



A CRH COMPANY

Network Access Chamber Systems

Installation Guide

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GR-WI-599

STAKKAbOX™ ULTIMA Hybrid

Introduction

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

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 supplied STAKKAbox™ ULTIMA Connect pieces, ULTIMA beams and concrete components, you will require the following material:

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. 24-25)
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 material:

7. Hole Saw (Sized to the outside diameter of the duct to be installed),
 8. Power Drill
- Materials:**
9. Base materials (See Appendix A, Table 1 and 2 (Pg. 24-25)
 10. Sikaflex, Adheseal PU25 or cement grout (for joints)
 11. Butyl Mastic
 12. Expandable PU Foam or cement grout (for sealing around Bellmouths)

Notes on Application

This Hybrid Installation guide is for STAKKAbox™ ULTIMA Hybrid pits being installed in areas classed as 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)
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 Hybrid Material Safety Data Sheet (MSDS).

Installation Guidelines

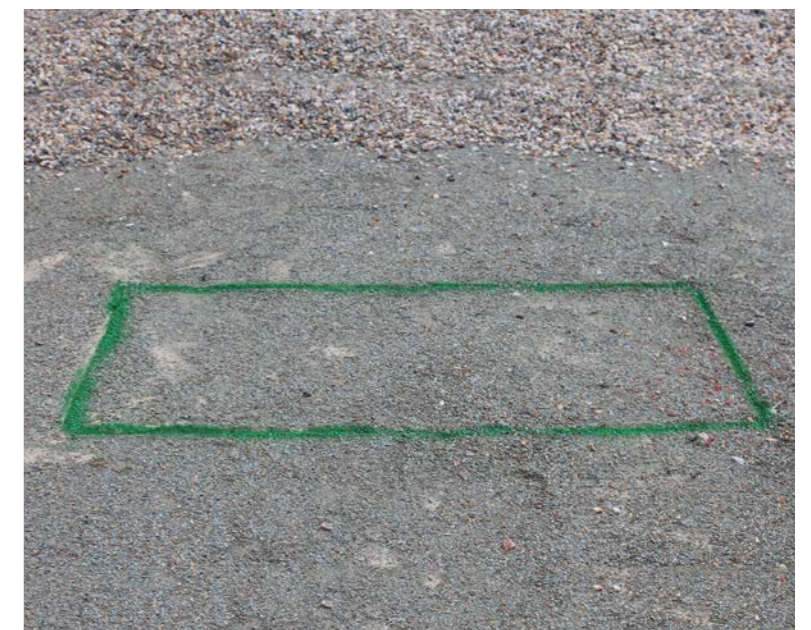
Part A - Precast Floor

- 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.

Refer to base thickness specifications provided by Cubis Systems.



As a guide, depth of ULTIMA sections are 150mm

Attention

When installing the STAKKAbox™ ULTIMA Hybrid, Cubis offers two base options. This document has been broken into the below sections:

PART A: Precast concrete floor - Pg. 7

PART B: Insitu concrete base slab - Pg. 16

Each section refers to the correct installation guidelines as per the chosen method.

- 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. 24-25).

- 4** Lift and install precast floor

- a. Lift utilising all anchors according to approved lifting clutches (refer to fig 1.1).
- b. If a drain is required in the access pit, it shall be core drilled only in the bottom ring of the STAKKAbox™ ULTIMA Hybrid assembly or in the floor (hole size 50mm).



