

Maximum Depth from Cover Level to Soffit of Pipe 3.0 m



Depth from Cover Level to Soffit of Pipe 3 m to 6 m

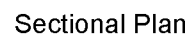


DEPTH FROM GROUND LEVEL TO SOFFIT OF PIPE 1.0m TO 1.45m



Not to scale, dimensions in millimetres

FIGURE B.14



Nominal diameter (mm)	Maximum effective length (m)
150 - 600	0.6
601 - 750	1.00
over 750	1.25

ALL DRAINAGE PIPEWORK MATERIAL UP TO 300mm TO BE VITRIFIED CLAY, HIGH STRENGTH. ABOVE 300mm TO BE HIGH STRENGTH CONCRETE

IMPORTANT NOTE:
ALL WORKS TO
ADOPTABLE SECTION 104
SURFACE WATER AND
FOUL WATER SEWERS
WILL BE AT RISK UNTIL
SECTION 104 TECHNICAL
APPROVAL

PIPE BEDDING MATERIAL:
ANGULAR AGGREGATE OF 10, 14, 20 OR 40mm
CRUSHED ROCK TO BS882 OR 14-5mm, 20-5mm
OR 40-5mm GRADED AGGREGATE MAY BE USED

150 mm

150 mm

BC

BC x 300 mm

FOR USE WHERE COVER TO CROWN OF PIPE IS GREATER THAN 900mm
UNDER VERGES, FOOTWAYS & CYCLEWAYS

FOR USE WHERE COVER TO CROWN OF PIPE IS GREATER THAN 900mm
UNDER VERGES, FOOTWAYS & CYCLEWAYS

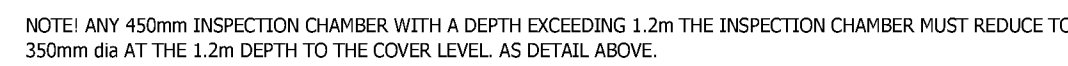
FOR USE WHERE COVER TO CROWN OF PIPE IS GREATER THAN
1200mm UNDER CARRIAGEWAYS

FOR USE WHERE COVER TO CROWN OF PIPE IS GREATER THAN
1200mm UNDER CARRIAGEWAYS

FOR USE WHERE COVER TO CROWN OF PIPE IS LESS THAN 1200mm UND
CARRIAGEWAYS, OR LESS THAN 900mm UNDER OTHER AREAS

FOR USE WHERE COVER TO CROWN OF PIPE IS LESS THAN 1200mm UND
CARRIAGEWAYS, OR LESS THAN 900mm UNDER OTHER AREAS

URUM DISTRICT COUNCIL LU3821/DOC



PLAN

GULLY GRATING AS SAINT
GOBAIN REF 187126
Waterflow C250 Pedestrian
325mm x 312mm Clear opening

SECTION

KERB

1 OR 2 COURSES OF
ENGINEERING BRICKS.

300# X 610mm DEEP NAYLOR CLAY ROAD
GULLY WITH RODDING EYE & STOPPER.

150# STRAIGHT PIPE OR BEND TO
ACHIEVE REQUIRED DEPTH.

150mm CONCRETE SUBROUND TO BE
PROVIDED BEFORE BRICKWORK COURSES
ARE CONSTRUCTED.

OPTIONAL
BACK INLET

SEDIMENT
BUCKET

Dimensions: 110, 150, 250, 510

STANDARD MANUFACTURERS ACCESS COVER IN FOOTPATH/VERGE AREAS, OR C250 DUTY COVER IN VEHICULAR TRAFFICKED AREAS

SHALLOW INSPECTION CHAMBER WITH 250mm □

600 MAXIMUM

100mm BED OF SUITABLE GRANULAR MATERIAL...

250mm □/300mm □

170x170 SQUARE BLACK POLYPROPYLENE TOP

400mm SQUARE CONCRETE SURROUND TO GULLY TOP

385 DEEP GULLY WITH 100mm OUTLET AS NAYLOR (CODE 19318) OR SIMILAR APPROVED.

SURFACE FINISH AS EXTERNAL WORKS LAYOUT

GROUND LEVEL

REMOVABLE TRAP

100mm PIPE OR BEND

150mm CONCRETE SURROUND

TL OF OUTLET 263mm BELOW GROUND LEVEL

FOR USE IN PEDESTRIAN AREAS OR OTHER AREAS NOT ACCESSIBLE TO HEAVY VEHICLES & FORK LIFT TRUCKS.

