



Network Access Chamber Systems

Installation Guide
V.1 2018

STAKKAbOX™ Fortress

Introduction

This guide addresses the methods and details for the installation of STAKKAbox™ Fortress 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 bare 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™ Fortress 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. Resin epoxy mortar or Expandable Polyurethane Foam

Notes on Application

This installation guide is for STAKKAbox™ Fortress pits being installed in areas classed as A, B and C 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 footway or light traffic areas. 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



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™ Fortress Material Safety Data Sheet (MSDS).

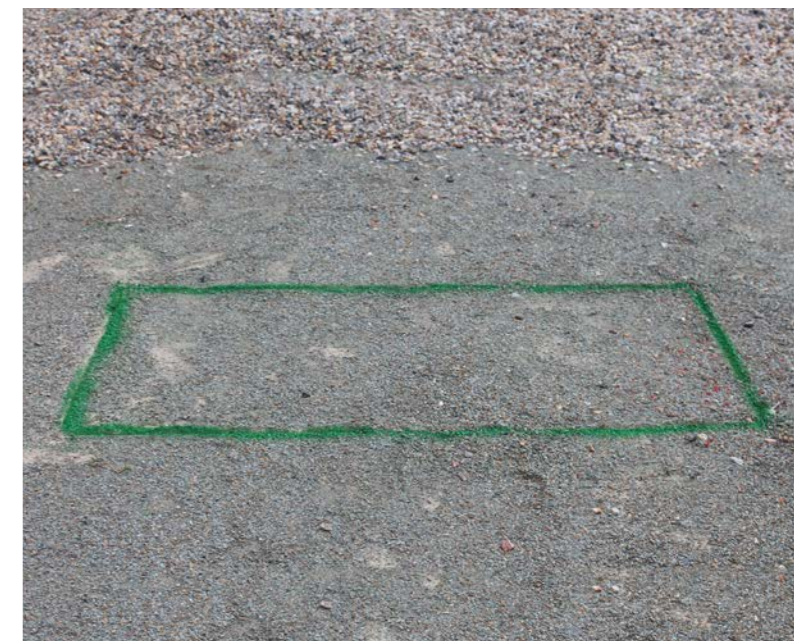
Installation Guidelines

1 Mark the extremity of the excavation on the ground

Place the bottom ring of Fortress on the ground, marking around it and allowing either the minimum thickness of backfill as stated in Appendix Table 2 or the width of the compaction plant, whichever is 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 & bedding mortar according to the level specified by the frame and cover installation, pit depth and the required base depth (see Appendix A, Table 2 Pg. 19 for base depths).



As a guide, depth of Fortress 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 Appendix Table 1 or other approved materials, compacted as per the requirements to achieve bearing capacity in Appendix A (Pg. 18-19).

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

- a. If a drain is required, complete installation as per client’s specification at this point.
- b. For compacted materials (refer to Appendix A, Table 1), level the stone with a shovel and compact as per Appendix A, Table 1 (Pg. 18)

