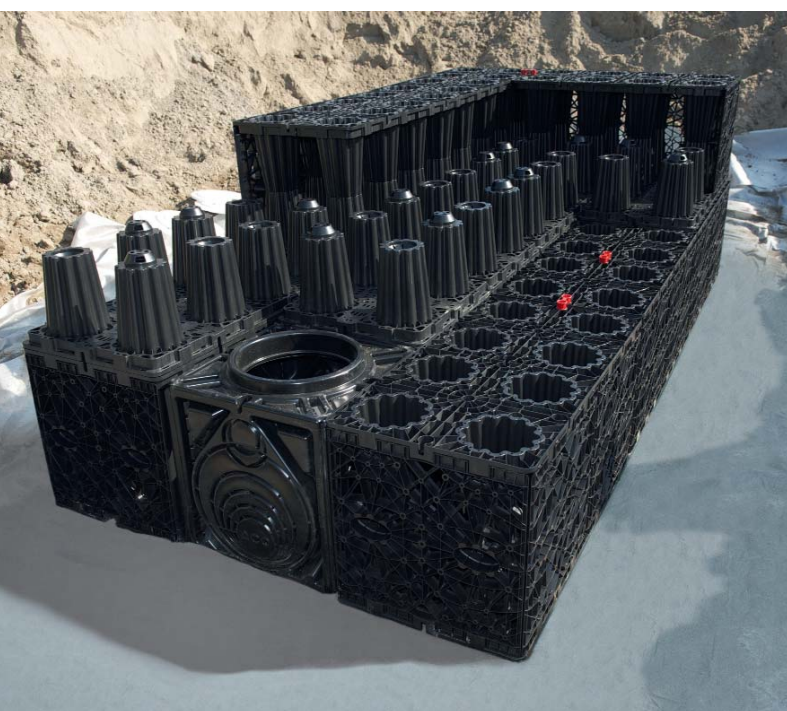




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ACO StormBrixx
Stormwater attenuation and infiltration system

ASSEMBLY AND INSTALLATION INSTRUCTIONS



For more information please visit
www.stormbrixx.co.uk



Further installation advice and a full
system demonstration is available at
www.stormbrixx.co.uk

Important information for the installer

This instruction document provides guidance on the installation of an ACO StormBrixx system. The document is divided into several sections.

Section 1: Overview of the ACO StormBrixx components

Section 2: How to build a StormBrixx system

Section 3: Installation of the access chamber

Section 4: Step by step installation guidance of an:

- **Attenuation system**
- **Infiltration system**

PRIOR TO INSTALLATION REMEMBER:

- ACO StormBrixx units should be installed in accordance with the installation instructions and relevant legislation. Special attention should be paid to temporary work requirements in excavations.
- ACO can give guidance with respect to the most suitable methods of installation for the ACO StormBrixx range.
- ACO StormBrixx should be installed using acceptable levels of workmanship and according to the National Code of Practice (BS 8000-14:1989).
- Detailed installation statements and methodologies will vary for all sites as each will have different aspects deserving particular consideration. Consequently the relevant approvals should be sought from the consulting engineer and/or the installer.
- Full product technical data can be found in the ACO StormBrixx brochure visit **www.stormbrixx.co.uk**.

2



POST INSTALLATION PROTECTION OF ACO STORMBRIXX

The ACO StormBrixx system is designed to withstand loadings from landscaped areas, car parks and service yards (subject to design criteria). However, after installation and backfilling, but prior to final surfacing, we recommend that the tank area is fenced off with high visibility fencing and traffic is prohibited from using the footprint area of the tank.


ACO StormBrixx is not designed to provide a load platform for construction traffic and should be treated accordingly. This action will protect the long term loading performance of the tank's structure.

The client should provide sign posts indicating maximum loads allowable over the tank footprint, to ensure the long term stability of the system is assured.

