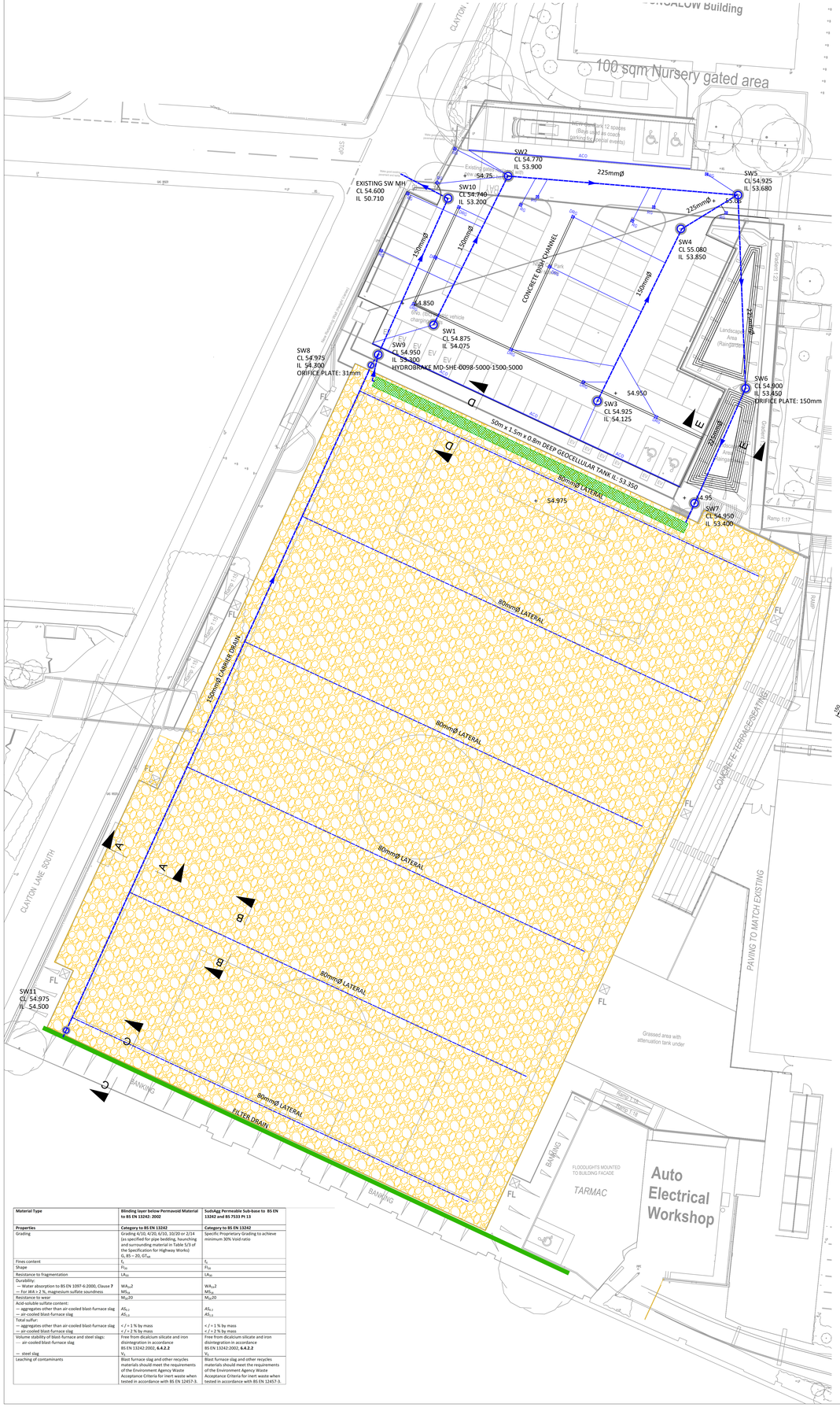
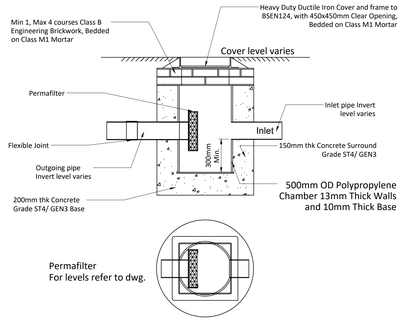
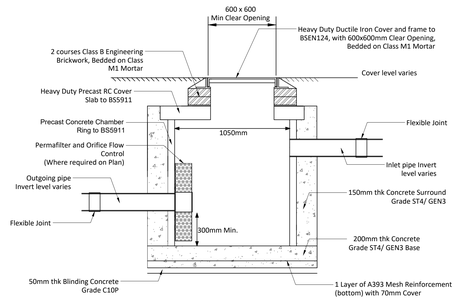


