

## SECTION 16010

### SPECIAL PROVISIONS FOR ELECTRICAL WORK

#### PART 1 - GENERAL

##### 1.01 DESCRIPTION

- A. Work Included: Furnish all labor, materials, equipment, tools and services in connection with, or properly incidental to the furnishing of equipment, installing equipment and the construction of electrical systems as described in this Division of the Specifications and/or shown on the accompanying Drawings, or reasonable implied therefrom, except as hereinafter specifically excluded.
- B. Related Work: Furnish all additional details or special construction as required for work indicated or specified in the division or work specified in other divisions. Furnish and install all material and equipment usually furnished with systems or required to complete and make operative the installation, whether specifically mentioned or not.

##### 1.02 REFERENCE DOCUMENTS

- A. The Electrical Drawings are a combination of scale and symbolic representation of the electrical systems required to be installed. The drawings and specifications are based on qualified skilled craftsmen procuring and installing the work. The drawings include symbolic indication of branch circuit conductors, connections to devices, hook-up of electrical powered equipment, etc.
- B. Division 16 Work includes proper routing or raceways, grouping of conductors, wiring to and hook-up of devices and equipment in accord with the total provisions of the specifications. Refer to the symbol schedule for the basis of the drawing representation. Symbols other than those in the schedule are explained elsewhere or are those commonly used in the industry. Listing of a symbol in the schedule does not imply that the symbol is used on the final contract documents. The electrical drawings indicate general locations of devices and equipment, but final locations shall be determined in reference to the Architectural, Structural, Mechanical and Electrical Drawings.
- C. The Architectural, Structural and Mechanical Drawings and Specifications including all Supplements issued thereto, are a part of these Specifications and the accompanying Electrical Drawings, and shall be complied with in every respect.

##### 1.03 REGULATIONS, PERMITS AND APPROVALS

- A. The installation including all materials and equipment shall conform to NFPA No. 70-1996 Edition; the applicable requirements of the utility companies supplying energy, communications and other services to the project; the laws of the City and/or

Town pertaining to electrical installation; and with all national, state and local codes and laws relating to construction, building and public safety.

- B. Each of the above regulations are minimum standards. Where the requirements of these minimum standards are less than or do not conflict with the requirements of the Contract Documents, the Contract Documents shall be followed.
- C. Obtain all permits and arrange for all inspections and approvals for the work including construction document review and site observations by the authorities having jurisdiction. Obtain certificates of inspection and acceptance and transmit these to the Architect as a condition of acceptance. Assume and pay all fees and other costs involved in obtaining the permits, inspection, certificates and approvals as a part of Division 16 Work.

#### 1.04 SHOP DRAWINGS AND OTHER SUBMITTAL

- A. Submit shop drawings or fully descriptive catalog data for all items of materials and equipment proposed to be furnished and/or installed. Submit sufficient copies to provide reviewed copies as needed to be returned plus three (3) copies for retention by the Architect.
- B. Submit on all Electrical Distribution Equipment, wiring materials, lighting fixtures and all components of communication, signal, protection and alarm systems. The submittal of free standing electrical equipment shall include scale drawings indicating the proposed layout of this equipment within the space allocated and the proximity of existing work, other electrical work, and work installed under their divisions of work.
- C. Submit sufficiently early to allow ample time for checking without delaying delivery of the materials to job site. A review of any submittal which results in a requirement to resubmit shall not be justified basis of work delay or extra cost.
- D. The review of Shop Drawings or catalog data by the Architect shall not negate the Contractor's responsibility for deviations from the Drawings and Specifications unless, in writing, attention is specifically noted for such deviations at the time of submission and acceptance of the Architect is noted thereon. When attention is called to deviations from the Drawings and Specifications, state in letter of transmittal whether or not such deviations involve any change in Contract time and cost. Errors of any kind associated with submittal shall be the responsibility of the installer of Division 16 Work.

#### 1.05 STANDARDS FOR ELECTRICAL MATERIALS

- A. Materials shall be new and free from defects and shall conform with the standards of the Underwriters' Laboratories, Inc., in every case where such standards have been established. Evidence of such conformance shall be the UL label or "listing" by Underwriters' Laboratories, Inc. under Re-examination Service.

- B. The Specifications indicate a standard of quality for materials. Manufacturer's names and catalog numbers are used to designate materials or equipment to establish grade and quality. Where several manufacturers are named, the bid shall be based on those named manufacturer's products. Where only one manufacturer is named, unless stated otherwise, manufacturers of equal quality products will, however, be considered as substitutions only after the award of the Contract.

