PART 1 - GENERAL

1.01 WORK INCLUDED

1. Distribution Panelboards
2. Lighting and Appliance Branch Circuit Panelboards

1.02 REFERENCES

1. FS W-C-375—Circuit Breakers, Molded Case, Branch Circuit and Service
2. FS W-P-115—Power Distribution Panel
3. NEMA PB 1—Panelboards
4. NEMA PB 1.1—Instructions for Safe Installation, Operation and Maintenance of
5. Panelboards Rated 600 Volts or Less.
6. NEMA PB 1.2—Application Guide for Ground-fault Protective Devices for Equipment.

1.03 SUBMITTALS

A. Submit shop drawings for equipment and component devices under provisions of Division 01.

B. Include outline and support point dimensions, voltage, main bus ampacity, integrated short circuit ampere rating, circuit breaker arrangement, and sizes.

1.04 SPARE PARTS

Keys: Furnish five (5) each to Owner [one (1) for Electrical Manager in Maintenance Department].

PART 2 - PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS—PANELBOARDS

1. Square D
2. Cutler Hammer
3. Siemens
4. General Electric
5. Substitutions: Under provisions of Division 01

2.02 GENERAL

A. All panelboards and circuit breakers shall be fully rated for available fault current.

B. All panelboards shall be MCB type. No MLO panelboards shall be accepted. Any exceptions shall be prior approved by Owner.

2.03 DISTRIBUTION PANELBOARDS

A. Panelboards: NEMA PB 1; bolted circuit breaker type.

B. Provide cabinet front with concealed trim clamps and hinged door with flush lock. Finish in manufacturer's standard gray enamel.

C. Provide panelboards with copper bus, ratings as scheduled on drawings. Provide copper ground bus in all panelboards.

D. Minimum Integrated Short Circuit Rating: As shown on drawings.

E. Molded Case Circuit Breakers: NEMA AB-3; 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.

F. Current Limiting Molded Case Circuit Breakers: NEMA AB-3, Federal Specification WC-375; 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.

2.04 BRANCH CIRCUIT PANELBOARDS

A. Lighting and Appliance Branch Circuit Panelboards: NEMA PB1; bolted circuit breaker type.

B. Enclosure: NEMA PB 1; Type 1 or 3 R as shown on drawings

C. Cabinet Size: 6 inches deep

D. Provide flush or surface cabinet front with concealed trim clamps, concealed hinge, and flush lock all keyed alike. Finish in manufacturer's standard gray enamel. Panelboards to have hinge-type interior access.

E. Provide panelboards with copper bus, ratings as scheduled on drawings. Provide copper ground bus in all panelboards.

F. Minimum Integrated Short Circuit Rating: 10,000 amperes rms symmetrical for 240 volt panelboards; 14,000 amperes rms symmetrical for 480 volt panelboards, or as shown on drawings. These ratings may be lowered by short circuit calculations performed by manufacturer stating actual A.I.C. ratings throughout entire system.

G. Molded Case Circuit Breakers: NEMA AB-3; 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 scheduled on drawings.

H. Current Limiting Molded Case Circuit Breakers: FS W-C-375; 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.

1. All multi-pole breakers shall have factory installed common trip handle ties.

J. List available fault current. Furnish and install arc flash warning label as per National Electrical Code (NEC) Articles 110.16 and 110.21.

2.05 EXISTING BRANCH CIRCUIT PANELBOARDS

A. Distribution, Lighting, and Appliance Branch Circuit Panelboards: NEMA PB1; bolted circuit breaker type or plug-in circuit breaker type to match existing.

B. Minimum Integrated Short Circuit Rating: Match existing rms symmetrical amperes in existing panels.

C. Molded Case Circuit Breakers: FS W-C-375; bolt-on or plug-in 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 scheduled on drawings.

PART 3 - EXECUTION

3.01 INSTALLATION

A. Install panelboards plumb [and flush with wall finishes], in conformance with NEMA PB 1.1.

B. Height: 6 feet 6 inches

C. Provide filler plates for unused spaces in panelboards.

D. Provide typed circuit directory for each branch circuit panelboard by building and room FISH number, new or existing. Revise directory to reflect circuiting changes required to balance phase loads. Trace out all circuits in existing panelboards to indicate an accurate directory per new space changes and room numbers. Indicate type of load served.

E. Stub three (3) empty ¾" conduits and two (2) empty 1" conduits to accessible location above ceiling out of each recessed panelboard. Install duct tape in ends of conduits to prevent insects and rodents from entering panelboard.

F. Panelboards/switchboards shall be provided with a minimum of 20% spare spacing for future additions.

G. All panelboards shall have built in locks and keys provided.

H. Load centers shall not be permitted.

I. Branch circuits/conductors originating from different panelboards shall not be in same raceway(s).

J. Panelboards shall not be used as raceways.

K. Install lightning surge protector per manufacturer's recommendations on all service entrances, as shown on drawings, and connect to ground bus.

L. Install in accordance with manufacturer's instructions and per NEC 110.26.

M. Install arc flash hazard labels on all panels.

3.02 FIELD QUALITY CONTROL

A. Measure steady state load currents at each panelboard feeder. Should the difference at any panelboard between phases exceed twenty percent (20%), rearrange circuits in the panelboard to balance the phase loads within twenty percent (20%). 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.

**END OF SECTION**