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## **Introduction:**

Pooshesh Niro Monavar Gostar Company aiming at acting in the area of Electrical Industry and competing with foreign products on the strength of the State Internal Industries independency, has taken action to design and to produce varieties of cable trays, cable ladders with respective attachments, wall and floor laying trunkings in varieties of dimensions and colors, metal ducts, strap and bar grating, electricity steel pipes, in which area the Company has succeeded in providing the foregoing equipments for varieties of power plant, petrochemical, shipbuilding and cement projects.

It ought to be noted that due to quick development of electrical industry , this company took action to perform the activities mentioned below in order to improve production process and to increase the quality level of its products:

- 1- Receiving ISO9001:2000 Standard Certificate;
- 2- Making close cooperation with Mavadkaran Laboratory and Razi Metallurgical Research Institute for analyzing consumption materials including various types of steel, aluminum and stainless steel sheets as well as Zink(Zn) Coating for performing hot galvanized operations; and
- 3- Performing loading test in the factory's laboratory of Monavar Gostar Company.

## **About this catalogue**

For transferring energy from the project of origin to the place of consumption (whether in power cables or time cables) , the structures named supporting systems, cable tray and cable ladder are used.

## **Selecting material based on the environmental weather conditions**

One of the most important selection at the time of designing power metal structures, including cable tray, cable ladder and respective attachments for using in normal environments, environments with high moisture and/or acidic environments, is to select protective materials. On this basis, in normal environmental condition, the materials of pre-galvanized type are suggested to be use.

In case of using those type of structures in environments with high moisture, after having completed the production process, the action is taken to perform Hot Dip Galvanized operations, based on ASTM A123. In this way, the useful life of those parts is increased severally.

It ought to be noted that in high moisture and acidic environments such as oil and gas platforms and very moist regions, using stainless steel 304 and Stainless Steel 316L materials are suggested.

## A) Supporting Systems

This type of structure is used for installing brackets in different types and size of which varieties are as follows:

### 1- U Type Support

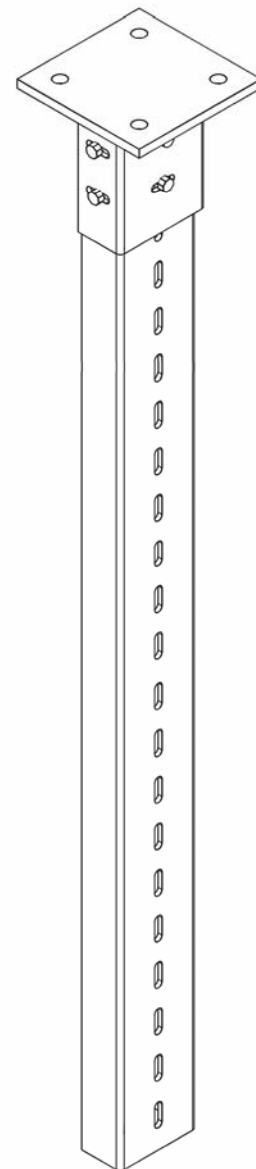
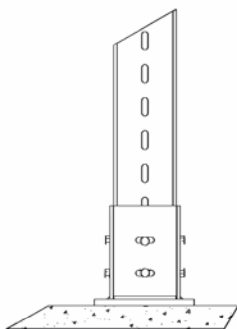
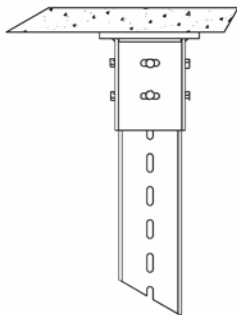
Order Code: UTS

UNP Profile

Length: up to 3m

Th: (2.5-6)mm

Material: H.D.G (Hot Dip Galvanized)  
N.G (Not galvanized)



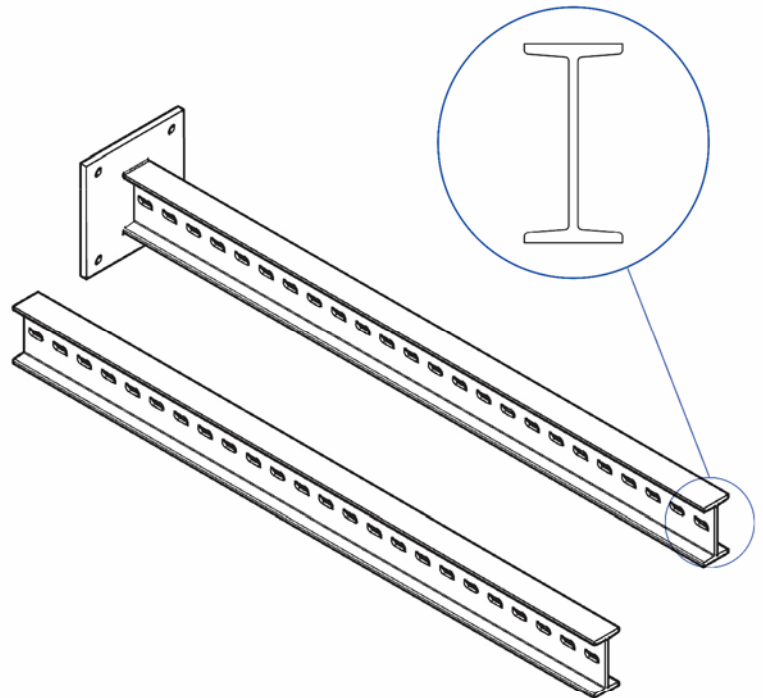
## 2- H Type Support

Order Code: HTS

H type profile 80-100-120...

