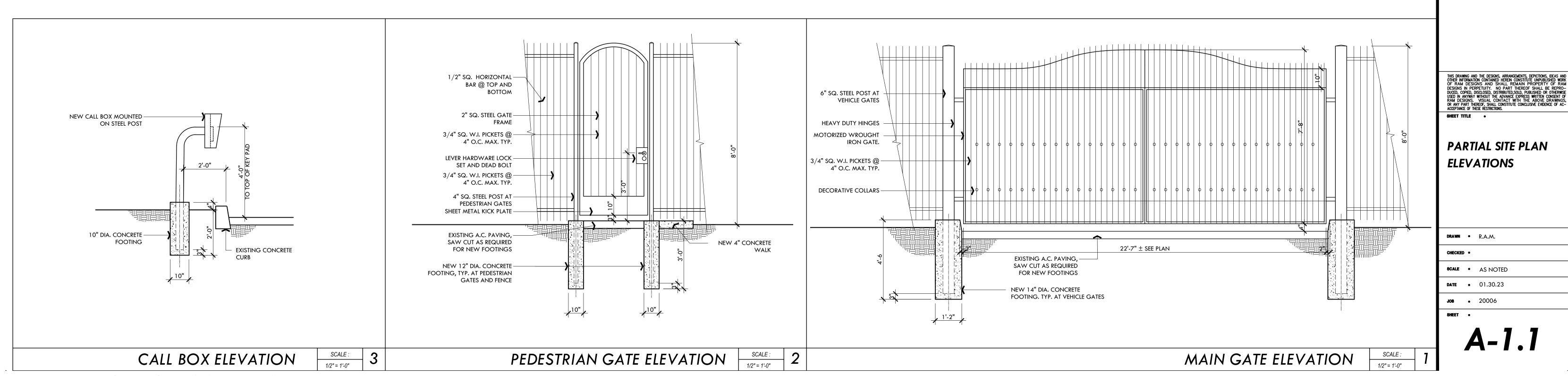
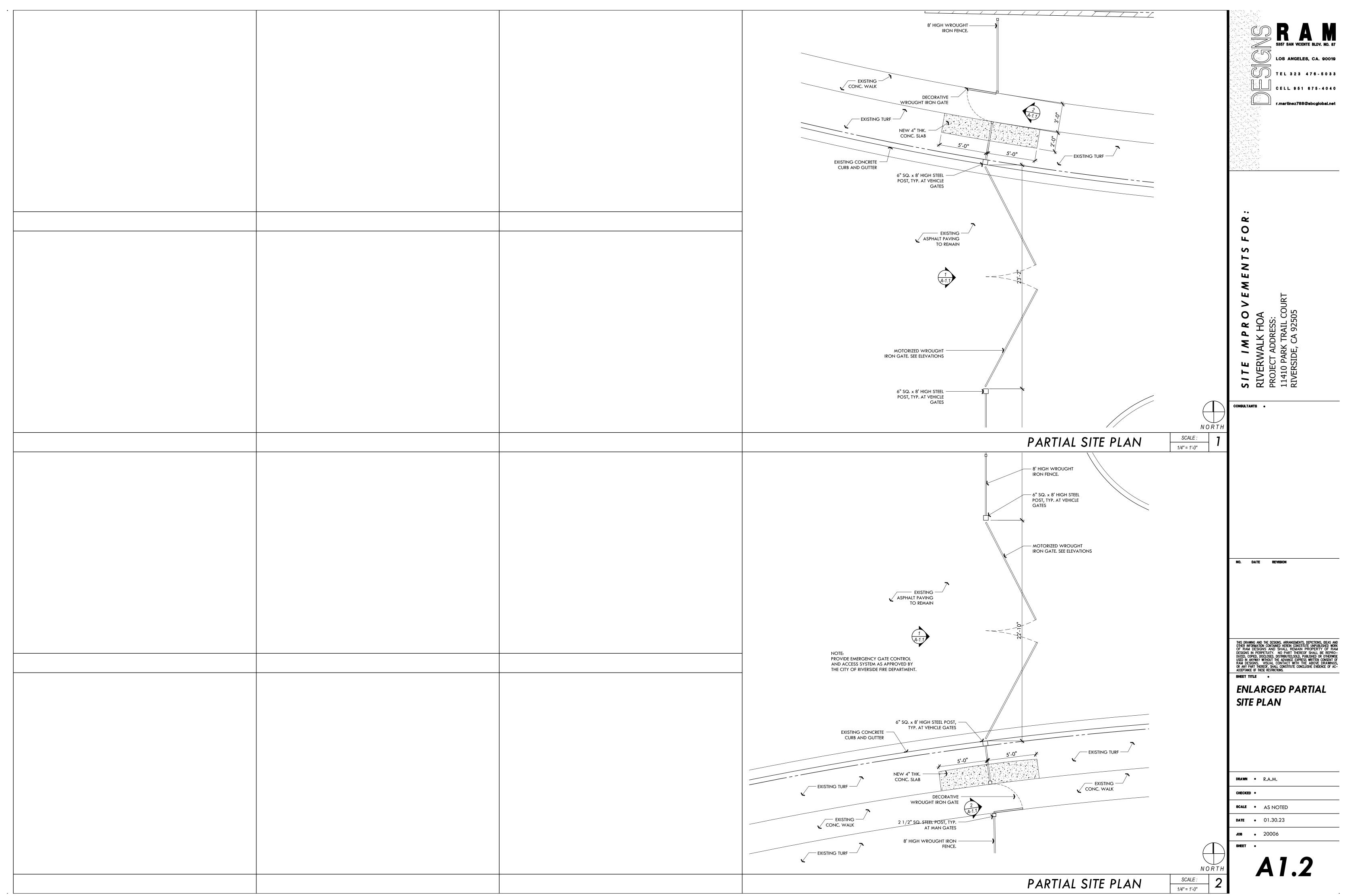


LOS ANGELES, CA. 90019

CELL. 951 675-4040

CONSULTANTS •





- CODE IN EFFECT: 2022 CALIFORNIA ELECTRICAL CODE, HEREAFTER REFERRED TO B. SWITCHES AS "CODE."
- 2. "PROVIDE" INDICATES ITEM FURNISHED, INSTALLED AND CONNECTED.
- . THE SPECIFICATIONS AND DRAWINGS ARE INTENDED TO COVER A COMPLETE INSTALLATION OF SYSTEMS. THE OMISSION OF EXPRESSED REFERENCE TO ANY ITEM OF LABOR OR MATERIAL FOR THE PROPER EXECUTION OF THE WORK IN ACCORDANCE WITH PRESENT PRACTICE OF THE TRADE SHALL NOT RELIEVE THE CONTRACTOR FROM PROVIDING SUCH ADDITIONAL LABOR AND MATERIALS.
- . ALL WORK AND MATERIALS SHALL BE IN FULL COMPLIANCE WITH THE LATEST AND MOST STRINGENT APPLICABLE CODE OR REGULATION. CONTRACTOR SHALL BE SOLELY AND COMPLETELY RESPONSIBLE FOR ANY ADDITIONAL COSTS FOR MATERIALS OR LABOR TO COMPLY WITH THESE CODES OR REGULATIONS.
- 5. NOTHING ON THE DESI**G**N DRAWINGS SHALL BE DEEMED AS PERMISSION TO VIOLATE \mid THE LATEST AND MOST STRINGENT APPLICABLE CODE OR REGULATION.
- THE CONTRACTOR SHALL VISIT THE SITE, VERIFY THE EXACT CONDITIONS RELATING TO THE WORK AND SHALL OBTAIN SUCH INFORMATION AS MAY BE NECESSARY TO PRESENT A CONCLUSIVE BID. NO ALLOWANCES SHALL BE MADE FOR ANY EXTRA EXPENSE, DUE TO FAILURE OF THE CONTRACTOR TO MAKE SUCH A FIELD VERIFICATION. BY SUBMITTING A PROPOSAL FOR THE WORK INCLUDED IN THE CONTRACT. THE CONTRACTOR SHALL BE DEEMED TO HAVE MADE THE FIELD VERIFICATION AND ACCEPTS ALL JOB SITE CONDITIONS.
- REFER TO THE DRAWINGS AND SHOP DRAWINGS OF OTHER TRADES FOR ADDITIONAL DETAILS WHICH AFFECT THE PROPER INSTALLATION OF THIS WORK. DIAGRAMS AND SYMBOLS SHOWING ELECTRICAL CONNECTIONS ARE DIAGRAMMATIC ONLY. WIRING DIAGRAMS DO NOT NECESSARILY SHOW THE EXACT PHYSICAL ARRANGEMENT OF THE EQUIPMENT.
- . THE DRAWINGS INDICATE DIAGRAMATICALLY THE DESIRED LOCATIONS OR ARRANGEMENTS OF CONDUIT RUNS, OUTLETS, EQUIPMENT, ETC., AND ARE TO BE FOLLOWED AS CLOSELY AS POSSIBLE, PROPER JUDGMENT MUST BE EXERCISED IN EXECUTING THE WORK SO AS TO SECURE THE BEST POSSIBLE INSTALLATION IN THE AVAILABLE SPACE AND TO OVERCOME LOCAL DIFFICULTIES DUE TO SPACE LIMITATIONS OR INTERFERENCE OF STRUCTURE CONDITIONS ENCOUNTERED. ALL EQUIPMENT SHALL BE LOCATED SUCH THAT CODE REQUIRED CLEARANCES ARE MAINTAINED.
- I. IF THERE ARE OMISSIONS OR CONFLICTS BETWEEN THE DRAWINGS AND SPECIFICATIONS, CLARIFY THESE POINTS, IN WRITING, WITH THE ARCHITECT BEFORE
- SUBMITTING BID. 10. USE ONLY COMPETENT SKILLED PERSONNEL, PERFORM ALL WORK CONSISTENT WITH THE BEST POSSIBLE TRADE PRACTICES.
- CONTRACTOR SHALL PROVIDE ALL LABOR, MATERIALS, INSURANCE, EQUIPMENT, INSTALLATION, CONSTRUCTION TOOLS, TRANSPORTATION, ETC. FOR A COMPLETE AND PROPERLY OPERATING ELECTRICAL SYSTEM.
- 12. ALL MATERIALS SHALL BE COMMERCIAL GRADE NEW AND OF THE SAME MANUFACTURER FOR EACH CLASS OR GROUP OF EQUIPMENT. MATERIALS SHALL BE LISTED AND LABELED BY UNDERWRITER'S LABORATORIES, AND SHALL BEAR THE INSPECTION LABEL WHERE SUBJECT TO SUCH APPROVAL, MATERIALS SHALL MEET WITH THE APPROVAL OF THE DIVISION OF INDUSTRIAL SAFETY, AND ALL GOVERNING BODIES HAVING JURISDICTION. MATERIALS SHALL BE MANUFACTURED II ACCORDANCE WITH APPLICABLE STANDARDS ESTABLISHED BY A.N.S.I., U.L., N.E.M.A. AND N.B.F.U. INSTALL PER MANUFACTURERS' RECOMMENDATIONS. IF APPLICABLE, ALL EQUIPMENT SHALL BE APPROVED AND LISTED FOR USE IN THIS CITY.
- SMITCHBOARDS, PANELBOARDS, TERMINAL CABINETS, CIRCUIT BREAKERS, DISCONNECT SWITCHES, STARTERS RELAYS, TIME SWITCHES, CONTACTORS, PUSH-BUTTON CONTROL STATIONS, AND OTHER APPARATUS USED FOR THE OPERATION OR CONTROL OF FEEDERS, CIRCUITS, APPLIANCES, OR EQUIPMENT SHALL BE PROPERLY IDENTIFIED BY MEANS OF DESCRIPTIVE NAMEPLATES OR TAGS PERMANENTLY ATTACHED TO THE APPARATUS AND WIRING.
- 4. CONTRACTOR SHALL SECURE AND PAY FOR ALL NECESSARY BUILDING PERMITS AND FEES. COORDINATE TEMPORARY CONSTRUCTION REQUIREMENTS WITH ALL TRADES PRIOR TO CONSTRUCTION. INCLUDE ALL COSTS IN THE BID.
- THE CONTRACTOR SHALL OBTAIN AN INDEPENDENT TESTING LABORATORY THAT WILL PROVIDE ALL INSTRUMENTATION AND TESTS ON THE ELECTRICAL SYSTEM AND EQUIPMENT AS HEREINAFTER DESCRIBED AND FURTHER DIRECTED BY THE ARCHITECT. THE TEST SHALL BE PERFORMED AFTER THE COMPLETION OF ALL ELECTRICAL SYSTEMS COVERED UNDER THIS SECTION OF THE SPECIFICATIONS. ALL TESTS SHALL BE RECORDED, DOCUMENTED AND SUBMITTED TO THE ENGINEER FOR REVIEW. COST OF ALL TESTING SHALL BE BORNE BY THE CONTRACTOR.
- ACCEPTANCE BY OWNER. ANY WORK, MATERIAL OR EQUIPMENT FOUND TO BE FAULTY DURING THAT PERIOD SHALL BE CORRECTED AT ONCE, UPON WRITTEN NOTIFICATION AT THE EXPENSE OF THE ELECTRICAL CONTRACTOR.
- WHERE A CONFLICT OCCURS BETWEEN THIS SPECIFICATION AND OTHER SPECIFICATIONS ISSUED AS A PART OF THE CONTRACT DOCUMENTS, THE MORE STRINGENT REQUIREMENTS SHALL PREVAIL.
- 18. ALL ADDENDA AND CHANGE ORDERS SHALL BE APPROVED BY OWNER.
- ALL MAJOR PIECES OF ELECTRICAL EQUIPMENT, INCLUDING, BUT NOT LIMITED TO SWITCHBOARDS, PANELBOARDS, TRANSFORMERS, MOTION SENSORS AND ALL IS PRACTICABLE AFTER AWARD OF CONTRACT. CONTRACTOR SHALL NOT ORDER SHALL IDENTIFY EACH PROPOSED SUBSTITUTION AND PROVIDE A DETAILED COMPARISON BETWEEN THE SPECIFICATION ITEM AND THE SUBSTITUTION. SIMPLY PROVIDING MANUFACTURES CUT SHEETS WILL NOT BE ACCEPTABLE. THE CONTRACTOR SHALL CONSIDER AND INCLUDE SUBMITTAL REVIEW TIME IN HIS TIMELINE. HOWEVER, NOTHING WITHIN THIS SECTION SHALL BE CONSTRUED AS A GUARANTEED REVIEW TIME. BY BIDDING THESE CONTRACT DOCUMENTS, THE CONTRACTOR AGREES TO HOLD THE OWNER AND ENTIRE DESIGN TEAM HARMLESS FOR ANY COSTS INCURRED AS A RESULT OF ANY SUBMITTAL REVIEW DELAY.
- 20. ALL BROCHURES, OPERATING MANUAL, CATALOGS, SHOP DRAWINGS, "AS-BUILTS", ETC. SHALL BE TURNED OVER TO THE OWNER AT THE COMPLETION OF THE JOB. PROVIDE THE OWNER WITH ONE (1) SET OF COMPLETE ELECTRICAL "AS-BUILTS" INDICATING FINAL EQUIPMENT/DEVICE LOCATIONS, CONDUIT ROUTING, ETC. ALL DEVIATIONS FROM ELECTRICAL DESIGN SHALL BE DOCUMENTED AND SUBMITTED TO
- WHERE IT IS NECESSARY TO SHUT OFF UTILITY SERVICES OR CAUSE ANY POWER OF SIGNAL INTERRUPTIONS WHILE THE BUILDING IS OCCUPIED, SCHEDULE ALL OUTAGES OR INTERRUPTIONS WITH THE OCCUPANTS OF THE BUILDING OR AS DIRECTED BY THE OWNER. ALL SUCH OUTAGES OR INTERRUPTIONS SHALL BE INCLUDED IN BID AND SCHEDULED AT THE CONVENIENCE OF THE OCCUPANTS.
- 22. WHERE IT BECOMES NECESSARY TO DRILL INTO OR CUT THROUGH ANY EXISTING FLOORS, WALLS OR CEILINGS TO PERMIT THE INSTALLATION OF ANY WORK UNDER THIS CONTRACT, OR TO REPAIR ANY DEFECTS THAT MAY APPEAR, SUCH CUTTING AND PATCHING SHALL BE PERFORMED BY TRADESMEN EXPERIENCED IN THE WORK REQUIRED. CONTRACTOR SHALL PAY FOR ALL COSTS REQUIRED FOR DRILLING, CUTTING AND/OR REPAIRING. ALL FINISHES SHALL MATCH EXISTING AND/OR NEW ADJACENT SURFACES. PROVIDE X-RAYS AS REQUIRED.
- 23. ALL EXTERIOR EQUIPMENT SHALL BE WEATHERPROOF.
- 24. ALL EQUIPMENT SHALL BE RATED FOR THE ENVIRONMENT IN WHICH IT INSTALLED, INCLUDING BUT NOT LIMITED TO: FREEZERS, COOLERS, CLEAN ROOMS, FOOD PROCESS AREAS, WASH DOWN AREAS, OUTDOORS AND CLASSIFIED AREAS. CONTRACTOR IS RESPONSIBLE FOR PROVIDING THE APPROPRIATELY RATED EQUIPMENT WHETHER SPECIFIED IN THESE DRAWING OR NOT.
- 25. FOR EXISTING SWITCHBOARDS, ELECTRICAL CONTRACTOR SHALL CLEAN AND
- $26.\,$ It is understood and agreed that this contract does not contemplate THE HANDLING OF ASBESTOS, PCB OR ANY HAZARDOUS WASTE MATERIAL. IF ASBESTOS, PCB OR ANY HAZARDOUS WASTE MATERIAL IS ENCOUNTERED, NOTIFY
- 27. ALL ELECTRICAL EQUIPMENT SHALL BE BRACED AND ANCHORED PER STATE AND LOCAL SEISMIC REQUIREMENTS.
- PART 2 MATERIAL

