Lateral and longitudinal seismic bracing of cable trays

AI Overview

Seismic bracing for cable trays involves both longitudinal and lateral supports to resist earthquake forces, following ASCE 7-22, MSS SP-58/SP-127, and SMACNA guidelines, with proper spacing and hardware to ensure structural integrity.Overview of Seismic BracingCable trays, especially in multi-layer or long runs, represent a distributed mass that can be significantly affected by seismic forces. Seismic bracing is required to prevent excessive movement, protect equipment, and comply with building codes and owner-specific criteria, such as Bellcore GR-1275-CORE for telecommunications facilities . Bracing is typically categorized as:Lateral (transverse) bracing: Resists side-to-side motion perpendicular to the tray run.Longitudinal bracing: Resists motion along the length of the tray, particularly at changes in direction or at terminations.Design ConsiderationsCode Compliance: ASCE 7-22 §13.6.5–13.6.7 sets thresholds for when bracing is required, including tray size, weight, and occupancy importance factor (I_p). MSS SP-58/SP-127 and SMACNA provide detailed guidance for spacing, attachment, and brace sizing .Tray Mass and Configuration: Multi-layer trays or trays above equipment racks require additional bracing due to higher distributed mass .Attachment Points: Braces should connect to structural elements such as roof framing, concrete decks, or steel trusses. Predrilled tabs or strut channels are commonly used for secure attachment .Spacing: Lateral sway braces are typically installed at intervals not exceeding 30 feet for long runs, with additional support at bends, tees, and terminations .Hardware: Common hardware includes threaded rods, trapeze hangers, strut channels, and rigid bracing assemblies. Rigid bracing systems reduce the number of braces required and simplify installation while maintaining UL-listed safety factors .Installation PracticesLateral B...

Article Content

UNISTRUT Seismic Bracing Solutions

Requirement: Each straight run requires a minimum of (2) transverse braces and (1) longitudinal brace.

Cable Tray Checklist for High-Seismicity Projects

When those elements are coordinated early, cable tray systems can perform far more reliably under earthquake demands. Planning a project in a

Performance-based optimum seismic design of cable tray system

Since the improper distribution of the seismic braces may result in discontinuities in lateral stiffness of the cable tray system, in this study, the drift ratio between two longitudinal braces or rods

800.321.LOOS (5667) SEISMIC DESIGN GUIDE CABLE BRACING

design and installation of our Seismic Cable Bracing System. All of the materials and products presented have been design d and tested to exceed the requirements set forth in NFPA-13. In fact, the

Design and Installation Manual for Seismic Bracing of Cable Trays

Cable tray runs in seismic zones need more than normal hanger spacing. A standard trapeze support carries gravity load; it does not reliably stop lateral sway, longitudinal movement,

Seismic and cable tray solution flyer

Eaton''s B-Line series cable tray with TOLCO seismic bracing is the recommended total solution for your project. Our cable tray, bolted framing, and seismic bracing are approved as one system through

Understanding the Seismic Resistance of Cable Trays

This article discusses the importance of seismic resistance for cable trays, detailing when seismic braces are necessary, the factors that affect

Seismic Restraints (Full)

All linear runs must have minimum two transverse seismic restraints and one longitudinal seismic restraint. A run is defined as a 1.5m length for duct and 3m length for any other linear non-structural

Installing Seismic Restraints for Electrical Equipment

Raceways/Conduits/Cable Trays: Covers the different ways to install raceways, conduits, and cable trays. Attachment Types: Gives instructions on installing equipment in different arrangements known

Seismic Cable Bracing Solution by EATON

Seismic cable applications Along with reliable, quality products that deliver lower total installed cost, Eaton provides pre-engineered details for lateral

Cable & Pipe Supports

In Australia, seismic compliance is mandated by Section 8 of AS1170.4 (2007). EzyStrut offers a range of seismic solutions that comply with AS1170, and our one-stop range of seismic bracing, cable tray

Seismic Bracing Systems for Cable Trays Catalog

Explore seismic bracing solutions for cable trays. Catalog details wire rope/cable systems, specs, design for earthquake protection.

