

Standard Requirements for Custom-Made Cable Trays in Vertical Shafts



Overview

IEC 61537:2023 | IECIEC 61537:2023 specifies requirements and tests for cable tray systems and cable ladder systems intended for the support and accommodat.

Key Takeaways

Vertical shaft cable trays must comply with IEC 61537, NEMA VE 1, UL 568, and NEC/CEC installation standards to ensure safety, structural integrity, and electrical performance. Key Standards and CodesIEC 61537 is the internationally recognized standard for metal cable tray systems, including vertical installations. It specifies construction requirements, load testing, deflection limits, and electrical continuity for trays made of steel, stainless steel, aluminum, or other metallic materials.

Compliance ensures trays can safely support cable weight over vertical spans and maintain grounding continuity with a resistance of less than 0.1 ohms across joints.

NEMA V

E 1 provides manufacturing and installation requirements for metal cable trays, including ladder, channel, wire mesh, and solid-bottom types. It defines load/span classes, material specifications, and fittings suitable for vertical runs, ensuring structural stability and proper cable support. For nonmetallic trays, UL 568 covers performance and safety requirements, including fiberglass ladder and trough systems, which are often used in corrosive or high-moisture environments.



National Electrical Code (NEC, NFPA 70) and Canadian Electrical Code (CEC, C22. 1 Part 1) govern installation practices, including vertical tray spacing, support intervals, and ampacity considerations for conductors. Article 310 of the NEC provides guidance on conductor ampacities, which is critical when designing vertical cable shafts to prevent overheating.

Design and Installation Considerations

Rung Spacing and Cable Support: Vertical trays typically use rung spacing of 6–9 inches (150–230 mm) to maintain cable positions and prevent sagging. **Material Selection:** Steel, stainless steel, aluminum, and fiberglass are chosen based on environmental conditions, corrosion resistance, and mechanical strength. Stainless steel (AISI 316L) is preferred in corrosive environments, while aluminum offers lightweight and corrosion-resistant options.

Load and Deflection: Vertical trays must be designed to handle the cumulative weight of cables over the shaft height.

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C 61537 provides formulas for working load and safety margins, and trays are tested for deflection and yield strength at various spans. **Electrical Continuity:** When used as part of an earthing system, vertical trays must maintain low-resistance continuity to safely carry fault currents. **Thermal Expansion:** Vertical shafts must account for thermal contraction and expansion, especially in long runs or extreme temperature environments.

Fittings and Supports: Proper fittings, splice plates, and support brackets are required at intervals to maintain alignment and structural integrity.

Best Practices

Ensure all vertical tray installations are engineered for the specific cable load and environmental conditions. Verify compliance with local electrical codes and obtain necessary certifications (UL, CE, or third-party testing). Use solid or ventilated covers as needed to protect cables from dust, moisture, or mechanical damage.

Periodically inspect vertical shafts for corrosion, mechanical damage, or loose fittings to maintain long-term safety and performance. By adhering to these standards and guidelines, vertical shaft cable trays can provide safe, reliable, and code-compliant support for power, control, and communication cables in commercial, industrial, and utility installations.

Article Content

IEC 61537:2023 | IEC

IEC 61537:2023 specifies requirements and tests for cable tray systems and cable ladder systems intended for the support and accommodation of cables and possibly other electrical equipment in

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Understanding IEC 61537: A Comprehensive Guide to Cable Tray

Focusing on the technical aspects of cable tray systems, IEC 61537 outlines strict requirements and regulatory guidelines for various technical indicators.

Codes and Standards | Cable Tray Institute

This standard specifies the requirements for nonmetallic cable trays and associated fittings designed for use in accordance with the rules of the Canadian Electrical Code (CEC) Part 1, and the National

IEC Standard for Cable Tray: Complete Technical Guide

IEC 61537 is the internationally recognized benchmark for metal cable tray systems. It applies to cable trays made of steel, stainless steel, aluminum, or other metallic materials. The

Cable Tray Design and Standards Guide

The document outlines codes and standards that must be followed for design and construction of cable trays and their components. Standards listed include those for materials, rolling and cutting

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Specifies requirements for metal cable trays and associated fittings designed for use in accordance with the rules of Canadian Electrical Code, Part I and the National Electrical Code®

Cable Tray Regulations: Global Guide to Rules

Understand Cable Tray Regulations worldwide. Learn key standards like NEC (US), BS 7671 (UK), IEC (Europe), and more for safe installs.

Cable Tray Standards | Cable Management | Metsec

Metsec cable tray systems are usually assembled using M6 roofing bolts particularly for couplers, fishplates and connection to supporting framework. These bolts should be tightened to a torque of

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CABLE TRAY

Supports for cable trays should provide strength and working load capabilities sufficient to meet the load requirement of the cable tray wiring system. Consideration should be given to the loads associated

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Typical Design Philosophy of Cable Trays for Power Plant

Cable tray system shall be used for laying of MV and LV power, control, instrumentation and special cables in the Power Plant. Cable trays shall be supported on cantilever brackets at specified interval.

CABLE TRAY SYSTEMS GUIDE

The total load supported by the cable tray, uniformly distributed. This will be the combined weight of all of the cables or tray contents, any environmental loads (snow, ice, dust) and any concentrated static

Cable Tray Spacing Standards for Installation and Safety

Discover the essential cable tray spacing requirements for safe and efficient installation. Learn key standards, horizontal and vertical spacing, and more.

Guide to cable support systems

A cable support system consists of cable support lengths and system components, such as cable support fittings, support elements, mounting elements and system accessories. The cable support

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