Specification – Basorfil Wire Mesh Cable Tray – Three Part Specification

DIVISION 26

SECTION 260536 - CABLE TRAYS FOR ELECTRICAL SYSTEMS

PART 1 – GENERAL

* 1. RELATED DOCUMENTS
		1. Drawings and general provisions of the contract, including General and Supplementary Conditions and Division 01 Specifications Sections, apply to this Section.
	2. SUMMARY
		1. Section Includes cable tray manufactured from rigid (non-plasticized) polyvinyl chloride (WIRE MESH).
	3. RELATED SECTIONS
		1. Section 27 05 36. - “Cable Trays for Communications Systems” for cable trays and accessories service communications systems.
		2. Section 26 05 19 – Low-Voltage Electrical Power Conductors and Cables.
		3. Section 27 05 39 – Surface Raceways for Communications Systems
		4. Section 26 05 00 – Common Work Results for Electrical.
		5. Section 48 00 00 – Electrical Power Generation.
		6. Section 27 11 23 – Communications Cable Management and Ladder Rack.
	4. REFERENCES

A. American National Standards Institute (ANSI) / National Fire Protection Association (NFPA)

* + - 1. ANSI/NFPA70 – National Electrical Code (NEC).
		1. International Electrotechnical Contractors (IEC):
			1. IEC 61537 – Cable Tray Systems and Cable Ladder Systems for Cable Management.
		2. Telecommunications Industry Association (TIA):
			1. TIA 569-A (1998) – Commercial Building Standard for Telecommunications Pathways and Spaces.
		3. Underwriters Laboratories (UL)
		4. DIN Standards – DIN 4102-12 :Fire behavior of building materials and building components – Part 12: Circuit integrity maintenance of electrical cable systems – requirements and testing. Edition 2000-02-01
	1. ACTION SUBMITALS
		1. Product Data for Each type of product.
			1. Include data indicating dimensions for each type of cable tray indicated; a Manufacturer’s data sheet on each product to be used (including dimensions, material, UL Classification).
			2. Preparation instructions and recommendations.
			3. Storage and handling requirements and recommendations.
			4. Illustrative installation methods.
		2. Shop Drawings: For each type of cable tray indicated.
			1. Show fabrication and installation details of cable trays, including plans, elevations and sections of components and attachments to other construction elements. Designate components and accessories, including clamps, brackets, hanger rods, splice-plate connectors, expansion -joint assemblies, straight lengths and fittings.
			2. Verify loading capacities for supports.
	2. INFORMATIONAL SUBMITTALS
		1. Coordination Drawings: Floor plans and sections, draw to scale on which the following items are shown and coordinated with each other, using input from installers of the items involved.
			1. Include scaled cable tray layout and relationships between components and adjacent structural, electrical and mechanical elements.
			2. Vertical and horizontal offsets and transitions.
			3. Clearances for access above and to the side of cable trays.
			4. Vertical elevation of cable trays above the floor or below bottom of ceiling structure.
			5. Include scaled cable tray layout and relationships between components and adjacent structural and mechanical elements. Field verification of all dimensions, routing, elevation changes, etc. are required.
		2. Seismic Qualifications Certificates: For cable trays, accessories and components from the manufacturer.
			1. Basis for Certification: Indicated whether the product load carrying capabilities certification are based upon actual test of assembled components or on calculations.
			2. Dimensioned outline drawings of equipment unit: Identify center of gravity and locate and describe mounting and anchorage provisions.
			3. Detailed description of equipment anchorage devices on which the certification is based and their installation requirements.
		3. Certification:
			1. Submit training procedure for certifying cable tray installers.
	3. QUALITY ASSURANCE
		1. Qualification of Installer: Certified by the manufacturer.
			1. Certified Installer: Cable tray installers shall have successfully completed manufacturers Certified Installer training program.
	4. DELIVERY, STORAGE and HANDLING
		1. Avoid breaking and scratching of finish. Damaged products shall not be installed. Store cable trays and accessories in original packaging in a location that is free from construction traffic and an environment that will damage the packaging materials.
		2. Store products in original unopened packaging until ready for installation.
1. - PRODUCTS
	1. MANUFACTURER