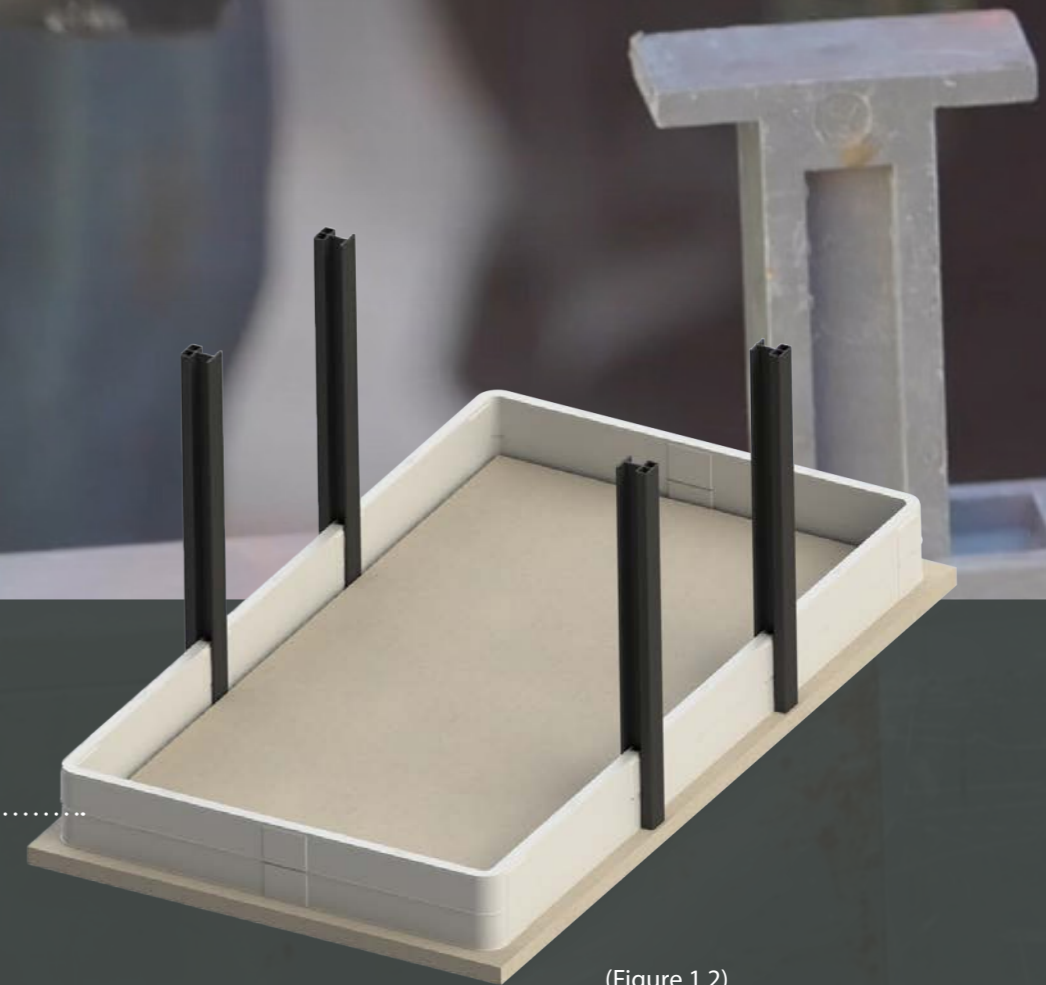
(Figure 1.1)

- 5** Build bottom ring section together with ULTIMA Beams as shown in fig 1.2

- a. The correct orientation of the ULTIMA Connect ring is with the horizontal lip facing downwards see fig 1.3. Check that the ring is level and at the correct depth.
- b. Each ULTIMA Connect section interconnects to form one ring, secured by ULTIMA pegs and/or ULTIMA Beams provided.
- c. Check to confirm each section is properly inserted, ensuring no gaps are present between ULTIMA rings.
- d. Fill the gap between the precast concrete floor and ULTIMA wall using cement grout.



(Figure 1.3)



(Figure 1.2)

