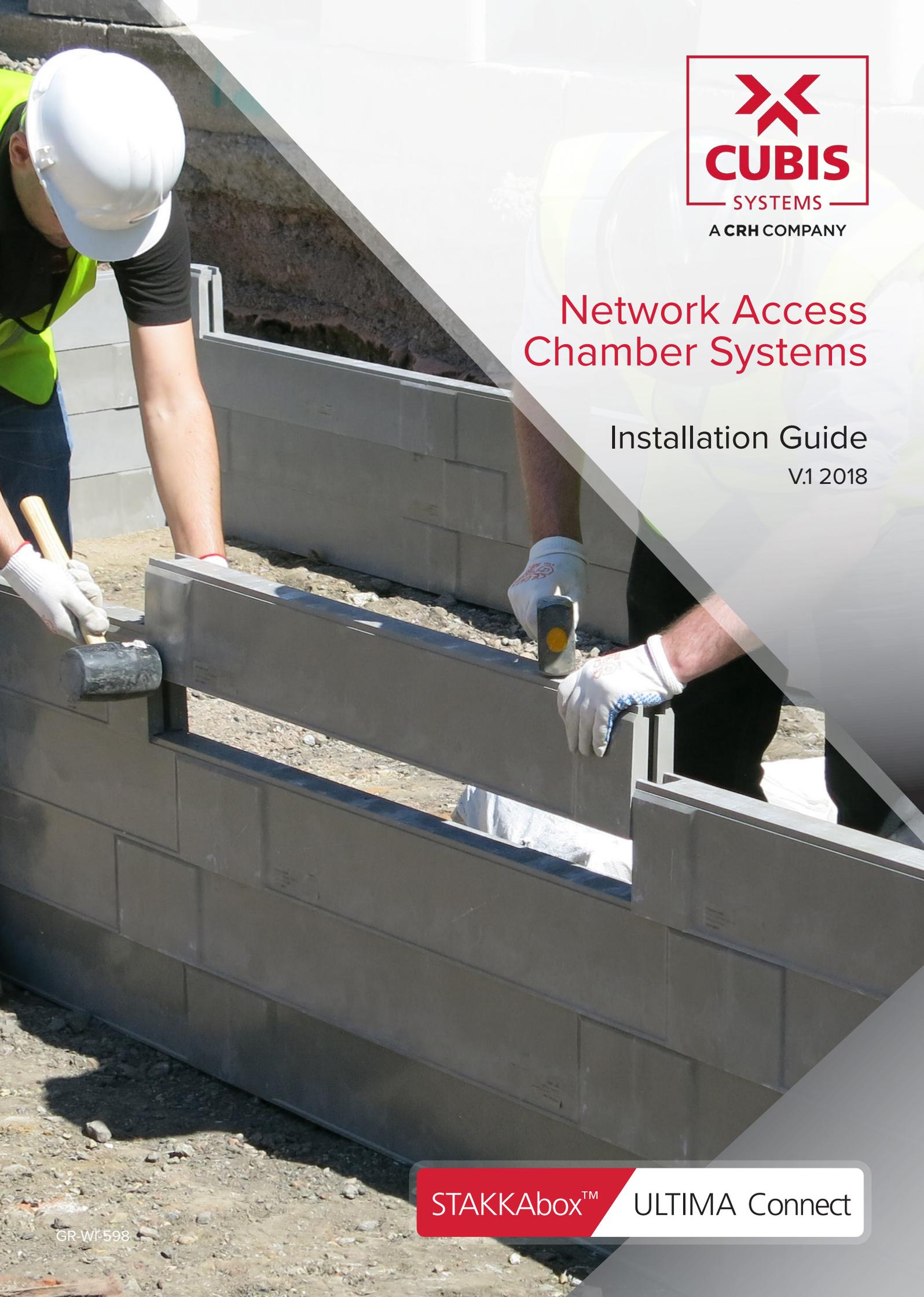




Network Access Chamber Systems

Installation Guide
V.1 2018



STAKKAbox™

ULTIMA Connect

Introduction

This guide addresses the acceptable methods and details for installation of STAKKAbox™ ULTIMA Connect access pits.

