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ELECTRICAL SPECIFICATIONS

REFERENCE NOTE: CONTRACTOR WILL OBTAIN AND REFER TO CAR WASH EQUIPMENT MANUFACTURER'S DATA SHEETS FOR WIRING ALL DEVICES (SPLIT BOLTS, TERMINATIONS, SUBCOMPONENTS LIKE FLOATS AND SWITCHES, MULTI-WIRE CABLES, PLCS AND TIMERS, SENSORS, ETC.). REFER TO OWNER PROVIDED SUPPLEMENTAL INFORMATION FOR PRICING AND CONCEPTUAL SCOPE. EQUIPMENT ON SITE MAY VARY. CONTACT OWNER REP FOR ASSISTANCE AS NEEDED.

1. MATERIALS AND INSTALLATION, AS A MINIMUM, ARE TO CONFORM WITH THE LATEST EDITION OF THE NATIONAL ELECTRIC CODE, THE LATEST EDITION OF N.F.P.A., AND THE LATEST EDITIONS OF THE LOCAL CODES AND ORDINANCES, INCLUDING ALL AMENDMENTS TO THE N.E.C. EQUIPMENT, WHERE APPLICABLE, WILL BE LISTED WITH THE UNDERWRITERS LABORATORIES, INC. QUALITY AND WORKMANSHIP ESTABLISHED BY DRAWINGS AND SPECIFICATIONS ARE NOT TO BE REDUCED BY THE ABOVE MENTIONED CODES.

2. BIDDERS ARE TO VISIT THE SITE AND FAMILIARIZE THEMSELVES WITH EXISTING CONDITIONS AND SATISFY THEMSELVES AS TO THE NATURE AND SCOPE OF WORK. THE SUBMISSION OF A BID WILL BE EVIDENCE THAT SUCH AN EXAMINATION HAS BEEN MADE. LATER CLAIMS FOR LABOR, EQUIPMENT, OR MATERIALS REQUIRED, OR FOR DIFFICULTIES ENCOUNTERED WHICH COULD HAVE BEEN FORESEEN HAD AN EXAMINATION BEEN MADE, WILL NOT BE ALLOWED.

3. ALL WORK SHALL BE PERFORMED BY A LICENSED ELECTRICAL CONTRACTOR IN A FIRST-CLASS WORKMANLIKE MANNER. THE COMPLETED SYSTEM IS TO BE FULLY OPERABLE AND ACCEPTANCE OF THIS SYSTEM BY THE ARCHITECT MUST BE A CONDITION OF THE SUB CONTRACT.

4. ALL WORK TO BE COORDINATED WITH OTHER TRADES TO AVOID INTERFERENCE WITH THE PROGRESS OF CONSTRUCTION.

5. CONTRACTOR TO GUARANTEE ALL MATERIALS AND WORKMANSHIP FREE FROM DEFECTS FOR PERIOD OF NOT LESS THAN ONE (1) YEAR FROM DATE OF ACCEPTANCE.

6. CORRECTION OF ANY DEFECTS TO BE COMPLETED WITHOUT ADDITIONAL CHARGE AND TO INCLUDE REPLACEMENT OR REPAIR OF ANY OTHER PHASE OF THE INSTALLATION WHICH MAY HAVE BEEN DAMAGED THEREBY.

7. ALL REQUIRED INSURANCE TO BE PROVIDED FOR PROTECTION AGAINST PUBLIC LIABILITY OF PROPERTY DAMAGE FOR THE DURATION OF THE WORK.

8. CONTRACTOR TO PAY FOR ALL PERMITS, FEES INSPECTIONS AND TESTINGS.

9. IT IS NOT THE INTENT OF THESE PLANS TO SHOW EVERY MINOR DETAIL OF CONSTRUCTION. THE CONTRACTOR IS EXPECTED TO FURNISH AND INSTALL ALL ITEMS FOR A COMPLETE ELECTRICAL SYSTEM, AND PROVIDE ALL NECESSARY DEVICES AND COMPONENTS FOR EQUIPMENT TO BE PLACED IN PROPER WORKING ORDER.

10. PROVIDE THREE COPIES OF TYPEWRITTEN SYSTEMS OPERATING INSTRUCTIONS AND THREE COPIES OF OPERATING AND MAINTENANCE BROCHURES FOR EACH PIECE OF EQUIPMENT INCLUDING MANUFACTURER'S DESCRIPTIVE BULLETINS WITH WIRING DIAGRAMS, PARTS LIST AND SPECIFIC MAINTENANCE INSTRUCTIONS, WARRANTIES AND GUARANTEES. BROCHURES SHALL BE BOUND IN PERMANENT TYPE BINDERS AND SUITABLY INDEXED.

10.1. AT PROJECT COMPLETION AND BEFORE THE FINAL OBSERVATION OF THE WORK, PROVIDE TO THE OWNER WRITTEN, ORAL AND HANDS-ON DEMONSTRATIONS OF THE OPERATION, FUNCTION AND MAINTENANCE OF EACH PIECE OF EQUIPMENT PROVIDED UNDER THIS CONTRACT. INSTRUCTION TO THE OWNER SHALL BE SUFFICIENT FOR THE OWNER TO COMPLETELY UNDERSTAND THE OPERATION AND MAINTENANCE FOR EACH PIECE OF EQUIPMENT.

11. SUPPORT ALL ITEMS COVERED BY THIS SPECIFICATION DIRECTLY FROM BUILDING STRUCTURAL MEMBERS INDEPENDENT OF ANY CEILINGS OR ANY OTHER INSTALLED ITEM. PANELBOARDS AND SWITCHES MAY BE ATTACHED TO SUITABLY REINFORCED WALLS. GROUND OR SLAB MOUNTED EQUIPMENT SHALL BE MOUNTED ON A SEPARATE FOUR INCH HIGH CONCRETE SLAB.

11.1. DO NOT ATTACH ITEMS OF THIS SPECIFICATION TO HVAC DUCTWORK, CEILING GRIDS AND CEILING SUPPORT MEMBERS, PIPING OR OTHER EQUIPMENT UNLESS SPECIFICALLY SHOWN OTHERWISE. WHERE APPLICABLE, ALL EQUIPMENT INCLUDING CONDUIT SHALL BE SUPPORTED FROM OVERHEAD USING WALL, FLOOR OR ROOF STRUCTURES USING GALVANIZED CHANNEL OR ANGLE MEMBERS FOR A RIGID SUPPORT. POSITION SUPPORTS AND EQUIPMENT SUCH THAT ACCESS THROUGH LAY-IN CEILINGS OR PANELS IS NOT IMPAIRED AND ALL CODE REQUIRED CLEARANCES ARE MAINTAINED.

11.2. WHERE APPLICABLE, UNDER NO CIRCUMSTANCES IS THE ELECTRICAL CONTRACTOR TO ATTACH TO OR SUPPORT FROM ANY BAR JOIST BRIDGING. ANY SUPPORTS TO THE BAR JOISTS OR ANY STRUCTURAL SYSTEMS SHALL BE APPROVED BY THE ARCHITECT. ALL SUPPLEMENTAL ANGLE OR CHANNEL IRON REQUIRED TO SUPPORT EQUIPMENT OF THIS SPECIFICATION SHALL BE PROVIDED FOR BY THE ELECTRICAL CONTRACTOR.

12. UNLESS OTHERWISE NOTED ON THE DRAWINGS OR REQUIRED BY THE ARCHITECT, THE FOLLOWING MOUNTING HEIGHTS SHALL APPLY:

TOGGLE SWITCHES	4'-0" TO CENTER
RECEPTACLES, TELEPHONE OUTLETS	1'-3" TO BOTTOM
PANELBOARDS	6'-6" MAXIMUM TO TOP
MOTOR CONTROL EQUIPMENT, DISCONNECT SWITCHES	5'-0" MAXIMUM CENTERLINE
WIREWAYS, TOP FEED (ADJUSTABLE)	4'-0" MAXIMUM TO BOTTOM
WIREWAYS, BOTTOM FEED (ADJUSTABLE)	5'-6" MAXIMUM TO BOTTOM 0'-8" ABOVE TOP TO
WIRING DEVICES ABOVE COUNTERS, BENCHES	BOTTOM OF DEVICE

12.1 ALL MOUNTING HEIGHTS MAY BE ADJUSTED IN THE FIELD TO REDUCE VISIBILITY AT OUTSIDE AND IN CERTAIN INSIDE AREAS. COORDINATE HEIGHTS OF ALL EQUIPMENT WITH SCREEN WALLS, FENCING, OTHER EQUIPMENT, ETC., WITH ARCHITECT BEFORE ROUGH-IN. THIS WILL INCLUDE WALL AND RACK MOUNTED EQUIPMENT INSIDE OR OUTSIDE. REFER TO "EQUIPMENT LAYOUT".

12.2. UPON PERMISSION OF THE ARCHITECT, MOUNTING HEIGHTS MAY BE ADJUSTED TO SIMPLIFY CUTTING OF MASONRY UNITS OR TO FACILITATE FURNITURE, BASE AND CABINET ARRANGEMENTS. ALL MOUNTING HEIGHTS MAY BE FIELD ADJUSTED BY THE ARCHITECT WITHOUT ANY ADDITIONAL COST.

13. ELECTRICAL INSTALLATION TO MEET ALL STANDARD REQUIREMENTS OF LOCAL POWER AND TELEPHONE COMPANIES. ELECTRICAL CONTRACTOR SHALL CONTACT LOCAL POWER AND TELEPHONE COMPANIES PRIOR TO START OF CONSTRUCTION AND COORDINATE HIS EFFORTS WITH THEIRS.

13.1. THE ELECTRICAL CONTRACTOR SHALL MEET AND COORDINATE THE TEMPORARY AND PERMANENT POWER WITH THE LOCAL POWER COMPANY AT THE SITE PRIOR TO CONSTRUCTION. AT THAT TIME, THE CONTRACTOR SHALL COORDINATE ALL RELATED WORK WITH THE UTILITY COMPANY'S RESPONSIBILITIES TO MEET THE OWNER'S SCHEDULE. THE COST FOR THESE SERVICES SHALL BE PAID FOR BY THE GENERAL CONTRACTOR.

14. ALL WIRING SHALL BE IN CONDUIT UNLESS OTHERWISE NOTED, MINIMUM WIRE SIZE SHALL BE #12 AWG, EXCLUDING CONTROL WIRING WHICH SHALL BE NO SMALLER THAN #16AWG. ALL CONDUCTORS SHALL BE COPPER WITH THWN/THHN INSULATION. CONDUCTORS #10 AND SMALLER MAY BE SOLID; ALL THOSE #8 AND LARGER TO BE STRANDED. WIRING MAY BE STRANDED ONLY WHEN TERMINATED IN SCREW LUG OR PRESSURE PLATE TYPE CONNECTION.

14.1. ALL ELECTRICAL CONDUCTORS SHALL BE INSTALLED IN AN APPROVED RACEWAY, EMT, RIGID GALVANIZED METAL OR SCHEDULE 40 P.V.C. MAXIMUM NUMBER OF 120V AND 277V CIRCUITS ALLOWED IN A COMMON CONDUIT SHALL BE SIX (6). THE CONTRACTOR SHALL STRICTLY CONFORM TO THE N.E.C. REQUIREMENTS OF DERATING FOR CONDUCTOR AMPACITY AND CONDUIT FILL. NO CONDUITS SHALL BE INSTALLED, EXPOSED ON ROOF.

14.2. FLEXIBLE METAL CONDUIT SHALL BE USED FOR CONNECTIONS TO LIGHTING FIXTURES, FIXED APPLIANCES AND MOTORS, WHEREVER FLEXIBILITY IS REQUIRED, AND FOR VIBRATING EQUIPMENT.

14.3 FLEXIBLE CONDUIT EXPOSED TO MOISTURE SHALL BE LIQUID TIGHT FLEXIBLE METAL CONDUIT OR NONMETALIC CONDUIT WITH A GROUND CONDUCTOR FOR BONDING AT EACH END.

14.5. CONDUCTORS SHALL BE COLOR CODED AS FOLLOWS:

208V SYSTEM	480V SYSTEM	PHASE SEQUENCE
NEUTRAL - WHITE	NEUTRAL - GRAY	ABC, TOP TO BOTTOM LEFT TO RIGHT, FRONT TO BACK
PHASE A - BLACK	PHASE A - BROWN	
PHASE B - RED	PHASE B - ORANGE	
PHASE C - BLUE	PHASE C - YELLOW	
GRD.CON - GREEN	GRD.CON - GREEN WITH YELLOW STRIPES	

15.1 ALL UNDERGROUND RACEWAYS SHALL BE MINIMUM 3/4", GALVANIZED RIGID STEEL CONDUIT OR SCHEDULE 40 PVC. ALL OTHER RACEWAYS TO COMPLY WITH GOVERNING CODES. WHERE RIGID STEEL IS USED, IT SHALL BE COMPLETELY COATED WITH AN ALKALI AND RUST RESISTANT BITUMASTIC PAINT, KOPPER NO. 50, AND THREADS SHALL BE COATED WITH ZINC CHROMATE. RIGID STEEL SHALL ALSO BE USED WHEN CONDUIT IS EXPOSED TO EXTERIOR ENVIRONMENT SUCH AS EXTERIOR OF BUILDING.

15.2. ALL UNDERGROUND SERVICE CONDUITS/RACEWAYS ENTERING BUILDING OR STRUCTURE FROM OUTSIDE TO INSIDE SHALL BE SEALED, INCLUDING SPARE CONDUITS. SEALANT SHALL BE SUITABLE FOR THIS USE.

15.3. ALL UNDERGROUND PVC CONDUIT RUNS SHALL HAVE RIGID STEEL ELBOWS AND RIGID STEEL SECTIONS AT SLAB PENETRATIONS WHERE SUBJECT TO POSSIBLE DAMAGE.

15.3. FITTINGS FOR RIGID METAL CONDUIT AND EMT SHALL BE HOT-DIPPED GALVANIZED STEEL AND SHALL BE OF A TYPE ESPECIALLY DESIGNED AND MANUFACTURED FOR THEIR PURPOSE. RIGID CONDUIT JOINTS FOR SINGLE CONDUIT RUNS SHALL BE MADE WITH THREADED FITTINGS MADE UP TIGHT WITH AT LEAST FIVE THREADS FULLY ENGAGED. DOUBLE SIDE BY SIDE OR LOOPED CONDUIT RISERS FOR RIGID CONDUIT RISING OUT OF CONCRETE AND TERMINATING IN AN OUTLET OR JUNCTION BOX WITHIN A WALL MAY USE RIGID METAL THREADLESS FITTINGS AND SET SCREW TYPE FITTINGS SHALL NOT BE USED FOR RIGID METAL CONDUIT.

15.4. EMT CONDUIT JOINTS SHALL BE MADE WITH WRENCH APPLIED COMPRESSION FITTINGS. SET SCREW FITTINGS SHALL NOT BE USED FOR EMT.

15.5. FITTINGS FOR NON-METALLIC CONDUIT SHALL BE SOLVENT WELDED.

15.6. WHERE THEY ENTER BOXES OR CABINETS THAT DO NOT HAVE THREADED HUBS, RIGID METAL CONDUITS SHALL BE SECURED IN PLACE WITH GALVANIZED LOCKNUTS INSIDE AND OUTSIDE THE CABINET. PROVIDE PLASTIC INSULATING BUSHING AT THE THREADED END OF ALL RIGID METAL CONDUITS. EMT CONDUITS SHALL HAVE A LOCKNUT FASTENED COMPRESSION FITTING WITH BUSHING, OR A FITTING WITH AN INSULATED SMOOTH THROAT AT THE CABINET, WITH THE CONDUIT INSERTED ON THE OUTSIDE AT THE FITTING.

16. OUTLET BOXES SHALL BE PRESSED STEEL IN DRY LOCATIONS, CAST ALLOY WITH THREADED HUBS IN WET OR DAMP LOCATIONS, AND BE OF SPECIAL CONSTRUCTION FOR OTHER CLASSIFIED AREAS. ALL BOXES SHALL BE RECESSED (FLUSH) IN WALLS OR CEILINGS WHENEVER POSSIBLE. THE CAR WASH TUNNEL SHALL BE CONSIDERED A WET ENVIRONMENT.

