURATE TO THIRD ORDER, CLASS II.
9. THE SPECIFIC PURPOSE OF THIS SURVEY IS TO DOCUMENT THE ASBUILT LOCATION OF NEWLY CONSTRUCTED MARINE IMPROVEMENTS.
10. BASE MAP PROVIDED BY THE CLIENT.
11. HORIZONTAL ACCURACY OF ASBUILT UTILITIES IS PLUS OR MINUS (±) 1 FOOT. VERTICAL ACCURACY IS PLUS OR MINUS 0.3 FEET.
12. SOME UTILITIES WERE BURIED PRIOR TO LOCATING AND WERE POSITIONED RELATIVE TO SURFACE FEATURES SUCH AS WIRE PULL BOXES, VALVE BOXES. ETC.
13. MOST IRRIGATION LINE LOCATIONS ARE APPROXIMATE AND WERE LOCATED AT THE CONTRACTORS REQUEST PRIOR TO TRENCHING. MOST CONNECTIONS WERE NOT LOCATED PRIOR TO BURIAL.
14. THIS SURVEY WAS CONDUCTED BETWEEN 1/27/20 & 2/5/21.

SURVEY CONTROL				
BM ID	X	Y	EL. (NAVD88)	DESCRIPTION
AD2695	962,373.7'	774,634.2'	15.62'	SRD BD/WALK "17.163"

LEGEND:

BFP	BACK FLOW PREVENTER
BTM	BOTTOM
EL	ELEVATION
ELEC	ELECTRIC
ELEV	ELEVATION
FE	FIRE EXTINGUISHER
ICV	IRRIGATION CONTROL VALVE
INV	INVERT
LB	LICENSED BUSINESS
NAVD88	NORTH AMERICAN VERTICAL DATUM OF 1988
PSM	PROFESSIONAL SURVEYOR AND MAPPER
RCP	REINFORCED CONCRETE PIPE
SRV	SERVICE
SS	SANITARY SEWER
TYP	TYPICAL
WTR	WATER
WM	WATER METER
WPB	WIRE PULL BOX

NOTICE: UNDERGROUND AND SUBAQUEOUS IMPROVEMENTS WERE NOT LOCATED AS PART OF THIS SURVEY

811 Know what's below. Call before you dig.

PREPARED FOR:
B&M Marine Construction
3500 SW 14th ST, DEERFIELD BEACH, FL

TERRAQUATIC SURVEYING AND MAPPING
TERRAQUATIC, INC. - PHONE: (561) 400-8348
1220 TANGELO TERR, UNIT A12 - DELRAY BEACH, FLORIDA 33444