GRANULAR BEDDING (TYPE A)
CAREFULLY COMPACTED

TERRAM 500 MEMBRANE
SURROUND

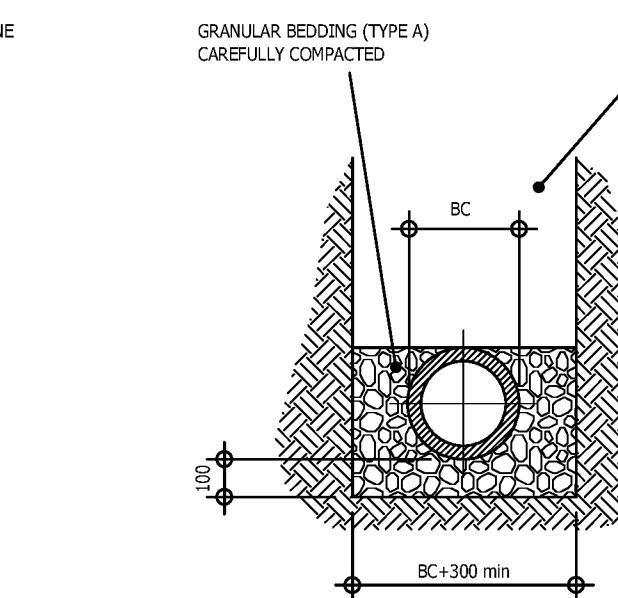
BC

150

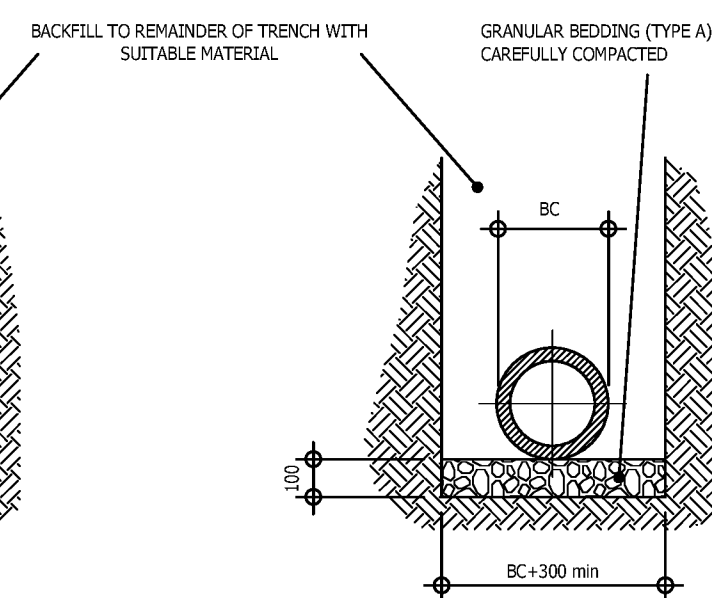
150

BC + 300 mm

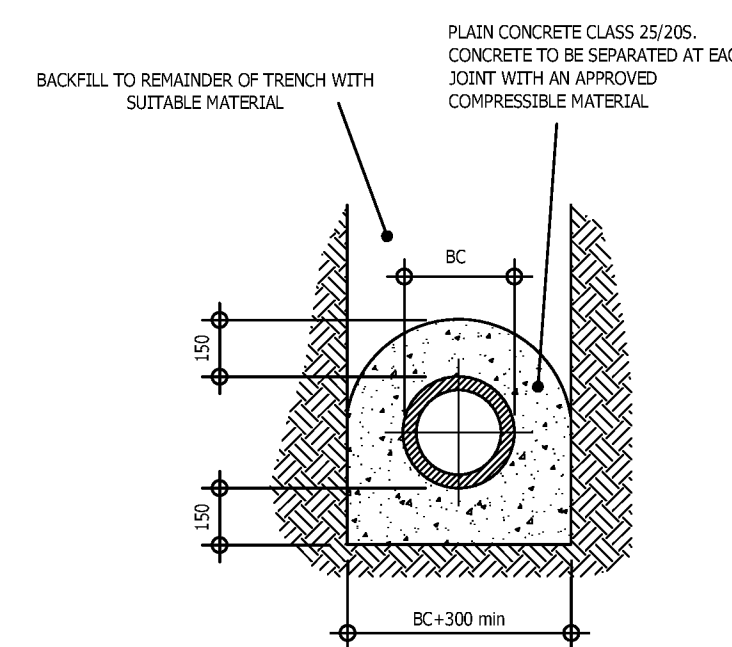
TO BE USED WHERE PIPE PASSES WITHIN 3M OF NEW OR
EXISTING TREES UNLESS PIPE REQUIRED CONCRETE
SURROUND



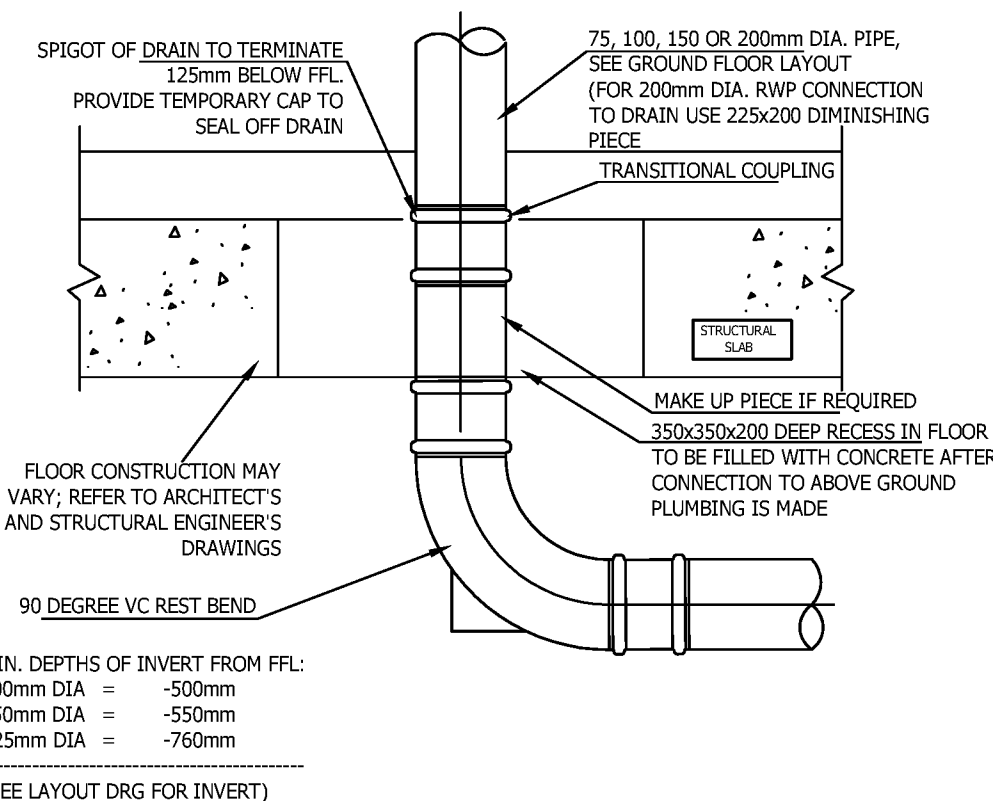
TO BE USED WHERE COVER TO CROWN OF PIPE IS GREATER THAN 900mm
UNDER ROADS, FOOTWAYS & HARDSTANDINGS



TO BE USED WHERE COVER TO CROWN OF PIPE IS GREATER
THAN 600mm IN LANDSCAPED AREAS



TO BE USED WHERE COVER TO CROWN OF PIPE IS LESS THAN 900mm
UNDER ROADS, FOOTWAYS & HARDSTANDINGS AND LESS THAN 600mm IN
LANDSCAPED AREAS



GENERAL NOTES

1. The location, size, depth and identification of existing services that may be shown or referred to on this drawing have been assessed from non intrusive observations , record drawings or the file. The contractor shall safely carry out intrusive investigations, trial holes or soundings prior to commencing work to satisfy himself that it is safe to proceed and that the assessments are accurate. any discrepancies shall be notified to gta prior to works commencing.
2. Tender or billing drawings shall not be used for construction or the ordering of materials.
3. Do not scale. All dimensions and levels to be site confirmed.
4. This drawing shall be read in conjunction with all relevant architects, consultants drawings and specifications, together with H&S plan requirements
5. Copyright : This drawing must not be copied, amended nor reproduced without the prior written agreement of gta.
6. All drawings specifications and recommendations made by gta are subject to Local Authority and other relevant Statutory Authorities approval. Any works or services made abortive due to the client proceeding prior to these approvals is considered wholly at the Clients risk. gta hold no responsibility for resulting abortive works or costs.

FINISHED GROUND LEVEL

AND DRAIN SURROUNDED WITH 20mm SINGLE SIZE GRANULAR MATERIAL AND WRAPPED IN A LAYER OF TERRAM TYPE 1000 OR SIMILAR GEOTEXTILE MATERIAL WITH 200mm LAP

POLYPROPYLENE FLEXIBLE LAND DRAIN, TO DIAMETER SPECIFIED ON CONTRACT DRAWINGS.

150

*OD

150

150 *OD 150

**INSTALLATION EXAMPLE
BRICK PAVING**

PROTECT TRANSDUCER
EXPOSED CONTROL JOINTS
PAVING BLOCKS

TAPE JOINT BETWEEN FRAME & CHANNEL TO ISOLATE JOINT

BEDDING SAND OR GRAVEL

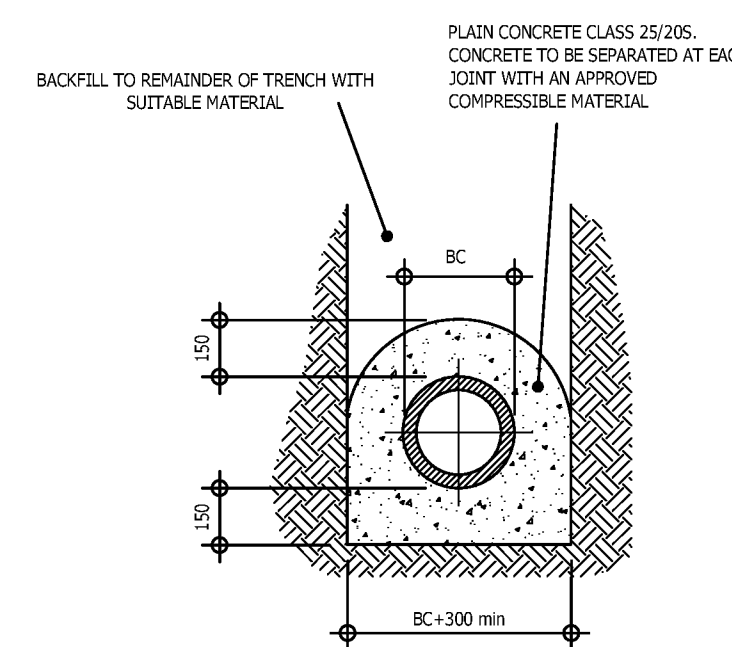
BRICK 100 CHANNEL

MIN GRADE C/S BED & WALL/CUT

Min 200mm

NOTE:
ASSEMBLE THE FRAME & GRATING BEFORE INSTALLING & SECURING TO THE WALL.

