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ENGINEERING THE FUTURE

Drainage Technical Note 01 (to discharge Planning Condition 10)

Sytner Group Porsche, Mid Sussex, London Road, Sayers
Common, Hassocks BN6 9HS

20 OCTOBER 2025



Geotechnical &
Geo-Environmental
Engineering



Civil &
Infrastructure
Engineering



Structural
Engineering



Strategic Energy
And Utilities



Mechanical &
Electrical Building
Services (MEP)



Vertical
Transportation

Project Number	Document Reference	Revision
23-0466	230466-ROL-ZZ-XX-RP-C-0001	S2-P01

	Name	Position	Signature
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Revision	Issue Date	Reason for Issue
P01	20.10.2025	Planning Condition Discharge

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1.0 INTRODUCTION

This Technical note has been prepared to discharge planning condition 10 for the proposed new Porsche dealership at London Road, Sayers Common, Hassocks BN6 9HS as identified on Lead Local Flood Authorities (LLFA) review letter ref. 'P269 UPDATED FILE NOTE 4th July 2025, recreated as follows;

1. A CV value of 1 and a climate change allowance of 45% should be utilised.
2. Details of pollution mitigation for surface water runoff in line with CIRIA SuDS Guidance should be provided
3. The discharge rate should be as close to the greenfield runoff rate for the area of the site being attenuated as feasible
4. As the flow control from the site is downstream of a ditch and the pond, the plan area of any ditches leading into the pond and the pond itself should be taken into account within the strategy to confirm there is sufficient capacity within the system
5. It should be demonstrated that the existing outfall pipework being retained is adequately sized for both the discharge from the land drain and the pond
6. As the pond is being utilised as part of the drainage strategy, it should be demonstrated that there is a 300mm freeboard
7. Linear drains (or similar) should be located at all low points across the site.
8. Details of how maintenance and access will be managed for the watercourse should be included within a Maintenance and Management Plan.
9. Confirmation of any permissions required to undertake works within the watercourse.

This document should be read in conjunction with all relevant Rolton drawings and specification and also in conjunction with the Architects (Axis 3) latest information and drawings.

2.0 RESPONSES

Rolton responses to the planning condition 10 comments are included on this following section. Drainage drawings and calculations are shown on **Appendix A and Appendix B** respectively.

Comment 1

- Reviewer's comments:
A CV value of 1 and a climate change allowance of 45% should be utilised.
- Response:
This has now been implemented

Comment 2

- Reviewer's comments:
Details of pollution mitigation for surface water runoff in line with CIRIA SuDS Guidance should be provided
- Response:
Refer to **Section 3, Surface Water Quality**.

Comment 3

- Reviewer's comments:
The discharge rate should be as close to the greenfield runoff rate for the area of the site being attenuated as feasible
- Response:
The approved Flood Risk Assessment and Drainage Strategy (Doc Ref: 101/R001) calculates a greenfield rate of 5.168 l/s/ha. For a proposed catchment area of 0.930 ha, a proposed discharge rate of 4.80 l/s has been calculated.

Comment 4

- Reviewer's comments:
As the flow control from the site is downstream of a ditch and the pond, the plan area of any ditches leading into the pond and the pond itself should be taken into account within the strategy to confirm there is sufficient capacity within the system
- Response:
The flow control now is now proposed upstream of the ditch and the pond. The ditch and pond volumes are not taken into account within the total proposed attenuation volume.

Comment 5

- Reviewer's comments:
It should be demonstrated that the existing outfall pipework being retained is adequately sized for both the discharge from the land drain and the pond
- Response:
An existing flowrate of 367 l/s has been calculated for the existing development for the 1 in 100 storm, following the Modified Rational Method discharge via the existing outfall pipework.

The proposed discharge surface water flowrate following redevelopment of the site is 4.80 l/s for the 1 in 100 + 45% storm event.

The approved Flood Risk Assessment and Drainage Strategy (Doc Ref: 101/R001) states that the site is not at risk surface water flooding.

Considering the proposals will reduce discharge rate from the development to greenfield rates it is assumed the existing outfall pipework has sufficient capacity and proposals will not increase the risk of flooding.

Comment 6

- Reviewer's comments:
As the pond is being utilised as part of the drainage strategy, it should be demonstrated that there is a 300mm freeboard
- Response:

The pond has been removed from attenuation volume calculations and will be used to provide treatment only.

Comment 7

- Reviewer's comments:
Linear drains (or similar) should be located at all low points across the site
- Response:
This has now been implemented. Where low points are in areas of permeable paving, channel drains have not been provided as drainage is provided by the permeable paving.

Comment 8

- Reviewer's comments:
Details of how maintenance and access will be managed for the watercourse should be included within a Maintenance and Management Plan.
- Response:
Refer to **Section 4, Surface Water Management and Maintenance.**

Comment 8

- Reviewer's comments:
Confirmation of any permissions required to undertake works within the watercourse
- Response:
An application for Ordinary Watercourse consent should be submitted once the planning condition has been discharged.
Following discussions that the existing watercourse on the site acts as a swale serving only the development site itself with no other connections into it, it is understood that no permissions are required for the works to this as it is under the ownership of the site owner.

3.0 SURFACE WATER QUALITY

The SuDS Manual, 2015 identifies pollution hazard levels of new development based off their proposed land use. In line with the SuDS Manual pollution hazard categorisations, a medium pollution risk for the proposed development external areas and roofs has been adopted.

Table 1 shows the total suspended solids, metals and hydrocarbons associated with a low pollution categorization (as provided within the SuDS Manual).

Table 1 - Total suspended solids, and hydrocarbons associated with a low pollution categorization (as provided within the SuDS Manual)

Pollution hazard index	Total Suspended Solids (TSS)	Metals	Hydro-carbons
Low	0.5	0.4	0.4
Medium	0.7	0.6	0.7

As of the SuDS Manual guidance, conveying run off through different forms of SuDS provides varied mitigation index values.

Table 2 - SuDS mitigation index values for parking spaces with permeable paving

SuDS Component	Total Suspended Solids (TSS)	Metals	Hydro-carbons
Permeable Paving	0.7	0.6	0.7
Pond	0.7	0.7	0.5

Table 3 - SuDS mitigation index values for roof areas and main road

SuDS Component	Total Suspended Solids (TSS)	Metals	Hydro-carbons
Bypass oil separator	0.8	0.6	0.9
Pond	0.7	0.7	0.5

Adhering to the following equation, as per table 26.2 of The SuDS Manual, the mitigation indices for the secondary and tertiary SuDS treatments would be reduced:

$$\text{Total SuDS Mitigation Index} = \text{mitigation index1} + 0.5 (\text{mitigation index2})$$

On the basis the combined mitigation index value is higher than the initial mitigation values associated with a medium pollution risk, the drainage system is deemed to have sufficiently mitigated the pollution hazard posed.

Table 4 – Final SuDS mitigation index values

SuDS Component	Total Suspended Solids (TSS)	Metals	Hydro-carbons
Bypass oil separator	0.7	0.7	0.5
Pond	0.7	0.7	0.5
Subtotal	1.25	1.25	0.75
Permeable paving	0.7	0.6	0.7
Pond	0.7	0.7	0.5
Subtotal	1.25	0.95	0.95

4.0 SURFACE WATER MANAGEMENT AND MAINTENANCE

For any surface water drainage system to operate as originally designed, it is necessary to ensure that it is adequately maintained to ensure its continued performance throughout its design life.

It is proposed the SuDS features used within this development will be fully maintained and managed by a private management company.

Table 5, 6 , 7 and 8 stipulate the proposed maintenance activities and frequencies the private management company would carry out over the lifetime of the development (as contractually obliged).

Table 5: Operation and Maintenance Requirements for Geo-cellular Tank

Maintenance Schedule	Required Action	Typical Frequency
Regular Maintenance	Inspect and identify areas that are not operating correctly. If required, take remedial action	Monthly for 3 months, then annually
	Remove debris from the catchment surface (where it may cause risk to performance)	Monthly
	For system where rainfall infiltrates into the tank from above, check surface of filter for blockage by sediment, algae or other matter; remove and replace surface infiltration medium as necessary	Annually
	Remove sediment from pre-treatment structures and / or internal forebays	Annually, or as required
Remedial Actions	Repair / rehabilitate inlets, outlets, overflows and vents	As required
Monitoring	Inspect / check all inlets, outlets, vents and overflows to ensure that they are in good condition and operating as designed	Annually
	Survey inside of tank for sediment build-up and remove if necessary	Every 5 years or as required

Table 6: Operation and maintenance Requirements for Pervious Pavements

Maintenance Schedule	Required Action	Typical Frequency
Regular Maintenance	Brushing and vacuuming (standard cosmetic sweep over whole surface)	Once a year, after autumn leaf fall, or reduced frequency as required, based on site-specific observations of clogging or manufacturer's recommendations – pay particular attention to areas where water runs onto pervious surface from adjacent impermeable areas as this area is most likely to collect the most sediment
Occasional Maintenance	Stabilise and mow contributing and adjacent areas	As required
	Removal of weeds or management using glyphosphate applied directly into the weeds by an applicator rather than spraying	As required – once per year on less frequently used pavements
Remedial Actions	Remediate any landscaping which, through vegetation maintenance or soil slip, has been raised to within 50mm of the level of the paving	As required
Remedial Actions	Remedial work to any depressions, rutting and cracked or broken blocks considered detrimental to the structural performance or a hazard to users, and replace lost jointing material	As required
Monitoring	Rehabilitation of surface and upper substructure by remedial sweeping	Every 10 to 15 years or as required (if infiltration performance is reduced due to significant clogging)
Monitoring	Initial inspection	Monthly for three months after installation

	Inspect for evidence of poor operation and/or weed growth – if required, take remedial action	Three-monthly, 48 hours after large storms in first six months
	Inspect silt accumulation rates and establish appropriate brushing frequencies	Annually
	Monitor inspection chambers	Annually

Table 7: Operation and Maintenance Requirements for Flow Control Device

Maintenance Schedule	Required Action	Typical Frequency
Regular Maintenance	Visual inspection and removal of debris / silt. If any siltation or debris is observed, it will be removed by hosing down, manual cleaning (subject to sufficient risk assessment taking place)	Visual inspection to be carried out once every month or after a substantial storm event.
Occasional Maintenance	Remove debris and hose down as a matter of course including clearing of sump chamber	Every 6 months
Remedial Work	Operation of flow control including testing as required. If operation is compromised in any way, flow control to be replaced.	As required

Table 8: Operation and Maintenance Requirements for Ponds

Maintenance Schedule	Required Action	Typical Frequency
Regular Maintenance	Remove litter and debris	Monthly (or as required)
Occasional Maintenance	Cut the grass – public areas	Monthly (during growing season)
	Cut the meadow grass	Half yearly (spring, before nesting season, and autumn)
	Inspect marginal and bankside vegetation and remove nuisance plants (for first 3 years)	Monthly (at start, then as required)
	Inspect inlets, outlets, banksides, structures, pipework etc for evidence of blockage and/or physical damage	Monthly

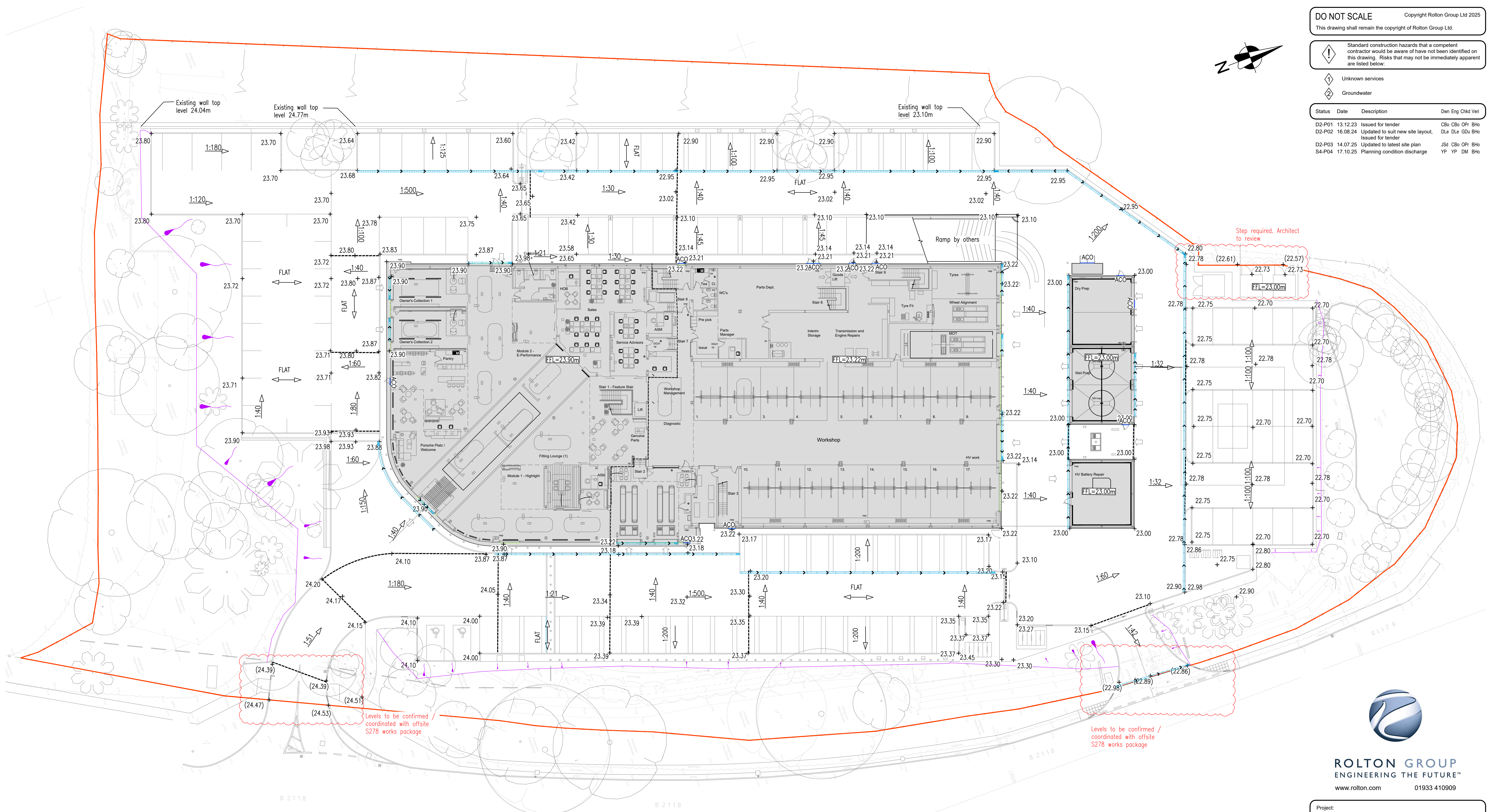
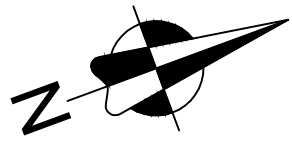
	Inspect water body for signs of poor water quality	Monthly (May – October)
	Inspect silt accumulation rates in any forebay and in main body of the pond and establish appropriate removal frequencies; undertake contamination testing once some build-up has occurred, to inform management and disposal options	Half yearly
	Check any mechanical devices eg penstocks	Half yearly
	Hand cut submerged and emergent aquatic plants (at minimum of 0.1 m above pond base; include max 25% of pond surface)	Annually
	Remove 25% of bank vegetation from water's edge to a minimum of 1 m above water level	Annually
	Tidy all dead growth (scrub clearance) before start of growing season (Note: tree maintenance is usually part of overall landscape management contract)	Annually
Occasional maintenance	Remove sediment from any forebay	Every 1–5 years, or as required
	Remove sediment and planting from one quadrant of the main body of ponds without sediment forebays	Every 5 years, or as required
	Remove sediment from the main body of big ponds when pool volume is reduced by 20%	With effective pre-treatment, this will only be required rarely, eg every 25–50 years
Remedial Work	Repair erosion or other damage	As required
	Replant, where necessary	As required
	Aerate pond when signs of eutrophication are detected	As required
	Realign rip-rap or repair other damage	As required
	Replant, where necessary	As required
	Repair / rehabilitate inlets, outlets and overflows	As required

APPENDIX A – DRAINAGE DRAWINGS

Standard construction hazards that a competent contractor would be aware of have not been identified on this drawing. Risks that may not be immediately apparent are listed below.

Unknown services
Groundwater

Status	Date	Description	Dwn	Eng	Chkd	Veri
D2-P01	13.12.23	Issued for tender	CBa	CBa	OPr	BHo
D2-P02	16.08.24	Updated to suit new site layout, issued for tender	DLe	DLe	GDu	BHo
D2-P03	14.07.25	Updated to latest site plan	JSt	CBa	OPr	BHo
S4-P04	17.10.25	Planning condition discharge	YP	YP	DM	BHo



GENERAL LEGEND:

— Total red line boundary (1.426 ha)

FINISHED LEVELS LEGEND:

+20.43
+20.43
1:95
Proposed Finished Ground Level
Proposed Finished Ground Level to match existing level
Proposed Finished Surface Gradient
Proposed Level Threshold Building Access

Low
High
Proposed banking extents (Max 1:3 gradient)
Grade line

Drawing based on:
• Axis 3 Site Layout drawing no. P269 Drawing Number 311
• Landmark Surveys and Developments drawing 21569

Notes

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Project:
Sytner Group Porsche
Mid Sussex
New Dealership & Workshop Facility

Drawing Title:
Proposed Levels & Retaining
Layout

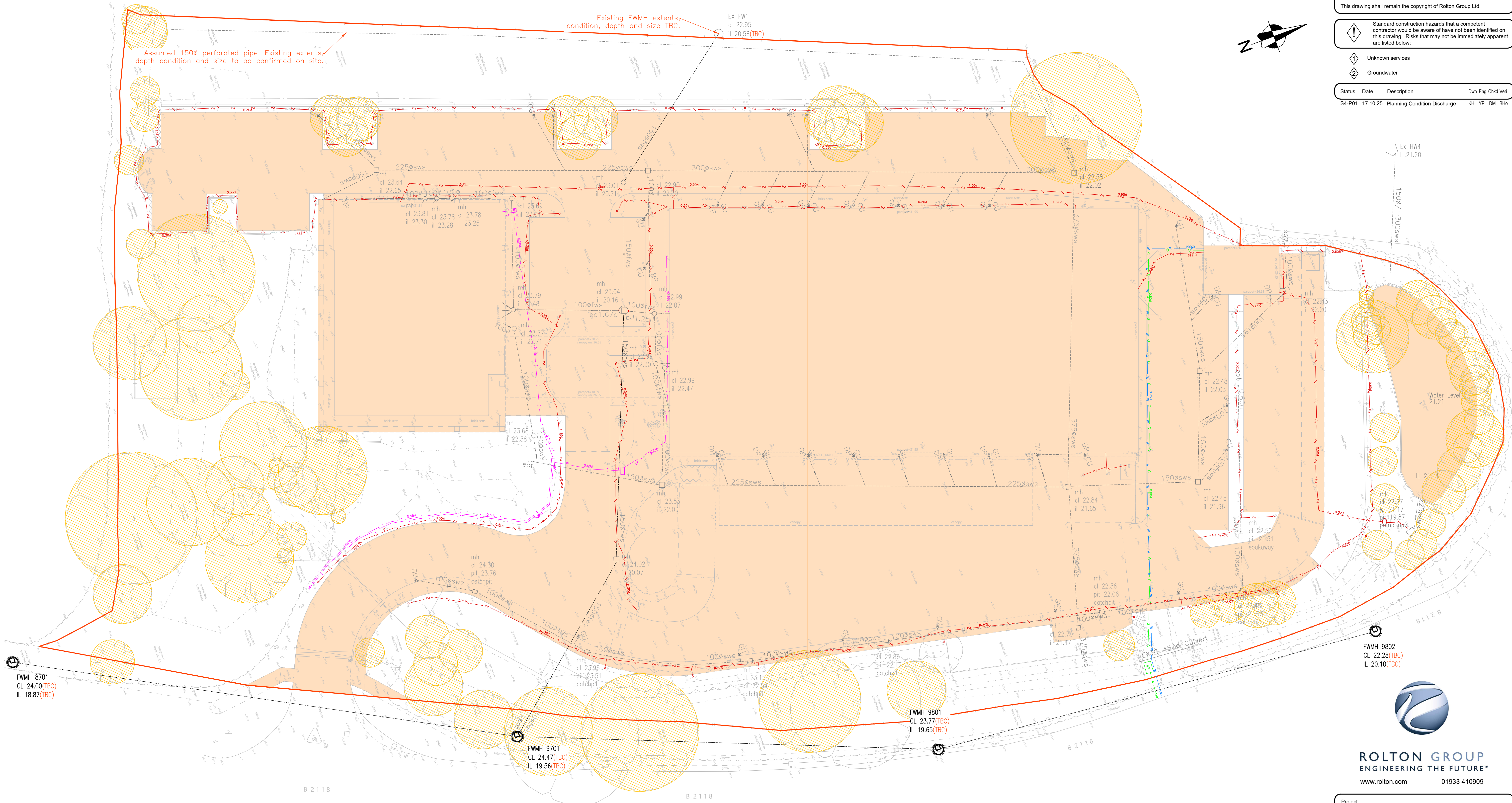
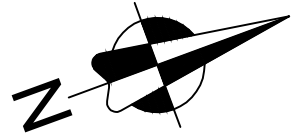
RGL Project Ref:
23-0466
Specification(s):
Scale@A1
1:250
Scale@A3
1:500

Drawing Number:
230466-RGL-ZZ-XX-DR-D-101-0001
Project Originator Zone Level Type Role Classification Number
Issue Purpose:
FOR APPROVAL
Status:
S4-P04
Suitability-Revision

Standard construction hazards that a competent contractor would be aware of have not been identified on this drawing. Risks that may not be immediately apparent are listed below:

- Unknown services
- Groundwater

Status	Date	Description	Dwn	Eng	Chkd	Veri
S4-P01	17.10.25	Planning Condition Discharge	KH	YP	DM	BHo



GENERAL LEGEND:

Total red line boundary (1.426 ha)

EXISTING DRAINAGE LEGEND

- Existing Southern Water Foul Water Drainage. (Drainage information as taken from Southern Water asset mapping) (Extents, depth, condition and size to be confirmed onsite via CCTV survey)
- Existing Private Surface Water Drainage. (Drainage information as taken from Safe Dig Surveys, subsurface utility mapping, DWG No.U1333, sheet 1 & 2, rev., dated December 2023.
- Existing Private Foul Water Drainage. (Drainage information as taken from Safe Dig Surveys, subsurface utility mapping, DWG No.U1333, sheet 1 & 2, rev., dated December 2023.