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

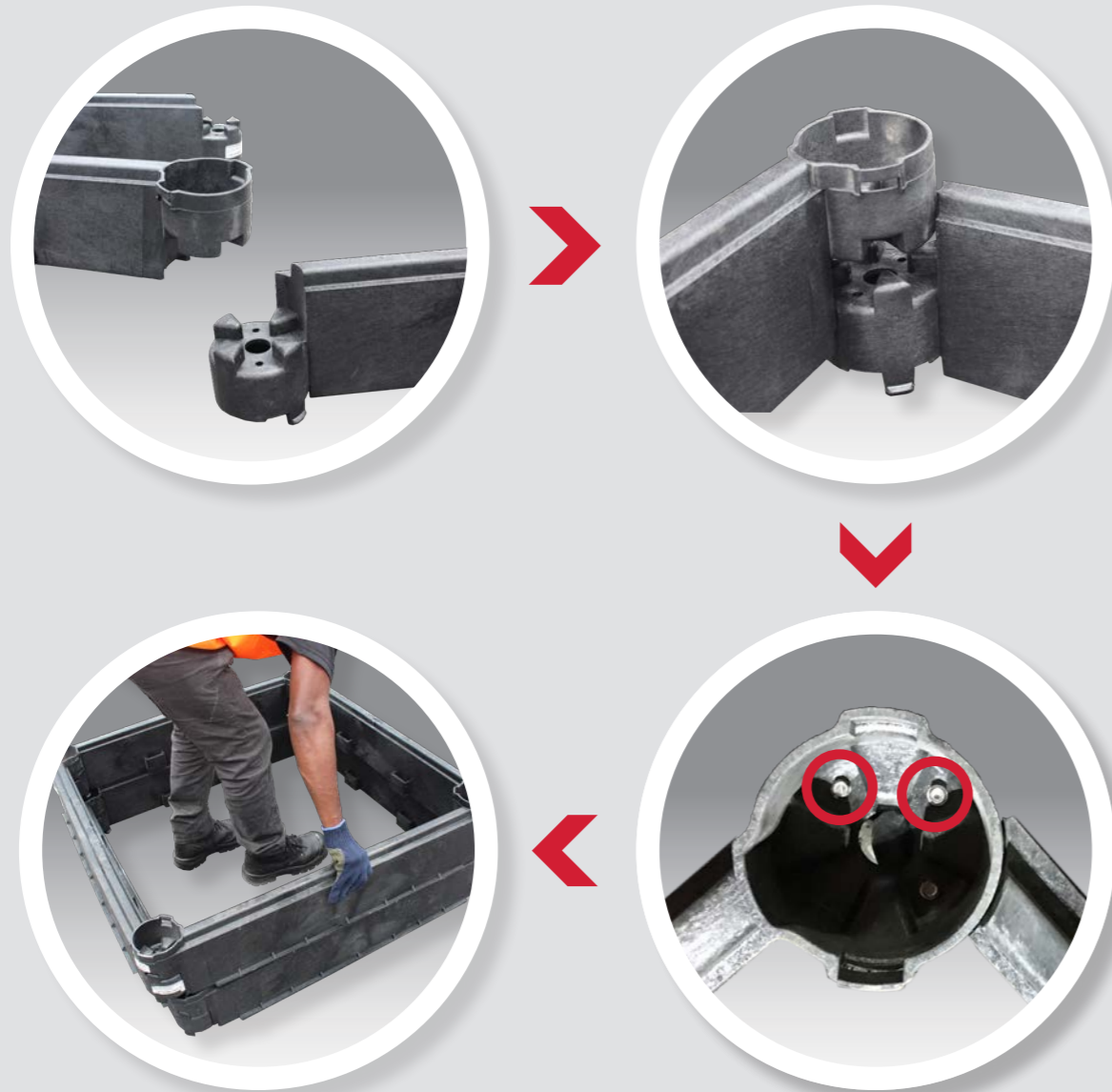
The correct orientation of the Fortress ring is with the horizontal lip facing towards the ground (see below). Check that the ring is level and at the correct depth required.



Ensure base material is compacted and level

6 Begin installation of the Fortress pit wall sections

- a. Make sure that each section is correctly inserted into one another ensuring there are no gaps between the sections.
- b. Install two (2) self-tapping screws in each 'castle' section of the bottom and top Fortress rings (see below).