16.1. OUTLET BOXES SHALL BE OF SUFFICIENT SIZE TO ACCOMMODATE DEVICES SHOWN. MINIMUM SIZE 4"x4"x1-1/2" DEEP SQUARE WITH APPROPRIATE ROUGH-IN RING. OUTLET BOXES FOR LIGHTING FIXTURES SHALL BE ONE PIECE, 4 INCH OCTAGONAL, GALVANIZED STEEL, NOT LESS THAN 1-1/2 INCHES DEEP WITH FIXTURE STUD FASTENED THROUGH FROM BACK OF BOX. OUTLET BOXES FOR TELECOMMUNICATIONS SHALL BE FOUR INCHES SQUARE, 2-1/8 INCHES DEEP.

16.2. OUTLET BOXES INSTALLED BETWEEN STUDS SHALL UTILIZE METAL TELESCOPIC MOUNTING BRACKETS B-LINE BB2 SERIES OR CADDY TSGB SERIES.

17. DISCONNECT SWITCHES SHALL BE H.P. RATED, GENERAL DUTY, QUICK-MAKE, QUICK-BREAK TYPE. ENCLOSURES SHALL BE AS REQUIRED BY N.E.C. AND LOCATION (WEATHERPROOF, ETC.). ENGRAVED LAMINATED PLASTIC IDENTIFICATION PLATES SHALL BE FURNISHED AND INSTALLED ON ALL DISCONNECT SWITCHES, CONTACTORS AND STARTERS. A LABEL MAKER WITH TYPEWRITTEN CHARACTERS MAY BE USED IN SUITABLE ENVIRONMENTS.

17.1. ALL FUSES FOR SAFETY SWITCHES SHALL BE DUAL ELEMENT, CARTRIDGE TYPE. FUSES SHALL BE THOSE MANUFACTURED BY EITHER BUSSMAN, SHAWMUT OR LITTLEFUSE. THE CONTRACTOR SHALL FURNISH TO THE OWNER ONE SPARE FUSE FOR EACH SIZE AND TYPE OF FUSE INSTALLED. FUSES 600 AMPS OR LESS SHALL BE CLASS RK1, LITTLEFUSE LL(NORS) RK, SHAWMUT AZD OR A6D, BUSSMAN LP(NORS) RK.

18. ALL GENERAL PURPOSE SWITCHES AND RECEPTACLES SHALL BE THE PRODUCT OF A SINGLE MANUFACTURER. CATALOG NUMBERS LISTED ARE LEVITON: HOWEVER, COMPARABLE DEVICES BY PASS & SEYMOUR OR BRYANT WILL BE ACCEPTED. COLOR OF DEVICES AND PLATES SHALL BE WHITE AND PLATES SHALL BE STAINLESS STEEL, UNLESS OTHERWISE NOTED IN THIS SET.

A. SWITCHES: LEVITON #CSB1-20I, 20 AMP
B. RECEPTACLES: LEVITON #BR20-I, 20 AMP

NOTE: ALL OTHER REQUIRED DEVICES SHALL MATCH IN COLOR AND STYLE.

19. MAIN ELECTRIC SERVICE EQUIPMENT, CONDUIT WORK, MOTORS, PANELBOARDS AND ALL OTHER ELECTRICAL EQUIPMENT SHALL BE EFFECTIVELY AND PERMANENTLY GROUNDED. GROUNDING CONNECTIONS AND CONDUCTOR SIZES SHALL BE IN ACCORDANCE WITH REQUIREMENTS OF THE NATIONAL ELECTRICAL CODE, ARTICLE 250 AND LOCAL ORDINANCES.

19.1. FOR ALL CIRCUITS, PROVIDE A SEPARATE GROUNDING CONDUCTOR. THIS SHALL INCLUDE RUNS OF NON-METALLIC CONDUIT. THE GROUNDING CONDUCTOR SHALL BE SIZED IN ACCORDANCE WITH NEC TABLE 250.122 AND SHALL RUN IN THE CONDUIT WITH THE CIRCUIT CONDUCTORS. THE GROUNDING CONDUCTOR SHALL BE BARE OR GREEN JACKET COLORED INSULATED COPPER. CONDUIT RUNS SHALL BE INCREASED IN SIZE WHERE NECESSARY TO ACCOMMODATE THE GROUNDING CONDUCTOR IN ADDITION TO CIRCUIT CONDUCTORS.

19.2. ALL OUTLET BOXES AND JUNCTION BOXES SHALL BE PERMANENTLY GROUNDED USING A SCREW TERMINAL INTEGRAL TO THE BOX CONSTRUCTION. THE GROUNDING CONDUCTOR SHALL TERMINATE AT THIS POINT WITH A JUMPER TO THE DEVICE SUCH THAT REMOVAL OF THE DEVICE SHALL NOT DISTURB THE GROUNDING CONDUCTOR CONNECTION AND GROUNDING OF THE BOX. THIS REQUIRES A SPLICE TO THE INCOMING GROUNDING CONDUCTOR. RE: 4E4.

19.3. THE COMMON NEUTRAL OF MULTI-WIRE BRANCH CIRCUITS SHALL BE SPLICED WITH A JUMPER TO THE DEVICE SUCH THAT REMOVAL OF THE DEVICE SHALL NOT INTERRUPT THE CONTINUITY OF THE NEUTRAL CONDUCTOR.

19.4. WHERE SHOWN ON THE DRAWINGS, GROUND RODS TO BE 5/8 INCH DIAMETER COPPER CLAD STEEL, EIGHT FEET LONG. WHERE MULTIPLE GROUND RODS ARE CALLED FOR, THE MINIMUM SPACING IS SIX FEET BETWEEN EACH ROD. NON-INCASED ROD CONNECTIONS TO BE ACCESSIBLE AND MADE WITH AN APPROVED BRASS CONSTRUCTED JAW-TYPE BOLT-ON-CLAMP. PROVIDE PICTURES TO ENGINEER OF GROUNING TERMINATION IN MDP, AND THE GROUND RODS INSTALLED FOR APPROVAL.

20. LOAD DATA IS BASED ON INFORMATION GIVEN ENGINEER AT THE TIME OF DESIGN. VERIFY ALL EQUIPMENT NAMEPLATE RATINGS BEFORE ORDERING.

21. FURNISH AND INSTALL DISCONNECT SWITCHES, WIRING AND CONNECTIONS ON HVAC SYSTEM AS SHOWN ON PLANS. ELECTRICAL CONTRACTOR SHALL VERIFY AND COORDINATE WITH MECHANICAL CONTRACTOR REGARDING SUPPLY AND INSTALLATION OF ALL REQUIRED CONTROLS. TEMPERATURE CONTROLS SHALL BE UNDER DIVISION 15 WORK.

22. THE DISCONNECT SWITCH, FUSE SIZES, BREAKER SIZES, CONDUIT AND WIRE SHOWN FOR ALL HVAC ARE SIZED PER THE MANUFACTURER, AND MODEL NUMBER LISTED ON THE EQUAL MANUFACTURER, OR OTHER MANUFACTURER MECHANICAL PLANS. IF THERE IS AN PROVIDED, THE GENERAL CONTRACTOR SHALL BARE ANY ADDITIONAL COST INCURRED IF THE ELECTRICAL IS NOT EQUAL TO SPECIFICATIONS.

23. ALL SWITCHGEAR, PANELS, STARTERS, CONTACTORS ETC., SHALL BE THE PRODUCT OF A SINGLE MANUFACTURER, THE SYSTEM DESIGN IS BASED ON SIEMENS; HOWEVER, COMPARABLE EQUIPMENT BY G.E., SQUARE D, AND CUTLER HAMMER ONLY WILL BE ACCEPTABLE. TANDEM AND HALF-SPACE CIRCUIT BREAKERS SHALL NOT BE USED.

23.1. PRINTED CIRCUIT INDEX SHALL BE AFFIXED TO INSIDE SURFACE OF EACH PANELBOARD DOOR, CLEARLY INDICATING AREA AND TYPE OF LOAD SERVED BY EACH BRANCH CIRCUIT PROTECTIVE DEVICE, INCLUDING SPARES. HAND PRINTED WILL NOT BE ACCEPTED.

23.2. ENGRAVED, LAMINATED PLASTIC IDENTIFICATION PLATES SHALL BE FURNISHED AND INSTALLED ON ALL PANELS AND SWITCHGEAR. PLATES SHALL BE AFFIXED TO FRONT OF PANELS, INDICATING PANEL NAME, VOLTAGE AND AMPERAGE.

24. CONTRACTOR SHALL BE RESPONSIBLE FOR SEALING ALL CONDUIT PENETRATIONS MADE THROUGH FIRE RATED WALLS, CEILINGS, SLABS, ETC. PENETRATION SEALS SHALL BE PER U.L. ASSEMBLY STANDARDS.

25. REQUESTS FOR PRIOR APPROVALS SHALL BE PROVIDED IN A SHOP DRAWING SUBMITTAL FORMAT FOR LIGHT FIXTURES, SWITCHGEAR, WIRING DEVICES, AND ALL OTHER PROVIDED SYSTEMS. PROVIDE TWO (2) COPIES, TEN (10) DAYS PRIOR TO BID DATE FOR ARCHITECT'S APPROVAL. ARCHITECT'S APPROVAL OF THE PRIOR APPROVAL PACKAGE WILL BE CONSIDERED PRELIMINARY. FINAL APPROVAL WILL BE CONTINGENT UPON REVIEW OF FINAL SHOP DRAWINGS. ALL PROPOSED ALTERNATES MUST BE INDUSTRY STANDARD EQUALS TO THE ITEMS SPECIFIED AS THE BASIS OF DESIGN; HOWEVER, IF THE ITEMS ARE NOT CONSIDERED EQUAL BY THE ENGINEER, IT SHALL BE DISAPPROVED FOR FINAL SUBMITTAL. ALTERNATE SITE LIGHTING FIXTURE SUBMITTALS SHALL INCLUDE A COMPUTER GENERATED POINT-BY-POINT PHOTOMETRIC CALCULATION BASED ON THE PLANS (FIXTURE CHARACTERISTICS AND POLE PLACEMENT SHALL NOT BE ALTERED). THIS DIAGRAM SHALL SHOW COMPOSITE VALUES OF THE ILLUMINANCE PROJECTED FROM THE ARRANGEMENT OF LIGHT SOURCES AS SHOWN ON PLAN. COMPUTER PLOT DIAGRAM SHALL ALSO SHOW THE LOCATIONS OF THE POLES, SPACING BETWEEN POLES, THE MOUNTING HEIGHT USED IN THE CALCULATIONS, AND THE FIXTURE CATALOG NUMBER BEING USED.

26. CONTRACTOR SHALL MAINTAIN A COMPLETE SET OF CONTRACT DRAWINGS AT JOB SITE WITH COLORED MARKINGS INDICATING PROGRESS OF WORK. THIS SET OF CONTRACT DRAWINGS IS TO BE SEPARATE FROM AND IN ADDITION TO CONTRACTOR'S CONSTRUCTION SET. EVERY UNIT OF EQUIPMENT, DEVICE, CONDUIT AND WIRE IS TO MARKED WHEN INSTALLED. USE GREEN TO INDICATE INSTALLATION AS SHOWN ON DRAWINGS AND USE RED TO INDICATE FIELD CHANGES. UPON COMPLETION OF WORK, THIS SET OF CONTRACT DRAWINGS IS TO BE TURNED OVER TO, AND BECOME PROPERTY OF THE ARCHITECT.

27. THE OWNER RESERVES THE RIGHT TO REVISE THE DRAWING FROM TIME TO TIME TO INDICATE CHANGES IN THE WORK. WHEN REVISED DRAWINGS AND/OR ANY REVISIONS ARE ISSUED, THE CONTRACTOR SHALL EVALUATE THE CHANGES PROMPTLY. EACH REVISION SHALL BE REVIEWED AND ANY CHANGES TO THE COST OF THE WORK SHALL BE LINE-ITEM LISTED SHOWING THE APPROPRIATE CHANGES, ADDITIONS AND DELETIONS. SUBMIT THROUGH THE GENERAL CONTACTOR FOR REVIEW. THE CONTRACTOR SHALL NOT PROCEED WITH THE REVISED WORK WITHOUT PRIOR WRITTEN APPROVAL BY THE ARCHITECT ON ANY CHANGES TO THE COST OF THE WORK.

28. IF ELECTRICAL CONTRACTOR HAS QUESTIONS, OR BELIEVES THAT CERTAIN PORTIONS OF THE WORK REQUIRE REVISIONS, IT IS THEIR RESPONSIBILITY TO BRING THIS TO THE ATTENTION OF THE ARCHITECT/OWNER IMMEDIATELY. THE ELECTRICAL CONTRACTOR WILL NOT BE COMPENSATED FOR ANY CHANGES TO THE CONTRACT DOCUMENTS MADE WITHOUT WRITTEN PRIOR APPROVAL FROM THE ARCHITECT/OWNER.

29. PROVIDE NEW LIGHTING FIXTURES COMPLETE WITH LAMPS, LED DRIVERS, REFLECTORS, PLASTER FRAMES, LOUVERS, STEM HANGERS, ETC., AND AS DESCRIBED ON THE DRAWINGS.

29.1 B. CONTRACTOR SHALL PROVIDE AND INSTALL THE SPECIFIED MANUFACTURER AND MODEL NUMBER OF LIGHT FIXTURE(S) AND LAMPS AS INDICATED ON THE LIGHTING FIXTURE SCHEDULE AND / OR DRAWINGS. THE CONTRACTOR SHALL PROVIDE ADEQUATE INFORMATION ON ANY PROPOSED EXCEPTION TO THE SPECIFIED LIST NO LESS THAN THREE (3) DAYS PRIOR TO BID DATE. PROVIDE MANUFACTURER AND MODEL NUMBER OF PROPOSED EXCEPTIONS AND, IF REQUESTED, PROVIDE CUT SHEET, PHOTOMETRICS, AND SAMPLES. FIXTURE SUBMITTALS NOT AS SPECIFIED AND PROVIDED AFTER BID WITHOUT PRIOR APPROVAL WILL NOT BE ACCEPTED FOR REVIEW. PROPOSED ALTERNATE MANUFACTURERS AND EXCEPTIONS TO THE FIXTURE SCHEDULE, IF APPROVED, WILL NOT RELIEVE CONTRACTOR OF RESPONSIBILITY FOR FIXTURE QUALITY, PHOTOMETRIC PERFORMANCE AND OWNER SATISFACTION. SUCH SITUATION SHALL BE CORRECTED AT CONTRACTOR'S EXPENSE AND TO OWNER'S SATISFACTION.

29.2. LED DRIVERS SHALL BE INTERNALLY PROTECTED BY USE OF TWO INTERNAL, TEMPERATURE-SENSITIVE, NON-RESETING PROTECTORS, EQUAL TO G.E. WATTMISER, CLASS "P".

29.3. EXCEPT AS NOTED BELOW, THE ELECTRICAL CONTRACTOR SHALL SUPPORT EACH LIGHTING FIXTURE DIRECTLY FROM BUILDING STRUCTURAL MEMBERS OR CEILING SUPPORT MEMBERS INDEPENDENT OF ANY CEILINGS OR OTHER INSTALLED ITEM. PROVIDE SUPPLEMENTAL ANGLE OR CHANNEL TRAPEZE SUPPORTS REQUIRED TO SPAN ACROSS PIPING, DUCTWORK OR OTHER OBJECTS WHERE DIRECT ABOVE THE FIXTURE SUPPORT IS NOT POSSIBLE. DO NOT ATTACH TO THE DUCTWORK; ALL SUPPORT AND WEIGHT OF THE FIXTURE MUST BE BORNE BY THE STRUCTURE. THESE SUPPORTS SHALL BE INSTALLED BY THE ELECTRICAL CONTRACTOR AS REQUIRED BY FIELD CONDITIONS WITHOUT ADDITIONAL COST. CEILING FRAMING MEMBERS SHALL NOT BE USED TO SUPPORT FIXTURES EXCEPT IN SPECIFIC AREAS WHERE CEILING SUPPORTS FOR THIS PURPOSE HAVE BEEN SPECIFIED ELSEWHERE IN THESE SPECIFICATIONS. UNLESS OTHERWISE SPECIFIED, LIGHTING FIXTURES SHALL BE PERMANENTLY INSTALLED AND CONNECTED TO THE WIRING SYSTEM.

