

## **Design Standard Enclosed Switches**

### **Purpose:**

This design standard has the purpose of creating a consistent application of enclosed switches throughout the East Side Union High School District, therefore achieving a standard of maintenance, reliability and quality throughout all renovation and new building projects.

### **Design Standard:**

Enclosed switches include but are not limited to:

- Manual motor starters
- Toggle type disconnect switches
- Safety switches

All circuit and motor disconnects are to meet the following requirements based on Code requirements and industry standard of care:

- Provide disconnect switch in sight of each motor location unless otherwise noted.
- Motors within sight of and not more than 20 feet from motor branch circuit device do not require a disconnect switch at the motor. Provide locking device on circuit protective device.
- Provide disconnect switch in sight of each motor controller. Motor controller disconnect equipped with lock-out/tag-out padlock provisions do not require a disconnect switch at the controlled motor location.
- Recessed fractional horsepower exhaust ceiling or wall fan units; no disconnect switch required at motor if unit is recessed.
- Switches disconnect phase legs.
- Coordinate fuse ampere rating with installed equipment. Fuse ampere rating variance between original design information and installed equipment, size in accordance with Bussmann Fusetron 40C recommendations. Do not provide fuses of lower ampere rating than motor starter thermal units.
- For toggle type disconnect switches:
  - i) Rating: 120 volt, 1 pole, 20 amp, 1 HP maximum.
  - ii) Enclosure: NEMA 1 indoors, NEMA 3R raintight outdoors.
- For manual motor starters:
  - i) Characteristics:
    - a. Quick-make, quick-break.
    - b. Thermal overload protection.
    - c. Clearly label device for maximum voltage, current and horsepower.
    - d. Square D, Class 2510.

- ii) Enclosure: NEMA 1 indoors, NEMA 3R raintight outdoors.
- For safety switches:
  - i) Heavy duty, fused type, dual rated, quick-make, quick-break with fuse rejection feature for use with Class R fuses only, unless other fuse type is specifically noted.
  - ii) Enclosures: NEMA 1 indoors, NEMA 3R raintight outdoors.
  - iii) Switches clearly marked for maximum voltage, current and horsepower.
  - iv) Equip enclosure with defeatable cover interlock.
  - v) Switches rated for maximum available fault current.
- For combination starters:
  - i) Heavy duty, fused type, dual rated, quick-make, quick-break with fuse rejection feature for use with Class R fuses only, unless other fuse type is specifically noted.
  - ii) Enclosures: NEMA 1 indoors, NEMA 3R raintight outdoors.
  - iii) Clearly mark switches for maximum voltage, current and horsepower.
  - iv) Provide coil voltage coordinated with control requirements.
  - v) Provide thermal overload units sized to equipment nameplate rating.
  - vi) Provide one N.C. and one N.O. auxiliary contacts.
  - vii) Provide prewired hand/off/auto switch and start button.

### **Approved Manufacturers:**

- Manual Motor Starters:
  - Eaton Electrical
  - Siemens
  - Square D
  - Schneider
- Toggle Type Disconnect Switches:
  - Square D
- Safety Switches:
  - Square D

### **Substitutes Allowed:**

- Manual Motor Starters: Yes, if performance and quality equivalency can be evidenced.
- Disconnect Switches and Safety Switches: No substitutes allowed.

Pursuant to Section 3400 of the Public Contract Code: Square D disconnect and safety switches are now in use on the particular public improvement described as

East Side Union High School District. At each instance in these specifications that a disconnect and/or safety switch is designated by the brand name “Square D”, that product is designated to support the existing electrical distribution system that is in place at East Side Union High School District. The Contractor will furnish and apply only “Square D” disconnect and/or safety switch as required, and no substitutions shall be deemed to be “or equal” or allowed.

### **Associated Design Standards and Construction Specifications:**

- Division 26 Electrical Design Standards

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