ARBORICULTURE SURVEY LEGEND:

Root protection Area (RPA)
Arboricultural information based Axis 3 Design proposed levels CAD model. (Original Arboricultural assessment required for review.)

EXISTING UTILITY LEGEND

- Electric
 - Telecom
 - Gas
 - Water
- Existing utility information as taken from Safe Dig Surveys, subsurface utility mapping, DWG No.U1333, sheet 1 & 2, rev., dated December 2023.

EXISTING HARDSTANDING PLAN LEGEND:

Catchment Area (ha)	Impermeable Area (ha)	Direct Discharge location
Total Catchment Area	0.877 ha	To existing pond/ditch.

Existing flowrate for the 1 in 100 storm: 367 l/s (Based on Modified Rational Method)

GENERAL

- The contractor shall comply with the health and safety requirements as set out in the CDM Regulations
- All works are to be undertaken in accordance with the Building Regulations and latest relevant British Standards.
- Conflicting information between this drawing and information given by others must be referred to the engineer before the works commence.
- The contractor shall, before commencing the works, verify all existing outfall invert levels and site and setting out dimensions, the contractor shall be responsible for the true and proper setting out of the works and for the correctness of the position, levels, dimensions, and alignment of all parts of the works. Any discrepancies are to be reported to the Engineer
- All products used are to be CE marked in accordance with the Construction Products Directive CPD/89/106/EEC.
- The contractor shall be responsible for locating all existing utilities prior to commencing construction and protecting all existing services affected by the works.
- Any unidentified hazards discovered during the progress of works are to be reported immediately to the engineer.
- This drawing should not be used for setting out
- All land, ownership and asset boundaries / extents, shown on this plan should be assumed to be indicative and should be legally verified prior to any works commencing

Project:
**Sytner Group Porsche
Mid Sussex
New Dealership & Workshop Facility**

Drawing Title:
**Existing Drainage
General Arrangement Plan**

RGL Project Ref:
23-0466

Scale@A1
1:250

Scale@A3
1:500

Specification(s):

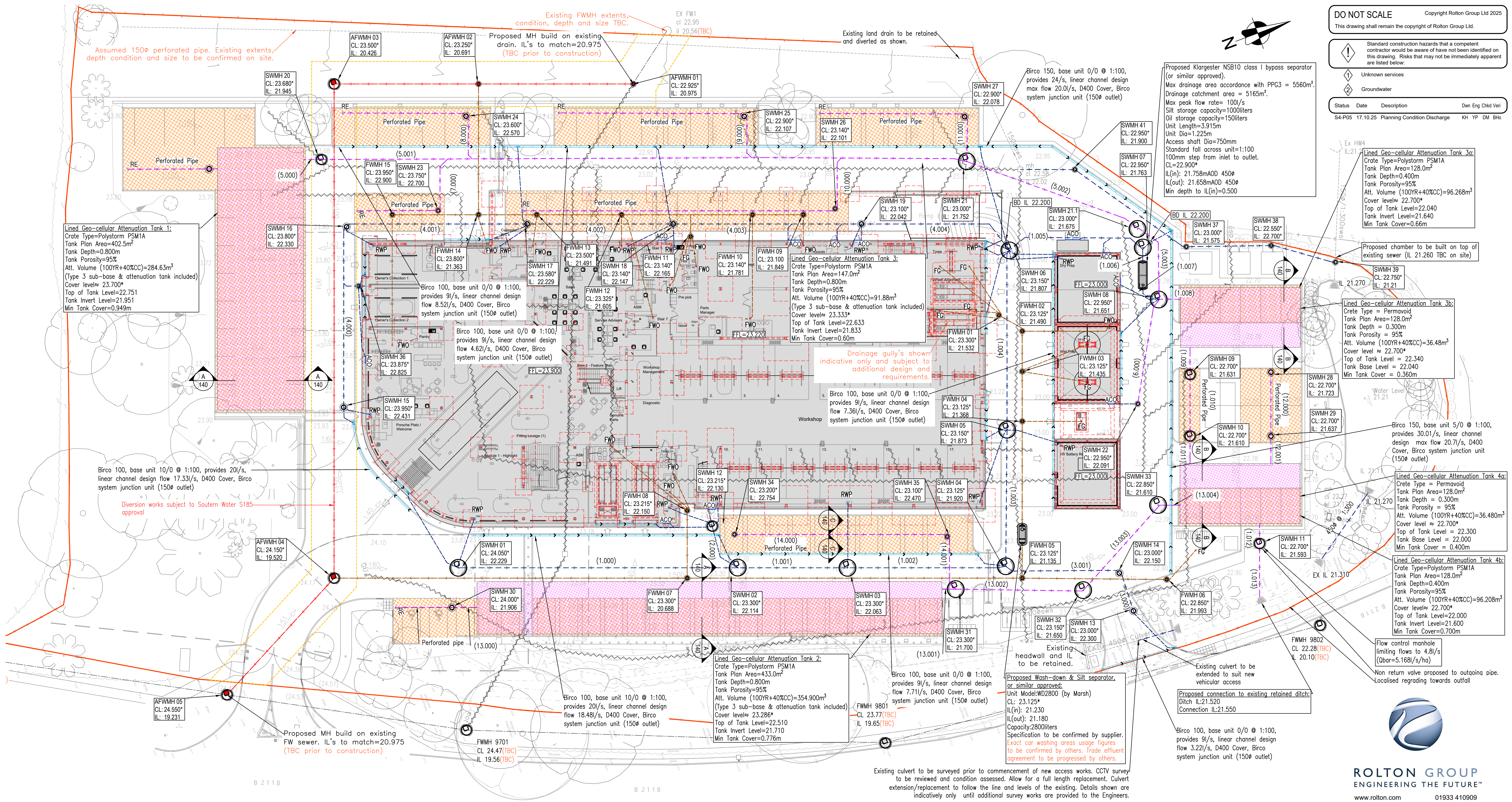
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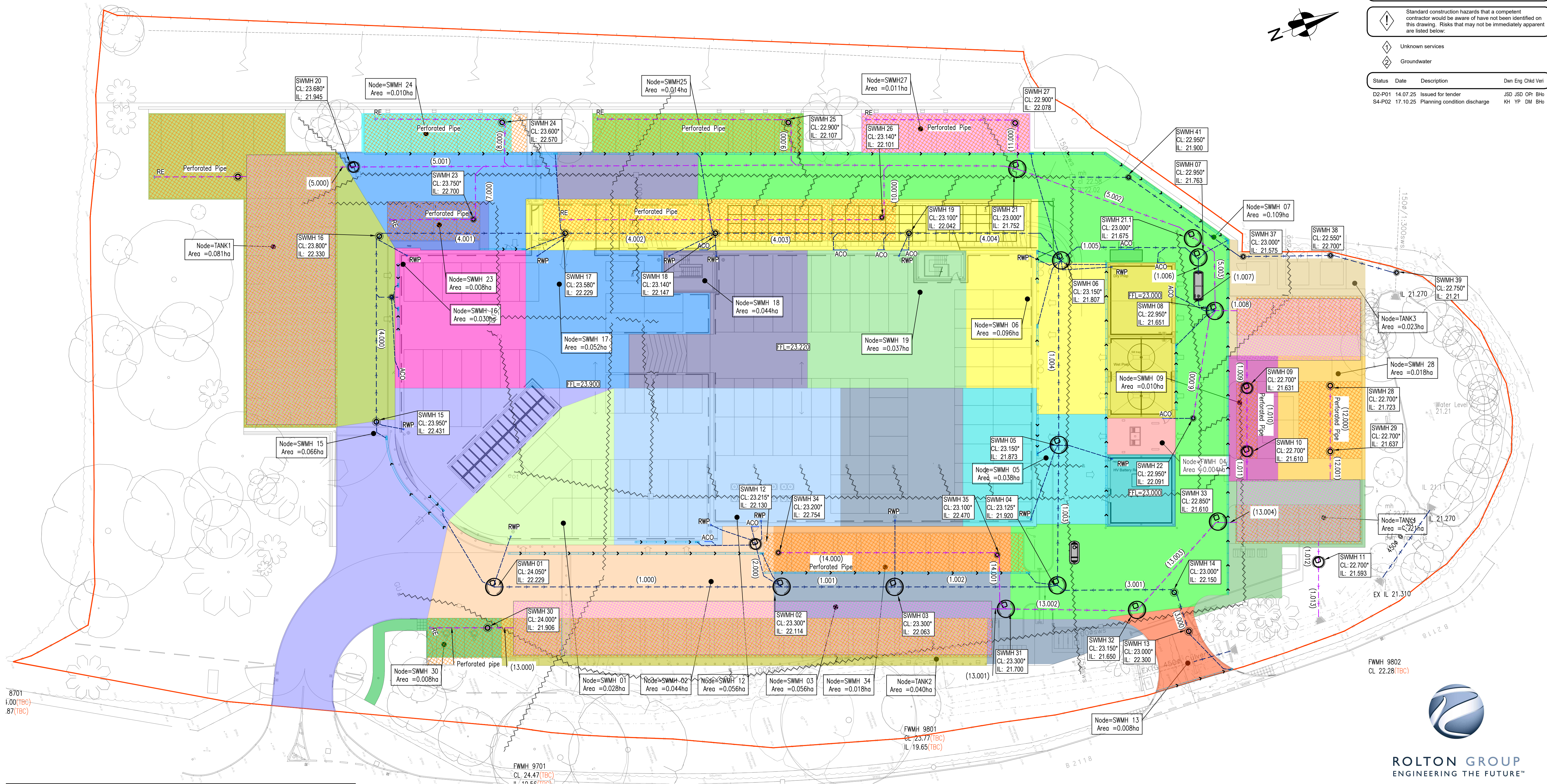
Project-Originator-Zone-Level-Type-Role-Classification-Number

Issue Purpose:
FOR APPROVAL

Status:
S4-P01

Substability-Revision





GENERAL LEGEND:

Total red line boundary (1,426 ha)

CATCHMENT PLAN LEGEND:

Catchment Area (ha)	Impermeable Area (ha)	Direct Discharge location
Catchment 1	0.930ha	To existing retained ditch.

GENERAL

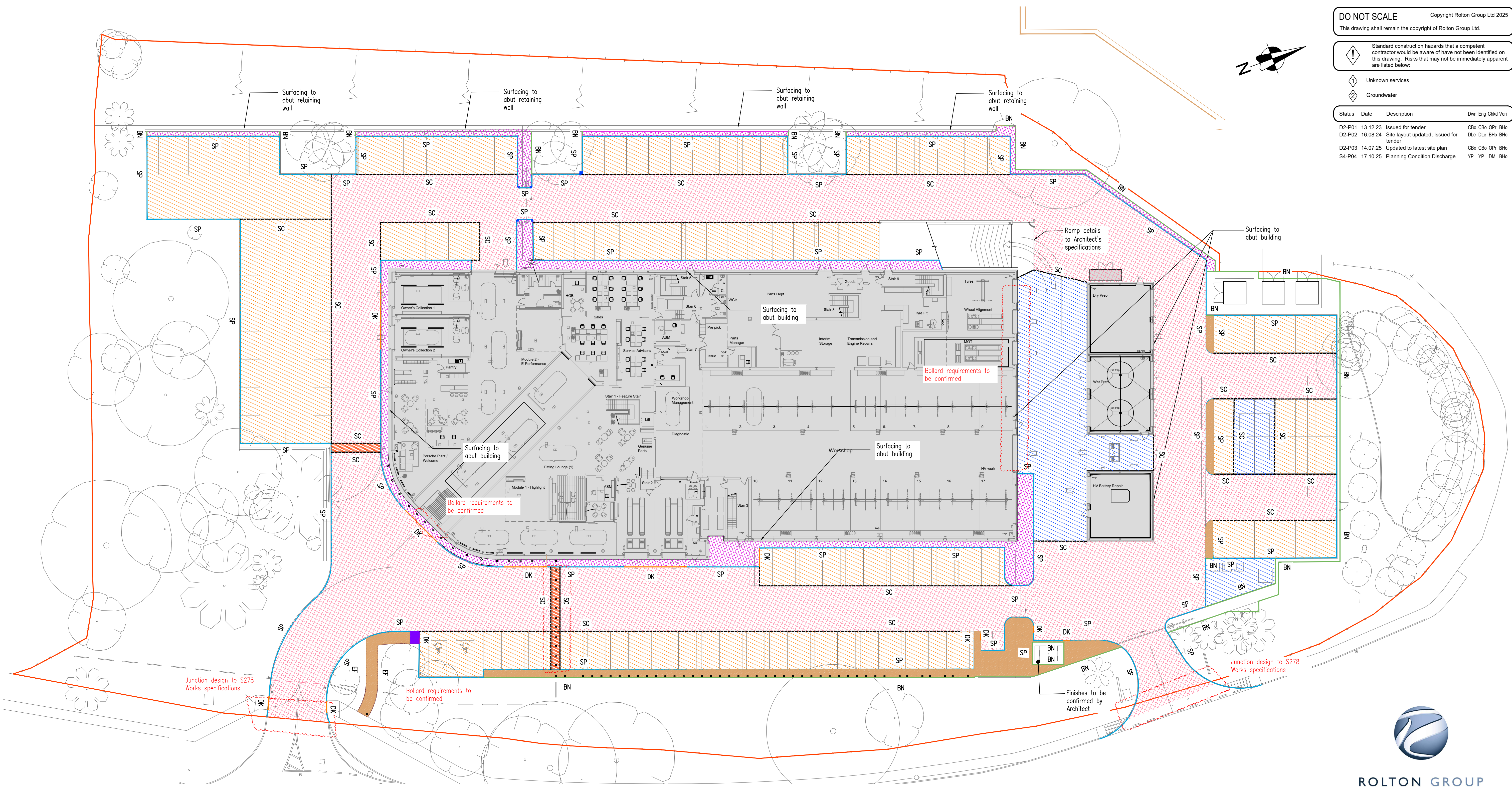
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- The contractor shall, before commencing the works, verify all existing 'outfall' invert levels and site and setting out dimensions. The contractor shall be responsible for the true and proper setting out of the works and for the correctness of the position, levels, dimensions, and alignment of all parts of the works. Any discrepancies are to be reported to the Engineer
- All products used are to be CE marked in accordance with the Construction Products Directive CPD/89/106/EEC.
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Project:
Sytner Group Porsche
Mid Sussex
New Dealership & Workshop Facility

Drawing Title:
Proposed Catchment Area Plan

RGL Project Ref: 23-0466
Scale@A1: 1:250
Scale@A3: 1:500
Specification(s):

Drawing Number:
230466-RGL-ZZ-XX-DR-D-121-0001
Project-Originator-Zone-Level-Type-Role-Classification-Number
Issue Purpose:
FOR APPROVAL
Status:
S4-P02
Suitability-Revision



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- 1 Standard construction hazards that a competent contractor would be aware of have not been identified on this drawing. Risks that may not be immediately apparent are listed below.
- 2 Unknown services
- 3 Groundwater

Status	Date	Description	Dwn	Eng	Chkd	Veri
D2-P01	13.12.23	Issued for tender	CB	Bo	OP	BHo
D2-P02	16.08.24	Site layout updated, issued for tender	DLe	DLe	BHo	BHo
D2-P03	14.07.25	Updated to latest site plan	CB	Bo	OP	BHo
S4-P04	17.10.25	Planning Condition Discharge	YP	YP	DM	BHo

GENERAL LEGEND:

— Total red line boundary (1,426 ha)

SURFACES & KERBING LEGEND:

SP Concrete splayed kerb (125 x 255mm) laid with 75mm upstand.

SC Kerb channel (125 x 150mm) laid flush with surface.

DK Concrete splayed drop kerb (125 x 255/150mm).

BN Concrete bullnosed kerb (125 x 150mm) laid flush with surface.

EF Concrete edging – flat top (50 x 150mm) laid flush with surface.

Concrete half battered kerb quadrant (305mm radius), laid with 75mm upstand.

Proposed Blockwork Permeable Paving Car Park Construction. Refer to detail C1 on drawing 230466-RGL-ZZ-XX-DR-D-125-0002.

Proposed Asphalt Impermeable Carriageway Construction. Refer to detail C2 on drawing 230466-RGL-ZZ-XX-DR-D-125-0002.

Proposed Blockwork Carriageway Construction. Refer to detail C3 on drawing 230466-RGL-ZZ-XX-DR-D-125-0002.

Proposed Asphalt Impermeable Footpath Construction. Refer to detail F1 on drawing 230466-RGL-ZZ-XX-DR-D-125-0002.

Proposed Blockwork Impermeable Footpath Construction. Refer to detail F2 on drawing 230466-RGL-ZZ-XX-DR-D-125-0002.

Marshall Blister Concrete Tactile Paving (400 x 400mm). Refer to detail F3 on drawing 230466-RGL-ZZ-XX-DR-D-125-0002.

168mmØ Marshalls RB 101 Steel Bollard or similar approved

EXTERNAL CONCRETE SLAB LEGEND:

Proposed Concrete Slab Construction Type 1. Refer to detail C4 on drawing 230466-RGL-ZZ-XX-DR-D-125-0003.

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Project:
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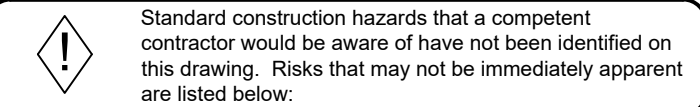
Drawing Title:
**Proposed External Finishes & Kerbs
Layout**

RGL Project Ref: 23-0466	Scale@A1 1:250	Scale@A3 1:500
Specification(s):		

Drawing Number:
230466-RGL-ZZ-XX-DR-D-125-0001
Project Originator/Zone/Level/Type/Role Classification Number

Issue Purpose:
FOR APPROVAL

Status:
S4-P04
Suitability/Revision

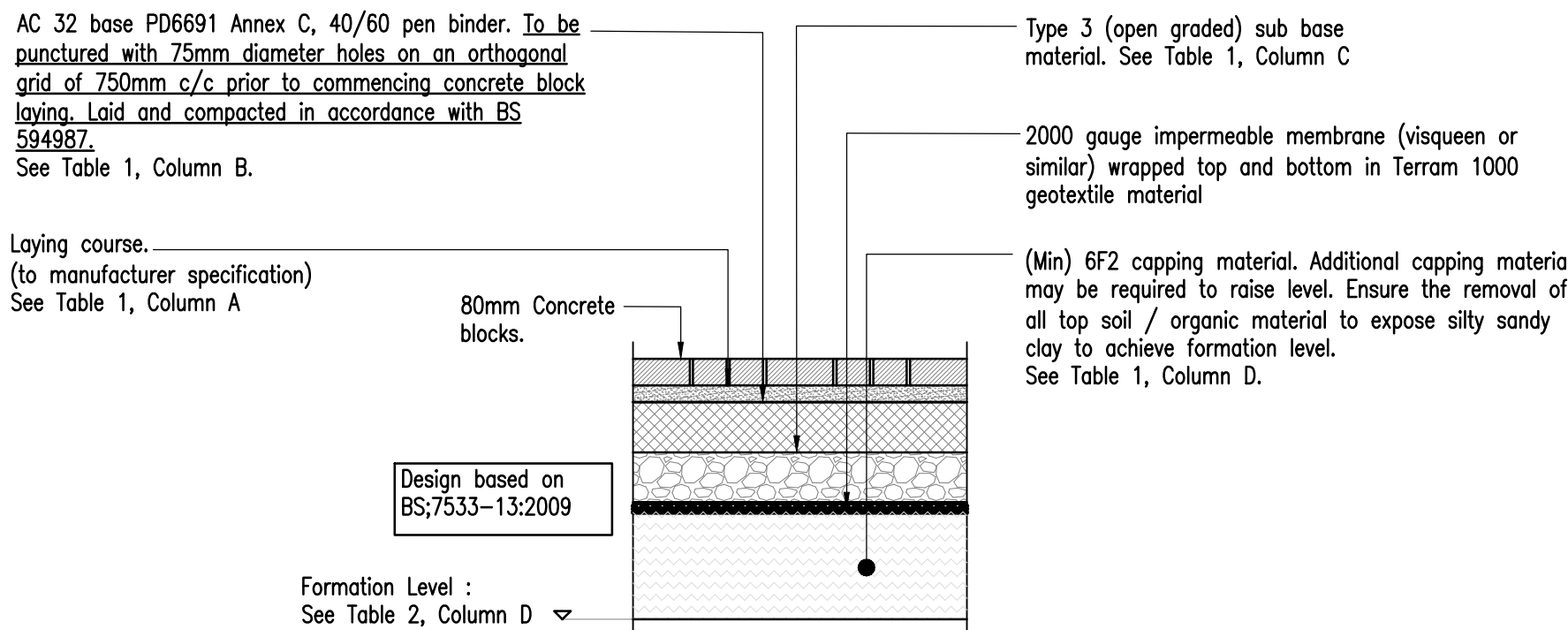


Standard construction hazards that a competent contractor would be aware of have not been identified on this drawing. Risks that may not be immediately apparent are listed below.

