Wavin
Product Installation Guide

AquaCell

Stackable System

wavin
An Orbia Building & Infrastructure business.

AquaCell Installation Guide

General characteristics

AqueCell is a below ground storm water storage system which can be used in different applications namely as:

1. Retention / Infiltration Systems

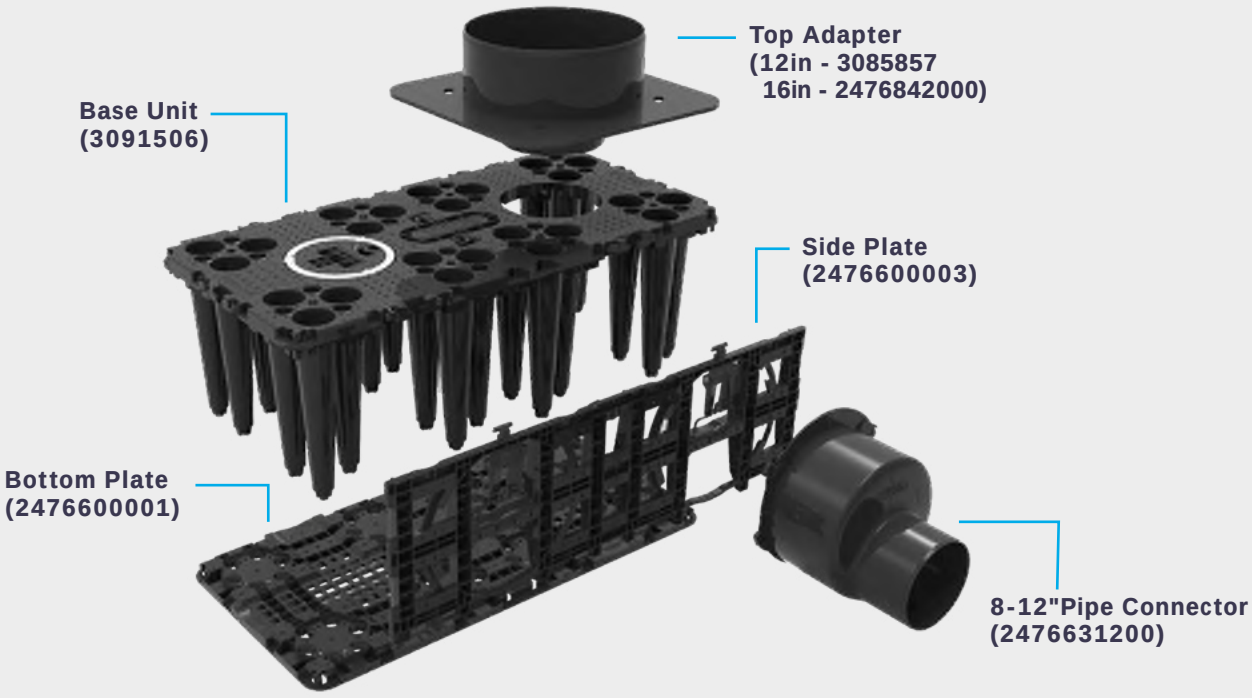
Objective: temporary storage to allow the gradual infiltration of water into the soil.

Solution: Wavin AquaCell wrapped in a non-woven geotextile.

2. Detention / Water Reuse Systems

Objective: temporary or permanent water storage and management meant to return the water to the existing network or implement for use in irrigation or landscape maintenance.

Solution: Wavin AquaCell covered in a 30 mil geomembrane liner, which is protected by a non-woven geotextile around it.



Technical Specifications

General	Raw material	100% recycled polypropylene
	Color	Black
	Vertical inspection access	10in
Base Unit	Dimensions (Length x Width x Height)	47.2 in x 23.6 in x 16.7 in
	Gross volume with baseplate attached	81 gal / 10.81 cf
	Net volume with baseplate attached	77 gal / 10.25 cf
	Void Rate (Varies by layer/side plates added)	94% - 96%
	Weight	24lbs
	Pipe Connections	6in, 8in, 10in, 12in
Bottom Plate	Dimensions (Length x Width x Height)	47.2 in x 23.6 in x 16.7 in
	Weight	8 lb
Side Plate	Dimensions (Length x Width x Height)	45.5 in x 15.2 in x 2 in
	Weight	5 lb
Top Adaptor (Inspection and Maintenance)	Dimensions	10/12in.
	Weight	3lbs
	Dimensions	10/16 in.
	Weight	11lbs
Connection Adaptor 8in - 12in	Dimensions (Length x Width x Height)	14 in x 14 in x 12 in
	Weight	3lbs

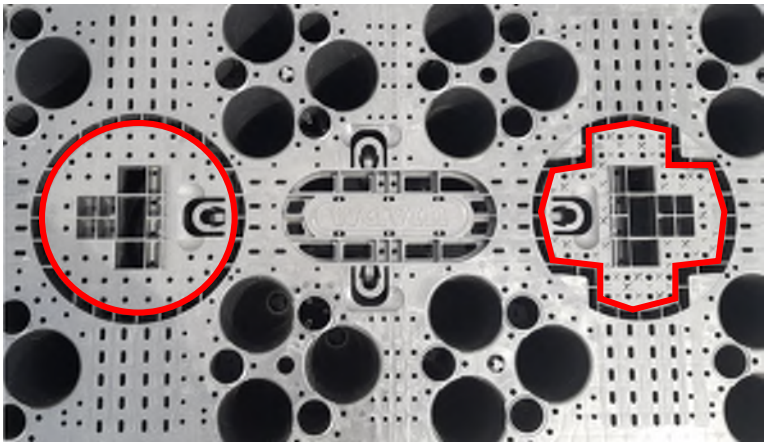
	Type of load	**Standard (SD)**	**Extra Strong (EX)**
Minimum Cover Depth(d) / Maximum (H) Burial Depth	H-10 Traffic Loading [in/ft]	d=12 in. / H= 14.4 ft	d=12 in. / H=26.2 ft
	HS-20 Traffic Loading [in/ft]	d=24 in. / H=14.4 ft	d=18 in. / H=26.2 ft
	HS-25 Traffic Loading [in/ft]	d=32 in. / H=14.1 ft	d=22 in. / H=26.1 ft

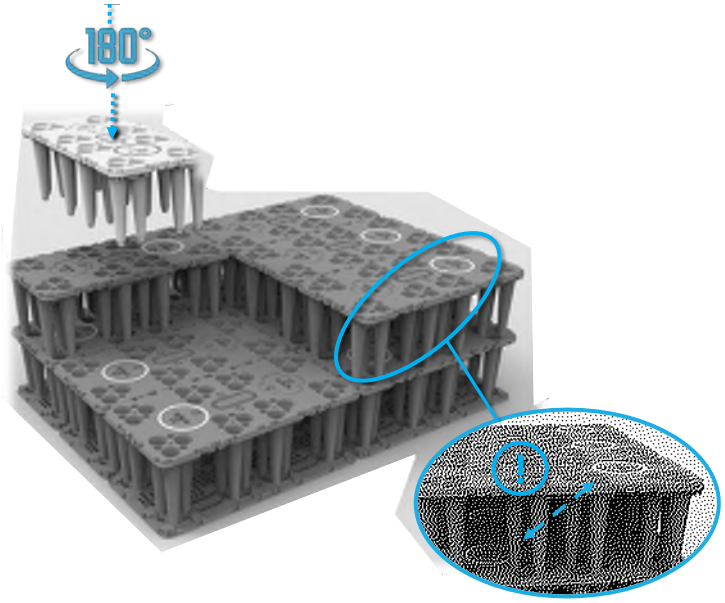
Product Orientation Guidelines

The Wavin AquaCell has integrated shapes on the top of the base units for visual orientation of the product. A **"cross"** and a **"circle"** shape are meant to be a guide when stacking each of the base units on top of each other in a multi-layer system.