Notes

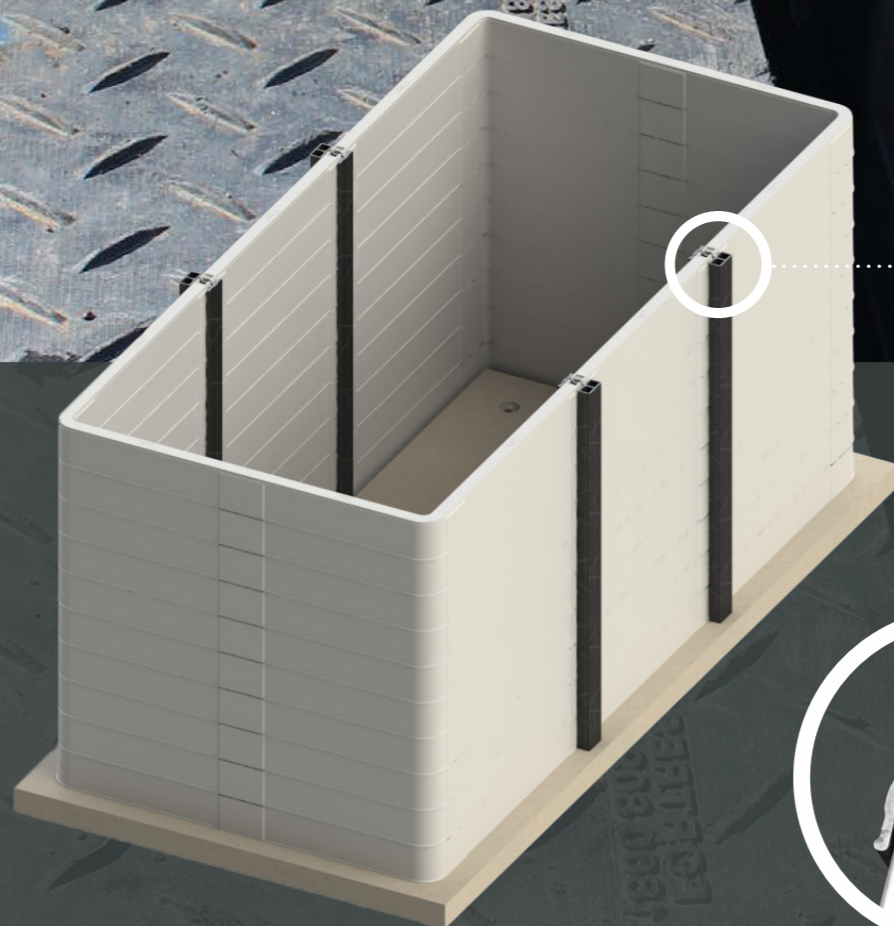
Cubis recommends the use of a rubber mallet when assembling.

- 6 Check the alignment and install self-tapping screws (30mm length) to connect all ULTIMA Beams and ULTIMA sections of the second (2nd) row

- 7 Complete the installation of the ULTIMA Hybrid pit as shown in figure on left (Fig 1.4)

Continue to monitor that **NO** gaps occur between coinciding STAKKAbox™ ring sections, with all rings to be flush/ square.

- 8 Install self-tapping screws to connect all ULTIMA Beams and ULTIMA sections at the top row or second (2nd) top row



(Figure 1.4)

