

ITEM NO. 657.0010--25 PANELBOARDS AND CIRCUIT BREAKERS

1. DESCRIPTION:

- 1.01 This work shall consist of furnishing and installing panelboards and circuit breakers indicated on the contract drawings.

2. MATERIALS:

2.01 Panelboards

All panelboards shall be supplied for 277/480 volts, 3 phase, 4 wire, 60 hertz. A.C. Ratings shall be as shown on the Contract drawings.

All panelboards shall be NEMA 12, of the enclosed type, dead front, flush or surface mounted, in steel cabinets, No. 10 gauge, with steel trim, concealed hinges, doors and flush type locks.

All buses shall be hard-drawn copper and sized on the Basis of 1000 amperes per square inch cross-section area Buses shall be arranged for sequence phasing. Straps for breaker connections shall also be copper. Panel shall be equipped with solid copper neutral bar.

Panelboards shall be equipped with quick-make, quick-break molded case circuit breakers, of voltage required, and of size and number of poles indicated in schedules on contract Drawings. Circuit breakers shall meet the requirements of UL Standard 489.

Cabinets for new panelboards shall be of sufficient size to allow a gutter space of at least six inches on all sides around panels.

Boxes and trims shall be sheet steel and electro-galvanized or hot dipped galvanized after fabrication with prime and finish coat of gray enamel.

Trim shall be door-in-door type in one piece so designed that doors will close without a rabbet. Doors shall be fastened to a cabinet with flush butt hinges. The doors shall be constructed of No. 10 gauge stainless steel, suitably reinforced. Trims shall be fastened to a cabinet by means of approved adjusting clamps or screws. Where cabinet is flush mounted the trim shall extend 1" on all sides beyond the edge of cabinet.

A typewritten directory 5 inches by 8 inches with metal frame and plexiglass face shall be furnished and installed upon the inside of the door of each cabinet, indicating the service controlled by each circuit. Alternate phases shall be used in consecutive circuit numbering. Total load on panel shall be divided amongst all phases as evenly as possible.

Panelboards shall be as manufactured by Square D type NQOD, Siemens type Sentron S1, General Electric type AL series or equal.

2.02 Circuit Breakers

Manufactured and tested in strict conformance with the latest revisions of NEMA Standard AB 1.

Trip free, thermal-magnetic, ambient compensated, bolt-on type, quick-make, quick-break with one trip element per pole and trip rating as indicated on the Contract drawings.

For multiple breakers, quick-make, quick-break, trip-free having common trip features so that

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2. MATERIALS: (cont'd)

2.02 Circuit Breakers: (cont'd)

operation of a trip device in any of the poles will cause all poles to open regardless of the breaker operating handle being locked in the "on" position.

When the breaker handle is not locked or operated by external device it shall indicate a tripped condition.

Circuit breakers shall have thermally operated, inverse time limit, tripping elements that will not trip the breaker on harmless momentary overloads. Rapid interruption of short circuit currents accomplished with an instantaneous magnetic trip element and shall be UL listed for copper wire.

Contacts silver-plated tungsten-copper alloy, to reduce pitting and burning,

Branch circuit breaker shall conform to the following:

- a. 277/480 volt panelboard branch circuit breakers bolt-in mounted with minimum NEMA interrupting rating of 65,000 minimum amps A/C asymmetrical non-inter-changeable type.
- b. Main circuit breaker shall be Siemens type JXD6 or General Electric Type TJD or Square D Type FA or equal.

3. CONSTRUCTION DETAILS:

- 3.01 Panelboards and Circuit Breakers shall be installed at locations shown on the contract drawing. Panelboards shall be secured to the walls with approved installation hardware.
- 3.02 Mounting bolts, nuts, washers and other detail parts used for fastening the panelboards, shall be of stainless steel conforming to the requirements of the ASTM Designation A276, Type 316. Bolt heads and nuts shall be hexagonal, and shall be provided with medium series lock washers. Bolts smaller than 1/2-inch in diameter shall not be used except as may be necessary to fit the mounting holes in switches, boxes and similar standard devices.
- 3.03 Expansion anchors for fastening equipment or brackets to concrete surfaces shall be wedge type anchor bolts, which shall be locked in place by an expansion wedge as the nut is tightened. All parts of the expansion anchors shall be of Type 303 stainless steel. Holes for the anchors shall be drilled to the size and depth, recommended by the manufacturer, using carbide tipped masonry drills.

4. METHOD OF MEASUREMENT:

- 4.01 The quantity to be paid for under this item shall be the number of panelboards and circuit breakers satisfactorily installed in accordance with the plans, specifications and direction of the Engineer.

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5. BASIS OF PAYMENT:

- 5.01 The unit price bid for this item shall include the cost of all labor, materials, installation, hardware and equipment necessary to satisfactorily complete the work in accordance with the Contract Plans and Specifications. The cost of testing, and associated appurtenances shall be included in the unit price.