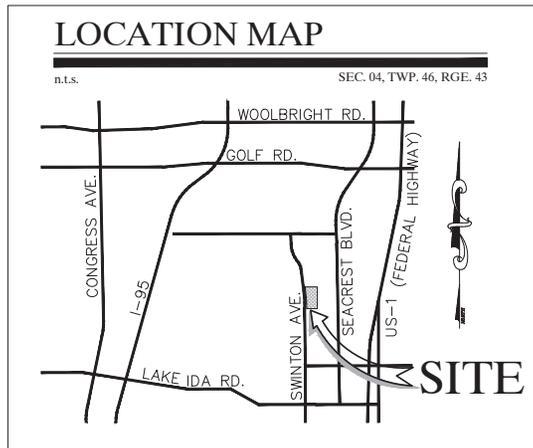


# DELRAY RIDGE

## Delray Beach, Florida

PAVING, GRADING, & DRAINAGE PLANS & DETAILS



### INDEX

PD-01.....	Cover Page
PD-01A.....	Demolition Plan
PD-02.....	Paving, Grading, & Drainage Plan
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PD-04 - PD-05.....	Grading Cross-Sections
PD-06 - PD-10.....	Paving, Grading, & Drainage Details
PD-11.....	Pollution Prevention Plan

REVISIONS	DATE	BY

CAULFIELD & WHEELER, INC.  
 LANDSCAPE ARCHITECTURE - SURVEYING  
 7800 GLADYS ROAD, SUITE 100  
 DELRAY BEACH, FLORIDA 33484  
 PHONE (561) 592-9671 / FAX (561) 750-4452

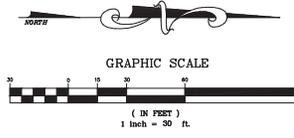
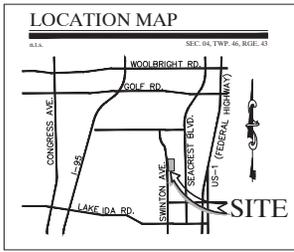
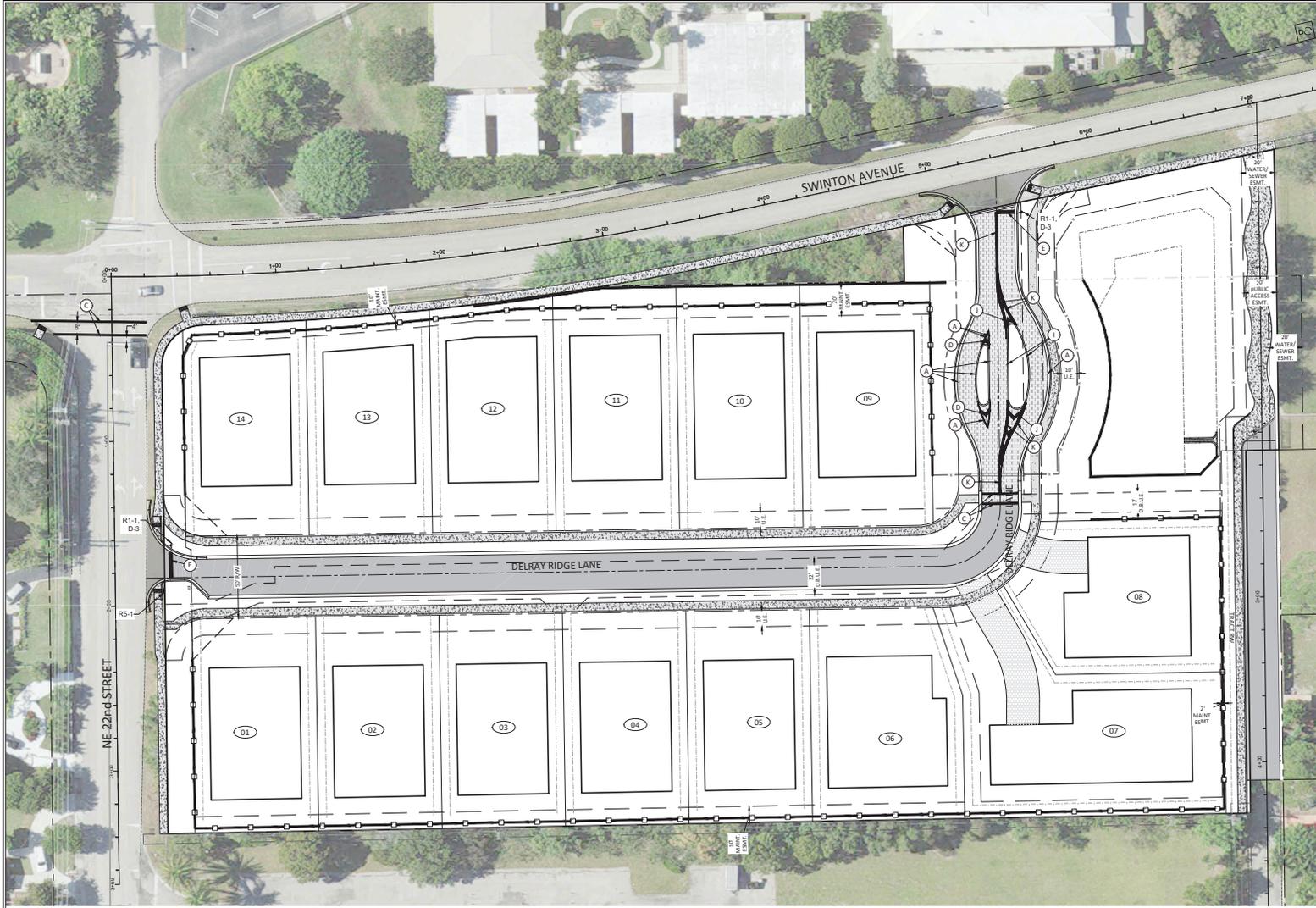
DELRAY RIDGE  
 COVER SHEET  
DELRAY BEACH, FLORIDA

DATE	12/17/20
DRAWN BY	RHT
F.B. / PG.	N/A
SCALE	N/A

Ryan Wheeler  
 RYAN D. WHEELER  
 PROFESSIONAL ENGINEER  
 LICENSE NO. 71427  
 STATE OF FLORIDA  
 FOR THE FIRM  
 DATE Jun 07, 2022

JOB #6577  
 SHEET  
**PD-01**  
 OF 11 SHEETS





- PAVEMENT MARKING LEGEND**
- A - 6" SOLID WHITE
  - B - 8" SOLID WHITE
  - C - 12" SOLID WHITE
  - D - 18" SOLID WHITE
  - E - 24" SOLID WHITE
  - F - 6" WHITE - SKIP (10'-30')
  - G - 6" WHITE - SKIP (6'-10')
  - H - 6" WHITE - SKIP (2'-4')
  - I - 6" SOLID YELLOW
  - J - 18" SOLID YELLOW
  - K - 6" DOUBLE SOLID YELLOW
  - L - 6" YELLOW - SKIP (10'-30')
  - M - 6" YELLOW - SKIP (6'-10')
  - N - 6" YELLOW - SKIP (2'-4')
  - P - RPM BI-DIRECTIONAL AMBER/AMBER
  - R - FDP WHITE
  - S - FDP YELLOW
  - T - RPM BI-DIRECTIONAL WHITE/RED
  - U - RPM BI-DIRECTIONAL RED/YELLOW



MIN. ROADWAY CROWN EL. = 16.70'-FT (10yr/24hr PEAK STAGE = 15.19'-FT)  
 MIN. PERIMETER BERM EL. = 16.52'-FT (25yr/72hr PEAK STAGE = 16.52'-FT)  
 MIN. FINISHED FLOOR EL. = 19.50'-FT (100yr/72hr ZD PEAK STAGE = 18.53'-FT)

ALL ELEVATIONS SHOWN IN NAVD88 UNLESS OTHERWISE NOTED  
 CONVERSION: NAVD88 - NGVD - 1.53'

CONTRACTOR NOTE:  
 CONSULT WITH CITY OF DELRAY BEACH AND  
 LOCATION OF EXISTING UTILITIES PRIOR  
 TO ANY CONSTRUCTION.

DATE	BY
07/18/2023	RHT
REVISIONS	
FILE NAME: 8/27/2023	

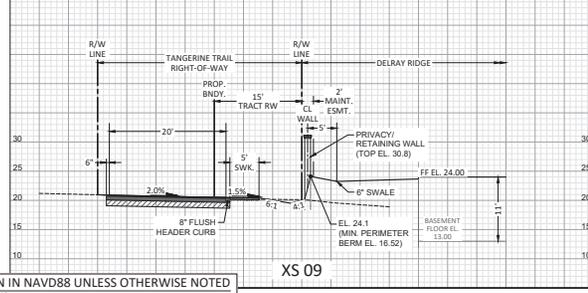
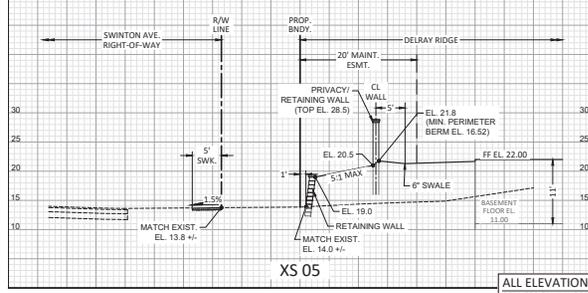
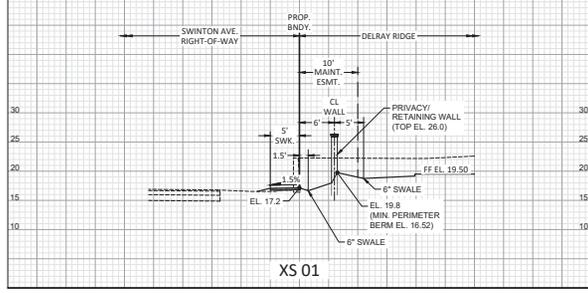
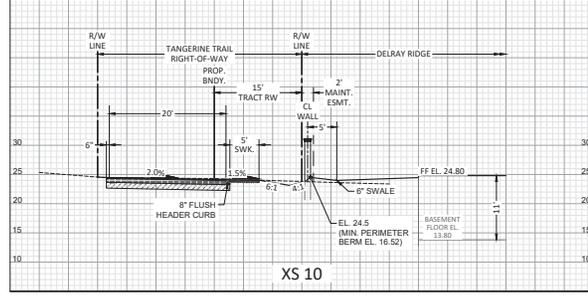
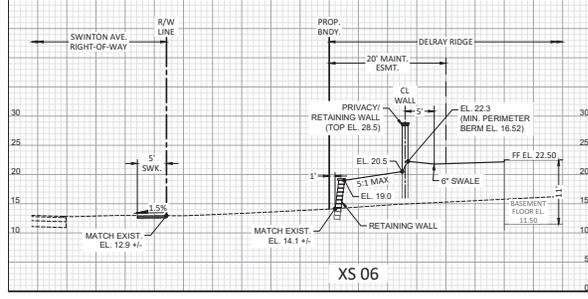
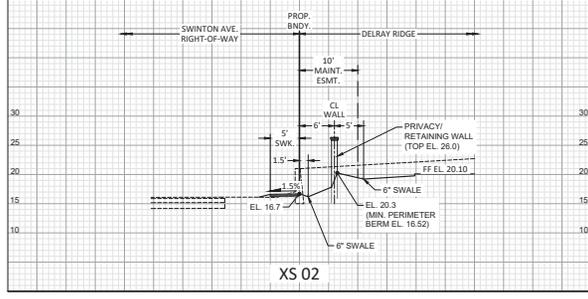
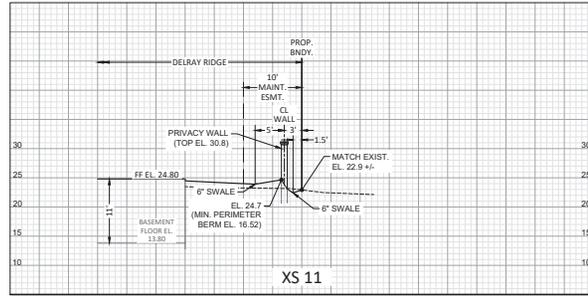
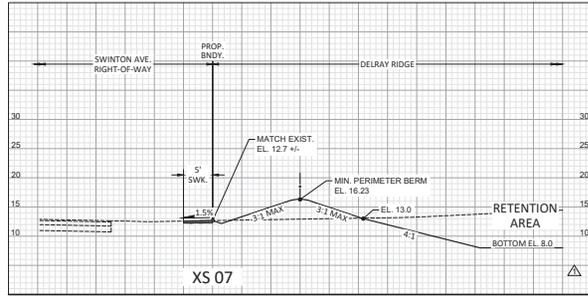
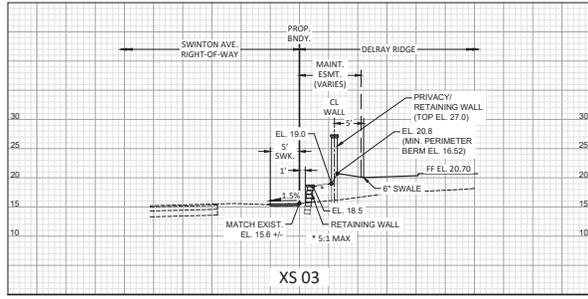
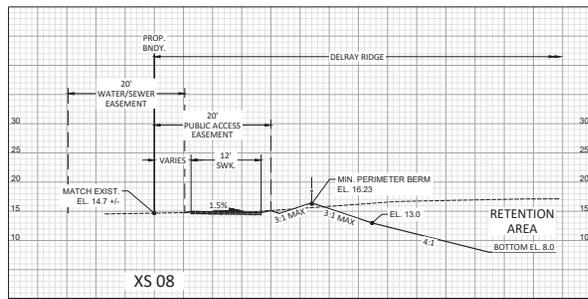
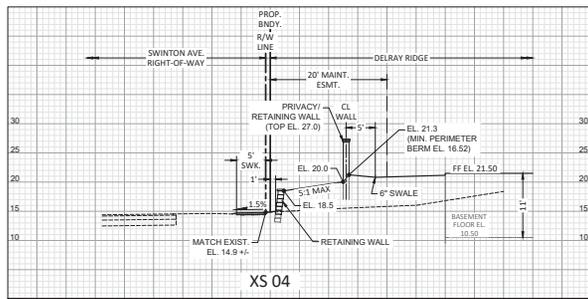
**CAULFIELD & WHEELER, INC.**  
 LANDSCAPE ARCHITECTURE & SURVEYING  
 7800 GLADES ROAD, SUITE 100  
 BOCA RATON, FL 33433  
 PHONE (561) 992-7671 / FAX (561) 750-6452