Material Type	Blinding layer below Permavoid Material to BS EN 13242: 2002	SudsAgg Permeable Sub-base to BS EN 13242 and BS 7533 Pt 13
Properties	**Category to BS EN 13242**	**Category to BS EN 13242**
Grading	Grading 6/10, 6/20, 6/10, 10/20 or 2/14 (as specified for pipe bedding, haunching and surrounding material in Table 5/3 of the Specification for Highway Works) $G_C 85 - 20; GF_{80}$	Specific Proprietary Grading to achieve minimum 30% Void ratio
Fines content	f_c	f_c
Shape	FI_{20}	FI_{20}
Resistance to fragmentation	LA_{50}	LA_{50}
Durability: — Water absorption to BS EN 1097-6:2000, Clause 7 — For WA > 2 %, magnesium sulfate soundness	$WA_{24}2$ MS_{18}	$WA_{24}2$ MS_{18}
Resistance to wear	$M_{DE}20$	$M_{DE}20$
Acid-soluble sulfate content: — aggregates other than air-cooled blast-furnace slag — air-cooled blast-furnace slag	$AS_{0.2}$ $AS_{1.0}$	$AS_{0.2}$ $AS_{1.0}$
Total sulfur: — aggregates other than air-cooled blast-furnace slag — air-cooled blast-furnace slag	< / = 1 % by mass < / = 2 % by mass	< / = 1 % by mass < / = 2 % by mass
Volume stability of blast-furnace and steel slags: — air-cooled blast-furnace slag — steel slag	Free from dicalcium silicate and iron disintegration in accordance BS EN 13242:2002, **6.4.2.2** $V_{0.5}$	Free from dicalcium silicate and iron disintegration in accordance BS EN 13242:2002, **6.4.2.2** $V_{0.5}$
Leaching of contaminants	Blast furnace slag and other recycles materials should meet the requirements of the Environment Agency Waste Acceptance Criteria for inert waste when tested in accordance with BS EN 12457-3.	Blast furnace slag and other recycles materials should meet the requirements of the Environment Agency Waste Acceptance Criteria for inert waste when tested in accordance with BS EN 12457-3.



750Ø CATCHPIT INSPECTION CHAMBER INCORPORATING DEBRIS DEVICE



1050Ø PERMAVOID CATCHPIT INSPECTION CHAMBER INCORPORATING FLOW CONTROL AND DEBRIS DEVICE

Legend.

- Surface Water Drainage Pipework 150mm dia U.N.O
- 1050mm dia manhole
- 750mm dia catchpit inspection chamber
- Filter trench
- 250mm thick 30% void Sub-Base
- 800mm deep geocellular tank
- Road gully
- Dished channel road gully
- Dished channel road gully

Notes.

1. Roadway and footpath surfacing design and construction to Engineer's Specification (by others).

2. Heavy duty geotextile fleece to be non-woven needle-punched polypropylene as per Specification. Geotextile to be laid with minimum 300mm overlaps and to be applied to all external surfaces of Polypipe-Permavoid drainage units. To be installed in accordance with the manufacturer's recommendations.

3. Waterproof geomembrane to be single layer cold applied robust welded flexible membrane as per Specification suitable for waterproofing to structures and for water containment. Membrane to be nominal 1mm thick laid with minimum 120mm laps and welded seams. To be installed in accordance with the manufacturer's recommendations under and approved CQA protocol that includes testing of the welds.