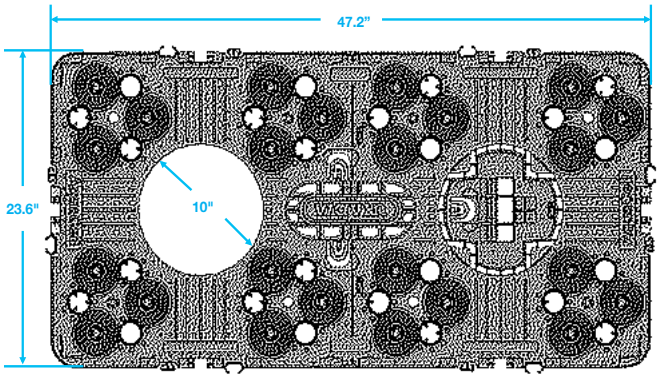
Each stackable base unit will need to be turned 180° to be oriented in the opposite direction of the lower unit underneath. Each of the pillars will fall into position and click in the top of the deck openings of the unit below.

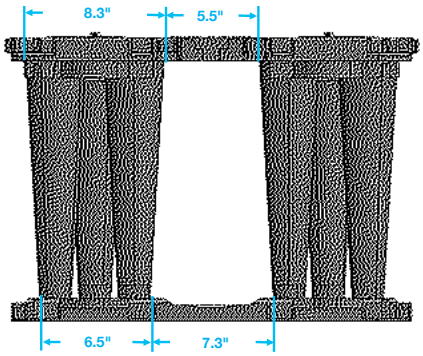
If the unit is not 180° in the opposite direction of the lower section, the units will fall into each other as they are stacked on the shipping pallet.

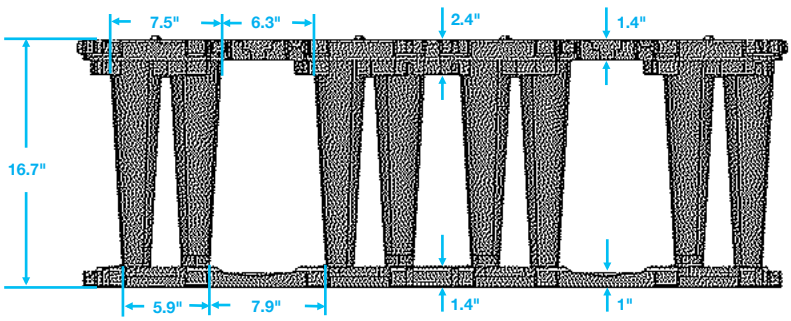




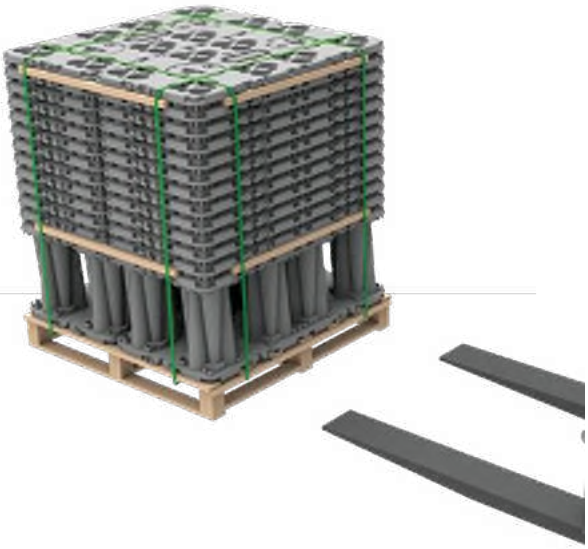
Dimensions







Unloading and Unpacking

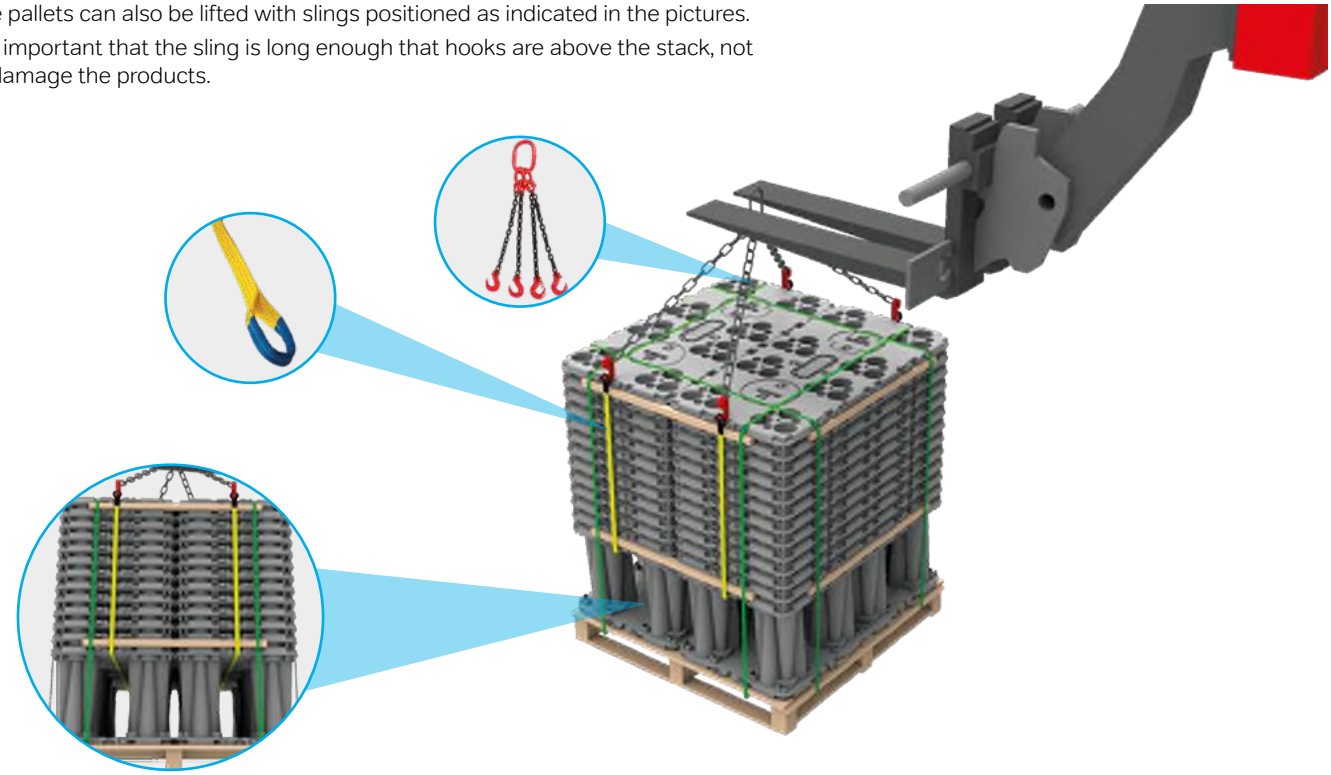


Handling by excavator or forklift:

AquaCell base units are stacked 56 units per 4'x4' pallet. The pallets can be lifted with forks on an excavator or forklift by positioning these forks in the openings of the pallets (full pallet stack is separated at 14 units from the top with boards to easily slide the forks in the center of the stack).

