



# DATA SHEET FOR INFRAPIPE HDPE MANHOLES & BESPOKE STRUCTURES DN600-DN3200

## HDPE MANHOLES ARE ESSENTIAL FOR THESE SITUATIONS:

- ✓ Sewage (immune to hydrogen sulphide).
- ✓ Marine or coastal applications.
- ✓ Acidic Soil.
- ✓ Difficult access.
- ✓ Seismic risk.
- ✓ Many or close connections required.
- ✓ Poor (weak) soil.
- ✓ Minimal lifting equipment.
- ✓ Depths 5m+
- ✓ Fast laying or short lead time required.

**A manhole is not required solely** for a change of direction or grade, or for access or for a connection, **if using an HDPE pipe system**. Bends, connectors and integrated access are cheaper, quicker to install and have a lower lifetime cost.

## DIMENSIONS HEIGHT AND WEIGHT

This table below provides sample weights for standard diameters, however other diameters – 600, 700, 800, 900, 1100, 1350, 1600, 1800, 2300, 2500 are also available in addition to the demonstrated 1000, 1200, 1500, 2000 & 3200. Locations with a high water table require a thicker chamber and base and the corresponding weight is shown in the right hand column.

Manholes can be produced from any height 600mm-18000mm, the heights below are examples:

ID	Depth	Weight	Weight High WT
1000	1500	185	185
1000	2500	305	330
1000	5000	625	945
1200	1500	255	255
1200	2500	425	465
1200	5000	890	1335
1500	1500	380	380
1500	2500	630	750
1500	5000	1400	2050
2000	1500	660	660
2000	2500	1100	1300
2000	5000	2500	3600
3200	1500	1500	1500
3200	2500	2500	3150
3200	5000	6300	9005

Fig 1. Weights in kg for example diameters



Fig 2. Airport manhole known as the 'turret'



## COMPONENTS

An INFRAPIPE manhole has these components:

**Cover & safety grille** of ductile iron.

OR **vented cover** for sewage applications where specified

OR **scruffy dome**.

**Riser** if required made to the exact height or specified over-size and cut to size on site.

**Lid** of concrete or HDPE with rebate and hydrophilic seal.

**Rungs** of HDPE at 300mm centres from 600mm up.

**Chamber** made of solid wall HDPE pipe from any diameter as above and to the strength required for the load, soil type and water table. The pipe can be made to the exact height or specified over-size and cut to size on site.

**Lifting Lugs**.

**Optional** Safety Platforms.

**Connections** installed at any invert, any diameter with any connection to any type of pipe.

**Benching** at any slope to match any council specification using shaped and welded abrasion-proof HDPE sheet.

**Base** of double-welded HDPE sheet.

**Flange** provides stability.

**Foundation** if required which can include **anti-buoyancy** if required.

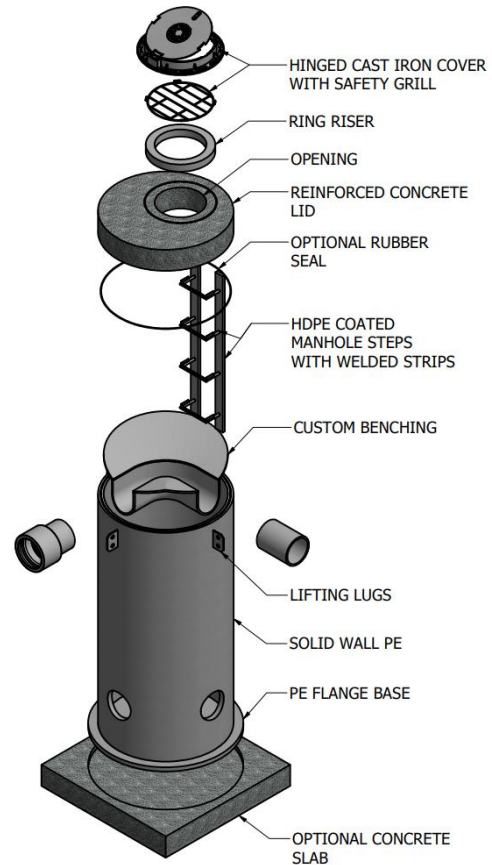


Fig 3. Manhole components

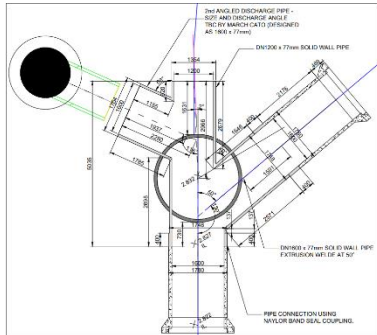


Fig 4. Airport 'turret' drawing

## NO RESTRICTIONS

Due to the flexibility of HDPE INFRAPIPE imposes no constraints on:

- ✓ Co-location of connections.
- ✓ Number of connections.
- ✓ Height of connections.
- ✓ Exact height of manhole.
- ✓ Lifting.
- ✓ Exact angles.