4. Stormwater attenuation/infiltration system shall be Polypipe Permavoid pre-formed modular geocellular sub-base replacement with minimum 95% volumetric void ratio and minimum 52% effective perforated surface area. Units shall be manufactured with integral interlocking ties (Polypipe-Permaties) to maintain rigidity and minimise deflection. Geocellular units to be fully encapsulated with Heavy duty geotextile fleece (as Note 2) and impermeable membrane (as Note 3). Geocellular layer to be in accordance with the Specification and BS7533:2009 Pt13. All to be installed in accordance with the manufacturer's recommendations.

5. Multi-layered Polypipe-Permavoid tank configurations shall be fixed with proprietary shear connectors between each vertical layer to maintain rigidity and minimise lateral displacement in accordance with BS7533:2009 Pt13. Shear connectors shall to be fitted in accordance with the manufacturer's recommendations.

6. Polypipe Permavoid units to be laid on a prepared even formation that shall be free from undulations, sharp steps or protruding stones/rocks. The formation shall be graded to achieve a maximum deviation of 5mm in 3.0m in any direction. The formation shall have an equilibrium CBR value greater than 5%. Where the Polypipe-Permavoid discharges via infiltration to the ground the formation shall be granular and the equilibrium CBR value shall be greater than 10%. A 50mm thick blinding layer of crushed clean rock in accordance with the specification may be used to achieve a suitable bedding surface. The blinding layer shall be placed to give a smooth, even and firm formation. The formation and blinding shall be inspected by the Engineer and Contractor to ensure that they are acceptable for the construction of Polypipe-Permavoid.

7. Where appropriate, the constructed tanks, associated pipe work and connections shall be air and water tested in line with manufacturer's instructions to demonstrate air and watertightness of the impermeable membrane, where attenuation tanks are specified.

8. Polypipe-Permavoid units shall generally be laid with zero falls unless noted otherwise.

9. Where the design permits Polypipe-Permavoid tanks may be backfilled with selected as-dug materials. This material shall not contain pieces of rock, gravel, clay lumps, etc greater than 75mm in diameter, nor should it contain any other sharp materials such as metals that could pierce the units or membranes or cause uneven loading. The selected backfill material shall be compacted to 90% maximum dry density using plate mechanical compaction equipment. The materials and method of compaction shall be approved by the Engineer and Contractor.

10. Polypipe-Permachannel units are nominal 1000mm long. All continuous lengths of Polypipe-Permachannel shall have an outlet at 1000mm centres. All 'Hit and Miss' lengths of Polypipe-Permachannel shall have one outlet per 1000mm channel unit.

11. All dimensions are in millimetres unless otherwise stated.

12. Pre-cast concrete products shall comply with the relevant provisions of BS 5911 and be 'Kite Marked'.

13. All pipes and pipe fittings shall be HDPE twinwall and have current British Board of Agreement Certification.

14. Manhole covers and frames, grids and frames shall comply with the relevant provisions of BS EN 124.

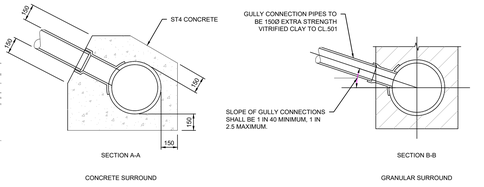
15. Do not scale from this drawing. If in doubt ask.

16. This drawing to be read in conjunction with all relevant EPG, Architects & Engineers drawings.

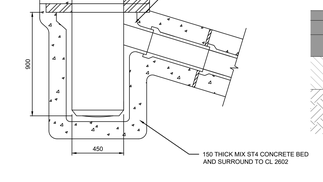
17. Should there be any conflict between the details indicated on this drawing and those on other drawings the Engineer should be informed PRIOR to construction on site.

18. Until technical approval has been obtained from the relevant Authority, It should be understood that all drawings are PRELIMINARY and NOT FOR CONSTRUCTION.

