

SECTION 26 28 23

ENCLOSED CIRCUIT BREAKERS

PART 1 GENERAL

1.01 SUMMARY

- A. Section includes molded-case and insulated-case circuit breakers in individual enclosures.

1.02 REFERENCES

- A. National Electrical Manufacturers Association:
 - 1. NEMA AB 1 - Molded Case Circuit Breakers and Molded Case Switches.
- B. International Electrical Testing Association:
 - 1. NETA ATS - Acceptance Testing Specifications for Electrical Power Distribution Equipment and Systems.

1.03 SUBMITTALS

- A. Division 01 - Submittal Procedures: Submittal procedures.
- B. Submit shop drawings after Short Circuit and 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 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. Product Data: Submit catalog sheets showing ratings, trip units, time current curves, dimensions, and enclosure details.
- F. Manufacturer's Installation Instructions: Indicate application conditions and limitations of use stipulated by Product testing agency specified under Regulatory Requirements. Include instructions for storage, handling, protection, examination, preparation, installation, and starting of Product.
- G. Manufacturer shall provide special seismic certification with submittal.

1.04 CLOSEOUT SUBMITTALS

- A. Division 01 - Execution and Closeout Requirements: Closeout procedures.
- B. Project Record Documents: Record actual locations and continuous current ratings of enclosed circuit breakers.

1.05 QUALIFICATIONS

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

PART 2 PRODUCTS

2.01 MOLDED CASE CIRCUIT BREAKER

- A. Manufacturers:
 - 1. Eaton Electric – Cutler-Hammer Products
 - 2. Square D
 - 3. Siemens
 - 4. Substitutions: Not Permitted.
- B. Product Description: Enclosed, molded-case circuit breaker conforming to NEMA AB 1 and FS W-C-375.
- C. Configuration: Inverse time automatic tripping.
- D. Field-Adjustable Trip Circuit Breaker: Circuit breakers with frame sizes 400 amperes and larger have mechanism for adjusting long time, short time and instantaneous setting for automatic operation.
- E. Field-Changeable Ampere Rating Circuit Breaker: Circuit breakers with frame sizes 400 amperes and larger have changeable trip units.
- F. Current Limiting Circuit Breaker: Circuit breaker indicated as current-limiting have automatically-resetting current limiting elements in each pole. Let-through Current and Energy: Less than permitted for same size Class RK-5 fuse.
- G. Solid-State Circuit Breaker: Electronic sensing, timing, and tripping circuits for adjustable current settings; instantaneous trip; and adjustable short time trip; ground fault trip with integral ground fault sensing as required to complete the work.
- H. Accessories: Conform to NEMA AB 1.
 - 1. Shunt Trip Device: 120 volts, AC.
 - 2. Undervoltage Trip Device: 120 volts, AC.
 - 3. Auxiliary Switch: 120 volts, AC.
 - 4. Alarm Switch: 120 volts, AC.
 - 5. Electrical Operator: 120 volts, AC.
 - 6. Handle Lock: Provisions for padlocking.
 - 7. Insulated Grounding Lug: In each enclosure.
- I. Enclosure: NEMA AB 1, to meet conditions. Fabricate enclosure from steel finished with manufacturer's standard gray enamel polyester plastic.
 - 1. Interior Dry Locations: Type 1.
 - 2. Exterior Locations: Type 3R.
- J. Terminal Lugs Size: NEMA AB1. Suitable for copper or aluminum conductors as required to complete the work. Oversize to accommodate oversized feeders.
- K. Provide circuit breakers, UL listed, as Type HACR for heating, air conditioning and heating branch circuits.

2.02 INSULATED CASE CIRCUIT BREAKER

- A. Manufacturers:
 - 1. Eaton Electric – Cutler-Hammer Products
 - 2. Square D
 - 3. Siemens
 - 4. Substitutions: Not Permitted.

- B. Product Description: Enclosed, molded-case circuit breaker conforming to NEMA AB 1 and FS W-C-375.
- C. Trip Unit: Electronic sensing, timing, and tripping circuits for adjustable current settings; instantaneous trip; and adjustable short time trip ground fault trip with integral ground fault sensing as required to complete the work per program.
- D. Accessories: Conform to NEMA AB 1.
 - 1. Shunt Trip Device: 120 volts, AC.
 - 2. Undervoltage Trip Device: 120 volts, AC.
 - 3. Auxiliary Switch: 120 volts, AC.
 - 4. Alarm Switch: 120 volts, AC.
 - 5. Electrical Operator: 120 volts, AC.
 - 6. Handle Lock: Provisions for padlocking.
 - 7. Insulated Grounding Lug: In each enclosure.
- E. Enclosure: NEMA AB 1, to meet conditions. Fabricate enclosure from steel finished with manufacturer's standard gray enamel polyester plastic.
 - 1. Interior Dry Locations: Type 1.
 - 2. Exterior Locations: Type 3R.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that surfaces are ready to receive work.
- B. Verify field measurements and coordinate with the work.
- C. Verify that required utilities are available, in proper location and ready for use.
- D. Beginning of installation means that installer accepts conditions.

3.02 INSTALLATION

- A. Install enclosed circuit breakers plumb. Provide supports in accordance with Division 26.
- B. Height: 5 feet to operating handle.
- C. Locate and install engraved plastic nameplates in accordance with Division 26.

3.03 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 inspections and tests listed in NETA ATS, Section 7.6.1.1.

3.04 ADJUSTING

- A. Division 01 - Execution and Closeout Requirements: Testing, adjusting, and balancing.
- B. Adjust trip settings per Short Circuit Overcurrent Protective Device Coordination Study, Division 26.

END OF SECTION