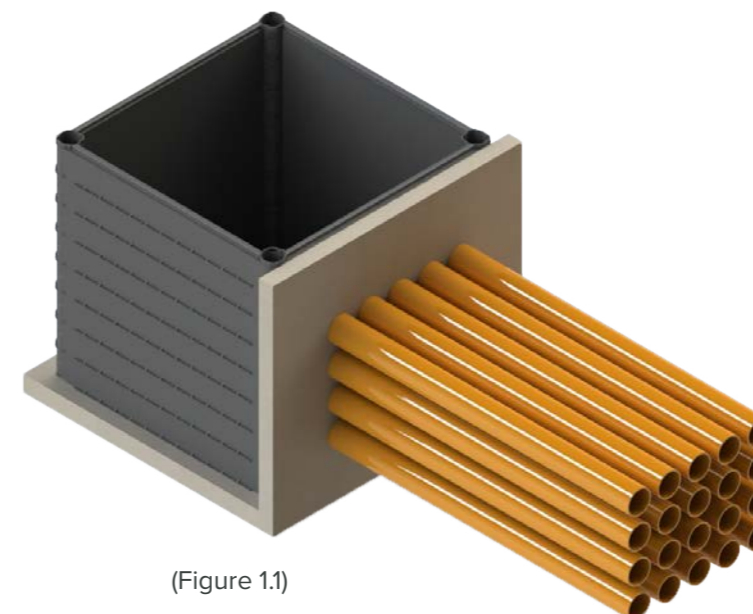


Duct Entries

7 Duct entries can now be formed on site for Fortress access pits

- a. Site formed 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.
- b. If using pre-formed bellmouths or pit entry connectors, complete fitting now.
- c. Insert the duct into the holes and use Resin epoxy mortar or Expandable Polyurethane Foam to seal any gaps as required.
- d. Duct entries shall **NOT** be formed in the bottom ring 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 area up to the top ring with conduit entries.

Refer to figure 1.1 below.



(Figure 1.1)

When the duct is fitted, the gap between the cut and the duct should be filled using mortar or expandable foam.

Over Existing Services

- 8** Where access pits are required to be built over existing services, STAKKAbox™ Fortress offers a fast, flexible installation solution
- a. Cut a duct entry in the appropriate ring section as previously described (Pg. 10-11).
 - b. With a hand saw cutting from the bottom of the Fortress ring make an open ended arch.
 - c. Alternatively, after the duct entry has been formed, the ring can be cut vertically and reassembled around the existing duct.

Pit Accessories

- 9** Install any required pit accessories to the Fortress pit (i.e hanging brackets, uni strut, labels, etc.)
- 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.

Refer to page 12 for
Over Existing Services

Notes

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

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

Backfilling

- 10** With the Fortress 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 place.

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

Frame & Cover

Applies to Fortress 600 x 600 (mm) and 900 x 900 (mm) Access Pits (Class B & C) only.

- 11** Once the Fortress pit is backfilled, the frame and cover can be fitted
- a. Place the frame on top of the access pit to check there is adequate space for a mortar bed.
 - b. Use self-tapping screws to secure the frame to the Fortress access pit.

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 quality of the installation.

Encasement

Custom designed encasements with cast iron access covers can be supplied with Cubis STAKKAbox™ pit products. These 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

Refer to Appendix A, Table 1 and 2 (Pg. 18-19), 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.

Encasement (Class B & C)

- 12** Custom designed encasements with cast iron access covers can be supplied with the Fortress access pit range
- a. Complete backfilling of access pit with use of any required bracing.
 - b. Refer to backfilling material and compaction requirements in Appendix A, Table 1 and 2 (Pg. 18-19).
 - c. Implement lifting plans and installation instructions as supplied by Cubis with all encasement products and drawings.

Appendix A



Backfill Material

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

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

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

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 2

Product	Load Class	Maximum Depth (mm)	Excavation Footprint	Base Material	Backfill
Footway Fortress	A	1200	100mm or width of compacting equipment	50mm of compacted material (Table 1) Achieve 75kpa	Maximum Sidewall length 1.2m Refer to Table 1.
	B/C	1200	100mm or width of compacting equipment	100mm of compacted material (Table 1) Achieve 100kpa	Maximum Sidewall length 1.2m Refer to Table 1.

Contact us

National Freecall

P: 1 800 065 356

Victoria

73 Ballarat-Carngham Road
Winter Valley VIC 3358

P: 03 5335 0999

F: 03 5336 1118

E: salesvic@cubis-systems.com.au

Queensland

2 Stradbroke Street
Heathwood QLD 4110

P: 07 3714 0444

F: 07 3714 0445

E: salesqld@cubis-systems.com.au

New South Wales

Unit 2, 13 Dunn Road,
Smeaton Grange NSW 2567

Telephone: 1800 065 356

Email: salesnsw@cubis-systems.com.au

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