

**SECTION 26 0100**

**BASIC ELECTRICAL REQUIREMENTS**

**PART 1 - GENERAL**

**1.1 RELATED DOCUMENTS**

- A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this and the other sections of Division 26.
- B. This section is a Division 26 Common Work Results for Electrical section, and is a part of each Division 26 Section.
- C. Requirements of the following Division 26 Sections apply to this section:
  - 1. Common Work Results for Electrical.

**1.2 SUMMARY**

- A. This Section includes general administrative and procedural requirements for electrical installations. The following administrative and procedural requirements are included in this Section to expand the requirements specified in Division 1 - reference individual sections for further expansion of these requirements:
  - 1. Pre-Construction Meeting.
  - 2. Abbreviations and Definitions.
  - 3. Permits, Codes, and Inspections.
  - 4. Utilities.
  - 5. Visiting Premises.
  - 6. Submittals.
  - 7. Project Drawings and Specifications.
  - 8. Cooperation and Coordination with Other Trades.
  - 9. Space Priority.
  - 10. Product Listing.
  - 11. Nameplate Data.
  - 12. Record Documents.
  - 13. Maintenance Manuals.
  - 14. Warranty.
  - 15. Performance of Equipment.
  - 16. Delivery, Storage and Handling.
  - 17. Sequence of Work.
  - 18. Rough-ins.
  - 19. Electrical Installations.

20. Cutting and Patching.
21. Cleaning.
22. Testing.
23. Instructions to the Owner.

### 1.3 ABBREVIATIONS AND DEFINITIONS

A. General: Utilize the following abbreviations and definitions for discernment within the Drawings and Specifications.

#### 1. Abbreviations:

ANSI	American National Standards Institute.
ASA	American Standards Association.
ASTM	American Society of Testing Materials.
CBM	Certified Ballast Manufacturers.
E.C.	Electrical Contractor.
EIA	Electronic Industries Association.
ETL	Electrical Testing Laboratories, Inc.
G.C.	General Contractor.
HVAC	Heating, Ventilating, Air Conditioning Contractor.
ICEA	International Cable Engineers Association.
IEEE	Institute of Electrical and Electronics Engineers.
IES	Illuminating Engineering Society.
NEC	National Electrical Code.
NEMA	National Electrical Manufacturers Association.
NFPA	National Fire Protection Association.
O.E.M.	Original Equipment Manufacturer.
OSHA	Occupational Safety and Health Admin.
P.C.	Plumbing Contractor.
UL	Underwriter's Laboratories, Inc.

### 1.4 DEFINITIONS

- A. PROVIDE means to furnish, place, erect, connect, test and turn over to Owner, complete and ready for the regular operation, the particular work referred to.
- B. INSTALL means to join, unite, fasten, link, attach, set up or otherwise connect together before testing and turning over to Owner, complete and ready for regular operation, the particular work referred to.
- C. FURNISH means to supply all materials, labor, equipment, testing

- apparatus, controls, tests, accessories and all other items customarily required for the proper and complete application for the particular work referred to.
- D. WIRING means the inclusion of all raceways, fittings, conductors, connectors, tape, junction and outlet boxes, connections, splices, and all other items necessary and/or required in connection with such work.
- E. CONDUIT means the inclusion of all fittings, hangers, supports, sleeves, etc.
- F. AS DIRECTED means as directed by the Contracting Officer Representative (COR) or their representative.
- G. CONCEALED means embedded in masonry or other construction, installed behind wall furring or within double partitions or installed within hung ceilings.
- H. ACCEPTED means as accepted by the Contracting Officer Representative (COR) or their representative.
- I. APPROVED means as approved by the Contracting Officer Representative (COR) or their representative.
- J. EQUAL means equivalent as approved by the Contracting Officer Representative (COR) or their representative.
- K. CONTRACTOR as stated herein shall mean Electrical Contractor.

#### **1.5 PERMITS, CODES, AND INSPECTIONS**

- A. General: Contractor shall obtain and pay for all permits and inspections required by laws, ordinances, rules, and regulations having jurisdiction for work included under this Contract, and shall submit approval certificates to the Contracting Officer Representative (COR) .
- B. Codes: The electrical installation shall comply fully with all local, county, and state laws, ordinances and regulations applicable to electrical installations.
- C. The Electrical installation shall be in compliance with the requirements of the latest revisions of:
1. Occupational Safety and Health Act (OSHA).
  2. Institution of Electrical and Electronic Engineers (IEEE).
  3. National Electric Code (NEC).
  4. National Electrical Safety Code (NESC).