## CONNECTIONS

INFRAPIPE provides all connections:

- ✓ Slip coupler to PVC.
- ✓ Butt/extrusion weld to HDPE.
- ✓ EF weld to HDPE.
- ✓ Shearband to concrete.
- ✓ Corbel to concrete.
- ✓ Puddle flange to all.
- ✓ Stub flange to all.



Fig 5. Benching





## OTHER FABRICATIONS

The INFRAPIPE KRAH system produces all other fabrications required for pipelines in NZ: **Bends** of radius 1d+ typically in segments of 22.5 degrees or less can be formed from any diameter. **Risers** to provide integrated access to pipes, tanks or other structures. **Connections** can have convergent angles as low as 11 degrees and can incorporate more than one connection simultaneously. Alternatively bends can be incorporated upstream of a connection to improve flow - turning a Tee into Wye for instance as below:

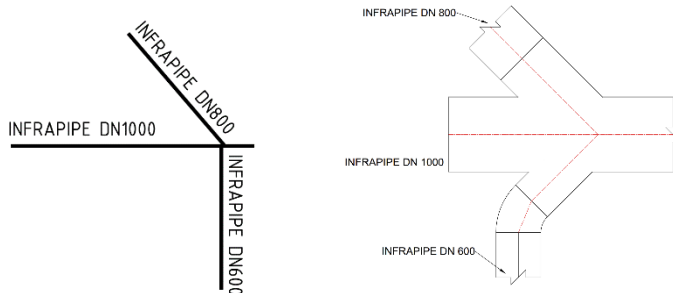


Fig 6. Pre-connection bends improve hydraulic efficiency

## Standards

1. EZYFLOW has been certified to AS/NZS 5065:2005 licence no. AMI 74961.
2. INFRAPIPE is certified to ISO 9001:2015 licence no. AMI 78044.
3. Pipes are tested by Infrapipe in their test lab in accordance with ISO 9969:2016 *Thermoplastic pipes – Determination of Ring Stiffness*.

## MATERIAL

HDPE and structures fabricated from it have the following material properties:

The best abrasion resistance.

- ✓ The best seismic resistance.
- ✓ The best chemical resistance.
- ✓ The best biological resistance.
- ✓ The best damage resistance.
- ✓ No maintenance.
- ✓ Lowest lifetime cost.
- ✓ Long life 100 yrs +
- ✓ Completely recyclable.



Fig 7. Manhole showing proximity of connections

## OTHER APPLICATIONS

INFRAPIPE manholes can be used in combination with connections and other fittings to provide the optimum solution for the site. This example to the right combined manholes with **30m<sup>3</sup> of water storage**. **Clarifiers, grit separators, pump chambers, wetwells or terminal chambers** can be independent or supplied integrated into the pipeline or **tank** reducing complexity, cost and seismic or infiltration risk.



Fig 8. Combined manhole/tank

## SUSTAINABILITY

HDPE and structures fabricated from it are the best solution for the environment:

- ✓ Lowest environmental impact.
- ✓ Less freight.
- ✓ Less diggers, less cranes.
- ✓ Completely recyclable.
- ✓ All production waste is reprocessed.
- ✓ Less abrasion = less pollution.



## WHOLE OF LIFE COSTING

An HDPE manhole or other structure has superior Whole of Life cost because it has:

- ✓ Similar manufactured price.
- ✓ Less freight cost.
- ✓ Lower installation cost.
- ✓ Lower connection cost.
- ✓ No maintenance cost.
- ✓ Easy and to modify.
- ✓ No decay or degradation from chemical or biological attack.
- ✓ The best seismic resistance.
- ✓ The best abrasion resistance.
- ✓ Easy to exhume.
- ✓ Free to dispose to recycling.

## INSTALLATION AND SITE SURVEYS



INFRAPIPE manufactures its manholes in East Tamaki. By prior arrangement, final confirmation of invert levels or angles for connections can be made only days prior to dispatch to assist those working in difficult sites who face unforeseeable changes

### BUOYANCY

Buoyancy is calculated during design and the appropriate size of base or other measures are specified.

Fig 9. Sample pictures of manholes

## CONCRETE COMPARISON

DN	Depth	Concrete Weight kg	HDPE Weight High WT kg
1000	2500	2091	330
1200	2500	2482	465
1500	2500	3609	750

Fig 10. Weight comparison for HDPE & concrete



## SPECIFICATION, DESIGN FLEXIBILITY & MORE DETAIL

For typical manholes annotate "INFRAPIPE MANHOLE DN x". For more complex structures confirm the ID required of each component in the detail drawings. Connection types can be specified or INFRAPIPE can propose them. Any shape composed of cylinders from 450 to 3200mm in diameter can be manufactured with no constraints imposed by the need to preserve internal reinforcing.

Visit [INFRAPIPE's website](#) or the [Downloads section for Design Manuals and Data Sheets](#) on INFRAPIPE for civil applications (storm and waste water), tanks, SN16 drainage, solid wall pipes and other products DN100-3200.

