Cable Tray Expansion Joint Manufacturing Method



Overview

Cable Tray Expansion Joint Installation: Comprehensive GuideDiscover best practices for cable tray expansion joint installation to accommodate thermal chan.

Key Takeaways

Cable tray expansion joints are manufactured and installed to accommodate thermal expansion and contraction, using splice plates, expansion guides, and bonding jumpers, with material and gap settings determined by temperature differentials.

Materials and Fabrication

Cable tray expansion joints are typically made from the same material as the tray itself, such as steel, aluminum, or fiberglass, to ensure compatible thermal expansion properties ( ). The expansion joint consists of splice plates that connect two tray sections while allowing longitudinal movement. These plates are fabricated to precise dimensions to maintain structural integrity and electrical continuity.

Bonding jumpers are incorporated around the splice plates to match the fault current capacity of the tray side rails or cross-section, ensuring safety and compliance with electrical standards ( ).

Manufacturing Process

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Material Selection: Choose tray-compatible metals or composites with appropriate corrosion resistance and mechanical strength ( ). Cutting and Shaping: Splice plates are cut and formed to match the tray profile, including holes for bolting and slots for thermal movement. Surface Treatment: Steel trays may be pre-galvanized or hot-dip galvanized, while aluminum trays rely on natural oxide layers for corrosion resistance ( ).

Assembly: Splice plates are pre-assembled with expansion guides and bonding jumpers to allow sliding movement while maintaining electrical continuity ( ).

Gap Setting and Installation

The expansion gap is calculated based on the maximum and minimum expected temperatures at the installation site.

Using NEM

A VE-1 or VE-2 standards, the gap is set to allow the tray to expand and contract without distortion or stress ( ). For example, a steel tray with a 100°F temperature differential may require an expansion joint every 128 feet, while aluminum requires one every 65 feet ( ). The installation process includes: Anchoring the tray at the midpoint between expansion joints with hold-down clamps.

Securing all other supports with expansion guides to allow sliding movement. Ensuring bonding jumpers are properly sized and connected to maintain electrical continuity ( ).

Standards and Guidelines

Manufacturing and installation must comply with NEC Section 300-7(b) and NEMA VE-1/VE-2 standards, which provide guidance on spacing, gap settings, and environmental considerations to prevent structural stress and maintain long-term reliability ( ).

Summary

The manufacturing of cable tray expansion joints involves material selection, precise fabrication of splice plates, incorporation of expansion guides and bonding jumpers, and careful gap setting based on thermal calculations. Proper adherence to standards ensures the system accommodates thermal movement, maintains electrical safety, and prevents mechanical damage to the tray or cables.

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Article Content

Cable Tray Expansion Joint Installation: Comprehensive Guide

Discover best practices for cable tray expansion joint installation to accommodate thermal changes, ensuring structural integrity and compliance with NEC and NEMA standards.

Managing Thermal Expansion and Contraction in Cable

Learn how to manage thermal expansion and contraction in cable tray systems with expert tips on expansion joints, guides, and spacing to ensure

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

Document DICOS

Attaching a channel cable tray by using the method illustrated in Figure 3-88 maintains the electrical requirements, and the bolted mechanical connection while providing a practical method for dropping

INSTALLATION GUIDE

We have more than a decade''s worth of experience making and designing quality cable tray and cable management systems. Our knowledgeable production team works closely with each customer to

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

The choice of method should be discussed with a local inspector. The best decision may be to extend only the cables, creating a discontinuity in the cable tray.

CTI-S65001_A01

It is important that cable tray installations incorporate features which provide adequate compensation for their thermal contraction and expansion. The length of the continuous cable tray straight run, and the

Best Practice Guide to Cable Ladder and Cable Tray Systems

Introduction This publication is intended as a practical guide for the proper and safe* installation of cable ladder systems, cable tray systems, channel support systems and associated supports. Cable ladder

GUIDE CABLE TRAYS TECHNICAL

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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®

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Cable Tray Trunking & Ladder Installation Method Statement

Cable Trays and Trunking shall be fixed with metal bracket at an interval of 1200mm or less as per manufacturer recommendations and at 250mm from bends, intersection and termination points with

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

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 characteristics, installation, and

Installation of Cable Tray, Trunking And Accessories

2. Purpose This method statement for the Installation of Cable Tray, Trunking, and Accessories shows and explains the procedure must be followed to install the cable tray and

What is Expansion Joint Cable Tray Installation

Learn the essentials of expansion joint cable tray installation and how they ensure safe and durable cable tray systems in various environments.

INSTALLATION GUIDE

At the midpoint between two expansion joints the tray should be secured (no longitudinal movement). At all other support locations, the tray is secured to the supports using the expansion guide portion of

Thermal Contraction and Expansion of Cable Tray

There are expansion joint splice plates and bonding jumpers available from cable tray manufacturers. A cable tray support should be located within 2 feet of each side of the expansion joint splice plates

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Cable Tray Trunking & Ladder Installation Method for Projects

Before any permanent work will proceed, pre-inspection of all materials, tools and access for installation to be carried out. Method of Installation of Cable Tray, Trunking and Ladders Cable

Related Video Reference

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

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This document is for preliminary research. Verify specifications against current standards, product documentation and project requirements.

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