29.4. ALL EXIT SIGNS, EMERGENCY LIGHTS AND NIGHT LIGHTS SHALL BE CONNECTED TO THE LOCAL CIRCUIT AHEAD OF ANY SWITCHING.

29.5. COORDINATE MOUNTING HEIGHT OF ALL WALL MOUNTED EXTERIOR LIGHTS WITH ARCHITECTURAL ELEVATIONS PRIOR TO ROUGH-IN.

30. AT SUCH TIMES AS THE ARCHITECT DIRECTS, THE ELECTRICAL CONTRACTOR SHALL CONDUCT IN THE ARCHITECT'S PRESENCE OPERATING TESTS TO DEMONSTRATE THAT THE ELECTRICAL SYSTEMS ARE INSTALLED AND WILL OPERATE PROPERLY AND IN ACCORDANCE WITH THE REQUIREMENTS OF THE SPECIFICATIONS. THE ELECTRICAL CONTRACTOR SHALL FURNISH INSTRUMENTS AND PERSONNEL REQUIRED FOR SUCH TESTS. ANY WORK AND MATERIALS TESTED AND FOUND VARYING FROM THE REQUIREMENTS OF THE DRAWINGS OR SPECIFICATIONS SHALL BE REPLACED BY THE ELECTRICAL CONTRACTOR WITHOUT ADDITIONAL COST OF THE OWNER.

30.1. THE ELECTRICAL CONTRACTOR SHALL BALANCE THE LOAD OF THE COMPLETED PROJECT SUCH THAT NO PANELBOARD OR DISTRIBUTION DEVICE IS OVERLOADED, AND SO THAT THE LOAD BETWEEN PHASES IS WITHIN 15% OF EACH OTHER.

31. EXCAVATING AND BACKFILLING FOR INSTALLATION OF UNDERGROUND AND UNDERSLAB ELECTRICAL FACILITIES SHALL BE BY THE ELECTRICAL CONTRACTOR. ALL DEBRIS AND EXCESS DIRT SHALL BE REMOVED FROM THE BUILDING SITE. BACKFILL MATERIAL SHALL BE FREE OF GRASS, ROOTS AND OTHER DEBRIS. BACKFILL SHALL BE INSTALLED IN ACCORDANCE WITH ACCEPTABLE METHODS.

31.1. BACKFILL MATERIAL SHALL BE IN MAXIMUM 9 INCH LAYERS, FULLY TAMPED BY MECHANICAL MEANS, THEN BACKFILLED IN LAYERS TO GRADE LEVEL. ANY SETTLING OF THE TRENCH AREA SHALL BE FILLED AND TAMPED SO THAT AT PROJECT COMPLETION NO CHANGE OF GRADE ELEVATION IS NOTICED AT THE TRENCH AREA.

32. THE ELECTRICAL CONTRACTOR SHALL FURNISH AND INSTALL NEMA RATED CONTACTORS WHERE SHOWN ON THE DRAWINGS. ALL CONTACTORS SHALL BE SUITABLE FOR USE AT THE VOLTAGE RATING OF THE CIRCUITS CONTROLLED AND SHALL HAVE THE NUMBER OF POLES AND AMPERE RATING SHOWN ON THE DRAWINGS AS A MINIMUM. WHERE AMPERE RATINGS ARE NOT SHOWN, RATINGS SHALL BE 30 AMPERES AS A MINIMUM.

32.1. CONTACTORS SHALL BE OF THE SINGLE COIL, ELECTRICALLY OPERATED, ELECTRICALLY HELD TYPE, NEMA RATED. PROVIDE HAND-OFF-AUTO CONTROLS OR ON-OFF CONTROLS AS PER DRAWINGS. CONTACTS SHALL BE SELF ALIGNING SILVER ALLOY TYPE AND BE RENEWABLE FROM THE FRONT OF THE UNIT. CONTACTORS SHALL BE FULLY RATED AND MARKED FOR USE IN MOTOR SERVICE WHERE CIRCUITS FEED PRIMARILY INDUCTIVE LOADS. "LIGHTING" TYPE CONTACTORS ARE TO BE USED ONLY FOR CIRCUITS FEEDING PRIMARILY LIGHTING LOADS.

33.1. ACCEPTABLE MANUFACTURERS

1. SQUARE D
2. GENERAL ELECTRIC
3. CUTLER-HAMMER
4. SIEMENS

33.2. DRY TYPE TRANSFORMERS: ANSI/NEMA ST 20; FACTORY-ASSEMBLED, AIR COOLED DRY TYPE TRANSFORMERS; RATINGS AS SHOWN ON THE DRAWINGS.

33.3. INSULATION SYSTEM AND AVERAGE WINDING TEMPERATURE RISE FOR RATED KVA AS FOLLOWS:

RATING	CLASS	RISE (DEGREE C)
1 - 15	185	115
16 - 500	220	150

33.4. CASE TEMPERATURE SHALL NOT EXCEED 40 DEGREES C RISE ABOVE AMBIENT AT ITS WARMEST POINT.

33.5. WINDING TAPS, TRANSFORMERS LESS THAN 15 KVA: TWO 5% BELOW RATED VOLTAGE, FULL CAPACITY TAPS ON PRIMARY WINDING.

33.6. WINDING TAPS, TRANSFORMERS 15 KVA AND LARGER: ANSI/NEMA ST 20.

33.7 SOUND LEVEL: ANSI/NEMA ST 20.

33.8. BASIC IMPULSE LEVEL: 10 KV FOR TRANSFORMERS LESS THAN 300 KVA, 30 KV FOR TRANSFORMERS 300 KVA AND LARGER.

33.9. GROUND CORE AND COIL ASSEMBLY TO ENCLOSURE BY MEANS OF A VISIBLE FLEXIBLE COPPER GROUNDING STRAP.

33.10. MOUNTING: TRANSFORMERS 75 KVA AND LESS SHALL BE SUITABLE FOR WALL, FLOOR OR TRAPEZE MOUNTING; TRANSFORMERS LARGER THAN 75 KVA SHALL BE SUITABLE FOR FLOOR OR TRAPEZE MOUNTING.

33.11. COIL CONDUCTORS: CONTINUOUS WINDING WITH BRAZED OR WELDED TERMINATIONS.

33.12. ENCLOSURE: ANSI/NEMA ST 20; TYPE 1 FOR INDOOR APPLICATION, TYPE 3R FOR OUTDOOR OR WET LOCATION APPLICATION. PROVIDE LIFTING EYES OR BRACKETS.

33.13. ISOLATE CORE AND COIL FROM ENCLOSURE USING VIBRATION-ABSORBING MOUNTS.

33.14. NAMEPLATES: INCLUDE TRANSFORMER CONNECTION DATA AND OVERLOAD CAPACITY BASED ON RATED ALLOWABLE TEMPERATURE RISE.

33.15. EFFICIENCY: COMPLY WITH APPLICABLE CURRENT FEDERAL ENERGY POLICY ACT.

33.16 DRY TYPE TRANSFORMER INSTALLTION

33.17. SET TRANSFORMER PLUMB AND LEVEL, ON 4 IN. HIGH CONCRETE HOUSEKEEPING PAD FOR FLOOR MOUNTED UNITS, ON STRUT ASSEMBLIES FOR WALL OR CEILING MOUNTED UNITS.

33.18. USE FLEXIBLE CONDUIT 2 FT. MINIMUM LENGTH, FOR CONNECTIONS TO TRANSFORMER CASE. MAKE CONDUIT CONNECTIONS TO SIDE PANEL OF ENCLOSURE.

33.19. MOUNT TRANSFORMERS ON VIBRATION ISOLATION PADS SUITABLE FOR ISOLATING THE TRANSFORMER NOISE FROM THE BUILDING STRUCTURE.

33.20. PROVIDE SEISMIC RESTRAINTS ANCHORED PER LOCAL WIND CODES.

33.21. INSTALL NAMEPLATE.

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ELECTRICAL SYMBOL SCHEDULE

▭	LIGHTING FIXTURE
├─•─┤	STRIP LIGHTING FIXTURE.
○ , □	LIGHTING FIXTURE
◠ , ♀	WALL MOUNTED LIGHTING FIXTURE
•-□ , •-○	POLE MOUNTED LIGHTING FIXTURE
1A a A	LIGHTING FIXTURE TYPE A: CONNECT TO CIRCUIT NO. 1 IN PANEL A. CONNECT TO SWITCH INDICATED BY LETTER "a". WHERE NO LETTER IS SHOWN, CONNECT TO SWITCH(ES) (SINGLE POLE OR THREE-WAY) IN ROOM.
⊗ , ⊗	EXIT LIGHT: SHADED AREA DENOTES FACE. WALL MOUNT WHEN SHOWN WITH BRACKET, CEILING MOUNT OTHERWISE. COORDINATE WITH DOOR SWINGS. PROVIDE ARROW(S) AS NOTED.
	WALL MOUNTED EMERGENCY BATTERY BACKED UP LIGHTING FIXTURE. MOUNT AT 7'-8" AFF.
PC	PHOTOCELL: MOUNT ON WALL AS HIGH AS POSSIBLE.
TC	TIME CLOCK
LC	LIGHTING CONTACTOR
S	SINGLE POLE TOGGLE SWITCH
S_3	THREE WAY TOGGLE SWITCH
S_4	FOUR WAY TOGGLE SWITCH
S	SWITCH FURNISHED BY MECHANICAL. INSTALLED AND CONNECTED BY ELECTRICAL.
S_O	WALL MOUNTED, LINE VOLTAGE OCCUPANCY SENSOR DEVICE AND SWITCH.
φ	DUPLEX RECEPTACLE
⌖	DOUBLE DUPLEX RECEPTACLE
φ GF	DUPLEX RECEPTACLE WITH INTEGRAL GROUND FAULT PROTECTION.
φ EWC	DUPLEX RECEPTACLE CONCEALED BEHIND EWC.
▲	SPECIAL RECEPTACLE, SEE PLANS.
Ⓙ	JUNCTION/PULL BOX
Ⓖ	JUNCTION/PULL BOX WITH CONTROL CABLE ROUTED TO IT. COORDINATE WITH GROUPING CHART TO DETERMINE WHICH RELAYS ARE BEING CONNECTED TO AND WHAT QUANTITY.
Ⓒ 3:2	TELECOMMUNICATIONS OUTLET, WITH 1"C ROUTED CONCEALED TO ACCESSIBLE CEILING OR ATTIC SPACE. CONDUIT SHALL BE BENT/INSTALLED SUCH THAT 0'-6" MINIMUM OF CONDUIT IS PARALLEL WITH CEILING PLANE. NUMBERS SEPARATED BY COLON INDICATE NUMBER OF CABLES/JACKS. PROVIDE 3 DATA CABLES/JACKS AND 2 VOICE CABLES/JACKS. WHERE NUMBERS ARE NOT SHOWN, PROVIDE 2 DATA CABLES/JACKS AND 1 VOICE CABLE/JACK.
───	TELEPHONE BACKBOARD. 4'-0"H x 2'-0"W x 3/4"D THICK PLYWOOD. RE: SPECS.
C/B	CIRCUIT BREAKER
WP	WEATHERPROOF, NEMA 3R OR AS NOTED ON PLANS.
48" AFF	MOUNT 48" ABOVE FINISHED FLOOR TO CENTER LINE.
RE: 1E2.1	REFER TO DETAIL 1, SHEET E2.1.
+8" AC	MOUNT 8" ABOVE COUNTER TOP TO BOTTOM OF DEVICE.
1-1/2" EC	EMPTY CONDUIT WITH PULL WIRE.
GEC	GROUNDING ELECTRODE CONDUCTOR
①	REFERENCE TO ELECTRICAL KEYNOTE NUMBER 1
▬ A	SURFACE MOUNTED PANEL DESIGNATED "A".
T-L	DRY TYPE TRANSFORMER: L DENOTES PANEL SERVED BY TRANSFORMER.
── W ──	SURFACE METAL RACEWAY
────	CONDUIT RUN CONCEALED IN WALL OR CEILING
── – ──	CONDUIT RUN EXPOSED
– – – – – –	CONDUIT RUN CONCEALED UNDER FLOOR OR UNDERGROUND.
●	CONDUIT TURN UP OR DOWN AS NOTED ON PLANS
N	NEUTRAL CONDUCTOR
G	EQUIPMENT GROUNDING CONDUCTOR
60/3	DISCONNECT SWITCH WITH EQUIPMENT GROUND LUG (SIZE/POLE): 60A, 3 POLE, NON-FUSIBLE SWITCH.
AHU-1	MECHANICAL EQUIPMENT PROVIDED BY MECHANICAL ELECTRICAL SHALL CONNECT. RE: MECHANICAL EQUIPMENT SCHEDULES FOR DESCRIPTION. COORDINATE WITH MECHANICAL.
Ⓒ	CAMERA JACK WITH 1"C ROUTED CONCEALED TO ACCESSIBLE CEILING OR ATTIC SPACE. CONDUIT SHALL BE BENT/INSTALLED SUCH THAT 0'-6" MINIMUM OF CONDUIT IS PARALLEL WITH CEILING PLANE. WHERE INSTALLED EXPOSED OUTSIDE, PROVIDE 1"C. CONNECT OWNER SUPPLIED RG-59 TO THE CAMERA FROM THE OFFICE AND TERMINATE INTO THE CAMERA SYSTEM THERE. WHERE INSTALLED ON EXTERIOR WALLS, PROVIDE A PENETRATION INTO THE BUILDING AND A SINGLE GANG JACK FLUSH MOUNTED IN THE WALL FOR THE OWNER CAMERA TO CONNECT TO. WHERE INSTALLED REMOTE FROM THE BUILDING, PROVIDE MULTIPLE CONDUCTORS GANGED IN THE NOTED CONDUITS UNTIL THE FIRST CAMERA THEN ROUTE AS NOTED ABOVE FROM THERE.

GENERAL NOTE

1. COORDINATE EXTERIOR CIRCUITS WITH THE LIGHTING CONTACTOR FOR CONTROLS. RE: 4E4.02 FOR DETAILS.
2. COORDINATE SITE SECURITY CONDUIT WITH CIVIL AND ARCHITECTURAL DRAWINGS AND PROVIDE CAMERA CONDUIT AND INSTALLATION REQUIREMENTS PRIOR TO BID.
3. COORDINATE ELECTRICAL PROVISIONS WITH EQUIPMENT INSTALLER PRIOR TO BID.
4. REFER TO CONDUIT SCHEDULE IN SUPPLEMENTAL DRAWINGS FOR QUANTITIES AND ROUTING OF UNDERGROUND CONDUITS.
5. PROVIDE CONDUITS AND CONDUCTORS FOR APPROXIMATELY 30 CAMERAS THROUGHOUT THE SITE. ARCHITECT SHALL PROVIDE LOCATIONS AT A LATER DATE.

KEYNOTES

1" = 1'-0"

① POWER FOR TIDAL WAVE SIGNS. CONNECT BOTH SIGNS AT EACH ENTRY TO THIS CIRCUIT TO BE CONTROLLED VIA THE CONTACTORS. COORDINATE THE EXACT LOCATION AND ELEVATIONS WITH ARCHITECTURAL DRAWINGS.

② PROVIDE SEPARATE ROUTING AND JUNCTION BOXES FOR POWER/LIGHTING AND DATA/CAMERAS.

③ PROVIDE POWER FOR THE ATTENDANT STAND FROM THE BUILDING LIGHTING AND CONTROL ACCORDINGLY. STRAP LIGHTS TO HIPPED ROOF MEMBERS.