RODDING POINT SHALLOW DRAIN RUN
D213.1



TO BE USED WHERE COVER TO CROWN OF PIPE IS LESS THAN 900mm
UNDER ROADS, FOOTWAYS & HARDSTANDINGS AND LESS THAN 600mm IN
LANDSCAPED AREAS

GENERAL NOTES

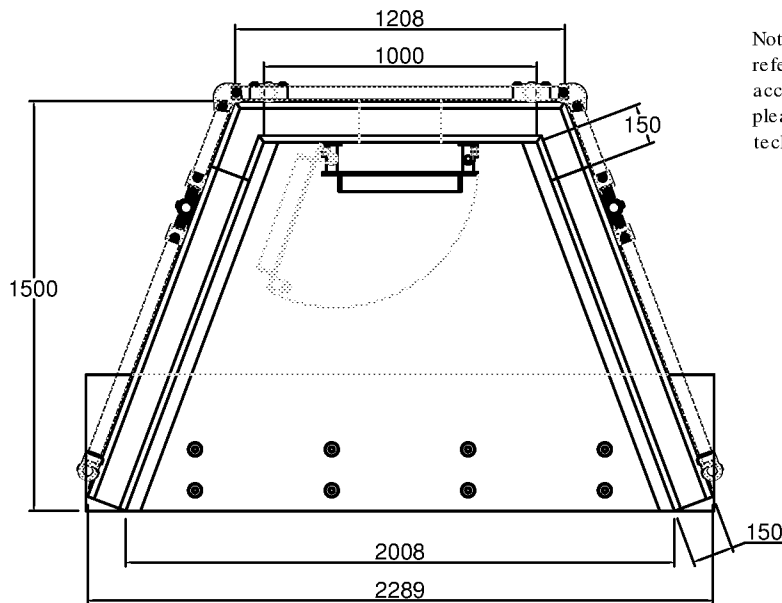
1. The location, size, depth and identification of existing services that may be shown or referred to in this drawing have been assessed from non intrusive observations , record drawings or the like. The contractor shall safely carry out intrusive investigations, trial holes or soundings prior to commencing work to satisfy himself that it is safe to proceed and that the assessments are accurate. any discrepancies shall be notified to gta prior to works commencing.
2. Tender or billing drawings shall not be used for construction or the ordering of materials.
3. Do not scale. All dimensions and levels to be site confirmed.
4. This drawing shall be read in conjunction with all relevant architects, consultants drawings and specifications, together with H&S plan requirements
5. Copyright : This drawing must not be copied, amended nor reproduced without the prior written agreement of gta.
6. All drawings specifications and recommendations made by gta are subject to Local Authority and other relevant Statutory Authorities approval. Any works or services made abortive due to the client proceeding prior to these approvals is considered wholly at the Clients risk. gta hold no responsibility for resulting abortive works or costs.

T1	INITIAL ISSUE	20.11.20	SDL	MR	
Rev	Amendments	Date	Dsn	Cnk	
Status TENDER					
Client  PERSIMMON Together, we make a home <u>PERSIMMON HOMES - THAMES VALLEY</u>					
Architect					
Project TODDINGTON LANE LITTLEHAMPTON - PHASE 4					
Title DRAINAGE DETAILS					
Date	NOV 2020		Scale @ A1	NTS	
Base Layout Ref.		CAD File ref.			
Clients Ref.		Project Ref. 10952			
 Gloucester House, 66a Church Walk, Burgess Hill, West Sussex, RH15 9AS Tel: 01444 871444 Web: www.gtacivils.co.uk					
Drawing Number 10952/1700				Rev. T1	

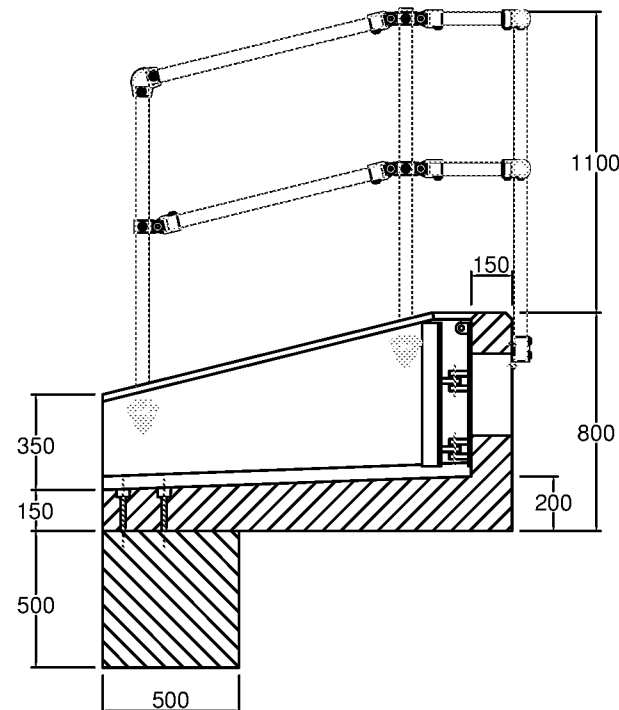
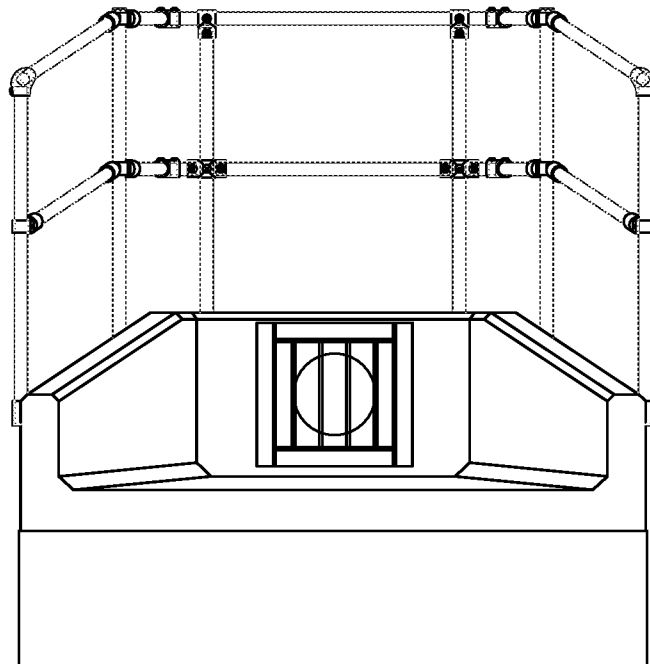
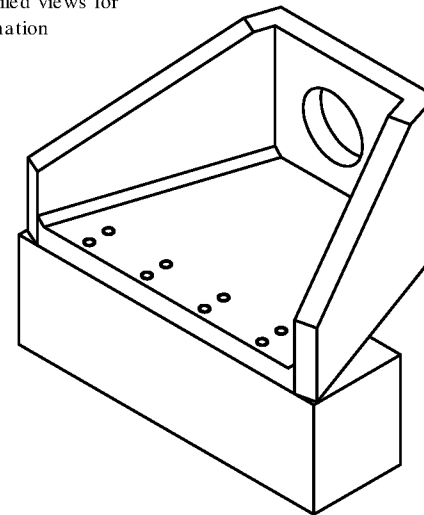
PIPE BEDDING DETAILS (Scale 1:20)

