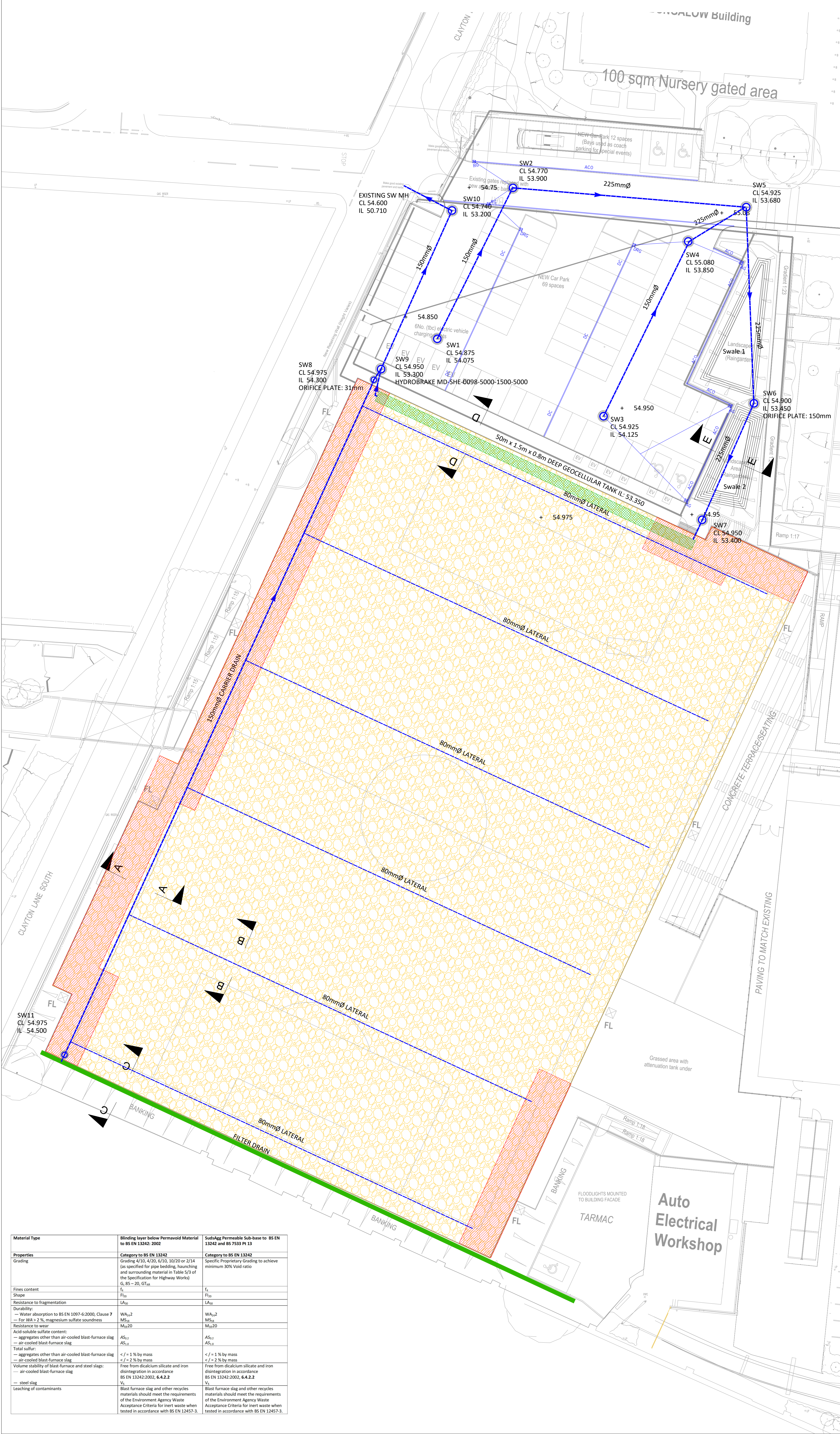
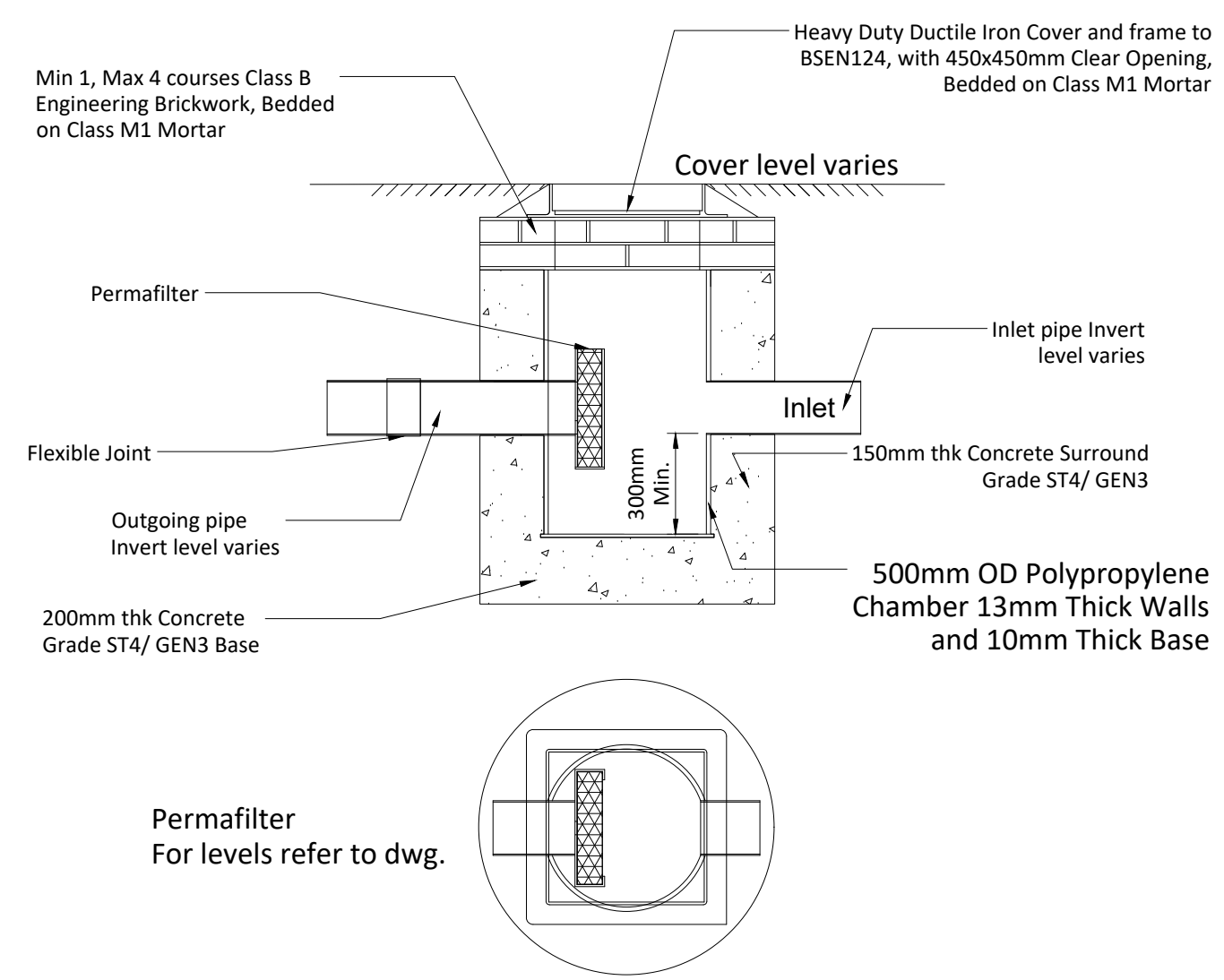
