

# enduro



ELECTRICAL  
PRODUCTS

## Z CABLE TRAY GUIDE

- Straight Sections
- Molded Fittings
- Mitered Fittings
- Splice Plates
- Accessories
- Channel Tray

# ABOUT **enduro**

**A Leader** in innovative engineered fiberglass products and systems. Enduro manufactures FRP/GRP products which include pipe, tanks and vessels, roofing and siding panels, ladder tray for cable management, tank cover systems, baffle and partition walls for water and wastewater treatment and odor control process systems.

**We Create Value** for our clients by working closely with them to understand their needs, helping to design fiberglass solutions to provide functionality and value with long service life.

**Experience** in engineering and chemical solutions. Enduro is a longtime leader in designing, manufacturing and installing the correct composite solutions for corrosion problems.

**Success** Enduro's know how and successful solutions have traveled the globe and today, our products can be seen in installations throughout the United States, Latin America, Europe, Asia and the Middle East.



# Z CABLE TRAY

## Z CHANNEL STATS

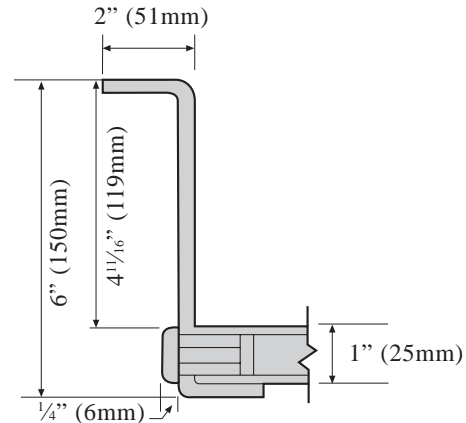
NEMA Class FG-1: 20C

Safety Factor: 1.5

Min. Channel Thickness: 5/16" (8mm)

Tray Weight: 4.8 Lbs/Ft (7.1 kg/m)

\*(2 side rails, 12" rung spacing)



## Z TRAY PART NUMBERS

### Imperial Straight Section Part Numbers

Example: **EHVZ6 - 06 - 06 - 20 - MR**

Resin Type	Width*	Rung Spacing	Length	Rung
V=Vinyl Ester	06=6"	06=6"	10=10 Ft.	SR=Strut Rung
S=Halogen-Free Polyester	09=9"	09=9.25"	20=20 Ft.	MR=Marine Rung
VS=Halogen-Free Vinyl Ester	12=12"	12=12"		MR2=Marine Rung every other
Y=Halogen-Free Low Smoke+	18=18"	18=18.5"		
RT=Conductive	24=24"			
For polyester tray, leave resin type in product number blank, example: EHZ6-06-06-20-MR.	30=30"			For standard rung, leave rung space in product number blank, example: EHZV6-06-06-20.

### Metric Straight Section Part Numbers

Example: **EHVZ6 - 150 - 150 - 6M - MR**

Resin Type	Width*	Rung Spacing	Length	Rung
V=Vinyl Ester	150=150mm	150=150mm	3M=3m	SR=Strut Rung
S=Halogen-Free Polyester	225=225mm	235=235mm	6M=6m	MR=Marine Rung
VS=Halogen-Free Vinyl Ester	300=300mm	300=300mm	9M=9m	MR2=Marine Rung every other
Y=Halogen-Free Low Smoke+	450=450mm	470=470mm		
RT=Conductive	600=600mm			
For polyester tray, leave resin type in product number blank, example: EHZ6-150-150-6M-MR.	750=750mm			For standard rung, leave rung space in product number blank, example: EHZV6-150-150-6M.
	900=900mm			

For more detail on resin systems, see the next page. Solid bottom available upon request. Rung connections are made with a mechanical and chemical lock. See specification page 7, item 5.1.2 for details. Please contact us for any other custom modifications. 18.5" (470mm) rung spacing not available for 30" (750mm) and 36" (900mm) widths. Width represents inside dimensions. Value of (mm) is nominal throughout.

# Z CABLE TRAY

## WORKING LOAD

Working (Allowable) Load Lbs./Ft. (kg/m)			
14' (4.3m)	16' (4.9m)	18' (5.5m)	20' (6.1m)
204 (304)	156 (233)	123 (184)	100 (149)

## RESIN SYSTEMS

Below is an overview of the common resin systems we offer. When choosing a resin type for your application, we highly recommend consulting with us regarding the application to be sure the proper resin is specified. Considerations include corrosion environment, temperature, fire resistance, smoke and smoke toxicity requirements and conductivity / resistivity requirements. Regarding the corrosion environment, certain chemical concentrations and temperatures will dictate whether a polyester or epoxy vinyl ester system is preferred for optimum durability.

### ISOPHTHALIC POLYESTER

This industrial-grade polyester resin system offers very good weathering performance (resistance to UV) and corrosion resistance. This system is especially suitable for seawater environments.

### VINYL ESTER

This resin system also delivers good weathering performance, but is superior to a polyester with respect to corrosion resistance and high heat environments. Epoxy vinyl ester resins provide greater toughness and considerably higher strength at elevated temperatures. They also provide superior resistance to chemical attack in corrosive chemical service.

### CONDUCTIVE

This Isophthalic Polyester-based resin is formulated to comply with ABS requirements for conductivity. To provide superior resistance to chemical attack, the conductive formulation is also available in a Vinyl Ester base.

### HALOGEN-FREE POLYESTER

This system offers similar performance attributes as our standard Isophthalic Polyester, but without the use of halogens.

### HALOGEN-FREE VINYL ESTER

This system offers similar performance attributes as our Vinyl Ester, but without the use of halogens.

### HALOGEN-FREE LOW SMOKE PLUS

This modified-acrylic based resin is suitable for applications which require extremely low-smoke development in the case of fire. This resin system is commonly used in tunnel applications.

# CABLE TRAY SPECIFICATION

## 1.0 Scope

1.1 The cable tray system shall conform to the material and fabrication requirements as per this specification.

## 2.0 Standards

2.1 The cable tray system shall conform to applicable sections:

- 2.1.1 NEMA Standard FG-1 (latest edition)
- 2.1.2 National Electric Code (NEC)
- 2.1.3 ASTM E-84 (Class 1 Rating)
- 2.1.4 UL (Underwriters Laboratories, Inc.) Standards for Non-Metallic Cable Trays.
- 2.1.5 CSA INTERNATIONAL (National Standard of Canada) CAN/CSA-C22.2 No. 126 Cable Tray Systems

## 3.0 General

### 3.1 Tray Requirements

- 3.1.1 Tray widths 6" (152mm), 9" (229mm), 12" (305mm), 18" (457mm), 24" (610mm), 30" (762mm), and 36" (914mm)
- 3.1.2 Lengths (as required): 10 ft, 20 ft, 3m, and 6m
- 3.1.3 Rung spacing (as required): 6" (152mm), 9.25" (235mm), 12" (305mm), and 18.5" (470mm) Rung Type (as required): Standard Rung, Marine Rung or Strut Rung
- 3.1.4 Radius of fittings (as required): 12" (305mm), 24" (610mm), and 36" (914mm)
- 3.1.5 Resin Systems (as required): Isophthalic Polyester, Vinyl Ester, Conductive, Halogen-Free Polyester, Halogen-Free Vinyl Ester, or Halogen-Free Low Smoke Plus

### 3.2 Loading Requirements

3.2.1 There shall be three working load classifications of fiberglass cable tray based on 20 Ft. (6m) support span:

Class	Working Load	FOS
A	50 Lbs./Lineal Ft.	1.5
B	75 Lbs./Lineal Ft.	1.5
C	100 Lbs./Lineal Ft.	1.5

3.2.2 Span support criteria shall be as specified (Reference the following table)

Support Span (Ft.)	Working Load in Lbs./Lineal Ft.		
	Class A	Class B	Class C
30	-	-	100
20	50	75	100
18	62	92	123
16	78	117	156
14	102	150	200
12	139	208	-
10	200	-	-

•Independent test reports in conformance to NEMA FG-1 required.