GRANULAR BEDDING TYPE A - SHALL CONSIST OF AGGREGATES FROM NATURAL SOURCES OR SINTERED PULVERISED FUELSH COMPLYING WITH THE RELEVANT PROVISIONS OF BS 882 AND BS 3797 PART 2 RESPECTIVELY. TO BE SIZED ACCORDING TO PIPE DIAMETER TO APPROVED DOCUMENT H OF THE BUILDING REGULATIONS -
5mm TO 10mm SIZE MATERIAL FOR 100mm PIPES, 14mm FOR 150mm PIPES & 20mm FOR PIPES 150-600mm.

UN DISTRICT COUNCIL LU38821/DOC



Note: Isometric drawing is for reference only, details may not accurately represent actual design - please see detailed views for technical information



DO NOT SCALE DRAWING

NOTES:

- All dimensions in mm
- All measurements ± 1 mm

Specification Information

- Opening in back wall cast to suit outside diameter of the pipework
- Invert level of pipe can be set to your specification

Headwall Installation

Units should be bedded on minimum 150mm thick well compacted Class 6A* selected well graded granular material.

*Manual of contract documents for Highway Works: Volume 1 (MCHW1) specification for Highway Works, Series 600 (Nov.09).

Sit the headwall level or with a slight fall 1:50 from pipe to spill mouth.

Material: Reinforced concrete

Kee Klamp Specification Information

- Galvanised steel kee klamp handrail
- 1100mm high above back wall

GRP / FRP hand rails also available

Sewers for Adoption / Sewers for Scotland Outfall Safety Grille - SFA1 300

1. In accordance with Figure C.6 Typical Outfall Safety Grille - for outfalls of 350mm diameter of greater - Sewers for Adoption 7th Edition
2. Material Grade is to be: BS EN 10025 S275
3. All mild steel to be hot dipped galvanized after fabrication
4. Galvanizing to BS EN: 1461
5. Welding to BS EN 1011-2:2001
6. Hinged on one side with padlock facility
7. Weight Approx: 37.5kg

REV NO:	DATE:	DESCRIPTION:



ADDRESS: ALTHON LIMITED
VULCAN ROAD SOUTH
NORWICH
NR6 6AF

TEL: 01603 488700
FAX: 01603 488598
EMAIL: sales@althon.co.uk
WEBSITE: www.althon.co.uk

PROPRIETARY & CONFIDENTIAL

The information contained in this drawing is the sole property of Althon Limited. Any reproduction in part or as a whole without the written permission of Althon Limited is strictly prohibited.

DRAWING TITLE:

SFA10A Headwall
500 x 500mm Toe
SFA1 300 Outfall Safety Grille
3 Sided Kee Klamp

CLIENT:

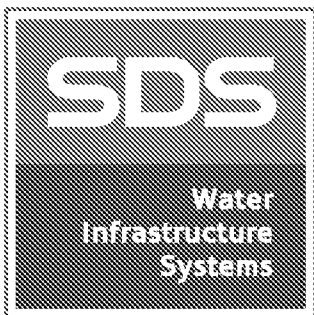
SCALE:	PAPER:	DATE:
NTS	A4	04 - 04 - 18

SHEET NO:	WEIGHT:
01 OF 01	1900kg +1380kg Toe

PRODUCT NAME:

SFA10A

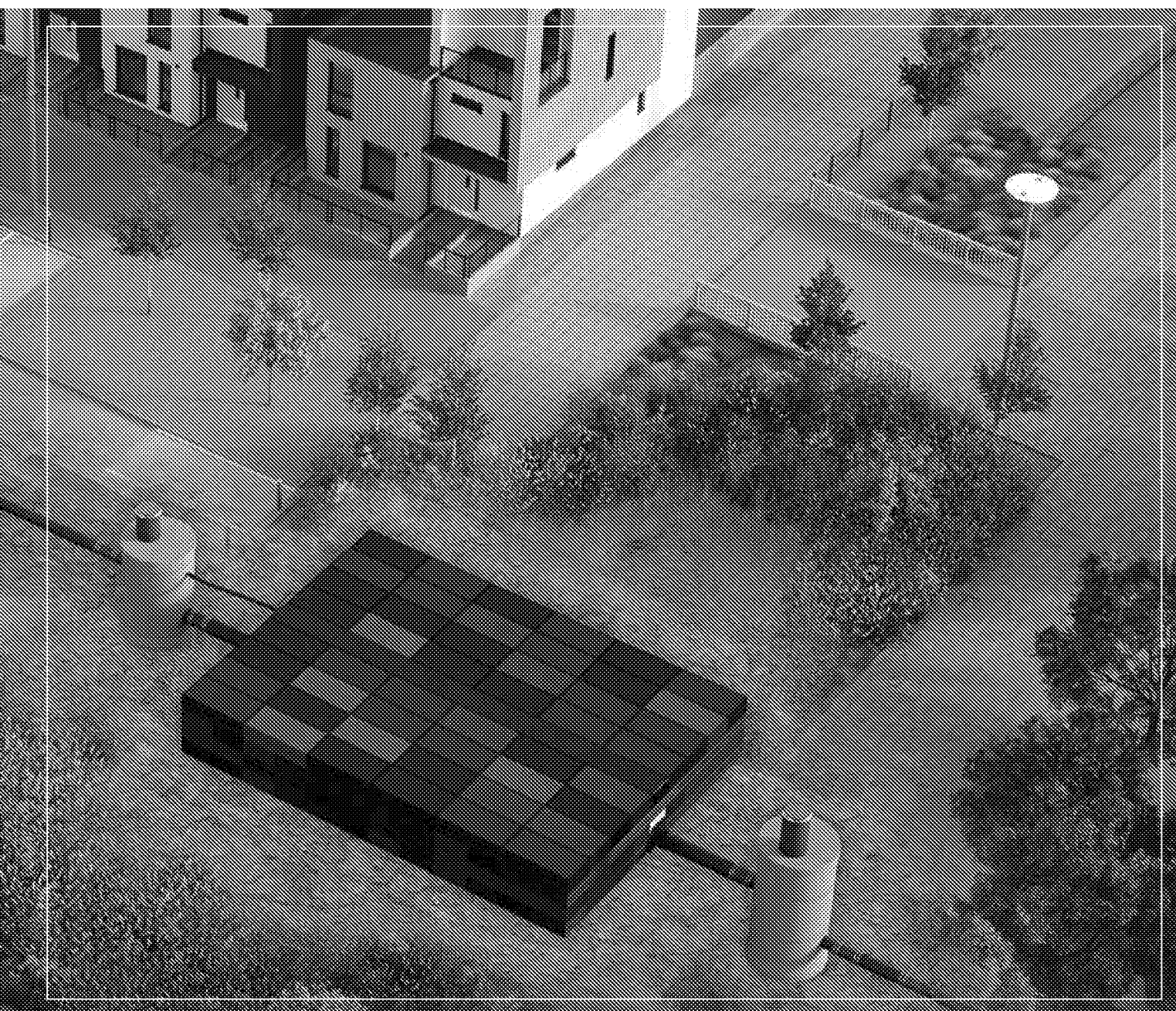
DRAWING No:



INNOVATORS IN
WATER TECHNOLOGY

SDS GEOLight®

Stormwater Management System



SDS GEOLight® is an ultra lightweight honeycombed modular structure, made from recycled PVC, that provides an underground storage facility for the application of stormwater attenuation or infiltration.



