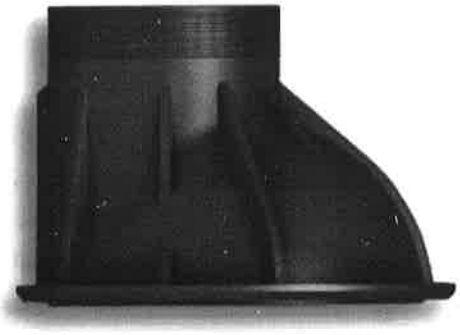


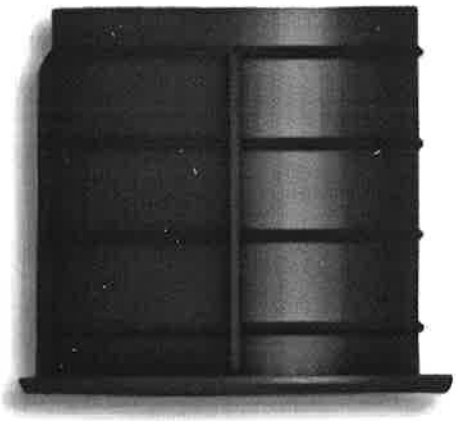
Another Green & Innovative Product From **BACE RESOURCES PTE LTD**

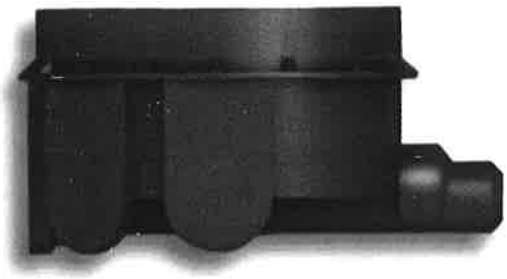
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Polyethylene Manhole / Inspection Chamber







- A completely sealed water-tight system that prevent ground contamination and protects the environment.
- Excellent chemical resistance - Highly resistance to corrosion internally and externally resulting in long product life-span.
- Total protection against tree roots intrusion / penetration.
- Environmentally friendly - Recyclable materials.
- Light weight, quick installation, easy handling (no heavy machinery required)
- Extremely smooth internal surface ensure good hydraulic flow and self-cleansing effect.
- Very flexible system that can accommodate multiple inlet pipes from different angle.
- Modular design enables different combination and height adjustment for perfect solutions to site requirements.
- Compatible for connection to different type of pipes (eg PE, PP, PVC, VCP, Ductile Iron)
- Can accommodate wide range of pipe sizes (DN.100mm - DN.500mm)
- Can be install in driveway as well as enclosed area which have no access to heavy machineries.
- Easily weldable - ensure simple, fast and low repair cost if damaged.
- Very low maintenance cost as smooth internal surface prevent dirt built-up, resulting in longer periodical cleaning.
- High Quality products which comply to stringent specifications and international standards.
- Substantial cost saving in both construction and maintenance cost.

Range of Products

Our range of Polyethlyene (PE) Manhole & Inspection Chambers can be made up of a combination of various elements from our product line or alternatively we also offer a selection of complete single unit (Combo) of various diameters and heights.



Waste Sump DN 600



Inspection Chamber DN 800



Complete Unit DN 800



Manhole DN 1000

BASE UNIT

The base unit is the bottom section of the manhole where all the inlet and outlet pipes connect. We offer 3 main types of base unit:- Flow Bottom, Round Bottom and Flat Bottom

(i) Flow Bottom Base Unit



Our Flow Bottom Base Unit comes with the options of 1, 3 or 5 inlets and 1 outlet. The inclination of the channels in the unit are 2%.

The connection of the inlet pipes to the manhole is made by special seals and adaptors or by welding.

The Outlet pipe can be connected to standard sockets or fittings of PVC or PE. pipe. For vitrified clay and ductile iron pipes, seals and adaptors are also available for these connections.

(Available in DN400, DN600, DN800 and DN1000 mm)



One Inlet



Three Inlets



Five Inlets

(ii) Round Bottom Base Unit



The Round Bottom Base Unit is a very flexible and versatile unit. It allows mulitple number of inlet pipes to be connected into the manhole at any angle by means of rubber seals.

The outlet pipe shall be connected by extrusion welding to polyethylene pipes.

