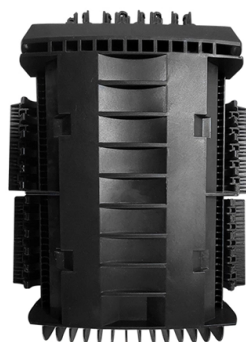


RIVO MULTITRADE OPTICAL SYSTEMS

Cable trays for laying electrical wires on the ground



Overview

Cable Tray Installation Rules (NEC 392) – Electrical TraderCore rules for selecting, installing, grounding, and filling cable trays—clearances, materials.

Key Takeaways

Cable trays can be safely installed on the ground using proper support, grounding, and material selection to ensure compliance, durability, and electrical safety. Tray Types and Material Selection

For ground-level installations, ladder-type, perforated, or solid-bottom trays are commonly used. Ladder trays allow airflow and easy cable entry, perforated trays support lighter loads, and solid-bottom trays protect cables from dust, debris, or moisture. Materials should be chosen based on environmental conditions: galvanized steel, aluminum, or stainless steel are preferred for corrosion resistance, while nonmetallic trays may be used in dry, low-risk areas. Aluminum offers excellent corrosion resistance due to its natural oxide layer, while galvanized steel provides sacrificial protection against rust.

Installation Guidelines

- Route Planning: Mark the tray path considering clearance, load, and cable separation.
- Support: Ground-mounted trays should be supported with brackets or stands spaced 1.5 to 3 meters apart, depending on tray type and load.

- Alignment: Ensure trays are level and straight, using connectors and fittings to join sections .
- Cable Laying: Organize cables neatly with ties or straps, leaving slack for expansion or future adjustments .
- Clearances: Maintain at least 12 inches of vertical clearance above trays for maintenance access .

Grounding and Bonding

Metallic trays must be properly grounded to prevent electrical hazards. The tray can serve as an Equipment Grounding Conductor (EGC) if it meets NEC requirements, or a separate grounding wire can be run along the tray . Key points include:

- Use continuous grounding conductors or secure connections at each tray joint with clamps or bolts .
- Ensure low grounding resistance, ideally 4 ohms or less .
- Avoid bare copper in aluminum trays to prevent electrolytic corrosion; use insulated conductors with exposed ends at bonding points .

Safety and Compliance

- Only use tray-rated or metal-clad cables suitable for open-air environments .
- Do not exceed 40% fill for power cables or 50% for control cables .
- Separate high-power and low-power cables to prevent electromagnetic interference .
- Avoid installation in hoistways, enclosed spaces, or areas prone to severe physical damage .

Additional Considerations

- For outdoor or wet environments, consider solid covers to protect cables from moisture and debris .
- Use sunlight-resistant cables if exposed to direct sunlight .
- Maintain proper bend radius at tray exits to prevent cable damage . By following these guidelines, ground-laid cable trays can provide a safe, organized, and durable solution for electrical wiring, ensuring compliance with NEC standards and long-term reliability .

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