

SECTION 16010

GENERAL REQUIREMENTS

PART 1 - GENERAL

1.1 Description

A. This Division includes the complete installation of power, control, instrumentation, wiring, lighting, and other electrical systems as specified in the Sections of Division 16. In general, work includes, but is not limited to, the following:

1. Electrical work associated with this Project. This includes the provision and installation of grounding, power distribution, lighting, instrumentation, process equipment, and data gathering systems (SCADA System).
2. Provision and installation of wiring connections to equipment specified in this and all other divisions, unless indicated otherwise.
3. Provision and installation of wiring connections to Equipment furnished by Owner.
4. Assist electrical utility with installation of utility equipment dedicated to this project.
5. SCADA System equipment installation (PLC, Radio, Termination Cabinet, etc.)
6. All necessary SCADA System programming modifications required to make system operational.

B. Related Work Specified Elsewhere

1. All sections this Division.

1.2 References

- A.** As specified in each applicable section, this Division.
- B.** National Fire Protection Association

National Electrical Code, NFPA 70

Standard for Electrical Safety in the Workplace, NFPA 70E

- C. National Electrical Safety Code, IEEE C2.
- D. Occupational Safety and Health Administration, OSHA.

1.3 Submittals

- A. As specified in each applicable Section, this Division.

PART 2 - MATERIALS

2.1 General

- A. All equipment and materials shall be in accordance with the latest edition of the National Electrical Code (NEC) as adopted by Lake Havasu City.
- B. All equipment conductor termination provisions shall be UL listed for the conductor temperatures specified.
- C. All electrical and control equipment and material shall bear the recognized Underwriters Laboratories, Inc. (UL) seal of approval. It is Vendor's responsibility to obtain local inspection approval for all non-UL labeled equipment and pay all fees in connection with the same.

2.2 Systems to be Installed

- A. Power - 480-VAC, 3-phase, 60-Hertz, 4-wire power system.
- B. Power – 208/120-VAC, 3- phase, 60-Hertz, 4-wire power system.
- C. Grounding systems.
- D. Control systems.
- E. Underground conduit system.
- F. Instrumentation systems.
- G. Electrical utility transformer secondary conduits and wiring and metering equipment, CT cabinet, and assistance to local utility.

- H. SCADA System equipment (radio, PLC, antenna mast antenna, wiring) and programming.
- I. Temporary lighting and power facilities during construction.

2.3 Warranty

- A. All electrical equipment and workmanship shall be warranted for a minimum period of one (1) year or as designated in Section 700 of this document by the contractor. Where manufacturers' warranty exceeds the one (1) year general warranty period of the contractor, the manufacturers' extended warranty period shall be the governing factor.

PART 3 - EXECUTION

3.1 Installation

- A. As specified in each applicable section, this Division.
- B. All work shall be in accordance with the National Electrical Code (NEC) and all other applicable standards, refer to clause 1.2 above.
- C. Equipment power ratings, horsepower and kilowatt indicated are approximate. If equipment of a different size is furnished, the Contractor shall furnish and install the proper motor starter, fuses, circuit breaker, disconnect switch, wire, and conduit required for the equipment furnished, at no additional cost to the Owner.
- D. Provide temporary power to all on site construction trailers.
- E. Provide temporary power as required to support construction trades.

Note: all work, including temporary construction related activities shall be in accordance with the NEC, and all other requirements of the standards and safety codes.

3.2 Work on Existing Equipment

- A. Do not remove any Equipment from service without obtaining permission from Owner and Engineer. A minimum of 48 hours notice to be given to the Owner and Engineer by contractor before work is begun.

- B. Perform work that requires taking Equipment out of service at times designated by Owner so as to cause minimum interruption in plant operation.
- C. Continue work with as many workmen as can be efficiently used from the time any Equipment is removed from service until Equipment is tested and back in service.
- D. Connect electrical equipment to provide same phasing as existing equipment, unless otherwise specified or indicated.
- E. Any work on energized (live) equipment shall meet the requirements of NEC 2005 110.16.

3.3 Testing

- A. Test all electrical equipment upon completion of installation to ensure that the equipment operates satisfactorily and to conform to Contract Documents.
- B. Furnish temporary power source of proper type for testing purposes when normal supply is not available at the time of testing.
- C. Upon successful completion of testing and acceptance by owner provide physical protection of equipment to prevent damage.

3.4 Coordination and Scheduling

- A. Coordinate Electrical Installation with other trades to avoid interference of exposed conduit, lighting fixtures, or other equipment until all piping, pipe hangers, ducts, and equipment which are above or behind have been installed, unless release is given in specific cases by Engineer.
- B. Coordinate installation of equipment and wiring with the established construction schedule.

PART 4 - MEASUREMENT AND PAYMENT

4.1 Measurement

- A. No measurement will be made for this item.

4.2 Payment

- A.** Payment will be made at the contract lump sum price bid and shall be considered full payment for providing labor and materials to perform this work.

**** END OF SECTION 16010 ****