

# **GENERAL NOTES**

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- 1. READ THE SPECIFICATIONS AND REVIEW DRAWINGS OF ALL DIVISIONS OF WORK. COORDINATE THIS WORK WITH ALL OTHER DIVISIONS OF WORK AND ALL SUBCONTRACTORS. PROVIDE ALL SUBCONTRACTORS WITH A COMPLETE SET OF BID DOCUMENTS.
- 2. COORDINATE ALL WORK WITH OTHER TRADES AND CONTRACTORS.
- 3. ALL EXPOSED CONDUIT SHALL BE PAINTED TO MATCH ADJACENT SURFACE, COORDINATE WITH
- 4. ALL CIRCUITS SHALL HAVE A SEPARATE GREEN GROUND CONDUCTOR.
- 5. PROVIDE NEUTRAL CONDUCTOR FOR ALL 120V CIRCUITS OR AS OTHERWISE INDICATED.
- 6. REFER TO PANEL SCHEDULES FOR SPECIFIED CONDUCTOR SIZES PER BRANCH CIRCUIT. UNLESS OTHERWISE NOTED, ALL CIRCUITRY SHALL BE #12 AWG IN 3/4" CONDUIT.
- 7. PRIOR TO SUBMITTING BID, CONTRACTOR SHALL VISIT THE JOB SITE AND BECOME FULLY ACQUAINTED WITH THE EXISTING CONDITIONS OF THE FACILITY. REVIEW THE GENERAL NOTES AND ALL OTHER TRADE DRAWINGS FOR ADDITIONAL REQUIREMENTS THAT MAY NOT BE CALLED OUT IN THIS PORTION OF THE CONSTRUCTION DOCUMENTS, NOTIFY ARCHITECT, ENGINEER OR OWNER, AS SPECIFIED, OF ANY CONFLICTS OR DISCREPANCIES PRIOR TO SUBMITTING BID.
- 8. ALL WORK IS TO BE COORDINATED WITH THE REPRESENTATIVE
- 9. FOR ELECTRICAL DETAILS REFER TO MANUFACTURER DRAWINGS AND SPECIFICATIONS.
- 10. THE INFORMATION SHOWN IN THE SHORT-CIRCUIT AND VOLTAGE DROP CALCULATIONS SCHEDULE IS SHOWN FOR CALCULATION PURPOSES ONLY. CONTRACTOR SHALL NOT USE THE CONDUIT TYPES, CONDUCTOR TYPES, SIZES, QUANTITIES OR LENGTHS FOR TAKEOFFS OR BIDDING PURPOSES. CONTRACTOR SHALL NOTIFY ENGINEER OF ANY CONFLICTS BETWEEN THIS SCHEDULE AND OTHER PORTIONS OF THE CONSTRUCTION DOCUMENTS. CONTRACTOR SHALL NOTIFY ENGINEER OF AS-BUILT CONDITIONS THAT CONSTITUTE A CHANGE FROM WHAT IS SHOWN ON THE SCHEDULE: THIS INCLUDES CONDUCTOR LENGTHS DIFFERING BY MORE THAN 10%
- 11. FEEDER SIZES ARE BASED ON COPPER (CU) THHN/THWN-2 INSULATION, UNLESS NOTED OTHERWISE. AL WIRE MAY BE SUBSTITUTED FOR CU FEEDERS AS ALLOWED BY CODE SPECIFICATIONS, AND OWNER, UNLESS NOTED OTHERWISE, ALL CONDUCTOR SIZES ARE BASED ON 75 DEG C RATED TERMINATIONS, UNLESS NOTED OTHERWISE. CONDUIT SIZES SHOWN ARE APPROPRIATE FOR SCHEDULE 40 PVC, EMT, GRS, IMC AND RMC; ADJUST SIZE AS NEEDED FOR OTHER RACEWAY TYPES. FOR ANY OTHER CONDITIONS MODIFY SIZES PER CODE. REFER TO SPECIFICATIONS FOR ADDITIONAL INFORMATION.
- 12. PROVIDE A PERMANENT LABEL ON FRONT OF EQUIPMENT ENCLOSURE; REFER TO SPECIFICATIONS FOR LABEL REQUIREMENTS. LABEL SHALL READ AS FOLLOWS (INCLUDE SERVICE EQUIPMENT LABEL: LINE 1: NOMINAL VOLTAGE AND FREQUENCY

LINE 2: SERVICE EQUIPMENT BUS RATING IN

LINE 3: SCCR OF SERVICE EQUIPMENT IN

LINE 4: MAXIMUM AVAILABLE FAULT CURRENT

LINE 5: DATE CALCULATED

EXAMPLE: 208Y/120V, 60HZ SCCR = 65,000A MAX AVAILABLE FAULT CURRENT = 58,815A CALCULATED: 01/01/2018

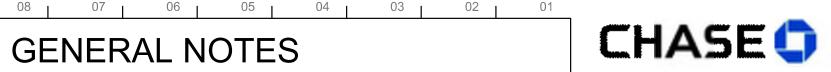
CONSTRUCTION.

13. OBTAIN THE AVAILABLE FAULT CURRENT DELIVERED BY UTILITY COMPANY AT THE POINT OF SERVICE. REPORT FINDINGS TO THE ENGINEER FOR ANALYSIS PRIOR TO BEGINNING

14. CONTRACTOR'S BID SHALL INCLUDE PROVISIONS TO PROVIDE ALL SERVICES RELATED TO THE CODE REQUIRED BUILDING SYSTEMS COMMISSIONING INCLUDING A COMMISSIONING PLAN. FUNCTIONAL TESTING, AND RELATED DOCUMENTATION, REPORTS AND OWNER TRAINING. THIS INCLUDES RETAINING THE SERVICES OF A 3RD PARTY REGISTERED DESIGN PROFESSIONAL OR APPROVED AGENCY. REFER TO THE LATEST ADOPTED EDITION OF THE APPLICABLE ENERGY CODE FOR MORE INFORMATION. CONTRACTOR SHALL COMPLETE ALL RELATED COMMISSIONING REQUIREMENTS PRIOR TO FINAL INSPECTIONS IN ACCORDANCE WITH THE CONSTRUCTION DOCUMENTS, CODE AND MANUFACTURER'S INSTRUCTIONS.











GENERAL CONTRACTORS

2000 SHAWNEE MISSION PARKWAY STE 100 MISSION WOODS, KS 56205 TEL 816 502 1500 FAX 816 842 1878

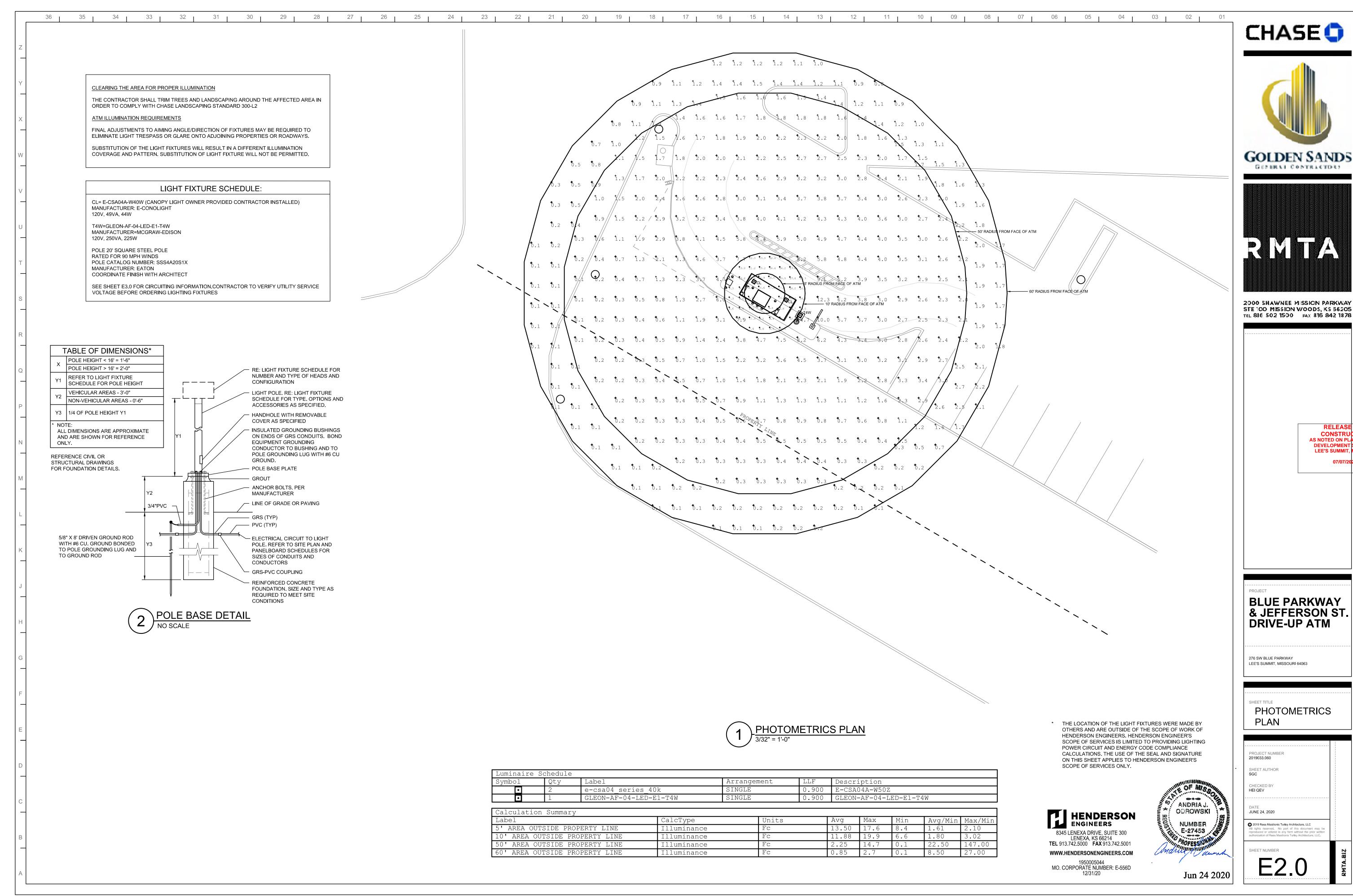
> CONSTRUCT **AS NOTED ON PLANS REVIEW** DEVELOPMENT SERVICES LEE'S SUMMIT, MI 07/07/202

