
DEPARTMENT OF THE ARMY AR-27 05 28.36 48 (April 2020)
U.S. ARMY CORPS OF ENGINEERS -----
Preparing Activity: LRL USACE

ARMY RESERVE GUIDE SPECIFICATIONS

SECTION 27 05 28.36 48

CABLE TRAYS FOR COMMUNICATIONS SYSTEMS
04/20

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 item(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 directed to the mailbox SpecsIntact@usace.army.mil.

PART 1 GENERAL

1.1 REFERENCES

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 Reference Identifier (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.

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.

ARMY RESERVE NETWORK ENTERPRISE CENTER (ARNEC)

ARNEC Army Reserve Network Enterprise Center
Infrastructure Technical Criteria

ASTM INTERNATIONAL (ASTM)

ASTM A1008/A1008M (2016) Standard Specification for Steel,
Sheet, Cold-Rolled, Carbon, Structural,
High-Strength Low-Alloy, High-Strength
Low-Alloy with Improved Formability,
Solution Hardened, and Bake Hardenable

NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION (NEMA)

NEMA VE 1 (2017) Metal Cable Tray Systems

NEMA VE 2 (2013; ERTA 2016) Cable Tray Installation
Guidelines

NATIONAL FIRE PROTECTION ASSOCIATION (NFPA)

NFPA 70 (ERTA 1-2 2017; TIA 17-1; TIA 17-2; TIA
17-3; TIA 17-4; TIA 17-5; TIA 17-6; TIA
17-7; TIA 17-8; TIA 17-9; TIA 17-10; TIA
17-11; TIA 17-12; TIA 17-13; TIA 17-14;
TIA 17-15; TIA 17-16; TIA 17-17) National
Electrical Code

TELECOMMUNICATIONS INDUSTRY ASSOCIATION (TIA)

TIA-569 Commercial Building Standard for
Telecommunications Pathways and Spaces

TIA-607 Generic Telecommunications Bonding and
Grounding (Earthing) for Customer Premises

U.S. DEPARTMENT OF DEFENSE (DOD)

UFC 3-580-01 Telecommunications Interior Infrastructure
Planning and Design

1.2 DESIGN REQUIREMENTS

Telecommunication products, product quality, and product execution in accordance with ARNEC and UFC 3-580-01. If a difference arises between specifications or the drawings, or both, then adherence to these criteria documents will take precedence for such products.

1.3 SUBMITTALS

NOTE: Submittals must be limited to that necessary for adequate quality control. The importance of an item in the project should be one of the primary factors in determining if a submittal for the item

should be required.

Indicate submittal classification in the blank space following the name of the item requiring the submittal by using "G" when the submittal requires Government approval. Submittals not classified as "G" will show on the submittal register as "Information Only".

NOTE: USARC G-6 is to be provided submittals under this section to review. USARC G6 has no contractual authority over the contract, and this must be annotated in the Engineering Considerations and Instruction to Field Personnel (ECIFP). Adding them as a reviewer directly in the contract could potential create a condition where USARC G6 could obligate the Government.

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for information only. Submit the following in accordance with Section 01 33 00.00 06 SUBMITTAL PROCEDURES:

SD-02 Shop Drawings

Fabrication Drawings; G[, [_____]]

Installation Drawings; G[, [_____]]

SD-03 Product Data

Cable Trays; G[, [_____]]

Supports; G[, [_____]]

1.4 QUALITY CONTROL

Follow requirements in accordance with NEMA VE 1. Follow requirements in accordance with NEC and requirements that apply to the construction and installation of cable tray and cable channel systems (Article 392 NEC). Provide UL-classified products and labeled with UL classification mark.

1.5 PREINSTALLATION MEETING

The Contracting Officer will schedule a pre-installation meeting. Contractor is required to be present.

PART 2 PRODUCTS

2.1 CABLE TRAYS

In telecommunications spaces, provide ladder style cable tray consisting of two longitudinal side members connected by individual transverse members.

In all areas where cable tray is being installed outside of

telecommunications spaces, provide basket style cable trays in accordance with [ASTM A1008/A1008M](#), with zinc coating, straight section, and fitting side rails and rungs made of AISI Type 304 or Type 316 stainless steel. Weld transverse members (rungs) or corrugated bottoms to the side rails with Type 316 stainless steel welding wire.

2.2 FABRICATION

Submit [fabrication drawings](#) for cable trays to include details showing the fabrication and assembly details performed in the factory.

Before assembly, use an antioxidant compound to coat the contact surfaces of trays. Ensure that the finishes of edges, fittings, and hardware are 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 ensure that the surface can accommodate hold down clamps or fasteners. Provide a means, other than friction, for securely fastening cable trays to supports.

Provide support for cable trays at intervals of no more than 6-foot. Place supports for horizontal-elbow tray fittings within 2-feet of each fitting extremity and as recommended by the cable tray manufacturer.

Ensure that the cable trays can carry at least 150 pounds per linear foot when supported at 6-foot intervals. Ensure that the tray fittings have a load-carrying capacity that is equal to or greater than that of straight tray sections. Ensure that the radius of tray fittings is based on the minimum bending radius of the cables, as specified by the cable manufacturer.

PART 3 EXECUTION

3.1 GENERAL INSTALLATION

Install in accordance with [ARNEC](#), [UFC 3-580-01](#), [NFPA 70](#), [TIA-569](#), [TIA-607](#), [NEMA VE 2](#).

3.1.1 Installation Drawings

Submit the manufacturer's installation instructions for [cable trays](#), including special provisions required to install equipment components and system packages. Ensure that the instructions specify impedances, hazards and safety precautions.

30 calendar days prior to shipment, submit [installation drawings](#). Coordinate drawings with those being used for all other work in the immediate area to ensure that this other work does not conflict with the installation. Include the layout of the cable tray work and details on both horizontal and vertical supports as specified in the paragraph "SUPPORTS."

3.1.2 Cable Tray Installation

Install telecommunications cable tray in accordance with [ARNEC](#),

UFC 3-580-01, TIA-569, TIA-607, and NFPA 70. Install cable trays parallel with or at right angles to ceilings, walls, and structural members. Edges, fittings, and hardware to be finished free from burrs and sharp edges. Support in accordance with manufacturer recommendations but at not more than 6 foot intervals. Coat contact surfaces of aluminum connections with an antioxidant compound prior to assembly. Bond together adjacent cable tray sections by connector plates of an identical type as the cable tray sections. Terminate cable trays 10 inches from both sides of smoke and fire partitions. Provide supports to resist forces of 0.5 times the equipment weight in any direction and 1.5 times the equipment weight in the downward direction.

3.1.3 Cable Tray Bonding

Provide bonding for cable trays in accordance with NFPA 70, TIA-607, ARNEC. Bond all sections of cable tray together with an UL listed method or provide No. 2 AWG bare copper wire throughout cable tray system, and bond to each section. Bond the grounding conductor to cable tray sections and fittings by compatible UL listed 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 that is low enough to limit the potential above ground and to facilitate operation of overcurrent devices in the circuit.

-- End of Section --