(Available in DN600, DN800 and DN1000 mm)

(iii) Flat Bottom Base Unit



The Flat Bottom Base Unit is mainly used for pump stations, water meter chambers and valves chambers.

(Available in DN400, DN600, DN800 and DN1000 mm)



UPPER UNIT

The Upper Unit is the top most section of the manhole. This element is designed to be incorporated with either a Polyethylene (PE) or Ductile Iron Cover to close off the manhole. The height of this unit could be cut on site and adjusted to the required finished level of the pavement.

The connection to the elevation unit could be made by elastomeric seals or welding.

(Available in DN800 & DN1000 mm).



ELEVATION UNIT

The Elevation Unit is the middle section of the manhole. This is a modular unit that comes with different heights to be connected together to achieve the required manhole depth.

These connections can be made with an elastomeric joint or by welding.

For DN.1000mm, steps / stainless steel ladder are incorporated inside these elevation units for man-entry.

(Available in DN600, DN800 & DN1000 mm)



COMBO (Monolithic) MANHOLE

These Manholes are manufactured in one complete single piece (Base, Elevation and Upper Unit together) There is no requirement for elastomeric seals or welding works.

(Available in DN600 & DN800 mm in height of 900, 1000, 1200, 1300, 1650 & 1750mm).

TOP COVER



Polyethylene Cover

This cover is suitable for manhole located on very light traffic load and pedestrian zones, corresponding to EN.124 - Class A loading.

This cover has an anti-skid surface and can be fitted directly on the manhole which will add on another 50mm to the total height of the manhole.

Suitable for DN 600, 800 & 1000mm manhole.



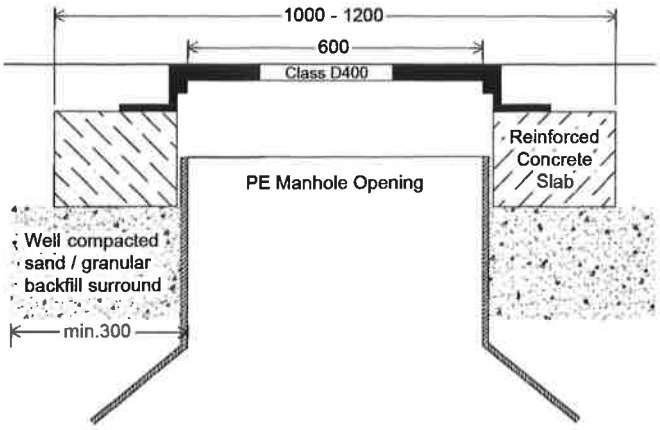
Ductile Iron Cover

Polyethylene (PE) manhole sited on vehicular driveway must be closed off with a Ductile Iron cover corresponding to EN.124 - Class C or D loading.

The Ductile Iron Cover shall be directly install onto a reinforced concrete slab which will take the traffic load from this cover and divert them away from the manhole.

Suitable for DN 600, 800 & 1000mm manhole.

APPLICATION IN TRAFFIC LOAD AREA



Polyethylene (PE) manhole can be designed to be situated in heavy traffic load areas, according to the above recommended example.

The Ductile Iron Manhole Cover shall be minimum EN. 124 Class D loading. The reinforced concrete slab shall be designed to take the expected traffic load from the manhole cover and divert it away from the Polyethylene (PE) manhole.

BUILT-IN STEPS / STAINLESS STEEL LADDERS



For manhole of DN.1000mm internal steps / stainless steel ladders are pre-fabricated together with the manhole elements to facilitate man-entry.

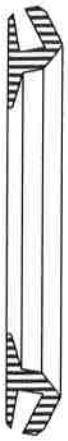
These steps have anti-skid properties and are manufactured according to EN.13598-2.



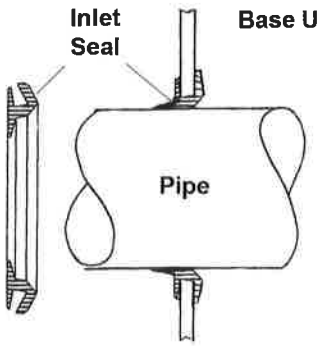
SEALS

(i) Inlet Seals





Section of Type
Inlet Seal



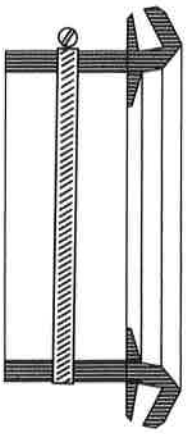
Details of inlet joint

The Inlet Seals are used to connect the inlet pipes to the manhole.