BLUE PARKWAY & JEFFERSON ST. **DRIVE-UP ATM** 

276 SW BLUE PARKWAY LEE'S SUMMIT, MISSOURI 64063

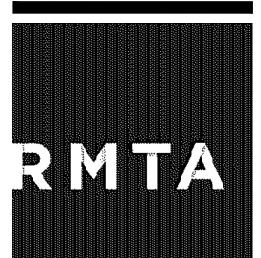
SYMBOLS LIST AND **GENERAL NOTES** 

2019033.060 SHEET AUTHOR HEI QEV JUNE 24, 2020 2019 Rees Masilionis Turley Architecture, LLC



CHASE



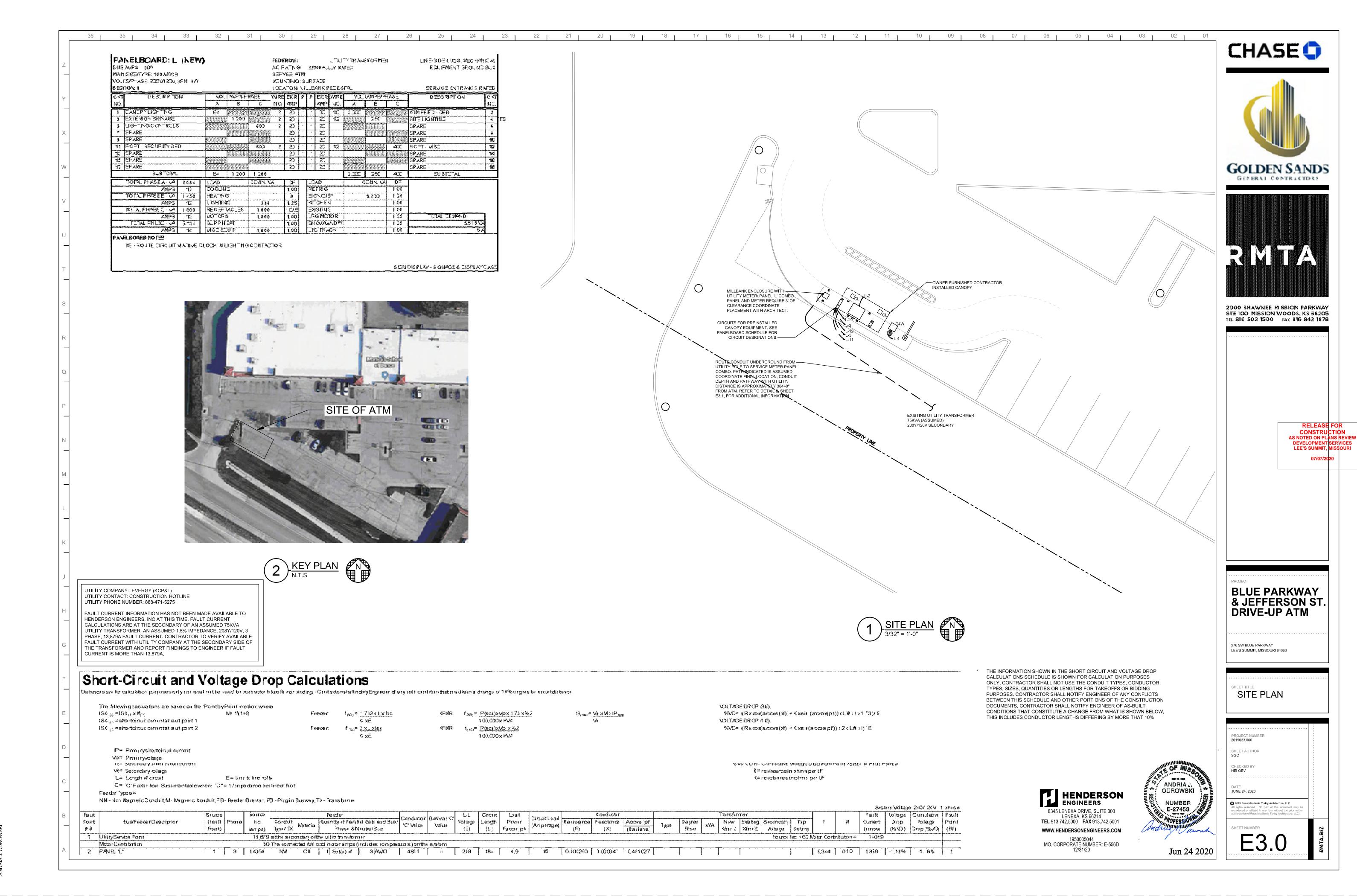


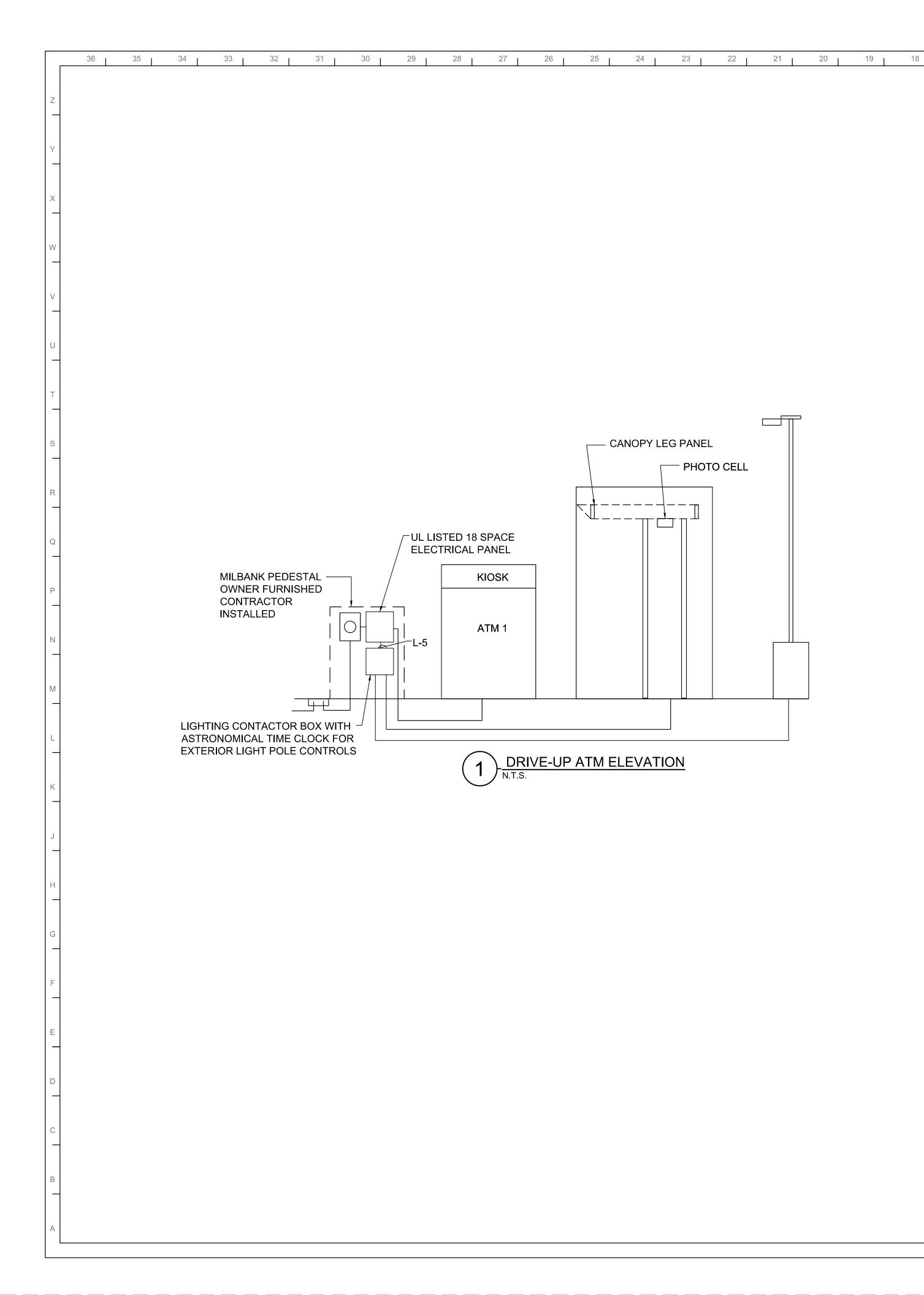
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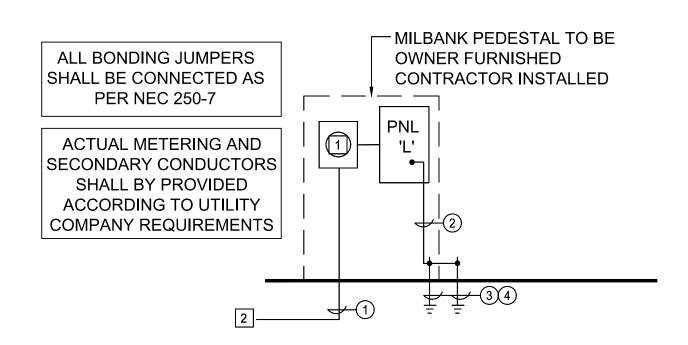
> CONSTRUCTION
> AS NOTED ON PLANS REVIEW DEVELOPMENT SERVICES LEE'S SUMMIT, MISSOURI

BLUE PARKWAY & JEFFERSON ST. DRIVE-UP ATM

PHOTOMETRICS







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# RISER # LEGEND

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1. NEW THWN CU WIRE IN NEW PVC SCH. 40 UNDERGROUND CONDUIT. SEE CHART BELOW.

НОТ	NEUTRAL	GND.	CONDUIT
3-#3	1-#3	-	1-1/4"

- 2. PROVIDE #8 GROUND TO GROUND ROD IN MILBANK PEDESTAL.
- 3. PROVIDE GROUND ROD PER MILBANK DRAWINGS.
- 4. PROVIDE A CONCRETE-ENCASED ELECTRODE OF AT LEAST 20' FT OF #4 BARE COPPER CONDUCTOR AS PER NEC 250.52(3)(2).

# DETAIL # NOTES

- 1. NEW ELECTRICAL METER TO BE INSTALLED UNDER THIS CONTRACT.
- 2. TO POWER UTILITY COMPANY POINT OF CONNECTION. FIELD COORDINATION REQUIRED.





Jun 24 2020

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BLUE PARKWAY & JEFFERSON ST. DRIVE-UP ATM

