

**SECTION 16010  
ELECTRICAL GENERAL PROVISIONS**

**PART 1 GENERAL**

**1.01 - Section Includes**

- A. General Electrical Requirements.

**1.02 - Description of Work**

- A. Work shall include furnishing of all systems, equipment and material specified in this division and as called for on the electrical drawings, to include supervision, operations, methods and labor for the fabrication, installation, start-up and tests for the complete electrical installation.
- B. All elements of the construction shall be performed by workmen skilled in the particular craft involved, and regularly employed in that particular craft.
- C. All work shall be performed in a neat, workmanlike manner in keeping with the highest standards of the craft.

**1.03 - Related Work**

Refer to Bidding Information, conditions of the contract and Division 1, General Requirements, which all apply to work under this Division.

**1.04 - Quality Assurance**

- A. All work shall be done in accordance with the applicable portion of the following codes and standards:
  - 1. National Electrical Code
  - 2. Local Electrical Code
  - 3. National Fire Protection Association
  - 4. National Electrical Manufacturers Association
  - 5. International Building Code
  - 6. Utility Company Requirements
- B. All Contractors shall familiarize themselves with all codes and standards applicable to their work. No extra compensation will be allowed for corrections or changes in the work required due to Contractor's failure to comply with the applicable codes and standards. Where two or more codes or standards are in conflict, that requiring the highest order of workmanship shall take precedence, but such questions shall be referred to Engineer for final decision.
- C. Contractors shall notify the Engineer of any discrepancies between the design and applicable code requirements so that any conflicts can be resolved.

**1.05 - Electrical Drawings**

- A. Drawings for the electrical work are in part diagrammatic, and are intended to convey the scope of the work and to indicate the actual location of some equipment.
- B. Contractor shall layout his own work and shall be responsible for determining the exact locations for equipment and rough-ins and the exact routing of conduits and raceway so as to best fit the layout of the work.
- C. Contractor shall take his own field measurements for verifying locations and dimensions; scaling of the drawings will not be sufficient for laying out the work.
- D. Because of the scale of the drawings, certain basic items such as couplings, pull or splice boxes may not be shown, but where such items are required by code or by other sections of the specifications or where they are required for proper installation of the work, such items shall be furnished and installed.

**1.06 - Active Services**

- A. Contractor shall be responsible for verifying exact locations of all existing services prior to beginning work in that area.
- B. Existing active services, i.e., water, gas, sewer, electric, when encountered, shall be protected against damage. Do not prevent or disturb operation of active services that are to remain.

- C. When active services are encountered which require relocation, Contractor shall make request to authorities with jurisdiction for determination of procedures.
- D. Where existing services are to be abandoned, they shall be terminated in conformance with requirements of the utility or municipality having jurisdiction.

**1.07 - Site Inspection**

- A. Contractor shall inspect the site prior to submitting bid for work to become familiar with the conditions of the site which will affect work and shall verify points of connection with utilities, routing of outside conduit to include required clearances from any existing structures, trees or other obstacles.
- B. Extra payment will not be allowed for changes in the work required because of Contractor's failure to make this inspection.

**1.08 - Coordination and Cooperation**

- A. When applicable, it shall be the Traffic Signal Contractor's responsibility to schedule and coordinate work with the schedule of the Prime Contractor so as to progress the work expeditiously, and to avoid unnecessary delays.
- B. Traffic Signal Contractor shall fully examine the drawings and specifications for other trades and shall coordinate the installation of his work with the work of the other Contractors. Traffic Signal Contractor shall consult and cooperate with other Contractors for determining space requirements and for determining that adequate clearance is allowed with respect to his equipment and other equipment.
- C. Conflicts between the drawings and the specifications, or between the requirements set forth for the various contractors shall be called to the attention of the Engineer. If clarification is not asked for prior to the taking of bids, it will be assumed that none is required and that the Contractor is in agreement with the drawings and specifications as issued. If clarification is required after the contract is awarded, the Engineer will make such clarification and his decision will be final.
- D. Special care shall be taken for protection for all equipment. Damage from rust, paint, scratches, etc., shall be repaired as required to restore equipment to original condition.

**1.09 - Excavating and Backfilling**

- A. Contractor shall do all excavating necessary for light pole bases, underground wiring and conduit, and shall backfill trenches and excavations after work has been inspected.
- B. Backfill about the structure shall be placed, when practical, as the work of construction progresses. Backfilling on or against concrete work shall be done only when directed. Backfilling of trenches shall progress as rapidly as the testing and acceptance of the finished sections of the work will permit. Backfill shall be in accordance with Specification Section 02200.

**1.10 - Materials and Equipment**

- A. All materials and equipment shall be the standard product of a reputable U.S.A. manufacturer regularly engaged in the manufacture of the specified item. Where more than one unit is required of the same items, the same manufacturer except shall furnish them where specified otherwise.
- B. All material and equipment shall be installed in strict accordance with the manufacturer's recommendations.
- C. The equipment specifications cannot deal individually with any minute items such as parts, controls, devices, etc., which may be required to produce the equipment performance and function as specified, or as required to meet the equipment guarantees. Such items when required shall be furnished as part of the equipment, whether or not specifically called for.

