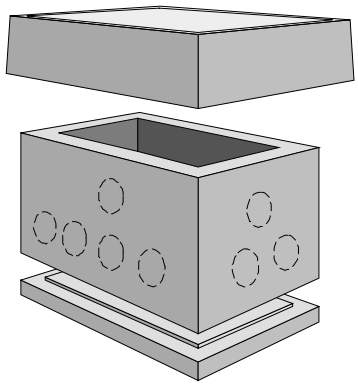
VANSTONE PRECAST (PTY) LTD

PRECAST CONCRETE THREE-PIECE LIGHT MANHOLE / DRAW BOX FOR TELECOMS INSTALLATIONS 600 x 450 x 600 mm

GENERIC SPECIFICATION

Update 5: May 2020



Introduction

The Light Manhole is a 600 x 450 x 600 mm high (internally) precast concrete manhole or draw box suitable for underground telecoms services. It comes equipped with any number knock-out holes of size and arrangement to suit the customer. The attached drawings show the standard knock-out arrangement.

The nominal lid opening is 600mm x 450mm. Available lids types are i) Light duty cast iron lid and frame cast-in, ii) Steel checker plate hot dipped galvanized lockable lid and iii) Reinforced concrete lid (not lockable).

The Light Manhole is supplied in a three-piece kit including a floor, a ring wall and a cover frame.

Design

The walls and floor of Light Manhole has been designed in accordance with SABS 0100-1 2000 “The structural use of concrete” to safely withstand a static wheel load of 50 kN (5 tonnes) evenly distributed over an area of 200 x 150 mm. Lid only design loads are:

i) Cast iron – light duty no guarantee;
ii) Steel: 10kN (1t: Ldv single wheel)
iii) Reinforced Concrete: B125 (12.5t)

The following design criteria were used:

Limit state of design:	Ultimate
Imposed load:	As given above
Load factor:	1.6
Material safety factors:	Steel 1.15; Concrete 1.5; Polymer-concrete 1.2
Analysis:	Static, simply supported
Material characteristic strengths	Concrete fcu = 30MPa,
	Polymer-concrete flexural strength = 18MPa
	Steel plate fy = 275MPa,
Reinforcing:	High tensile main reinforcing to SABS 920
Strength verification:	By testing and statistical method for concrete

Dimensions

External:	Height	655 mm
	Length	680 mm
	Width	530 mm
Internal:	Depth	600 mm
	Length	600 mm
	Width	450 mm

Components list

Floor:	680 x 530 x 50 mm
Ring wall:	680 x 530 x 430 mm
Lid frame:	758 x 610 x 200 mm
Holes / knock-outs:	Number and size as required by the customer. Services entrances can be either holes through the walls where unused holes have to be plugged or knock-outs where only the holes that are needed are knocked out.
Lifting of lid:	i. Cast iron and Reinforced concrete: standard slots, ii. Steel: lifting handle and disengage-able hinges.
Other:	Any other equipment to customers' requirements like unistruts, security bolts etc. may be supplied as optional extras.

Installation

The total external height of the manhole is 650mm. It is often preferred that the rim of the manhole project above the ground or paving by at least 75mm. This determines the depth of excavation. Excavate for the manhole and over-excavate for the sides sufficiently to allow for compaction equipment. Where sufficient accuracy of excavation can be achieved, only slight over excavation is required. This may be backfilled with a cement stabilized gravel or mass concrete if preferred.

Backfilling should always be at least as strong and serve the same purpose as the surrounding soil. To aid the drainage of occasional rain water, a subsoil drain may be installed under the manhole. This may be in the form of a small sump under the centre hole that can hold extra water or a system that drains water away from the manhole. Simply over-excavate to the size required and fill with any constant size crushed stone.

