

PART 1 – GENERAL

1.1 RELATED DOCUMENTS

- A. REFER TO DIVISION 0, "BIDDING AND CONTRACT REQUIREMENTS", DIVISION 1, "GENERAL REQUIREMENTS", AND ALL ADDENDA WHICH ARE HEREBY MADE A PART OF THIS SPECIFICATION.
- B. THIS CONTRACTOR IS TO READ ALL SPECIFICATIONS OF ALL PARTS OF THE WORK AND INCLUDING WIRING FOR THEIR EQUIPMENT UNLESS SPECIFICALLY EXCEPTED HEREIN.
- C. THE WORK REQUIRED UNDER DIVISION 16 OF THE SPECIFICATIONS INCLUDES ALL REQUIREMENTS OF ALL SECTIONS OF THIS DIVISION. IN GENERAL, THE WORK CONSISTS OF FURNISHING AND INSTALLING THE EQUIPMENT, SERVICE AND ALL OTHER MATERIALS NECESSARY TO PROVIDE THE COMPLETE ELECTRICAL SYSTEM AND ALL WORK IN CONNECTION WITH SUCH SYSTEMS INCLUDING LABOR, TRANSPORTATION, ETC., COMPLETE IN EVERY RESPECT AS SHOWN ON THE PLANS, HEREIN SPECIFIED, OR REASONABLE IMPLIED AS READY FOR USE UNLESS OTHERWISE SPECIFIED.
- D. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO PROVIDE ALL ELECTRICAL WORK AS HEREIN DESCRIBED OR AS INDICATED ON THE DRAWINGS. MATERIAL AND/OR LABOR WHICH IS NOT INDICATED ON THE DRAWINGS OR SPECIFICATIONS, BUT NECESSARY TO COMPLETE THE WORK (AND USUALLY INCLUDED IN SIMILAR WORK), SHALL BE PROVIDED.

1.2 DESCRIPTION OF WORK

- A. PROVIDE A COMPLETE WORKING ELECTRICAL SYSTEM READY FOR USE.
- B. ELECTRICAL SYSTEM INCLUDES THE DISTRIBUTION, LIGHTING, POWER OUTLETS, AND RACEWAYS
- C. PROVIDE ALL COORDINATION AND ADMINISTRATION NECESSARY TO INSTALL ELECTRICAL SYSTEM AND UTILITY SERVICES.

1.3 WORK INCLUDED

- A. WIRE, RACEWAYS AND BOXES.
- B. SWITCHES AND PANELBOARDS.
- C. MAINTAIN EXISTING SERVICE AND EXISTING WIRING.
- D. ELECTRICAL DISTRIBUTION.
- E. LIGHTING.
- F. GROUNDING AND BONDING.
- G. POWER WIRING.
- H. CONNECTIONS TO ELECTRICAL EQUIPMENT.

1.4 GENERAL

- A. IT IS THE PURPOSE OF THE DRAWINGS TO INDICATE THE APPROXIMATE LOCATIONS OF ALL EQUIPMENT, OUTLETS, ETC. THE EXACT LOCATION OF APPARATUS AND OUTLETS MAY BE GIVEN AS THE WORK PROGRESSES.
- B. THIS CONTRACTOR SHALL TAKE ALL FIELD MEASUREMENTS NECESSARY FOR THIS WORK AND SHALL ASSUME RESPONSIBILITY FOR THEIR ACCURACY. DO NOT SCALE DRAWINGS. ANY INTERFERENCES OR FIELD PROBLEMS SHALL BE REPORTED TO THE OWNER FOR RESOLUTION.
- C. THE WORK COVERED BY THIS SPECIFICATION CONSISTS OF PROVIDING ALL LABOR, EQUIPMENT, SUPPLIES, MATERIALS, PERMITS, AND SERVICES REQUIRED FOR THE COMPLETE INSTALLATION OF THE ELECTRICAL WORK, READY FOR USE.
- D. THE DESIGN DESCRIBED HEREIN IS INTENDED TO COMPLY WITH APPLICABLE CODES AND STANDARDS, AND WITH SAFEGUARDS IN EXCESS OF CODE REQUIREMENTS WHERE NECESSARY. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO MAINTAIN THESE STANDARDS FOR ACHIEVING A COMPLETE AND SAFE INSTALLATION AND TO OBSERVE AND REPORT TO THE OWNER ANY ITEMS WHICH, IN HIS OPINION, DO NOT CONFORM TO THE CODES AND STANDARDS, OR WHICH WOULD IMPROVE THE SAFETY AND/OR SERVICEABILITY OF THE INSTALLATION.