Stormwater Management

The Environment Agency is keen to promote the wider use of sustainable drainage systems, which reduce the impact of surface water runoff. There are two main ways of storing surface water for stormwater management:

- Stormwater attenuation tanks
- Soakaway infiltration systems

Stormwater Attenuation Systems

This consists of underground water storage facilities that hold excess water during periods of peak rainfall.

The stored water is gradually released in a controlled manner into the surface water drainage system or directly into watercourses, reducing the risk of upstream and downstream flooding.

Soakaway Infiltration Systems

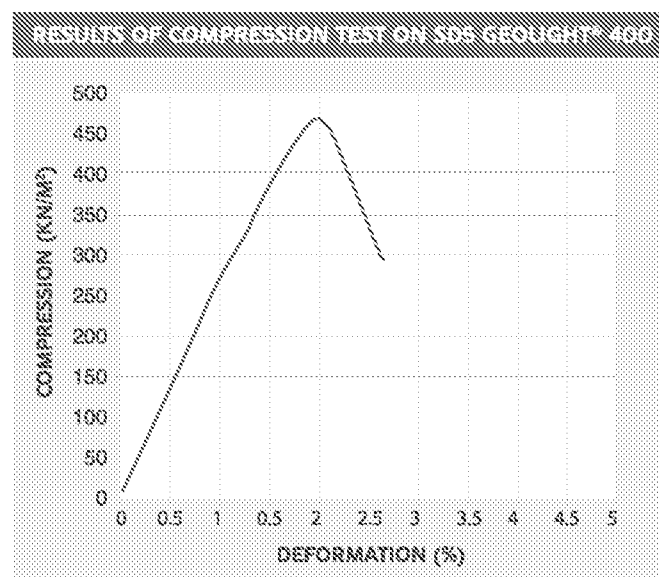
Soakaways are designed to store surface water runoff until it can be gradually absorbed by the surrounding ground.

SDS GEOLight® – an efficient and economic solution for stormwater management.

SDS GEOLight® Attenuation

SDS GEOLight® has been specifically designed to form underground water storage reservoirs in stormwater management schemes. Its honeycombed structure gives it certain unique characteristics that make it ideal for this purpose:

- The high void rate (95%) of GEOLight® means that the maximum volume of water is stored in the minimum volume of storage unit.
- High compressive strength. GEOLight® is available in two strengths as standard: 200 and 400kN/m². Note: Higher compressive strengths available from 600 to 1000 kN/m². The graph on the right shows the results of a compression test, where samples of GEOLight® 400 were compressed at the rate of 1mm per minute. The deformation at 400kN/m² is about 1.6%.



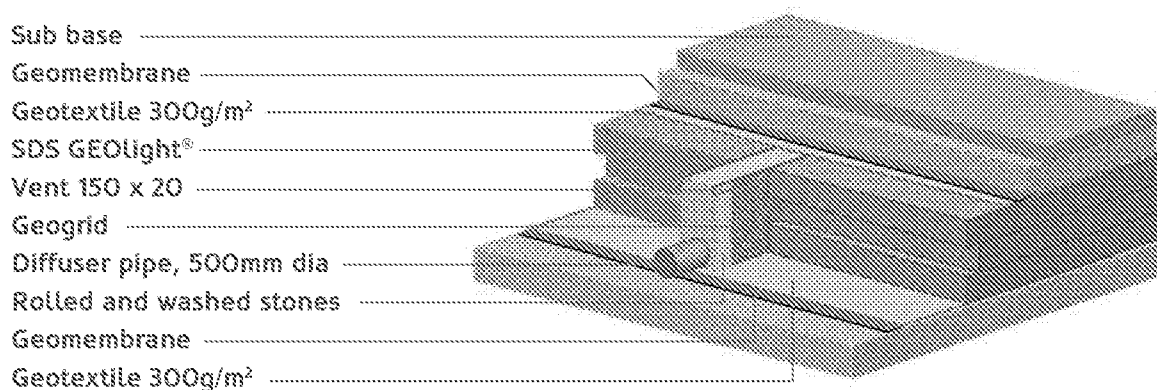
The GEOLight® Stormwater Attenuation System consists of two manholes (inspection chambers) connected by a length of perforated distribution pipe which feeds the stormwater storage reservoirs on either side formed from GEOLight®.

The distribution pipe is normally from 225mm up to 500mm diameter, generally covered in a trench that is filled with draining material such as 15/25 clean graded stone, free from fines.

The reservoirs and distribution pipe are wrapped in a waterproof membrane, such as butyl, to prevent seepage of water into the surrounding ground. The top of each GEOLight® reservoir has a vent which is connected back to the upstream manhole.

A geotextile or 10mm mesh geogrid is laid between the distribution pipe and GEOLight® to prevent the GEOLight® units being clogged by the draining materials.

SDS GEOLight® Attenuation



How does it work?

- 1. In normal conditions, water enters a back drop manhole. This is the upstream manhole and any silt or sediment will collect in the bottom of the chamber. The water then flows along the distribution pipe into the downstream manhole. The upstream pipework is sized to cope with normal flow conditions. The distribution pipe and attenuation tank are sized to cope with storm conditions. The outflow pipe is sized to cope with the permissible discharge.
- 2. In storm conditions the flow restrictor (vortex flow control or orifice plate) in the downstream manhole limits the amount of water flowing out of the manhole. This causes the water level in the distribution pipe to rise and water to spill into the GEOLight® reservoirs on either side. As the water level rises in the reservoirs, air is forced out of the high level vents into the upstream manhole.

- 3. Once the storm has passed, the water level in the GEOLight® reservoirs gradually falls as water passes through the flow restrictor in the downstream manhole. The vents now allow air to return into the GEOLight® reservoirs. Gradually the reservoirs empty. The flow restrictor prevents excess surges of flood water to pass downstream and uses the storage reservoirs to store the water for the period of the storm.

Calculating the storage capacity

The storage capacity of the GEOLight® reservoirs is determined by the maximum outflow permitted, (set by the water company or Environment Agency), the impermeable area of the site and the rainfall return period – normally 1 in 30 years, but again can be dictated by the water company. A full design service, including calculations, can be supplied via a third party consultant. **Please contact SDS for details.**

Other uses

The water storage ability of SDS GEOLight® lends itself to a number of other uses:

- Water recycling combines with irrigation systems – this is increasingly popular: GEOLight® is used to retain stormwater which is then pumped as required to a network of standpipes for irrigation.
- Drainage channels – the natural permeability of GEOLight® lends itself for use as an underground drainage channel that collects and drains away groundwater.
- Pollution control – improved water runoff quality. When used in combination with oil / petrol separators, GEOLight® can replenish groundwater without the risk of contamination from oil, chemicals or suspended solids.
- To form lightweight embankments (slope stabilisation) – GEOLight® can be used to quickly form the base of embankments that only weigh a fraction of earth embankments.