In the bottom of the excavation, prepare a true and level 50mm thick bed of riversand, crusher sand, fine clean gravel (particle size < 10mm) or cement stabilized topping material. Place the manhole base or floor carefully on the bed ensuring proper and even seating. Place the wall section on the base, ensuring that it is the right way up when looking at the service holes. Use a thin layer of cement mortar between the walls and the base if seating is not snug. Place the lid section on top of the walls and make sure that the walls penetrate into the recess at the bottom of the lid and is not half-in, half-out. The manhole can now be used to install sleeves, cables and other services. Full water tightness is not achievable.

Knocking out of holes:

Use a light ball head or ball-pein hammer of no more than 1½ lbs. Identify the hole to be knocked out by looking on the inside. Put one hand over the hole. Now locate the hole's corresponding outside position by placing the other hand on the outside of the wall directly over it. Mark if necessary. Start tapping from the outside with the ball of the hammer as close as possible to the centre of the hole. The taps should be light and repeatedly on the same spot until penetration occurs. Carefully enlarge the hole from the centre out until it is complete. DO NOT use force, a heavy hammer or knock the hole out from the inside.

Attachments

- Page down.
- Drawing showing panel type manhole and an arrangement of knock-outs. Any arrangement is possible.

Contact

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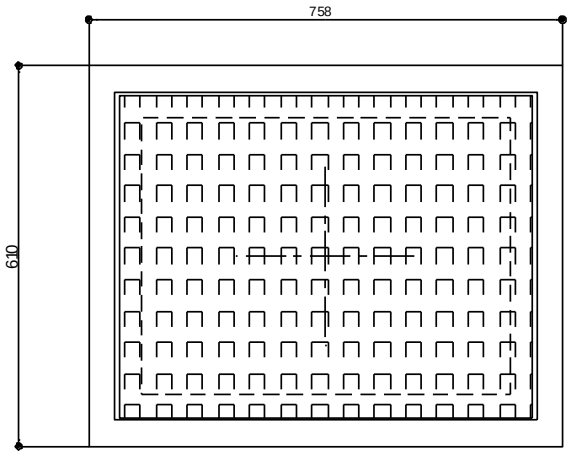
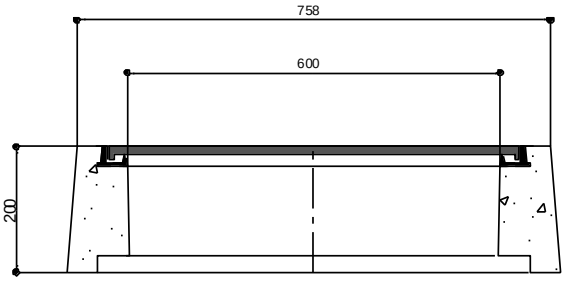
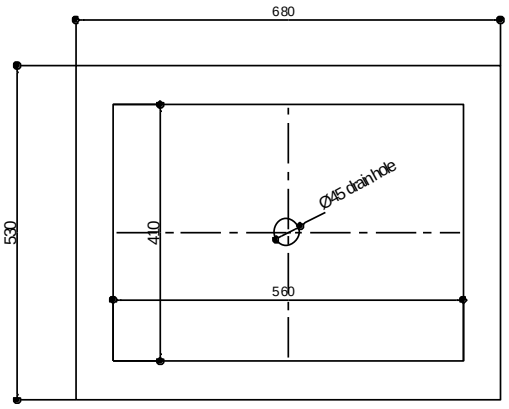


