

SECTION 230510 - HVAC ELECTRICAL EQUIPMENT AND WIRING REQUIREMENTS

PART 1 - GENERAL

1.1 STIPULATIONS

- A. The specifications sections “General Conditions of the Construction Contract”, “Special Conditions”, and “Division 1 – General Requirements” form a part of this Section by this reference thereto, and shall have the same force and effect as if printed herewith in full.
- B. The specification Section 230500 – COMMON WORK RESULTS FOR HVAC forms a part of this section and shall have the same force and effect as if printed herewith in full.

1.2 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.3 ELECTRICAL EQUIPMENT

- A. General:
 - 1. This Contractor shall furnish all motors, starters, for motors and heating coils and controls for equipment under his Contract, unless otherwise noted.
 - 2. Electrical Contractor shall install all starters, disconnects and overload protectors furnished by this Contractor and shall provide all necessary wire, conduit and boxes to properly connect equipment for this Contractor no matter how many disconnects, starters, etc. are included, unless otherwise noted.
 - 3. This Contractor shall provide all necessary conduit and control wiring to pushbuttons, thermostats, pilot lights, interlocks and similar equipment for this Contractors equipment.
 - 4. Flow control switches, thermostats and similar mechanical-electrical devices necessary for proper operation of mechanical systems shall be furnished and installed by this Contractor.
 - 5. Where the starter and/or safety switch is an integral part of the equipment assembly, the assembly shall be furnished with the wiring complete between starter, controller and motor. The Electrical Contractor will make connections to unit terminals.
 - 6. If motor control center is furnished (and installed) by Electrical Contractor for specific motors, the Mechanical Contractor shall not furnish starters for those specific motors, however the Mechanical Contractor shall furnish Electrical Contractor with starter requirements to insure proper operation of those motors.

7. All motors and motor control equipment and wiring shall meet the requirements of the NEC, and shall comply with the requirements of the Public Utility Company furnishing service and with the rules and regulations of all authorities having jurisdiction.
8. Voltage available at the building is 120/230/460 volts - three phase – four wires.
9. THIS CONTRACTOR SHALL VERIFY VOLTAGE AT SITE BEFORE ORDERING ANY ELECTRICAL EQUIPMENT.
10. The Electrical Contractor shall be responsible for proper rotation of three phase equipment.

PART 2 - PRODUCTS

2.1 CONTROL WIRING

- A. All wiring and conduit shall be according to the latest edition of the NEC. All control wiring shall be installed in EMT, applicable portions of the NEC and of "DIVISION 16 - ELECTRICAL".
- B. Low voltage control wiring in air plenums shall be a UL approved conductor for application as manufactured by Alpha or Beldon.

2.2 STARTERS/DISCONNECTS

- A. Starters shall be combination disconnect type and provided by the Electrical contractor.

PART 3 - EXECUTION

3.1 CONTROL WIRING

- A. Workmanship on all phases of control wiring shall be equal to that of the Electrical Contractor and shall be performed by competent workmen.
- B. Horizontal cable runs shall be made level. Vertical cable runs shall be made plumb. Exposed cable runs shall run parallel or perpendicular to walls and ceilings, i.e., no unsightly diagonals or bends.
- C. In building equipment spaces, cables may be run along and strapped to the surface of walls using mechanical fasteners with wire ties.
- D. Horizontal cable runs shall be supported every 12 inches, and vertical cable runs shall be supported every 24 inches. Cables will be run in a workmanlike manner parallel to the floor with all droops removed by pulling taut but without exceeding the tensile strength of the conductors.

- E. Cable runs may not be run along or fastened to: any telephone cable superstructure, including those supported from the ceiling, from the wall, or on top of the telephone equipment frames; any air handling ductwork beyond fifteen feet from the supply or return fan; any fluid or gas piping.
- F. Cables shall be concealed unless permission is otherwise solicited from the Professional and granted in writing.

3.2 RESPONSIBILITIES

- A. The following is a list of equipment provided by this Contractor and shows both this Contractor's and the Electrical Contractor's responsibility for the furnishing, installing and connection of control, disconnecting and overload equipment.
- B. The conditions under Electrical Equipment, General (above) also apply to these paragraphs.
- C. Provide to the Electrical Contractor shop drawings, product data, and manufacturer's instructions for equipment furnished under DIVISION 23.
 - 1. Roof Top Units (Outdoor)
 - a. 460 volt - 3 phase.
 - b. Starters with overload protection shall be furnished and installed by Electrical contractor.
 - c. The Electrical Contractor shall furnish, install and connect all power wiring to a fused weatherproof disconnect switch.
 - d. All wiring to the respective devices in the unit shall be factory installed by the equipment manufacturer.
 - e. Internally mounted control center with motor starters, 24 VAC control transformers and control circuit fusing shall be provided by equipment manufacturer.
 - 2. Energy Recovery Ventilators (Outdoor)
 - a. 460 volt - 3 phase.
 - b. Starters with overload protection shall be furnished and installed by Electrical contractor.
 - c. The Electrical Contractor shall furnish, install and connect all power wiring to a fused weatherproof disconnect switch.
 - d. All wiring to the respective devices in the unit shall be factory installed by the equipment manufacturer.
 - e. Internally mounted control center with motor starters, 24 VAC control transformers and control circuit fusing shall be provided by equipment manufacturer.
 - 3. Roof Exhaust Fans (Outdoor)
 - a. 120 volt - 1 phase.
 - b. Starters with overload protection shall be furnished and installed by Electrical contractor.

- c. The Electrical Contractor shall furnish, install and connect all power wiring to a fused weatherproof disconnect switch.
- d. All wiring to the respective devices in the unit shall be factory installed by the equipment manufacturer.
- e. Internally mounted control center with motor starters, 24 VAC control transformers and control circuit fusing shall be provided by equipment manufacturer.

END OF SECTION 230510