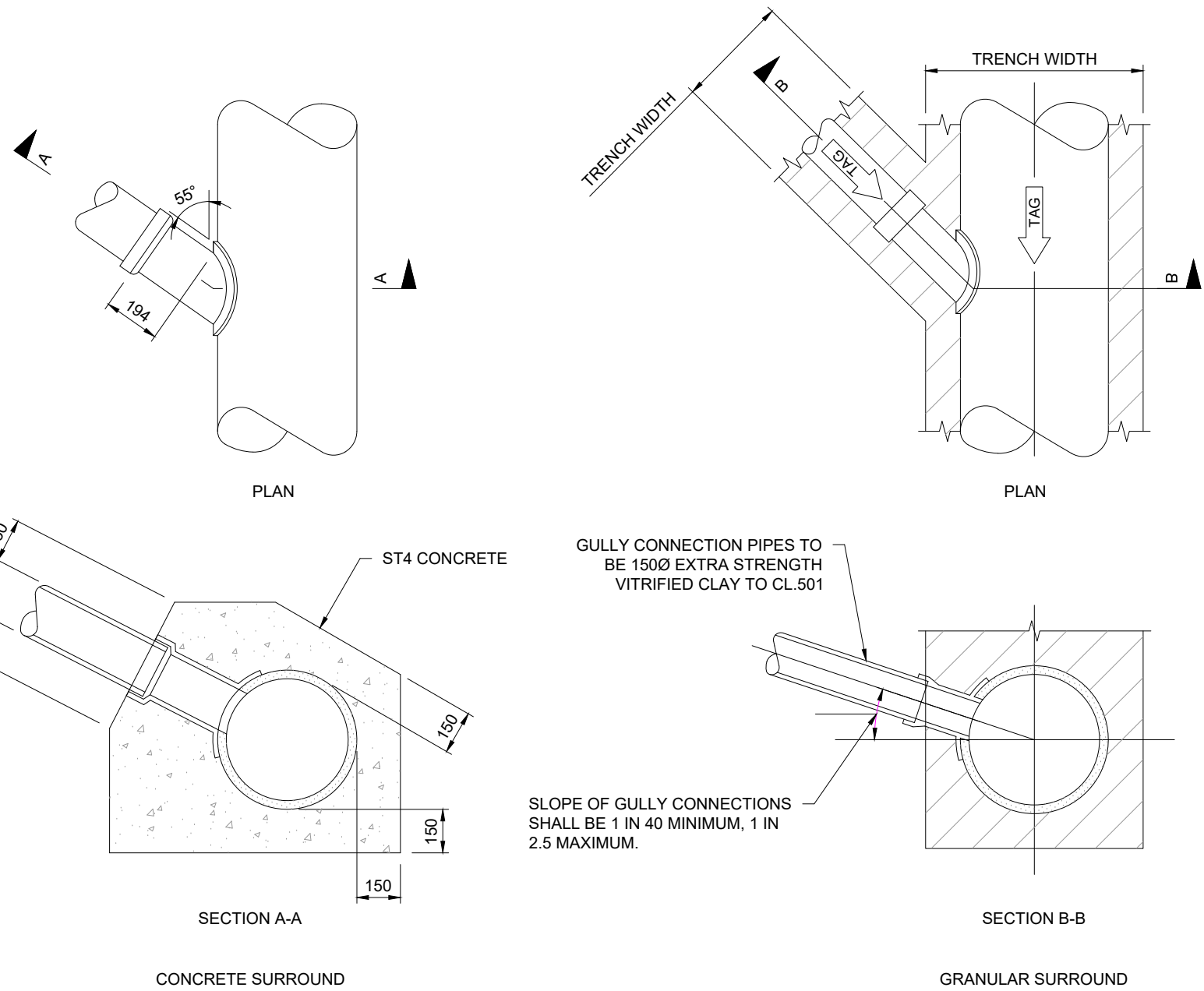




