

PART 1 GENERAL INSTRUCTIONS

1.1 GENERAL REQUIREMENTS

- A. ALL REQUIREMENTS IN THE ARCHITECTURAL SPECIFICATIONS, ARCHITECTURAL GENERAL NOTES AND THE GENERAL AND SUPPLEMENTARY CONDITIONS OF THESE SPECIFICATIONS APPLY TO THIS SECTION AND DIVISION. WHERE THE REQUIREMENTS OF THIS SECTION AND DIVISION EXCEED THOSE OF THE ARCHITECTURAL SPECIFICATIONS AND ARCHITECTURAL GENERAL NOTES, THIS SECTION AND DIVISION TAKE PRECEDENCE. BECOME THOROUGHLY FAMILIAR WITH ALL REQUIREMENTS THAT AFFECT THIS DIVISION, SECTION OR BOTH. WORK REQUIRED UNDER THIS DIVISION INCLUDES ALL MATERIAL, EQUIPMENT, APPLIANCES, AND LABOR REQUIRED TO COMPLETE THE ENTIRE ELECTRICAL SYSTEM AS REQUIRED BY THE DRAWINGS AND SPECIFICATIONS, OR REASONABLY INFERRED TO BE NECESSARY TO FACILITATE EACH SYSTEM'S FUNCTIONALITY AS IMPLIED BY THE DESIGN AND THE EQUIPMENT SPECIFICATIONS.
- B. THE SPECIFICATIONS AND DRAWINGS ARE COMPLEMENTARY, AND PORTIONS OF THE WORK DESCRIBED IN ONE, SHALL BE PROVIDED AS IF DESCRIBED IN BOTH. IN THE EVENT OF DISCREPANCIES, NOTIFY THE ENGINEER AND REQUEST CLARIFICATION PRIOR TO PROCEEDING WITH THE WORK INVOLVED. DRAWINGS ARE GRAPHIC REPRESENTATIONS OF THE WORK UPON WHICH THE CONTRACT IS BASED. THEY SHOW THE MATERIALS AND THEIR RELATIONSHIP TO ONE ANOTHER, INCLUDING SIZES, SHAPES, LOCATIONS, AND CONNECTIONS. THEY ALSO CONVEY THE SCOPE OF WORK, INDICATING THE INTENDED GENERAL ARRANGEMENT OF THE EQUIPMENT, FIXTURES, OUTLETS AND CIRCUITS WITHOUT SHOWING ALL OF THE EXACT DETAILS AS TO ELEVATIONS, OFFSETS, CONTROL LINES, AND OTHER REQUIREMENTS. USE THE DRAWINGS AS A GUIDE WHEN LAYING OUT THE WORK AND TO VERIFY THAT MATERIALS AND EQUIPMENT WILL FIT INTO THE DESIGNATED SPACES AND WHICH, WHEN INSTALLED PER MANUFACTURERS' REQUIREMENTS, WILL ENSURE A COMPLETE, COORDINATED, SATISFACTORY AND PROPERLY OPERATING SYSTEM.
- 1. DRAWINGS ARE TO BE USED TO SHOW THE SEVERAL COMPONENTS OF THE SYSTEMS APPROXIMATELY TO SCALE AND ATTEMPT TO INDICATE HOW THEY SHALL BE INTEGRATED WITH OTHER PARTS OF THE WORK. FIGURED DIMENSIONS TAKE PRECEDENCE TO SCALED DIMENSIONS. DETERMINE EXACT LOCATIONS BY JOB MEASUREMENTS, BY CHECKING THE REQUIREMENTS OF OTHER TRADES, AND BY REVIEWING ALL CONTRACT DOCUMENTS. CORRECT ERRORS THAT COULD HAVE BEEN AVOIDED BY PROPER CHECKING AND INSPECTION, AT NO ADDITIONAL COST.
- 2. SPECIFICATIONS DEFINE THE QUALITATIVE REQUIREMENTS FOR PRODUCTS, MATERIALS, AND WORKMANSHIP UPON WHICH THE CONTRACT IS BASED.

1.2 DEFINITIONS

- A. FURNISH TO SUPPLY AND DELIVER TO THE PROJECT SITE, READY FOR UNLOADING, UNPACKING, ASSEMBLING, INSTALLING, AND SIMILAR OPERATIONS.
- B. INSTALL: TO PERFORM ALL OPERATIONS AT THE PROJECT SITE, INCLUDING, BUT NOT LIMITED TO, PACKING, UNLOADING, UNPACKING, ASSEMBLING, ERECTING, PLACING, FINISHING, WORKING TO DIMENSION, FINISHING, CURING, PROTECTING, CLEANING, TESTING, COMMISSIONING, STARTING UP AND SIMILAR OPERATIONS, COMPLETE, AND READY FOR THE INTENDED USE.
- C. PROVIDE: TO FURNISH AND INSTALL COMPLETE, AND READY FOR THE INTENDED USE.
- D. FURNISHED BY OWNER (OR OWNER-FURNISHED) OR FURNISHED BY OTHERS: AN ITEM FURNISHED BY THE OWNER OR UNDER OTHER DIVISIONS OR CONTRACTS, AND INSTALLED UNDER THE REQUIREMENTS OF THIS DIVISION, COMPLETE, AND READY FOR THE INTENDED USE, INCLUDING ALL ITEMS AND SERVICES INCIDENTAL TO THE WORK NECESSARY FOR PROPER INSTALLATION AND OPERATION. INCLUDE THE INSTALLATION UNDER THE WARRANTY REQUIRED BY THIS DIVISION.
- E. ENGINEER: WHERE REFERENCED IN THIS DIVISION, "ENGINEER" IS THE ENGINEER OF RECORD AND THE DESIGN PROFESSIONAL FOR THE WORK UNDER THIS DIVISION, AND IS A CONSULTANT TO, AND AN AUTHORIZED REPRESENTATIVE OF, THE ARCHITECT, AS DEFINED IN THE GENERAL AND/OR SUPPLEMENTARY CONDITIONS. WHEN USED IN THIS DIVISION, IT MEANS INCREASED INVOLVEMENT BY, AND OBLIGATIONS TO, THE ENGINEER, IN ADDITION TO INVOLVEMENT BY, AND OBLIGATIONS TO, THE ARCHITECT.
- F. AHJ: THE LOCAL CODE AND/OR INSPECTION AGENCY. AUTHORITY HAVING JURISDICTION OVER THE WORK.
- G. NRTL: NATIONAL ELECTRICAL TESTING LABORATORY, AS DEFINED AND LISTED BY OSHA 28 CFR 1910.7 (E.G., UL, ETL, CSA), AND ACCEPTABLE TO THE AHJ OVER THIS PROJECT.
- H. THE TERMS "EQUIVALENT," OR "EQUAL" ARE USED SYNONYMOUSLY AND SHALL MEAN "ACCEPTED BY OR ACCEPTABLE TO THE ENGINEER AS EQUIVALENT TO THE ITEM OR MANUFACTURER'S PRODUCT," "EQUIVALENT," OR "EQUAL" PRODUCTS SHALL BE LABELED, LISTED, CERTIFIED, OR ALL THREE, BY AN NRTL, AND ACCEPTABLE TO THE AHJ OVER THIS PROJECT.

1.3 PRE-BID SITE VISIT

- A. PERSONNEL TO VISIT THE SITE OF THE PROPOSED WORK AND BECOME FULLY INFORMED OF CONDITIONS UNDER WHICH THE WORK IS TO BE DONE. FAILURE TO DO SO WILL NOT BE CONSIDERED SUFFICIENT JUSTIFICATION TO REQUEST OR OBTAIN EXTRA COMPENSATION OVER AND ABOVE THE CONTRACT PRICE.

1.4 MATERIAL AND WORKMANSHIP

- A. PROVIDE ALL MATERIAL AND EQUIPMENT NEW AND IN FIRST CLASS CONDITION. PROVIDE MARKINGS OR NAMEPLATE FOR ALL MATERIAL AND EQUIPMENT IDENTIFYING THE MANUFACTURER AND PROVIDING SUFFICIENT REFERENCE TO ESTABLISH QUALITY, SIZE AND CAPACITY. ALL WORKMANSHIP SHALL BE OF THE FINEST POSSIBLE BY EXPERIENCED MECHANICS OF THE PROPER TRADE. IN GENERAL, PROVIDE THE FOLLOWING QUALITY GRADE(S) FOR ALL MATERIALS AND EQUIPMENT (LIGHT DUTY AND RESIDENTIAL TYPE EQUIPMENT WILL NOT BE ACCEPTABLE).
- B. COMMERCIAL SPECIFICATION GRADE.
- C. PROVIDE ALL HOISTS, SCAFFOLDS, STAGING, RUNWAYS, TOOLS, MACHINERY AND EQUIPMENT TRAINING TO INSURE THE INSTALLATION AND PERFORMANCE OF THE ELECTRICAL WORK. STORE AND MAINTAIN MATERIAL AND EQUIPMENT IN CLEAN CONDITION, AND PROTECTED FROM WEATHER, MOISTURE, AND PHYSICAL DAMAGE.
- D. FURNISH ONLY MATERIAL AND EQUIPMENT THAT ARE LISTED, LABELED, CERTIFIED, OR ALL THREE, BY A NATIONALLY RECOGNIZED TESTING LABORATORY. WHENEVER ANY LISTING OR LABELING EXISTS FOR THE TYPES OF MATERIAL AND EQUIPMENT SPECIFIED, AT A MINIMUM, GENERAL WORK PRACTICES FOR ELECTRICAL CONSTRUCTION SHALL BE IN ACCORDANCE WITH NECA 1 (LATEST EDITION), "STANDARD PRACTICES FOR GOOD WORKMANSHIP IN ELECTRICAL CONSTRUCTION".