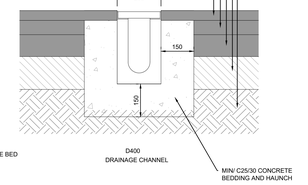
19. At all times the works are to be executed in accordance with the requirements of the Health And Safety at Work Act 1974 and CDM Regulations 2015.



SADDLE CONNECTION DETAILS

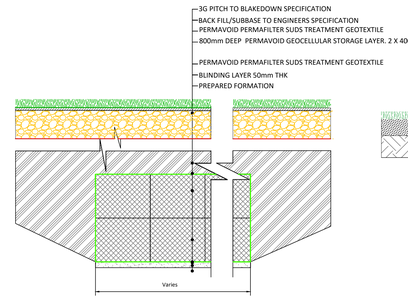


UNTRAPPED CONCRETE GULLY WITH SPIGOT OUTLET (450x900)

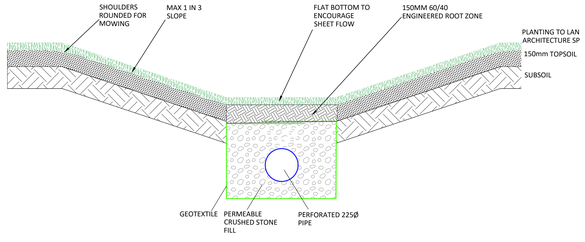


LINEAR DRAINAGE CHANNEL SECTION

SCALE - 1:10

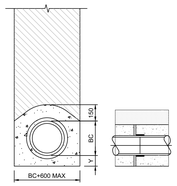


SECTION D-D THROUGH 800 THK PERMAVOID ATTENUATION TANK

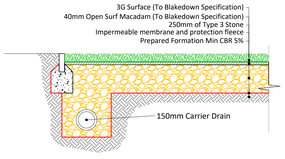


SECTION E-E THROUGH UNDER DRAINED SWALE

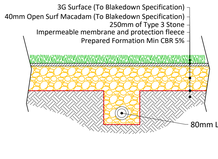
LANDSCAPE ARCHITECT TO CONFIRM



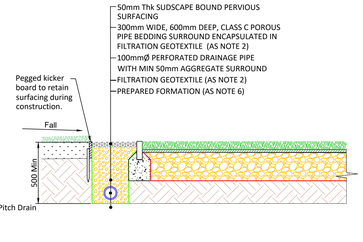
CONCRETE BED AND SURROUND CLASS `Z' PIPES LESS THAN 1.2m DEEP



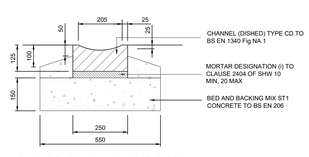
SECTION A-A 150mmØ CARRIER DRAIN DETAIL



SECTION B-B 80mmØ LATERAL DRAIN DETAIL



SECTION C-C THROUGH PERIMETER FILTER-DRAIN WITH CONVEYANCE PIPE



DISHED CHANNEL TYPE CD

SCALE - 1:10

S3	P01	18.03.22	First issue			JR	JR \| RG \| RG
STATUS	REV	DATE	REVISION HISTORY			DSG \| DRW \| CHK \| APP	

ALL REVISIONS

CLIENT

BLAKEDOWN SPORT & PLAY

KEY PLAN

ORIGINATOR

Part of the STRI Group
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The Environmental Protection Group Ltd
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F: 01925 652 983
W: www.epg-ltd.co.uk
E: consultantsupport@epg-ltd.co.uk
© The Environmental Protection Group Ltd

DRAWING TITLE

OPENSHAW COLLEGE
SURFACE WATER DRAINAGE DESIGN

	Name	Signature	Date
Designed by	JR		18.03.2022
Drawn by	JR		18.03.2022
Checked	RG		18.03.2022
Approved	RG		18.03.2022

EPG REF	SCALE	@ A0	BIM FILE NAME - REVISION
9705	1:250, 1:20		-
	S3 - Suitable for Internal Review & Comment		

PROJECT	ISSUER	VOLUME	LEVEL	TYPE	ROLE	NUMBER	REV
9705	EPG	XX	XX	DR	Y	0001	P01