**DELRAY RIDGE**  
**SIGNING & PAVEMENT MARKING PLAN**

DATE	06/08/20
DRAWN BY	RHT
F.B. / P.C.	N/A
SCALE	1"=30'

Ryan Wheeler  
 RYAN D. WHEELER  
 PROFESSIONAL ENGINEER  
 LICENSE NO. 71437  
 STATE OF FLORIDA  
 - FOR THE FIRM -  
 DATE: Jun 07, 2023

JOB #6577  
 SHEET  
**PD-03**  
 OF 11 SHEETS



ALL ELEVATIONS SHOWN IN NAVD88 UNLESS OTHERWISE NOTED  
CONVERSION: NAVD88 = NGVD + 1.53'

DATE	BY
07/12/2010	RHT
REVISIONS	DATE
FILE NAME: 8/27/2010	

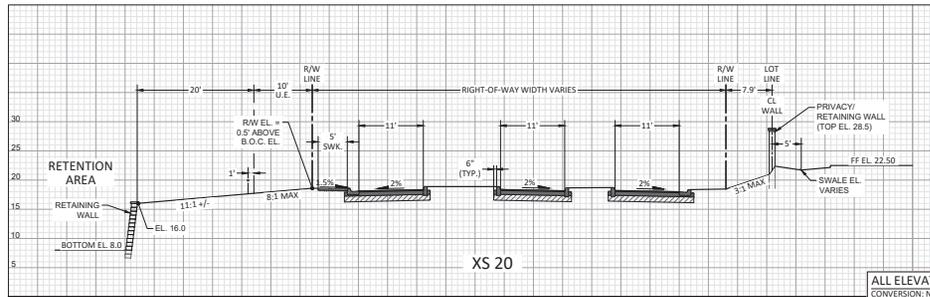
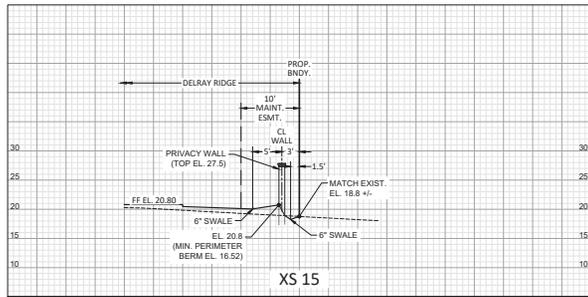
CAULFIELD & WHEELER, INC.  
LANDSCAPE ARCHITECTURE & SURVEYING  
7900 GLADYS ROAD, SUITE 100  
DADE CITY, FLORIDA 34608  
PHONE (561) 592-0911 / FAX (561) 590-4429

DELAY RIDGE  
GRADING CROSS-SECTIONS  
DELAY RIDGE, FLORIDA

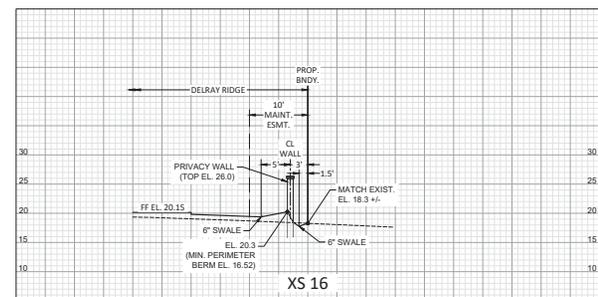
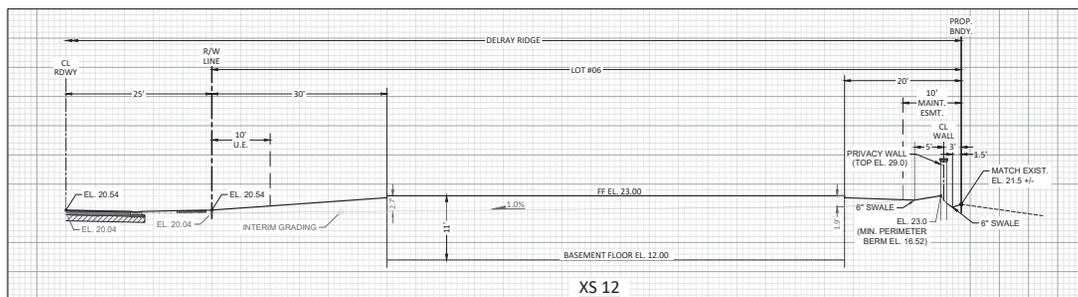
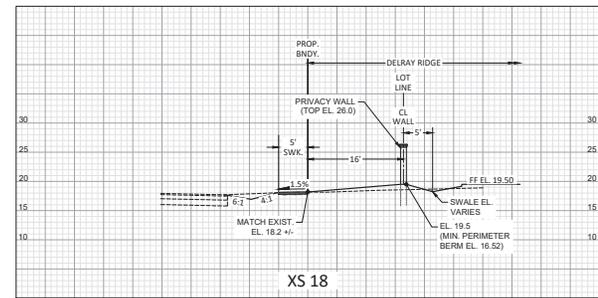
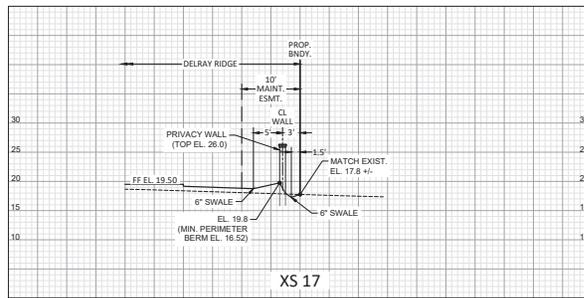
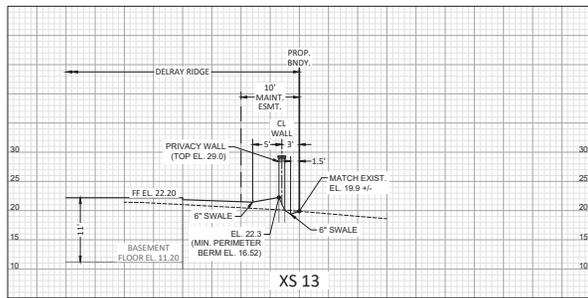
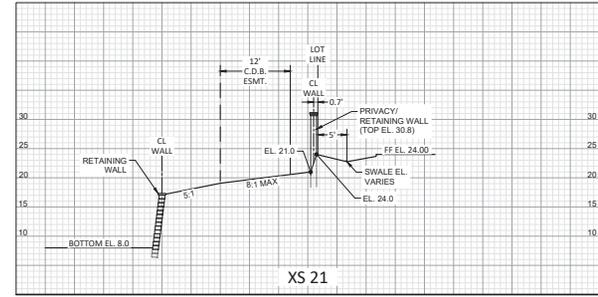
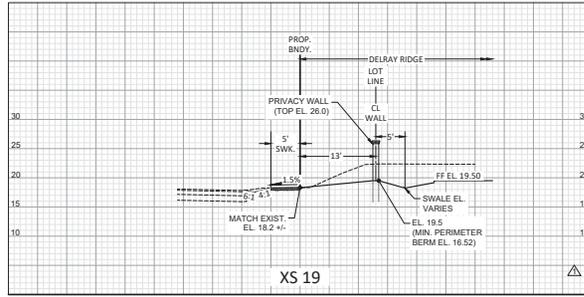
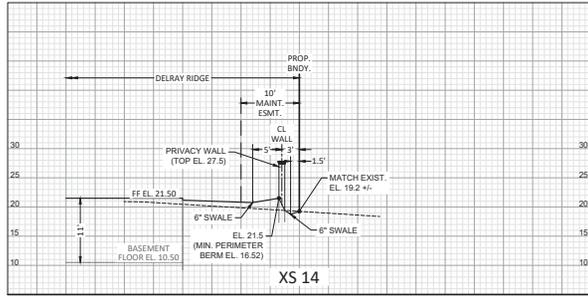
DATE	06/08/20
DRAWN BY	RHT
F.B./P.C.	N/A
SCALE	N/A

Ryan Wheeler  
RYAN D. WHEELER  
PROFESSIONAL ENGINEER  
LICENSE NO. 71437  
STATE OF FLORIDA  
- FOR THE FIRM -  
DATE: Jun 07, 2022

JOB #6577  
SHEET NO.  
PD-04  
OF 11 SHEETS



ALL ELEVATIONS SHOWN IN NAVD88 UNLESS OTHERWISE NOTED  
CONVERSION: NAVD88 = NGVD - 1.5'



REVISIONS	DATE	BY
07/18/2018		RHT

DATE: 07/18/2018  
BY: RHT

**CAULFIELD & WHEELER, INC.**  
LANDSCAPE ARCHITECTURE & SURVEYING  
7800 GLADES ROAD, SUITE 100  
FORT LAUDERDALE, FL 33309  
PHONE (561) 592-0991 / FAX (561) 750-4452

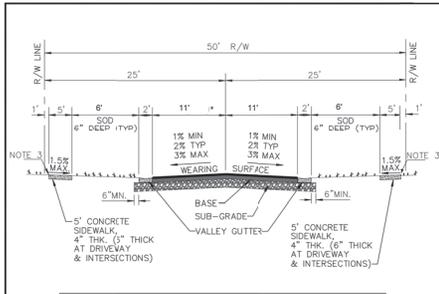
**DELRAY RIDGE**  
GRADING CROSS-SECTIONS

DELRAY RIDGE, FLORIDA

DATE: 06/08/20  
DRAWN BY: RHT  
F.B./P.C.: N/A  
SCALE: N/A

Ryan Wheeler  
PROFESSIONAL ENGINEER  
LICENSE NO. 71421  
STATE OF FLORIDA  
- FOR THE FIRM -  
DATE: Jun 07, 2023

JOB #6577  
SHEET NO.  
PD-05  
OF 11 SHEETS



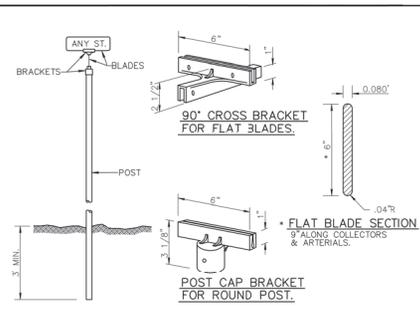
PAVEMENT SPECIFICATIONS	
WEARING SURFACE	3" TYPE S-III (2 LIFTS) AFTER COMPACTION SEE NOTE 2
BASE	8" LIMEROCK OR 10" CRUSHED CONCRETE COMPACTED TO 98% MAX. DENSITY PER AASHTO T-180, PRIME & TACK COAT PER FDOT SECTION 300.
SUBGRADE	12" STABILIZED (75 P.S. FBV) AND COMPACTED TO 98% MAX. DENSITY PER AASHTO T-180.

- NOTE:**
- VARIATION FROM MATERIAL SPECIFICATIONS WILL BE CONSIDERED ON A CASE BY CASE BASIS BY THE CITY ENGINEER.
  - 2ND LIFT SHALL NOT BE PAVED UNTIL CONSTRUCTION VEHICLES AND EQUIPMENT HAVE COMPLETED WORK.
  - IN UNDEVELOPED LOCATION, ELEVATION TO BE SET EQUAL TO ROADWAY CROWN 'N' PREVIOUSLY DEVELOPED AREAS, MATCH EXISTING GRADES.
  - LANE WIDTHS MUST BE APPROVED BY CITY ENGINEERING PRIOR TO DESIGN.

**CITY OF DELRAY BEACH**  
PUBLIC WORKS DEPARTMENT  
400 SOUTH BENTON AVENUE, DELRAY BEACH, FLORIDA 33444

TYPICAL 50' R/W SECTION WITH VALLEY GUTTER

DATE: 06/08/20  
BY: R 1.0

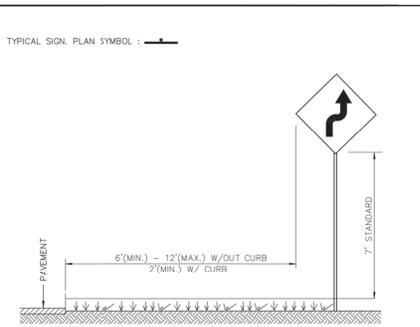


- GENERAL SPECIFICATIONS:**
- BLADE:** ALCOA NO.86054.6063-76 ALLOY, ETCHED, DEGREASED, AND DEBURRED WITH NO.1200 ALODINE FINISH WITH HIGH INTENSITY GREEN BACKGROUND DIMENSIONS: 6" OR 9" IN HEIGHT, AND 24", 30", OR 36" IN LENGTH
  - LETTERS:** NAME: 4' SERIES "9" HIGH INTENSITY (SILVER) SUFFIX: 2' SERIES "8" HIGH INTENSITY (SILVER) ALL LETTERS FOR SIGNS ALONG COLLECTOR OR ARTERIAL ROADWAYS SHALL BE 7' SERIES "8" WITH 4' SERIES "8" SUFFIX ON 9" HIGH BLADES.
  - POST:** STEEL FLANGED GALVANIZED CHANNEL PER A.S.I.M. A123 WITHOUT ANCHOR PLATES.
  - BRACKETS:** DIE CAST HIGH STRENGTH ALUMINUM ALLOY, MIN. TENSILE STRENGTH 40,000 P.S.I., DEGREASED, TUMBLE, 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, 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  
400 SOUTH BENTON AVENUE, DELRAY BEACH, FLORIDA 33444

STREET SIGN DETAIL (SHEET 1 OF 2)

DATE: 06/08/20  
BY: R 6.0

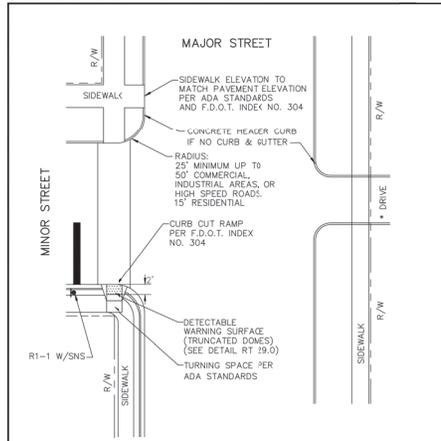


- NOTES:**
- ALL SIGNS SHALL BE SPECIFIED USING THE M.U.T.C.D. DESIGNATION.
  - ALL SIGNS SHALL BE FACED WITH HIGH INTENSITY SHEETING MATERIAL OR BETTER.
  - SIGNS SHALL BE MANUFACTURED WITH 0.080" ALUMINUM BLANK.
  - POSTS SHALL BE PER DETAIL RT 6.0.
  - USE SHALL FOLLOW THE M.U.T.C.D. AND F.D.O.T. STANDARD DESIGN SPECIFICATIONS.
  - ANY DEVIATION FROM THIS TYPICAL SHALL BE APPROVED BY THE CITY ENGINEER PRIOR TO INSTALLATION.
  - REFLECTIVE POSTS MAY BE USED IF M.U.T.C.D. STANDARD IS FOLLOWED.