RISER DIAGRAMS

276 SW BLUE PARKWAY

PROJECT NUMBER 2019033.060

SHEET AUTHOR SGC

CHECKED BY HEI QEV

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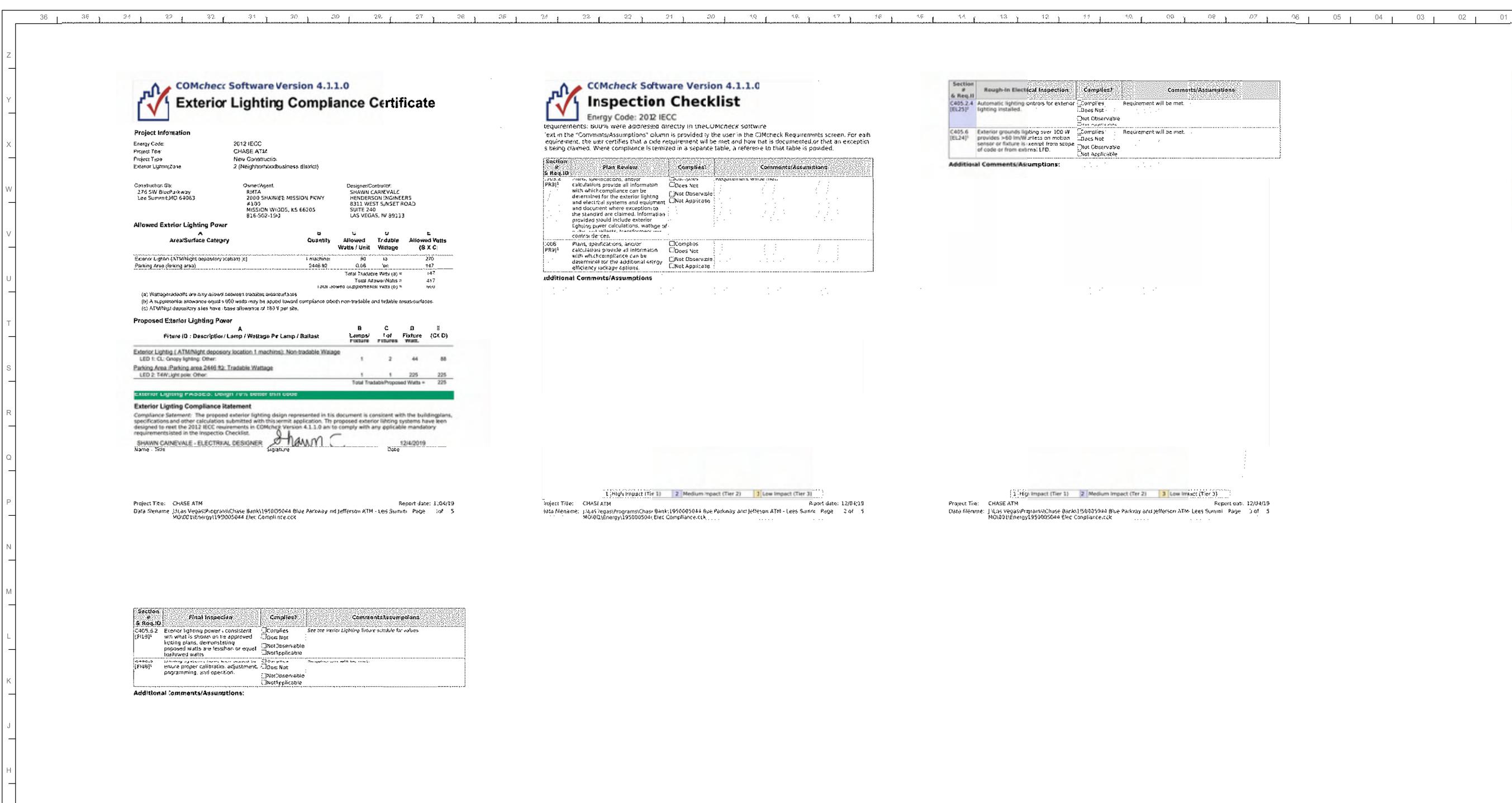
GOLDEN SANDS

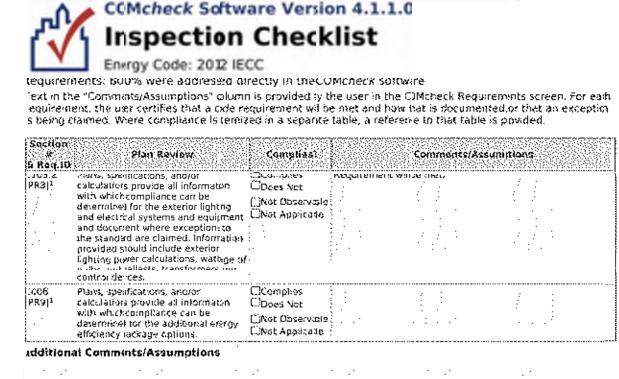
RMTA

2000 SHAWNEE MISSION PARKWAY STE 100 MISSION WOODS, KS 56205

TEL 816 502 1500 FAX 816 842 1878

CONSTRUCTION
AS NOTED ON PLANS REVIEW
DEVELOPMENT SERVICES
LEE'S SUMMIT, MISSOURI





Ephlors Inpact (Tie 1) 2 Medium Inpact (Tier 2) 12 Low Impact (Tier 3) Project Title: CMASEATM Report date: 12/04/19 Bata filename: INEAS Fegas)Programs/Chase Bank: 1950005044 6ue Parkway and Jeffeson ATM - Lees Sunnic Page 2 of 5 MOI001\Energy\1950005044 Elec Compilance cck

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Additional Comments/Assumptions:

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2000 SHAWNEE MISSION PARKWAY STE 100 MISSION WOODS, KS 66205 TEL 816 502 1500 FAX 816 842 1878

> CONSTRUCT AS NOTED ON PLANS REVIEW DEVELOPMENT SERVICES
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**BLUE PARKWAY** & JEFFERSON ST **DRIVE-UP ATM** 

276 SW BLUE PARKWAY LEE'S SUMMIT, MISSOURI 64063

SHEET TITLE **ENERGY** COMPLIANCE

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HENDERSON ENGINEERS 8345 LENEXA DRIVE, SUITE 300 LENEXA, KS 66214

TEL 913.742.5000 FAX 913.742.5001 WWW.HENDERSONENGINEERS.COM 1950005044 MO. CORPORATE NUMBER: E-556D 12/31/20

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Jun 24 2020

#### GENERAL INSTRUCTIONS

ALL REQUIREMENTS UNDER DIVISION 01 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 DIVISION 01, THIS SECTION AND DIVISION TAKE PRECEDENCE. BECOME THOROUGHLY FAMILIAR WITH ALL ITS CONTENTS AS TO REQUIREMENTS THAT AFFECT THIS DIVISION. SECTION. OR BOTH, WORK REQUIRED UNDER THIS DIVISION INCLUDES ALL MATERIAL, EQUIPMENT, APPLIANCES, TRANSPORTATION, SERVICES, AND LABOR REQUIRED TO COMPLETE THE ENTIRE SYSTEM AS REQUIRED BY THE DRAWINGS AND SPECIFICATIONS, OR REASONABLY INFERRED TO BE NECESSARY TO FACILITATE THE FUNCTION OF EACH SYSTEM AS IMPLIED BY THE DESIGN AND THE EQUIPMENT SPECIFIED.

THE SPECIFICATIONS AND DRAWINGS FOR THE PROJECT ARE COMPLEMENTARY, AND ANY PORTION OF 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 CONVEY THE SCOPE OF WORK, INDICATING THE INTENDED GENERAL ARRANGEMENT OF THE SYSTEMS WITHOUT SHOWING ALI OF THE EXACT DETAILS AS TO ELEVATIONS, OFFSETS, CONTROL LINES, AND OTHER INSTALLATION 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.

DIVISION: REFERENCES CONTAINED IN THIS SPECIFICATION FOLLOW THE NUMBERING SYSTEM DEFINED IN THE CONSTRUCTION SPECIFICATIONS INSTITUTE (CSI) MASTERFORMAT 2004 EDITION SPECIFICATION DIVISIONS 01 THROUGH 13 PROVIDED WITH THIS PROJECT MAY REFERENCE THE CSI MASTERFORMAT 1995 EDITION. THE CORRESPONDING DIVISION REFERENCES BETWEEN THE 2004 EDITION AND 1995 EDITION ARE AS FOLLOWS:

- DIVISION 21 FIRE SUPPRESSION DIVISION 15 DIVISION 22 - PLUMBING DIVISION 15 DIVISION 23 - HVAC DIVISION 15 DIVISION 26 - ELECTRICAL DIVISION 16 DIVISION 27 - COMMUNICATIONS **DIVISION 16**
- FURNISH: "TO SUPPLY AND DELIVER TO THE PROJECT SITE, READY FOR UNLOADING,

INSTALL: "TO PERFORM ALL OPERATIONS AT THE PROJECT SITE INCLUDING, BUT NOT LIMITED TO, THE ACTUAL UNLOADING, UNPACKING, ASSEMBLING, ERECTING, PLACING, ANCHORING, APPLYING, WORKING TO DIMENSION, FINISHING, CURING, PROTECTING, CLEANING, TESTING, COMMISSIONING, STARTING UP AND SIMILAR OPERATIONS, COMPLETE, AND READY FOR THE

#### PROVIDE: "TO FURNISH AND INSTALL."

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

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, ENGINEER MEANS INCREASED INVOLVEMENT BY AND OBLIGATIONS TO THE ENGINEER, IN ADDITION TO INVOLVEMENT BY AND OBLIGATIONS TO THE ARCHITECT

## AHJ: THE LOCAL CODE AND/OR INSPECTION AGENCY (AUTHORITY) HAVING JURISDICTION OVER

NRTL: NATIONALLY RECOGNIZED TESTING LABORATORY, AS DEFINED AND LISTED BY OSHA IN 29 CFR 1910.7 (E.G., UL, ETL, CSA), AND ACCEPTABLE TO THE AHJ OVER THIS PROJECT. NATIONALLY RECOGNIZED TESTING LABORATORIES AND STANDARDS LISTED ARE USED ONLY TO REPRESENT THE CHARACTERISTICS REQUIRED AND ARE NOT INTENDED TO RESTRICT THE USE OF OTHER NRTLS THAT ARE ACCEPTABLE TO THE AHJ AND STANDARDS THAT MEET THE

HOMERUN: THAT PORTION OF AN ELECTRICAL CIRCUIT ORIGINATING AT A JUNCTION BOX, PANELBOARD. NOTE: WHERE MC CABLE IS UTILIZED FOR RECEPTACLE AND/OR LIGHTING BRANCH CIRCUITING LOADS. THE ORIGINATING POINT OF THE HOMERUN SHALL BE AT THE FIRST LOAD IN THE CIRCUIT OR AT A JUNCTION BOX LOCATED IN AN ACCESSIBLE CEILING SPACE AS

CLOSE AS POSSIBLE TO THE FIRST LOAD. SUBSTITUTION: CHANGES IN PRODUCTS, MATERIALS, EQUIPMENT, AND METHODS OF CONSTRUCTION FROM THOSE REQUIRED BY THE CONTRACT DOCUMENTS AND PROPOSED BY CONTRACTOR, SUBSTITUTIONS INCLUDE VALUE ENGINEERING PROPOSALS. SUBSTITUTIONS FOR CAUSE: CHANGES PROPOSED BY CONTRACTOR THAT ARE REQUIRED

CHANGES, OR UNAVAILABILITY OF REQUIRED WARRANTY TERMS. SUBSTITUTIONS FOR CONVENIENCE: CHANGES PROPOSED BY CONTRACTOR OR OWNER THAT ARE NOT REQUIRED IN ORDER TO MEET OTHER PROJECT REQUIREMENTS BUT MAY OFFER ADVANTAGE TO CONTRACTOR OR OWNER.

THE TERMS "APPROVED EQUAL", "EQUIVALENT", OR "EQUAL" ARE USED SYNONYMOUSLY AND SHALL MEAN "ACCEPTED BY OR ACCEPTABLE TO THE ENGINEER AS EQUIVALENT TO THE ITEM OR MANUFACTURER SPECIFIED" THE TERM "APPROVED" SHALL MEAN LABELED LISTED CERTIFIED, OR ALL THREE, BY AN NRTL, AND ACCEPTABLE TO THE AHJ OVER THIS PROJECT.

## C. PRE-BID SITE VISIT

PRIOR TO SUBMITTING BID, VISIT THE SITE OF THE PROPOSED WORK AND BECOME FULLY INFORMED AS TO THE CONDITIONS UNDER WHICH THE WORK IS TO BE DONE. FAILURE TO COMPLY WITH THIS REQUIREMENT SHALL NOT BE CONSIDERED SUFFICIENT JUSTIFICATION TO REQUEST OR OBTAIN EXTRA COMPENSATION OVER AND ABOVE THE CONTRACT PRICE.