Handling by excavator or forklift:

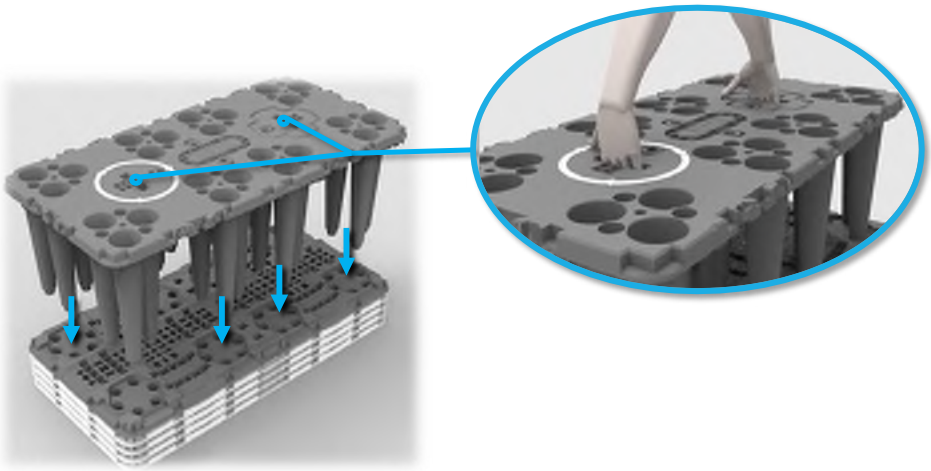
The pallets can also be lifted with slings positioned as indicated in the pictures. It is important that the sling is long enough that hooks are above the stack, not to damage the products.



Jobsite delivery Instructions & Transfer of Risk Acknowledgement:

See pages 13-14 included for submission to Wavin Customer Service for AquaCell product warranty act

AquaCell Base unit has a low weight (11.4kg / 25.1lb) and is equipped with integrated handgrips for ergonomics.



For dismounting of the bottom layer of the stack, pull firmly on one short side of the unit while keeping a foot on the bottom layer.

2. Installation instructions

For the total installation of AquaCell the following steps have to be performed:

Step 1:

Prepare the bottom of the trench with suitable bedding material with a minimum depth of 4in / 10cm (max. 12in / 30 cm).

Remove protruding objects /debris in bedding (e.g. stones) which can damage the geotextile fabric).

Step 2:

Level (screed) the bottom of the trench.

*Sub-base must provide a minimum bearing capacity of 2,000 lbs/sf

Step 3:

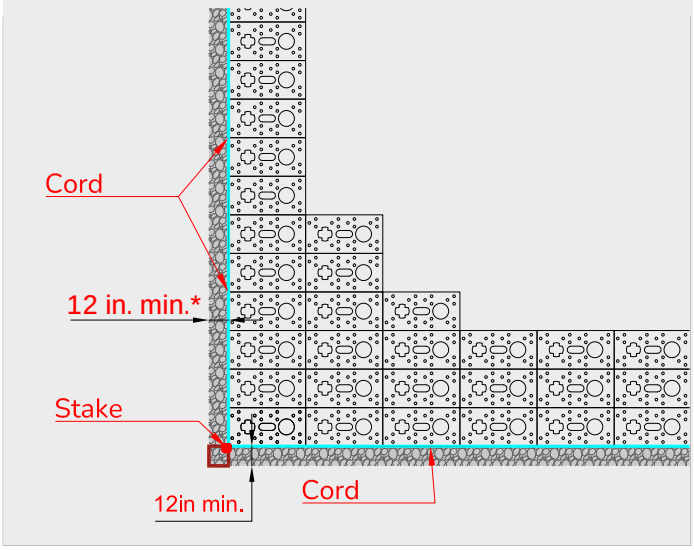
Install the non-woven geotextile / geomembrane on the bottom of the trench. Be sure that a minimum overlap of 12in (300mm) is available at each side of the system.

Step 4:

Install and outline (perpendicular) a string guide to ensure a straight system.

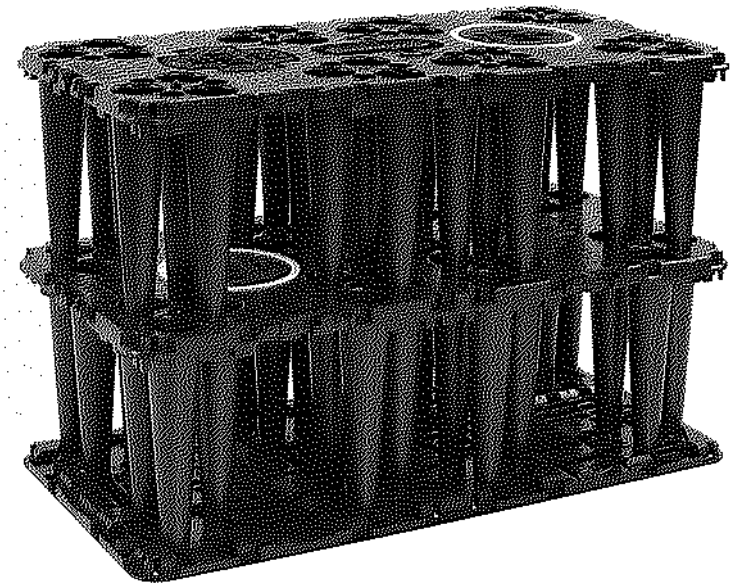
Note: Do not punch the geotextile / geomembrane with stakes. Place the stakes outside the highlighted area.

*Note: **12 in. backfill/stone perimeter** is noted as a "**Minimum**" distance only and does not replace or override the **specified** perimeter around the AquaCell Tank as designed by the E.O.R.



Step 5:

Bottom layer: Mount the bottom plate to AquaCell unit (make sure an audible “click” is heard to ensure a proper connection) and place this unit in the outlined corner on the bottom of the trench.



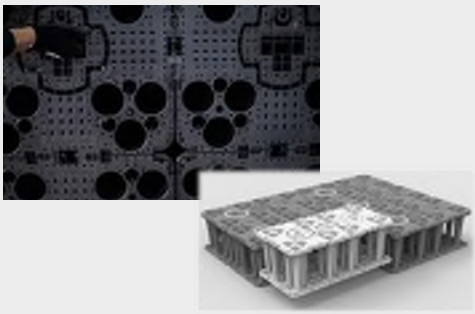
Step 6a:

Bottom layer: Place the next (outer) units (including pre-mounted bottom plates) next to the installed units by sliding the integrated connectors into each other.

Note: Check the orientation of crates, ensuring crosses/circles are in line).

Repeat this until the full bottom layer is installed.

Alternately, bottom plates can be laid out first, with base units installed sequentially from top corner of system moving laterally to end of system boundaries until full bottom layer is installed.



Step 6b:

Vertical inspection ports: When vertical access through the unit is required, the round plate / “Circle” or “Cross” on top of the unit must be cut. The cutting lines are marked by a ***“hand saw”*** logo. A saw with a blade length of at least 3in / 8cm is required.