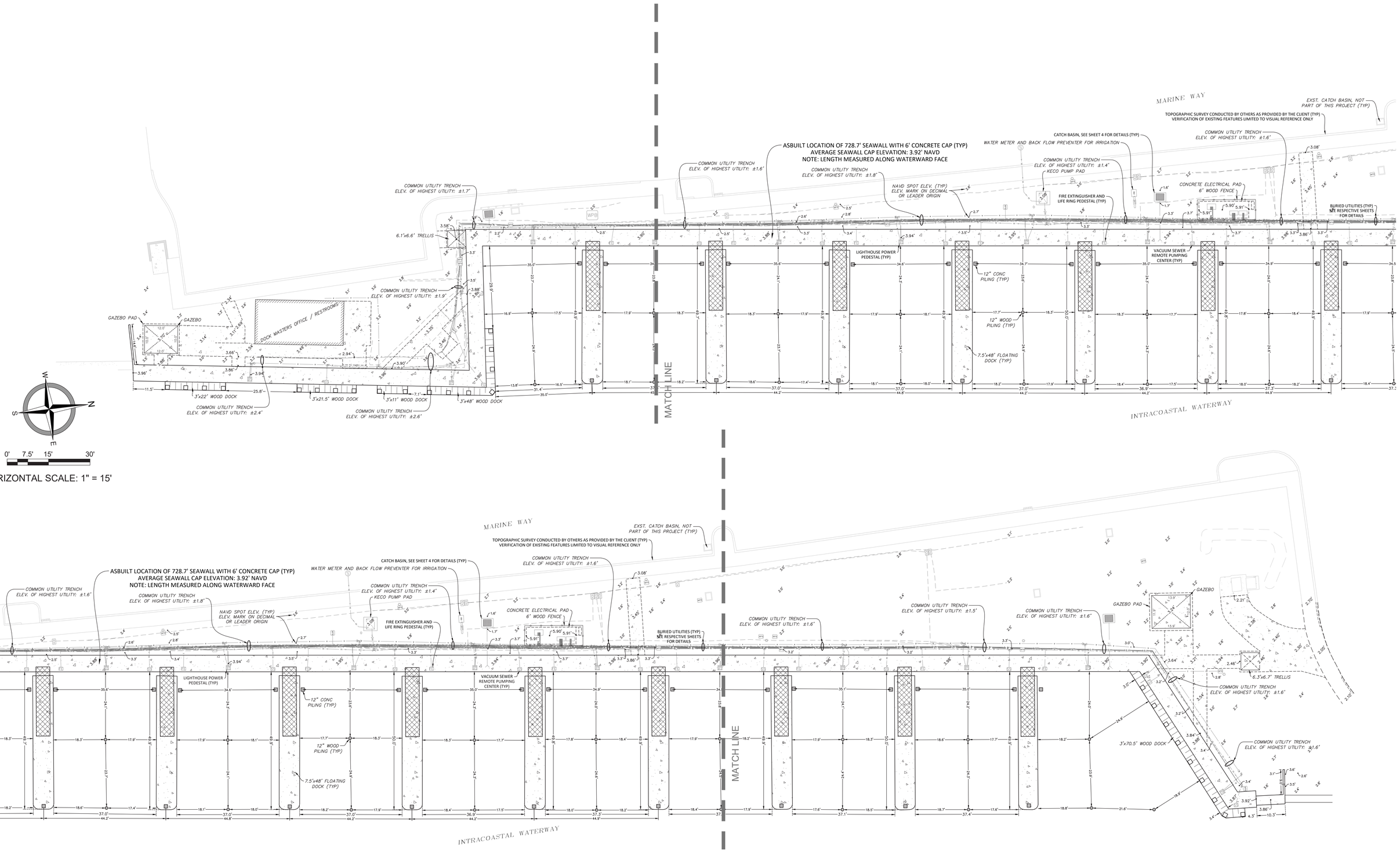
CERTIFICATION:

KENNETH C. JACKSON,PSM
FLORIDA REGISTRATION LS4549 - CERTIFICATE OF AUTHORIZATION NO. 7324

CITY OF DELRAY BEACH MUNICIPAL MARINA
ASBUILT SURVEY
COVER SHEET
DELRAY BEACH - PALM BEACH COUNTY, FLORIDA

DRAWN BY: BL	CHECKED BY: KCJ
JOB No.: 20-939	DATE: 2/6/21

REV	DESCRIPTION	DATE



HORIZONTAL SCALE: 1" = 15'

PREPARED FOR:

B&M Marine Construction

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TERRAQUATIC SURVEYING AND MAPPING