## D. MATERIAL AND WORKMANSHIP

PROVIDE NEW MATERIAL, EQUIPMENT, AND APPARATUS UNDER THIS CONTRACT UNLESS OTHERWISE STATED HEREIN, OF BEST QUALITY NORMALLY USED FOR THE PURPOSE IN GOOD COMMERCIAL PRACTICE, AND FREE FROM DEFECTS. MODEL NUMBERS LISTED IN THE SPECIFICATIONS OR SHOWN ON THE DRAWINGS ARE NOT NECESSARILY INTENDED TO DESIGNATE THE REQUIRED TRIM, WRITTEN DESCRIPTIONS OF THE TRIM GOVERN MODEL

PROVIDE MARKINGS OR A NAMEPI ATE FOR ALL MATERIAL AND FOLIPMENT 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.

## COMMERCIAL SPECIFICATION GRADE:

PROVIDE ALL HOISTS, SCAFFOLDS, STAGING, RUNWAYS, TOOLS, MACHINERY, AND EQUIPMENT REQUIRED FOR THE PERFORMANCE OF THE ELECTRICAL WORK. STORE AND MAINTAIN MATERIAL AND EQUIPMENT IN CLEAN CONDITION, AND PROTECTED FROM WEATHER, MOISTURE,

FURNISH ONLY MATERIAL AND EQUIPMENT THAT ARE LISTED, LABELED, CERTIFIED, OR ALL THREE, BY AN NRTL 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".

## E. MANUFACTURERS

IN OTHER ARTICLES WHERE LISTS OF MANUFACTURERS ARE INTRODUCED, SUBJECT TO

COMPLIANCE WITH REQUIREMENTS. PROVIDE PRODUCTS BY ONE OF THE MANUFACTURERS

WHERE A LIST IS PROVIDED, MANUFACTURERS ARE LISTED ALPHABETICALLY AND NOT IN ACCORDANCE WITH ANY RANKING OR PREFERENCE.

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.

#### F. COORDINATION

COORDINATE ALL WORK WITH OTHER DIVISIONS AND TRADES SO THAT VARIOUS COMPONENTS. OF THE SYSTEMS ARE INSTALLED AT THE PROPER TIME, FIT THE AVAILABLE SPACE, AND ALLOW PROPER SERVICE ACCESS TO THOSE ITEMS REQUIRING MAINTENANCE, COMPONENTS WHICH ARE INSTALLED WITHOUT REGARD TO THE ABOVE SHALL BE RELOCATED AT NO ADDITIONAL COST TO THE OWNER.

UNLESS OTHERWISE INDICATED. THE GENERAL CONTRACTOR SHALL PROVIDE CHASES AND OPENINGS IN BUILDING CONSTRUCTION REQUIRED FOR INSTALLATION OF THE SYSTEMS SPECIFIED HEREIN. CONTRACTOR SHALL FURNISH THE GENERAL CONTRACTOR WITH INFORMATION WHERE CHASES AND OPENINGS ARE REQUIRED. CONTRACTOR SHALL KEEP INFORMED AS TO THE WORK OF OTHER TRADES ENGAGED IN THE CONSTRUCTION OF THE PROJECT AND SHALL EXECUTE WORK IN A MANNER AS TO NOT INTERFERE WITH OR DELAY THE WORK OF OTHER TRADES.

FIGURED DIMENSIONS SHALL BE TAKEN IN PREFERENCE TO SCALE DIMENSIONS. CONTRACTOR SHALL TAKE HIS OWN MEASUREMENTS AT THE BUILDING. AS VARIATIONS MAY OCCUR. CONTRACTOR SHALL BE HELD RESPONSIBLE FOR ERRORS THAT COULD HAVE BEEN AVOIDED BY PROPER CHECKING AND INSPECTION

PROVIDE MATERIALS WITH TRIM THAT WILL PROPERLY FIT THE TYPES OF CEILING, WALL, OR FLOOR FINISHES ACTUALLY INSTALLED, MODEL NUMBERS LISTED IN THE SPECIFICATIONS OR SHOWN ON THE DRAWINGS ARE NOT INTENDED TO DESIGNATE THE REQUIRED TRIM.

MAKE ALL OFFSETS REQUIRED TO CLEAR EQUIPMENT, BEAMS, AND OTHER STRUCTURAL MEMBERS, AND TO FACILITATE CONCEALING RACEWAYS IN THE MANNER ANTICIPATED IN THE DESIGN. PROVIDE MATERIALS WITH TRIM THAT WILL FIT PROPERLY THE TYPES OF CEILING, WALL, OR FLOOR FINISHES ACTUALLY INSTALLED.

#### G. ORDINANCES AND CODES

WORK PERFORMED UNDER THIS CONTRACT SHALL, AT A MINIMUM, BE IN CONFORMANCE WITH APPLICABLE NATIONAL. STATE AND LOCAL CODES HAVING JURISDICTION. EQUIPMENT FURNISHED AND ASSOCIATED INSTALLATION WORK PERFORMED UNDER THIS CONTRACT SHALL BE IN STRICT COMPLIANCE WITH CURRENT APPLICABLE CODES ADOPTED BY THE LOCAL AHJ. INCLUDING ANY AMENDMENTS AND STANDARDS AS SET FORTH BY THE FOLLOWING:

- NATIONAL FIRE PROTECTION ASSOCIATION (NFPA)
- UNDERWRITERS LABORATORIES (UL) OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION (OSHA)

7. OTHER NATIONAL STANDARDS AND CODES WHERE APPLICABLE.

- AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI) AMERICAN SOCIETY OF TESTING MATERIALS (ASTM)
- RULES AND REGULATIONS OF PUBLIC UTILITIES AND MUNICIPAL DEPARTMENTS AFFECTED BY CONNECTION OF SERVICES.

WHERE THE CONTRACT DOCUMENTS EXCEED THE REQUIREMENTS OF THE REFERENCED CODES, STANDARDS, ETC., THE CONTRACT DOCUMENTS SHALL TAKE PRECEDENCE, WHERE CONFLICTS BETWEEN VARIOUS CODES, ORDINANCES, RULES, AND REGULATIONS EXIST, COMPLY WITH THE MOST STRINGENT.

PROMPTLY BRING ALL CONFLICTS OBSERVED BETWEEN CODES, ORDINANCES, RULES, REGULATIONS, REFERENCED STANDARDS, AND THESE DOCUMENTS TO THE ATTENTION OF THE ARCHITECT AND ENGINEER FOR FINAL RESOLUTION. CONTRACTOR WILL BE HELD RESPONSIBLE FOR ANY VIOLATION OF THE LAW.

PROCURE AND PAY FOR PERMITS AND LICENSES REQUIRED FOR THE ACCOMPLISHMENT OF THE WORK HEREIN DESCRIBED. WHERE REQUIRED, OBTAIN, PAY FOR, AND FURNISH CERTIFICATES OF INSPECTION TO OWNER. PROVIDE ALL SAFETY LIGHTS, GUARDS, AND WARNING SIGNS REQUIRED FOR THE PERFORMANCE OF THE WORK AND FOR THE SAFETY OF THE PUBLIC.

### H. PROTECTION OF EQUIPMENT AND MATERIALS

STORE AND PROTECT FROM DAMAGE EQUIPMENT AND MATERIALS DELIVERED TO JOB SITE. FOR MATERIALS AND EQUIPMENT SUSCEPTIBLE TO CHANGING WEATHER CONDITIONS, DAMPNESS. OR TEMPERATURE VARIATIONS, STORE INSIDE IN 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 DAMAGED BY CONSTRUCTION ACTIVITIES SHALL BE REJECTED, AND CONTRACTOR SHALL FURNISH NEW EQUIPMENT AND MATERIAL OF A LIKE KIND AT HIS OWN EXPENSE

KEEP PREMISES BROOM CLEAN OF FOREIGN MATERIAL CREATED DURING WORK PERFORMED UNDER THIS CONTRACT. CONDUIT, EQUIPMENT, ETC. SHALL HAVE A NEAT AND CLEAN APPEARANCE AT THE TERMINATION OF THE WORK.

PLUG OR CAP OPEN ENDS OF CONDUITS WHILE STORED AND INSTALLED DURING

## SUBSTITUTIONS

MATERIALS, PRODUCTS, EQUIPMENT, AND SYSTEMS DESCRIBED IN THE BIDDING DOCUMENTS ESTABLISH A STANDARD OF REQUIRED FUNCTION. DIMENSION, APPEARANCE AND QUALITY TO BE MET BY THE PROPOSED SUBSTITUTION. THE BASE BID SHALL INCLUDE ONLY THE PRODUCTS FROM MANUFACTURERS SPECIFICALLY NAMED IN THE DRAWINGS AND SPECIFICATIONS. TO REQUEST A SUBSTITUTION, REQUEST THE SUBSTITUTION REQUEST FORM FROM THE ARCHITECT OR ENGINEER. COMPLETE AND SEND THE SUBSTITUTION REQUEST FROM FOR EACH MATERIAL, PRODUCT, EQUIPMENT, OR SYSTEM THAT IS PROPOSED TO BE SUBSTITUTED. THE BURDEN OF PROOF OF THE MERIT OF THE PROPOSED SUBSTITUTION IS UPON THE PROPOSER.

CONSTRUCTION WHEN NOT IN USE TO PREVENT THE ENTRANCE OF DEBRIS INTO THE SYSTEMS.

UNLESS STATED OTHERWISE IN WRITING TO THE ENGINEER BY THE CONTRACTOR, CONTRACTOR WARRANTS TO THE ENGINEER, ARCHITECT, AND OWNER THE FOLLOWING: PROPOSED SUBSTITUTION HAS BEEN FULLY INVESTIGATED AND DETERMINED TO MEET OR EXCEED THE SPECIFIED WORK IN ALL RESPECTS UNLESS STATED OTHERWISE IN THE SUBSTITUTION REQUEST.

PROPOSED SUBSTITUTION IS CONSISTENT WITH THE CONTRACT DOCUMENTS AND WILL PRODUCE INDICATED RESULTS, INCLUDING FUNCTIONAL CLEARANCES, MAINTENANCE SERVICE, AND SOURCING OF REPLACEMENT PARTS. 3. PROPOSED SUBSTITUTION HAS RECEIVED NECESSARY APPROVALS OF AUTHORITIES

HAVING JURISDICTION 4. SAME WARRANTY WILL BE FURNISHED FOR PROPOSED SUBSTITUTION AS FOR SPECIFIED 5. IF ACCEPTED SUBSTITUTION FAILS TO PERFORM AS REQUIRED, CONTRACTOR SHALL

REPLACE SUBSTITUTE MATERIAL OR SYSTEM WITH THAT ORIGINALLY SPECIFIED AND BEAR COSTS INCURRED THEREBY COORDINATION, INSTALLATION AND CHANGES IN THE WORK AS NECESSARY FOR

ACCEPTED SUBSTITUTION WILL BE COMPLETE IN ALL RESPECTS. NO SUBSTITUTIONS WILL BE CONSIDERED UNLESS THE SUBSTITUTION REQUEST FORM IS COMPLETED AND ATTACHED WITH THE APPROPRIATE SUBSTITUTION DOCUMENTATION. NO SUBSTITUTION WILL BE CONSIDERED PRIOR TO RECEIPT OF BIDS UNLESS WRITTEN REQUEST FOR APPROVAL TO BID HAS BEEN RECEIVED BY THE ENGINEER AT LEAST TEN (10) CALENDAR DAYS PRIOR TO THE DATE FOR RECEIPT OF BIDS.