Stormwater Attenuation System

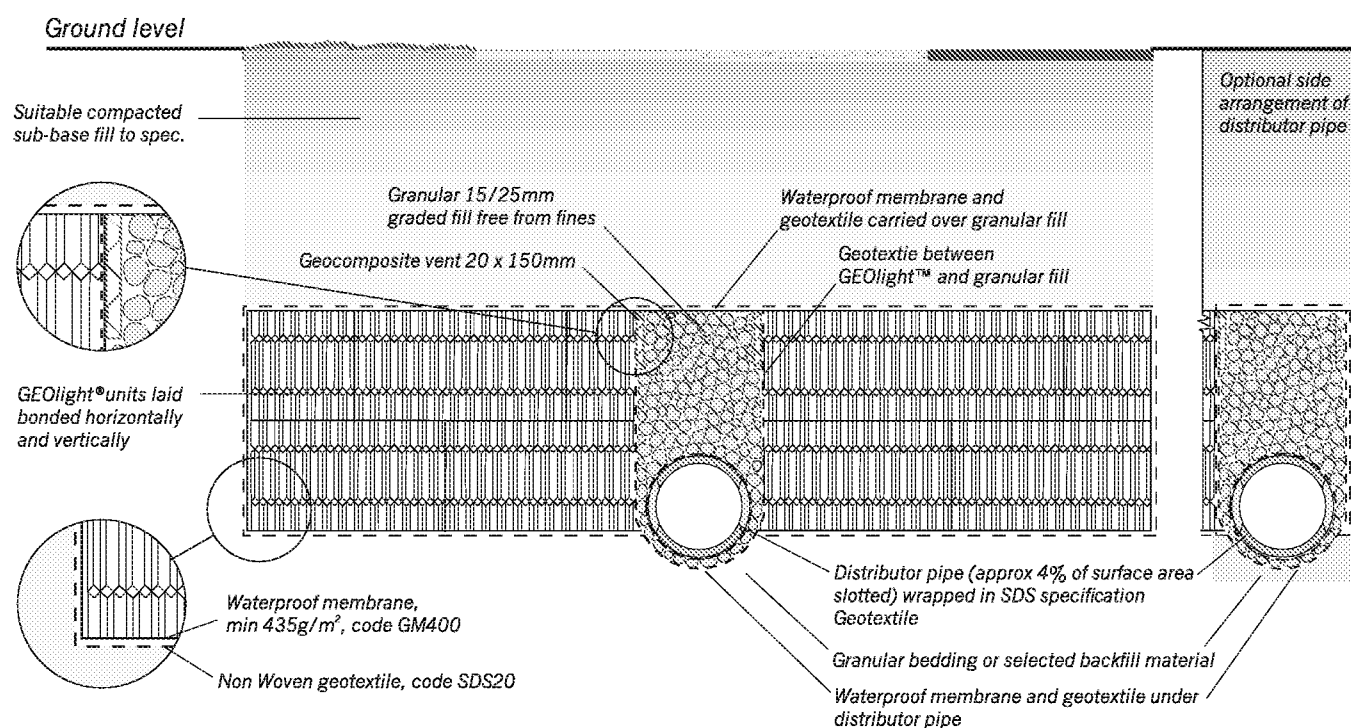
Design Details

The details on these two pages illustrate the construction of a typical SDS GEOLight® Stormwater Attenuation System. The length and height of the GEOLight® reservoirs is determined by the quantity of water to be stored.

The layout of each scheme is specifically designed to suit the characteristics and limitation of the site. Typically the distributor pipe would be arranged in the centre of the reservoir, but can alternatively be placed at the side where topographical constraints dictate.

The high performance waterproof membrane should be sealed continuously to encapsulate the GEOLight® reservoirs, distributor pipe and granular fill. It is protected by a heavyweight needle punched, non woven geotextile. To help with maintenance a high flow geotextile is placed between the granular fill and GEOLight® attenuation units to prevent silt and particles being washed into the reservoir. GEOLight® can be used under a range of surfaces e.g. grass, porous paving, standard paving block, tarmac and concrete.