TERRAQUATIC, INC. - PHONE: (561) 400-8348

1220 TANGELO TERR, UNIT A12 - DELRAY BEACH, FLORIDA 33444

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FLORIDA REGISTRATION LS4549 - CERTIFICATE OF AUTHORIZATION NO. 7324

CITY OF DELRAY BEACH MUNICIPAL MARINA

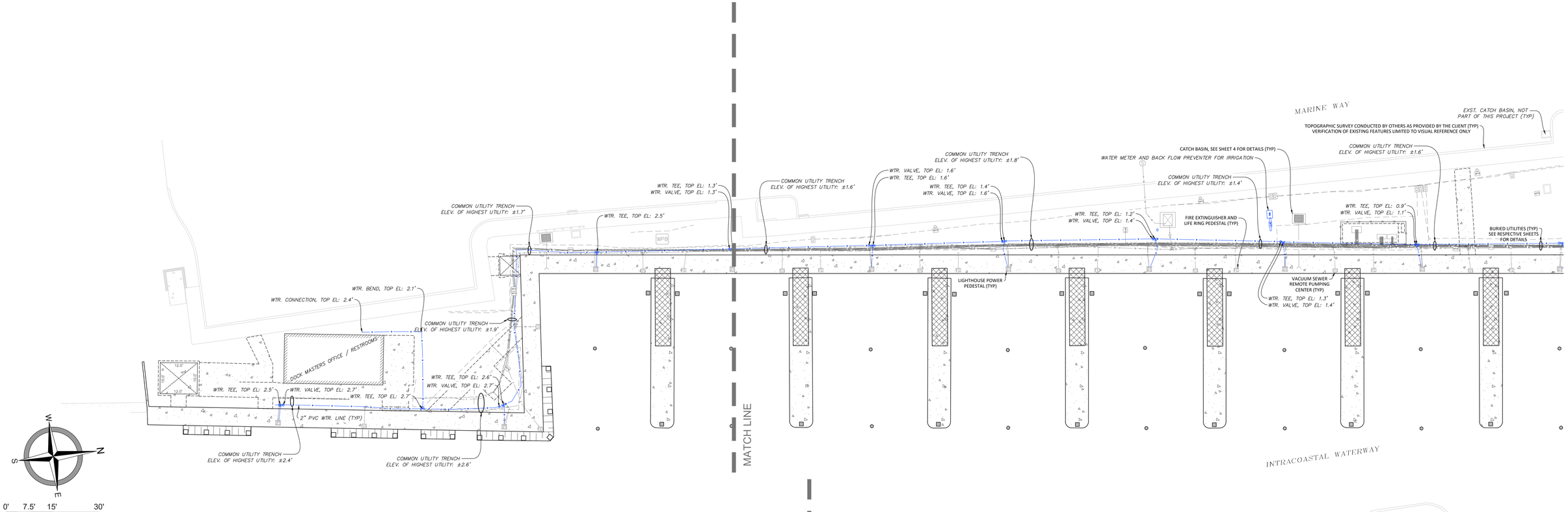
ASBUILT SURVEY

TOPOGRAPHIC FEATURES

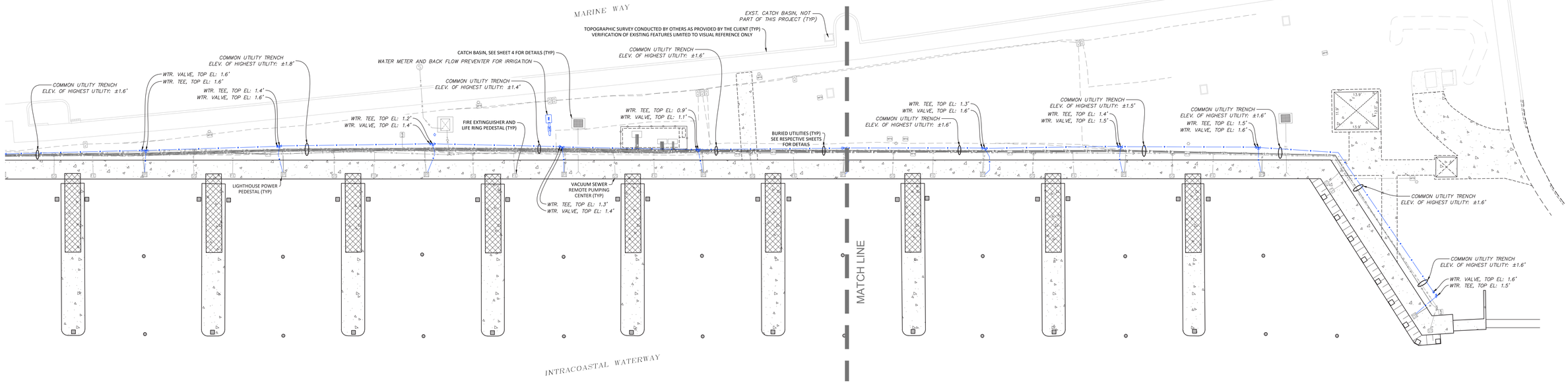
DELRAY BEACH - PALM BEACH COUNTY, FLORIDA