IF THE PROPOSED SUBSTITUTION IS APPROVED PRIOR TO RECEIPT OF BIDS, SUCH APPROVAL WILL BE STATED IN AN ADDENDUM. BIDDERS SHALL NOT RELY UPON APPROVALS MADE IN ANY OTHER WAY. VERBAL APPROVAL WILL NOT BE GIVEN. NO SUBSTITUTIONS WILL BE CONSIDERED AFTER THE CONTRACT IS AWARDED UNLESS SPECIFICALLY PROVIDED IN THE CONTRACT DOCUMENTS.

PROVIDE FACTORY GENERATED POINT-BY-POINT CALCULATIONS FOR ALL EXTERIOR LIGHT FIXTURES (PHOTOMETRIC FILES SUPPLIED SO 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.

## J. SUBMITTALS

ASSEMBLE AND SUBMIT FOR REVIEW SHOP DRAWINGS, MATERIAL LISTS, MANUFACTURER PRODUCT LITERATURE FOR EQUIPMENT TO BE FURNISHED. AND ITEMS REQUIRING COORDINATION BETWEEN CONTRACTORS UNDER THIS CONTRACT. PROVIDE SUBMITTALS IN SUFFICIENT DETAIL SO AS TO DEMONSTRATE COMPLIANCE WITH THESE CONTRACT DOCUMENTS AND THE DESIGN CONCEPT. PRIOR TO TRANSMITTING SUBMITTALS, VERIFY THAT THE EQUIPMENT SUBMITTED IS MUTUALLY COMPATIBLE WITH AND SUITABLE FOR THE INTENDED USE, WILL FIT THE AVAILABLE SPACE, AND MAINTAIN MANUFACTURER RECOMMENDED SERVICE

CLEARANCES. IF THE SIZE OF EQUIPMENT FURNISHED MAKES NECESSARY ANY CHANGE IN LOCATION OR CONFIGURATION, SUBMIT A SHOP DRAWING SHOWING THE PROPOSED LAYOUT.

TRANSMIT SUBMITTALS AS EARLY AS REQUIRED TO SUPPORT THE PROJECT SCHEDULE. ALLOW TWO WEEKS FOR ENGINEER REVIEW TIME. PLUS TO/FROM MAILING TIME VIA THE ARCHITECT. PLUS A DUPLICATION OF THIS TIME FOR RESUBMITTALS, IF REQUIRED. ONLY RESUBMIT THOSE

SUBMITTAL DATA, FOUIPMENT IDENTIFICATIONS ACRONYM AS USED ON THE DRAWINGS, AND THE CONTRACTOR'S STAMP. THE STAMP SHALL CERTIFY THAT THE SUBMITTAL HAS BEEN CHECKED BY THE CONTRACTOR, COMPLIES WITH THE DRAWINGS AND SPECIFICATIONS, AND IS COORDINATED WITH OTHER TRADES. MANUFACTURER PRODUCT LITERATURE SHALL INCLUDE SHOP DRAWINGS, PRODUCT DATA, PERFORMANCE SHEETS, SAMPLES, AND OTHER SUBMITTALS REQUIRED BY THIS DIVISION. HIGHLIGHT, MARK, LIST, OR INDICATE THE MATERIALS, PERFORMANCE CRITERIA, AND ACCESSORIES THAT ARE BEING PROPOSED. GENERAL PRODUCT CATALOG DATA NOT SPECIFICALLY NOTED TO BE PART OF THE SPECIFIED PRODUCT WILL BE REJECTED AND RETURNED WITHOUT REVIEW.

SUBMITTALS AND SHOP DRAWINGS SHALL NOT CONTAIN FIRM NAME, LOGO, THE SEAL, OR SIGNATURE OF THE ENGINEER. THEY SHALL NOT BE COPIES OF THE WORK PRODUCT OF THE ENGINEER. IF THE CONTRACTOR DESIRES TO USE ELEMENTS OF SUCH PRODUCT, REFER TO PARAGRAPH "ELECTRONIC DRAWING FILES" FOR PROCEDURES TO BE USED.

SEPARATE SUBMITTALS ACCORDING TO INDIVIDUAL SPECIFICATION SECTIONS, ILLEGIBLE SUBMITTALS WILL BE REJECTED AND RETURNED WITHOUT REVIEW. CATALOG DATA SHALL BE PROPERLY BOUND, IDENTIFIED, INDEXED AND TABBED IN A 3-RING BINDER. EACH ITEM OR MODEL NUMBER SHALL BE CLEARLY MARKED AND ACCESSORIES INDICATED. LABEL THE CATALOG DATA WITH THE EQUIPMENT IDENTIFICATION ACRONYM OR NUMBER AS USED ON THE DRAWINGS AND INCLUDE PERFORMANCE CURVES, CAPACITIES, SIZES, WEIGHTS, MATERIALS. FINISHES, WIRING DIAGRAMS, ELECTRICAL REQUIREMENTS AND DEVIATIONS FROM SPECIFIED EQUIPMENT OR MATERIALS. MARK OUT INAPPLICABLE ITEMS. SHOP DRAWINGS WILL BE RETURNED WITHOUT REVIEW IF THE ABOVE MENTIONED REQUIREMENTS ARE NOT MET PROVIDE THE QUANTITY OF SUBMITTALS REQUIRED BY DIVISION 01. IF NOT INDICATED AND HARD-COPY SETS ARE PROVIDED. SUBMIT A MINIMUM OF SIX (6) COPIES, REFER TO DIVISION 01 FOR ACCEPTANCE OF ELECTRONIC SUBMITTALS FOR THIS PROJECT. FOR ELECTRONIC SUBMITTALS, CONTRACTOR SHALL SUBMIT THE DOCUMENTS IN ACCORDANCE WITH THE PROCEDURES SPECIFIED IN DIVISION 01. CONTRACTOR SHALL NOTIFY THE ARCHITECT AND ENGINEER THAT THE SUBMITTALS HAVE BEEN POSTED. IF ELECTRONIC SUBMITTAL PROCEDURES ARE NOT DEFINED IN DIVISION 01, CONTRACTOR SHALL INCLUDE THE WEBSITE USER NAME, AND PASSWORD INFORMATION NEEDED TO ACCESS THE SUBMITTALS. FOR SUBMITTALS SENT BY E-MAIL, CONTRACTOR SHALL COPY THE DESIGNATED REPRESENTATIVES OF THE ARCHITECT AND ENGINEER. CONTRACTOR SHALL ALLOW FOR THE ENGINEER REVIEW TIME AS SPECIFIED ABOVE IN THE CONSTRUCTION SCHEDULE. CONTRACTOR SHALL SUBMIT ONLY THE DOCUMENTS REQUIRED TO PURCHASE THE MATERIALS AND/OR EQUIPMENT IN THE

THE CHECKING AND SUBSEQUENT ACCEPTANCE OF SUBMITTALS BY THE ENGINEER AND/OR ARCHITECT SHALL NOT RELIEVE THE CONTRACTOR FROM RESPONSIBILITY FOR DEVIATIONS FROM THE DRAWINGS AND SPECIFICATIONS, ERRORS IN DIMENSIONS, DETAILS, SIZES OF EQUIPMENT, OR QUANTITIES, OMISSIONS OF COMPONENTS OR FITTINGS, COORDINATION OF ELECTRICAL REQUIREMENTS, AND NOT COORDINATING ITEMS WITH ACTUAL BUILDING CONDITIONS AND ADJACENT WORK. CONTRACTOR SHALL REQUEST AND SECURE WRITTEN ACCEPTANCE FROM THE ENGINEER AND ARCHITECT PRIOR TO IMPLEMENTING ANY DEVIATION

#### K. ELECTRONIC DRAWING FILES

IN PREPARATION OF SHOP DRAWINGS OR RECORD DRAWINGS, CONTRACTOR MAY, AT HIS OPTION, OBTAIN ELECTRONIC DRAWING FILES IN AUTOCAD OR DXF FORMAT ON CD-ROM DISK, DVD DISK, FLASH DRIVE, OR DIRECT DOWNLOAD, AS DESIRED, FROM THE ENGINEER FOR A SHIPPING AND HANDLING FEE OF \$200 FOR A DRAWING SET UP TO 12 SHEETS AND \$15 PER SHEET FOR EACH ADDITIONAL SHEET, CONTACT THE ARCHITECT FOR WRITTEN AUTHORIZATION AND ENGINEER FOR THE NECESSARY AGREEMENT FORM AND TO SPECIFY SHIPPING METHOD AND DRAWING FORMAT. IN ADDITION TO PAYMENT, THE WRITTEN AUTHORIZATION FROM THE ARCHITECT AND RELEASE AGREEMENT FORM FROM THE ENGINEER MUST BE RECEIVED BEFORE ELECTRONIC DRAWING FILES WILL BE SENT.

DURING PROGRESS OF THE WORK IN THIS DIVISION, CONTRACTOR SHALL MAINTAIN AN ACCURATE RECORD OF ALL CHANGES MADE DURING THE INSTALLATION OF THE SYSTEM, UPON COMPLETION OF THE WORK, ACCURATELY TRANSFER ALL RECORD INFORMATION TO THREE IDENTICAL SETS OF THE APPROVED SHOP DRAWINGS. INSERT ONE SET INTO EACH COPY OF THE MANUAL DESCRIBED BELOW.

## SEE DIVISION 01 AND GENERAL CONDITIONS FOR ADDITIONAL INFORMATION.

## M. OPERATION AND MAINTENANCE INSTRUCTIONS

FOLIPMENT FURNISHED AND INSTALLED ON THIS PROJECT, INCLUDE OPERATIONAL AND LISTS, APPROVED SUBMITTALS AND SHOP DRAWINGS, WARRANTIES, AND DESCRIPTIVE LITERATURE AS FURNISHED BY THE EQUIPMENT MANUFACTURER. INCLUDE AN INSIDE COVER SHEET THAT LISTS THE PROJECT NAME, DATE, OWNER, ARCHITECT, ENGINEER, GENERAL CONTRACTOR, SUB-CONTRACTOR, AND AN INDEX OF CONTENTS.

SUBMIT THREE COPIES OF LITERATURE BOUND IN APPROVED BINDERS WITH INDEX AND TABS SEPARATING FOUIPMENT TYPES TO THE ARCHITECT. FOR ENGINEER'S REVIEW, AT THE TERMINATION OF THE WORK, PAPER CLIPS, STAPLES, RUBBER BANDS, LOOSE-LEAF BINDING AND MAILING ENVELOPES ARE NOT CONSIDERED APPROVED BINDERS. FINAL APPROVAL OF SYSTEMS INSTALLED UNDER THIS CONTRACT SHALL BE WITHHELD UNTIL THIS EQUIPMENT WORKMEN TO SAVE REQUIRED LITERATURE SHIPPED WITH THE EQUIPMENT ITSELF FOR INCLUSION IN THIS BROCHURE.

REFER TO DIVISION 01 FOR ACCEPTANCE OF ELECTRONIC MANUALS FOR THIS PROJECT. FOR ELECTRONIC MANUALS, REFER TO PARAGRAPH "SUBMITTALS" FOR REQUIREMENTS.