#### 1.06 SUBSTITUTIONS

- A. In the event substitutions are to be submitted for Owner review, furnish descriptive catalog material, test data, samples, etc., of both the specified material and the proposed substitute, as well as any other pertinent data necessary to demonstrate that the proposed substitutions are acceptable equals to the specified products.
- B. Substitutions shall not be made without written acceptance and the lack of acceptance shall not be a basis of change in work.

### **PART 2 - PRODUCTS**

#### 2.01 PAINTS AND PROTECTIVE COATINGS

- A. For exposed hangers and supports: not provided with factory protected finish: Sherwin-Williams Kromik primer and Metalatex semi-gloss enamel.
- B. Materials and Equipment: Sherwin-Williams Kromik primer and Metalatex semi-gloss enamel.

#### 2.02 NAMEPLATES

- A. Nameplates shall be laminate plastic nameplates with one-fourth inch (1/4") high letters engraved thereon which give contract identification, electric service characteristics and source of power on each of the items of equipment. Nameplates for items of equipment, on Life Safety System including transfer switches shall be red with white letters and all others shall be black with white letters unless specifically noted otherwise.
- B. Nameplates shall be fastened on with cadmium or plated screws.

### **PART 3 - EXECUTION**

#### 3.01 EXAMINATION OF SITE

- A. Visit the site of the proposed work and carefully examine the existing conditions and limitations thereof, and include in the bid all costs of any kind whatsoever which are incurred through limitations of the existing conditions.

#### 3.02 SERVICE, CONNECTIONS AND PERMITS

- A. Obtain all permits, inspections and approvals for the work including construction document review and site observations by the authorities having jurisdiction. Obtain certificates of inspection and acceptance and transmit there to the Architect as a condition of acceptance. All fees and other costs involved in obtaining these permits, inspections and approvals shall be assumed and paid under the Division of the Work.
- B. Arrange for all services and pay all costs whatsoever to completely install and place in operation these electrical systems.

### 3.03 COORDINATION

- A. Coordinate work with that of other trades and adjacent projects to make proper connections at appropriate locations and times. Review the construction of other trades and adjacent projects to determine the physical needs and time requirements imposed in providing connections to them as shown on the drawings and in accordance with the project schedule.
- B. Coordinate work with that of the other trades so work may be installed in the most direct and workmanlike manner without hindering or handicapping the other trades. Give precedence to lines which require a stated grade for proper operation. Where space requirements conflict, the electric conduit shall, in general, yield to all other trades.
- C. When an electrical equipment is operable and it is to the advantage of the project, the equipment may be operated providing that prior approval of the Owner is received and proper supervision of the equipment operation performed. The warranty period shall, however, not commence until such time as the equipment is operated for the beneficial use of the Owner. Regardless of whether the equipment has or has not been operated, properly maintain the equipment; and at the completion of the work, properly clean, adjust, and complete all items before final acceptance is requested.
- D. The Architect or others may, during the execution of the work, desire to make connections to or modifications of work installed in this Division of Work.

Permission for the Architect or others to make these connections or modifications shall be granted without relieving responsibility for work installed under this Division of Work.

### 3.04 RECORD DRAWINGS AND BROCHURES

- A. During the execution of work, maintain a complete set of reproducible drawings upon which all dimensional locations of equipment, deviations and changes in the work shall be recorded. These Record Drawings shall be in good condition and shall be marked "Record Drawings", signed, dated and transmitted with two sets of prints under a transmittal letter to the Architect upon completion and acceptance of the work and before final payment is made.

- B. The following data as applicable to the work shall be included in items furnished for use by the Owner:
1. Record Drawings as specified above and elsewhere.
  2. Four (4) brochures of lighting fixtures with copies of data of each installed luminaire. Index each brochure indicating fixture type, manufacturer and catalog number, voltage, and lamping.
  3. Four (4) brochures of Electrical Distribution Equipment with final drawings, operating instructions and maintenance instructions.
  4. Four (4) brochures each for communication, signal protection and alarm systems installed with final installation and connection diagrams; and equipment operating, test and maintenance instructions.

### 3.05 CARE AND CLEAN UP OF EQUIPMENT AND MATERIALS

- A. Protect each item and component of electrical equipment from moisture, concrete, mortar, paint, dust and other foreign materials from the time it arrives on the job site until installed, placed in service and accepted by the Owner, using signs, barriers and other means whereby others are made fully aware of the importance of protection equipment from damage.
- B. Keep all electrical construction materials clean of all foreign materials from the time of arrival on the site until their installation. Time the installation of each item to avoid unnecessary exposure of the materials to destructive elements or destructive environment. Clean all installed materials of all foreign materials including concrete, mortar, spilled paint, and dust prior to final inspection. All unused electrical construction materials shall be removed from the site.
- C. After the installation is complete and before equipment is energized, thoroughly cleans the interior and exterior of all equipment and materials.