Status	Date	Description	Dwn/Eng/Chkd/Veri
D2-P01	13.12.23	Issued for tender	CBo CBo OPi BHo
S4-P02	17.10.25	Planning Condition Discharge	YP YP DM BHo

GENERAL

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C1 Proposed Permeable Block Paving Car Park Construction Detail (System C - Tanked permeable paving)

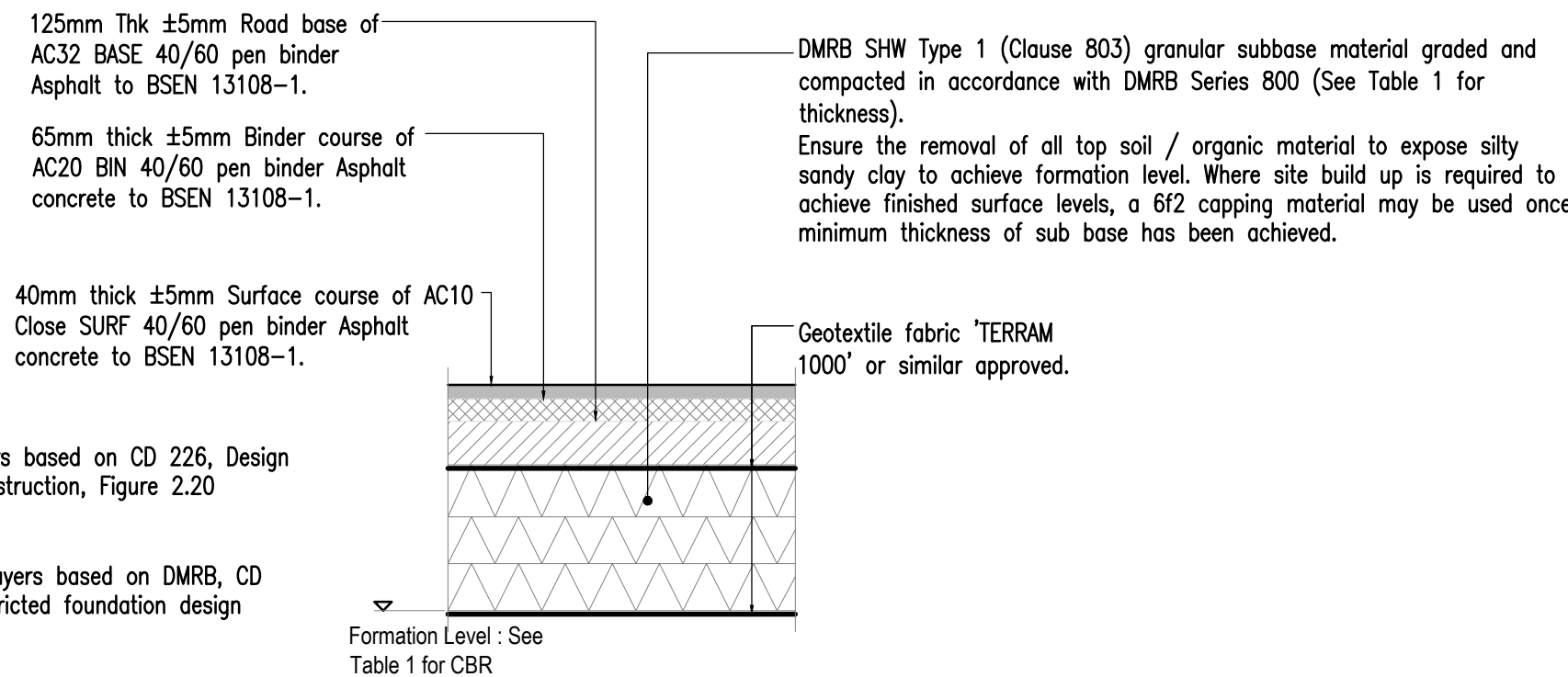
Table 1: BS:7533-13:2009.

System C (Lined permeable paving) – Selection of pavement course material & thickness. (Pg 14)

Site Category	No. of Standard axles (over life cycle)	Column A Laying course (in mm)	Column B Asphalt Base thickness (in mm)	Column C Type 3 Sub-base (in mm)	Column D Subgrade CBR class (in %) with surface modulus (in MPa) to determine subbase capping (in mm)					
					1% (17.60MPa)	2% (27.43MPa)	3% (35.55MPa)	4% (42.74MPa)	5% (49.30MPa)	6% (55.40MPa)
A (Domestic)	0	50 mm	Not Applicable	250 mm	600 mm	350 mm	250 mm	200 mm	150 mm	
B (Car Parking)	100	50 mm	Not Applicable	350 mm	600 mm	350 mm	250 mm	200 mm		
C (Pedestrian)	0.015 MSA	50 mm	125 mm	150 mm	600 mm	350 mm	250 mm	200 mm		
D (Shopping)	0.15 MSA	50 mm	150 mm	150 mm	600 mm	350 mm	250 mm	200 mm		
E (Commercial)	1.5 MSA	50 mm	200 mm	150 mm	600 mm	400 mm	250 mm	200 mm		
F (Heavy Traffic)	15 MSA	50 mm	300 mm	150 mm	600 mm	350 mm	250 mm	200 mm		

Note(s):

- Pavement detail layer thickness not drawn to size. Use table above.
- Site CBR testing to be undertaken to determine sub-base thickness & report back to Rolton with test results.
- For site category A and B use 50mm thick blocks. For site category C to F use 80mm thick blocks.
- Sub-base Type 3 thickness represented in above table is sized for structural loading.
- Footway design to be as of site category A.



- Design of asphalt layers based on CD 226, Design for new pavement construction, Figure 2.20 (assuming 4 msa)

- Design of foundation layers based on DMRB, CD 225, Figure 3.18, Restricted foundation design option.

C2 Asphalt Carriageway Construction Detail

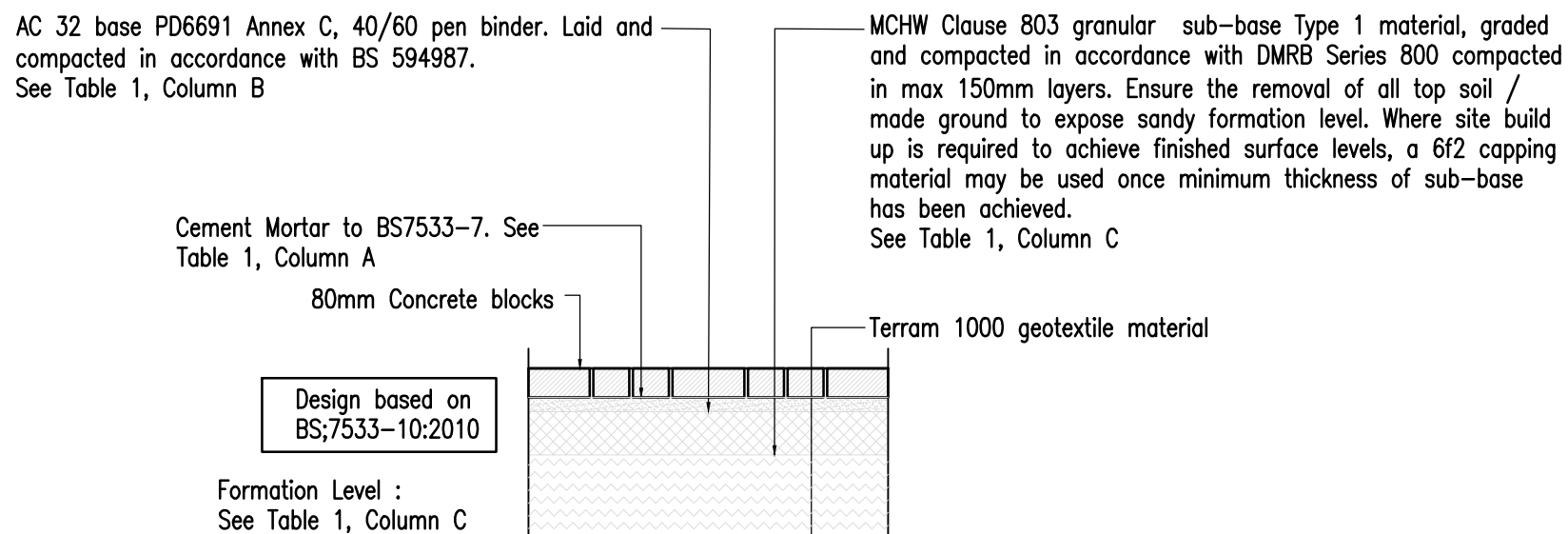
Table 1: Minimum subbase thickness for subgrade CBR. (Based on DMRB-CD 225, Fig.3.18 – Subbase MCHW1, Pg 14)

Subgrade Stiffness		Subbase Thickness without capping (in mm)
Subgrade surface modulus (in MPa)	Equivalent CBR (in %)	
17.6	1	N/A
27.43	2	420
35.55	3	370
42.74	4	310
49.30	5	270
55.40	6	260

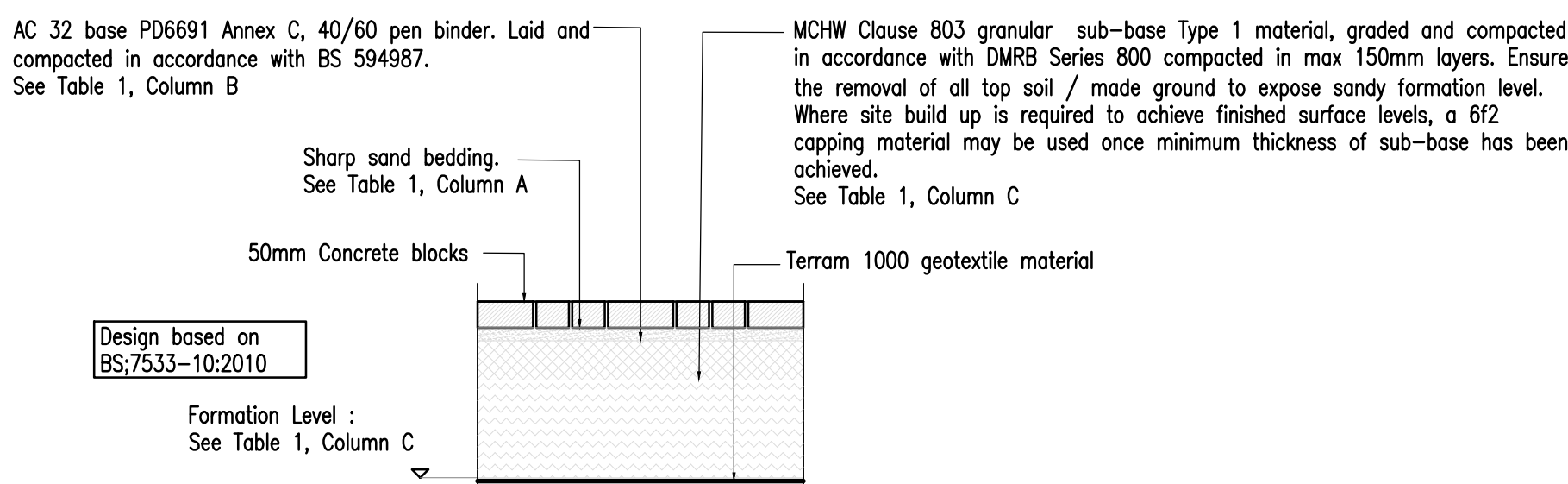
Site CBR testing to be undertaken to determine subbase thickness. Report back to Rolton with test results.

Note(s):

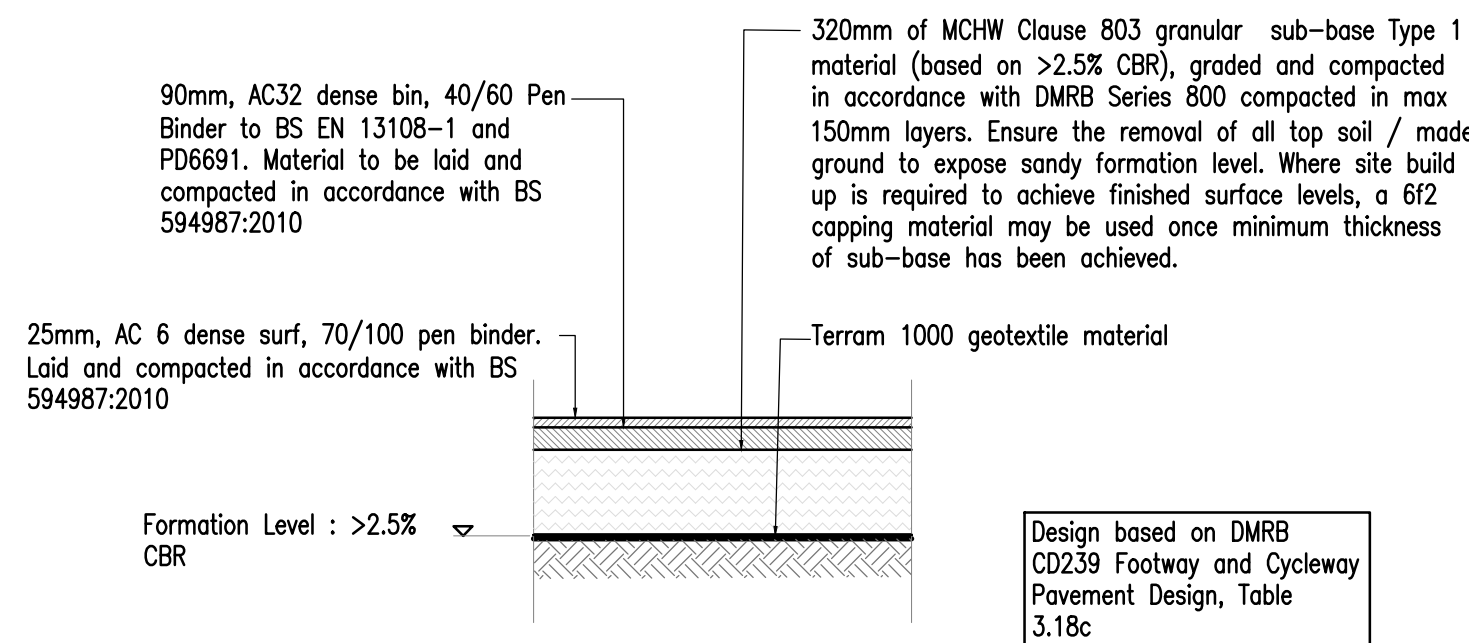
- Pavement detail layer thickness not drawn to size. Use table above.
- Site CBR testing to be undertaken to determine sub-base thickness & report back to Rolton with test results.



C3 Proposed Impermeable Block Paving Carriageway Construction Detail



F2 Proposed Impermeable Block Paving Footpath Construction Detail



F1 Proposed Impermeable Asphalt Footway

Site Category	Standard Axles per day	Column A Laying course (in mm)	Column B Asphalt Base thickness (in mm)	Column C Subgrade CBR class (in %) with surface modulus (in MPa) to determine subbase thickness(in mm)				
				2% (27.43MPa)	3% (35.55MPa)	4% (42.74MPa)	5% (49.30MPa)	6% (55.40MPa)
IB	>1000	40 mm	200 mm	450 mm	350 mm	250 mm	150 mm	150 mm
IA	</=1000	40 mm	200 mm	450 mm	350 mm	250 mm	150 mm	150 mm
I	</=200	40 mm	200 mm	450 mm	350 mm	250 mm	150 mm	150 mm
II	</=60	40 mm	200 mm	300 mm	275 mm	250 mm	150 mm	150 mm
III	</=5	40 mm	200 mm	300 mm	275 mm	250 mm	150 mm	150 mm
IV	0	40 mm	40 mm	300 mm	250 mm	200 mm	110 mm	110 mm

Note(s):

- Pavement detail layer thickness not drawn to size. Use table above.
- Site CBR testing to be undertaken to determine sub-base thickness & report back to Rolton with test results.
- Footway design to be as of light vehicle construction.
- Type 1 sub-base to MCHW Clause 803 specification

Site Category	Standard Axles per day	Column A Laying course (in mm)	Column B Asphalt Base thickness (in mm)	Column C Subgrade CBR class (in %) with surface modulus (in MPa) to determine subbase thickness(in mm)				
				2% (27.43MPa)	3% (35.55MPa)	4% (42.74MPa)	5% (49.30MPa)	6% (55.40MPa)
IB	>1000	Not Applicable	Not Applicable	Not Applicable				
IA	</=1000	Not Applicable	Not Applicable	Not Applicable				
I	</=200	Not Applicable	Not Applicable	Not Applicable				
II	</=60	40 mm	160 mm	300 mm	275 mm	250 mm	225 mm	175 mm
III	</=5	40 mm	120 mm	300 mm	275 mm	250 mm	225 mm	175 mm
IV	0	40 mm	Not Applicable	300 mm	250 mm	200 mm	110 mm	110 mm

Note(s):

- Pavement detail layer thickness not drawn to size. Use table above.
- Site CBR testing to be undertaken to determine sub-base thickness & report back to Rolton with test results.
- Footway design to be as of light vehicle construction.
- Type 1 sub-base to MCHW Clause 803 specification

NOTES:

Design subject to receipt of Site Investigation Report and CBR Testing Results



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Project:
**Sytner Group Porsche
Mid Sussex
New Dealership & Workshop Facility**

Drawing Title:
**Proposed External Hardstanding
Construction Details Sheet 1**

RGL Project Ref:
23-0466

Scale@A1
1:20

Scale@A3
1:40

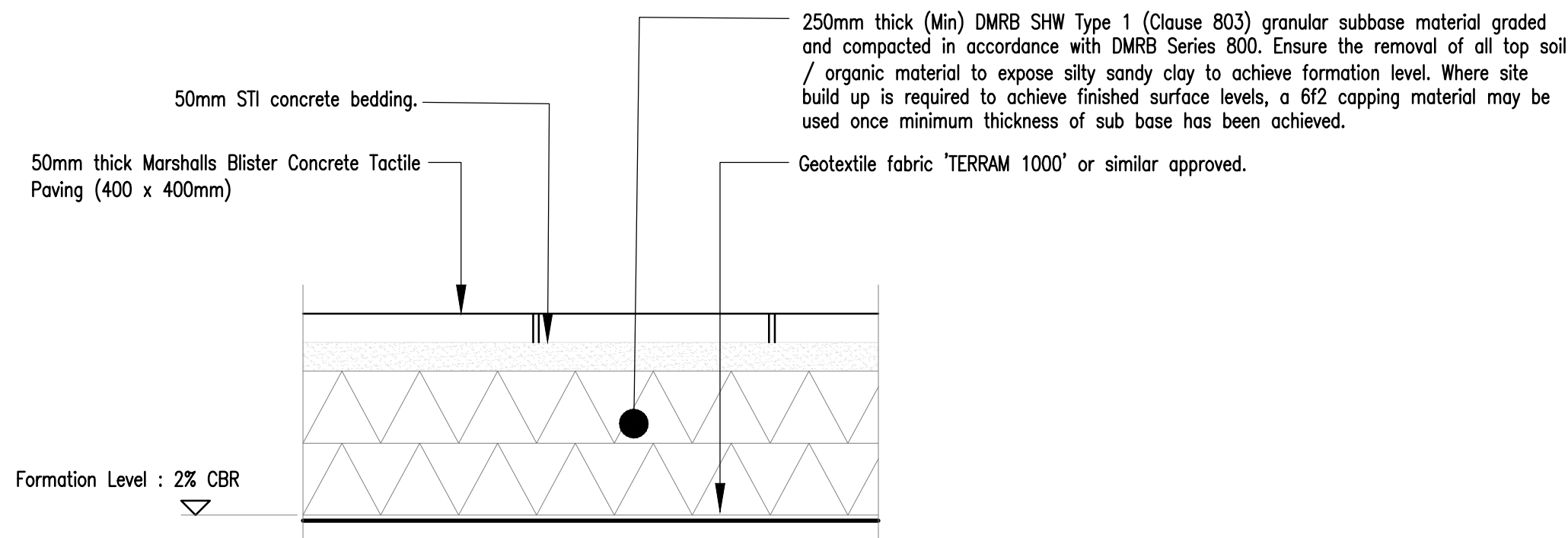
Specification(s):

Drawing Number:
230466-RGL-ZZ-XX-DR-D-130-0001

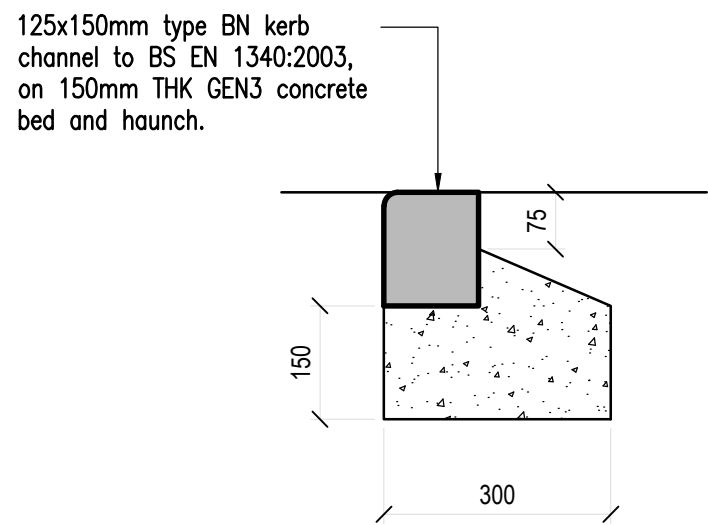
Project Originator/Zone/Level/Type/Role/Classification/Number