ACO Water Management Design Services Team

Tel: 01462 816666
Email: technical@aco.co.uk

Overview of the ACO StormBrixx components

Tank Body	Side Panel	Top Cover
		
<p>Can be assembled as a single unit directly on top of one another, or in a brick bonded format (see page 4 for details).</p> <p>Weight: 10kg</p>	<p>Added to provide lateral support against the surrounding soils.</p> <p>Weight: 1.6kg</p>	<p>Added to the top layer to ensure consistent vertical support for the top cover fill material.</p> <p>Weight: 0.8kg (per set of 4)</p>
Layer connectors	Access Chamber (optional)	Access chamber cover (optional)
		
<p>Used to connect unit to unit of a single layer of StormBrixx.</p> <p>Use two on top of each other when installing a second layer of ACO StormBrixx.</p> <p>Weight: 0.1kg</p>	<p>Provides 3D access to any StormBrixx system for simple inspection (see page 5 for details).</p> <p>Weight: 32kg</p>	<p>Load Class D 400. Ø450mm ductile iron cover.</p> <p>Weight: 38kg</p>
Inspection Point (optional)	Inspection point cover (optional)	<div data-bbox="979 1720 1051 1800" data-label="Image"> </div> <div data-bbox="973 1758 1267 1890" data-label="Text"> <p>Full technical data for each component can be found in the ACO StormBrixx brochure. Visit www.stormbrixx.co.uk.</p> </div> <div data-bbox="1273 1733 1426 1935" data-label="Image"> </div>
		
<p>Ø225mm. Provides access for remote CCTV and inspection equipment. For installation advice please see page 25 of the ACO StormBrixx brochure.</p> <p>Weight 2.5kg</p>	<p>Load Class D400, Ø225mm ductile iron cover.</p> <p>Weight: 52kg</p>	

How to build a StormBrixx system

This page will:

- Demonstrate how to construct a single unit
- Demonstrate how to build a StormBrixx system
- Explain and demonstrate brick and cross bonding



Constructing a single unit

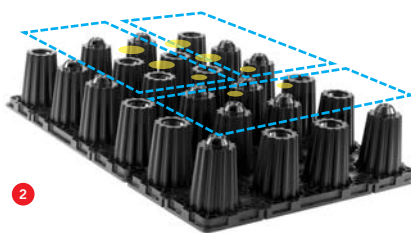
1. A Single tank body consists of eight columns, four with spigots and four with sockets
2. Invert second tank body and place on top of the first
3. Align spigots and sockets and push bodies together ensuring all columns are engaged

Note: Once engaged the two bodies are designed to stay connected

The images below demonstrate how to build a simple ACO StormBrixx system utilising the brick and cross bonding feature. This patented bonding feature provides unparalleled stability in the construction of the tank and the ability to create a single layer of interlocked units.



1



2



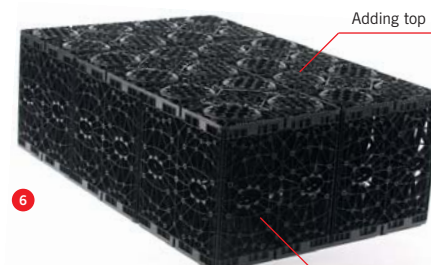
3



4



5



6

Adding top covers

Adding side panels



----- Indicates orientation of tank body.



Indicates cross bonding of tank bodies.

● To enable cross bonding ensure there is one block of spigots and one block of sockets in the middle of the configuration

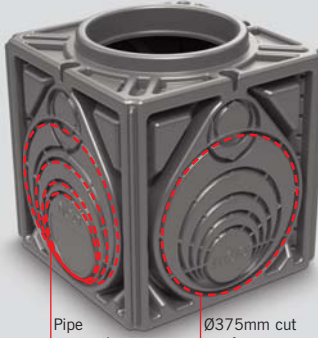


An installation video and further system configurations including perimeter and concentric ring examples can be found on the StormBrixx website. Visit www.stormbrixx.co.uk.

Installation of the access chamber

This page will:

- Overview the access chamber module features and pipe connections
- Explain how to build the StormBrixx access chamber



Pipe connections

Ø375mm cut out for access

Access chamber module overview

1. Each module has 150mm, 225mm, 300mm and 375mm inlet and outlet pipe connections
2. A 375mm cut out for access
3. 100mm or 150mm cut outs for ventilation
4. A Load Class D 400 ductile frame and cover available
5. Inspection points can be added for remote CCTV and jetting equipment access

Building the StormBrixx access chamber

1. Cutting the unit for pipe connections



Pipe connections are provided on each side of the access chamber. Recessed cutting lines are provided for guidance.

2. Removing the base for multi-layered systems



If using more than one access chamber module in a stack, remove the base from all modules except the base unit. Cut along the recessed cutting line provided and remove base.