Length: up to 3m

Material: H.D.G (Hot Dip Galvanized)  
N.G (Not galvanized)



## 3- Clamp Type Support

**Remarks: The Foregoing support is only used for installing on wall.**

Order code: CLTS

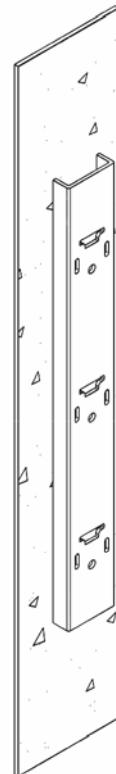
Length: up to 3m

Width: only 90mm

Height: 25mm to 30mm

Th: 3mm to 5mm

Material: H.D.G (Hot Dip Galvanized)  
N.G (Not galvanized)



## 4- C Type Support

Remarks: This type of structure may be made in various single and double types

Order Code: CTS

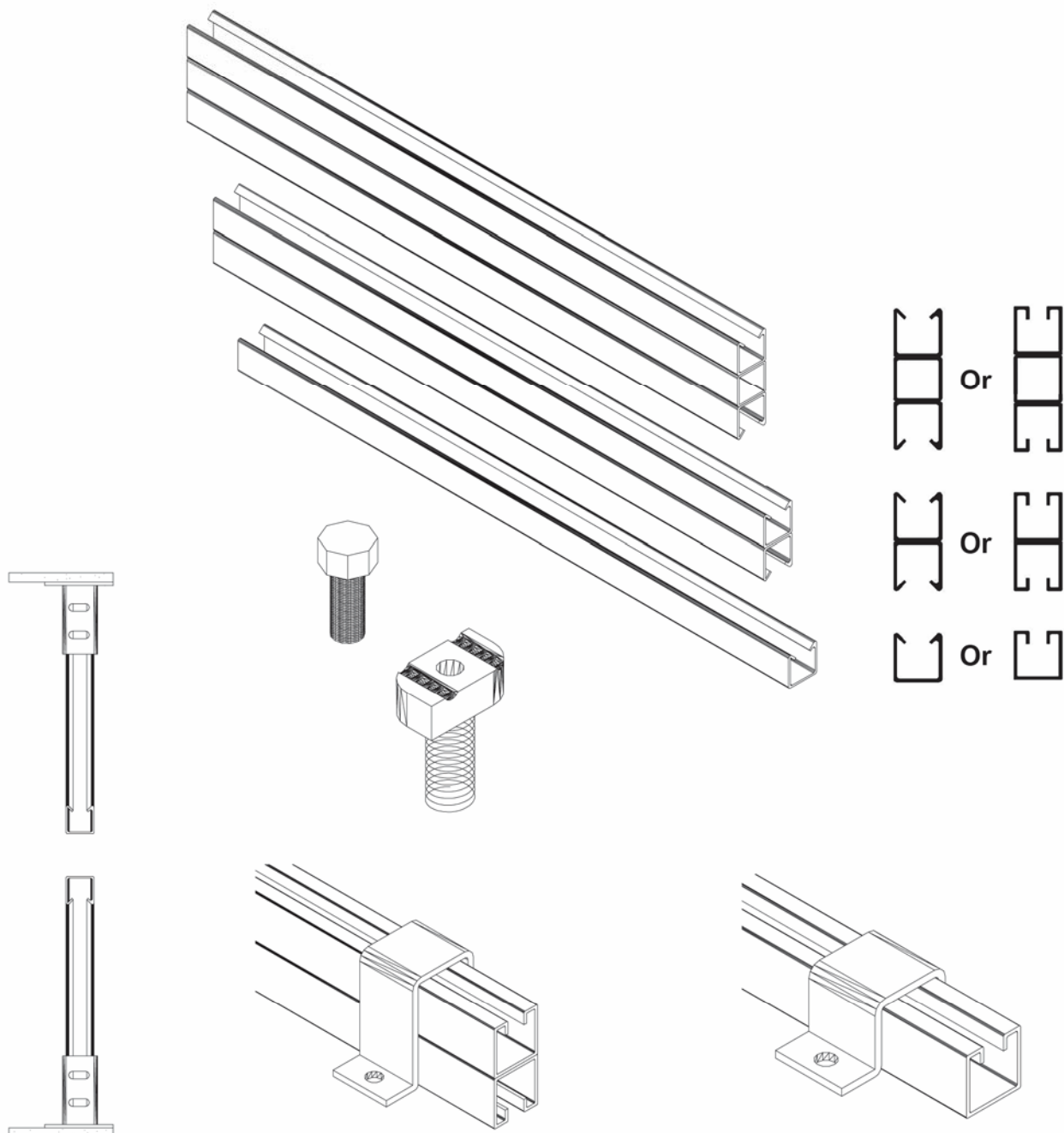
C Channel

Length: up to 3m

Thickness: 2.5mm

Material: H.D.G (Hot Dip Galvanized)

N.G (Not galvanized)





## B- Bracket Systems

This type of structure, which is installed on the support and concrete walls and metal structures, is used for cable tray and cable ladder horizontally. It ought to be noted that in some cases this type of structure would have the capability of conducting and bracing cable.

