SECTION 26 24 16

PANELBOARDS

PART 1 GENERAL

1.01 SUMMARY

A. Section includes distribution and branch circuit panelboards.

B. Related Sections:

1. Division 26 - Grounding and Bonding for Electrical Systems.
2. Division 26 - Identification for Electrical Systems.
3. Division 26 - Fuses.

1.02 REFERENCES

A. Institute of Electrical and Electronics Engineers:

1. IEEE C62.41 - Recommended Practice on Surge Voltages in Low-Voltage AC Power Circuits.

B. National Electrical Manufacturers Association:

1. NEMA AB 1 - Molded Case Circuit Breakers and Molded Case Switches.
2. NEMA FU 1 - Low Voltage Cartridge Fuses.
3. NEMA ICS 2 - Industrial Control and Systems: Controllers, Contactors, and Overload Relays, Rated Not More Than 2000 Volts AC or 750 Volts DC.
4. NEMA ICS 5 - Industrial Control and Systems: Control Circuit and Pilot Devices.
5. NEMA KS 1 - Enclosed and Miscellaneous Distribution Equipment Switches (600 Volts Maximum).
6. NEMA PB 1 - Panelboards.
7. NEMA PB 1.1 - General Instructions for Proper Installation, Operation, and Maintenance of Panelboards Rated 600 Volts or Less.

C. International Electrical Testing Association:

1. NETA ATS - Acceptance Testing Specifications for Electrical Power Distribution Equipment and Systems.

D. National Fire Protection Association:

1. NFPA 70 - National Electrical Code.

E. Underwriters Laboratories Inc.:

1. UL 67 - Safety for Panelboards.

1.03 SUBMITTALS

A. Division 01 - Submittal Procedures: Requirements for submittals.

B. Submit shop drawings after Overcurrent Protective Device Coordination Study, Division 26, is approved. Shop drawings submitted without approved study will be returned and not reviewed.

C. AIC ratings shown on the single line diagrams are approximate values only. The AIC ratings of all submitted equipment must conform to the approved Short Circuit and Overcurrent Protective Device Coordination Study.

D. The Developer/Design Builder's electrical contractor shall submit 1/4”=1’0” scale sketches of all electrical rooms and areas including actual dimensions of all equipment in electrical rooms and indicate clearances per CEC, as well as door swings or other obstacles. Sketches shall be submitted along with or prior to shop drawing submittals. Shop drawing submittal without sketches shall be returned and not reviewed.

E. Shop Drawings: Indicate outline and support point dimensions, voltage, main bus ampacity, integrated short circuit ampere rating, circuit breaker and fusible switch arrangement and sizes.

F. Manufacturer's Installation Instructions: Indicate application conditions and limitations of use stipulated by Product testing agency. Include instructions for storage, handling, protection, examination, preparation, installation, and starting of Product

G. Product Data: Submit catalog data showing specified features of standard products.

H. Manufacturer shall provide special seismic certification with submittal.

1.04 CLOSEOUT SUBMITTALS

A. Division 01 - Execution and Closeout Requirements: Requirements for submittals.

B. Project Record Documents: Record actual locations of panelboards and record actual circuiting arrangements.

C. Operation and Maintenance Data: Submit spare parts listing and recommended maintenance procedures and intervals.

1.05 QUALIFICATIONS

A. Manufacturer: Company specializing in manufacturing products specified in this section with minimum five years documented experience.

1.06 MAINTENANCE MATERIALS

A. Division 01 - Execution and Closeout Requirements: Requirements for maintenance products.

B. Furnish two of each panelboard key.

PART 2 PRODUCTS

2.01 DISTRIBUTION PANELBOARDS

A. Manufacturers:

1. Eaton Electric / Cutler Hammer Products
2. Siemens
3. Square D
4. Substitutions: Not Permitted.

B. Product Description: NEMA PB 1, circuit breaker type panelboard.

C. Panelboard Bus: Copper, current carrying components, ratings as required to complete the work. Furnish copper ground bus in each panelboard. Provide isolated ground bus.