These seals are made of natural rubber complying to EN.681, and are design to suit different pipe materials ranging from DN.100mm to 500mm. Water tightness pressure is up to 0.5 bar for this seals.

(ii) Groundwater Seals





Section of Type
Rubber Seal for ground water

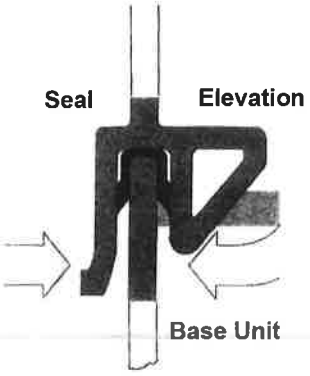
This seals are specially designed for application where groundwater is present around the manhole. The seals come complete with a long band and stainless steel clamps to prevent infiltration of groundwater into manhole.

This seals are manufactured in elastomeric rubber materials complying to EN.681 and are suitable for different pipe materials of DN.100mm – 400mm.

(iii) Element Seals



Seal Type GE



Detail of joint
between the elements

Element seals are used in between each element to connect the Base, Elevations and Upper Unit together to form the required depth of a complete manhole.

These seals comply with EN.13598-2 and water - tightness pressure is guaranteed at +0.5 / -0.3bar.

CORING BITS & ADAPTOR



Circular Cutter



Adaptor for Drill Bit

The coring bits are for opening the inlet holes on the manhole.

This hole will then be fixed with the inlet seals to allow the connection of the inlet pipes into the manhole.

This coring bit is available in different sizes according to the inlet seals and can be connected to an electric drill with the drill adaptor.

ADAPTORS & BUSHES

These adaptors & bushes are design to connect different pipe materials (Eg. PVC, Ductile, VC. Pipes) to the inlet and outlets PE Pipes of the manhole / inspection chambers.







PIPE CONNECTION

(I) PE / PVC or Ductile Pipes Connection



PE, PVC or Ductile Pipes can be connected to the manhole by elastomericseals or coupling made in PE or PVC.