### 1. Multi-purposes Bracket

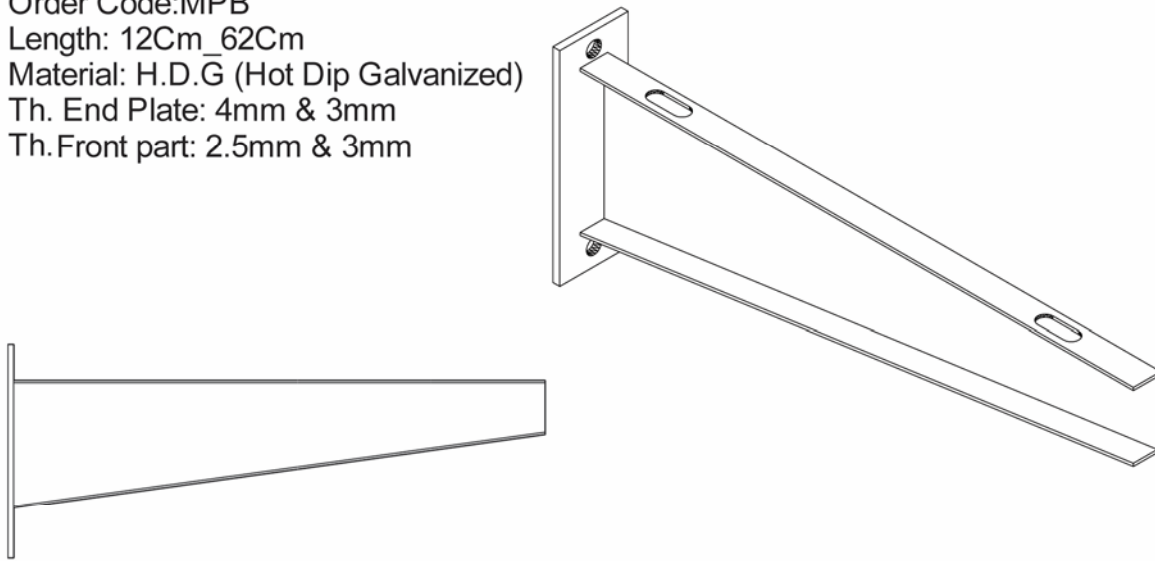
Order Code: MPB

Length: 12Cm\_62Cm

Material: H.D.G (Hot Dip Galvanized)

Th. End Plate: 4mm & 3mm

Th. Front part: 2.5mm & 3mm



### 2. C Channel Bracket

This type of structure consists of two single and double forms, which is produced based on the type of request.

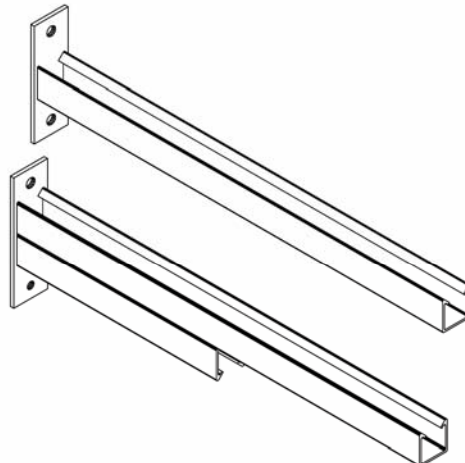
Order code: CHB

Length (Single): 10cm to 40cm

Length (Double): 40cm to 60cm

Th End Plate: 4mm to 5mm

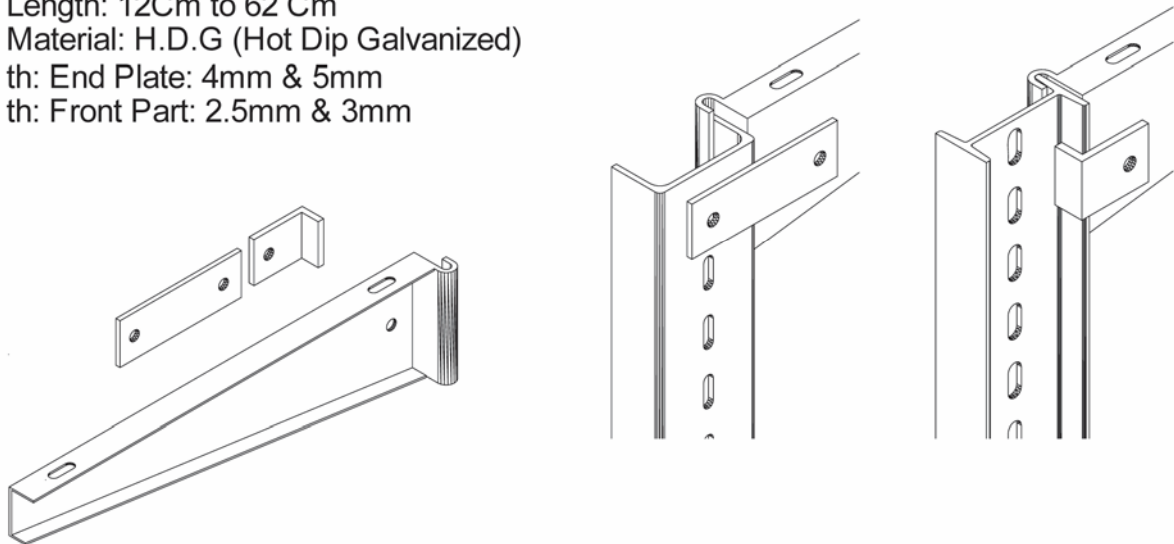
Th C Channel: 2.5mm



### 3- Gripping Bracket

This structure is only used for installation on Angle Support, H Type Support and UNP Support.  
In certain Angle Support, clamshell bracket is used.

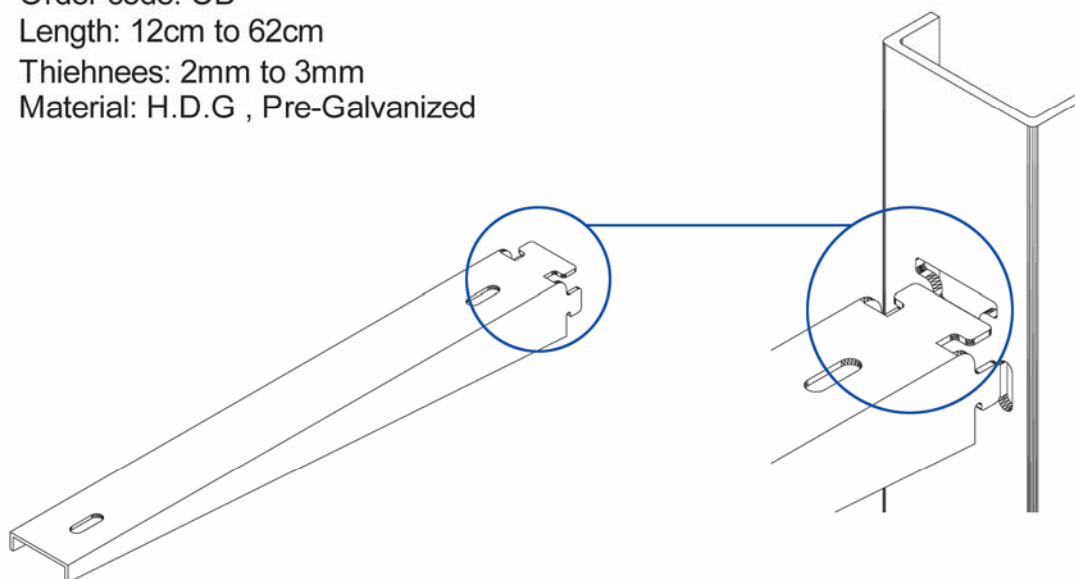
Order Code: GB  
Length: 12Cm to 62 Cm  
Material: H.D.G (Hot Dip Galvanized)  
th: End Plate: 4mm & 5mm  
th: Front Part: 2.5mm & 3mm



