

External Expansion Joints for Cable Trays

Article Overview

External expansion joints in cable trays accommodate thermal expansion and contraction, preventing structural stress, misalignment, and damage to cables.

Purpose of Expansion Joints

Cable trays, especially metal ones, expand when heated and contract when cooled. Without proper expansion joints, trays can bend, tear from supports, or elongate bolt holes, potentially damaging cables and compromising system integrity. Expansion joints absorb these movements, allowing trays to expand and contract safely while maintaining alignment and electrical grounding.

Material Considerations

- o Aluminum trays expand and contract more than steel, requiring more frequent expansion joints. For example, a 100-foot aluminum tray may change length by approximately 2 inches over a 100°F temperature variation.
- o Steel trays are heavier and less prone to expansion, so fewer joints are needed, but stronger supports are required.
- o Fiberglass trays have different thermal properties and may require unique spacing and gap settings.

Installation Guidelines

- o Placement: Expansion joints should be installed at regular intervals, particularly where temperature variations are significant, and near structural expansion points.
- o Support: Place supports within 2 feet of each side of the expansion joint. The tray should not be clamped too tightly, allowing it to slide via expansion guides.
- o Anchoring: Anchor the tray at the midpoint between expansion joints with hold-down clamps, while other supports use expansion guides to permit longitudinal movement.
- o Gap Setting: Determine the expansion gap based on the maximum and minimum expected temperatures and the tray material. Use nomographs or tables from NEMA VE-1/VE-2 standards to calculate the correct gap at installation.

Spacing Recommendations

- o For a 100°F temperature differential, steel trays may require an expansion joint every 128 feet, while aluminum trays every 65 feet.
- o For a 70°C differential, maximum spacing is approximately 102 ft for steel, 52 ft for aluminum, and 133 ft for fiberglass.



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Safety and Compliance

Proper installation ensures compliance with NEC Section 300-7(b) and NEMA VE-1/VE-2 standards, maintaining system safety, grounding continuity, and long-term reliability . Incorrect placement or tight clamping can lead to misalignment, cable damage, or tray failure.

Summary

External expansion joints are essential for cable tray systems exposed to temperature fluctuations. Correct material selection, spacing, anchoring, and gap settings prevent structural stress, maintain electrical safety, and ensure long-term performance of the cable tray system .

Learn how to manage thermal expansion and contraction in cable tray systems with expert

Is there anywhere else in the NEC book that says cable tray has to have an expansion splice plate every so many

T0 209 - Expansion joint - ZT - Cable trays and Trunkings

There are expansion joint splice plates and bonding jumpers available from cable tray manufacturers. A cable tray support should be

A cable tray system may be affected by thermal expansion and contraction, which must be taken into account during installation. To

Discover best practices for cable tray expansion joint installation to accommodate thermal

A. Submittal Drawings: Submit drawings of cable tray and accessories including clamps, brackets, hanger rods, splice plate

Center hung tray supports allow for quicker and easier cable installation by allowing cables to be deposited into tray systems from

Cable trays should be fastened to the support system using guides that allow for longitudinal movement. 5.4.4 Expansion Connectors

These three qualities make the Cablofil Wiremesh Cable Tray system preferred by installers.

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This guide covers cable ladder systems, cable tray systems, channel support systems and associated supports intended for the

An expansion joint is disclosed for a cable tray apparatus for a people mover system. An expansion joint is inserted or positioned

The ultra-robust Super-Duty Splice Plate allows cost-efficient expansion by reducing the need for structural supports. It can also be

Our thermal expansion guides are recommended to provide longitudinal movement from a fixed point. Two guides should be used

Learn the essentials of expansion joint cable tray installation and how they ensure safe and durable cable tray

Step 2: Determine the gap setting between the cable tray expansion splice joints at the time of the installation to account properly the

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