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SECTION 26 0500-BASIC ELECTRICAL REQUIREMENTS

PART 1 GENERAL

1.01 RELATED SECTIONS

- A. The general provisions of the Contract, including General and Supplementary Conditions and General Requirements (if any), apply to the work specified in this Section.

1.02 DESCRIPTION OF WORK

- A. This Section specifies several categories of provisions for electrical work, including:
- Certain adaptive expansions of requirements specified in Division 1.
 - General performance requirements within the electrical systems as a whole.
 - General work to be performed as electrical work because of its close association.
 - Drawings and Specifications:
- Drawings: Refer to the E-Series Drawings for graphic representations, schedules, and notations showing electrical work.
 - Specifications: Refer to the bid categories for the related primary technical specifications of electrical work.
 - Drawings and Specifications are intended to supplement each other, and all work specified or indicated in either shall be provided.

1.03 COORDINATION OF ELECTRICAL WORK

- A. General: Refer to the Division 1 sections for general coordination requirements applicable to the entire scope of work. It is recognized that the documents are diagrammatic in showing physical relationships which must be established within the electrical work, and in its interface with other work, including utilities and mechanical work. Such establishment is the exclusive responsibility of the Electrical Contractor.
- B. Advise other trades of openings required in their work for the installation of large electrical equipment.
- C. The Electrical Contractor shall be responsible for all subcontractors and suppliers, and include in his bid all materials, labor, and equipment to other trades involved in accordance with all local customs, rules, regulations, jurisdictional awards, and decisions and secure compliance of all parts of the specifications and drawings regardless of Sectional inclusion in these specifications.
- D. Equipment Clearance:
- Electrical Contractor to coordinate with the Mechanical Contractor's equipment locations, to insure adequate clearance is maintained, as required by the National Electrical Code, applicable state and local codes, and for future maintenance and operation.
- E. Wall, Floor and Ceiling Openings
- Locate all openings and provide the General Contractor with details and templates of all openings necessary for installation of electrical work.
 - In general, all openings and required intels shall be provided by the General Contractor. Size and location of openings is the responsibility of this Contractor. Cracks and rough edges left following the installation of equipment shall be caulked or covered by the equipment installing contractor.
 - E. C. is responsible for preventing water from entering through any exterior wall or floor penetrations via conduits or cracks and/or rough edges of openings made.

1.04 PRODUCT SUBSTITUTIONS

- A. Substitutions requested for review during or after bidding may be reviewed by the WPF Engineering upon request at a fee of \$500.00 per product review.

1.05 SUBMITTAL PROCEDURES

- A. General: Refer to Division 1 for general administrative/procedural requirements related to shop drawings. Provide Shop drawings for all equipment as specified in individual specification sections.

1.06 SITE AND PROJECT DOCUMENTATION EXAMINATION

- A. Submission of proposal is considered evidence the Electrical Contractor has visited site, examined drawings and specifications of all trades including Architectural, Structural, Mechanical and Electrical, and fully informed himself with all project and site conditions. It is also evidence that they are proficient, experienced, and knowledgeable of all standards, codes, ordinances, permits, and regulations which affect his completion, cost, and time required, and that all costs are included in the proposal.
- B. Each Electrical Contractor and subcontractor shall examine all drawings and specifications of his trade and work shown on drawings, shop drawings and field layouts of all other trades (including Architectural, Structural, Mechanical and Electrical) working on the project prior to starting his required work, and coordination of all work with other trades.
- C. All schedules on drawings and specifications are only for convenience of the Electrical Contractor.

Each Electrical Contractor shall make his own count and, where fixtures or equipment are shown on drawings but not on schedule, provide like equipment or fixtures for like rooms or use.