The purpose is to serve as a guideline and the customer shall comply with all laws, regulations, codes and orders of any authority having jurisdiction over the customer and which relate to the customer's installation, maintenance and use of the products.

If the customer's installation or use of any products contravenes any such laws, regulations, codes or orders of such authorities, the customer shall be responsible for the violation thereof and shall bear costs, expense and damage attributable to its failure to comply with the provisions of such laws, ordinances, rules, regulations, codes and orders.

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Requirements

Equipment

In addition to the STAKKAbox™ ULTIMA Connect pieces supplied, you will require the following:

1. The means of excavating a hole; mechanical digger, pneumatic hammer, vacuum truck, etc. depending on the ground conditions and size of access pit being installed.
2. Shovel and/or spade
3. Means of compacting base and surrounding material, refer to Appendix A (Pg. 18)
4. Concreting tools (if required)
5. Straight edge/level
6. Handsaw/reciprocating saw

Furthermore, if duct entries are to be cut on site you will require the following:

7. Hole Saw (Sized to the outside diameter of the duct to be installed), with minimum depth of 80mm
8. Power Drill
9. Bracing (if required)

Materials:

10. Base materials (See Appendix A, Table 1 and 2)
11. Backfill Material (See Appendix A, Table 1 and 2)
12. Bedding mortar/resin epoxy mortar
13. Butyl Mastic
14. Expandable Polyurethane Foam

Notes on Application

This installation guide is for STAKKAbox™ ULTIMA Connect pits being installed in areas classed as A, B, C and D in accordance with Australian Standards AS 3996:2006.

This means that Cubis access pits can, depending on how they are installed, be situated in either the footway or the road. Both situations are addressed within this document.

Class	Typical Use	Ultimate Limit State Design Load (kN)
A	 Areas accessible strictly by pedestrians. Not suited to vehicles. Purpose: Residential backyards. Walkways not accessible by vehicles.	10
B	 Private and shared residential property. Suitable for vehicles accessing driveways and footways. Low speed only. Purpose: Residential driveways. Unit sites. Parklands. Residential car parks.	80
C	 Minor roads and car parks. Trafficable to vehicles not exceeding 50km/h. Purpose: Residential streets. Commercial car parks. Not suitable for forklifts.	150
D	 Minor and major roads including freeway shoulders. Warehouses and loading docks. Purpose: Minor and major roads.	210



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 existing buried services in the location of the access pit should be taken.



Scan QR Code for the STAKKAbox™ ULTIMA Connect Material Safety Data Sheet (SDS).

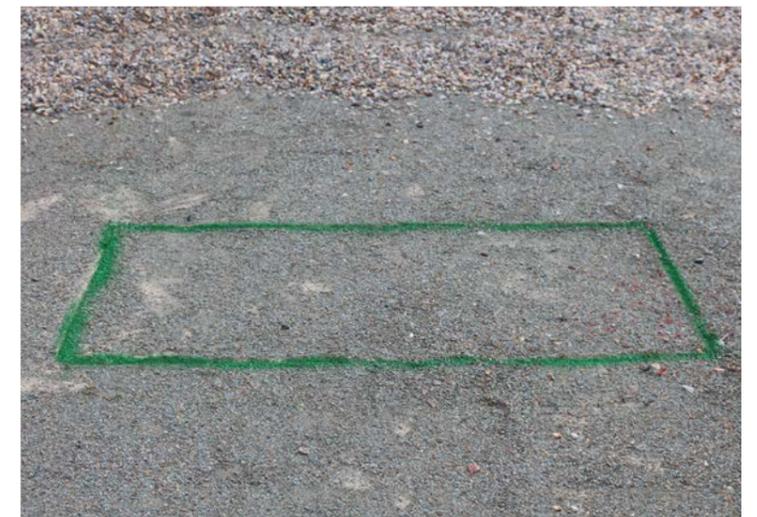
Installation Guidelines

1 Mark the extremity of the excavation on the ground

Place the bottom ring of ULTIMA Connect on the ground, marking around it and allowing either the minimum thickness of backfill as stated in Table 2 or the width of the compaction equipment, whichever is the greater.