④ ELECTRICIAN SHALL SET AND WIRE (1) BOOM VAC LED FIXTURE PER BOOM VAC POST. FIXTURE PROVIDED BY OTHERS. DAISY CHAIN CONDUIT BETWEEN BOOM STANCHION. MOUNT JBOX TO ACCESS DOOR.

⑤ IRRIGATION PANEL POWER. VERIFY EXACT LOCATION OF THE IRRIGATION CONTROLLER WITH CIVIL.

⑥ NOT USED.

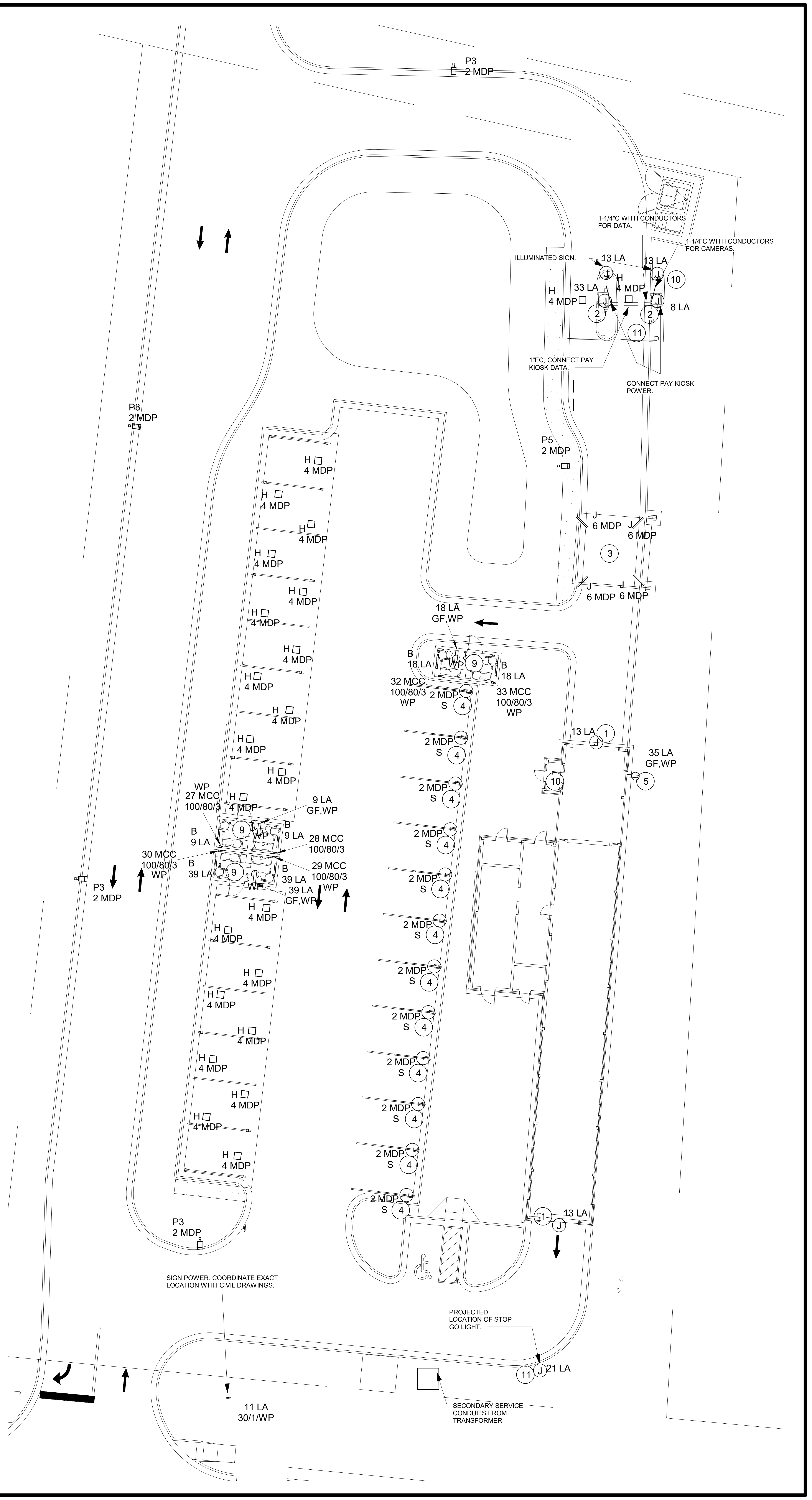
⑦ NOT USED.

⑧ NOT USED.

⑨ VERIFY VAC HOUSE MOTOR COUNT AND HORSEPOWER RATINGS WITH OWNER PRIOR TO UNDERGROUND CONDUIT ROUGH-IN. OPERATOR'S FINAL EQUIPMENT ORDER IS NOT PLACED AS TIME OF PRINT OF PUBLICATION.

⑩ PROVIDE (3) 1-1/2" HOMERUN CONDUITS TO PROPERTY LINE FOR CATV, TELEPHONE, AND INTERNET. COORDINATE LOCATION WITH SERVICE PROVIDER.

⑪ CONTRACTOR SHALL FURNISH AND INSTALL TRAFFIC LOOPS FOR GATES AND LICENSE PLATE READER. REFER TO OWNER EXHIBIT FOR LOOP WIRE DRAWINGS FOR DETAILS.



ELECTRICAL SITE PLAN

1" = 20'-0"

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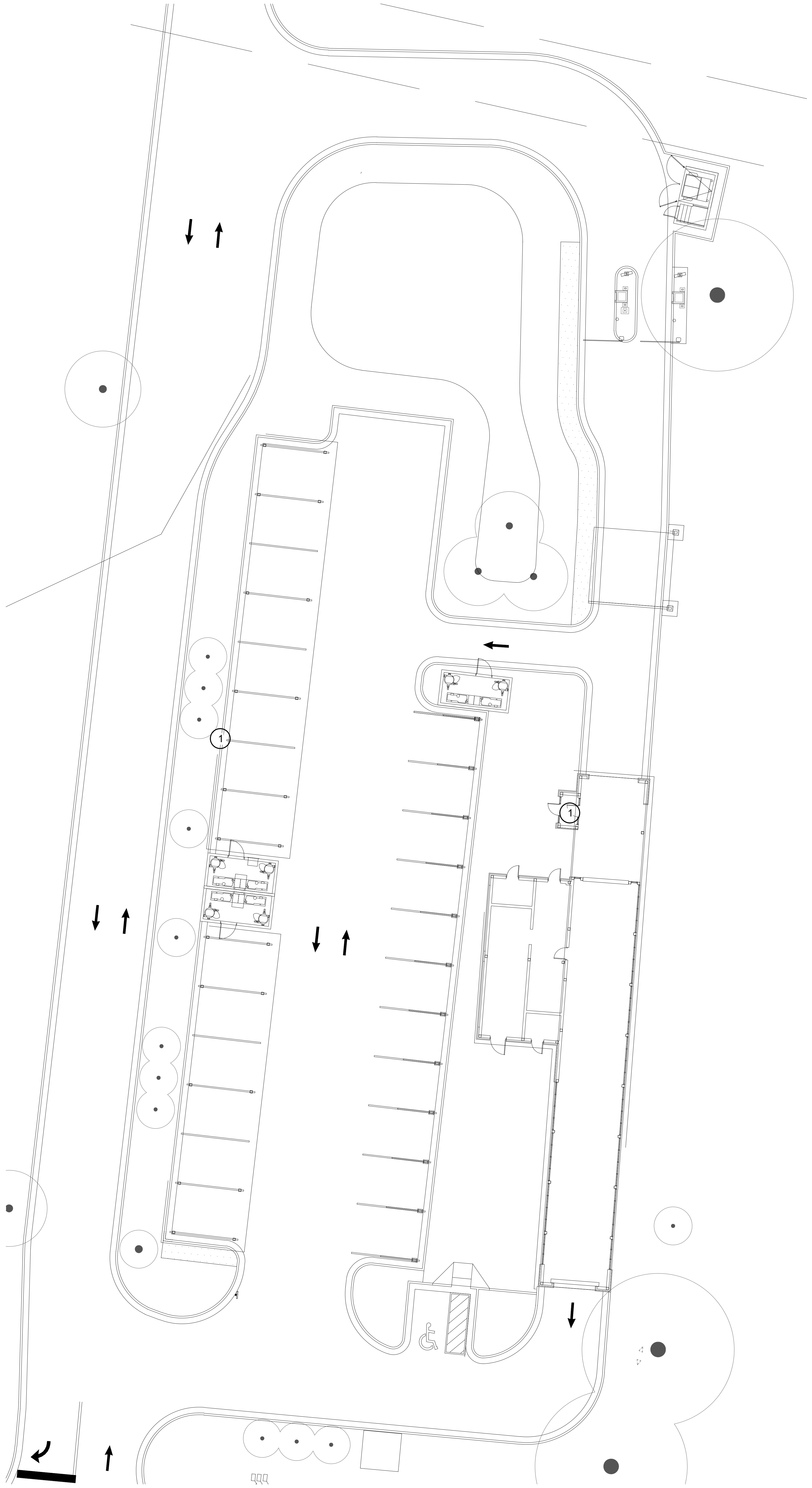

ELECTRICAL SITE PLAN

1" = 20'-0"

GENERAL NOTE

1. RUN (2) EC FOR EACH CAMERA LOCATION IN MARKUP.
2. ECS MAY BE LOOPED BACK TO HR.
3. REFER TO OWNER PROVIDED CAMERA SCHEDULE FOR MOUNTING AND AIM.
4. PROVIDE FOR APPROXIMATELY 35 CAMERA LOCATIONS THROUGHOUT THE SITE. EXACT LOCATIONS SHALL BE PROVIDED BY ARCHITECT AT A LATER DATE.

KEYNOTES

① HOME RUN (HR) CAMERA ECS UNDER COUNTER.

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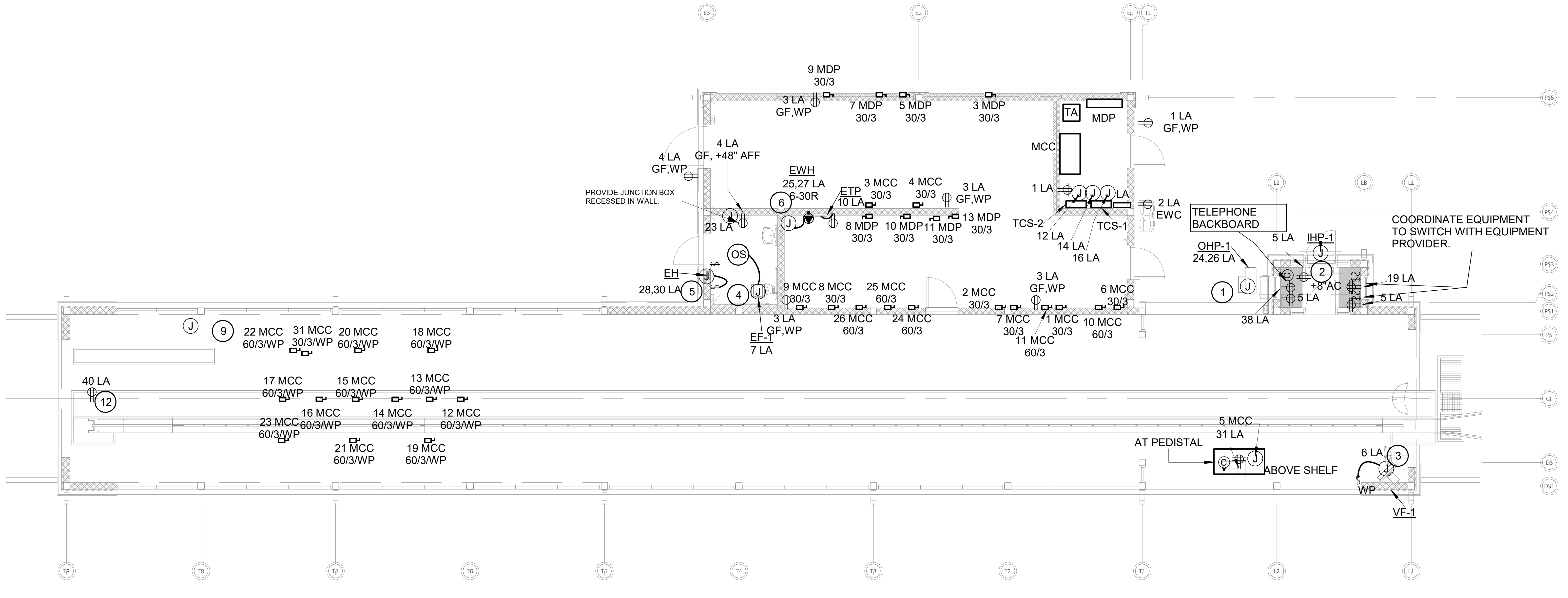
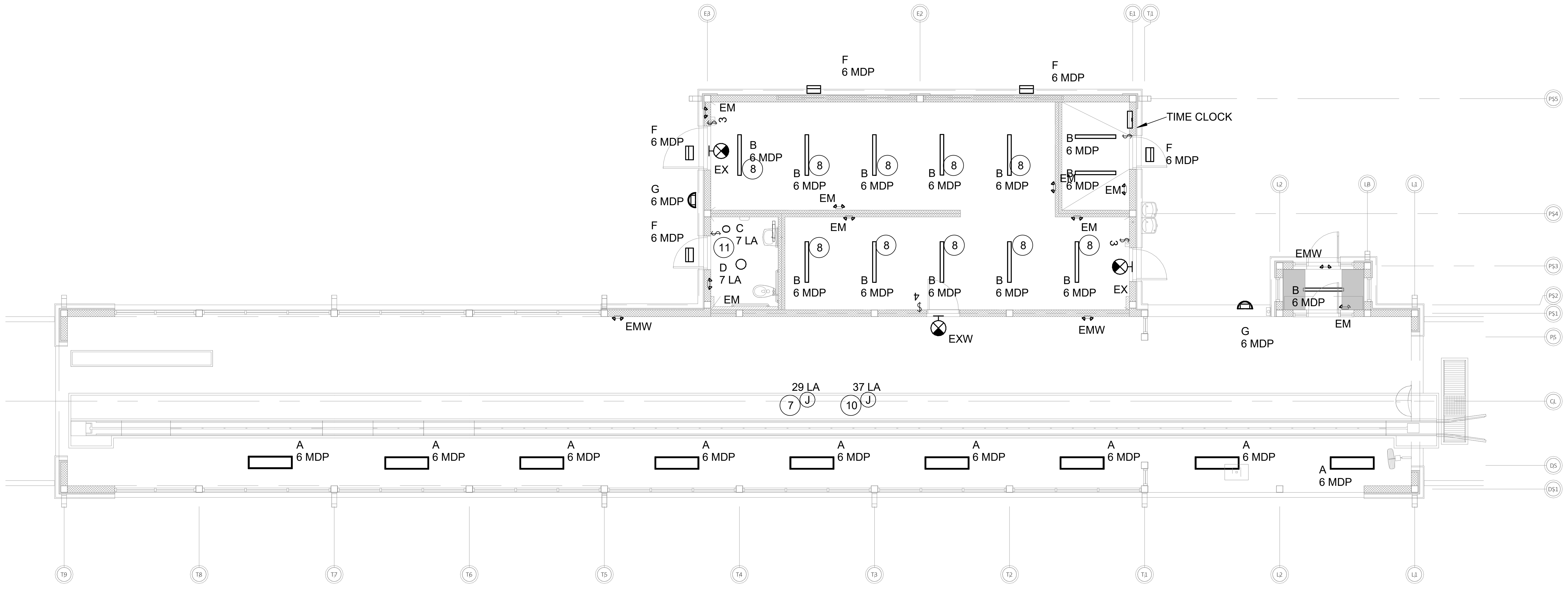


POWER FLOOR PLAN

1/8" = 1'-0"



LIGHTING FLOOR PLAN

1/8" = 1'-0"

KEYNOTES

① CONNECT WALL MOUNTED OHP. UNIT SHALL HAVE A FACTORY MOUNTED DISCONNECT. ROUE ALL CONDUIT CONCEALED.