3.2.3 Nominal loading depth (as required): 2" (51mm), 3" (76mm), 5" (127mm), 7" (178mm) and 9" (229mm)

## 4.0 Materials

- 4.1 The glass fiber to resin content shall be maintained between 45 to 55 percent by weight in all pultruded components except flat sheet which shall be 35 to 45 percent; and, 25 to 45 percent by weight in all molded components.
- 4.2 All composite material shall have an ultraviolet light inhibiting chemical additive to resist UV degradation.
- 4.3 All composite material shall be fire retardant and have a flame spread rating of 25 or less (Class 1 Rating) when tested in accordance with ASTM E-84.

4.4 All pultruded products shall have a complete surfacing veil to provide maximum chemical and UV protection.

## 5.0 Construction

5.1 Straight section tray shall be fiberglass reinforced meeting all the requirements herein described.

- 5.1.1 The side rail members must turn in.
- 5.1.2 All rung to side member connections shall have both a mechanical and a chemical (adhesive) lock. The tray shall be assembled by the use of a locking pin made of fiberglass reinforced thermoplastic. The locking pin shall be inserted under pressure with a high strength, chemical resistant adhesive.
- 5.1.3 All bonded connections must be sanded to maximize adhesion and structural integrity.
- 5.1.4 The tray interior shall be clear of all projections or sharp objects.
- 5.1.5 All straight section lengths shall be pre-drilled to accept connector plates.
- 5.1.6 All cut ends and drilled holes (factory and field) shall be resin coated.

5.2 Fittings are to be pre-fabricated and shall meet all the requirements herein described.

- 5.2.1 All fittings shall have a nominal 9.25" rung spacing.
- 5.2.2 All fittings shall be pre-drilled to accept connector plates.
- 5.2.3 All fittings shall be designed and installed so as to have the same load carrying capacity as the straight sections.
- 5.2.4 Rung to side member connections shall have both a mechanical and/or chemical (adhesive) lock. Fittings shall be assembled by use of a locking pin made of fiberglass reinforced thermoplastic and/or a stainless steel rivet. The locking pin shall be inserted under pressure with a high strength chemical resistant adhesive.
  - All radius 90° and 45° horizontal and vertical bends, all tees and crosses for tray types using 6" (152mm), and most 4" (101mm) and 8" (202mm), C-channel members shall be of concentric curved molded design and made by resin transfer molding.

### 5.3 Connector Plates and Fasteners:

- 5.3.1 Connector plates shall be fiberglass and designed with sufficient strength so they may be installed between 0.2 and 0.3 of the length of the span from the support without derating the load carrying capacity of the tray.
- 5.3.2 Connector plates for conductive tray shall be stainless steel.
- 5.3.3 Fasteners for connector plates shall be 3/8" (9.5mm) diameter Type 316 Stainless Steel, Monel, Silicon, Bronze, or FRP studs & hex nuts as required.

## 5.4 Accessories

5.4.1 The manufacturer shall be capable of providing all necessary parts (i.e. clamps, support assemblies, etc.) for the installation of a complete fiberglass tray system.

## 6.0 Acceptable Manufacturer

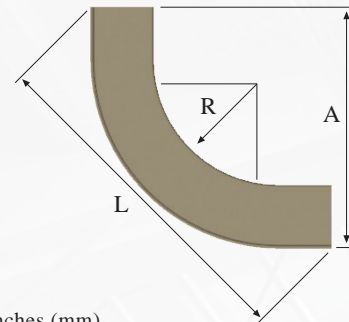
6.1 The fiberglass ladder-type cable tray system shall be manufactured – pultrusion, compression molded, resin transfer molded and/or fabricated by Enduro Composites, Inc., of Houston, Texas USA.

# MOLDED FITTINGS

## 90° VERTICAL BEND

### Part No. Key\*

INSIDE: EIV-MVZ6-90-(W)-(R)  
 OUTSIDE: EOVMVZ6-90-(W)-(R)



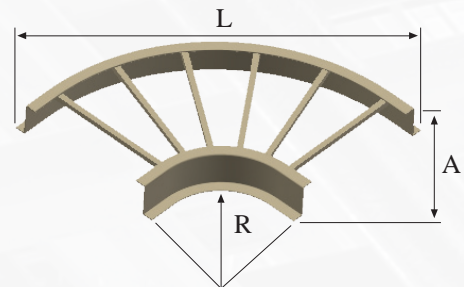
Dimension Inches (mm)

Width	12" (305) Radius		24" (610) Radius		36" (914) Radius	
	A	L	A	L	A	L
6 (152)	22 3/4 (578)	32 3/16 (818)	34 3/4 (883)	49 1/8 (1248)	46 3/4 (1187)	66 1/8 (1680)
12 (305)	22 3/4 (578)	32 3/16 (818)	34 3/4 (883)	49 1/8 (1248)	46 3/4 (1187)	66 1/8 (1680)
18 (457)	22 3/4 (578)	32 3/16 (818)	34 3/4 (883)	49 1/8 (1248)	46 3/4 (1187)	66 1/8 (1680)
24 (610)	22 3/4 (578)	32 3/16 (818)	34 3/4 (883)	49 1/8 (1248)	46 3/4 (1187)	66 1/8 (1680)
36 (914)	22 3/4 (578)	32 3/16 (818)	34 3/4 (883)	49 1/8 (1248)	46 3/4 (1187)	66 1/8 (1680)

## 90° HORIZONTAL BEND

### Part No. Key\*

EHB-MVZ6-90-(W)-(R)



Dimension Inches (mm)