1.5 MANUFACTURERS

- A. IN OTHER ARTICLES WHERE LISTS OF MANUFACTURERS ARE INTRODUCED, SUBJECT TO COMPLIANCE WITH REQUIREMENTS, PROVIDE PRODUCTS BY ONE OF THE MANUFACTURERS SPECIFIED.
- B. WHERE MANUFACTURERS ARE NOT LISTED, PROVIDE PRODUCTS SUBJECT TO COMPLIANCE WITH REQUIREMENTS FROM MANUFACTURERS THAT HAVE BEEN ACTIVELY INVOLVED IN MANUFACTURING THE SPECIFIED PRODUCT FOR NO LESS THAN 5 YEARS.

1.6 COORDINATION

- A. COORDINATE ALL WORK WITH OTHER DIVISIONS AND TRADES SO THAT VARIOUS COMPONENTS OF THE ELECTRICAL SYSTEMS ARE INSTALLED AT THE PROPER TIME, FIT THE AVAILABLE SPACE, AND ALLOW PROPER SERVICE ACCESS TO ALL EQUIPMENT. REFER TO THE DRAWINGS AND SPECIFICATIONS FOR ALL ARCHITECTURAL, STRUCTURAL, MECHANICAL AND PLUMBING, AND TO RELEVANT EQUIPMENT SUBMITTALS AND SHOP DRAWINGS TO DETERMINE THE EXTENT OF CLEAR SPACES. MAKE ALL OFFSETS REQUIRED TO CLEAR EQUIPMENT, BEAMS AND OTHER STRUCTURAL MEMBERS, AND TO FACILITATE CONCEALING RACEWAYS IN THE MANNER ANTICIPATED BY THE DESIGN. PROVIDE MATERIALS WITH TRIM THAT WILL FIT PROPERLY THE TYPES OF CEILING, WALL, OR FLOOR FINISHES ACTUALLY INSTALLED.

1.7 ORDINANCE, CODES, AND CLIENT STANDARDS

- A. COMPLY WITH NATIONAL FIRE PROTECTION ASSOCIATION (NFPA) STANDARDS, STATE AND LOCAL BUILDING CODES, AND ALL OTHER APPLICABLE CODES AND ORDINANCES FOR PERFORMANCE, WORKMANSHIP, EQUIPMENT, AND MATERIALS. ADDITIONALLY, COMPLY WITH RULES AND REGULATIONS OF PUBLIC UTILITIES AND MUNICIPAL DEPARTMENTS AFFECTED BY CONNECTION OF SERVICES.
- B. WHERE CONFLICTS BETWEEN VARIOUS CODES, ORDINANCES, RULES, AND REGULATIONS EXIST, COMPLY WITH THE MOST STRINGENT. WHERE CONFLICTS OR REQUIREMENTS OF THESE SPECIFICATIONS, DRAWINGS, OR BOTH, EXCEED THOSE OF THE ABOVE ITEMS, THE REQUIREMENTS OF THESE SPECIFICATIONS, DRAWINGS, OR BOTH, SHALL GOVERN. CODE COMPLIANCE, AT A MINIMUM, IS MANDATORY. CONSTRUCT NOTHING IN THESE CONSTRUCTION DOCUMENTS AS PERMITTED WORK UNDER THESE SPECIFICATIONS, DRAWINGS, OR BOTH.
- C. BRING ALL CONFLICTS OBSERVED BETWEEN CODES, ORDINANCES, RULES, REGULATIONS, REFERENCED STANDARDS, AND THESE DOCUMENTS TO THE ENGINEER'S ATTENTION FOR FINAL RESOLUTION. CONTRACTOR WILL BE HELD RESPONSIBLE FOR ANY VIOLATION OF THE LAW.
- D. PROVIDE AND MAINTAIN ALL NECESSARY SIGNAL LIGHTS AND GUARDS FOR THE SAFETY OF THE PUBLIC. OBTAIN AND PAY FOR ALL PERMITS FOR WORK IN THIS DIVISION.

1.8 PROTECTION OF EQUIPMENT AND MATERIALS

- A. STORE AND PROTECT FROM DAMAGE EQUIPMENT AND MATERIALS DELIVERED TO JOB SITE, IN ACCORDANCE WITH MANUFACTURERS' A. RECOMMENDATIONS, FOR MATERIALS AND EQUIPMENT SUSCEPTIBLE TO CHANGING WEATHER CONDITIONS, DAMPNESS, OR TEMPERATURE VARIATIONS, STORE INSURED AND PROPERLY CONDITIONED SPACES. FOR MATERIALS AND EQUIPMENT NOT SUSCEPTIBLE TO THESE CONDITIONS, COVER WITH WATERPROOF, TEAR-RESISTANT, HEAVY TARP OR POLYETHYLENE PLASTIC AS REQUIRED TO PROTECT FROM PLASTER, DIRT, PAINT, WATER, OR PHYSICAL DAMAGE. EQUIPMENT AND MATERIAL THAT HAS BEEN DAMAGED BY CONSTRUCTION ACTIVITIES WILL BE REJECTED, AND CONTRACTOR SHALL FURNISH REPLACEMENT MATERIAL OF LIKE KIND. PLOG OR CAP OPEN ENDS OF CONDUITS WHILE STORED AND INSTALLED DURING CONSTRUCTION WHEN NOT IN USE, TO PREVENT THE ENTRANCE OF DEBRIS INTO THE SYSTEMS.
- C. RE-ESTABLISH SERVICE TO EXISTING EQUIPMENT THAT MAY HAVE BEEN INTERRUPTED DUE TO REMODELING.

1.9 SUBSTITUTIONS

- A. INCLUDE IN THE BASE BID THE PRODUCTS SPECIFICALLY NAMED IN THESE SPECIFICATIONS OR ON THE DRAWINGS. SUBMIT, IN THE FORM OF A SUBSTITUTE, WITH THE BID, PRODUCTS OF ANY OTHER MANUFACTURERS FOR SIMILAR USE, PROVIDED THE DIFFERENCES IN COST, IF ANY, ARE INCLUDED FOR EACH PROPOSED ALTERNATE. PRIOR TO THE BID DATE, SUBSTITUTIONS WILL NOT BE CONSIDERED UNLESS SUBMITTED TO THE ARCHITECT, FOR ENGINEER'S REVIEW. AT LEAST TEN CALENDAR DAYS PRIOR TO THE DATE FOR RECEIPT OF BIDS, INCLUDE THE NAME OF THE MATERIAL OR EQUIPMENT WHICH IT IS TO BE SUBSTITUTED AND A COMPLETE DESCRIPTION OF THE PROPOSED SUBSTITUTE INCLUDING OUTSHEETS, PHOTOMETRIC DATA, AND ALL OTHER INFORMATION NECESSARY FOR AN EVALUATION FOR EACH SUCH REQUEST. PROVIDE FACTORY GENERATED POINT-BY-POINT CALCULATIONS FOR ALL EXTERIOR LIGHT FIXTURES. SHOW THE LOCATION OF ALL POINTS. THE ENGINEER CAN GENERATE A POINT-BY-POINT DO NOT SUFFICE FOR THE POINT-BY-POINT CALCULATIONS). PROVIDE INTERIOR POINT-BY-POINT CALCULATIONS AT THE DISCRETION OF THE ENGINEER. SUBMIT A \$100.00 REVIEW FEE TO THE ENGINEER WITH EACH SUCH POINT-BY-POINT CALCULATION FOR USE OF ELECTRONIC BASE FILED. THE ENGINEER WILL HAVE THE FINAL AUTHORITY AS TO WHETHER THE PRODUCT IS AN ACCEPTABLE REPLACEMENT TO THE SPECIFIED ITEM. THE PROPOSED SUBSTITUTE MAY ALSO BE REJECTED BY THE ARCHITECT FOR AESTHETIC REASONS IF FELT NECESSARY OR DESIRABLE. IN B. THE EVENT THE PROPOSED SUBSTITUTIONS HEREIN DESCRIBED ARE REJECTED, FURNISH THE SPECIFIED ITEM.