- SIZES AS INDICATED ON THE DRAWINGS AND IN NO CASE OF LESS SIZE OR MATERIAL THICKNESS THAN REQUIRED BY THE GOVERNING CODE. EXERCISE CARE IN LOCATING UNDERGROUND PULL BOXES TO AVOID INSTALLATION IN DRAIN WATER FLOW AREAS.
- GENERAL PURPOSE SHEET STEEL PULL BOXES: INSTALL ONLY IN DRY PROTECTED LOCATIONS WITH REMOVABLE SCREW COVERS, MANUFACTURER'S STANDARD BAKED
- GALVANIZED TRAFFIC COVER WITH HOT-DIP GALVANIZED FRAME AND 4 GALVANIZED CABLE RACKS WITH PORCELAIN BLOCKS. THE BOX TO BE SET ON A PEA GRAVEL BASE 12" THICK AND AS LARGE AS THE BOTTOM. PROVIDE PREFABRICATED PULL BOXES AS MANUFACTURED BY QUIKSET OR BROOKS PRODUCTS. SUBMIT SHOP DRAWINGS FOR APPROVAL. REFER TO DRAWINGS FOR SIZE. PROVIDE BEAD WELD ON COVER TO PULL BOX TO INDICATE SERVICES WITHIN PULL BOX (I.E. - "480/277-VOLT, 3-PHASE, 4-WIRE ELECTRICAL" OR "SIGNAL /TEL /P.A. /CLOCK /FIRE ALARM").

- PROVIDE CIRCUIT SWITCHES TOTALLY ENCLOSED, BAKELITE OR COMPOSITION BASE, TOGGLE TYPE WITH 120/277 VOLT A.C. RATING FOR FULL CAPACITY OR CONTACTS FOR LED, INCANDESCENT, FLUORESCENT OR HID LAMP LOADS AS APPLICABLE. SWITCH RATINGS SHALL BE 20 AMPERE ONLY. COLOR SHALL BE WHITE OR AS SELECTED BY ARCHITECT. CONTRACTOR SHALL CONFIRM COLOR WITH ARCHITECT PRIOR TO ORDERING. SWITCHES SHALL BE COMMERCIAL GRADE.
- RECEPTACLES
- ALL RECEPTACLES IN FLUSH TYPE OUTLET BOXES SHALL BE INSTALLED WITH A BONDING JUMPER TO CONNECT THE BOX TO THE RECEPTACLE GROUND TERMINAL. GROUNDING THROUGH THE RECEPTACLE MOUNTING STRAPS IS NOT ACCEPTABLE. BONDING JUMPER, SIZED PER CODE, SHALL BE ATTACHED AT EACH OUTLET TO THE BACK OF THE BOX USING DRILLED AND TAPPED HOLES AND WASHER HEAD SCREWS 6-32 OR LARGER (EXCEPT ISOLATED GROUND RECEPTACLES). COLOR SHALL BE WHITE WITH MATCHING COVER PLATE OR AS SELECTED BY ARCHITECT. CONTRACTOR SHALL CONFIRM COLOR WITH ARCHITECT PRIOR TO ORDERING. RECEPTACLES CONNECTED TO EMERGENCY POWER CIRCUITS SHALL BE RED, ISOLATED GROUND SHALL BE ORANGE.
- 2. DUPLEX CONVENIENCE RECEPTACLES SHALL BE GROUNDING TYPE, 125 VOLT, 20 AMPERE AND SHALL HAVE TWO CURRENT CARRYING CONTACTS AND ONE GROUNDING CONTACT WHICH IS INTERNALLY CONNECTED TO THE FRAME. OUTLET SHALL ACCOMMODATE STANDARD PARALLEL BLADE CAP AND SHALL BE SIDE
- GROUND FAULT CONVENIENCE RECEPTACLES PROVIDE SEPARATE GROUND FAULT
- WEATHERPROOF RECEPTACLE: GROUND FAULT TYPE DUPLEX RECEPTACLE. MOUNTED IN A FLUSH OR SURFACE OUTLET BOX AS NOTED WITH SPRING DOOR TYPE
- SPECIAL OUTLETS SHALL BE AS INDICATED ON THE DRAWINGS.
- HEREIN BEFORE SPECIFIED SHALL BE GROUNDING TYPE, 125 VOLTS, 20 AMPERES. AND SHALL HAVE TWO CURRENT CARRYING CONTACTS AND ONE GROUNDING CONTACT WHICH IS INTERNALLY CONNECTED TO THE FRAME. RECEPTACLE SHALL BE P & S OR HUBBELL #5242, SIERRA #1410 OR LEVITON #5014, WITH STANDARD LENGTH MOUNTING STRAP AS REQUIRED BY THE MANUFACTURER OF FLOOR BOX BEING FURNISHED (OR AS SHOWN ON PLANS).

- DISCONNECT SWITCHES SHALL BE RATED 600 VOLT A.C., NEMA TYPE HD, QUICK-MAKE, QUICK-BREAK, H.P.-RATED, NON-FUSIBLE OR FUSIBLE, CLASS "R", IN NEMA TYPE | ENCLOSURE, LOCKABLE WITH NUMBER OF POLES AND AMPERAGE AS INDICATED ON THE DRAWINGS. WHERE ENCLOSURE IS EXPOSED TO WEATHER OR IS INDICATED W.P. (WEATHERPROOF) SWITCHES SHALL BE RAIN-TIGHT NEMA TYPE 3R ENCLOSURE, LOCKABLE.
- 2. ALL FUSED DISCONNECT SWITCHES SHALL BE FUSED PER ASSOCIATED EQUIPMENT NAMEPLATE.