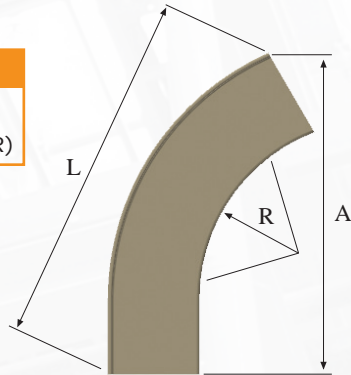
Width	12" (305) Radius		24" (610) Radius		36" (914) Radius	
	A	L	A	L	A	L
6 (152)	24 3/4 (629)	35 (890)	34 3/4 (933)	52 (1319)	48 3/4 (1232)	68 15/16 (1742)
9 (229)	27 3/4 (705)	39 1/4 (977)	39 3/4 (1010)	56 3/16 (1428)	51 3/4 (1315)	73 3/16 (1860)
12 (305)	30 3/4 (456)	43 1/2 (645)	42 3/4 (1086)	60 7/16 (1536)	54 3/4 (1391)	77 7/16 (1967)
18 (457)	36 3/4 (934)	52 (1321)	48 3/4 (1238)	68 15/16 (1751)	60 3/4 (1543)	85 15/16 (2182)
24 (610)	42 3/4 (1086)	60 7/16 (1536)	54 3/4 (1391)	77 7/16 (1967)	66 3/4 (1696)	94 3/8 (2399)
30 (762)	48 3/4 (1238)	68 15/16 (1751)	60 3/4 (1543)	85 15/16 (2182)	NA	NA
36 (914)	54 3/4 (1391)	77 7/16 (1967)	66 3/4 (1696)	94 3/8 (2399)	NA	NA

\* In Part No. Key, parentheses ( ) = insert corresponding option code;  
 R = Radius; W = Width of the inside distance from tray wall to tray wall

## 60° VERTICAL BEND

### Part No. Key\*

INSIDE: EIV-MVZ6-60-(W)-(R)  
 OUTSIDE: EOVMVZ6-60-(W)-(R)



### INSIDE

Dimension Inches (mm)

Width	12" (305) Radius		24" (610) Radius		36" (914) Radius	
	A	L	A	L	A	L
6 (152)	11 7/8 (302)	22 3/16 (564)	17 7/8 (454)	34 1/8 (868)	23 7/8 (606)	46 1/16 (1172)
12 (305)	11 7/8 (302)	22 3/16 (564)	17 7/8 (454)	34 1/8 (868)	23 7/8 (606)	46 1/16 (1172)
18 (457)	11 7/8 (302)	22 3/16 (564)	17 7/8 (454)	34 1/8 (868)	23 7/8 (606)	46 1/16 (1172)
24 (610)	11 7/8 (302)	22 3/16 (564)	17 7/8 (454)	34 1/8 (868)	23 7/8 (606)	46 1/16 (1172)
36 (914)	11 7/8 (302)	22 3/16 (564)	17 7/8 (454)	34 1/8 (868)	23 7/8 (606)	46 1/16 (1172)

### OUTSIDE

Dimension Inches (mm)

Width	12" (305) Radius		24" (610) Radius		36" (914) Radius	
	A	L	A	L	A	L
6 (152)	11 7/8 (302)	22 3/16 (564)	17 7/8 (454)	34 3/16 (868)	23 7/8 (606)	46 1/8 (1172)
12 (305)	11 7/8 (302)	22 3/16 (564)	17 7/8 (454)	34 3/16 (868)	23 7/8 (606)	46 1/8 (1172)
18 (457)	11 7/8 (302)	22 3/16 (564)	17 7/8 (454)	34 3/16 (868)	23 7/8 (606)	46 1/8 (1172)
24 (610)	11 7/8 (302)	22 3/16 (564)	17 7/8 (454)	34 3/16 (868)	23 7/8 (606)	46 1/8 (1172)
36 (914)	11 7/8 (302)	22 3/16 (564)	17 7/8 (454)	34 3/16 (868)	23 7/8 (606)	46 1/8 (1172)

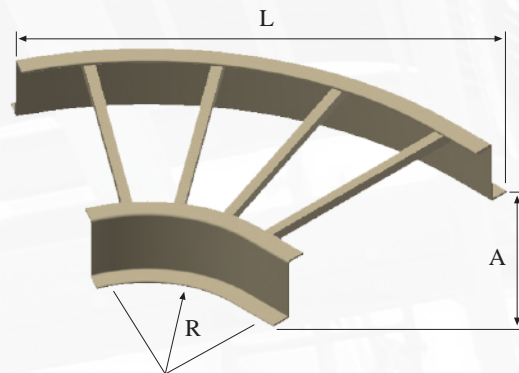
## 60° HORIZONTAL BEND

### Part No. Key\*

EHB-MVZ6-60-(W)-(R)

Dimension Inches (mm)

Width	12" (305) Radius		24" (610) Radius		36" (914) Radius	
	A	L	A	L	A	L
6 (152)	15 (381)	24 (610)	21 (533)	35 15/16 (903)	25 (635)	47 15/16 (1208)
12 (305)	21 (533)	30 (762)	27 (686)	41 15/16 (1056)	33 (838)	53 15/16 (1360)
18 (457)	27 (686)	35 15/16 (903)	33 (838)	47 15/16 (1208)	39 (991)	57 15/16 (1462)
24 (610)	32 7/8 (810)	41 3/16 (1046)	37 1/4 (946)	53 1/8 (1349)	45 (1143)	65 15/16 (1665)
36 (914)	45 (1143)	53 15/16 (1437)	49 1/4 (1251)	65 15/16 (1665)	57 (1448)	77 1/8 (1959)



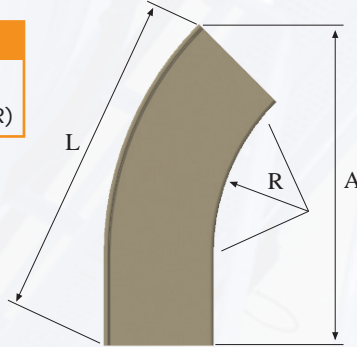
\* Part No. Key, parentheses ( ) = Insert corresponding option code; R = Radius; W = Width of the inside distance from tray wall to tray wall

# MOLDED FITTINGS

## 45° VERTICAL BEND

### Part No. Key\*

INSIDE: EIV-MVZ6-45-(W)-(R)  
 OUTSIDE: EOVMVZ6-45-(W)-(R)



### INSIDE

Dimension Inches (mm)

Width	12" (305) Radius		24" (610) Radius		36" (914) Radius	
	A	L	A	L	A	L
6 (152)	9 7/16 (240)	18 1/8 (460)	12 15/16 (329)	27 1/16 (697)	16 1/2 (419)	36 5/8 (930)
12 (305)	9 7/16 (240)	18 1/8 (460)	12 15/16 (329)	27 1/16 (697)	16 1/2 (419)	36 5/8 (930)
18 (457)	9 7/16 (240)	18 1/8 (460)	12 15/16 (329)	27 1/16 (697)	16 1/2 (419)	36 5/8 (930)
24 (610)	9 7/16 (240)	18 1/8 (460)	12 15/16 (329)	27 1/16 (697)	16 1/2 (419)	36 5/8 (930)
36 (914)	9 7/16 (240)	18 1/8 (460)	12 15/16 (329)	27 1/16 (697)	16 1/2 (419)	36 5/8 (930)

### OUTSIDE

Dimension Inches (mm)