## N. WARRANTIES

WARRANT EACH SYSTEM AND EACH ELEMENT THEREOF AGAINST ALL DEFECTS DUE TO FAULTY WORKMANSHIP, DESIGN, OR MATERIAL FOR A PERIOD OF 12 MONTHS FROM DATE OF SUBSTANTIAL COMPLETION, UNLESS SPECIFIC ITEMS ARE NOTED TO CARRY A LONGER WARRANTY IN THESE 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 01. WARRANTIES SHALL INCLUDE LABOR AND MATERIAL, INCLUDING TRAVEL EXPENSES, MAKE REPAIRS OR REPLACEMENTS WITHOUT ANY ADDITIONAL COSTS TO THE OWNER, AND TO THE

PERFORM THE REMEDIAL WORK PROMPTLY, UPON WRITTEN NOTICE FROM THE ENGINEER OR

ALSO WARRANT THE FOLLOWING ADDITIONAL ITEMS: ALL RACEWAYS ARE FREE FROM OBSTRUCTIONS, HOLES, CRUSHING, OR BREAKS OF ANY

ALL RACEWAY SEALS ARE EFFECTIVE. THE ENTIRE ELECTRICAL SYSTEM IS FREE FROM ALL SHORT CIRCUITS AND UNWANTED

AT THE TIME OF SUBSTANTIAL COMPLETION, DELIVER TO THE OWNER ALL WARRANTIES, IN WRITING AND PROPERLY EXECUTED, INCLUDING TERM LIMITS FOR WARRANTIES EXTENDING BEYOND THE ONE YEAR PERIOD AND ANY ACTIONS THE OWNER MUST TAKE IN ORDER TO MAINTAIN WARRANTY STATUS. EACH WARRANTY INSTRUMENT SHALL BE ADDRESSED TO THE

## 2. GENERAL MATERIALS AND INSTALLATION

## A. EXCAVATION AND BACKFILLING

FUTURE SETTLEMENT.

EXCAVATION SHALL COMPRISE THE SATISFACTORY REMOVAL AND DISPOSITION OF MATERIAL OF WHATEVER SUBSTANCES AND OF EVERY DESCRIPTION ENCOUNTERED, INCLUDING ROCK, IF ANY WITHIN THE LIMITS OF THE WORK AS SPECIFIED AND SHOWN ON THE DRAWINGS EXCAVATION SHALL BE PERFORMED TO THE LINES AND GRADES INDICATED ON THE DRAWINGS DISPOSE OF EXCAVATED MATERIALS THAT ARE CONSIDERED UNSUITABLE FOR BACKFILL, AND SURPLUS OF EXCAVATED MATERIAL, WHICH IS NOT REQUIRED FOR BACKFILL, ALL TO THE SATISFACTION OF THE ENGINEER.

#### B. COINCIDENTAL DAMAGE

REPAIR STREETS, SIDEWALKS, DRIVES, PAVING, WALLS, FINISHES, AND OTHER FACILITIES DAMAGED IN THE COURSE OF THIS WORK, REPAIR MATERIALS SHALL MATCH EXISTING CONSTRUCTION. REPAIR WORK SHALL MEET ALL REQUIREMENTS OF THE OWNER. LOCAL AUTHORITIES HAVING JURISDICTION, AND MEET THE SATISFACTION OF THE ARCHITECT. REPAIR WORK SHALL BE THOROUGHLY FIRST CLASS.

# C. ROUGH-IN

COORDINATE WITHOUT DELAY ALL ROUGHING-IN WITH OTHER DIVISIONS. CONCEAL ALL CONDUIT AND RACEWAYS EXCEPT IN UNFINISHED AREAS AND WHERE OTHERWISE INDICATED ON THE DRAWINGS.

#### D. CONCRETE BASES

PROVIDE CONCRETE BASES (F.G., HOUSEKEEPING PADS) FOR EQUIPMENT WHERE INDICATED ON THE DRAWINGS AND AS SPECIFIED HEREIN. CONCRETE BASES SHALL HAVE CHAMFERED EDGES. SIZE OF BASE SHALL BE A MINIMUM OF 4 INCHES GREATER THAN THE FOOTPRINT OF THE EQUIPMENT THAT IT IS SUPPORTING AND SHALL HAVE A MINIMUM HEIGHT OF 3-1/2 INCHES.

CONSTRUCT EQUIPMENT BASES OF A MINIMUM 28-DAY, 4000-PSI CONCRETE CONFORMING TO AMERICAN CONCRETE INSTITUTE STANDARD BUILDING CODE FOR REINFORCED CONCRETE (ACI 318) AND THE LATEST APPLICABLE RECOMMENDATIONS OF THE ACLISTANDARD PRACTICE MANUAL CONCRETE SHALL BE COMPOSED OF CEMENT CONFORMING TO ASTM C 150 TYPE I, AGGREGATE CONFORMING TO ASTM C33, AND POTABLE WATER. EXPOSED EXTERIOR CONCRETE SHALL CONTAIN 5 TO 7 PERCENT AIR ENTRAINMENT.

UNLESS OTHERWISE SPECIFIED OR SHOWN ON THE STRUCTURAL DRAWINGS, REINFORCE EQUIPMENT BASES WITH NO. 4 REINFORCING BARS CONFORMING TO ASTM A615 OR 6X6 - W2.9 X W2.9 WELDED WIRE MESH CONFORMING TO ASTM A185, PLACE REINFORCING BARS 24 INCHES ON CENTER WITH A MINIMUM OF TWO BARS EACH DIRECTION.

PROVIDE GALVANIZED ANCHOR BOLTS FOR EQUIPMENT PLACED ON CONCRETE BASES OR ON CONCRETE SLABS. ANCHOR BOLTS SIZE, NUMBER, AND PLACEMENT SHALL BE AS RECOMMENDED BY THE MANUFACTURER OF THE EQUIPMENT.

## E. EQUIPMENT FURNISHED BY OTHERS

PROVIDE NECESSARY EQUIPMENT AND ACCESSORIES THAT ARE NOT PROVIDED BY THE EQUIPMENT SUPPLIER OR OWNER TO COMPLETE INSTALLATION 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. BUT NOT BE LIMITED TO, FLEXIBLE CORDS AND PLUGS AS REQUIRED FOR PROPER OPERATION OF THE COMPLETE SYSTEM, IN ACCORDANCE WITH THE MANUFACTURERS' INSTRUCTIONS.

CONTRACTOR SHALL BE RESPONSIBLE FOR CORRECT ROUGH-IN DIMENSIONS, AND VERIFY THEM WITH ARCHITECT AND/OR EQUIPMENT SUPPLIER PRIOR TO ROUGH-IN AND SERVICE INSTALLATIONS.

#### F. SYSTEM TESTING AND ADJUSTING

ADJUST, ALIGN, AND TEST ALL ELECTRICAL EQUIPMENT ON THIS PROJECT PROVIDED UNDER THIS DIVISION AND ALL ELECTRICAL EQUIPMENT FURNISHED BY OTHERS FOR INSTALLATION OR WIRING UNDER THIS DIVISION FOR PROPER OPERATION.

TEST ALL SYSTEMS AND EQUIPMENT ACCORDING TO THE REQUIREMENTS IN NETA ATS (LATEST EDITION) AND ALL ADDITIONAL REQUIREMENTS SPECIFIED IN FOLLOWING SECTIONS.

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.

### G. EQUIPMENT IDENTIFICATION

PROVIDE EQUIPMENT IDENTIFICATION NAMEPLATES ON ALL SWITCHBOARDS, PANELBOARDS, ELECTRICAL EQUIPMENT ENCLOSURES, ACCESS DOORS, TRANSFORMERS, DISCONNECT SWITCHES ENCLOSED CIRCUIT BREAKERS MOTOR STARTERS FEEDER DEVICES IN SWITCHBOARDS, DISTRIBUTION PANELBOARDS, AND MOTOR CONTROL CENTERS.

ENGRAVED, CONTRASTING COLOR, THREE-LAYER, LAMINATED PLASTIC, INDICATING THE NAME OF THE EQUIPMENT, LOAD, OR CIRCUIT AS DESIGNATED ON THE DRAWINGS AND IN THE

SPECIFICATIONS: FIELD-APPLIED PERMANENT EPOXY ADHESIVE, COMPATIBLE WITH THE EQUIPMENT FINISH. SELF-ADHERING WITH A PERMANENT WEATHERPROOF ADHESIVE

ATTACHMENT METHOD SHALL BE ACCEPTABLE TO THE MANUFACTURERS OF THE EQUIPMENT TO WHICH THE NAMEPLATES ARE BEING APPLIED.

#### NAMEPLATE COLOR: BLACK BACKGROUND WITH WHITE LETTERS FOR NORMAL POWER: RED BACKGROUND WITH WHITE LETTERS FOR EMERGENCY POWER.

ATTACHED WITH STAINLESS STEEL SCREWS AND HARDWARE.

## LETTER HEIGHT: 3/8-INCH MINIMUM.

B. SYSTEM START UP

PERFORM THE FOLLOWING PRIOR TO STARTING UP THE ELECTRICAL SYSTEMS CHECK ALL COMPONENTS AND DEVICES AND LUBRICATE ITEMS ACCORDINGLY. 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 THOSE SPECIFIED IN UL 486A AND UL 486B

ADJUST TAPS ON EACH TRANSFORMER FOR RATED SECONDARY VOLTAGE WHEN THE TRANSFORMER IS AT MINIMUM LOAD 4. CHECK AND RECORD BUILDING'S SERVICE ENTRANCE VOLTAGE, GROUNDING CONDITIONS, GROUNDING RESISTANCE, AND PROPER PHASING.

5. REPLACE ALL BURNED-OUT LAMPS AND LAMPS USED FOR TEMPORARY CONSTRUCTION LIGHTING IN PERMANENT LIGHT FIXTURES. 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 RE-BALANCING AND REDISTRIBUTION OF CIRCUITS ARE COMPLETE TURN ON ALL LOADS IN AN ATTEMPT TO MAXIMIZE THE LOAD ON THE PANEL AND TAKE AMPERE READINGS ON EACH OF THE PHASES BEFORE REDISTRIBUTING CIRCUITS AND BALANCING THE

7. 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 SECTION 26**



**HENDERSON** 

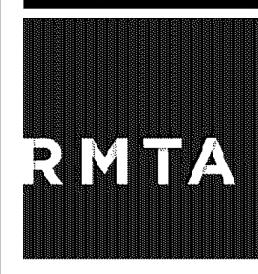
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> CONSTRUC AS NOTED ON PLANS REVIEW DEVELOPMENT SERVICES LEE'S SUMMIT, M

**BLUE PARKWAY** & JEFFERSON ST **DRIVE-UP ATM** 

276 SW BLUE PARKWAY

LEE'S SUMMIT, MISSOURI 64063

SPECS

2019033.060 SHEET AUTHOR HEI QEV JUNE 24, 2020 2019 Rees Masilionis Turley Architecture, LLC

SECTIONS REQUESTED FOR RESUBMITTAL.