1.5 EQUIPMENT MANUFACTURER'S DIRECTIONS, DIAGRAMS, AND MANUALS

- A. EXCEPT WHERE SPECIFICALLY PERMITTED OTHERWISE, ALL MATERIALS, EQUIPMENT, AND DEVICES FURNISHED BY THE CONTRACTOR SHALL BE NEW AND SHALL CONFORM TO NECA, NEMA, IEEE, ANSI, AND UNDERWRITERS' LABORATORIES STANDARDS AND SHALL BEAR THE U.L. LISTING OR LABEL MARK.
- B. ALL MANUFACTURED ARTICLES AND ALL OTHER MATERIALS AND EQUIPMENT FURNISHED BY THE CONTRACTOR SHALL BE APPLIED, CONNECTED, ERECTED, USED, CLEANED, AND CONDITIONED AS DIRECTED IN THE MANUFACTURER'S LATEST PRINTED INSTRUCTIONS.
- C. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO CONSULT THE MANUFACTURER'S DRAWINGS, INSTALLATION MANUALS, AND INSTRUCTIONS FOR ALL EQUIPMENT. ALL EQUIPMENT SHALL BE INSTALLED IN STRICT ACCORDANCE WITH THESE MANUALS AND INSTRUCTIONS.

1.6 INSPECTION

- A. THE OWNER AND HIS AUTHORIZED REPRESENTATIVES SHALL HAVE ACCESS TO AND THE PRIVILEGE OF INSPECTING ALL WORK AND MATERIALS AS THE WORK PROGRESSES. THESE REPRESENTATIVES WILL HAVE AUTHORITY TO APPROVE OR REJECT ANY WORK OR MATERIALS, WITH THE DRAWINGS, SPECIFICATIONS, CODES, AND GOOD ENGINEERING PRACTICES AS A BASIS FOR ANY ACTION TAKEN.
- B. ANY WORK FOUND NOT IN COMPLIANCE WITH THE DRAWINGS, SPECIFICATIONS, OR APPLICABLE STANDARDS AS LISTED HEREIN SHALL BE REPAIRED OR REPLACED AS DEMAED NECESSARY BY THE OWNER OR HIS REPRESENTATIVES. ANY SUCH ADDITIONAL WORK BY THE CONTRACTOR AS CONSIDERED NECESSARY BY THE OWNER FOR THE CONTRACTOR'S WORK TO COMPLY WITH THE CONTRACT DOCUMENTS AS DESCRIBED HEREIN SHALL NOT BE JUSTIFICATION FOR ADDITIONAL COMPENSATION BY THE CONTRACTOR.

1.7 COORDINATION OF WORK

- A. THIS CONTRACTOR SHALL BE IN A POSITION TO MEET ALL COMPLETION DATES SET BY THE OWNER, AND SHALL BE ABLE TO FURNISH ALL LABOR OF VARIOUS CLASSES REQUIRED TO MEET SCHEDULES AND COMPLETION DATES. THIS CONTRACTOR SHALL FAMILIARIZE HIMSELF WITH THE VARIOUS MANUFACTURERS ON DELIVERY AND ARRANGE FOR DELIVERY OF EQUIPMENT AND MATERIALS SO AS NOT TO HINDER OR DELAY ANY COMPLETION DATES FOR ELECTRICAL WORK OR OTHER TRADES WHICH ARE AFFECTED BY THE ELECTRICAL WORK.

1.8 SAFETY AND CLEAN-UP

- A. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO MAINTAIN A CLEAN, SAFE WORK PLACE WHILE PERFORMING HIS WORK AND UPON LEAVING EACH EVENING. LIVE ELECTRICAL PARTS OF FIXTURES, DEVICES, AND EQUIPMENT SHALL BE COMPLETELY PROTECTED TO PREVENT ACCIDENTAL INJURY TO OTHERS IN THE BUILDING. ALL STAIRWAYS, HALLS, AND EXITS SHALL BE LEFT WITH FREE ACCESS. TOOLS, TOOL BOXES, LADDERS, MATERIALS, ETC., SHALL BE KEPT IN A CONFINED AREA AWAY FROM NORMALLY OCCUPIED AREAS WHEN NOT IN USE.
- B. THIS CONTRACTOR WILL BE HELD RESPONSIBLE FOR DAMAGE TO OTHER WORK CAUSED BY HIS WORK OR THROUGH THE NEGLIGENCE OF HIS WORKMEN. ALL PATCHING OR REPAIRING OF DAMAGED WORK SHALL BE DONE BY PERSONS OR CONTRACTORS NORMALLY EXPERIENCED IN THE WORK TO BE PERFORMED. SUCH CONTRACTORS OR SUBCONTRACTORS SHALL BE SUBJECT TO PRIOR APPROVAL OF THE OWNER. THE COST OF SUCH WORK SHALL BE PAID BY THE CONTRACTOR.