1.07 QUALITY ASSURANCE, STANDARDS, AND SYMBOLS

- A. General: Refer to Division 1 for general administrative/procedural requirements related to compliance with codes and standards. Specifically, for the electrical work (in addition to standards specified in individual work sections), the following standards are imposed, as applicable to the work in each instance:
- NEC (NFPA 70), National Electrical Code
 - AWS, American Welding Society, Standards for Welding
 - ANSI C2, National Electrical Safety Code
 - ANSI C73, Dimensions of Attachment Plugs & Receptacles
 - NECA, Standards for Installation
 - NEMA, Standards for Materials and Products
 - ASTM, American Society for Testing Materials
 - ASA, American Standards Association
 - NFPA, National Fire Protection Association
 - UL, Underwriters' Laboratories, Inc.
 - OSHA, Occupational Safety and Health Act
 - ADA, Americans with Disabilities Act
- B. NOTE: ALWAYS REFER TO THE MOST CURRENT ADOPTED CODES AND STANDARDS.
- C. All work to be provided and tested in accordance with all applicable local, county and state laws, ordinances, codes, rules, and regulations.
- D. Where quantities, sizes, or other requirements on drawings or specifications are in excess of code requirements, drawings or specifications govern.
- E. When conflict exists between referenced specifications or standards, more stringent requirements govern. No extra compensation for such compliance requirements shall be allowed.
- F. No work shall be covered or enclosed until tested in accordance with applicable codes and regulations, and successful tests witnessed and approved by authorized inspection authority. Written approvals shall be secured by the Electrical Contractor and submitted to Engineer before final acceptance of work.
- G. In general, all material where applicable shall be labeled or listed by Underwriters' Laboratories, Inc.
- H. Permits and Fees: Give all notices, file all drawings, obtain necessary approvals, obtain all permits, pay all fees, deposits and expenses required for installation of all work under this Contract.

PART 2 PRODUCTS

2.01 PRODUCTS, ELECTRICAL WORK

- A. General: Refer to Division 1 sections for general requirements on products, materials and equipment. The following provisions expand or modify the requirements as applicable to electrical work.
- B. Compatibility: Provide products which are compatible with other products of the electrical work, and with other work requiring interface with the electrical work, including electrical connections and control devices. For exposed electrical work, coordinate colors and finishes with other work.
- C. Standards:
- All electrical material, equipment and accessories shall be new and conform to all applicable standards, codes and requirements and all applicable local, state and federal specifications.
 - All products shall be of established manufacturers regularly engaged in making type of materials to be provided and complete with all parts, accessories, connections, etc., reasonably incidental thereto as specified in detail or as described in manufacturer's catalog. All properly tested, cleaned, adjusted, lubricated and put in complete working order ready for service.

2.05 FIRE STOPPING

- A. Sealing of openings between floors, through rated fire and smoke wall, existing or created by the contractor for their work shall be the responsibility of the contractor.
- B. Sealing material and application of this material shall be accomplished in such a manner which is acceptable to the local fire and building authorities having jurisdiction over this work.
- C. Any openings created by or the contractor and left unused shall also be sealed as part of this work.

PART 3 EXECUTION

3.01 CERTIFICATE OF INSPECTION

- A. Provide Engineer's office evidence that installation has been inspected and approved by municipal or state inspector having jurisdiction over electrical work involved.

3.02 RECORD DRAWINGS AND OPERATIONAL AND MAINTENANCE MANUALS

- A. Maintain a white-print set of Electrical Contract Drawings and submittals in clean, undamaged condition for mark-up of actual installation on either Electrical Contract Drawings or submittals which vary substantially from the work as shown. Comply with additional Division 1 requirements relative to record drawings.
- B. Contractor to provide copies of all Operational and Maintenance Manuals per specifications. Comply with additional Division 1 requirements relative to operational and maintenance manuals.
- C. Contractor responsible for securing all elevations and locations prior to concealment.

3.03 PLACING SYSTEMS INTO OPERATION

- A. General:
- Electrical Contractor shall be responsible for all start-up procedures, system checks and phase balancing, coordinating work of other Contractors and Subcontractors.
 - All equipment installed, tested and operated in accordance with manufacturer's recommendations at normal operating conditions.
 - All permanent electrical equipment used during construction periods shall be cleaned, and damaged equipment replaced.
 - Place all systems into operation when weather or other considerations require their use. Perform repair, adjustment and balancing operations as often as required to assure satisfactory operation before final acceptance.

3.04 ADJUSTMENTS AND BALANCING

- A. Subsequent to the installation of the electrical power and distribution system and upon the beginning of operation, Contractor shall make all necessary adjustments to equipment installed or connected by him under this Contract so as to insure proper operation of the same. Contractor shall measure phase balance and make necessary adjustments to any portion of the electrical system that is substantially out of balance.

3.05 TESTING

- A. All equipment shall be factory tested using industry standard testing procedures. Refer to individual specification sections for specific testing requirements.

3.06 GUARANTEE

- A. Provide written guarantee for all work performed under this Contract for a period of not less than one year from the date of substantial completion.
- B. Acceptance date of substantial completion shall be the date of Owner occupancy as defined by Architect/Engineer.
- C. Contractor shall make all necessary alterations, repairs, adjustments, replacements during guarantee period as directed by Architect/Engineer to comply with Drawings and Specifications at no cost to Owner.
- D. Repair or replacements made under guarantee to bear further one year guarantee from date of acceptance of repair or replacement.

