EPP Composites Pvt. Ltd.
Since 1986

FRP Cable Trays

Ultimate solutions for
Cable Management System



www.eppcomposites.com

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About Us

Established in 1986, EPP has been a tour de' force for the past 37+ years with dedicated efforts for the growth of composite product solutions in India.

A technology powerhouse, EPP has been successful in developing and exercising every composite technology available in the world, serving clients with customized, engineered composite product solutions.

EPP provide total Turnkey solutions and detailed engineering services to Chemical, Petrochemical, Pharmaceutical, Oil & Gas, Water & Sanitation, Power & Energy, Offshore, Electrical, Building & Construction, Defence, Mass Transportation, Cooling Tower, Marine, and Steel Industry with 60+ product-driven solutions.

Certified with ISO 9001:2015 for QMS (Quality Management System).

7 Manufacturing Campuses | 1600+ Workforce
Exporting to >45 Countries | 5000+ Satisfied Customers



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FRP Cable Trays

A high quality FRP Cable Tray system offering a wide choice of sizes, material types & applications. For safety critical load and environment applications the product has been tested and approved to standards listed later in this document.

The range is designed to offer a cost effective, low maintenance alternative to GI, Al, stainless or galvanized steel when used in new build or refurbishment projects.

Available in a range of colours and finishes, provides all the advantages of lightweight, high strength and durability, coupled with a corrosion resistant, maintenance free, minimum 25 year lifespan.

The Cable Tray are manufactured from polyester resin by a Pultruded process with a choice of resin types to suit all environments.

They provide worker or general public safety and comfort in a variety of locations throughout industrial and public access areas.

EPP FRP Cable Tray is manufactured on a highly sophisticated Pultrusion Plant. The dimensions are the Rung space during the assembling of FRP Cable trays depending upon the specific requirement and the Working Load as per NEMA Standards.

EPP FRP Cable Trays are manufactured as per the industry standards for Non-Metalic Cable Trays. EPP FRP Cable Trays are widely used in Chemical Process industries where corrosion is the major problem.

EPP offers Cable Trays in the following varieties.

- **Ladder Type**
- **Channel Type with or without Perforations**



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Available Type

FRP Ladder Type Cable Tray

FRP ladder type cable tray is assembled with two longitudinal sides and a plurality of rungs. The ladder structure is ventilated and has good heat dissipation performance They are suitable for containing multiple cables, most of which are used in building wining system.



FRP Channel with Perforated Cable Tray

The structure of FRP channel cable tray shows a solid or perforated bottom with integral side rails. Plus a cover on it, it is closed. It is generally used in places that fire-proof, moisture-proof, dust-proof, anti-interference and mechanical damage, such as residential buildings office buildings, supermarkets and hotels





Flat Side Beam



Ragged Side Beam



Beam Perforated Beam

Available Covers

Besides, FRP channel cable tray and FRP ladder type cable tray are also available with cover. For further security, covers are used where cable protection is required or desired The flat cover is more widely used and fits most applications. In some places that exist the accumulation of snow or other particulate, the peaked cover can help shed excessive loads to reduce the pressure of FRP cable tray



Resin Material

- **Polyester Resin.** (Standard Product) It offers good UV and weather resistance.
- **Vinylester Resin.** It offers better corrosion and heat resistance.
- **Epoxy Resin.** Excellent insulation performance for electrical power projects
- **Phenolic.** It offers extreme low smoke and toxicity properties

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Design & Production Capability

EPP has expertise in pultrusion design, engineering, and manufacturing, making it possible to offer unique solutions to meet the customer's exact need.

We use the latest CAD and FEA software to design and analyse each part to provides expert solutions to customers for specific needs. EPP has an ISO : 9001 certified manufacturing facility.

- In-house laboratory for ASTM/IS structural and electrical testing
- Extensive research and development capabilities
- 30 Dedicated pultrusion lines for Cable Tray production
- Complete fabrication facilities to cut or machine the parts for customer application






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Manufacturing Process

When we designed EPP System FRP cable management and multi-discipline support system we had one thing in mind: To be Simply the Best! With over 37+ years of experience as a global lead-er in the supply cable support systems, we were able to fully evaluate product requirements, market trends, customer requirements, environmental con-siderations, smart designs and cost factors.

With all these factors in mind, we have created a full range of products that are user friendly, cost efficient and deliver safe, high strength solutions. Combined with creative, user friendly fittings and smart accessories, we are confident we have achieved our goal to be Simply the Best!

