

SECTION 16150

MOTORS, CONTROLLERS, AND ELECTRIC POWERED EQUIPMENT

PART 1 - GENERAL

1.01 WORK INCLUDED

- A. Furnish and install all wiring necessary to completely connect all motors, electric powered equipment and electric controlled equipment that is furnished by the Owner, other Contractors, or the Divisions of Work. This includes HVAC equipment, plumbing equipment, fire protection, and similar items that are installed by others.
- B. The Owner, other Contractors, or other Divisions of the Work will furnish locations of equipment and all instructions and wiring diagrams necessary to select the materials required to install this equipment properly. Furnish and install all conduit wire boxes and common wiring materials to make the installation complete and operative.

1.02 REFERENCE DOCUMENTS

- A. The Special Provisions for Electrical Work are hereby made a part of this Section of Work. Refer to Section 16010.
- B. Refer to other Divisions of the Drawings and Specifications for information as to the scope of this work. All notations for electrical work to be "By Electrical" or "By Mechanical" or "See Electrical" or "See Mechanical" shall be deemed instructions for work in Division 16.

PART 2 - PRODUCTS

2.01 MATERIALS

- A. The Owner or other Contractors will furnish and deliver to the job site the motors, controllers, switches, and other controls for the equipment which they furnish, except as indicated otherwise.
- B. Motor controllers shall be in accordance with NEMA standards for the application; a product of a NEMA member; NEMA rated voltage, frequency and power of the motor; housed in a NEMA standard enclosure suitable for the environment of controller location; and equipped with necessary auxiliary contacts required for control and/or interlock to operate in the systems indicated. Each controller shall be equipped with an overload in each ungrounded leg selected on the nameplate full load current of the actual motor installed on the job that the device serves.

- C. Except as indicated otherwise, controllers for three phase and large single phase motors shall be magnetic, non-reversing, full voltage, across-the-line type. Combination units shall have fused switch disconnects. Manual starters shall be used for small single phase motors and shall be flush mounted toggle switch-type, trip free and trip indicating with neon pilot lights and Type 304 stainless steel cover plates.
- D. Each magnetic starter unit shall be provided with a fused 120 volt control transformer sized to handle the holding coil, pilots, etc., plus the requirements for relays, EP switches, interlocks, remote pilots and other devices as set forth for the temperature controls and operation control. Each magnetic starter unit shall be equipped as required with a hand-off-automatic switch and pilot light or a push button and pilot light, and all necessary interlocks as required to operate the equipment served by the unit and the auxiliaries and control and indication devices associated with the equipment. Pilot lights may be omitted on intermittent operating equipment such as sump pumps and sewage ejectors, but hand-off-automatic switches on these types of devices on all equipment which could be damaged by being left in the "hand" position shall be spring return from the "hand" to the "off" position.
- E. Motor controllers for reduced voltage or increment winding starting shall be as specified for the particular piece of equipment controlled. Each such controller shall match the motor and shall be equipped with proper overload protection for the device and the motor windings, a proper timer for the first step, and shall be closed transition between steps.

PART 3 - EXECUTION

3.01 INSTALLATION

- A. Set in place all controllers, switches, and control devices. Furnish and install all supports, conduit, wire, boxes and common wiring materials, etc., as required. Furnish and install all interlocks and interconnecting wiring for equipment controls and safeties and make all other electrical connections for proper operation.
- B. Furnish and install a suitable disconnect switch for each motor and electric powered equipment which does not have such a disconnect as an integral part of the equipment or which is not within sight of a feeding branch circuit protective device which meets the requirements of a disconnect.

END OF SECTION