SUBMITTALS SHALL CONTAIN THE PROJECT NAME, APPLICABLE SPECIFICATION SECTION,

RECORD DRAWINGS (AS-BUILT DRAWINGS)

DURING THE COURSE OF CONSTRUCTION, COLLECT AND COMPILE A COMPLETE BROCHURE OF MAINTENANCE INSTRUCTIONS. MANUFACTURER'S CATALOG SHEETS, WIRING DIAGRAMS, PARTS

BROCHURE IS RECEIVED AND DEEMED COMPLETE BY THE ARCHITECT AND ENGINEER. INSTRUCT

INCLUDE RECORD DRAWINGS AS DESCRIBED ABOVE.

SATISFACTION OF THE OWNER, ARCHITECT, AND ENGINEER.

## OWNER AND STATE THE COMMENCEMENT DATE AND TERM.

PERFORM EXCAVATION AND BACKFILL REQUIRED FOR INSTALLATION OF UNDERGROUND WORK UNDER THIS CONTRACT. TRENCHES SHALL BE OF SUFFICIENT WIDTH. CRIB OR BRACE TRENCHES TO PREVENT CAVE-IN OR SETTLEMENT. DO NOT EXCAVATE TRENCHES CLOSE TO COLUMNS AND WALLS OF NEW BUILDING WITHOUT PRIOR CONSULTATION WITH THE ARCHITECT. USE PUMPING EQUIPMENT IF REQUIRED TO KEEP TRENCHES FREE OF WATER. BACKFILL TRENCHES IN MAXIMUM 6-INCH LAYERS OF WELL TAMPED DRY EARTH IN A MANNER TO PREVENT

EXCAVATION AS SPECIFIED HEREIN SHALL BE CLASSIFIED AS COMMON EXCAVATION. COMMON

ALL FEEDER AND BRANCH CIRCUIT CONDUCTORS NO. 8 AWG AND LARGER: STRANDED.

ALL BRANCH CIRCUIT WIRING: NOT SMALLER THAN NO. 12 AWG. IF NO CONDUCTOR SIZE IS

ALL CONDUCTORS, NO. 10 AWG AND SMALLER: SOLID COPPER.

INDICATED ON THE DRAWINGS FOR A BRANCH CIRCUIT. PROVIDE CONDUCTORS AND CONDUIT SIZED PER NFPA 70 AND BASED ON THE INDICATED BRANCH CIRCUIT OVERCURRENT PROTECTIVE DEVICE (OCPD) RATING AND NUMBER OF POLES. WHERE NO CIRCUIT SIZE (LE CONDUCTORS AND OCPD) IS INDICATED ON THE DRAWINGS FOR A BRANCH CIRCUIT. PROVIDE THREE NO. 12 AWG CONDUCTORS, IN 3/4-INCH RACEWAY, AND A 20A CIRCUIT BREAKER.

29 | 28 | 27 | 26 | 25 | 24 | 23 |

CONTROL WIRING: STRANDED COPPER CONDUCTORS, 600V INSULATION, OF THE PROPER TYPE, SIZE, AND NUMBER AS REQUIRED TO ACCOMPLISH SPECIFIED FUNCTION. MINIMUM SIZE: NO. 14 AWG. UNLESS NOTED OTHERWISE.

FLEXIBLE CORDS AND CABLES: STRANDED COPPER CONDUCTORS FOR ALL, UNLESS NOTED

SPECIAL PURPOSE CONDUCTORS AND CABLES, SUCH AS LOW VOLTAGE CONTROL AND SHIELDED INSTRUMENT WIRING: AS RECOMMENDED BY THE SYSTEM EQUIPMENT MANUFACTURER UNLESS INDICATED OTHERWISE.

COPPER CONDUCTOR MANUFACTURERS: ADVANCE WIRE AND CABLE, AFC CABLE, ALAN WIRE, ALFLEX, AMERICAN INSULATED WIRE, ENCORE WIRE, NORTHERN CABLES, OKONITE, OR

CONNECTIONS: APPLY A ZINC BASED ANTI\_OXIDIZING COMPOUND TO CONNECTIONS. DO NOT USE TERMINALS ON WIRING DEVICES TO FEED THROUGH TO THE NEXT DEVICE.

### 5. CONDUCTORS AND CABLES INSTALLATION

INSTALL ALL WIRING IN APPROVED RACEWAY AND ENCLOSURES, EXCEPT WHERE SPECIFIED OR INDICATED FOR LOW-VOLTAGE WIRING, WHERE SPECIFIED OR INDICATED FOR DIRECT-BURIED CABLES, OR WHERE TYPE MC CABLE IS INDICATED OR SPECIFIED AS

INSTALL ALL CONDUCTORS AND CABLES IN RACEWAYS CONTINUOUS WITHOUT TAPS OR SPLICES, SPLICE OR TAP ONLY IN APPROVED BOXES AND ENCLOSURES WITH APPROVED SOLDERLESS CONNECTORS, OR CRIMP CONNECTORS AND TERMINAL BLOCKS FOR CONTROL WIRING, AND KEEP TO THE MINIMUM REQUIRED. INSULATE ALL SPLICES, TAPS, AND JOINTS AS REQUIRED BY CODES.

ALL MATERIALS USED TO TERMINATE, SPLICE, OR TAP CONDUCTORS: DESIGNED FOR, PROPERLY SIZED FOR, AND NRTL LISTED FOR THE SPECIFIC APPLICATION AND CONDUCTORS INVOLVED, AND INSTALLED IN STRICT ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS, USING THE MANUFACTURER'S RECOMMENDED TOOLS.

WHERE WIRING IS INDICATED AS INSTALLED, BUT THE CONNECTION IS INDICATED "FUTURE" OR "BY OTHER DIVISION, TRADES, OR CONTRACTS", LEAVE A MINIMUM 3-FOOT "PIGTAIL" AT THE BOX, TAPE THE ENDS OF THE CONDUCTORS, AND COVER THE BOX.

IN GENERAL, THE DIRECTION OF BRANCH CIRCUIT "HOME RUN" ROUTING IS INDICATED ON THE DRAWINGS, COMPLETE WITH CIRCUIT NUMBERS AND PANELBOARD DESIGNATION, CONTINUE ALL SUCH "HOME RUN" WIRING TO THE DESIGNATED PANELBOARD. AS THOUGH "CIRCUIT RUNS" WERE INDICATED IN THEIR ENTIRETY

COMMON OR SHARED NEUTRALS ARE NOT ALLOWED UNLESS SHOWN ON THE DRAWINGS TO BE USED OR SPECIFICALLY NOTED TO BE ALLOWED.

WHERE MULTI-WIRE BRANCH CIRCUITS (I.E., SHARED NEUTRAL) ARE ALLOWED, THEY SHALL BE PROVIDED WITH A MEANS THAT WILL SIMULTANEOUSLY DISCONNECT ALL UNGROUNDED CONDUCTORS AT THE POINT THE BRANCH CIRCUIT ORIGINATES. MULTI-POLE BREAKERS OR 3 SINGLE-POLE BREAKERS WITH A HANDLE TIE ARE TWO EXAMPLES.

WHEN MULTIPLE HOME RUNS ARE COMBINED INTO A SINGLE RACEWAY SUCH THAT THE NUMBER OF CONDUCTORS EXCEEDS FOUR (CONDUCTOR COUNT IS MADE UP OF ANY COMBINATION OF PHASE AND NEUTRAL CONDUCTORS), THE FOLLOWING RESTRICTIONS APPLY, WHICH ARE IN ADDITION TO THOSE IN NFPA 70:

### NORMAL OR NON-ESSENTIAL CIRCUITS:

MAXIMUM OF 16 CONDUCTORS IN A SINGLE RACEWAY. FOR UP TO EIGHT CONDUCTORS IN A RACEWAY, MINIMUM RACEWAY SIZE: 3/4-INCH. FOR GREATER THAN EIGHT CONDUCTORS, MINIMUM RACEWAY SIZE: 1-INCH. DO NOT INSTALL ANY OTHER TYPE OF CIRCUIT IN THIS

## 2. MINIMUM WIRE SIZE FOR ALL CONDUCTORS IN THIS RACEWAY: NO. 10 AWG.

3. ONLY 15A AND 20A BRANCH CIRCUIT HOMERUNS MAY BE COMBINED INTO ONE RACEWAY. PROPERLY IDENTIFY ALL TERMINAL BLOCKS AND WIRE TERMINALS FOR CONTROL WIRING WITH VINYL STICK-ON MARKERS OR EQUIVALENT, PROVIDE ENGINEER WITH A LIST OF PROPOSED

PROVIDE AN EQUIPMENT-GROUNDING CONDUCTOR OR BONDING JUMPER. AS APPLICABLE. IN ALL FEEDERS AND BRANCH CIRCUITS, SIZED IN ACCORDANCE WITH NFPA 70 TABLES 250.66 OR 250.122, AS APPLICABLE, UNLESS INDICATED AS LARGER ON THE DRAWINGS.

## VOLTAGE DROP IN BRANCH CIRCUITS SHALL NOT EXCEED 3 PERCENT.

IDENTIFYING NUMBERS FOR REVIEW PRIOR TO INSTALLING MARKERS.

WIRING SHALL HAVE INSULATION OF THE PROPER COLOR TO MATCH COLOR CODE SYSTEM IN THE TABLE BELOW UNLESS THERE IS A COLOR SYSTEM CURRENTLY IN USE BY THE FACILITY. IN WHICH CASE THE COLORS ARE TO MATCH THE EXISTING SYSTEM. IN LARGER SIZES WHERE PROPERLY COLORED INSULATION IS NOT AVAILABLE, USE VINYL PLASTIC ELECTRICAL TAPE OF THE APPROPRIATE COLOR AROUND EACH CONDUCTOR AT ALL TERMINATION POINTS,

#### JUNCTIONS, AND PULL BOXES. SYSTEM VOLTAGE:

240V AND UNDER, INCLUDING 208Y/120, 120/240, 120/208, AND 240D/120 SYSTEMS:

- PHASE A: BLACK. PHASE B: RED.
- PHASE C: BLUE
- NEUTRAL: WHITE.
- EQUIPMENT GROUND: GREEN.
- ISOLATED GROUND: GREEN WITH YELLOW STRIPE.

### 7. JUNCTION BOXES, PULL BOXES, CABINETS, AND WIREWAYS

PROVIDE JUNCTION BOXES, PULL BOXES, CABINETS, AND WIREWAYS WHEREVER NECESSARY FOR PROPER INSTALLATION OF VARIOUS ELECTRICAL SYSTEMS ACCORDING TO NFPA 70 AND WHERE INDICATED ON THE DRAWINGS. SIZE AS REQUIRED FOR THE SPECIFIC FUNCTION OR AS REQUIRED BY NFPA 70, WHICHEVER IS LARGER. CONSTRUCTION SHALL BE OF A NEMA DESIGN SUITABLE FOR THE ENVIRONMENT INSTALLED.

JUNCTION BOXES INSTALLED BEHIND WALL CASES AND IN OR ON OTHER STORE FIXTURES, EXCEPT WHERE OTHERWISE SPECIFIED, SHALL BE 4 INCHES SQUARE OR LARGER WITH GALVANIZED COVERS.