5. National Board of Fire Underwriter's (NBFU).
  6. Authority having Jurisdiction.
  7. Underwriter's Laboratories, Inc. (UL).
  8. National Electrical Manufacturer's Association (NEMA).
  9. National Electrical Contractors Association (NECA).
  10. National Safety Code.
  11. Legislative Act 235 (1965) - Handicapped.
  12. Legislative Act 287 (1974) - Excavation.
  13. International Building Code (IBC) 2009.
  14. Americans with Disabilities Act (ADA).
  15. All local codes and ordinances in effect and having jurisdiction.
  17. All approved published instructions set forth by equipment manufacturers.
- D. Submit certificates issued by approved authorized agencies to indicate conformance of all work with the above requirements, as well as any additional certificates as may be required for the performance of this contract work.
- E. Should any change in Drawings or Specifications be required to comply with governmental regulations, the Contractor shall notify Contracting Officer Representative (COR) prior to execution of the work. The work shall be carried out according to the requirements of such code in accordance with the instruction of the Contracting Officer Representative (COR) and at no additional cost to the Owner.

#### **1.6 VISITING PREMISES**

- A. General: The Bidder shall visit the project site before submitting their bid, in order to familiarize themselves with existing conditions that may affect their work. It is the Contractor's responsibility to analyze existing conditions. Sufficient allowances shall be provided in the Contractor's bid to cover work, due to existing conditions, that will be required to complete this contract work.
- B. By submission of a bid, the Contractor is attesting that responsible personnel did in fact visit the site during the bidding period and verified all existing pertinent conditions.
- C. Contractor shall verify all measurements and dimensions at the site prior to submitting a bid.

### **1.7 PROJECT DRAWINGS AND SPECIFICATIONS**

- A. Contractor shall carefully examine the Drawings and Specifications of all trades and report all discrepancies to the Contracting Officer Representative (COR) in writing to obtain corrective action. No departures from the Contract Documents will be made without prior written approval from the Contracting Officer Representative (COR) .
- B. Questions or disputes regarding the intent or meaning of Contract Documents shall be resolved by the interpretation of the Contracting Officer Representative (COR) . The Contracting Officer Representative (COR) 's interpretation is final and binding.
- C. The Drawings and Specifications are not intended to define all details, finish materials, and special construction that may be required or necessary. The Contractor shall provide all installations complete and adequate as implied by the project documents.
- D. Drawings are diagrammatic only and do not show exact routes and locations of equipment and associated wiring. The Contractor shall verify the work of all other trades and shall arrange their work to avoid conflicts. In the event of a conflict, the Contractor shall obtain corrective action from the Contracting Officer Representative (COR) .
- E. All work shall be considered new, unless noted otherwise.

### **1.8 COOPERATION AND COORDINATION WITH OTHER TRADES**

- A. This Electrical Contractor must cooperate completely and coordinate work with the Contractors of other trades providing equipment under this division and other divisions of the specifications.
- B. Coordinate the location of each and every electrical panel, pullbox, transfer switch, ect. with the Contracting Officer Representative (COR) before rough-in. The above required floor plans shall be reviewed and approved by the Owner and Contracting Officer Representative (COR), and shall be signed by both the Owner and the Contracting Officer Representative (COR) .
- C. Individual trade interference drawings may be used as shop drawings and/or as record drawings at the completion of the project.

### **1.9 COORDINATION OF THE WORK**

- A. Certain materials will be provided by other trades. Examine the

- contract documents to ascertain these requirements.
- B. Carefully check space requirements with the existing conditions and the physical confines of the area to insure that all material can be installed in the spaces allotted there to including finished suspended ceilings. Make modifications there to as required.
  - C. Transmit to other trades all information required for work to be provided under their respective sections in ample time for installation.
  - D. Where ever work interconnects with work of other trades, coordinate with other trades to insure that all trades have the information necessary so that they may properly install all the necessary connections and equipment. Identify all items of work that require access so that the ceiling trade will know where to install access doors and panels.
  - E. Due to the type of the installation, a fixed sequence of operation is required to properly install the complete systems. Coordinate, project and schedule work with the Contracting Officer Representative (COR) in accordance with the construction sequence.
  - F. The locations of panels and other equipment indicated on the Drawings are approximately correct, but they are understood to be subject to such revision as may be found necessary or desirable at the time the work is installed.
  - G. Exercise particular caution with reference to the location of panels and have precise and definite locations approved by the Engineer before proceeding with the installation.
  - H. The Drawings show only the general run of raceways and approximate location of outlets. Any significant changes in location of outlets, cabinets, etc., necessary in order to meet field conditions shall be brought to the immediate attention of the Contracting Officer Representative (COR) and receive his approval before such alterations are made. All such modifications shall be made without additional cost to the VAMC.
  - I. Obtain from the Contracting Officer Representative (COR) in the field the location of such devices or equipment not definitely located on the Drawings.
  - J. Circuit "tags" in the form of arrows are used where shown to indicate the home runs of raceways to electrical distribution points. These

tags show the circuits in each home run and the panel designation. Show the actual circuit numbers on the finished record tracing and on panel directory card. Where circuiting is not indicated, Electrical Contractor must provide required circuiting in accordance with the loading indicated on the drawings and/or as directed.