1.10 SUBMITTALS

- A. ASSEMBLE AND SUBMIT TO THE ARCHITECT, FOR ENGINEER'S REVIEW, MANUFACTURER'S PRODUCT LITERATURE FOR ALL MATERIALS AND ALL EQUIPMENT TO BE FURNISHED, INSTALLED, OR BIDDING UNDER THIS DIVISION, INCLUDING SHOP DRAWINGS, MANUFACTURERS' PRODUCT DATA AND PERFORMANCE SHEETS, SAMPLES, AND OTHER SUBMITTALS REQUIRED BY THIS DIVISION. PROVIDE THE NUMBER OF SUBMITTALS REQUIRED BY THE ARCHITECTURAL SPECIFICATIONS; HOWEVER, AT A MINIMUM, SUBMIT SIX (6) SETS, OR SUBMIT ELECTRONIC PDFS, BEFORE SUBMITTING. OBTAIN PERMISSION OF THE ARCHITECT, OWNER, AND OWNER'S DESIGNATED STRUCTURAL ENGINEER BEFORE DOING ANY CUTTING, CUT ALL HOLES AS SMALL AS POSSIBLE, PATCH WALLS, FLOORS, AND OTHER PORTIONS OF THE FACILITY AS REQUIRED BY WORK UNDER THIS DIVISION. ALL PATCHING SHALL BE FIRST CLASS AND SHALL MATCH THE ORIGINAL MATERIAL AND CONSTRUCTION INCLUDING FIRE RATINGS IF APPLICABLE. DO NOT CUT OR PENETRATE MATERIAL AND CONSTRUCTION, INCLUDING FIRE RATINGS, DO NOT CUT OR PENETRATE STRUCTURAL ELEMENTS.
 - B. BEFORE ANY NEW FLOOR CORES ARE MADE, PROVIDE A LETTER FROM THE BUILDING OWNERS STRUCTURAL ENGINEER APPROVING THE LOCATION OF EACH NEW FLOOR CORE. THE LETTER SHALL ADDRESS CORES FOR: FOR CONDUIT AND POKE-THRU'S, WHERE A LETTER IS NOT SUPPLIED TO THE ENGINEER AND ARCHITECT OF RECORD BEFORE ANY FLOOR CORES ARE MADE, THE CONTRACTOR ASSUMES ALL LIABILITY FOR ANY AND ALL ISSUES THAT MAY OR COULD ARISE FROM CORING THE FLOOR.
- 1. THE PROJECT NAME AND LOCATION (STREET ADDRESS, FLOOR/SUITE NUMBER, CITY AND STATE).
 - 2. THE APPLICABLE SPECIFICATION SECTION AND PARAGRAPH.
 - 3. THE SUBMITTAL DATE.
 - 4. THE CONTRACTOR'S STAMP, WHICH SHALL CERTIFY THAT THE STAMPED DRAWINGS HAVE BEEN CHECKED BY THE CONTRACTOR, COMPLY WITH THE DRAWINGS AND SPECIFICATIONS, AND HAVE BEEN COORDINATED WITH OTHER TRADES.
 - 5. BLANK PAGE FOR PLACEMENT OF ENGINEERS REVIEW STAMP.
 - 6. TRANSMIT SUBMITTALS AS EARLY AS REQUIRED TO SUPPORT THE PROJECT SCHEDULE, ALLOW TWO WEEKS FOR ENGINEER REVIEW TIME, PLUS MAILING TIME, ALLOW AN ADDITIONAL TWO WEEKS FOR RE-SUBMITTALS, IF REQUIRED. TRANSMIT SUBMITTALS AS SOON AS POSSIBLE AFTER NOTICE TO PROCEED AND BEFORE CONSTRUCTION STARTS. THE ENGINEER'S SUBMITTAL REVIEWS WILL NOT RELIEVE THE CONTRACTOR FROM RESPONSIBILITY FOR ERRORS IN DIMENSIONS, DETAILS, SIZE OF MEMBERS, OR QUANTITIES, OR FOR OMITTING COMPONENTS OR FITTINGS, OR FOR NOT COORDINATING ITEMS WITH ACTUAL BUILDING CONDITIONS.

1.11 ELECTRONIC DRAWINGS FILES

- A. IN PREPARATION OF SHOP DRAWINGS, CONTRACTOR MAY, AT HIS OPTION, OBTAIN ELECTRONIC DRAWING FILES IN AUTOCAD DWG OR DXF FORMAT FOR THE ENGINEER FOR A NON-REFUNDABLE SHIPPING AND HANDLING FEE OF \$200 FOR A DRAWING SET UP TO 12 SHEETS AND \$15 PER SHEET FOR A DRAWING SET OF MORE THAN 12 SHEETS. CONTRACTOR SHALL CONTACT THE ENGINEER FOR THE WRITTEN AUTHORIZATION. CONTRACTOR SHALL INDICATE ON THE FORM THE DESIRED SHIPPING METHOD AND DRAWING FORMAT CONTRACTOR SHALL INCLUDE PAYMENT WITH THE SIGNED AUTHORIZATION FORM. THE SIGNED AUTHORIZATION FORM AND PAYMENT MUST BE RECEIVED BY THE ENGINEER BEFORE ANY ELECTRONIC FILES WILL BE SENT.

1.12 TRAINING

- A. AT A TIME MUTUALLY AGREED UPON BETWEEN THE OWNER AND CONTRACTOR, TRAIN OWNER'S DESIGNATED PERSONNEL ON THE OPERATION AND MAINTENANCE OF THE EQUIPMENT PROVIDED FOR THIS PROJECT.
- B. PROVIDE TRAINING TO INSURE TRAINING IS LIMITED TO AN OVERVIEW OF THE SYSTEM AND/OR EQUIPMENT AS IT RELATES TO THE FACILITY AS A WHOLE; OPERATION AND MAINTENANCE PROCEDURES AND SCHEDULES RELATED TO STARTUP AND SHUTDOWN, TROUBLESHOOTING, SERVICING, PREVENTIVE MAINTENANCE AND APPROPRIATE OPERATOR INTERVENTION, AND REVIEW OF DATA INCLUDED IN THE OPERATION AND MAINTENANCE RECORDS.
- C. SCHEDULE TRAINING WITH OWNER WITH AT LEAST 30 DAYS IN ADVANCE NOTICE.

1.13 WARRANTIES

- A. WARRANT EACH SYSTEM AND EACH ELEMENT THEREOF AGAINST ALL DEFECTS DUE TO FAULTY WORKMANSHIP, MATERIALS, OR METHODS OF CONSTRUCTION FOR A PERIOD OF 12 MONTHS FROM DATE OF SUBSTANTIAL COMPLETION, UNLESS SPECIFIC ITEMS ARE NOTED TO CARRY A LONGER WARRANTY IN THE CONSTRUCTION DOCUMENTS OR MANUFACTURER'S STANDARD WARRANTY EXCEEDS 12 MONTHS. REMEDY ALL DEFECTS, OCCURRING WITHIN THE WARRANTY PERIOD(S), AS STATED IN THE GENERAL CONDITIONS AND DIVISION 1. ALSO WARRANT THE FOLLOWING ADDITIONAL ITEMS:
 - 1. ALL RACEWAYS ARE FREE FROM OBSTRUCTIONS, HOLES, CRUSHING, OR BREAKS OF ANY NATURE.
 - 2. ALL RACEWAY SEALS ARE EFFECTIVE.
 - 3. THE ENTIRE ELECTRICAL SYSTEM IS FREE FROM ALL SHORT CIRCUITS AND UNWANTED OPEN CIRCUITS AND GROUNDS.
- C. THE ABOVE WARRANTIES SHALL INCLUDE LABOR AND MATERIAL. MAKE REPAIRS OR REPLACEMENTS WITHOUT ANY ADDITIONAL COSTS TO THE OWNER.
- D. PERFORM THE REMEDIAL WORK PROMPTLY, UPON WRITTEN NOTICE FROM THE ENGINEER OR OWNER.
- E. AT THE TIME OF SUBSTANTIAL COMPLETION, DELIVER TO THE OWNER ALL WARRANTIES, IN WRITING AND PROPERLY EXECUTED, INCLUDING E. TERM LIMITS FOR WARRANTIES EXTENDING BEYOND THE ONE YEAR PERIOD, EACH WARRANTY INSTRUMENT BEING ADDRESSED TO THE OWNER AND STATING THE COMMENCEMENT DATE AND TERM.

1.14 MISCELLANEOUS REMODELING WORK

- A. PROVIDE ALL DEMOLITION OF EXISTING ELECTRICAL SYSTEMS AND NEW ELECTRICAL SYSTEM MODIFICATIONS REQUIRED BECAUSE OF BUILDING REMODELING, AS NOTED ON THE DRAWINGS, OR NECESSARY FOR PROPER OPERATION AND NEW CONSTRUCTION. REMOVE ALL EXISTING CABLES AND WIRING ABOVE ACCESSIBLE CEILINGS AND VENTILATION SHAFTS.
- B. EXERCISE EXTREME CAUTION IN THE INSTALLATION OF THIS WORK TO AVOID AN ELECTRICAL SHOCK ACCIDENT. THE FACILITY IS EXISTING AND MAY REMAIN IN OPERATION DURING THIS WORK. COORDINATE ALL WORK SCHEDULES WITH THE BUILDING MANAGEMENT PRIOR TO DE-ENERGIZING ANY ELECTRICAL CIRCUITS TO AVOID CONFLICTS WITH ANY OTHER TERNATE'S OPERATION. ALLOW 3 DAYS PRIOR CONFIRMED NOTIFICATION.
- C. VERIFY THAT NEW AND EXISTING TO REMAIN INSTALLATIONS ARE CODE COMPLIANT, AND MAKE CORRECTIONS AS REQUIRED.
- D. PROVIDE AND MAINTAIN ALL NECESSARY SIGNAL LIGHTS AND GUARDS FOR THE SAFETY OF THE PUBLIC. OBTAIN AND PAY FOR ALL PERMITS FOR WORK IN THIS DIVISION.