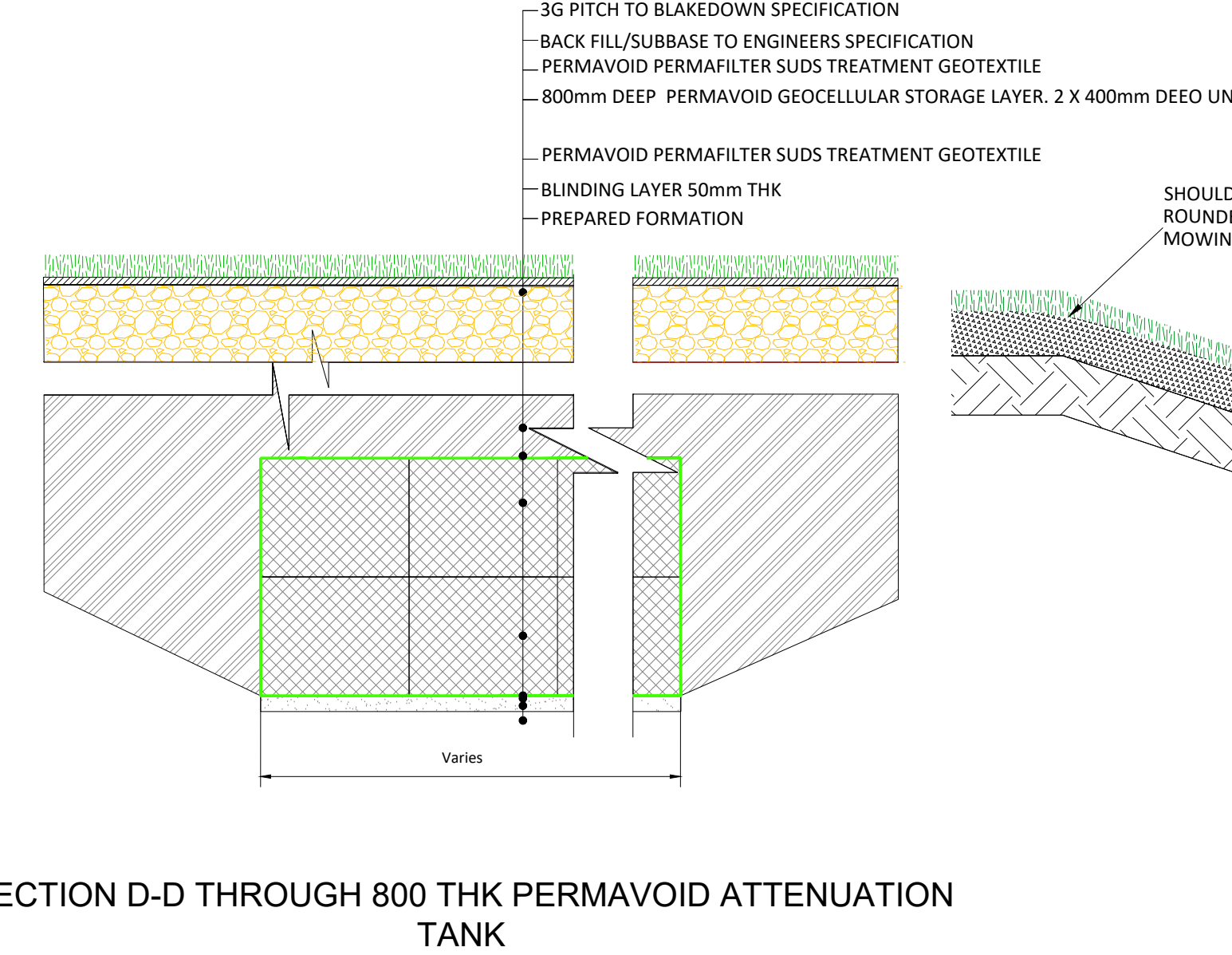
- CAR PARK PAVEMENT DETAILS TO BELL MUNRO CONSULTING LTD DETAILS AND SPECIFICATION
- PROPOSED LEVELS TO ARCHITECTS SPECIFICATION