- K. The Drawings generally do not indicate the exact number wires in each conduit for the branch circuit wiring of fixtures, and outlets, or the actual circuiting. Provide the correct wire size and quantity as required by the indicated circuiting and/or circuit numbers indicated and control wiring diagrams, if any, specified voltage drop or maximum distance limitations, and the applicable requirements of the NEC.
- L. Adjust location of conduits, panels, equipment, pull boxes, fixtures, etc. to accommodate the work to prevent interferences, both anticipated and encountered. Determine the exact route and location of each raceway prior to installation.
- M. Contractor shall furnish services of an experienced Superintendent, who shall be in constant charge of all work, and who shall coordinate his work with the work of other trades. No work shall be installed before coordinating with other trades.

#### **1.10 SPACE PRIORITY**

- A. Ensure equitable use of available space for materials and equipment installed above ceilings. Allocate space in the order of priority as listed below. Items are listed in the order of priority, with items of equal importance listed under a single priority number.
  - 1. Gravity flow piping systems.
  - 2. Vent piping systems.
  - 3. Ceiling recessed lighting fixtures.
  - 4. Concealed air terminal units, fans.
  - 5. Air duct systems.
  - 6. Sprinkler systems piping.
  - 7. Forced flow piping systems.
  - 8. Electrical conduit, wiring, control wiring.
- B. Order of priority does not dictate installation sequence. Installation sequence shall be as mutually agreed by all affected trades.

- C. Change in order of priority is permissible by mutual agreement of all affected trades.
- D. The work of a particular trade shall not infringe upon the allocated space of another trade without permission of the Contractor for the affected trade.
- E. The work of a particular trade shall not obstruct access for installation, operation and maintenance of the Work, materials and equipment of another trade.

#### **1.11 NAMEPLATE DATA**

- A. Provide permanent operational data nameplate on each item of power operated equipment, indicating manufacturer, product name, model number, serial number, capacity, operating and power characteristics, labels of tested compliances, and similar essential data. Locate nameplate in an accessible location.

#### **1.12 OMISSIONS FROM THE DRAWINGS**

- A. Should a Bidder find discrepancies in or omissions from the drawings or specifications or be in doubt as to their meaning, they shall notify the Contracting Officer Representative (COR) before submitting their proposal. The Contracting Officer Representative (COR) will in turn, send written instructions to all Bidders. Neither the Contracting Officer Representative (COR) nor the Design Professional will be responsible for oral instructions. If the Contractor fails to comply with this requirement, they shall accept the Engineer's interpretation as to the intended meaning of the drawings and specifications.

### **PART 2 - PRODUCTS**

#### **2.1 GENERAL**

- A. Major items of equipment shall have manufacturer's name, address, and catalog number on a plate securely attached in a convenient place. All equipment or apparatus of any one (1) system must be the product of one (1) manufacturer, or approved equivalent products of a number of manufacturer's that are suitable for use in a unified system.
- B. All materials and equipment for which Underwriter's Laboratories have established standards shall bear a UL label of approval.
- C. In all cases where a device, function or item of equipment is herein referred to in the singular, such reference shall apply to as many such items as are required to complete the installation.

- D. All listed materials and equipment shown on drawings and/or specified herein, are indicative of complete and whole units and shall be furnished as such.
- E. Comply with manufacturer's printed instructions and recommendations as minimum criteria for the installation of equipment.
- F. All materials and equipment provided under this Contract shall be completely satisfactory and acceptable in operation, performance and capacity. No approval, either verbal or written, of any drawing, descriptive data or samples of such materials, equipment and/or appurtenances, shall relieve this Contractor of his responsibility to turn over all items in perfect working order at completion of the work.

