



Made **S**trong  
With **S**afety





## THE COMPANY

INFINE FRP Industries offering an elegant range of quality products related to Indian construction industries since many years, With strong technical team and house testing facility, now launching an innovative product Fiber Reinforced Polymer- FRP which is a composite material made of a polymer matrix with reinforced by Glass Fiber.

Being an ISO certified company we have complete manufacturing facilities with advance technology, FRP products basically manufactured with world class technology by compressed moulding system and the woven fiber fabrics are randomly arranged in it which provides more strength and flexible to the product within complex shapes.

We have successfully developed FRP Manhole covers with frame & Gully Gratings as per EN 124:2015 Class ranging from A15 to E600.

We follow and adhere all the standard testing code including but not limited to EN 124:2015, IS 1726, BS 9124 & AASHTO.

### Our Offerings

The range of products we have developed which include, INFINE solid top manhole covers, Recess manhole covers, Air tight water tank covers, water gully covers, gratings and tree gratings. All these products are available

### Why FRP

Fibre reinforced plastic (FRP) is the next generation polymer made of a polymer matrix reinforced with fibers. These polymers are considered to be the strongest one and most resistive to deforming forces.



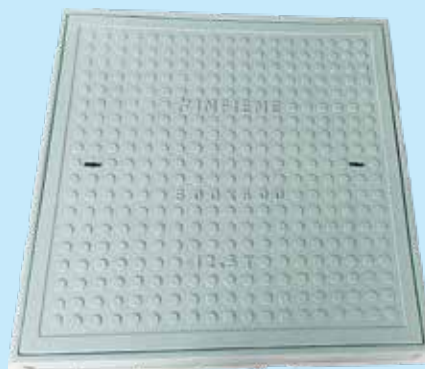
## PRODUCT RANGE

- FRP MANHOLE COVER
- FRP WATER GULLY COVER
- FRP RECESSED COVER
- FRP LAWN COVER
- FRP TREE GRATING
- FRP MOULDED GRATING
- FRP DRAIN CHANNEL
- FRP UNDERGROUND WATER TANK COVER
- FRP OVERHEAD TANK COVER
- CUSTOMISED FRP PRODUCT
- CUSTOMISED COLOUR OPTION

## FRP MANHOLE COVER

Mostly the manhole cover used in variety in sizes as square / rectangle / circular as comfortable to customer's choice. These patterns are accepted in global level due to its impressive design. The frame and cover plate is specially designed and fitted properly in between as not to allow foul smell to emanate from the chamber or does not permit foreign particles to enter the chamber. The key holes, providing on top of cover plate helps to easy lifting by the time of service as required. Generally the square / rectangular / circular manhole cover is preferred for the buildings like school, hospital, shopping mall, corporate towers, factories, housing apartments and individual bungalows and goverment buildings, apartfrom roads as highways, sector roads & service roads.