1.9 INTERFERENCES, CUTTING AND PATCHING

- A. THE CONTRACTOR SHALL PREDETERMINE THE LOCATION, SIZE, ETC., OF ALL CHASES AND OPENINGS NECESSARY IN NEW AND EXISTING CONSTRUCTION FOR THE INSTALLATION OF HIS WORK AND SHALL BE RESPONSIBLE TO PROVIDE ALL SUCH OPENINGS. HE SHALL SET ALL SLEEVES, INSERTS, INLETS AND HANGERS AND BE RESPONSIBLE FOR THEIR PROPER LOCATION AND FOR FINAL PATCHING. CUTTING AND PATCHING SHALL SATISFY DIVISIONS 4, 5, 6, 7 AND 9. SHOULD HE FAIL TO COMPLY WITH THIS CLAUSE AND CUTTING OF NEW CONSTRUCTION IS REQUIRED BECAUSE THE OTHER TRADES WERE NOT PROPERLY NOTIFIED AND INSTRUCTED, THIS CONTRACTOR SHALL, AT HIS OWN EXPENSE, HAVE ANY NECESSARY CUTTING AND PATCHING DONE BY THE CONTRACTOR WHO FIRST INSTALLED THE WORK.
- B. ALL PENETRATIONS SHALL BE FINISHED BY THE ELECTRICAL CONTRACTOR WITH APPROPRIATE AND ACCEPTABLE TRIMS.

1.10 RECEIPT OF PORTABLE OR DETACHABLE PARTS

- A. THE CONTRACTOR SHALL RETAIN IN HIS POSSESSION AND SHALL BE RESPONSIBLE FOR ALL PORTABLE OR DETACHABLE PORTIONS OF THE INSTALLATION SUCH AS FUSES, KEYS, LOCKS, ETC., UNTIL THE COMPLETION OF THE WORK, AND SHALL TURN THEM OVER TO THE OWNER AND OBTAIN AN ITEMIZED RECEIPT. THIS RECEIPT, TOGETHER WITH A CERTIFICATE OF APPROVAL, SHALL BE ATTACHED TO THE CONTRACTOR'S REQUEST FOR FINAL PAYMENT.

1.11 CODES, PERMITS AND INSPECTIONS

- A. ALL WORK SHALL BE EXECUTED IN ACCORDANCE WITH THE LATEST ADOPTED EDITION OF THE NATIONAL ELECTRICAL CODE AND THE STATE CODE, IN ADDITION TO ANY LOCAL, CITY OR COUNTY CODES IN EFFECT AT THE TIME OF CONSTRUCTION.
- B. AT ALL TIMES DURING WHICH THE CONTRACTOR OR ANY SUBCONTRACTOR ARE ENGAGED IN WORK COVERED BY THESE DOCUMENTS, ALL REQUIREMENTS OF THE OCCUPATIONAL SAFETY AND HEALTH ACT SHALL BE OBSERVED.
- C. THE INSTALLATION COVERED BY THESE DOCUMENTS SHALL COMPLY WITH ALL REQUIREMENTS OF THE OCCUPATIONAL SAFETY AND HEALTH ACT.
- D. THE CONTRACTOR SHALL SECURE AND PAY FOR ALL PERMITS FROM ALL AGENCIES AND OBTAIN ALL INSPECTIONS REQUIRED FOR THE PROSECUTION OF THE ELECTRICAL WORK. ALL PERMITS AND CERTIFICATES OF INSPECTION AND APPROVAL SIGNED BY THE BUILDING DEPARTMENT SHALL BE FURNISHED IN DUPLICATE TO THE OWNER AND SHALL BECOME THE PROPERTY OF THE OWNER.

- E. ALL ELECTRICAL WORK SHALL BE INSPECTED BY THE LOCAL AUTHORITIES HAVING JURISDICTION.