**CITY OF DELRAY BEACH**  
PUBLIC WORKS DEPARTMENT  
400 SOUTH BENTON AVENUE, DELRAY BEACH, FLORIDA 33444

STREET SIGN DETAIL (SHEET 2 OF 2)

DATE: 06/08/20  
BY: R 7.0

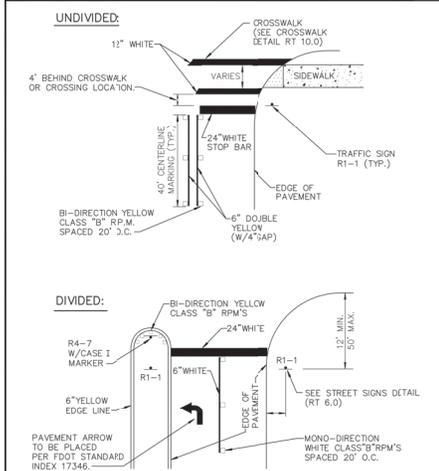


- DRIVEWAY DESIGN TO BE PER CITY LAND DEVELOPMENT REGULATIONS, FOOT STANDARD SPECIFICATIONS. ALL DESIGNS SUBJECT TO CITY ENGINEER APPROVAL.
- ALL WALKS CROSSING A VEHICULAR AREA SHALL HAVE A DETECTABLE WARNING SURFACE (TRUNCATED DOME) IN ACCORDANCE WITH THE FLORIDA BUILDING CODE, CHAPTER 11, FC ACCESSIBILITY CODE FOR BUILDING CONSTRUCTION.

**CITY OF DELRAY BEACH**  
PUBLIC WORKS DEPARTMENT  
400 SOUTH BENTON AVENUE, DELRAY BEACH, FLORIDA 33444

INTERSECTION DETAIL

DATE: 06/08/20  
BY: RT 8.0

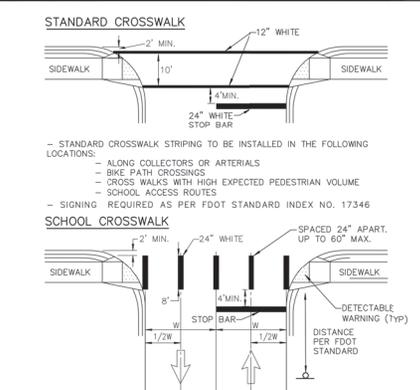


- NOTE:** ALL STRIPING AND DELINEATION TO CONFORM TO THE REQUIREMENTS OF THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES, (MUTCD) LATEST EDITION.

**CITY OF DELRAY BEACH**  
PUBLIC WORKS DEPARTMENT  
400 SOUTH BENTON AVENUE, DELRAY BEACH, FLORIDA 33444

INTERSECTION TRAFFIC CONTROL STOP CONTROL

DATE: 06/08/20  
BY: R 9.0

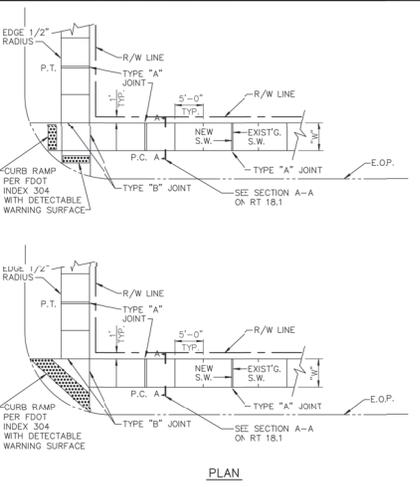


- STANDARD CROSSWALK STRIPING TO BE INSTALLED IN THE FOLLOWING LOCATIONS:
    - ALONG COLLECTORS OR ARTERIALS
    - BIKE PATH CROSSINGS
    - CROSS WALKS WITH HIGH EXPECTED PEDESTRIAN VOLUME
    - SCHOOL ACCESS ROUTES
  - SIGNING REQUIRED AS PER FDOT STANDARD INDEX NO. 17346
- SCHOOL CROSSWALK**
- SCHOOL CROSSWALK STRIPING TO BE USED ONLY AT DESIGNATED SUPERVISED SCHOOL CROSSING
  - SIGNS AND ADVANCED PAVEMENT MESSAGES TO BE DESIGNED AND INSTALLED PER FDOT STANDARD (INDEX NO. 17346)
  - CROSSWALKS LOCATED MINIMUM WIDTH 10' AND ALL CROSSWALK MARKINGS SHALL BE WHITE.
  - LONGITUDINAL LINES IN SPECIAL EMPHASIS CROSSWALK SHALL BE 24" WIDE AND SPACED TO AVOID THE WHEEL PATH OF VEHICLES AS SHOWN IN DETAIL. THE SPACE BETWEEN MARKINGS SHALL NOT EXCEED 60". A LONGITUDINAL MARKING SHALL BE PLACED AT EACH LANE LINE. ADDITIONAL LONGITUDINAL MARKINGS SHALL BE PLACED AT THE CENTER OF EACH LANE.
  - WHERE THE CROSSWALK IS SKEWED TO THE LANE LANE LINES, THE SPECIAL EMPHASIS LONGITUDINAL LINES SHOULD BE PARALLEL TO THE LANE LINE.

**CITY OF DELRAY BEACH**  
PUBLIC WORKS DEPARTMENT  
400 SOUTH BENTON AVENUE, DELRAY BEACH, FLORIDA 33444

CROSSWALK DETAILS

DATE: 06/08/20  
BY: RT 10.0

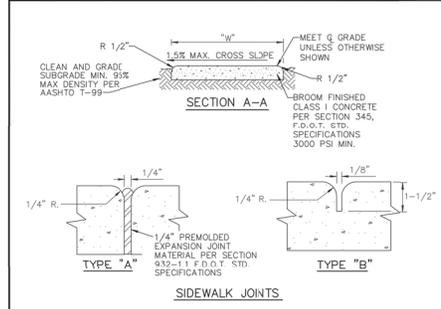


- TABLE OF SIDEWALK THICKNESS - "T"**
- | GENERAL AREAS  | 4"   |
|--|------|
| WITHIN 10' OF CROSS-STREETS, 6" @ AT DRIVEWAYS & OTHER AREAS | 6" @ |
- TABLE OF SIDEWALK WIDTHS - "W"**
- | SINGLE-FAMILY AREAS                            | 5' |
|--|----|
| MULTI-FAMILY AREAS                             | 5' |
| OTHER AREAS AS SPECIFIED BY THE CITY ENGINEER. |    |

**CITY OF DELRAY BEACH**  
PUBLIC WORKS DEPARTMENT  
400 SOUTH BENTON AVENUE, DELRAY BEACH, FLORIDA 33444

SIDEWALK CONSTRUCTION DETAIL

DATE: 06/08/20  
BY: RT 18.0



- NOTE:**
- ALL SIDEWALKS SHALL BE CONSTRUCTED THRU DRIVEWAYS.
  - ALL SIDEWALKS SHALL INCLUDE ADA COMPLIANT RAMPS IN INTERSECTIONS.
  - ALL SIDEWALKS SHALL INCLUDE CROSS SLOPE AND RUNNING SLOPE IN ACCORDANCE WITH ADA REQUIREMENTS.
  - 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, 6" @ AT DRIVEWAYS & OTHER AREAS	6" @

**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.
"N"	WHERE SIDEWALK ABUTS CONCRETE CURBS, DRIVEWAYS, AND SIMILAR STRUCTURES.

**CITY OF DELRAY BEACH**  
PUBLIC WORKS DEPARTMENT  
400 SOUTH BENTON AVENUE, DELRAY BEACH, FLORIDA 33444

SIDEWALK CONSTRUCTION

DATE: 06/08/20  
BY: RT 18.1

REVISIONS	DATE	BY

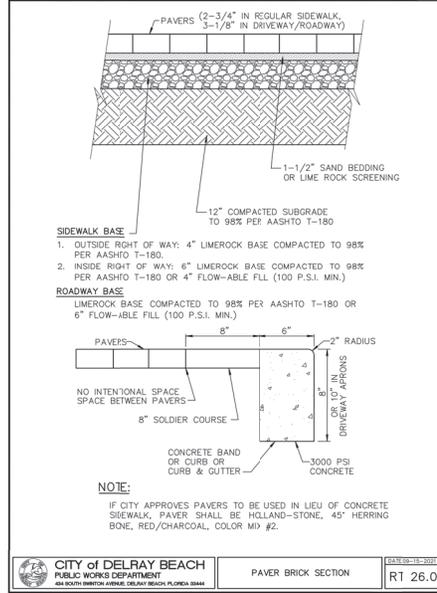
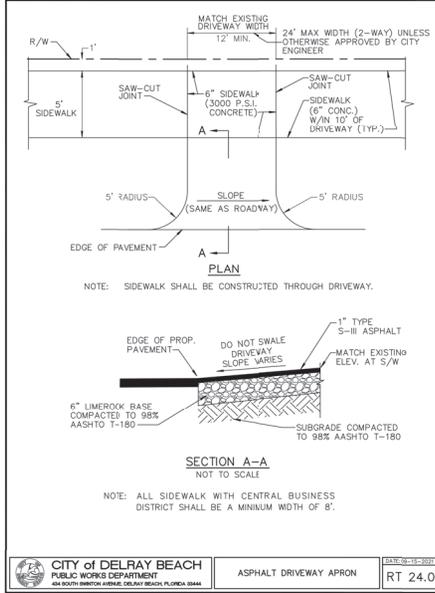
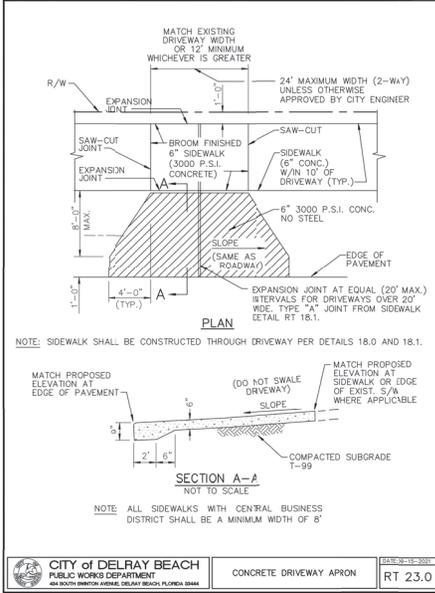
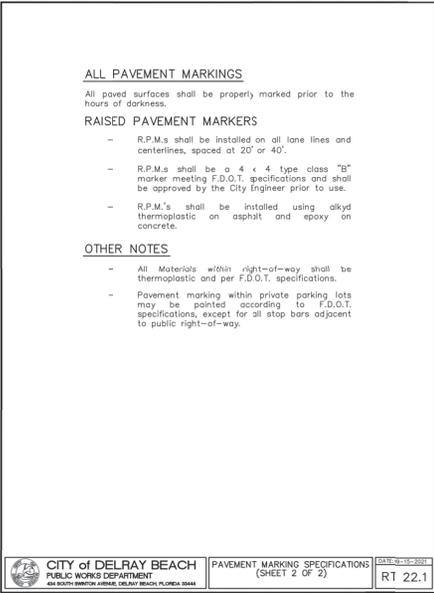
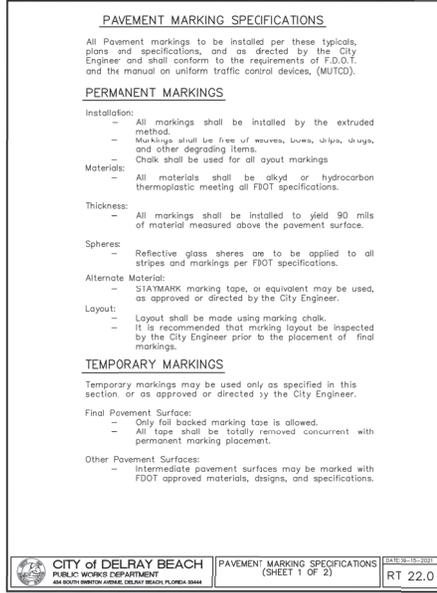
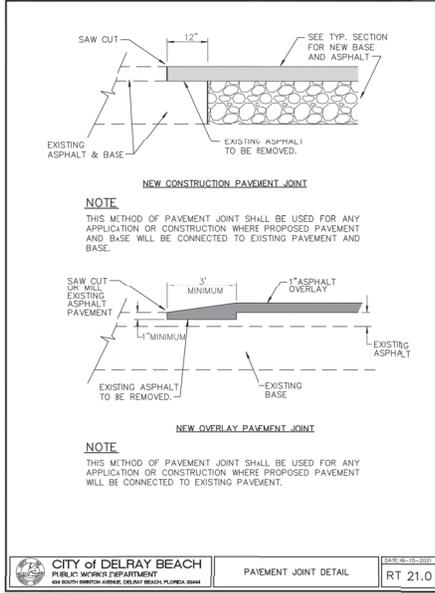
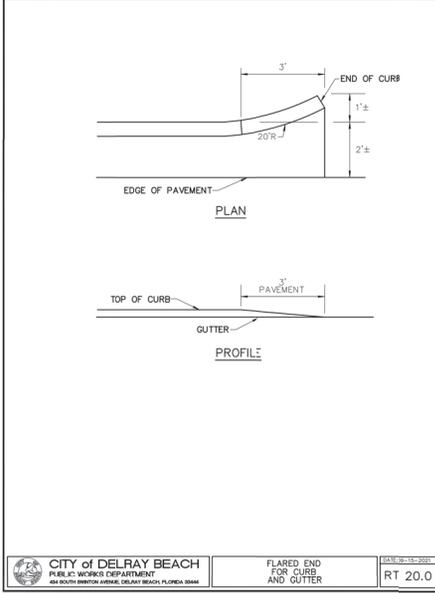
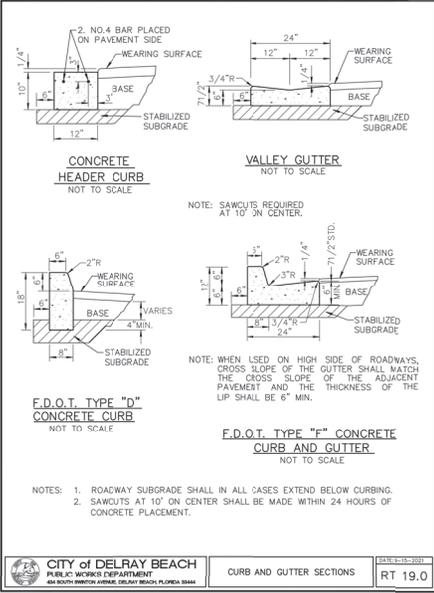
**CAULFIELD & WHEELER, INC.**  
LANDSCAPE ARCHITECTURE & SURVEYING  
7800 GLADES ROAD, SUITE 100  
DELRAY BEACH, FLORIDA 33444  
PHONE (561) 592-7971 / FAX (561) 750-6452