| Item      | Load Capacity (M.Ton) | Clear Opening (A) | Cover Size (B) | Frame Size (C) | Frame Height (D) | Cover Thickness (H) | Weight (Kg.) |
|-----------|-----------------------|-------------------|----------------|----------------|------------------|---------------------|--------------|
| Square    | 2.5/5                 | 225x225           | 250            | 320            | 40               | 15                  | 6            |
|           | 12.5/25/40            | 225x225           | 290            | 375            | 50               | 20                  | 10           |
|           | 2.5/5                 | 300x300           | 325            | 390            | 40               | 15                  | 7            |
|           | 12.5/25/40            | 300x300           | 375            | 425            | 50               | 30                  | 24           |
|           | 2.5/5                 | 450x450           | 475            | 540            | 40               | 15                  | 14           |
|           | 12.5/25/40            | 450x450           | 490            | 570            | 60               | 40                  | 40           |
|           | 2.5/5                 | 600x600           | 640            | 710            | 50               | 25                  | 28           |
|           | 12.5/25/40            | 600x600           | 660            | 740            | 60               | 40                  | 60           |
|           | 12.5/25/40            | 750x750           | 830            | 930            | 80               | 40                  | 90           |
|           | 25/40                 | 900x900           | 1000           | 1120           | 90               | 50                  | 110          |
|           | 40                    | 1200x1200         | 1320           | 1440           | 100              | 60                  | 130          |
| Rectangle | 2.5/5/12.5            | 300x450           | 330x480        | 390x540        | 35               | 15                  | 8            |
|           | 25/40                 | 300x450           | 370x520        | 410x580        | 60               | 40                  | 12           |
|           | 2.5/5                 | 450x600           | 490x640        | 560x710        | 40               | 15                  | 30           |
|           | 12.5/25/40            | 450x600           | 520x660        | 600x750        | 60               | 40                  | 48           |
|           | 2.5/5                 | 450x900           | 510x960        | 610x1040       | 40               | 25                  | 46           |
|           | 12.5/25/40            | 450x900           | 520x965        | 615x1065       | 90               | 50                  | 75           |
|           | 12.5/25/40            | 600x750           | 680x830        | 780x930        | 80               | 50                  | 80           |
|           | 12.5/25/40            | 600x900           | 680x980        | 780x1080       | 90               | 60                  | 100          |
|           | 25/40                 | 750x900           | 840x990        | 960x1110       | 90               | 60                  | 120          |
| Circular  | 2.5/5/12.5            | 300               | 360            | 460            | 40               | 25                  | 13           |
|           | 25/40                 | 300               | 360            | 460            | 75               | 40                  | 16           |
|           | 2.5/5/12.5            | 450               | 510            | 610            | 40               | 25                  | 18           |
|           | 25/40                 | 450               | 520            | 620            | 75               | 40                  | 28           |
|           | 2.5/5/12.5            | 530               | 590            | 690            | 40               | 25                  | 26           |
|           | 25/40                 | 530               | 610            | 710            | 80               | 40                  | 47           |
|           | 2.5/5/12.5            | 600               | 660            | 760            | 50               | 25                  | 30           |
|           | 25/40                 | 600               | 670            | 770            | 80               | 45                  | 55           |