Issue Purpose:
FOR APPROVAL

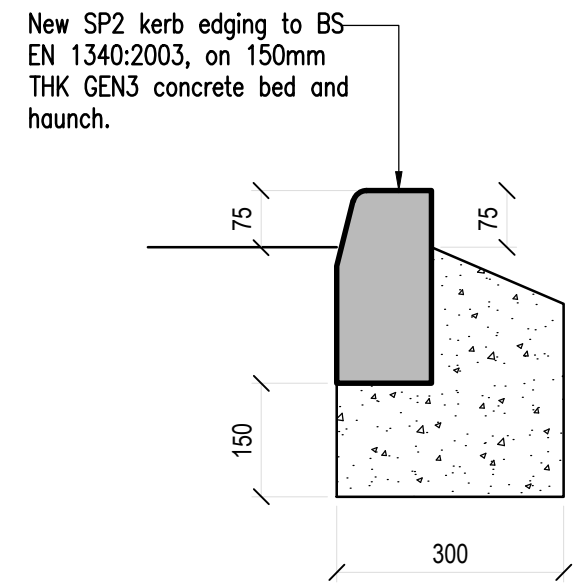
Status:
S4-P02
Suitability/Revision



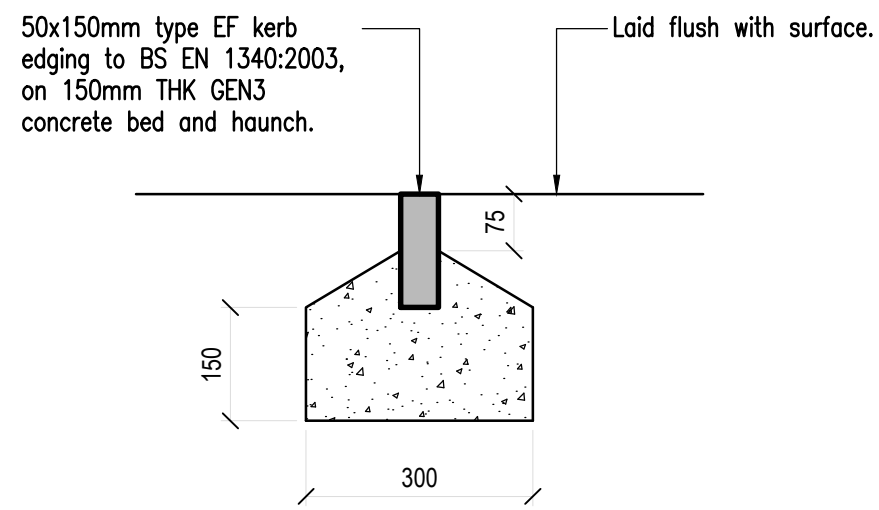
F3 Tactile Paving Construction Detail



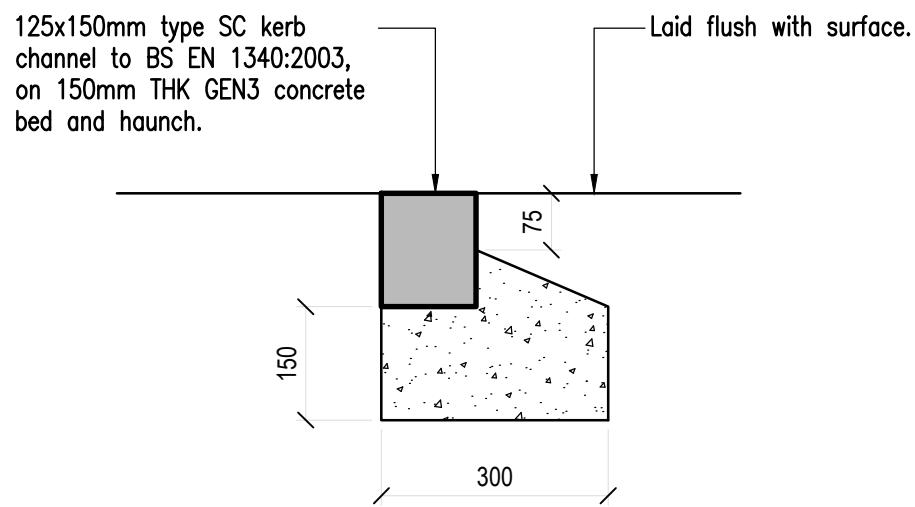
BN Kerb Detail - 0mm Upstand



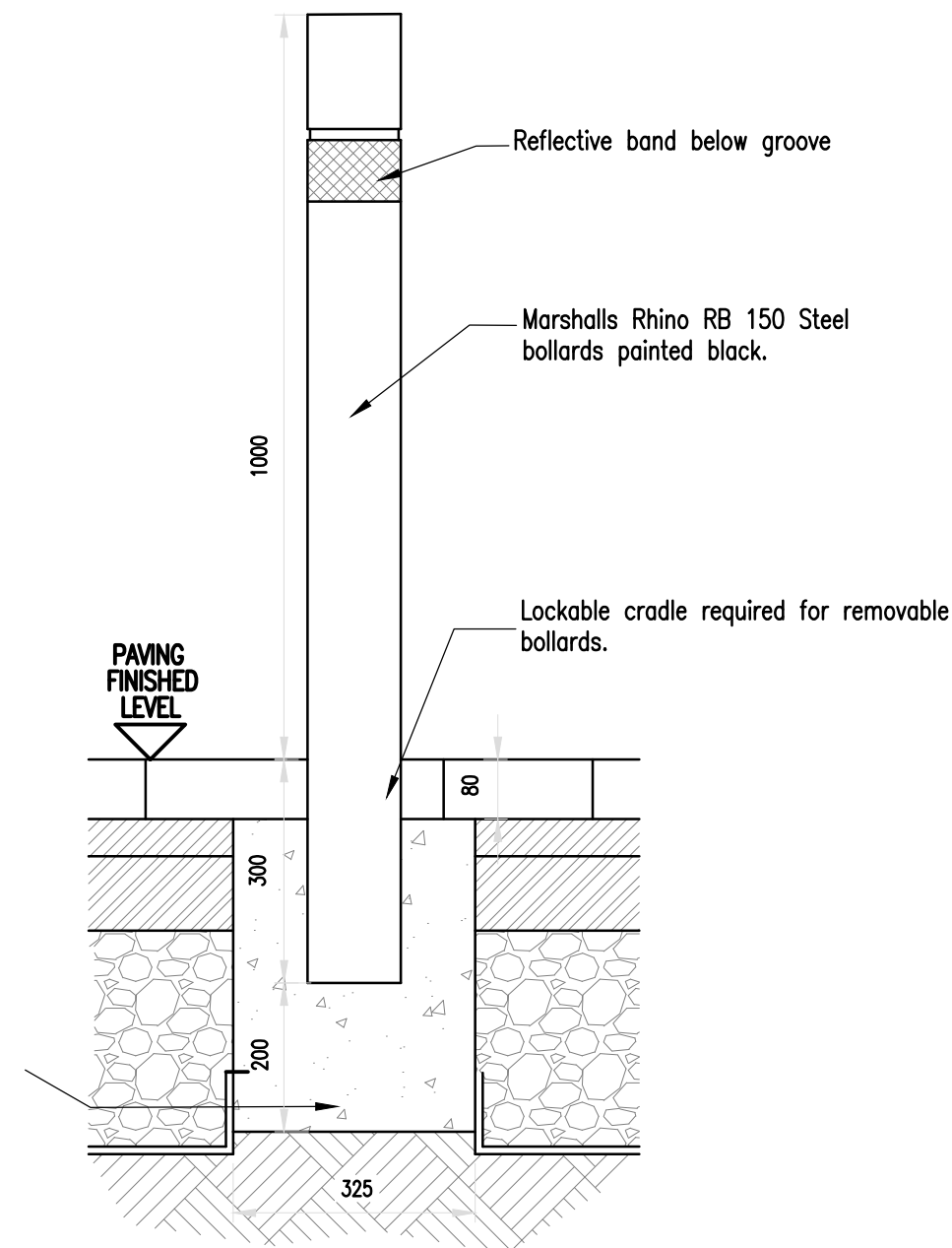
SP2 Kerb Detail



EF Kerb Detail - 0mm Upstand



SC Kerb Detail



Typical Bollard Detail

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Status	Date	Description	Dwn	Eng	Chkd	Veri
D2-P01	13.12.23	Issued for tender	CB	CB	OP	BH
S4-P02	17.10.25	Planning Condition Discharge	YP	YP	DM	BH

GENERAL

- The contractor shall comply with the health and safety requirements as set out in the CDM Regulations
- All works are to be undertaken in accordance with the Building Regulations and latest relevant British Standards.
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- The contractor shall, before commencing the works, verify all existing outfall invert levels and site and setting out dimensions. the contractor shall be responsible for the true and proper setting out of the works and for the correctness of the position, levels, dimensions, and alignment of all parts of the works. Any discrepancies are to be reported to the Engineer
- All products used are to be CE marked in accordance with the Construction Products Directive CPD/89/106/EEC.
- The contractor shall be responsible for locating all existing utilities prior to commencing construction and protecting all existing services affected by the works.
- Any unidentified hazards discovered during the progress of works are to be reported immediately to the engineer.
- This drawing should not be used for setting out
- All land, ownership and asset boundaries / extents, shown on this plan should be assumed to be indicative and should be legally verified prior to any works commencing



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Project:
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Mid Sussex
New Dealership & Workshop Facility**

Drawing Title:
**Proposed External Hardstanding
Construction Details Sheet 2**

RGL Project Ref: 23-0466	Scale@A1 As shown	Scale@A3 As shown
Specification(s):		

Drawing Number: 230466-RGL-ZZ-XX-DR-D-131-0002 Project-Originator-Zone-Level-Type-Role-Classification-Number	Status: S4-P02 Suitability-Revision
Issue Purpose: FOR APPROVAL	

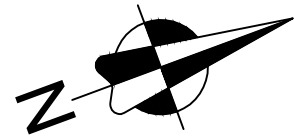
NOTES:
Design subject to receipt of Site Investigation Report and CBR Testing Results

LEGEND:

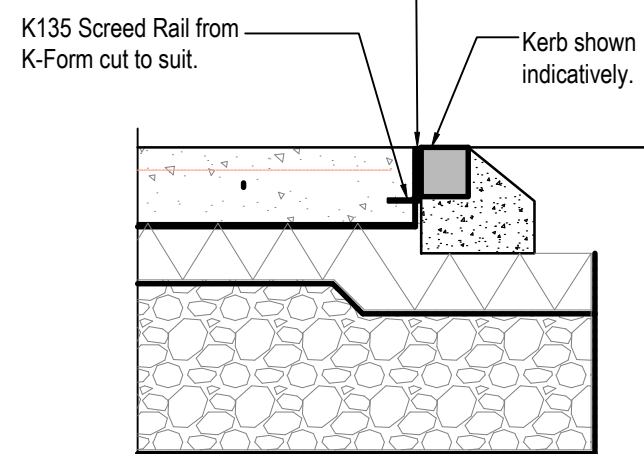
- (LJ) Denotes Longitudinal / Induced Joint.
- (CJ) Denotes Contraction Joint.
- (ISO) Denotes Isolation Joint.
- (MJ2) Denotes Manhole Joint - Detail 2.

NOTE

- Where longitudinal joints are shown on jointing layout the contractor may also use the induced joint detail where preferred.
- All manholes to be installed as shown in Manhole Joint Detail 1 unless noted otherwise.

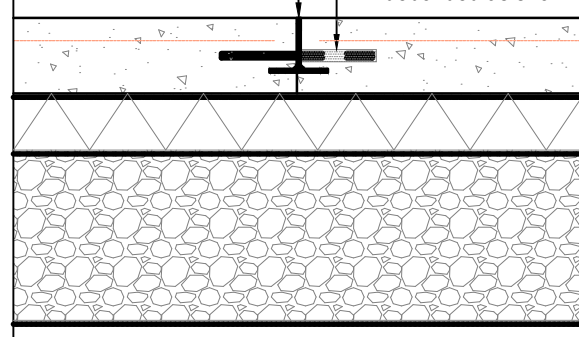


Isolation joint consisting of K135 Screenshot Rail from K-Form. Remove top cap once concrete bays are cast. Use cold pour sealant in line with K-Form recommendations.



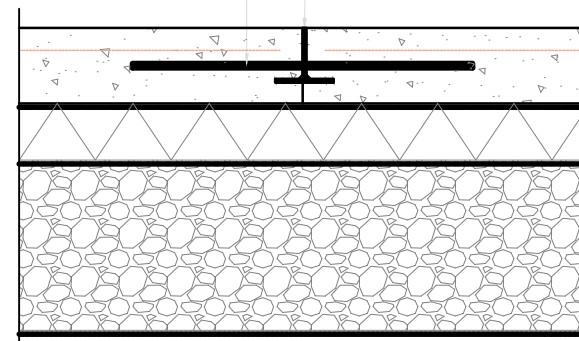
ISO Isolation Joint Detail
Scale: 1:20

K135 Screenshot Rail from K-Form. Remove top cap once concrete bays are cast. Use cold pour sealant in line with K-Form recommendations.



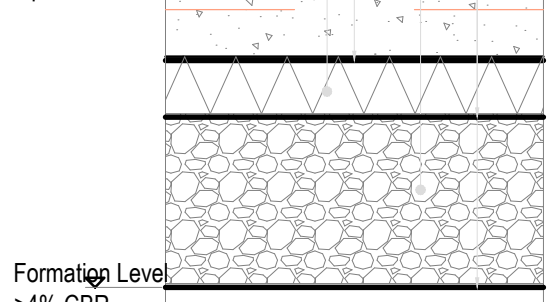
CJ Contraction Joint Detail
Scale: 1:20

12mm Ø x 900mm long mild steel tie bars at 600mm CRS.



LJ Longitudinal Joint Detail
Scale: 1:20

200mm thick grade PAV2 reinforced concrete slab reinforced with 1 no. layer A393 mesh reinforcement top. Minimum concrete cover to reinforcement is to be 60mm to all faces. Slab to be brushed finish, 1.5 - 3mm deep.



C3 Concrete Slab Construction Type 1 Detail
Scale: 1:20

150mm thick (Min) DMRB SHW Type 1 (Clause 803) granular subbase material graded and compacted in accordance with DMRB Series 800. Ensure the removal of all top soil / organic material to expose silty sandy clay to achieve formation level. Where site build up is required to achieve finished surface levels, a 6F2 capping material may be used once minimum thickness of sub base has been achieved.

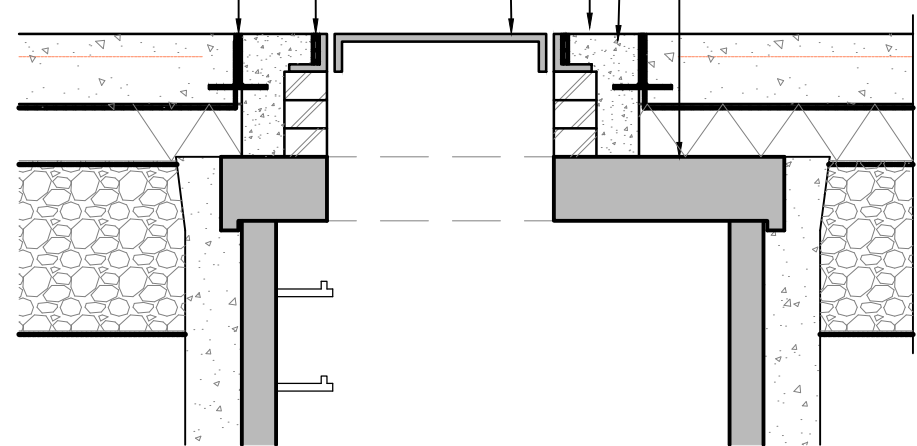
1200 gauge impermeable membrane. (Visqueen or similar)

400mm (Min) 6F2 capping material. Additional capping material may be required to raise level. Ensure the removal of all topsoil / organic material to expose silty sandy clay to achieve formation level

Geotextile fabric TERRAM 1000' or similar approved.

600 x 600mm clear opening cover complying with BS EN 124 and BS 7903. K135 Screenshot Rail from K-Form cut to suit.

Isolation joint consisting of K135 Screenshot Rail from K-Form. Remove top cap once concrete bays are cast. Use cold pour sealant in line with K-Form recommendations.



MJ1 Manhole Joint Detail 1
Scale: 1:20

Edge of slab to coordinate with ramp layout. Architect to confirm

FFL=23.000

ACO

ACO

ACO

FFL=23.000

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Unknown services

Groundwater

Status	Date	Description	Dwn	Eng	Chkd	Veri
S4- P01	16.10.25	Planning condition discharge	YP	YP	DM	BHo

Notes

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- Any CONSTRUCTION status issue does not provide or imply approval or validation of any third party information.
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- Not all hatches and linetypes shown on legends and keys may be present on this drawing. Drawings to be printed in colour by default, typical material colours are for clarity only.



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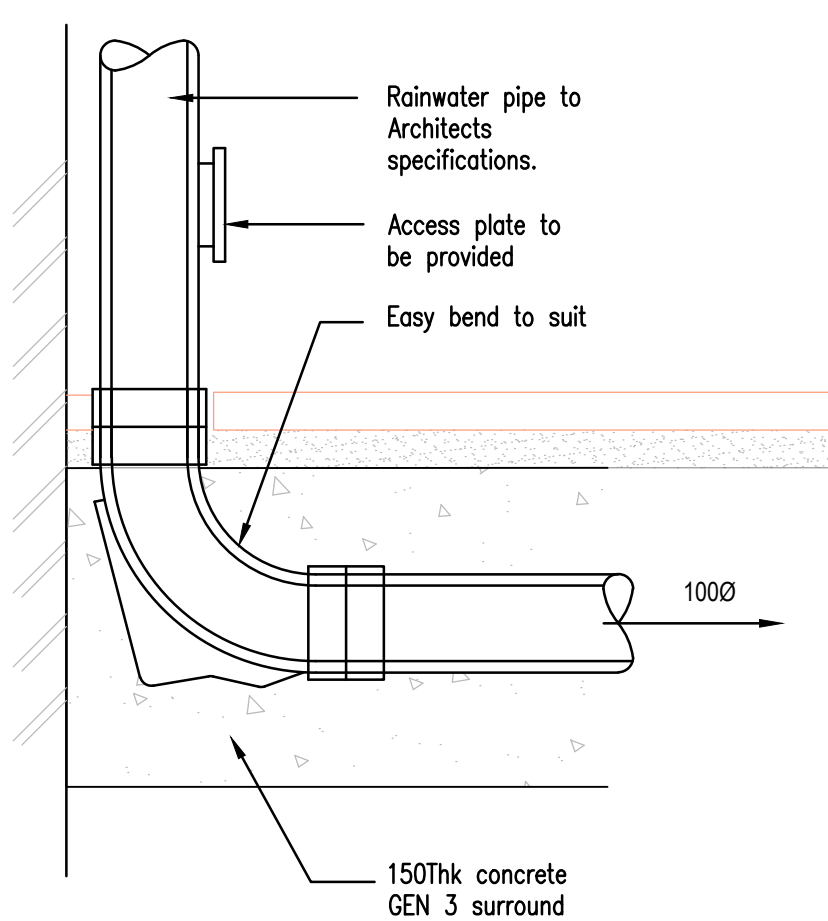
Project:
**Sytner Group Porsche
Mid Sussex
New Dealership & Workshop Facility**

Drawing Title:
**Proposed External Concrete Slab
General Arrangement**

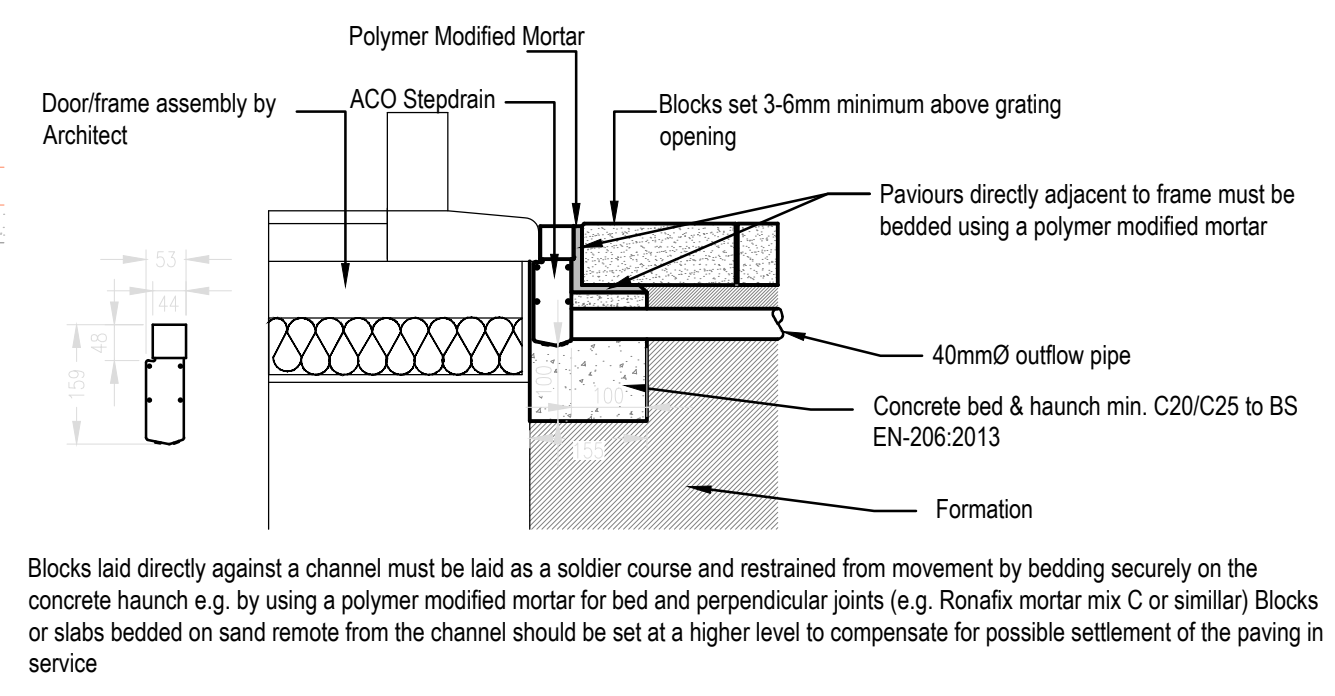
RGL Project Ref: 23-0466	Scale@A1 1:100	Scale@A3 1:500
Specification(s):		

Drawing Number: 230466-RGL-ZZ-XX-DR-D-130-0003	Status: S4-P01
Project Originator Zone-Level-Type-Role-Classification-Number	Suitability-Revision
Issue Purpose: FOR APPROVAL	

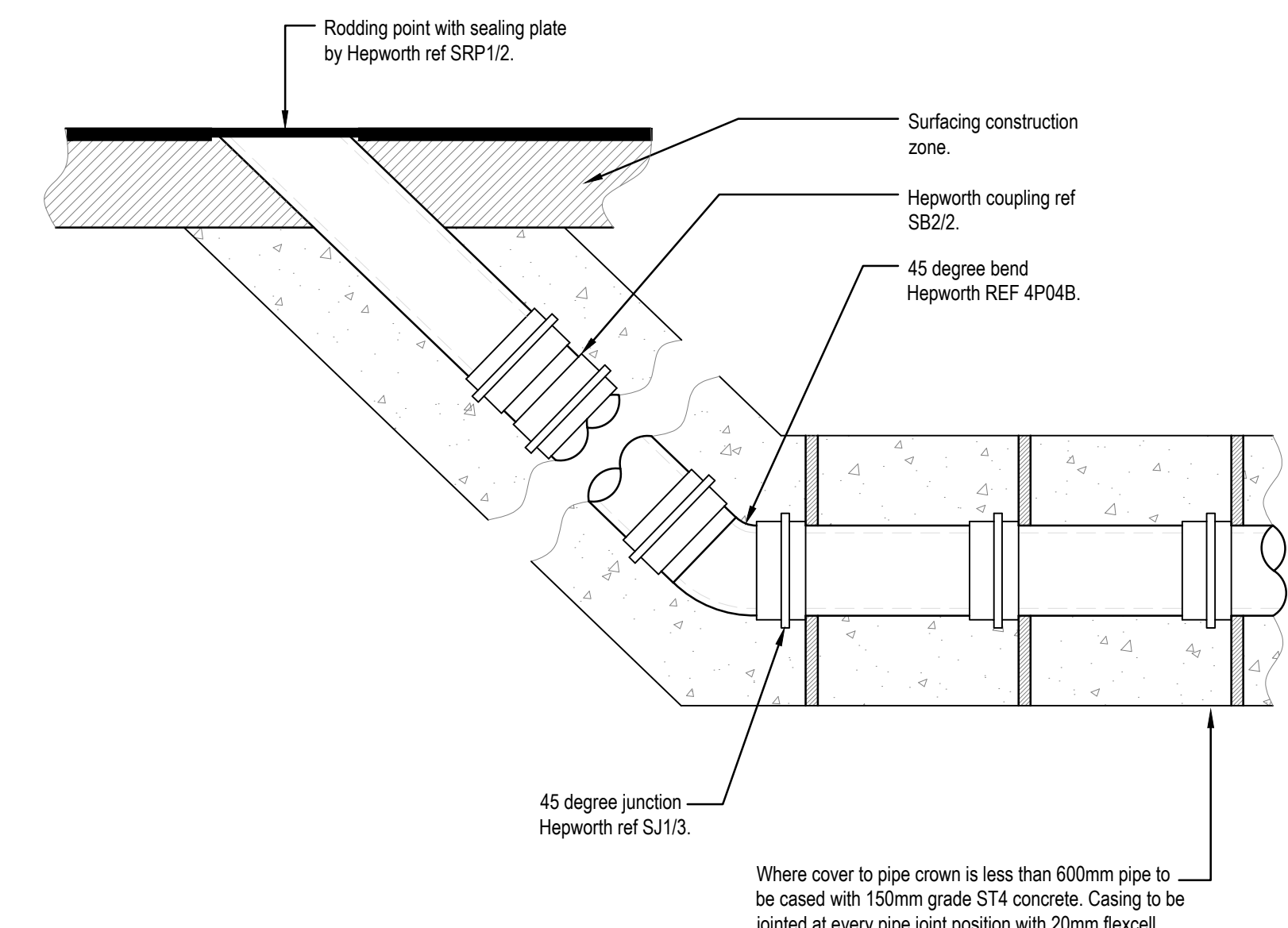
NOTES:
Design subject to receipt of Site Investigation Report and CBR Testing Results