- TRANSFORMERS SHALL BE ALUMINUM WOUND W/ 150 DEGREE "C" RISE AND A MINIMUM OF (4) 2 1/2% FULL CAPACITY PRIMARY TAPS. VOLTAGES SHALL BE AS SPECIFIED ON SINGLE LINE. PROVIDE VIBRATION ISOLATORS AT FOUR CORNERS. TRANSFORMERS SHALL BE MOUNTED SUCH THAT ALL MANUFACTURERS AND CODE REQUIRED CLEARANCES ARE MAINTAINED.
- ALL DRY-TYPE TRANSFORMERS, RATED AT 15KVA OR GREATER, SHALL MEET THE ENERGY EFFICIENCY REQUIREMENTS OF THE DOE 2016.
- 3. TRANSFORMERS RATED OVER 112 1/2 KVA SHALL HAVE CLASS 155 OR HIGHER INSULATION SYSTEMS AND BE COMPLETELY ENCLOSED EXCEPT FOR VENTILATING
- WALL MOUNTED TRANSFORMERS SHALL UTILIZE MANUFACTURES MOUNTING BRACKETS, CONTRACTOR IS RESPONSIBLE TO COORDINATE WITH STRUCTURAL TO INSURE WALL IS CAPABLE OF SUPPORTING TRANSFORMER AND COMPLIES WITH ALL
- SPARE FUSE CABINETS
- PROVIDE A CABINET IN EACH ROOM WHERE A SWITCHBOARD OR MOTOR CONTROL CENTER IS INSTALLED AND CONTAINS FUSES. CABINETS SHALL BE AS SPECIFIED FOR "TERMINAL CABINETS" AND SHALL BE OF SUFFICIENT SIZE TO CONTAIN ALL SPARE FUSES SPECIFIED HEREIN. PROVIDE CLIPS (2 PER FUSE) FOR EACH SPARE FUSE. PROVIDE (3) SPARE FUSES FOR EACH TYPE/SIZE ON PROJECT. MOUNT CLIPS IN PLYWOOD BACKBOARD IN CABINET. LABEL CABINET "SPARE FUSES". INCLUDE
- CONDUIT
- ALL CONDUIT SHALL BE UTILIZED AND INSTALLED PER CODE. ALL CONDUIT SHALL BE SUPPORTED AND BRACED PER APPLICABLE CODES WITH PIPE CLAMPS & SUPPORTS, PLUMBERS TAPE SHALL NO BE ACCEPTED.
- ALL CONDUIT SHALL BE CONCEALED FROM VIEW WHEREVER POSSIBLE
- ALL EXPOSED CONDUIT SHALL BE INSTALLED AT RIGHT ANGLES OR PARALLEL TO WALLS OR STRUCTURES AND SHALL BE INSTALLED IN A CLEAN, WORKMAN LIKE MANNER. CONTRACTOR SHALL PAINT EXPOSED CONDUIT TO MATCH SURROUNDING SURFACE COLOR. CONTRACTOR SHALL OBTAIN PAINT MANUFACTURES NAME AND COLOR NUMBERS FROM ARCHITECT OR OWNERS REPRESENTATIVE.
- RIGID STEEL CONDUIT SHALL BE USED WHERE EMBEDDED IN CONCRETE; EMBEDDED IN BRICK OR MASONRY WALLS; EXPOSED ON INTERIOR OF BUILDINGS BELOW EIGHT FEET WHERE SUBJECT TO PHYSICAL DAMAGE; EXPOSED ON EXTERIOR OF BUILDING DAMP OR WET LOCATIONS; EXPOSED ON ROOF OR IN CLASSIFIED AREAS. RIGID STEEL CONDUIT SHALL NOT BE INSTALLED IN DIRECT CONTACT WITH EARTH OR
- 5. CONDUITS PENETRATING THRU SLAB SHALL BE RIGID GALVANIZED STEEL
- 6. EMT SHALL BE INSTALLED IN DRY LOCATIONS SUCH AS, PARTITIONS, CEILING SPACES AND STUD WALLS, OR WHERE EXPOSED BELOW EIGHT FEET AND NOT SUBJECT TO PHYSICAL DAMAGE.
- OR IN NON-MASONRY/CONCRETE WALLS AND PROPERTY SUPPORTED.
- LIQUID-TIGHT FLEXIBLE CONDUIT SHALL BE INSTALLED FOR FINAL CONNECTION TO MOTORS, CONTROL DEVICES MOUNTED ON VIBRATING OR ROTATING EQUIPMENT. AREAS WHERE EXPOSED TO MOISTURE AND FLEXIBLE CONNECTIONS ARE REQUIRED. ALL FLEXIBLE CONDUIT SHALL CONTAIN A GROUND CONDUCTOR SIZED PER CODE.
- 9. PVC SCHEDULE 40 NONMETALLIC CONDUIT WITH CODE SIZED GROUND CONDUCTOR SHALL BE USED BELOW GRADE ONLY, IF APPROVED AND INSTALLED PER LOCAL CODES UNLESS OTHERWISE SPECIFIED. DO NOT ROUTE BELOW GRADE CONDUITS THROUGH AREAS OF FUTURE CONSTRUCTION. INSTALL 30" BELOW GRADE. PROVIDE PVC-COATED STEEL CONDUIT FOR ALL ELBOWS AND RISERS. NON-METALLIC CONDUIT SHALL NOT BE INSTALLED IN; CONCRETE BUILDINGS, BRICK OR MASONRY CONSTRUCTION; IN WALLS; ABOVE CEILINGS OR IN CRAWL SPACES.
- MC CABLE SHALL BE ACCEPTABLE IN AREAS WHERE NOT SUBJECT TO DAMAGE SUCH AS IN FURRED OUT WALLS AND ABOVE CEILINGS PROVIDED ALL SUPPORT REQUIREMENTS ARE MET AND PROVIDE IT IS INSTALLED AS FOLLOWS
 - TRADITIONAL CONDUIT/WIRE SYSTEM SHALL BE USED FROM THE PANEL TO AN ACCESSIBLE SPACE IN THE CEILING. A CODE SIZE JUNCTION BOX/BOXES SHALL BE INSTALLED IN THE ACCESSIBLE CEILING AREA. THHN/THWN, 90 DEGREE CONDUCTORS IS THEN PULLED FROM THE J-BOX TO THE PANEL WHERE THE CONDUCTORS IS THEN PULLED FROM J-BOX TO THE PANEL WHERE THE CONDUCTORS ARE TERMINATED ON THE BREAKERS. FROM THE J-BOX IN THE CEILING, MC CABLE, WITH THE FULLY RATED GROUND, MAY THRU BE RUN TO THE
 - THE METHOD USED TO CUT THE MC CABLE IS DONE WITH MANUFACTURER APPROVED TOOLS ONLY. SPECIFICALLY A TOOL DESIGNED TO CUT THE METAL JACKET WITHOUT DAMAGING THE WIRE INSIDE. AFTER THE JACKET HAD BEEN CUT, A PLASTIC BUSHING IS INSERTED TO FURTHER PROTECT THE WIRING. THEN T ALL CIRCUITS TO ENSURE POLARITY, VOLTAGE AND GROUNDING
- FIRE STOP OR SEALANT SHALL BE EQUAL TO THE RATING OF THE ELEMENT PENETRATED.
- 12. CONDUITS REFERENCED AS CONDUIT ONLY (C.O.) SHALL BE CAPPED AND PROVIDED WITH A NYLON PULL STRING AND TAGS INDICATING THE ORIGINATION AND FUNCTION FOR THE CONDUIT.
- SYSTEM SHALL BE 2TT/480 OR 120/208 VOLT RATED.
- 14. CONDUITS CROSSING BUILDING EXPANSION AND/OR SEISMIC JOINTS SHALL BE PROVIDED WITH EXPANSION DEFLECTION FITTINGS AT THE EXPANSION AND/OR

SEISMIC JOINT.

ALL CONDUIT FOR ROOFTOP EQUIPMENT SHALL BE ROUTED BELOW THE ROOF STRUCTURE. ALL PENETRATIONS THROUGH ROOF OR EXTERIOR WALL SHALL BE FLASHED AND MADE WATER-TIGHT. PROVIDE ROOF JACKS AT ALL PENETRATIONS. 16. CONTRACTOR SHALL PROVIDE CONDUIT SEALS AS REQUIRED BY CODE.

- 17. CONDUITS USED FOR EQUIPMENT GROUNDING SHALL UTILIZE APPROVED GROUNDING

- ALL CONDUCTORS SHALL BE COPPER TYPE THHN/THWN-2, 600V AND SHALL BE RATED AT 90 DEGREE C.
- 2. WHERE INSTALLED IN RACEWAY, CONDUCTORS OF SIZE NO.8 AND LARGER SHALL
- 3. CONDUCTORS SIZE NO. I AWG AND SMALLER WITH 90°C INSULATION ARE TO USE THE 60° COLUMN OF THE CODE, TABLE 310.15(B)(16), TO DETERMINE AMPACITY. CONDUCTORS #1/0 AMG AND LARGER WITH 90° INSULATION ARE TO USE THE 75° COLUMN OF THE CODE, TABLE 310.15(B)(16), TO DETERMINE AMPACITY.
- 4. ALL CONDUCTORS/CABLING SHALL BE INSTALLED IN AN APPROVED RACEWAY UNLESS SPECIFICALLY NOTED OTHERWISE IN THE CONTRACT DOCUMENTS.
- OVER A RUST INHIBITING PRIMER ON CORROSIVE RESISTANT METAL SURFACE. SWITCHBOARD SHALL BE NEW AND FREE OF ANY SCRATCHES, DENTS OR ANY DAMAGE.
- 2. ALL BUSSING SHALL BE ALUMINUM WITH BRACING PER SINGLE LINE DIAGRAM. THE AIG BRACING SHALL NEVER BE LESS THAN THE UTILITY COMPANY AVAILABLE FAULT CURRENT. CONTRACTOR SHALL VERIFY AFC WITH UTILITY RATING. SWITCHGEAR SHALL BE APPROVED BY UTILITY CO ASSOCIATED WITH
- 3. ALL PANELBOARDS SHALL BE U.L. LISTED FOR SERIES RATING WITH COMBINATION FUSE TO CIRCUIT BREAKER OR CIRCUIT BREAKER TO CIRCUIT BREAKER ARRANGEMENT. ALL BUSSING SHALL BE ALUMINUM AND ALL CIRCUIT BREAKERS SHALL BE BOLT-ON TYPE.
- 4. PANELBOARDS SHALL BE MOUNTED AS SHOWN ON DRAWINGS. PROVIDE CIRCUIT BREAKERS AS SHOWN ON PANEL SCHEDULES AND SINGLE LINE DIAGRAM. PROVIDE
- 5. ALL PANELBOARDS AND CONTROL CABINETS SHALL BE LOCKABLE AND KEYED

WITH HINGED DOORS, TYPED PANEL CARDS AND PROPER BUSSING.

COMPANY REQUIREMENTS. IN NO CASE SHALL THE DIMENSIONS OF THE PULL SECTION BE LESS THAN REQUIRED BY THE SERVING UTILITY COMPANY. THE METER/MAIN SECTION SHALL INCLUDE ALL METERING EQUIPMENT INCLUDING CURRENT TRANSFORMERS, SOCKET, TEST BLOCK AND METERING BARRIER

6. THE UNDERGROUND PULL SECTION SHALL BE SIZED PER PLANS AND UTILITY

- SEPARATING METERING EQUIPMENT FROM MAIN DEVICE. THE MAIN SHALL BE A THERMAL MAGNETIC MOLDED CASE CIRCUIT BREAKER OR SOLID STATE CIRCUIT BREAKER. FUSIBLE SWITCHES SHALL NOT BE ACCEPTED UNLESS SPECIFICALLY SHOWN ON PLANS.
- 6. DISTRIBUTION BOARDS AND PANELBOARDS SHALL BE BY THE SAME MANUFACTURER AS UGPS AND METER/MAINS.
- 9. DIMENSIONS OF SWITCHGEAR DESIGN ARE TO BE USED IN LAYING OUT ELECTRICAL ROOM. ANY DEVIATIONS MAY VIOLATE CODE MINIMUM CLEARANCE. CONTRACTOR SHALL PROVIDE A SCALED AND DIMENSIONED PLAN OF ELECTRICAL ROOM SHOWING ACTUAL SWITCHBOARD SIZE AND EXACT LOCATION. THIS DRAWING SHALL BE FURNISHED WITH SHOP DRAWING SUBMITTAL.
- 10. DISTRIBUTION BOARDS SHALL BE FLOOR STANDING, FULL HEIGHT WITH MINIMUM OF 60 INCHES OF DISTRIBUTION AND CAPABLE OF HOUSING CIRCUIT BREAKER AS LARGE AS THE MAIN CIRCUIT BREAKER. THE BUSSING SHALL BE ALUMINUM BRACED FOR 65,000 AMPS (UNLESS OTHERWISE NOTED ON PLANS). THE BUSSING SHALL MATCH UP WITH METER MAIN AND BOLT TOGETHER. CABLE CONNECTIONS SHALL NOT THESE SECTIONS SHALL HAVE THE SAME INTERRUPTING RATING AS THE MAIN CIRCUIT BREAKER, CIRCUIT BREAKERS DOWN STREAM SHALL BE SERIES RATED AND SHALL BARE ALL TAGS AND CODE REQUIRED IDENTIFICATION.
- HORIZONTAL AND VERTICAL BUSSES SHALL BE FULL LENGTH. BUSS SHALL HAVE A MINIMUM WITHSTAND RATING EQUAL TO AVAILABLE FAULT CURRENT INDICATED ON DRAWINGS, BUT IN NO CASE SHALL THE RATING BE LESS THAT 65,000 AMPS, SYMMETRICAL UNLESS SPECIFICALLY SHOWN ON PLANS.
- 12. PROVIDE INTERCONNECTED FULL CAPACITY NEUTRAL BUS IN EACH SECTION WITH THE SAME RATINGS AND CONSTRUCTION AS THE PHASE BUSSES.
- 13. PROVIDE INTERCONNECTED GROUND BUS IN EACH SECTION. 14. PROVIDE SPACE AND ALL HARDWARE AND MOUNTING ATTACHMENTS FOR FUTURE
- DEVICES AS INDICATED ON THE DRAWINGS.
- 15. MAIN HORIZONTAL BUSSING SHALL BE FULL CAPACITY IN ALL SMITCHBOARD
- 16. VERTICAL BUSS MAY BE TAPERED, TO NOT LESS THAN ONE THIRD THE AMPACITY RATING OF THE MAIN HORIZONTAL BUSS; BUT IN NO CASE SHALL THE VERTICAL BUSS BE OF LESS CAPACITY THAN THE SUM OF THE FRAME SIZE AMPACITIES OF OVERCURRENT DEVICES MOUNTED IN THE RESPECTIVE SECTIONS INCLUDING ANY INDICATED SPARES AND SPACES.
- 17. THE SWITCHBOARD BUSSING SHALL BE OF SUFFICIENT CROSS-SECTIONAL AREA TO MEET UL STANDARD 891 ON TEMPERATURE RISE, BUS SHALL BE ALUMINUM. THE THROUGH BUS SHALL HAVE PROVISIONS FOR THE ADDITION OF FUTURE SECTION. THE THROUGH BUS SUPPORTS, CONNECTIONS AND JOINTS ARE TO BE BOLTED WITH GRADE 5 HEX HEAD BOLTS AND BELLEVILLE WASHERS TO MINIMIZE MAINTENANCE