1.12 WORKMANSHIP

- A. ALL ELECTRICAL WORK SHALL BE INSTALLED UNDER THE DIRECTION OF A SKILLED ELECTRICAL FOREMAN ACCEPTABLE TO THE OWNER. ALL WORK SHALL BE TESTED, INSPECTED AND CERTIFIED APPROVED AS TO MATERIALS AND WORKMANSHIP BY THE PROPER AUTHORITY PRIOR TO ACCEPTANCE.
- B. ALL TESTS SHALL BE MADE BEFORE ANY CIRCUIT OR MAIN SWITCH IS MADE HOT. CIRCUITS SHALL BE PHASED OUT AND CONNECTED TO THE PANEL OR MAIN SWITCH IN A PROPER MANNER. LOADS SHALL BE DISTRIBUTED AS EVENLY AS POSSIBLE ON ALL PHASES. ALL WIRES SHALL BE ENTIRELY FREE FROM GROUNDS AND SHORT CIRCUITS. ALL PANELBOARDS SHALL HAVE LOADS DISTRIBUTED BETWEEN THE VARIOUS PHASES SO THAT MAXIMUM VARIATION IN CURRENT READINGS OF THE DIFFERENT PHASES SHALL NOT EXCEED 5% WHEN ALL THE LOAD IS IN OPERATION.
- C. AFTER COMPLETION OF THE WORK, THE ENTIRE ELECTRICAL SYSTEM, BOTH POWER AND LIGHTING, SHALL BE THOROUGHLY TESTED FOR THEIR PROPER FUNCTIONING. THE TESTING OF ALL ELECTRICAL EQUIPMENT AND CIRCUITS SHALL BE SCHEDULED AND PERFORMED TO THE SATISFACTION OF THE OWNER AND A RECORD OF ALL TEST RESULTS SHALL BE SUPPLIED IN TRIPLICATE AND SUBMITTED TO THE OWNER PRIOR TO REQUEST FOR FINAL PAYMENT.
- D. THE WORKMANSHIP OF ALL INSTALLED ELECTRICAL EQUIPMENT SHALL BE SUBJECT TO FINAL APPROVAL OF THE OWNER. ANY WORK WHICH DOES NOT MEET RECOGNIZED STANDARDS OF PROPER INSTALLATION SHALL BE REPAIRED OR REPLACED BY THE CONTRACTOR AT THE OWNER'S DISCRETION. THE COST OF ANY REPAIR AND/OR REPLACEMENTS NECESSARY DUE TO FAULTY WORKMANSHIP SHALL NOT BE JUSTIFICATION FOR ADDITIONAL COMPENSATION BY THE CONTRACTOR.

1.13 GUARANTEE

- A. THIS CONTRACTOR SHALL GUARANTEE HIS WORKMANSHIP AND MATERIAL FOR A PERIOD OF ONE (1) YEAR FROM THE DATE OF FINAL ACCEPTANCE AND LEAVE HIS WORK IN PERFECT ORDER AT COMPLETION. SHOULD ANY DEFECTS DEVELOP WITHIN THE GUARANTEE PERIOD, THIS CONTRACTOR SHALL, UPON NOTICE OF SAME, REMEDY THE DEFECTS AND HAVE ALL DAMAGES TO OTHER WORK OR FURNISHINGS CAUSED BY THE DEFECTS OR THE WORK OF CORRECTING SAME, REPAIRED AND/OR REPLACED AT HIS EXPENSE, TO THE CONDITION BEFORE SUCH DAMAGE. THE DATE OF FINAL ACCEPTANCE IS DEFINED AS THE DATE OF SIGNATURE OF THE OWNER ON THE FINAL PAYMENT OF THE CONTRACT.
- B. THIS GUARANTEE SHALL BE SUPPLIED IN WRITING AND SHALL BE ATTACHED TO THE CONTRACTOR'S REQUEST FOR FINAL PAYMENT.

PART 2 – PRODUCTS AND SYSTEMS

2.1 MATERIALS

- A. ELECTRICAL MATERIALS SHALL BE NEW, SHALL MEET N.E.C. STANDARDS, SHALL BEAR THE U.L. LABEL, AND SHALL BE PROTECTED FROM INJURY UNTIL FINAL ACCEPTANCE.
- B. INTERIOR CONDUIT SHALL BE ELECTRICAL METALLIC TUBING OR P.V.C. (WHERE ACCEPTABLE BY CODE) UNDER THE GROUND FLOOR. BURIED EXTERIOR CONDUITS SHALL BE SCHEDULED 40 P.V.C. RUN A GROUND CONDUCTOR IN EACH PVC CONDUIT.
- C. WIRE AND CABLE SHALL BE COPPER WITH 600 VOLT TYPE "THW", "THWN", OR "THHN" INSULATION. WIRE SMALLER THAN #12 AWG SHALL NOT BE USED. 150 DEGREES C TYPE "AF" WIRING IS REQUIRED FOR INCANDESCENT FIXTURE WIRING. HOMERUNS SHALL BE #10 AWG AND ABOVE 150 FEET SHALL BE #8 AWG.
- D. OUTLET BOXES SHALL BE PRESSED STEEL IN DRY LOCATIONS AND CAST ALLOY WITH THREADED HUBS IN WET AND DAMP LOCATIONS.
- E. PANELBOARDS SHALL HAVE A HINGED DOOR WITH TYPEWRITTEN PANEL LEGEND INDICATING ALL CIRCUITS SUPPLIED INCLUDING SPARES.

