

Standard for Electrostatic Connection of Cable Trays

Article Overview

Metallic cable trays must be electrically continuous, properly bonded, and connected to the building grounding system to safely conduct fault currents and prevent electrostatic hazards.

Electrical Continuity and Bonding

All metallic cable trays must maintain electrical continuity across sections, splices, and fittings. Mechanical connections alone may not always ensure reliable conductivity, so bonding jumpers are often required to bridge gaps and maintain a continuous grounding path . Each tray section should be mechanically tight and electrically continuous to prevent potential shock hazards or equipment damage .

Equipment Grounding Conductor (EGC) Requirements

Cable trays can serve as an Equipment Grounding Conductor (EGC) if they meet minimum cross-sectional area requirements for the side rails, based on the protective device rating (fuse or circuit breaker) of the circuit . If the tray's conductive area is insufficient, a separate EGC must be installed within the tray or alongside the cables . Non-metallic trays cannot serve as conductors, and wire mesh trays are generally not recommended as EGCs due to reduced current-carrying capacity when cut or modified .

NEC Compliance

According to the National Electrical Code (NEC):

- o NEC 318-6(a) requires cable trays to be electrically continuous, even if mechanical continuity is not mandatory .
- o NEC 250-51 specifies that the grounding path must be permanent, low-impedance, and capable of safely conducting fault currents .
- o All metallic components enclosing electrical conductors must be bonded to limit voltage to ground and facilitate operation of overcurrent protective devices under fault conditions .

Best Practices

- o Ensure all tray sections, fittings, and splices are mechanically tight and electrically bonded.
- o Verify grounding conductor sizing according to NEC tables to handle potential fault currents .
- o Use solid or ventilated trays for grounding purposes; avoid wire mesh trays unless a separate ground wire is installed .
- o Maintain proper separation of power and data cables to reduce electromagnetic interference while ensuring

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grounding continuity .

Summary

For safe and code-compliant electrostatic connection of cable trays:

- o Use metallic trays with continuous electrical paths.
- o Bond all sections and fittings, using jumpers if necessary.
- o Ensure the tray or a separate EGC meets NEC sizing requirements.
- o Avoid relying on wire mesh trays alone for grounding.
- o Connect the tray system securely to the building's grounding network to safely conduct fault currents and prevent electrostatic hazards .

This article provides a comprehensive framework that governs various aspects of cable tray installations, including

This document specifies requirements and tests for cable tray systems and cable ladder systems intended for the support and

In accordance with its continuous improvement policy, Legrand reserves the right to change the specifications and illustrations

Joint Connections: Use dedicated splice plates and bolts. Ensure firm electrical continuity through

IEEE 576 - This standard describes recommended practice for installation, termination and testing of insulated power cables in cable

One of the most recognized frameworks globally is the IEC standard for cable tray systems.

2.02 CABLE TRAY SECTIONS AND COMPONENTS A. General: Except as otherwise indicated, provide metal cable trays, of types,

Core rules for selecting, installing, grounding, and filling cable trays--clearances, materials, separation, and bonding

Available Standard widths of 25, 50, 150, 200, 300, 400, 450, 500, and 600 millimeters Standard depths of 25, 50, and 100

Cable tray is considered to be a system. It must provide continuous support for cables, and the electrical

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continuity of the cable tray

When cable trays have to connect two buildings and have to go through accessible trenches, the minimum size of the trenches must

The Cable Tray Institute is making available the current edition of this practical guide for the proper installation of aluminum or steel

IEEE-SA Standards Board Abstract: The design, installation, and protection of wire and cable systems in substations are covered in

A bare copper equipment grounding conductor should not be placed in an aluminum cable tray due to the potential for electrolytic

Cable trays and cable ladders are indispensable components in modern electrical wiring systems, providing organized

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

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