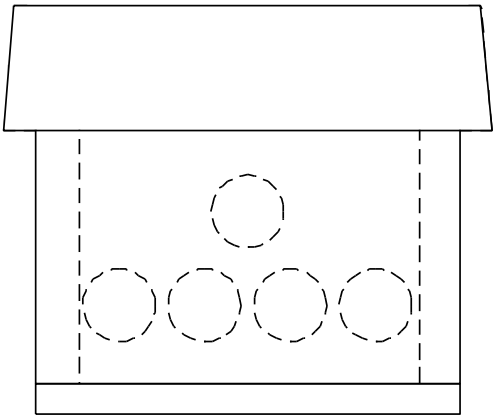
PLAN - TOP FRAME



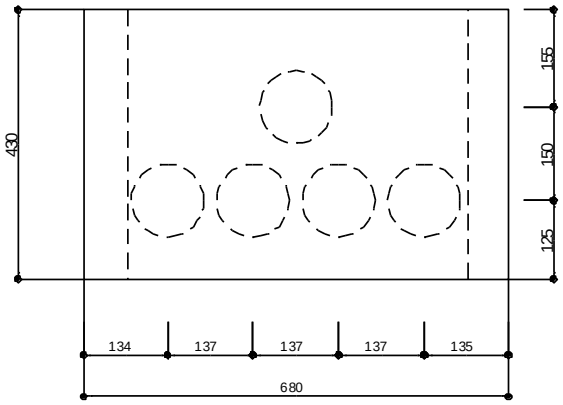
SECTION THROUGH TOP FRAME



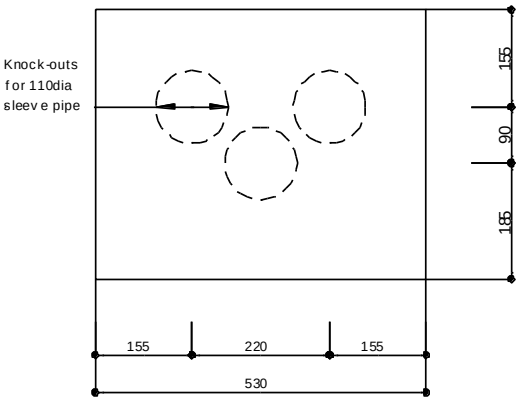
PLAN - WALLS



ELEVATION

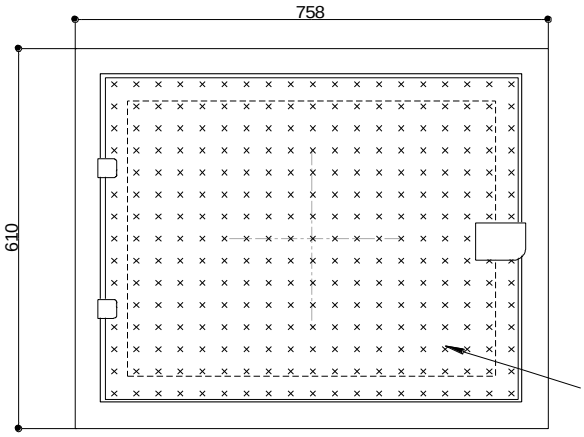


ELEVATION - LONG SIDE

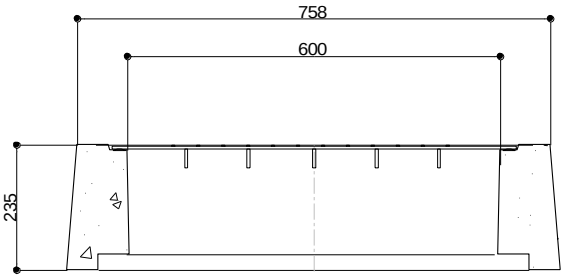


ELEVATION - SHORT SIDE

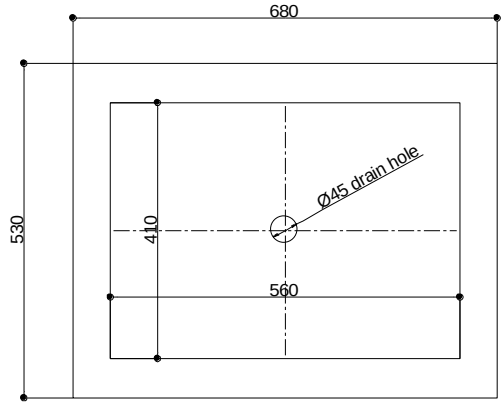
600 x 450 3-PIECE PRECAST MANHOLE - CAST IRON LID



