

AQUAVOID

Stormwater Management



The Concept

SCS AQUAVOID is a stormwater storage unit which has been designed for rapid assembly of an underground structure as part of a Stormwater Management System. Developed specifically to meet the needs of sustainable urban drainage systems, SCS AQUAVOID allows stormwater runoff to be stored temporarily and then released either through infiltration into the sub-strata or released as part of an attenuation scheme designed to reduce the impact of flow on adjacent sewer systems.

The Product

SCS AQUAVOID is an extremely strong polypropylene water permeable modular unit with a volume of one third of a cubic metre (1m x 1m plan by 1/3m height) which, through the use of inter-connecting clips, enables rapid construction of both large and small storage capacities whilst retaining the flexibility required by many schemes. Constructed of "wine box" style interconnecting panels together with integral pipes SCS AQUAVOID is capable of withstanding very high loadings making it the ideal choice for retaining stormwater for SUDS applications.

SCS AQUAVOID is available in three main configurations: SCS AQUAVOID STANDARD, with a very high load bearing capability from 600kN/m², designed to meet most requirements; SCS AQUAVOID LITE, with a lower load bearing capability of 200kN/m², designed for domestic & developer use; SCS AQUAVOID BESPOKE, designed to specific requirements for extra heavy duty use.



Applications

SCS AQUAVOID is ideal for bulk storage of stormwater in both attenuation and infiltration schemes. Buried at least 0.5m below the surface the extreme traffic loading capability makes it ideal for amenity areas and even under car parks and HGV areas.

Product Data

NOMINAL SIZE	1.0m (L) x 1.0m (W) x 1/3m (H)
COVERAGE RATE	3 /m ³
CAPACITY	333 litres
UNIT WEIGHT	17.8 kg (Standard), 15.1 kg (Lite)
VOID RATIO	95.0%
COMPRESSIVE STRENGTH	600kN/m ² (Standard), 200kNm ² (Lite)
Please contact us directly to see how Aquavoid® can meet your stormwater management design requirements.	



The Advantages of SCS AQUAVOID:

- Assembled ready to install with up to 80 m³ on a full load
- Available in different configurations to meet specific requirements
- Very high load bearing capability capable of withstanding HGV traffic
- Simple and fast to install with 3 units per m³
- Modular size of 1m x 1m plan x 1/3m height ensures great versatility in both size and shape of storage
- Small modular height (1/3m) allows use with high water tables
- Standard connectivity with both 110 or 160 mm connections
- Lightweight units of under 20kg obviates need for mechanical handling

The Principle

For permeable infiltration schemes SCS AQUAVOID units are wrapped in a 180g non woven, needle punched geotextile (SCS GT1900) which allows water discharge through the subsurface, but does not allow the ingress of soil or sand particles.

For attenuation schemes SCS AQUAVOID units are enveloped in a fully welded geomembrane (SCS GM FPP1.0) that is sandwiched between two layers of SCS GT 1900 geotextile fleece to protect it against penetration by foreign objects.

Why use SCS AQUAVOID?

- Prevents extreme peak flows to main drainage and water purification systems
- Rainwater is "cleaned" by the geotextile surround
- Decreases inconvenience of flooding during heavy rain falls
- Allows development of difficult sites by use of attenuated storage
- Decreases environment problems caused by development

Design

Following detailed assessment of the required volume of stormwater to be stored (see CIRIA C522, R156 & BRE 365), the total number of SCS AQUAVOID units can be calculated using approx. 3/m³ (1,000 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.

SCS AQUAVOID is suitable for landscaped and car park areas as well as heavier duty use. As a guide, units require approx 0.5m of cover in landscaped areas and 0.75m cover in vehicular areas with a 75mm sharp sand base.

For full design & installation details see separate literature.

