

ELECTRICAL SITE PLAN

Car Wash
14145 S. MILITARY TRAIL
Delray, FL 33484

711 East 8th Street
Tucson, Arizona 85719
520.903.2323 phone
www.a23studios.com

a.23 studios

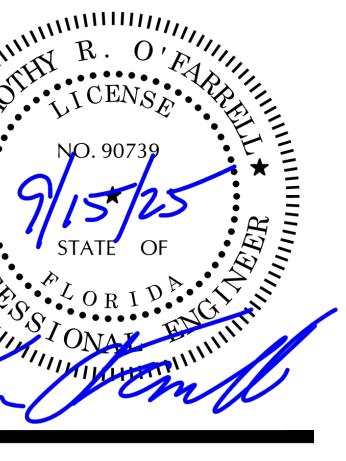
Project 24099
Date 01.15.25
Scale Noted
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Job No. 24070

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Electrical Consulting Engineering Group

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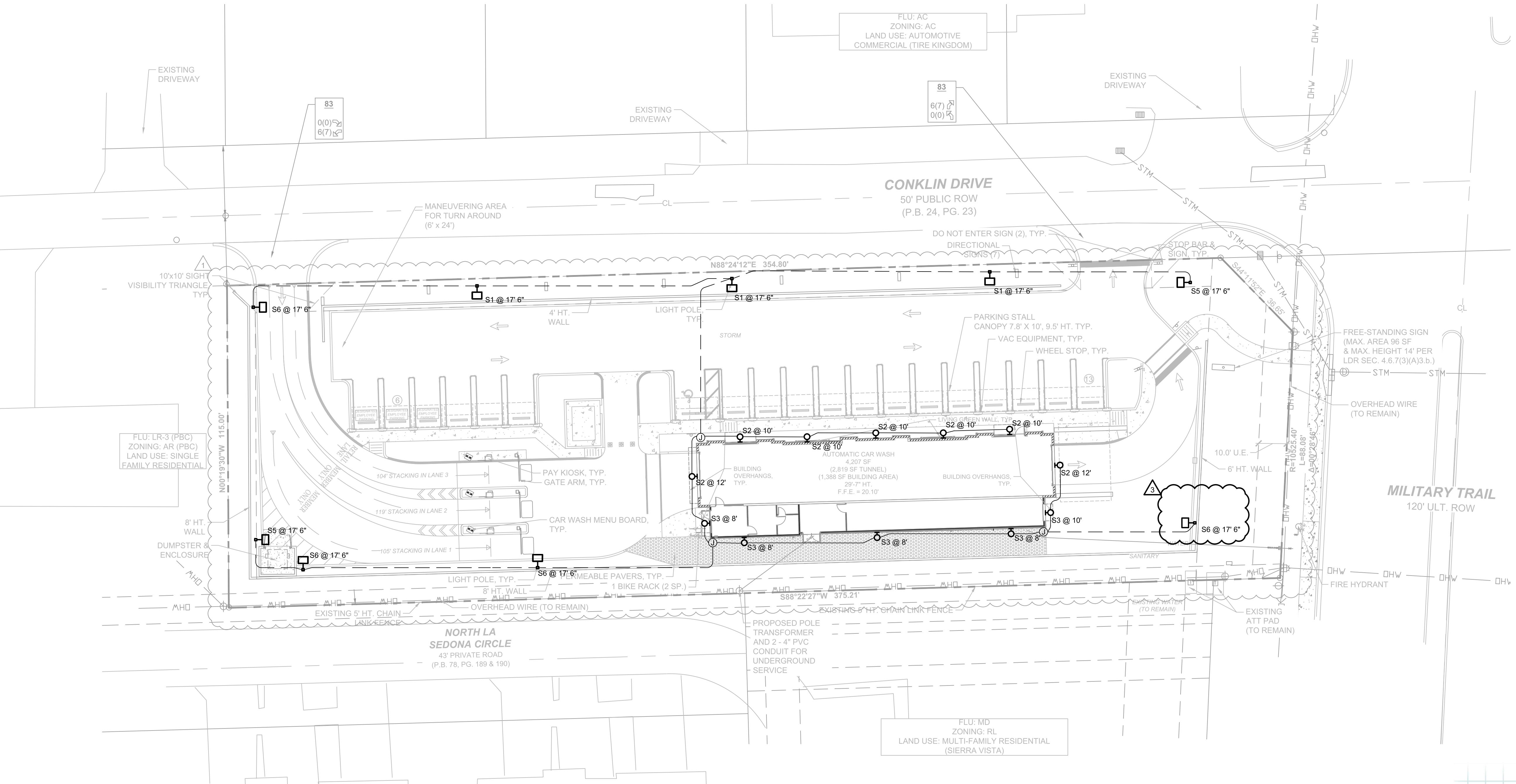