### 4- Clamp Bracket

This structure is only used to be installed for clamp type support.

Order code: CB  
Length: 12cm to 62cm  
Thieknees: 2mm to 3mm  
Material: H.D.G , Pre-Galvanized





## Cable Tray Type Selection

What type of cable tray should be used for the main runs of a cable tray wiring system? The cable tray types to choose from are ventilated trough, or solid bottom. What are the reasons for selecting a specific type of cable tray?

The engineer or designer should select the type of cable tray that has the features which best serve the project's requirements.

### C) Ladder Cable Tray

Ladder cable tray is used for about 75 percent of the cable tray wiring system installations. It is the predominate cable tray type due to its many desirable features:

- A ladder cable tray without covers permits the maximum free flow of air across the cables. This allows the heat produced in the cable's conductors to effectively dissipate. Under such conditions, the conductor insulation in the cables of a properly designed cable tray wiring system will not exceed its maximum operating temperature. The cables will not prematurely age due to excessive operating temperatures.
- The rungs of the ladder cable trays provide convenient anchors for tying down the cables in the non-horizontal cable tray runs or where the positions of the cables must be maintained in the horizontal cable tray runs. This capability is a must for single conductor cable installations. Under fault conditions (short circuit), the magnetic forces produced by the fault current will force the single conductor cables from the cable tray if they are not securely anchored to the cable tray.
- Cables may exit or enter the ladder cable trays through the top or the bottom of the cable tray. Where the cables enter or exit conduit, the conduit to cable tray clamps may be installed upright or inverted to terminate conduits on the top or bottom of the cable tray side rail.
- Moisture can't accumulate in ladder cable trays.

If Cable trays are being installed where working space is a problem, hand access through the cable tray bottom may help to facilitate the installation of small diameter cables: control instrumentation, signal, etc.

- The most current spacing of the center to the center of staircase for ladder cable tray shall be 285mm in 2 meters branches, and 300mm for 3 meters branches. But, it does not mean that it is impossible to be more or less spaces.

