VANSTONE PRECAST (PTY) LTD

SOLID SWITCH MANHOLE

SPECIFICATION

Date of first issue: 23 August 2012

Introduction

The Solid Switch Manhole is a reinforced precast concrete inspection / service chamber suitable for underground telecoms services. It is a solid manhole i.e. the floor and walls are cast monolithically. The external size is 1.2m x 0.84m x 1.1m high. See full dimensions herein later.

The standard form is equipped with 36 knock-out holes of 130 mm diameter, 4 unistruts vertically bolted-on, a drainage sump with weep hole and a hot dipped galvanized steel lid made of “vastrap” plate with folded edges and two lifting handles. The lid has slide-in hinges and a heavy duty hasp and staple with a lock protector. The padlock is not supplied.



View of complete Switch Manhole

Design

The Solid Switch Manhole has been designed in accordance with SABS 0100-1 2000 “The structural use of concrete” for the following loads:

Walls and floor:	Static wheel load 100kN
Lid:	Static wheel load 10kN.



Lid handles and lock mechanism

The following design criteria were used:

Limit state of design:	Ultimate
Imposed load:	10/100 kN static wheel loads
acting vertically on lid.	
Load factor:	1.6
Material safety factors:	Steel 1.15; Concrete 1.5
Analysis:	Static, simply supported
Concrete strength	35 Mpa
Reinforcing:	High tensile main reinforcing to SABS 920

Dimensions

	Length (mm)	Width (mm)	Depth (mm)
Internal dimensions	1000	640	1000
External dimensions	1200	840	1100

Equipment list

Body:	Walls 1200 x 840mm in plan, minimum 94mm thick reinforced concrete
Floor:	100mm thick reinforced.
Lid:	Steel 4.5/6.1 “vastrap” plate, edges folded down, strengthened with ribs and bearing on 6mm spacers to allow for ventilation. Two handles, slide-in hinges staple and slot for padlock, lock protector. All hot dipped galvanized.
Knock-outs:	36 x 130mm diameter or as required by the customer
Drainage sump:	200 x 200 x 50mm deep with 40mm diameter weep hole
Unistruts:	4 x 650mm long, size 41.3 x 20.6mm, vertically bolted on, hot dipped galvanized.

Installation

The manhole may be installed with the rim and lid protruding above the natural ground level by 30mm – 50mm to prevent ingress by low intensity surface water.

Excavate for the manhole to a depth of at least 1100 mm deep below the final level. Over excavate sides sufficiently to allow for compaction equipment. Where sufficient accuracy of excavation can be achieved, only slight over excavation is required, which may be backfilled with a cement stabilized gravel or mass concrete. This method is especially suited for installation within existing roads and paved areas. Backfilling should always be at least as strong and serve the same purpose as the surrounding soil.

In the bottom of the excavation, prepare a true and level bed 50mm thick of riversand, chrusher sand, fine clean gravel (particle size < 6 mm) or cement stabilized topping material. Place the handhole carefully on the bed ensuring proper and even seating before backfilling.

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. Services may now be installed and plugged with a semi-dry 1:3 cement/riversand mixture or polyfoam. Full water tightness is not achievable.

Attached drawings

- General drawing

Credits Information

The following organisations contributed to the development and improvement of the product.

- MNT: Development of deep solid manhole with folded steel lid based on Vanstone’s Solid Handhole.

Contact

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