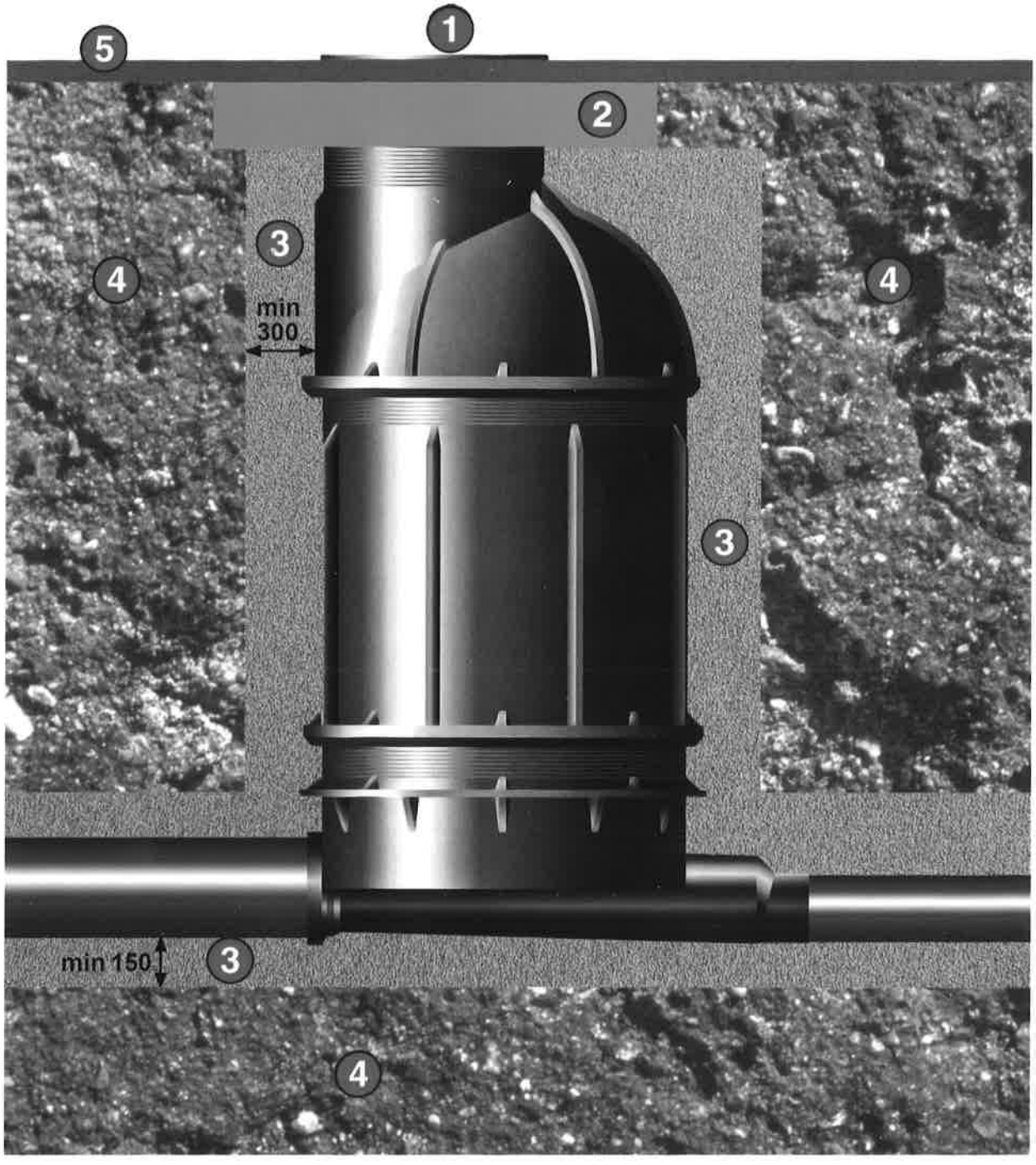
(II) Vitrified Clay Pipes Connection





The connection of Vitrified Clay Pipes to the PE manhole could be done by means of rubber or PVC adaptors and stainless steel couplings.

Method of Installation



(1) Shaft and Laying Bed

1) Ductile Iron Cover - Complying to EN.124, class D400 loading.
2) Concrete Slab which distributes vehicular load away from manhole.
3) Filling materials , min. 300mm surround (sand or grandular material well compacted) with dmax = 20mm.
   Laying bed (sand or grandular material well compacted with dmax = 20mm)
4) Manhole base - Details varies according to actual site requirement.
5) Driveway - Finish materials according to project requirement.

The base of the shaft should be at least 200mm below the invert level of the outlet pipe and 1000mm larger than the manhole diameter to ease installation work.

Sand and grandular material should be placed on the laying bed with a thickness of at least 150mm.

Place the manhole with care; consider the direction and the height of the inlet and the outlet.



(2) Preparing the Outlet

If necessary cut the outlet in the manhole according to the size of the outlet pipe.



(3) Drilling the Hole

With the correct device which has a circular blade furnished by us, make a hole in the inlet in correspondence to the marking on the manhole taking care in noticing the size required in accordance to the Pipes diameter 110, 125, 160, 200, 250, 315 or 400mm.

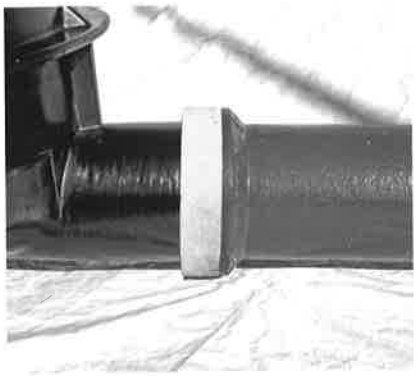


(4) Preparing the Inlet

Insert the seal for a flexible and water-tight joint.

(5) The laying of the Element





Lay the base or the monoblock unit on the compacted sand bedding. Connect the pipes into the inlet by pushing the pipe through the seal, with the help of lubrications if necessary. Insert the discharge pipe on the outlet of the manhole. Place the manhole in an vertical position with the use of a levelling ruler and making sure that the flow axis has a slope of 2%. Make sure the space around the manhole is already filled with sand.

(6) Removing of Reinforcing Ring




All the elements are equipped with a structural ring to be removed before assembling with other elements. Cut with a knife and remove with a hammer.

(7) Connection of the other components



Use the element seals to connect each element together as shown in the photograph. Place the top element onto the seal of the lower unit and using enough pressure push in the connection while making sure that the steps / stainless steel ladders are aligned. Alternatively, all the components of the manhole can be welded together. It is best to order from the factory pre-welded element if required.