## 1- Cable Ladder

Order code: CL

Length: up to 3m

Width: 100mm to 600mm

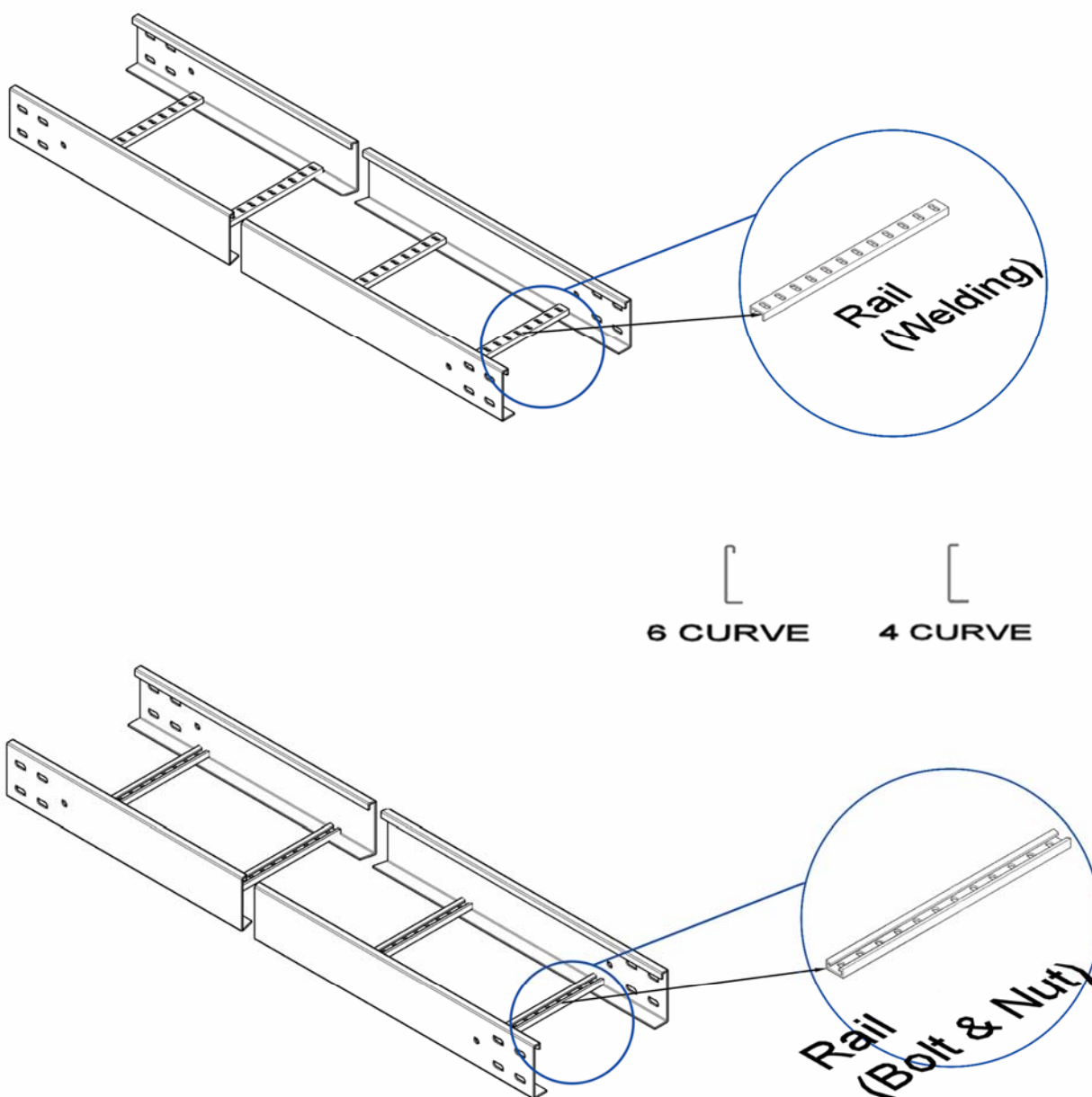
Height: 50mm to 100mm

Thickness: 1.5mm to 2.5mm

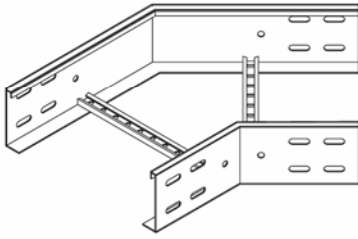
Material: pre galvanized carbon steel sheets

hot dip galvanized after fabrication

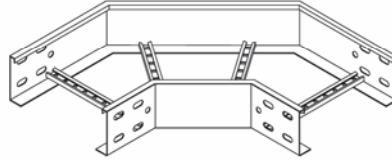
stainless steel sheets.