OVERCURRENT DEVICES

- ALL OVER CURRENT DEVICES, INCLUDING BUT NOT LIMITED TO, CIRCUIT BREAKERS, FUSED SWITCHED, COMBINATION MOTOR STARTERS, ETC. SHALL HAVE AN INTERRUPTING RATING EQUAL TO OR EXCEEDING THE AVAILABLE FAULT CURRENT, INCLUDING MOTOR CONTRIBUTION. CONTRACTOR SHALL VERIFY THE UTILITY CO. AVAILABLE FAULT CURRENT PRIOR TO ORDERING EQUIPMENT. IN THE EVENT THE AVAILABLE FAULT CURRENT IS HIGHER THAN SHOWN ON THE DRAWINGS, CONTRACTOR SHALL ADJUST, AT NO COST, AS REQUIRED.
- 2. ALL CIRCUIT BREAKERS SHALL BE BY THE SAME MANUFACTURE, AS INDICATED ON THE SINGLE LINE DIAGRAM AND PANEL SCHEDULES.
- 3. CIRCUIT BREAKERS SHALL BE ARRANGED IN PANELS SO THAT PROPER TRIP SETTINGS AND NUMBERS CORRESPOND TO THE PANEL SCHEDULES ON THE DRAWINGS. IN NO CASE SHALL THE CONTRACTOR MODIFY THE BREAKER CONFIGURATION UNLESS WRITTEN AUTHORIZATION IS GIVEN BY THE ENGINEER OF
- TWO OR THREE POLE CIRCUIT BREAKERS SHALL BE COMMON TRIP TYPE. SINGLE POLE BREAKERS WITH TIE-BAR BETWEEN HANDLES ARE NOT ACCEPTABLE.
- 5. WHERE BRANCH CIRCUITS FEED MOTORS, WATER HEATERS AND SIGNAL DEVICES, THE BREAKER SHALL BE PROVIDED WITH A PERMANENT LOCK-OFF DEVICE.
- 6. ALL PANELBOARD CIRCUIT BREAKERS SHALL BE BOLT-ON TYPE.
- MAIN SERVICE DISCONNECT DEVICES SHALL BE CIRCUIT BREAKERS UNLESS OTHERWISE SPECIFIED IN PLANS.
- 8. MAIN SERVICE DISCONNECTS RATED 1000 AMPS OR MORE, SOLIDLY GROUND MYE WITH GREATER THAN 150 VOLTS TO GROUND AND BUT NOT EXCEEDING 600 VOLTS PHASE TO PHASE SHALL BE PROVIDED WITH A ZERO SEQUENCE GROUND FAULT DETECTION/INTERUPT DEVICE. ALL GROUND FAULT EQUIPMENT SHALL BE TESTED AND SET BY AN INDEPENDENT TESTING LABORATORY AND SHALL BE SET AS RECOMMENDED BY THE TESTING AGENCY SO AS TO BE COORDINATED WITH OTHER PROTECTION DEVICES WITHIN THE ELECTRICAL DESIGN. COPIES OF THE TEST AND SETTINGS SHALL BE SENT TO THE ARCHITECT. CONTRACTOR SHALL INCLUDE IN HIS BID ALL COST ASSOCIATED WITH TESTING AND SETTING OF GROUND FAULT
- 9. NEW CIRCUIT BREAKERS AND FUSIBLE SWITCHES INSTALLED IN EXISTING SWITCHBOARDS, DISTRIBUTION BOARDS AND PANELBOARDS SHALL MATCH EXISTING MANUFACTURER AND ALL ELECTRICAL CHARACTERISTICS OF THE EXISTING EQUIPMENT BUT IN NO CASE SHALL THE INTERRUPTING RATING BE LESS THAN THE AVAILABLE FAULT CURRENT, INCLUDING MOTOR CONTRIBUTION.
- IO. ALL FUSES SHALL BE CLASS "R" BUSS CO. LPN-RK (250V) OR LPS-RK (600V), UNLESS OTHERWISE NOTED. ALL FUSES SHALL PROPERLY SERIES RATE WITH DOWN STREAM DEVICES.
- ALL LIGHTING SHALL COMPLY WITH APPLICABLE ENERGY CODES WHETHER INDICATED IN THESE DRAWINGS OR NOT.
- PROVIDE LIGHT FIXTURES COMPLETE WITH LED MODULES, LAMPS, BALLAST'S, SOCKETS, HOUSINGS, CEILING TRIM RINGS FOR SPECIAL CEILINGS, BRACKETS, DIFFUSERS/LENSES AND OUTLET BOXES.
- 3. THE CATALOG NUMBERS INCLUDED IN THE FIXTURE SCHEDULE SHALL BE CONSIDERED TO ESTABLISH THE TYPE OR CLASS OF FIXTURE WITH A PARTICULAR MANUFACTURER ONLY. THE FIXTURE LENGTH, NUMBER AND TYPE OF LAMPS, COMPONENT MATERIALS, ACCESSORIES, MOUNTING TYPE AND ALL OTHER FEATURES REQUIRED TO FULFILL THE TOTAL DESCRIPTION OF THE FIXTURE BASED ON ALL DRAWINGS AND SPECIFICATION INFORMATION SHALL BE COMPLIED WITH REGARDLESS OF WHETHER OR NOT THE CATALOG NUMBER ON THE FIXTURE SCHEDULE SPECIFICALLY INCLUDES THESE FEATURES. IF ANY CONFLICT EXISTS BETWEEN THE CATALOG, THE CATALOG NUMBER AND THE DESCRIPTION, THE CONTRACTOR SHALL EITHER RESOLVE THE CONFLICT WITH THE ARCHITECT PRIOR TO SUBMITTAL OF THIS BID OR FURNISH THE FIXTURE TO MEET THE INTENT AS LATER

- - LIGHT FIXTURE WHERE OUTLET IS SHOWN ON DRAWINGS WITHOUT A FIXTURE TYPE
- 6. ALL FIXTURES OF ONE TYPE SHALL BE OF ONE MANUFACTURER AND OF IDENTICAL FINISH AND APPEARANCE, UNLESS OTHERWISE NOTED ON DRAWINGS.
- 8. LED FIXTURES SHALL BE COMPLETE WITH LED MODULES, DRIVERS, DIMMING CAPABILITY, MOUNTING HARDWARE AND WATTAGES PER FIXTURE SCHEDULE.

7. PROVIDE SEISMIC RESTRAINTS, AS REQUIRED, BY LOCAL JURISDICTION.

- 9. FLUORESCENT BALLAST SHALL BE RAPID START, HIGH FREQUENCY ELECTRONIC WITH HIGH POWER FACTOR (9 MINIMUM), CLASS "A" SOUND RATING OR BETTER AND SHALL COMPLY WITH APPLICABLE ENERGY CODES.
- 10. FLUORESCENT LIGHT FIXTURES SHOWN AS "E.M." SHALL BE PROVIDED WITH SINGLE LAMP EMERGENCY BATTERY BACKUP, TEST SWITCH AND RED L.E.D., UNIT SHALL BE CAPABLE OF PROVIDING 1400 LUMENS MINIMUM OR AS INDICATED ON FIXTURE
- II. ALL FLUORESCENT FIXTURES SHALL BE LAMPED WITH ENERGY SAVING LAMPS.
- 12. BALLAST'S FOR HID AND FLUORESCENT FIXTURES SHALL BE HIGH POWER FACTOR WITH LOWEST SOUND RATING AVAILABLE. BALLAST'S WHICH ARE JUDGED TO BE EXCESSIVELY NOISY BY THE ARCHITECT SHALL BE REPLACED AT NO ADDITIONAL COST. ALL BALLASTS SHALL BE ELECTRONIC AND MEET TITLE 20 AND TITLE 24 REQUIREMENTS WHETHER SHOWN ON PLANS OR NOT.
- 13. LIGHT FIXTURES SHALL HAVE ALL PARTS AND FITTINGS NECESSARY TO COMPLETE AND PROPERLY INSTALL THE FIXTURE. ALL FIXTURES SHALL BE EQUIPPED WITH LAMPS OF SIZE AND TYPE SPECIFIED.
- 14. SURFACE AND/OR WALL MOUNTED LIGHTING FIXTURES SHALL NOT HAVE ANY EXPOSED CHASE NIPPLES OR CONDUIT KNOCKOUTS VISIBLE TO VIEW WITHIN FIXTURE HOUSING. LIGHTING FIXTURES MOUNTED IN CONTINUOUS ROWS SHALL HAVE CHASE NIPPLES OR CONDUIT KNOCKOUTS BETWEEN FIXTURE HOUSINGS, BUT SHALL NOT HAVE VISIBLE CHASE NIPPLE/CONDUIT KNOCKOUTS ON THE VISIBLE ENDS OF THE CONTINUOUS ROW LIGHTING FIXTURE.
- WHERE FIXTURE COLOR IS INDICATED TO BE SELECTED BY THE ARCHITECT,
- 16. RECESSED FIXTURES MUST ALL HAVE U.L. APPROVAL FOR RECESSED INSTALLATION WITH PLASTER FRAME AND ATTACHED PULLBOX. LAMP ENCLOSURE, REFLECTORS AND FINISH WIRING SHALL NOT BE INSTALLED UNTIL PLASTERING IS COMPLETE. FINISH TRIM SHALL NOT BE INSTALLED UNTIL FINISH PAINTING OF THE ADJACENT
- 17. ALL FIXTURES SHALL BEAR U.L. LABEL OF APPROVAL FOR WATTAGE'S INDICATED
- LISTED FOR SUCH LOCATION.
- HAVE A SEPARATION OF 3" BETWEEN THE FIXTURE AND THE INSULATION. 20. FIXTURES LENSES AND DIFFUSERS SHALL BE AS CALLED OUT ON FIXTURE
- 21. ACRYLIC LENSES SHALL BE MANUFACTURED FROM 100% VIRGIN ACRYLIC AND BE .125" THICK MINIMUM. 22. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO VERIFY ACTUAL CEILING TYPE
- REPORTED TO THE ARCHITECT PRIOR TO ORDERING. RECESSED FIXTURE MOUNTED FLUSH IN "LAY-IN" T-BAR OR CONCEALED SPLINE CEILING SHALL BE PROVIDED WITH TWO CLIPS ON EACH END OF THE FIXTURE AND CONNECTED TO THE CEILING CROSS RUNNERS. PROVIDE TWO 12 GAUGE FIXTURE
- 24. SURFACE MOUNTED FIXTURES INSTALLED ON DRY WALL OR PLASTER CEILINGS AND WEIGHING LESS THAN 50 POUNDS MAY BE SUPPORTED FROM OUTLET BOX. PROVIDE STRUCTURAL SUPPORTS ABOVE DRYWALL OR PLASTER CEILING FOR INSTALLATION OF FIXTURE WEIGHING MORE THAN 50 POUNDS AND SECURE FIXTURES TO
- STRUCTURAL SUPPORTS. THE USE OF TOGGLE BOLTS IS PROHIBITED. 25. LIGHTING FIXTURES RECESSED IN CEILING OR DRY WALL WHICH HAS A FIRE RESISTIVE RATING OF ONE HOUR OR MORE SHALL BE ENCLOSED IN A BOX WHICH HAS A FIRE RATING EQUAL TO THAT OF THE CEILING OR WALL. THE SPACE FROM
- 26. LENS AND DIFFUSERS SHALL BE CLEANED COMPLETELY OF ALL DUST, DIRT, AND FINGERPRINTS AFTER THE INSTALLATION OF THE LIGHT FIXTURES, CEILING, PAINTING, AND PRIOR TO OCCUPANCY OF THE FACILITY BY OWNER.
- 28. PROVIDE ILLUMINATED EXIT SIGNS AS REQUIRED BY BUILDING DEPARTMENT OR FIRE MARSHALL. EXIT SIGNS SHALL HAVE SELF-CONTAINED EMERGENCY BATTERY PACKS. PROVIDE CIRCUITRY AS REQUIRED FOR EXIT SIGNS, VERIFY LOCATIONS. CONTRACTOR SHALL PROVIDE ADDITIONAL EXIT SIGNS AND CIRCUITRY AS

PART 3 - SYSTEMS

SCHEDULE.