- E. VERIFY THE LOADING OF EACH CIRCUIT AFFECTED BY THE REMODELING. DO NOT LOAD CIRCUITS TO MORE THAN 80% OF ITS RATING.
 - F. PROVIDE UPDATED, TYPED DIRECTORY FOR EACH PANELBOARD BEING USED OR MODIFIED UNDER THIS CONTRACT. DESIGNATE NEW CIRCUITS AND SUITE BEING REWORKED OR REMOVED. WHERE THE WORK IS NOT SUSCEPTIBLE TO THESE CONDITIONS, COVER WITH WATERPROOF, TEAR-RESISTANT, HEAVY TARP OR POLYETHYLENE PLASTIC AS REQUIRED TO PROTECT FROM PLASTER, DIRT, PAINT, WATER, OR PHYSICAL DAMAGE. EQUIPMENT AND MATERIAL THAT HAS BEEN DAMAGED BY CONSTRUCTION ACTIVITIES WILL BE REJECTED, AND CONTRACTOR SHALL FURNISH REPLACEMENT MATERIAL OF LIKE KIND. PLOG OR CAP OPEN ENDS OF CONDUITS WHILE STORED AND INSTALLED DURING CONSTRUCTION WHEN NOT IN USE, TO PREVENT THE ENTRANCE OF DEBRIS INTO THE SYSTEMS.
 - C. RE-ESTABLISH SERVICE TO EXISTING EQUIPMENT THAT MAY HAVE BEEN INTERRUPTED DUE TO REMODELING.
- 1. "FIRE STOP F" - FIRE STOP FOAM #2001, 3M CORP.
 - 2. "METACAULK 835+," RECTORS SEAL
 - 3. "SPECSEAL SYSTEM 200 SILICONE FOAM," SPECIFY TECHNOLOGY INC.
 - 4. "FIRE STOP SYSTEM," UNITED STATES GYPSUM COMPANY.

(END OF PART 1)

PART 2 ELECTRICAL WORK

2.1 BUILDING OPERATION

- A. COORDINATE THE SCHEDULE OF OPERATIONS AS OUTLINED IN THE ARCHITECTURAL PORTIONS OF THIS SPECIFICATION. BUILDING FACILITY SHALL BE MAINTAINED IN CONTINUOUS OPERATION. ACCOMPLISH WORK THAT REQUIRES INTERRUPTION OF BUILDING AND BUILDING TENANT OPERATIONS AT A TIME WHEN THE BUILDING IS NOT IN OPERATION, AND ONLY WITH WRITTEN APPROVAL OF THE ARCHITECT AND/OR AFFECTED TENANT(S). COORDINATE INTERRUPTION OF BUILDING OPERATION WITH THE OWNER AND/OR TENANT(S) A MINIMUM OF DAYS IN ADVANCE OF WORK.

2.2 COINCIDENTAL DAMAGE

- A. REPAIR ALL STREETS, SIDEWALKS, DRIVES, PAVING, WALLS, FLOORING, FINISHES, AND OTHER FACILITIES DAMAGED IN THE COURSE OF THIS WORK. REPAIR MATERIALS SHALL MATCH EXISTING CONSTRUCTION. ALL BACKFILLING AND REPAIRING SHALL MEET ALL REQUIREMENTS OF THE OWNER, CITY AND OTHERS HAVING JURISDICTION. REPAIR WORK SHALL BE FIRST CLASS UTILIZING THE BEST MATERIALS AND TRADESMEN TO PERFORM ALL NECESSARY REPAIR WORK. CONFORM TO ALL REQUIREMENTS OF DIVISION 5 OF THESE SPECIFICATIONS.
- 1. CUTTING AND PATCHING
 - A. FOLLOWING THE REQUIREMENTS IN DIVISION 1, CUT WALLS, FLOORS, CEILINGS, AND OTHER PORTIONS OF THE FACILITY AS REQUIRED TO PERFORM WORK BEFORE SUBMITTING. OBTAIN PERMISSION OF THE ARCHITECT, OWNER, AND OWNER'S DESIGNATED STRUCTURAL ENGINEER BEFORE DOING ANY CUTTING. CUT ALL HOLES AS SMALL AS POSSIBLE. PATCH WALLS, FLOORS, AND OTHER PORTIONS OF THE FACILITY AS REQUIRED BY WORK UNDER THIS DIVISION. ALL PATCHING SHALL BE FIRST CLASS AND SHALL MATCH THE ORIGINAL MATERIAL AND CONSTRUCTION INCLUDING FIRE RATINGS IF APPLICABLE. DO NOT CUT OR PENETRATE MATERIAL AND CONSTRUCTION, INCLUDING FIRE RATINGS, DO NOT CUT OR PENETRATE STRUCTURAL ELEMENTS.
 - B. BEFORE ANY NEW FLOOR CORES ARE MADE, PROVIDE A LETTER FROM THE BUILDING OWNERS STRUCTURAL ENGINEER APPROVING THE LOCATION OF EACH NEW FLOOR CORE. THE LETTER SHALL ADDRESS CORES FOR: FOR CONDUIT AND POKE-THRU'S, WHERE A LETTER IS NOT SUPPLIED TO THE ENGINEER AND ARCHITECT OF RECORD BEFORE ANY FLOOR CORES ARE MADE, THE CONTRACTOR ASSUMES ALL LIABILITY FOR ANY AND ALL ISSUES THAT MAY OR COULD ARISE FROM CORING THE FLOOR.

(END OF PART 2)

PART 3 EXISTING EQUIPMENT REUSE AND REMOVAL

- A. REMOVE ALL EXISTING WIRING, LIGHT FIXTURES, EXPOSED CONDUITS AND OTHER ELECTRICAL COMPONENTS AND DEVICES.
- 2. LUBRICATE ITEMS ACCORDINGLY.
- 3. TIGHTEN SCREWS AND BOLTS FOR CONNECTORS AND TERMINALS ACCORDING TO MANUFACTURER'S PUBLISHED TORQUE-TIGHTENING VALUES. IF MANUFACTURER'S TORQUE VALUES ARE NOT INDICATED, USE THE VALUES SPECIFIED IN UL 488A AND UL 488B.
- 4. ADJUST TAPS ON EACH TRANSFORMER FOR RATED SECONDARY VOLTAGE.
- 5. CHECK AND RECORD BUILDING'S SERVICE ENTRANCE VOLTAGE, GROUNDING CONDITIONS, GROUNDING RESISTANCE, AND PROPER PHASING.
- 6. BALANCE ALL SINGLE-PHASE LOADS AT EACH PANELBOARD, REDISTRIBUTING BRANCH CIRCUIT CONNECTIONS UNTIL BALANCE IS ACHIEVED. DO NOT TYPE UP FINAL PANELBOARD DIRECTORIES UNTIL ALL REBALANCING AND REDISTRIBUTION OF CIRCUITS ARE COMPLETE.
- 7. REPLACE ALL BURNED-OUT LAMPS, LAMPS NOT UNIFORM IN COLOR, AND LAMPS USED FOR TEMPORARY CONSTRUCTION LIGHTING IN PERMANENT LIGHT FIXTURES.
- 8. AFTER ALL SYSTEMS HAVE BEEN INSPECTED AND ADJUSTED, CONFIRM ALL OPERATING FEATURES REQUIRED BY THE DRAWINGS AND SPECIFICATIONS AND MAKE FINAL ADJUSTMENTS AS NECESSARY.

(END OF PART 3)

PART 4 BASIC ELECTRICAL MATERIALS AND METHODS

4.1 METHODS

- 4.1.1 RACEWAYS**
 - A. INSTALLED CONDUIT AND TUBING:
 - 1. ELECTRICAL METALLIC TUBING AND FITTINGS (EMT); ANSI C80.3, UL 797.
 - 2. FLEXIBLE METAL CONDUIT (FMC); ZINC-COATED STEEL OR ALUMINUM, UL 1.
 - 3. INTERMEDIATE METAL CONDUIT (IMC); HOT-DIP GALVANIZED RIGID STEEL CONDUIT; ANSI C80.8, UL 1242.
 - 4. LIQUID TIGHT FLEXIBLE METAL CONDUIT (LFMC); FLEXIBLE STEEL CONDUIT WITH PVC JACKET, UL 360.
 - 5. RIGID METAL CONDUIT (RMC); HOT-DIP GALVANIZED RIGID STEEL CONDUIT (GRS); ANSI C80.1, UL 6.
 - 6. RIGID ALUMINUM CONDUIT (RAC); ANSI C80.5, UL 6A.
 - 7. DUCTILE IRON PRESSURE PIPE, WITH FLAN ENDS AND INTEGRAL WATERSTOP, UNLESS OTHERWISE INDICATED.
 - 8. SLEEVES FOR RECTANGULAR OPENINGS: GALVANIZED SHEET STEEL WITH MINIMUM 0.052-INCH THICKNESS AS INDICATED AND OF LENGTH TO SUIT APPLICATION.
 - B. NON-METALLIC CONDUIT AND TUBING:
 - 1. RIGID NONMETALLIC CONDUIT (RNC); SCHEDULE 40 PVC, 90 DEG C RATED, NEMA TO-2, UL 561; FITTINGS: NEMA TO-3, TO-6, UL 514, COMPATIBLE WITH CONDUIT/TUBING TYPE AND MATERIAL, UL LISTED.
- 4.1.2 RACEWAY INSTALLATION**
 - A. INSTALL ALL RACEWAYS A MINIMUM OF 12" ABOVE SUSPENDED CEILINGS, INCLUDING RACEWAY WALLS AND FLOORS. SEALANTS AND ACCESSORIES SHALL HAVE FIRE RESISTANCE RATINGS INDICATED, AS ESTABLISHED BY TESTING IDENTICAL ASSEMBLIES IN ACCORDANCE WITH ASTM E 814, BY UNDERWRITERS LABORATORIES, INC., OR OTHER NRTL ACCEPTABLE TO AHJ.
 - B. PRODUCTS: SUBJECT TO COMPLIANCE WITH REQUIREMENTS, PROVIDE ONE OF THE FOLLOWING:
 - 1. "FIRE STOP F" - FIRE STOP FOAM #2001, 3M CORP.
 - 2. "METACAULK 835+," RECTORS SEAL
 - 3. "SPECSEAL SYSTEM 200 SILICONE FOAM," SPECIFY TECHNOLOGY INC.
 - 4. "FIRE STOP SYSTEM," UNITED STATES GYPSUM COMPANY.

