

VANSTONE PRECAST (PTY) LTD

PRECAST CONCRETE HANDHOLE FOR OPTIC FIBRE INSTALLATIONS

SPECIFICATION

Update 1: Oct 2007 (galvanized steel rim lining added)

Update 2: May 2008 (measures to improve anti-corrosion performance)

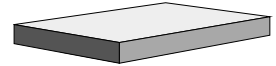
Update 3: Aug 2008 (wall extension added, credits added)

Update 4: Jul 2009 (shallow type added)

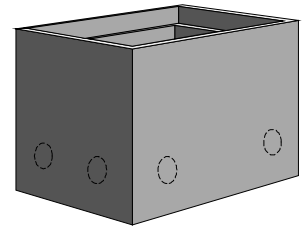
Update 5: Mar 2010 (generalized for all variations)

Introduction

The Optic Fibre Handhole/Manhole is a reinforced precast concrete inspection / service chamber suitable for underground telecoms services. It is available in a fixed floor or loose floor (split) version and each in standard depth or shallow manhole. A wall extension of 350mm deep is available for split versions where extra depth is required. See full dimensions for all models herein later.



All models are equipped with 8 knock out holes of 130 mm diameter, 4 unistruts vertically bolted-on, a drainage sump with weep hole and a precast concrete lid that can be bolted down.



Design

The Optic Fibre Handhole has been designed in accordance with SABS 0100-1 2000 "The structural use of concrete" to safely withstand a static wheel load of 100kN. This applies to the lid as well as the walls.

The following design criteria were used:

Limit state of design:	Ultimate
Imposed load:	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

The tops of the walls are lined with 2 mm folded steel plate to protect the exposed edge against traffic.

Although the lid was designed for the given wheel loading and each lid is individually cast for each manhole to sit perfectly and eliminate any rocking of the lid under traffic, concrete is a low ductility

material and its durability under high volumes of heavy vehicle traffic is not proven nor guaranteed. For these situations special heavy traffic lids comprising steel as base material should be used.

Models

The Optic Fibre Handhole is available in the following models, all which comply with this specification:

Model	External dimensions (mm)			Internal dimensions (mm)		
	L	B	H	L	B	D
Standard Solid Floor type	1200	840	850	1000	640	750
Standard Loose Floor type	1200	840	850	1000	640	750
Loose floor type plus wall extension	1200	840	1200	1000	640	1100
Shallow Solid Floor type	1200	840	600	1000	640	500
Shallow Loose Floor type	1200	840	600	1000	640	500

Equipment list

Body:	Walls 1200 x 840mm in plan, minimum 100mm thick reinforced concrete
Floor:	Split versions only. 100mm thick reinforced.
Lid:	1100 x 740 x 100mm thick reinforced concrete
Knock-outs:	8 x 130mm diameter, end ones slotted for loose-floor type
Drainage sump:	200 x 200 x 50mm deep with 40mm diameter weep hole
Rim lining:	2mm cold formed steel, hot dipped galvanized.
Unistruts:	4 x 400mm long, size 41.3 x 20.6mm, vertically bolted on, hot dipped galvanized. Shorter for shallow types.
Hold-down nuts:	4 x M16 nuts and sleeves, to support rim, entirely cast-in, zinc plated.
Bolt sleeves in lid:	2 x for lid, entirely cast-in, for M16 alan-cap bolts, zinc plated. Bolts not supplied.
Lifting boxes in lid:	4 x with slots for special key, also acting as ventilation openings for chamber.

Installation

Excavate for the handhole to a depth of at least 900 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, crusher 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. For split versions, the loose floor is installed first as above and the walls are placed later on the floor on a bed of 1:4 brick mortar.

Knock out the required service holes by using no more than a 4 pound hammer. After installation of services it may be plugged with a semi-dry 1:3 cement/riversand mixture. Full water tightness is not achievable.

Attached drawings

- Drawing showing knock-outs for standard solid floor handhole
- Drawing showing knock-outs for loose-floor type handhole
- Drawing showing wall extension.
- Drawing showing shallow type with solid floor
- Drawing showing shallow type with loose floor

Credits Information

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

- Muvoni Weltex Network Technologies: Initial requirement and development for first installation; anti-corrosion improvements.
- MCT: Development of lockable automatic electronic lid and adaptation of it to Vanstone's standard manhole.
- Plessey: Development of the loose floor concept.
- Alcatel-Lucent: Development of the 350mm wall extension to obtain a deeper manhole.
- DFA: Shallow type manhole
- Vodacom: Standard specification.