		1. Manufacturer shall be Basor Electric, which US office is located at 609 South Breese, Millstadt, Illinois 62260; Toll Free Telephone: 844-393-3985; Telephone: 618-476-6300; Fax:618-476-6301; E-Mail: customerservice@basor.com ; Web address: [www.basor.com](http://www.basor.com) or [www.basor.us](http://www.basor.us) .
		2. Substitutions
			1. Substitutions shall not be permitted.
	2. WIRE MESH CABLE TRAYS
		1. Cable Trays shall be a welded wire mesh construction with a grid pattern consistent with 50mm (2” nominal) and 100mm (4” nominal) long rectangular continuous grid. The longitudinal wires shall be formed with a concave (inward) wave pattern. The grid member to be formed into a channel configuration designed expressly for cable management purposes.
			1. Cable tray system shall include, but will not be limited to, straight sections, elevation transitions, horizontal transitions, supports and accessories.
			2. Product: Basorfil BF2R and BFR Type cable trays by Basor Electric.
			3. Splices for cable tray straight sections to be pre-attached and no tool needed for assembly for all trays 2” and 4” siderail depths.
			4. Nuts and bolts and washer kits to be used to splice cable tray straight sections with 6” deep side channel depth and to field assemble manufactured fittings/transitions together.
			5. Wire Mesh Cable Tray Depth 2-inches (65mm)
				1. 2” (60mm) wide
				2. 4” (100mm) wide
				3. 6” (150mm) wide
				4. 8” (200mm) wide
				5. 12” (300mm) wide
				6. 16” (400mm) wide
				7. 18” (450mm) wide
				8. 20” (500mm) wide
				9. 24” (600mm) wide
			6. Wire Mesh Cable Tray Depth 4-inches (105mm)
				1. 4” (100mm) wide
				2. 6” (150mm) wide
				3. 8” (200mm) wide
				4. 12” (300mm) wide
				5. 16” (400mm) wide
				6. 18” (500mm) wide
				7. 20” (600mm) wide
				8. 24” (600mm) wide
			7. Length: The Wire Mesh Cable Tray straight section length shall be 118.1 inches (3,000mm) unless otherwise shown on drawings.
		2. Materials: High strength steel wires that will be electro zinc or unless specified based upon application and installation (i.e. HDGAF, i304 Stainless or i316L stainless).
			1. Electro plated Zinc: Straight sections shall be made from steel meeting the minimum mechanical properties of ASTM A510 and shall be electro-plated zinc in accordance with ASTM B633 SC2.
		3. Fire Rating for Wire Mesh Cable Tray. Wire Mesh cable tray shall be certified as tested and approved for an E90 fire rating according to DIN 41102-12 Standards.
	3. EXISTING PRODUCTS (general requirements for Cable tray)
	4. MATERIAL (performance requirements. Wire Mesh Cable Tray)
		1. Load Span Criteria
			1. The Load Span to be per the manufacturer’s recommendations based upon the cable type, cable size, cable quantity planned for the installation.
	5. MANUFACTURED UNITS
		1. Units shall be in pieces.
	6. EQUIPMENT
		1. Proper Material handling equipment shall be used on site to prevent personal injury or damage to materials.
	7. FABRICATION
		1. Field fabrication or alterations of WIRE MESH cable tray fittings to be per the manufacturer’s instructions. They are expected and shall be allowed.
		2. Field Fabrication or alterations of WIRE MESH cable tray fittings to be made with a offset head bolt or wire cutter.
			1. Tee’s and 90’s to be fabricated with the Basor BT90 Kit per the manufacture’s recommendations.
2. – EXECUTION
	1. INSTALLERS
		1. On installations of greater than 500 feet (approximately 152 meters) in total length, installers must be certified and trained by the manufacturer or manufacturer’s representative.
		2. Install as a complete system, including all necessary fasteners, splice plates, supports, divider strips, elbows, Tees, reducers, crosses vertical splice plates, variable angle splice plates hinged splice plates and covers.
	2. EXAMINATION
		1. Examine materials to be installed, comparing them to the manufacturer’s specifications and spec sheets (drawings). Do not proceed with installation until materials are confirmed to be within the prescribed condition.
		2. Examine materials to be installed for cleanliness and hidden damage resulting from poor material handling practice.
	3. CABLE TRAY INSTALLATION
		1. Install cable trays according to the manufacturer’s installation directions.
		2. Install cable trays as a complete system, including fasteners, hold-down clips, support systems, barrier strips, adjustable horizontal and vertical splice plates, elbows, reducers, tees, crosses, cable dropouts, adapters and covers.
		3. Install cable trays so that the tray is accessible for cable installation and all splices are accessible for inspection and adjustment.
		4. Remove any burrs or sharp edges from cable trays that result from field fabrication.
		5. Fasten cable tray supports to building structure and install seismic restraints as applicable.