Note: Make sure that the round “circle” plate or “cross” of each unit of each layer below the vertical access is cut.

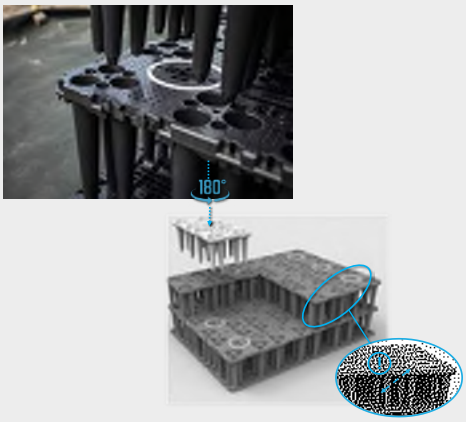
Step 7:

Next layer(s): Mount the base unit (w/o bottom plate) directly on the top deck of bottom layer base unit(s). Each of the pillars will fall into position and click in the top deck openings of the unit below.

Note 1: Keep in mind the orientation of the circles/crosses (circle above circle / cross above cross will drop columns into the lower base unit).

Note 2: The integrated connectors will slide into each other (vertically).

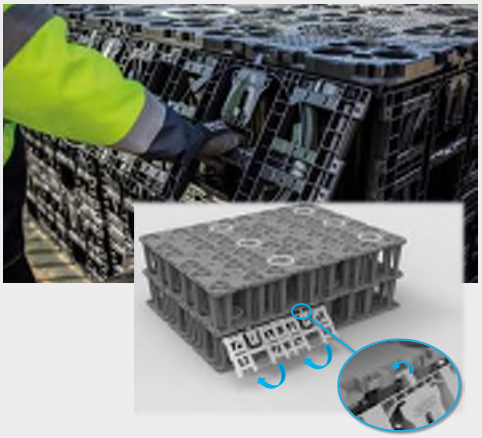
Repeat this for all the layers until all units are installed.



Step 8:

Side plate: The following step is to install the side plates by putting the hinge pins of the side plate into the hinge pockets of the units at an angle. Next, the plates can be hinged against the pillars of the AquaCell unit. The plate will snap to each of the unit.

Repeat this step until all side plates are installed and the system is fully closed except at the location where the inlet and outlet must be placed.



Note 1: In case of the need of a half side plate, cut side plate down center (follow guidelines shown on side plate).

Note 2: After cutting there is a left and right version. Be sure that the rounded edge of the half plate is positioned towards the corner of the system (not the cut edge). Depending on the length of the side, put the half plate in between 2 uncut plates.

Step 9a:

Connection ≤ 6in / 160mm : Each side plate consists two standard 6in / 160mm Inlets with integrated pipe stopper.

The two sprues of the pipe stopper can be cut/broken to activate this pipe stopper.

Step 10:

Wrap the complete system in geotextile or geomembrane. The unit has a clip to help hold the geotextile during wrapping.

Note: The overlap of the geotextile/membrane should be at least 20in / 500mm.

Step 11:

Back fill the trench around the system in lifts of max. 12in / 30cm with the appropriate soil type and compact this evenly until the level of the top inlet.

The appropriate degree of soil compacting should correspond with the existing soil and water conditions and future external load.

It is advised to compact soil at the minimum level of:

- 95 % Standard Proctor (SP) for all traffic loads

In the case of high level of ground water, it is advised to increase the degree of soil compacting to the minimum level of 98 % Proctor (SP)

Step 12:

Install pipe inlet/outlets ≤ 15 in using 8-12 in Pipe Connector. Secure the non-woven geotextile / geomembrane to the pipe using flexible rubber coupler, corrosion-resistant mastic tape, or steel hose clamps. Overlap of fabric: 39 in X 39 in / 1m x 1m). Backfill and compact underneath and around the pipe.

Note: For pipe connection ≥ 16 inches, create a ***boot*** using the geotextile fabric wrapped around the AquaCell tank.

Step 13:

Cut an "X" into the geotextile/geomembrane on top of AquaCell for installation of 12in/16in Top Adapter into upper deck. The 10in (250mm) spigot at the bottom of the top adapter fits into the previously cored hole at the top of the upper base unit. Next, secure the fabric and top adapter with corrosion resistant adhesive tape (or steel hose-clamps). The Top Adapter is ready for installation of vertical inspection pipe (12in adapter use 12in PVC SWR pipe; 16in use 12in HDPE or 18in SCH.40).

Step 14:

Backfill the trench around the system in lifts of max. 12in / 30cm with the appropriate soil type and compact this evenly until the top is level with the system (tank).

Note: For the appropriate degree of soil compacting, see step 11.

Step 15:

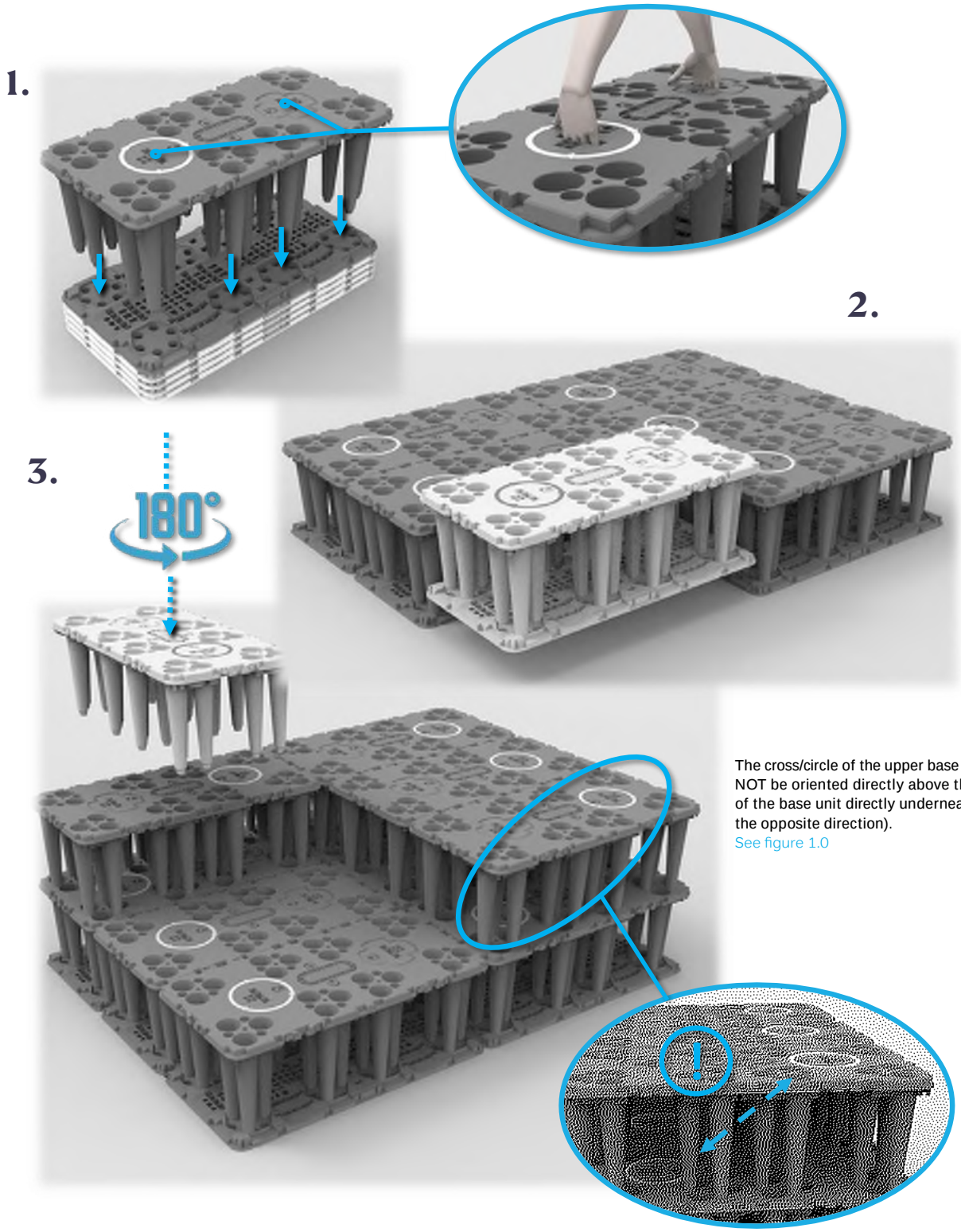
Backfill the trench evenly on top of the system. Compaction begins after 12in of material placement over the AquaCell tank, with subsequent lifts no greater than 12in for well-graded materials or 6in for processed aggregates. Roller gross vehicle weight and dynamic force of construction equipment must not exceed 12,000 and 20,000 pounds, respectively. *Reference AquaCell detail AQ-100-20 pg. 17 for further guidance.