**DELRAY RIDGE**  
PAVING, GRADING, & DRAINAGE DETAILS

DATE: 06/08/20  
DRAWN BY: RHT  
F.B./P.C.: N/A  
SCALE: N/A

**Ryan Wheeler**  
RYAN D. WHEELER  
PROFESSIONAL ENGINEER  
LICENSE NO. 74747  
STATE OF FLORIDA  
- FOR THE FIRM -  
DATE: Jun 07, 2022

JOB #657  
SHEET  
**PD-06**  
OF 11 SHEETS



BY	
DATE	
REVISIONS	
REV. NAME	DESCRIPTION

**CAULFIELD & WHEELER, INC.**  
LANDSCAPE ARCHITECTURE, SURVEYING  
7800 GLADES ROAD, SUITE 100  
DELRAY BEACH, FLORIDA 33446  
PHONE (561) 592-9911 / FAX (561) 750-4452

**DELRAY RIDGE**  
PAVING, GRADING, & DRAINAGE DETAILS

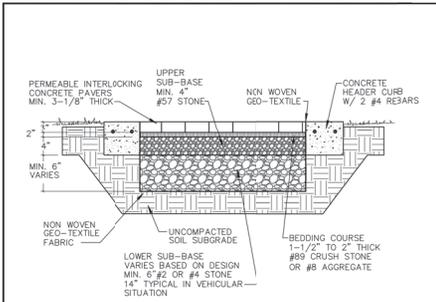
DELRAY RIDGE, FLORIDA

DATE	06/08/20
DRAWN BY	RHT
F.B./P.C.	N/A
SCALE	N/A

**Ryan Wheeler**  
PROFESSIONAL ENGINEER  
LICENSE NO. 71477  
STATE OF FLORIDA  
FOR THE FIRM

DATE: Jun 07, 2023

JOB #577	
STATUS	PD-07
OF 11 SHEETS	

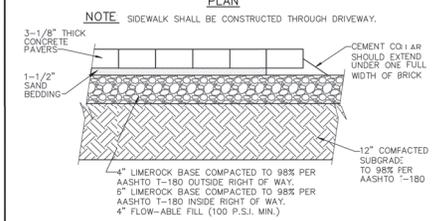
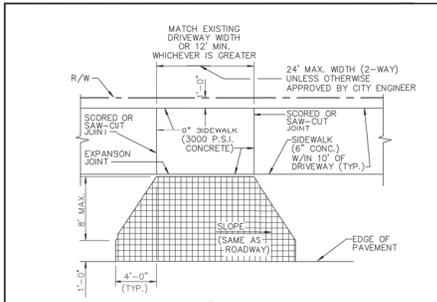


- NOTE:**
1. CONTRACTOR TO FIELD VERIFY EXACT LOCATION, SIZE AND DEPTH OF ALL EXISTING UTILITIES AT THE TIME OF CONSTRUCTION AND REPORT ANY DISCREPANCIES TO THE CITY ENGINEER.
  2. FOR VEHICULAR APPLICATIONS, SUBGRADE WOULD NEED TO BE EVALUATED BY QUALIFIED CIVIL OR GEOTECHNICAL ENGINEER FOR COMPACTION.
  3. PERMEABLE INTERLOCKING CONCRETE PAVERS SHALL BE DESIRED IN ACCORDANCE WITH THE STANDARDS SET FORTH BY THE INTERLOCKING CONCRETE PAVEMENT INSTITUTE (ICPI).
  4. PERMEABLE PAVERS TO BE INSTALLED IN CITY RIGHT-OF-WAY MUST BE INSTALLED BY AN ICPI INSTALLER CERTIFIED.
  5. PAVERS SHALL BE 45° HERRING-BONE, RED/CHARCOAL, MIX #2.

**CITY OF DELRAY BEACH**  
PUBLIC WORKS DEPARTMENT  
604 SOUTH BENTON AVENUE, DELRAY BEACH, FLORIDA 33446

PERMEABLE PAVER SECTION  
DETAIL

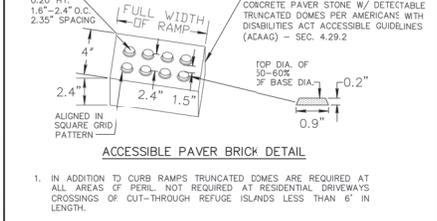
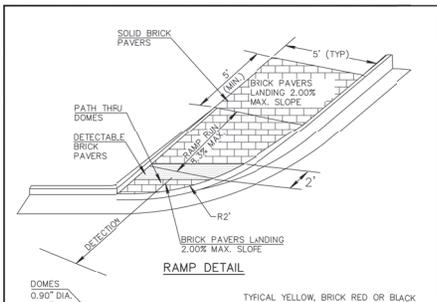
DATE: 06/08/20  
BY: RT 27.0



**CITY OF DELRAY BEACH**  
PUBLIC WORKS DEPARTMENT  
604 SOUTH BENTON AVENUE, DELRAY BEACH, FLORIDA 33446

PAVER BRICK DRIVEWAY APRON

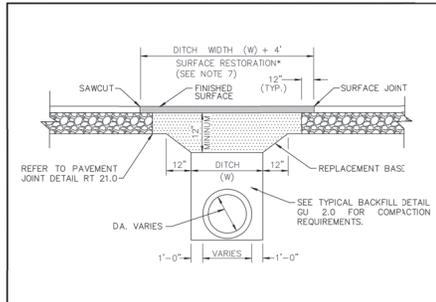
DATE: 06/08/20  
BY: RT 28.0



**CITY OF DELRAY BEACH**  
PUBLIC WORKS DEPARTMENT  
604 SOUTH BENTON AVENUE, DELRAY BEACH, FLORIDA 33446

DETECTABLE WARNING RAMP  
IN PAVER SIDEWALK  
TYPICAL DETAIL

DATE: 06/08/20  
BY: RT 29.0

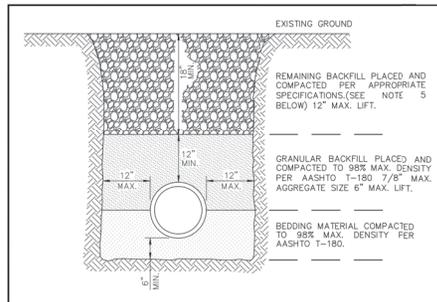


1. REPLACEMENT BASE TO BE AT MIN. 12\"/>
- 2a. BASE MATERIAL SHALL BE PLACED IN TWO LIFTS AND EACH LIFT COMPACTED TO 98% MAXIMUM DENSITY PER AASHTO T-180 (MAX. LIFT THICKNESS = 6\").
- 2b. 24\"/>
3. ASPHALT CONCRETE PAVEMENT JOINTS SHALL BE MECHANICALLY SAWS.
4. ALL DISTURBED PAVEMENT MARKINGS SHALL BE RESTORED IN ACCORDANCE WITH CITY STANDARDS.
5. SURFACE MATERIAL SHALL BE 5-11 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\"/>

**CITY OF DELRAY BEACH**  
PUBLIC WORKS DEPARTMENT  
604 SOUTH BENTON AVENUE, DELRAY BEACH, FLORIDA 33446

PAVEMENT REPAIR DETAIL

DATE: 06/08/20  
BY: GU 1.0

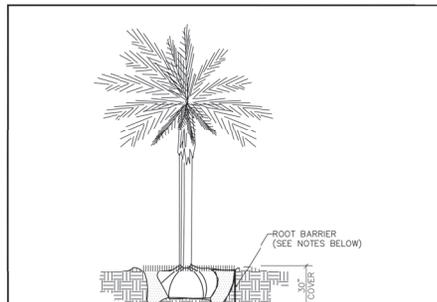


- NOTES:**
1. UNSUITABLE IN-SITU MATERIALS SUCH AS MUCK, DEBRIS AND LARGE ROCKS SHALL BE REMOVED OFF SITE AND DISPOSED IN A PROPER LANDFILL; BEDDING MATERIAL AND BACKFILL CONSISTING OF WASHED AND GRADED LIMEROCK 3/8\"/>
  2. THE PIPE AND/OR STRUCTURE SHALL BE FULLY SUPPORTED FOR ITS ENTIRE LENGTH WITH 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  
604 SOUTH BENTON AVENUE, DELRAY BEACH, FLORIDA 33446

TYPICAL BACKFILL DETAIL

DATE: 06/08/20  
BY: GU 2.0

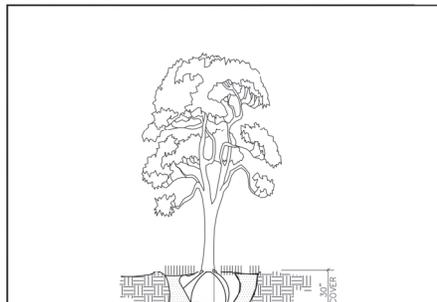


- NOTES:**
1. ALL ROOT BARRIERS SHALL BE 4\"/>
  2. THE INSTALLATION OF ROOT BARRIERS SHALL BE COORDINATED WITH CITY AND INSPECTED BY CITY PRIOR TO BACKFILLING. ALL ROOT BARRIERS SHALL EXTEND UP TO FINISHED GRADE.
  3. ROOT BARRIERS SHALL BE MINIMUM 36\"/>
  4. ALL ROOT BARRIERS SHALL BE INSTALLED IN ACCORDANCE WITH MANUFACTURERS WRITTEN INSTRUCTIONS.

**CITY OF DELRAY BEACH**  
PUBLIC WORKS DEPARTMENT  
604 SOUTH BENTON AVENUE, DELRAY BEACH, FLORIDA 33446

TYPICAL TREE WITH  
ROOT BARRIER

DATE: 06/08/20  
BY: LD 1.0



- NOTES:**
1. THIS DISTANCE SHALL BE 10\"/>

**CITY OF DELRAY BEACH**  
PUBLIC WORKS DEPARTMENT  
604 SOUTH BENTON AVENUE, DELRAY BEACH, FLORIDA 33446

TYPICAL TREE WITHOUT  
ROOT BARRIER

DATE: 06/08/20  
BY: LD 2.0

NO.	DATE	BY

**CAULFIELD & WHEELER, INC.**  
PROFESSIONAL ENGINEER  
LANDSCAPE ARCHITECTURE - SURVEYING  
7800 GLADES ROAD, SUITE 100  
DELRAY BEACH, FLORIDA 33446  
PHONE (561) 592-9911 FAX (561) 750-6442