3.07 ELECTRICAL WORK CLOSEOUT

- A. General: Refer to the Division 1 Sections for general closeout requirements.
- B. Coordinate closeout operations with closeout of mechanical systems and other power consuming equipment as follows:
- Test run electrical equipment in coordination with test runs of mechanical systems.
 - Clean and lubricate operational equipment.
 - Instruct Owner's operating personnel thoroughly in the operation, sequencing, maintenance and safety/emergency provisions of the electrical systems.
 - Turn over the operations to the Owner's personnel at the time(s) of substantial completion.
 - Until the time of final acceptance of the total work of the Contract, respond promptly with consultation and services to assist the Owner's personnel with operation of electrical systems.
- C. Conditions of Final Closeout:
- All completion checklists signed and returned to Engineer.
 - Maintenance manuals submitted and approved.
 - Record drawings submitted and approved.
 - Final certificate of electrical inspection and Contractor's written 1 year warranty submitted and approved.
 - Circuit directory in each panelboard. Electrical component identification complete.
 - Equipment clean-up and final adjustments made.
 - Contractor has instructed Owner's representative in the safe operation and use of the electrical systems.
 - All temporary wiring and facilities have been removed.

SECTION 26 0502 - MINOR ELECTRICAL DEMOLITION

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Electrical demolition.

PART 2 PRODUCTS

2.01 MATERIALS AND EQUIPMENT

- A. Materials and equipment for patching and extending work: Refer to individual specification sections for additional requirements in addition to section 16095.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify field measurements and circuiting arrangements are as shown on Drawings.
- B. Verify that abandoned wiring and equipment serve only abandoned facilities.
- C. Demolition drawings are based on casual field observation and existing record documents.
- D. Report discrepancies to Architect before disturbing existing installation.
- E. Report existing code violation to Architect
- F. Beginning of demolition means installer accepts existing conditions.

3.02 PREPARATION

- A. Disconnect electrical systems in walls, floors, and ceilings to be removed.
- B. Coordinate utility service outages with utility company.
- C. Provide temporary wiring and connections to maintain existing systems in service during construction. When work must be performed on energized equipment or circuits, use personnel experienced in such operations.
- D. Existing Electrical Service: Maintain existing system in service until new system is complete and ready for service. Disable system only to make switchovers and connections. Minimize outage duration.
- Obtain permission from Owner at least 24 hours before partially or completely disabling system.
 - Make temporary connections to maintain service in areas adjacent to work area.
- E. Existing Telephone System: Maintain existing system in service. Minimize outage duration.
- Notify Owner at least 24 hours before partially or completely disabling system.
 - Notify telephone utility company at least 24 hours before partially or completely disabling system.
 - Make temporary connections to maintain service in areas adjacent to work area.

3.03 DEMOLITION AND EXTENSION OF EXISTING ELECTRICAL WORK

- A. Remove, relocate, and extend existing installations to accommodate new construction.
- B. Remove abandoned wiring to source of supply.
- C. Remove exposed abandoned conduit, including abandoned conduit above accessible ceiling finishes. Cut conduit flush with walls and floors, and patch surfaces.
- D. Disconnect abandoned outlets and remove devices. Remove abandoned outlets if conduit servicing them is abandoned and removed. Provide blank cover for abandoned outlets which are not removed unless noted to be patched on plans.
- E. Disconnect and remove abandoned panelboards and distribution equipment.
- F. Disconnect and remove electrical devices and equipment serving utilization equipment that has been removed.
- G. Disconnect and remove abandoned luminaires. Remove brackets, stems, hangers, and other accessories.
- H. Repair adjacent construction and finishes damaged during demolition and extension work.

- I. Maintain access to existing electrical installations which remain active. Modify installation or provide access panel as appropriate.
- J. Extend existing installations using materials and methods compatible with existing electrical installations, or as specified.
- K. Existing branch circuits serving lights, outlets and other loads need not be replaced, unless otherwise indicated, if no other work is required on that circuit. New circuit extensions from unaltered existing circuits shall be made to replaced or relocated branch circuit panels.
- L. Reconnect all existing loads which are not abandoned or removed whether shown on Drawing or not. This requirement is intended to cover the replacement of panels such that all required branch circuits are reconnected.
- M. Circulating in Remodel Area, if not shown on plans, shall be left to discretion of Electrical Contractor except as follows:
- When indicated, certain outlets shall be circuite as shown on plans. Do not add any other loads to these circuits.