4.1.3 ACCESS DOORS

- A. PROVIDE ACCESS DOORS IN CEILINGS AND WALLS, WHERE INDICATED OR REQUIRED FOR ACCESS OR MAINTENANCE TO CONCEALED EQUIPMENT INSTALLED UNDER THIS SECTION. PROVIDE CONCEALED HINGES, SCREWDRIVER-TYPE LOCK, AND ANCHOR STRAPS, MANUFACTURED BY MILCOR, ZURN, TITUS, OR EQUIVALENT. OBTAIN ARCHITECT'S APPROVAL OF TYPE, SIZE, LOCATION AND COLOR BEFORE ORDERING.
- 1. VERIFY THAT NEW AND EXISTING TO REMAIN INSTALLATIONS ARE CODE COMPLIANT, AND MAKE CORRECTIONS AS REQUIRED.
 - 2. PROVIDE AND MAINTAIN ALL NECESSARY SIGNAL LIGHTS AND GUARDS FOR THE SAFETY OF THE PUBLIC. OBTAIN AND PAY FOR ALL PERMITS FOR WORK IN THIS DIVISION.

4.1.4 EQUIPMENT FURNISHED BY OTHERS

- A. PROVIDE NECESSARY EQUIPMENT AND ACCESSORIES THAT ARE NOT PROVIDED BY THE OWNER OR MANUFACTURER. PROVIDE THE NAME, TYPE, LOCATION OF EQUIPMENT FURNISHED BY OTHERS, IN LOCATIONS AS INDICATED ON THE DRAWINGS, SPECIFIED HEREIN, OR BOTH. EQUIPMENT AND ACCESSORIES NOT PROVIDED BY THE EQUIPMENT SUPPLIER MAY INCLUDE SUCH ITEMS AS FLEXIBLE COULDS AND PLUGS, AS REQUIRED FOR PROPER OPERATION OF THE COMPLETE SYSTEM IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTION LITERATURE.
- B. MAINTAIN ALL CORRECT ROUGH-IN DIMENSIONS, AND VERIFY THEM WITH ARCHITECT, OWNER'S REPRESENTATIVE, EQUIPMENT SUPPLIER, OR ALL THREE, PRIOR TO ROUGH-IN AND SERVICE INSTALLATIONS.

2.10 CLEANING

- A. IN ADDITION TO THE REQUIREMENTS SET FORTH IN THE ARCHITECTURAL DRAWINGS AND SPECIFICATIONS, REMOVE FROM THE PREMISES DIRT AND REFUSE RESULTING FROM THE PERFORMANCE OF THE ELECTRICAL WORK, AS REQUIRED, TO PREVENT ACCUMULATION. COOPERATE IN MAINTAINING REASONABLY CLEAN PREMISES AT ALL TIMES, IMMEDIATELY PRIOR TO FINAL INSPECTION. MAKE A FINAL CLEANUP OF DIRT AND REFUSE RESULTING FROM THE WORK. CLEAN ALL MATERIAL AND EQUIPMENT INSTALLED UNDER THIS DIVISION. REMOVE DIRT, DUST, PLASTER, STAINS AND FOREIGN MATTER FROM ALL SURFACES. TOUCH UP AND RESTORE ALL DAMAGED FINISHES TO THEIR ORIGINAL CONDITION.

2.11 ADJUSTING, ALIGNING, AND TESTING

- A. ADJUST, ALIGN, AND TEST ALL ELECTRICAL EQUIPMENT ON THIS PROJECT PROVIDED UNDER THIS DIVISION AND ALL ELECTRICAL EQUIPMENT FURNISHED BY THE OWNER FOR INSTALLATION OR WIRING UNDER THIS DIVISION, FOR PROPER OPERATION.
- B. TEST ALL SYSTEMS AND EQUIPMENT ACCORDING TO THE REQUIREMENTS IN NETA ATS (LATEST EDITION) AND ALL ADDITIONAL REQUIREMENTS SPECIFIED IN BUILDING SECTIONS. PROVIDE COPIES OF ALL TEST REPORTS TO THE ENGINEER OF RECORD.
- C. MAINTAIN THE FOLLOWING ON THE PROJECT PREMISES AT ALL TIMES: A TRUE RMS READING VOLTMETER, A TRUE RMS READING AMMETER, AND A MEGOHMMETER INSULATION RESISTANCE TESTER. PROVIDE TEST DATA READINGS AS REQUESTED OR AS REQUIRED BY THE ENGINEER.

2.12 EQUIPMENT IDENTIFICATION

- A. PROVIDE EQUIPMENT IDENTIFICATION NAMEPLATES:
 - 1. ON ALL PANELBOARDS, SWITCHES, STARTERS, DIMMERS, A/C UNITS, AND METERS.
 - 2. WHERE INDICATED ON THE DRAWINGS.
 - 3. RECEPTACLE FACEPLATES AND JUNCTION BOXES WITH CIRCUIT AND PANEL.
 - 4. LIGHT SWITCH FACEPLATES BACKSIDE WITH CIRCUIT AND PANEL.
- B. NAMEPLATES:
 - 1. ENGRAVED; CONTRASTING COLOR, THREE-LAYER, LAMINATED PLASTIC OR METAL.
 - 2. WHERE INDICATED ON THE DRAWINGS AND IN THE SPECIFICATIONS.
 - 3. SELF-ADHERING, WITH A PERMANENT, WEATHERPROOF ADHESIVE.
 - 4. ATTACHMENT METHOD SHALL BE ACCEPTABLE TO THE MANUFACTURERS OF THE EQUIPMENT TO WHICH THE NAMEPLATES ARE BEING APPLIED.
 - 5. COLOR: BLACK BACKGROUND WITH WHITE LETTERS FOR NORMAL POWER. LIGHT SWITCH FACEPLATES: PERMANENT BLACK MAGIC MARKER.

2.13 SYSTEM START UP

- A. PRIOR TO STARTING UP THE ELECTRICAL SYSTEMS:
 - 1. CHECK ALL COMPONENTS AND DEVICES.
 - 2. LUBRICATE ITEMS ACCORDINGLY.
 - 3. TIGHTEN SCREWS AND BOLTS FOR CONNECTORS AND TERMINALS ACCORDING TO MANUFACTURER'S PUBLISHED TORQUE-TIGHTENING VALUES. IF MANUFACTURER'S TORQUE VALUES ARE NOT INDICATED, USE THE VALUES SPECIFIED IN UL 488A AND UL 488B.
 - 4. ADJUST TAPS ON EACH TRANSFORMER FOR RATED SECONDARY VOLTAGE.
 - 5. CHECK AND RECORD BUILDING'S SERVICE ENTRANCE VOLTAGE, GROUNDING CONDITIONS, GROUNDING RESISTANCE, AND PROPER PHASING.
 - 6. BALANCE ALL SINGLE-PHASE LOADS AT EACH PANELBOARD, REDISTRIBUTING BRANCH CIRCUIT CONNECTIONS UNTIL BALANCE IS ACHIEVED. DO NOT TYPE UP FINAL PANELBOARD DIRECTORIES UNTIL ALL REBALANCING AND REDISTRIBUTION OF CIRCUITS ARE COMPLETE.
 - 7. REPLACE ALL BURNED-OUT LAMPS, LAMPS NOT UNIFORM IN COLOR, AND LAMPS USED FOR TEMPORARY CONSTRUCTION LIGHTING IN PERMANENT LIGHT FIXTURES.
 - 8. AFTER ALL SYSTEMS HAVE BEEN INSPECTED AND ADJUSTED, CONFIRM ALL OPERATING FEATURES REQUIRED BY THE DRAWINGS AND SPECIFICATIONS AND MAKE FINAL ADJUSTMENTS AS NECESSARY.