**DELRAY RIDGE**  
PAVING, GRADING, & DRAINAGE DETAILS

DELRAY, FLORIDA 33446

DATE	06/08/20
DRAWN BY	RHT
F.B./P.C.	N/A
SCALE	N/A

**Ryan Wheeler**  
PROFESSIONAL ENGINEER  
LICENSE NO. 71423  
STATE OF FLORIDA  
- FOR THE FIRM -  
DATE: Jun 07, 2022

JOB #577  
SHEET NO. PD-08  
OF 11 SHEETS

**GENERAL NOTES PAVING, GRADING & DRAINAGE**

- ALL DIMENSIONS SHOWN ON THESE DRAWINGS ARE SCALED DISTANCES. THE CONTRACTOR SHALL CONFIRM ALL MEASUREMENTS IN THE FIELD AND NOTIFY THE ENGINEER IN WRITING OF ANY DISCREPANCY PRIOR TO PERFORMING THE WORK. ALL QUANTITIES SHALL BE PAID ON THE BASIS OF FIELD MEASUREMENTS OF COMPLETED WORK.
- REINFORCED CONCRETE PIPE (R.C.P.) SHALL BE IN ACCORDANCE WITH F.D.O.T. STANDARD SPECIFICATIONS SEC. 941. CORRUGATED ALUMINUM PIPE (C.A.P.) SHALL BE IN ACCORDANCE WITH F.D.O.T. STANDARD SPECIFICATIONS SEC. 945.
- IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO MAKE SUCH EXAMINATION OF THE SITE OF THE WORK, AND OF ANY MATERIALS INDICATED IN THE PLANS, AS MAY BE NECESSARY TO INFORM HIMSELF OF THE CONDITIONS UNDER WHICH WORK IS TO BE PERFORMED.
- PROPOSED GRADES SHOWN IN PAVED AREAS REFER TO FINISH PAVEMENT GRADES.
- PAVEMENT MARKING AND GEOMETRICS SHALL BE IN ACCORDANCE WITH THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES FOR STREETS AND HIGHWAYS AND PALM BEACH COUNTY TYPICAL MO. T-1-P-18.
- ALL LOTS, ROADWAYS AND BORROW AREAS SHALL BE STRIPPED OF ALL DELETERIOUS (UNSAITABLE) MATERIALS AND MATERIALS SHALL BE DISPOSED WITHIN THE SITE.
- ALL GRADING OF STREETS, INCLUDING THE REMOVAL OF ALL MATERIALS AND THE FINISHING OF ALL SHOULDERS, SUBGRADE PREPARATION, SWALES AND BACKSLOPES, IN ACCORDANCE WITH THE TYPICAL SECTIONS SHOWN HEREON SHALL BE INCLUDED IN THE BID PRICE FOR PAVING.
- ANY EXISTING ROADWAY AND/OR UTILITY THAT IS DAMAGED BY THE CONTRACTOR SHALL BE CORRECTED AT THE CONTRACTOR'S EXPENSE TO THE SATISFACTION OF THE ENGINEER, AND UTILITY.
- THE FULL DEPTH OF ALL EXISTING ORGANIC AND DELETERIOUS MATERIALS WITHIN THE RIGHT-OF-WAY AND UTILITIES AND DRAINAGE EASEMENT SHALL BE COMPLETELY REMOVED. NO MATERIALS OF F.D.O.T. CLASS 5-1, 4-2, 4-3, 4-4, 4-5, 4-6, 4-7, 4-8, 4-9, 4-10, 4-11, 4-12, 4-13, 4-14, 4-15, 4-16, 4-17, 4-18, 4-19, 4-20, 4-21, 4-22, 4-23, 4-24, 4-25, 4-26, 4-27, 4-28, 4-29, 4-30, 4-31, 4-32, 4-33, 4-34, 4-35, 4-36, 4-37, 4-38, 4-39, 4-40, 4-41, 4-42, 4-43, 4-44, 4-45, 4-46, 4-47, 4-48, 4-49, 4-50, 4-51, 4-52, 4-53, 4-54, 4-55, 4-56, 4-57, 4-58, 4-59, 4-60, 4-61, 4-62, 4-63, 4-64, 4-65, 4-66, 4-67, 4-68, 4-69, 4-70, 4-71, 4-72, 4-73, 4-74, 4-75, 4-76, 4-77, 4-78, 4-79, 4-80, 4-81, 4-82, 4-83, 4-84, 4-85, 4-86, 4-87, 4-88, 4-89, 4-90, 4-91, 4-92, 4-93, 4-94, 4-95, 4-96, 4-97, 4-98, 4-99, 4-100 SHALL BE ALLOWED.
- ANY MUCK POCKETS OR GUMBO CONCRETED SHALL BE REMOVED WITHIN THE ROADWAY TO 10' BELOW SUBGRADE AND TO OUTSIDE EDGE OF BOTH SHOULDERS. THE MUCK AND GUMBO SHOULD BE REMOVED IN THE AREA OF AND WITHIN 10 FEET OF PROPOSED PAVEMENT OR FOUNDATION AREAS.
- ALL PAVING AND DRAINAGE WORK TO BE CONSTRUCTED IN FULL ACCORDANCE WITH PALM BEACH COUNTY STANDARDS AND SPECIFICATIONS.
- THE SEQUENCE OF CONSTRUCTION SHALL BE SUCH THAT ALL UNDERGROUND INSTALLATIONS OF EVERY KIND THAT WILL BE BENEATH THE PAVEMENT CURRENTLY TO BE CONSTRUCTED SHALL BE INSTALLED PRIOR TO THE COMPACTION OF SUBGRADE.
- CONTRACTOR SHALL SUBMIT SHOP DRAWINGS TO ENGINEER AND COUNTY ON ALL PIPE, PIPE BANDS, DRAINAGE STRUCTURES, GRATES, FRAMES AND COVERS.
- IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO DETERMINE THE LOCATION OF EXISTING UTILITIES WHETHER SHOWN OR NOT SHOWN ON THESE DRAWINGS AND SHALL VERIFY ALL ELEVATIONS BEFORE STARTING CONSTRUCTION. ALL EXISTING UTILITIES DAMAGED BY THE CONTRACTOR SHALL BE RESTORED TO EXISTING OR BETTER CONDITIONS BY CONTRACTOR AT NO EXPENSE TO OWNER.
- WHERE CONNECTIONS TO AN EXISTING DRAINAGE SYSTEM ARE PROPOSED, SAID EXISTING DRAINAGE STRUCTURES AND LINES SHALL BE PURGED OF ALL SILT AND DEBRIS PRIOR TO SAID CONNECTION. WHERE EXISTING DRAINAGE SYSTEM INCLUDES DITCHES, SAID DITCHES SHALL BE CLEARED AND REMOVED, AS NECESSARY, TO RESTORE THEM TO THEIR APPROVED DESIGN SECTION.
- ALL PIPE JOINTS ARE TO BE INSPECTED BY A REPRESENTATIVE OF THE ENGINEER PRIOR TO BACKFILLING. ALL INSPECTIONS SHOULD BE AVERAGE NO LESS THAN 48 HOURS IN ADVANCE.
- ALL CATCH BASIN GRATES MUST HAVE LOCKING CHAINS IN ACCORDANCE WITH FOOT INDEX 201.

**CLEARING AND GRUBBING:**

WORK SHALL CONSIST OF THE COMPLETE REMOVAL AND DISPOSAL OF ALL BUILDINGS, TIMBER, BRUSH, STUMPS, ROOTS, RUBBISH, AND DEBRIS AND ALL OTHER OBSTRUCTIONS RESTING ON OR PROTRUDING THROUGH THE SURFACE OF THE EXISTING GROUND AND THE SURFACE OF EXCAVATED AREAS, AND OF ALL OTHER STRUCTURES AND OBSTRUCTIONS NECESSARY TO BE REMOVED, INCLUDING SEPTIC TANKS, BUILDING FOUNDATIONS, AND PIPES.

ROOTS AND OTHER DEBRIS SHALL BE REMOVED TO A DEPTH OF AT LEAST ONE FOOT BELOW THE GROUND SURFACE. ALL STUMPS WITHIN THE CONSTRUCTION AREA SHALL BE COMPLETELY REMOVED AND DISPOSED OF BY THE CONTRACTOR.

EXISTING TREES TO REMAIN WHERE SO DIRECTED BY THE ENGINEER, SHALL BE TRIMMED, PROTECTED AND LEFT STANDING.

PROPERTY OBSTRUCTIONS WHICH ARE TO REMAIN IN PLACE, SUCH AS BUILDINGS, SEWERS, DRAINS, WATER OR GAS PIPES, CONDUCITS, POLES, WALLS, POSTS, BRIDGES, ETC. ARE TO BE CAREFULLY PROTECTED FROM DAMAGE AND ARE NOT TO BE DISPLACED.

CLEARING AND GRUBBING MATERIALS SHALL BE DISPOSED OF BY THE CONTRACTOR IN MANNER AND BY METHODS APPROVED BY THE ENGINEER.

**SUB-GRADE:**

UTILIZATION OF MATERIAL IN SUBGRADE CONSTRUCTION SHALL BE IN ACCORDANCE WITH PLAN DETAILS OR AS DIRECTED BY THE ENGINEER.

A PROCTOR TEST SHALL BE PERFORMED ON THE PROPOSED SUBGRADE MATERIAL TO DETERMINE THE OPTIMUM MOISTURE CONTENT AND MAXIMUM DENSITY OF THE MATERIAL. IN-PLACE DENSITY TESTS OF THE FINISH SUBGRADE SHALL BE PERFORMED AT A FREQUENCY OF AT LEAST ONE TEST FOR EVERY 7,000 SQ.FT. OF PROPOSED PAVEMENT AREA TO DETERMINE COMPLIANCE WITH THE DESIGN SPECIFICATIONS OF 100% OF MAX. DENSITY PER AASHTO T-99 TESTING METHODS.

STABILIZED SUBGRADE SHALL HAVE A MINIMUM LMEROCK BEARING RATIO (LBR) OF 40. THE COMPACTED SUBGRADE SHALL CONFORM TO THE LINES, GRADES, AND CROSS-SECTIONS SHOWN ON THE PLANS. ALL ROOTS, STUMPS, OR OBSTRUCTIONAL MATERIAL PRESENT ON, UNDER, OR PROTRUDING THROUGH THE SURFACE SHALL BE COMPLETELY REMOVED FROM THE SUBGRADE. THE FINISHED SURFACE OF THE SUBGRADE SHALL BE STRUNG-LINED PRIOR TO PLACEMENT OF ROCK BASE TO VERIFY THAT THE SUBGRADE HAS BEEN CONSTRUCTED TO THE PROPER LINES, CROSS-SECTIONS, AND ELEVATIONS WITHIN AN ALLOWABLE TOLERANCE OF 1/2" OF THE PROPOSED FINISH SUBGRADE ELEVATIONS.

**BASE:**

LMEROCK COMPOSITION - THE FOLLOWING TESTS ARE REQUIRED ON THE LMEROCK MATERIAL: A. CHEMICAL COMPOSITION TEST TO DETERMINE THAT MATERIAL HAS A MINIMUM PERCENT CARBONATES OF 40% B. LMEROCK BEARING RATIO TEST TO DETERMINE THAT MATERIAL CAN ACHIEVE AN LBR OF 100. C. SIEVE ANALYSIS TO INSURE THAT AT LEAST 97% (BY WEIGHT) OF THE MATERIAL SHALL PASS A 3-1/2" SIEVE AND 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.

A PROCTOR TEST SHALL BE PERFORMED ON THE PROPOSED LMEROCK MATERIAL TO DETERMINE THE MAXIMUM DENSITY OF THE MATERIAL. IN-PLACE DENSITY TESTS SHALL BE TAKEN AT A FREQUENCY OF AT LEAST ONE TEST FOR EVERY 7,000 SQ.FT. OF PROPOSED PAVEMENT TO DETERMINE COMPLIANCE WITH THE DESIGN SPECIFICATIONS OF 98% OF MAX. DENSITY PER AASHTO T-99 TESTING METHODS.

THE COMPACTED BASE SHALL CONFORM TO THE LINES, GRADES, AND CROSS-SECTION SHOWN ON THE PLANS. THE FINISH BASE SURFACE SHALL BE STRUNG OR CHECKED WITH A TEMPLATE TO VERIFY CONFORMANCE WITH THE PLAN GRADES WITHIN AN ALLOWABLE TOLERANCE OF 1/4" OF THE PROPOSED BASE ELEVATIONS. PRIME COAT SHALL BE APPLIED AT A RATE OF 0.25 GALLONS PER SQUARE YARD.

**ASPHALTIC CONCRETE SURFACE COURSE:**

TACK COAT - A. PRIOR TO INSTALLATION OF THE OVERLAY, THE SURFACE OF THE EXISTING ASPHALT SHALL BE BROOMED TO REMOVE ALL LOOSE MATERIAL WHICH MIGHT INTERFERE WITH THE ADHESION OF THE EXISTING ASPHALT AND OVERLAY. B. A TACK COAT SHALL BE APPLIED TO THE TOP OF THE CLEAN ASPHALT SURFACE AT A RATE OF 0.10 GALLONS/SQ.FT. IN THE PRESENCE OF THE ENGINEER'S REPRESENTATIVE.

PRIME COAT SHALL BE APPLIED AT A RATE OF 0.25 GALLONS PER SQUARE YARD. PRIME AND TACK COAT FOR BASE SHALL CONFORM TO THE REQUIREMENTS AND SPECIFICATIONS OF SECTION 300-1 THROUGH 300-7 OF F.D.O.T. STANDARD SPECIFICATIONS.

ASPHALTIC CONCRETE SHALL CONFORM TO FLORIDA D.O.T. REQUIREMENTS OF TYPE 5-1 AND 5-3. CERTIFICATIONS OF THE ASPHALT MIX SHALL BE SUBMITTED BY THE ASPHALT PLANT TO THE ENGINEER FOR APPROVAL PRIOR TO CONSTRUCTION.

THE TEMPERATURE OF THE ASPHALT SHALL BE AT LEAST 230 DEGREES F. DURING THE LAYING OPERATION.

THE THICKNESS OF THE FINISHED SURFACE COURSE SHALL BE CHECKED AT VARIOUS INTERVALS TO INSURE THE CONSTRUCTED SURFACE COURSE IS WITHIN 1/8" OF THE DESIGN THICKNESS (NO NEGATIVE TOLERANCE WILL BE ACCEPTABLE).

THE FINISHED SURFACE OF THE ASPHALT SHALL BE CHECKED WITH A STRAIGHT EDGE TO INSURE THAT THE LINE, GRADE, AND CROSS-SECTION OF THE FINISHED PAVEMENT COURSE IS IN CONFORMANCE WITH THE DESIGN. THE FINISHED SURFACE SHALL BE OF UNIFORM TEXTURE AND COMPACTION. THE SURFACE SHALL HAVE NO PULLED, TORN, OR LOOSENED PORTIONS AND SHALL BE FREE OF SEGREGATION, SAND, STREAKS, SAND SPOTS, OR RIPPLES. ALL AREAS OF THE SURFACE WHICH DOES NOT MEET THE FOREGOING REQUIREMENTS SHALL BE CORRECTED TO THE ENGINEER'S SATISFACTION.

ALL REPAIRS TO EXISTING PAVEMENT SHALL RESUME SAWCUT EDGE PRIOR TO RELAYING ASPHALT. UNDER PAVEMENT UTILITY PIPING OR WIRING LESS THAN FOUR (4) INCHES IN DIAMETER REQUIRES A SCHEDULE 40 PVC CASING PIPE WITH SAND BACKFILLS.

ALL PERMANENT CONTROL POINTS AND/OR REFERENCE MARKERS SHOWN ON PLAT SHALL BE RAISED TO FINAL GRADE IF LOCATED IN PAVEMENT OR CONCRETE; THESE POINTS AND REFERENCE MARKERS SHALL BE LOCATED AND NOTED ON THE PLAT.

**NOTIFICATION - TESTING:**

NOTIFICATION - THE CONTRACTOR SHALL NOTIFY THE ENGINEER, THE COUNTY AND UTILITIES 48 HOURS PRIOR TO SCHEDULING FIELD OBSERVATIONS AND SHALL SUPPLY ALL EQUIPMENT NECESSARY TO TEST THE COMPLETED WORK. CALL U.N.C.L.E. PRIOR TO ANY EXCAVATION.

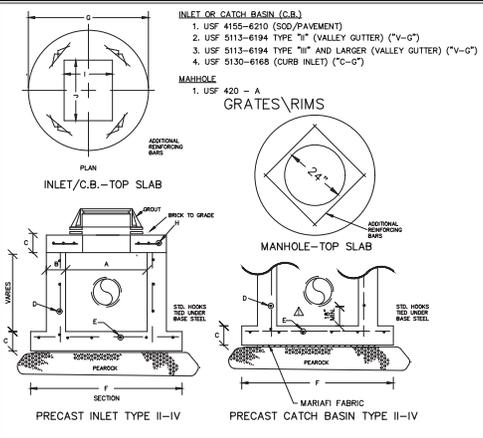
ALL DRAINAGE SYSTEMS SHALL BE PUMPED DOWN TO BELOW 1/3 OF THE DIAMETER OF THE PIPE (FROM THE INVERT) AND LAMPED AS A REQUIREMENT OF THE FINAL DRAINAGE INSPECTION.