Note: For the appropriate degree of soil compacting, see step 11.

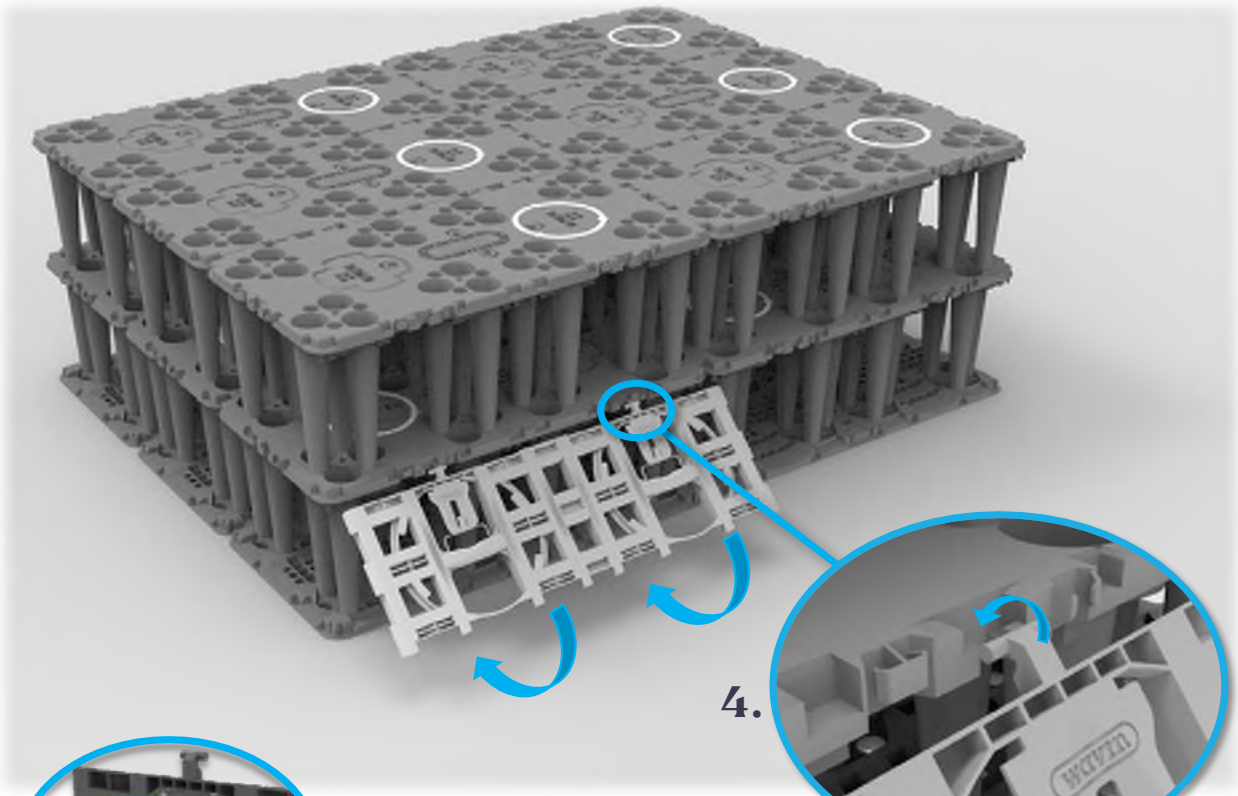
Step 16:

Shorten length of vertical pipe from the top adapter (if necessary) and install designated top casting & cover(s) as specified for the application.

3. Universal Installation Instructions



The cross/circle of the upper base unit should NOT be oriented directly above the cross/circle of the base unit directly underneath (180º in the opposite direction).
See figure 1.0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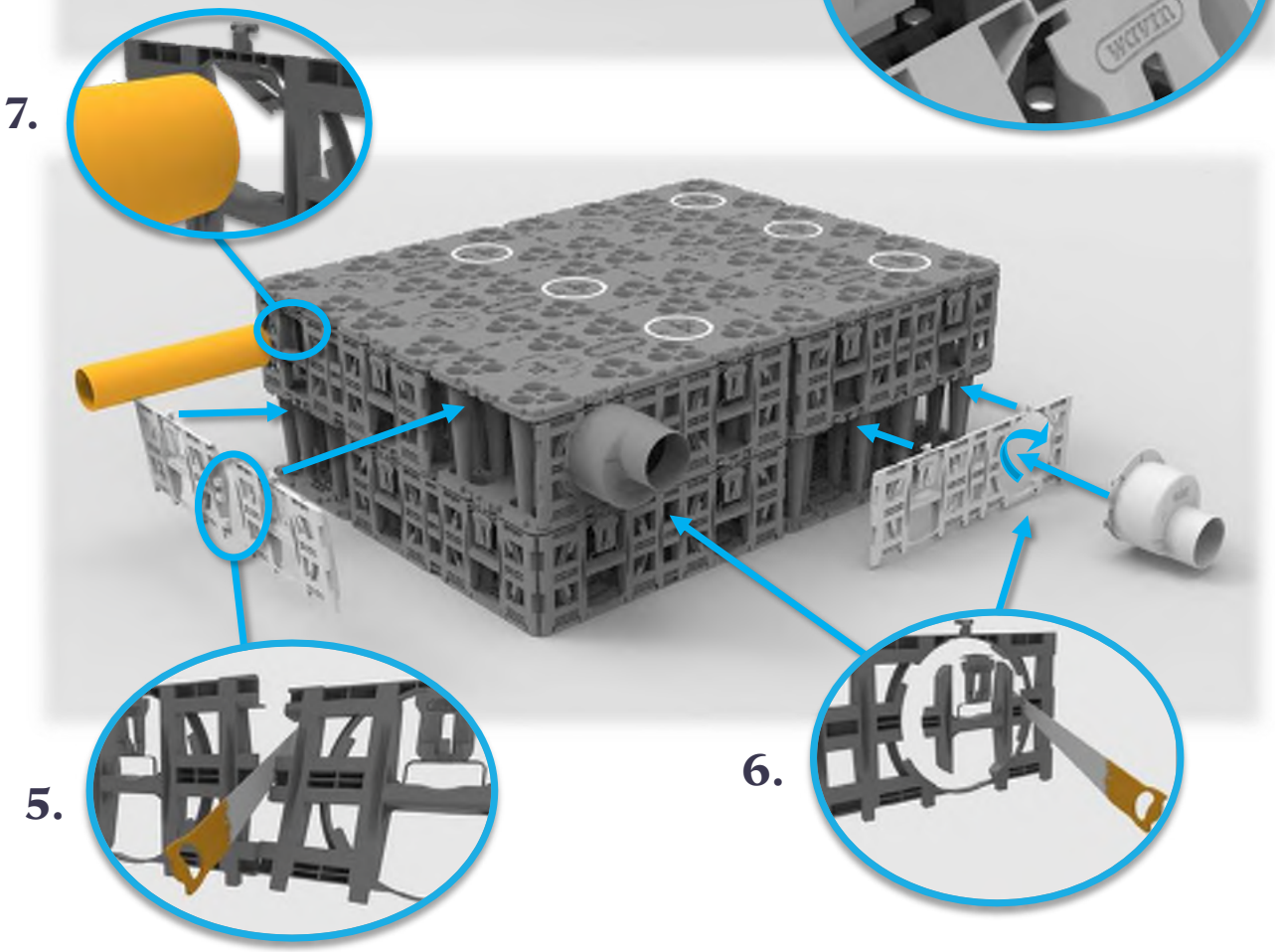