Width	12" (305) Radius		24" (610) Radius		36" (914) Radius	
	A	L	A	L	A	L
6 (152)	9 7/16 (240)	18 5/16 (465)	12 15/16 (329)	27 7/16 (697)	16 1/2 (419)	36 5/8 (930)
12 (305)	9 7/16 (240)	18 5/16 (465)	12 15/16 (329)	27 7/16 (697)	16 1/2 (419)	36 5/8 (930)
18 (457)	9 7/16 (240)	18 5/16 (465)	12 15/16 (329)	27 7/16 (697)	16 1/2 (419)	36 5/8 (930)
24 (610)	9 7/16 (240)	18 5/16 (465)	12 15/16 (329)	27 7/16 (697)	16 1/2 (419)	36 5/8 (930)
36 (914)	9 7/16 (240)	18 5/16 (465)	12 15/16 (329)	27 7/16 (697)	16 1/2 (419)	36 5/8 (930)

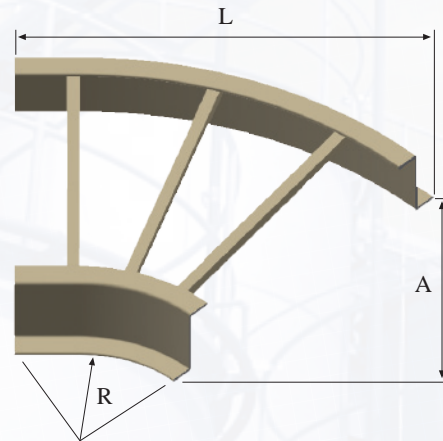
## 45° HORIZONTAL BEND

### Part No. Key\*

EHB-MVZ6-45-(W)-(R)

Dimension Inches (mm)

Width	12" (305) Radius		24" (610) Radius		36" (914) Radius	
	A	L	A	L	A	L
6 (152)	11 15/16 (278)	18 13/16 (477)	15 14/16 (392)	27 5/16 (693)	19 (483)	35 13/16 (909)
9 (229)	14 15/16 (380)	20 15/16 (531)	18 7/16 (469)	29 (747)	22 (559)	37 15/16 (963)
12 (305)	17 15/16 (456)	23 1/16 (585)	21 1/16 (545)	31 9/16 (801)	25 (635)	40 1/16 (1017)
18 (457)	23 15/16 (608)	27 5/16 (693)	27 7/16 (697)	35 13/16 (909)	31 (788)	44 5/16 (1125)
24 (610)	29 15/16 (761)	31 9/16 (801)	33 7/16 (849)	40 1/16 (1017)	37 (940)	48 5/8 (1233)
30 (762)	35 15/16 (913)	35 13/16 (909)	39 7/16 (1002)	44 3/16 (1125)	NA	NA
36 (914)	41 15/16 (1065)	40 1/16 (1017)	45 7/16 (1154)	48 5/8 (1233)	NA	NA



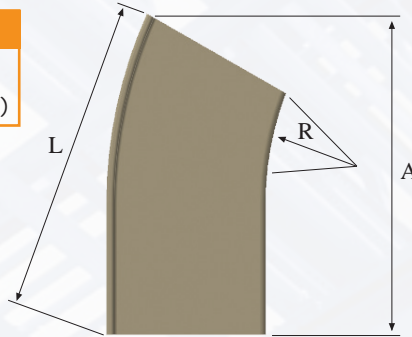
\* In Part No. Key, parentheses ( ) = insert corresponding option code; R = Radius; W = Width of the inside distance from tray wall to tray wall



## 30° VERTICAL BEND

### Part No. Key\*

INSIDE: EIV-MVZ6-30-(W)-(R)  
 OUTSIDE: EOVMVZ6-30-(W)-(R)



### INSIDE

Dimension Inches (mm)

Width	12" (305) Radius		24" (610) Radius		36" (914) Radius	
	A	L	A	L	A	L
6 (152)	7 7/16 (192)	14 1/16 (357)	9 3/16 (233)	27 5/16 (694)	10 3/4 (273)	26 7/16 (672)
12 (305)	7 7/16 (192)	14 1/16 (357)	9 3/16 (233)	31 1/16 (694)	10 3/4 (273)	26 7/16 (672)
18 (457)	7 7/16 (192)	14 1/16 (357)	9 3/16 (233)	35 3/16 (694)	10 3/4 (273)	26 7/16 (672)
24 (610)	7 7/16 (192)	14 1/16 (357)	9 3/16 (233)	40 1/16 (694)	10 3/4 (273)	26 7/16 (672)
36 (914)	7 7/16 (192)	14 1/16 (357)	9 3/16 (233)	48 7/16 (694)	10 3/4 (273)	26 7/16 (672)

### OUTSIDE

Dimension Inches (mm)

Width	12" (305) Radius		24" (610) Radius		36" (914) Radius	
	A	L	A	L	A	L
6 (152)	7 7/16 (192)	14 1/8 (359)	9 3/16 (233)	20 1/4 (514)	10 13/16 (275)	26 1/2 (673)
12 (305)	7 7/16 (192)	14 1/8 (359)	9 3/16 (233)	20 1/4 (514)	10 13/16 (275)	26 1/2 (673)
18 (457)	7 7/16 (192)	14 1/8 (359)	9 3/16 (233)	20 1/4 (514)	10 13/16 (275)	26 1/2 (673)
24 (610)	7 7/16 (192)	14 1/8 (359)	9 3/16 (233)	20 1/4 (514)	10 13/16 (275)	26 1/2 (673)
36 (914)	7 7/16 (192)	14 1/8 (359)	9 3/16 (233)	20 1/4 (514)	10 13/16 (275)	26 1/2 (673)

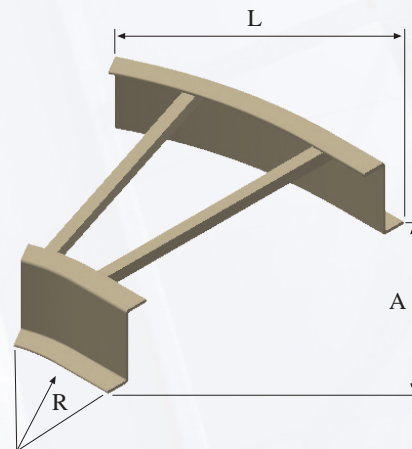
## 30° HORIZONTAL BEND

### Part No. Key\*

EHB-MVZ6-30-(W)-(R)

Dimension Inches (mm)

Width	12" (305) Radius		24" (610) Radius		36" (914) Radius	
	A	L	A	L	A	L
6 (152)	11 5/16 (287)	14 3/4 (375)	12 15/16 (329)	20 11/16 (525)	14 9/16 (370)	26 13/16 (681)
12 (305)	17 5/16 (440)	17 13/16 (437)	18 15/16 (481)	23 3/4 (603)	20 9/16 (522)	29 15/16 (760)
18 (457)	23 5/16 (592)	20 15/16 (522)	24 15/16 (633)	26 13/16 (681)	14 9/16 (370)	33 (838)
24 (610)	27 5/16 (694)	24 1/16 (611)	30 15/16 (786)	29 15/16 (760)	32 9/16 (827)	36 1/2 (927)
36 (914)	41 5/16 (1049)	30 1/4 (768)	42 15/16 (1091)	36 7/16 (926)	44 9/16 (1132)	42 11/16 (1084)



\* In Part No. Key, any parentheses ( ) = insert corresponding option code; R = Radius; W = Width of the inside distance from tray wall to tray wall

# MOLDED FITTINGS

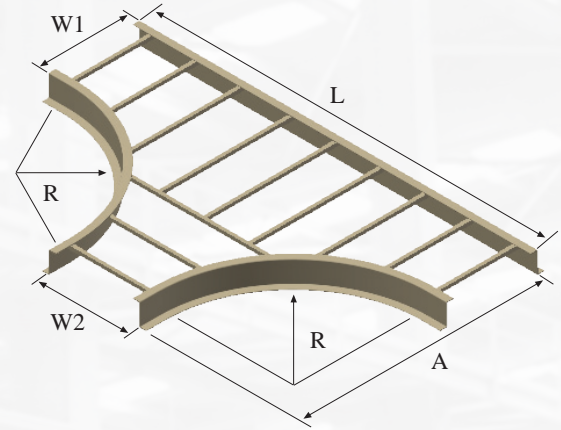
## HORIZONTAL TEE

### Part No. Key\*

EHT-MVZ6-(W1)-(W2)-(R)

Dimension Inches (mm)

Width	12" (305) Radius		24" (610) Radius		36" (914) Radius	
	A	L	A	L	A	L
6 (152)	24 3/4 (578)	39 (991)	36 3/4 (883)	63 (1600)	48 3/4 (1187)	87 (2210)
9 (229)	27 3/4 (654)	42 (1067)	39 3/4 (959)	66 (1676)	51 3/4 (1264)	90 (2286)
12 (305)	30 3/4 (730)	45 (1143)	42 3/4 (1035)	69 (1753)	54 3/4 (1340)	93 (2362)
18 (457)	36 3/4 (883)	51 (1295)	48 3/4 (1187)	75 (1905)	60 3/4 (1492)	99 (2515)
24 (610)	42 3/4 (1035)	57 (1448)	54 3/4 (1340)	81 (2057)	66 3/4 (1645)	105 (2667)
30 (762)	48 3/4 (1187)	63 (1600)	60 3/4 (1492)	87 (2210)	72 3/4 (1797)	111 (2819)
36 (914)	54 3/4 (1340)	69 (1753)	66 3/4 (1645)	93 (2362)	78 3/4 (1949)	117 (2972)



Contact us for dimensions on reducing tee.

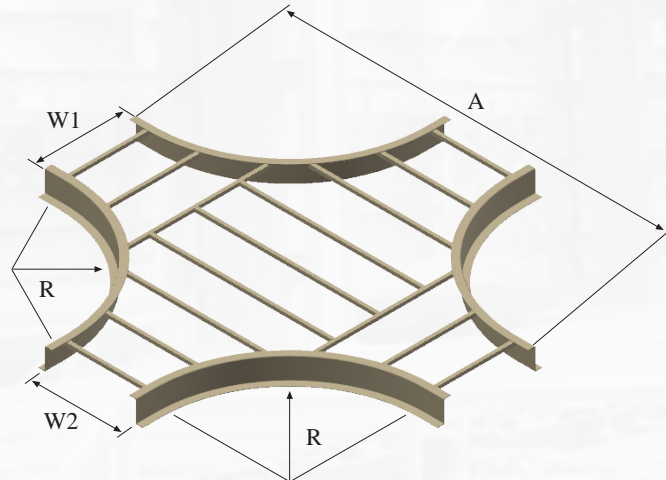
## HORIZONTAL CROSS

### Part No. Key\*

EHC-MVZ6-(W1)-(W2)-(R)

Dimension Inches (mm)

Width	12" Radius	24" Radius	36" Radius
	A	A	A
6 (152)	39 (991)	63 (1600)	87 (2210)
9 (229)	42 (1067)	66 (1676)	90 (2286)
12 (305)	45 (1143)	69 (1753)	93 (2362)
18 (457)	51 (1295)	75 (1905)	99 (2515)
24 (610)	57 (1448)	81 (2057)	105 (2667)
30 (762)	63 (1600)	87 (2210)	111 (2819)
36 (914)	69 (1753)	93 (2362)	117 (2972)



Contact us for dimensions on reducing cross.

Due to overall size of the 24" wide thru 36" wide, 36" radius cross assemblies are unable to be shipped via regular motor freight lines.

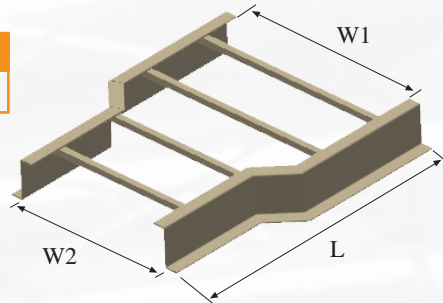
\* In Part No. Key, parentheses ( ) = insert corresponding option code; R = Radius; W = Width of the inside distance from tray wall to tray wall

# MITERED FITTINGS

## STRAIGHT REDUCER

### Part No. Key\*

ESR-HVZ6-(W1)x(W2)



W2 Inches (mm)	W1 Inches (mm)					
	36 (914)	30 (762)	24 (610)	18 (457)	12 (305)	9 (229)
6 (152)	43½ (1105)	40½ (1029)	37½ (953)	34½ (876)	26¾ (679)	26⅝ (670)
9 (229)	42 (1067)	39 (991)	36 (914)	33 (838)	26⅝ (670)	—
12 (305)	40½ (1029)	37½ (953)	36 (914)	26¾ (679)	—	—
18 (457)	37½ (953)	35¼ (908)	26¾ (679)	—	—	—
24 (610)	35¼ (908)	26¾ (679)	—	—	—	—
30 (762)	26¾ (679)	—	—	—	—	—

**Dimension "L" Inches (mm)**

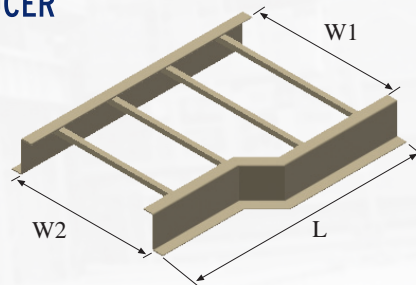
## RIGHT OR LEFT HAND REDUCER

### Part No. Key\*

RIGHT: ER-HVZ6-(W1)x(W2)

LEFT: EL-HVZ6-(W1)x(W2)

Right hand reducer is shown.



W2 Inches (mm)	W1 Inches (mm)					
	36 (914)	30 (762)	24 (610)	18 (457)	12 (305)	9 (229)
6 (152)	55½ (1410)	46¼ (1175)	46¼ (1175)	37 (940)	37 (940)	27¾ (705)
9 (229)	46¼ (1175)	46¼ (1175)	37 (940)	37 (940)	27¾ (705)	—
12 (305)	46¼ (1175)	37 (940)	37 (940)	27¾ (705)	—	—
18 (457)	37 (940)	37 (940)	27¾ (705)	—	—	—
24 (610)	37 (940)	27¾ (705)	—	—	—	—
30 (762)	27¾ (705)	—	—	—	—	—

**Dimension "L" Inches (mm)**

\* In Part No. Key, parentheses ( ) = insert corresponding option code;  
W = Width of the inside distance from tray wall to tray wall

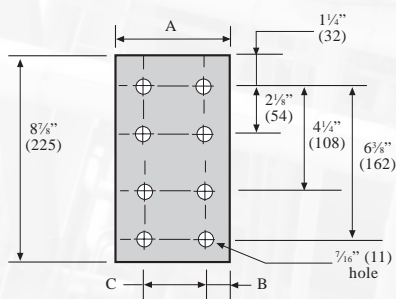
# SPLICE PLATES

Enduro offers a full line of fiberglass splice plates designed to provide a structural transition between straight sections and fittings. Enduro splice plates and hardware are sold separately and are not provided as standard with straight sections or fittings due to the many hardware options. All plates have 7/16" pre-drilled bolt holes.

## NEMA FG-1

Please refer to NEMA FG-1 regarding proper tray installation as it pertains to support and splice plate locations for straight sections and fittings. Refer to page 11 for recommended support locations.

## STRAIGHT SECTION



## SPLICE PLATE & HARDWARE OPTIONS

Tray Resin	Splice Plate Material		Hardware Material Sets			
	Vinyl Ester	316 Stainless Steel	316 Stainless Steel	Monel	Silicon Bronze	Isoplast
Vinyl Ester	Standard	Optional	Standard	Optional	Optional	Optional

## HARDWARE

Type	Set Includes	Size	For Use with Tray Types	Part No.
Silicon Bronze Bolt Set	Bolt, nut, 2 flat washers, 1 lock washer	3/8"-16 x 1 1/4"	All tray types (except 10" Channel***)	808167SB

\*\*\* Contact us for hardware; It is recommended that expansion splice plates and 1 1/2" long assembly fasteners be used when connecting mitered fittings to molded fittings or straight lengths.

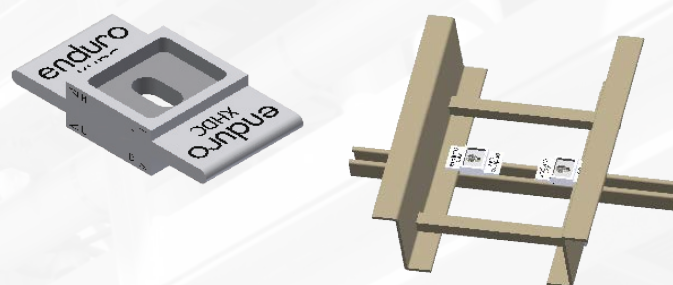
# ACCESSORIES

## HOLD DOWN CLAMP & EXPANSION GUIDE

Enduro's XHDC serves as both a Hold Down Clip and Expansion Guide for all Enduro ladder tray types. This new design eliminates the need for ordering or tracking multiple products for securing ladder tray to structural supports.

Installation: To determine the appropriate orientation for installation, rotate the XHDC to the corresponding letter indicator (etched into side profile) as shown in the table below. Each row shows which letter indicator to use for each series, for use as either Hold Down Clip, or Expansion Guide.

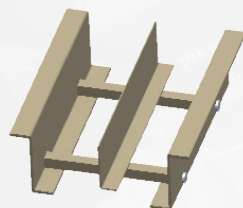
Part No. XHDC		Tray Type
Hold Down Clamp	Expansion Guide	
H	D	EHZ6



## DIVIDER STRIP

Divider strips are supplied in ten foot lengths. Unless indicated otherwise, dividers are intended for field installation. Please indicate installation position if required. For easier installation, dividers can be furnished with factory-drilled notching with additional cost. Divider strips are available for fittings, please contact us for part numbers. For securing riveted divider to tray we use 3/16" SS rivets. We also have available thermoplastic drive rivets (directly below) which require field drilling.

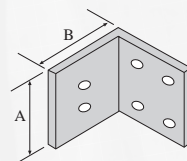
Part No. Key*
Loose: EDS-(Δ)-1
Installed: EDS-(Δ)-2



## FLOOR / PANEL FLANGE PLATE

Part No. Key*	Side Rail Height	Dim. A	Dim. B
FP-3(Δ)	3" (76)	1¾"	5 <sup>7</sup> / <sub>16</sub> "
FP-4(Δ)	4" (102)	2¼"	5 <sup>7</sup> / <sub>16</sub> "
FP-6(Δ)	6" (152)	4 <sup>5</sup> / <sub>8</sub> "	5 <sup>7</sup> / <sub>16</sub> "
FP-8(Δ)	8" (203)	6"	5 <sup>7</sup> / <sub>16</sub> "
FP-10(Δ)	10" (254)	8"	5 <sup>7</sup> / <sub>16</sub> "

Please contact us for stainless steel dimensions. All drilled holes are 7/16" in diameter. Hole pattern varies with tray type.



\* In Part No. Key, parentheses ( ) = insert corresponding option code; Δ = Insert resin designation, see gray box on page 23; H = Side Rail Height, available heights (inches): 3, 4, 6, or 8; W = Width of the inside distance from tray wall to tray wall; TD = Tray Designation

# CHANNEL TRAY

Enduro channel-type instrumentation tray is designed for light loads of individual wiring and pneumatic tubing. As illustrated, it is offered in solid or ventilated construction.

Ventilated channel-type tray has .75" (19mm) diameter holes on 9.25" (235mm) or 12" (305mm) centers staggered left and right in the web. Also available as slotted.

All straight sections and pre-assembled fittings are pre-drilled to accept flange splice plates. All splice plates and hardware are separate order items.

## SOLID BOTTOM PART NUMBERS

Part No. Key	Channel Size Width x Depth	Lbs/Ft.	Resin
EIS-200 x (L)	2" x 1" (51 x 25)	0.35	Polyester
EIS-400 x (L)	4" x 1½" (102 x 35)	0.94	Polyester
EIS-VE-200 x (L)	2" x 1" (51 x 25)	0.94	Vinyl Ester

Width represents outside dimensions. For slotted tray, replace the "S" in the part number with "PS".

L = Length; Available in 10', 20', 3m, and 6m sections, substitute "L" for 10, 20, 3M, or 6M.

Examples: EIS-400 x 10  
EIS-400 x 3M

## MAXIMUM LOADING & MAXIMUM DEFLECTION

Part No.	Span Ft. (m)	Max Loading Lbs./Ft. (N/m)	Max Deflection In. (mm)
EIS-200 x (L)	5 (1.5)	4.0 (5.94)	0.5 (12.7)
EIS-300 x (L)	5 (1.5)	3.9 (5.79)	0.5 (12.7)
	8 (2.4)	1.0 (1.48)	0.8 (20.3)
EIS-400 x (L)	8 (2.4)	2.8 (4.16)	0.8 (20.3)
	10 (3.0)	1.5 (2.23)	1.0 (25.4)
EIS-600 x (L)	10 (3.0)	2.8 (4.16)	1.0 (25.4)
EIS-800 x (L)	10 (3.0)	5.2 (7.73)	1.0 (25.4)
EIS-1000 x (L)	10 (3.0)	20.0 (29.73)	1.0 (25.4)
	15 (4.5)	3.9 (5.79)	1.0 (25.4)

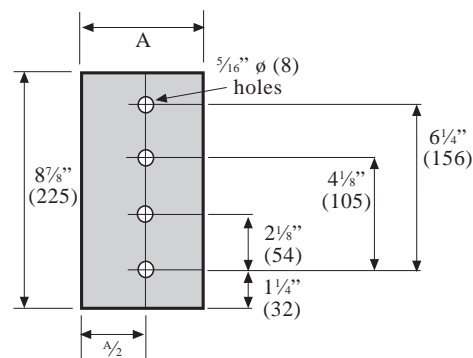
Loads are based on limiting the deflection to a value equal to 1/120 of the span. For ventilated tray, max loading reduced by 10 percent.

## STRAIGHT SECTION SPICE PLATE

### Part No. Key\*

EISP-180-(C)00

C = Channel Size; Available in 2" (50mm), 3" (75mm), 4" (100mm), 6" (150mm), 8" (200mm), 10" (250mm)



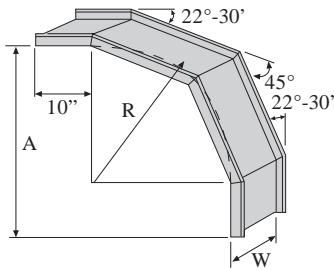
# CHANNEL TRAY FITTINGS & ACCESSORIES

The following fitting part numbers are for polyester, solid bottom channel-type fittings. Molded fittings also available in vinyl ester, add "VE". Vinyl ester example: EIS-VE-MC90IV-18-600. Mitered fittings also available in vinyl ester, add "VE" Example: EIS-90IV-12-600. For ventilated fitting, replace the "S" with a "P".

## 90° VERTICAL OUTSIDE MITERED

Part No. Key*	A
EIS-90OV-(R)-(W)00	22" (559)
EIS-90OV-(R)-(W)00	34" (864)

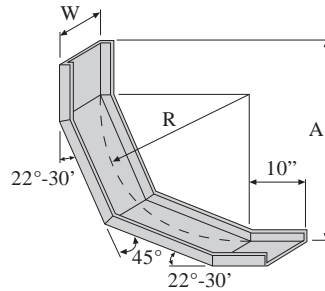
R = Radius which can be 12" (305) or 24" (610); W = Width which can be 2", 3", 4", 6", 8" or 10"; For 10" dimensions contact us.



## 90° VERTICAL INSIDE MITERED

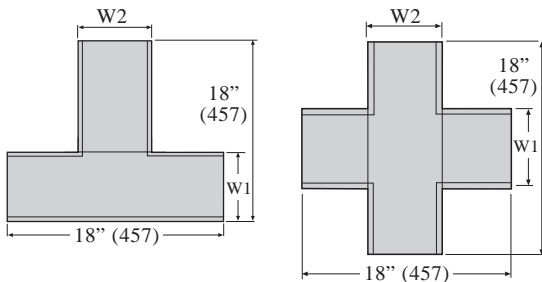
Part No. Key*	A
EIS-90IV-(R)-(W)00	22 1/4" (565)
EIS-90IV-(R)-(W)00	34 1/4" (820)

R = Radius which can be 12" (305) or 24" (610); W = Width which can be 2", 3", 4", 6", 8" or 10"; For 10" dimensions contact us.



## HORIZONTAL TEE & HORIZONTAL CROSS

Part No. Key*	W1	W2
EIS-HT or HC-200	2" (51)	2" (51)
EIS-HT or HC-300	3" (76)	3" (76)
EIS-HT or HC-400	4" (102)	4" (102)
EIS-HT or HC-600	6" (154)	6" (152)
EIS-HT or HC-800	8" (203)	8" (203)
EIS-HT or HC-1000	10" (255)	10" (255)

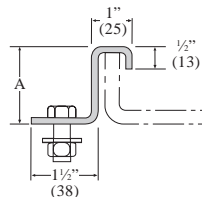


## 90° HORIZONTAL BEND

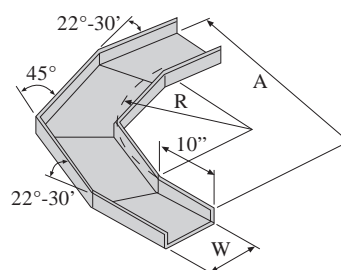
	Part No.	A
12" (305) Radius	EIS-90HB-12-200	24" (610)
	EIS-90HB-12-300	25" (635)
	EIS-90HB-12-400	26" (660)
	EIS-90HB-12-600	28" (711)
	EIS-90HB-12-800	30" (762)
	EIS-90HB-12-1000	32" (813)
24" (610) Radius	EIS-90HB-24-200	36" (914)
	EIS-90HB-24-300	37" (940)
	EIS-90HB-24-400	38" (965)
	EIS-90HB-24-600	40" (1016)
	EIS-90HB-24-800	42" (1067)
	EIS-90HB-24-1000	44" (1118)

## CHANNEL HOLD DOWN CLIP

Part No.	W	A
IHDC-3	3" (76)	1 1/8" (28)
IHDC-4	4" (102)	1 1/4" (33)
IHDC-6	6" (154)	1 3/4" (44)
IHDC-6D	6" (154)	1 3/4" (44)
IHDC-8	8" (203)	1 7/8" (47)
IHDC-10	10" (255)	2 7/8" (72)



10 Ga. 316 SS



\* In Part No. Key, parentheses ( ) = insert corresponding option code; Δ = Resin; R = Radius; W = Width of the inside distance from tray wall to tray wall.