Revisions

1 CITY OF DELRAY BEACH 04/08/25

3 CITY COMMENTS 09/15/25

NOTE: THESE DOCUMENTS ESTABLISH THE GENERAL STANDARDS OF QUALITY AND DETAIL FOR DEVELOPING A NEGOTIATED CONSTRUCTION CONTRACT.



POLE LIGHT FIXTURE 'S1', 'S5', & 'S6' DETAIL

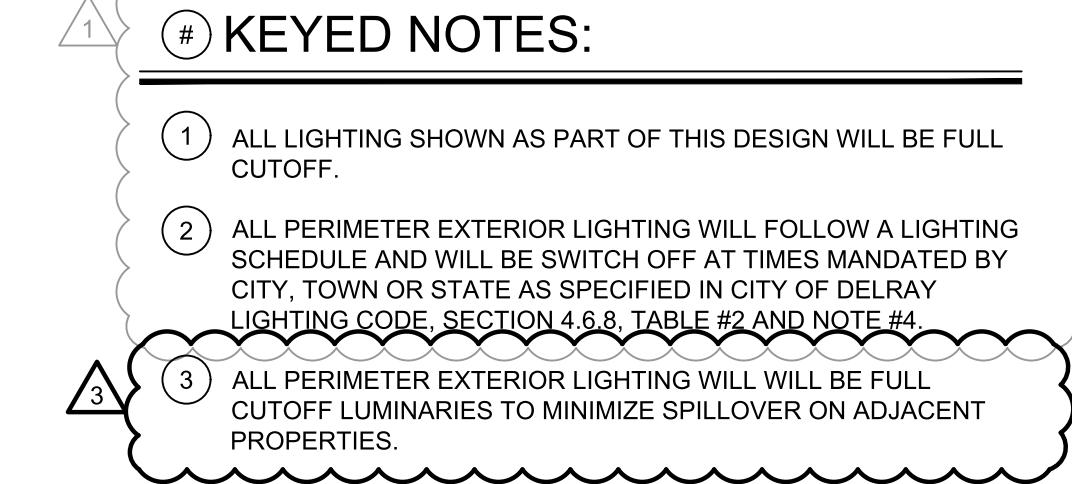
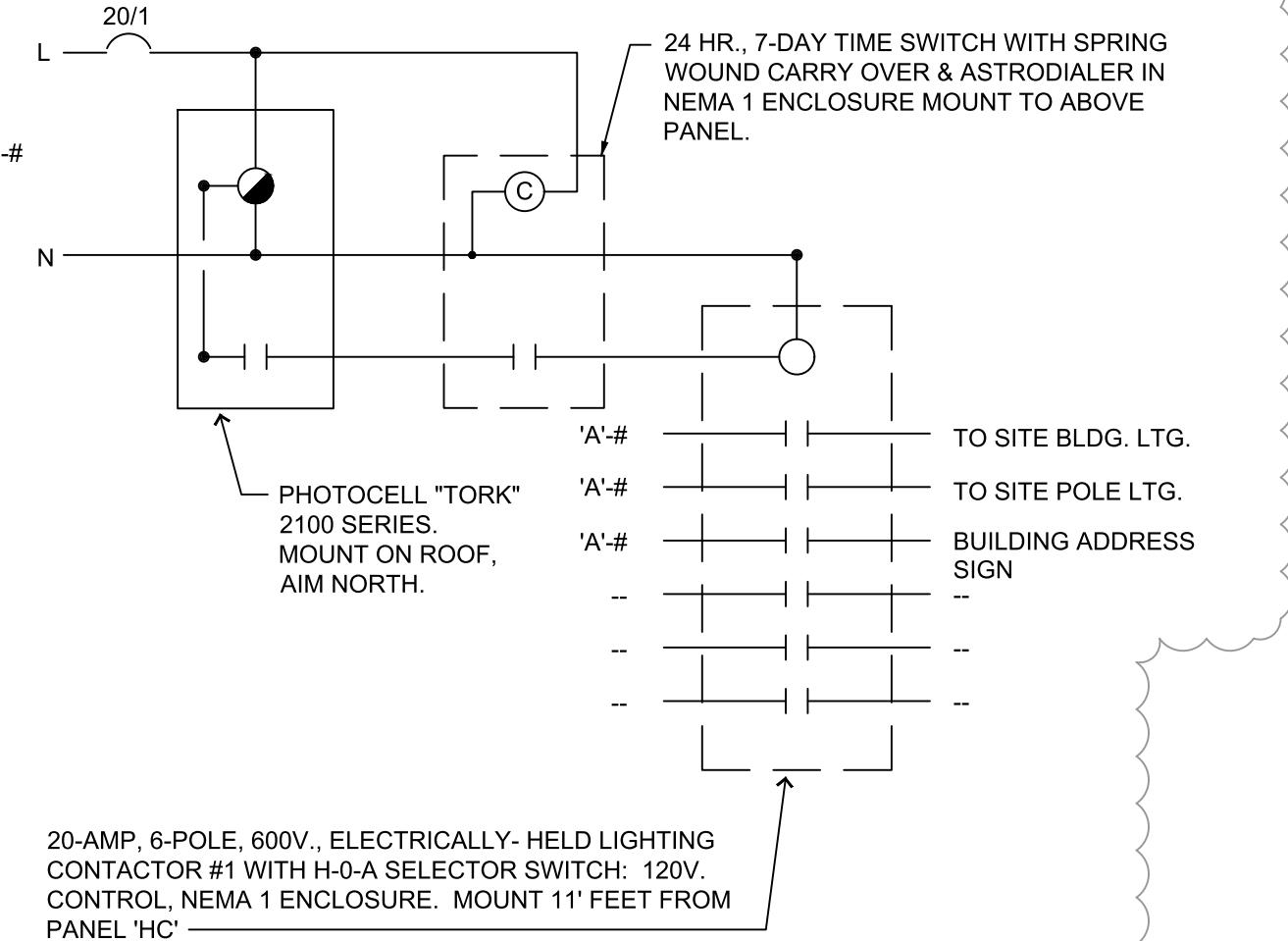
N.T.S.