- 3. THE MAXIMUM RESISTANCE TO GROUND SHALL NOT EXCEED 25 OHMS TO GROUND.
- 4. THE CONTRACTOR SHALL PROVIDE ALL INSTRUMENTATION AND TESTS FOR MEASURING THE RESISTANCE OF EACH PHASE TO GROUND. A PROPERLY CALIBRATED "MEGGER" TYPE INSTRUMENT SHALL BE USED. IN THE EVENT THAT HIGH RESISTANCE TO GROUNDS ARE FOUND THEY SHALL BE ISOLATED. MAKE PROPER CORRECTIONS TO RESTORE THE RESISTANCE TO AN ACCEPTABLE VALUE. INCLUDES | AF
- ADDITION OF MORE GROUND RODS, OR CHEMICAL GROUND RODS IF REQUIRED.

FINAL REQUIREMENTS/ LOCATIONS.

- CONTRACTOR SHALL INCLUDE ALL H.V.A.C. AND PLUMBING POWER AND CONTROL REQUIREMENTS IN BASE BID. REVIEW MECHANICAL AND PLUMBING DRAWINGS FOR
- 2. VERIFY EXACT LOCATIONS AND ORIENTATION OF ALL MECHANICAL AND PLUMBING EQUIPMENT WITH MECHANICAL AND PLUMBING DRAWINGS. FIELD VERIFY CONDITIONS WITH MECHANICAL AND PLUMBING CONTRACTORS PRIOR TO ROUGH-IN.
- BUT NOT LIMITED TO, ALL CONDUIT, WIRING, TIME CLOCKS, STARTERS, CONTROL DEVICES, RELAYS, DISCONNECT SWITCHES, ETC. FOR THE PROPER OPERATION OF THE MECHANICAL AND PLUMBING SYSTEMS. REFER TO THE MECHANICAL AND PLUMBING DRAWINGS AND ADDENDUMS FOR ADDITIONAL ELECTRICAL
- 4. ALL EQUIPMENT, ENCLOSURES, DEVICES, DISCONNECT SWITCHES, CONNECTIONS, ETC. LOCATED ON THE ROOF SHALL BE WEATHERPROOF.
- COMMUNICATIONS SYSTEM

REQUIREMENTS.

- TELEPHONE AND DATA OUTLETS SHALL CONSIST OF A SINGLE-GANG BOX WITH (I) 3/4"C.O. STUBBED 6" ABOVE ACCESSIBLE CEILING WITH A NYLON PULLSTRING. PROVIDE PLASTER RING AND A SINGLE-PORT FACE PLATE, COLOR SPECIFIED BY
- PULL STRING ROUTED TO THE NEAREST TELEPHONE BACKBOARD. 3. IT IS THE RESPONSIBILITY OF THE ELECTRICAL CONTRACTOR TO VERIFY THE TELEPHONE SERVICE ENTRANCE REQUIREMENTS AND SYSTEM DISTRIBUTION REQUIREMENTS WITH THE SERVING LOCAL TELEPHONE UTILITY COMPANY AND
- O. OTHER SYSTEMS

APPROPRIATE VENDOR.

CONTRACTOR SHALL REVIEW DRAWINGS AND SPECIFICATIONS OF ALL OTHER TRADES, INCLUDING BUT NOT LIMITED TO, ARCHITECTURAL, MECHANICAL, PLUMBING, LANDSCAPE, REFRIGERATION, KITCHEN, FIRE ALARM, LIFE SAFETY, SPRINKLER, SECURITY, AUDIO/VISUAL AND COMMUNICATIONS AND INCLUDE IN HIS BID ALL ELECTRICAL POWER, CONTROLS, CONDUIT ETC. NECESSARY TO MAKE THESE SYSTEMS OPERABLE WHETHER INDICATED ON THESE DRAWINGS OR NOT.

NECESSARY TO PROVIDE A SYSTEM PER THE SERVING UTILITY COMPANIES

3. CONTRACTOR SHALL VERIFY ALL EXISTING CONDITIONS AND UTILITY COMPANY REQUIREMENTS PRIOR TO BID.

- ELECTRICAL SYMBOLS LIST
- SOME SYMBOLS MAY NOT BE USE.

 - 53 THREE WAY SP PILOT LIGHT
 - SK KEYED SWITCH S2 - DPST
 - DUPLEX RECEPTACLE MOUNTED AT +18" AFF
 - DOUBLE DUPLEX RECEPTACLE, ONE DUPLEX CONTROLLED AND ONE DUPLEX UNCONTROLLED, MOUNTED AT +18" AFF

 - LOCATED WITHIN 25FT OF HVAC EQUIPMENT

 - MOTOR, EXHAUST FAN
 - THERMOSTAT MOUNTED AT 42" AFF, VERIFY WITH ARCH
 - TRANSFORMER, SEE PLANS OR CORRESPONDING SCHEDULE
 - 3#6-|#6*G*-|"C
 - 4#|2-|#|26-|/2"C 4#|0-|#|06-3/4"C 4#6-|#66-|"C 4#8-|#8**6-|**"C 5#|2-|#|2G-|/2"C 5#|*0*-|#|0G-3/4"C 5#8-|#8G-| |/4"C 5#6-|#6G-| |/4"C

 - --- UNDERGROUND CONDUIT, 3/4" MINIMUM ----- CONDUIT HOMERUN TO PANEL AND BREAKERS INDICATED E CONDUIT STUB OUT, VERIFY LOCATION
 - O CONDUIT RISER UP, VERIFY LOCATION
 - TELEPHONE OUTLET MOUNTED AT 18" AFF D DATA OUTLET MOUNTED AT 18" AFF TELEPHONE / DATA OUTLET MOUNTED AT 18" AFF
 - (-(W) COLD WATER SERVICE INTO BUILDING, VERIFY LOCATION MGB MAIN GROUND BUS

PB PULL BOX W TRAFFIC COVER

MATCH LINE REFERENCE SHEET LOCATION

- RELOCATED
- ARCHITECT CIRCUIT BREAKER
- CALIFORNIA ELECTRICAL CODE (CURRENT EDITION) CONDUIT
- FIELD VERIFY HOT, PHASE CONDUCTOR
- GENERAL CONTRACTOR GROUND FAULT INTERRUPTER GROUND FAULT PROTECTION FOR EQUIPMENT
- MOUNTED NEUTRAL, GROUNDED CONDUCTOR
- SWITCHBOARD TELEPHONE BACKBOARD TYPICAL

UNDERGROUND

- UNLESS OTHERWISE NOTED VOLTAGE DROP CONTRACTOR SHALL INCLUDE IN HIS BID, INCLUDING, BUT NOT LIMITED TO, ALL
 - [XXX] INDICATES MANUFACTURE'S CIRCUIT BREAKER TYPE

02/21/23

DRAWN

G.L./E.D.

DESIGNED BY

E-0.1 E.R.#22105

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- - PANELBOARDS, SWITCHBOARDS, AND DISTRIBUTION BOARDS ENCLOSURES SHALL BE NEMA I FOR INDOOR AND NEMA 3R FOR OUTDOOR USE. ALL GEAR SHALL BE PAINTED MANUFACTURERS STANDARD GRAY
 - COMPANY PRIOR TO ORDERING GEAR TO ENSURE PROPER BRACING AND SERIES
 - PROJECT AND SHALL HAVE AN E.U.S.E.R. NUMBER.
 - - SURFACE IS COMPLETE. 18. LIGHT FIXTURES INSTALLED OUTDOOR IN DAMP OR WET LOCATIONS SHALL BE U.L.

PROVIDED TWO COLOR CHIP SAMPLES FOR REVIEW.

- 19. LIGHT FIXTURES INSTALLED IN CONTACT WITH INSULATION SHALL HAVE PROPER I.C. RATING WHETHER SHOWN ON PLANS OR NOT. FIXTURES WITHOUT I.C. RATING SHALL
- AS DEFINED ON THE ARCHITECTURAL DRAWINGS AND FURNISH ALL FIXTURES WITH THE CORRECT MOUNTING DEVICES AND PROPER OPERATING VOLTAGES. CONTRACTOR SHALL VERIFY DEPTH OF ALL RECESSED FIXTURES WITH ARCHITECTURAL DRAWINGS PRIOR TO ORDERING. ANY DISCREPANCIES SHALL BE
- HANGER WIRE ATTACHED TO STRUCTURAL MEMBERS AND CONNECT TO DIAGONAL CORNERS OF FIXTURE. FIXTURE SHALL SET LEVEL AND FLUSH WITH CEILING GRID
- THE FIXTURE TO THE ENCLOSURE TO BE A MINIMUM OF 3".
- 27. ALL RECESSED INCANDESCENT DOWN LIGHTS SHALL BE EQUIPPED WITH THERMAL CUTOUTS WHERE REQUIRED BY CODE.
- REQUIRED WITHOUT ADDITIONAL COST.
- I. THE ELECTRICAL SYSTEM SHALL BE GROUNDED PER CODE. 2. EQUIPMENT GROUNDING SHALL BE PER 250.118.
- MECHANICAL/PLUMBING SYSTEMS
- 3. COORDINATE WITH MECHANICAL AND PLUMBING DRAWINGS AND PROVIDE, INCLUDING | EC
- PROVIDE WEATHERPROOF GFI RECEPTACLES WITHIN 25 FT. OF MECHANICAL AND PLUMBING EQUIPMENT WHETHER SHOWN ON THESE DRAWINGS OR NOT.
- ARCHITECT, UNLESS OTHERWISE NOTED. 2 TELEPHONE AND DATA OUTLETS IN BUILDINGS SERVED BY A PLENUM RATED CEILING OR AS REQUIRED BY LOCAL AUTHORITY SHALL HAVE 3/4"C.O. WITH NYLON
- REQUIREMENTS. 2. CONTRACTOR SHALL BUILD PER THE UTILITY COMPANIES ENGINEERED DRAWINGS

- AMPS INTERRUPTING CAPACITY
- CONDUIT ONLY ELECTRICAL CONTRACTOR
 - HORSEPOWER
- IN ACCORDANCE WITH ISOLATED GROUND
- NIGHT LIGHT FIXTURE, ON AT DUSK, OFF AT DAWN PROVIDE FURNISH, INSTALL AND CONNECT
- WEATHERPROOF TRANSFORMER

Exp. 9/30/24 /

- · THE JOB SHALL BE GUARANTEED FOR A PERIOD OF ONE (I) YEAR AFTER DATE OF
- CONTRACTOR SHALL SUBMIT 5 COPIES OF SHOP DRAWINGS, IN BOOKLET FORM, FOR LIGHTING FIXTURES. SUBMITTALS SHALL BE MADE TO THE ARCHITECT AS SOON AS EQUIPMENT UNTIL SUBMITTALS HAVE BEEN RETURNED AND STAMPED "REVIEWED" OR "REVIEWED AND CORRECTED" BY THIS OFFICE. MINIMUM REVIEW TIME IS TWO WEEKS UNLESS SUBSTITUTES HAVE BEEN SUBMITTED, WHICH MAY RESULT IN SIGNIFICANTLY LONGER REVIEW TIME. IN THE EVENT THE CONTRACTOR SUBMITS A SUBSTITUTION, HE

- RETORQUE WITHIN MAIN SWITCHBOARD TO MEET MANUFACTURES SPECIFICATIONS.
- THE OWNER IMMEDIATELY. DO NOT DISTURB, HANDLE OR ATTEMPT TO REMOVE.
- . ALL WEATHERPROOF JUNCTION BOXES SHALL BE "FS" TYPE, OTHERS SHALL NOT BE CONCRETE PULL BOXES: FURNISH COMPLETE WITH PULLING IRONS, HOT-DIP

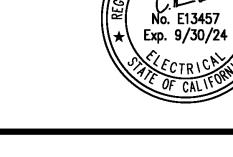
- WIRED. ONLY THESE RECEPTACLES LISTED HEREAFTER SHALL BE USED.
- RECEPTACLE AT EACH LOCATION INDICATED ON DRAWINGS.
- 6. FLUSH FLOOR DUPLEX CONVENIENCE RECEPTACLE IN A CAST IRON FLOOR BOX AS
- 7. ALL RECEPTACLES SHALL BE COMMERCIAL GRADE.
- DISCONNECTS