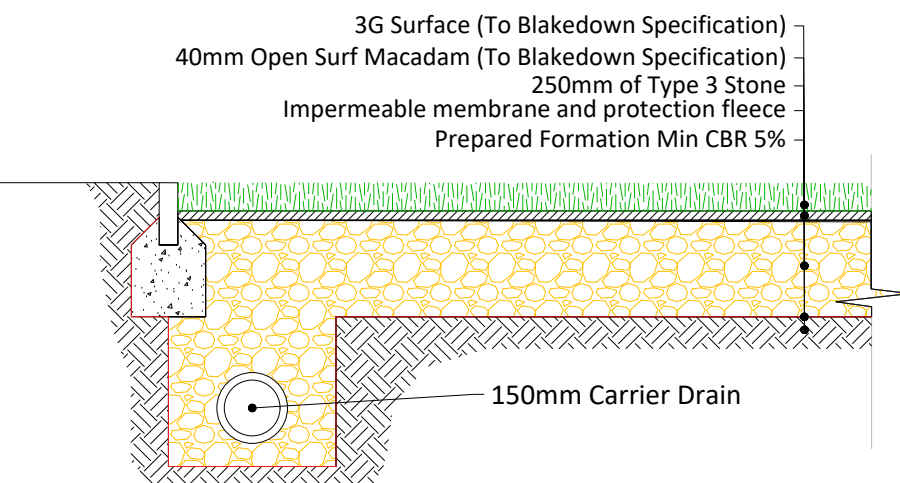
7500 CATCHPIT INSPECTION CHAMBER INCORPORATING DEBRIS DEVICE



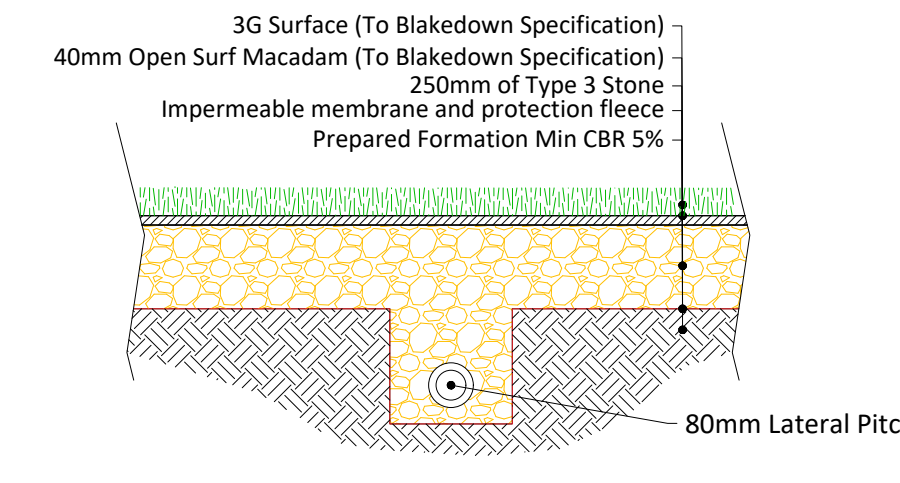
SADDLE CONNECTION DETAILS



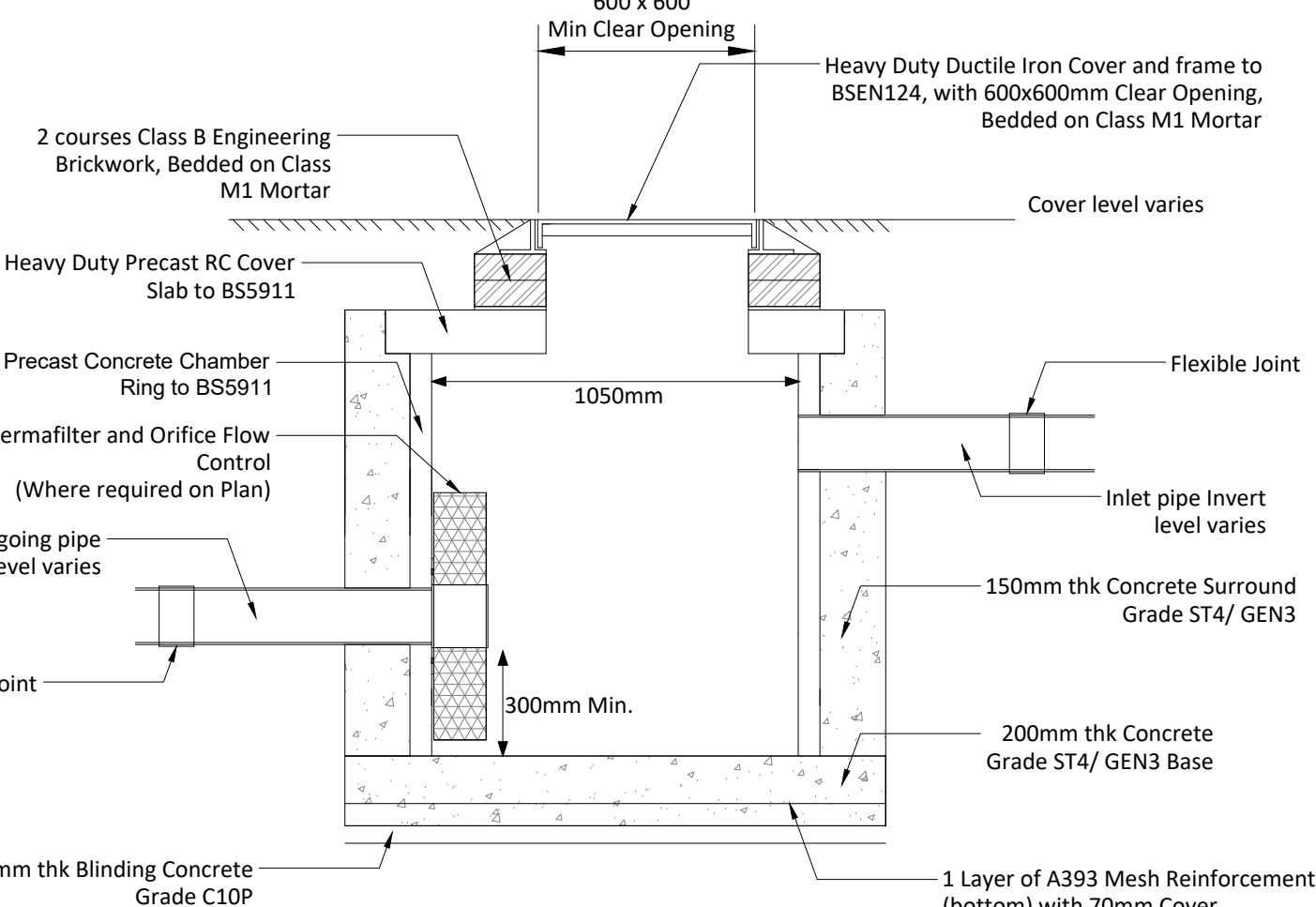
SECTION D-D THROUGH 800 THK PERMAVOID ATTENUATION TANK