		6. Design fasteners and supports to carry cable tray and the cables.
		7. Place supports so that spans do not exceed maximum spans on loading schedules and provide clearances shown on drawings or per manufacture’s recommendations.
		8. Construct supports from appurtenances furnished by the cable tray manufacturer. Arrange supports in trapeze, wall-bracket form or directly upon the floor or machinery as required by the application.
		9. Support Cable Tray assembly to prevent twisting from eccentric loading.
		10. Locate and install supports according to the installation directions provided by the manufacturer.
		11. Make connections to equipment and flanged fittings fastened to cable trays to equipment. Support cable trays independently of fittings. Do not transfer the weight of the cable trays to equipment enclosures.
		12. Make changes in direction and elevation using the manufacturer’s recommended field fabrication instructions.
		13. Seal penetrations through fire and smoke barriers in accordance with requirements in NFPA 70, National Electrical Code, Section 300.21. If cable trays are sized for futures cables, specify provisions for penetrations with sleeves through fire-rated partitions or use “repairable” firestop sealing material.
		14. Install capped metals sleeves for future cables through firestop-sealed cable tray penetrations of fire and smoke barriers.
		15. Install cable trays with enough workspace to permit access for installing cables.
		16. Install barriers to separate cables of different systems, such as power, communications and data processing; or different insulation levels such as 600v, 5,000v and 15,000v.
		17. Install permanent covers, if used, after installing cable. For outdoor applications or for where access to the contents of the tray is to be limited to qualified individuals, install cover retention hardware that will result in the need for a tool to remove the cover.
		18. Install warning signs in visible locations on or near cable trays after cable installation with the legend “Warning! Not to be used as a Walkway, Ladder or Support for Ladders or Personnel.”
	4. CABLE INSTALLATION
		1. Install cables only when each cable tray run has been completed and inspected.
		2. Fasten cables on horizontal runs with environment appropriate cable ties according to the methods demonstrated in NEMA VE2. Tighten cable ties only enough to secure the cable, without indenting the cable jacket. Install cable ties with a tool that includes an automatic pressure-limiting device.
		3. Fasten cables on vertical runs to cable trays every 18 inches (450mm).
		4. Fasten and support cables that pass from one cable tray to another or drop from cable trays to equipment enclosures. Fasten cables to the cable tray at the point of exit and support cables independent of the enclosure. The cable length between cable trays or between cable tray and enclosure shall be no more than 72 inches (1,800mm).
		5. In existing construction, remove inactive or dead cables from the cable trays before active cables are installed.
	5. CONNECTIONS
		1. Connect raceways to cable trays according to requirements in NFPA 70, National Electric Code.
	6. FIELD QUALITY CONTROL
		1. Perform the following tests and inspections [**with the assistance of factory-authorized service representatives]**:
			1. After installing cable trays and after the electrical circuitry has been energized, survey for compliance with requirements.
			2. Visually inspect cable insulations for damage. Correct any sharp corners, protuberances that appear in the cable tray, vibrations and thermal expansion and contraction conditions, which may cause or have caused damage.
			3. Verify that the number, size and voltage of cables in cable trays are installed as permitted by NFPA 70. Verify that communications or data-processing circuits are separated from power circuits by barriers or are installed in separate cable trays.
			4. Verify that there are no intruding items such as pipes, hangers or other equipment in the cable tray.
			5. Remove dust deposits, industrial process materials, trash or any description and any blockage of tray ventilation.
			6. Visually inspect each cable tray joint for mechanical continuity.
			7. Check for missing, incorrect or damaged bolts, bolt heads or nuts. When found, replace with specified hardware.
	7. PROTECTION
		1. Install temporary protection for cables in open trays to safeguard exposed cables against falling objects or debris during construction. Temporary protection for cables and cable tray can be constructed of wood or metal materials and shall remain in place until the risk of damage no longer exists.