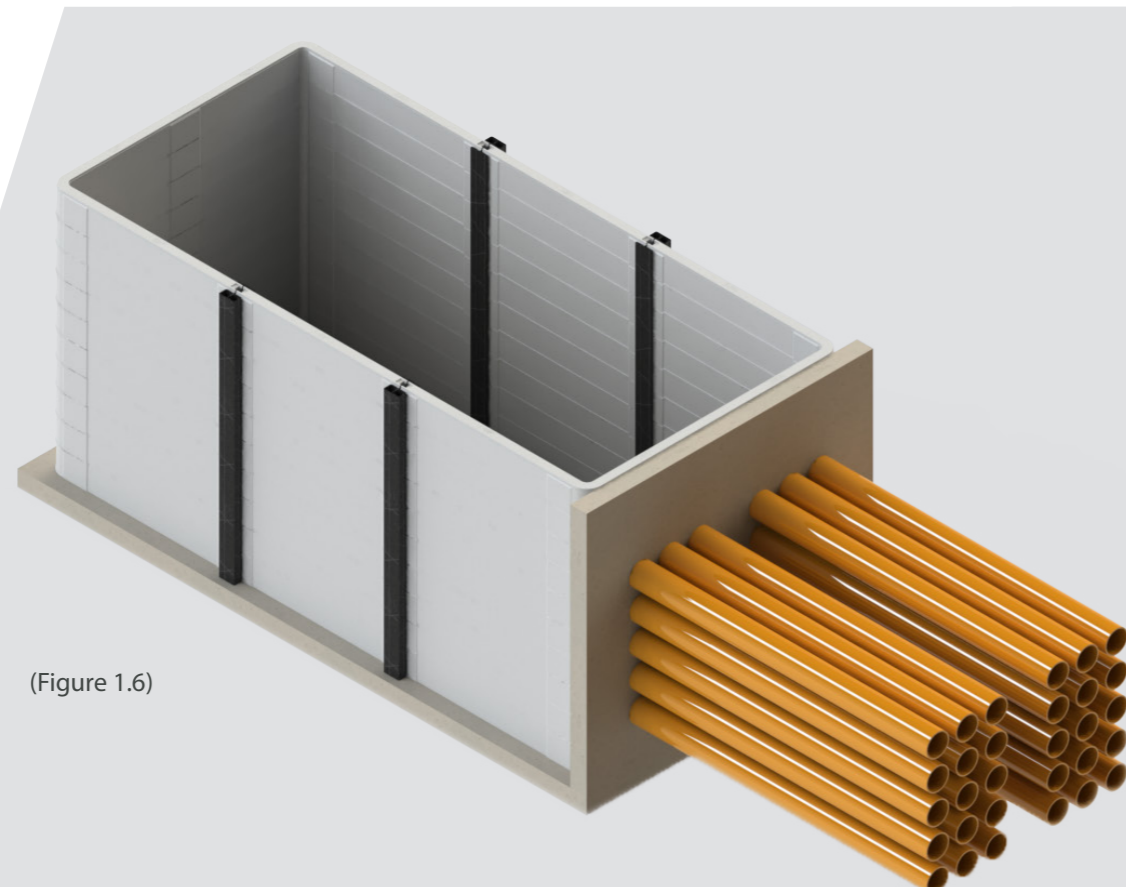
Notes

If there is excess length of ULTIMA Beams above the top ULTIMA ring section, cut the excess length before installing encasement.



Duct Entries

- 9 Use hole-saw to allow duct entries into the pit wall
 - a. It is recommended to machine holes as assembly is done, ensuring **NO** duct entries in or near ULTIMA Beams (minimum gap shall be 50mm).
 - b. Duct entries **shall not be** allowed in neither the bottom or top ULTIMA Connect ring sections to ensure the integrity of the pit.
 - c. Maximum cutting shall be limited to 20% of the wall area.
 - d. Duct entries OD to be minimum 50mm from radius of ULTIMA.
 - e. In the event of duct entries constituting more than 20% of the side wall area, concrete shall be started from the base and cover the top ULTIMA ring which contains the conduit entries. Refer to fig 1.5 below.



(Figure 1.6)

- 10 Apply butyl mastic between encasement and STAKKAbox™ top ring. Refer to manufacturer installation guide for application details

Pit Accessories

- 11 Install any required pit accessories to the ULTIMA Hybrid pit
 - a. Mark the position of the accessories as required by the clients' specification.
 - b. Drill required size holes and fix the accessories with bolts supplied.



Notes

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.

Encasements

- 12** Install encasement on top of the STAKKAbox™ ULTIMA Hybrid access pit, ensuring rebate distance to ring wall is equal

Refer to fig 1.6 on left for completed ULTIMA Hybrid installation.

If installing segmented roof encasement, apply Silkaflex Polyurethane Adhesive Sealant or Adheseal PU25 Sealant between concrete joints to seal the gap. Refer to manufacturer installation guide for application details and Cubis drawings.

Backfilling

- 13** Backfilling should be conducted when encasement is installed

Backfill material shall be well graded soil, refer to Appendix A for material and compaction requirements. Encasement is required for lateral support.

Important

If encasement needs to be removed for any service activity, acrow prop bracing should be installed between ULTIMA Beams at the top (use top ULTIMA rings as the level). However, cast iron access covers can be removed at any stage without above requirements.

If backfilling is conducted before installing the encasement/roof slab, timber bracing or acrow props shall be installed between the ULTIMA Beams to avoid any inward bending of walls. Bracing is not supplied by CUBIS.

(Figure 1.6)

Part B - Insitu Base

- 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. Refer to base thickness specifications provided by Cubis Systems.

As a guide, depth of ULTIMA 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 as in Appendix A (Pg. 24-25).



4 Pour a minimum of 75mm thick concrete layer 32MPa with central SL62 mesh ensuring it is level

- a. If a drain is required in the ULTIMA Hybrid pit, it should be installed as per the client's specification during base preparation or in the floor.
- b. After allowing 18-20 hours for curing of concrete, installation of the pit can begin.