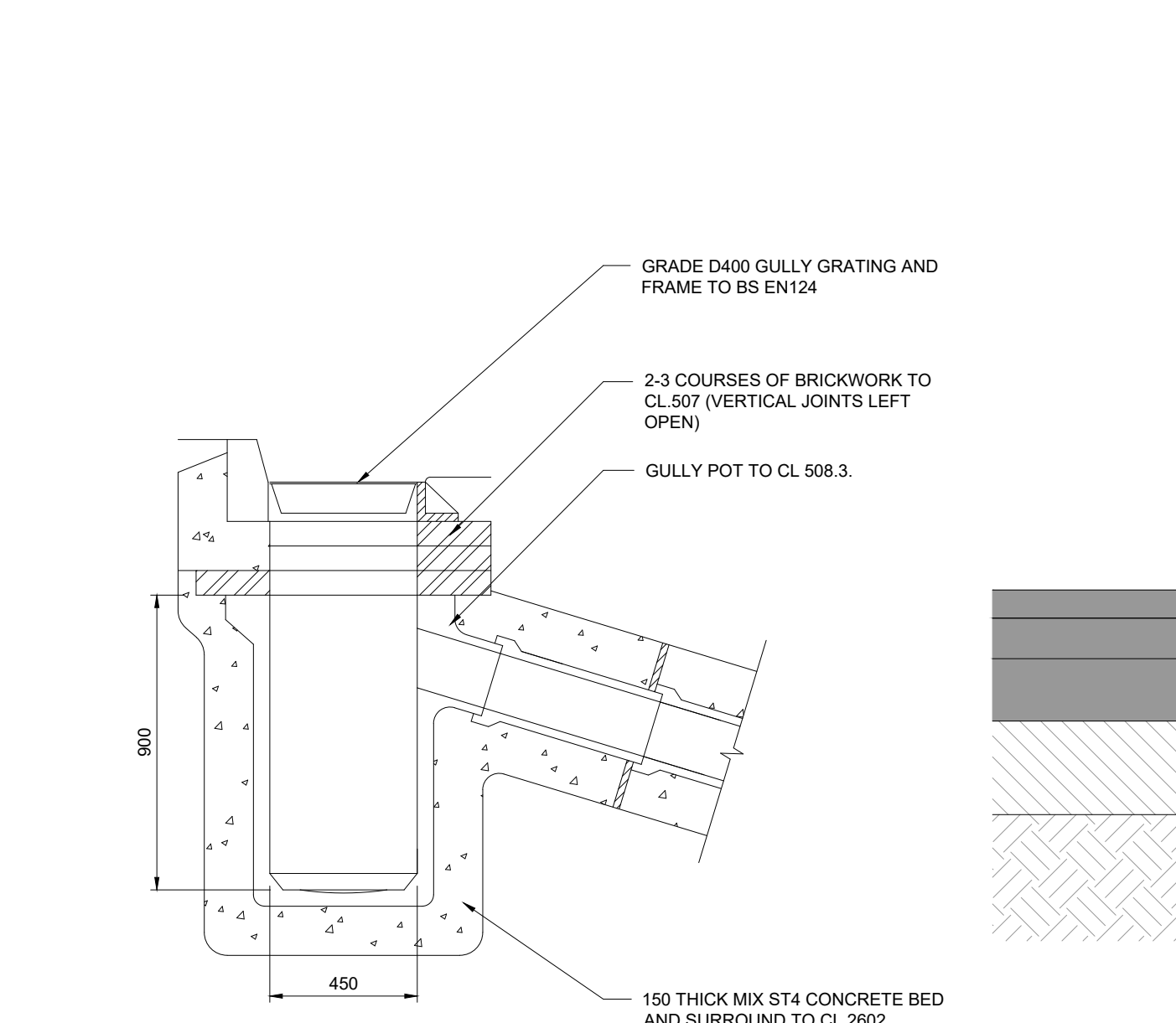
SECTION A-A 150mmØ CARRIER DRAIN DETAIL



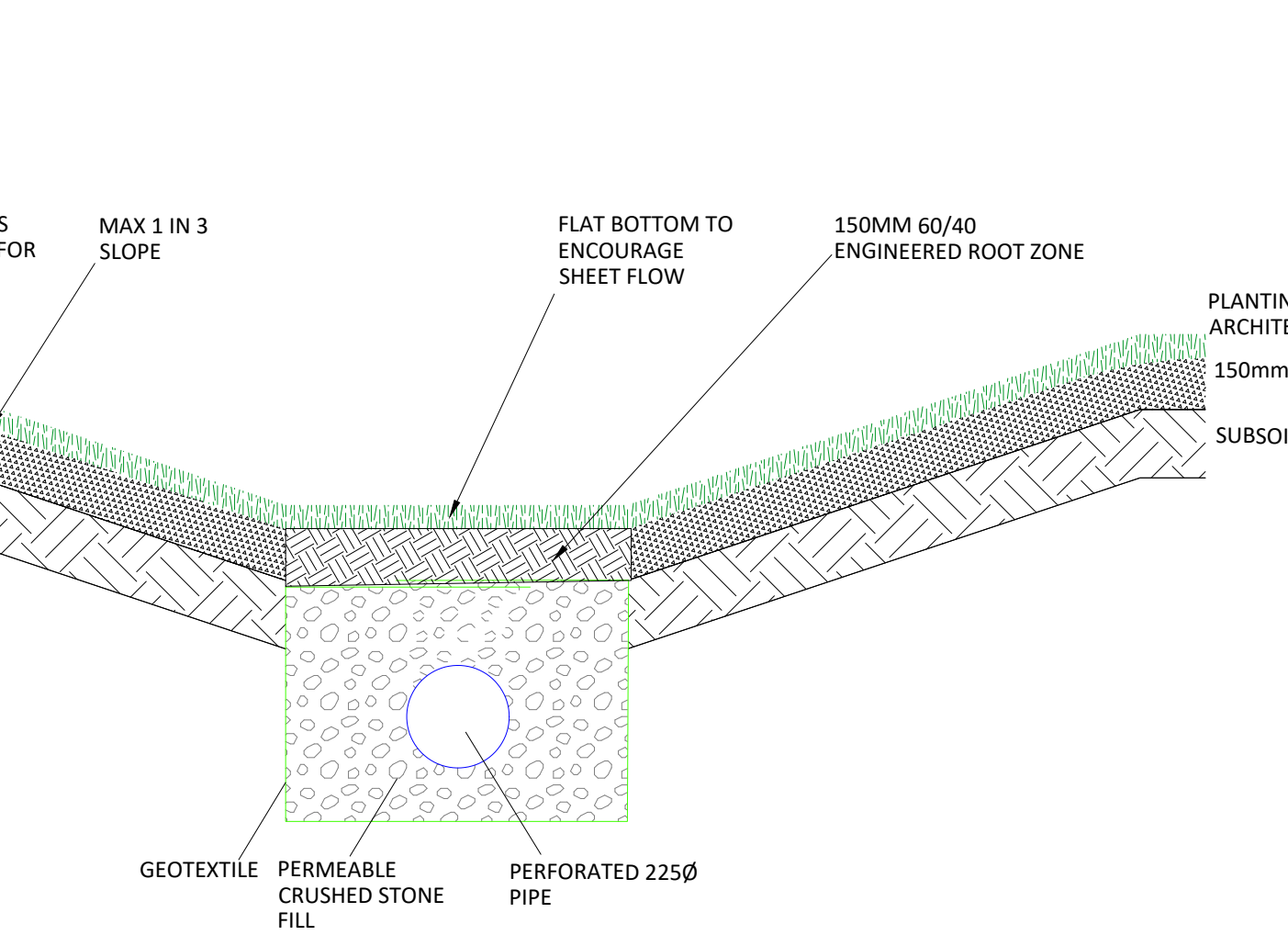
SECTION B-B 80mmØ LATERAL DRAIN DETAIL