DRAWN BY: BL	CHECKED BY: KCJ	
JOB No.: 20-939	DATE: 2/6/21	
REV	DESCRIPTION	DATE

SHEET 2 of 6



HORIZONTAL SCALE: 1" = 15'



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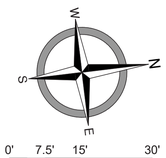
FLORIDA REGISTRATION LS4549 - CERTIFICATE OF AUTHORIZATION NO. 7324

CITY OF DELRAY BEACH MUNICIPAL MARINA
ASBUILT SURVEY
WATER
DELRAY BEACH - PALM BEACH COUNTY, FLORIDA

DRAWN BY: BL	CHECKED BY: KCJ
JOB No.: 20-939	DATE: 2/6/21

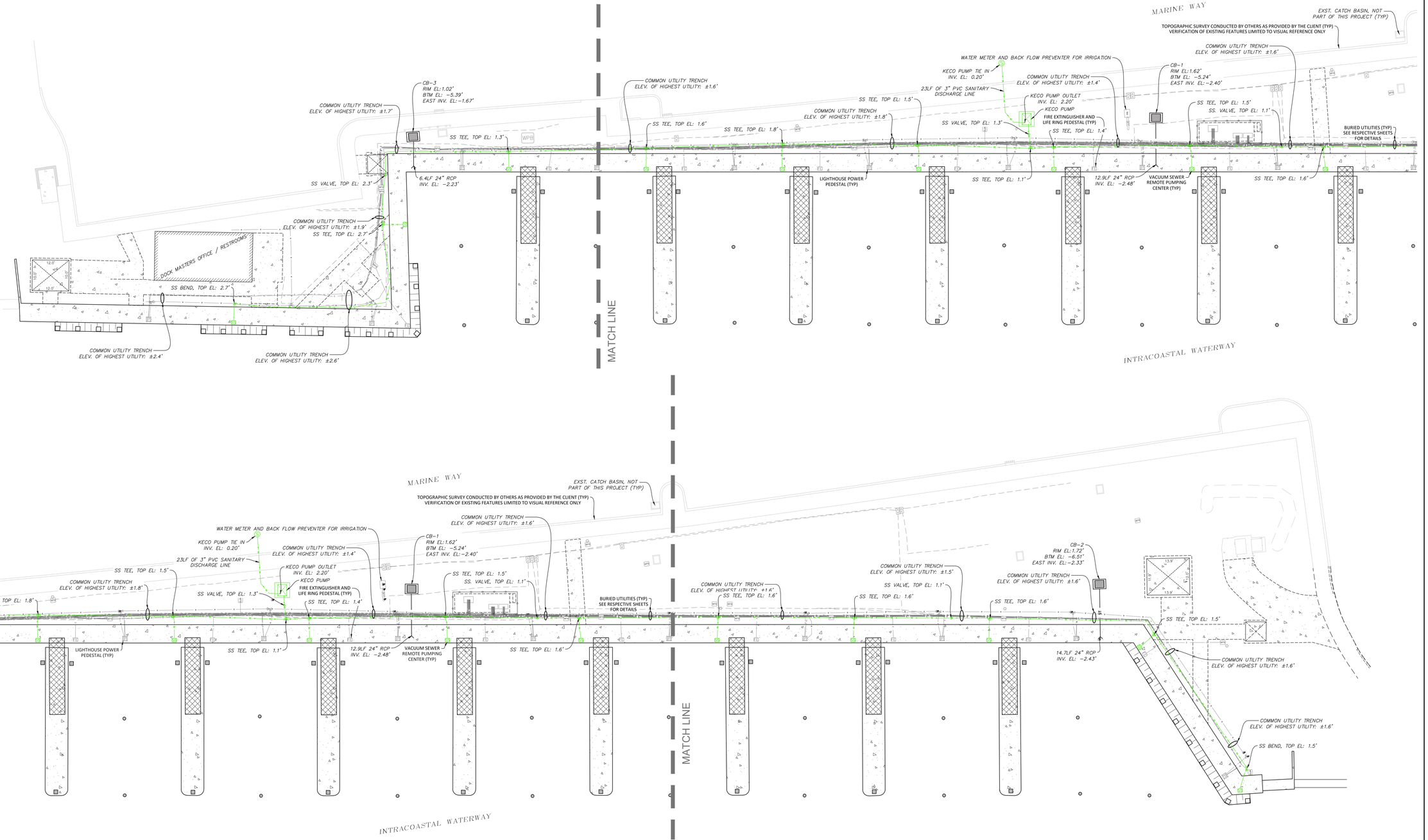
REV	DESCRIPTION	DATE

SHEET 3 of 6



0' 7.5' 15' 30'

HORIZONTAL SCALE: 1" = 15'



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TERRAQUATIC, INC. - PHONE: (561) 400-8348

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CITY OF DELRAY BEACH MUNICIPAL MARINA