2.2 LIGHTING SYSTEMS

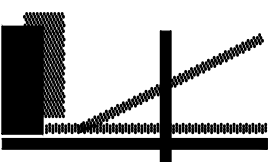
- A. PROVIDE ALL LIGHTING FIXTURES AND LAMPS AS SHOWN IN THE FIXTURE SCHEDULE AND/OR DESCRIBED IN THESE SPECIFICATIONS. COORDINATE WITH ALL OTHER TRADES IN THE LOCATING OF LIGHTING OUTLETS.
 1. INCANDESCENT LAMPS: 130 VOLTS
 2. LAMPS SHALL BE OF THE SAME MANUFACTURER THROUGHOUT THE PROJECT AND SHALL BE AS MANUFACTURED BY GENERAL ELECTRIC, PHILIPS, OR PENNSYLVANIA.

PART 3 – EXECUTION

3.1 INSTALLATION

- A. ELECTRICAL WORK SHALL BE INSTALLED IN ACCORDANCE WITH THE N.E.C., ALL APPLICABLE FEDERAL, STATE, AND LOCAL CODES, AND THE OWNER'S DESIGN CRITERIA DURING CONSTRUCTION, OBSERVE ALL REQUIREMENTS OF THE OCCUPATIONAL SAFETY AND HEALTH ACT.
- B. THIS DESIGN IS ADDRESSED TO A CONTRACTOR WHICH IS LICENSED IN HIS WORK AND UNDERSTANDS THE NATIONAL, STATE, AND LOCAL CODES. IT IS NOT POSSIBLE TO REPRODUCE THE ENTIRE CODE WITHIN THESE DRAWINGS AND SPECIFICATIONS; THEREFORE, IT IS THE RESPONSIBILITY OF THE INSTALLER TO USE APPROVED MATERIALS, METHODS, AND LOCATIONS ACCEPTABLE TO THE FEDERAL, STATE, AND LOCAL CODES AND AUTHORITIES.
- C. EXTERIOR OUTLETS SHALL BE GFI (GROUND FAULT INTERRUPTED). PROVIDE OUTDOOR OUTLET COVER
- D. PROVIDE A COMPLETE GROUNDING SYSTEM PER N.E.C. PROVIDE SEPARATE GROUND CONDUCTOR FOR ALL POWER CIRCUITS.
- E. CODE REQUIREMENTS SHALL BE INCLUDED AN INSTALLED EVEN IF NOT SHOWN. DRAWINGS ARE SCHEMATIC AND MAY NOT SHOW CODE REQUIREMENTS.
- F. MOUNT ALL RECEPTACLES VERTICALLY UNLESS OTHERWISE NOTED.
- G. PERMANENTLY MARK BACK OF DEVICE PLATES WITH PANEL AND CIRCUIT NUMBER. PROVIDE NAMEPLATES FOR ALL EQUIPMENT.
- H. ALL WIRING SHALL BE INSTALLED IN CONDUIT.
- I. SURFACE-MOUNTED FIXTURES, FLUORESCENT AND INCANDESCENT, SHALL BE MOUNTED SECURELY TO THE CEILING. PROVIDE AIR GAP TO CEILING IF REQUIRED.
- J. EXTERIOR EQUIPMENT SHALL BE NEMA 3R
- K. LIGHT FIXTURES SHALL BE SUPPORTED FROM BUILDING STRUCTURE.
- L. CLEAN LAMPS AFTER CONSTRUCTION IS FINISHED.
- M. PROVIDE ALL CUTTING, PATCHING, AND OPENINGS IN FLOORS
- N. WIRING DEVICES SHALL BE INSTALLED IN OUTLET BOXES. BOXES SHALL BE 4-INCH SQUARE MINIMUM WITH DEVICE COVERS TO SUIT.

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ISSUE / REVISIONS

09-18-15 EXISTING COND.
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