Contact

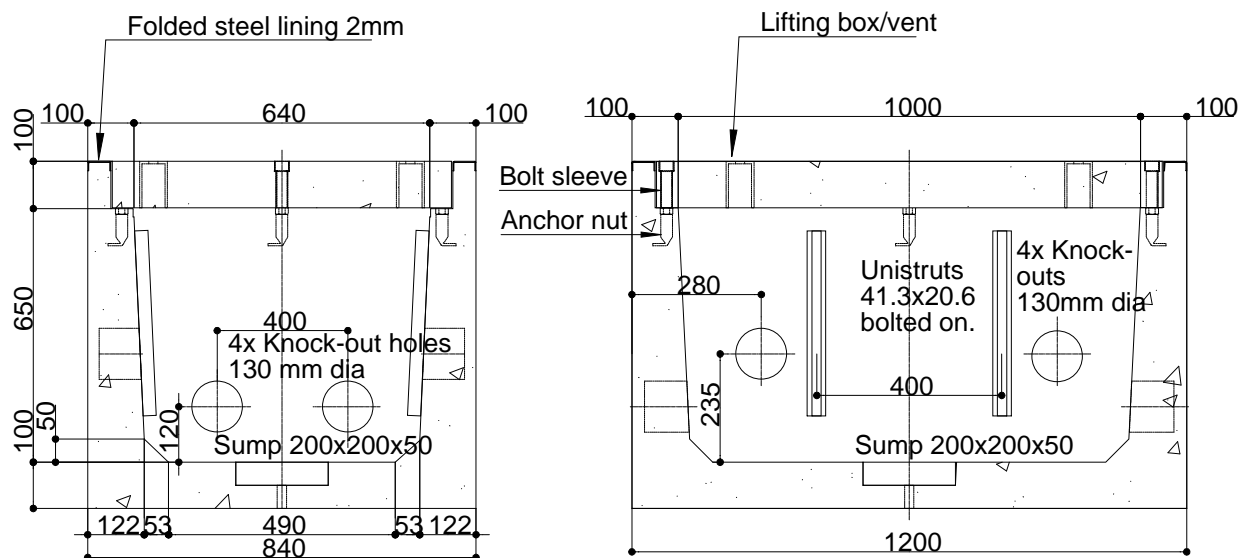
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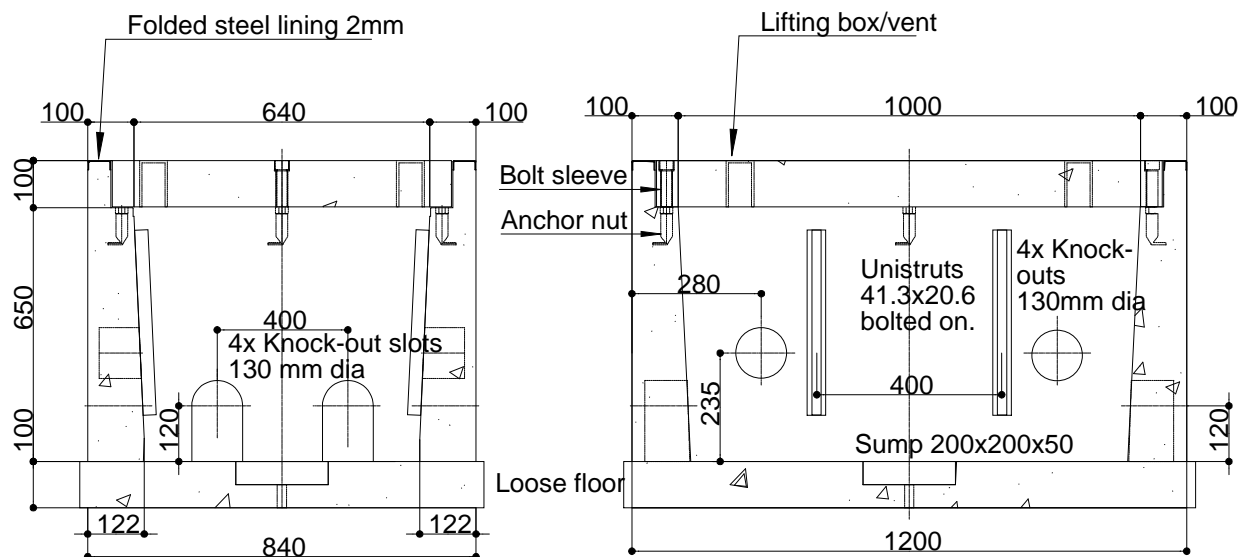
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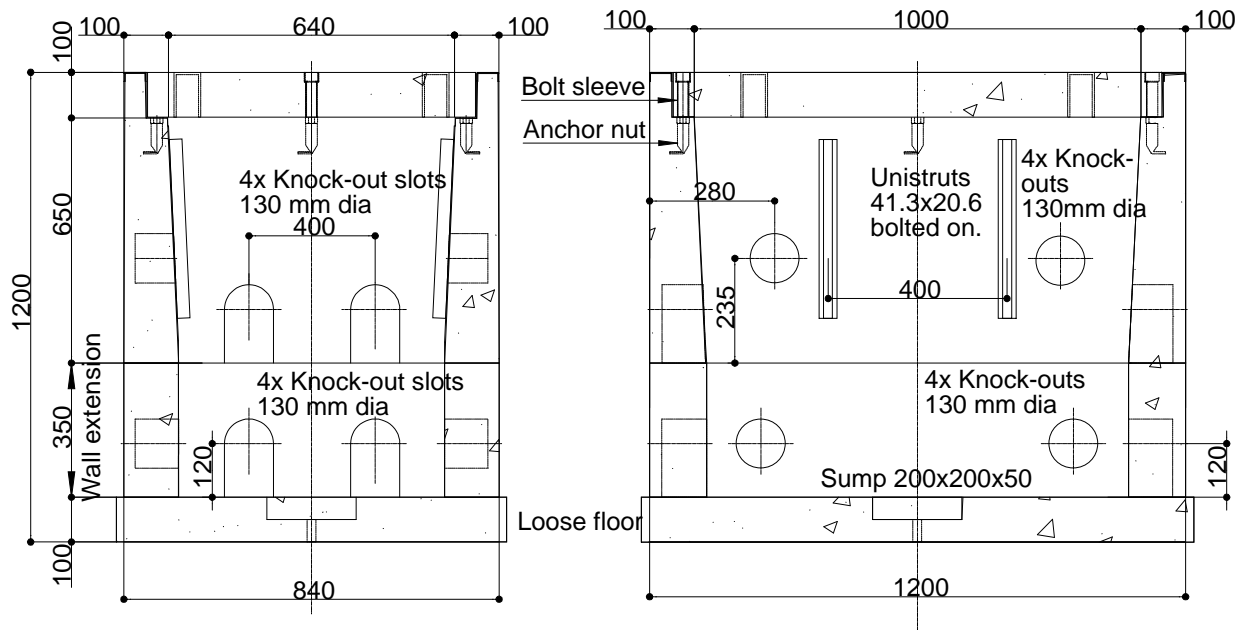
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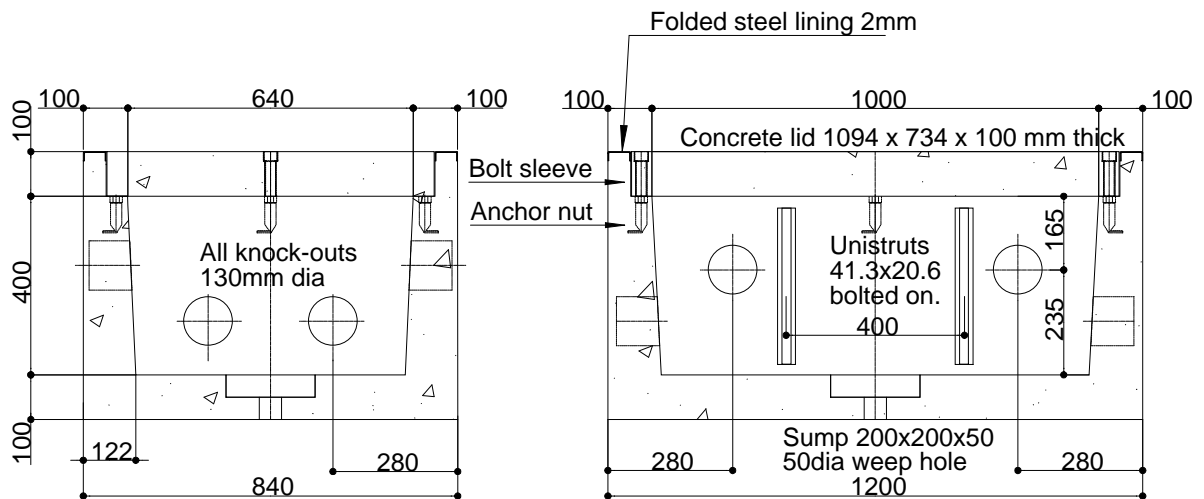
**HANDHOLE SHOWING KNOCK-OUTS AND LID
(‘SOLID’ FLOOR TYPE)**



**HANDHOLE SHOWING KNOCK-OUTS AND LID
(‘LOOSE’ FLOOR TYPE)**



**HANDHOLE SHOWING KNOCK-OUTS AND LID
(EXTENDED WALL FOR 'LOOSE' FLOOR TYPE)**



**SHALLOW HANDHOLE SHOWING KNOCK-OUTS AND LID
('SOLID' FLOOR TYPE)**