Pultrusion Process

Pultrusion is a continuous process of roving or mat/roving bundles, which are drawn through a resin impregnated bath to coat each fiber with a specially formulated resin mixture. The impregnated fibers are then drawn through a heated die which forms the desired cross section. Curing of the thermoset resin is initiated by heat in the die and catalyst in the resin. The rate of reaction is controlled by heating the die. The resulting high strength profile is cut to length and ready to be used in the EPP System FRP cable management and multi-discipline support system.





Standard Cable Ladder and Cable Tray fittings are fabricated using FRP/SS316/SS304 angle plates and SS bolt sets unless stated otherwise.



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FRP Composite Materials

Our System offers a range of resins to match the needs of our customers.

From our standard polyester resin to our high performance olstar resin, we can meet your chemical, fire, smoke and toxicity requirements.

To specify the desired resin, the standard FRP article numbers are prefixed with the resin code shown below.

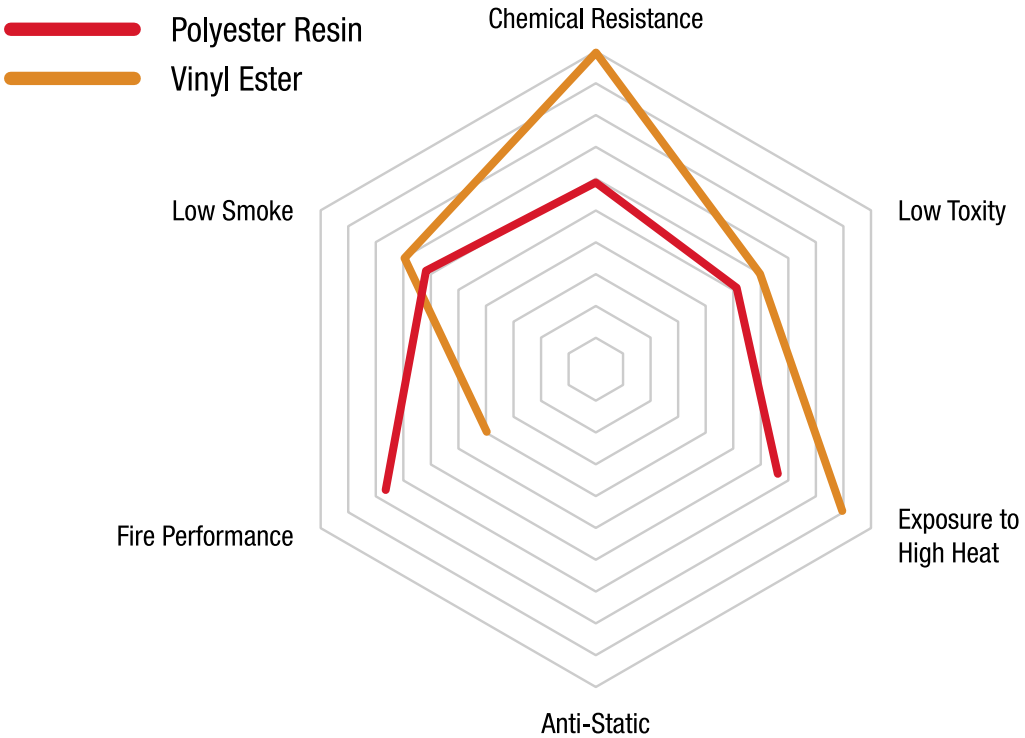
POLYESTER

Polyester is the most widely used resin system. It offers good weathering properties with to resistance ultraviolet light and has good corrosion resistance. the resin can also be formulated to meet specific fire and smoke standards and can be supplied with conductive properties. Our standard polyester resin product range is UI approved.

VINYL ESTER

Vinylester resins offer better corrosion resistance and heat resistance than polyester resin. It is suitable in industries using heavy chemical and caustic materials.

Resin Selection Chart



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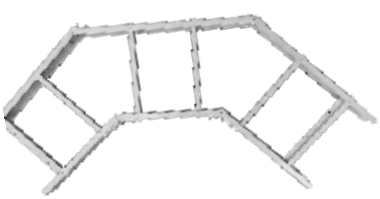
Common Specifications

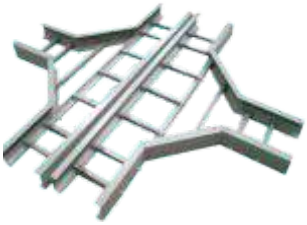
FRP Ladder Type Cable Tray							
Item	**Width mm**	**Height mm**	**Length m**	**Spacing mm**	**Color**	**Resin System**	**Remark**
EPPLTCT-01	100	75/100	3/6	250/300	Grey, White or Any Colors	Polyester Vinylester Phenolic	With Cover or without Cover
EPPLTCT-02	300	75/100					
EPPLTCT-03	300	75/100					
EPPLTCT-04	400	100/150					
EPPLTCT-05	500	100/150					
EPPLTCT-06	500	100/150					
EPPLTCT-07	600	100/150					
EPPLTCT-08	700	100/150					
EPPLTCT-09	1000	100/150					
EPPLTCT-10	1200	100/150					