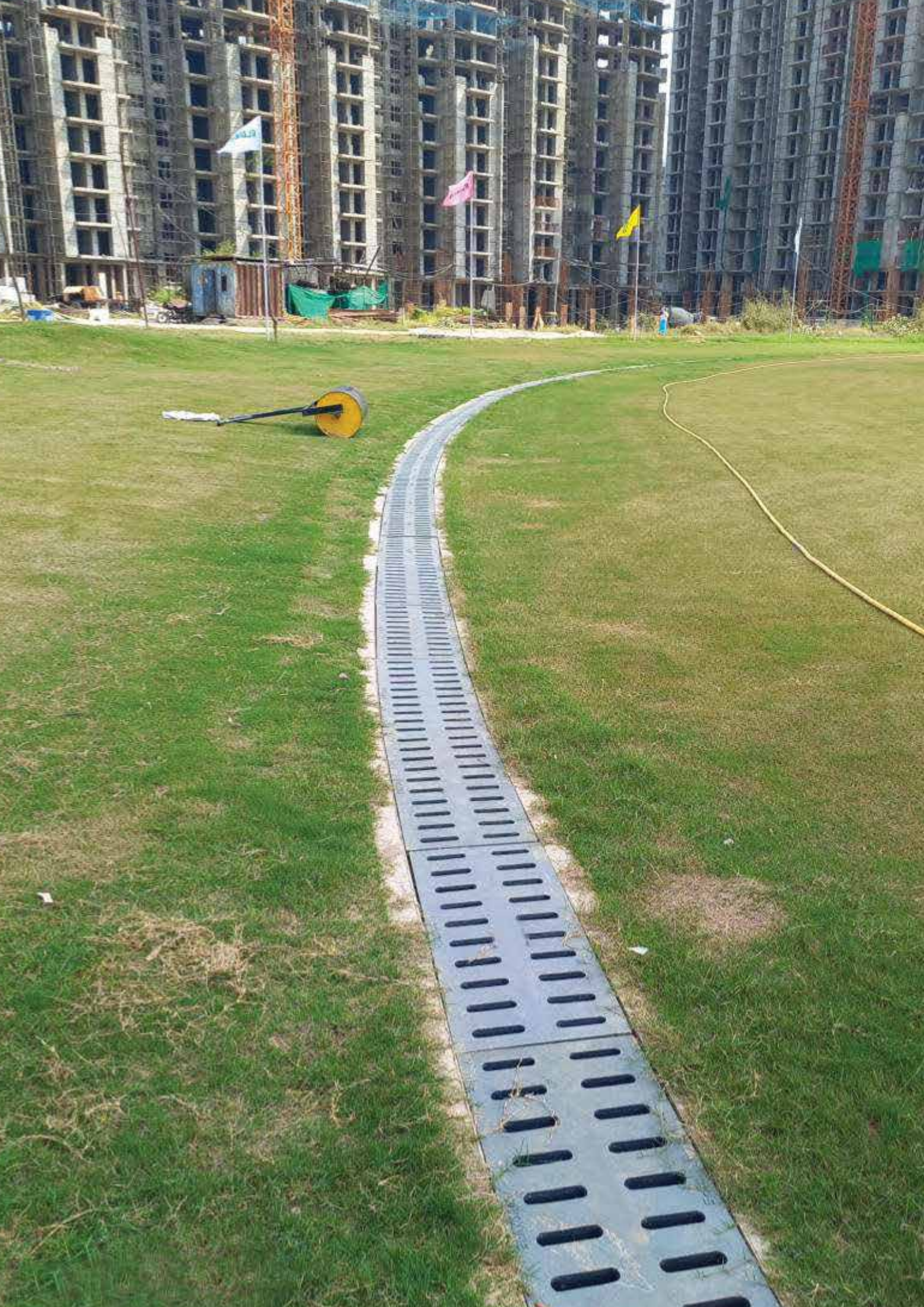
# FRP GULLY GRATING

INFINE Gully grating is an attractive product with its double slitting rows provide an aesthetics view when it fixed on chamber. The special design in various pattern such as square / rectangle / circular in sizes are suitable to the areas like basement, ramps and around the green lawn or path ways. The rectangle gratings have its own space with special feature maintain with continuity of water drainage chamber which has an attractive view.

| Item      | Load Capacity (M.Ton) | Clear Opening (A) | Cover Size (B) | Frame Size (C) | Frame Height (D) | Cover Thickness (H) | Aprox. Weight (Kg.) |
|-----------|-----------------------|-------------------|----------------|----------------|------------------|---------------------|---------------------|
| Square    | 2.5/5/12.5            | 300x300           | 360            | 400            | 45               | 25                  | 13                  |
|           | 25/40                 | 300x300           | 390            | 440            | 70               | 40                  | 24                  |
|           | 2.5/5/12.5            | 450x450           | 490            | 550            | 45               | 30                  | 18                  |
|           | 25/40                 | 450x450           | 510            | 580            | 70               | 45                  | 35                  |
|           | 2.5/5                 | 600x600           | 645            | 710            | 45               | 30                  | 27                  |
|           | 12.5/25/40            | 600x600           | 665            | 730            | 70               | 45                  | 50                  |
|           | 12.5/25/40            | 750x750           | 825            | 925            | 75               | 45                  | 90                  |
|           | 12.5                  | 900x900           | 960            | 1060           | 60               | 30                  | 110                 |
|           | 25/40                 | 900x900           | 980            | 1080           | 80               | 50                  | 160                 |
|           |                       |                   |                |                |                  |                     |                     |
| Rectangle | 5/12.5                | 150x1000          | 210x1060       | 300x1100       | 55               | 30                  | 25                  |
|           | 25/40                 | 150x1000          | 230x1080       | 340x1120       | 70               | 40                  | 35                  |
|           | 5/12.5                | 200x1000          | 260x1060       | 350x1100       | 55               | 30                  | 28                  |
|           | 25/40                 | 200x1000          | 280x1080       | 380x1120       | 70               | 40                  | 40                  |
|           | 5/12.5                | 250x1000          | 310x1060       | 360x1080       | 55               | 30                  | 24                  |
|           | 25/40                 | 250x1000          | 330x1080       | 450x1140       | 70               | 40                  | 46                  |
|           | 5/12.5                | 300x1000          | 370x1060       | 425x1090       | 55               | 30                  | 28                  |
|           | 25/40                 | 300x1000          | 380x1080       | 480x1140       | 70               | 40                  | 55                  |
|           | 12.5/25/40            | 450x600           | 520x670        | 620x770        | 65               | 40                  | 40                  |
|           | 12.5/25/40            | 450x900           | 520x980        | 620x1010       | 70               | 45                  | 52                  |
|           | 12.5/25/40            | 600x900           | 670x970        | 780x1080       | 70               | 45                  | 74                  |
|           |                       |                   |                |                |                  |                     |                     |
| Circular  | 2.5/5/12.5            | 600               | 680            | 780            | 70               | 40                  | 45                  |
|           | 25/40                 | 600               | 690            | 790            | 80               | 50                  | 50                  |





