Cable grounding in cable tray

Overview

All metallic cable trays shall be grounded as required in Article 250.96 regardless of whether or not the cable tray is being used as an equipment grounding conductor (EGC).

Key Takeaways

Cable trays can be used to safely ground electrical systems, either by using the tray itself as a grounding conductor or by attaching a dedicated grounding cable.

Grounding Principles

All metallic cable trays must be grounded according to NEC Article 250. 96, regardless of whether the tray is used as an equipment grounding conductor (EGC) or not. Grounding ensures that any stray electrical currents are safely directed to the earth, reducing the risk of electric shock, equipment damage, or fire.

The grounding path must be permanent, electrically continuous, and have low impedance to allow protective devices to operate effectively under fault conditions.

Methods of Grounding

Using the Cable Tray as the Grounding Conductor Metal trays that meet conductivity and strength requirements can serve as the EGC. The tray must be electrically continuous, and bonding between tray sections is recommended using grounding clamps or bolted connections. Steel trays should not be used as EGCs for circuits with ground-fault protection above 600 A, and aluminum trays should not be used above 2000 A.

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Dedicated Grounding Cable A separate grounding conductor can be run along the tray, bonded to each or alternate tray sections with clamps. This method is preferred when using aluminum trays to prevent electrolytic corrosion or when additional safety is desired. The grounding wire should be insulated except at bonding points, where tin- or zinc-plated connectors are recommended.

Full-

Length Conductor or Sectional Connections Continuous grounding conductors provide a reliable path for fault currents. Alternatively, grounding wires can be connected at each tray joint using bolts or welds to maintain electrical continuity.

Material Considerations

Copper Wire: Excellent conductivity and corrosion resistance, ideal for most installations.

Hot-

Dip Galvanized Steel: Durable and corrosion-resistant, suitable for industrial environments. Stainless Steel: Recommended for harsh or corrosive environments. Bare copper should not be used in aluminum trays in moist environments due to corrosion risk.

Safety and Compliance

Ensure grounding resistance is low (ideally ≤4 ohms) to maintain system effectiveness. Keep grounding conductors clear of flammable or corrosive materials.

Follow NE

C standards for tray fill, separation of power and data cables, and bonding requirements. Use approved tray-rated cables to maintain safety and code compliance. By following these practices, cable trays can provide a safe, reliable grounding path, protecting both personnel and equipment while ensuring compliance with electrical codes.

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Article Content

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All metallic cable trays shall be grounded as required in Article 250.96 regardless of whether or not the cable tray is being used as an equipment grounding conductor (EGC). The EGC

Equipment Grounding Conductors for Cable Tray Systems

Electrically paralleling the single conductor EGC with the Cable Tray by bonding the single conductor EGC to the cable tray every 50 to 100 feet produces an installation that may provide some degree of

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Earthing or Bonding a Metallic Cable Tray: What the Regs Really Say ...

Regulation 412.2.4.1 treats the cable assembly as equivalent to Class II equipment, so a single insulation fault cannot raise the tray to a dangerous voltage. Leaving it isolated is actually

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Cable Trays

Heavy Duty Cable Tray Systems Heavy duty cable trays and cable ladders are manufactured from pre-galvanized or hot-dipped galvanized sheet metal,

Avoiding Mistakes in Instrumentation Cable Tray

Learn how to avoid common mistakes in instrumentation cable tray installation. Follow IEC standards and EPC best practices for safe, reliable

Installation Of Cable In Cable Trays: NEC, Safety

Installation of Cable in Cable Trays ensures proper routing, cable management, NEC compliance, grounding, fire safety, and load capacity.

Cable Tray, Cable Bus, Wire Mesh Cable Trays | MP

MP Husky manufacturers Cable Tray Systems, Cable Bus System, Wire Mesh/Wire,Cable Tray, & Cable Management Systems. Our cable support

Cable Tray and Conveying Systems

Cable Tray Systems Our cable tarys meet the standard quality and testing requirements demanded in Turkey and many other countries around the world. It is a system that facilitates the transportation of

Common Cable Tray Failures and How to Resolve Them

Learn about common cable tray failures, their causes, and practical solutions for ensuring the longevity and safety of your cable tray system,

Cable Tray Installation Guidelines

This document provides details on installing cable trays and their support systems. It includes diagrams showing how to mount cable trays on walls using pre-fabricated flanges or channels. The document

Aluminum Cable Tray | EAE USA

Aluminum Cable Tray Systems – Extra Heavy Duty Industrial Cable Ladder The aluminum cable tray is a lightweight, durable, and cost-effective solution used for organizing and safely carrying electrical

A Guide to Installing and Supporting Electrical Cable Trays

A professional guide to installing electrical cable tray systems per NEC Article 392. Covers support, securing cables, and fill calculations.

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