FRP Perforated Type Cable Tray						
Item	**Width mm**	**Height mm**	**Length m**	**Color**	**Resin System**	**Remark**
EPPPTCT-01	50	50	3/6	Grey, White or Any Colors	Polyester Vinylester Phenolic	With Cover or without Cover
EPPPTCT-02	100	50/100				
EPPPTCT-03	150	50				
EPPPTCT-04	200	50/100				
EPPPTCT-05	300	50/100				
EPPPTCT-06	400	50/100				
EPPPTCT-07	450	100				
EPPPTCT-08	500	100				
EPPPTCT-09	600	50/100/150				
EPPPTCT-10	750	100/150				
EPPPTCT-11	800	100/150				
EPPPTCT-12	900	100/150				

Load design is for a support span of 2.5 mtrs. Standards tray length is 3.0 mtrs.







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FRP Standards

EPP System has carried out extensive testing together with fully accredited third party laboratories and institutes on our FRP product range. The following information represents some of this testing. If you require a particular standard that has not been indicated here, please contact us for more support.



ASTM D257

This test measures the volume and surface resistivity of a material. Our material can be formulated to obtain a reading of 10^5 to 10^9 Ohm. We may lower the resistance and increase the anti-static properties by adding carbon. Careful consideration must be given to this process as a conductive product will require grounding.



ASTM D635

Standard test method for measuring the rate of burning and duration of burning in plastic products. Our FRP product achieved UL94 HB classification requirements.



ASTM D792G

Standard test for measurement of density. Composite materials are extremely lightweight, with densities ranging from 1699 kg/m^3 to 1965 kg/m^3.This offers massive advantages over steel products which have a density approaching 8000 kg/m^3. This reduces the cost of shipping and makes installations easier.



ASTM G154 200 - 1000 Hrs

Standard weathering test for non-metallic materials. It exposes the material to a high intensity ultraviolet light source. Thanks to our resin rich surface our material is highly resistant to ultraviolet light and is perfect for outdoor applications.



BS 476 PART 7 CLASS 1

This is a vertical flame spread test. Sample material is exposed to a high intensity flame for a predetermined amount of time. The heat source is then removed and the test begins, after 10 minutes the flame spread and rate is measured. All of our resin systems achieve the highest level possible.



ASTM E84

Tests the rate of flame spread and smoke emissions of materials. To test this, sample material is placed in a test box with a gas burner at one end and a smoke measurement device at the exhaust end. Air circulation is provided to assist the spread of the flame. Our FRP material received the highest level of certification in this test.



IS 6746

This Standard specifies the tolerances on the properties, classification of fire retardant grades and methods of sampling and tests for unsaturated polyester resin systems

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Advantages of FRP Cable Tray

Our FRP cable management system has been designed to work in most extreme environments. Products are designed and manufactured to the highest quality standards while at the same time offering exceptional values to our customers. FRP products have many advantages, some of which are shown below.

EPP your best partner for Cable Tray Management System

CORROSION RESISTANCE
Resistant to a range of chemicals including salt water.

STRONG
Pultruded profiles have high loading capacity.

LOW MAINTENANCE
Resists corrosion, which eliminates the need for continual maintenance and cleaning. Provides a cost effective long term solution.

CONDUCTIVITY
Low thermal and electrical conductivity properties and high dielectric strength. Options for increased electrical conductivity are also available.

WEATHER RESISTANT
FRP is highly resistant ot cold temperatures and performs exceptionally well in even the harshest climates.

LIGHT WEIGHT
High strength to weight ratio compared to traditional metallic support systems.

EMI AND RFI TRANSPARENCY
Non-conductive resins are transparent to electromagnetic and radio signal interference.

QUICK AND EASY INSTALLATION
Installation is simple and some items can be fabricated or modified on site, reducing the complications caused by late project changes. Installation and modifications are carried out with standard tools.

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Applications

- Chemical and purification plants
- Offshore/onshore platforms
- Power plants
- Tunnels
- Marine industry
- Metallurgical plants
- Oil & Gas sector
- Water treatment plants
- Paper industry
- Mining
- EMI/RFI testing
- Building construction
- Radar
- Pollution control









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FRP Cable Tray Mechanical Properties

Typical coupon properties of EPP Reinforced Plastics structural fiberglass channels (Standard and Polyester fire retardant shapes).

Properties derived according to NEMA test methods. Surface veil and ultraviolet inhibitors are standard in all channels.

Mechanical Proporties	NEEMA	Units	PE
Tensile Stress, LW	D-638	psi	30 000
Tensile Stress, CW	D-638	psi	7000
Tensile Modulus, LW	D-638	10^6 psi	2.5
Tensile Modulus, CW	D-638	10^6 psi	0.8
Compressive Stress, LW	D-695	psi	30 000
Compressive Stress, CW	D-695	psi	15 000
Compressive Modulus, LW	D-695	10^6 psi	2.5
Compressive Modulus, CW	D-695	10^6 psi	1.0
Flexural Stress, LW	D-790	psi	30 000
Flexural Stress, CW	D-790	psi	10 000
Flexural Modulus, LW	D-790	10^6 psi	1.8
Flexural Modulus, CW	D-790	10^6 psi	0.8
Modulys of Elasticity, E	Full Section	10^6 psi	2.6
Shear Modulus	-	10^6 psi	0.425
Short Beam Shear	D-2344	psi	4500
Notched Izod Impact, LW	D-256	ft-ls/in	25
Notched Izod Impact, CW	D-256	-	4

Physical Proporties	NEEMA	Units	PE
Barcol Hardness	D-2583	-	45
24 hour water absorption	D-570	% max	0.5
Density	D-792	bs./in.^{3}	.061-.070

Physical Proporties	NEEMA	Units	PE
Arc Resistance, LW	D-495	seconds	120
Dielectric Strength, LW	D-149	kv./in.	35
Dielectric Strength, PF	D-149	volts/mil.	200
Dielectric Constant, PF	D-150	60hz	8

Flame Rating Results

Test	Ignition	Burning	Rating
Flame Resistance (FTMS 406-2023)	75 seconds	75 seconds	-
Intermittent Flame test (HLT- 15)	-	-	100
Flammability test (ASTM D635)	none	0 second	-

Effect of Temperature

Strength properties of reinforced plastics are reduced when continuously exposed to elevated temperatures. Working loads shall be reduced based on the following:

Temperature in Degrees F	Approximate Percent of Strength
75	100
100	90
125	78
150	68
175	60
200	52

NEMA Standard 8-10-1986. If unusual temperature conditions exist, please consult the EPP Team.

Cable Trays Installation Guide

Installation of EPP fiberglass cable tray should be made in accordance with the standards set by NEMA Publication VE-2.

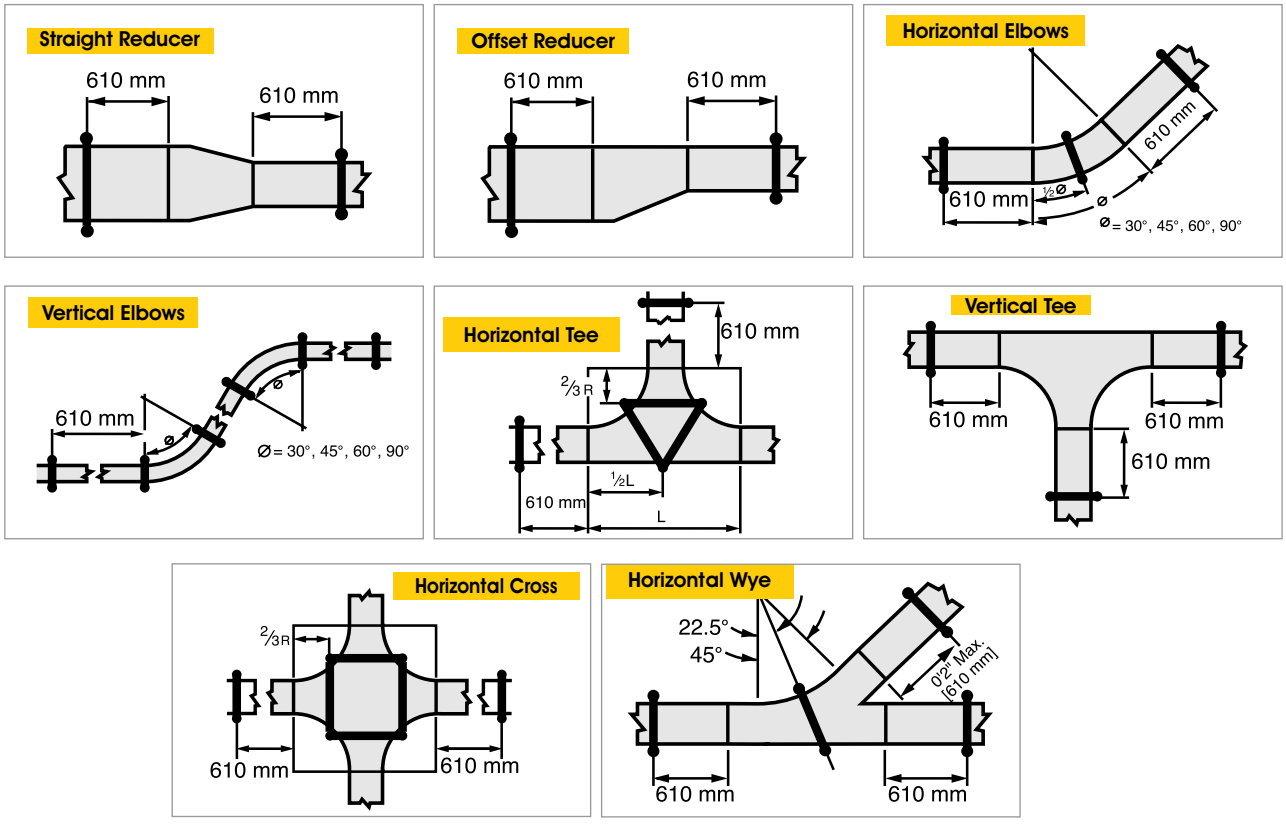
- Always observe common safety practices when assembling tray and fittings. Installations generally require some field cutting. Dust created during fabrication presents no serious health hazard, but skin irritation may be experienced by some workers.
- Operators of saws and drills should wear masks, long sleeve shirts or coveralls.
- Fabrication with fiberglass is relatively easy and comparable to working with wood. Ordinary hand tools may be used in most cases.
- A void excessive pressure when sawing or drilling. Too much force can rapidly dull tools and also produce excessive heat which softens the bonding resin in the fiberglass resulting in a ragged edge rather than a clean-cut edge.
- Field cutting is simple and can be accomplished with a circular power saw with an abrasive cut-off wheel (masonry type) or hack saw (24 to 32 teeth pr inch).
- Drill fiberglass as you would drill hard wood. Standard twist drills are more than adequate.
- Any surface that has been drilled, cut, sanded or otherwise broken, must be sealed with a compatible resin.
- Carbide tipped saw blades and drill bits are recommended when cutting large quantities.
- Support the fiberglass material firmly during cutting operations to keep material from shifting which may cause chipping at the cut edge.
- Each tray section length should be equal to or greater than the support span.
- When possible, the splice should be located at quarter span.
- Fittings should be supported as per NEMA FG-1.

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Support Locations for Fittings

Select the Fittings

Fittings are used to change the size or direction of the Cable Trays. The most important decision to be made in fitting design concerns radius. The radius of the bend, whether horizontal or vertical, can be 305mm, 607mm, 914mm and 1219 mm, or even greater on a custom basis. The selection requires a compromise with the considerations being available space, minimum bending radius of cables, ease of cable pulling, and cost. The typical radius is 607mm. When a standard angle will not work, field fittings or adjustable elbows can be used. It may be necessary to add supports to the tray at these points. Refer to NEMA Ve2 Installation Guidelines for suggested support locations. Note that fittings are not subject to NEMA/CSA load ratings.



Straight Sections

General rule of thumb is that the splice plates shall not fall beyond the 1/4 point of the span, or the distance between supports. For example: On a 20 (6.1m) support span, the splice plates shall not be further than 5' (1.5m) away from the support location. Under no circumstances shall two Cable Tray splices fall between any pair of supports. For special applications, mid-span splice plates can be furnished. Please contact the factory.

Fittings

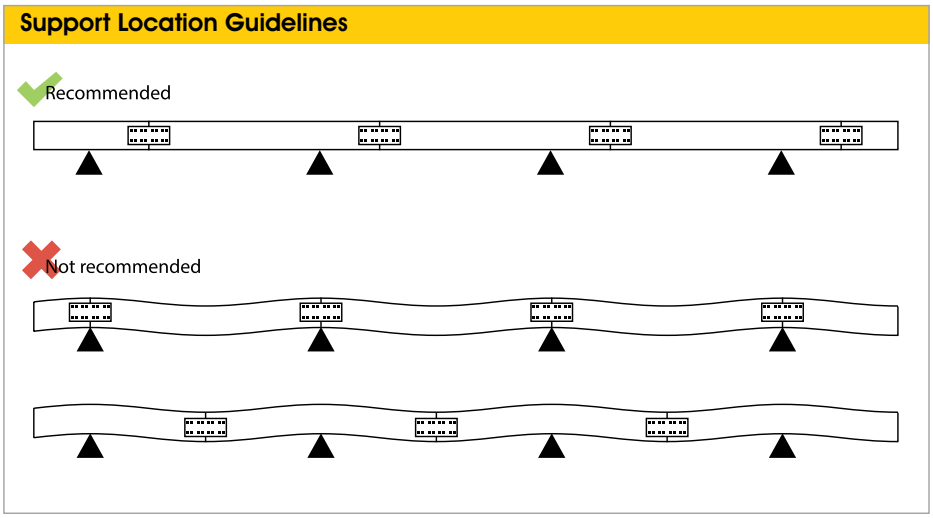
Supports for Cable Tray elbows are critical. It is important to note that the Cable Tray will come under its greatest stress when cables are being pulled into the tray. Therefore, proper placement of supports is necessary to ensure that the integrity of the tray system is maintained during the cable pulling operation.

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FRP Installation Guidelines

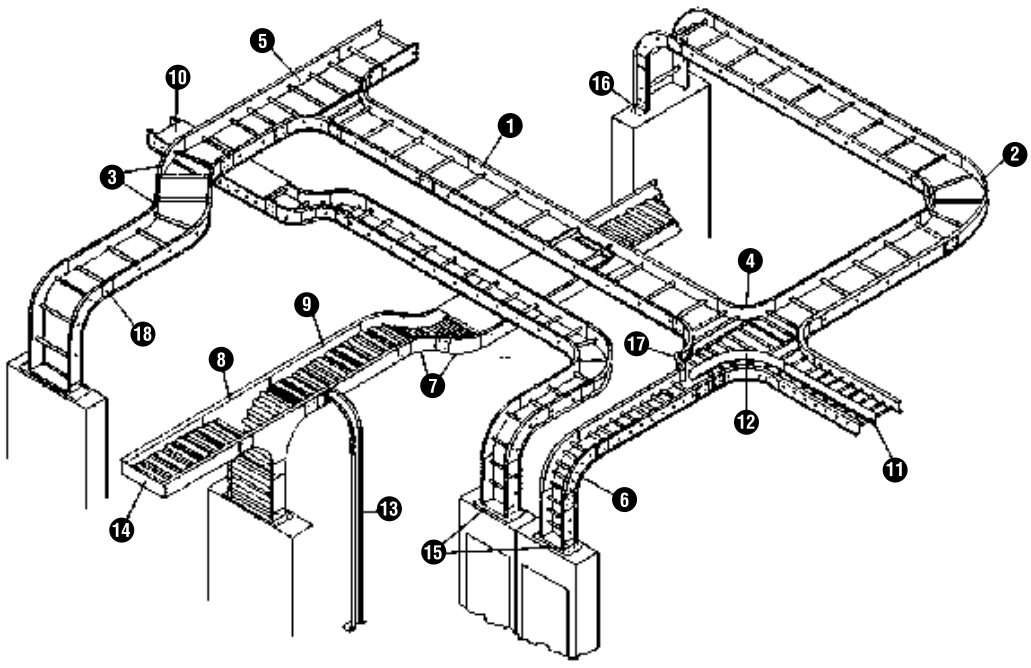
Installing Cable Ladders Trays Correctly

In order to minimize deflection and maximize the safe working load, the cable ladders or cable trays should be installed so that splice joints between horizontal runs sit at the quarter point of the span as illustrated below.



Cable Trays System Drawing Legend

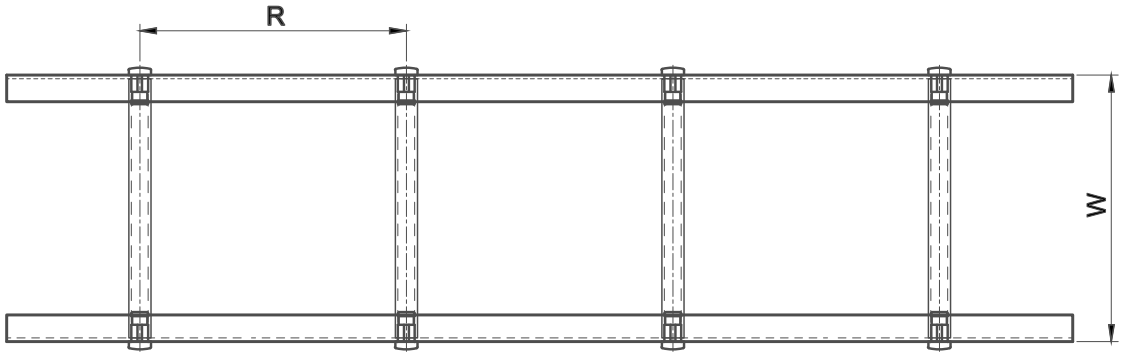
1 Straight Section, Ladder (SL)
2 Horizontal Elbow, 90°, Ladder Type (9F)
3 Horizontal Elbow, 30° (3F), 45° (4F) or 60° (6F)
4 Horizontal Cross, Ladder Type (FC)
5 Horizontal Tee, Ladder Type (FT)
6 Vertical Elbow, Outside, 90° (90)
7 Vertical Elbow, Outside & Inside, 30° (30, 3I), 45° (40, 4I), or 60° (60, 6I)
8 Vertical Tee, Solid Bottom Trof Type (VT)
9 Straight Section, Solid Bottom Trof (SL)
10 Flanged Solid Cover (FS)
11 Barrier Strip-Straight Section (SB)
12 Barrier Strip-Flexible-Horizontal Fitting (FB)
13 Straight Section, Channel (SL)
14 Blind End (BE)
15 Box Connector (BC)
16 Angle Connector (CA)
17 Reducing Connector (CO)
18 Universal Curvilinear Connector (RC)