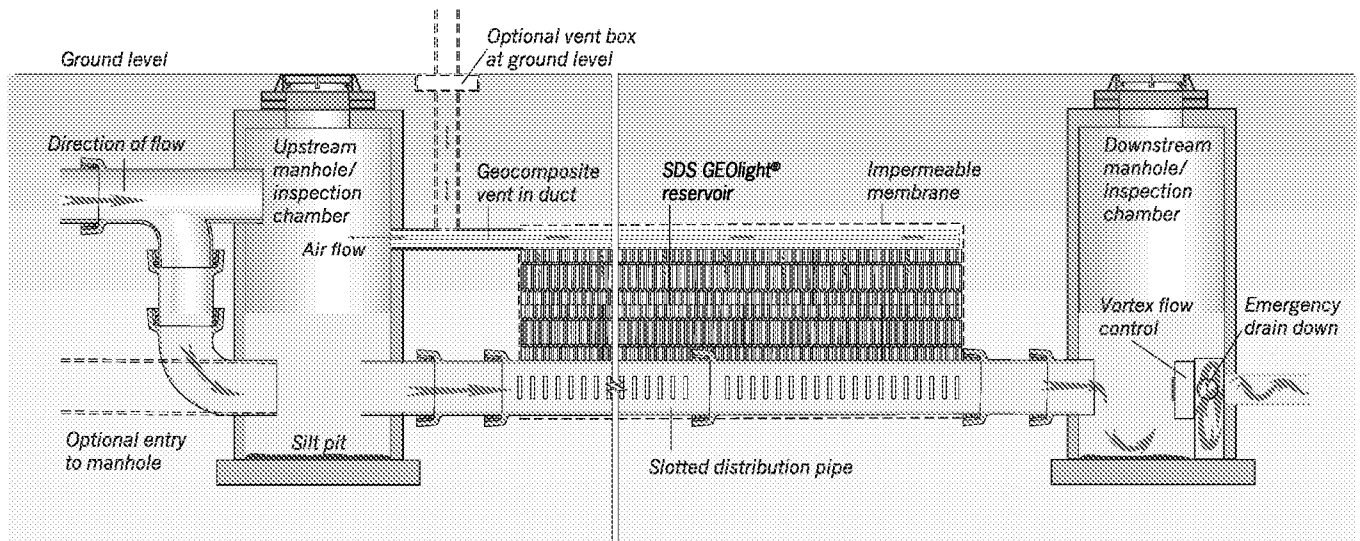
Cross Section



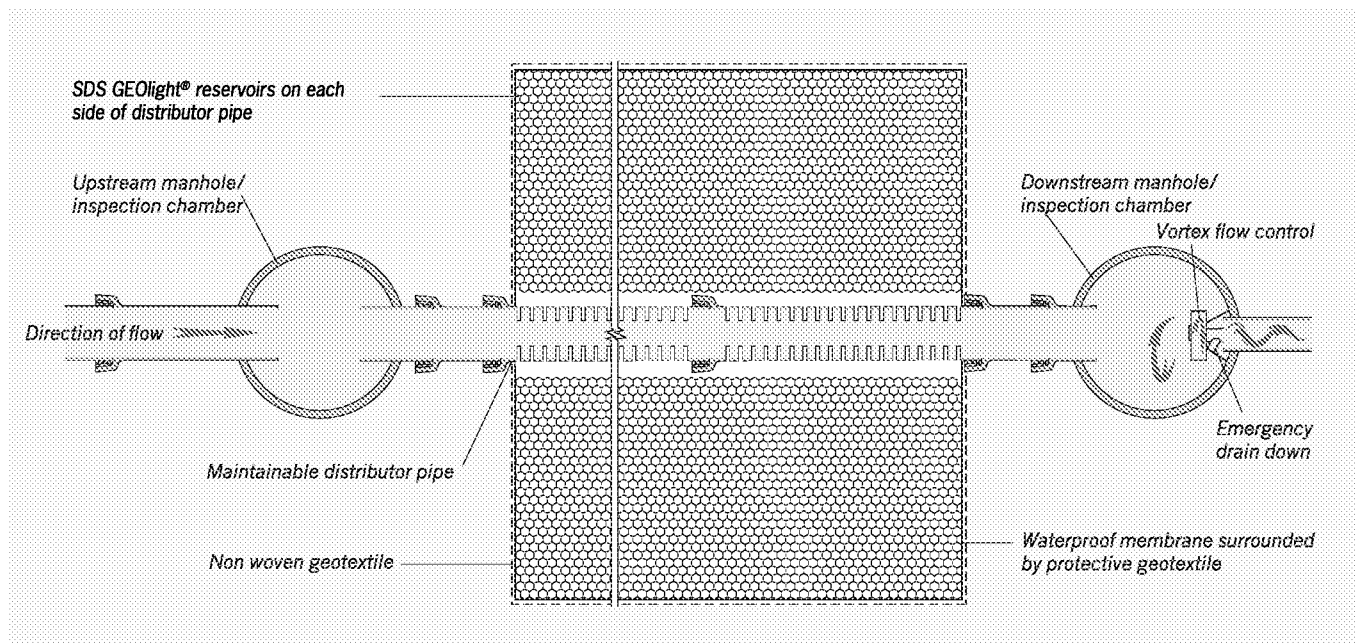
Stormwater Attenuation System

Design Details

Long Section



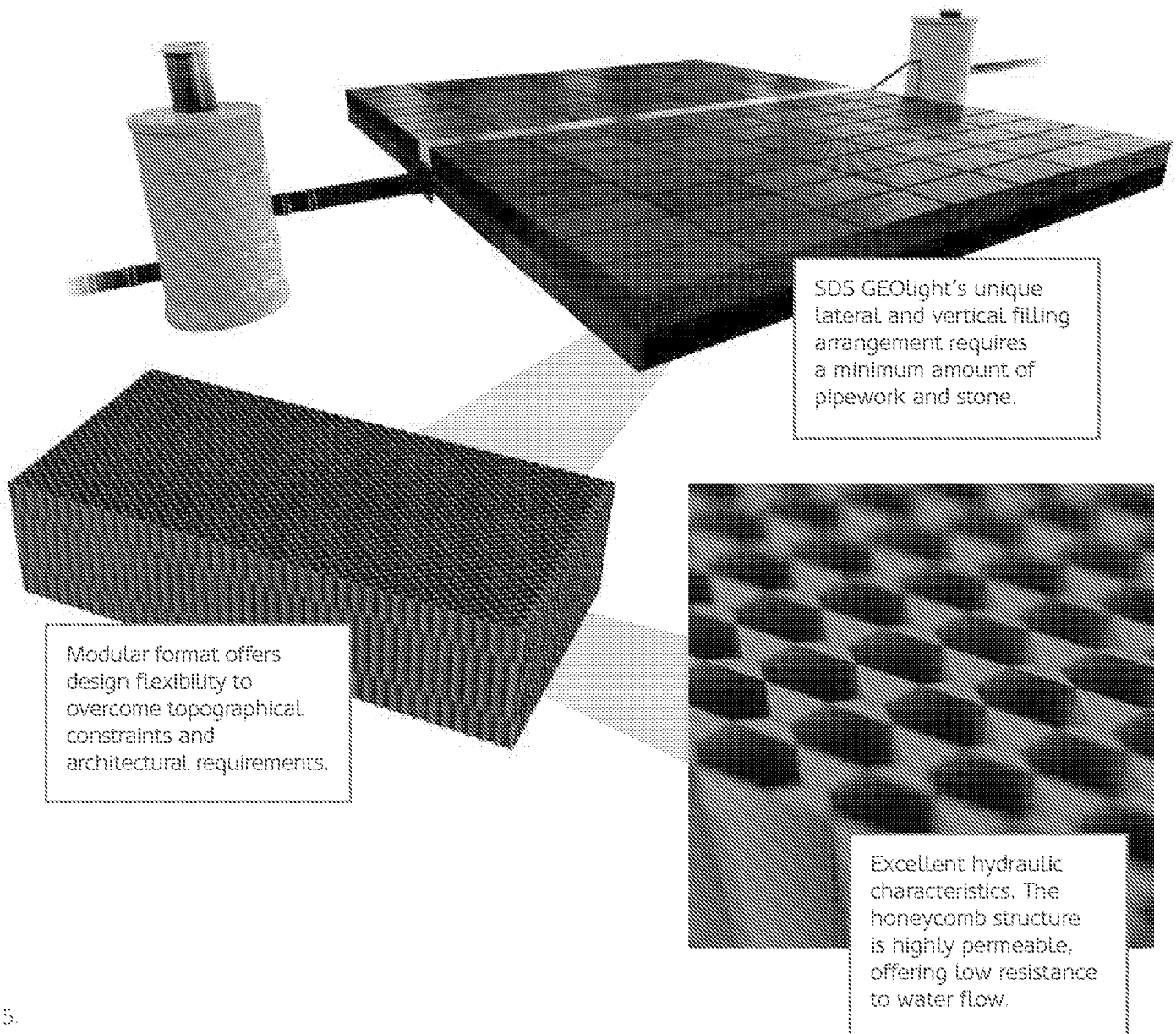
Plan



Benefits

- High compressive strength – can be located under all roads, car parks and amenity area surfaces.
- Reduced excavation costs – the very high void rate (95%) minimises the required volume of earthworks.
- Speed of installation – 1000m³ reservoir, completed in one week.
- Light and easy to handle.
- Depth of tank invert reduced by using patented lateral supply.
- Simplified distribution pipe network, easy maintenance – dispensing with costly and complicated pipework configurations.
- Greatly reduces the risk of flooding when used as stormwater storage.
- Can also be used for water recycling and combining with irrigation systems.
- Can virtually eliminate pollution when used in combination with specialist petrol / oil separators.
- Design service available, including calculations.

GEOlight® block



COSHH and Handling Information

1. COMPOSITION/INFORMATION ON INGREDIENTS:

Hazardous ingredients:

None as finished goods or products.

Types of materials:

Polyvinyl chloride (PVC)
MEK

2. HAZARDS IDENTIFICATION

Nature of hazard:

There are no health risks from the products during normal use. The products may contain various pigment colours and stabilisers that may be toxic. The chemicals are, however, bound within the product material and not easily extracted.

3. FIRST-AID MEASURES

Eye contact:

Plastic materials may cause physical irritation in the eyes. Wash out with large amounts of water. If irritation persists, seek medical advice.

Skin contact:

Not applicable.

Inhalation:

Not applicable.

Ingestion:

Not expected to have any toxic effects.

4. FIRE-FIGHTING MEASURES

Extinguishing media:

On small fires use any hand-held extinguisher type.
On large fires use water.

Fire and explosion hazards:

Melting plastics may flow and spread in a large fire.
Products of fire will be thick black toxic smoke.

Material characteristics:

PVC products will burn in the presence of a flame but are classed as self-extinguishing.

Protective equipment:

Wear self-contained breathing apparatus and protective clothing.

