Construction of Tray-type Span Cable Trays



Overview

Cable tray length is selected based on the load to be supported, the distance between the supports (also referred to as the span), and handling and installation constraints.

Key Takeaways

Tray-type span cable trays are structural systems designed to support and route electrical cables across open spans, using materials and supports engineered for load, environment, and safety compliance. OverviewTray-type cable trays are used to support and organize electrical, control, and communication cables in industrial and commercial facilities. They function similarly to bridges, providing a secure path for cables across open spans while allowing flexibility for routing, expansion, and maintenance.

Common types include ladder, ventilated trough, wire mesh, channel, and solid-bottom trays.

Materials and Corrosion Protection

Cable trays are typically made from steel, stainless steel, or aluminum, with various finishes to enhance corrosion resistance. Stainless steel (e.g., AISI 316L) is used in highly corrosive environments, while aluminum offers a high strength-to-weight ratio and natural corrosion resistance due to its oxide layer. Galvanized steel is common for general industrial applications.

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Design Considerations

Span and Support: Tray spans are determined by the load of cables and the type of tray. Supports can include wall brackets, suspended supports, or center suspensions. Typical spans range from 12 to 30 feet, depending on tray type and load.

Load Capacity: The tray must support the weight of cables plus any additional mechanical loads. Load calculations should consider cable density, future expansion, and environmental factors. Orientation: While trays are usually installed with rungs horizontal, edge-wise orientation is permissible if manufacturer guidelines are followed, which can reduce dust accumulation in certain environments.

Fittings and Routing: Horizontal and vertical bends, T-pieces, crossovers, and reductions allow for directional changes and dimensional adjustments. Proper fittings ensure structural integrity and cable protection.

Installation Guidelines

Support Placement: Supports should be installed at intervals recommended by the manufacturer to prevent sagging and maintain structural integrity. Thermal Expansion: Allow for thermal contraction and expansion, especially in long spans or outdoor installations. Cable Securing: Cables should be tied or anchored to maintain position, particularly in vertical runs or where precise spacing is required.

Compliance: Installation must comply with NEC, IEC, and NEMA standards (e.g., NEMA VE1, FG1, VE2) for safety, grounding, and performance.

Advantages

Flexibility: Easy to modify or expand cable routes. Safety: Reduces fire hazards and mechanical damage to cables. Cost Efficiency: Lower labor costs compared to conduit systems, especially for large installations.

Maintenance: Open designs allow for easy inspection and cable replacement.

Summary

Constructing tray-type span cable trays involves selecting the appropriate tray type and material, calculating load and span requirements, installing supports and fittings according to standards, and securing cables properly. Following manufacturer guidelines and industry standards ensures structural integrity, safety, and long-term reliability of the cable management system.

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Article Content

GUIDE CABLE TRAYS TECHNICAL

NEMA VE 1-2017 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 Technical Guide A practical guide to product selection and ...

Cable tray length is selected based on the load to be supported, the distance between the supports (also referred to as the span), and handling and installation constraints.

Guide to cable support systems

Four different mesh cable tray types are available, depending on the requirements, area of application and cable quantity. The innovative Magic connection system of the GRM and G-GRM mesh cable

CABLE TRAY SYSTEMS GUIDE

The Ladder Tray features light, rugged, tubular steel construction. It is designed for mechanical support and strain relief in long runs of cable and creates a smooth gradual bend for cable.

TECHNICAL AND SIZING DATA

The construction and outside diameter of the smallest cable will usually determine either the rung spacing or the type of construction for the bottom of the tray.

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

Cable Tray Installation Guidelines and Best Practices: Complete ...

Cable tray installation guidelines for industrial EPC projects with support spacing, earthing, routing, safety and real site best practices.

Cable Tray Design and Sizing Guide | PDF

The document discusses several key factors to consider when designing a cable tray system, including: 1) The width and height of the tray, type of tray bottom (ladder, ventilated, or solid), and type of

B-Line series Cable Tray Design Considerations

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Our wind certification report provides you with list of acceptable B-Line series cable tray supports, fittings and covers based off of the environmental conditions, cable loading, and type of cable tray in your

PRODUCT BROCHURE T&B® Cable Tray Specialty aluminum solutions

Technical specifications Load ratings: 1.5 safety factor. All tray sections will support an additional 200 lb concentrated load on any portion of tray (side rail, rung, etc.) above and beyond published load class.

Cable Tray Manufacturer in India | Industrial Cable Trays

Industrial Cable Trays, Galvanized Perforated & Ladder Type KP Green Engineering is an established supplier and premier cable tray manufacturer in India. KP

What are the main types of cable tray?

Introduce the main types of cable tray including ladder cable tray, perforated cable tray, solid bottom cable tray and wire mesh cable tray.

Cable Tray Today: An overview | Cable Tray Institute

This style of cable tray is available non-ventilated or ventilated, as shown in (figure D). Center supported cable trays Today, another type of cable tray is available for cable support and management. These

Codes and Standards | Cable Tray Institute

Purchase UL 568. FG 1, Fiberglass Cable Tray Systems Covers construction and test requirements for continuous, complete nonmetallic systems of ladder, ventilated, solid bottom cable trays, or channel

Cable Tray Selection Guide for Electrical Projects

Cable Tray Selection Guide for Electrical Projects Selecting the right cable tray is one of the most critical steps to ensure safe, stable, and long-lasting cable wiring in electrical and ...

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Cable Tray Joint / Cable Ladder Joint

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Cable Tray Joint / Cable Ladder Joint / L-Angle Side Joint Connector / Adjustable Joint Connector The adjustable joint connector is one of the important and widely used components in wire and cable

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This video was associated with the source search result. Verify technical details against current product documentation and project requirements.

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