

**SECTION 262416
PANELBOARDS**

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes provision of power distribution, lighting and receptacle panelboards, complete with overcurrent devices and accessories, as specified and indicated.

1.3 REFERENCES

- A. American National Standards Institute, Inc. (ANSI)
 - 1. NECA 407 – Recommended Practice for Installing and Maintaining Panelboards.
- B. National Electrical Manufacturers Association (NEMA)
 - 1. AB 1 - Molded Case Circuit Breakers and Molded Case Switches.
 - 2. KS 1 - Enclosed Switches.
 - 3. PB 1 - Panelboards
- C. Underwriters Laboratories Inc. (UL)
 - 1. 50 - Enclosures for Electrical Equipment.
 - 2. 67 - Panelboards.
 - 3. 98 - Enclosed and Dead-Front Switches.
 - 4. 489 - Molded-Case Circuit Breakers and Circuit-Breaker Enclosures.
 - 5. 869A - Reference Standard for Service Equipment.

1.4 SUBMITTALS

- A. Product Data: Submit manufacturer's technical product data for each type of panelboard provided.
- B. Shop Drawings: Submit dimensioned drawings of panelboards including elevations of power and distribution panelboards.
- C. Quality Control Submittals: Submit results of specified field tests.

PART 2 - PRODUCTS

2.1 LIGHTING AND RECEPTACLE PANELBOARDS

- A. Manufacturers:
 - 1. Panelboards rated 240V max.:
 - a. Siemens Energy & Automation, Inc.: P1-P3
 - b. Cutler-Hammer: Pow-R-Line 1a
 - c. GE Company, GE Industrial Systems: AL
 - d. Square D: NQOD

- e. Eaton
- 2. Panelboards rated 480/277V:
 - a. Siemens Energy & Automation, Inc.: P1-P3
 - b. Cutler-Hammer: Pow-R-Line 3a
 - c. GE Company, GE Industrial Systems: AE
 - d. Square D: NF, I Line

B. General:

- 1. Provide dead-front, safety-type, 60-hertz panelboards suitable for voltages, phases, and wires as indicated.
- 2. Comply with the applicable requirements of NEMA PB 1 and UL 50 and 67.
- 3. Provide minimum integrated equipment short circuit rating of 10,000 amperes RMS symmetrical at 240 volts for 240V maximum panelboards and 14,000 amperes RMS symmetrical at 277 volts for 480/277V panelboards unless otherwise indicated.

C. Enclosure:

- 1. Provide code gage, 316 stainless steel cabinet type enclosure with trim and door suitable for mounting condition indicated as specified.
- 2. Provide panelboard front with concealed trim clamps, door with concealed hinges and flush stainless steel lock. Key locks alike.
- 3. Provide a metal circuit directory frame and card with a clear plastic cover attached to the inside of the panel front door. Provide minimum 6-mm-high (1/4-inch-high) by 75-mm-long (3-inch-long) space for each pole position, including spares and spaces, on the card.

D. Bus System:

- 1. Provide copper bus with current ratings and main lugs or circuit breaker as indicated.
- 2. Provide fully rated bus system that extends the full height of the panelboard enclosure.
- 3. Provide branch circuit breaker bus connections of the distributed phase sequence type.
- 4. Provide full ampacity, insulated neutral bus with suitable lugs for each pole position.
 - a. Where indicated, provide 200 percent ampacity for 120/208 volt panelboards with suitable lugs for incoming main feeder with double neutral.
- 5. Provide copper ground bus.
 - a. Provide a separate isolated ground bus for panelboards indicated as isolated ground panelboards.

E. Circuit Breakers:

- 1. Provide circuit breakers, of size and type indicated, which comply with NEMA AB 1 and UL 489.
- 2. Provide bolt-on type, thermal magnetic trip, molded-case circuit breakers with common trip handle for all poles.
- 3. Provide UL Class A ground fault interrupter circuit breakers as indicated.

4. Provide pole positions indicated as "spare" with circuit breakers of the number of poles and trip ampacities indicated.
Provide pole positions indicated as "space" with bus connections ready for insertion of circuit breakers of the number of poles and ampacities indicated.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. General:
 1. Install and test panelboards in accordance with ANSI NECA 407.
 2. All mounting hardware shall be stainless steel or approved equivalent.
 3. Surface or flush mount panelboards as indicated on drawings.
 4. Align, level and securely fasten panelboards to the building.
 5. Connecting raceways shall not be used to support the panelboards.
 6. Plug unused panelboard openings.
 7. Install trim plumb and square.
 8. Provide flush mounted panels with 3 spare 1-inch conduits stubbed and capped 12 inches above the finished ceiling or 12 inches below the bottom of structure in areas with no finished ceilings.
 9. Inspect panel interior, remove foreign material and debris, and tighten all connections. Neatly arrange wiring in the gutter. Temporarily secure heavy cardboard panel to front of panelboard to protect interior from dirt or damage until permanent metal front is installed.

3.2 FIELD QUALITY CONTROL

- A. Field Tests:
 1. Operate main and branch devices to insure proper mechanical operation.
 2. Verify proper connection of wire terminations.
 3. Perform the following infrared scan tests and inspections and prepare reports:
 - a. Initial Infrared Scanning: After Substantial Completion, but not more than 60 days after Final Acceptance, perform an infrared scan of each panelboard. Remove front panels so joints and connections are accessible to portable scanner.
 - b. Follow-up Infrared Scanning: Perform an additional follow-up infrared scan of each panelboard 11 months after date of Substantial Completion.
 - c. Instruments and Equipment: Use an infrared scanning device designed to measure temperature or to detect significant deviations from normal values. Provide calibration record for device.

**END OF SECTION 262416
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