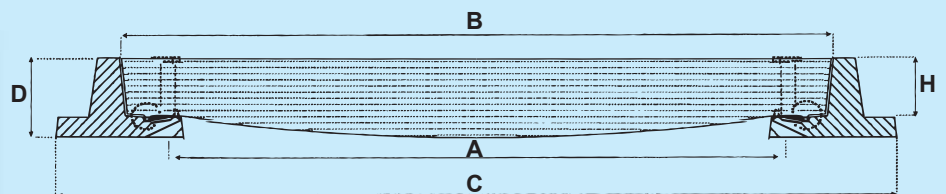


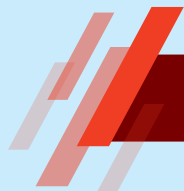


# AIR TIGHT WATER TANK COVER

INFINE Water tank cover is specially designed and developed with considering safety and hygienic point of view. It consists of double frame and a special type of seal is used in between the frame and cover. then fastening with 12 mm special coated bolt on all corners as the cover plate tight with frame to make the cover air proof though the outside water is not allow inside the tank.

| Item   | Load Capacity (M.Ton) | Clear Opening (A) | Cover Size (B) | Frame Size (C) | Frame Height (D) | Cover Thickness (H) | Weight (Kg.) |
|--------|-----------------------|-------------------|----------------|----------------|------------------|---------------------|--------------|
| Square | 2.5/5/12.5            | 450x450           | 510            | 610            | 50               | 25                  | 30           |
|        | 25/40                 | 450x450           | 550            | 650            | 80               | 40                  | 53           |
|        | 2.5/ 5/12.5           | 600x600           | 660            | 760            | 50               | 25                  | 44           |
|        | 25/40                 | 600x600           | 690            | 790            | 80               | 40                  | 85           |
|        | 25/12.5/40            | 750x750           | 840            | 940            | 80               | 40                  | 100          |
|        | 40                    | 900x900           | 1000           | 1100           | 80               | 40                  | 110          |





## RECESSED COVER

FRP Recessed manhole cover is having an extra-ordinary feature that it helps to continuity of floor finish. Generally the floor renderings are stone, tile or pavers. Hence to maintain the same finish the recessed manhole is very use full. Rather the cover is easy to handle during service and most durable compared to fabricated or casted alloy materials.

| Item   | Load Capacity<br>(M.Ton) | Clear Opening<br>(A) | Cover Size<br>(B) | Frame Size<br>(C) | Frame Height<br>(D) | Cover<br>Thickness (H) | Recessed<br>Height (h) | Weight<br>(Kg.) |
|--------|--------------------------|----------------------|-------------------|-------------------|---------------------|------------------------|------------------------|-----------------|
| Square | 2.5/5/12.5/25            | 300x300              | 375               | 480               | 90                  | 70                     | 40/100                 | 23              |
|        | 2.5/5/12.5/25            | 450x450              | 530               | 630               | 90                  | 70                     | 40/100                 | 34              |
|        | 2.5/5/12.5/25            | 600x600              | 670               | 770               | 90                  | 70                     | 40/100                 | 53              |
|        | 12.5/25/40               | 750x750              | 830               | 930               | 110                 | 80                     | 40/100                 | 95              |





## TREE GRATING

INFINE Tree grating is a decorative pattern of modular grating with frame and cover which is suitable to maintain tree area sanitization. Generally tree roots required moisturized water. It helps to allow watering to the root and oxidization support as the tree can grow and flourish. So this tree grating will provide the necessary aspects apart from an aesthetics look. This is strong, durable and not to get damage in normal condition. The application areas are trees within boundary of residential apartment, Firm house, malls, restaurant, club house, commercial building and corporate office complex.

| Item   | Load Capacity<br>(M.Ton) | Clear Opening<br>(A) | Cover Size<br>(B) | Frame Size<br>(C) | Frame Height<br>(D) | Cover<br>Thickness (H) | Weight<br>(Kg.) |
|--------|--------------------------|----------------------|-------------------|-------------------|---------------------|------------------------|-----------------|
| Square | 2.5/5/12.5               | 450x450              | 495               | 555               | 45                  | 30                     | 15              |
|        | 2.5/5                    | 600x600              | 645               | 710               | 45                  | 30                     | 25              |
|        | 12.5/25/40               | 750x750              | 825               | 925               | 75                  | 45                     | 90              |