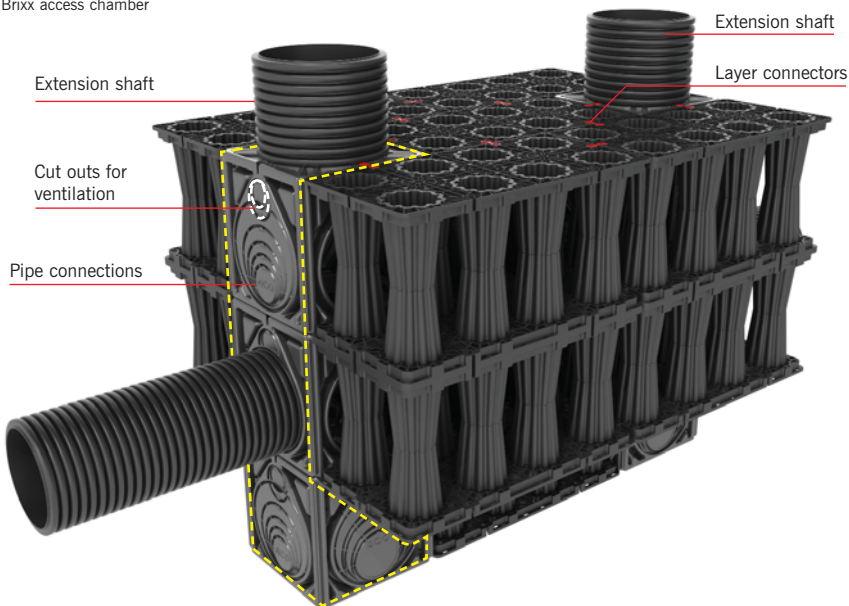
3. Adding StormBrixx modules and main unit connection



Once the bases of the upper module(s) have been removed, simply stack the units on top of each other ensuring that each module is clipped to the main structure using the ACO StormBrixx layer connectors. Remove 375mm panel from each module.

An example ACO StormBrixx system complete with access chambers

Perimeter of the ACO StormBrixx access chamber



Guide to installing an ACO StormBrixx attenuation system

General advice

If the ACO StormBrixx system is to be located in areas of high groundwater table, contaminated land, close proximity to buildings, or where the risk of contamination from surface water is high, ACO strongly recommend that the lining system is installed by a competent, qualified geomembrane lining contractor. Please consult the ACO Water Management Design Services Team on 01462 816666 for further advice.

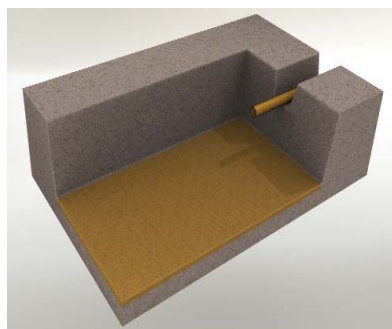
Installation guidance

ACO can give guidance with respect to the most suitable methods of installation for the ACO StormBrixx range. ACO StormBrixx should be installed using acceptable levels of workmanship and according to the National Code of Practice (BS 8000-14:1989).

Detailed installation statements and methodologies will vary for all sites as each will have different aspects deserving particular consideration, consequently the relevant approvals should be sought from the consulting engineer and/or the installer.

Step 1

Excavate the pipe trench and lay the inlet pipe to the required fall and invert level, install silt traps in appropriate locations in the pipe run or use the ACO StormBrixx access chamber.



Step 2

Excavate the hole or trench to the required dimensions to receive the ACO StormBrixx tanks, and any external inspection chamber(s) and/or silt trap(s).

Step 3

Ensure that the base plan dimensions of the hole allow 300mm working space on all sides for the site operatives to manoeuvre the ACO StormBrixx units, geotextile and geomembrane into position. Ideally mark out the plan area with spray paint or chalk line.

Step 4

Ensure that the base of the excavation is smooth and level and capable of withstanding the design loads, batter back the sides of the excavation to a safe angle, and ensure that safe access is provided for the site operatives. The excavation should be carried out in accordance with BS 6031:2009 with particular attention paid to safety procedures.

Step 5

Ensure that ground bearing capacity at formation level is adequate for design loads. Remove any soft spots from the excavation and replace with compacted granular material.

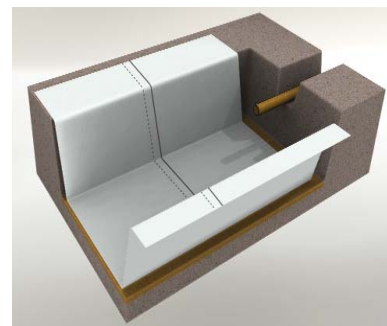
Step 6

Lay 100mm compacted Type 1 or 2 bedding layer to the base of the excavation and level. It is essential that the bedding layer is correctly levelled and smoothed, and that the base ground bearing capacity is adequate for design loads.