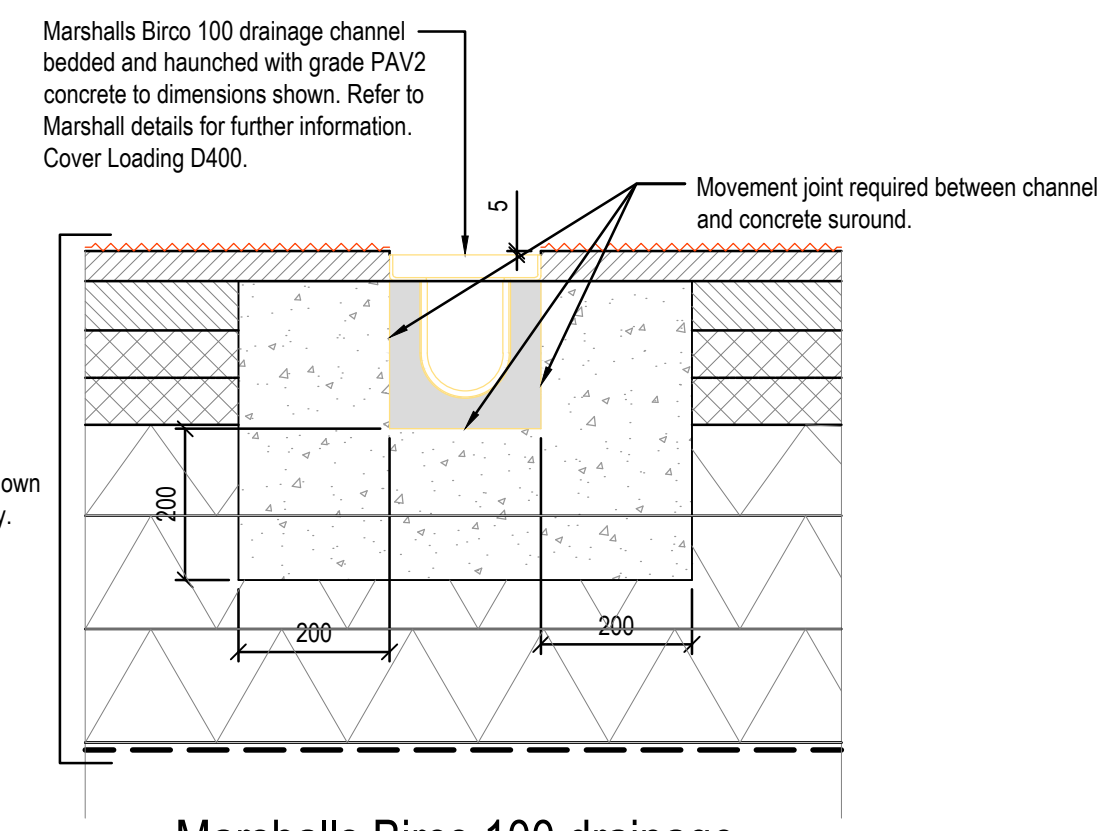
RWP Detail (1:10)



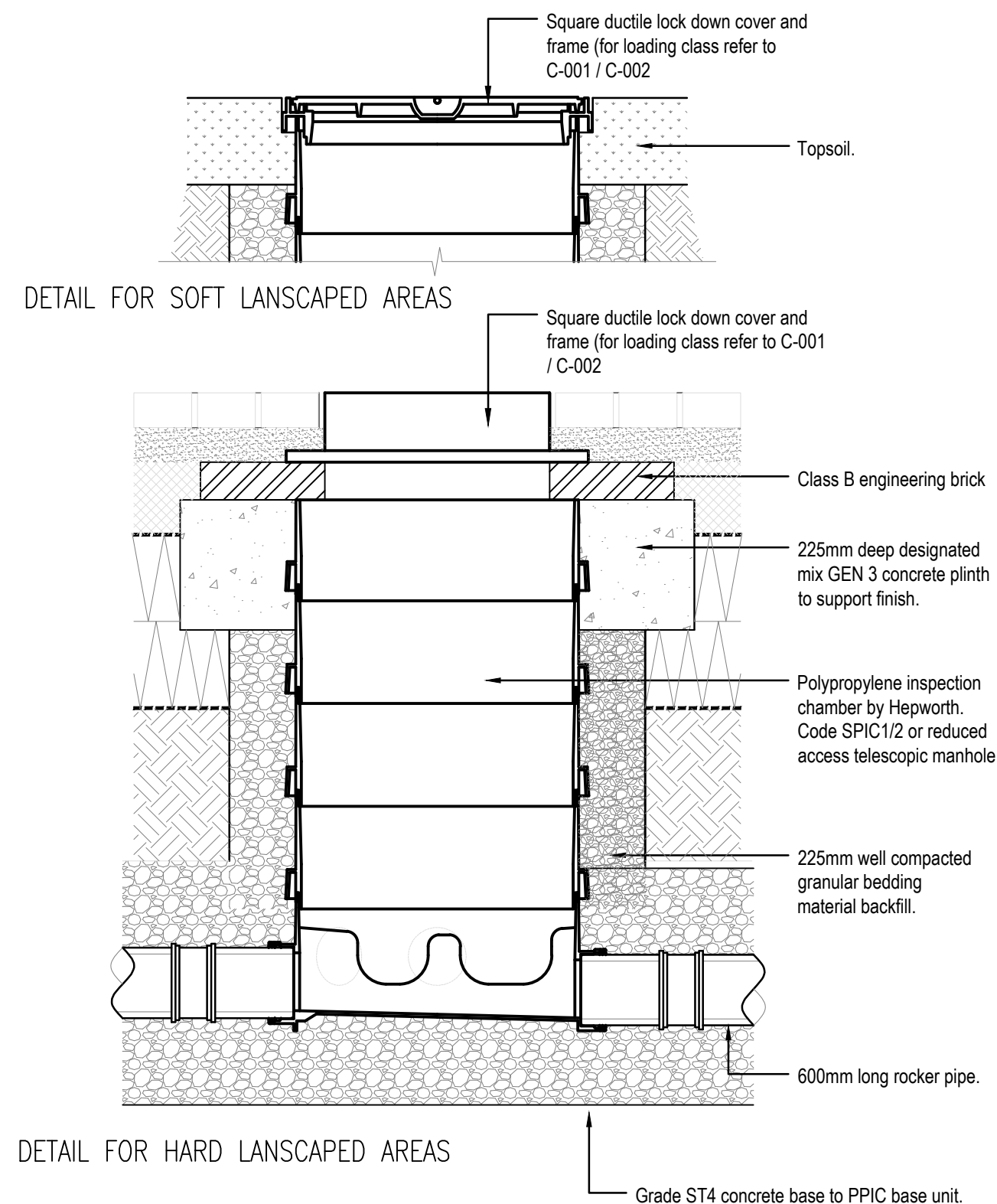
ACO Stepdrain (1:10)
Slimline Domestic Level Threshold Door Drainage



Rodding Eye Detail at Head of Run/On Branch Drain (1:10)

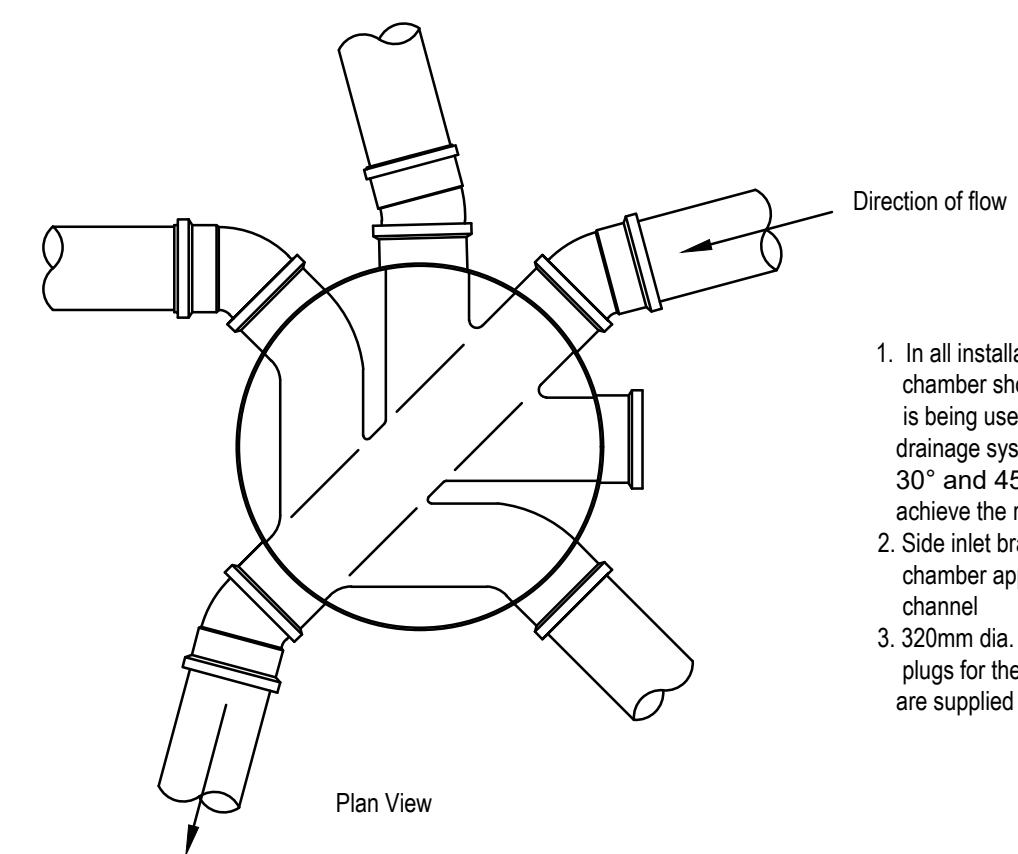


Marshalls Birco 100 drainage channel Construction Detail (1:10)



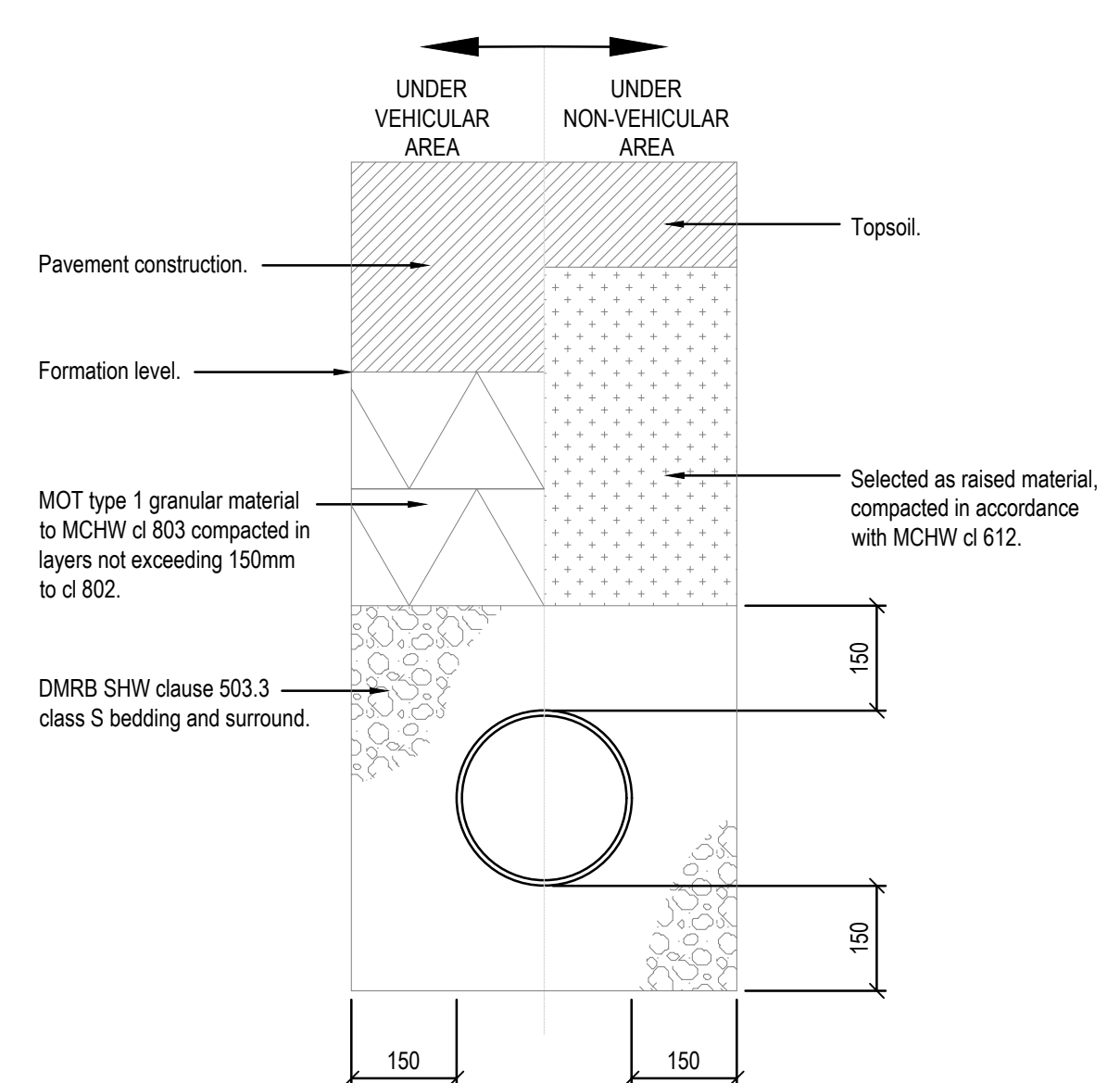
DETAIL FOR HARD LANDSCAPED AREAS

Typical Wavin PPIC Manhole Detail (1:10)



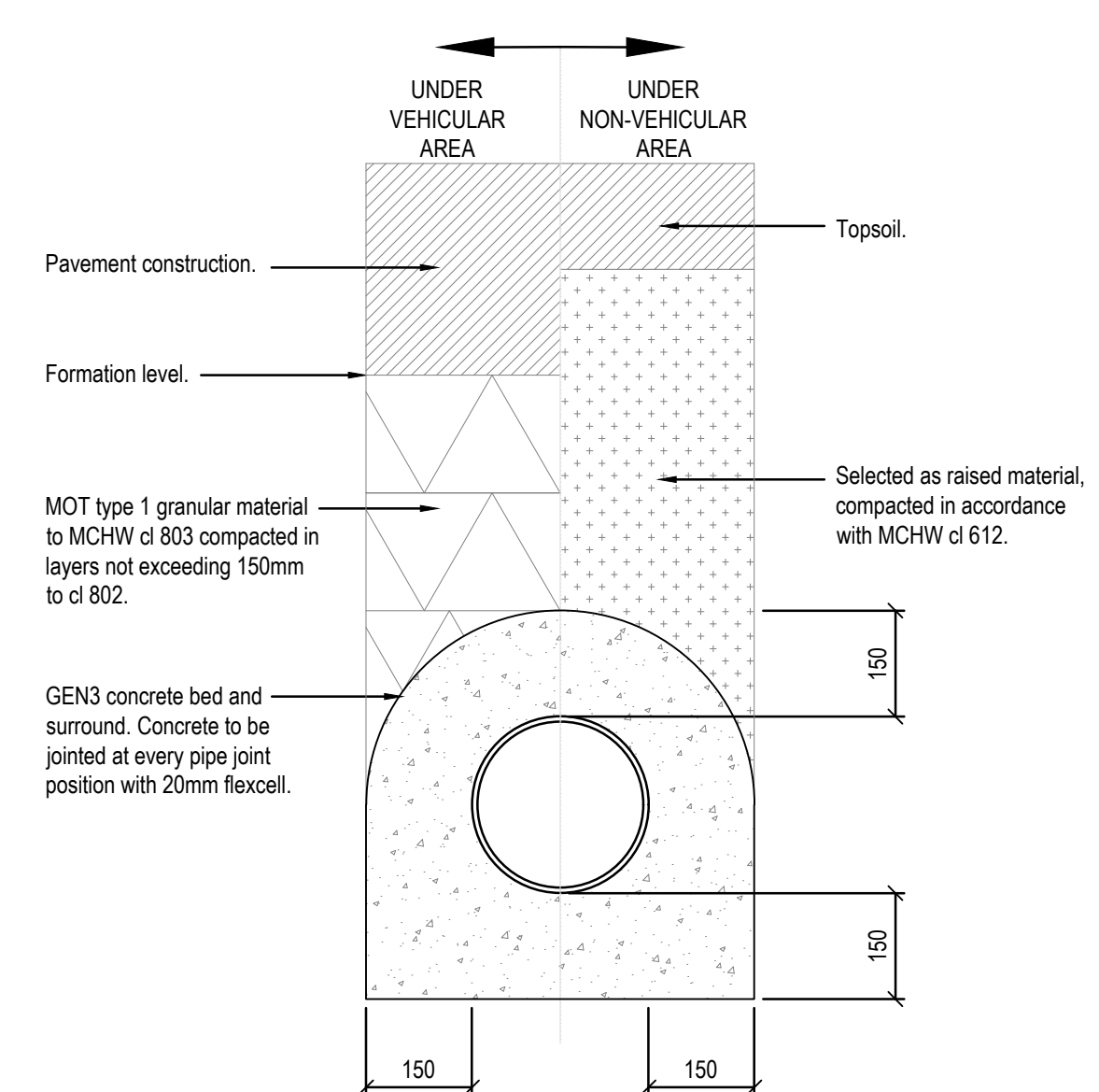
1. In all installations, the main channel of the inspection chamber should always be used. Where the chamber is being used as a change of direction for the drainage system, short radius bends of 11¼°, 15°, 30° and 45° can be used in the inlet and outlet to achieve the required angle.
2. Side inlet branch connections enter the inspection chamber approx. 55mm above the invert of the main channel
3. 320mm dia. chambers are supplied with 2no. blanking plugs for the side inlets and 460mm dia. chambers are supplied with 3no. blanking plugs.

Chamber Plan View (1:10)

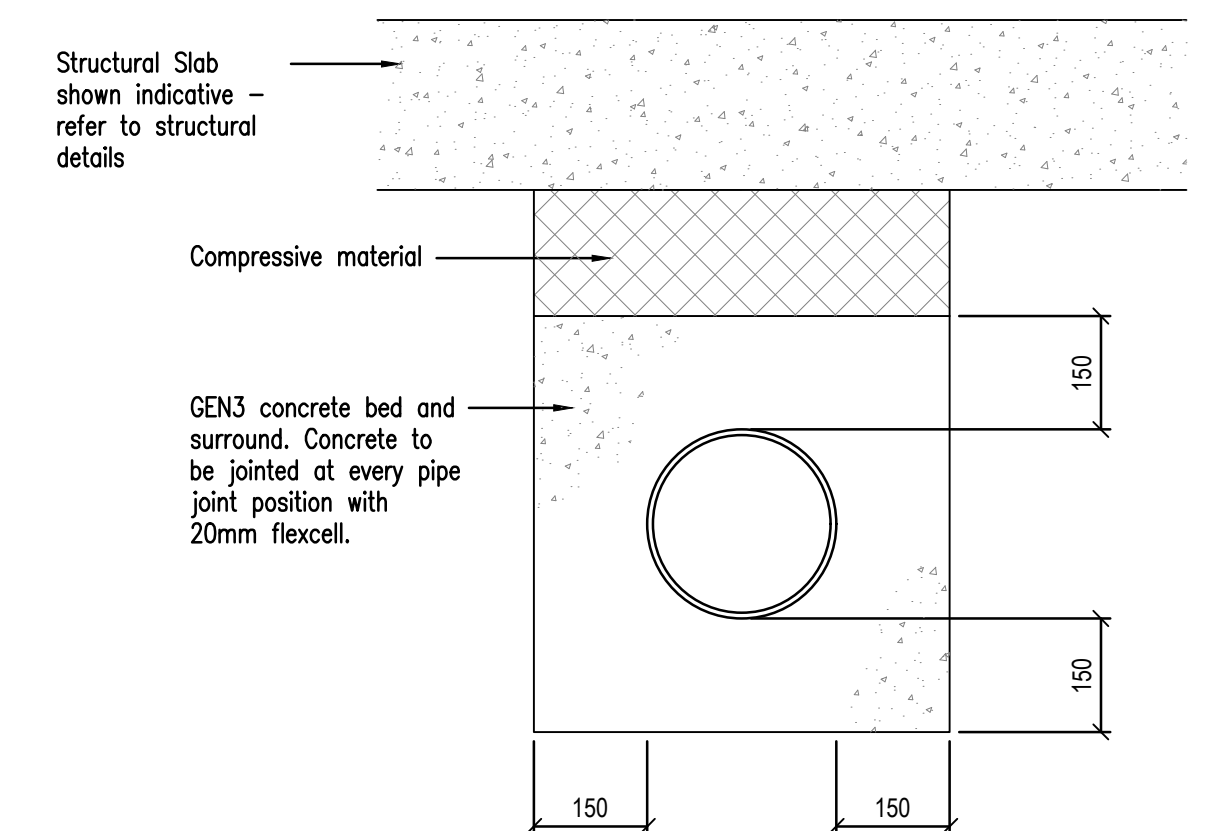


Class S granular pipe bed and surround
To be used for plastic, vitrified and concrete pipework where cover to crown is greater than 900mm.