Design Procedure:

1. Decide system application: determine whether its porous paving & whether its attenuation of infiltration.
2. Decide on the location and quantity of storage systems: locate the best site position to minimise excavation and pipe runs (normally at low point in site).
3. Decide on the surfacing required above the storage structure: parking or leisure area etc. as this will decide the required loading strength of the units.
4. Calculate the required capacity: this is based on storm intensity, duration, porosity of soil, EA restrictions etc.
5. Calculate the quantity of SCS Aquavoid units: based on 3 per m³.
6. Based on the depth of SCS Aquavoid of 1/3m³ mm calculate the dimensions of the tank that best suit local site conditions.
7. Decide on silt trap positions and inflow locations: water entering any storage device is best passed through a silt trap prior to storage.
8. Decide on outflow locations, if required (attenuation systems): these should be at the base of the units for attenuation systems and should be of a size required to suit the outflow requirements.
9. Select SCS Aquavoid liner: If a permeable infiltration system is required choose a single layer of SCS GT1900 180g needle punched non woven type. If an attenuated system is required a Geomembrane (SCS GM FPP1.0) would envelope the units with a SCS GT 1900 protective fleece under and around it.
10. Decide on the position of maintenance access: although systems of this type require virtually no maintenance, it is advisable to provide for visual inspection to all types of system.
11. For attenuated systems decide on the position of a vent: this can be a simple 100mm diameter pipe for each 5,000m² of drained area.

Aquavoid Clips:

Special clips are provided to join adjacent units together to prevent displacement during the backfilling operation. There are two types of clip: a single clip is used for adjacent units at a rate of one for each side of the Aquavoid. A double clip is also provided for multi-layer applications and these should be positioned around the periphery units (minimum 1 per unit) and the next layer simply dropped into place on top and pushed home.



Specification Clause

To assist in the correct specification of the SCS Aquavoid stormwater retention system we would suggest the following clauses:

Clause

The Stormwater retention system shall be SCS Aquavoid as supplied by Source Control Systems Ltd.. Units shall be manufactured from polypropylene and be 1/3m deep and have a plan area of 1.0 m x 1.0 m with a void ratio not less than 95%. Standard units shall have a vertical loading capability of not less than 600kN/m².

For more specification information relating to geotextiles and geomembranes please refer to individual data sheets.



Product manufactured in the UK

Information contained herein is subject to change without notice. Customers should check with SCS to ensure that they have the latest details. Liability in respect of any statements, conditions, warranties and representations made on behalf of SCS is limited in accordance with the terms set out in the Standard Conditions of Sale.

Lit. Ref. SCS/6C: 1.08.1k

Pre-installation notes:

For attenuation systems: generally position the inflow and outflow connections level with the base of the SCS Aquavoid structure.

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

Installation Instructions:

1. Excavate to the required length, width and depth and level the base. Ensure area is enough to allow plant access around sides to compact the backfill material (500mm minimum). Ensure base is smooth and level with no sharp protrusions. Cut back slopes to a safe angle or adequately support and allow safe access for site personnel.
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 attenuation) 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. Cover this with a second geotextile layer sandwiching the geomembrane.
5. Install the SCS Aquavoid units (1 m x 1 m x 1/3m) within the void in accordance with the installation instructions supplied. Arrange the units so that the pre-formed sockets are in correct alignment with the inlet and outlet pipes. In multi-layer installations use the special clips provided to secure the units against accidental displacement around the edges of the structure.
6. Complete the geotextile and/or geomembrane encapsulation to the sides and top of the installation, ensuring 150mm minimum overlap for the protection fleece. The geomembrane should be welded with double seams and inspected for damage, testing the welds as required.
7. Make drainage connections using proprietary adaptors. Ensure that the pre-formed socket positions are located correctly to receive the pipe-work. Alternatively for infiltration systems use flange adaptors and attach them to the Aquavoid units with self tapping screws. For attenuated systems, it is recommended that all connections and air vent installations are installed using sealed drainage connections into a preformed socket with proprietary seals (available to order).
8. Backfill the sides of the installation with Type 1 or 2 sub base, compacting in 150mm layers, in accordance with 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 metre width.

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 metre width.

10. Finalise pavement construction/landscaping over the SCS Aquavoid system.

Complementary product ranges presently offered by Source Control Systems include:

SCS Agrablock - Medium Duty Porous Paving
SCS Integra - Medium / Heavy Duty Porous Paving
SCS GT GeoTextiles
SCS GM GeoMembranes
SCS Rainwater Harvesting Systems
SCS Smart Sponge - Hydrocarbon Removal Systems



For more Information about SCS, its product portfolio and specialised services, please contact:

Source Control Systems Ltd.
Clay House
5 Horninglow Street
Burton Upon Trent
Staffordshire
DE14 1NG
T (01283) 509021
F (01283) 562941
E mail@sourcecontrol.co.uk
Website www.sourcecontrol.co.uk