ASBUILT SURVEY

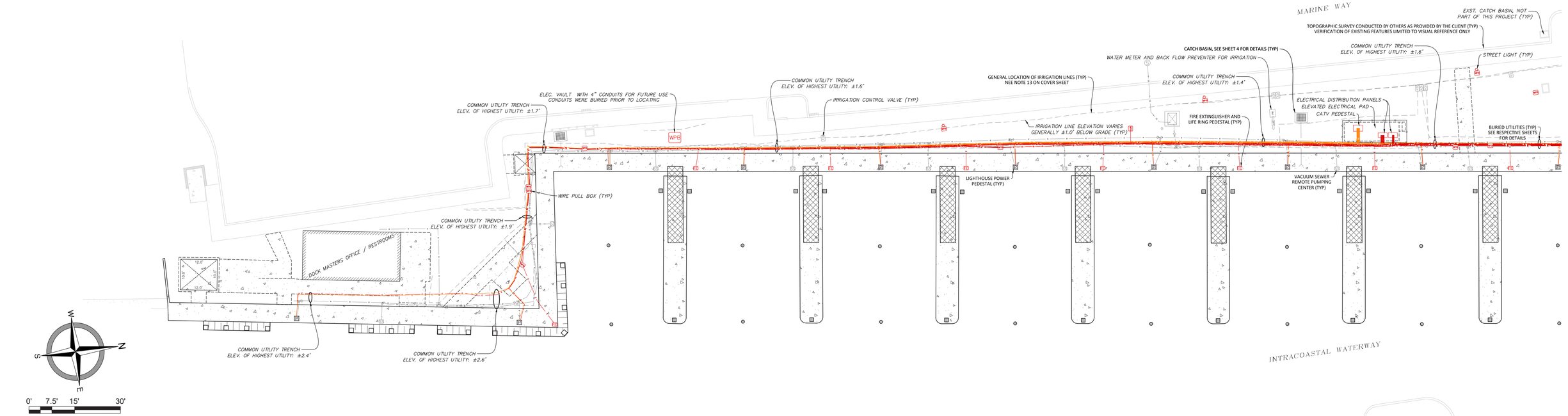
SANITARY & STORM SEWER

.DELRAY BEACH - PALM BEACH COUNTY, FLORIDA

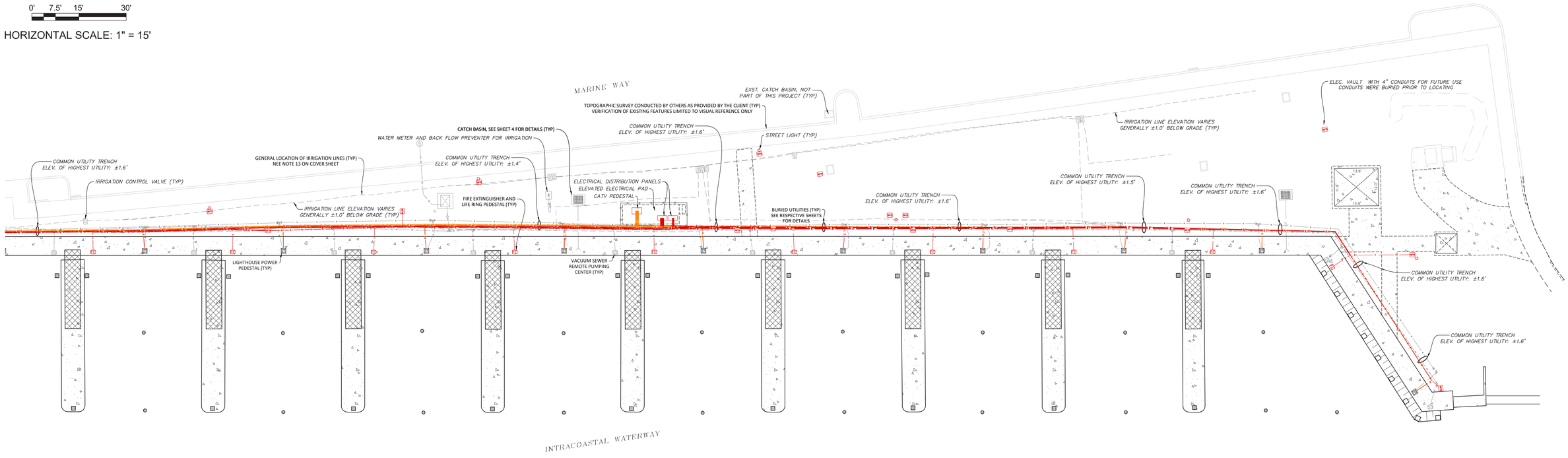
DRAWN BY: BL	CHECKED BY: KCJ
JOB No.: 20-939	DATE: 2/6/21

REV	DESCRIPTION	DATE

SHEET 4 of 6



HORIZONTAL SCALE: 1" = 15'