Pipe Bedding Details (1:10)

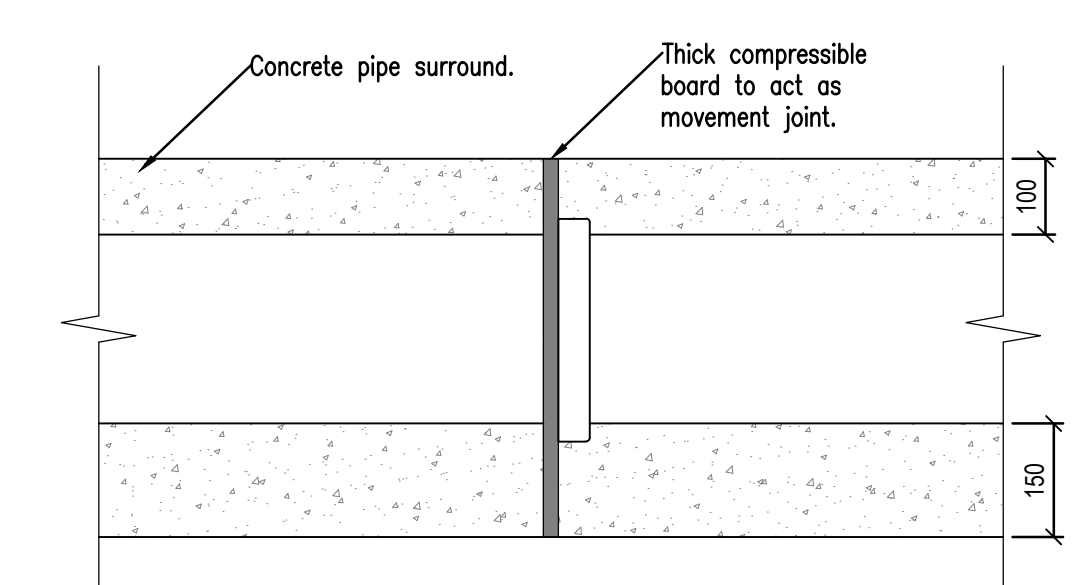


Class Z granular pipe bed and surround
To be used for plastic, vitrified and concrete pipework where cover to crown is less than 900mm.



Class Z granular pipe bed and surround under structural slab

- To be used for pipework where:
- cover to crown is less than 600mm for plastic, vitrified and concrete pipes laid in fields.
 - cover to crown is less than 900mm for plastic pipes laid in light and main roads.
 - cover to crown is less than 1200mm for vitrified and concrete pipes laid in light and main roads.



Joints for concrete encased pipes detail.

GENERAL

1. The contractor shall comply with the health and safety requirements as set out in the CDM Regulations
2. All works are to be undertaken in accordance with the Building Regulations and latest relevant British Standards.
3. Conflicting information between this drawing and information given by others must be referred to the engineer before the works commence.
4. The contractor shall, before commencing the works, verify all existing outfall levels and site, and setting out dimensions. The contractor shall be responsible for the true and proper setting out of the works and for the correctness of the position, levels, dimensions, and alignment of all parts of the works. Any discrepancies are to be reported to the Engineer
5. All products used are to be CE marked in accordance with the Construction Products Directive CPD/89/106/EEC.
6. The contractor shall be responsible for locating all existing utilities prior to commencing construction and protecting all existing services affected by the works.
7. Any unidentified hazards discovered during the progress of works are to be reported immediately to the engineer.
8. This drawing should not be used for setting out
9. All land, ownership and asset boundaries / extents, shown on this plan should be assumed to be indicative and should be legally verified prior to any works commencing

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Status	Date	Description	Dwn	Eng	Chld	Veri
D2-P01	13.12.23	Issued for tender	CB	CB	OP	BH
S4-P01	17.10.25	Planning condition discharge	KH	YP	DM	DM



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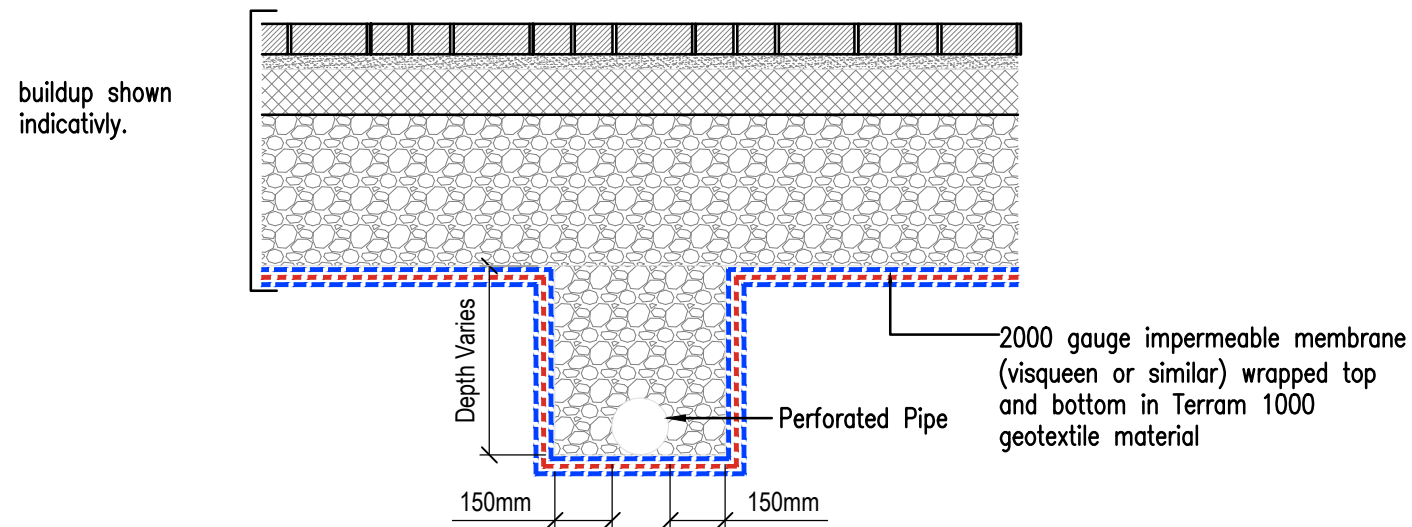
Project:
**Sytner Group Porsche
Mid Sussex
New Dealership & Workshop Facility**

Drawing Title:
**Proposed Private Drainage
Construction Details Sheet 1**

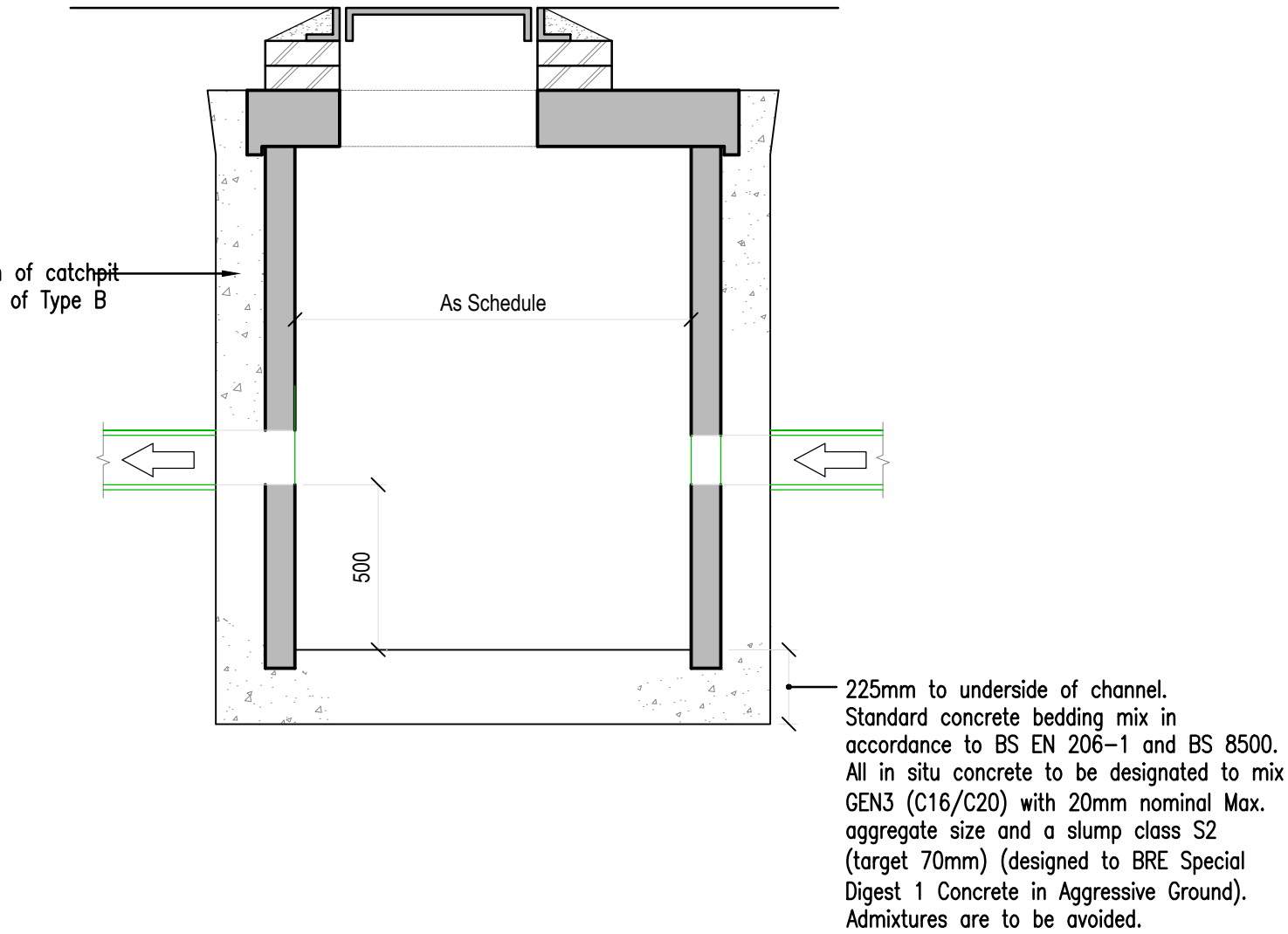
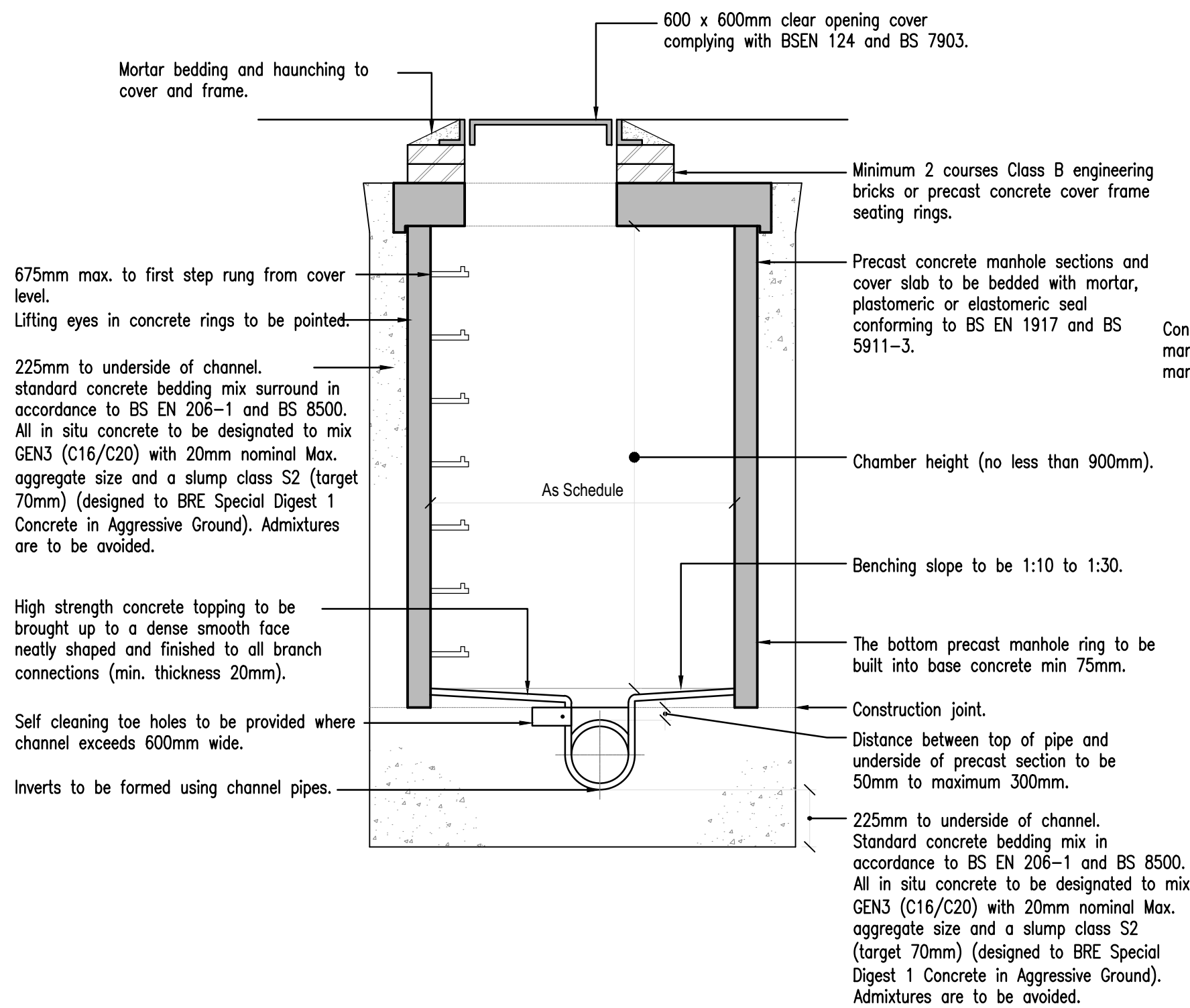
RGL Project Ref: 23-0466
Scale@A1: As shown
Scale@A3: As shown
Specification(s):

Drawing Number:
230466-RGL-ZZ-XX-DR-D-140-0001
Project-Originator-Zone-Level-Type-Role-Classification-Number
Issue Purpose:
FOR APPROVAL
Status:
S4-P02
Suitability-Revision

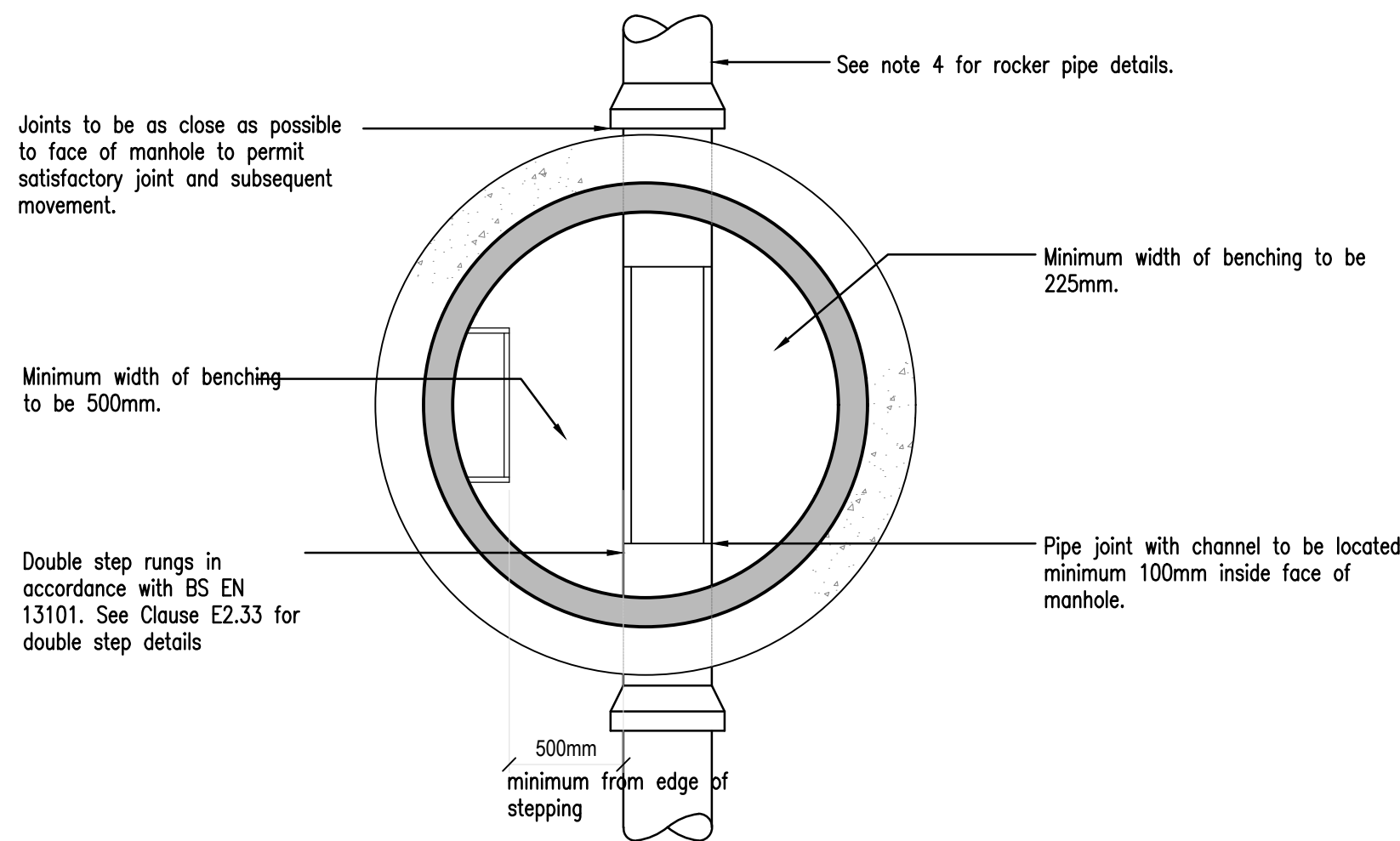
Status	Date	Description	Dwn	Eng	Chld	Veri
D2-P01	13.12.23	Issued for tender	CBa	CBo	OPr	BHo
S4-P01	17.10.25	Planning condition discharge	KH	YP	DM	DM



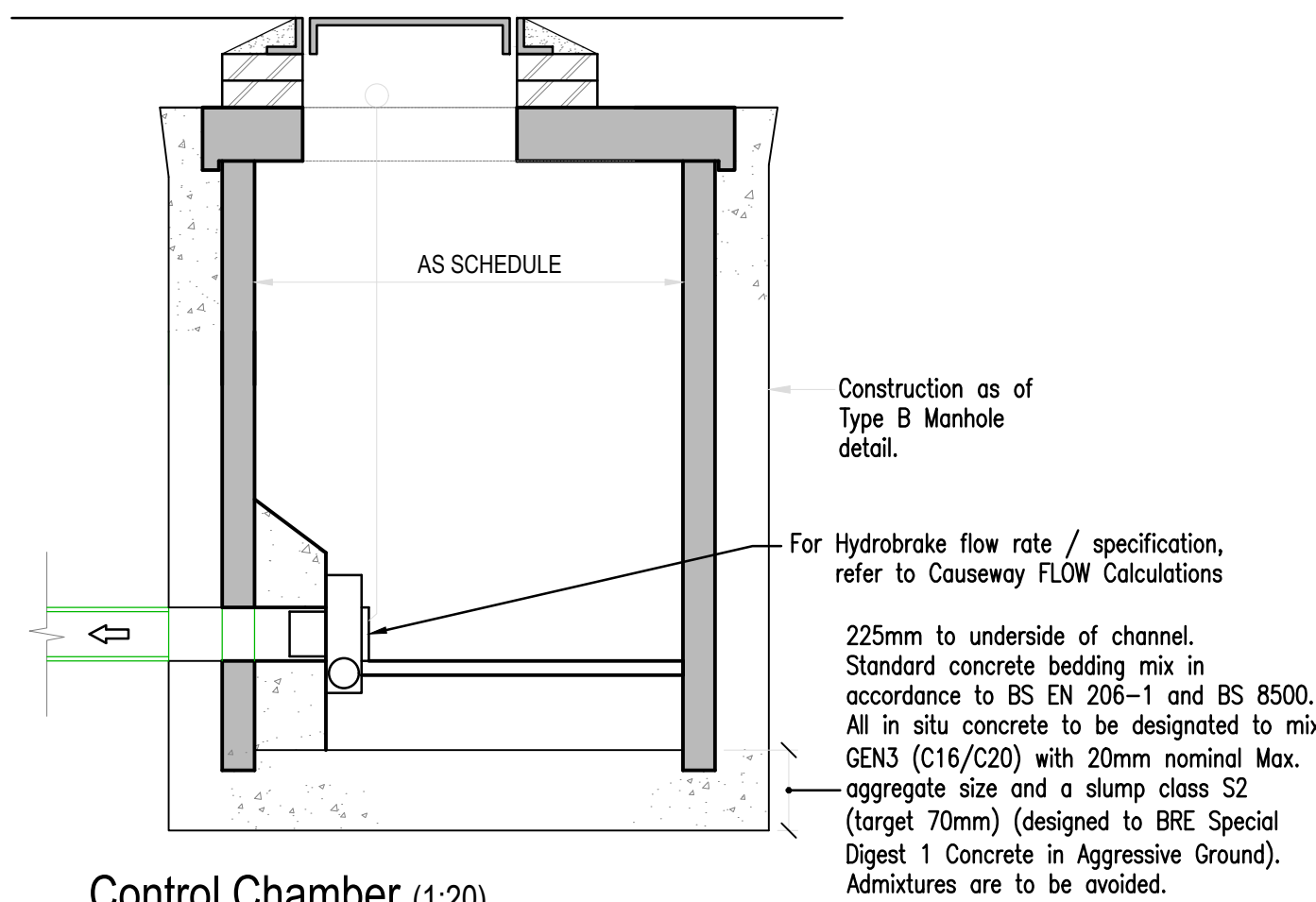
Section C-C - Typical Sub-Formation Drainage Arrangement
(1:20)