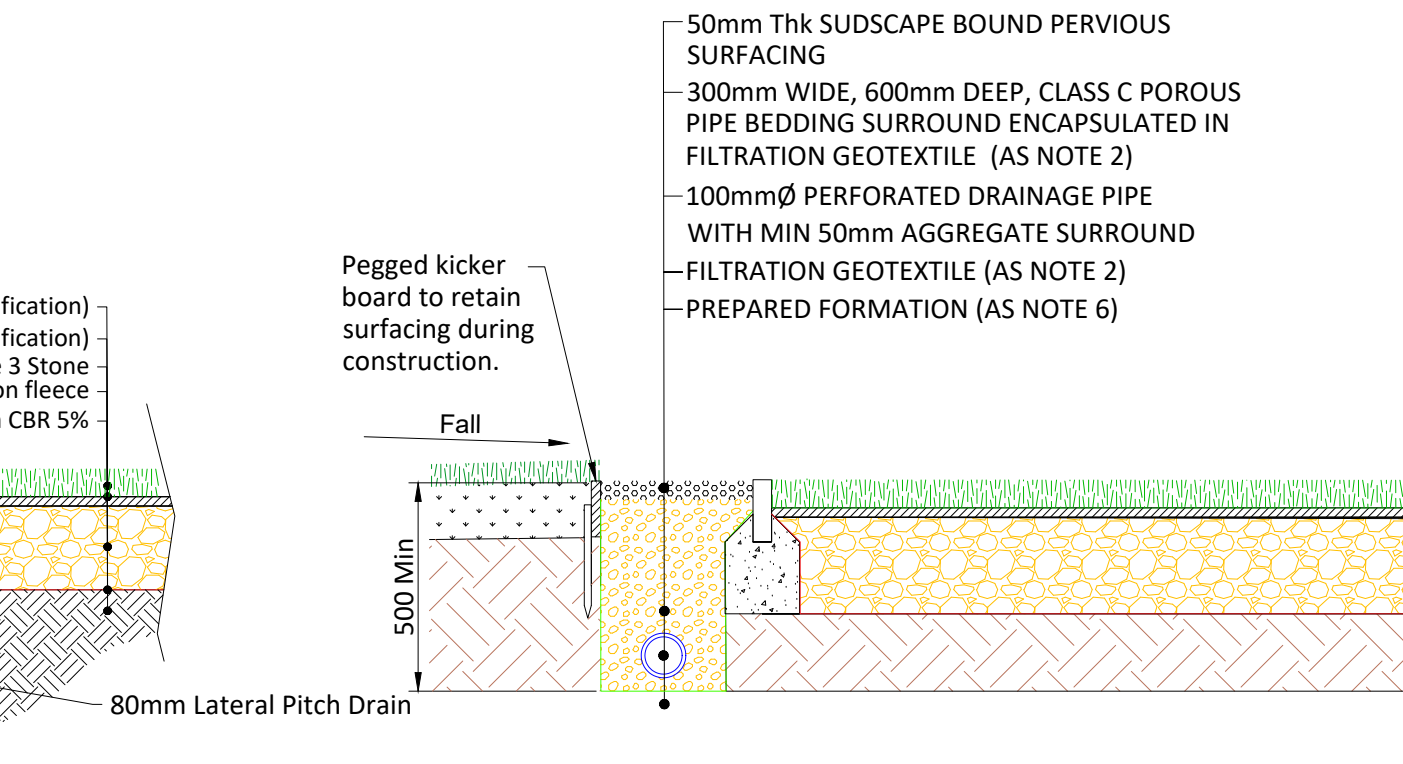
1050Ø PERMAVOID CATCHPIT INSPECTION CHAMBER INCORPORATING FLOW CONTROL AND DEBRIS DEVICE



UNTRAPPED CONCRETE GULLY WITH SPIGOT OUTLET (450x900)

