

## SECTION 23 01 90 - ELECTRIC WIRING

### PART 1 - GENERAL

#### 1.1 WORK INCLUDED

- A. Provide labor, materials, equipment and services for the complete installation of motor control wiring and temperature control wiring as required in Contract Documents. Provide wiring and conduit, required to connect devices furnished as part of or adjunctive to the automatic temperature control system and for motor control regardless of the source of supply. Control wiring includes 120 volt and lower voltage wiring for control signals directing equipment operation. Control circuits shall be 120 volt maximum. Provide wiring in accordance with requirements specified in "Electrical" and the National Electrical Code. Provide devices required for proper system operation, including special electrical switches, transformers, disconnect switches, relays, and circuit breaker protection.
- B. Coordinate all work with "Electrical".

#### 1.2 WORK NOT INCLUDED

- A. Power wiring for motors, motor starters and associated starting and control equipment, as well as the motor starters (except in the case of equipment specified to have packaged controls/starters), are included in Division 26, "Electrical," unless otherwise called for.

#### 1.3 QUALIFICATIONS

- A. Wiring installed in compliance with all requirements of Division 26, "Electrical."

#### 1.4 SUBMITTALS

- A. Provide complete wiring diagrams for equipment and systems. Deliver wiring diagrams to proper trades in time for roughing of conduit, equipment connections, and avoid delay in construction schedule. Wiring diagrams and roughing information to be wired as part of the Work of Division 26, "Electrical," shall be clearly indicated.

### PART 2 - PRODUCTS

#### 2.1 PRODUCTS

- A. Refer to Electrical specifications for required wiring materials.

### PART 3 - EXECUTION

#### 3.1 GENERAL

- A. Check electrical wiring pertaining to equipment for completeness and correctness of connections. Correct any misapplied motor and/or motor starter, improper thermal overload device, or device which fails to function and resultant damage, whether due to incorrect connections or improper information on wiring diagrams.

### **3.2 WIRING FOR CONTROL SYSTEMS**

- A. Provide motor control, temperature control and instrumentation wiring for equipment. All wiring shall be in conduit, unless otherwise noted. Refer to Electrical Specifications for type of conduit to be used in specific applications. Provide 18 in. length flexible conduit at motors and devices subject to vibration. Conduit supported on 5 ft. centers. Do not attach directly to hot surfaces, piping, or ductwork. Control wiring shall be in separate conduit from all other wiring. Provide green grounding wire circuited from starter, and run ground wire through conduit to each remote auxiliary relay, pushbutton station, remote panel heating device, thermostat, or device with potentials in excess of 50 volts. Size ground wire as required by NEC.
- B. Where allowable by Code and contract documents, temperature control wiring may be installed without conduit. Installation and wire insulation types shall be as described by NEC, Article 725. All low voltage wiring circuits 50V and under shall:
  - 1. When installed horizontally above ceilings and at mechanical room ceilings, low voltage wiring may be run without conduit. Cables shall be supported using bridle rings attached to building structure.
  - 2. All exposed wiring in occupied spaces shall be run in wall cavity or wiremold where no access is available to wall cavity.
  - 3. When installed vertically in Mechanical Rooms from panels and devices up to ceiling shall be installed in conduit.
  - 4. In locations where control wiring is being run to wall mounted sensors, the conduit within the stud wall, as well as the junction box, shall be of non-metallic construction. Carlon Flex-Plus Blue Electrical Non-metallic Tubing and Accessories, or equal.
  - 5. All cases not specifically covered by the above cases shall be run in conduit.

### **3.3 EQUIPMENT WIRING**

- A. Provide power and control wiring between sections of electric radiation units, between shipping splits, and between remote panels, thermostats, disconnect switches, and their respective units. Provide control wiring from the package control system, to each respective electric heat coil, reheat coil or motor. Properly mount control package. Power wiring to and including disconnect switch shall be by "Electrical".

### **3.4 FIELD WIRING IN STARTERS, CONTROLLERS, AND PANELS**

- A. Wiring within starters, controllers, and temperature control panels, shall be routed neatly in gutter space, away from moving and/or heat producing parts. Provide 30 ampere, 600 volt rated terminal blocks. Do not place more than two wire connections on pilot device or relay terminal. Where more than two circuit connections are required, use terminal blocks. Provide nylon self-insulated, locking type spade lugs for all control wires. Cables and wires shall be neatly bundled and lashed with nylon cable straps.

**END OF SECTION**