

Section 16470 Distribution and Branch Circuit Panelboards

Part 1 General

1.1 CONDITIONS AND REQUIREMENTS:

- A. Refer to the Drawings, General Conditions, Supplementary Conditions, and Division 01 Requirements.

1.2 DESCRIPTION

- A. Distribution panelboards.
- B. Lighting and appliance branch circuit panelboards.

1.3 References:

- A. National Electrical Manufacturers' Association (NEMA) AB1 Molded Case Circuit Breakers.
- B. NEMA PB1 Panelboards
- C. NEMA PB1.1 Instructions for Safe Installation, Operation and Maintenance of Panelboards Rated 600Volts or less.
- D. NEMA PB1.2 Application Guide for Ground-Fault Protective Devices for Equipment.

1.4 SUBMITTALS:

- A. Submit shop drawings for equipment and component devices under provisions of Section 01300.
- B. Include outline and Support point dimensions, voltage, main bus ampacity, integrated short circuit ampere rating, circuit breaker arrangement and sizes.

PART 2 PRODUCTS

2.1 DISTRIBUTION PANELBOARDS:

- A. Acceptable Manufacturers:
 - 1. Industrial Electric Mfg. (IEM)
- B. Panelboards: Per NEMA PB1, circuit breaker type.
- C. Enclosure: Per Nema PB1, Type 1 cabinet size maximum 38in. wide by 11in. deep but conforming to dimensions shown on drawings.

- C. Provide cabinet front with door over C.B.'s equipped with one flush lock.
- D. Switchboards, including all steel members and boxes, shall be painted using electro-statically applied polyester powder coated paint. Color shall be manufacture's standard gray or specific color as shown on drawings.
- E. Provide panelboards with Silver plated copper bus, 1000A per square in. Max., ratings as scheduled on drawings. Provide copper ground bus in all panelboards.
- F. Provide full height Bussing in all sections tapped to accept hardware in unused space.
- G. Provide hinged wiring gutters for easy access to load side cables.
- H. All power connections shall be torqued and marked to equipment manufacturers specification to insure structure rigidity before leaving manufacturer's assembly plant.
- I. Provide a 200% Neutral for all 120/208V Panelboards.
- J. Minimum Integrated Short Circuit Rating: At 240V and Below, 22KAIC and at 480V and below panelboards, 25KAIC, or as shown on drawings. Series rating shall not be acceptable.
- K. Molded Case Circuit Breakers: Provide circuit breaker with integral thermal and instant-magnetic trip in each pole. Provide circuit breakers Underwriters Laboratories, Inc. listed as type HACR for air conditioning equipment branch circuits, per NEMA AB1.

2.2 BRANCH CIRCUIT PANELBOARDS:

- A. Lighting and Appliance Branch Circuit Panelboards: Per NEMA PB1, Circuit Breaker Type.
- B. Enclosure: Per NEMA PB 1, Type 1.
- C. Cabinet Size: 6 in. deep by 20 in. wide.
- D. Provide flush or surface cabinet front with hinged door-in-door construction equipped with two flush locks, one on the outer trim and one on the inner trim. All locks to be keyed alike.
- E. Switchboards, including all steel members and boxes, shall be painted using electro-statically applied polyester powder coated paint. Color shall be manufacture's standard gray or specific color as shown on drawings.
- F. Provide panelboards with Silver plated copper bus (1000A per square in. max.), ratings as scheduled on drawings. Provide copper ground bus in all panelboards.
- G. Provide full height Bussing in all sections tapped to accept hardware in unused space.
- H. Minimum Integrated Short Circuit Rating: At 240V and Below, 10KAIC and at 480V and below panelboards, 14KAIC, or as shown on drawings. Series rating shall not be acceptable.

- I. Molded Case Circuit Breakers: Per NEMA AB1, bolt-on type thermal magnetic trip circuit breakers with common trip handle for all poles. Provide circuit breakers UL listed as Type SWD for lighting circuits. Provide UL Class A ground fault interrupter circuit breakers where indicated on the drawings.

PART 3 EXECUTION

3.1 INSTALLATION:

- A. [For panelboards in finished spaces,] install panelboards plumb and flush with wall finishes, in conformance with NEMA PB1.1.
- B. Height: 6-foot to top.
- C. Provide filler plates for unused spaces in panelboards.
- D. Provide type circuit directory for each branch circuit panelboard. Revise directory for each branch circuit panelboard. Revise directory to reflect circuiting changes required to balance phase loads.
- E. Stub five empty 1 in. conduits to accessible location above ceiling out of each recessed panelboard. This required is in addition to conduits required for circuits shown on drawings.

3.2 FIELD QUALITY CONTROL:

- A. Measure steady state load currents at each panelboard feeder. Should the difference at any panelboard between phases exceed [] 20 percent, rearrange circuits in the panelboard to balance the phase loads within [] 20 percent. Promptly notify the engineer. Record actual loads on each branch circuit and submit these records to the Engineer. Rearrange branch circuits as directed by the Engineer. Take care to maintain proper balancing for multi-wire branch circuits.
- B. Visual and Mechanical Inspection: Inspect for physical damage, proper alignment, anchorage and grounding. Check proper installation and tightness of connections for circuit breakers.

END OF SECTION