NOTE:

LIGHT FIXTURE DETAIL SHOWN FOR SCHEMATIC PURPOSES ONLY! GENERAL CONTRACTOR SHALL OBTAIN FINAL, ENGINEERED POLE BASE DETAIL FROM POLE MANUFACTURER OR STRUCTURAL ENGINEER PRIOR TO ANY WORK.

SITE LIGHTING CONTROL DIAGRAM

N.T.S.



ELECTRICAL SITE PLAN

SCALE: 1" = 20'-0"

1

LIGHT FIXTURE SPECIFICATION PLAN

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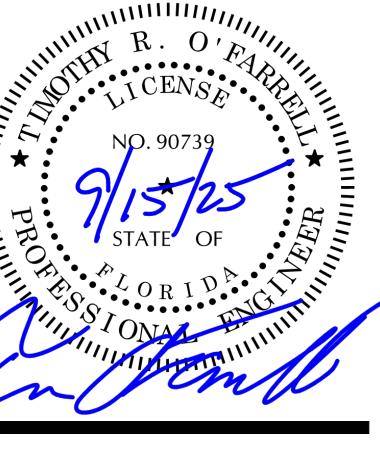
mw engineering, Inc.

Electrical Consulting Engineering Group

E2.0

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D-Series Size 0 LED Area Luminaire

WDGE2 LED Architectural Wall Sconce Precision Refractive Optic

D-Series LED Surface Canopy

DSXO LED Area Luminaire

WDGE LED Family Overview

Ordering Information

Accessories

Performance Data

Performance Data

Light Output

Performance Data

Performance Data

Performance Data

Projected LED Lumen Maintenance

Electrical Load

Ordering Information



Accessories

Shield Accessories

Drilling

Performance Data

Performance Data

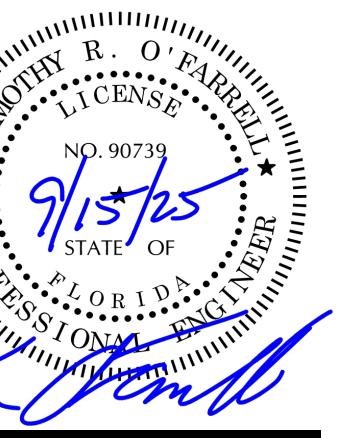
Performance Data

Light Output

Performance Data

Performance Data

Ordering Information



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1 CITY OF DELRAY BEACH
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ELECTRICAL SYMBOLS & SPECIFICATIONS

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ELECTRICAL SYMBOLS (NOTE: ALL SYMBOLS MAY NOT APPLY TO THIS PROJECT)