Step 7

Lay the geotextile, to the specification on page 16 and 17 of the ACO StormBrixx brochure, over the Type 1 bedding and up the sides of the excavation with minimum 300mm overlap joints between strips. Inspect geotextile for damage.



Step 8

Fabricate the geomembrane liner, bearing in mind the general advice above and the specifications on page 16 and 17 of the ACO StormBrixx brochure, and ensure all joints or welds are tested. If in doubt please consult the ACO Water Management Design Services Team for further advice.



Step 9

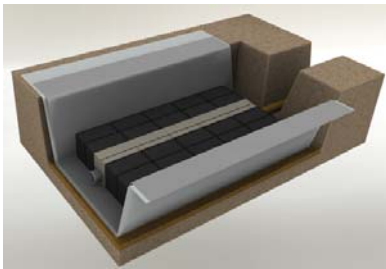
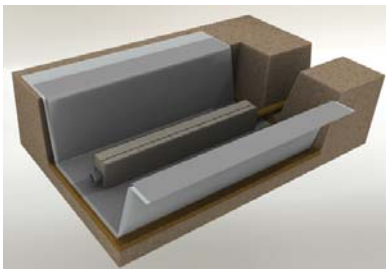
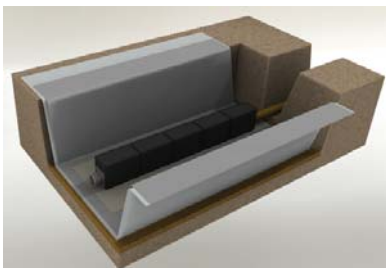
Assemble the ACO StormBrixx modular units to the plan size and unit configuration required and place on the geomembrane. Ensure any loose complete units are fixed together using the ACO StormBrixx layer connector. Examples of system configurations can be found in the ACO StormBrixx brochure. Visit www.stormbrixx.co.uk.



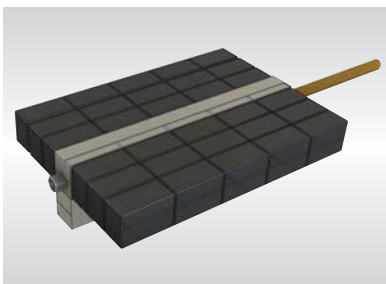
Manhole and inspection covers should be fitted in accordance with the relevant section from the Manual of Contract Documents for Highways Work (MCHW), and ACO's installation recommendations.

Step 10

If a sediment tunnel has been specified, lay the units with two side panels directly inline with the inlet and outlet pipes and encapsulate in ACOTex geotextile. Place the remainder of the ACO StormBrixx units either side of the sediment tunnel. Where necessary, insert ACO StormBrixx connectors between the layers of the ACO StormBrixx units. At the perimeter of the tank construction use side panels on all external boxes to create a rigid sidewall.



If a low flow drain down facility has been specified it will be necessary to install a row of ACO StormBrixx units in a trench below the main attenuation volume in line with the inlet & outlet connections. This row needs to have side panels on all outer edges and to be enveloped with a protection fleece and geomembrane on three sides.



Step 11

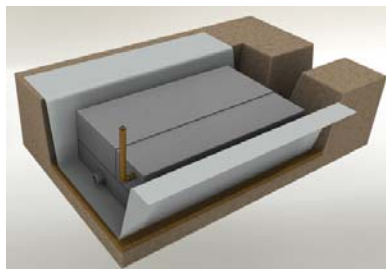
Form hole(s) in the side panel of ACO StormBrixx unit using a hole saw and jigsaw to receive the inlet pipe (outlet/inspection/vent pipe if required). Insert tank connector together with geomembrane top hat if required. Ensure top covers are installed on the top layer of the system.

Step 12

Carefully cut geomembrane around pipe protrusions and weld top hat to the geomembrane tank liner. Then seal geomembrane top hat to the pipe or tank connector. Test all joints for leaks.

Step 13

Continue with the geomembrane encapsulation using welded or taped joints as appropriate. If protrusions exist for venting then repeat step 12.

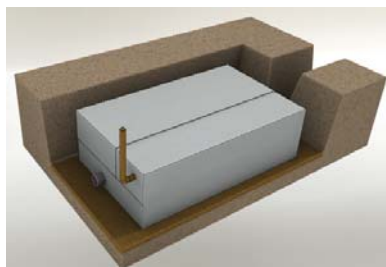


Step 14

Check for leaks and test seals.

