

## **AquaCrate Installation Instructions**

### **Pre-installation notes:**

For attenuation systems: position the inflow and outflow connections level with the base of the AquaCrate structure

For infiltration systems: position the inflow connection at the top of the AquaCrate structure.

### **Installation Instructions:**

1/. Excavate to the required length, width and depth and level the base. Make sure that the area is enough to allow plant access around sides to compact the backfill material (500mm minimum and 750mm minimum if HGVs being used over the tank).

Ensure the base is smooth and level with no sharp protrusions. Check that the slopes are cut back to a safe angle or adequately supported and that a safe access is possible to allow site personnel to enter the excavation.

2/. Inspect the base for soft spots and if any are present, excavate and replace with compacted granular fill material.

3/. Lay 75mm sharp sand bedding layer to the base of the excavation and level off. Lay the geotextile protection fleece (180g non woven, needle punched type GT1900), ensuring a minimum 150mm overlap. This is required for both attenuation and infiltration structures.

4/. Lay the geomembrane (if tank is for water storage) over the geotextile and sand bedding layer and up the sides of the excavation. Examine the geomembrane for damage and test all welds if apparent.

5/. Assemble the AquaCrate units (1m x 1m x 0.4m High) and install within the void in accordance with the installation schedule for correct positioning. Special clips are provided to join the units to prevent displacement (single clips for adjacent units (3 per unit) and double clips for all multi layer applications (1per unit)).

6/. Complete the geotextile and/or geomembrane encapsulation to the sides and top of the installation, ensuring that the protection fleece (if attenuation) has sufficient to overlap by 150mm minimum. The geomembrane should be welded with double seams and inspected for damage, testing the welds as required.

7/. Connect the drainage connections to the installation using proprietary adaptors. Alternatively for infiltration systems use flange adaptors and attach them to the AquaCrate units with self tapping screws. For attenuated systems, it is recommended that all connections and air vent installations are achieved using sealed drainage connections into a preformed socket using proprietary seals "top hats" available to order.

8/. Backfill around the installation with Type 1 or 2 sub base, compacting in 150mm layers, in accordance with the Specification for Highway Works.

9/. Place a 75mm sharp sand protection layer if required over the top of units and continue to backfill as follows:

*For trafficked areas (car parks etc):*

Type 1 or 2 sub base material compacted in 150mm layers in accordance with the Specification for Highway Works. Compaction equipment on top of the system not to exceed 2,300kg per sq.metre.

*For landscaped and non-trafficked areas:*

Selected "as dug" material with a unit size no more than 75mm compacted to 90% maximum dry density. Compaction equipment on top of the system not to exceed 2,300kg per sq.metre.

10/. Finalise the pavement construction / landscaping over the Aquacrate system.

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# Pennine AquaCrate

## Loadbearing underground water storage/attenuation system

### The Advantages of AquaCrate

- # Assembled ready to install with up to 72M<sup>3</sup> on a full load
- # Available in different configurations to meet specific load requirements
- # Available with high load-bearing capability able for HGV traffic
- # Simple and fast to install with 2.5 units per M<sup>3</sup>
- # Modular size of 1m x 1m plan x 400mm height ensures great versatility in both size and shape of storage
- # Lightweight units under 20kg removes need for mechanical handling



### The Principle

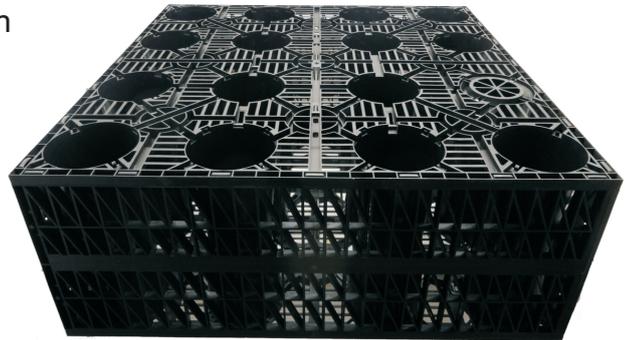
- # For permeable infiltration schemes, AquaCrate units should be wrapped in a non-woven needle punched geotextile which allows water discharge through the subsurface whilst preventing the ingress of soil or sand particles
- # For water storage, a impermeable geomembrane is used between the geotextile and the crate assembly

### Why use Aquacrates?

- # Prevents extreme peak flows to main drainage and water purification systems
- # Rainwater is "cleaned" by the geotextile surround
- # Decreases possibility of flooding during heavy rain falls
- # Allows development of difficult sites by using attenuation / water storage
- # Decreases environment problems caused by development
- # For water storage for subsequent use in toilets, watering plants, cleaning vehicles and other grey water usages

### Design

- # Following assessment of the required water to be stored (see CIRIA C522, R156 & BRE 365) the total number of Aquacrate units can be calculated using 2.5 /m<sup>3</sup> (1000 litres).  
Decide on the best configuration for the characteristics of the site in question and create the "box" accordingly using the length and width dimensions allowing for a 95% void ratio.
- # Aquacrate is suitable for landscaped and car park areas as well as heavier duty use.  
As a guide, units require a minimum 0.5m of cover in landscaped areas and 0.75m cover in vehicular areas and need 75mm sharp sand base.



#### PRODUCT DATA

	AquaCrate400
NOMINAL SIZE	1000 x 1000 x 400mm
CAPACITY	400Litres(2.5 per cu.metre)
UNIT WEIGHT	16kg
VOID RATIO	95.5%
COMPRESSIVE STRENGTH	>200+KN/m <sup>2</sup>

Made in UK from strong copolymer polypropylene

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