



Eldon Street,
Preston

Type of System: Stormwater Attenuation

Date of Installation: May 2012

Tank Size: 17.67m³

Site Problem:

A new housing development at Eldon Street in Preston required a stormwater attenuation tank. Restrictions on site discharge led to the development of an alternative drainage solution that would allow stormwater runoff from the site to be attenuated, prior to entry into the existing stormwater mainline system. After discussions with the design team it was decided that an attenuation tank would be the most ideal solution.

Project Requirements:

The attenuation tank was to be placed beneath an access road with between just 870mm and 1020mm of cover. The tank needed to be big enough to provide enough storage, as well as being strong enough to meet the maximum 10 tonne load allowed on British roads (identified in C680 as full HA loading for main roads). The project engineers were keen to ensure that these issues had been properly investigated through loading calculations.



VERSAVOID

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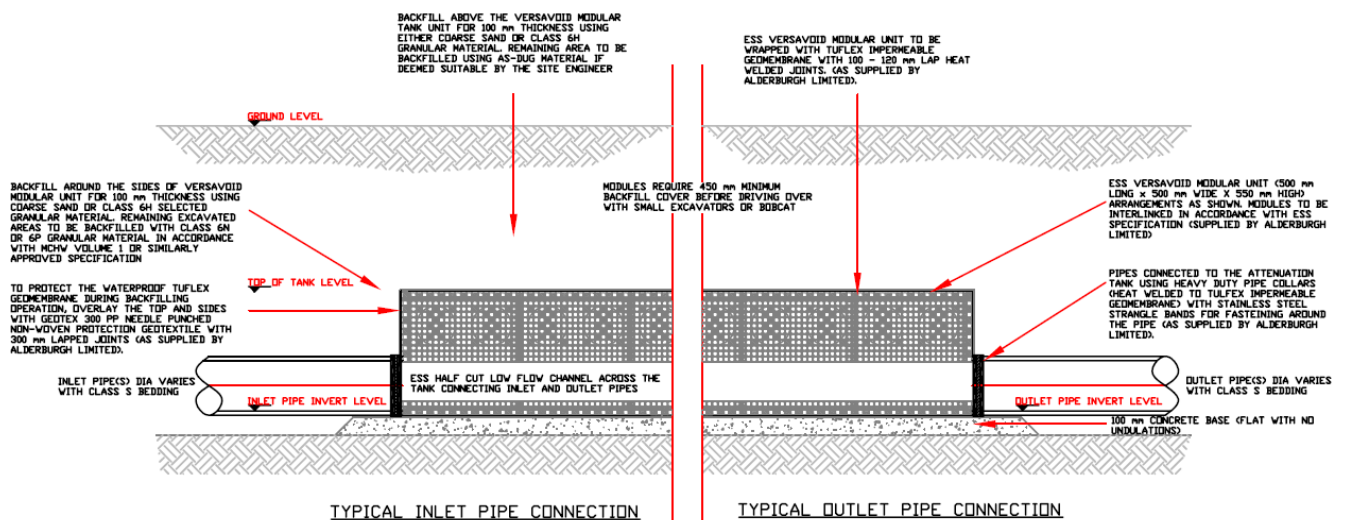
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TYPICAL DETAILS OF ATTENUATION TANK USING
VERSAVOID MODULAR UNITS



Eldon Street, Preston

ESS Solution:

ESS specified a modular VersaVoid tank to provide a completely open and unified tank structure. The tank provided a 96% void ratio, which at 17.67m³ provided 16.96m³ of stormwater storage, making the VersaVoid a very economical option.

In comparison to other stormwater attenuation systems available, VersaVoid was more than structurally capable of providing the load bearing capabilities needed. Its loading strength of 320kN/m² and lateral strength of 120kN/m² far outweighed the competitors on the market.

Furthermore, the VersaVoid tank was fitted with access points should inspection or maintenance needed to be carried out at a later date. Due to the modular construction of VersaVoid, the installation times were significantly shorter than those of other products.



