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USACE / NAVFAC / AFCEC / NASA UFGS-27 05 28.36 40 (August 2014)  
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Preparing Activity: NASA Superseding  
UFGS-27 05 28.36 40 (August 2011)

UNIFIED FACILITIES GUIDE SPECIFICATIONS

References are in agreement with UMRL dated July 2015

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08/14

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### SECTION 27 05 28.36 40

#### CABLE TRAYS FOR COMMUNICATIONS SYSTEMS 08/14

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NOTE: This guide specification covers the requirements for materials and installation of communication 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.

Adhere to UFC 1-300-02 Unified Facilities Guide Specifications (UFGS) Format Standard when editing this guide specification or preparing new project specification sections. 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, suggestions and recommended changes for this guide specification are welcome and 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 A1008/A1008M	(2015) 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 A123/A123M	(2013) Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products

NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION (NEMA)

NEMA VE 2	(2013) Cable Tray Installation Guidelines
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NATIONAL FIRE PROTECTION ASSOCIATION (NFPA)

NFPA 70	(2014; AMD 1 2013; Errata 1 2013; AMD 2 2013; Errata 2 2013; AMD 3 2014; Errata 3-4 2014; AMD 4-6 2014) National Electrical Code
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1.2 ADMINISTRATIVE 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.

1.2.1 Pre-Installation Meetings

The Contracting Officer will schedule a pre-installation meeting within [30] [\_\_\_\_\_] days of Contract Award. Submit the following for review and approval:

a. Fabrication Drawings

b. Installation Drawings

Submit manufacturer's product data for the following items:

a. Cable Trays

b. Supports

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.

The Guide Specification technical editors have designated those items that require Government approval, due to their complexity or criticality, with a "G." Generally, other submittal items can be reviewed by the Contractor's Quality Control System. Only add a "G" to an item, 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.

An "S" following a submittal item indicates that the submittal is required for the Sustainability Notebook to fulfill federally mandated sustainable requirements in accordance with Section 01 33 29 SUSTAINABILITY REPORTING.

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.] Submittals with an "S" are for inclusion in the Sustainability Notebook, in conformance to Section 01 33 29 SUSTAINABILITY REPORTING. Submit the following in accordance with Section 01 33 00 SUBMITTAL PROCEDURES:

SD-02 Shop Drawings

Fabrication Drawings[; G[, [\_\_\_\_]]]

Installation Drawings[; G[, [\_\_\_\_]]]

#### SD-03 Product Data

Cable Trays[; G[, [\_\_\_\_]]]

Supports[; G[, [\_\_\_\_]]]

#### SD-08 Manufacturer's Instructions

Manufacturer's Instructions[; G[, [\_\_\_\_]]]

### 1.4 QUALITY CONTROL

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 SYSTEM DESCRIPTION

[ 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 FABRICATION

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 MATERIALS

Provide cable trays constructed of [high-strength corrosion-resistant aluminum Alloy No. 5052-H32] [steel in accordance with ASTM A1008/A1008M with a zinc coating applied after fabrication].

[ Provide hot-dipped galvanized steel trays with finish in accordance with ASTM A123/A123M.

] [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.

## 12.4 COMPONENTS

### 2.4.1 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 holddown 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, ensure the cable trays are capable of carrying not less than [225] [\_\_\_\_\_] kilogram per meter [150] [\_\_\_\_\_] pounds per linear foot. Ensure tray fittings do not have 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 INSTALLATION

#### 3.1.1 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.

#### 3.1.2 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 SUPPORTS.

#### 3.1.3 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 --