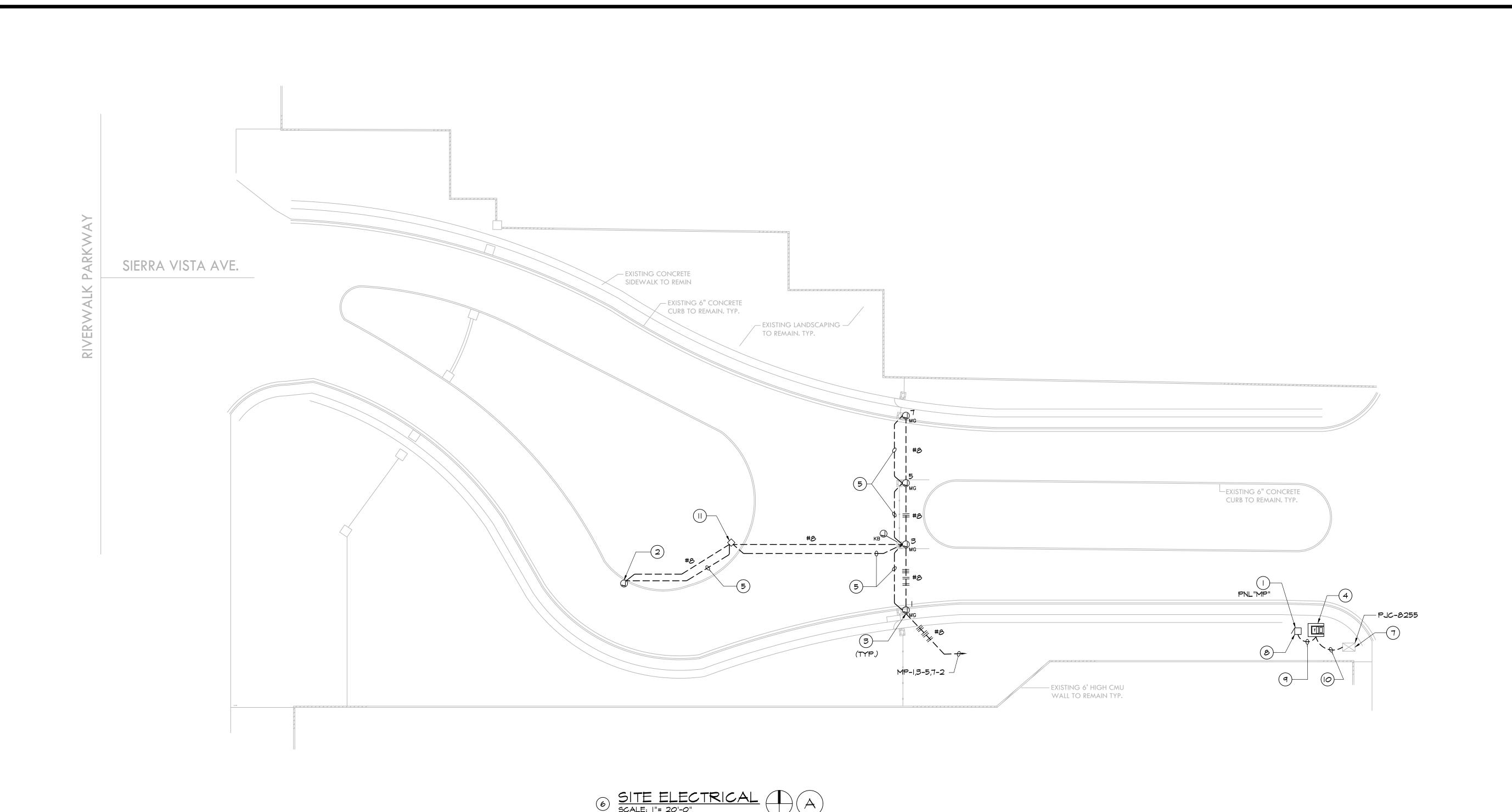
- FUSE PULLER.

- 7. FLEXIBLE STEEL CONDUIT MAY BE INSTALLED WHERE CONCEALED ABOVE CEILING EQUIPMENT INDICATED ON DRAWINGS TO HAVE FLEXIBLE CONNECTIONS, AND IN ALL
- ALL CONDUIT PENETRATIONS THROUGH FIRE-RATED FLOOR SLABS. SHAFTS AND WALLS SHALL BE SEALED TO PREVENT THE SPREAD OF FIRE OR SMOKE WITH AN APPROVED UL LISTED FIRE STOP OR FIRE RESISTANT SEALANT. THE RATING OF THE K. LIGHTING FIXTURES
- PREMANUFACTURE CONDUIT SYSTEMS MAY BE USED FOR LIGHTING SYSTEMS CONTRACTOR SHALL FURNISH COMPLETE SYSTEM WITH U.L. LISTED COMPONENTS AS APPROVED BY LOCAL JURISDICTION. CONTRACTOR SHALL PROVIDE SHOP DRAWING OF ENTIRE SYSTEM INDICATING ALL DEVICES, CONDUIT LENGTHS AND SUPPORTS.
 - INTERPRETED BY THE ARCHITECT WITHOUT CHANGE IN CONTRACT PRICE. 4. LIGHT FIXTURES SHALL BE OF TYPES AS INDICATED IN THE FIXTURE SCHEDULE ON THE DRAWINGS.

- COUPLINGS.
- PART 2 MATERIAL (CONTINUED) INCLUDE AN ALLOWANCE OF \$500,00 FOR THE SUPPLY AND INSTALLATION OF
 - - SPECIFICÁTION UNLESS OTHERWISE NOTED ELSEWHERE IN THESE DRAWIN**G**S VERIFY ALL LOCATIONS AND MOUNTING HEIGHTS WITH ARCHITECT.

 - SEE PLANS AND FIXTURE SCHEDULE FOR LIGHT FIXTURE SYMBOLS.
 - SWITCHES, SINGLE POLE, SINGLE THROW TOGGLE SWITCH MOUNTED AT 44" AFF SUBSCRIPT INDICATES CONTROL
 - S4 FOUR WAY SM MOTOR STARTER, NEMA 3R
 - SLV*1 OR \$*1 LOW VOLTAGE CONTROL SWITCH
 - DEDICATED DUPLEX RECEPTACLE MOUNTED AT +18" AFF DOUBLE DUPLEX RECEPTACLE MOUNTED AT +18" AFF
 - ## GFCI RECEPTACLE MOUNTED AT 42" AFF OR ABOVE BACKSPLASH
 - EI DEDICATED GFCI RECEPTACLE MOUNTED AT 42" AFF OR ABOVE BACKSPLASH OH SPECIAL USE RECEPTACLE (AS NOTED ON PLAN) MOUNTED AT +18" AFF
 - DUPLEX GFCI RECEPTACLE, HEAVY DUTY WEATHER PROOF WHILE IN USE,
 - Unction Box CEILING MOUNTED UH JUNCTION BOX - WALL MOUNTED →② JUNCTION BOX WITH EQUIPMENT CONNECTION
 - → FIRE SMOKE DAMPER TV OUTLET, MUD RING AND COVER PLATE WITH 3/4"CO UP TO ACCESSIBLE CEILING SPACE
 - 600V-3P NEMA 3R, HEAVY DUTY, HP RATED, FUSED DISCONNECT SWITCH 600V-3P HEAVY DUTY, HP RATED, FUSED COMBINATION MOTOR STARTER/DISCONNECT
 - PRIVATE METER, MOUNTED AT 60" AFF, VERIFY WITH ARCH BRANCH CIRCUIT PANELBOARD SURFACE MOUNTED BRANCH CIRCUIT PANELBOARD FLUSH MOUNTED ----- CONDUIT RUN CONCEALED IN WALLS OR CEILINGS
 - 6#|2-|#|2G-3/4**"**C 6#|O-|#|OG-3/4"C 6#8-|#8G-| |/4"C 6#6-|#6G-| |/4"C
 - CONDUIT RISER DOWN, VERIFY LOCATION
 - DETAIL REFERENCE SHEET LOCATION
 - ELECTRICAL ABBREVIATIONS HEIGHT TO CENTERLINE OF DEVICE ABOVE FINISHED FLOOR
 - AVAILABLE FAULT CURRENT ABOVE FINISHED FLOOR ABOVE FINISHED GRADE ABOVE FINISHED SLAB
 - DISCONNECT SWITCH FUSE RATED OR CIRCUIT BREAKER FRAME RATED DISCONNECT SWITCH AMPERAGE
 - EQUIPMENT GROUND EMERGENCY LIGHT FIXTURE WITH 90 MINUTE BACKUP POWER SOURCE ELECTRICAL POWER OFF FURNISHED BY OTHERS
 - MAIN GROUND BUS
 - UNDERGROUND PULL SECTION TRENCHING, CONDUIT, CONCRETE ENCASEMENT, PULL BOXES STRUCTURES, FEES, ETC. VERIFY LOCATION AND REQUIREMENTS





REFERENCE NOTES &

- (1) PROVIDE NEW SERVICE METER PEDESTAL-MYERS MODEL MEUGI6/C-100 304 SST ENCLOSURE TYPE 3R, RAINPROOF, 120/240 VOLT, SINGLE PHASE, 3 WIRES. (1) 50A CIRCUIT. (SEE E-3).
- PROVIDE NEW SUMMIT MT TELEPHONE ENTRY SYSTEM MOUNTED ON METAL PEDESTAL. PROVIDE CONTROL WIRING PER MANUFACTURE REQUIREMENTS. MOUNTED ON METAL PEDESTAL.
 - 3 PROVIDE NEW SWING GATE OPERATOR. PROVIDE FIRE STROBE SENSOR FOR AUTO OPEN FOR FIRST RESPONDERS.
 - 4 PROVIDE CONCRETE TRANSFORMER PAD PER UTILITY COMPANY REQUIREMENTS.
 - 5 PROVIDE CONTROL WIRING IN I" CONDUIT ONLY, PER MANUFACTURE REQUIREMENTS.
- 6 SAWCUT, TRENCH, BACKFILL, COMPACT TO MATCH EXISTING AFTER CONDUITS AND BOXES ARE INSTALLED.
- (7) EXISTING UTILITY COMPANY STRUCTURE.
- 8 PROVIDE METER PEDESTAL CONCRETE PAD PER UTILITY COMPANY REQUIREMENTS.
- 9 PROVIDE 3" C.O. FOR UTILITY COMPANY CONDUCTORS FROM TRANSFORMER TO METER PEDESTAL PER UTILITY COMPANY REQUIREMENTS.
- 10) PROVIDE 3" C.O. FOR UTILITY COMPANY CONDUCTORS FROM UTILITY STRUCTURE TO TRANSFORMER PER UTILITY COMPANY REQUIREMENTS.
- 11) PROVIDE AN II"XIT" CONCRETE PULLBOX WITH BOLT DOWN COVER, ENGRAVED "ELECTRICAL". ADD OTHER BOXES AS REQUIRED.

GENERAL SITE NOTES (UNLESS OTHERWISE NOTED)

- A. CONTRACTOR SHALL VERIFY ALL LOCATIONS, MOUNTING HEIGHTS AND REQUIREMENTS WITH OWNER, ARCHITECT AND/OR TENANT AS REQUIRED. CONTRACTOR SHALL REVIEW ALL DRAWINGS AND INCLUDE IN HIS BID ALL COSTS APPLICABLE TO THE ELECTRICAL TRADE WHETHER SHOWN IN THESE DRAWINGS OR NOT.
- B. INCOMING UTILITIES ARE IN THE PROCESS OF BEING COORDINATED BUT ARE STILL NOT TOTALLY DEFINED. CONTRACTOR SHALL BUILD FROM TELEPHONE AND ELECTRICAL UTILITY COMPANY ENGINEERED DRAWINGS.
- C. COORDINATE ALL REQUIREMENTS AND STANDARDS WITH THE UTILITY COMPANY AND TELEPHONE COMPANY PRIOR TO CONSTRUCTION.
- D. CONTRACTOR SHALL COORDINATE WITH UTILITY CONSULTANT AS
- E. ALL POWER AND TELEPHONE SERVICE CONDUITS SHALL BE PVC TYPE PER CORRESPONDING UTILITY COMPANY REQUIREMENTS.
- F. ALL UTILITY COMPANY CONDUITS SHALL BE INSTALLED PER UTILITY COMPANY REQUIREMENTS.
- G. UTILITY AND TELEPHONE CONDUITS MAY BE INSTALLED IN A COMMON TRENCH, PROVIDING THERE IS 12" MINIMUM SEPARATION BETWEEN SERVICE. COORDINATE WITH UTILITIES.
- H. ALL UTILITY PULL BOXES AND TRANSFORMER PADS SHALL BE INSTALLED LEVEL AND SET ON A 6" BED OF 3/4" GRAVEL. INCLUDE ALL OTHER INSTALLATION REQUIREMENTS DICTATED BY CORRESPONDING UTILITY COMPANY.
- I. ALL ELECTRICAL RELATED CONDITIONS SHALL BE VERIFIED IN FIELD PRIOR TO START OF CONSTRUCTION.
- J. CONTRACTOR SHALL PROVIDE PULL BOXES, SIZED PER CODE, AS REQUIRED TO FACILITATE PULLING OF CONDUCTORS. PROVIDE ALL PULLING CALCULATIONS.
- K. ALL UTILITY COMPANY PADS SHALL BE 3 FEET CLEAR MINIMUM FROM FACE OF ANY BUILDING OR FUTURE BUILDING. VERIFY REQUIREMENTS
- WITH UTILITY COMPANY PRIOR TO START OF WORK.

 L. PROVIDE PROTECTIVE BOLLARDS AROUND ALL STRUCTURES PER UTILITY
- COMPANY REQUIREMENTS.

 M. ENDS OF CONDUITS STUBBED UP THROUGH THE FLOOR SLAB SHALL BE GALVANIZED RIGID (GRC) TYPE, THREADED FOR A CAP WITH
- N. PROVIDE 48" GRC 90FL ELBOW AT EACH PULL END TO LIMIT CABLE BURN/FRICTION WHEN PULLING THE CABLES.
- O. ALL UNDERGROUND CONDUITS SHALL BE 3/4" MINIMUM.