7.
5.
6.

Jobsite Delivery Instructions & Transfer of Risk Acknowledgment

To ensure proper handling and documentation of Wavin products upon delivery to a jobsite, please follow the instructions below. These steps are critical for warranty validation and to confirm the transfer of risk from Wavin to the customer.

1. Pre-Delivery Preparation

- Ensure a designated representative is available on-site to receive the delivery.
- Review the delivery schedule and prepare necessary documentation (e.g., purchase order, delivery note).

2. Delivery Inspection

- Inspect all products immediately upon arrival for visible damage or missing items.
- Take clear photographs of the delivered goods, including packaging and any damage.
- Verify product labels, quantities, and crate integrity.

3. Documentation

- Complete the Delivery Note and Bill of Lading with the carrier.
- Record any discrepancies or damage on the delivery documents and notify Wavin immediately.
- Retain copies of all signed documents and photographs for your records.

4. Acceptance Confirmation

- Sign the Delivery Acceptance Form to confirm receipt and condition of goods.
- Ensure the form includes the delivery date, project name, and product details.
- Note: Signing the form without exceptions confirms acceptance and transfers risk to the customer.

5. Product Storage

- Store products in a clean, dry, and secure area as per Wavin's storage guidelines.
- Protect materials from direct sunlight, moisture, and physical damage until installation.

6. Warranty Activation

- Register the project with Wavin within 30 days of delivery using the provided registration form or online portal.
- Submit all required documentation, including delivery photos, signed acceptance form, and inspection records.

7. Contact Information

- For questions or to report delivery issues, contact Wavin Customer Support at: customer.service@orbia.com.

Delivery Acceptance & Transfer of Risk Form

1. Delivery Details

Project Name: _____

Delivery Date: _____

Delivery Location: _____

Carrier Name: _____

Wavin Product(s) Delivered: _____

Quantity Delivered: _____

Delivery Note Number: _____

2. On-Site Inspection

Visual Inspection Completed: ☐ Yes ☐ No

Any Damage Noted: ☐ Yes ☐ No

If yes, describe the damage:

_____

Photographic Evidence Taken: ☐ Yes ☐ No

3. Acceptance Confirmation

Received By (Client Representative): _____

Signature: _____

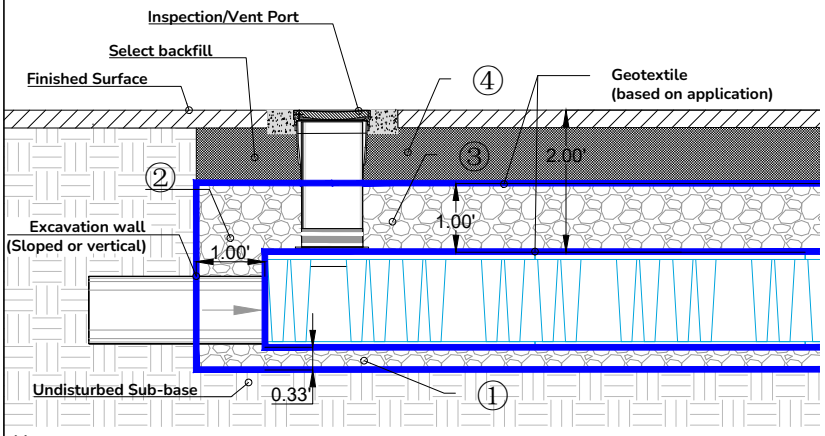
Date: _____

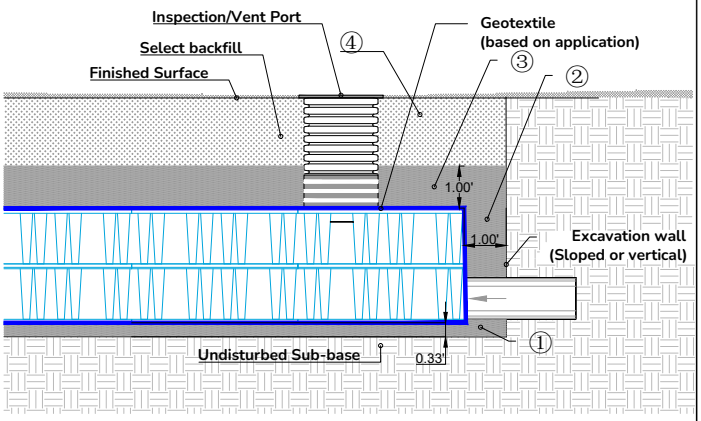
4. Transfer of Risk Acknowledgment

By signing this form, the client acknowledges receipt of the above-listed products in acceptable condition and agrees that the risk of loss or damage transfers from Wavin to the client as of the delivery date, unless damage was noted at the time of delivery.

Client Representative Name: _____

	Fill Material Location	Material Description	AASHTO Designation	Compaction Requirements
4	Final backfill / material to grade	For backfill, the design engineer will specify suitable native or engineered materials to create a stable subgrade as outlined in the project plans. Recommended material should be at minimum 12" of clean, well-graded soil.	Not applicable (N/A)	Subgrade preparation will follow strict specifications on the site plans, which may include additional requirements for paved installations as determined by the site engineer. The degree of soil compaction should correspond with existing soil and water conditions and future external load.
3	Initial backfill / cover over system	Granular well-graded soil/aggregate mixtures, < 35% fines, most pavement subbase materials can be used in this layer.	AASHTO M145 A-1, A-2-4, A-3 AASHTO M43 3, 357, 4, 467, 5, 56, 57, 6, 67, 68, 7, 78, 8, 9, 10	Compaction begins after 12" of material placement over the system, with subsequent lifts no greater than 12" for well-graded materials or 8" for processed aggregates, all compacted to a minimum of 90% standard Proctor density (or 95% relative density for processed aggregates). Roller gross vehicle weight and dynamic force must not exceed 12,000 and 20,000 pounds, respectively.
2	Embeddment / perimeter material	Clean, crushed angular stone, Native soil or sand compacted per application requirements.	AASHTO M43 3, 357,4, 467, 5, 56, 57	No compaction required.
1	Foundation / bedding material	Clean, crushed angular stone, Native soil or sand compacted per application requirements.	AASHTO M43 3, 357,4, 467, 5, 56, 57	Bedding must be uniform, level and free of debris, at a minimum depth of 4" and compacted to density of at least 90% standard Proctor (or as required by engineer).