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 (see Appendix A, Table 2 Pg. 19 for base depths).



As a guide, depth of ULTIMA Connect sections are 150mm

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

If there are any “soft areas” these should be excavated and filled with material specified in Table 1 or other approved materials, compacted as per the requirements to achieve bearing capacity in Appendix A (Pg. 18-19)

- 5** Carefully position the bottom ring section of ULTIMA onto the base

The correct orientation of the ULTIMA Connect ring is with the horizontal lip facing downwards. Check that the ring is level and at the correct depth.



- 4** Construct the pit base using the necessary materials

- a. If a drain is required, complete installation as per client’s specification now.
- b. For compacted materials (refer to Table 1), level the stone with a shovel and compact as per Appendix A (Pg. 18-19) requirements.
- c. For a concrete base, level the 32 MPa concrete as specified in Table 2 (Pg. 19).
- d. If precast base is used, it shall be installed on a well compacted ground as explained in Step 3



Notes

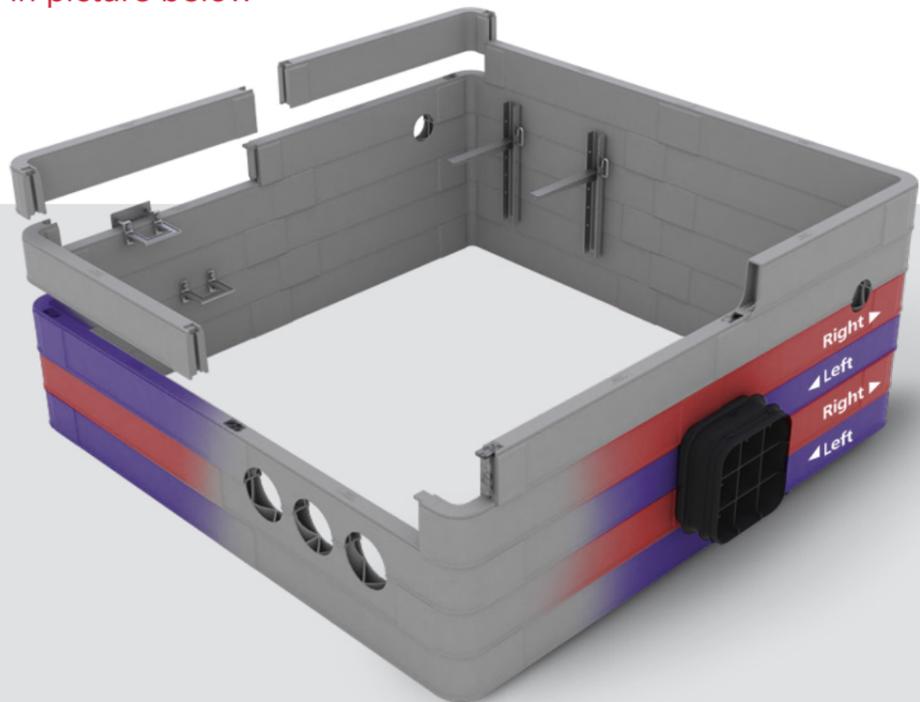
If a concrete base is being used, the concrete can be floated to give a smoother finish. The ULTIMA Connect pit is to begin from the top of the concrete base.

6 Begin installation of the ULTIMA Connect pit wall sections

Each ULTIMA Connect section shall interconnect to form one ring and be secured by ULTIMA pegs provided.

Check to confirm each section is properly inserted, ensuring no gaps are present between the ULTIMA ring sections (use rubber mallet as demonstrated in figure 1.1 below).

7 Alternative rings of left-hand and right-hand hockey sticks shall be installed as shown in picture below



Notes

Left-handed then right-handed components must alternate between each ring section to give a brick effect for added strength.