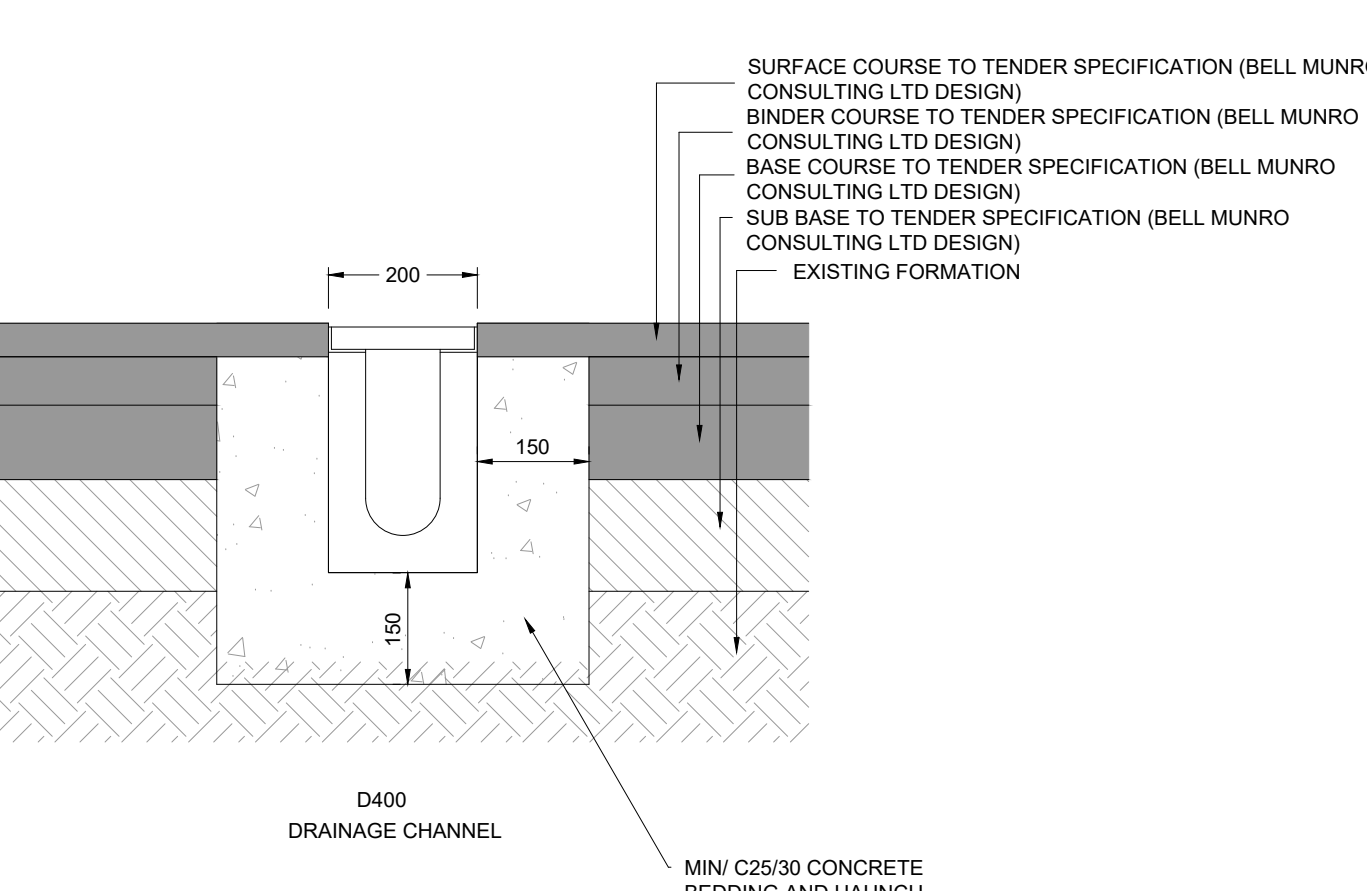


SECTION E-E THROUGH UNDER DRAINED SWALE 'LANDSCAPE ARCHITECT TO CONFIRM'