Notes:

1. Reference **Installation Min. Loading & Depth Requirements (AQ-100-02)** for load, compaction, and min/max depth requirements.
2. Reference **Geosynthetics Detail (AQ-100-03)** for minimum fabric material weights and application details.
3. Reference **AquaCell Installation Guide** for further information and instruction on installation of backfill material.

Managing water better since 1955.
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Waltham, MA 02451
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wavintechsupport@orbia.com

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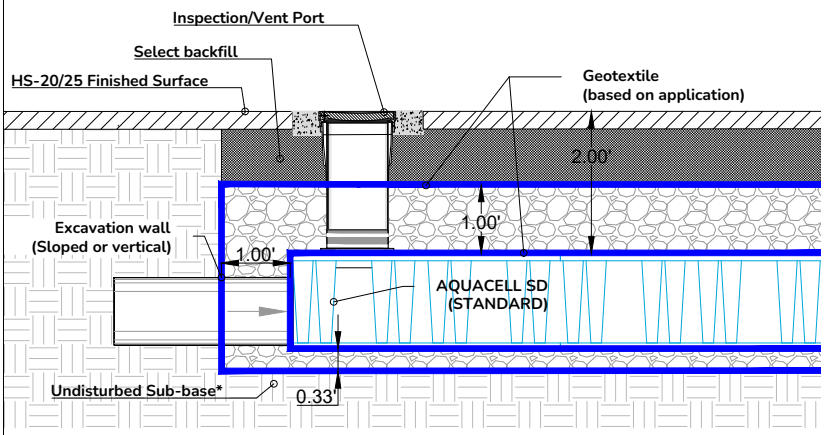
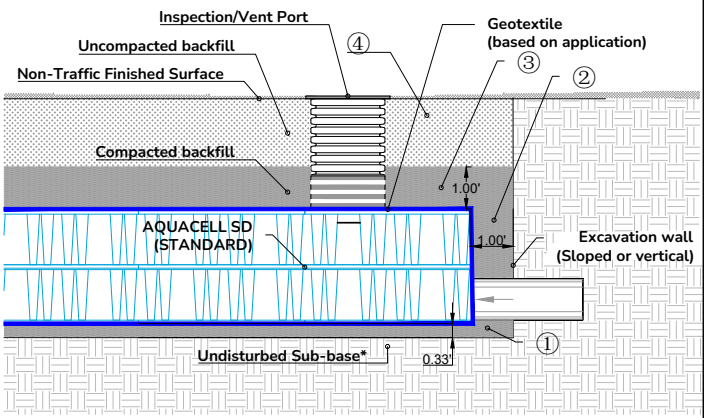
Title: AquaCell Acceptable Backfill Materials Table				
Date: 3/26/2025	Scale: NTS	Drawing: AQ-100-01		Rev: 3
Drawn: HJD	Approved: JS	Sheet: 1 of 1		

Load Rating[2]	Minimum Cover Depth (Standard)	Maximum Install Depth (Standard)	Minimum Cover Depth (Ex. Strong)[4]	Maximum Install Depth (Ex. Strong)[4]	Soil Compaction Minimum[3]
Light Duty < 2,500 lbs.	12 inches	14.4 feet	12 inches	26.2 feet	90% SP
H-10 Loading	12 inches	14.4 feet	12 inches	26.2 feet	95% SP
HS-20 Loading	24 inches	14.4 feet	18 inches	26.2 feet	98% SP
HS-25 Loading	32 inches	14.1 feet	22 inches	26.1 feet	98% SP

	Foundation Fill (Bedding)	Trench Width Around AquaCell	Uncompacted Backfill Over System	Compacted Backfill (Horizontal Lifts)[5]
Minimum	4 inches	12 inches	6 inches	6 inches
Maximum	12 inches	36 inches	12 inches	12 inches

*Sub-base must provide a minimum bearing capacity of 2,000 lbs/sf prior to installing foundation materials and/or AquaCell





Notes:

1. Reference **Backfill Materials Table (AQ-100-01)** for recommended materials, AASHTO designations, and compaction requirements.
2. AASHTO ratings follow standard classification of truck axle loading weights for live loads.
3. On-site soil compaction minimum percentage of Standard Proctor Density (SP) per ASTM D698 and ASTM D1557 as applicable.
4. **AquaCell Extra Strong (EX)** consists of two base units inset within each other. Reference **TB101 & TB102 Load Capacity Testing Results** for additional information.
5. Reference **Construction Loads Over AquaCell System (AQ-100-20)** for guidelines on compaction and machinery used during installation.
6. Reference **Cover and Burial Depths by Configuration (AQ-100-08)** and AquaCell Installation Guide for further information and instructions related to installation depths.

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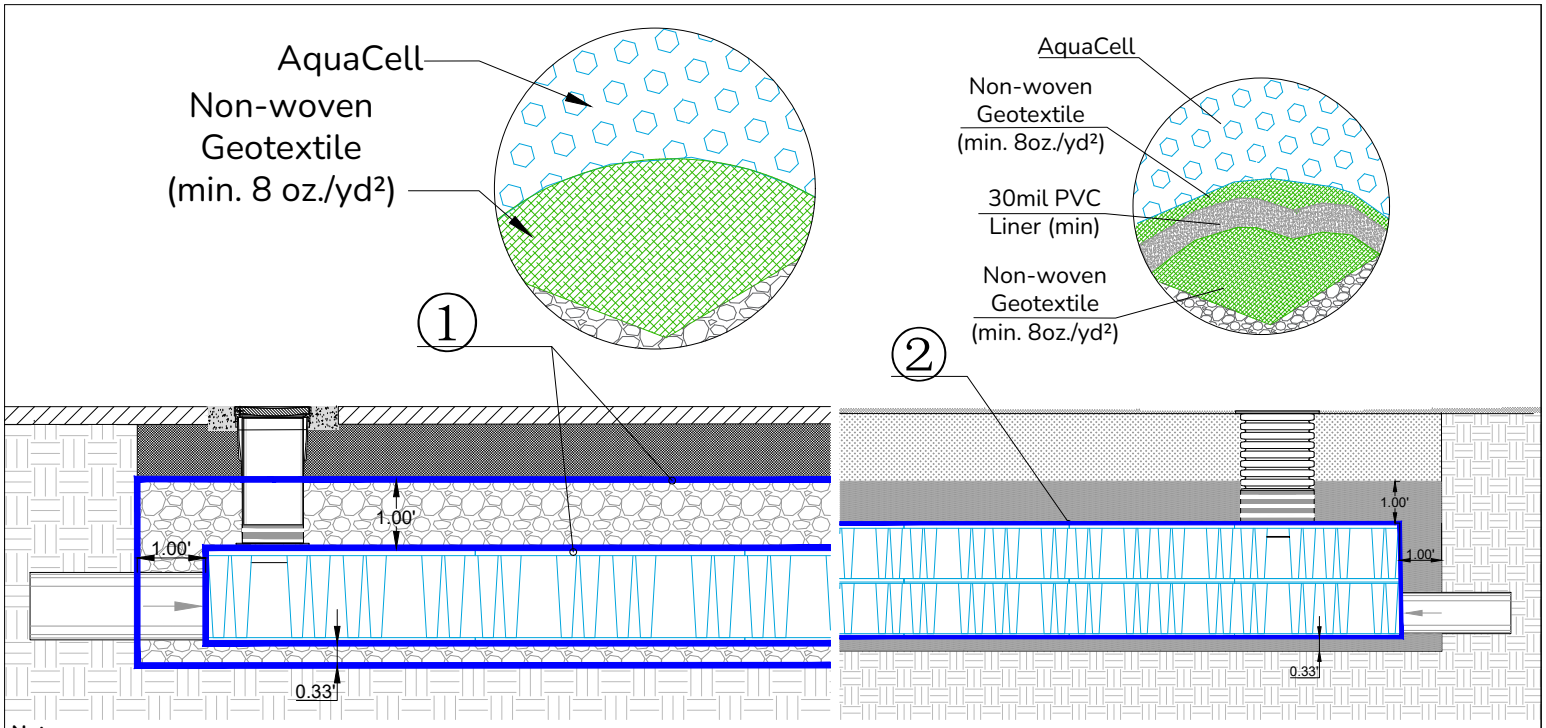
The design details/specifications presented in this document are for informational purposes only and are subject to change without notice. Responsibility for design of any AquaCell system rests soley with the original design engineer of record. For questions, contact: wavintechsupport@orbia.com