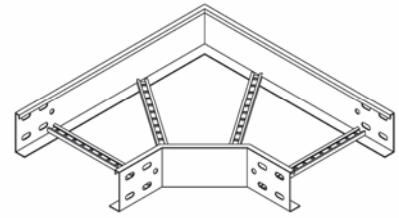
## Accessories For Cable Ladder



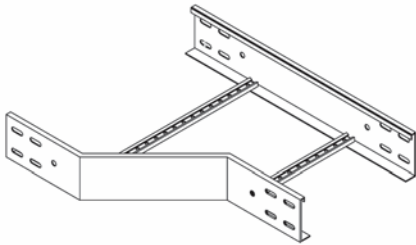
Horizontal Elbow 45°



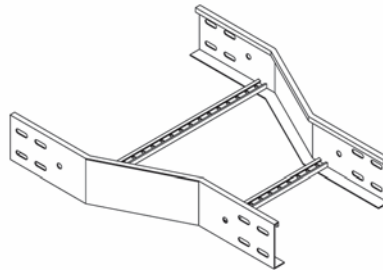
Horizontal Elbow 2x45



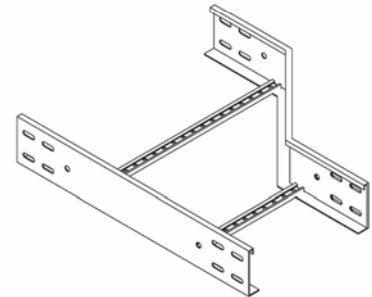
Horizontal Elbow 90°



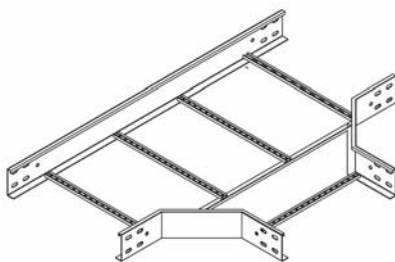
Left Hand Reducer



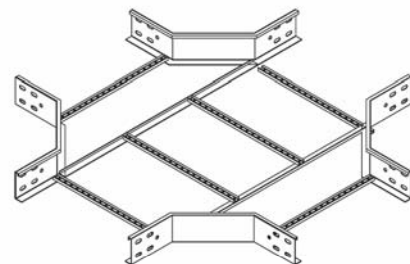
Straight Reducer



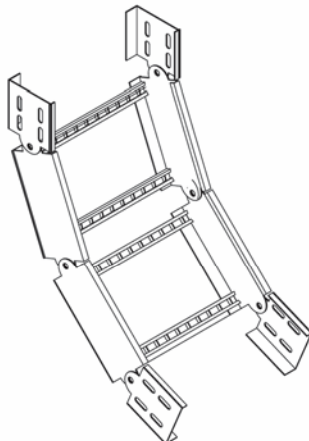
Right Hand Reducer



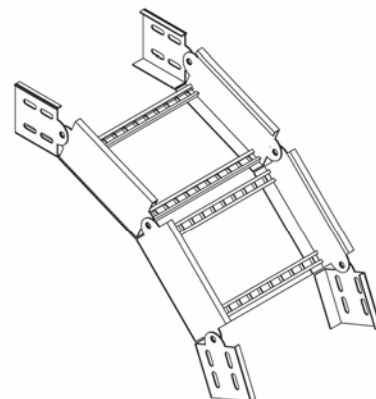
Horizontal Tee



Horizontal Cross

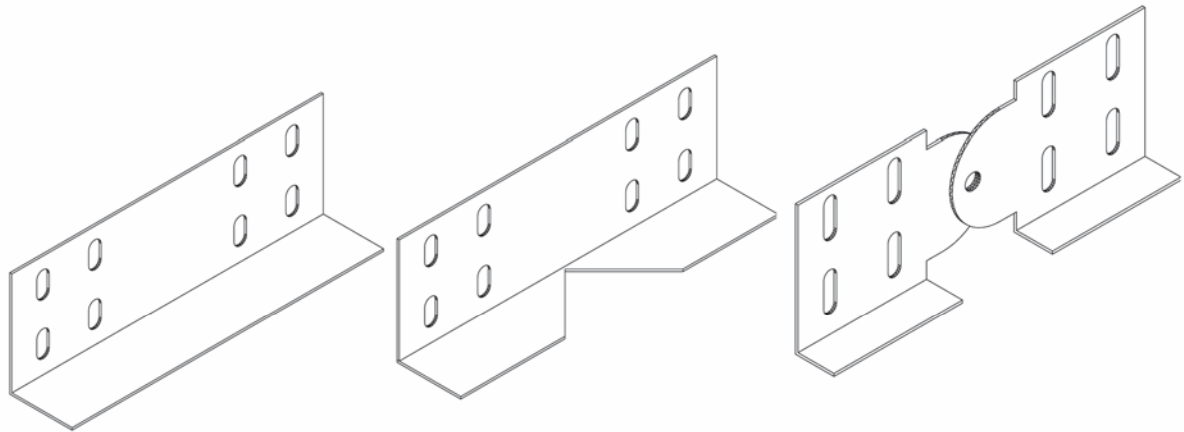


Vertical Inside Elbow

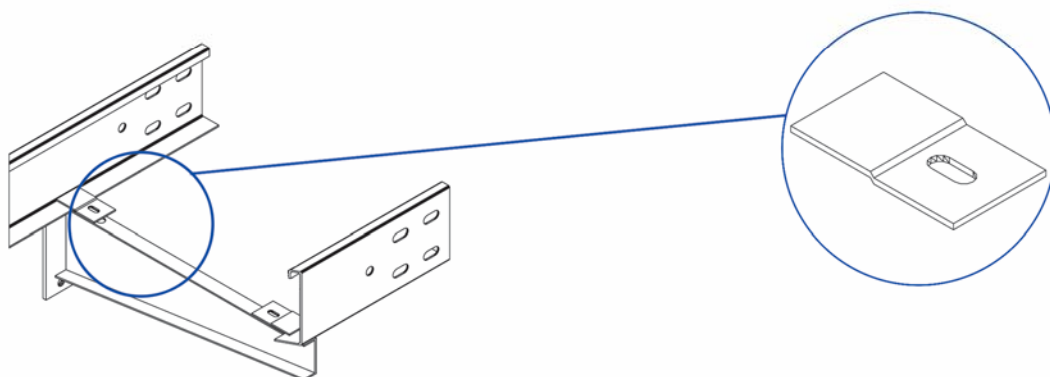


Vertical Outside Elbow

## Joint



## Hold Down Clamp



## 2- Cable Tray

### Pertorated Cable Tray

The only reason to select a Pertorated cable tray over a ladder type cable tray is easthetics. No dropping of small cables is visible. The Pertorated cable tray does provide more support to the cables.

### Solid Bottom Cable Tray

The main reason for selecting solid bottom cable tray (with covers) is the concern of EMI/RFI shielding protection for very sensitive circuits. A solid bottom steel cable tray with steel covers provides a good degree of shielding if there are no breaks or holes in the completed installation.

The solid bottom cable tray system has a disadvantage in that moisture can build up in the cable trays. This can be controlled by drilling oval ponch (30 × 10) inch drain holes in the bottom of the cable tray at 400mm intervals (at the middle and very near the sides) if the cable tray is not being used for EMI/RFI shielding.

Some engineers and designers specify solid bottom cable trays (often with covers) in the belief that all electrical circuits have to be totally enclosed by metal. The cable trays are just supporting cables that are designed for such installations. Cable failures in cable tray runs rarely happen. Cable failures due to cable support problems in cable trays are nonexistent.

Pertorated type or solid botten Cable tray

Order code: PCT or SCT

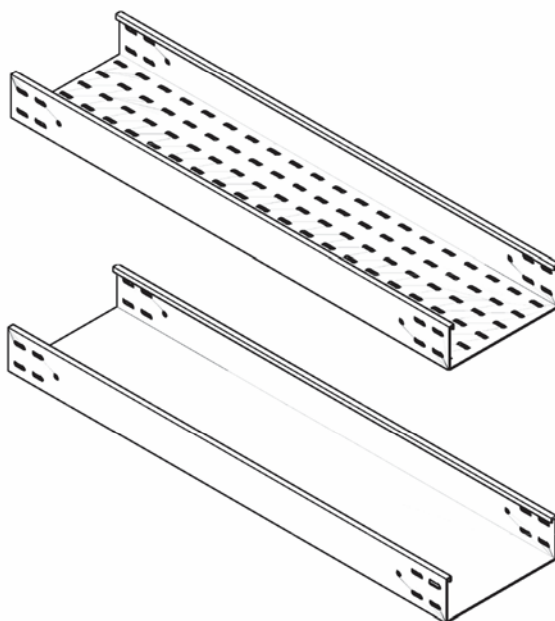
Length: up to 3m

Width: 100mm to 600mm

Height: 40mm to 100mm

Thiehnees: 1mm to 2.5mm

Material: pre galvanized carbon steel sheets  
hot dip galvanized after dobrication  
stainless steel sheets.