	LED LIGHT FIXTURE
	LED LIGHT FIXTURE WITH EMERGENCY BATTERY PACK, 1100 LUMENS NL = NIGHT LIGHT - UNSWITCHED EM = LINE SENSITIVE - OPERATES ONLY ON POWER OUTAGE - SWITCHED
	CEILING MOUNTED LIGHT FIXTURE
	WALL MOUNTED LIGHT FIXTURE
	LED LIGHT FIXTURE
	EXIT SIGN - SEE LIGHT FIXTURE SCHEDULE
	SURFACE-MOUNT EMERGENCY LIGHTING BATTERY PACK-SINGLE OR DOUBLE HEAD - SEE LIGHT FIXTURE SCHEDULE
	RECESSED EMERGENCY LIGHTING BATTERY PACK-SINGLE OR DOUBLE HEAD - SEE LIGHT FIXTURE SCHEDULE
	JUNCTION BOX IN ACCESSIBLE LOCATION ABOVE REMOVABLE CEILING W/ FLEXIBLE CONDUIT CONNECTION TO LIGHT FIXTURE
	FLEXIBLE CONDUIT CONNECTION TO EQUIPMENT
	JUNCTION BOX IN ACCESSIBLE LOCATION
	DUPLEX CONVENIENCE RECEPTACLE AT +15" A.F.F. TO BOTTOM OR AS NOTED
	FOUR-PLEX CONVENIENCE RECEPTACLE AT +15" A.F.F. TO BOTTOM OR AS NOTED
	ISOLATED GROUND RECEPTACLE AT +15" A.F.F. TO BOTTOM OR AS NOTED
	RECEPTACLE (TYPE AS SHOWN) AT + 42" A.F.F.
	SPECIAL USE RECEPTACLE. VERIFY NEMA NUMBER AND MOUNTING HEIGHT WITH EQUIPMENT
	SS ₃ S ₄ TOGGLE SWITCH - SINGLE POLE, 3-WAY, 4-WAY AT +42" OR AS NOTED ON PLANS.
	S _P SINGLE-POLE, ILLUMINATED HANDEL OR PILOT LIGHT TOGGLE SWITCH AT +42" OR AS NOTED ON PLANS
	S _M MOTOR RATED SWITCH WITH THERMAL PROTECTION
	S _V MOTOR SPEED CONTROL SWITCH. FURNISHED BY ELECTRICAL CONTRACTOR.
	PHOTOCELL - TORK #2100 - MOUNT ON ROOF AND AIM NORTH
	TS TIMESWITCH: TORK 'W' SERIES OR EQUAL
	CIRCUIT IN CONDUIT, CONCEALED, HASH MARKS INDICATE QUANTITY OF CONDUCTORS NO HASH MARKS INDICATE TWO CONDUCTORS, PLUS GROUND(S). (NOTE: WIRE AND OR CONDUIT SIZE SHOWN AT HOMERUN IS THE MINIMUM SIZE FOR THE ENTIRE CIRCUIT: #12 A.W.G. CU, 1/2" C. MINIMUM). LONG STROKE(S) INDICATE NEUTRAL CONDUCTOR(S), SHORT STROKES INDICATE PHASE OR SWITCHED CONDUCTORS AND LONG STROKES WITH DOT INDICATE GREEN INSULATED GROUNDING CONDUCTOR(S) TYPICAL. EACH ISOLATED GROUND CIRCUIT SHALL HAVE A SEPARATE NEUTRAL AND GROUND WIRE. BOND WIRES ARE NOT SHOWN ON DRAWINGS. BOND WIRES SHALL BE INSULATED CU. SIZED IN ACCORDANCE WITH N.E.C. #250.
	CIRCUIT IN CONDUIT CONCEALED IN FLOOR
	CIRCUIT IN CONDUIT CONCEALED IN WALLS OR ABOVE CEILING
	HOMERUN TO PANELBOARD OR AS NOTED
	PANELBOARD, MOUNT TOP OF PANEL AT + 6"-8", STUB (2) 3/4" E.C. INTO ACCESSIBLE CEILING SPACE ON FLUSH MOUNTED PANELS.