② CONNECT WALL MOUNTED IHP TO OHP THROUGH THERMOSTAT PROVIDED BY MECHANICAL CONTRACTOR. FOLLOW MANUFACTURER'S INSTALLATION INSTRUCTION FOR WIRE SIZE AND QUANTITY. ROUTE ALL CONDUIT CONCEALED AND JUNCTION BOXES RECESSED.

③ CONNECT VF-1 THROUGH 20A, 1 HP RATED, SINGLE POLE, WEATHERPROOF TOGGLE SWITCH AS SHOWN. LABEL SWITCH "VF-1 DISCONNECT." ROUTE ALL CONDUIT CONCEALED.

④ CONNECT EF-1. FAN SHALL HAVE FACTORY MOUTNED DISCONNECT SWITCH. ROUTE ALL CONDUIT CONCEALED.

⑤ CONNECT EH THROUGH 20A, TWO POLE, 208V RATED TOGGLE SWITCH AS SHOWN. MOUNT SWITCH ADJACENT TO EH AND LABEL SWITCH AS "EH DISCONNECT." ROUTE ALL CONDUIT CONCEALED.

⑥ PROIVDE PLUG AND CORD CONNECTION FOR CONNECTING EWH TO RECEPTACLE AS SHOWN. MOUNT RECEPTACLE ADJACENT TO EWH. PLUG SHALL NOT BE MOUNTED HIGHER THAN 6'-0"AFF.

⑦ PROVIDE JUNCTION BOX AND UNISTRUT SUPPORT MEMBER IN CUPOLA TO POWER OWNER PROVIDED LIGHTING FIXTURE. CONTROL WITH THE BUILDING SIGNAGE LIGHTS.

⑧ PROVIDE UNISTRUT SUPPORT SUSPENDED BY ALL THREAD CONNECTED TO THE CEILIING STRUCTURE IN ORDER TO MOUNT THE NOTED LIGHTING FIXTURE AT 12'-0"AFF.

⑨ ELECTRICIAN SHALL LOCATE DISCONNECTS FOR THE BLOWERS IN THIS CORNER THEN PROVIDE EMC OVERHEAD TO THE LADDER RACK. PROVIDE FLEX CONDUIT DOWN FROM THE LADDER RACK TO EACH RESPECTIVE BLOWER. PROVIDE 36" OF SLACK FOR REPOSITIONING OF BLOWERS IF NEEDED.

⑩ CONTRACTOR SHALL PROVIDE ELECTRICAL CONNECTION FOR RGB LED LIGHTING FOR OWNER PROVIDED FIXTURES THAT ARE TO BE PROVIDED AND MOUNTED BY OTHERS. VERIFY QUANTITY AND LOCATIONS WITH SUPPLEMENTAL DRAWINGS AND CONNECT TO NOTED CIRCUIT.

⑪ POWER LIGHTS IN RESTROOM FROM THE SAME CIRCUIT WHICH FEEDS THE EXHAUST FAN. CONNECT BEHIND THE SAME OCCUPANCY SENSOR SO THAT BOTH FAN AND LIGHTS ACTIVATE WHEN SENSOR ACTIVATES.

⑫ PROVIDE RECEPTACLE INSIDE OF TUNNEL PULSE COUNTER AND ANTI COLLISION BOX. VERIFY LOCATION OF BOX IN FIELD.

GENERAL NOTE

1. DIRECT CONNECTIONS SHALL BE ALLOWED FOR EQUIPMENT BEING SERVED BY THE MCC PROVIDED THAT INDIVIDUALLY LOCKABLE OVERCURRENT IS PROVIDED IN THE MCC FOR EACH PIECE OF EQUIPMENT. IF THIS IS NOT DONE THEN THE NEMA 4X DISCONNECT SHALL BE REQUIRED AS SHOWN.
2. PROVIDE BLOCKING AND UNISTRUT SUPPORT AS REQUIRED TO MOUNT FIXTURES.
3. REFER TO OWNER PROVIDED CAR WASH SHEETS FOR PROPER EQUIPMENT LAYOUT LOCATION OF MCC, MDP, AND LA POWERED CONNECTIONS.
4.

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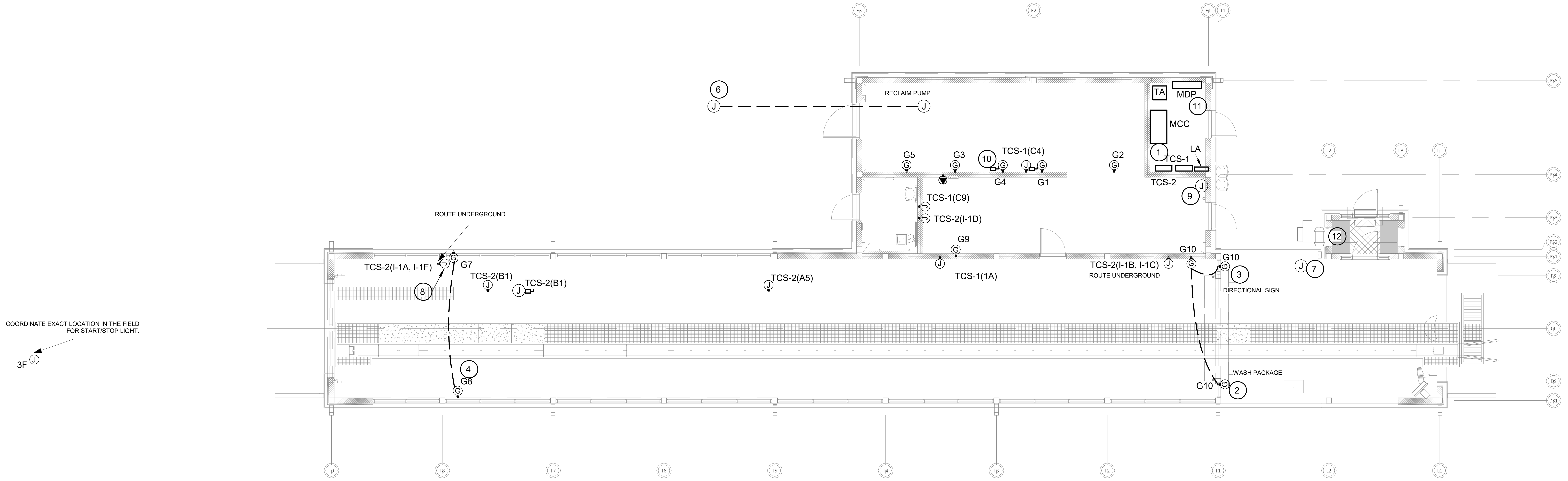

POWER FLOOR PLAN

1/8" = 1'-0"

KEYNOTES

1. PROVIDE A 6"X6" WIREWAY ATTACHED TO THE BOTTOM OF TCS-1 WITH OPEN ACCESS TO PANEL TCS-1. ROUTE WIREWAY ALONG THE WALL AND TERMINATE INTO MSP FOR CONTROL CONDUCTORS (2#16 PER). PROVIDE AND ROUTE CONTROL CONDUCTORS IN THIS WIREWAY TO CONNECT IN MSP FOR ITEMS ON RELAY GROUP G6. PROVIDE AN ADDITIONAL 2#16 FOR THE CONVEYOR CONTROLS BETWEEN TCS-1 AND MSP.
2. CONNECT CONTROLS FOR GROUPING G10 NOT REFERENCED BY A KEYNOTE TO GROUPING G10 AS NORMAL, AND CONTINUE TO THIS LOCATION. TERMINATE INTO WASH PACKAGE.
3. CONNECT CONTROLS FOR GROUPING G10 NOT REFERENCED BY A KEYNOTE TO GROUPING G10 AS NORMAL, AND CONTINUE TO THIS LOCATION. TERMINATE INTO DIRECTIONAL SIGNAGE.
4. ROUTE CONNECTION TO G8 THROUGH G7.
5. ROUTE F3 UNDERGROUND TO THE STOP/GO LIGHT. COORDINATE EXACT LOCATION WITH THE ARCHITECT PRIOR TO INSTALL.
6. ROUTE 2 #16 IN 1/2"C TO CONTROL TANK C FLOAT FROM THE RECLAIM PUMP. PROVIDE ADDITIONAL CONDUIT STUBBED UP NEXT TO TANK 3 FOR FUTURE TANK 2 CONNECTION.
7. PEDISTAL EPO. ROUTE 2#16, 1/2"C TO TCS-1.
8. EXIT EPO. ROUTE 2#16, 1/2"C TO TCS-1.
9. AIR SAFETY EPO. ROUTE 2#16, 1/2"C TO TCS-1.
10. HYDRAFLEX CONTROLLER MOUNTED HIGH ON WALL. PROVIDE TWO 3/4"EC, ONE TO AQUALAB 1, AND ONE TO AQUALAB 2. COORDINATE EXACT LOCATION OF AQUALAB UNITS IN THE FIELD.
11. PROVIDE TELEPHONE BACKBOARD IN ELECTRICAL ROOM. REFER TO SUPPLEMENTAL DRAWINGS FOR INFORMATION.
12. PROVIDE SERVER EQUIPMENT UNDER OPERATOR BOOTH CONNECTED BACK TO THE TELEPHONE BACKBOARD.

GENERAL NOTE

1. PROVIDE 2#16, IN 1/2"C TO EACH JUNCTION BOX NOTED ON THIS PLAN WITH A RELAY DESIGNATION. CONNECT ONE END TO THE RELAY NOTED, AND PROVIDE 10' OF ADDITIONAL SLACK ON THE OTHER END NOTED ON THE PLANS. FOR TCS CONNECTION TO DEMA VALVES, MAC VALVES, AQUALABS, AND TUNNEL RGB-LIGHTS CONTROLS PROVIDE 18/8
2. THERMOSTAT WIRE.

REFER TO OWNER PROVIDED CAR WASH SHEETS FOR PROPER EQUIPMENT LAYOUT AND LOCATIONS OF CONTROLS.

RELAY SCHEDULES

REFER TO OWNER PROVIDED TUNNEL CONTROL STATION PANEL SCHEDULES AND CONTROL WIRING SCHEMATICS. REQUEST CURRENT TCS SCHEDULE FROM OWNER REP PRIOR TO PULLING WIRE.

TCS-1						
	A	B	C	D	E	F
1	HORN	SPARE	SPARE	(MSP9) TIREBR/ROCK 1	(MSP10) TIREBR/ROCK 2	SPARE
2	(MSP2) OMNI	TURBO BLAST HP	SPINNERS HP	MIRROR RINSES HP	SPARE	(MSP11,12) LOWER 1&2
3	(MSP13,14) BLOWER 3&4	(MSP15,16) BLOWER 5&6	(MSP17,18) BLOWER 7&8	(MSP19,20) BLOWER 9&10	(MSP21,22) BLOWER 11 &12	BLOWER 13&14
4	WRAP 1 H2O	Tirebrsh 1 air	UNDERBODY	SPINNER FLIP	OMNI FLIP	SPARE
5	WRAP 2 H2O	TOPBRSH 1 H2O	LOWER DETAIL H2O	TOPBRSH 1 AIR	SPARE	TIREBRSH2 PASS AIR
6	TOPBRSH 2 H2O	PRERINSE 1	FINAL RINSE	TIREBSH2 DRV AIR	TURBO FLIP	WRAP 1 AIR
7	LAVA	SCENT	SPARE	WRAP 2 FOAM	SPARE	WRAP 2 AIR
8	RAIN X	1ST FOAMER	TRIFOAM TOP	SUPER LO	SPARE	HOT WAX
9	CTA 1	PRERINSE 2	LAVA SEAL	TIRESHINE CHEM	SPARE	SPARE
10	ROLLER UP	CTA 2	TOPBRUSH 2 AIR	PRESOAK	CERAMIC 1	CERAMIC 2
11	DRYING AGENT	CTA 3	TRIFOAM SIDES	CERAMIC 3	SPARE	SPARE
12	SPARE	SPARE	SPARE	SPARE	SPARE	SPARE?

TCS-2						
	A	B	C	D	E	F
1	BLOWER LIGHTS	BUFF N READY	SUPER LO LIGHT	HOT WAX LIGHT	TOPBRUSH 1 LT	SPARE
2	LAVA SEAL LIGHT	TOPBRUSH 2 LT	SPARE	TIRESHINE LIGHT	BUFF STAND LT	CERAMIC LT.
3	SPARE	$25 WASH LT	$20 WASH LT	$15 WASH LT	$10 WASH LT	STOP/GO LIGHT
4	SPARE	$20 CONF LIGHT	$15 CONF LIGHT	$10 CONF LIGHT	$25 CONF LIGHT	PROJECTOR
5	RAIN X LIGHT	LAVA LIGHT	TRIFOAM LIGHT	PRERINSE 2 LT	FINAL RINSE LT	SPARE
INPUTS						
	I-1A	I-1B	I- 1C	I-1F	I-1D	
	PULSE	ENTER SWITCH	TIRESWITCH	ANTICOLLISION	ICS PULSE	

CONTROLS GROUPING

GROUPING DESTINATION	RELAY #	NOTES:
G1	TCS-1(A4, A5, A6, B5, B6, C5, C6, E6)	
G2	TCS-1(A10, B4, C10, D4, D5, D6, E4, F5, F6, F7)	
G3	TCS-1(B7, B11, C8, C9, C11, D8)	WIRING PROVIDED BY SUPPLIER,CONTRACTOR TO PROVIDE CONDUIT AND...
G4	TCS-1(A7, A8, A9, B8, B10, D7, D10)	WIRING PROVIDED BY SUPPLIER,CONTRACTOR TO PROVIDE CONDUIT AND...
G5	TCS-1(A11, D9, D11, E10, F8, F10)	
G6	TCS-1(A2, A3, B2, B3, C2, C3, D1, D2, D3, E1, E3, F2, F3)	WIRING TO BE ROUTED IN WIREWAY BELOW TCS-1 TO MSP.
G7	TCS-2(B1, D2, E2, F3)	
G8	TCS-2(B4, C4, D4, E4)	
G9	TCS-2(A1, A2, B2, B5, C1, C5, D1, D5, E1, E5, F2, F4)	
G10	TCS-2(B3, C3, D3, E3)	

NOTES:
1) PROVIDE TWO #16AWG CABLES FOR EACH RELAY SHOWN ABOVE TO THE NOTED GROUPING JUNCTION BOX. PROVIDE A 1" CONDUIT TO ROUTE. CONNECT TWO TO EACH RELAY NOTED ON ONE END AND PROVIDE AN ADDITIONAL 10' OF SLACK ON THE OTHER.
2) FOR ANY GROUPING JUNCTION BOXES NOTED TO BE THRU WIRED BY KEYNOTES, CONTINUE THE WIRE FROM THE NOTED NODES.
3) FOR ANY WIRE SUPPLIED BY THE CONTRACTOR, PROVIDE ONLY THE 1" CONDUIT AND ROUTE THE OWNER PROVIDED CABLES THROUGH THEM.

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NOTES:

1. COORDINATE ALL ASPECTS OF NEW SERVICE WITH UTILITY COMPANY AND INCLUDE ALL COSTS IN BID.
2. WARNING TAPE SHALL BE INSTALLED 12 TO 18 INCHES BELOW GRADE OVER ALL CONDUITS.
3. PROVIDE 1/4" MINIMUM DIAMETER PULL ROPE. PULL ROPE SHALL NOT BE NYLON STRING.
4. FOR SERVICE ENTRANCE CONDUITS, UTILIZE LONG RADIUS (36") CONDUIT BENDS.
5. ALL CONDUIT RISERS FROM UNDERGROUND SHALL HAVE RIGID METAL ELLS AND RISERS, RE: SPECIFICATIONS.

RISER KEYNOTES:

① CONNECT TO COLD WATER PIPE AND BUILDING STEEL.

② PROVIDE A 48"W x 48"H x15"D U.L. LISTED, NEMA 3R SERVICE TERMINATION JUNCTION BOX. COORDINATE EXACT SIZE AND QUANTITY OF SERVICE ENTRANCE CONDUCTORS WITH UTILITY COMPANY. PROVIDE MULTI-CONDUCTOR SPLICE BLOCKS TYPE NSI, ILSCO OR BURNDY AND MAKE TERMINATIONS. SECURE BLOCKS TO AND INSULATE FROM THE BACK OF THE SERVICE BOX AND IDENTIFY EACH BLOCK BY PHASE COLOR. RE: SPECIFICATIONS.

