1. GENERAL

1.01 SECTION INCLUDES

.1 Electrical connections to equipment specified in other sections.

.2 Conduit rough-ins for future equipment.

1.02 RELATED REQUIREMENTS

.1 Division 08 – Openings.

.2 Division 11 – Equipment.

.3 Division 14 – Conveying Equipment.

.4 Division 20 – Common Mechanical Requirements.

.5 Section 20 05 13 – Common Motor Requirements for Mechanical Equipment.

.6 Division 21 – Fire Suppression.

.7 Division 22 – Plumbing.

.8 Division 23 – Heating, Ventilating, and Air Conditioning.

.9 Division 25 – Integrated Automation.

1.03 REFERENCES

.1 NEMA WD 1 - General Colour Requirements for Wiring Devices.

.2 NEMA WD 6 - Wiring Devices - Dimensional Requirements.

1.04 COORDINATION

.1 Coordinate work to Section 01 31 00.

.2 Obtain and review shop drawings, product data, and manufacturer's instructions for equipment provided under other sections.

.3 Determine connection locations and requirements.

.4 Sequence rough-in of electrical connections to coordinate with installation schedule for equipment.

.5 Sequence electrical connections to coordinate with start-up schedule for equipment.

1.05 SUBMITTALS

.1 Submit to Section 01 33 00.

.2 Product Data: Provide wiring device manufacturer's catalogue information showing dimensions, configurations, and construction.

.3 Manufacturer's Instructions: Indicate application conditions and limitations of use stipulated by Product testing agency specified under Regulatory Requirements. Include instructions for storage, handling, protection, examination, preparation, installation, and starting of Product.

1.06 REGULATORY REQUIREMENTS

.1 Provide products listed and classified by testing firm acceptable to authority having jurisdiction as suitable for purpose specified and shown.

2. PRODUCTS

2.01 COMMON MOTOR REQUIREMENTS

.1 Motors up to and including 1/3 hp, shall be 1 phase, 60 Hz, 120 V.

.2 Motors 1/2 hp and above shall be 3 phase, 60 Hz, 575 volts or 208 V.

2.02 CORDS AND CAPS

.1 Attachment Plug Construction: Conform to NEMA WD 1.

.2 Configuration: NEMA WD 6; match receptacle configuration at outlet provided for equipment.

.3 Cord Construction: NFPA 70, Type SJO multiconductor flexible cord with identified equipment grounding conductor, suitable for use in damp locations.

.4 Size: Suitable for connected load of equipment, length of cord, and rating of branch circuit overcurrent protection.

3. EXECUTION

3.01 CONDUIT PATHWAYS AND ROUGH-INS

.1 Where drawings indicate to rough-in conduits for future equipment, or equipment to be provided by the Owner, or other systems as noted on the plans, provide pull string in the conduit, and tag the conduit for the reserved future use/purpose.

.2 Where circuits breakers, disconnect switches, or other electrical distribution is provided for future equipment, tag the devices with the reserved future use/purpose.

3.02 WIRING OF EQUIPMENT PROVIDED UNDER OTHER DIVISIONS

.1 Use the following procedures for wiring of motors and equipment provided under other Divisions.

.2 The following equipment shall be responsibility of the trade supplying the equipment unless otherwise noted, in accordance with the requirements laid out in the individual section, or this division:

.1 Motors.

.2 Starters.

.3 Variable Frequency Drives.

.4 Motor Control Centres.

.5 Control wiring.

.3 In every instance, install starter, motor control centre, variable frequency drivers (VFD), etc. and wire to line side of the starter, the Motor Control Centre (MCC), or VFD. Extend wiring from starter, MCC, or VFD to motor as indicated.

.4 Provide all wiring for starters and VFD's from supply to starter to VFD and to motor. Coordinate requirements with the appropriate trade.

.5 Provide 500 mm of liquid tight flexible metal conduit for final connection to motor. Provide disconnect switches where required by code, and as indicated on the drawings.

.6 Where individual starters and controls are grouped together provide a panel for mounting this equipment. Provide a feeder, main fused disconnect and a splitter of adequate size and capacity and wire to line side of the starters on this panel and from starters to motors.