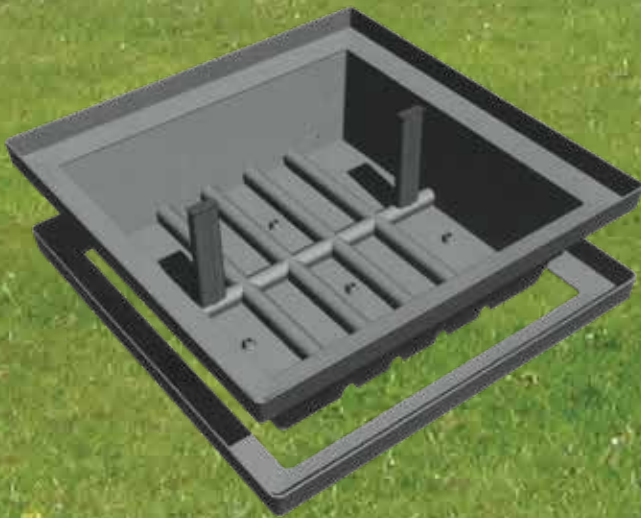




## LAWN COVER

INFINE FRP Lawn cover is recommended for green area application. It helps to continuation of green grass in lawn area and basically it is a readymade pit which carries the soil and grass on top and having ability to pass out the excess water from the lawn. It consists the frame and cover pit which is easy to carry out with the help of key, during the service and as necessity.

| Item   | Load Capacity (M.Ton) | Clear Opening (A) | Cover Size (B) | Frame Size (C) | Frame Height (D) | Cover Thickness (H) | Weight (Kg.) |
|--------|-----------------------|-------------------|----------------|----------------|------------------|---------------------|--------------|
| Square | 200kg                 | 450               | 530            | 550            | 150              | 30                  | 4            |
|        | 500kg                 | 450               | 530            | 550            | 150              | 30                  | 4            |
|        | 750kg                 | 450               | 530            | 550            | 150              | 30                  | 4            |
|        | 200kg                 | 600               | 675            | 695            | 150              | 30                  | 10           |
|        | 500kg                 | 600               | 675            | 695            | 150              | 30                  | 10           |
|        | 750kg                 | 600               | 675            | 695            | 150              | 30                  | 10           |