(END OF PART 2)

PART 3 EXISTING EQUIPMENT REUSE AND REMOVAL

- A. REMOVE ALL EXISTING WIRING, LIGHT FIXTURES, EXPOSED CONDUITS AND OTHER ELECTRICAL COMPONENTS AND DEVICES.
- 2. LUBRICATE ITEMS ACCORDINGLY.
- 3. TIGHTEN SCREWS AND BOLTS FOR CONNECTORS AND TERMINALS ACCORDING TO MANUFACTURER'S PUBLISHED TORQUE-TIGHTENING VALUES. IF MANUFACTURER'S TORQUE VALUES ARE NOT INDICATED, USE THE VALUES SPECIFIED IN UL 488A AND UL 488B.
- 4. ADJUST TAPS ON EACH TRANSFORMER FOR RATED SECONDARY VOLTAGE.
- 5. CHECK AND RECORD BUILDING'S SERVICE ENTRANCE VOLTAGE, GROUNDING CONDITIONS, GROUNDING RESISTANCE, AND PROPER PHASING.
- 6. BALANCE ALL SINGLE-PHASE LOADS AT EACH PANELBOARD, REDISTRIBUTING BRANCH CIRCUIT CONNECTIONS UNTIL BALANCE IS ACHIEVED. DO NOT TYPE UP FINAL PANELBOARD DIRECTORIES UNTIL ALL REBALANCING AND REDISTRIBUTION OF CIRCUITS ARE COMPLETE.
- 7. REPLACE ALL BURNED-OUT LAMPS, LAMPS NOT UNIFORM IN COLOR, AND LAMPS USED FOR TEMPORARY CONSTRUCTION LIGHTING IN PERMANENT LIGHT FIXTURES.
- 8. AFTER ALL SYSTEMS HAVE BEEN INSPECTED AND ADJUSTED, CONFIRM ALL OPERATING FEATURES REQUIRED BY THE DRAWINGS AND SPECIFICATIONS AND MAKE FINAL ADJUSTMENTS AS NECESSARY.

(END OF PART 3)

PART 4 BASIC ELECTRICAL MATERIALS AND METHODS

4.1 METHODS

- 4.1.1 RACEWAYS**
 - A. INSTALLED CONDUIT AND TUBING:
 - 1. ELECTRICAL METALLIC TUBING AND FITTINGS (EMT); ANSI C80.3, UL 797.
 - 2. FLEXIBLE METAL CONDUIT (FMC); ZINC-COATED STEEL OR ALUMINUM, UL 1.
 - 3. INTERMEDIATE METAL CONDUIT (IMC); HOT-DIP GALVANIZED RIGID STEEL CONDUIT; ANSI C80.8, UL 1242.
 - 4. LIQUID TIGHT FLEXIBLE METAL CONDUIT (LFMC); FLEXIBLE STEEL CONDUIT WITH PVC JACKET, UL 360.
 - 5. RIGID METAL CONDUIT (RMC); HOT-DIP GALVANIZED RIGID STEEL CONDUIT (GRS); ANSI C80.1, UL 6.
 - 6. RIGID ALUMINUM CONDUIT (RAC); ANSI C80.5, UL 6A.
 - 7. DUCTILE IRON PRESSURE PIPE, WITH FLAN ENDS AND INTEGRAL WATERSTOP, UNLESS OTHERWISE INDICATED.
 - 8. SLEEVES FOR RECTANGULAR OPENINGS: GALVANIZED SHEET STEEL WITH MINIMUM 0.052-INCH THICKNESS AS INDICATED AND OF LENGTH TO SUIT APPLICATION.
 - B. NON-METALLIC CONDUIT AND TUBING:
 - 1. RIGID NONMETALLIC CONDUIT (RNC); SCHEDULE 40 PVC, 90 DEG C RATED, NEMA TO-2, UL 561; FITTINGS: NEMA TO-3, TO-6, UL 514, COMPATIBLE WITH CONDUIT/TUBING TYPE AND MATERIAL, UL LISTED.
- 4.1.2 RACEWAY INSTALLATION**
 - A. INSTALL ALL RACEWAYS A MINIMUM OF 12" ABOVE SUSPENDED CEILINGS, INCLUDING RACEWAY WALLS AND FLOORS. SEALANTS AND ACCESSORIES SHALL HAVE FIRE RESISTANCE RATINGS INDICATED, AS ESTABLISHED BY TESTING IDENTICAL ASSEMBLIES IN ACCORDANCE WITH ASTM E 814, BY UNDERWRITERS LABORATORIES, INC., OR OTHER NRTL ACCEPTABLE TO AHJ.
 - B. PRODUCTS: SUBJECT TO COMPLIANCE WITH REQUIREMENTS, PROVIDE ONE OF THE FOLLOWING:
 - 1. "FIRE STOP F" - FIRE STOP FOAM #2001, 3M CORP.
 - 2. "METACAULK 835+," RECTORS SEAL
 - 3. "SPECSEAL SYSTEM 200 SILICONE FOAM," SPECIFY TECHNOLOGY INC.
 - 4. "FIRE STOP SYSTEM," UNITED STATES GYPSUM COMPANY.

- H. INSTALL RACEWAYS TO REQUIREMENTS OF STRUCTURE AND TO REQUIREMENTS OF ALL OTHER WORK ON THE PROJECT. INSTALL RACEWAY TO CLEAR ALL OPENINGS, DEPRESSIONS, PIPES, DUCTS, REINFORCING STEEL, AND OTHER IMMovable OBSTACLES. INSTALL RACEWAYS SET IN FORMS FOR CONCRETE STRUCTURES IN SUCH A MANNER THAT INSTALLATION WILL NOT DISTURB OR WEAKEN THE STRUCTURE. WHERE THE WORK IS APPROVED IN WRITING BY THE ENGINEER, INSTALL NO RACEWAY IN A SLAB-ON-GRADE. LOCATE RACEWAY IN GRANULAR FILL BELOW SLABS-ON-GRADE.
- I. INSTALL RACEWAYS CONTINUOUS BETWEEN CONNECTIONS TO OUTLETS, BOXES, AND CABINETS WITH A MINIMUM POSSIBLE NUMBER OF BENDS AND NOT MORE THAN THE EQUIVALENT OF FOUR 90-DEGREE BENDS BETWEEN CONNECTIONS. USE MANUFACTURED ELBOWS FOR ALL 45-DEGREE AND 90-DEGREE BENDS, UNLESS APPROVED BY THE ENGINEER IN ADVANCE. MAKE OTHER BENDS SMOOTH AND EVEN AND WITHOUT FLATTENING RACEWAY OR FLAKING GALVANIZING OR ENAMEL. RADI OF BENDS SHALL BE AS LONG AS POSSIBLE AND NEVER SHARPER THAN THE CORRESPONDING TRADE ELBOW. USE LONG RADIUS ELBOWS WHERE NECESSARY, INDICATED, OR BOTH.
- J. SECURELY FASTEN RACEWAYS IN PLACE WITH APPROVED STRAPS, HANGERS AND STEEL SUPPORTS AS REQUIRED. ATTACH RACEWAY SUPPORTS TO THE BUILDING STRUCTURE. SUPPORT RACEWAYS FOR FEEDERS WITH TRAPEZE SUPPORTS MADE OF ALL THREAD ROD AND UNISTRUT, SPACED NOT OVER FEET APART. SECURELY CLAMP VERTICAL FEEDER RACEWAYS TO STRUCTURAL STEEL MEMBERS ATTACHED TO STRUCTURE. INSTALL CABLE CLAMPS FOR SUPPORT OF VERTICAL FEEDERS WHERE REQUIRED. ADD RACEWAY SUPPORTS WITHIN 12 INCHES OF ALL BENDS, ON BOTH SIDES OF THE BENDS. DO NOT ALLOW UNDER OR INSULATION OVER ANY OF THESE SUPPORTS.
- K. REAM RACEWAY ENDS, THOROUGHLY CLEAN RACEWAYS BEFORE INSTALLATION, AND KEEP CLEAN AFTER INSTALLATION. PLUG OR COVER OPENINGS AND BOXES AS REQUIRED TO KEEP RACEWAYS CLEAN DURING CONSTRUCTION AND FISH ALL RACEWAYS CLEAR OF OBSTRUCTIONS BEFORE INSTALLATION. REMOVE ALL DEBRIS FROM RACEWAYS. REMOVE ALL PULLING OF WIRE AND NOT SMALLER THAN CODE REQUIREMENTS AND NOT LESS THAN 3/4-INCH IN SIZE, UNLESS OTHERWISE INDICATED ON DRAWINGS.
- L. EMT UP TO 2", IMC OR RIGID GALVANIZED STEEL GREATER THAN 2", ONLY STEEL COMPRESSION FITTINGS SHALL BE USED. SET SCREW FITTINGS ARE NOT ALLOWED UNDER OR INSULATION OVER ANY OF THESE SUPPORTS. CURRENT-CARRYING CONDUCTORS IN ANY ONE CONDUIT, UNLESS OTHERWISE NOTED, ALL CONDUITS SHALL CONTAIN A SEPARATE EQUIPMENT GROUND WIRE.
- M. PROTECT ALL RACEWAY INSTALLATIONS AGAINST DAMAGE DURING CONSTRUCTION. REPAIR ALL RACEWAYS DAMAGED OR MOVED OUT OF LINE AFTER ROUGHING-IN TO MEET ENGINEER'S APPROVAL WITHOUT ADDITIONAL COST TO THE OWNER.
- N. ALIGN AND INSTALL TRUE AND PLUMB ALL RACEWAY TERMINATIONS AT PANELBOARDS, SWITCHBOARDS, MOTOR CONTROL EQUIPMENT AND JUNCTION BOXES.
- O. INSTALL APPROVED EXPANSION/DEFLECTION FITTINGS WHERE RACEWAYS ARE THROUGH (IF EMBEDDED) OR ACROSS (IF EXPOSED) EXPANSION JOINTS.
- P. INSTALL A PULL WIRE IN EACH EMPTY RACEWAY THAT IS LEFT FOR INSTALLATION OF CONDUCTORS OR CABLES UNDER OTHER DIVISIONS OR CONTRACTS. USE POLYPROPYLENE OR MONOFILAMENT PLASTIC LINE WITH NOT LESS THAN 200-LB TENSILE STRENGTH. LEAVE AT LEAST 24 INCHES OF SLACK AT EACH END OF CONDUIT OR CABLE. PROVIDE A MINIMUM OF 12" OR GREATER IN SIZE THAT HAVE ROOM FOR ADDITIONAL WIRE TO BE ADDED.
- Q. EFFECTIVELY SEAL RACEWAYS, BY INSTALLING A CONDUIT FITTING AT THE BOUNDARY OF THE