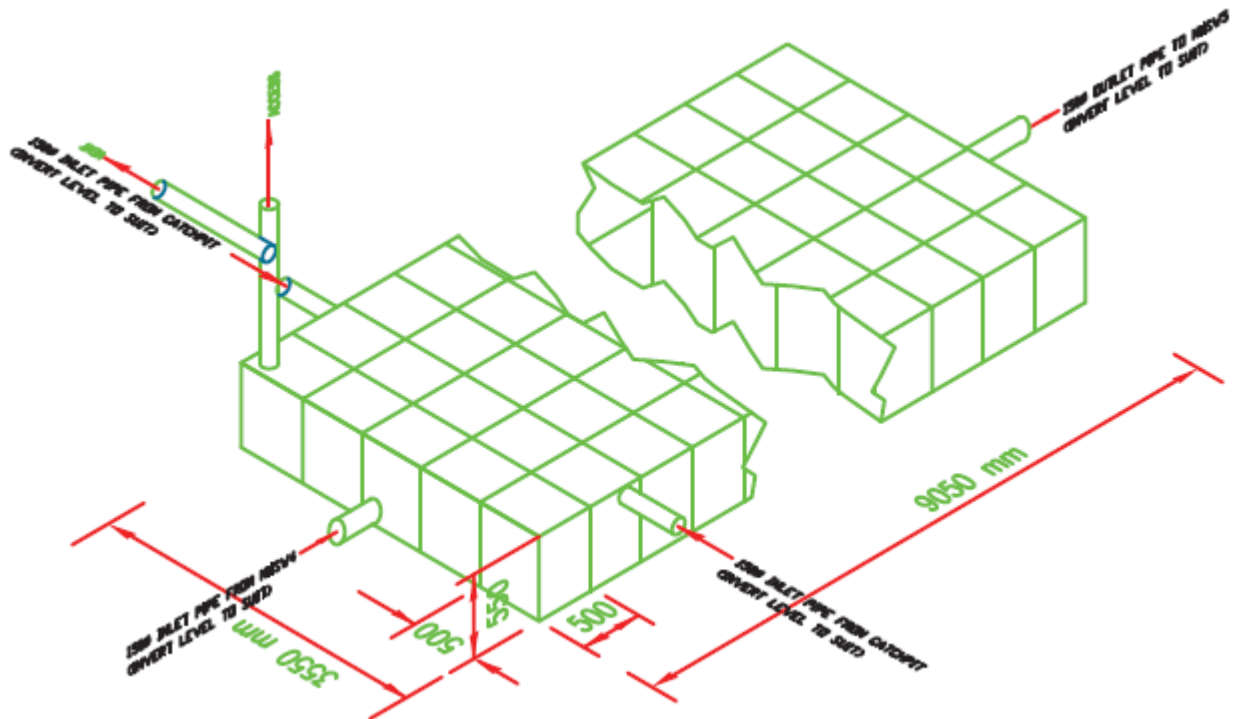


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Special Considerations: Tank

Configuration: 9.05m x 3.55m x 0.55m

$$= 17.67\text{m}^3$$



The relatively small size of the attenuation tank still provided enough storage and compressive strength for the site's needs



Eldon Street, Preston

Specialist Considerations: Loading Compliance

Due to VersaVoid being independently tested according to CIRIA guidelines (and by two separate institutions), ESS were able to provide all of the specified test data. The information provided complied with all the necessary documentation such as CIRIA C680, 609 and 697. All tests (including compressive strength, lateral strength and long term creep tests) complied with CIRIA guidelines as outlined in CIRIA C697 and following defined methodology outlined in C680. On top of this, ESS supplied its own in-house test data.

VersaVoid is capable of bearing the full five tonne load, which is the maximum load for roads in Britain. This meant that, although the size of the tank was a small one, it was easily able to satisfy the engineer's requirements.

ESS also supplied the loading calculations for the VersaVoid tank to the engineer in order to further satisfy their requirements, which proved that the tank had more than enough compressive strength to deal with all legal load bearing possibilities.

Summary:

- VersaVoid provided a design that met all of the stringent requirements set by the engineer including CIRIA requirements for both loading and access.
- Despite the small size of the tank, VersaVoid was still able to provide a huge void ratio of 96% as well as providing the compressive strength to deal with all load bearing requirements.
- Fitted to the VersaVoid tank were access points, which allowed for maintenance and inspection to take place at a later date.
- Due to VersaVoid's modular construction, installation times were greatly reduced in comparison with other products.