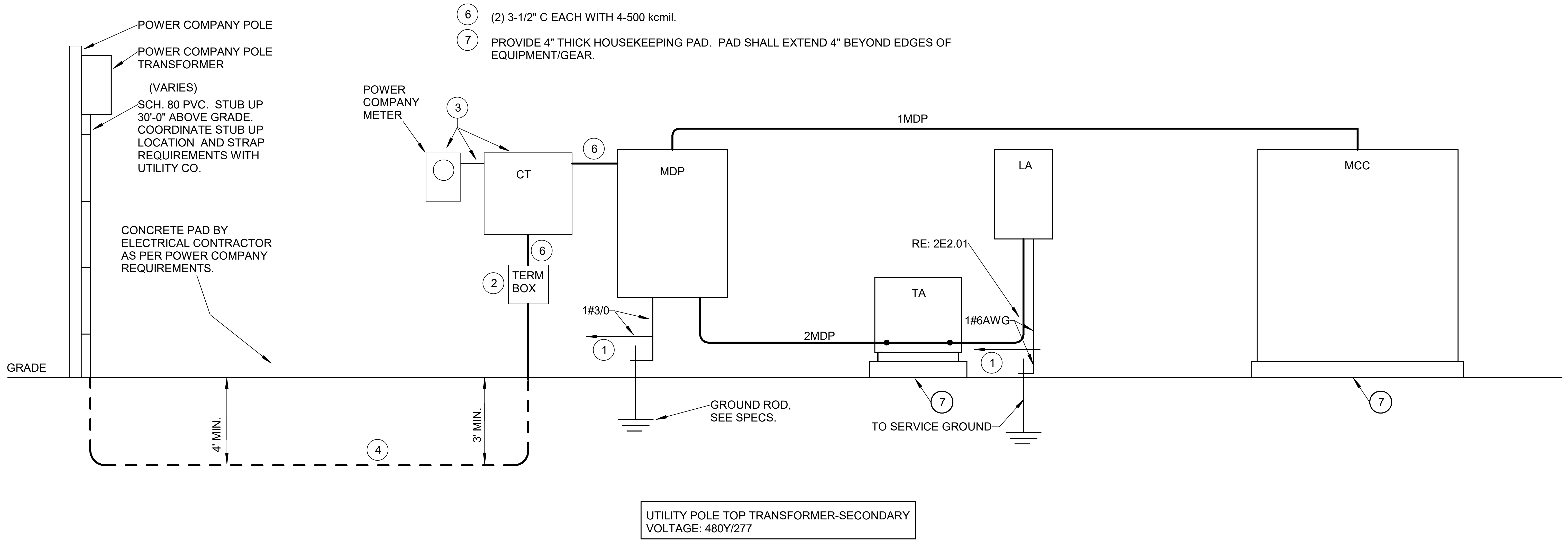
③ PROVIDE METERING EQUIPMENT ENCLOSURES, 1-1/4" CONDUIT, AND METERING EQUIPMENT CONDUCTORS AS PER POWER COMPANY REQUIREMENTS.

④ ELECTRICAL PRIMARY FEED. PROVIDE THREE 3" CONDUITS.

⑤ NOT USED.

⑥ (2) 3-1/2" C EACH WITH 4-500 kcmil.

⑦ PROVIDE 4" THICK HOUSEKEEPING PAD. PAD SHALL EXTEND 4" BEYOND EDGES OF EQUIPMENT/GEAR.



ELECTRICAL RISER DIAGRAM

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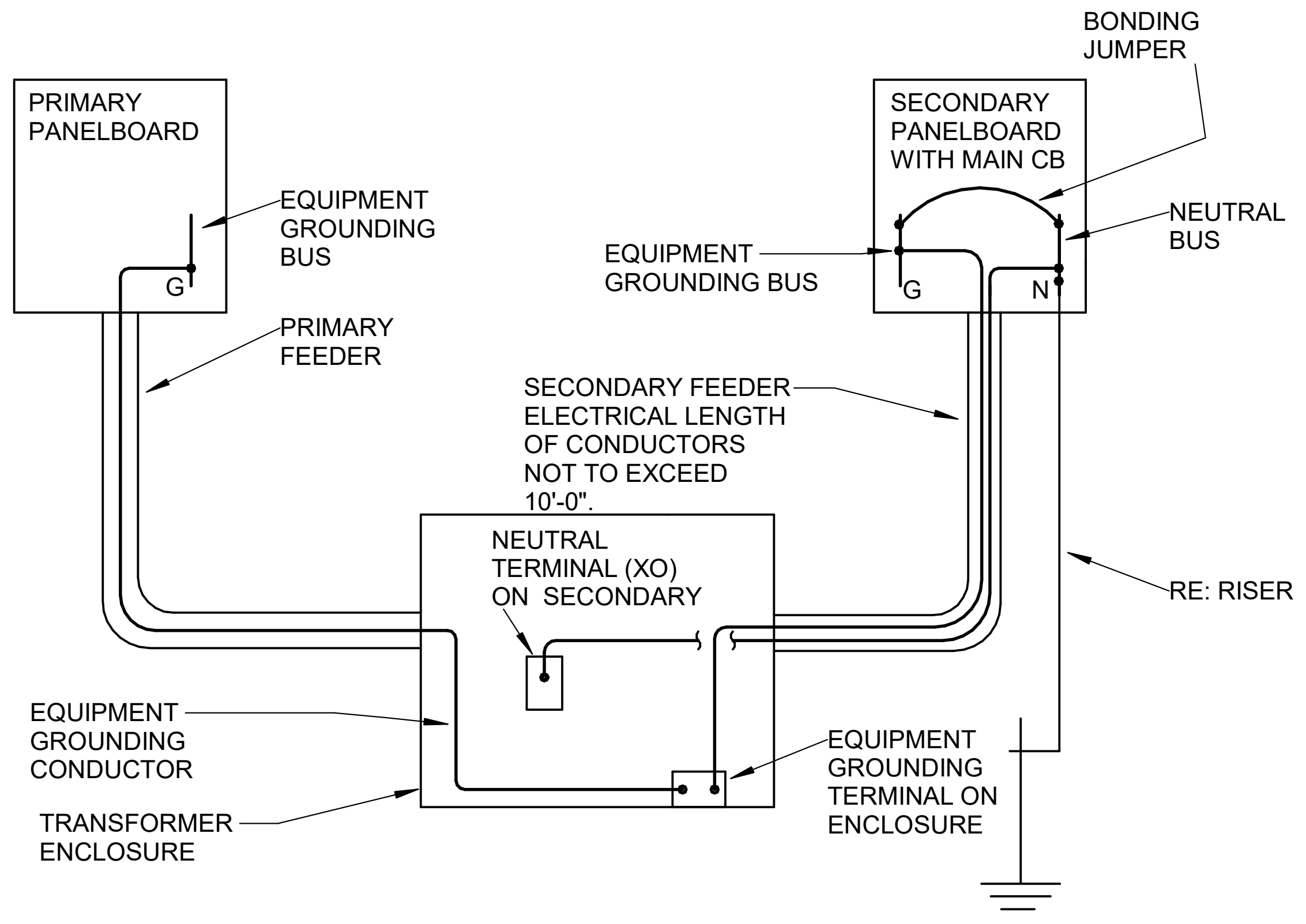

TYPICAL TRANSFORMER GROUNDING DETAIL

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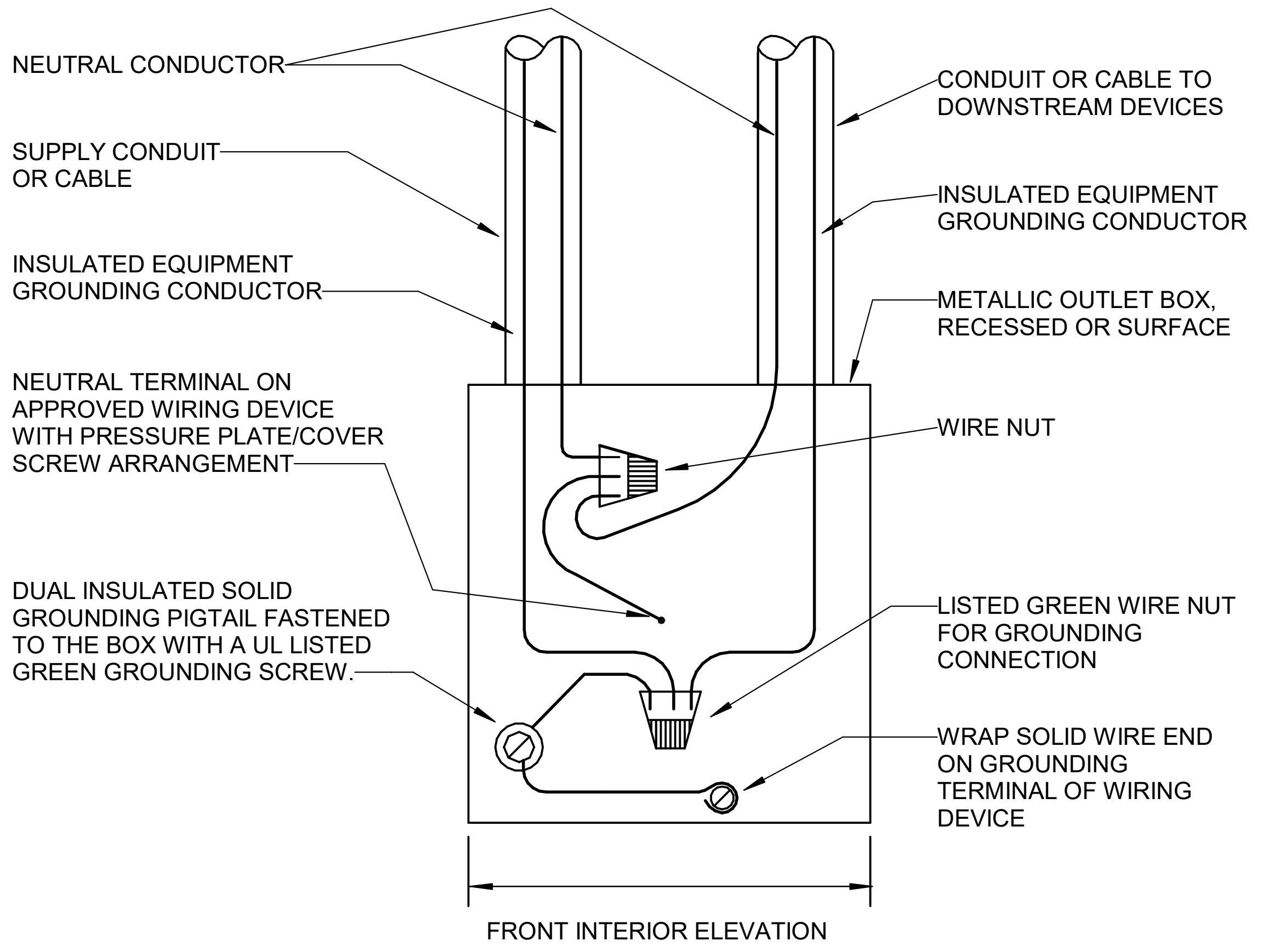
(BONDING JUMPER AT FIRST SYSTEM DISCONNECTING MEANS OR OVERCURRENT DEVICE)

TRANSFORMER SCHEDULE

DESIGNATION	KVA RATING	VOLTAGE		AVERAGE WINDING TEMP. RISE °C	SECONDARY FEEDER CONDUCTORS/CONDUIT *	G.E.C. **	TO SERVE PANEL NAME	REMARKS
		PRIMARY	SECONDARY					
TA	45	480V DELTA	208Y/120V, 3PH, 4W	150	4#1/0, 1#6G, 2"C	6	L	STANDARD TRANSFORMER

* SECONDARY CONDUCTORS SHALL NOT EXCEED 10'-0" IN LENGTH.
** REFER TO TYPICAL TRANSFORMER GROUNDING DETAIL. RE: 3E2.01.
ALL PRIMARY AND SECONDARY CONDUCTORS SHALL HAVE AN INSULATION RATING OF THWN-2 AND LISTED FOR 90 DEGREE C OPERATION.
ALL TRANSFORMERS SHALL HAVE A 220°C INSULATION SYSTEM.

TRANSFORMER SCHEDULE



TYPICAL WIRING DEVICE GROUNDING DETAIL

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TIDAL WAVE
AUTO SPA

R R R
R R
R R R

R

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SHEET DATE:

SHEET REVISIONS:

DRAWN BY: TEM

SHEET TITLE:

SHEET SCALE: NOT TO SCALE

SHEET NUMBER:

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LIGHTING FIXTURE SCHEDULE

A
MANUF/NUMBER: ECOLITE/CITA-CL-48-A150W19500L-DMV-40K
VOLTAGE: 120-277
FINISH: WHITE
WATTS- 150
TYPE- LED, 4000K, 19,500 LUMENS
REMARKS: 14.5" W x 4.8" H x 52" L SURFACE MOUNT FIXTURE. FIXTURE SHALL BE IP67 RATED AND CAPABLE OF WITHSTANDING 1,500 PSI HOSE-DOWN. PROVIDE ALL NECESSARY MOUNTING HARDWARE FOR PROPERLY MOUNTING FIXTURE IN WASH TUNNEL AS

B
MANUF/NUMBER: ECOLITE/JSR-48L-40W5400L-DMV-40K-80
VOLTAGE: 120-277
FINISH: WHITE
WATTS- 41
TYPE- LED, 4000K, 5,400 LUMENS
REMARKS: 4'-0" L STRIP LIGHT SUSPENDED FIXTURE WITH REQUIRED MOUNTING HARDWARE TYPE D CHAIN AND HOOK.

C
MANUF/NUMBER: ECOLITE/VAN-WB-24L-S282000L-DMV-40K-90-BM
VOLTAGE: 120
FINISH: BLACK MARBLE
WATTS- 28
TYPE- LED, 4000K, 2000 LUMENS
REMARKS: 2'-0" LONG WALL BRACKET WITH EXTRUDED ACRYLIC DIFFUSER. MOUNT ABOVE MIRROR. COORDINATE EXACT LOCATION AFF WITH ARCHITECT PRIOR TO ROUGH-IN.

D
MANUF/NUMBER: ECOLITE/ECO-TKO-20W-6DL
VOLTAGE: 120
FINISH: SILVER
WATTS- 20
TYPE- LED, 4000K, 1760 LUMENS
REMARKS: 6" DIAMETER DOWNLIGHT WITH 45 DEGREE CUTOFF.

F
MANUF/NUMBER: ECOLITE/ECO-SEM-AWPF-45W-4000K
VOLTAGE: 277
FINISH: DARK BRONZE
WATTS- 25
TYPE- LED, 4000K, 4770 LUMENS
REMARKS: 17" W x 8-1/2" H x 10-3/16" D TRAPEZOID WALL PACK. FIXTURE SHALL BE WET LOCATION LISTED. MOUNT FIXTURE AT 9'-4" AFF.

G
MANUF/NUMBER: ECOLITE/DBEL-ACEM-BR-SDT
VOLTAGE: 277
FINISH: DARK BRONZE
WATTS- 9
TYPE- LED, 4000K
REMARKS: EMERGENCY EXTERIOR LUMINAIRE WITH BATTERY PACK.

H
MANUF/NUMBER: ECOLITE/ECO-LXY-137A-120W
VOLTAGE: 277
FINISH: WHITE
WATTS- 120
TYPE- LED, 5000K, 14400 LUMRNS
REMARKS: 14" X 14" STANDARD SYMMETRICAL CANOPY LIGHT. PROVIDE MOUNTING BRACKETS TO MOUNT TO BOTTOM OF CANOPY. COORDINATE INSTALLATION AND PROVIDE REQUIRED INFIL/BRIDGE MEMBERS TO FIRMLY MOUNT.