	MOTOR: SIZE AND RATING AS SHOWN. EF INDICATES 55-WATT, 120V. EXHAUST FAN
	A.C. MAGNETIC STARTER BY ELECTRICAL CONTRACTOR. HORSEPOWER, VOLTAGE AND PHASE REQUIRED. NUMBER OF POLES REQUIRED. FURNISH WITH (1) N.O. AUXILIARY CONTACT (120 V. CONTROL) SINGLE SPEED NON-REVERSING UNLESS OTHERWISE SHOWN ON PLANS
	DISCONNECT SWITCH - HORSEPOWER RATED, FUSED, NEMA 3R WHERE OUTSIDE. N.F. INDICATES NON-FUSED. (FUSE PER EQUIPMENT MANUFACTURER'S SPECIFICATIONS.)
	MOTOR CONTROLLER - FURNISHED WITH EQUIPMENT
	TELEPHONE OUTLET AT +15" TO BOTTOM OR AS NOTED WITH 3/4" C. UP INTO ACCESSIBLE CEILING SPACE UNLESS SHOWN OTHERWISE
	DATA OUTLET AT + 15" A.F.F. TO BOTTOM OR AS NOTED. STUB 3/4" C. INTO ACCESSIBLE CEILING SPACE
	DATA/TELEPHONE OUTLET AT + 15" A.F.F. TO BOTTOM OR AS NOTED. STUB 3/4" C. INTO ACCESSIBLE CEILING SPACE
	APPROVED TEMPERATURE SEAL-OFF AND EXPANSION JOINTS AS REQ'D BY N.E.C. ART. #300-7
	FLUSH FLOOR FOURPLEX OUTLET AND DATA/TELEPHONE OUTLET COMBO WITH BRASS DEVICE PLATE
	FLUSH FLOOR DATA RECEPTACLE WITH BRASS COVER PLATE AND 3/4" C. STUBBED TO ABOVE ACCESSIBLE CEILING LOCATION
	FLUSH FLOOR TELEPHONE RECEPTACLE WITH BRASS COVER PLATE AND 3/4" C. STUBBED TO ABOVE ACCESSIBLE CEILING LOCATION
	FLUSH FLOOR DUPLEX OUTLET WITH BRASS DEVICE PLATE
	FLUSH FLOOR FOURPLEX OUTLET WITH BRASS DEVICE PLATE
	ISOLATED GROUND RECEPTACLE "HUBBELL" # IG5263 20A, 125V, FLUSH FLOOR WITH BRASS DEVICE PLATE
	TELEVISION OUTLET AT + 15" TO BOTTOM OR AS NOTED. STUB 3/4" C INTO ACCESSIBLE CEILING SPACE
	DIMMER SWITCH AT + 42" A.F.F. "LUTRON" NP SERIES. SIZE DIMMER FOR LOAD. TRACK LIGHTING SHALL HAVE "LUTRON" NP2000 DIMMER
	A.D.A.-APPROVED FIRE ALARM STROBE
	A.D.A.-APPROVED FIRE ALARM HORN/STROBE
	A.D.A.-APPROVED FIRE ALARM PULL STATION
	A.D.A.-APPROVED SMOKE DETECTOR MOUNTED IN CEILING OR AS INDICATED
	CEILING MOUNTED OCCUPANCY SENSOR. LUTRON OR EQUAL.
	WP WEATHER PROOF
	EDF ELECTRIC DRINKING FOUNTAIN
	S.E.S. SERVICE ENTRANCE SECTION
	T.M.B. TELEPHONE MOUNTING BOARD: 4' X 8' X 3/4" PLYWOOD WITH #6 CU. BOND WIRE TO GROUNDING ELECTRODE SYSTEM
	T.T.C. TELEPHONE TERMINAL CABINET: 36" W. X 36" H X 6" D 16 GA. WEATHERPROOF HINGED LOCKABLE COVER, 5/8" PLYWOOD BACKBOARD. PROVIDE A #6 CU BOND TO GROUNDING ELECTRODE SYSTEM

