Nearby cable tray ground wire

Overview

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.

Key Takeaways

The ground wire should be connected to each cable tray section or at designated bonding points using clamps or connectors, ensuring electrical continuity and compliance with NEC standards.

Grounding Principles

Cable trays must be grounded to provide a safe path for fault currents, protecting personnel and equipment from electrical hazards ( ). Metallic trays can serve as the Equipment Grounding Conductor (EGC) if they meet the minimum cross-sectional area requirements specified in NEC Table 392. 60(A) ( ).

If the tray does not meet these requirements, a separate EGC conductor must be installed within the tray or alongside each cable ( ).

Connection Locations

At Each Tray Section or Splice Grounding connections should be made at each tray section or at splice points to maintain electrical continuity. This can be achieved using bonding clamps, bolts, or welds ( ). Proper mechanical fastening ensures the EGC remains in place under fault current conditions.

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Ahead of Equipment Ground wires should be connected near equipment terminations, such as panels, motor control centers, or distribution boards, to ensure a low-resistance path to the building grounding system ( ).

Material Considerations

Steel trays: Can be used as EGCs for circuits with ground-fault protection up to 600 amperes. Aluminum trays: Can be used as EGCs for circuits with ground-fault protection up to 2000 amperes. Bare copper should not be used in aluminum trays due to corrosion; insulated conductors with exposed ends at bonding points are recommended ( ).

Best Practices

Ensure all tray sections are mechanically tight and electrically continuous ( ). Use tin- or zinc-plated connectors when bonding to prevent corrosion ( ). Verify grounding resistance is low (ideally 4 ohms or less) to ensure effective fault current diversion ( ).

If using a separate EGC, bond it to each or alternate tray sections for added safety ( ). By following these guidelines, the cable tray system will provide a reliable grounding path, comply with NEC requirements, and enhance overall electrical safety.

Article Content

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Equipment Grounding Conductors for Cable Tray Systems

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