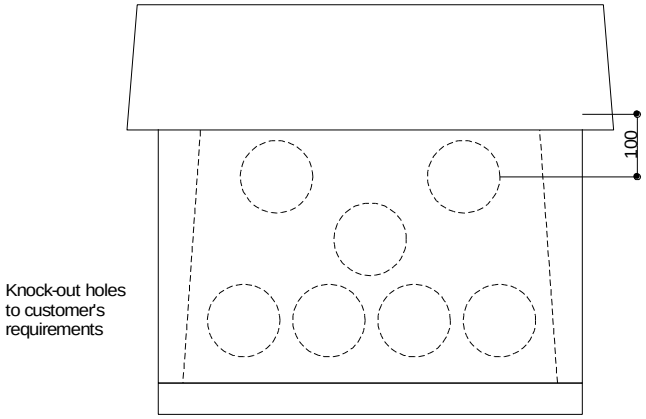
PLAN - TOP FRAME AND LID



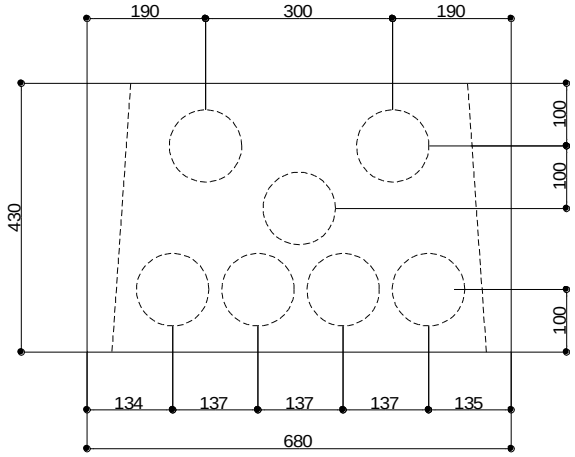
SECTION THROUGH TOP FRAME AND LID



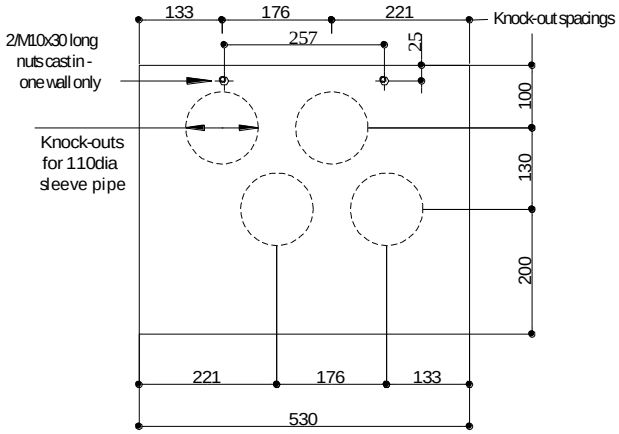
PLAN - WALLS



ELEVATION



ELEVATION - LONG SIDE



ELEVATION - SHORT SIDE

600 x 450 3-PIECE PRECAST MANHOLE - LOCKABLE STEEL LID

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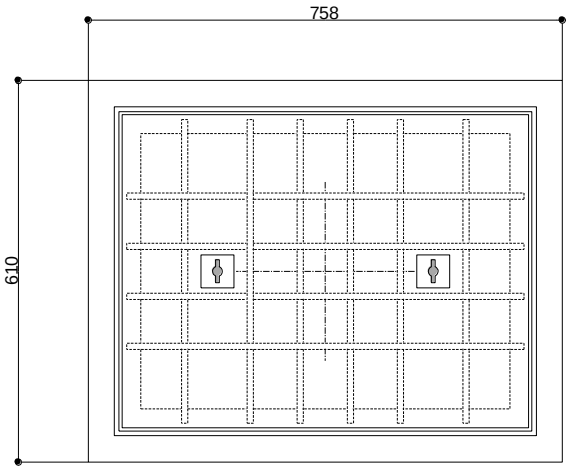