(8) Regulating the height of the Manhole



To achieve the required height of the manhole, it is possible to cut each element along the marked line with a space of 10 mm using a hack-sawing machine or a simple manual saw.

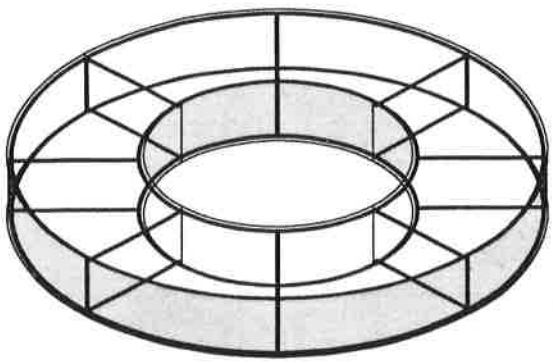
(9) The filling



To make sure that the pressure on the manhole from the ground is uniform, it is necessary to fill the space around the manhole for at least 300 mm with sand and grandular material (dmax=20 mm). Backfill in layers of 300 mm and compact with added water.

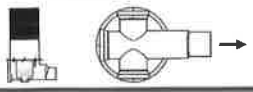
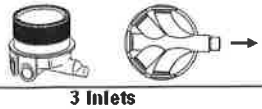
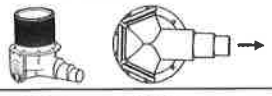
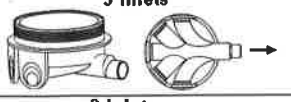
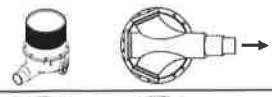
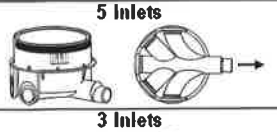
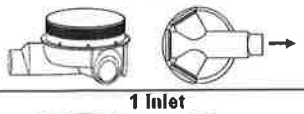
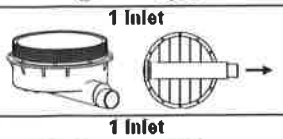
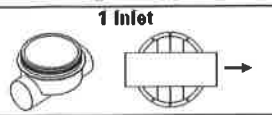
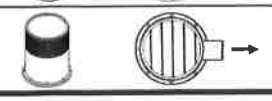
(10) Covering the Manhole in Driveway