- Do not intermix lighting, outlets and motors on same branch circuit.
- Limit lighting loads to 1500 VA per 20 amp circuit for 120V and 3500 VA per 20 amp circuit for 277V.
- Do not install more than five (5) convenience outlets on a 20 amp branch circuit.
- Circuit motors to comply with regulation of National Electrical Code.

3.04 CLEANING AND REPAIR

- A. Clean and repair existing materials and equipment which remain or are to be reused.
- B. Panelboards: Clean exposed surfaces and check tightness of electrical connections. Replace damaged circuit breakers and provide closure plates for vacant positions. Provide typed circuit directory showing revised circuiting arrangement.

SECTION 26 0505 - OVERCURRENT PROTECTIVE DEVICE COORDINATION STUDY

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Performance requirements for overcurrent protective devices.
- B. Short circuit study.
- C. Coordination study and analysis.

1.02 REFERENCES

- A. IEEE 242 - IEEE Recommended Practice for Protection and Coordination of Industrial and Commercial Power Systems.
- B. IEEE 399 - IEEE Recommended Practice for Industrial and Commercial Power Systems Analysis.
- C. NFPA 70 - (National Electrical Code; National Fire Protection Association)

1.03 SUBMITTALS

- A. See Section 26 0500 - Basic Electrical Requirements - Submittal procedures.
- B. Study Report: Submit protective device studies as specified, prior to submission of product data submittals or ordering of protective devices.
- Include stamp or seal and signature of preparing engineer.
- C. Field Engineer Qualifications.
- D. Field Inspection Report: Show final adjusted settings of protective devices.

1.04 QUALITY ASSURANCE

- A. Computer Software for Study Preparation: Use the latest edition of commercially available software utilizing specified methodologies.
- B. Contractor Responsibility: Provide all project-related data needed by study preparer, including equipment, wire sizes, insulation types, conduit types, and actual circuit lengths.
- C. Owner's Responsibility: Provide data on relevant Owner power distribution equipment.

SECTION 26 0519 - BUILDING WIRE AND CABLE

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Wire and cable for 600 volts and less.
- B. Wiring connectors and connections.

1.02 RELATED SECTIONS

- A. Section 31 2316 - Excavation.
- B. Section 31 2323 - Fill and Backfill: Bedding and backfilling.
- C. Section 31 2316.13 - Trenching for Site Utilities: Excavating, bedding, and backfilling.
- D. Section 26 0553 - Electrical Identification.

1.03 REFERENCES

- A. Install per NECA (National Electrical Contractors Association)
- B. Meet NEMA (National Electrical Manufacturers Association) standard requirements
- C. Install per NFPA 70 (National Electrical Code; National Fire Protection Association)

1.04 QUALITY ASSURANCE

- A. Conform to requirements of NFPA 70.
- B. Manufacturer Qualifications: Company specializing in manufacturing the Products specified in this section with minimum three years documented experience and with service facilities within 100 miles of Project.
- C. Products: Furnish products listed and classified by Underwriters Laboratories Inc. as suitable for the purpose specified and indicated.

PART 2 PRODUCTS

2.01 WIRING REQUIREMENTS

- A. Concealed Dry Interior Locations: Use only building wire with Type THHN/THWN insulation in raceway.
- B. Exposed Dry Interior Locations: Use only building wire with Type THHN/THWN insulation in raceway.
- C. Above Accessible Ceilings: Use only building wire with Type THHN/THWN insulation in raceway.
- D. Wet or Damp Interior Locations: Use only building wire with Type THHN/THWN insulation in raceway.
- E. Exterior Locations: Use only building wire with Type THHN/THWN insulation in raceway.
- F. Underground Installations: Use only building wire with Type THHN/THWN insulation in raceway, unless noted on plan.
- G. Use stranded conductors for control circuits.
- H. Use conductor not smaller than 12 AWG for power and lighting circuits.
- I. Use conductor not smaller than 14 AWG for control circuits.
- J. Use 10 AWG conductors for 20 ampere, 120 volt branch circuits longer than 75 feet.
- K. Use 10 AWG conductors for 20 ampere, 277 volt branch circuits longer than 200 feet.
- L. Conductor sizes are based on copper unless noted as aluminum or "AL".
- M. Aluminum conductor to be sized to match circuit requirements for conductor ampacity and voltage drop. Use of Aluminum conductor must be approved by Architect.