**PART 3- EXECUTION**

**3.1 DELIVERY, STORAGE, AND HANDLING**

- A. Deliver products to the project properly identified with names, model numbers, types, grades, compliance labels, and other information needed for distinct identification; adequately packaged and protected to prevent damage during shipment, storage and handling.
- B. Store equipment and materials at the site, unless off-site storage is authorized in writing. Protect stored equipment and materials from damage.
- C. Coordinate deliveries of electrical materials and equipment to minimize construction site congestion. Limit each shipment of materials and equipment to the items and quantities needed for the smooth and efficient flow of installations.

**3.2 SEQUENCE OF WORK**

- A. Construct work in a sequence in accordance with Division 1.

**3.3 ROUGH-IN**

- A. Obtain written approval of locations of all electrical devices from the Contracting Officer Representative (COR) prior to rough-in. The Contracting Officer Representative (COR) reserves the right to move any or all electrical devices prior to rough-in, at no additional cost.
- B. Verify final locations for rough-ins with field measurements and with the requirements of the actual equipment to be connected.
- C. Refer to equipment specifications in Divisions 2 through 33 for rough-in requirements.

- D. Contractor shall obtain detailed and specific information regarding location of all equipment. Final locations may differ from those indicated on drawings. Work improperly placed because of Contractor's failure to obtain this information shall be relocated and reinstalled as directed, without additional costs to the Contract.
- E. The design shall be subject to such revisions as may be necessary to overcome building obstructions. No charges shall be made in location of equipment without prior written approval.
- F. Door swings may vary from plans. Make note of actual door swings at time of rough-in. Do not install switches or other items behind the swing of any door.
- G. Rough-ins for devices in concrete block walls shall be installed level and plumb. Devices adjacent to each other shall be installed at the same elevation. Saw cut openings to the size required, such that oversized coverplates are not required.

#### **3.4 INSTALLATIONS**

- A. General: Sequence, coordinate, and integrate the various elements of electrical systems, materials, and equipment. Comply with the following requirements:
  - 1. Coordinate electrical systems, equipment, and materials installation with other building components.
  - 2. Verify all dimensions by field measurements.
  - 3. Arrange for chases, slots, and openings in other building components during progress of construction, to allow for electrical installations.
  - 4. Coordinate the installation of required supporting devices and sleeves to be set in poured-in-place concrete and other structural components, as they are constructed.
  - 5. Sequence, coordinate, and integrate installations of electrical materials and equipment for efficient flow of the Work. Give particular attention to large equipment requiring positioning prior to closing in the building.
  - 6. Where mounting heights are not detailed or dimensioned, install systems, materials, and equipment to provide the maximum headroom possible.
  - 7. Coordinate connection of electrical systems with exterior

underground and overhead utilities and services. Comply with requirements of governing regulations, franchised service companies, and controlling agencies. Provide required connection for each service.

8. Install systems, materials, and equipment to conform with approved submittal data, including coordination drawings, to greatest extent possible. Conform to arrangements indicated by the Contract Documents, recognizing that portions of the Work are shown only in diagrammatic form. Where coordination requirements conflict with individual system requirements, refer conflict to the Contracting Officer Representative (COR) .
9. Install systems, materials, and equipment level and plumb, parallel and perpendicular to other building systems and components.
10. Coordinate the cutting and patching of building components to accommodate installation of electrical equipment and materials.
11. Coordinate the installation of electrical materials and equipment above existing ceilings with suspension system, existing mechanical equipment and systems, and existing structural components.
12. Install electrical equipment to facilitate servicing, maintenance, and repair or replacement of equipment components. Connect equipment for ease of disconnecting, with minimum of interference with other installations.
13. Install access panel or doors where units are concealed behind finished surfaces. Access panels and doors are specified in Division 26 Section Common Work Results for Electrical.
14. Install systems, materials, and equipment giving right-of-way priority to systems required to be installed at a specified slope.

### **3.5 EQUIPMENT ACCESSORIES**

- A. Establish sizes and location of the various concrete bases required. Coordinate with General Contractor and provide all necessary anchor bolts together with templates for holding these bolts in position.
- B. Provide supports, hangers and auxiliary structural members required for support of the work.
- C. Furnish and set all sleeves for passage of raceways through

structural, masonry and concrete walls and floors and elsewhere as will be required for the proper protection of each raceway and passing through building surfaces.

- D. Wall-mounted equipment may be directly secured to wall by means of steel bolts. Maintain at least 1" air space between equipment and supporting wall. Groups or arrays of equipment may be mounted on adequately sized steel angles, channels, or bars. Prefabricated steel channels providing a high degree of mounting flexibility may be used for mounting arrays of equipment.