GRATE AND RIM ELEVATION ARE BASED ON PROPOSED FINISHED GRADE. ADJUSTMENTS MAY BE NECESSARY DUE TO FIELD CONDITIONS. ADJUSTMENTS ARE TO BE MADE BY THE CONTRACTOR WHEN THE BASE COURSE IS IN PLACE OR SITE GRADING IS COMPLETE. COST OF ADJUSTING RIMS AND GRATES IS TO BE INCLUDED IN BASE BID.

**SOODING:**

WORK CONSISTS OF THE ESTABLISHING OF A STAND OF GRASS WITHIN THE AREAS CALLED FOR BY THE FURNISHING AND PLACING OF GRASS SOD AND FERTILIZING, WATERING, AND MAINTAINING SOODING AREAS SUCH AS TO ASSURE A HEALTHY STAND OF GRASS.

THE AREA OVER WHICH THE SOD IS TO BE PLACED SHALL BE SCARIFIED OR LOOSENED TO SUITABLE DEPTH. THE SOD SHALL BE PLACED ON THE PREPARED SURFACE WITH EDGES IN CLOSE CONTACT AND SHALL BE FIRMLY AND SMOOTHLY EMBEDDED BY LIGHT TAMPING WITH APPROPRIATE TOOLS. IN AREAS WHERE THE SOD MAY SLIDE DUE TO HEIGHT AND SLOPE, THE ENGINEER MAY DIRECT THAT THE SOD BE PEGGED WITH PEGS DRIVEN THROUGH THE SOD BLOCKS INTO FIRM EARTH AT SUITABLE INTERVALS.



**PRECAST CATCH BASIN TYPE "C"**

**NOTES:**

- ELEVATIONS SHOWN ARE IN NAVD 88 DATUM
- ALL DRAINAGE SYSTEMS SHALL BE PUMPED COMPLETELY DRY AND LAMPED AS A REQUIREMENT OF THE FINAL DRAINAGE INSPECTIONS.

**Pavement marking and geometric shall be in accordance with the "Manual on Uniform Traffic Control Devices for Streets and Highways", and "Palm Beach County" typical No. T-1-P-18 (Or latest version).**

**PERMANENT MARKINGS:**

- Installation:
  - All markings shall be installed by the extruded method.
  - Markings shall be free of weaves, bows, drips, drops, and other degrading items.
  - Chalk shall be used for all layout markings.
- Materials:
  - All materials shall be alkyl thermoplastic meeting all State specifications.
- Thickness:
  - All markings shall be installed to yield 90 mils of material measured above the pavement surface.
- Beads:
  - Reflective beads are to be installed per FDOT specifications on all markings.
- 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:**

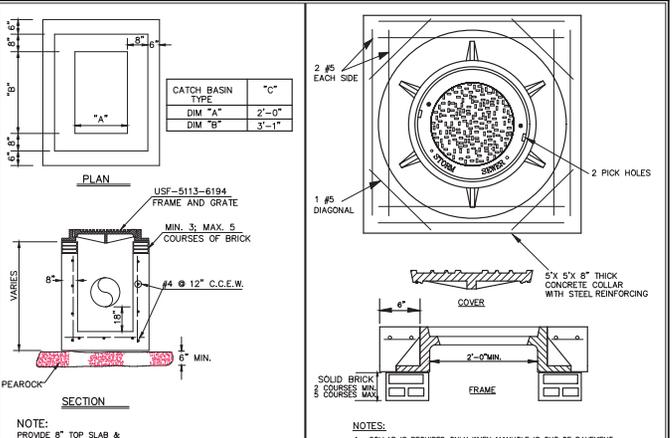
- Temporary markings may be used only as specified in this section, or as approved or directed by the Palm Beach County Engineer.
- Final Pavement Surface:
  - Only full backed marking tape is allowed.
  - All tape shall be totally removed concurrent with permanent marking placement.
- Other Pavement Surfaces:
  - Intermediate pavement surfaces may be marked with FDOT approved materials, designs, and specifications.

**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 FDOT specifications and shall be approved by the Engineer prior to use.
- R.P.M.'s shall be installed using alkyl thermoplastic on asphalt and epoxy on concrete.



**NOTES:**

- PROVIDE 8" TOP SLAB & USF 5113-6194 VALLEY GUTTER FOR TYPE "C" VALLEY GRATE
- COLLAR IS REQUIRED ONLY WHEN MANHOLE IS OUT OF PAVEMENT.
- FRAME AND COVER SHALL BE U.S. FOUNDRY 420 A (OR EQUAL).

**CONCRETE FLUME**

**RETAINING WALL DETAIL**

NO.	DATE	BY

**CAULFIELD & WHEELER, INC.**  
 CIVIL AND MECHANICAL ENGINEERING  
 LANDSCAPE ARCHITECTURE SURVEYING  
 7800 GLADES ROAD, SUITE 100  
 PALM BEACH, FLORIDA 33411  
 PHONE (561) 592-7671 / FAX (561) 750-7429

**DELRAY RIDGE**  
 PAVING, GRADING, & DRAINAGE DETAILS

DATE 06/08/20  
 DRAWN BY RHT  
 F.B./P.C. N/A  
 SCALE N/A

Ryan Wheeler  
 PROFESSIONAL ENGINEER  
 LICENSE NO. 71473  
 STATE OF FLORIDA  
 - FOR THE FIRM -  
 DATE Jun 07, 2023

**JOB #577**  
 PD-09  
 OF 11 SHEETS

SOLID CONCRETE INTERLOCKING PAVING STONE SPECIFICATIONS

I. DESCRIPTION

1.1. GENERAL:

- A. Scope of Work:
1. Furnish and place sand bedding course.
  2. Furnish and install concrete interlocking paving stones in the quality, shape, thickness and a color as specified.
  3. Furnish and install all accessory items as required by the contract.

B. Related Work:

1. Furnish and install subgrade per Table 100.6 of the Palm Beach County Land Development Design Standards Manual.
2. Furnish and install base per Table 100.6 of the Palm Beach County Land Development Design Standards Manual.

C. Product Handling:

1. Paving stones shall be delivered and unloaded at jobsite in such a manner that no damage occurs during shipping, handling and storage.

D. References:

1. Solid concrete interlocking paving stones shall meet or exceed the requirements in ASTM C-936 Standard Specifications for Solid Concrete Interlocking Paving Units.

II. MATERIALS:

2.1. SOLID CONCRETE INTERLOCKING PAVING STONES:

- A. Thickness, Color and Pattern:
1. Paving stone thickness shall be between 3-1/8" min - 4" max.
  2. All paving stones shall be colored through the full depth of paver and not just the surface.
  3. A multi-colored paving stone pattern shall be used.

B. Cementitious Materials:

1. Portland cements shall conform to ASTM C-150.

C. Aggregates:

1. Aggregates shall conform to ASTM C-33 for normal weight concrete except that grading requirements shall not necessarily apply.

D. Other Materials:

1. Coloring pigments, air entraining agents, integral water repellents, finely ground silica, etc., shall conform to ASTM standard where applicable or shall be previously established as suitable for use in concrete.

E. Compressive Strength:

1. At the time of delivery to the work site, the average compressive strength shall not be less than 8,000 psi with no individual unit strength less than 7,200 psi, with testing procedures in accordance with ASTM C-140.

F. Absorption:

1. The average absorption shall not be greater than 5% with no individual unit absorption greater than 7%.

G. Proven Field Performance:

1. Satisfying field performance is indicated when paving stones similar in composition, and made with the same manufacturing equipment as those supplied to the purchaser, do not exhibit deterioration after one year.

H. Visual Inspection:

1. All paving stones shall be sound and free of defects that would interfere with the proper placement of the paving stone or impair the strength or permanence of the construction.
2. Minor cracks incidental to the usual methods of manufacture, or chipping resulting from customary methods of handling in shipment and delivery, shall not be deemed grounds for rejection.

I. Sampling and Testing:

1. The purchaser shall be accorded proper facilities to inspect and sample the paving stones at the place of manufacture from lots ready for delivery.
2. Paving stones will be sampled and tested in accordance with ASTM C-140.

J. Rejection:

1. If the shipment fails to conform to the specified requirements, the manufacturer may sort it, and new test paving stones shall be selected at random by the purchaser from the retained lot and tested at the expense of the manufacturer. If the second set of test paving stones fail to conform to the specified requirements, the entire lot shall be rejected.

2.2. BEDDING COURSE:

- A. The bedding course shall be a well graded, clean, washed sand with 100% passing a 3/8" sieve size and a maximum of 3% passing a No. 200 sieve size. The use of mason sand shall not be approved.

- B. The bedding course shall be the responsibility of the paving stone installer.

2.3. EDGE RESTRAINT:

- A. All edges of the installed paving stones shall be restrained. The type of edge restraint, shall be approved at locations and to details noted on plans.

III. CONSTRUCTION METHODS:

3.1. PREPARATION OF THE BASE COURSE:

- A. A suitable base shall be prepared as specified in Section B.2. of this specification.

- B. The base course shall be shaped to grade and cross section with allowable tolerance of 1/4".

3.2. CONSTRUCTION OF THE BEDDING COURSE:

- A. The finished base course shall be approved before the placement of the bedding course.

- B. The sand bedding course shall be spread evenly over the area to receive the paving stones and the screeded level to produce a 1" thickness when the paving stones have been placed and vibrated.

- C. The final elevation of paving stones shall be nominally 1/4" to 3/8" higher than the adjacent curb, gutter, etc., to allow for free drainage from chamfers on paving stone edges.

- D. The bedding course shall not be disturbed, once screeded and leveled to the desired elevation.

3.3. INSTALLATION OF PAVING STONES:

- A. The paving stones shall be placed as shown on the drawings.

- B. The paving stones shall be placed in such a manner that the desired pattern is maintained and that no intentional space is left between the stones for maximum interlock.

- C. String lines should be used to hold all patterns true.

- D. The gaps at the edge of the paving stone surface shall be filled with standard edge stone or with stones cut to fit. Cutting of concrete paving stone shall be accomplished to leave a clean edge to the traffic surface using a double-headed breaker or a masonry saw. Whenever possible, no cut should result with a paving stone less than 1/3 of original dimension.

- E. Paving stones shall be vibrated into the bedding course using a plate vibrator capable of 3000 to 5000 pounds compaction force with the surface clean and the joints open.

- F. After vibration, clean, sharp sand containing at least 30% of 1/8" particles shall be spread over the paving stone surface, allowed to dry and vibrated into the joints with additional plate vibrator passes and brushing so as to completely fill the joints.

- G. Surplus material shall then be swept from the surface or left on the surface during construction to insure complete filling of joints during initial use.

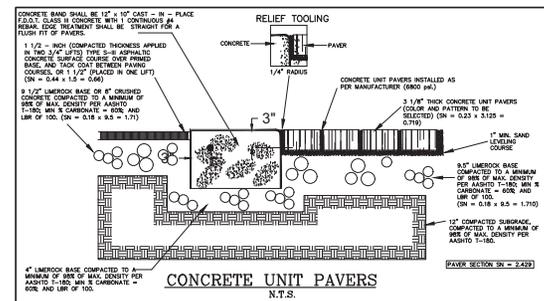
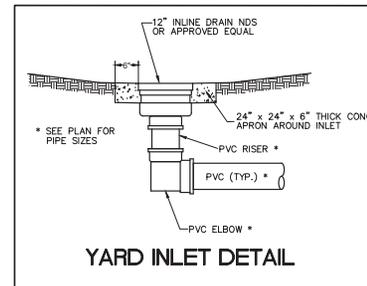
- H. Upon completion of work covered in this section, the Contractor shall clean up all work areas by removing all debris, surplus material and equipment from the site.

1. Paver brick shall conform with Palm Beach County Land Development Design Standards Manual with the following exceptions: a) Under II Material 2.1 # A.1, Paving stone thickness shall be 3 1/8" (min.) to 4" (max.) b) Under II Material 2.1 # A.3, The coloring shall be throughout the entire brick with the white and yellow conforming with F.D.O.T. Standard Specifications for Road and Bridge Construction (latest edition) section 710-4.7

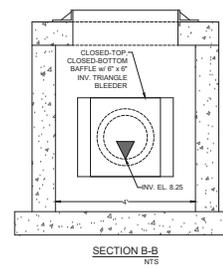
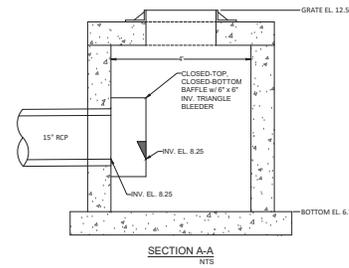
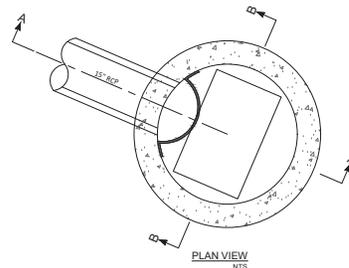
2. Glass spheres to meet the requirements of sections 971-1 and 971-14 with retroreflectivity to be not less than 300 retroreflectors.

3. When header curb is used to outline a crosswalk the curb shall be white concrete with glass beads in the white concrete.

4. The brick shall be pre-approved per project before installation by the Palm Beach County Traffic Engineering Division.



- NOTES:
- ELEVATIONS SHOWN ARE IN NAVD 88 DATUM
  - ALL DRAINAGE SYSTEMS SHALL BE PUMPED COMPLETELY DRY AND LAMPED AS A REQUIREMENT OF THE FINAL DRAINAGE INSPECTIONS.