Understanding Seismic Support for Electrical Installations

By understanding and implementing the maximum design spacing for rigid and flexible cable trays, accurately placing lateral supports, and utilizing gate-type seismic braces, the resilience of electrical

Seismic analysis and design of electrical cable trays and support ...

Both the seismic qualifica- tion of the trays, and the design of their supports require the determination of seismic loads resulting from the response of the tray support system. The analysis

Seismic Standards: Cable Management Guide – Electrical Trader

In U.S. work, cable tray bracing often starts at 12 inches tray width. Typical ASCE 7 spacing is 40 ft transverse and 80 ft longitudinal. NZS 4219 calls for restraint when trays are

Vogtle Electric Generating Plant (VEGP) Units 3 and 4 Updated ...

Cable Trays and Cable Tray Supports This appendix provides the design criteria for seismic Category I cable trays and their supports. Seismic Category II cable trays and their supports are also designed

Design and Installation Manual for Seismic Bracing of Cable Trays

Overview of a cable tray seismic bracing load path from tray rail to structure. This guide serves EPC engineers, MEP contractors, procurement teams, and site inspectors working on

Performance-based optimum seismic design of cable tray system

The seismic performance levels of cable tray systems are presented according to current seismic design codes. A performance-based optimum seismic design procedure for cable tray

Seismic fragility analysis of suspended cable trays in civil buildings ...

This study investigates the seismic fragility of cable trays with two types of seismic supports in civil buildings by using the IDA method combined with full-scale shaking table tests.

Seismic Bracing Kit | Seismic Bracing | Wire and Cable Hangers | Wire ...

Kit contains items needed for seismic bracing long cable tray runs. Each kit contains: (4) 11'' cables with mounting eyelets (2) Metal brackets for attachment to support members (4) Cable clamp collars (4)

Cable Tray Checklist for High-Seismicity Projects

In seismic design, the support and bracing system is often more critical than the tray section itself. A standard gravity-only support layout is not

How Cable Trays and Seismic Bracing Systems Mitigate Earthquake

Properly installed systems can reduce lateral displacements by 40-60%. Controlled Movement: Unlike fixed supports, seismic-rated cable trays allow controlled sway through articulated

Seismic MEP Solutions | Eaton

First, lateral braces, also called transverse braces, are installed across or perpendicular to the system. Second, longitudinal braces are installed parallel to the system. Seismic bracing also uses rod

SEISMIC BRACING OF A DISTRIBUTED CABLE TRAY SYSTEM

The cable trays have diagonal bracing between layers of cable trays in the longitudinal direction using proprietary steel members and connected using bolts and clamps.

EARTHQUAKE PROTECTION

Pipe, Cable Trays, Bus Ducts & Conduit Bracing Details Cable Bracing SWIVEL FASTENER (TYP.) SEISMIC TENSION LOAD (REACTION) STIFFENER CLAMP STIFFENER CLAMP HANGER ROD

Seismic analysis and design of electrical cable trays and support ...

The design aspects of electrical cable trays and support systems are discussed from the seismic and structural standpoint. The effects of the inherent flexibility of commonly used cable trays

SOLUTIONS

Engineer certified designs and site inspections Ezystrut offers a range of seismic solutions that comply with Australian Standard AS1170.4. Our one-stop solution for seismic bracing, cable tray, pipe

Seismic and cable tray solution flyer

Our team of experts can help you select the best cable tray series for your application, as well as designing your seismic bracing layout to ensure it meets applicable building codes and standards.

UNISTRUT Seismic Bracing Solutions

UNISTRUT Seismic Bracing Solutions Unistrut is a global leader in seismic bracing solutions and is a go-to resource for Engineers, Contractors, Specifiers, and others. We have decades of experience

Lightweight Cable Tray System, Strong, Fast

No need for any drilling which makes for an extremely fast and simple installation. Compare B-Line or Thomas & Betts cable trays to ZipTray for an informed decision.

Contact Us

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