.7 Equipment, General

.1 Ascertain exact locations of starters, motor control centres, motors, etc. from drawings and coordinate exact locations with the supplying trade.

.2 Control wiring shall be the responsibility of the supplying trade.

.1 Control wiring shall be in accordance with Section 26 05 19, and Section 26 05 23.

.2 Control wiring shall be installed in conduit in accordance with Section 26 05 33.13.

.8 Doors

.1 Ascertain exact locations of door operators, push buttons, automatic sensors, and other door hardware.

.2 Provide branch circuit wiring for door operators.

.3 Provide control and control wiring for all low voltage door interconnections.

.9 Conveying Equipment (e.g. Elevators): in accordance with Section 26 05 83.14.

.10 Plumbing Equipment

.1 Ascertain exact locations of starters, motor control centres, motors, infra-red plumbing fixture controls from Mechanical Drawings and coordinate exact locations with plumbing trade.

.2 Provide branch circuit wiring and an outlet for each infra-red plumbing fixture control.

.3 Control wiring shall be the responsibility of the plumbing trade, as described above.

.11 HVAC Equipment

.1 Ascertain exact locations of starters, motor control centres, motors, motorized dampers, VAV boxes, and heating control valves from HVAC drawings and coordinate exact locations with HVAC Division.

.2 In the case of unit heaters, reheat coils and cabinet unit heaters, terminate wiring on terminals provided. Control wiring, thermostats, or other control devices shall be the responsibility of the HVAC trade, as described above.

.3 Provide branch circuit wiring and an outlet for each motorized damper, variable air volume (VAV) box, or heating control valve. Control wiring shall be the responsibility of the HVAC trade, as described above.

.4 [Provide 120 V power connections to small exhaust fans, and ceiling fans for all line voltage control devices, including but not limited to wiring through toggle switches, line voltage thermostats, countdown timer switches, or line voltage speed controllers. Refer

to mechanical drawings and schedules for control devices and coordinate requirements with HVAC Division.]

.5 Provide 120 V wiring connections to duplex receptacles integral with air handling unit control panels.

.6 Provide 120 V wiring connections to HVAC maintenance receptacles integral with roof mounted HVAC equipment.

.7 Provide 120 V wiring connections to lighting fixture/switch combinations integral with air handling units.

.12 Integrated Automation (Building Automation System)

.1 [Refer to drawing notes for requirements.]

.2 Provide 120 V wiring connections to BAS system controllers/panels and other control system or component requiring 120 V power including, but not limited to, VAV boxes, dampers, low voltage transformers, etc.

.3 From equipment as noted on drawings, extend suitable wiring in conduit from equipment contacts to designated BMS panel serving area, terminating wiring and conduit in a junction box. Leave wiring un-terminated with slack coiled length of minimum 2 m (6 ft) long. Clearly label junction box and wiring end for termination onto BMS panel by respective Mechanical Trade.

3.03 EXAMINATION

.1 Verify that equipment is ready for electrical connection, wiring, and energization.

3.04 ELECTRICAL CONNECTIONS

.1 Provide a local disconnect switch for all equipment, regardless of if a disconnect switch is shown or not shown on the plans.

.2 Make electrical connections to equipment manufacturer's instructions.

.3 Make conduit connections to equipment using flexible conduit. Use liquid-tight flexible conduit with watertight connectors in damp or wet locations.

.4 Make wiring connections using wire and cable with insulation suitable for temperatures encountered in heat producing equipment.

.5 Provide receptacle outlet where connection with attachment plug is indicated. Provide cord and cap where field-supplied attachment plug is indicated.

.6 Provide suitable strain-relief clamps and fittings for cord connections at outlet boxes and equipment connection boxes.

.7 Coolers and Freezers: Cut and seal conduit openings in freezer and cooler walls, floor, and ceilings.

.8 Install disconnect switches, controllers, control stations, and control devices as indicated.

.9 Modify equipment control wiring with terminal block jumpers as indicated.

.10 Provide interconnecting conduit and wiring between devices and equipment where indicated.

End of Section