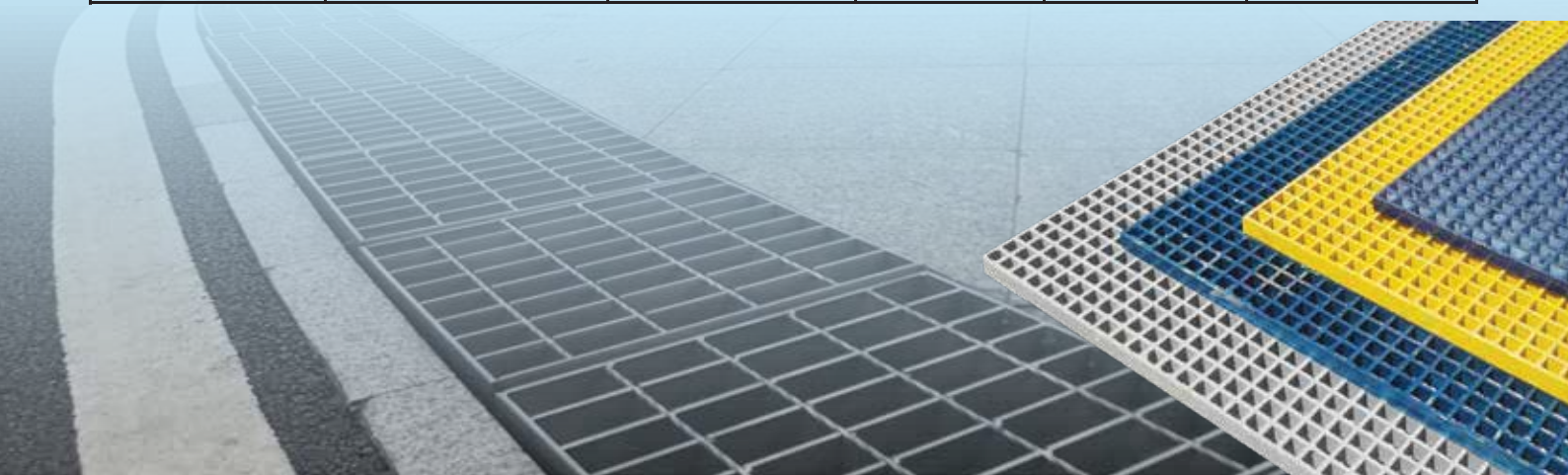


## MESH GRATINGS

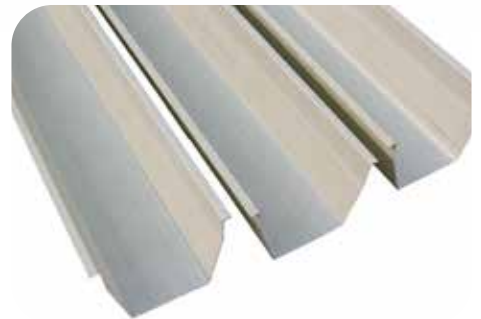
INFINE FRP Gratings combines high chemical and corrosion resistance and durability. It can be fitted with 'L' angle of iron or any material. Light weight, fancy and easy to handle by nature and mostly preferred to non traffic area. The locations like walkways, water treatment plant, swimming pools, footpath, green belt corridor and basement where vehicles are not in movement are suitable for this product. Besides industrial use as Chemical & petroleum, oil, gas plant, food & beverage plants are preferred this product for their use.

An aesthetic concern it looks very nice with its small grids and with various colors. Self pigmented in manufacturing process assure the life and sustainability of colour without fade.

| Item       | Load Capacity<br>(M.Ton) | Clear Opening<br>(A) | Cover Size<br>(B) | Frame Size<br>(C) | Frame Height<br>(D) |
|------------|--------------------------|----------------------|-------------------|-------------------|---------------------|
| Grating-30 | 5                        | 30x30                | 8                 | 1120x2262         | 20                  |
| Grating-32 | 12.5                     | 32x32                | 8                 | 1160x2430         | 23                  |
| Angle-35   | 5                        | 35x35                | 4                 |                   |                     |
| Angle-45   | 12.5                     | 45x45                | 4                 |                   |                     |



## CUSTOMISED PRODUCT





## LOAD CAPACITIES AND GRADATION AS PER IS : 1726 (1991)

| Grade            | Grade Desingnation        | Recommended Application   |
|------------------|---------------------------|---|
| Light Duty       | LD-2.5 (Wheel load 0.8T)  | Suitable for use within residential boundary, walking path ways, pedestrian areas and pedal cyclist.  |
| Light Duty       | LD-5.0 (Wheel load 2.5T)  | Recommended areas like traffic of light moter vehicle (less than 3 tons), basement parking and parking decks in residential areas.  |
| Medium Duty      | MD-12.5 (Wheel load 3.0T) | Areas as service lanes/roads, on pavements with medium weight moter vehicle traffic including car parking .   |
| Heavy Duty       | HD-25 (Wheel load 5.0T)   | Suitable for use in city trunk roads, bus terminal, areas where heavy duty moter vehicle traffic, cul-de-sacs and fequent traffic area.   |
| Extra Heavy Duty | EHD-40 (Wheel load 11.5T) | For high density traffic area and all type of vehicles like loaded trucks, containers, trailers upto fire tender. Suitable for areas like Industrial Park, warehouses, Godowns and roads as main roads, sector roads and national highways. |

## PRODUCT FEATURES

|  |
|--|
| 1. Anti-slide                          |
| 2.Anti-Theft                           |
| 3.Customized sizes & Customized Colour |
| 4.Durable (Aprox-30-40years life)      |
| 5.Acid, Alkali, Weather Resistance     |

## PHYSICAL CHARACTERISTICS

|                     |   |
|---------------------|---|
| Shape Available     | Circle, Square, Rectangle and Customized              |
| Working Temperature | -10 TO 120 degree centigrade                          |
| Noise               | Reduced noise and vibration                           |
| Conduction          | Non - Electricity and heat conduction                 |
| Colour              | Standard gray and facilitated as per customer choice. |
| Surface treatment   | Anti - slip, anti - UV                                |
| Technique           | Mould Pressing  |
| Packing             | Card board or as customer's need.                     |

