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.

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.
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