**1.11 - Shop Drawings**

- A. Contractor shall furnish complete sets of shop drawings and other submittal data. Contractor shall review and sign shop drawings before submittal.
- B. Shop drawings shall be bound into sets and cover related items for a complete system as much as practical and shall be identified with symbols or "plan marks" used on drawings. Incomplete, piecemeal or unbound submittals will be rejected.

- C. Submittals required by the various sections of the Project Manual include, but are not necessarily limited to those identified in the submittal schedule below.
- D. After award of contract, the Contractor shall provide a completed submittal schedule including dates that the submittals will be to the Engineer for review.
- E. Submit required information on the following items:

Spec Section	Equipment	Detail Drawings	Product Data	Samples	Install Methods	O & M Manual	Other (See Notes)	Submittal Date By Contr.
16170	Disconnects	X	X		X	X		
16470	Panels	X	X		X	X		
16475	Overcurrent Protection Devices	X	X		X	X		
16551	Roadway Lighting	X	X		X	X		

- F. The Engineer will review shop drawings solely to assist Contractors in correctly interpreting the plans and specifications.
- G. Contract requirements cannot be changed by shop drawings that differ from contract drawings and specifications.

**1.12 - Operation and Maintenance Manuals**

- A. Operation and maintenance manuals shall be submitted to the Engineer in duplicate upon completion of the job. Manuals shall be bound in a three ring hard-backed binder. Front cover and spine of each binder shall have the following lettering done:

<p>OPERATION AND MAINTENANCE MANUAL FOR ELECTRICAL SYSTEMS</p> <p>(PROJECT NAME) (LOCATION) (DATE)</p> <p>SUBMITTED BY (NAME AND ADDRESS OF CONTRACTOR)</p>
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- B. Provide a master index at the beginning of manual showing items included. Use plastic tab indexes for sections of manual. Each section shall contain the following information for equipment furnished under this contract:
  1. Equipment and system warranties and guarantees.
  2. Installation instructions.
  3. Operating instructions.
  4. Maintenance instructions.
  5. Spare parts identification and ordering list.
  6. Local service organization, address, contact and phone number.
  7. Shop drawings with reviewed stamp of Engineer and Contractor shall be included, if applicable, along with the items listed above.
- C. Items to be included shall be those listed in shop drawing section.

**1.13 - Tests and Demonstrations**

- A. All systems shall be tested by the Contractor and placed in proper working order prior to demonstrating systems to Owner.
- B. Prior to acceptance of the electrical installation, the Contractor shall demonstrate to the Owner, or his designated representatives, all essential features and functions of all systems installed, and shall instruct the Owner in the proper operation and maintenance of such systems.

**1.14 - Permits, Fees, Etc.**

Secure all required permits and pay for all inspections required in connection with the electrical work. Contractor shall post all bonds and obtain all licenses required by the State, City, County and Utility.

**1.15 - Substitutions**

- A. Refer to Instruction to Bidders.
- B. Where substitutions are approved, Contractor assumes all responsibility for physical dimensions and all other resulting changes. This responsibility extends to cover all extra work necessitated by other trades as a result of the substitution.

**1.16 - Equals**

- A. In most cases, equipment specifications are based on a specific manufacturer's type, style, dimensional data, catalog number, etc. Listed with the base specification, either in the manual or on the plan schedules, are acceptable manufacturers approved to bid products of equal quality. These manufacturers are encouraged to submit to the Engineer at least 8 days prior to the bid due date drawings and catalog numbers of products to be bid as equals.
- B. Manufacturers that do not submit prior to bidding, run the risk of having the product rejected at time of shop drawing submittal. Extra costs associated with replacing the rejected product shall be the responsibility of the Contractor and/or the manufacturer.
- C. If the Contractor chooses to use a manufacturer listed as an equal, it shall be his responsibility to assure that the manufacturer has complied with the requirements of the contract. Contractor shall assume all responsibility for physical dimensions, operating characteristics, and all other resulting changes. This responsibility extends to cover all extra work necessitated by other trades as a result of using the alternate manufacturer.

**1.17 - Guarantee**

The entire electrical system including all sub-systems shall be guaranteed against defect in materials and installation for a minimum of one year. Any malfunctions that occur within the guarantee period shall be promptly corrected without cost to the Owner. This guarantee shall not limit or void any manufacturer's express or implied warranties.

**1.18 - Completion**

- A. Systems, at time of completion, shall be complete, efficiently operating, non-hazardous and ready for normal use by the Owner.
- B. When all the electrical work is complete the, Contractor shall thoroughly clean all material and equipment installed as a part of this contract and leave all equipment and material in new condition.
- C. The Contractor shall clean up and remove from the site all debris, excess material and equipment left during the progress of this contract at job completion.

**END OF SECTION 16010**