After the building is completed and cleaned, arrange for a power outage on each item of equipment and repeat the cleaning. This cleaning shall be performed just before final inspection. Each component shall be cleaned with air pressure, vacuumed and wiped clean of all dust and other foreign material. Components shall be cleaned of all oxidation. Any portion needing touch-up finishing and/or protective coating shall be so finished to equal the specified finish on the product. The entire inside and outside of all equipment shall be wiped with a lemon-oiled rag after all other cleaning and touch-up is complete.

- D. Provide for the removal of all unused, scrap, material containers and other rubbish or trash resulting from Division 16 Work from within and around all work and work areas on a basis that it will not interfere with other trades, other work or the completion of any work.

### 3.06 PAINTING AND PROTECTION

- A. Electrical equipment such as primary switches, switchboards, panelboard fronts, motor control centers and transformers shall be delivered to the job with suitable factory finish. Finishes marred in transit or during installation shall be refinished under this Division of Work to present a neat, workmanlike appearance equal to the factory finish.
- B. Except as elsewhere required, painting of equipment, boxes, conduit, etc., furnished under this Contract will be performed under another division of work. Clean electrical work of all trash, dirt, marks, and other foreign materials under this Division of Work prior to the application of finishes.
- C. Electric work in areas of the construction to remain unpainted shall be protective finished under this Division of Work as follows unless indicated otherwise:
  - 1. Paint all exposed and on-rust inhibited hangers and supports not provided with a factory finish with primer and two (2) coats of enamel.
  - 2. Material and equipment with suitable factory-applied finishes may be left unpainted provided the Architects' approval to do so is obtained. Prime and paint material and equipment that does not obtain such approval with two (2) coats of semi-gloss enamel.
- D. Painting in finished areas of the construction where finished coatings are applied under other divisions of work shall be performed under other Division of Work and shall include:
  - 1. All exposed hangers and supports and all exposed conduits and boxes with a coat of primer, and two (2) coats of semi-gloss enamel and all panelboards and other cabinets with two (2) coats of semi-gloss enamel.
  - 2. Concrete foundations with one (1) coat of masonry paint and one (1) coat of enamel.
  - 3. Equipment with suitable factory-applied finishes left unpainted provided Architect approval is obtained prior to beginning of painting in the area. Material and equipment that does not obtain such approval shall be primed and painted two (2) coats of enamel.
- E. Painting done shall be in colors designated by the Architect. Successive coats of paint shall be different shades.

### 3.07 CUTTING AND PATCHING

- A. Do all cutting necessary for the installation of Division 16 Work. Cutting shall be carefully and neatly done so as not to damage or cut away more than necessary.

- B. Where Division 16 workmen damage or cut away work excessively, patching will be performed as a part of Division 16 Work. Patching will be by craftsman experienced in performing this type of work.

### 3.08 NAMEPLATES

- A. Install nameplates which give contract drawing identification and electric service characteristics on equipment unless specifically indicated otherwise including switchgear, switchboards, transformers, panelboards, and main control cabinets for alarm systems. Typed directories shall be provided for branch panelboards.
- B. In each case where compartments, equipment, etc., are required to be “labeled” or “identified”, it shall be construed that nameplates are to be installed.
- C. Locate nameplates on the exterior face of the equipment so as to be clearly visible when the equipment is in place.
- D. Fasten nameplates on with screws except contact-type permanent adhesive shall be used where screws cannot or should not penetrate enclosure or substrate.

### 3.09 ELECTRICAL SERVICE CONNECTIONS

- A. All provisions for electrical power service, installation at service gutter, service feeders, current transformers and metering, and main service switches will be furnished and installed under Section 16410.
- B. Service for telephone will be extended to the main telephone board installed under the base contract and terminated in an empty conduit strapped to the telephone board.
- C. All other electrical work illustrated on the accompanying drawings and specified herein shall be included under the base contract.

### 3.10 TESTS

- A. On completion of the work, make voltage, resistance and ground tests of all wiring installed under this Contract.
- B. Such tests shall show results in accordance with the requirements of the Code. See specific items for other specific test requirements.
- C. Any defect found shall be repaired under this Contract to the satisfaction of the Architect.

### 3.11 GUARANTEE

- A. Warranty all work done and all materials and equipment furnished to be free from defects.

- B. Promptly repair or replace defective work, material and equipment without charge to the Owner at a schedule suitable to the Owner.
- C. The warranty shall be for a period of one year after acceptance for beneficial use by the Owner unless otherwise indicated elsewhere.

**END OF SECTION**