J
REMARKS: STRIP LIGHT FIXTURE PROVIDED WITH PREP CANOPY. CONNECTED BY CONTRACTOR.

EM
MANUF/NUMBER: ECOLITE/ECO-RMR16
VOLTAGE: 120/277
FINISH: WHITE
WATTS- --
TYPE- INC.
REMARKS: EMERGENCY LUMINAIRE WITH BATTERY PACK. CONNECT TO AREA BRANCH LIGHTING CIRCUIT AHEAD OF ANY LOCAL SWITCHING WITH 3#12 CONDUCTORS IN CONDUIT.

EMW
MANUF/NUMBER: ECOLITE/DXR-12-10
VOLTAGE: 120/277
FINISH: WHITE
LAMP: QUANTITY- 2
WATTS- --
TYPE- INC.
REMARKS: HAZARDOUS LOCATION EMERGENCY LUMINAIRE WITH BATTERY PACK. CONNECT TO AREA BRANCH LIGHTING CIRCUIT AHEAD OF ANY LOCAL SWITCHING WITH 3#12 CONDUCTORS IN CONDUIT.

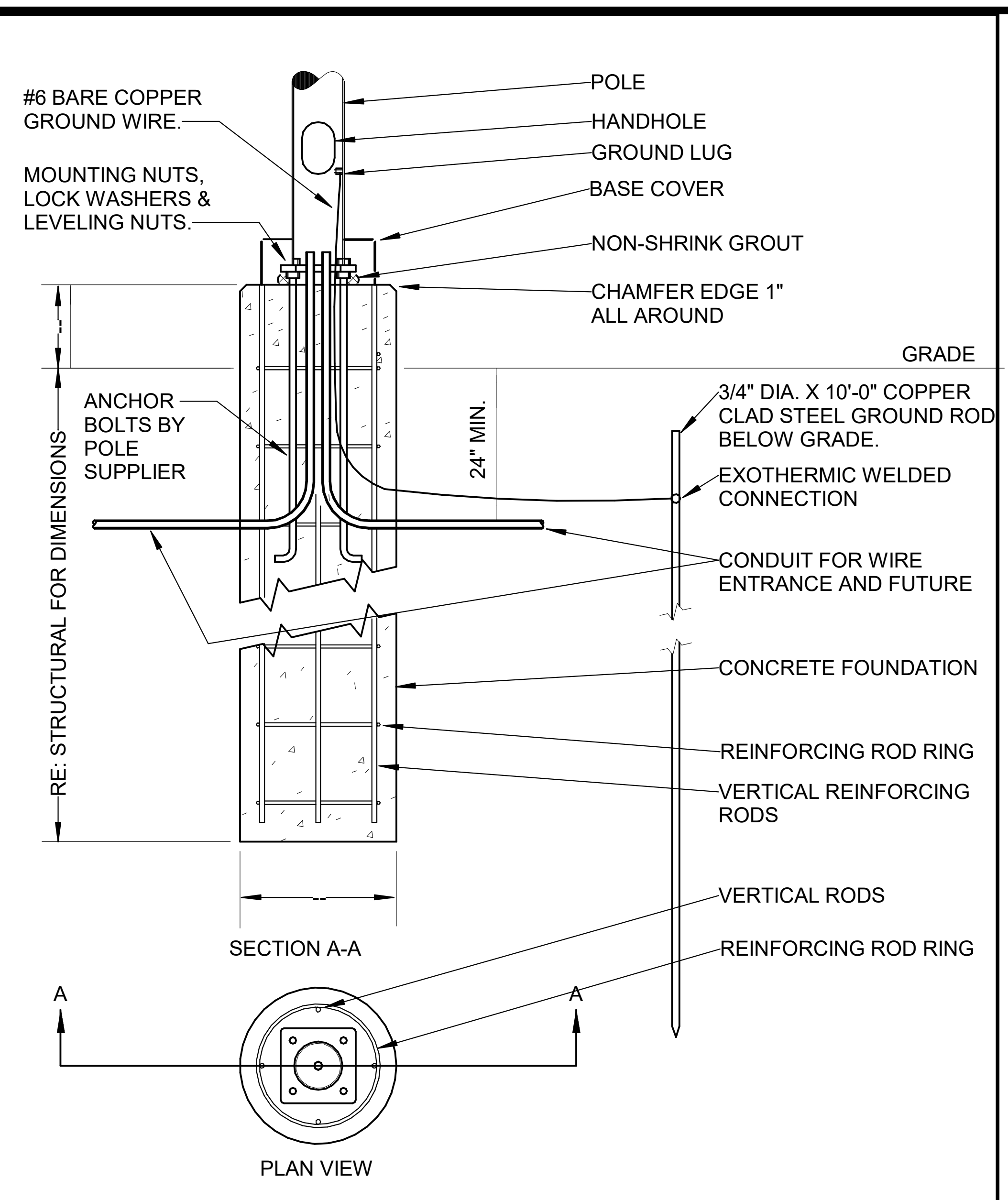
EX
MANUF/NUMBER: ECOLITE/ECO-HSL-ELXTEU1RCAEM
VOLTAGE: 120/277
FINISH: CLEAR WITH RED LETTERS
WATTS- 7
TYPE- LED
REMARKS: CLEAR SINGLE OR DOUBLE FACE EXIT FIXTURE WITH SELF-CONTAINED NICKEL CADMIUM BATTERY PACK MOUNTED INTERNALLY. PROVIDE FACE(S) AND ARROW(S) AS SHOWN ON DRAWINGS. FIXTURE SHALL PROVIDE EVEN ILLUMINATION SUCH THAT INDIVIDUAL LED'S ARE NOT VISIBLE. CONNECT TO AREA LIGHTING BRANCH CIRCUIT AHEAD OF ANY LOCAL SWITCHING WITH 2#12 AND 1#12G CONDUCTORS IN CONDUIT.

EXW
MANUF/NUMBER: ECOLITE/WLEZXTEU-1-R-W
VOLTAGE: 120/277
FINISH: WHITE WITH RED LETTERS
WATTS- 7
TYPE- LED
REMARKS: WET LOCATION POLYCARBONATE SINGLE OR DOUBLE FACE EXIT FIXTURE WITH SELF-CONTAINED NICKEL CADMIUM BATTERY PACK MOUNTED INTERNALLY. PROVIDE FACE(S) AND ARROW(S) AS SHOWN ON DRAWINGS. FIXTURE SHALL PROVIDE EVEN ILLUMINATION SUCH THAT INDIVIDUAL LED'S ARE NOT VISIBLE. CONNECT TO AREA LIGHTING BRANCH CIRCUIT AHEAD OF ANY LOCAL SWITCHING WITH 2#12 AND 1#12G CONDUCTORS IN CONDUIT.

P3
MANUF/NUMBER: ECOLITE/ECO-AOK-180WOT-NV-L3-00-5070-T301-P
VOLTAGE: 277
FINISH: DARK BRONZE
WATTS- 180
TYPE- LED, 4000K, 25,605 LUMENS
REMARKS: 11" W x 2.2" H X 23" L POLE MOUNTED AREA LIGHT WITH TYPE 3 OPTICS. FIXTURE SHALL BE SUITABLE FOR WET LOCATIONS AND MOUNTED ON 30' POLE SPECIFIED.

P5
MANUF/NUMBER: ECOLITE/ECO-AOK-180WOT-NV-L3-00-5070-T501-P
VOLTAGE: 277
FINISH: DARK BRONZE
WATTS- 180
TYPE- LED, 4000K, 25,605 LUMENS
REMARKS: 11" W x 2.2" H X 23" L POLE MOUNTED AREA LIGHT WITH TYPE 5 OPTICS. FIXTURE SHALL BE SUITABLE FOR WET LOCATIONS AND MOUNTED ON 30' POLE SPECIFIED.

S
REMARKS: LED ARC LIGHT PROVIDED BY OWNER CONNECTED BY CONTRACTOR.



POLE FOUNDATION LIGHTING FIXTURE TYPES "P3", "P4", "P5"

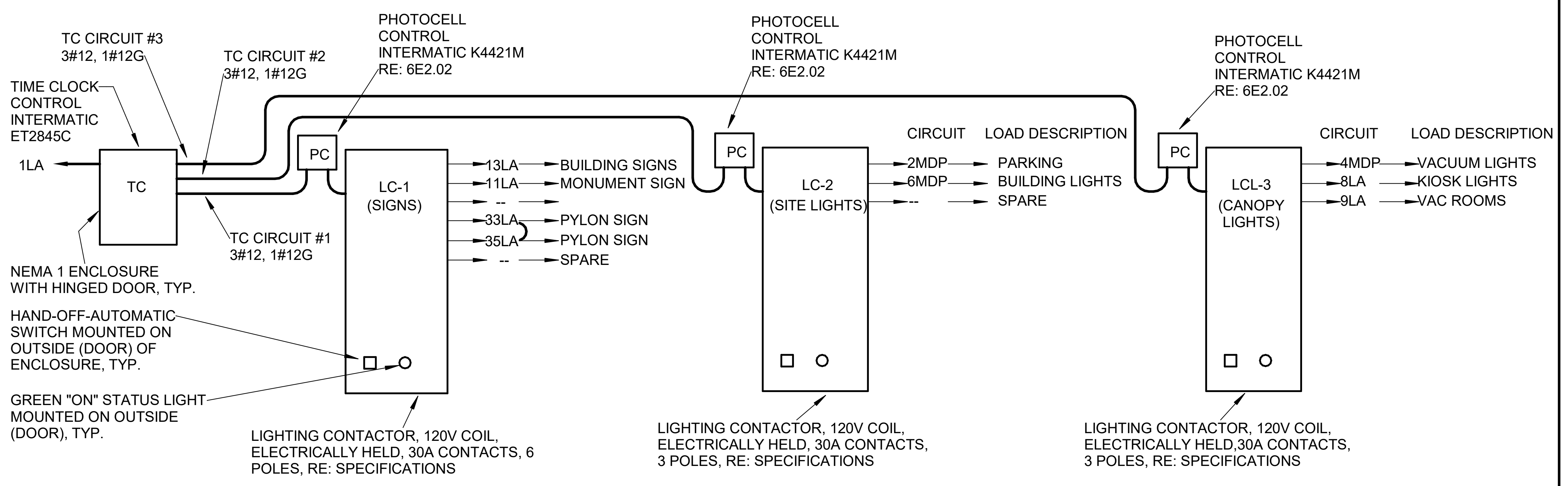
GENERAL NOTE

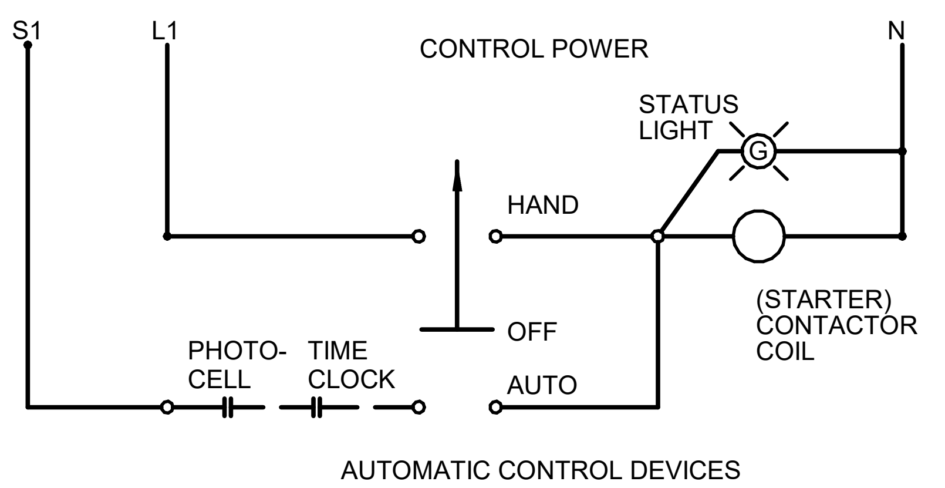
1. ALL EXTERIOR LIGHTS OTHER THAN EMERGENCY SHALL BE ON TIME CLOCK CONTROL TO AUTOMATICALLY TURN THE LIGHTS OFF AND ON. SCHEDULE TO BE COORDINATED IN THE FIELD.
2. ALL LIGHTS UTILIZER ARE LED TYPE AND CALCULATED WITH A 0.8 LIGHT LOSS FACTOR.
3. THE MAX POLE HEIGHT ON THE SITE IS 30' TALL.
4. ALL EXTERIOR FIXTURES ARE WET LOCATION LISTED, AND ALL NON EMERGENCY ONLY FIXTURES ARE FULL CUTOFF.
5. THE PHOTOMETRIC CALCULATIONS FOR BOTH THE PARKING SURFACE AREA AND PARKING CANOPY AREAS MEET THEIR RESPECTIVE MINIMUM AND MAX/MIN RATIOS AS SPECIFIED IN 64-6.A.8.c
6. ALL SURROUNDING PROPERTIES ARE ZONED TYPE B-3 COMMUNITY BUSINESS.

PHOTOMETRIC SITE PLAN

1" = 30'-0"

NOTE:
CONNECT LIGHTING CIRCUITS, AS SHOWN, THROUGH LIGHTING CONTACTOR. CONNECT CONTROL CIRCUIT SUCH THAT IT ALLOWS THE PC TO CONTROL ON, ENERGIZING THE COIL AND THE TC TO CONTROL OFF, DE-ENERGIZING THE COIL. MENU BOARD SHALL BE CONTROLLED BY TIME CLOCK ONLY AND NOT PHOTO CELL.





HAND-OFF-AUTOMATIC SWITCH SHALL BE USED ON 3-WIRE CONTROL APPLICATIONS TO OPERATE THE CONTACTOR MANUALLY AS WELL AS AUTOMATICALLY. THE CONTACTOR COIL SHALL BE MANUALLY ENERGIZED WHEN THE SWITCH IS IN THE HAND POSITION. THE CONTACTOR COIL SHALL BE AUTOMATICALLY ENERGIZED VIA THE AUTOMATIC CONTROL DEVICES WHEN THE SWITCH IS IN THE AUTO POSITION.

S1 AND L1 MUST BE THE SAME CIRCUIT.

S1 - SWITCHED HOT THRU TIME CLOCK AND/OR PHOTOCELL FOR AUTO CONTROL.

L1 - CONSTANT HOT FOR HAND OVERRIDE.

LIGHTING CONTACTOR RISER DIAGRAM

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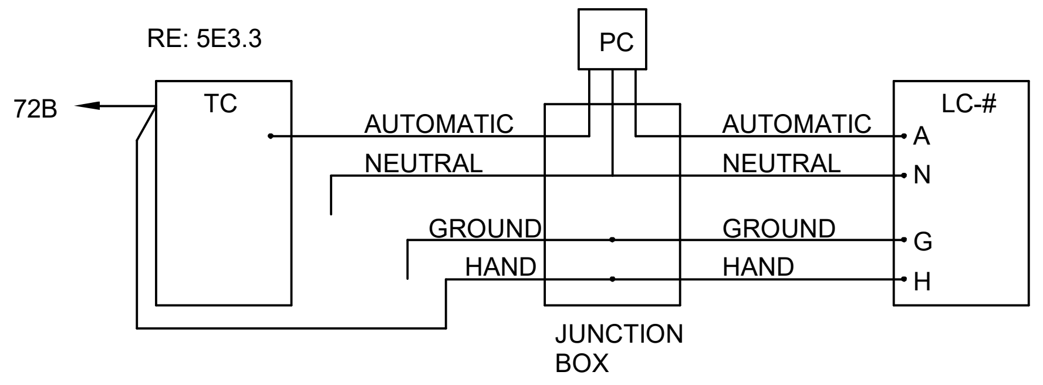

LIGHTING CONTACTOR RISER DIAGRAM

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OLSON LAND PARTNERS, LLC
Real Estate Aqcuisitions & Development

TIDAL WAVE
AUTO SPA

R R R
R R
R R R

R

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MCC SHALL BE PROVIDED BY VENDOR AND INSTALLED BY CONTRACTOR. CONTRACTOR SHALL INSTALL, CONNECT MCC, AND PROVIDE CONDUIT AND CONDUCTORS BETWEEN THE MCC STARTER AND EQUIPMENT.