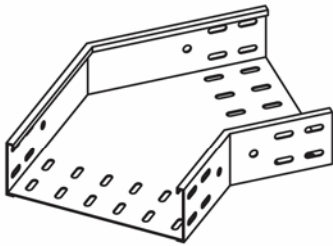
4 CURVE



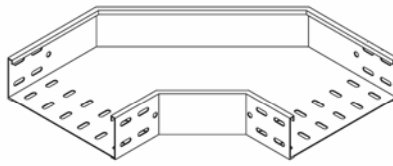
6 CURVE



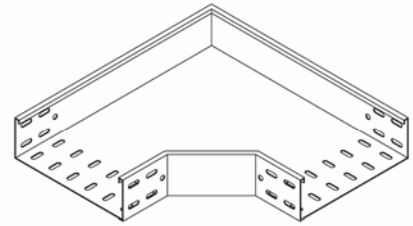
## Accessories For Cable Tray



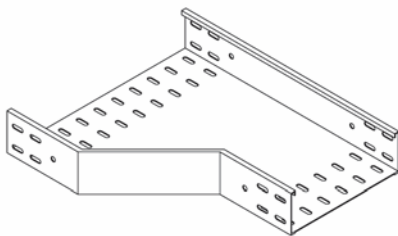
Horizontal Elbow 45°



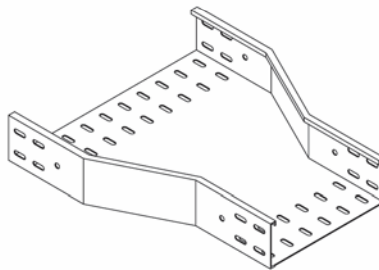
Horizontal Elbow 90°



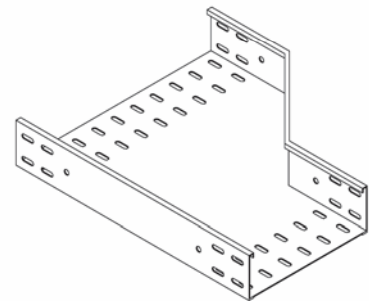
Horizontal Elbow 2 x 45°



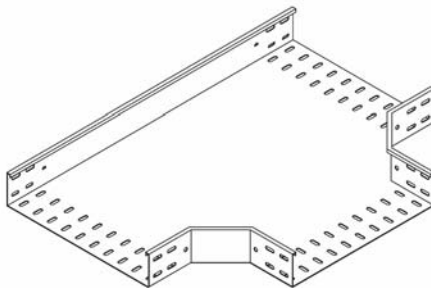
Left Hand



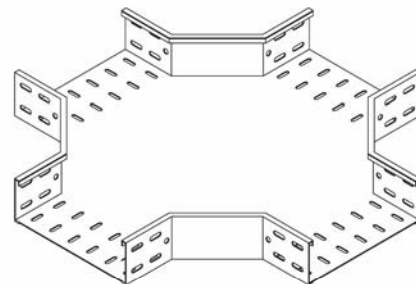
Straight



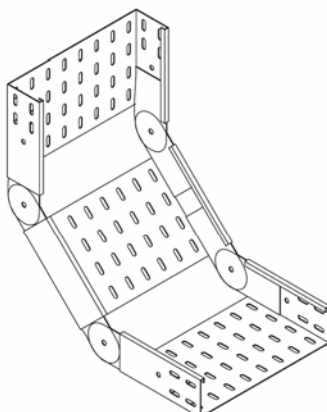
Right Hand



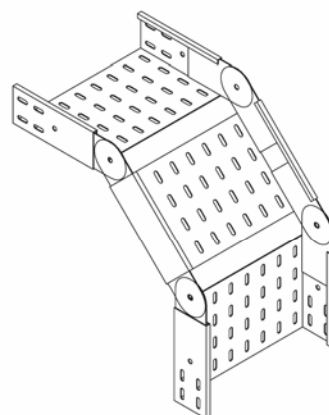
Horizontal Tee



Horizontal Cross



Vertical Elbow en side



Vertical Elbow out side

## E) Cable Tray or Ladder Cover

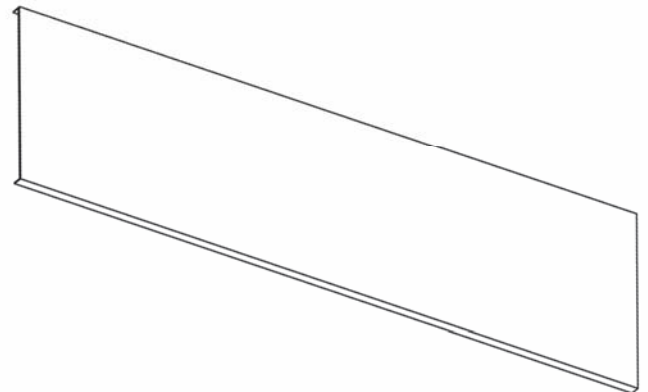
### Caution in Using Cable Tray Covers Outdoors

Improperly secured covers on outdoor cable trays can cause a serious safety hazard in high winds. In the majority of cases, covers are not used on cable trays for technical or safety reasons, but due to the “raceway complex,” a feeling by specifics that cables must be totally enclosed in metal. Quality tray cables have a life of 30 to 40 years without covers when exposed to the elements.

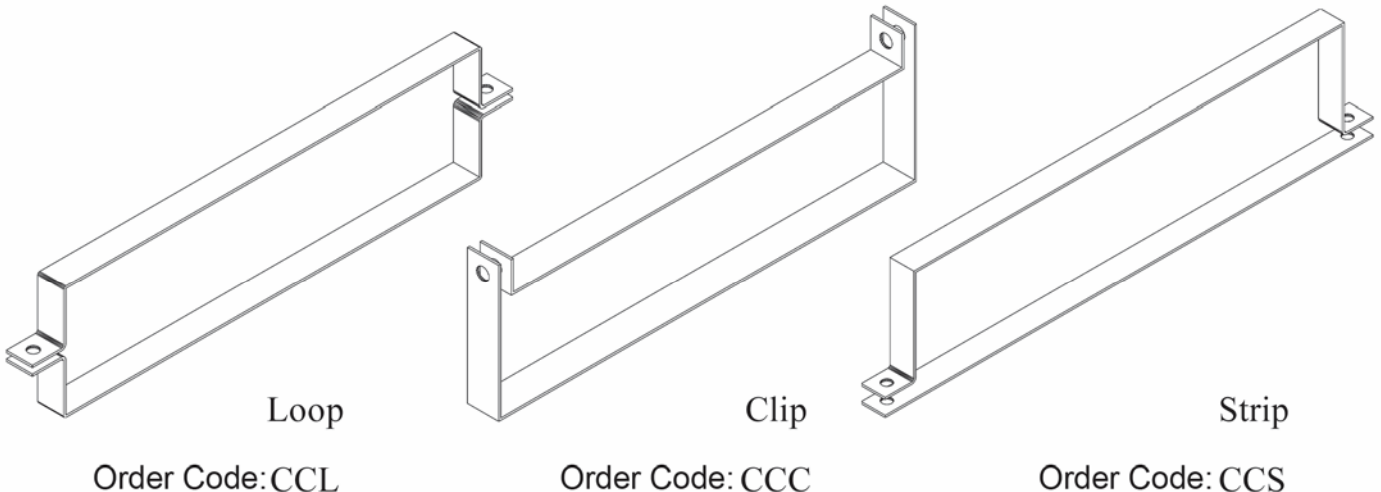
Cable tray wiring systems have a 30-year plus proven track record of safety and dependability. They are the best economic choice for commercial and industrial wiring systems.