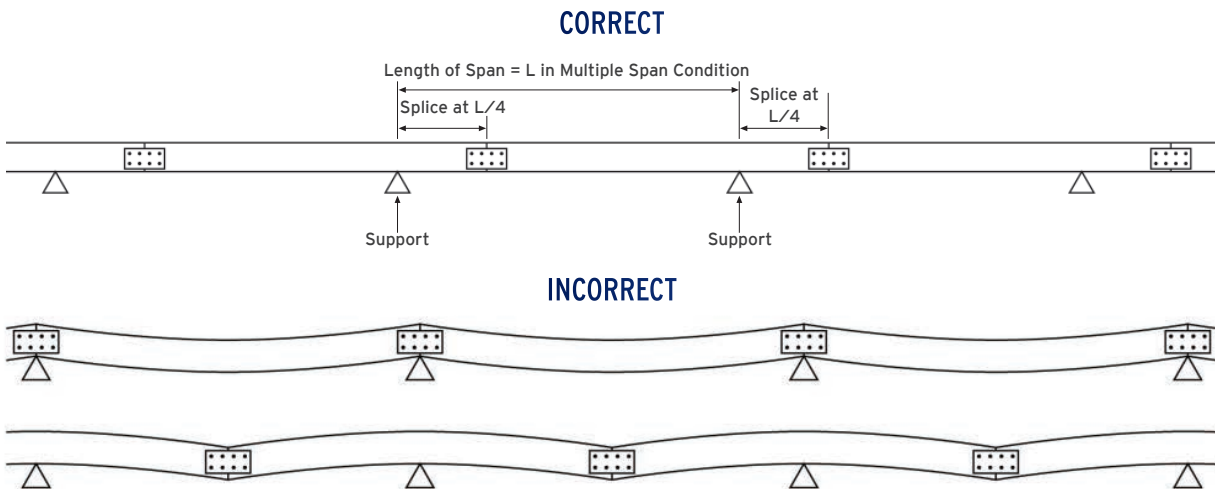
# CABLE TRAY INSTALLATION

The installation of Enduro Cable Tray should be made in compliance with the standards set forth by the National Electric Code and NEMA Publications VE-2 (current issue). Enduro supplies made to order, pre-fabricated cable ladder tray and fittings as specified by the purchaser. Always observe common safety practices when assembling tray and fittings in the field. Assemble in well-ventilated areas as dust from field cuts can accumulate. This presents no serious health hazard but can cause skin irritation and, if allowed to accumulate with grease and other machining lubricants, can become abrasive. Personnel should wear safety goggles, dust mask, coveralls or a shop coat when sawing, machining and/or sanding. Caution should also be noted when cutting as dust from carbon fiber is also electrically conductive and additional considerations apply.

Avoid generating excessive heat in any machining operation, as heat softens the bonding resin in the fiberglass, resulting in a ragged rather than a clean-cut edge. Avoid excessive pressure when sawing, drilling, routing, etc. Use carbide-tipped drill bits and saw blades for extended tool life. The use of lubricant during machining is not recommended. To avoid chipping of material at cut edges, secure cable tray and fittings properly during field cut operations. We recommend the use of Enduro sealant for sealing surfaces and cut edges after field cuts are made.

When using adhesives, be sure to prepare the surface properly before applying. Follow label instructions carefully. A combination of mechanical fasteners and adhesives make the strongest most reliable connections.

## SUPPORT LOCATION GUIDELINES



These guidelines apply when using standard splice plates. For location flexibility, heavy duty splice plates (pg. 22) allow for support location anywhere in the span.



## WARNING! CABLE TRAYS ARE NOT DESIGNED FOR USE AS WALKWAYS

Reference NEMA VE-2 (current issue)

In as much as fiberglass cable tray is designed as a support for power or control cables, or both; it is not intended or designed to be a walkway for personnel. The user is urged to display appropriate warning cautioning against the use of this support as a walkway.

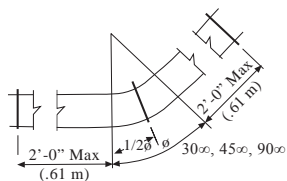


# STRAIGHT SECTIONS

Supports must be located so that connector (splice joints) between horizontal runs fall between the support point and the quarter point of the span. Standard engineering practice requires that the splice joints be located where they will resist little or no bending moment. This allows the cable tray system to act as a continuous member with spans working in conjunction with one another to resist loading. When a cable tray system is installed with the splice joints located directly over the support, the previous continuous span condition is changed to one of a number of simple spans. These spans act independently of each other and excessive stress will occur at substantially less loading. Vertical straight lengths should be supported at intervals dictated by the building structure not exceeding 24 Ft. on centers. A support should be located 2 Ft. on each side of an expansion connection.

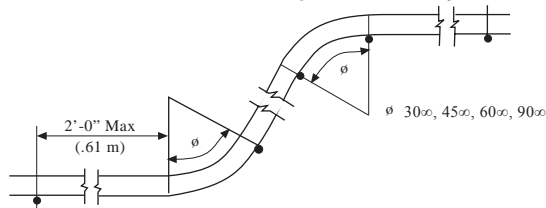
## HORIZONTAL FITTING SUPPORTS

Supports should be placed within 2 Ft. (.61m) of each fitting extremity, and as follows: 90 degree supports at the 45 degree point of the arc, 45 degree supports at the 22.5 degree point of the arc (except for the 12" radii), 30 degree supports at the 15 degree point of the arc (except for the 12" radii).



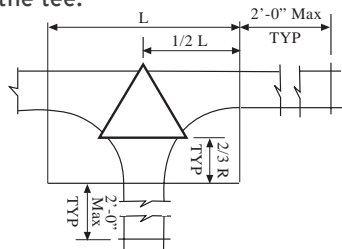
## VERTICAL FITTING SUPPORTS

Vertical fittings at the top runs should be supported at each end. Fittings at the bottom of runs should be supported at the top of the fitting, and within 2 Ft. (.61m) of the lower extremity of the fitting.



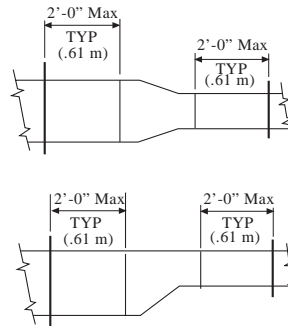
## HORIZONTAL TEE SUPPORTS

Supports should be placed within 2 Ft. (.61m) of each of the three openings connected to other cable tray items for 12" (305mm) radius. On all other radii, at least one support should also be placed under each side rail of the tee.



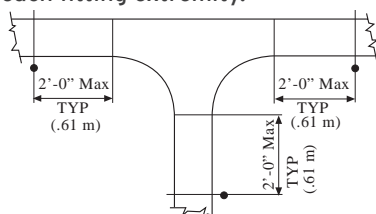
## REDUCER FITTING SUPPORTS

Straight reducer and right/left hand reducer fittings should be supported within 2 Ft. (.61m) of each fitting extremity.



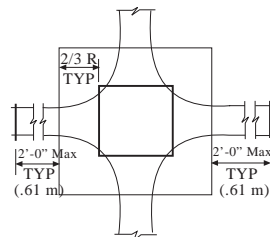
## VERTICAL TEE SUPPORTS

Vertical tee fittings should be supported within 2 Ft. (.61m) of each fitting extremity.



## HORIZONTAL CROSS SUPPORTS

Supports should be placed within 2 Ft. (.61m) of the four openings connected to other cable tray items for the 12" (305mm) radius. On all other radii, at least one support should also be placed under each side rail of the cross.



The background of the left side of the page is a grayscale photograph of an industrial facility, possibly a factory or a large-scale construction site. It features a complex network of metal beams, pipes, and structural supports. A white grid pattern is overlaid on this image. A vertical orange line separates this image from the dark blue background on the right.

# enduro

## HEADQUARTERS

16602 Central Green Blvd.  
Houston, TX 77032

Office 713.358.4000

Toll Free 800.231.7271

Fax 713.358.4100

Email [sales@endurocomposites.com](mailto:sales@endurocomposites.com)

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CERTIFIED**