Switchboard: MCC

Location:
Supply From: MDP
Mounting: Recessed
Enclosure: Type 1
Volts: 480/277 Wye
Phases: 3
Wires: 4
A.I.C. Rating: 32000
Mains Type: Main Lugs
Mains Rating: 800 A
MCB Rating: 800 A

Notes:

CKT	EQ#	Circuit Description	HP	Wire Size	# of Poles	Trip Rating	Load	CONTRACTOR PROVIDED DISCONNECTING MEANS
1	E431M	ROCKERS/TOP BRUSH	5	3#12, 1#12G, 1/2"C	3	20 A	5404 VA	MOTOR RATED TOGGLE SWITCH WITH CLEAR COVER
2	E361M	OMNI 2FL	7.5	3#12, 1#12G, 1/2"C	3	20 A	5404 VA	MOTOR RATED TOGGLE SWITCH WITH CLEAR COVER
3	E820	GRUNDFOS PUMP 1 BRKR	7.5	3#10, 1#10G, 3/4"C	3	20 A	8314 VA	MOTOR RATED TOGGLE SWITCH WITH CLEAR COVER
4	E820	GRUNDFOS PUMP 2 BRKR	7.5	3#10, 1#10G, 3/4"C	3	20 A	8314 VA	MOTOR RATED TOGGLE SWITCH WITH CLEAR COVER
5	E121M	PREP	7.5	3#12, 1#12G, 1/2"C	3	20 A	7898 VA	MOTOR RATED TOGGLE SWITCH WITH CLEAR COVER
6	E321M	2FL WRAP #1	7.5	3#12, 1#12G, 1/2"C	3	20 A	7649 VA	MOTOR RATED TOGGLE SWITCH WITH CLEAR COVER
7	E351M	2FL WRAP #2	7.5	3#12, 1#12G, 1/2"C	3	20 A	7649 VA	MOTOR RATED TOGGLE SWITCH WITH CLEAR COVER
8	E411M1	CONVEYOR (MAIN)	7.5	3#12, 1#12G, 1/2"C	3	20 A	7649 VA	MOTOR RATED TOGGLE SWITCH WITH CLEAR COVER
9	E412M2	CONVEYOR (SPARE)	7.5	3#12, 1#12G, 1/2"C	3	20 A	7649 VA	MOTOR RATED TOGGLE SWITCH WITH CLEAR COVER
10	E311M	TIRE/ROCKER #1	10	3#10, 1#10G, 3/4"C	3	20 A	10309 VA	MOTOR RATED TOGGLE SWITCH WITH CLEAR COVER
11	E331M	TIRE/ROCKER #2	10	3#10, 1#10G, 3/4"C	3	20 A	10309 VA	MOTOR RATED TOGGLE SWITCH WITH CLEAR COVER
12	D201	BLOWER #1	15	3#10, 1#10G, 3/4"C	3	50 A	13718 VA	MOTOR RATED TOGGLE SWITCH WITH NEMA 4R WHILE IN USE COVER
13	D202	BLOWER #2	15	3#10, 1#10G, 3/4"C	3	50 A	13718 VA	MOTOR RATED TOGGLE SWITCH WITH NEMA 4R WHILE IN USE COVER
14	D203	BLOWER #3	15	3#10, 1#10G, 3/4"C	3	50 A	13718 VA	MOTOR RATED TOGGLE SWITCH WITH NEMA 4R WHILE IN USE COVER
15	D204	BLOWER #4	15	3#10, 1#10G, 3/4"C	3	50 A	13718 VA	MOTOR RATED TOGGLE SWITCH WITH NEMA 4R WHILE IN USE COVER
16	D205	BLOWER #6	15	3#10, 1#10G, 3/4"C	3	50 A	13718 VA	MOTOR RATED TOGGLE SWITCH WITH NEMA 4R WHILE IN USE COVER
17	D206	BLOWER #7	15	3#10, 1#10G, 3/4"C	3	50 A	13718 VA	MOTOR RATED TOGGLE SWITCH WITH NEMA 4R WHILE IN USE COVER
18	D207	BLOWER #7	15	3#10, 1#10G, 3/4"C	3	50 A	13718 VA	MOTOR RATED TOGGLE SWITCH WITH NEMA 4R WHILE IN USE COVER
19	D208	BLOWER #8	15	3#10, 1#10G, 3/4"C	3	50 A	13718 VA	MOTOR RATED TOGGLE SWITCH WITH NEMA 4R WHILE IN USE COVER
20	D209	BLOWER #9	15	3#10, 1#10G, 3/4"C	3	50 A	13718 VA	MOTOR RATED TOGGLE SWITCH WITH NEMA 4R WHILE IN USE COVER
21	D210	BLOWER #10	15	3#10, 1#10G, 3/4"C	3	50 A	13718 VA	MOTOR RATED TOGGLE SWITCH WITH NEMA 4R WHILE IN USE COVER
22	D211	BLOWER #11	15	3#10, 1#10G, 3/4"C	3	50 A	13718 VA	MOTOR RATED TOGGLE SWITCH WITH NEMA 4R WHILE IN USE COVER
23	D212	BLOWER #12	15	3#8, 1#8G, 3/4"C	3	50 A	13718 VA	MOTOR RATED TOGGLE SWITCH WITH NEMA 4R WHILE IN USE COVER
24	E241M	OMNI MIRROR	15	3#8, 1#8G, 3/4"C	3	50 A	15214 VA	MOTOR RATED TOGGLE SWITCH WITH CLEAR COVER
25	E281M	OMNI WHEEL	15	3#8, 1#8G, 3/4"C	3	50 A	15214 VA	MOTOR RATED TOGGLE SWITCH WITH CLEAR COVER
26	E261M	OMNI TURBO	15	3#8, 1#8G, 3/4"C	3	50 A	15214 VA	MOTOR RATED TOGGLE SWITCH WITH CLEAR COVER
27	V210	VACUUM MOTOR #1	30	3#6, 1#8G, 1-1/2"C	3	100 A	23000 VA	NEMA 3R SAFETY SWITCH
28	V210	VACUUM MOTOR #2	30	3#6, 1#8G, 1-1/2"C	3	100 A	23000 VA	NEMA 3R SAFETY SWITCH
29	V210	VACUUM MOTOR #3	30	3#6, 1#8G, 1-1/2"C	3	100 A	23000 VA	NEMA 3R SAFETY SWITCH
30	V210	VACUUM MOTOR #4	30	3#6, 1#8G, 1-1/2"C	3	100 A	23000 VA	NEMA 3R SAFETY SWITCH
31	D270E	BUFF N DRY	1.5	3#12, 1#12G, 1/2"C	3	30 A	1663 VA	SAFETY SWITCH
32	V210	VACUUM MOTOR #5	30	3#6, 1#8G, 1-1/2"C	3	100 A	23000 VA	NEMA 3R SAFETY SWITCH
33	V210	VACUUM MOTOR #6	30	3#6, 1#8G, 1-1/2"C	3	100 A	23000 VA	NEMA 3R SAFETY SWITCH
							436469 VA	
							525 A	

Legend:

Load Classification	Connected Load	Demand Factor	Estimated Demand	Panel Totals	
Motor	428571 VA	100.00%	428571 VA		
Miscellaneous	7898 VA	100.00%	7898 VA	**Total Conn. Load:**	436469 VA
				Total Est. Demand:	436469 VA
				Total Conn.:	525 A
				Total Est. Demand:	525 A

Notes:

Switchboard: MDP

Voltage: 480/277 Wye
Main Rating: 800 A
Main Type: MCB
Enclosure: Type 1
Mounting Type: Surface
Quantity of Sections: 1
Service Entrance: Yes
Neutral Rating: 100.00%
Feed Point: Bottom
Equipment Grounding Bus: Yes
Isolated Ground Bus: No
A.I.C Rating: 42000

Notes: Contractor provided, contractor installed panel. Refer to owner provided wiring schematics prior to purchasing. Provide factory individual lock out tag out type breakers.

CKT	Circuit Description	Wire Size	# of Poles	Trip Rating	Load	Remarks
1	[PC300] MCC	(2) SETS OF 4#500KCMIL, 1#1/0G, 4"C	3	800 A	436469 VA	Provide with adjustable trip rating.
2	Site Lighting	2#12, 1#12G	1	20 A	6665 VA	
3	[E911M] Purclean Window Wash...	3#12, 1#12G, 1/2"C	3	20 A	5000 VA	Provide motor rated toggle switch disconnect w/ clear cover
4	Site Lights	2#10, 1#10G, 3/4"C	1	20 A	1150 VA	
5	[E610]Air Compressor 1	3#12, 1#12G, 1/2"C	3	20 A	5000 VA	
6	Wash Tunnel Lights	2#12, 1#12G, 1/2"C	1	20 A	1921 VA	
7	[E620]Air Compressor 2	3#12, 1#12G, 1/2"C	3	20 A	5000 VA	
8	[D720E]Dry and Shine Cabinet	3#12, 1#12G, 1/2"C	3	20 A	5404 VA	
9	[E511M]Reclaim Pump	3#12, 1#12G, 1/2"C	3	20 A	8314 VA	
10	[EW411M]RO Station Reject Pump	3#12, 1#12G, 1/2"C	3	20 A	5404 VA	
11	EW431M]RO Station Spot Free Pump	3#12, 1#12G, 1/2"C	3	20 A	5404 VA	
12	[P440]T-A	3#4, 1#8G, 1"C	3	70 A	25621 VA	
13	[E711M]Velocity Repress Pump...	3#12, 1#12G, 1/2"C	3	20 A	5404 VA	
14	Spare	--	3	20 A	0 VA	
15	Spare	--	3	20 A	0 VA	
16	Spare	--	3	20 A	0 VA	
17	Spare	--	3	20 A	0 VA	
					516756 VA	
					622 A	

Legend:

Load Classification	Connected Load	Demand Factor	Estimated Demand	Panel Totals	
Heating	4500 VA	100.00%	4500 VA		
Motor	475365 VA	100.00%	475365 VA	**Total Conn. Load:**	516756 VA
Other	0 VA	0.00%	0 VA	**Total Est. Demand:**	516756 VA
Receptacle	4860 VA	100.00%	4860 VA	**Total Conn.:**	622 A
Power	64 VA	100.00%	64 VA	**Total Est. Demand:**	622 A
Lighting	10969 VA	100.00%	10969 VA		
Miscellaneous	20998 VA	100.00%	20998 VA		

Notes:

Branch Panel: LA

Voltage: 120/208 Wye
Main: 150 A
Main Type MCB
Enclosure: Type 1
Mounting: Surface
Quantity of Sections: 1
Service Entrance: YES
Feed Through Lugs: NO
Neutral Rating: 100.00%
Feed: BOTTOM
Equipment Ground Bus: YES
Isolated Ground Bus: NO
AIC Symmetrical Interrupt... 22000
Supplied From: TA

CKT	Circuit Description	Wire Size	Cond.	C/B	Pole	A		B		C		Pole	C/B	Cond.	Wire Size	Circuit Description	CKT
1	Receptacle	2#12, 1#12G	1/2"	20 A	1	0.54	0.6					1	20 A	1/2"	2#12, 1#12G	EWC	2 (1)
3	Receptacle	2#12, 1#12G	1/2"	20 A	1			0.72	0.36			1	20 A	1/2"	2#12, 1#12G	Receptacle	4
5	Receptacle	2#12, 1#12G	1/2"	20 A	1					1.08	0.864	1	20 A	1/2"	2#12, 1#12G	VF-1	6
7	EF-1/Bathroom Lighting	2#12, 1#12G	1/2"	20 A	1	0.551	0.5					1	20 A	3/4"	2#10, 1#10G	PAY KIOSK/GATE 2	8
9	VAC Receptacle	2#10, 1#10G	3/4"	20 A	1			0.262	0.18			1	20 A	1/2"	2#12, 1#12G	Electronic Trap Primer	10
11	Monument Sign	2#10, 1#10G	3/4"	30 A	1					0	0.5	1	20 A	1/2"	2#12, 1#12G	TCS 1&2 POWER	12
13	Signs	2#10, 1#10G	3/4"	20 A	1	2	0.5					1	20 A	1/2"	2#12, 1#12G	TCS Lighting 1	14
15	Miscellaneous	2#12, 1#12G	1/2"	20 A	1			0.5	0.5			1	20 A	1/2"	2#12, 1#12G	TCS Lighting 2	16
17	Control Pedistal	2#12, 1#12G	1/2"	20 A	1					3.5	0.262	1	20 A	3/4"	2#10, 1#10G	VAC Receptacle	18
19	Office Computers	2#12, 1#12G	1/2"	20 A	1	0.36	0					1	20 A	--	--	Spare	20
21	STOP/GO LIGHT	2#12, 1#12G	1"	20 A	1			0.5	0			1	20 A	--	--	Spare	22
23	Hand Dryer	2#12, 1#12G	1/2"	20 A	1					0.5	1.25	2	20 A	1/2"	2#12, 1#12G	OHP/IHP	24
(1) 25	EWH	2#10, 1#10G	1/2"	20 A	2	1.75	1.25					--	--	--	--	--	26
27	--	--	--	--	--			1.75	1			2	20 A	1/2"	2#12, 1#12G	EH	28
29	Cupola Light	2#12, 1#12G	1/2"	20 A	1					0.5	1	--	--	--	--	--	30
31	Control Pedistal...	2#12, 1#12G	1/2"	20 A	1	0.36	0					1	20 A	--	--	Spare	32
33	PAY KIOSK/GATE 1	2#10, 1#10G	3/4"	20 A	1			0.5	0			1	20 A	--	--	Spare	34
35	Irrigation Panel	2#12, 1#12G	1/2"	20 A	1					0.18	0	1	20 A	--	--	Spare	36
37	RGB LED LIGHTS	2#12, 1#12G	1/2"	20 A	1	0.5	0.36					1	20 A	1/2"	2#12, 1#12G	Camera Power	38
39	VAC Receptacle	2#10, 1#10G	3/4"	20 A	1			0.262	0.18			1	20 A	1/2"	2#12, 1#12G	Receptacle	40
41	Spare	--	--	20 A	1					0	0	1	20 A	--	--	Spare	42
					Total Load By Phase:	9.271 kVA		6.714 kVA		9.636 kVA							
					Total Current By Phase:	80.537 A		55.95 A		83.578 A							

Notes:

1). Contractor purchased, contractor installed panel.
2). Refer to owner provided wiring diagram prior to purchase.

Load Classification	Connected Load	Demand Factor	Estimated Demand	Panel Totals	
Heating	4500 VA	100.00%	4500 VA		
Motor	1864 VA	100.00%	1864 VA	**Total Conn. Load:**	25621 VA
Receptacle	4860 VA	100.00%	4860 VA	**Total Est. Demand:**	25621 VA
Lighting	1297 VA	100.00%	1297 VA	**Total Conn.:**	71 A
Miscellaneous	13100 VA	100.00%	13100 VA	**Total Est. Demand:**	71 A

(1) PROVIDE GROUND FAULT CIRCUIT BREAKER.

GENERAL NOTE

1" = 1'-0"

1. COORDINATE EXACT PANEL REQUIREMENTS AND CONNECTIONS WITH THE SONNYS E SERIES SHEETS FOR ANY ADDITIONAL EQUIPMENT CONNECTIONS. UTILIZE SPARE BREAKERS FOR ANY SUCH EQUIPMENT.

OLSON LAND
PARTNERS, LLC
Real Estate Aqcuisitions & Development

TIDAL
WAVE
AUTO SPA

R R R
R R
R R R

R

MICHAEL DAVID DOYLE
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2/28/22

AST
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Baton Rouge, Louisiana 70806
(p) 225.926.5600 | (f) 225.926.5620

SHEET DATE:

SHEET REVISIONS:

DRAWN BY: TEM

SHEET TITLE:

SHEET SCALE: 1" = 1'-0"

SHEET NUMBER: