

Article Overview

Curved cable trays are measured by summing the straight tray lengths and the equivalent lengths of bends, using standard bend radii and fitting dimensions to calculate total tray run.

Understanding Curved Cable Tray Metering

When designing or installing cable trays with curves or bends, accurate metering ensures proper material estimation and installation planning. The total length of a curved cable tray is not simply the straight-line distance between start and end points; it must account for the geometry of bends and fittings.

Steps for Metering Curved Cable Trays

- o Identify Straight Sections Measure all straight tray segments between bends. These are added directly to the total tray length.
- o Account for Bends and Curves
 - o Use the standard bend radius provided by the manufacturer or specified in IEC 61537 or BS EN 61537 standards .
 - o For horizontal or vertical bends, the length of the tray along the curve is calculated as the arc length: $L_{\text{bend}} = \theta \times R$ where θ is the bend angle in radians and R is the bend radius.
 - o For 90° bends, the arc length is typically $\sqrt{2} \times R$.
- o Include Fittings and Accessories
 - o T-pieces, crossovers, reducers, and end closures have equivalent lengths that should be added to the total tray run .
 - o Manufacturers often provide fitting length tables to simplify calculations.
- o Sum All Components Total tray length = sum of straight sections + sum of curved sections + equivalent lengths of fittings.

Practical Considerations

- o Minimum Bend Radius: Ensure the bend radius meets cable manufacturer recommendations to prevent cable damage.
- o Material Type: Steel, aluminum, or stainless steel trays may have different bend allowances due to rigidity .
- o Installation Tolerances: Allow for slight adjustments during installation to accommodate alignment and support spacing.
- o Compliance: Follow IEC 61537 or BS EN 61537 for mechanical strength, electrical continuity, and safety .

Example

Metering Method for Curved Cable Trays

For a cable tray run with:

- o Two straight sections of 3 m and 4 m
 - o One 90° bend with a radius of 0.5 m
 - o One T-piece with an equivalent length of 0.2 m
- The total tray length is:

$$L_{\text{total}} = 3 + 4 + (\pi \times 0.5) + 0.2 = 7.785 + 0.2 = 7.985 \text{ m}$$

This method ensures accurate material estimation and proper installation planning for curved cable tray systems. By following these steps, engineers and installers can precisely meter curved cable trays, maintain compliance with standards, and avoid costly errors or rework.

The NEC rule requires that the cable cross-sectional areas together may not exceed 50% of the tray area (width x depth = fill).

This method statement covers the site installation of the cable tray & ladders and the requirements of checks to be

Tables list standard sizes and specifications for straight and bent cable trays, including width, height, thickness, materials, and

NEMA VE 1-2017 Specifies requirements for metal cable trays and associated fittings designed for use in accordance with the rules

A practical guide to product selection and installation This guide for engineers and installers has been developed by ABB as a

1.0 This method statement will serve as a minimum guideline to carry out the Cable Tray Installation activities for commercial

IEC 61537 does not specify exact load-bearing values for cable trays. Instead, it defines a standardized load-testing methodology

Cable trays and ladders are standardly produced in 3-meter lengths but can also be manufactured in 6-meter lengths if desired. Fully

The document provides an overview of cable trays, which are designed to organize electrical wires and prevent tangling. It details

Metering Method for Curved Cable Trays

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

It applies to cable trays made of steel, stainless steel, aluminum, or other metallic materials.

Attaching a channel cable tray by using the method illustrated in Figure 3-88 maintains the electrical requirements, and the bolted

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

THE BENEFITS OF CABLE TRAYS If you are seeking to break the very spirit of your IT staff, then the spaghetti method of cable

Cable tray / raceway is integral part of any cable management system. Selection of cable tray is very critical because

Cable trays are essential for organizing and supporting electrical and communication

Web: <https://www.in-au.co.za>