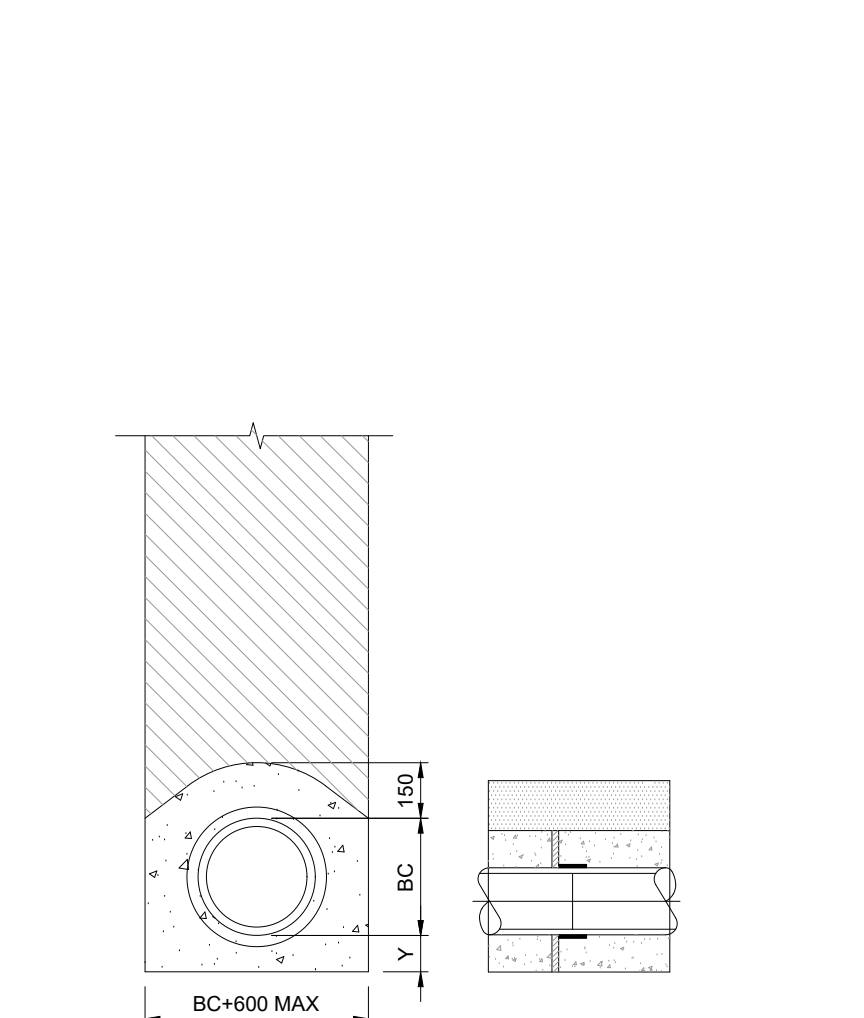


SECTION C-C THROUGH PERIMETER FILTER-DRAIN WITH CONVEYANCE PIPE

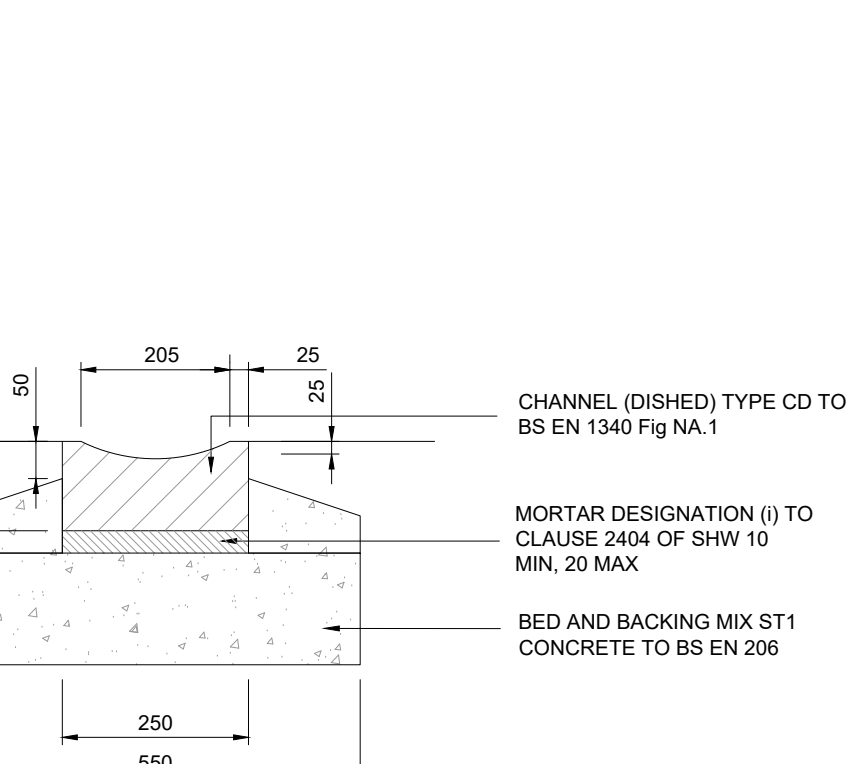
- Legend.
- Surface Water Drainage Pipework 150mm dia U.N.O
 - 1050mm dia manhole
 - 750mm dia catchpit inspection chamber
 - Filter trench
 - 250mm thick 30% void Sub-Base
 - 800mm deep geocellular tank
 - ACO gully
 - Dished channel road gully
 - ACO channel
 - Dished channel
 - 5m impermeable membrane lining to prevent infiltration adjacent to retaining wall or back.



LINEAR DRAINAGE CHANNEL SECTION SCALE: 1:10



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



DISHED CHANNEL TYPE CD SCALE: 1:10

- 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 suitable for waterproofing to structures and for water containment. Membrane to be nominal 3mm 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.
 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 3mm 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 Polypropylene 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. Polypropylene PermaVoid to maintain rigidity and minimal 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 BS7333:2009 P11.3. All to be installed in accordance with the manufacturer's recommendations.
 5. Multi-layered Polypropylene-PermaVoid tank configurations shall be fixed with proprietary shear connectors between each vertical layer to maintain rigidity and minimise lateral displacement in accordance with BS7333:2009 P11.3. Shear connectors shall be fitted in accordance with the manufacturer's recommendations.
 6. Polypropylene PermaVoid units to be laid on a prepared even formation that shall be free from undulations, sharp dips 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 Polypropylene 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 Polypropylene 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. Polypropylene PermaVoid units shall generally be laid with zero falls unless noted otherwise.
 9. Where the design permits Polypropylene PermaVoid tanks may be backfilled with selected as-dual 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. Polypropylene PermaVoid units are nominal 1000mm long. All continuous lengths of Polypropylene PermaVoid shall have an outlet at 1000mm centres. All 'Hit and Miss' lengths of Polypropylene PermaVoid 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. 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.

CR	AB1	05.06.23	As built issue	JR	1	SH	1	SW	1	PW
S3	P03	11.08.22	Swales labelled	JR	1	SH	1	SW	1	PW
S3	P02	07.04.22	Impermeable membrane lining added.	JR	1	SH	1	SW	1	PW
S3	P01	18.03.22	First issue	JR	1	SH	1	SW	1	PW
STATUS	REV	DATE	REVISION HISTORY	EPG	1	SH	1	SW	1	PW

ALL REVISIONS

CLIENT

50 Celebrating Fifty Years **blakedown** sport & play.

KEY PLAN

Drawn by: GH

Checked: SW

Approved: PW

Scale: 1:250, 1:20

BM FILE NAME - REVISION

ORIGINATOR

Part of the EPG Group

epg

Warrington Business Park

Long Lane

Warrington

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WA1 1JH

Warrington

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Warrington

Cheshire

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DRAWING TITLE									
OPENSRAW COLLEGE SURFACE WATER DRAINAGE DESIGN									
Name	Signature	Date							
Designed by	JR	05.06.2023							
Drawn by	GH	05.06.2023							
Checked	SW	05.06.2023							
Approved	PW	05.06.2023							
EPG REF	SCALE	@ AD	BM FILE NAME - REVISION						
9705	1:250, 1:20	-							
CR - As construction record document									
PROJECT	ISSUER	VOLUME	LEVEL	TYPE	ROLE	NUMBER	REV		
9705	EPG	XX	XX	DR	Y	0001	AB1		