NOTE: THESE DOCUMENTS ESTABLISH THE GENERAL
STANDARDS OF QUALITY AND DETAIL FOR
DEVELOPING A NEGOTIATED CONSTRUCTION
CONTRACT.

ELECTRICAL SYSTEM SPECIFICATIONS - DIVISION 16000

(SOME SECTIONS MAY NOT APPLY)

1. GENERAL CONDITIONS	6.2 Materials shall be suitable for intended use and location. Unless otherwise shown use NEMA-1 for interior areas and NEMA-3R for exterior areas.	12. WIRE	17.3 Test system for shorts and grounds. Faulty wiring shall be removed and replaced. Any device, apparatus or fixture installed showing substandard performance shall be removed and replaced as directed by the Architect/Engineer.
2. SCOPE OF WORK	6.3 The Architect/Engineer decision as to equal in grade and quality shall rule and be final for all electrical materials incorporated in this work. Where two or more similar type items are furnished, all shall be of the same manufacturer (e.g., all disconnect switches shall be of the same manufacturer) unless otherwise noted herein or shown on the drawings. All material and installation methods used shall be in accordance with the latest and approved electrical and mechanical engineering practices.	12.1 Soft drawn annealed copper (unless otherwise noted on plans) having conductivity of not less than 98% of that of pure copper, uniform in cross section, free from flaws, scales, and other imperfections. All wire larger than #10 shall be stranded.	17.4 Megger all systems neutrals to insure the neutral is not grounded within the system.
3. GENERAL DESCRIPTION	6.4 Service entrance equipment shall be in accordance with the requirements of the municipal governing body and serving utility. Shop drawings shall be submitted to the serving utility for written approval before ordering equipment.	12.2 Insulation: Type THHN/THWN, or XHHW for all branch circuit and feeder wiring.	17.5 All equipment rated at 1,000 amps or more, or 480 volts shall be tested for insulation breakdown prior to its being energized. Such equipment shall withstand for a period of one minute without breakdown, the application of a 60HZ alternating potential of 1,000V plus twice the rated voltage of the device.
3.1 The work in general shall consist of, but is not necessarily limited to the following.	6.5 Label equipment and each individual overcurrent device per Section 16000.22.	12.3 Sizes: No wire smaller than #12 unless otherwise noted on drawings.	17.6 After the electrical wiring system installation is completed and at such time as the Architect/Engineer or his authorized representative may direct, the Contractor shall conduct an operating test for approval. Equipment shall be demonstrated to operate in accordance with requirements of specifications. Test shall be performed in presence of Architect/Engineer or his representative.
3.1.1 Furnishing and installing all fixtures with lamps as indicated on the drawings and as specified herein unless noted.	6.6 Approved manufacturers are: Sun Valley, Square D, Cutler-Hammer, Siemens/ITE, General Electric	12.4 Feeder conductors #2 awg and larger may be copper or AA-8000 series aluminum alloy. Aluminum conductors shall be equal or larger ampacity to copper. Conduit fill shall not exceed 40% factor as described in NEC, annex C, table C1 (copper) or C1A (aluminum).	18. SHOP DRAWINGS
3.1.2 Furnishing and installing all electrical work, panels, service, conduit, wiring, etc., for all outlets and equipment.	6.7 PANELBOARDS	12.5 MISCELLANEOUS MATERIALS:	18.1 All data shall be submitted at one time, bound and indexed in an orderly manner. Prior to starting the work, submit to the Architect/Engineer for approval, six (6) sets of shop drawings of service (S.E.S.), panels, distribution sections, light fixtures, motor control centers, fire alarm system, dimmers, sound system, emergency generator, devices, transformers, labels as required by 16000.22, and all other equipment to be fabricated.
3.1.3 Furnishing and installing all telephone outlets, conduits with pull strings and telephone mounting boards including conduit from telephone mounting board to the building entrance as indicated on the plan.	6.8 STARTERS	12.6 Safety switches: Heavy duty, fused rejection type, minimum 200,000 A.C. rated. "NF" indicates not fused.	18.2 Procure shop drawings, wiring diagrams, etc., from other trades involved where such drawings may facilitate and expedite the work. Air conditioning and mechanical equipment shall be wired complete as per manufacturer's wiring diagrams furnished by the air conditioning and mechanical contractors.