HORIZONTALLY MOUNT JUNCTION BOXES UNDER CENTER FIXTURES (AND CASES), HANDY BOXES OR 4-INCH SQUARE BOXES WITH TOPS OF BOXES NOT MORE THAN 3-1/2 INCHES ABOVE THE FLOOR. SIZE JUNCTION BOXES TO ADEQUATELY CONTAIN ALL REQUIRED CONDUCTORS

## 8. OUTLET BOXES

ALL OUTLETS INCLUDING LIGHT FIXTURE, SWITCH, RECEPTACLE, AND SIMILAR OUTLETS: GALVANIZED STEEL KNOCKOUT BOXES, SUITABLE IN DESIGN TO THE PURPOSE THEY SERVE AND THE SPACE THEY OCCUPY. SIZE AS REQUIRED FOR THE SPECIFIC FUNCTION OR AS REQUIRED BY NFPA 70, WHICHEVER IS LARGER. SET ALL OUTLET BOXES IN WALLS, COLUMNS, FLOORS, OR CEILINGS SO THEY ARE FLUSH WITH THE FINISHED SURFACE, ACCURATELY SET, AND RIGIDLY SECURED IN POSITION. PROVIDE PLASTER RINGS, EXTENSION RINGS AND/OR MASONRY RINGS AS REQUIRED FOR FLUSH MOUNTING. PROVIDE APPROVED CAST OUTLET BOXES WITH HUBS AND WEATHERPROOF COVERS IN ALL AREAS SUBJECT TO DAMP, WET, OR HARSH CONDITIONS

MANUFACTURERS: APPLETON, COOPER, ERIKSON ELECTRICAL, HOFFMAN, KILLARK ELECTRIC, O-Z/GEDNEY. RACO. ROBROY INDUSTRIES, SCOTT FETZER, SPRING CITY ELECTRICAL, THOMAS AND BETTS, WALKER SYSTEMS, OR WOODHEAD.

## 9. OUTLET LOCATIONS

COORDINATE LOCATIONS OF OUTLET BOXES. OUTLETS ARE ONLY APPROXIMATELY LOCATED ON THE SMALL SCALE DRAWINGS. USE GREAT CARE IN THE ACTUAL LOCATION BY CONSULTING THE VARIOUS LARGE SCALE DETAILED DRAWINGS USED BY OTHER DIVISION TRADES, AND BY SECURING DEFINITE LOCATIONS FROM THE ARCHITECT.

### 10. ELECTRICAL SERVICE AND GROUNDING

#### A. ELECTRICAL SERVICE

22 | 21 | 20 | 19 |

SEE DRAWINGS FOR TYPE, SIZE, VOLTAGE, PHASE, AND OTHER REQUIREMENTS.

PROVIDE, OR ARRANGE WITH THE SERVING UTILITY FOR INSTALLATION TO PROVIDE, A RECORDING VOLTMETER AT THE SERVICE POINT, ON THE FIRST DAY THE FACILITY IS OPEN FOR BUSINESS. FOR A 24-HOUR VOLTAGE TEST. IF VOLTAGE AND REGULATION ARE NOT WITHIN ACCEPTABLE LIMITS, ARRANGE WITH THE UTILITY FOR PROPER VOLTAGE. SUBMIT TO THE OWNER A REPORT OF MAXIMUM AND MINIMUM VOLTAGE AND A COPY OF THE RECORDING **VOLTMETER CHART** 

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08

#### B. CONNECTION TO SERVING UTILITIES

PROVIDE RACEWAYS, TERMINATIONS, METERING PROVISIONS, AND MISCELLANEOUS EQUIPMENT AS REQUIRED FOR ELECTRICAL AND TELEPHONE SERVICES FOR CONNECTION BY THE SERVING UTILITY. IN STRICT COMPLIANCE WITH THE REQUIREMENTS OF ALL APPLICABLE CODES AND OF THE SERVING UTILITY INVOLVED, VERIFY ALL SERVICE TERMINATIONS AND CONNECTION POINTS IN THE FIELD AND WORK IN CONJUNCTION WITH THE UTILITY INVOLVED IN THE INSTALLATION OF ALL SERVICES. PROVIDE ALL MATERIALS AND EQUIPMENT REQUIRED FOR COMPLETE UTILITY CONNECTION BUT NOT FURNISHED BY THE SERVING UTILITY. NOTIFY THE UTILITY COMPANIES INVOLVED WITHIN TWO WEEKS AFTER NOTICE TO PROCEED OF ALL REQUIRED INFORMATION NECESSARY FOR THE UTILITY TO SUPPLY THE PROJECT WITHOUT DELAY. PAY ALL CHARGES OF THE SERVING UTILITY FOR THE ELECTRICAL SERVICE(S).

#### C. GROUNDING

PERMANENTLY AND EFFECTIVELY GROUND AND BOND THE ELECTRICAL INSTALLATION IN A THOROUGH AND EFFICIENT MANNER, AND IN CONFORMANCE, AT A MINIMUM, WITH NFPA 70, OR THESE DOCUMENTS, WHERE THEY EXCEED CODE REQUIREMENTS. USE BARE OR INSULATED CONDUCTORS AS SPECIFIED HEREIN, AND OTHER MATERIALS INDICATED ON THE DRAWINGS.

### 13. LIGHT FIXTURES, LAMPS AND BALLASTS

#### D. LIGHT FIXTURE LOCATIONS

LIGHT FIXTURES SHOWN ON THE DRAWINGS REPRESENT GENERAL ARRANGEMENTS ONLY. REFER TO ARCHITECTURAL DRAWINGS FOR MORE EXACT LOCATIONS. COORDINATE LOCATION WITH ALL OTHER TRADES REFORE INSTALLATION TO AVOID CONFLICTS. COORDINATE LIGHT FIXTURE LOCATIONS IN MECHANICAL ROOMS WITH FINAL INSTALLED PIPING AND DUCTWORK LAYOUTS.

#### E. LIGHT FIXTURES

PROVIDE LIGHT FIXTURES AS SCHEDULED ON DRAWINGS, INCLUDING ALL LAMPS, ALL NECESSARY ACCESSORIES, MATERIAL AND LABOR TO SECURELY HANG, CLEAN, AND MAKE LIGHT FIXTURES COMPLETELY READY FOR USE. LIGHT FIXTURE MODEL NUMBERS SCHEDULED ON THE DRAWINGS SHOW ONLY THE MANUFACTURER, GRADE, AND STYLE OF LIGHT FIXTURES REQUIRED. PROVIDE ALL HANGERS. SUPPORTS, AND MISCELLANEOUS HARDWARE REQUIRED TO INSTALL LIGHT FIXTURES, PROPER TRIM TO FIT EACH CEILING CONDITION ACTUALLY ENCOUNTERED, AND ADDITIONAL TIE WIRES CONNECTED TO STRUCTURE TO CONFORM TO SEISMIC REQUIREMENTS WHERE REQUIRED BY THE APPLICABLE BUILDING CODE.

PACKAGING OF LIGHT FIXTURES WILL NOT BE ALLOWED. ONLY THOSE LUMINAIRES LISTED IN THE LIGHT FIXTURE SCHEDULE OR APPROVED IN ACCORDANCE WITH SUBSTITUTIONS OF THESE SPECIFICATIONS WILL BE ACCEPTED. WHERE THE LIGHT FIXTURE SCHEDULE INDICATES AN ALLOWANCE FOR A SPECIFIC LIGHT FIXTURE. THE PRICE IS A CONTRACTOR PRICE, INCLUDE ALL ADDITIONAL COSTS FOR FREIGHT, LAMPS, AND INSTALLATION OF LIGHT FIXTURE AND LAMPS.

LED LAMPS AND LUMINAIRES: COMPLY WITH ANSI C78.377 FOR WHITE LIGHT LED COLOR RANGE; MINIMUM CRI OF 80 UNLESS NOTED OTHERWISE; LED BINNING SPECIFICATION TOLERANCE TO BE WITHIN 3 MACADAM ELLIPSES OF RATED VALUES; ALL LEDS USED FOR SAME FIXTURE TYPE THROUGHOUT THE PROJECT MUST ORIGINATE FROM THE SAME PRODUCTION BIN: MINIMUM AVERAGE RATED LIFE OF 20 000 HOURS FOR LED LAMPS AND 50 000 HOURS FOR LED. LUMINAIRES; ROHS COMPLIANT, LED LAMP MANUFACTURERS: BRIDGELUX, CREE, NICHIA, OSRAM, OR XICATO.

## G. BALLASTS

LED DRIVERS: COMPLY WITH NRTL REQUIREMENTS AND ANSI C82.77; DESIGNED FOR TYPE AND QUANTITY OF LAMPS SERVED; SOUND LEVELS NOT EXCEEDING CLASS A AMBIENT NOISE LEVELS; LAMP CURRENT CREST FACTOR OF 1.5 OR LESS; 90-PERCENT POWER FACTOR OR GREATER; LINE TRANSIENT WITHSTAND RATINGS AS DEFINED IN ANSI/IFFE C62.41. CATEGORY A: TOTAL HARMONIC DISTORTION LESS THAN 20 PERCENT: SHALL TOLERATE SUSTAINED OPEN CIRCUIT AND SHORT CIRCUIT OUTPUT CONDITIONS WITHOUT DAMAGE: SHALL NOT OVER-DRIVE LEDS AT A CURRENT OR VOLTAGE ABOVE LED RATED VALUES; ROHS COMPLIANT; MEETS EN610000 REQUIREMENTS FOR INPUT HARMONICS.

## H. EXTERIOR AREA LIGHTING

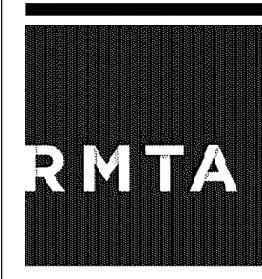
PROVIDE ALL COMPONENTS OF THE OUTDOOR LIGHTING SYSTEM, INCLUDING POLE ASSEMBLIES AS DETAILED ON THE DRAWINGS AND DESCRIBED BELOW. ALL MATERIAL FURNISHED SHALL BE OF THE BEST QUALITY AND WORKMANSHIP, AND THE MANUFACTURER MAY BE REQUIRED TO FURNISH SATISFACTORY EVIDENCE OF THE ABILITY TO SUPPLY THE MATERIAL IN ACCORDANCE WITH THE DRAWINGS AND SPECIFICATIONS.

POLES AND LIGHT FIXTURES SHALL BE AS NOTED ON THE DRAWINGS. IF CONTRACTOR DESIRES TO SUBSTITUTE OTHER THAN THE SPECIFIED MANUFACTURER(S), REFER TO ARTICLE "SUBSTITUTIONS" IN THIS DIVISION, FOR REQUIREMENTS. NO ALTERNATE MANUFACTURERS WILL BE CONSIDERED FOR APPROVAL WITHOUT THIS PRIOR SUBMITTAL

FURNISH ALL POLES WITH HAND HOLES AND NO LESS THAN FOUR HIGH-STRENGTH STEEL ANCHOR BOLTS FOR POLE MOUNTING. EACH ANCHOR BOLT SHALL BE THREADED AT THE TOP, FITTED WITH HEXAGON NUTS, AND SHALL HAVE AN "L" BEND ON THE BOTTOM OF THE BOLT. ALL ANCHOR BOLTS AND NUTS SHALL BE HOT-DIP GALVANIZED. ALL OTHER SMALL HARDWARE REQUIRED (BOLTS, NUTS, WASHERS, SHIMS, ETC.) SHALL BE GALVANIZED. PROVIDE POLE FINISHES AS NOTED ON THE DRAWINGS.

## **END OF SECTION 26**





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