Strong winds moving across outdoor cable trays with solid covers creates a negative pressure above the cable tray cover and a positive pressure inside the cable tray. This is the same aerodynamic phenomenon produced on aircraft wings to provide lift and maintenance of altitude. This pressure difference can lift covers off the cable tray if they are not properly clamped to the cable tray with heavy duty clamps.

Order Code: CO  
Length: up to 3m  
Width: 50mm to 600mm  
Height: 15mm  
Thickness: 1mm to 2mm  
Material: pre galvanized carbon steel sheets  
hot dip galvanized after fabrication  
stainless steel sheets.

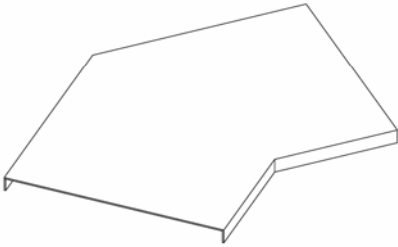


### Cover Clamp

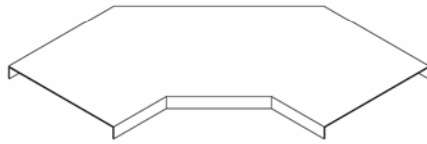




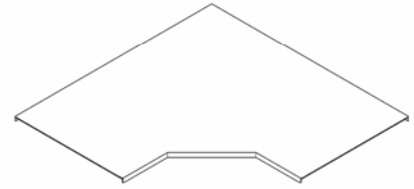
## Cover For Accessories Cable Tray Or Ladder



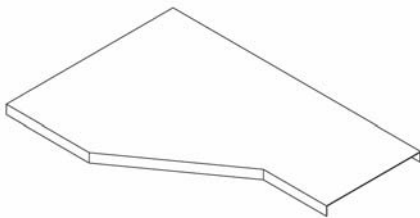
Cover Elbow 45°



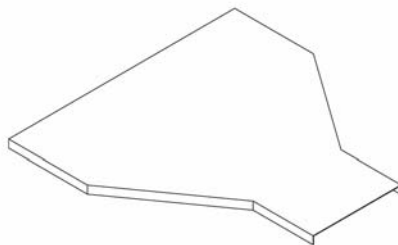
Cover Elbow 2x45°



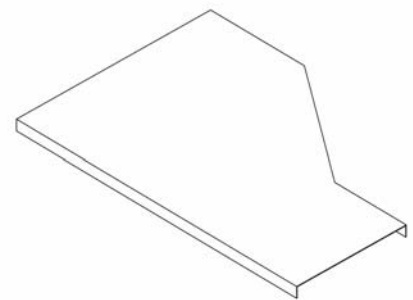
Cover Elbow 90°



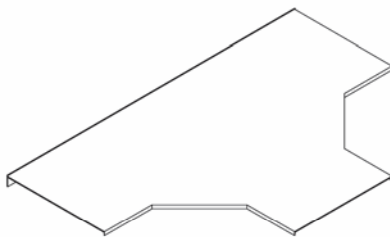
Cover Left Reducer



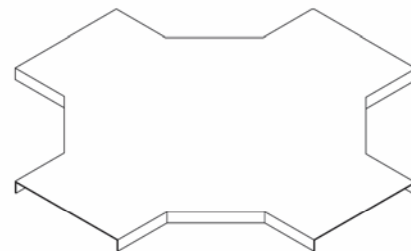
Cover Stright Reducer



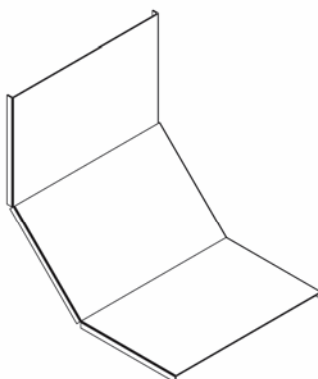
Cover Right Reducer



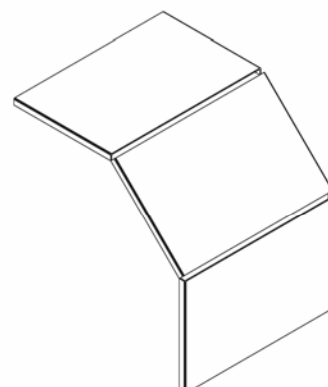
Tee Cover



Cross Cover



Vertical Cover Elbow en side



Cover Elbow out side

## F) Grating

Grating is a type of network metal structure used in staircases , oil platforms , cable passage canals door, etc. in which we feel the air and cooling shall pass.

This type of structure shall be designed and manufactured in a manner that people and vehicles could easily pass on it.

The thickness and type of material used for this type of structure is designed and manufactured based on the project requirements.

