

SECTION 16470
PANELBOARDS

PART 1 GENERAL

1.1 SECTION INCLUDES:

- A. Service and distribution panel boards.
- B. Lighting and appliance branch circuit panel boards.

1.2 REFERENCES

- A. FS W-C-375 - Circuit Breakers, Molded Case, Branch Circuit and Service.
- B. FS W-F-870 - Fuse holders (For Plug and Enclosed Fuses).
- C. FS W-P-115 - Power Distribution Panel.
- D. FS W-S-865 - Enclosed Knife Switch
- E. NEMA AB 1 - Molded Case Circuit Breakers.
- F. NEMA KS 1 - Enclosed Switches.
- G. NEMA PB 1 - Panelboards.
- H. NEMA PB 1.1 - Instructions for Safe Installation, Operation and Maintenance of Panelboards Rated 600 Volts or less.
- I. NEMA PB 1.2 - Application Guide for Ground-fault Protective Devices for Equipment.

1.3 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 and fusible switch arrangement and sizes.

PART 2 PRODUCTS

2.1 ACCEPTABLE MANUFACTURES - PANELBOARDS

- A. Square D.
- B. General Electric.
- C. Cutler Hammer.
- D. Siemens/ITE.
- E. Westinghouse

2.2 MAIN AND DISTRIBUTION PANELBOARDS

- A. Panelboards: NEMA PB 1; circuit breaker type, fusible switch type.
- B. Enclosure: NEMA PB 1; Type as required to meet conditions of installation unless indicated on the Drawings.
- C. Provide flush lock in hinged door(s). Covers to be finished in manufacturer's standard enamel color.
- D. Provide panel boards with copper bus, ratings as scheduled on Drawings. Provide copper ground bus in all panel boards.
- E. Minimum Integrated Short Circuit Rating: 10,000 amperes rms symmetrical for 208 volt panel boards; 14,000 amperes rms symmetrical for 480 volt panel boards, or as shown on Drawings.

- F. Fusible Switch Assemblies: NEMA KS 1; quick-make, quick-break, load interrupter enclosed knife switch with externally operable handle. Provide interlock to prevent opening front cover with switch in ON position. Handle lockable in OFF position. Fuse Clips: Designed to accommodate Class R fuses, type as specified.
- G. Molded Case Circuit Breakers: NEMA AB 1; provide circuit breakers with integral thermal and instantaneous magnetic trip in each pole. Provide circuit breakers UL listed as Type HACR for air conditioning equipment branch circuits.
- H. Molded Case Circuit Breakers with Current Limiters: NEMA AB 1; provide circuit breakers with replaceable current limiting elements, in addition to integral thermal and instantaneous magnetic trip in each pole.
- I. Current Limiting Molded Case Circuit Breakers; NEMA AB 1; provide circuit breakers with integral thermal and instantaneous magnetic trip in each pole, coordinated with automatically resetting current limiting elements in each pole. Interrupting rating 100,000 symmetrical amperes, let-through current and energy level less than permitted for same size Class RK-5 fuse.
- J. Breakers to have bolted bus connections.

2.3 BRANCH CIRCUIT PANELBOARDS

- A. Lighting and Appliance Branch Circuit Panelboards: NEMA PB1; circuit breaker type.
- B. Enclosure: NEMA PB 1; Type 1 or Type 3R.
- C. Provide applicable cabinet front with concealed trim clamps, concealed hinge and flush lock all keyed alike. Finish in manufacturer's standard enamel.
- D. Provide panel boards with copper bus, ratings as scheduled on Drawings. Provide copper ground bus in all panel boards.
- E. Minimum Integrated Short Circuit Rating: 10,000 amperes rms symmetrical for 208 volt panel boards; 14,000 amperes rms symmetrical for 480 volt panel boards, or as shown on Drawings.
- F. Molded Case Circuit Breakers: NEMA AB 1; bolt-on type thermal magnetic trip circuit breakers, with common trip handle for all poles.
- G. Current Limiting Molded Case Circuit Breakers: NEMA AB 1; provide bolt-on type circuit breakers with integral thermal and instantaneous magnetic trip in each pole, coordinated with automatically resetting current limiting elements in each pole. Interrupting rating 100,000 symmetrical amperes, let-through current and energy level less than permitted for same size Class RK-5 fuse.
- H. Do not use tandem circuit breakers.
- I. Use full width, breakers.
- J. Breakers for kitchen equipment shall have permanent padlock breaker locks.
- K. Provide a neutral conductor to every panel board.

PART 3 EXECUTION

3.1 INSTALLATION

- A. Install panel boards plumb and flush with wall finishes where recessed, in conformance with NEMA PB 1.1.
- B. Height: 6' maximum.
- C. Provide filler plates for unused spaces in panel boards.
- D. Provide typed circuit directory for each branch circuit panel board. Revise directory to reflect circuiting changes required to balance phase loads.

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- E. Provide two- 1" spare conduits from recessed and one 1" spare conduit from surface panel boards into the closest suspended acoustical ceiling.

3.2 FIELD QUALITY CONTROL

- A. Measure steady state load currents at each panel board feeder. Should the difference at any panel board between phases exceed 15%, rearrange circuits in the panel board to balance the phase loads within 15%. Take care to maintain proper phasing 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, fusible switches, and fuses.

END OF SECTION