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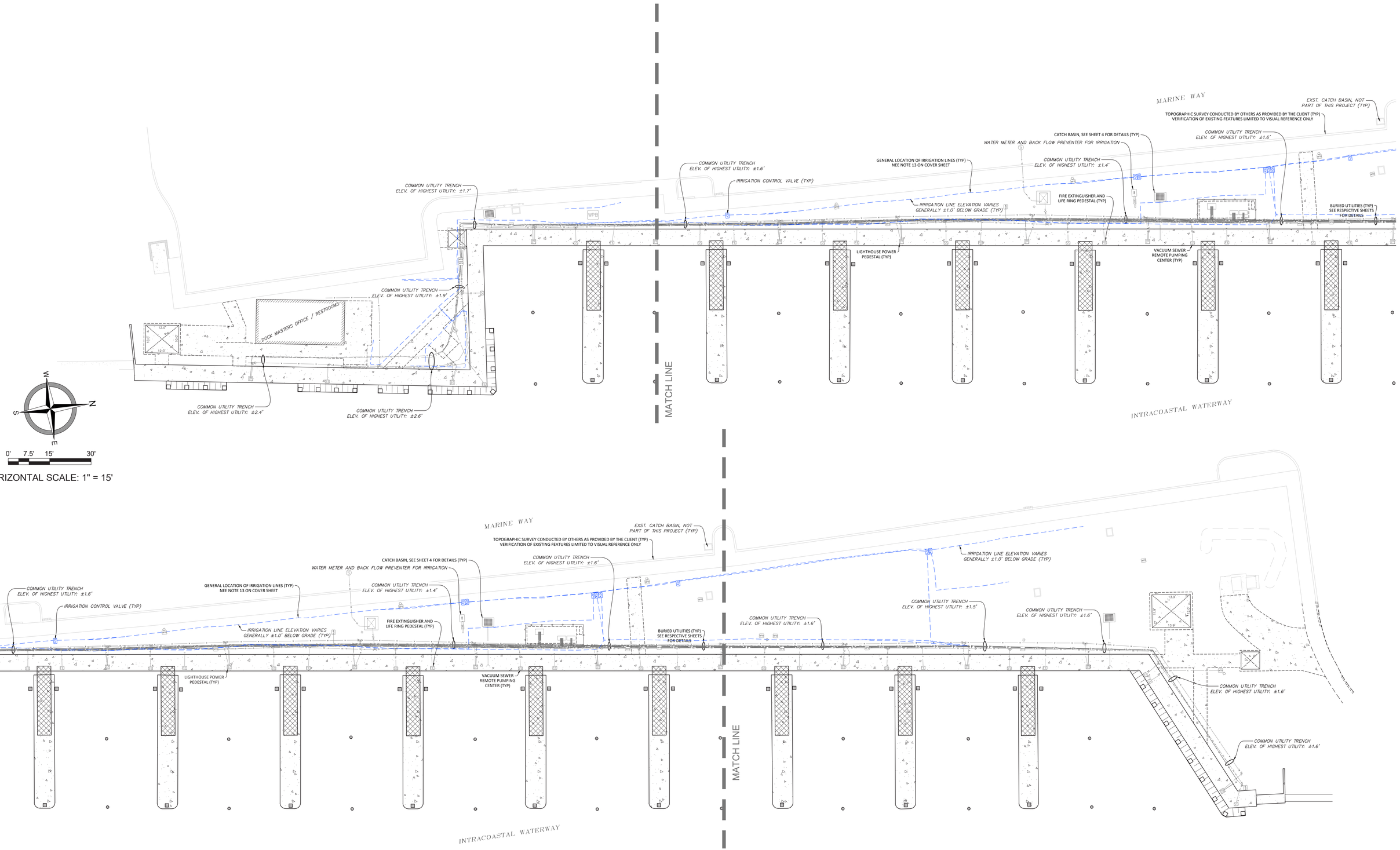
FLORIDA REGISTRATION LS4549 - CERTIFICATE OF AUTHORIZATION NO. 7324

CITY OF DELRAY BEACH MUNICIPAL MARINA
ASBUILT SURVEY
ELECTRICAL & TELEVISION
.DELRAY BEACH - PALM BEACH COUNTY, FLORIDA

DRAWN BY: BL	CHECKED BY: KCJ
JOB No.: 20-939	DATE: 2/6/21

REV	DESCRIPTION	DATE

SHEET 5 of 6



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CITY OF DELRAY BEACH MUNICIPAL MARINA
ASBUILT SURVEY
IRRIGATION
.DELRAY BEACH - PALM BEACH COUNTY, FLORIDA

DRAWN BY: BL	CHECKED BY: KCJ
JOB No.: 20-939	DATE: 2/6/21

REV	DESCRIPTION	DATE

SHEET 6 of 6

ANTICIPATED SEQUENCE OF EVENTS

GENERAL

1. CONDUCT PUBLIC OUTREACH MEETING TO INFORM RESIDENTS OF CONSTRUCTION START AND KEY DISRUPTION EVENTS AND DURATIONS.
2. CALL IN SUNSHINE 811 DIG TICKET FOR EXISTING UTILITIES TO BE MARKED BY UTILITY OWNERS.
3. INSTALL BMP'S AND SWPPP COMPONENTS. MONITOR WEEKLY FOR PERFORMANCE.
4. REMOVE CITY MARINA GAZEBO, CATALOG PARTS AND HARDWARE. STORE AT CITY APPROVED LOCATION AND PROTECT FROM THE ELEMENTS.