5. HANDLING AND STORAGE

Handling:

There are no hazards associated with the finished products. However, when cutting SDS GEOLight®, we recommend that the correct tools are used e.g. Handsaw or Alligator saw. When cutting, dust may be created; avoid inhaling these dusts. Take care of heat build-up within materials during cutting etc. The pallets of SDS GEOLight® units should be placed on level ground and should not be stacked on site. The maximum weight of the pallet of SDS GEOLight® units as delivered to site is 650kg (700kg on one copy), including packaging. Machines used to lift the pallet should be able to lift this weight safely. Loose individual units should not be stored more than three units high. SDS GEOLight® units are lightweight ranging from 23kg to 55kg and can be easily handled – one or two person lift.

Storage:

SDS GEOLight® units will resist the effects of UV light for up to six months; however, prolonged storage in direct sunlight should be avoided. SDS GEOLight® units should not be stored near to any fuel storage areas or any other solvents. SDS GEOLight® units are very robust and resistant to damage during normal handling; however, they should be secured in areas where impacts from vehicles or construction plant will be avoided.

Material characteristics:

PVC products will burn in the presence of a flame but are classed as self-extinguishing.

Protective equipment:

Wear self-contained breathing apparatus and protective clothing.

6. EXPOSURE CONTROLS / PERSONAL PROTECTION

Respiratory protection:

Not required under normal conditions of use. Where cutting etc. creates dust, wear a disposable half-mask to the standard FFP2S.

Hand protection:

Wear impervious strong gloves to prevent cuts to the hands while handling, cutting etc.

Eye protection:

Wear safety glasses when cutting etc.

Skin protection:

Wear overalls.

7. SITE HAZARDS

Other hazards for consideration:

Working in excavations and trenches – SDS GEOLight® may be designed with a shallow invert for infiltration (soakaway) or attenuation (storage) system. This negates the need for deep excavations or trenches, excavation near services e.g. gas, electricity or contaminated soil areas. N.B. All risk assessments should be undertaken by the main contractor for forklift, access to and working in excavations and trench support.

8. STABILITY AND REACTIVITY

Decomposition products:

Major thermal decomposition products are oxides of carbon. Relevant differences are (in addition): PVC may produce amounts of Hydrogen Chloride.

Stability:

These materials are stable at temperatures up to normal operating limits (moulding parameters).

9. ECOLOGICAL INFORMATION

Biodegradability:

Plastic products are not readily biodegradable but are not detrimental to terrestrial wildlife.

Aquatic toxicity:

Non-toxic to marine life.

10. DISPOSAL CONSIDERATIONS

Method:

The preferred method of disposal is collection and recycling. Plastics can safely be placed with regular industrial or household wastes where recycling is not available.

11. OTHER INFORMATION

As the handling, storage, use and disposal of the product are beyond our control SDS disclaims all liability for loss, damage, injury or expense in any way connected with such activities and further makes no warranties, expressed or implied, as to the suitability of the product for any particular use.

The preferred method of disposal is collection and recycling. Plastics can safely be placed with regular industrial or household wastes where recycling is not available.

SDS

Water
Infrastructure
Systems

INNOVATORS IN WATER TECHNOLOGY



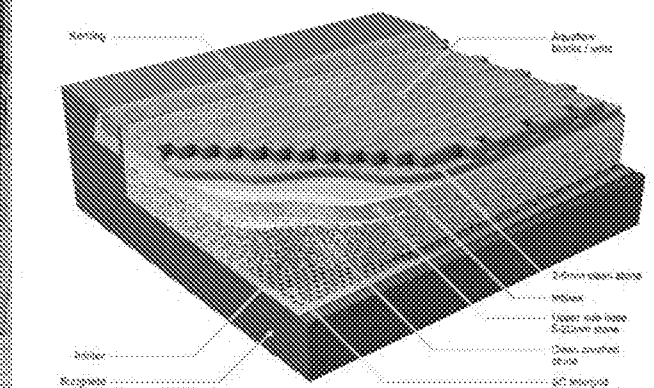
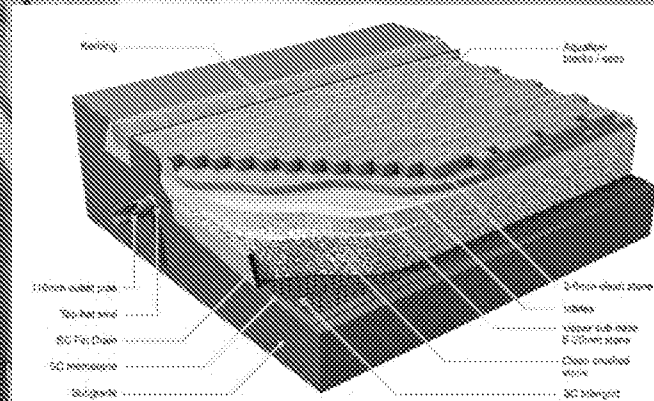
SDS Limited
Clearwater House
Castlemills
Bridgeman
Somerset
BS26 2RE

ARUP DISTRICT COUNCIL 13/06/21/000



sdslimited.com

Distributors of FORMPAVE AQUAFLOW geosynthetic components nationwide.



Units 2-5 Tetbury Close
Martland Industrial Park
Wigan, Lancashire
WN5 0LA

Formpave[®]
INNOVATORS IN PERMEABLE PAVING

Inbitex®

Exclusive to the Formpave Aquaflow systems this specialist non-woven geotextile is used for separation, filtration and pollution control. Inbitex® provides initial filtering and cleansing of run-off, and prevents fine aggregate particles migrating down and clogging lower layers. When wet, micro-organisms grow within the layer which help remove pollutants and cleanse the water being filtered.

SC Intergrid®

Exclusive to Formpave Aquaflow systems, the unique SC Intergrid® effectively confines and stabilises the graded sub-base aggregate, providing a competent foundation for the permeable block paved surfacing whilst reducing construction thicknesses.

SC Membrane®

This specialist impermeable membrane is exclusive to the Formpave Aquaflow systems and is utilised to create an impermeable barrier around the graded sub-base aggregate thus creating a water retention tank beneath the surface. Joints can be taped or welded depending on application. Where welding is required a high grade membrane is required, SC GT Membrane.

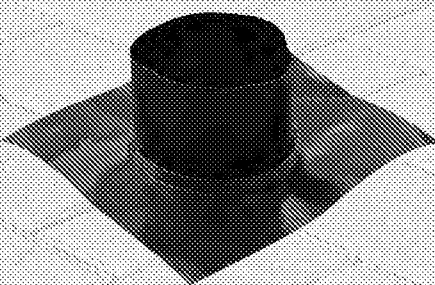
SC Findrain®

Provides an efficient and high flow drainage path from the sub-base to the drainage outlet pipe. Manufactured with a high crushing strength, the fin drain remains effectively clog-free due to the filtering effect of the unique Inbitex® geotextile wraparound.

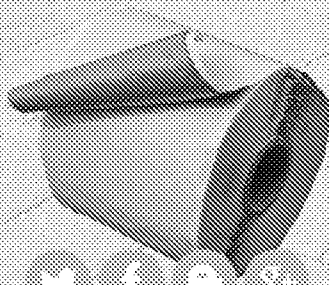
Formpave Aquaflow Distribution Tanks®

Used for connecting rainwater downpipes and other impermeable areas for drainage to the Aquaflow system. Can be used in trafficked areas. Available in three different sizes depending on catchment area.

Top Hats



Tape



Findings