2.02 WIRE MANUFACTURERS

- A. Cerro Wire & Cable Company: www.cerro.com.
- B. Industrial Wire & Cable, Inc.: www.industrialwire.com.
- C. Southwire Company: www.mysouthwire.com.
- D. Rome Cable Corporation.
- E. Cablec.
- F. Futronk Systems Corp.
- G. Substitutions: See Section 26 0500 - Basic Electrical Requirements: Product Substitutions.

2.03 BUILDING WIRE

- A. Description: Single conductor insulated wire.
- B. Conductor: Copper.
- C. Insulation Voltage Rating: 600 volts.
- D. Insulation: Thermoplastic material rated 60 degrees C.

2.04 NONMETALLIC-SHEATHED CABLE (ROMEX) INSIDE APARTMENTS ONLY

- A. Description: NFPA 70, Type NMC OR NM.
- B. Conductor: Copper.
- C. Insulation Voltage Rating: 600 volts.

2.05 SERVICE ENTRANCE CABLE

- A. Description: NFPA 70, Type SE.
- B. Conductor: Copper.
- C. Insulation Voltage Rating: 600 volts.
- D. Insulation: Type NMC.

2.06 METAL CLAD CABLE

- A. Description: NFPA 70, Type MC.
- B. Conductor: Copper.
- C. Insulation Voltage Rating: 600 volts.
- D. Insulation Temperature Rating: 90 degrees C.
- E. Insulation Material: Thermoplastic.
- F. Armor Material: Aluminum.
- G. Armor Design: Interlocked metal tape.
- H. Jacket: PVC; use in locations indicated.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that interior of building has been protected from weather.
- B. Verify that mechanical work likely to damage wire and cable has been completed.
- C. Verify that raceway installation is complete and supported.
- D. Verify that field measurements are as indicated.

3.02 PREPARATION

- A. Completely and thoroughly swab raceway before installing wire.

3.03 INSTALLATION

- A. Install wire and cable securely, in a neat and workmanlike manner, as specified in NECA 1.
- B. Route wire and cable as required to meet project conditions.
- Wire and cable routing indicated is approximate unless dimensioned.
 - Where wire and cable destination is indicated and routing is not shown, determine exact routing and lengths required.
 - Include wire and cable of lengths required to install connected devices within 10 ft of location shown.

- C. Use wiring methods indicated.
- D. Pull all conductors into raceway at same time.
- E. Use suitable wire pulling lubricant for building wire 4 AWG and larger.
- F. Protect exposed cable from damage.
- G. Support cables above accessible ceiling, using spring metal clips or metal cable ties to support cables from structure or ceiling suspension system. Do not rest cable on ceiling panels.
- H. Use suitable cable fittings and connectors.
- I. Neatly train and lace wiring inside boxes, equipment, and panelboards.
- J. Clean conductor surfaces before installing lugs and connectors.
- K. Make splices, taps, and terminations to carry full ampacity of conductors with no perceptible temperature rise.
- L. Terminate aluminum conductors with tin-plated aluminum-bodied compression connectors only. Fill with anti-oxidant compound before installing conductor.
- M. Use suitable reducing connectors or mechanical connector adaptors for connecting aluminum conductors to copper conductors.
- N. Use split bolt connectors for copper conductor splices and taps, 6 AWG and larger. Tape uninsulated conductors and connector with electrical tape to 150 percent of insulation rating of conductor.
- O. Use solderless pressure connectors with insulating covers for copper conductor splices and taps, 8 AWG and smaller.
- P. Use insulated spring wire connectors with plastic caps for copper conductor splices and taps, 10 AWG and smaller.
- Q. Trench and backfill for direct burial cable installations. Install warning tape along entire length of direct burial cable.
- R. Identify and color code wire and cable under provisions of Section 26 0553. Identify each conductor with its circuit number or other designation indicated.
- S. Lighting: Conduit and wire to first light fixture junction box; MC cable permitted from that point on.
- T. All branch feeders shall be in conduit to the jbox in ceiling just before vertical runs. MC cable permitted vertically in walls to receptacles/devices except as noted below:
- No MC cable permitted for dedicated circuits.
 - No MC cable permitted in copy rooms or work rooms.
 - No MC cable permitted in kitchens or break rooms.