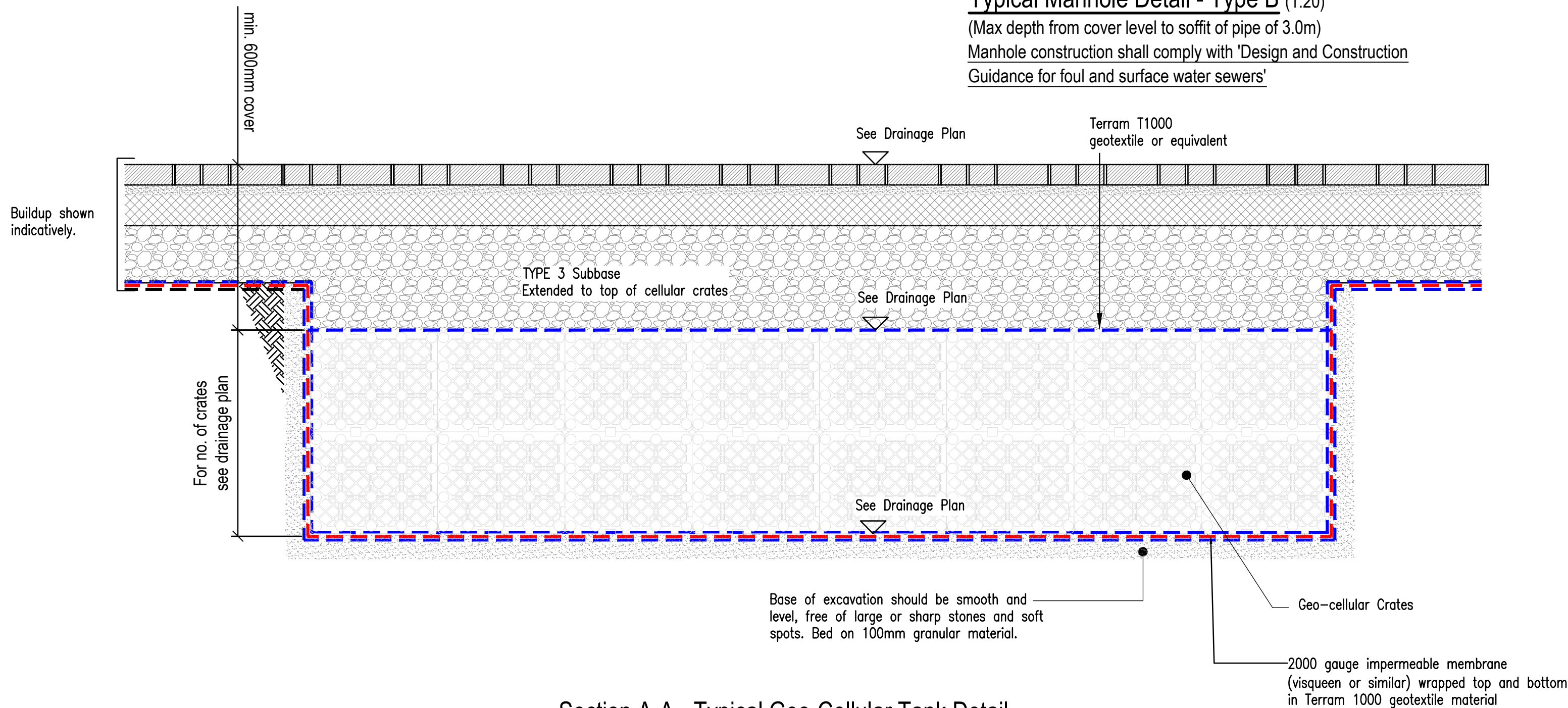
Typical Catchpit Detail - Type D (1:20)
(Max depth from cover level to soffit of pipe of 2.0m)
Manhole construction shall comply with 'Design and Construction Guidance for foul and surface water sewers'



Typical Manhole Detail - Type B (1:20)
(Max depth from cover level to soffit of pipe of 3.0m)
Manhole construction shall comply with 'Design and Construction Guidance for foul and surface water sewers'



Control Chamber (1:20)
(Max depth from cover level to soffit of pipe of 3.0m)
Manhole construction shall comply with 'Design and Construction Guidance for foul and surface water sewers'



Section A-A - Typical Geo-Cellular Tank Detail (1:15)



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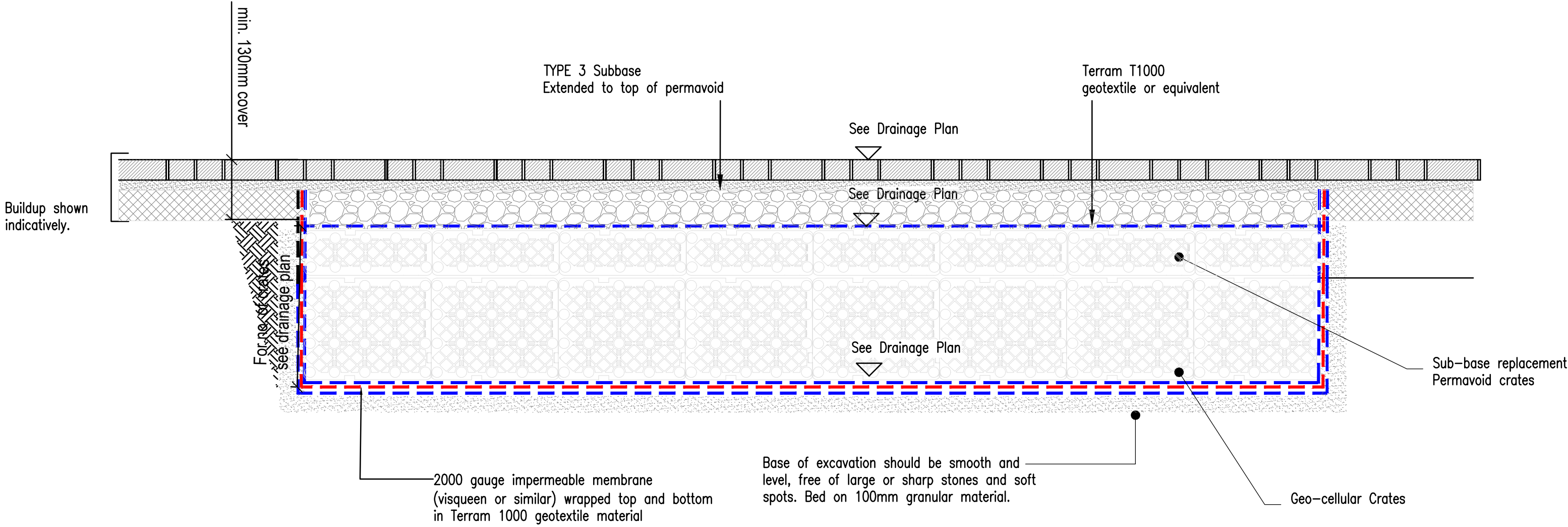
Drawing Title:
**Proposed Private Drainage
Construction Details Sheet 2**

RGL Project Ref: 23-0466	Scale@A1 As shown	Scale@A3 As shown
Specification(s):		

Drawing Number: 230466-RGL-ZZ-XX-DR-D-140-0002	Status: S4-P02
Project-Originator-Zone-Level-Type-Role-Classification-Number	Suitability-Revision
Issue Purpose: FOR APPROVAL	

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- All products used are to be CE marked in accordance with the Construction Products Directive CPD/89/106/EEC.
- The contractor shall be responsible for locating all existing utilities prior to commencing construction and protecting all existing services affected by the works.
- Any unidentified hazards discovered during the progress of works are to be reported immediately to the engineer.
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Section B-B - Typical Geo-Cellular Tank Detail (1:15)

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Status	Date	Description	Dwn	Eng	Chld	Veri
D2-P01	13.12.23	Issued for tender	CBa	CBa	OPr	BHo
S4-P01	17.10.25	Planning condition discharge	KH	YP	DM	DM

GENERAL

- The contractor shall comply with the health and safety requirements as set out in the CDM Regulations
- All works are to be undertaken in accordance with the Building Regulations and latest relevant British Standards.
- Conflicting information between this drawing and information given by others must be referred to the engineer before the works commence.
- The contractor shall, before commencing the works, verify all existing outfall invert levels and site and setting out dimensions, the contractor shall be responsible for the true and proper setting out of the works and for the correctness of the position, levels, dimensions, and alignment of all parts of the works. Any discrepancies are to be reported to the Engineer
- All products used are to be CE marked in accordance with the Construction Products Directive CPD/89/106/EEC.
- The contractor shall be responsible for locating all existing utilities prior to commencing construction and protecting all existing services affected by the works.
- Any unidentified hazards discovered during the progress of works are to be reported immediately to the engineer.
- This drawing should not be used for setting out
- All land, ownership and asset boundaries / extents, shown on this plan should be assumed to be indicative and should be legally verified prior to any works commencing



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Project:
Sytner Group Porsche
Mid Sussex
New Dealership & Workshop Facility

Drawing Title:
Proposed Private Drainage
Construction Details Sheet 3

RGL Project Ref: 23-0466	Scale@A1 As shown	Scale@A3 As shown
Specification(s):		

Drawing Number: 230466-RGL-ZZ-XX-DR-D-140-0003 Project-Originator-Zone-Level-Type-Role-Classification-Number	
Issue Purpose: FOR APPROVAL	Status: S4-P02 Suitability-Revision

PROPOSED SURFACE WATER MANHOLE SCHEDULE							
Note: Levels to be confirmed. Levels to Ordnance Survey Datum.							
MANHOLE REF	COVER LEVEL (m)approx	INVERT LEVEL (m)	MANHOLE TYPE	MANHOLE SIZE (mm)	COVER & FRAME	NOTES	BACKDROP/ CATCHPIT
SWMH 01	24.050*	22.229	2	1200#	Class D400 600x600	–	–
SWMH 02	23.300*	22.114	2	1800#	Class D400 600x600	–	–
SWMH 03	23.300*	22.063	2	1800#	Class D400 600x600	–	–
SWMH 04	23.125*	21.920	2	1800#	Class D400 600x600	–	–
SWMH 05	23.150*	21.873	2	1800#	Class D400 600x600	–	–
SWMH 06	23.150*	21.807	2	1800#	Class D400 600x600	–	–
SWMH 07	22.950*	21.763	2	1800#	Class D400 600x600	–	CATCHPIT
SWMH 08	22.950*	21.651	2	1800#	Class D400 600x600	–	CATCHPIT
SWMH 09	22.700*	21.631	2	1800#	Class D400 600x600	–	CATCHPIT
SWMH 10	22.700*	21.610	2	1800#	Class D400 600x600	–	CATCHPIT
SWMH 11	22.700*	21.593	2	1800#	Class D400 600x600	FC MH @ 4.8l/s	CATCHPIT
SWMH 12	23.215*	22.130	2	1800#	Class D400 600x600	–	–
SWMH 13	23.000*	22.300	PPIC	600#	Class D400 600x600	–	–
SWMH 14	23.000*	22.150	PPIC	600#	Class D400 600x600	–	–
SWMH 15	23.950*	22.431	PPIC	600#	Class D400 600x600	–	–
SWMH 16	23.800*	22.330	PPIC	600#	Class D400 600x600	–	–
SWMH 17	23.580*	22.229	PPIC	600#	Class D400 600x600	–	–
SWMH 18	23.140*	22.147	PPIC	600#	Class D400 600x600	–	–
SWMH 19	23.100*	22.042	PPIC	600#	Class D400 600x600	–	–
SWMH 20	23.680*	21.945	2	1800#	Class D400 600x600	–	CATCHPIT
SWMH 21	23.000*	21.752	2	1800#	Class D400 600x600	–	–
SWMH 22	22.950*	22.091	PPIC	450#	Class D400 450x450	–	–
SWMH 23	23.750*	22.700	PPIC	450#	Class D400 450x450	–	CATCHPIT
SWMH 24	23.600*	22.570	PPIC	450#	Class D400 450x450	–	CATCHPIT
SWMH 25	22.900*	22.107	PPIC	450#	Class D400 450x450	–	CATCHPIT
SWMH 26	23.140*	22.101	PPIC	450#	Class D400 450x450	–	CATCHPIT
SWMH 27	22.900*	22.078	PPIC	450#	Class D400 450x450	–	CATCHPIT
SWMH 28	22.700*	21.723	PPIC	450#	Class D400 450x450	–	CATCHPIT
SWMH 29	22.700*	21.637	PPIC	450#	Class D400 450x450	–	CATCHPIT
SWMH 30	24.000*	21.906	2	1800#	Class D400 600x600	–	CATCHPIT
SWMH 31	23.300*	21.700	2	1800#	Class D400 600x600	–	CATCHPIT
SWMH 32	23.150*	21.650	PPIC	1800#	Class D400 600x600	–	–
SWMH 33	22.850*	21.610	PPIC	1800#	Class D400 600x600	–	CATCHPIT
SWMH 34	23.200*	22.754	PPIC	450#	Class D400 450x450	–	–
SWMH 35	23.100*	22.470	PPIC	450#	Class D400 450x450	–	CATCHPIT
SWMH 36	23.875*	22.825	PPIC	450#	Class D400 450x450	–	–
SWMH 37	23.000*	21.575	PPIC	450#	Class D400 450x450	–	–
SWMH 38	22.550*	22.700*	PPIC	450#	Class D400 450x450	–	–
SWMH 39	22.750*	21.21	PPIC	450#	Class D400 450x450	–	–
SWMH 21.1	23.000*	21.675	2	1800#	Class D400 600x600	–	–
SWMH 40	23.700*	22.900	PPIC	600#	Class D400 600x600	–	CATCHPIT

- As of Table 11, Part H of the Building Regulations, all inspection chambers with cover greater than 1.2m shall utilize a restricted square 350 x 350 or circular 350# cover
- All chambers located within the building envelope to utilize triple sealed covers
- All chamber covers to be laid flush with finished surface levels
- Chambers within paved areas are to be recessed with paving to match.

PROPOSED FOUL WATER MANHOLE SCHEDULE							
Note: Levels to be confirmed. Levels to Ordnance Survey Datum.							
MANHOLE REF	COVER LEVEL (m)approx	INVERT LEVEL (m)	MANHOLE TYPE	MANHOLE SIZE (mm)	COVER & FRAME	NOTES	BACKDROP/ CATCHPIT
FWMH 01	23.300*	21.532	PPIC	450#	Class D400 450x450	–	–
FWMH 02	23.125*	21.490	PPIC	450#	Class D400 450x450	–	–
FWMH 03	23.125*	21.435	PPIC	450#	Class D400 450x450	–	–
FWMH 04	23.125*	21.368	PPIC	450#	Class D400 450x450	–	–
FWMH 05	23.125*	21.135	PPIC	450#	Class D400 450x450	–	–
FWMH 06	22.850*	21.993	PPIC	450#	Class D400 450x450	–	–
FWMH 07	23.300*	20.688	PPIC	450#	Class D400 450x450	–	–
FWMH 08	23.215*	22.150	PPIC	450#	Class D400 450x450	–	–
FWMH 09	23.100	21.849	PPIC	450#	Class D400 450x450	–	–
FWMH 10	23.140*	21.781	PPIC	450#	Class D400 450x450	–	–
FWMH 11	23.140*	22.165	PPIC	450#	Class D400 450x450	–	–
FWMH 12	23.325*	21.605	PPIC	450#	Class D400 450x450	–	–
FWMH 13	23.500*	21.491	PPIC	450#	Class D400 450x450	–	–
FWMH 14	23.800*	21.363	PPIC	450#	Class D400 450x450	–	–
FWMH 15	23.950*	22.900	PPIC	450#	Class D400 450x450	–	–

PROPOSED ADOPTABLE FOUL WATER MANHOLE SCHEDULE							
Note: Levels to be confirmed. Levels to Ordnance Survey Datum.							
MANHOLE REF	COVER LEVEL (m)approx	INVERT LEVEL (m)	MANHOLE TYPE	MANHOLE SIZE (mm)	COVER & FRAME	NOTES	BACKDROP/ CATCHPIT
AFWMH 01	22.925*	20.975	PPIC	450#	Class D400 Ductile Iron 450x450	–	–
AFWMH 02	23.250*	20.691	PPIC	450#	Class D400 Ductile Iron 450x450	–	–
AFWMH 03	23.500*	20.426	2	1200#	Class D400 Ductile Iron 600x600	–	–
AFWMH 04	24.150*	19.520	2	1200#	Class D400 Ductile Iron 600x600	–	–
AFWMH 05	24.550*	19.231	2	1200#	Class D400 Ductile Iron 600x600	–	–

- As of Table 11, Part H of the Building Regulations, all inspection chambers with cover greater than 1.2m shall utilize a restricted square 350 x 350 or circular 350# cover
- All chambers located within the building envelope to utilize triple sealed covers
- All chamber covers to be laid flush with finished surface levels
- Chambers within paved areas are to be recessed with paving to match.

DRAINAGE

- All drain runs constructed with less than 600mm cover between finished ground level and crown of the pipe are to be encased with a minimum of 150mm Grade S14 concrete. The casing concrete is to be jointed at every pipe joint position with 20mm Flexcell board to form joint and provide joint flexibility.
- All pipework 300mmØ or below, that convey corrosive chemicals, to be verified clay pipes. All pipework greater than 300mm Ø to be Class H concrete.
- All SVP/SS and RWP building spurs to be 100Ø pipework laid at 1:40 for foul water and 1:80 for surface water.
- All oil/forecourt/washdown separators to be fitted with high level alarm located within nearby building. Ducting arrangement by M&E Engineer
- Installation of oil / washdown / forecourt separators and pump stations to be undertaken in strict accordance with manufacturer instruction and installation details.
- Refer to Architect and / or Mechanical & Electrical design packages for Rain Water Pipe (RWP) and Foul Water Outlet (FWO) exact setting out positions
- All building drainage to be installed and tested in compliance with the Building Regulations Approved Document H, 2015 Edition and design shown herein to be agreed for compliance by Building Control prior to construction commencing
- Insitu concrete for use in general drainage works shall be in accordance with BS:8500 and in accordance with the recommendations of the site investigation report, and in accordance with BRE digest 1 "concrete in aggressive ground" to meet any expected sulphate conditions.
- All gullies, channels and manhole covers are to be set 5mm lower than indicated on the drawing (i.e. 5mm lower than the adjacent surface). All drain and sewer pipes are to be laid soffit to soffit, unless shown otherwise.
- All above-ground drainage to incorporate rodding access facilities.
- All manhole covers and frames shall be manufactured from ductile iron and comply with BSEN:124 and be marked 'FW' or 'SW'. They shall be non-ventilating type and have closed keyways. the minimum frame depth shall be 100mm.
- Contractor to undertake a pre-construction CCTV drainage survey to confirm that no existing third party connections require maintaining or diverting through the development site.
- Exact arrangement of Geo-cellular storage to provide sufficient access for maintenance and venting will be subject to specific manufacturer product details. It is recommended therefore, a design of geo-cellular storage is obtained from the clients chosen manufacturer prior to works commencing
- As of Table 11, Part H of the Building Regulations ("Drainage and Waste Disposal"), all inspection chambers with cover greater than 1.2m shall utilize a restricted square 350 x 350 or circular 350# cover
- Unless explicitly confirmed to us, it is assumed drainage Traps in relation to surface and foul water, will be incorporated within foul water sanitary appliances / gullies or otherwise suitably specified by the M&E engineer as part of their above ground drainage design.
- All chambers located within the building envelope to utilize triple sealed covers
- All chamber covers to be laid flush with finished surface levels
- Chambers within paved areas are to be recessed with paving to match.
- The formation level of all permeable paving shall either be flat or fall at the same gradient as the surface finish levels towards the closest sub formation drainage outlet
- All adoptable sewers to be constructed in accordance with the latest revision of "Design Construction Guidance (DCG)" and to the satisfaction of the statutory sewerage undertaker overseeing engineer
- All drainage running through tree root protection areas or sensitive soft landscaped areas to be reviewed and agreed with arboriculturist prior to construction commencing
- Where provision is shown on this plan in relation to building envelope waterproofing (cavity drainage or similar), this should be assumed to be indicative and subject to specialist third party design
-

DO NOT SCALE

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This drawing shall remain the copyright of Rolton Group Ltd.

Standard construction hazards that a competent contractor would be aware of have not been identified on this drawing. Risks that may not be immediately apparent are listed below.