D. Minimum integrated short circuit rating: As determined by Overcurrent Protective Device Coordination Study (Division 26).

E. Molded Case Circuit Breakers: NEMA AB 1, circuit breakers with integral thermal and instantaneous magnetic trip in each pole. Provide circuit breakers UL listed as type HACR for heating, air conditioning and refrigeration branch circuits.

F. Circuit Breaker Accessories: Trip units and auxiliary switches as required to complete the work.

G. Enclosure: NEMA PB 1, Type 1, cabinet box, indoor. Type 3R outdoor.

H. Cabinet Front: Surface door-in-door type, fastened with screws, hinged door with flush lock, metal directory frame, finished in manufacturer's standard grey enamel.

2.02 BRANCH CIRCUIT PANELBOARDS

A. Manufacturers:

1. Eaton Electric / Cutler Hammer Products
2. Siemens
3. Square D
4. Substitutions: Not Permitted.

B. Product Description: NEMA PB1, circuit breaker type, lighting and appliance branch circuit panelboard.

C. Panelboard Bus: Copper, current carrying components, ratings as required to complete the work. Furnish copper ground bus in each panelboard; furnish isolated ground bus as required.

D. Minimum Integrated Short Circuit Rating: As indicated by Overcurrent Protective Device Coordination Study Division 26).

E. Molded Case Circuit Breakers: NEMA AB 1, bolt-on type thermal magnetic trip circuit breakers, with common trip handle for all poles, listed as Type SWD for lighting circuits, Type HACR for heating, air conditioning and refrigeration equipment circuits, Class A ground fault interrupter circuit breakers. Do not use tandem circuit breakers.

F. Enclosure: NEMA PB 1, Type 1 Indoor. Type 3R Outdoor.

G. Cabinet Box: 6 inches deep, 20 inches wide for 240 volt and less panelboards, 20 wide for 480 volt panelboards.

H. Cabinet Front: Flush cabinet front with concealed trim clamps, concealed hinge, metal directory frame, and flush lock keyed alike. Finish in manufacturer's standard gray enamel.

PART 3 EXECUTION

3.01 INSTALLATION

A. Install panelboards and load centers in accordance with NEMA PB 1.1.

B. Install panelboards and load centers plumb.

C. Install recessed panelboards and load centers flush with wall finishes.

D. Height: 6 feet to top of panelboard and load center; install panelboards taller than 6 feet with bottom no more than 4 inches above floor.

E. Install filler plates for unused spaces in panelboards.

F. Provide typed circuit directory for each branch circuit panelboard and load center. Revise directory to reflect circuiting changes to balance phase loads.

G. Install engraved plastic nameplates in accordance with Division 26.

H. Install spare conduits out of each recessed panelboard to accessible location above ceiling. Minimum spare conduits: 5 empty 3/4 inch. Identify each as SPARE.

I. Ground and bond panelboard enclosure according to Division 26. Connect equipment ground bars of panels in accordance with NFPA 70.

3.02 FIELD QUALITY CONTROL

A. Division 01 - Quality Requirements and Execution and Closeout Requirements: Field inspecting, testing, adjusting, and balancing.

B. Inspect and test in accordance with NETA ATS, except Section 4.

C. Perform circuit breaker inspections and tests listed in NETA ATS, Section 7.6.

D. Perform switch inspections and tests listed in NETA ATS, Section 7.5.

E. Perform controller inspections and tests listed in NETA ATS, Section 7.16.1.

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E. Perform controller inspections and test listed in NETA ATS, Section 7.16.1.

F. Maintain one copy of each document on site.

G. Visual and Mechanical Inspection: Inspect for physical damage, proper alignment, anchorage and grounding. Check proper installation and tightness of connections fir circuit breakers, fusible switches, and fuses.

3.04 ADJUSTING

A. Division 01 - Execution and Closeout Requirements: Requirements for starting and adjusting.

END OF SECTION