3.04 FIELD QUALITY CONTROL

- A. Perform field inspection and testing in Industry standards
- B. Inspect and test in accordance with NETA STD ATS.
- C. Perform inspections and tests listed in NETA STD ATS.

SECTION 26 0526 - GROUNDING AND BONDING

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Grounding and bonding components.
- B. Provide all components necessary to complete the grounding system(s) consisting of:
- Metal underground water pipe.
 - Metal frame of the building.
 - Concrete-Encased electrodes (new buildings)
 - Ground Electrode
 - The terms "connect" and "bond" are used interchangeably in this specification and have the same meaning.

1.02 RELATED SECTIONS

- A. Section 03 2000 - Concrete Reinforcement.
- B. Section 03 3000 - Cast-in-Place Concrete.
- C. Section 26 4113 - Lightning Protection.
- D. Section 27 0528 - Telephone Service, Pathways and Wiring

1.03 REFERENCES

- A. Install per NFPA 70 - (National Electrical Code; National Fire Protection Association)
- B. Install per NFPA 99 - (Standard for Health Care Facilities; National Fire Protection Association)

1.05 SUBMITTALS

- A. See Section 26 0500 - Basic Electrical Requirements - Submittal procedures.
- B. Test Reports: Indicate overall resistance to ground and resistance of each electrode.
- C. Project Record Documents: Record actual locations of components and grounding electrodes.
- D. Certificate of Compliance: Indicate approval of installation by authority having jurisdiction.

1.06 QUALITY ASSURANCE

- A. Conform to requirements of NFPA 70.
- B. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three years' experience.
- C. Products: Listed and classified by Underwriters Laboratories, Inc. as suitable for the purpose specified and indicated.

PART 2 PRODUCTS

2.01 GROUNDING AND BONDING CONDUCTORS

- A. Equipment grounding conductors shall be UL 83 insulated stranded copper, except that sizes 10AWG and smaller shall be solid copper. Insulation color shall be continuous green for all equipment grounding conductors, except that wire sizes 4 AWG and larger shall be permitted to be identified per NEC.
- B. Bonding conductors shall be ASTM B8 bare stranded copper, except that sizes 10AWG and smaller shall be ASTM B1 solid bare copper wire.
- C. Electrical System Grounding: Conductor sizes shall not be less than what is shown on the drawings and not less than required by the NEC, whichever is greater.

2.02 GROUND RODS

- A. Copper clad steel, ¾" diameter by 10 feet long, conforming to UL 467.
- B. Quantity of rods shall be as required to obtain a 25 ohms ground resistance.

2.03 CONCRETE-ENCASED ELECTRODE

- A. Electrode shall be encased by at least 2 inches of concrete, located horizontally near the bottom or vertically, within that portion of a concrete foundation or footing that is in direct contact with the earth. See code section 250.52.A.3 for further requirements.

2.04 SPLICES AND TERMINATION COMPONENTS

- A. Components shall meet or exceed UL 467 and be clearly marked with the manufacturer, catalog number, and permitted conductor size(s).

2.05 GROUND CONNECTIONS

- A. Below Grade: Exothermic-welded type connectors
- B. Above Grade:
- Bonding jumpers: Compression type connectors, using zinc-plated fasteners and external tooth lockwashers.
 - Ground Busbars: Two-hole compression type lugs using tin-plated copper or copper alloy bolts and nuts.
 - Rack and Cabinet Ground Bars: one-hole compression-type lugs using zinc-plated or copper alloy fasteners.

2.06 EQUIPMENT RACK AND CABINET GROUND BARS

- A. Provide solid copper ground bars designed for mounting on the framework of open or cabinet-enclosed equipment racks with minimum dimensions of 4 mm thick by 19 mm wide.

2.07 GROUND TERMINAL BLOCKS

- A. At any equipment mounting location (e.g. backboards and hinged cover enclosures) where rack-type ground bars cannot be mounted, provide screw lug-type terminal blocks.

2.08 SPLICE CASE GROUND ACCESSORIES

- A. Splice case grounding and bonding accessories shall be supplied by the splice case manufacturer when available. Otherwise, use 6 AWG insulated ground wire with shield bonding connectors.

PART 3 EXECUTION

3.01 GENERAL

- A. Verify existing conditions prior to beginning work.
- B. Verify that final backfill and compaction has been completed before driving rod electrodes.

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ARCHITECT
Driven Design Studio PLLC
11 Carlyle Street
Battie Creek, MI 49017

(269) 753-8040
cody@drivendesignstudio.com



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