3.1.4 Furnishing and installing a complete Fire Alarm system as indicated on plans.	6.9 TRANSFORMERS	12.7 Fuses: "Bussmann" or "Gould Shawmut" mfg. No substitutions unless by prior written approval from Engineer, or as noted on drawings.	19. DRAWINGS OF RECORD (AS-BUILT)
3.1.5 Include \$ hundred dollars) allowance for power and telephone company utility service charges. Difference between actual cost and allowance to be credited or billed to the Owner.	6.10 Label equipment per Section 16000.22	12.8 Conduit strap: Heavy gauge steel snap-on type.	19.1 As-built drawings shall be submitted in accordance with and if required by Division 1 - General Requirements.
3.1.6 Furnishing and installing all motor starters and control components, not specifically specified to be furnished in accordance with other sections of the specifications.	6.11 Approved manufacturers are: Square D, Cutler-Hammer, Siemens/ITE, General Electric	12.9 Electrical metallic tubing fittings: Equal to T&B compression type. Connectors shall have insulated bushings.	20. GUARANTEE
3.1.7 Furnishing and installing all power and wiring except that which is pre-wired in factory assembled equipment.	6.12 Label per Section 16000.22	12.10 Rigid conduit locknuts and bushings: Equal to T&B.	20.1 The Contractor shall guarantee all material and equipment to be free from defect of material and workmanship and shall replace or repair without cost to the owner all defective material and workmanship for a period of one year after final acceptance.
3.1.8 Installing all LINE VOLTAGE mechanical control wiring and associated controls which are furnished by the Mechanical Contractor (low voltage control wiring and controls shall be furnished and installed by the Mechanical Contractor).	6.13 Label equipment per Section 16000.22	12.11 Flexible conduit and fittings: Equal to California Conduit and Cable Company, Inc.	21. INSTRUCTIONS
3.1.9 Painting work as described under other sections of these specifications. Clean and prepare all surfaces ready for painting.	6.14 Label per Section 16000.22	12.12 Liquid tight conduit and fittings for all exterior and equipment connections.	21.1 Contractor shall instruct the Owner in the proper operating and maintenance of the equipment.
3.1.10 Provide temporary construction power as outlined below. This service shall be maintained throughout the entire job as the work progresses. Provide outlets at convenient points and in sufficient numbers so that no extension cord over 50 feet in length is required to reach any work point. Maintain general lighting in corridors, stairs, basement and other areas not receiving sufficient daylight required for safety. Remove temporary work as rapidly as required for or allowed by installation of permanent work.	6.15 Label per Section 16000.22	12.13 Outlet boxes, plaster rings, pull, and junction boxes, etc: Equal to RACO. Zinc coated or Cadmium plated sheet steel for indoor locations, cast aluminum for outdoor locations.	21.2 Contractor shall provide two (2) sets of operating and maintenance manuals for each piece of equipment provided by this discipline, only when such manuals are available from the manufacturer.
3.1.11 Certain items of work by other trades will be necessary for the completion of work under this division. Cooperate with other trades and arrange for these items to be performed in an orderly course.	6.16 Label per Section 16000.22	12.14 For all light fixtures: Octagon or 4" square boxes.	21.2.1 All manuals to be bound in a 3-ring binder and tabulated in an orderly manner.
3.1.12 This Contractor shall review the mechanical control requirements as specified and shown on the drawings and shall furnish and install all necessary conduit, wiring, boxes, protective devices, switches, etc., for the completion and proper operation of the system.	6.17 Label per Section 16000.22	12.15 For switches and receptacles: 4" or 4-11/16" square boxes.	22. LABELING