### **3.6 CUTTING AND PATCHING**

- A. General: Perform cutting and patching in accordance with Division 1. In addition to the requirements specified in Division 1, the following requirements apply:

1. Perform cutting, fitting, and patching of electrical equipment and materials required to:
  - a. Uncover Work to provide for installation of ill-timed Work.
  - b. Remove and replace defective Work.
  - c. Remove and replace Work not conforming to requirements of the Contract Documents.
  - d. Remove samples of installed Work as specified for testing.
  - e. Install equipment and materials in existing structures.
  - f. Upon written instructions from the Contracting Officer Representative (COR) , uncover and restore Work to provide for Contracting Officer Representative (COR) observation of concealed Work.
2. Cut, remove, and legally dispose of selected electrical equipment, components, and materials as indicated, including but not limited to removal of electrical items indicated to be removed and items made obsolete by the new Work.
3. Protect the structure, furnishings, finishes, and adjacent materials not indicated or scheduled to be removed.
4. Provide and maintain temporary partitions or dust barriers adequate to prevent the spread of dust and dirt to adjacent areas.
5. Protection of Installed Work: During cutting and patching operations, protect adjacent installations.

6. Arrange and pay for repairs required to restore other work, because of damage caused as a result of electrical installations.
7. No additional compensation will be authorized for cutting and patching work that is necessitated by ill-timed, defective or non-conforming installations.
8. Patch all finished surfaces and building components using new materials specified for the original installation and experienced Installers. For Installers' qualifications refer to the materials and methods required for the surface and building components being patched.
  - a. Refer to Division 1 for definition of experienced "Installer."

### **3.7 CLEANING**

- A. Refer to Division 1 for general requirements for final cleaning.
- B. Clean all light fixtures, lamps and lenses prior to final acceptance. Replace all inoperative lamps.

### **3.8 DEBRIS**

- A. Debris resulting from work under this Contract, shall all be removed promptly from the premises by this Contractor.
- B. Remove all dead wire and associated raceway resulting from work under this contract.

### **3.9 TESTING**

- A. Contractor, at his own expense, shall make any tests directed by an inspection authority or by the Contracting Officer Representative (COR) and shall provide all equipment, instruments and materials to make such tests.
- B. All overload devices, including equipment furnished under other contracts, shall be set and adjusted to suit load conditions.
- C. Unless otherwise approved, all connections shall be made and all components shall be in place, complete and operational, at time of final inspection and tests.
- D. Time of such tests, the manner in which they are made and the results of the tests, shall be subject to approval.
- E. Upon completion of work, all component parts, both singularly and as a whole, shall be set, calibrated, adjusted and left in satisfactory operating condition to suit load conditions, by means of instruments furnished by the Contractor.

- F. Complete testing of equipment and systems shall be provided throughout this project.
- G. Industry standards shall apply except as otherwise specified.
- H. Provide all labor, premium labor and materials required by shop and field testing as specified in the Contract Documents and as required by the authorities having jurisdiction.
- I. Notify the Contracting Officer Representative (COR) seven (7) days prior to the testing dates. Upon completion of a test, a statement of certification shall be forwarded to the Contracting Officer Representative (COR) for their approval.
- J. Conduct tests at a time agreeable to the Contracting Officer Representative (COR) . Provide premium labor as necessary.
- K. Products which are found defective or do not pass such tests shall be removed and replaced at the Contractor's expense. Tests shall be repeated.

### **3.10 FIRE STOPS**

- A. Openings for electrical equipment penetrating a fire rated floor, wall or ceiling, shall be resealed as required by Code. Install fire rated sealant equal to or greater than the fire rating of the penetrated surface.

### **3.11 WATERPROOFING**

- A. Avoid, if possible, the penetration of any waterproof membranes such as roofs, machine room floors, basement walls and the like. If such penetration is necessary, perform it prior to the waterproofing and furnish all sleeves or pitch-pockets required.
- B. If Contractor penetrates any walls or surfaces after they have been waterproofed, they shall restore the waterproof integrity of that surface at their own expense and as directed by the Contracting Officer Representative (COR) .
- C. Contractor shall advise the Contracting Officer Representative (COR) and obtain written permission before penetrating any waterproof membrane, even where such penetration is shown on the drawings. Such work shall be performed in such a manner as to maintain any warranties in place.

### **3.12 CONSTRUCTION PROGRESS AND NOTIFICATION**

- A. The Contractor shall notify, in writing, the Owner and the Engineer of construction progress. At a minimum, the Contractor shall notify

VA Project No.528A6-16-614EM  
AE Works Project No. 16036

Bath VAMC  
Replace Generator, Building 78  
100% Construction Documents

at the 50% rough in of conduit, prior to enclosing or burying, and  
at "punch list" time lines.

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