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USACE / NAVFAC / AFCEA / NASA                      UFGS-27 05 28.36 40 (April 2006)  
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Preparing Activity:    NASA                      Superseding  
    NASA-16135S (December 2005)

UNIFIED FACILITIES GUIDE SPECIFICATIONS

References are NOT in agreement with UMRL dated 01 April 2006

Revised throughout - changes not indicated by CHG tags

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SECTION TABLE OF CONTENTS

DIVISION 27 - COMMUNICATIONS

SECTION 27 05 28.36 40

CABLE TRAYS

04/06

PART 1    GENERAL

- 1.1    REFERENCES
- 1.2    GENERAL REQUIREMENTS
- 1.3    SUBMITTALS

PART 2    PRODUCTS

- 2.1    CABLE TRAYS
- 2.2    MATERIAL AND FABRICATION
- 2.3    SUPPORTS

PART 3    EXECUTION

- 3.1    MANUFACTURER'S INSTRUCTIONS
- 3.2    INSTALLATION DRAWINGS
- 3.3    GROUNDING

-- End of Section Table of Contents --

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### SECTION 27 05 28.36 40

#### CABLE TRAYS 04/06

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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 materials and installation of cable-tray systems.

Contract drawings should indicate the extent and general arrangement of the cables, equipment, and distribution systems and should indicate cable-tray supports.

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.

ASTM INTERNATIONAL (ASTM)

ASTM A 1008/A 1008M (2005a) Standard Specification for Steel, Sheet, Cold-Rolled, Carbon, Structural, High-Strength Low-Alloy and High-Strength Low-Alloy with Improved Formability, Solution Hardened, and Bake Hardened

ASTM A 123/A 123M (2002) Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products

NATIONAL FIRE PROTECTION ASSOCIATION (NFPA)

NFPA 70 (2005) National Electrical Code

1.2 GENERAL REQUIREMENTS

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

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

1.3 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  
Installation Drawings

#### SD-03 Product Data

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

Cable Trays  
Supports

#### SD-08 Manufacturer's Instructions

Manufacturer's instructions shall be submitted for cable trays in accordance with paragraph entitled, "Manufacturer's Instructions," of this section.

## PART 2 PRODUCTS

### 2.1 CABLE TRAYS

[Ladder cable trays shall consist of two longitudinal side members connected by individual transverse members.]

[Trough cable trays shall consist of continuous one-piece ventilated-bottom

sections contained within longitudinal side members.]

[Channel cable trays shall consist of one-piece ventilated channel sections.]

[Solid bottom trays shall consist of two longitudinal side members connected by one-piece bottom section.]

## 2.2 MATERIAL AND FABRICATION

Cable trays shall be [high-strength corrosion-resistant aluminum Alloy No. 5052-H32] [steel sheet in accordance with [ASTM A 1008/A 1008M](#) with a zinc coating applied after fabrication].

Steel trays shall be hot-dipped galvanized finish in accordance with [ASTM A 123/A 123M](#).

[Fabrication drawings](#) shall be submitted for cable trays consisting of fabrication and assembly details to be performed in the factory.

Prior to assembly, contact surfaces of trays shall be coated with an antioxidant compound. Edges, fittings, and hardware shall be finished free from burrs and sharp edges. Cable trays shall include splice and end plates, dropouts, and miscellaneous hardware.

## 2.3 SUPPORTS

Supports and hangers shall permit both vertical and horizontal adjustment, where possible. Horizontal and vertical tray supports shall provide an adequate bearing surface for the tray and shall have provisions for holddown clamps or fasteners. Vertical tray supports shall provide a secure means other than friction for fastening cable trays to supports.

Cable trays shall be supported at not more than [1800] [\_\_\_\_\_] millimeter [6] [\_\_\_\_\_] -foot intervals. Supports for horizontal-elbow tray fittings shall be placed within [600] [\_\_\_\_\_] millimeter [2] [\_\_\_\_\_] feet of each fitting extremity and as recommended by the cable-tray manufacturer.

When supported at [1800] [\_\_\_\_\_] millimeter [6] [\_\_\_\_\_] -foot intervals, the cable trays shall be capable of carrying not less than [225] [\_\_\_\_\_] kilogram per meter [150] [\_\_\_\_\_] pounds per linear foot. Tray fittings shall have not less than the load-carrying ability of straight tray sections and shall have the manufacturer's minimum standard radius.

## PART 3 EXECUTION

### 3.1 MANUFACTURER'S INSTRUCTIONS

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

### 3.2 INSTALLATION DRAWINGS

[Thirty] [\_\_\_\_\_] calendar days prior to shipment, [installation drawings](#) shall be submitted to the Contracting officer for approval. Drawings shall be coordinated with all other work in the immediate area that could come in conflict with the installation. Drawings shall include layout of cable

tray work, including details of both horizontal and vertical supports. Both horizontal and vertical supports shall be as specified in paragraph entitled, "Supports," of this section.

### 3.3 GROUNDING

Cable trays shall be properly grounded by means of a low-resistance conductor of sufficient capacity, but in no case smaller than No. 1/0 AWG copper . Grounding conductor shall be bonded to cable-tray sections and fittings by compatible bolted connections. Effective grounding shall be permanent and continuous with an impedance sufficiently low to limit the potential above ground and to facilitate operation of overcurrent devices in the circuit. Grounding and bonding cable trays shall be in accordance with NFPA 70.

-- End of Section --