PULL-STRING. LABEL EACH LOCATION.

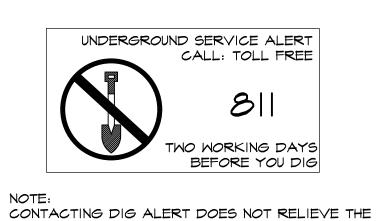
PROVIDE WP J-BOX FOR KNOX BOX. VERIFY EXACT LOCATION.

REPROVIDE I" CO FROM KNOX BOX GATE OPERATOR.

SITE LEGEND (SOME MAY NOT BE USED)

PROVIDE WEATHERPROOF J-BOXES WITH I"C AND CONDUCTORS FOR MOTORIZED GATE POWER AND I" C AND CONDUCTORS FOR GATE CONTROL BETWEEN J-BOXES. PROVIDE 3/4" X IO' COPPER CLAD ROD AT EACH GATE MOTOR. BOND AS REQUIRED, VERIFY EXACT LOCATIONS AND REQUIREMENTS WITH OWNER.





CONTRACTOR OF THE RESPONSIBILITY OF LOCATING THE EXISTING UTILITIES AND SERVICES



13457 /30/24 * ERICALIFORNIA

E.R.#22105

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DATE
02/21/23
DRAWN
G.L./E.D.
DESIGNED

DATE
02/21/23

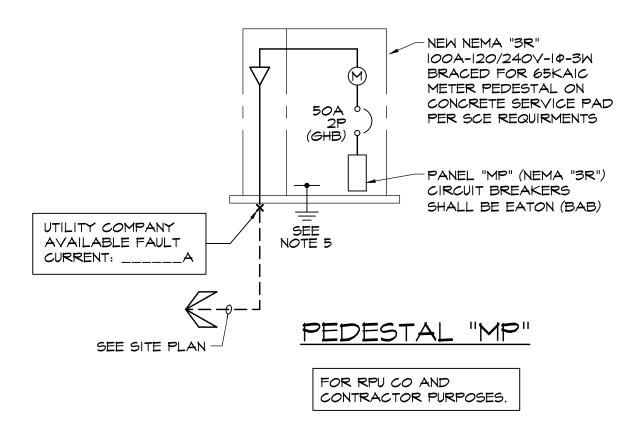
DRAWN
G.L./E.D.

DESIGNED BY
C.N.

C.N.

SITE PLAN

UJ



"MP" GATE MOTOR SINGLE LINE DIAGRAM (1234)

REFERENCE NOTES

- () ALL EQUIPMENT SHALL BE U.L. LISTED.
- (2) ALL EQUIPMENT CLEARANCES SHALL BE PER CODE.
- 3 SINGLE LINE IS ONLY DIAGRAMMATIC, PEDESTAL SHALL BE LAID OUT PER CORRESPONDING PLAN ON THESE DRAWINGS.
- 4 PER ART. 110.22 EQUIPMENT WITH SERIES RATING APPLIED SHALL BE MARKED: "CAUTION-SERIES COMBINATION SYSTEM RATED ____AMPERES. IDENTIFIED REPLACEMENT COMPONENTS REQUIRED." SEE SINGLE LINE DIAGRAM FOR AVAILABLE FAULT CURRENT.

SINGLE LINE DIAGRAM NOTES

- I. SIZE NO. I AWG CONDUCTORS AND SMALLER ARE TO USE THE 60° COLUMN OF TABLE 310.16 TO DETERMINE AMPACITY. CONDUCTORS #1/O AWG AND LARGER ARE TO USE THE 75° COLUMN OF TABLE 310.16 TO DETERMINE AMPACITY. (SEE UL ELECTRICAL CONSTRUCTION MATERIALS DIRECTORY & ART 110.14(C).
- 2. ALL CONDUCTORS SHALL BE COPPER AND RATED 90°C AND 600 VOLTS. SIZES NO. 8 AWG AND LARGER SHALL BE STRANDED AND NO. 10 AND SMALLER SHALL BE SOLID. USE TYPE THHN/THWN-2.
- 3. PEDESTAL SHALL BE BRACED FOR 65,000 AIC MINIMUM, UNLESS OTHERWISE NOTED. ALL OVER CURRENT DEVICES IN THE MAIN SWITCHBOARD SHALL BE FULLY RATED AT 65,000 AIC MINIMUM AND SHALL SERIES RATE AT 65,000 AIC WITH DOWN STREAM DEVICES, UNLESS OTHERWISE NOTED.
- 4. ALL CIRCUIT BREAKERS SHALL BE BOLT ON TYPE.
- 5. PROVIDE MAIN SERVICE GROUND CONSISTING OF (2) 10'X3/4" DIA. COPPER CLAD GROUND RODS SPACED AT LEAST 6' APART WITH 1#2 CU-3/4"C BETWEEN GROUND RODS AND METER PEDESTAL GROUND BUS. BOND AT BOTH ENDS.
- 6. SERIES RATING BASED ON EATON 65KAIC UL COMPONENT RECOGNIZED SERIES CONNECT RATINGS.

UTILITY NOTES:

INCOMING UTILITIES ARE IN THE PROCESS OF BEING COORDINATED BUT ARE STILL NOT TOTALLY DEFINED. CONTRACTOR SHALL BUILD FROM ELECTRICAL UTILITY COMPANY ENGINEERED DRAWINGS.

MOUNT					NEW PA				100					
1	JSH FULLY RATED			1:	20/240 VO		V		MAIN CIRCUIT BREAKER					
X FRI	EE STANDING Circuit			*	100 AN	Per Phase			MAIN LUGS ONLY Circuit	1				
No	Description	Qty	Bkr		Phase A		Dla	Qty	Circuit	_				
1	GATE MOTOR 1	1	15	*	720	riiase b	15	Qty	TELE. ENTRY SYS.	+				
	GATE MOTOR I	'	13		100		1	'	TELE. ENTRY 313.	F				
3	GATE MOTOR 2	1	<u> </u>	*	100	720		1	SPARE	+				
	GATE MOTOR 2	'	2			120	20	'	STAIL	H				
5	GATE MOTOR 3	1	15	*	720			\vdash	SPACE	+				
<u> </u>	GATE MOTOR O	'	'-		720				SIAGE	H				
7	GATE MOTOR 4	1	-	*		720			SPACE	+				
	G, (12 III G 1 G 1 1 1		2						5.7.52	H				
9	SPACE		F						SPACE	$^{+}$				
										H				
11	SPACE								SPACE	t				
										H				
Long Co Total V <i>F</i> Total V <i>F</i>	tal VA of Phases A & B = ontinuous Load (Light Wattage A Minus Long Continuous Load A Plus 125% Of Long Continuo ge (Line Above Divided By Vo	' d = ous Loa∉		LCL *	2,980 2,880 100	x 125 x 100 3,700)% = 	_	3,600 Plus 100 Equals					
VA Of Highest Phase =				1,540					FOR RPU CO AND					
Highest	Phase Amperage =				13			CC	ONTRACTOR PURPOSE	==				
								1						

	VOLTAGE DROP CALCULATIONS																
CONTINUATION OF PREVIOUS	SOURCE	LOAD	NOMINAL VOLTAGE	PHASE	LINE SIDE VOLTAGE	DESIGN CKT AMPACITY	PARALLEL	WIRE SIZE (AWG-kcmil)	CONDUCTOR (Cu, Al)	CONDUIT (PVC, AI, Steel)	DISTANCE (3)	DEMAND LOAD	POWER FACTOR (2)	SOURCE XFMR TAP	END VOLTAGE	VOLTAGE DROP (1)	VOLTAGE
								_									
	MP-1	Gate Motor 1	120 V	1	120.0 V	20 A	1	8	Cu	PVC	220'	6.00	0.90		118.1 V	1.9 V	1.69
	MP-3	Gate Motor 2	120 V	1	120.0 V	20 A	1	8	Cu	PVC	230'	6.00	0.90		118.0 V	2.0 V	1.79
	MP-5	Gate Motor 3	120 V	1	120.0 V	20 A	1	8	Cu	PVC	240'	6.00	0.90		117.9 V	2.1 V	1.7
	MP-7	Gate Motor 4	120 V	1	120.0 V	20 A	1	8	Cu	PVC	250'	6.00	0.90		117.8 V	2.2 V	1.89
															l		
1) VALU	JES OF AC REACTANCE F	OR COPPER AND ALUMINU	M COND	JCTORS	USED IN C	ALCULA	TING VO	TAGE DI	ROP ARE	FROM	NEC CHA	PTER 9,	TABLE 9				
		POWER FACTORS ARE ST															
		O ON PLAN, PLUS VERTICA															
		EPENDING ON TRANSFOR															
	EFERENCED FROM NOMIN		WILLY IV	. I LIXOL	INT VOLITA	DI DITO	DOLO	1017111									
U) AO IN	LI LINCLD I NOM NOM				MERUN USI												

GENERAL SINGLE LINE DIAGRAM NOTES (UNLESS OTHERWISE NOTED)

- A. ALL ELECTRICAL EQUIPMENT SHALL BE LABELED, LISTED OR CERTIFIED BY A NATIONALLY RECOGNIZED TESTING LABORATORY ACCREDITED BY THE UNITED STATES OCCUPATIONAL SAFETY HEALTH ADMINISTRATION.
- B. ALL EQUIPMENT SHALL BE INSTALLED PER IT'S LISTING.
- C. ALL EQUIPMENT CLEARANCES SHALL BE PER CODE.
- D. ELECTRICAL DRAWINGS AND SINGLE LINE DIAGRAMMATIC IN NATURE. SWITCHBOARD SHALL BE LAID OUT PER CORRESPONDING PLAN ON THIS DRAWING.
- E. PER ART. 110.22 EQUIPMENT WITH SERIES RATING APPLIED SHALL BE MARKED: "CAUTION-SERIES COMBINATION SYSTEM RATED 65,000 AMPERES. IDENTIFIED REPLACEMENT COMPONENTS REQUIRED." SEE SINGLE LINE DIAGRAM FOR AVAILABLE FAULT CURRENT.
- F. SIZE NO. I AMG CONDUCTORS AND SMALLER ARE TO USE THE 60 DEG C COLUMN OF TABLE 310.15(B)(16) TO DETERMINE AMPACITY. CONDUCTORS #1/O AMG AND LARGER ARE TO USE THE 75 DEG C COLUMN OF TABLE 310.15(B)(16) TO DETERMINE AMPACITY. (SEE UL ELECTRICAL CONSTRUCTION MATERIALS DIRECTORY AND ART 110.14(C).
- G. ALL CONDUCTORS SHALL BE COPPER AND RATED 90 DEG C AND 600 YOLTS. SIZES NO. & AWG AND LARGER SHALL BE STRANDED AND NO. 10 AND SMALLER SHALL BE SOLID. USE TYPE THHN/THWN-2/XHHW/XHHW-2.
- H. ALL CIRCUIT BREAKERS SHALL BE BOLT ON TYPE.
- I. MAIN SWITCHBOARD SHALL BE RATED FOR IOOK AIC MINIMUM, UNLESS OTHERWISE NOTED. ALL OVER CURRENT DEVICES IN THE MAIN SWITCHBOARD SHALL BE FULLY RATED AT IOOK AIC MINIMUM AND SHALL SERIES RATE AT IOOK AIC WITH DOWN STREAM DEVICES, UNLESS OTHERWISE NOTED.
- J. ALL 480V DISTRIBUTION BOARDS, PANEL BOARDS AND DEVICES DOWNSTREAM OF THE MAIN SWITCHBOARD SHALL BE SERIES RATED AT IOOK AIC, BASED ON MANUFACTURER'S COMPONENT RECOGNIZED SERIES CONNECT RATINGS, UNLESS OTHERWISE NOTED.
- K. ALL 120/208V DISTRIBUTION BOARDS, PANEL BOARDS AND DEVICES SHALL BE FULLY RATED AT 10K AIC MINIMUM, UNLESS OTHERWISE NOTED. WHERE THE TRANSFORMER AVAILABLE FAULT CURRENT (AFC) EXCEEDS 10K AIC, THE MINIMUM AIC RATING SHALL EXCEED THAT SHOWN ON THE TRANSFORMER SCHEDULE, UNLESS OTHERWISE NOTED.
- L. PER IIO.24(A), CONTRACTOR SHALL LEGIBLY MARK SERVICE EQUIPMENT WITH THE MAXIMUM AVAILABLE FAULT CURRENT. THE FIELD MARKING(S) SHALL INCLUDE THE DATE THE FAULT CURRENT CALCULATION WAS PERFORMED AND BE OF SUFFICIENT DURABILITY TO WITHSTAND THE ENVIRONMENT INSTALLED. WHERE MODIFICATIONS TO THE ELECTRICAL SYSTEM OCCUR, COMPLY WITH IIO.24(B).