(Figure 1.1)



Duct Entries

8 Duct entries can now be formed on site for ULTIMA Connect access pits

- a. Duct entries are best created using a hole-saw and drill, if these tools are not available then the opening can be formed by using a hand saw or disc cutter to form a square hole. Refer to Pg. 1 for ULTIMA MSDS document link (QR code).
- b. If using pre-formed bellmouths or pit entry connectors, complete fitting now.
- c. Insert the ducts into the holes.
- d. Duct entries **SHALL NOT BE** formed in the bottom ring section or the top two ring sections under any circumstances.
- e. Duct entries should **NOT** be cut within 50mm from the corner.
- f. The distance between duct entries should be a minimum of half the duct diameter from edge to edge or as per regulatory requirement but not less than that specified by Cubis.
- g. The accumulative area of all of the ducts shall be limited to 20% of the side wall area.
- h. In the event of duct entries constituting more than 20% of the side wall area, a structural 32MPa concrete layer (100mm thick) shall be started from the base and cover the total wall area up to the top ring which contains conduit entries. Refer to figure 1.2 below.
- i. When the duct is fitted the gap between the cut and the duct should be filled using mortar or expandable foam (polyurethane).



(Figure 1.2)

Over Existing Services

- 9** Where access pits are required to be built over existing services, STAKKAbox™ ULTIMA Connect can easily accommodate this by either:
- Cutting a duct entry in the appropriate ring section as previously described and then with a hand saw cutting from the bottom of the ring to make an open ended arch.
 - Alternatively, after the duct entry has been formed, the ring can be cut vertically and reassembled around the existing duct.

Pit Accessories

- 10** Install any required pit accessories to the ULTIMA Connect pit (i.e. hanging brackets, unistrut, labels, etc.)
- Mark the position of the accessories as required by the clients' specification.
 - Drill required size holes and fix the accessories with bolts supplied.



Notes

When installing ULTIMA Connect as new or over-existing services it is important that a complete ring is installed above and below the cut ring section.

Pit accessories (except step irons) can be retrofitted at a later date on most STAKKAbox™ access pits. For specific details please contact Cubis Systems directly.



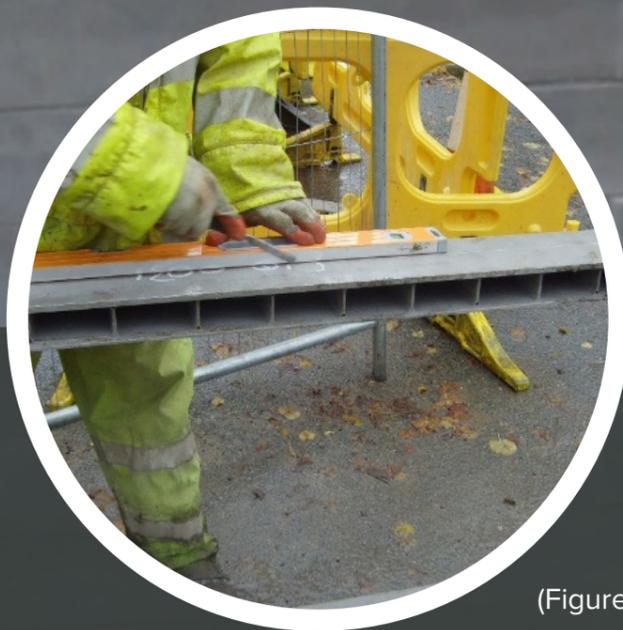
Backfilling

- 11** With the ULTIMA Connect access pit installed to its finished depth, duct entries formed, pit accessories fitted and if required suitable bracing installed, the backfill surround of the pit can now take

Backfilling is formed in layers and shall be completed to the top of the access pit, or in the case of a roadway construction to the underside of the pavement construction.