PHASE 1: STORM WATER PUMP STATION AND BACK-UP GENERATOR

1. FURNISH AND INSTALL STORM WATER PUMP STATION, BAFFLE BOX, CUT-IN STRUCTURES, AND DISCHARGE PIPING.
2. RESHAPE EXISTING STORM WATER RETENTION SWALE. MAINTAIN EXISTING S. MARINE WAY BYPASS PUMPING.
3. INSTALL STORM WATER PIPES FROM STORM WATER PUMP STATION WETWELL AND BAFFLE BOX TO THEIR RESPECTIVE CUT-IN STRUCTURES. DO NOT PLUG.
4. CONSTRUCT GENERATOR STRUCTURE AND ELECTRICAL COMPONENTS. UTILIZE EXISTING ELECTRICAL CONDUITS INSTALLED WITH THE CITY MARINA PROJECT.
5. RELOCATE CITY MARINA TELECOMMUNICATIONS CABINET.

PHASE 2: N. MARINE WAY SEAWALL, DRAINAGE, WATER AND SEWER, AND SHARED-USE PATH

1. INSTALL STORM WATER PIPE AND EXFILTRATION TRENCH TO POINT OF CONNECTION. INSTALL MARINE WAY WATER AND SEWER MAINS AND SERVICES.
2. CONSTRUCT MARINE WAY SEAWALL.
3. CONSTRUCT DECK84 SEAWALL-TO-MARGINAL-DOCK CONNECTIONS.
4. CONSTRUCT CURBING, TURF-BLOCK PAVERS, PAVER BRICK SHARED-USE PATH, AND LANDSCAPING TO LIMITS OF THE N. MARINE WAY SEAWALL.
5. INSTALL STREET/PEDESTRIAN LIGHTING

PHASE 3: DISCHARGE BAY, UTILITY BAY, AND S. MARINE WAY DRAINAGE INFRASTRUCTURE

1. CONSTRUCT DISCHARGE BAY AND DISCHARGE PIPING WITH IN-LINE CHECK VALVES AND MANATEE GRATES.
2. ACTIVATE PUMP STATION.
3. PLUG EXISTING STORM WATER SYSTEM AT PHASE 1 CUT-IN STRUCTURES AND REMOVE EXISTING STORM WATER STRUCTURES AND PIPE.
4. INSTALL SIDEWALK, CURBING, AND REMAINING PORTION OF PAVER BRICK SHARED-USE PATH TO CONNECTION POINT WITH SE 1ST STREET.
5. CONSTRUCT UTILITY BAY. PROTECT EXISTING CITY, AT&T CABLES, AND FDOT 48" OUTFALL.
6. CONNECT UTILITY BAY TO N. MARINE WAY SEAWALL. INSTALL MANATEE GRATE ON FDOT 48" OUTFALL.
7. INSTALL S. MARINE WAY DRAINAGE INFRASTRUCTURE AND CONNECT TO STORM WATER PUMP STATION WETWELL.

PHASE 4: S. MARINE WAY RESTORATION

1. CONSTRUCT SIDEWALK, CURBING, AND FIRST LIFT OF ASPHALT.
2. INSTALL SIGNS, AND TEMPORARY STRIPING.
3. RESTORE DISTURBED SODDED AREAS.

PHASE 5: DECK 84 AND ATLANTIC AVENUE (MISCELLANEOUS)

1. CONSTRUCT EMERGENCY ACCESS ONLY THROUGH-LANE AND INSTALL REMOVABLE BOLLARDS.
2. INSTALL LANDSCAPING AND PAVERBRICK COMMON AREA.
3. CONSTRUCT WING WALL AND RAILING IMPROVEMENTS.
4. INSTALL DRAINAGE BASIN AND 4" OUTFALL PIPES WITH IN-LINE CHECK VALVE.

PHASE 6: FINAL

1. INSTALL FINAL LIFT OF ASPHALT
2. APPLY PAVEMENT STRIPING



CONCEPTUAL PLAN NOT FOR CONSTRUCTION