CONTROL STRUCTURE (D-11) DETAILS

REVISIONS	DATE	BY

CAULFIELD & WHEELER, INC.  
 LANDSCAPE ARCHITECTURE & SURVEYING  
 7800 GLADES ROAD, SUITE 100  
 BOCA RATON, FLORIDA 33433  
 PHONE (561) 392-0911 FAX (561) 750-6452

DELRAY BEACH, FLORIDA  
**DELRAY RIDGE**  
 PAVING, GRADING, & DRAINAGE DETAILS

DATE	06/08/20
DRAWN BY	RHT
F.B./P.C.	N/A
SCALE	N/A

Ryan Wheeler  
 RYAN D. WHEELER  
 PROFESSIONAL ENGINEER  
 LICENSE NO. 71431  
 STATE OF FLORIDA  
 - FOR THE FIRM -  
 DATE Jun 07, 2023

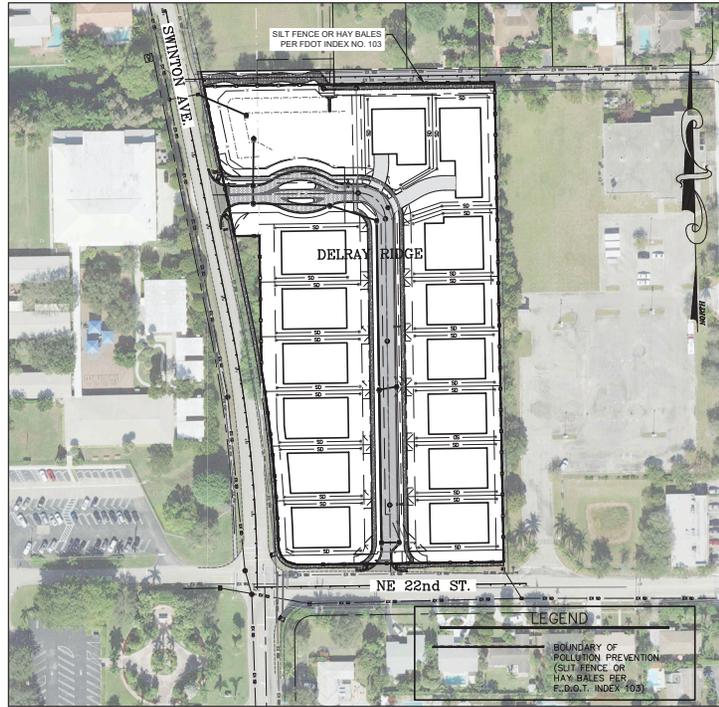
JOB #577
SHEET
<b>PD-10</b>
OF 11 SHEETS

**DEFINITIONS**

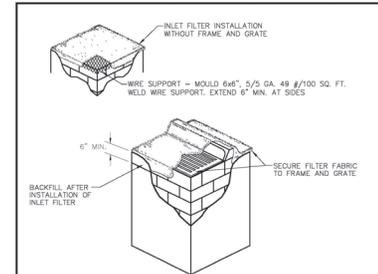
1. COUNTY – PALM BEACH COUNTY
2. CONTRACTOR – UTILITY CONTRACTOR AND ALL UTILITY SUBCONTRACTORS
3. ENGINEER – ENGINEER RESPONSIBLE FOR INSPECTION AND CERTIFICATION

**PROCEDURE**

1. A PRE-CONSTRUCTION MEETING IS TO BE HELD PRIOR TO DELIVERY OF MATERIALS AND INITIATION OF ANY WATER AND SEWER CONSTRUCTION. THE MEETING SHALL BE ATTENDED BY THE COUNTY, CONTRACTOR, SUBCONTRACTORS, ENGINEER AND OTHER INTERESTED PARTIES.
2. ANY REVISIONS TO THE APPROVED PLANS MUST BE APPROVED BY THE COUNTY 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 COUPLINGS WERE MANUFACTURED IN ACCORDANCE WITH AWWA C105/A21.51-91.
4. ALL APPLICABLE PERMITS MUST BE OBTAINED WITH COPIES PROVIDED TO THE COUNTY 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 COUNTY PRIOR TO CONSTRUCTION. ALL REQUESTS FOR MATERIAL SUBSTITUTION SHALL BE APPROVED 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 PLANS) EXIST WITHIN THE AREA OF CONSTRUCTION. SHOULD THERE BE UTILITY CONFLICTS, THE CONTRACTOR SHALL NOTIFY THE COUNTY AND NOTIFY THE RESPECTIVE UTILITY OWNER TO RESOLVE THE UTILITY CONFLICTS AND THE UTILITY ADJUSTMENTS AS REQUIRED.
8. 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.
9. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING LOCATIONS OF ALL OTHER UTILITY FACILITIES.
10. THE CONTRACTOR SHALL SCHEDULE INSPECTIONS AND TESTS WITH THE COUNTY A MINIMUM OF 24 HOURS IN ADVANCE.
11. CONTRACTOR SHALL NOT DISTURB EXISTING COUNTY MAINS OR STRUCTURES WITHOUT THE PRESENCE OF A COUNTY INSPECTOR. COUNTY UTILITY SYSTEM VALVES AND APPURTENANCES MAY ONLY BE OPERATED BY COUNTY PERSONNEL.
12. FACILITIES PROPOSED HEREIN SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE APPROVED PLANS. DEVIATIONS FROM THE APPROVED PLANS MUST BE APPROVED IN ADVANCE BY THE COUNTY.
13. 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.
14. PAVING, DRAINAGE AND TRAFFIC CONSTRUCTION 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 No. 1-P-18 UNLESS SHOWN OTHERWISE.
15. AS-BUILT DRAWINGS SHALL BE PREPARED BY A REGISTERED LAND SURVEYOR, REGISTERED IN THE STATE OF FLORIDA, AND SUBMITTED BY THE CONTRACTOR TO THE COUNTY.
16. PRIOR TO COMMENCEMENT OF ANY EXCAVATION, THE CONTRACTOR SHALL COMPLY WITH FLORIDA STATUTE 553-851 FOR PROTECTION OF UNDERGROUND GAS PIPE LINES.
17. CONTRACTOR SHALL NOTIFY SUNSHINE STATE ONE (1-800-432-4770) 48 HOURS IN ADVANCE OF CONSTRUCTION.
18. GRADES SHOWN ON PLANS ARE FINISHED GRADES. THE CONTRACTOR SHALL BE REQUIRED TO ADJUST EXISTING SANITARY SEWER MANHOLE TOPS AND VALVE BOX COVERS TO FINISHED GRADE.
19. CONTRACTOR SHALL MAINTAIN LOCAL TRAFFIC AT ALL TIMES DURING CONSTRUCTION AND SHALL BE REQUIRED TO PROVIDE MAINTENANCE STALLS, 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.
20. EXISTING BASE MATERIAL THAT IS REMOVED DURING CONSTRUCTION SHALL NOT BE USED IN THE CONSTRUCTION OF NEW LIME/ROCK BASE.
21. ALL VEGETATION, DEBRIS, CONCRETE OR OTHER UNSUITABLE MATERIAL SHALL BE LEGALLY DISPOSED OF OFF-SITE IN AN AREA AT THE CONTRACTOR'S EXPENSE.
22. CONTRACTOR SHALL UTILIZE 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.
23. ALL REINFORCED CONCRETE STORM SEWER PIPE SHALL BE CLASS III, UNLESS OTHERWISE NOTED.
24. ALL PAVED SURFACES SHALL BE PROPERLY MARKED PRIOR TO HOURS OF DARKNESS. PERMANENT PAVEMENT MARKING STALLS SHALL BE LAID OUT USING MARKING CHALK. LAYOUT TO BE REVIEWED BY THE COUNTY PRIOR TO PLACEMENT OF FINAL MARKINGS.
25. ENHANCEMENT (E&I) 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 BIDD ITEMS.
26. CONTINUITY OF WATER AND SEWER SERVICE TO COUNTY 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 COUNTY. DETERMINATION OF SERVICE BREAK REQUIREMENT WILL BE MADE BY THE COUNTY.
27. SITE INFORMATION BASED ON A SURVEY PREPARED BY: CAULFIELD & WHEELER, INC.
28. RELOCATION OF UTILITY POLES AND GAS PIPE LINES SHALL BE COORDINATED BY THE CONTRACTOR WITH FLORIDA POWER AND LIGHT, AND FLORIDA PUBLIC UTILITIES, RESPECTIVELY. EACH UTILITY HAS BEEN NOTIFIED THAT THEY WILL BE REQUIRED TO RELOCATE THEIR UTILITIES.



**POLLUTION PREVENTION DETAIL**



**NOTES**

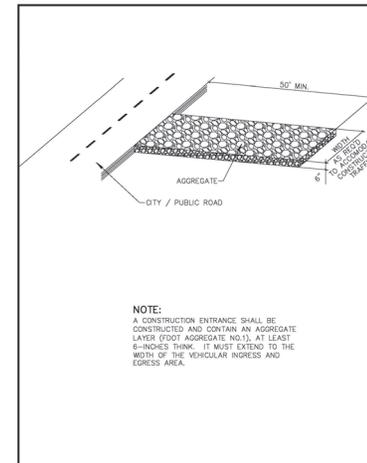
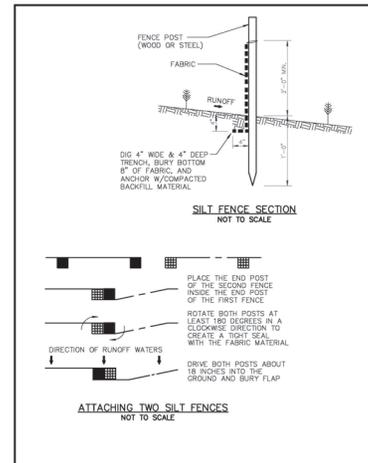
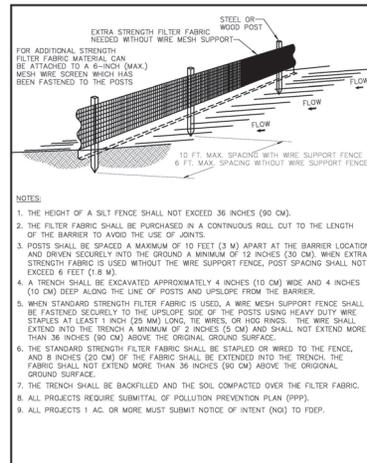
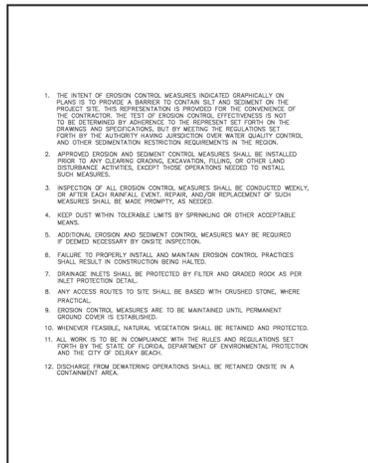
1. CONTRACTOR IS TO CLEAN INLET FILTER AFTER EVERY STORM.
2. CONTRACTOR TO REMOVE FABRIC JUST PRIOR TO PAVING.

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**  
ENVIRONMENTAL SERVICES DEPARTMENT

**INLET FILTER DETAIL** D 8.1



REVISIONS	DATE	BY

**CAULFIELD & WHEELER, INC.**  
LANDSCAPE ARCHITECTURE & SURVEYING  
7800 GLADES ROAD, SUITE 100  
PALM BEACH, FLORIDA 33411  
PHONE (561) 592-7671 / FAX (561) 750-6429

**DELRAY RIDGE**  
POLLUTION PREVENTION PLAN

DATE 06/08/20  
DRAWN BY RHT  
F.B./P.C./N/A  
SCALE N/A

Ryan Wheeler  
PROFESSIONAL ENGINEER  
LICENSE NO. 71477  
STATE OF FLORIDA  
- FOR THE FIRM -  
DATE: Jun 07, 2023

**CITY OF DELRAY BEACH**  
ENVIRONMENTAL SERVICES DEPARTMENT

**STABILIZED CONSTRUCTION ENTRANCE DETAIL** D 9.1c

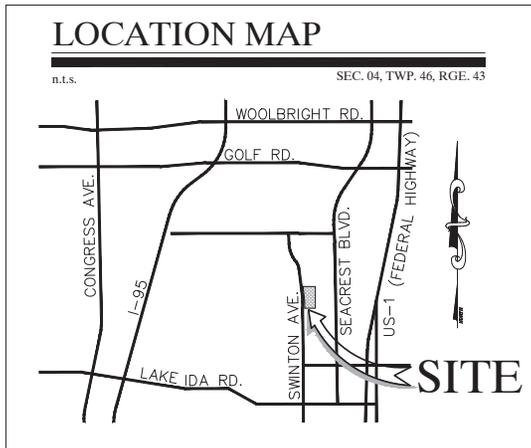
JOB #577  
SHEET PD-11  
OF 11 SHEETS



# DELRAY RIDGE

## Delray Beach, Florida

WATER DISTRIBUTION & SANITARY SEWER PLANS & DETAILS



### INDEX

WS-01 ..... Cover Page

WS-02 ..... Water Distribution & Sanitary Sewer Plan

WS-03 ..... Sanitary Sewer Profiles

WS-04 - WS-06 ..... Utility Details

REVISIONS	DATE	BY

CAULFIELD & WHEELER, INC.  
 LANDSCAPE ARCHITECTURE & SURVEYING  
 7900 GLADES ROAD - SUITE 100  
 DELRAY BEACH, FLORIDA 33483  
 PHONE: (561) 352-1991 / FAX: (561) 750-4452

DELRAY RIDGE  
 COVER PAGE  
 DELRAY BEACH, FLORIDA

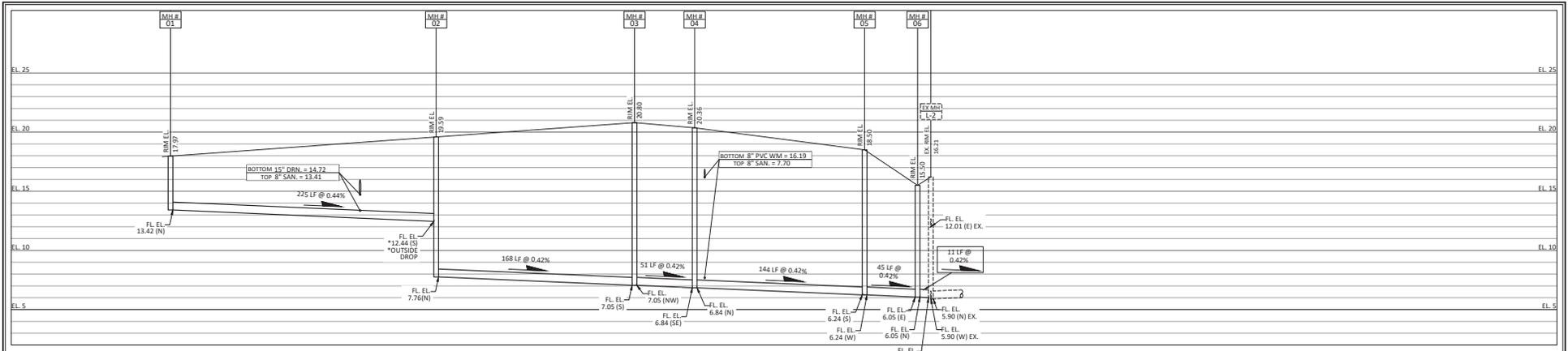
DATE	12/17/20
DRAWN BY	RHT
F.B. / PG.	N/A
SCALE	N/A

