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USACE / NAVFAC / AFCEA / NASA UFGS-27 05 28.36 40 (November 2008)  
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Preparing Activity: NASA Superseding  
UFGS-27 05 28.36 (August 2008)  
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UNIFIED FACILITIES GUIDE SPECIFICATIONS

References are in agreement with UMRL dated July 2009

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### SECTION 27 05 28.36 40

#### CABLE TRAYS FOR COMMUNICATIONS SYSTEMS 11/08

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NOTE: This specification covers the requirements  
for 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.

Edit this guide specification for project specific  
requirements by adding, deleting, or revising text.  
For bracketed items, choose applicable items(s) or  
insert appropriate information.

Remove information and requirements not required in  
respective project, whether or not brackets are  
present.

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).

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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 (2009) 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 (2009) Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products

#### NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION (NEMA)

NEMA VE 2 (2006) Cable Tray Installation Guidelines

#### NATIONAL FIRE PROTECTION ASSOCIATION (NFPA)

NFPA 70 (2008; AMD 1 2008) National Electrical Code - 2008 Edition

### 1.2 GENERAL REQUIREMENTS

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NOTE: If Section 26 00 00.00 20 BASIC ELECTRICAL MATERIALS AND METHODS 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 20 BASIC ELECTRICAL MATERIALS AND METHODS 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

Submit manufacturer's product data for the following items:

Cable Trays  
Supports

#### SD-08 Manufacturer's Instructions

Submit Manufacturer's Instructions for cable trays in accordance with paragraph entitled, "Manufacturer's Instructions," of this section.

### 1.4 QUALITY ASSURANCE

Comply with NEMA Standards Publication Number VE1, "Cable Tray Systems"

Comply with NEC, as applicable to construction and installation of cable tray and cable channel systems (Article 392 NEC)

Provide products that are UL-classified and labeled.

## PART 2 PRODUCTS

### 2.1 CABLE TRAYS

[Provide ladder cable trays consisting of two longitudinal side members connected by individual transverse members.]

[Provide trough cable trays consisting of continuous one-piece ventilated-bottom sections contained within longitudinal side members.]

[Provide channel cable trays consisting of one-piece ventilated channel sections.]

[Provide solid bottom trays consisting of two longitudinal side members connected by one-piece bottom section.]

### 2.2 MATERIAL AND FABRICATION

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

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

[Provide stainless steel tray with straight section and fitting side rails and rungs made of AISI Type 304 or Type 316. Weld transverse members (rungs) or corrugated bottoms to the side rails with Type 316 stainless steel welding wire.]

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

Prior to assembly, coat contact surfaces of trays with an antioxidant compound. Finish edges, fittings, and hardware free from burrs and sharp edges. Include splice and end plates, dropouts, and miscellaneous hardware.

### 2.3 SUPPORTS

Permit both vertical and horizontal adjustment, where possible on supports and hangers. Provide an adequate bearing surface for the tray on the horizontal and vertical tray supports and have provisions for hold-down clamps or fasteners. Provide a secure means other than friction for fastening cable trays to supports.

Support cable trays at not more than [\[1800\] \[\\_\\_\\_\\_\\_\] millimeter \[6\] \[\\_\\_\\_\\_\\_\] -foot](#) intervals. Place supports for horizontal-elbow tray fittings 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 have the manufacturer's minimum standard radius.

## PART 3 EXECUTION

Comply with NEMA VE 2 for cable tray installation.

### 3.1 MANUFACTURER'S INSTRUCTIONS

Submit manufacturer's instructions for Cable Trays including special provisions required to install equipment components and system packages. Detail impedances, hazards and safety precautions.

### 3.2 INSTALLATION DRAWINGS

[Thirty] [\_\_\_\_\_] calendar days prior to shipment, submit installation drawings to the Contracting officer for approval. Coordinate drawings with all other work in the immediate area that could come in conflict with the installation. Include layout of cable tray work and details of both horizontal and vertical supports as specified in paragraph entitled, "Supports," of this section.

### 3.3 GROUNDING

Properly grounded cable trays by means of a low-resistance conductor of sufficient capacity, but in no case smaller than [No. 1/0 AWG copper][No. 3/0 AWG aluminum]. Bond grounding conductor to cable-tray sections and fittings by compatible bolted connections. Consider cable tray sections in tandem assembly as having electrical continuity when these sections are bonded with appropriate high-strength bolts. Provide permanent and continuous effective grounding with an impedance sufficiently low to limit the potential above ground and to facilitate operation of overcurrent devices in the circuit. Provide grounding and bonding of cable trays in accordance with NFPA 70.

-- End of Section --