Step 15

Continue with the outer protection encapsulation of the geomembrane and ACO StormBrixx system. Fold the corners of the protection fleece over-run at each end of the attenuation tank.



Step 16

Complete the encapsulation by wrapping the protection fleece horizontally round the tank and tape into position.

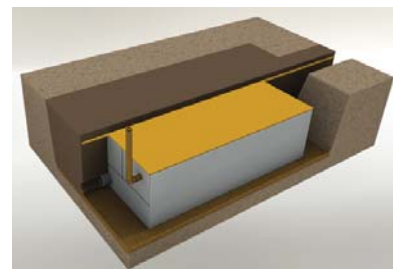
Step 17

Connect inlet/outlet/vent pipe and access chamber using appropriate adaptors. Only one Ø110mm vent pipe is required per 7500m² of the area to be drained.

Step 18

Backfill evenly around excavation using Type 1 or 2 sub-base or selected granular material in layers of 150-300mm and compact. The first 500mm of any installation should be compacted by hand.

Step 19



Use a 100mm minimum coarse sand protection layer over the top of the ACO StormBrixx units and geomembrane and then backfill. There should be a minimum 400mm backfill cover before compaction plant is used.

Step 20

The area should then be compacted using suitable compaction equipment in accordance with the Manual of Contract Documents for Highway Works (MCHW) volumes 1 & 2:

- ▶ **Tracked areas (eg restricted access car parks):** Type 1 or 2 sub-base material compacted in 150 mm layers in accordance with MCHW Volumes 1 & 2. Compaction plant over top of system should not exceed 2300kg per metre width. Where the units are to be installed beneath a paved area the pavement sub-base may form part of the backfill material provided minimum cover depths are maintained (refer to page 18 of the ACO StormBrixx brochure).
- ▶ **Landscaped and non-tracked areas:** selected as-dug material with size of particles less than 40mm within 300mm of the top of the units. Above this level selected as-dug material may be used. Place backfill and compact in layers no greater than 300mm. Compaction plant over top of system must not to exceed 2300kg per metre width.

Guide to installing an ACO StormBrixx infiltration system

General advice

The ACO StormBrixx units should be installed in accordance with the installation instructions and relevant legislation. Special attention should be paid to temporary work requirements in excavations. Please consult the ACO Water Management Design Services Team on 01462 816666 for further advice.

Installation guidance

ACO can give guidance with respect to the most suitable methods of installation for the ACO StormBrixx range. ACO StormBrixx should be installed using acceptable levels of workmanship and according to the National Code of Practice (BS 8000-14:1989).

Detailed installation statements and methodologies will vary for all sites as each will have different aspects deserving particular consideration, consequently the relevant approvals should be sought from the consulting engineer and/or the installer.

Step 1

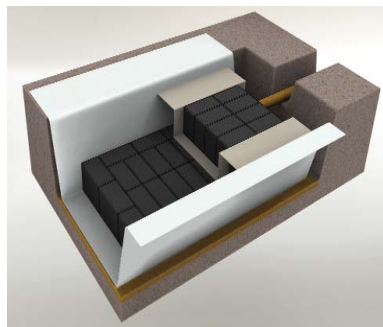
Follow steps 1-7 from the Guide to installing an ACO StormBrixx attenuation system (page 6) except lay 100mm coarse sand bedding to the base of the excavation and level instead of a compacted Type 1 or 2 bedding layer. For infiltration applications use coarse sand or class 6H selected granular material in accordance with the Manual of Contract Documents for Highway Works (MCHW) Volumes 1 & 2. It is essential that the bedding layer is correctly levelled and smooth.



Manhole and inspection covers should be fitted in accordance with the relevant section from the Manual of Contract Documents for Highways Work (MCHW), and ACO's installation recommendations.

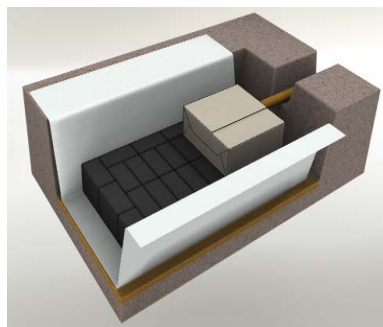
Step 8

Assemble the ACO StormBrixx modular units to the plan size and unit configuration required and place on the geotextile. Ensure any loose complete units are fixed together using the ACO StormBrixx layer connector.