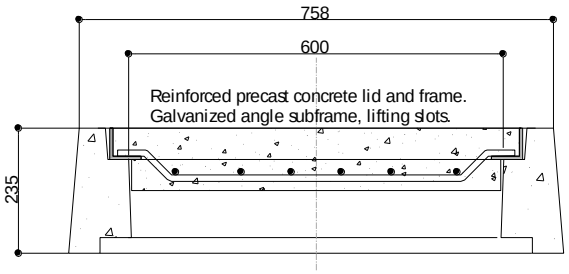
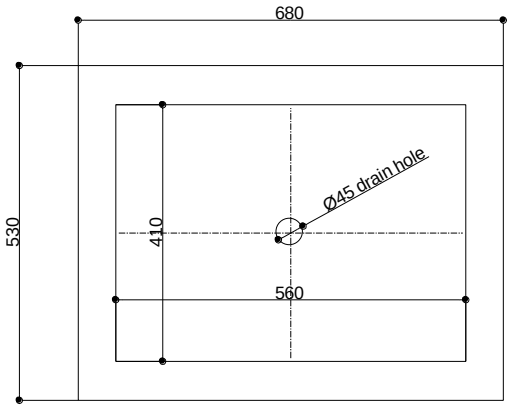


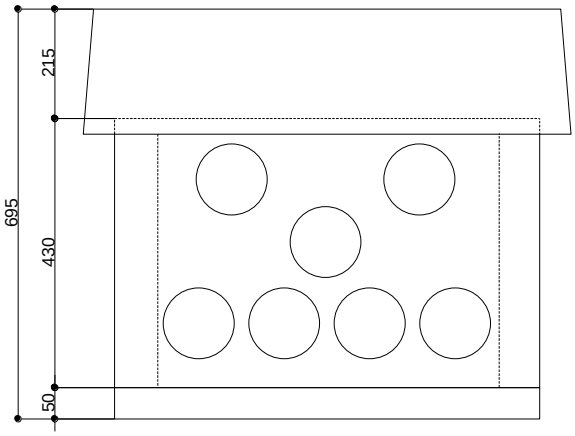
PLAN - TOP FRAME



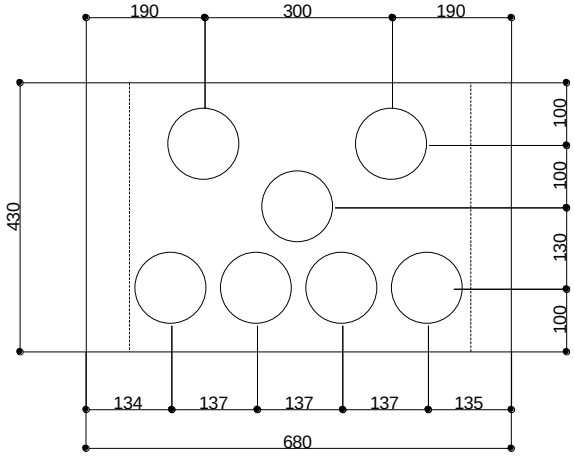
SECTION THROUGH
TOP FRAME & LID



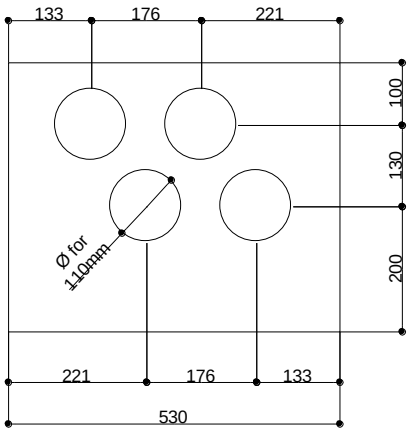
PLAN - WALLS



ELEVATION



ELEVATION - LONG SIDE



ELEVATION - SHORT SIDE

600 x 450 3-PIECE PRECAST MANHOLE - CONCRETE LID