Final Adjustment

- 12** If the access pit height has been miscalculated and the levels cannot be altered by adjusting the bedding of the frame; cut the top ring section horizontally to correct the level
- Simply mark the access pit section requiring adjustment and cut by either using a hand saw or disc cutter. See figure 1.3.
 - The required section can then be bedded onto the next section using the standard processes.
 - Fill the voids in the top section with 32MPa concrete to give a solid base for the frame to be bedded on.
 - Use concrete filling to raise additional depth up to 20mm if required.



(Figure 1.3)

Notes

Refer to Appendix A, Table 1 and 2, for the recommended backfill material and required thickness of material.

Custom frame and cover assemblies can be manufactured on request, please contact Cubis Systems for more information.

Frame & Cover

Applies to ULTIMA 600 x 600 (mm) and 900 x 900 (mm) Access Pits (Class B & C)

- 13** Once the ULTIMA Connect pit is backfilled, the frame and cover can be fitted

Place the frame on top of the access pit to check there is adequate space for a mortar bed.

Encasement (Class C & D)

- 14** Custom designed concrete encasements with cast iron access covers can be supplied with the ULTIMA Connect access pit range

- a. Complete backfilling of the access pit with the use of any required bracing.
- b. Refer to backfilling material and compaction requirements in Appendix A, Table 1 and 2 (Pg. 18-19).
- c. Apply butyl mastic layer on top of the access pit before placing encasement.
- d. Implement lifting plans and installation instructions as supplied by Cubis with all encasement products and drawings.

Standards

Frame and cover

A frame and cover must be installed, specified to the correct loading as dictated by Australian standards and any other relevant authority.

Cubis Systems manufacture a range of covers and frames engineered to work in conjunction with its access pit products. Covers and frames that are not supplied by Cubis should be agreed to be fit for purpose prior to installation as this might adversely affect the standard of the installation.

Encasement

Custom designed encasements with cast iron access covers can be supplied with Cubis STAKKAbox™ pit products. The encasements are designed with relevant Australian standards to suit the size and application of the access pit. Lifting plans and installation instructions are supplied with encasement products and drawings.

Notes

Custom frame and cover assemblies can be manufactured on request, please contact Cubis Systems for more information.

Appendix A



Backfill Material

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

Table 1 gives the typical material types which may be used to comply with relevant road material specifications in each state.

Compaction

Compaction can be carried out using tamping, ramming, rolling, or vibration, or a combination of all these processes. Usually Tampers (whackers) and rammers can be used for compaction when installing access pits in tight spaces. See Table 2 for details regarding compaction requirements.

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

Table 1

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

Table 2

Product	Load Class	Maximum Depth (mm)	Excavation Footprint	Base Material	Bracing	Backfill
ULTIMA Connect	A	2400	150mm or width of compacting equipment	50mm of compacted material (Table 1) Achieve 75kpa	≥1200mm single central bracing, required in both directions. ≥2000mm double bracing at equal spacing.	Sidewall length < 1500mm As dug if granular is ok, otherwise compacted material (Table 1). Sidewall length between 1500 and 2000mm compacted material (Table 1). Sidewall length > 2000mm minimum 150mm 32MPa concrete or seek advice from Cubis
	B/C	2400	150mm or width of compacting equipment	100mm of compacted material (Table 1) Achieve 100kpa		Sidewall length < 2000mm compacted material (Table 1) Sidewall length > 2000mm minimum 150mm 32MPa concrete or seek advice from Cubis
	D	2400	150mm or width of compacting equipment	150mm of concrete (32MPa) with 1 layers SL82 mesh. Achieve 150kpa. When pit wall length is greater than 1500mm concrete floor shall be poured in two steps; Step 1: Pour 100mm of concrete (32MPa) with 1 layers SL82 mesh in the centre Step 2: Install ULTIMA pit on the previously poured slab Step 3: When ULTIMA walls are installed, pour 50mm concrete layer inside the pit to complete the floor		Sidewall length < 2000mm compacted material (Table 1) Sidewall length > 2000mm minimum 200 mm 32MPa concrete or seek advice from Cubis

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