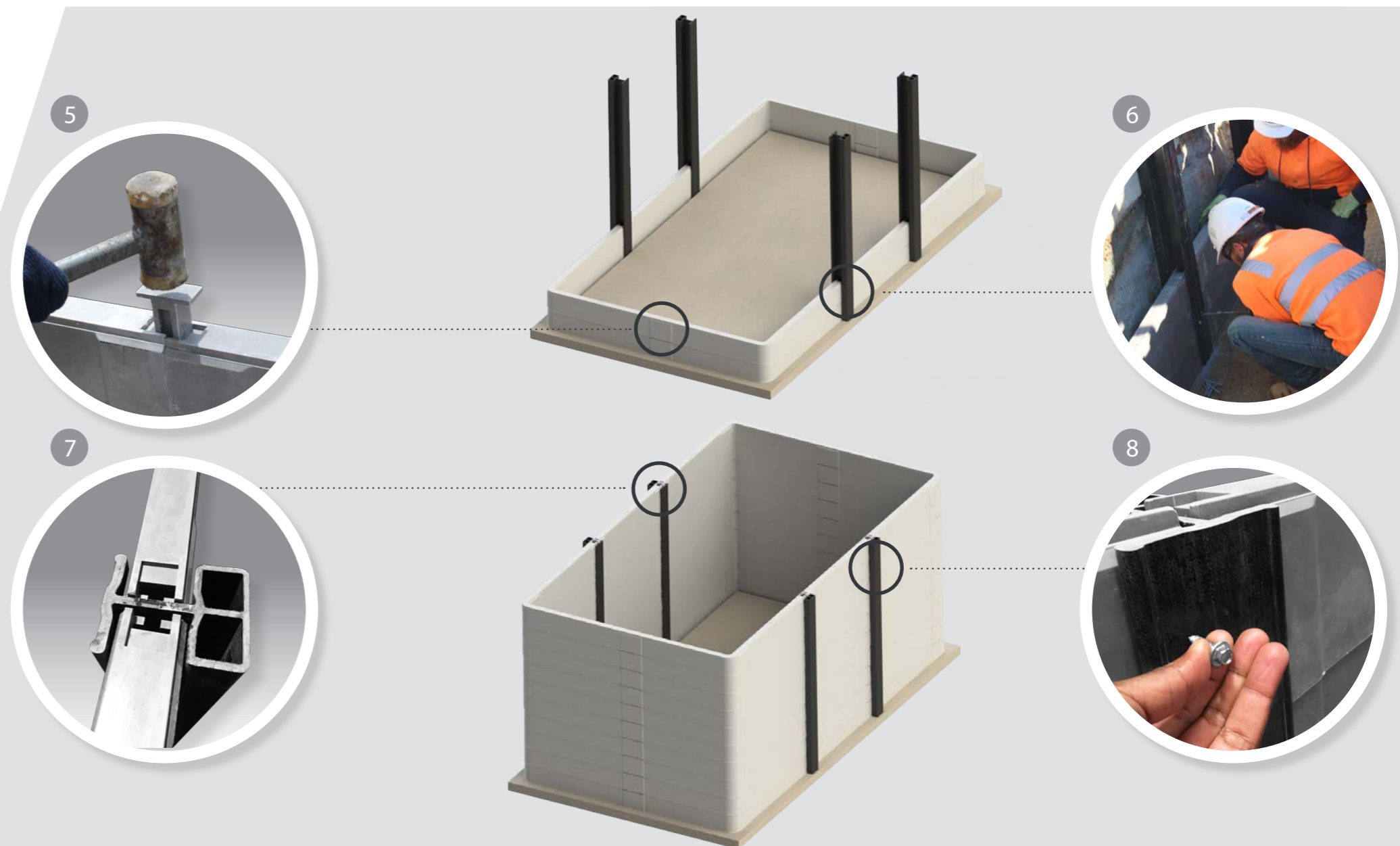
6 Check alignment and install self-tapping screws (30mm length) to connect all ULTIMA Beams and ULTIMA sections of the second (2nd) row

7 Complete the installation of the pit as shown below and ensure final ring is flush with top of ULTIMA Beam

8 Install self-tapping screws (30mm) to connect all ULTIMA Beams and ULTIMA sections at the top row or second (2nd) top row

5 Build bottom ring together with ULTIMA Beams as shown on the right

- a. 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.
- b. Each ULTIMA Connect section interconnects to form one ring, secured by ULTIMA pegs and/or ULTIMA Beams provided.
- c. Check to confirm each section is properly inserted and aligned with ULTIMA Beams. Ensure ULTIMA rings are flush between each section.

