

## **SECTION 26 28 18**

### **ENCLOSED SWITCHES**

#### **PART 1 - GENERAL**

##### **1.1 RELATED DOCUMENTS:**

- A. The Conditions of the Contract and applicable requirements of Divisions 0 and 1 and Section 26 00 01, "Electrical General Provisions", govern this Section.

##### **1.2 DESCRIPTION OF WORK:**

- A. Work Included: Provide safety and disconnect switch work as shown, scheduled, indicated, and as specified.
- B. Types: The types of safety and disconnect switches required for the project include, but are not limited to, equipment disconnects and motor-circuit disconnects.

##### **1.3 STANDARDS:**

- A. Products shall be designed, manufactured, tested, and installed in compliance with the following standards:
  - 1. Federal Spec. W-S-865 Switch, Box (Enclosed), Surface-Mounted.
  - 2. NEMA KS 1 Enclosed Switches.

##### **1.4 QUALITY ASSURANCE:**

- A. Manufacturers: Provide products complying with these specifications and produced by one of the following:
  - 1. Cutler-Hammer, Inc.
  - 2. Eaton.
  - 3. General Electric Company.
  - 4. Siemens.
  - 5. Square D Company.
- B. UL-Label: Safety and disconnect switches must have Underwriters' Laboratories, Inc., approval and bear the UL label.

##### **1.5 SUBMITTALS:**

- A. Shop drawing submittals shall include, but not be limited to, the following:
  - 1. Cut sheets of the safety and disconnect switches with ratings, voltage, poles, capacity, horsepower, short circuit rating, and all associated accessories clearly indicated.
  - 2. Include dimensioned drawings of electrical safety and disconnect switches which have a rating of 100 amperes or larger, showing the accurately scaled switches, their layout, and relation to associated equipment.
  - 3. Additional information as required in Section 26 00 01, "Electrical General Provisions".

##### **1.6 DELIVERY, STORAGE AND HANDLING:**

- A. Deliver switches individually wrapped in factory-fabricated water-resistant type containers.

- B. Handle switches carefully to avoid damage to material components, enclosure and finish. Damaged switches shall not be installed on project.
- C. Store switches in a clean and dry space and protect from weather.

## **PART 2 - PRODUCTS**

### 2.1 MATERIAL:

- A. General: Provide heavy-duty type, dead front, sheet steel-enclosed, surface-mounted safety switches of the type and size indicated. Safety switches shall be rated for the voltage of the circuit in which they are installed. Safety switches used as motor disconnects shall be horsepower rated for the motor served.
- B. Switch Mechanism:
  - 1. Safety switches shall be quick-make quick-break type with permanently attached arc suppressors and constructed such that switch blades are visible in the "OFF" position with the door open. The operating handle shall be an integral part of the box, not of the cover. Switch shall have provision to padlock in the "OFF" position. Safety switches shall have a cover interlock to prevent unauthorized opening of the switch door when the switch mechanism is in the "ON" position or closing of the switch mechanism when the switch door is open.
  - 2. Cover interlock shall have an override mechanism to permit switch inspection by authorized personnel. **[All current-carrying parts shall be constructed of high conductivity copper with silver-plated switch contacts.]** Lugs shall be copper-plated or aluminum, suitable for copper cable and front removable. **[Switch blades shall be copper.]**
- C. Fusing: Provide fusible safety switches where indicated. Fuse clips shall be positive pressure rejection type fuse clips suitable for use with UL Class R fuses.
- D. Neutral: Provide safety switches with number of switched poles as indicated. Where a neutral is present in the circuit, provide a solid neutral with the safety switch.
- E. Enclosures:
  - 1. All safety switches installed in indoor locations shall be NEMA 1 general purpose enclosures unless otherwise shown.
  - 2. Safety switches installed in exterior locations or where exposed to outdoor conditions shall be NEMA 3R (water resistant) unless otherwise shown or specified.
  - 3. Safety switches installed in wet areas**[, in laundries] [, in kitchens] [and at cooling towers]** shall be **[NEMA 4X (fiberglass reinforced polyester)]** NEMA 4 (stainless steel), unless otherwise shown.

## **PART 3 - EXECUTION**

### 3.1 INSPECTION:

- A. Installer shall examine the areas and conditions under which safety and disconnect switches are to be installed and notify the Engineer in writing of conditions detrimental to the proper and timely completion of the work. Do not proceed with the work until unsatisfactory conditions have been corrected.

### 3.2 INSTALLATION OF SAFETY AND DISCONNECT SWITCHES:

- A. General: Install safety and disconnect switches where shown, in accordance with the manufacturer's written instructions, the applicable requirements of the NEC, the NECA's "Standard of Installation", and recognized industry practices to ensure that products serve the intended function. No switch handle shall be more than 72" above finished floor in On position.
  - B. Location: Provide safety switches where shown and at each motor which is out-of-sight-of or greater than 50' from the switch or panel from which the motor circuit is fed, unless another NEC complying disconnecting method is utilized.
  - C. Supports: Provide all safety and disconnect switches with galvanized angle or other suitable supports where mounting on wall or other rigid surface is impractical. Switches shall not be supported by conduit alone. Where safety and disconnect switches are mounted on equipment served, the switch shall not inhibit removal of any service panels or interfere with any required access areas.
  - D. Disconnect Switches: Install disconnect switches used with motor-driven appliances, motors, and controllers within sight of the controller position unless otherwise indicated.
  - E. Coordination: Coordinate safety and disconnect switch installation work with electrical raceway and cable work as necessary for proper interface.
- 3.3 TESTING:
- A. General: Prior to energization, check for continuity of circuits and for short circuits.
- 3.4 IDENTIFICATION:
- A. Refer to Section 26 05 53, "Identification for Electrical Systems", for applicable painting, nameplates, and labeling requirements.

**END OF SECTION 26 28 18**