Title: AquaCell Acceptable Backfill Materials Table				
Date: 6/23/2025	Scale: NTS	Drawing: AQ-100-02		Rev: 3
Drawn: HJD	Approved: JS	Sheet: 1 of 1		



Notes:

1. For **Infiltration systems**, provide a non-woven monofilament geotextile fabric with a minimum weight of 8 oz./yd² for wrapping and protecting the AquaCell units from abrasion, puncture, and UV degradation before and and during installation. **Geosynthetics provided by others**.
2. For **Detention & water reuse systems**, provide a minimum 30 mil PVC geomembrane with a thickness tolerance of ± 5% as defined by ASTM 5199.
   2.1. Choose geomembranes based on site specific applications. Material should be puncture resistant and durable. **Geosynthetics provided by others**.
3. Reference **AquaCell Installation Guide** for further information and instruction on geosynthetics installation.

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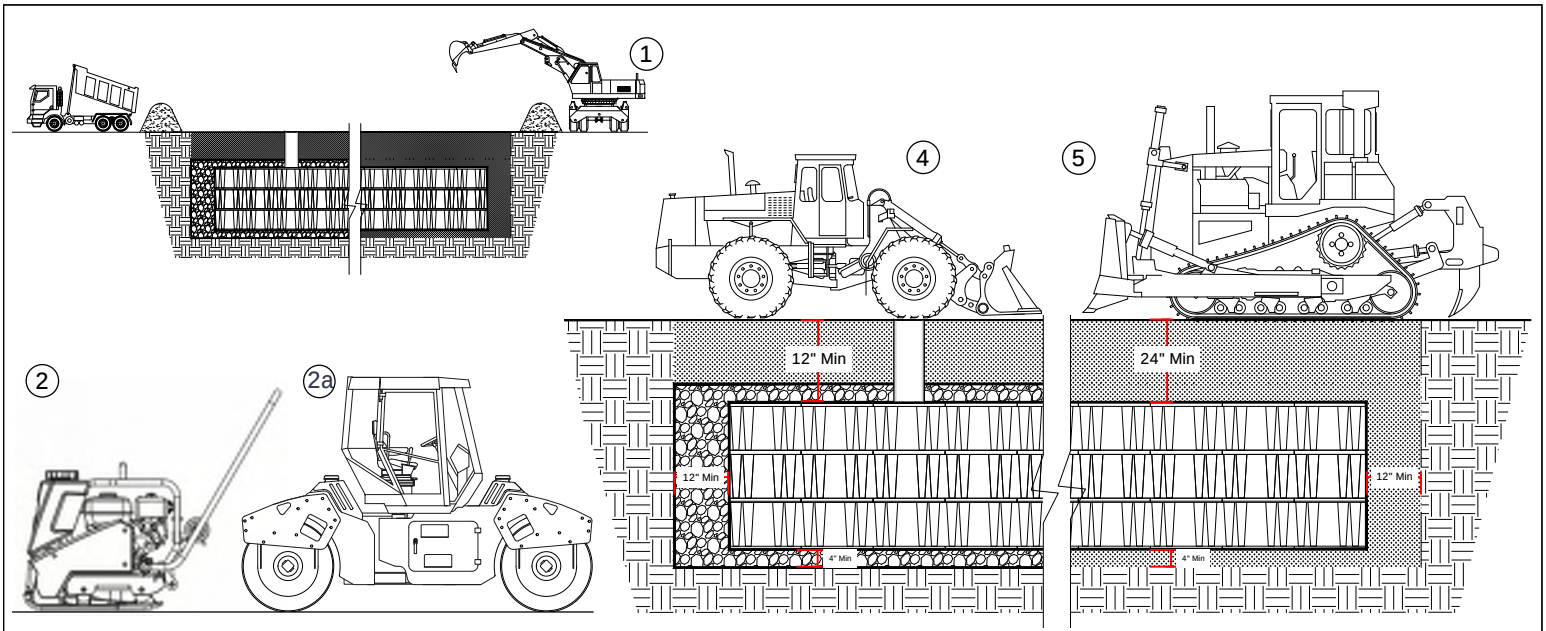
Title:	AquaCell Infiltration / Retention / Detention Detail			
Date: 6/23/2025	Scale: NTS	Drawing: AQ-100-03		Rev: 1
Drawn: HJD	Approved: JS	Sheet: 1 of 1		



NOTES:

1. Recommended fill method is with an excavator< 23 US tons from outside the **AquaCell** system.
   a) Tracked excavators outside the excavated hole should be used to place fill over the **AquaCell** system when the geotextile/geomembrane wrapping has been completed.
   b) No compaction equipment is permissible to operate directly on the **AquaCell** units.
2. Backfill the first 12" layer with an excavator and compact with a manual vibration plate or small smooth vibrating drum roller (static mode only) weighing no more than 6 US tons.
   a) Minimum 24" backfill cover over **AquaCell** system when any smooth vibrating drum roller is in vibratory mode.
3. Fill should be compacted as required with no loose fill. Recommended compaction is 90% standard proctor (SP) for non-traffic, 95% SP for light/limited traffic, 98% SP for heavy traffic.
4. Dozers that can be used with 12" of backfill cover must have contact pressure< 7.0 psi with an operating weight< 10 US tons.
5. 24" of well compacted backfill over the top of the **AquaCell** system must be in place before any heavy equipment up to 11 US tons maximum may operate over the top of the **AquaCell**.
6. Reference **Acceptable Backfill Materials Table (AQ-100-01)** for additional guidance on fill material.
7. Reference **Installation Depth Requirements (AQ-100-02)** for additional guidance on load, depth, and compaction requirements.

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Title: Construction Loads over AquaCell System

Drawn by: HJD	Approved by: KS	
Scale: NTS	Revision: 0	
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Notes

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