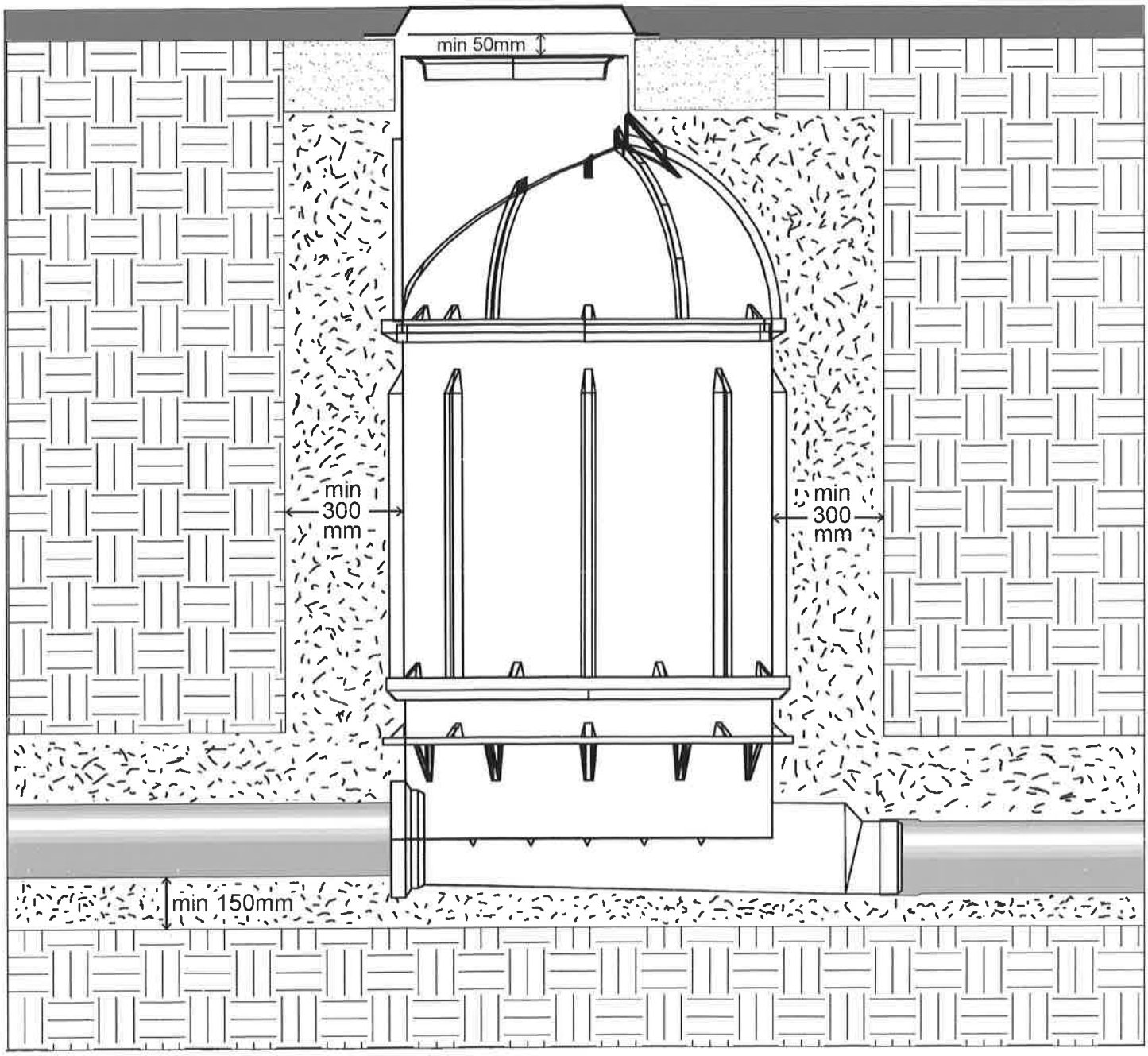


In a non-carriageable area you can cover the manhole with the plastic cover furnished by us. In a driveway area for medium or high traffic load it is necessary to place a reinforced concrete slab, which distributes the load coming from the street to the compact ground. In this case the cover will be placed and fixed on the concrete slab which must be at least 1500mm wide and 200mm thick.

Technical Specification

Manhole Diameter		Pipe Diameter (mm): (110/160/200/250/315/400)		Unit Height (mm)			Combo Manhole Height (mm)
		Inlet Pipe	Outlet Pipe	Base Unit	Elevation Unit	Upper Unit	
DN.400					-	-	
Flow Bottom	3 Inlets 	110 / 160 / 200	160 / 200	1000	PVC Pipe	-	1000
DN.600						-	
Flow Bottom	5 Inlets 	110 / 160	110 / 160	600	200, 400, 800	-	-
	3 Inlets 	110 - 315	200 / 250 / 315	1000	200, 400, 800	-	1000
Round Bottom		Any Direction 110 - 315	110 - 315	600, 800, 1000, 1200	200, 400, 800	-	-
DN.800							
Flow Bottom	5 Inlets 	110 - 200	160 / 200	500	400, 1000	400, 550	900, 1200, 1650
	3 Inlets 	110 - 315	200 / 250 / 315	1000	400, 1000	400, 550	1300, 1750
Round Bottom		Any Direction 110 - 315	110 - 400	600, 800, 1400	400, 1000	400, 550	800, 950, 1200
Flat Bottom		Any Direction 110 - 315	110 - 400	400, 1000	-	-	-
DN.1000							-
Flow Bottom	5 Inlets 	110 - 250	200 / 250	600, 900	500, 1000	750, 1000	-
	3 Inlets 	110 - 400	315 / 400	700	500, 1000	750, 1000	-
	1 Inlet 	110 - 250	200 / 250	600	500, 1000	750, 1000	-
	1 Inlet 	450 / 500	450 / 500	750	500, 1000	750, 1000	-
Round Bottom		Any Direction 110 - 400	110 - 500	1000	500, 1000	750, 1000	-
Flat Bottom		Any Direction 110 - 400	110 - 500	500, 1000	500, 1000	750, 1000	-

* Above information and Specification are subjected to changes without prior notification.


min 50mm
min
300
mm
min
300
mm
min 150mm

Another Green & Innovative Product From

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BACE RESOURCES PTE LTD

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