LIGHT FIXTURE SCHEDULE									
ID	MANUFACTURER	MODEL NUMBER	LAMP	VOLTS	LUMENS	WATTS	LLF	DESCRIPTION	REMARKS
T2	LITHONIA LIGHTING	DSX1 LED P6 40K 80CRI T2M HS EGS-F	LED	120	10579	165	0.8	LED AREA LIGHT WITH ONE TYPE II HEAD, MOUNTED ON A 22"-Ø ROUND POLE. PROVIDE POLE COMPATIBLE WITH FIXTURE IN SAME FINISH	1.2
T3	LITHONIA LIGHTING	DSX1 LED P6 40K 80CRI T3M HS EGS-F	LED	120	10294	165	0.8	LED AREA LIGHT WITH ONE TYPE III HEAD, MOUNTED ON A 22"-Ø ROUND POLE. PROVIDE POLE COMPATIBLE WITH FIXTURE IN SAME FINISH	1.2
T4	LITHONIA LIGHTING	DSX1 LED P6 40K 80CRI BL04 EGS	LED	120	13026	165	0.8	LED AREA LIGHT WITH ONE TYPE IV HEAD, MOUNTED ON A 22"-Ø ROUND POLE. PROVIDE POLE COMPATIBLE WITH FIXTURE IN SAME FINISH	1.2

REMARKS:
1. EQUAL MANUFACTURER'S MAY BE SUBSTITUTED.
2. PROVIDE POLE BASE PER DETAIL ON THIS SHEET.

IESNA PARKING LOT LEVELS OF ACTIVITY	IESNA MAINTAINED HORIZONTAL ILLUMINANCE STANDARDS (FOOT-CANDLES)		
	AVE.	MIN.	UNIFORMITY RATIO (AVG/MIN)
COMMUNITY SHOPPING CENTERS, RETAIL SPACE TO 299,999 SQUARE FEET	2.4	0.6	4:1

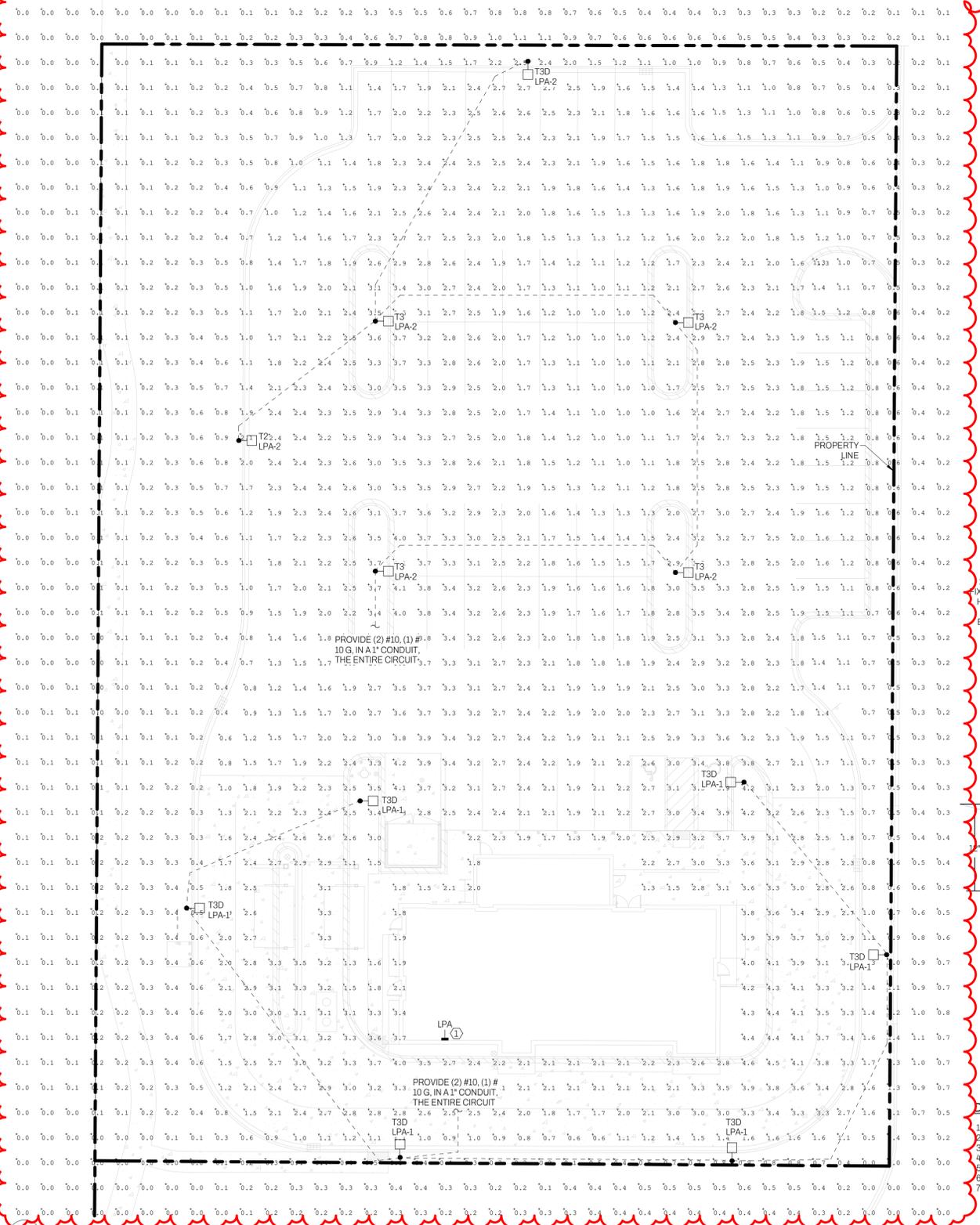
CALCULATION SUMMARY					
LABEL	UNITS	AVG	MAX	MIN	AVG/MIN
PARKING AND DRIVEWAY AREAS	FC	2.29	4.6	0.6	3.82
WHOLE SITE	FC	0.22	2.7	0.0	N/A

- GENERAL NOTES**
- ALL EXTERIOR LIGHTING CIRCUITS TO BE ROUTED THROUGH A TIMECLOCK.
 - ALL EXTERIOR LIGHT FIXTURE TO BE FED WITH #6 COPPER, UNLESS NOTED OTHERWISE.
 - ALL PVC CONDUITS MUST HAVE A MINIMUM OF #12 COPPER GROUND CONDUCTOR INSTALLED.
 - ALL EXTERIOR ELECTRICAL EQUIPMENT TO BE NEMA-3R RATED.
 - CONTRACTOR TO COORDINATE EXACT SITE LIGHTING FIXTURE LOCATIONS WITH CIVIL/LANDSCAPE DRAWINGS.

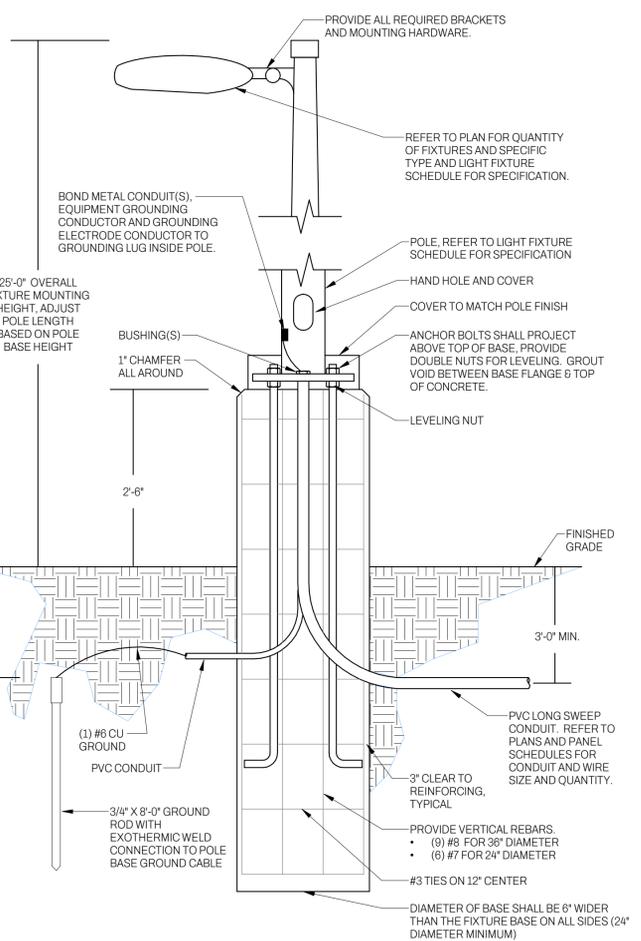
- KEY NOTES**
- CONTRACTOR TO COORDINATE EXACT ELECTRICAL PANEL LOCATION, VOLTAGE, AND NAME.



