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USACE / NAVFAC / AFCEA / NASA                      UFGS-33 75 13.00 40 (June 2006)  
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Preparing Activity:    NASA                      Superseding  
   UFGS-33 75 13.00 40 (April 2006)  
   NASA-16325S (December 2005)

UNIFIED FACILITIES GUIDE SPECIFICATIONS

References are in agreement with UMRL dated 9 October 2006

Latest change indicated by CHG tags

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AIR HIGH-VOLTAGE CIRCUIT BREAKER

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### SECTION 33 75 13.00 40

#### AIR HIGH-VOLTAGE CIRCUIT BREAKER 06/06

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NOTE: Delete, revise, or add to the text in this section to cover project requirements. Notes are for designer information and will not appear in the final project specification.

This section covers load-break, gang-operated switches, 2.4 kilovolts and above. The drawings should indicate voltage rating and installation details.

Comments and suggestions on this guide specification are welcome and should be directed to the technical proponent of the specification. A listing of technical proponents, including their organization designation and telephone number, is on the Internet.

Recommended changes to a UFGS should be submitted as a Criteria Change Request (CCR).

Use of electronic communication is encouraged.

Brackets are used in the text to indicate designer choices or locations where text must be supplied by the designer.

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## PART 1    GENERAL

### 1.1    REFERENCES

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NOTE: This paragraph is used to list the publications cited in the text of the guide specification. The publications are referred to in the text by basic designation only and listed in this paragraph by organization, designation, date, and title.

Use the Reference Wizard's Check Reference feature when you add a RID outside of the Section's Reference Article to automatically place the reference in the Reference Article. Also use the Reference Wizard's Check Reference feature to update the issue dates.

References not used in the text will automatically be deleted from this section of the project specification when you choose to reconcile references in the publish print process.

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The publications listed below form a part of this specification to the extent referenced. The publications are referred to within the text by the basic designation only.

NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION (NEMA)

NEMA C29.1 (1988; R 1996) Electrical Power Insulators  
- Test Methods

NEMA SG 6 (2000) Standard for Power Switching  
Equipment

1.2 SUBMITTALS

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NOTE: Review Submittal Description (SD) definitions in Section 01 33 00 SUBMITTAL PROCEDURES and edit the following list to reflect only the submittals required for the project. Submittals should be kept to the minimum required for adequate quality control.

A "G" following a submittal item indicates that the submittal requires Government approval. Some submittals are already marked with a "G". Only delete an existing "G" if the submittal item is not complex and can be reviewed through the Contractor's Quality Control system. Only add a "G" if the submittal is sufficiently important or complex in context of the project.

For submittals requiring Government approval on Army projects, a code of up to three characters within the submittal tags may be used following the "G" designation to indicate the approving authority. Codes for Army projects using the Resident Management System (RMS) are: "AE" for Architect-Engineer; "DO" for District Office (Engineering Division or other organization in the District Office); "AO" for Area Office; "RO" for Resident Office; and "PO" for Project Office. Codes following the "G" typically are not used for Navy, Air Force, and NASA projects.

Choose the first bracketed item for Navy, Air Force and NASA projects, or choose the second bracketed item for Army projects.

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Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are [for Contractor Quality Control approval.][for information only. When used, a designation following the "G" designation identifies the office that will review the submittal for the Government.] Submit the following in accordance with Section 01 33 00 SUBMITTAL PROCEDURES:

#### SD-02 Shop Drawings

[Fabrication Drawings](#) shall be submitted in accordance with paragraph entitled, "General Requirements," of this section.

[Installation Drawings](#) shall be submitted for load-break switches in accordance with the paragraph entitled, "Installation," of this section.

#### SD-03 Product Data

Equipment and performance data shall be submitted for [Load-Break Switches](#) including life, test, system functional flows, safety features, and mechanical automated details.

Manufacturer's catalog data shall be submitted for the following items:

[Load-Break Switches](#)  
[Handles](#)

#### SD-08 Manufacturer's Instructions

Manufacturer's instructions shall be submitted for [Load-Break Switches](#) including special provisions required to install equipment components and system packages. Special notices shall detail impedances, hazards and safety precautions.

#### SD-10 Operation and Maintenance Data

Operation and Maintenance Manuals shall be submitted for the following equipment:

[Load Break Switches](#)

### 1.3 GENERAL REQUIREMENTS

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NOTE: If Section 26 00 00.00 40 ELECTRICAL is not included in the project specification, applicable requirements therefrom should be inserted and the following paragraph deleted.

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Section 26 00 00.00 40 ELECTRICAL applies to work specified in this section.

[Fabrication Drawings](#) shall be submitted for load-break switches consisting of fabrication and assembly details to be performed in the factory.

## PART 2 PRODUCTS

### 2.1 SWITCHES

Load-break switches shall be gang-operated, air-break, 3-insulator, 3-pole, single-throw, horizontal-mounted, vertical-break, rotating-insulator type for poletop or structure mounting suitable for the intended application.

Insulators and other component parts shall be in accordance with NEMA SG 6 and NEMA C29.1, except that the leakage distance of each insulator assembly shall be at least 600 millimeter 24 inches.

Switch rating shall not be less than 400 amperes.

Operating parts of switch assemblies shall be corrosion-resistant metals.

Switches shall be provided with suitable attachments to permit closing and opening under full rated load current without damage.

### 2.2 HANDLES

Operating handles shall be located approximately 1500 millimeter 5-feet above the ground and shall be provided with suitable attachments for padlocking the switches in both open and closed positions.

## PART 3 EXECUTION

### 3.1 INSTALLATION

Switches shall be mounted in accordance with the manufacturer's instructions. Installation shall include necessary timbers, hardware, insulators, and connections to line wire or bus.

Prior to final acceptance the switch shall be energized and the circuit loaded (to the maximum load possible, but not less than 10 percent of expected full load) for a minimum of 10 minutes and the temperature measured, with a non-contact device, to verify contact pressure and alignment. The temperature detector shall be accurate within 0.5 degrees C. Each phase temperature shall be less than 5 degrees C above ambient and within 3 C degrees of each other. Temperatures outside these values warrant investigation.

Installation Drawings shall be submitted for load-break switches.

### 3.2 GROUNDING

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NOTE: In locations where existing underground  
utilities, equipment or structures may be damaged,  
ground rod installation should be accomplished using  
the water jetting method.  
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Ground rods shall be installed at each poletop switch installation. Operating mechanisms shall be solidly bonded to the ground with a flexible copper strap; joints in the operating mechanisms shall be flexible.

Ground rods shall be not less than 20 by 6000 millimeter 3/4-inch by 20-foot long copper-clad steel. Two rods at least 3000 millimeter 10 feet apart shall be [driven] [installed using a water jetting method] at each switch and shall be solidly bonded together and independently bonded to the switch.

-- End of Section --