



A CRH COMPANY

Precast Concrete

Installation Guide

V.1 2019



Introduction

Cubis Systems designs, manufactures and distributes a wide range of precast concrete cable pits and access covers for all major Australian sectors with Class A to G load capabilities.

Working with State, Local and Industry authorities, Cubis offers one of the most diverse ranges of approved and custom engineered precast concrete network asset solutions on the market.



Scan QR Code for the Melbourne Metro Tunnel Case Study.

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Product Description



All Cubis precast concrete products are manufactured using C40/50MPa strength concrete.

Refer to pit drawing for specific detail such as unistrut, conduit knockouts, lifting anchor size, etc.

Precast Concrete Turret

Precast Concrete Encasment



Pit Base with Drainage Hole



Health & Safety Notice

In areas where the public have access, the site should be properly signed and guarded in accordance with the State and Territory Regulators, Laws and Codes on Health and Safety.

Additionally, all other safety precautions required by legislation, the customer and as specified by the contract, the Local Authorities, other Landowners and the Police should be observed at all times.

Before excavation takes place, all necessary precautions to locate and protect exiting buried services in the location of the access pit should be taken.



Scan QR Code for the Precast Concrete General Material Safety Data Sheet (MSDS).

Installation Guidelines



Bed Preparation

- 1 Mark the extremity of the excavation on the ground

- 2 Excavate the hole to the correct depth

The depth of the hole should measure from finished ground level minus the thickness of the frame or encasement according to the drawing/specification of the selected frame or encasement, pit wall depth and the required base thickness.

- 3 Compact the bottom of the excavation using a suitable compaction device, making sure that it is level

- a. The minimum allowable bearing capacity of the soil foundation is 100 kPa for Class B and 175 kPa for Class D pits. For Class G pit, refer to project specific requirements
- b. Should any softening or loosening occur following excavation, the soft/loose materials must be removed and replaced with a coarse single-size aggregate.
- c. The compacted depth of replacement material must be uniform and sufficient to ensure that the minimum specified bearing capacity is achieved.

Bearing capacity requirements can be reduced for larger pits, please consult with Cubis' Engineering Department for project specific information.

- 4 Once the foundation has been stabilised, the bedding material of sand or gravel shall be placed onto the foundation to a uniform depth. The bedding is designed to provide uniform support across the whole underside of the pit.

Bedding material and compaction should comply with the project specific requirements. Cubis recommends consulting the Asset Owner and/or Major Contractor for bedding material and compaction requirements, especially where unusual ground conditions are present.

Pit Installation

- 5 All Cubis precast concrete units are supplied with cast-in lifting anchors to enable safe handling.

To prevent stress and possible concrete cracking, all units shall be handled using the cast-in lifting anchors and associated lifting clutches

- 6 A spreader beam shall be used if recommended in the lifting plan for each specific Cubis precast concrete product to prevent chipping.

Contact Cubis Engineering Department for lifting plan if required

It is the contractor's responsibility to ensure an appropriate spreader beam is used. Installers shall use tagged lifting equipment only.

It is the contractor's responsibility to ensure the lifting clutches are available onsite to suit the lifting anchors shown in Cubis product drawings.

- 7 Wherever possible, all Cubis precast concrete products shall be lifted from the delivery truck and set directly onto the prepared bedding material

- a. If temporary storage is required onsite, and especially for larger sized pits, use timbers when placing the Cubis precast concrete pit on the ground.



Conduit Entries

- 8 Using a rubber mallet, knock out the precast conduit entries supplied by Cubis at the required locations and sizes on pit end walls
 - a. If custom conduit entries are required, use a holesaw of the required size and cut out conduit entries on end walls.
 - b. Ensure conduit entry and exit points at opposite ends of the pit align as closely as possible to allow for a continuous pull through of cable.

- 9 Remove all burrs and sharp edges from the cut end of the conduit

- 10 To prevent ingress of moisture or silt entering the pit during backfilling and future servicing use proprietary sealant to seal pit and pipe connection

Recommended material - Megapox P1
(mixture of Part A & Part B).

Encasement/Cover Slab

- 11** With the Cubis precast concrete access pit installed to its finished depth, duct entries formed and furniture fitted, the Cubis precast concrete access cover/encasement can now be placed on top of the pit
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- 12** Seal the pit wall and cover slab using Premium Grade Butyl Based Sealant or equivalent mastic-type product.

Apply the sealant in accordance with the product manufacturer's requirements.
Ensure no gaps remain

- 13** Place the cover slab on top of the installed pit. Quality bond is achieved as a result of the weight of the cover slab
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- 14** Leave the segments undisturbed until the period of curing is complete in accordance with the sealant product manufacturer's requirements
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- 15** All Cubis precast concrete units are supplied with cast-in lifting anchors to enable safe handling.

To prevent stress and possible concrete cracking, all units shall be handled using the cast-in lifting anchors and associated lifting clutches

- 16** A spreader beam shall be used if recommended in the lifting plan for each specific Cubis precast concrete product to prevent chipping.

Contact Cubis Engineering for lifting plan if required



Notes

The cast-in lifting anchors shall be used at all times when lifting Cubis precast concrete components to ensure safe handling.



Important

Trafficable pits (Class D) are installed within major transport infrastructure, as such backfilling shall be conducted in accordance to the relevant authority requirements.

Backfilling

- 17** Material types may vary from State to State to suit relevant material specifications

Cubis recommend consulting with the project engineer for backfilling material and compaction requirements; especially where unusual ground conditions may occur.

- 18** Compaction can be carried out using tamping, ramming, rolling vibration or a combination of these processes

- 19** The field density after the compaction must be greater than 95% of the maximum dry unit weight as determined from the Standard Compaction Test.

Refer to Appendix A, Table 1 (Page 15) for typical backfill specifications per State

- 20** The contractor may select machinery, the thickness of each lift (layer of material added) and to control moisture contents in order to achieve the specified amount of compaction

Appendix A



Backfill Material

Backfill material shall be well graded (not single size particles) with maximum particle size 40mm.

Table 1

The typical material types which may be used to comply with relevant road material specifications in each state.

State	Specification	Material
QLD	Transport and Main Roads Specifications MRTS05 Unbound Pavements	Type 2.1 or equivalent
NSW	Roads and Maritime Services QA Specification B30 Excavation and backfill for bridgeworks	Select Fill or equivalent
VIC	VicRoads Section 812 - Crushed rock for pavement base and sub-base	40mm Class 3 Sub-base or equivalent
SA	Department of Planning, Transport and Infrastructure Attachment R15A Pavement material specification, List of products	40mm Class 3 PM 3/40QG or equivalent
NT	Department of Infrastructure Standard Specification for Roadworks	Type 1 or Type 4 or equivalent



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Any alterations or unforeseen issues please consult the Cubis Specialist Team before proceeding.

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