P.O. BOX 38 | DALTON, GA 30722



1 ELECTRICAL - SITE PLAN - ELECTRICAL
E100 1/8" = 1'-0"



- DETAIL NOTES**
- THE POLE BASE IS TO BE DESIGNED BY STRUCTURAL ENGINEER. REFER TO STRUCTURAL DRAWINGS.
 - THE CONTRACTOR IS TO PROVIDE A REINFORCED CONCRETE POLE BASE FOR EACH POLE SHOWN ON THE PLANS.
 - GROUND CONDUCTOR SHALL BE IN PVC RACEWAY WITHIN THE CONCRETE BASE.
 - LEVELING NUTS SHALL BE USED. POLE BEARING PLATE SHALL NOT BE SHIMMED AGAINST PIER CONCRETE.
 - CONCRETE: AIR ENTRAINED, 5000 PSI AFTER 28 DAYS, MAX AGGREGATE 3/4".
 - REINFORCEMENT: TYPE A-315 NEW BILLET STOCK A.S.T.M. GRADE 60.
 - IF THE ANTICIPATED FORECAST TEMPERATURE IS 35° OR LESS, THE BASE SHALL BE INSULATED WITH EITHER BLANKETS OR POLY AND STRAW FOR A MINIMUM OF 3 DAYS.

2 LIGHT POLE BASE - RAISED BASE DETAIL
E100 NOT TO SCALE

D-Series Size 1 LED Area Luminaire

Specifications
EPA: 0.69 ft² (0.064)
Length: 32.71" (833mm)
Width: 14.26" (362mm)
Height H1: 7.88" (200mm)
Height H2: 2.73" (69mm)
Weight: 24.9lb (11.3kg)

Introduction
The modern styling of the D-Series features a highly refined aesthetic that blends seamlessly with its environment. The D-Series offers the benefits of the latest in LED technology into a high performance, high efficacy, long-life luminaire.

The photometric performance results in sites with excellent uniformity, greater pole spacing and lower power density. D-Series outstanding photometry aids in reducing the number of poles required in area lighting applications with typical energy savings of 65% and expected service life of over 100,000 hours.

Ordering Information
EXAMPLE: DSX1 LED P7 40K 70CRI T3M MVOLT SPA NTAIR2 PIRIN DBDXX

Series	LEDs	Color Temperature	Color Rendering Index	Classification	Voltage	Mounting
DSX1 LED	P1 (2) P2 (2) P3 (2) P4 (2) P5 (2) P6 (2) P7 (2) P8 (2) P9 (2) P10 (2) P11 (2) P12 (2) P13 (2) P14 (2) P15 (2) P16 (2) P17 (2) P18 (2) P19 (2) P20 (2) P21 (2) P22 (2) P23 (2) P24 (2) P25 (2) P26 (2) P27 (2) P28 (2) P29 (2) P30 (2) P31 (2) P32 (2) P33 (2) P34 (2) P35 (2) P36 (2) P37 (2) P38 (2) P39 (2) P40 (2) P41 (2) P42 (2) P43 (2) P44 (2) P45 (2) P46 (2) P47 (2) P48 (2) P49 (2) P50 (2) P51 (2) P52 (2) P53 (2) P54 (2) P55 (2) P56 (2) P57 (2) P58 (2) P59 (2) P60 (2) P61 (2) P62 (2) P63 (2) P64 (2) P65 (2) P66 (2) P67 (2) P68 (2) P69 (2) P70 (2) P71 (2) P72 (2) P73 (2) P74 (2) P75 (2) P76 (2) P77 (2) P78 (2) P79 (2) P80 (2) P81 (2) P82 (2) P83 (2) P84 (2) P85 (2) P86 (2) P87 (2) P88 (2) P89 (2) P90 (2) P91 (2) P92 (2) P93 (2) P94 (2) P95 (2) P96 (2) P97 (2) P98 (2) P99 (2) P100 (2)	40K 70CRI	90	Class II	120V	SPA

Performance Data

Lumen Output

Performance Series	Series/Model	LED Count	Beam Spread	Distribution Type	Foot-candle (FC) at 10' height																									
					10'	15'	20'	25'	30'	35'	40'	45'	50'	55'																
P4	120W	30	120°	Type II	175	134	101	78	61	48	38	30	24	19	15	12	10	8	6	5	4	3	2	1						
					180	139	106	83	65	51	40	32	25	20	16	12	10	8	6	5	4	3	2	1						
					190	145	112	87	69	55	43	34	27	21	17	13	11	9	7	6	5	4	3	2	1					
					200	151	118	93	73	59	46	36	29	23	18	14	12	10	8	7	6	5	4	3	2	1				
					210	157	124	99	79	63	50	39	31	25	20	16	13	11	9	8	7	6	5	4	3	2	1			
					220	163	130	105	85	67	53	41	33	27	22	17	14	12	10	9	8	7	6	5	4	3	2	1		
					230	169	136	111	91	73	57	44	35	29	24	19	15	13	11	10	9	8	7	6	5	4	3	2	1	
					240	175	142	117	97	79	63	49	39	32	26	21	17	14	12	11	10	9	8	7	6	5	4	3	2	1
					250	181	148	123	103	85	67	53	41	33	27	22	17	14	12	11	10	9	8	7	6	5	4	3	2	1
					260	187	154	129	109	91	73	57	44	35	29	24	19	15	13	11	10	9	8	7	6	5	4	3	2	1

GENERAL NOTES

- ALL EXTERIOR LIGHTING CIRCUITS TO BE ROUTED THROUGH A TIMECLOCK.
- ALL EXTERIOR LIGHT FIXTURE TO BE FED WITH #6 COPPER, UNLESS NOTED OTHERWISE.
- ALL PVC CONDUITS MUST HAVE A MINIMUM OF #12 COPPER GROUND CONDUCTOR INSTALLED.
- ALL EXTERIOR ELECTRICAL EQUIPMENT TO BE NEMA-3R RATED.
- CONTRACTOR TO COORDINATE EXACT SITE LIGHTING FIXTURE LOCATIONS WITH CIVIL/LANDSCAPE DRAWINGS.

KEY NOTES

- CONTRACTOR TO COORDINATE EXACT ELECTRICAL PANEL LOCATION, VOLTAGE, AND NAME.

Performance Data

Lumen Output

Forward Optics

Performance Series	Series/Model	LED Count	Beam Spread	Distribution Type	Foot-candle (FC) at 10' height																									
					10'	15'	20'	25'	30'	35'	40'	45'	50'	55'																
P4	120W	30	120°	Type II	175	134	101	78	61	48	38	30	24	19	15	12	10	8	6	5	4	3	2	1						
					180	139	106	83	65	51	40	32	25	20	16	12	10	8	6	5	4	3	2	1						
					190	145	112	87	69	55	43	34	27	21	17	13	11	9	7	6	5	4	3	2	1					
					200	151	118	93	73	59	46	36	29	23	18	14	12	10	8	6	5	4	3	2	1					
					210	157	124	99	79	63	50	39	31	25	20	16	13	11	9	8	7	6	5	4	3	2	1			
					220	163	130	105	85	67	53	41	33	27	22	17	14	12	10	9	8	7	6	5	4	3	2	1		
					230	169	136	111	91	73	57	44	35	29	24	19	15	13	11	10	9	8	7	6	5	4	3	2	1	
					240	175	142	117	97	79	63	49	39	32	26	21	17	14	12	11	10	9	8	7	6	5	4	3	2	1
					250	181	148	123	103	85	67	53	41	33	27	22	17	14	12	11	10	9	8	7	6	5	4	3	2	1
					260	187	154	129	109	91	73	57	44	35	29	24	19	15	13	11	10	9	8	7	6	5	4	3	2	1

PROJECT NAME:
GUZMAN Y GOMEZ MEXICAN KITCHEN

844 ILLINOIS ROUTE 59
NAPERVILLE, IL
DUPAGE COUNTY



EXPIRES 11/30/2025
05/14/2025

NO	DATE	DESCRIPTION
	03/18/2025	ISSUED FOR PERMIT
1	05/15/2025	PUD RESUBMISSION

DRAWING TITLE:
ELECTRICAL - SITE PLAN

PROJ. NO: 20250064.0
DRAWN BY: YA
CHECKED BY: EW

E100

RELEASED FOR CONSTRUCTION