## TECHNICAL SPECIFICATION

| Description            | INFINE Manhole cover performance |
|------------------------|----------------------------------|
| Longitudinal Strength  | 250 - 600 Mpa                    |
| Compressive Strength   | 300 - 600 Mpa                    |
| Stretch modulus        | 25 - 35 Gpa                      |
| Break elongation ratio | 1.3 - 10.0 %                     |
| Bending Strength       | 700 - 1400 Mpa                   |
| Poisson - ratio        | 0.35                             |
| Relative Density       | 1.11 - 1.15                      |
| Water absorption(24 h) | 10 - 30 mg                       |

## LOAD TESTING

FRP/GRP/COMPOSIT products are tested for LD (2.5/5 Mt) MD (12.5 Mt), HD (25 Mt) & EHD (35 Mt above) load bearing and permanent set as per BS EN: 124 , IS: 1726 (1991). BS EN: 124 is a testing code worldwide for manhole covers in cast iron, ductile iron and other materials also. Permanent Set is a multiple loading test to determine the permanent deformation in cover after multiple loading within a short time as specified in the code.

We have in-house testing facility where we are conducting regular test in batch to batch for the confined to quality consistency in the product.





## CONCEPTUALISATION

### Top Layer

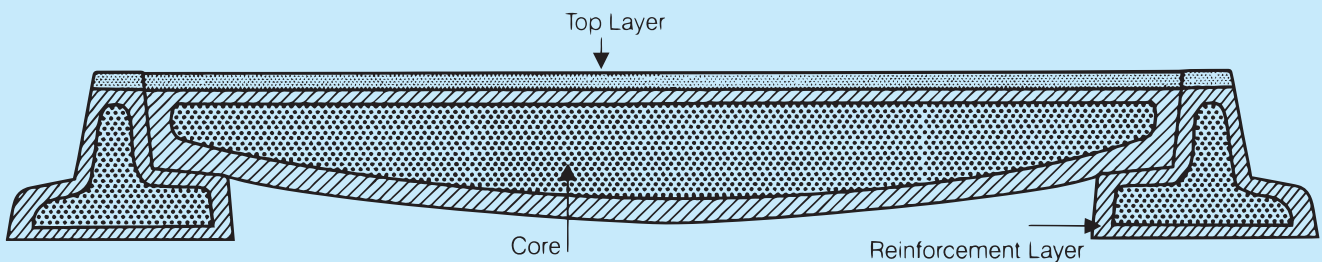
INFINE FRP manhole cover products are specially designed and formulated with an advance technology. The composite product consists of frame and cover plate to perform correct outcome which is required as per system. The top layer of the product consists of a mixture of UV Stabilized resin and Isophthalic based Gelcoat which provides high abrasion resistance.

### Reinforcement Layer

This layer is specially designed and arranged the multiple layers of fiber glass reinforcement depending on the required load bearing strength to the product. This sustains the tensile load applied on the cover.

### Core

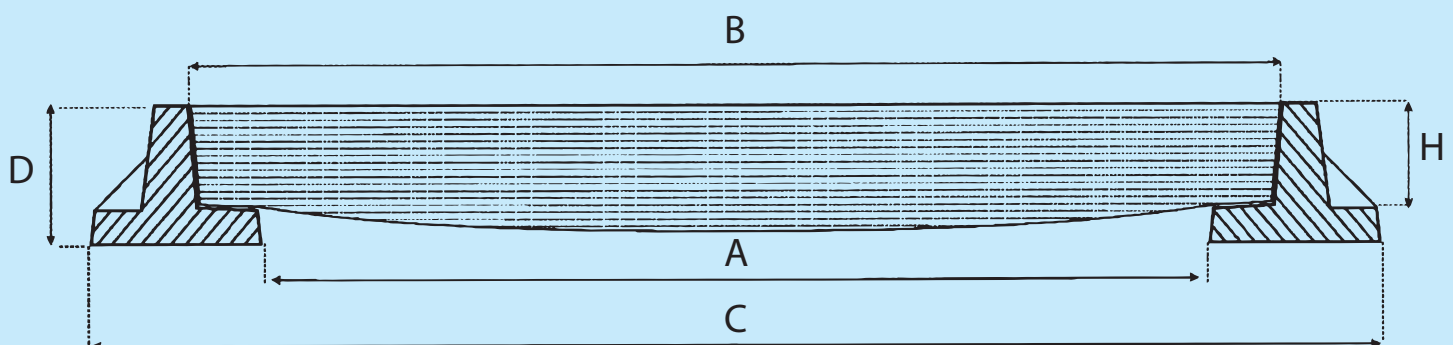
The core of the product consists of a specially formulated mixture of resin and polymer concrete. Functionally this treated core provides rigidity and bears the compressive load applied on the cover.