Ryan  
 Wheeler  
 RYAN D. WHEELER  
 PROFESSIONAL ENGINEER  
 LICENSE NO. 71477  
 STATE OF FLORIDA  
 - FOR THE FIRM -  
 DATE: May 24, 2022

JOB #8577  
 SHEET NO.  
**WS-01**  
 OF 06 SHEETS

Drawing: P:\2021\7-20-20-00\DelrayRidge\DelrayRidge.dwg





REVISIONS	DATE	BY

CAULFIELD & WHEELER, INC.  
 LANDSCAPE ARCHITECTURE - SURVEYING  
 7990 GLADES ROAD - SUITE 100  
 MIAMI, FL 33155  
 PHONE: (305) 552-1991 / FAX: (305) 759-4452

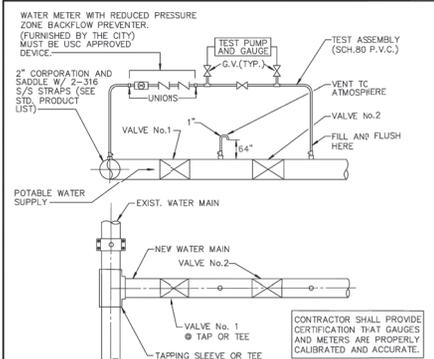
**DELRAY RIDGE**  
**SANITARY SEWER PROFILES**  
 DELRAY BEACH, FLORIDA

DATE 12/17/20  
 DRAWN BY RHT  
 F.B. / PG. N/A  
 SCALE 1"=40'

RYAN D. WHEELER  
 PROFESSIONAL ENGINEER  
 LICENSE NO. 71477  
 STATE OF FLORIDA  
 FOR THE FIRM  
 DATE May 24, 2022

JOB #8577  
 SHT. NO.  
**WS-03**  
 OF 06 SHEETS

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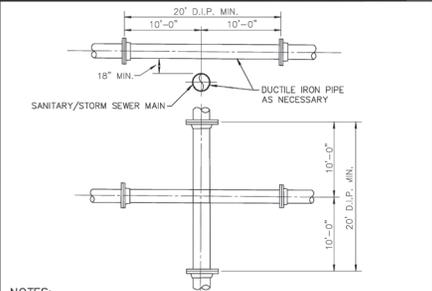


- NOTES:**
- BOTH VALVES SHALL BE KEPT CLOSED UNTIL FILLING, FLUSHING, AND BACTERIOLOGICAL TESTING IS COMPLETED AND APPROVED.
  - GAUGE AND RISER TO BE REMOVED AFTER PRESSURE TEST.
  - CITY SHALL BE NOTIFIED BEFORE FILLING AND FLUSHING.
  - AFTER RELEASE FROM THE HEALTH DEPARTMENT, BOTH VALVES TO BE LEFT OPEN WITH VALVE BOX INSTALLED ON BOTH VALVES.
  - PRESSURE TEST PUMP MAY CONNECT TO SERVICE LINE, FIRE HYDRANTS OR BLOWOFF; NO EXTRA TAPS ARE PERMITTED SOLELY FOR TESTING PURPOSES UNLESS PRECEDING ARE NOT PRESENT IN TEST SECTION.
  - TAPPING SADDLE OR SLEEVE (PER CURRENT CITY PRODUCT LIST) IS REQUIRED ON EXISTING MAIN.
  - SETUP FOR ALL DOUBLE VALVE CONNECTIONS TO INCLUDE ATMOSPHERE VENTS AS SHOWN ABOVE.
  - OUTLET ON VENT TO ATMOSPHERE A MINIMUM 24\"/>

**CITY OF DELRAY BEACH** PUBLIC WORKS DEPARTMENT  
404 SOUTH HUNTER AVENUE, DELRAY BEACH, FLORIDA 33444

FILL & FLUSH DETAIL

DATE: 08-19-2020  
PW 1.01

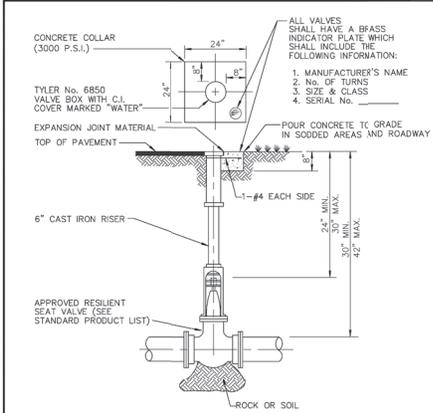


- NOTES:**
- STORM AND SANITARY SEWERS CROSSING UNDER WATER MAINS SHALL BE LAID TO PROVIDE A MINIMUM VERTICAL DISTANCE OF 18 INCHES BETWEEN THE INVERT OF THE UPPER PIPE AND THE CROWN OF THE LOWER PIPE. WHERE THIS MINIMUM SEPARATION CANNOT BE MAINTAINED, THE CROSSING SHALL BE ARRANGED SO THAT THE SEWER 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 8 INCHES. WHERE THERE IS NO ALTERNATIVE TO SEWER PIPES CROSSING OVER A WATER MAIN, THE CRITERIA FOR MINIMUM VERTICAL SEPARATION BETWEEN LINES AND JOINTS APPLICABLE, AS STATED ABOVE, SHALL BE REQUIRED AND BOTH PIPES SHALL BE CLASS 200 D.I.P. IRRESPECTIVE OF SEPARATION. D.I.P. IS NOT REQUIRED FOR STORM SEWERS.
  - MAINTAIN 100 FEET HORIZONTAL DISTANCE BETWEEN WATER MAIN AND STORM OR SANITARY SEWER MAIN, AS A MINIMUM.
  - 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.
  - SEWER SERVICE LATERALS SHALL CROSS UNDER WATERMANS 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.
  - 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 SDR18 OR BETTER.

**CITY OF DELRAY BEACH** PUBLIC WORKS DEPARTMENT  
404 SOUTH HUNTER AVENUE, DELRAY BEACH, FLORIDA 33444

WATER MAIN & SEWER CONFLICTS

DATE: 08-19-2020  
PW 2.0

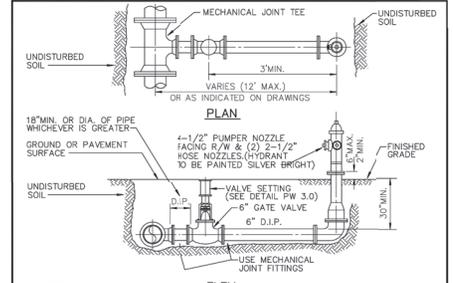


- NOTES:**
- WHEN VALVE IS DEEPER THAN 30\"/>
- NOTES:**
- AT END AND/OR WHERE MAIN LINES CHANGE DIRECTION, VALVES SHALL BE RESTRAINED USING MECHANICAL JOINT RESTRAINTS, THE RODS, OR OTHER RESTRAINT APPROVED BY UTILITIES DEPARTMENT (NO THRUST BLOCKS ALLOWED).

**CITY OF DELRAY BEACH** PUBLIC WORKS DEPARTMENT  
404 SOUTH HUNTER AVENUE, DELRAY BEACH, FLORIDA 33444

TYPICAL GATE VALVE DETAIL

DATE: 08-19-2020  
PW 3.0

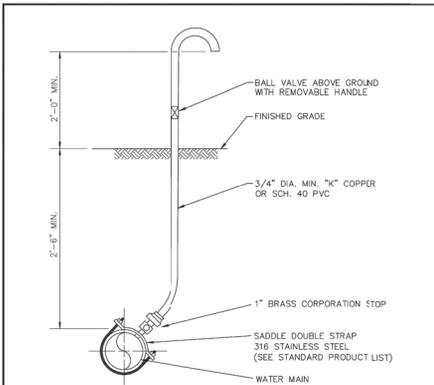


- NOTES:**
- HYDRANT SHALL BE INSTALLED PLUMB AND TRUE IN UNOBSTRUCTED LOCATION, (7.5\"/>
- NOTES:**
- HYDRANT SHALL BE MUELLER SUPER CENTURION, #423 6\"/>

**CITY OF DELRAY BEACH** PUBLIC WORKS DEPARTMENT  
404 SOUTH HUNTER AVENUE, DELRAY BEACH, FLORIDA 33444

TYPICAL FIRE HYDRANT INSTALLATION

DATE: 08-19-2020  
PW 6.0

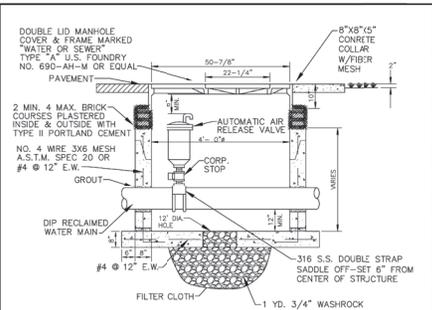


- NOTES:**
- SAMPLE POINT SHOULD BE AT SERVICE LINE OR FIRE HYDRANT IF POSSIBLE.
  - IF SAMPLE POINT IS NOT AT SERVICE LINE OR FIRE HYDRANT, CORP. STOP SHALL BE SHUT OFF AT MAIN AND ALL TUBING SHALL BE REMOVED, AND CORP. STOP SHALL HAVE A BRASS PLUG OR CAP INSTALLED AFTER RELEASE OF WATER MAIN BY PALM BEACH COUNTY HEALTH DEPARTMENT.
  - IF AT ALL POSSIBLE SAMPLE POINT SHALL NOT BE LOCATED IN A TRAFFIC AREA.
  - SAMPLE POINTS SHALL KEEP RUNNING UNTIL PALM BEACH COUNTY HEALTH DEPARTMENT RELEASE AND ALL MAIN LINE VALVES ARE OPENED.

**CITY OF DELRAY BEACH** PUBLIC WORKS DEPARTMENT  
404 SOUTH HUNTER AVENUE, DELRAY BEACH, FLORIDA 33444

TYPICAL SAMPLE POINT

DATE: 08-19-2020  
PW 10.0

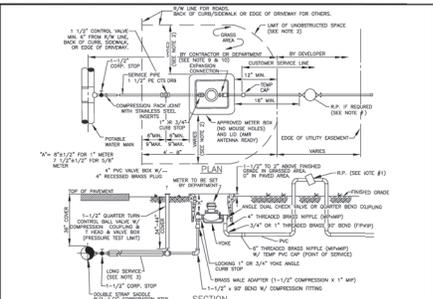


- NOTES:**
- PRECAST CONCRETE TYPE # 4000 P.S.I.
  - ALL OPENINGS SHALL BE SEALED WITH A WATERPROOF NON-SHRINKING GROUT.
  - LIFT HOLES ARE PERMITTED.
  - ALL PIPE HOLES SHALL BE PRECAST OR CORE-DRILLED.
  - MANHOLE FABRICATION SHALL BE IN ACCORDANCE WITH A.S.T.M. C-478 LATEST STANDARD.
  - CONCRETE COLLAR REQUIRED WHEN MANHOLE IS OUTSIDE PAVEMENT, SEE DETAIL.
  - AIR RELEASE VALVE SHALL BE TYPE AND SIZE APPROPRIATE FOR SERVICE INTENDED.
  - AIR RELEASE VALVE AND PIPING TO BE IDENTIFIED AS 'WATER OR SEWER'.
  - TWO PIECE MANHOLE WITH JOINT AT BASE IS PERMITTED, NO PIPE JOINTS INSIDE MANHOLE.
  - DUCTILE IRON PIPE IS REQUIRED THROUGH THE VAULT.
  - THREADED AREAS OF CORPORATION STOP SHALL BE COMPLETELY SPIRAL WRAPPED WITH TWO WRAPS OF 'TEFLON TAPE'.
  - CORPORATION STOP REFER TO STANDARD PRODUCT LIST.

**CITY OF DELRAY BEACH** PUBLIC WORKS DEPARTMENT  
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UNDERGROUND AIR RELEASE VALVE AND VAULT

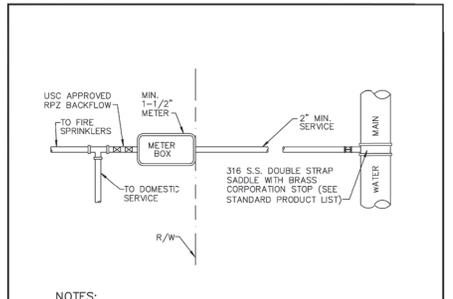
DATE: 08-19-2020  
PW 11.0



- NOTES:**
- ALL NON-RESIDENTIAL SERVICES SHALL HAVE AN APPROVED REDUCED PRESSURE ZONE BACKFLOW PREVENTION ASSEMBLY (RPZ). THE RPZ SHALL BE INSTALLED AS CLOSE AS POSSIBLE TO THE POINT OF SERVICE NOT TO EXCEED 40\"/>

**CITY OF DELRAY BEACH** PUBLIC WORKS DEPARTMENT  
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POTABLE WATER SERVICE SINGLE 1\"/>



- NOTES:**
- SUCCESSIVE TAPS INTO THE WATER MAIN SHALL BE SPACED A MINIMUM OF 18\"/>

**CITY OF DELRAY BEACH** PUBLIC WORKS DEPARTMENT  
404 SOUTH HUNTER AVENUE, DELRAY BEACH, FLORIDA 33444

TYPICAL FIRE SERVICE CONNECTION

DATE: 08-19-2020  
PW 14.0

REVISIONS

DATE

BY

CAULFIELD & WHEELER, INC.  
LANDSCAPE ARCHITECTURE & PLANNING  
7900 GLADES ROAD - SUITE 100  
DELRAY BEACH, FLORIDA 33446  
PHONE: (561) 391-1744 FAX: (561) 391-6452

DELRAY RIDGE  
UTILITY DETAILS

DELRAY BEACH, FLORIDA

DATE 12/17/20

DRAWN BY RHT

F.B./PG. N/A

SCALE N/A

RYAN D. WHEELER  
PROFESSIONAL ENGINEER  
LICENSE NO. 71477  
STATE OF FLORIDA  
- FOR THE FIRM -  
DATE May 24, 2022

JOB #8577

SHT. NO. WS-04

OF 06 SHEETS