- M. PRIOR TO ENERGIZING THE SYSTEM, CONTRACTOR SHALL PROVIDE THIRD PARTY GROUND TEST TO MEASURE THE RESISTANCE BETWEEN THE GROUND SYSTEM AND EARTH. PROVIDE REPORT TO ENGINEER.
- N. ALL FUSES SHALL BE CLASS "R" LPN-RK (250V) OR LPS-RK (600V), UNLESS OTHERWISE NOTED.
- O. THE FEEDER LENGTHS SHOWN ARE ESTIMATED FOR VOLTAGE DROP CALCULATIONS ONLY. CONTRACTOR SHALL NOT USE THE LENGTHS FOR
- BIDDING OR ORDERING PURPOSES.

 P. ALL SWITCHBOARDS AND PANELBOARDS SUPPLIED BY A FEEDER IN OTHER THAN ONE OR TWO-FAMILY DWELLINGS SHALL BE MARKED TO INDICATE THE DEVICE OR EQUIPMENT WHERE THE POWER SUPPLY

ORIGINATES. COMPLY WITH 408.4(B).

- Q. WHERE A TRANSFORMER IS NOT WITHIN SIGHT OF ITS SUPPLY SIDE DISCONNECT, PROVIDE A PERMANENT PLACARD ON THE TRANSFORMER INDICATING THE LOCATION OF THE SUPPLY SIDE DISCONNECTING MEANS. THE SUPPLY SIDE DISCONNECT SHALL BE LOCKABLE IN THE OPEN POSITION. COMPLY WITH CEC 450.14.
- R. CONTRACTOR SHALL PROVIDE AN ARC ENERGY REDUCTION SYSTEM TO COMPLY WITH 240.87. PROVIDE AN ENERGY-REDUCING MAINTENANCE SWITCH WITH LOCAL STATUS INDICATOR ON ALL OVERCURRENT DEVICES FOR WHICH THE INSTALLED CIRCUIT BREAKER IS RATED OR CAN BE ADJUSTED TO 1200 AMPERES OR HIGHER. PROVIDE DOCUMENTATION PER 240.87(A).
- S. IF THE UTILITY-PROVIDED METER DOES NOT INDICATE INSTANTANEOUS KW DEMAND AND KWH FOR A UTILITY-DEFINED PERIOD, THEN CONTRACTOR SHALL PROVIDE A SEPARATE METER TO MEET 2019 TITLE 24 TABLE 130.5-A. METER SHALL BE INTEGRAL TO SWITCHBOARD OR PANEL BOARD AS APPLICABLE.
- T. ALL CIRCUIT BREAKER AND PANEL BOARD TERMINAL LUGS SHALL BE RATED FOR THE CONDUCTOR SIZE AND QUANTITY SHOWN ON THE SINGLE LINE DIAGRAM AND ASSOCIATED FEEDER SCHEDULE.
- U. ALL CIRCUIT BREAKER AND PANEL BOARD TERMINAL LUGS SHALL BE RATED FOR 75ÁC AND FOR THE CONDUCTOR MATERIAL SPECIFIED ON THE SINGLE LINE DIAGRAM AND ASSOCIATED FEEDER SCHEDULE.
- V. ALL PANEL BOARDS WITH MAIN CIRCUIT BREAKERS SHALL HAVE THE MAIN CIRCUIT BREAKER INDIVIDUALLY MOUNTED TO ELIMINATE BUS SUPPORTS WHERE POSSIBLE. BACK FEED OF CHASSIS CIRCUIT BREAKERS IS NOT ALLOWED.
- W. ELECTRICAL EQUIPMENT SHALL BE MANUFACTURED BY <u>EATON</u>. THE PHYSICAL DIMENSIONS OF THE EQUIPMENT IS BASED ON THE SPECIFIED MANUFACTURER. THE CONTRACTOR ASSUMES ALL RESPONSIBILITY AND LIABILITY FOR ANY SUBSTITUTE.

- X. CONTRACTOR SHALL INCLUDE IN HIS BID THE COSTS OF ALL CONDUCTOR PULLING CALCULATIONS AS REQUIRED.
- Y. CONTRACTOR SHALL INCLUDE ALL NECESSARY PULL BOXES OR SPLICE BOXES AS REQUIRED TO MEET THE INTENT OF DESIGN.
- Z. CONTRACTOR SHALL COORDINATE ALL CONDUIT ROUTING AND ELECTRICAL EQUIPMENT LOCATIONS WITH ARCHITECT, OWNER, TENANT AND OTHER TRADES.
- AA.CONTRACTOR SHALL MAINTAIN CODE REQUIRED CLEARANCES FOR ALL ELECTRICAL EQUIPMENT
- AB. CONTRACTOR SHALL CONSULT WITH AND COORDINATE WITH STRUCTURAL ENGINEER FOR ALL CONDUIT OR ELECTRICAL EQUIPMENT MOUNTED TO OR SUSPENDED FROM CEILINGS, ROOF STRUCTURES, WALLS OR OTHER STRUCTURAL ELEMENTS. CONTRACTOR IS RESPONSIBLE FOR PROVIDING THE STRUCTURAL ENGINEER WITH WEIGHTS, SIZES, MOUNTING POINTS AND ALL OTHER DATA NECESSARY FOR THE STRUCTURAL ENGINEER TO COMPLETE HIS ANALYSIS. WHERE NECESSARY, THE CONTRACTOR SHALL INCLUDE IN HIS BID A LINE ITEM COST TO HIRE A STRUCTURAL ENGINEER, LICENSED IN THE STATE OF THE PROJECT, TO CONDUCT THE REQUIRED ENGINEERING.
- AC.CHARACTERS IN SQUARE BRACKETS [] INDICATE SWITCHBOARD
 MANUFACTURER'S CIRCUIT BREAKER TYPES. CONTRACTOR SHALL ENSURE
 CIRCUIT BREAKER'S AIC RATING EXCEEDS AVAILABLE FAULT CURRENT
 AT THAT LOCATION OR IS PROPERLY SERIES RATED.
- AD.CONTRACTOR SHALL VERIFY ALL LOCATIONS, MOUNTING HEIGHTS, CONNECTIONS AND REQUIREMENTS WITH OTHER TRADES, OWNER, ARCHITECT AND/OR TENANT AS APPLICABLE PRIOR TO INSTALL AND ADJUST ACCORDINGLY. CONTRACTOR SHALL REVIEW ALL OTHER TRADE'S DRAWINGS AND INCLUDE IN HIS BID ALL COSTS APPLICABLE TO THE ELECTRICAL TRADE WHETHER SHOWN IN THESE DRAWINGS OR NOT.
- AE. PER ART. 110.24 SERVICE EQUIPMENT IN OTHER THAN DWELLING UNITS SHALL BE LEGIBLY MARKED IN THE FIELD WITH THE MAXIMUM AVAILABLE FAULT CURRENT. THE FIELD MARKING(S) SHALL INCLUDE THE DATE THE FAULT-CURRENT CALCULATION WAS PERFORMED AND BE OF SUFFICIENT DURABILITY TO WITHSTAND THE ENVIRONMENT INVOLVED.

		EEDER S		<u> </u>	
DESIGNATION	NO. SETS	PHASE CONDUCTORS	NEUTRAL	EQUIPMENT GROUND	CONI
	1	2410		1#16	1 /01
F206	1	3# 2 3# 2	l#l2	# 2 # 2	1/2' 3/4
F20NG	l	<u>⊃#1∠</u>	# ∠	<u> </u>	5/4
F306	1	3#10		I#I <i>O</i>	3/4
F30NG	i	3#IO	I#I <i>O</i>	1#10	3/4
F506		3#6		I#I <i>O</i>	/-
F50NG	<u> </u>	3#6	<u> #6</u>	<u> # 0</u>	/•
TF50NG		3#6	1#6	I#8	/-
F706	1	3#4		I#8	/-
FTONG	i	3#4	#4	I#8	1 1/-
				, ,	,
F1006	l	3#		I#8	1 1/:
FIOONG	<u> </u>	3#1	[#]	I#8	2" 2"
TFIOONG		3#1	#	1#6	2"
EIOEG	1	2# 1/0		 #6	2"
<u>F1256</u> F125NG	<u> </u>	3# I/O 3# I/O	# /0		<u>2</u> 2"
1 125110	<u> </u>	J# 1/U	1# 1/0	1#0	
F1506		3# I/O		1#6	2"
FI50NG	I	3# 1/0	I# I/O	1#6	2"
TFI50NG	- 1	3# I/O	# <i> </i> O	I#6	2"
FI756	<u> </u>	3# 2/O	I# 2/0	#6 #6	2" 2"
FI75NG	l	3# 2/O	l# 2/O	1#6	
F200G	1	3# 3/0		1#6	2"
F200NG	i	3# 3/O	I# 3/O	1#6	
		·	·		
F2256	l	3# 4 <i>/0</i>		l# 4	2 1,
F225NG	<u> </u>	3# 4/0	I# 4/O	I#4	2 1,
TF225NG		3# 4/O	I# 4/O	l#2	2 1,
F35 <i>06</i>	1	3#400		#2	3"
F350NG	i	3#400	1#400		3 I
1 000110	•	<u> </u>			
F400G		3#5 <i>00</i>		l#2	4"
F400NG	<u> </u>	3#500	1#500	l#2	4"
TF400NG	2	<u>3#3/0</u>	1#3/0	l#2	2 1,
F500G	2	3#25 <i>O</i>		l#2	2 1/
F500NG	_ <u></u>	3#25 <i>O</i>	l#25 <i>O</i>	l#2	3"
TF500NG	2	3#25 <i>0</i>	l#25 <i>0</i>	I#I <i>/O</i>	3"
F600G	2	3#350		#	3"
F600NG	2	3#35 <i>0</i>	1#350	#	3 1/
F800G	2	3#500		# /0	4"
F800NG	2	3#5 <i>00</i>	1#500	# /O	
TF800NG	2	3#600	1#600	I# 3/O	4"
F10006	3	3#4 <i>00</i>		l# 2/0	3"
FIOOONG	3	3#4 <i>00</i>	<u> #400</u>	# 2/O	3 1/
TFIOOONG	3	3#4 <i>00</i>	1#400	I# 3/O	4"
F12006	3	3#600		I# 3/O	4"
F12008	<u> </u>	3#600	1#600	# 3/O	
					•
F1600G	4	3#600		I# 4/O	4"
FI600NG	4	3#600	1#600	I# 4/O	4"
TF1600NG	4	3#600	1#600	I# 4/O	4"
E20000	=	3#600		1#250	4"
F2000G F2000NG	<u>5</u>	3#600 3#600	I#600	#25 <i>0</i> #25 <i>0</i>	<u>4"</u> 4"
1 2000110		J.,500	1500	1"200	
F25006	6	3#600		1#350	4"
F2500NG	6	3#600	1#600	1#350	4"
F30006	8	3#500		1#400	4"
F3000NG	8	3#500	1#500	1#400	4"
F4000G	10	3#600		1#500	4"

NOTES

ALL FEEDERS MAY NOT BE USED.

- 2. DESIGNATION DEFINITIONS:

 "F" INDICATES FEEDER

 NUMBER INDICATES OVERCURRENT DEVICE TRIP RATING

 "N" INDICATES PROVIDE NEUTRAL CONDUCTOR

 "G" INDICATES PROVIDE EQUIPMENT GROUNDING CONDUCTOR

 "VD" INDICATES FEEDER HAS BEEN ADJUSTED FOR VOLTAGE DROP
- 3. ALL CONDUCTORS SHALL BE COPPER AND RATED FOR 600V.

"TF" INDICATES TRANSFORMER SECONDARY FEEDER

- 4. FEEDER SCHEDULE IS BASED ON CONDUCTOR TYPES: THHN/THWN-2 IN ELECTRICAL METALLIC TUBING, FLEXIBLE METALLIC CONDUIT, INTERMEDIATE METALLIC CONDUIT, LIQUID TIGHT FLEXIBLE METAL CONDUIT, RIGID METAL CONDUIT OR SCHEDULE 40 PVC CONDUIT ONLY
- 5. NO. SETS INDICATES NUMBER OF PARALLEL SET OF CONDUITS AND CONDUCTORS. EACH PARALLEL CONDUIT SHALL INCLUDE ALL PHASE, NEUTRAL AND GROUND CONDUCTORS INDICATED. COMPLY WITH ART
- 6. GROUND CONDUCTOR ON SEPARATELY DERIVED SYSTEMS SHALL BE SIZED BASED ON TABLE 250.66.
- 7. WHERE NUMBER OF EQUIPMENT GROUNDS ARE 2, ONE SHALL BE AN ISOLATED GROUND, UNLESS OTHERWISE NOTED.



E-2 E.R.#221*0*5

01/05/23

6.L./E.D.

DESIGNED B