3.1.13 Review all drawings and all specifications for each section of work. Unless specifically noted otherwise, herein or elsewhere, furnish and install items of any electrical nature required for completion of work for other trades, whether or not same is shown or noted in this or other sections.	6.18 Label per Section 16000.22	12.16 Junction and pull boxes: 4" square minimum size. Provide with screwfastened covers located in accessible locations.	22.1 Labels shall be engraved, black on white melamine plastic laminate, 1/16" minimum thickness for signs up to 20 square inches or 8 inches long; 1/8" thick for larger sizes. Engraved legend shall be in white letters on black face with minimum 3/16" high letters. Labels shall be punched and fastened to equipment with aluminum rivets or self tapping stainless steel screws or number 10/32 stainless steel machine screws with nuts, flat and lock washers.
4. REGULATIONS AND CODES	6.19 Label per Section 16000.22	12.17 Conductors: Equal to Crouse-Hinds.	22.2 Label equipment with name, amperage, voltage, phase, and wires (i.e. Panel "A", 400A, 120/208V, 30,4W). Submit list of all labels with wording for review as per 16000.18.
The Contractor must comply with all state, municipal and federal safety laws, construction codes, ordinances and regulations relating to building and public health and safety. In addition, comply with rules and regulations of the State Fire Protection Code. Fire protection material must bear the Fire Underwriters Laboratories label.	6.20 Label per Section 16000.22	12.18 Device plates: "Hubbell", "Leviton", or equal. Receptacles: Duplex-20 amp #5362, isolated ground - 20 amp #IG-5362, GFCI- 20 amp #GF-5362. Switches: 20 amp #1221 single pole, 1222 double pole, 1223 three way, 1224 four way. Colors to be specified by Architect/Owner/tenant.	22.3 Equipment to be labeled shall include service (S.E.S.) and all overcurrent devices, distribution sections and all overcurrent devices, motor control centers (M.C.C.) and all overcurrent devices, fusible panelboards and all overcurrent devices, panels, starters and transformers. Label other equipment as noted on plans.
5. GENERAL REQUIREMENTS	6.21 Label per Section 16000.22	12.19 Lighting fixtures: Equal to as shown on fixture schedule or described on drawings, complete with lamps in original cartons and all canopies, stems, hangers, and accessories including all structural members required for proper mounting. All fluorescent fixture ballasts shall be energy saving type. Submit shop drawings to Architect/Engineer for approval by the same. Must be C.E.C. approved in Calif.	
5.1 The Contractor shall examine the premises and satisfy himself of existing conditions under which he will be obligated to operate in performing his part of the work or that will in any manner affect the work under the contract. The Contractor shall cooperate with other trades so that the installations of all equipment may be properly coordinated.	6.22 Label per Section 16000.22	12.20 Lamps: G.E. or equal and shall be for the maximum rated wattage of fixture unless otherwise shown on drawings.	
5.2 All equipment furnished shall fit the space available, with connection, etc., in the required locations and with adequate space for operating and servicing. The drawings are generally diagrammatic and indicate the manner and method of the installation, while the specifications and fixture list denote the type and quality of material and workmanship to be used. Where a conflict exists between the drawings and the specifications, the Contractor shall promptly notify the Architect/Engineer whose decision shall be final. No allowance will be made subsequently in this connection in behalf of the Contractor after award of the contract.	6.23 Label per Section 16000.22	12.21 Sleeves, inserts, openings	
6. EQUIPMENT AND MATERIAL	6.24 Label per Section 16000.22	12.22 Contractor shall layout and install his work in advance of pouring concrete floors or walls. Provide all sleeves and/or openings through floors or walls required for electrical conduits or ducts.	
6.1 All materials furnished under this contract shall be new (except as noted), free from defects of any character, shall conform with the standards of the Underwriters Laboratories, Inc. (U.L.) (or other nationally recognized Laboratory), in every case where such a standard has been established and shall be so labeled. It is the intention of these specifications to indicate a standard of quality for all materials incorporated in this work, and where materials are not specified herein and are required to complete the electrical installation, these materials shall be of first quality for use intended. Manufacturers of similar quality products will be considered unless the specifications or drawings indicate otherwise.</td			