

# Standard Double-Layer Cable Tray

## Article Overview

Double-layer cable trays are designed to accommodate multiple layers of cables, ensuring proper separation, load distribution, and compliance with NEC standards.

## Overview

Double-layer cable trays allow stacking of cables in two distinct layers, often separated by a barrier or divider to maintain electrical safety, prevent overheating, and facilitate maintenance. They are commonly used in industrial, commercial, and data center applications where high cable density is required.

## Materials and Construction

- o Steel: Hot-dip galvanized or pre-galvanized for corrosion resistance, suitable for indoor and outdoor environments .
- o Aluminum: Lightweight, corrosion-resistant, and ideal for environments with atmospheric exposure .
- o Fiberglass or PVC-coated trays: Used in highly corrosive or chemical environments.
- o Design types: Ladder, ventilated, or solid-bottom trays. Ladder trays are preferred for heavy power cables, while solid-bottom trays are used for sensitive instrumentation or fiber optic cables .

## Dimensions and Layering

- o Width: Determined by the sum of cable diameters in each layer. For ladder trays, the interior width must accommodate the total of the cables' individual diameters. Solid-bottom trays should not exceed 90% of the tray width .
- o Layer separation: A physical barrier or separator is recommended when stacking cables of different sizes or types to prevent interference and maintain ampacity .
- o Rung spacing: Typically 150-230 mm (6-9 inches) for ladder trays to support cables and maintain minimum bend radius .

## Load Capacity

- o Safe working load: Depends on tray material, width, and span between supports. Manufacturers provide load tables specifying maximum distributed and point loads .
- o Installation span: Support intervals are critical; excessive span can lead to sagging or cable damage. Standard spans range from 1.5 m to 3 m depending on tray type and load .

## Electrical and Safety Considerations

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- o Earthing and bonding: Metal trays must be properly grounded to prevent electrical hazards .
- o Ampacity: Cable ampacity may be reduced when multiple layers are installed due to heat accumulation. NEC guidelines recommend derating factors for multi-layer installations .
- o Fire resistance: Trays should comply with local fire codes, especially for indoor installations carrying power cables .

## Installation Tips

- o Ensure minimum bend radius is maintained at tray entries and exits.
- o Use separators for different cable types (power vs. data) to reduce electromagnetic interference.
- o Consider ventilation for heat dissipation in high-current applications.
- o Verify compliance with NEC and local standards for cable spacing, load, and grounding . Double-layer cable trays provide a practical solution for high-density cable management while maintaining safety, accessibility, and compliance with electrical codes. Proper selection of material, width, and separation ensures optimal performance and longevity.

Cables Allowed in NEC Tray Applications Cable tray is one of the most common methods of supporting wire and cable. There are

Explore standard sizes by tray type, understand width and depth limits, and see how to

The Cable Tray Institute (CTI) was founded in 1991 to support the cable tray industry by engaging in research, development,

Overloading cable trays can lead to a breakdown of the tray, its connecting points, and/or supports, causing hazards to persons

This guide covers cable ladder systems, cable tray systems, channel support systems and associated supports intended for the

This publication is intended as a practical guide for the proper and safe\* installation of cable ladder systems, cable tray systems,

B. Cable tray systems are defined to include, but are not limited to straight sections of [ladder type] [trough type] [solid bottom type]

Example of a non-standard junction of cable trays, only in particular cases indicated in the cable trays manufacturing drawings, like

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Cable tray systems are engineered support structures designed to route, support, and protect insulated electrical

Where necessary, cable tray systems and cable ladder systems can be used for the arrangement of cables into groups. This

IEC 61537:2023 specifies requirements and tests for cable tray systems and cable ladder systems intended for the support and

How to design cable tray? Most projects are roughly defined at the start of cable tray design. For projects that are not

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Need help selecting the right cable ladder or -tray for your project? We offer a wide range of cable tray

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These documents: ANSI/NEMA VE-1, Metal Cable Tray Systems; NEMA VE-2, Cable Tray Installation Guidelines; and NEMA FG-1,

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