

Cable trays laid along the ground



Overview

Cable tray grounding wire is the safety connection that links your electrical system's cable tray to the ground.

Key Takeaways

Cable trays can be installed along the ground, but proper grounding, bonding, and adherence to NEC standards are essential for safety and reliability.

Installation Considerations

Cable trays laid along the ground are commonly used in industrial and commercial facilities where overhead installation is impractical. They must remain accessible for maintenance and should not be placed in areas prone to severe physical damage or flooding. Only conductors rated for open-air environments, such as Tray Rated (Type TC) or Metal-Clad (Type MC) cables, should be used in these trays, and fill limits must be observed—typically 40% for power cables and 50% for control cables to prevent overheating.

Grounding and Bonding

Grounding is critical for cable trays on the ground. Metallic trays can serve as the Equipment Grounding Conductor (EGC) if they meet NEC requirements, or a separate grounding conductor can be installed along the tray. Each tray section should be bonded to the next using clamps, bolts, or splice plates to ensure electrical continuity.

For installations with multiple cables, the EGC in the cables should also be bonded to the tray sections to prevent displacement under fault conditions. Material considerations: Avoid placing bare copper conductors in aluminum trays in moist environments to prevent electrolytic corrosion; insulated conductors with exposed bonding points are preferred. Grounding resistance: The grounding system should ideally have a resistance of 4 ohms or less to ensure effective fault current dissipation.

Bonding jumpers: These should be sized according to the minimum requirements for equipment grounding conductors and connect all tray sections, conduit, or cable drops back to the power source.

Safety and Compliance

Cable trays on the ground must comply with NEC Article 392, which prohibits installation in hoistways or enclosed spaces and requires proper separation of high-power and low-power cables to minimize electromagnetic interference (EMI). Grounding protects personnel from electric shock, prevents equipment damage, and reduces fire hazards caused by fault currents or lightning strikes.

Environmental and Mechanical Considerations

Corrosion resistance: Use galvanized steel, stainless steel, or copper for grounding wires depending on environmental conditions. Mechanical protection: Ground-level trays should be protected from physical damage, moisture, and corrosive substances. Consider using covers or elevated supports if necessary.

Thermal expansion: If trays are exposed to sunlight or temperature variations, expansion splice plates may be required to accommodate movement. By following these guidelines, cable trays laid along the ground can provide a safe, reliable, and code-compliant solution for routing electrical conductors in industrial and commercial installations.

Article Content

Cable Tray Grounding Wire: What You Need to Know

Cable tray grounding wire is the safety connection that links your electrical system's cable tray to the ground. This provides a safe path for any

Practices for grounding and bonding of cable trays

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).

Equipment Grounding Conductors for Cable Tray Systems

The intent of this article is to review grounding practices for cable tray wiring systems. The Equipment Grounding Conductors are the most important conductors in the electrical systems. The Equipment

Wiring in Cable Trays: Your Guide to Tidy and Safe

Learn essential principles for wiring in cable trays. Our guide covers segregation, fill, bending, grounding, and labeling for safe, tidy, and reliable cable

A Guide to Installing and Supporting Electrical Cable Trays

This guide covers the critical steps, from selecting the right electrical cable tray and performing accurate cable fill calculations to managing a safe cable pull through

Cable Tray Technical Guide A practical guide to product selection and ...

Cable tray installed in a hazardous location must contain only those cables that are appropriate for this type of environment as defined in Chapter 5 of the NEC.

Practices For Grounding and Bonding of Cable Trays

The document discusses grounding and bonding practices for metallic and non-metallic cable trays. Metallic cable trays must be grounded and can serve as an equipment grounding conductor if the

Cable tray manual

These documents: ANSI/NEMA VE-1, Metal Cable Tray Systems; NEMA VE-2, Cable Tray Installation Guidelines; and NEMA FG-1, Non Metallic Cable Tray Systems, are an excellent industry resource in

Cable Tray Installation

4. What materials are commonly used for cable trays? Depending on the application and environment, fiberglass, aluminum, and steel (galvanized or stainless) are typically used. 5. What are

Understanding Cable Tray Grounding: A

Cable tray grounding is an indispensable aspect of electrical installations that plays a pivotal role in ensuring safety, reliability, and efficiency.

Cable Tray Installation Quality Assessment Guide

What Is Cable Tray Installation Quality Assessment? When installing cable trays, meeting installation quality standards is vital to guarantee the

Cable Tray Technical Guide A practical guide to product selection and ...

Cable Tray Technical Guide A practical guide to product selection and installation This guide for engineers and installers has been developed by ABB as a practical reference regarding cable tray

Grounding Requirements for Electrical Cables, Cable Trays, and

Guidelines for grounding electrical cables, busbars, and cable trays in wiring projects, ensuring safety and compliance with industry standards.

Cable Tray Cable Ladders: A Comprehensive Guide to Installation and ...

Proper installation and maintenance of cable tray and cable ladder systems are vital to maximize their benefits and minimize potential risks. This comprehensive and in-depth guide delves

Typical Design Philosophy of Cable Trays for Power Plant

Cable trays shall be complete with necessary hot dip galvanized sheet steel accessories such as coupler plates, ground continuity connections, clamps, nuts, bolts, washers, hangers, clamps,

Equipment Grounding Conductors for Cable Tray Systems

Equipment Grounding Conductors for Cable Tray Systems Cable tray wiring systems have excellent safety and dependability records. These excellent records are the result of cable tray's unique

Practices for grounding and bonding of cable trays

Grounding and bonding of cable trays There are three wiring options for providing an EGC in a cable tray wiring system: An EGC conductor in or on

Mastering Cable Tray Installation | Step-by-Step Guide for a Seamless ...

Learn how to install cable trays correctly. Get the ultimate step-by-step guide on setting up a seamless and reliable cable management system.

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