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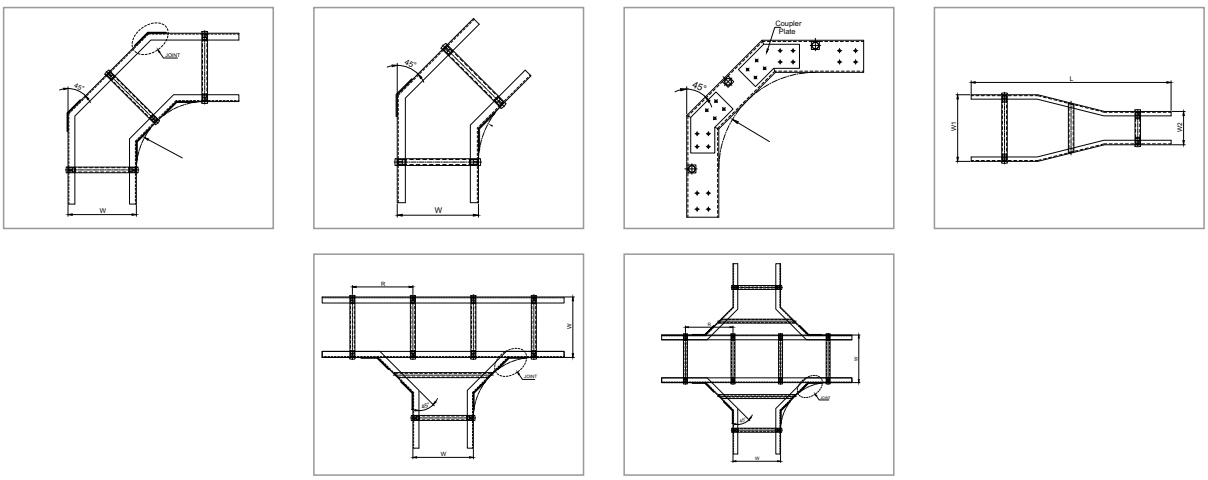
Ladder Type Cable Trays

The ladder type system comprises two channel side rails connected by transverse rungs. All rungs to side channel connections have both a mechanical and adhesive lock. They are used for any mixture of power or lighting cables with any mixture of control or signal cables. To cover all the ladder type cable tray nomenclature system is used. Nomenclature system includes each system with their respective side rail height, tray width etc. All cable trays are available in polyester, vinylester resin. Rung connections are made with a mechanical and chemical lock.



- These are manufactured by assembling various cross sections like side runner / 'C' channels and rungs.
- The rungs are inverted channels of 40 mm width x 20 mm depth and 4 mm thickness
- Cable Tray thickness depends height of cable tray
- Space between rungs is 300 mm
- The Cable Ladder Tray length is the length of the side runner / 'C' channels. It is 3000 mm
- Cable Trays are joined using coupler plates