## INSTALLATION

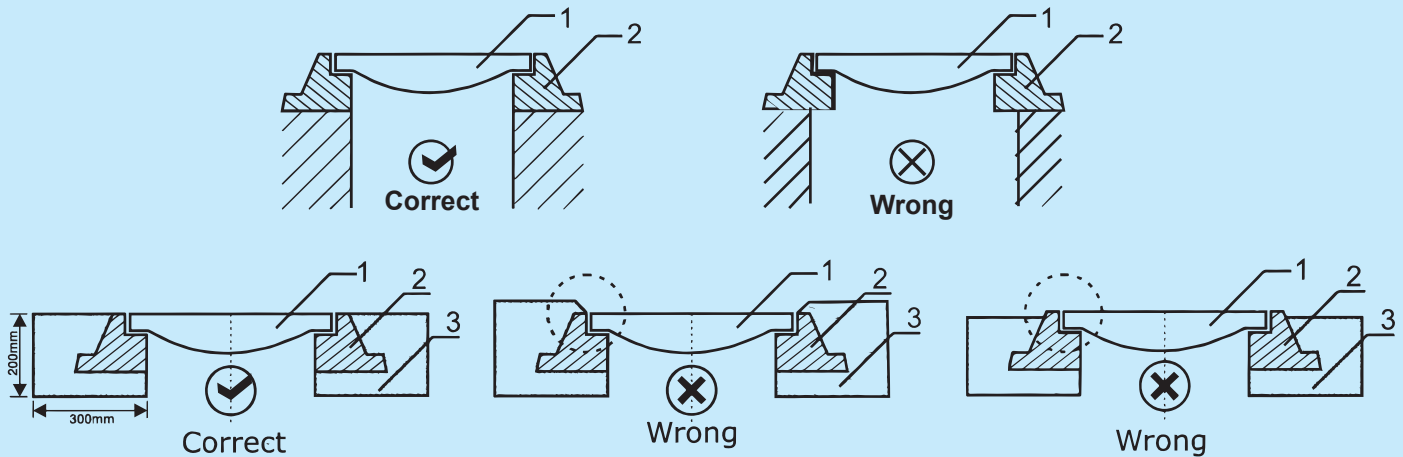
### Size selection:

- The size of manhole cover or grating determines to the clear opening of the frame.
- The shape / size of the clear opening of manhole cover should be same as clear finished of the chamber.
- If possible the chamber opening must be finished after consideration of size and pattern of man hole cover or grating.



### Installation procedure:

- To fix the frame, a concrete bed is mandatory and it should not be minimum M-20 Grade concrete mixture.
- The concrete bed to be prepared after considering the height of the frame.
- The chamber where the frame to be rest should be level properly so that the frame is uniformly supported.
- If the concrete bed is not available then a RCC beam to be casted to support as a solid back ground and it should be minimum 100 mm in height of M-20 grade concrete.



### Handling

- To carry the material with care and not to detach the cover plate and frame before use.
- Do not through the material.
- Always carry and stack the pieces in flat.
- Do not allow to hit the corner it may get damage.
- Do not impose load or trial test before properly fixing on the appropriate chamber.

## COMPARISON WITH INFINE FRP VS CI & SFRC MANHOLE COVER

| Description            | INFINE FRP | CI/DI        | SFRC           |
|------------------------|------------|--------------|----------------|
| Life Span              | High       | Moderate     | Low            |
| Corrosion Resistance   | High       | Poor         | Medium         |
| Thermal Expansion      | Negligence | High         | Low            |
| Strenth & Weight ratio | Very High  | Moderate     | Low            |
| Colour Range           | Availble   | Not Availble | Not Available  |
| Finishing              | Exellant   | Normal       | poor           |
| Customization          | Offering   | NO           | No             |
| Locking System         | Availble   | Not Availble | Not Available  |
| Scrap Value            | Nil        | High         | Low            |
| Cost                   | Very High  | Moderate     | Low            |
| Handeling              | Easy       | Difficult    | Very Difficult |
| Logo Embossing         | Availble   | Not Availble | Not Available  |
| Abrasion Resistance    | Yes        | None         | None           |



## Impact On SFRC/CI Manhole Cover



## INFINE FRP Product





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