

## **DIVISION 16 – ELECTRICAL**

### **SECTION 16100 - ELECTRICAL**

#### **PART 1 - GENERAL**

##### **SCOPE**

All electrical work as shown on the drawings and as necessary to provide a complete electrical system. Include primary service, transformers, distribution center, grounding, power and lighting panels, wiring, outlet boxes, receptacles, lighting fixtures, switches, conduits, and raceways and all accessories.

##### **QUALITY**

All work must conform to the National Electric Code, latest edition, and all other applicable codes and regulations.

##### **WARRANTY**

All work shall be warranted against defects in materials and labor for a period of one (1) year after date of Substantial Completion.

##### **SUBMITTALS**

Submit six (6) copies of shop drawings and/or brochures of all electrical equipment and materials to be incorporated into the building to the Architect for approval prior to ordering materials.

##### **COORDINATION**

Electrical contractor shall coordinate the electrical hook-up of equipment provided by others. Also, he shall coordinate the location of electrical items with other trades to prevent interference and to permit access to equipment, controls, and access boxes. All work shall be installed to allow easy removal or repair of all building equipment.

##### **OPERATION AND MAINTENANCE MANUALS**

Provide three (3) copies of the operation and maintenance manuals to the Architect at least two (2) weeks prior to completion of the work.

#### **PART 2 - PRODUCTS**

ELECTRICAL LIGHT FIXTURES

As shown on drawings.

EXHAUST FANS AND TIMER SWITCH

As shown on drawings.

## ROOF VENTILATORS

As shown on drawings.

To be provided and installed by heating and ventilation contractor and wired by electrical contractor.

## CONDUIT

Rigid, galvanized - in concrete.

Electrical Metallic Tubing (EMT) - in other locations.

Flexible Conduit - Flexible, plastic jacketed, with liquid-tight connectors.

Couplings - Set screw, liquid-tight.

Rigid P.V.C. - Schedule 40, underground locations.

Make connections to motors and equipment with PVC jacketed flexible conduit. Minimum size 1/2 inch for motor connections. Use only 3/8 inch flexible conduit for fixture and control wiring.

## BUILDING WIRE

Interior: THWN and THHN, 98 percent copper, 600 volt insulation.

Exterior: THWN, XHHW, 98 percent copper.

Conductors size #10 AWG and smaller may be stranded or solid. Conductors #8 AWG and larger shall be stranded.

## BOXES

Sheet metal boxes, Nema OS1, galvanized steel.

## WIRING DEVICES

Wall Switches - Hubbell #1221, NEMA, WD-1, specification grade, AC only, 120/277, general use snap switch, 20 amp.

Receptacles - Duplex, Hubbell #5361; GFCI, Hubbell #GF5362.

Cover Plates - Stainless steel.

## MOTOR DISCONNECTS

Square D, Class 3110, single phase (2 pole), three phase (3 pole) heavy duty, fusible, 250 or 600 volt as required, NEMA 1 for indoor and NEMA 3R for outdoor or wet locations.

## CONDUIT SUPPORTS

Galvanized conduit strap anchors.

## SWITCHBOARDS

Switchboards to meet all U.L. and NEMA Standards and NEMA Class construction. Switchboards used as service entrance shall carry U.L. label identifying it as suitable for use as service entrance equipment.

### G.E. - AV LINE

NEMA Class I, front accessible, rear aligned with group mounted devices, fully enclosed, indoor, rated 600 volts, single-phase, 3-wire service with neutral.

Main service entrance switch shall be switchboard mounted. Main switch shall be manual operation with electrical trip capability.

## PANEL BOARDS

Panel boards shall meet U.L. Standards 50 and 67 and shall bear U.L. Labels. they shall also meet NEMA Standards.

Square D, 120/208 volt, NQOD type with bolt on breakers.

Breakers shall be thermal magnetic type, quick-make, quick-break, enclosure compensated, bolt-in-type. Two and three pole breakers shall be single unit common trip. Breakers used for lighting shall be approved for that purpose and marked "SWD."

Cabinet shall be for recessed installation with rust-proof prime paint coating and finish coating of ANSI No. 61 paint. Busbars shall be 98% conductivity copper. Provide panel schedule inside face of door. Door shall have key lock. Terminal lugs shall be U.L. approved for Al/CU termination.

## **PART 3 - EXECUTION**

### WORKMANSHIP

Shall be performed in compliance with all applicable safety regulations by experienced electricians in a first class condition. All electrical equipment shall be tested and then adjusted for proper operation. Final start up of equipment shall include a complete demonstration of operation for the Owner's personnel.

For exposed runs, attach surface mounted conduit with clamps. Route all conduits parallel or perpendicular to building lines. Splice only in accessible junction or outlet boxes.

Color code conductors to designate neutral conductor and phase.

Install all conductors, connections, and splices in accordance with National Electric Code. Provide copper grounding conductors and straps.

Mount switches 48 inc. above floor and outlets at 18" above floor.

Install identification tags in all switch and outlet boxes to identify that circuit.

Provide mounting brackets, busbars drilled and tapped, and filler pieces for unused spaces.

Prepare and affix typewritten directory to inside cover of panelboard indicating loads controlled by each circuit.

Flush mounted panelboards shall have 2-3/4" spare conduits stubbed out to accessible ceiling space.

Provide and install all disconnects for mechanical equipment that do not have a disconnecting means furnished as an integral part of the equipment. Coordinate with Mechanical Contractor.

Electrical Contractor shall receive, uncrate, mount, connect and adjust electrical equipment furnished under all Sections of the Specifications. This includes controls, detached motors, controllers, starters, and electrical elements of temperature control systems.

Electrical Contractor shall set, align, and connect all separate motors, and furnish lubrication, start-up and test.

Electrical Contractor shall provide stencil nameplate for each unit he mounts and shall furnish and install required mountings.

Electrical Contractor shall complete Electrical work shown or noted on Electrical Drawings.

Electrical Contractor shall furnish and install power and control wiring associated with HVAC Temperature Control System.

**\*\*\*\*\* END OF DIVISION 16 – ELECTRICAL \*\*\*\*\***