Fittings for Ladder Type Cable Trays

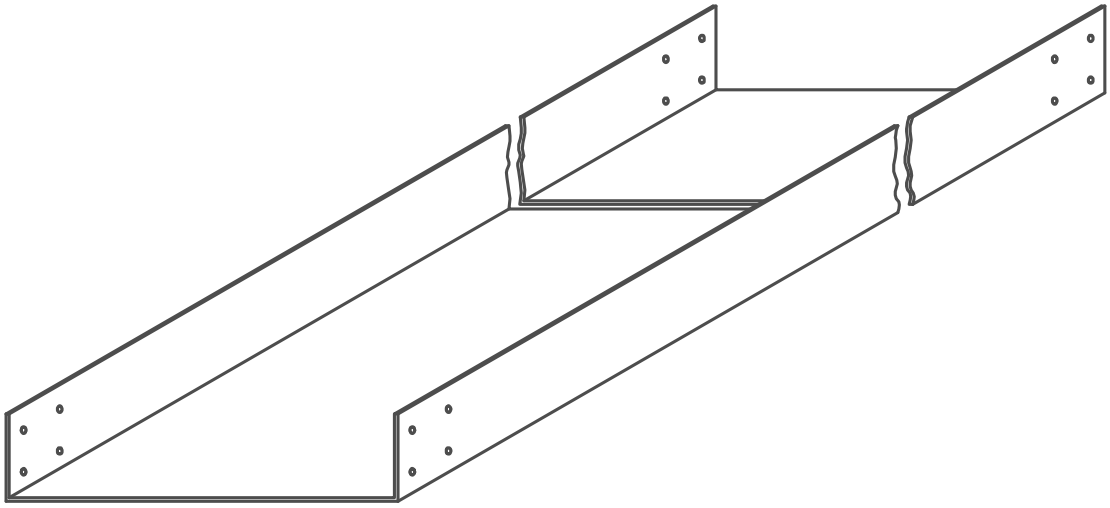


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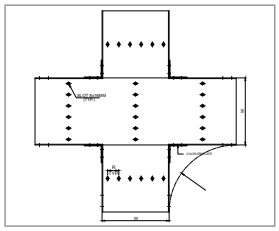
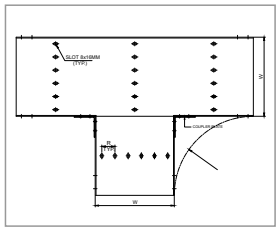
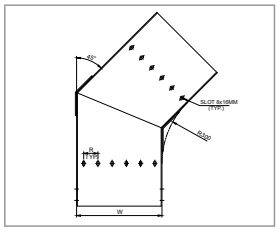
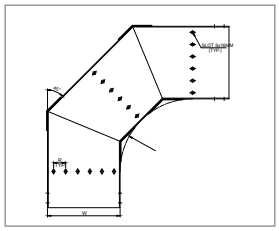
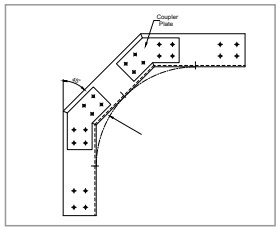
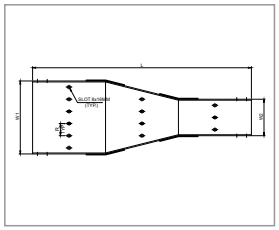
Perforated Type Cable Trays

The perforated type C channel solid bottom pre-drilled cable tray are designed for light loads namely Instrumentation and control cables and for transition from cable tray to individuals control points.

Perforations are on standard 300 mm centers and provide both ventilation and sites for cable tie down.

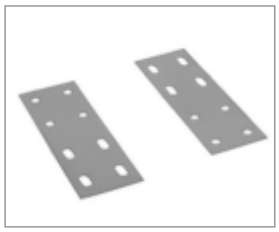


Fittings for Perforated Type Cable Trays

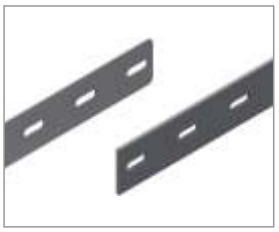







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Accessories



Splice Connector



Expansion
Splice Connector



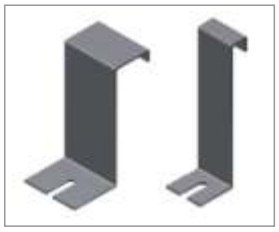
Splice Angle
Horizontal



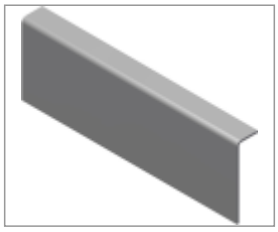
Hinge Vertical



Divider



Hold
Down Clamp



End Cover

Other products applicable in similar fields

FRP Electrical Trench Cover | FRP Lighting Poles | CCTV Poles | IP 65 / 66 / 67 Enclosures
Motor Canopies | Instrument Canopies | Earth Pit covers | Cage Ladders | Trefoil Clamps
FRP Cable Ducts | Conduits | FRP Supports | SMC Enclosures | SMC Sheets



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Major Clients

















































EPP COMPOSITES PVT. LTD.

REGISTERED OFFICE
Plot No. 2646, Kranti Gate Main Road, Lodhika Industrial Estate, Kalawad Road, GIDC Metoda, Rajkot - 360 021, Gujarat, INDIA.

Ph. : +91 02827 287059-60-61
Mob. : 91- 9099072558
E-mail : raviranjan@epp.co.in
Website : www.eppcomposites.com

AHMEDABAD OFFICE
801, Iskon Elegance, Nr. Shapath V, Prahlad Nagar, S G Highway, Ahmedabad 380015.

EPP/C/FRPcabletray/68/2024/Rev.01