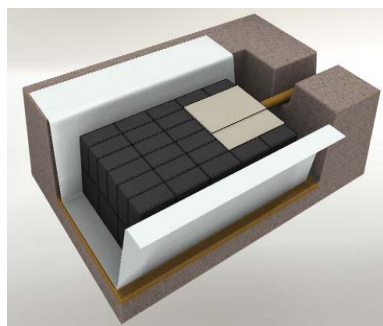
Step 9

Where a sediment forebay has been detailed, form the forebay containment structure around the pipe inlet using side panels on the correct units to the dimensions specified. Ensure top covers are installed on the top layer of the sediment forebay. Encapsulate using ACOTex. Example of system configurations can be found in the ACO StormBrixx brochure. Visit www.stormbrixx.co.uk.



Step 10

Form the remainder of the ACO StormBrixx units to complete the overall dimensions specified.

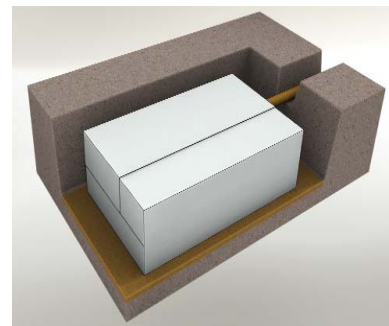


Step 11

Where necessary insert ACO StormBrixx connectors between layers of the ACO StormBrixx units. At the perimeter of the tank construction use side panels on all external boxes to create a rigid sidewall. Ensure top covers are installed on the top layer of the system.

Step 12

Form hole(s) in the side panel of the ACO StormBrixx unit using a hole saw or jigsaw to receive the inlet pipe (and outlet/inspection/vent pipe if required). Insert tank connector and using ACOTex geotextile form a wrap around apron of the tank connector spigot and secure using tape or jubilee clip. Ensure a minimum 50mm of spigot remains exposed.



Step 13

Continue with the geotextile encapsulation of the ACO StormBrixx system.

Step 14

Connect inlet/outlet/vent/inspection using the appropriate adaptors. Only one 110mm vent pipe is required per 7500m² of area drained.

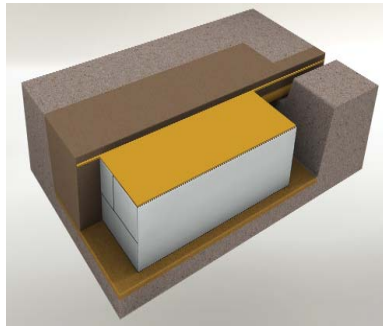
Step 15

Backfill evenly around excavation using 6N or 6P selected granular material in accordance with MCHW volumes 1 & 2, in layers of 150-300mm and compact. The first 500mm of any installation should be compacted by hand.



Step 16

Lay a minimum 100mm coarse sand protection layer over the top of the ACO StormBrixx units and geotextile and then backfill. There should be a minimum 400mm backfill cover before compaction plant is used.



Step 17

The area should then be compacted using suitable compaction equipment in accordance with Manual of Contract Documents for Highway Works (MCHW) Volumes 1 & 2:

- ▶ **Trafficked areas (e.g. restricted access car parks):** Type 1 or 2 sub-base material compacted in 150mm layers in accordance with MCHW volumes 1 & 2. Compaction plant over top of system should not exceed 2300kg per metre width. Where the units are to be installed beneath a paved area the pavement sub-base may form part of the backfill material provided minimum cover depths are maintained (refer to page 18 of the ACO StormBrixx brochure).
- ▶ **Landscaped and non-trafficked areas:** selected as-dug material with size of particles less than 40mm within 300mm of the top of the units. Above this level selected as-dug material may be used. Place backfill and compact in layers no greater than 300mm. Compaction plant over top of system must not exceed 2300kg per metre width.

Step 18

The pavement construction or landscaping is completed over the ACO StormBrixx system. Please read Post-installation protection of ACO StormBrixx below.



Post-installation protection of ACO StormBrixx

The ACO StormBrixx system is designed to withstand loadings from landscaped areas, car parks and service yards (subject to design criteria). However, after installation and backfilling, but prior to final surfacing, we recommend that the tank area is fenced off with high visibility fencing and traffic is prohibited from using the footprint area of the tank.

ACO StormBrixx is not designed to provide a load platform for construction traffic and should be treated accordingly. This action will protect the long term loading performance of the tank's structure.

The client should provide sign posts indicating maximum loads allowable over the tank footprint, to ensure the long term stability of the system is assured.

**ACO Water Management:
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The ACO Group: A strong family you can depend on.