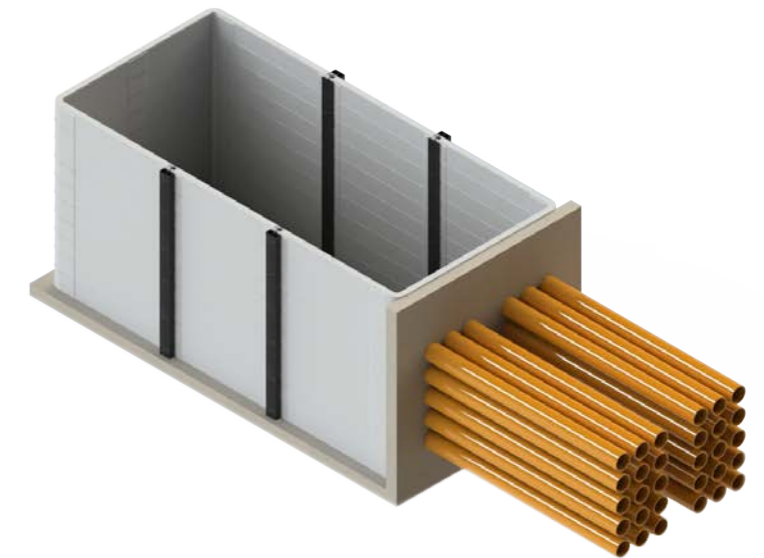


Notes

Self-tapping screws are installed to ensure the stability during installation and is NOT a structural requirement

Duct Entries

- 9 Use hole-saw to allow duct entries into the pit wall as per assembly
 - a. Duct entries **shall not be** allowed in either the bottom or top ULTIMA Connect ring sections to ensure integrity of the pit. Minimum 100mm from radius edge.
 - b. Maximum cutting shall be limited to 20% of the wall area.
 - c. 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 ULTIMA Hybrid ring which contains conduit entries. See image below.



- 10 Internal concrete layer (75mm) shall be applied at this stage using 32 MPa concrete with central SL82 mesh

- 11 Apply butyl mastic between encasement and ULTIMA wall. Refer to manufacturer installation guide for product application

Pit Accessories

- 12** Install any required pit accessories to the ULTIMA Hybrid (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.

Encasements

- 13** Install encasement on top of the STAKKAbox™ ULTIMA Hybrid access pit, ensuring rebate distance to ring wall is equal

Refer to figures on right for completed ULTIMA Hybrid installations.

- If there is excess length of ULTIMA Beams above the top ULTIMA Connect ring section, cut the excess length before installing encasement.
- If installing segmented roof encasement, apply Silkaflex Polyurethane Adhesive Sealant or Adheseal PU25 Sealant between concrete joints to seal the gap. Refer to manufacturer installation guide for application details and Cubis drawings.
- For an example of a complete ULTIMA Hybrid pit assembly with segmented encasements refer to fig 1.7 above.

Backfilling

- 14** Backfilling shall be conducted when central slab is installed and internal screed is cured for 18-20 hours. For backfilling material refer to Appendix A (Pg. 24-25)



(Figure 1.7)

Notes

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.

Important

If encasement needs to be removed for any service activity, acrow prop bracing should be installed between ULTIMA Beams at the top (use top ULTIMA rings as the level). However, cast iron access covers can be removed at any stage without above requirements.

If backfilling is conducted before installing the encasement/roof slab, timber bracing or acrow props shall be installed between the ULTIMA Beams to avoid any inward bending of walls. Bracing is not supplied by CUBIS.

Appendix A



Backfill Material

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

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.

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

The typical material types which may be used to comply with relevant road backfill materials 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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