Status	Date	Description	Dwn	Eng	Chkd	Veri
S4-P01	17.10.25	Planning condition discharge	KH	YP	DM	BHo



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Project:

Sytner Group Porsche

Mid Sussex

New Dealership & Workshop Facility

Drawing Title:

Proposed Private Drainage

Manhole Schedules

RGL Project Ref: 23-0466

Scale@A1 As shown

Scale@A3 As shown

Specification(s):

Drawing Number: 230466-RGL-ZZ-XX-DR-D-600-0001

Project-Originator-Zone-Level-Type-Role-Classification-Number

Issue Purpose: FOR APPROVAL

Status: S4-P01

Suitability-Revision

APPENDIX B - DRAINAGE CALCULATIONS

Design Settings

Rainfall Methodology	FEH-22	Minimum Velocity (m/s)	1.00
Return Period (years)	100	Connection Type	Level Soffits
Additional Flow (%)	0	Minimum Backdrop Height (m)	0.000
CV	1.000	Preferred Cover Depth (m)	0.900
Time of Entry (mins)	4.00	Include Intermediate Ground	✓
Maximum Time of Concentration (mins)	30.00	Enforce best practice design rules	✓
Maximum Rainfall (mm/hr)	50.0		

Nodes

Name	Area (ha)	T of E (mins)	Cover Level (m)	Diameter (mm)	Easting (m)	Northing (m)	Depth (m)
SWMH 01	0.028	4.00	24.050	1200	526906.820	118791.570	1.821
SWMH 02	0.044	4.00	23.300	1800	526919.243	118825.261	1.186
SWMH 03	0.056	4.00	23.300	1800	526924.798	118840.328	1.237
SWMH 04			23.125	1800	526932.141	118860.243	1.205
SWMH 05	0.038	4.00	23.150	1800	526915.161	118866.504	1.277
SWMH 06	0.096	4.00	23.150	1800	526891.710	118875.794	1.343
SWMH 07	0.109	4.00	22.950	1800	526897.915	118892.164	1.187
SWMH 08			22.950	1800	526904.652	118890.503	1.299
SWMH 09	0.010	4.00	22.700	1800	526915.981	118892.217	1.069
SWMH 10			22.700	1800	526923.685	118889.376	1.090
SWMH 11			22.700	1800	526940.345	118893.118	1.107
SWMH 12	0.056	4.00	23.215	1200	526913.479	118826.592	1.085
SWMH 13	0.008	4.00	23.000	600	526942.960	118874.220	0.700
SWMH 14			23.000	600	526937.578	118874.197	0.850
SWMH 15	0.066	4.00	23.950	600	526881.033	118784.799	1.519
SWMH 16	0.030	4.00	23.800	600	526858.585	118793.478	1.470
SWMH 17	0.052	4.00	23.650	600	526866.565	118816.210	1.421
SWMH 18	0.044	4.00	23.140	600	526873.301	118834.479	0.993
SWMH 19	0.037	4.00	23.100	600	526881.985	118858.032	1.058
SWMH 20			23.680	1800	526848.966	118793.455	1.735
SWMH 21			23.000	1800	526880.328	118873.725	1.248
SWMH 21.1			23.000	1800	526895.337	118892.353	1.325
SWMH 22		4.00	22.950	450	526917.250	118884.312	0.859
SWMH 23	0.008	4.00	23.750	450	526860.888	118806.735	1.050
SWMH 24	0.010	4.00	23.600	450	526850.247	118813.530	1.030
SWMH 25	0.014	4.00	22.900	450	526863.112	118848.319	0.793
SWMH 26		4.00	23.140	450	526878.855	118855.461	1.039
SWMH 27	0.011	4.00	22.900	450	526873.328	118875.900	0.822
SWMH 28	0.018	4.00	22.700	450	526919.432	118902.439	0.977
SWMH 29			22.700	450	526927.422	118899.493	1.063
SWMH 30	0.008	4.00	24.000	1800	526911.095	118789.085	2.094
SWMH 31			23.300	1800	526931.733	118852.188	1.600
SWMH 32			23.150	1800	526937.717	118868.417	1.500
SWMH 33			22.850	1800	526931.126	118882.895	1.240
SWMH 34	0.018	4.00	23.200	450	526914.988	118827.826	0.446
SWMH 35			23.100	450	526925.067	118854.344	0.630
TANK1	0.081	4.00	23.660	1	526848.202	118791.235	1.709
TANK2	0.040	4.00	23.286	1	526930.698	118849.380	1.576
TANK3	0.023	4.00	22.700	1	526912.594	118893.466	1.060
TANK4	0.021	4.00	22.700	1	526937.851	118894.037	1.100
OIL SEP			22.900	1	526900.604	118890.450	1.242

Nodes

Name	Area (ha)	T of E (mins)	Cover Level (m)	Diameter (mm)	Easting (m)	Northing (m)	Depth (m)
HW			22.700	1	526947.013	118890.659	1.150

Links

Name	US Node	DS Node	Length (m)	ks (mm) / n	US IL (m)	DS IL (m)	Fall (m)	Slope (1:X)	Dia (mm)	T of C (mins)	Rain (mm/hr)
1.000	SWMH 01	SWMH 02	35.908	0.600	22.229	22.114	0.115	312.2	375	4.59	50.0
1.001	SWMH 02	SWMH 03	16.058	0.600	22.114	22.063	0.051	314.9	375	4.85	50.0
1.002	SWMH 03	SWMH 04	21.226	0.600	22.063	21.995	0.068	312.1	375	5.20	50.0
1.003	SWMH 04	SWMH 05	18.098	0.600	21.920	21.873	0.047	385.1	450	5.49	50.0
1.004	SWMH 05	SWMH 06	25.224	0.600	21.873	21.807	0.066	382.2	450	5.90	50.0
1.005	SWMH 06	SWMH 07	16.829	0.600	21.807	21.763	0.044	382.5	450	6.17	50.0
1.006	SWMH 07	OIL SEP	1.807	0.600	21.763	21.758	0.005	361.4	450	6.20	50.0
1.007	OIL SEP	SWMH 08	2.791	0.600	21.658	21.651	0.007	398.7	450	6.24	50.0
1.008	SWMH 08	TANK3	4.251	0.600	21.651	21.640	0.011	386.5	450	6.35	50.0
1.009	TANK3	SWMH 09	3.610	0.600	21.640	21.631	0.009	401.1	450	6.41	50.0
1.010	SWMH 09	SWMH 10	8.211	0.600	21.631	21.610	0.021	391.0	450	6.55	50.0
1.011	SWMH 10	TANK4	3.674	0.600	21.610	21.600	0.010	367.4	450	6.60	50.0
1.012	TANK4	SWMH 11	2.658	0.600	21.600	21.593	0.007	379.7	450	6.65	50.0
1.013	SWMH 11	HW	7.107	0.600	21.593	21.550	0.043	165.3	225	6.76	50.0
2.000	SWMH 12	SWMH 02	5.916	0.600	22.130	22.114	0.016	369.8	300	4.12	50.0
3.000	SWMH 13	SWMH 14	5.382	0.600	22.300	22.250	0.050	107.6	225	4.07	50.0
3.001	SWMH 14	SWMH 04	14.976	0.600	22.150	22.083	0.067	223.5	300	4.31	50.0
4.000	SWMH 15	SWMH 16	24.067	0.600	22.431	22.330	0.101	238.3	300	4.40	50.0

Name	Vel (m/s)	Cap (l/s)	Flow (l/s)	US Depth (m)	DS Depth (m)	Σ Area (ha)	Σ Add Inflow (l/s)
1.000	1.020	112.6	5.1	1.446	0.811	0.028	0.0
1.001	1.015	112.2	23.1	0.811	0.862	0.128	0.0
1.002	1.020	112.6	33.2	0.862	0.755	0.184	0.0
1.003	1.030	163.8	34.7	0.755	0.827	0.192	0.0
1.004	1.034	164.4	41.6	0.827	0.893	0.230	0.0
1.005	1.033	164.3	100.3	0.893	0.737	0.555	0.0
1.006	1.063	169.1	120.0	0.737	0.692	0.664	0.0
1.007	1.012	160.9	120.0	0.792	0.849	0.664	0.0
1.008	1.028	163.5	142.4	0.849	0.610	0.788	0.0
1.009	1.009	160.4	146.5	0.610	0.619	0.811	0.0
1.010	1.022	162.5	148.4	0.619	0.640	0.821	0.0
1.011	1.054	167.7	148.4	0.640	0.650	0.821	0.0
1.012	1.037	164.9	167.3	0.650	0.657	0.926	0.0
1.013	1.014	40.3	167.3	0.882	0.925	0.926	0.0
2.000	0.812	57.4	10.1	0.785	0.886	0.056	0.0
3.000	1.259	50.1	1.4	0.475	0.525	0.008	0.0
3.001	1.047	74.0	1.4	0.550	0.742	0.008	0.0
4.000	1.014	71.7	11.9	1.219	1.170	0.066	0.0

Links

Name	US Node	DS Node	Length (m)	ks (mm) / n	US IL (m)	DS IL (m)	Fall (m)	Slope (1:X)	Dia (mm)	T of C (mins)	Rain (mm/hr)
4.001	SWMH 16	SWMH 17	24.092	0.600	22.330	22.229	0.101	238.5	300	4.79	50.0
4.002	SWMH 17	SWMH 18	19.471	0.600	22.229	22.147	0.082	237.5	300	5.11	50.0
4.003	SWMH 18	SWMH 19	25.103	0.600	22.147	22.042	0.105	239.1	300	5.52	50.0
4.004	SWMH 19	SWMH 06	20.250	0.600	22.042	21.957	0.085	238.2	300	5.86	50.0
5.000	TANK1	SWMH 20	2.348	0.600	21.951	21.945	0.006	391.3	450	4.04	50.0
5.001	SWMH 20	SWMH 21	86.179	0.600	21.945	21.752	0.193	446.5	450	5.54	50.0
5.002	SWMH 21	SWMH 21.1	33.857	0.600	21.752	21.675	0.077	439.7	450	6.13	50.0
5.003	SWMH 21.1	SWMH 08	9.497	0.600	21.675	21.651	0.024	395.7	450	6.28	50.0
6.000	SWMH 22	SWMH 08	14.037	0.600	22.091	21.951	0.140	100.3	150	4.23	50.0
7.000	SWMH 23	SWMH 21	7.065	0.600	22.700	22.110	0.590	12.0	150	4.04	50.0
8.000	SWMH 24	SWMH 21	6.094	0.600	22.570	22.106	0.464	13.1	150	4.04	50.0
9.000	SWMH 25	SWMH 21	5.907	0.600	22.107	22.048	0.059	100.1	150	4.10	50.0
10.000	SWMH 26	SWMH 21	7.200	0.600	22.101	22.029	0.072	100.0	150	4.12	50.0
11.000	SWMH 27	SWMH 21	7.481	0.600	22.078	22.003	0.075	99.7	150	4.12	50.0
12.000	SWMH 28	SWMH 29	8.516	0.600	21.723	21.637	0.086	99.0	150	4.14	50.0
12.001	SWMH 29	TANK4	3.673	0.600	21.637	21.600	0.037	99.3	150	4.20	50.0

Name	Vel (m/s)	Cap (l/s)	Flow (l/s)	US Depth (m)	DS Depth (m)	Σ Area (ha)	Σ Add Inflow (l/s)
4.001	1.013	71.6	17.3	1.170	1.121	0.096	0.0
4.002	1.016	71.8	26.7	1.121	0.693	0.148	0.0
4.003	1.012	71.6	34.7	0.693	0.758	0.192	0.0
4.004	1.014	71.7	41.4	0.758	0.893	0.229	0.0
5.000	1.021	162.4	14.6	1.259	1.285	0.081	0.0
5.001	0.955	151.9	14.6	1.285	0.798	0.081	0.0
5.002	0.963	153.1	22.4	0.798	0.875	0.124	0.0
5.003	1.016	161.5	22.4	0.875	0.849	0.124	0.0
6.000	1.003	17.7	0.0	0.709	0.849	0.000	0.0
7.000	2.927	51.7	1.4	0.900	0.740	0.008	0.0
8.000	2.794	49.4	1.8	0.880	0.744	0.010	0.0
9.000	1.004	17.7	2.5	0.643	0.802	0.014	0.0
10.000	1.005	17.8	0.0	0.889	0.821	0.000	0.0
11.000	1.006	17.8	2.0	0.672	0.847	0.011	0.0
12.000	1.010	17.8	3.3	0.827	0.913	0.018	0.0
12.001	1.008	17.8	3.3	0.913	0.950	0.018	0.0

Links

Name	US Node	DS Node	Length (m)	ks (mm) / n	US IL (m)	DS IL (m)	Fall (m)	Slope (1:X)	Dia (mm)	T of C (mins)	Rain (mm/hr)
13.000	SWMH 30	TANK2	3.353	0.600	21.906	21.711	0.195	17.2	400	4.01	50.0
13.001	TANK2	SWMH 31	2.993	0.600	21.710	21.700	0.010	299.3	400	4.06	50.0
13.002	SWMH 31	SWMH 32	17.297	0.600	21.700	21.650	0.050	345.9	400	4.87	50.0
13.003	SWMH 32	SWMH 33	15.908	0.600	21.650	21.610	0.040	397.7	400	5.15	50.0
13.004	SWMH 33	TANK4	2.175	0.600	21.610	21.600	0.010	217.5	400	5.18	50.0
14.000	SWMH 34	SWMH 35	28.369	0.600	22.754	22.470	0.284	99.9	150	4.47	50.0
14.001	SWMH 35	SWMH 31	7.006	0.600	22.470	22.400	0.070	100.1	150	4.59	50.0

Name	Vel (m/s)	Cap (l/s)	Flow (l/s)	US Depth (m)	DS Depth (m)	Σ Area (ha)	Σ Add Inflow (l/s)
13.000	4.569	574.2	1.4	1.694	1.175	0.008	0.0
13.001	1.085	136.4	8.7	1.176	1.200	0.048	0.0
13.002	1.009	126.8	11.9	1.200	1.100	0.066	0.0
13.003	0.940	118.1	11.9	1.100	0.840	0.066	0.0
13.004	1.275	160.3	11.9	0.840	0.700	0.066	0.0
14.000	1.005	17.8	3.3	0.296	0.480	0.018	0.0
14.001	1.004	17.7	3.3	0.480	0.750	0.018	0.0

Pipeline Schedule

Link	Length (m)	Slope (1:X)	Dia (mm)	Link Type	US CL (m)	US IL (m)	US Depth (m)	DS CL (m)	DS IL (m)	DS Depth (m)
1.000	35.908	312.2	375	1 STANDARD	24.050	22.229	1.446	23.300	22.114	0.811
1.001	16.058	314.9	375	1 STANDARD	23.300	22.114	0.811	23.300	22.063	0.862
1.002	21.226	312.1	375	1 STANDARD	23.300	22.063	0.862	23.125	21.995	0.755
1.003	18.098	385.1	450	1 STANDARD	23.125	21.920	0.755	23.150	21.873	0.827
1.004	25.224	382.2	450	1 STANDARD	23.150	21.873	0.827	23.150	21.807	0.893
1.005	16.829	382.5	450	1 STANDARD	23.150	21.807	0.893	22.950	21.763	0.737
1.006	1.807	361.4	450	1 STANDARD	22.950	21.763	0.737	22.900	21.758	0.692
1.007	2.791	398.7	450	1 STANDARD	22.900	21.658	0.792	22.950	21.651	0.849
1.008	4.251	386.5	450	1 STANDARD	22.950	21.651	0.849	22.700	21.640	0.610
1.009	3.610	401.1	450	1 STANDARD	22.700	21.640	0.610	22.700	21.631	0.619
1.010	8.211	391.0	450	1 STANDARD	22.700	21.631	0.619	22.700	21.610	0.640

Link	US Node	Dia (mm)	Node Type	MH Type	DS Node	Dia (mm)	Node Type	MH Type
1.000	SWMH 01	1200	Manhole	1 STANDARD	SWMH 02	1800	Manhole	1 STANDARD
1.001	SWMH 02	1800	Manhole	1 STANDARD	SWMH 03	1800	Manhole	1 STANDARD
1.002	SWMH 03	1800	Manhole	1 STANDARD	SWMH 04	1800	Manhole	1 STANDARD
1.003	SWMH 04	1800	Manhole	1 STANDARD	SWMH 05	1800	Manhole	1 STANDARD
1.004	SWMH 05	1800	Manhole	1 STANDARD	SWMH 06	1800	Manhole	1 STANDARD
1.005	SWMH 06	1800	Manhole	1 STANDARD	SWMH 07	1800	Manhole	1 STANDARD
1.006	SWMH 07	1800	Manhole	1 STANDARD	OIL SEP	1	Manhole	1 STANDARD
1.007	OIL SEP	1	Manhole	1 STANDARD	SWMH 08	1800	Manhole	1 STANDARD
1.008	SWMH 08	1800	Manhole	1 STANDARD	TANK3	1	Manhole	1 STANDARD
1.009	TANK3	1	Manhole	1 STANDARD	SWMH 09	1800	Manhole	1 STANDARD
1.010	SWMH 09	1800	Manhole	1 STANDARD	SWMH 10	1800	Manhole	1 STANDARD

Pipeline Schedule

Link	Length (m)	Slope (1:X)	Dia (mm)	Link Type	US CL (m)	US IL (m)	US Depth (m)	DS CL (m)	DS IL (m)	DS Depth (m)
1.011	3.674	367.4	450	1 STANDARD	22.700	21.610	0.640	22.700	21.600	0.650
1.012	2.658	379.7	450	1 STANDARD	22.700	21.600	0.650	22.700	21.593	0.657
1.013	7.107	165.3	225	1 STANDARD	22.700	21.593	0.882	22.700	21.550	0.925
2.000	5.916	369.8	300	1 STANDARD	23.215	22.130	0.785	23.300	22.114	0.886
3.000	5.382	107.6	225	1 STANDARD	23.000	22.300	0.475	23.000	22.250	0.525
3.001	14.976	223.5	300	1 STANDARD	23.000	22.150	0.550	23.125	22.083	0.742
4.000	24.067	238.3	300	1 STANDARD	23.950	22.431	1.219	23.800	22.330	1.170
4.001	24.092	238.5	300	1 STANDARD	23.800	22.330	1.170	23.650	22.229	1.121
4.002	19.471	237.5	300	1 STANDARD	23.650	22.229	1.121	23.140	22.147	0.693
4.003	25.103	239.1	300	1 STANDARD	23.140	22.147	0.693	23.100	22.042	0.758
4.004	20.250	238.2	300	1 STANDARD	23.100	22.042	0.758	23.150	21.957	0.893
5.000	2.348	391.3	450	1 STANDARD	23.660	21.951	1.259	23.680	21.945	1.285
5.001	86.179	446.5	450	1 STANDARD	23.680	21.945	1.285	23.000	21.752	0.798
5.002	33.857	439.7	450	1 STANDARD	23.000	21.752	0.798	23.000	21.675	0.875
5.003	9.497	395.7	450	1 STANDARD	23.000	21.675	0.875	22.950	21.651	0.849
6.000	14.037	100.3	150	1 STANDARD	22.950	22.091	0.709	22.950	21.951	0.849
7.000	7.065	12.0	150	1 STANDARD	23.750	22.700	0.900	23.000	22.110	0.740
8.000	6.094	13.1	150	1 STANDARD	23.600	22.570	0.880	23.000	22.106	0.744

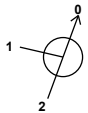
Link	US Node	Dia (mm)	Node Type	MH Type	DS Node	Dia (mm)	Node Type	MH Type
1.011	SWMH 10	1800	Manhole	1 STANDARD	TANK4	1	Manhole	1 STANDARD
1.012	TANK4	1	Manhole	1 STANDARD	SWMH 11	1800	Manhole	1 STANDARD
1.013	SWMH 11	1800	Manhole	1 STANDARD	HW	1	Manhole	1 STANDARD
2.000	SWMH 12	1200	Manhole	1 STANDARD	SWMH 02	1800	Manhole	1 STANDARD
3.000	SWMH 13	600	Manhole	1 STANDARD	SWMH 14	600	Manhole	1 STANDARD
3.001	SWMH 14	600	Manhole	1 STANDARD	SWMH 04	1800	Manhole	1 STANDARD
4.000	SWMH 15	600	Manhole	1 STANDARD	SWMH 16	600	Manhole	1 STANDARD
4.001	SWMH 16	600	Manhole	1 STANDARD	SWMH 17	600	Manhole	1 STANDARD
4.002	SWMH 17	600	Manhole	1 STANDARD	SWMH 18	600	Manhole	1 STANDARD
4.003	SWMH 18	600	Manhole	1 STANDARD	SWMH 19	600	Manhole	1 STANDARD
4.004	SWMH 19	600	Manhole	1 STANDARD	SWMH 06	1800	Manhole	1 STANDARD
5.000	TANK1	1	Manhole	1 STANDARD	SWMH 20	1800	Manhole	1 STANDARD
5.001	SWMH 20	1800	Manhole	1 STANDARD	SWMH 21	1800	Manhole	1 STANDARD
5.002	SWMH 21	1800	Manhole	1 STANDARD	SWMH 21.1	1800	Manhole	1 STANDARD
5.003	SWMH 21.1	1800	Manhole	1 STANDARD	SWMH 08	1800	Manhole	1 STANDARD
6.000	SWMH 22	450	Manhole	1 STANDARD	SWMH 08	1800	Manhole	1 STANDARD
7.000	SWMH 23	450	Manhole	1 STANDARD	SWMH 21	1800	Manhole	1 STANDARD
8.000	SWMH 24	450	Manhole	1 STANDARD	SWMH 21	1800	Manhole	1 STANDARD

Pipeline Schedule

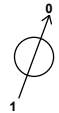
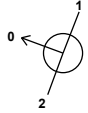
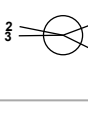
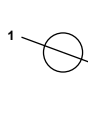
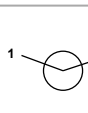
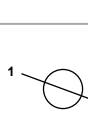
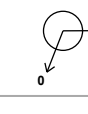
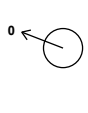
Link	Length (m)	Slope (1:X)	Dia (mm)	Link Type	US CL (m)	US IL (m)	US Depth (m)	DS CL (m)	DS IL (m)	DS Depth (m)
9.000	5.907	100.1	150	1 STANDARD	22.900	22.107	0.643	23.000	22.048	0.802
10.000	7.200	100.0	150	1 STANDARD	23.140	22.101	0.889	23.000	22.029	0.821
11.000	7.481	99.7	150	1 STANDARD	22.900	22.078	0.672	23.000	22.003	0.847
12.000	8.516	99.0	150	1 STANDARD	22.700	21.723	0.827	22.700	21.637	0.913
12.001	3.673	99.3	150	1 STANDARD	22.700	21.637	0.913	22.700	21.600	0.950
13.000	3.353	17.2	400	1 STANDARD	24.000	21.906	1.694	23.286	21.711	1.175
13.001	2.993	299.3	400	1 STANDARD	23.286	21.710	1.176	23.300	21.700	1.200
13.002	17.297	345.9	400	1 STANDARD	23.300	21.700	1.200	23.150	21.650	1.100
13.003	15.908	397.7	400	1 STANDARD	23.150	21.650	1.100	22.850	21.610	0.840
13.004	2.175	217.5	400	1 STANDARD	22.850	21.610	0.840	22.700	21.600	0.700
14.000	28.369	99.9	150	1 STANDARD	23.200	22.754	0.296	23.100	22.470	0.480
14.001	7.006	100.1	150	1 STANDARD	23.100	22.470	0.480	23.300	22.400	0.750

Link	US Node	Dia (mm)	Node Type	MH Type	DS Node	Dia (mm)	Node Type	MH Type
9.000	SWMH 25	450	Manhole	1 STANDARD	SWMH 21	1800	Manhole	1 STANDARD
10.000	SWMH 26	450	Manhole	1 STANDARD	SWMH 21	1800	Manhole	1 STANDARD
11.000	SWMH 27	450	Manhole	1 STANDARD	SWMH 21	1800	Manhole	1 STANDARD
12.000	SWMH 28	450	Manhole	1 STANDARD	SWMH 29	450	Manhole	1 STANDARD
12.001	SWMH 29	450	Manhole	1 STANDARD	TANK4	1	Manhole	1 STANDARD
13.000	SWMH 30	1800	Manhole	1 STANDARD	TANK2	1	Manhole	1 STANDARD
13.001	TANK2	1	Manhole	1 STANDARD	SWMH 31	1800	Manhole	1 STANDARD
13.002	SWMH 31	1800	Manhole	1 STANDARD	SWMH 32	1800	Manhole	1 STANDARD
13.003	SWMH 32	1800	Manhole	1 STANDARD	SWMH 33	1800	Manhole	1 STANDARD
13.004	SWMH 33	1800	Manhole	1 STANDARD	TANK4	1	Manhole	1 STANDARD
14.000	SWMH 34	450	Manhole	1 STANDARD	SWMH 35	450	Manhole	1 STANDARD
14.001	SWMH 35	450	Manhole	1 STANDARD	SWMH 31	1800	Manhole	1 STANDARD

Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)
SWMH 01	526906.820	118791.570	24.050	1.821	1200		0	1.000	22.229 375
SWMH 02	526919.243	118825.261	23.300	1.186	1800		1	2.000	22.114 300
							2	1.000	22.114 375
							0	1.001	22.114 375

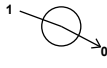
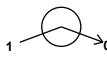
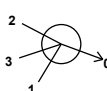
Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)
SWMH 03	526924.798	118840.328	23.300	1.237	1800		1 1.001	22.063	375
SWMH 04	526932.141	118860.243	23.125	1.205	1800		1 3.001 2 1.002	22.083 21.995	300 375
SWMH 05	526915.161	118866.504	23.150	1.277	1800		1 1.003	21.920	450
SWMH 06	526891.710	118875.794	23.150	1.343	1800		1 4.004 2 1.004	21.873	450
SWMH 07	526897.915	118892.164	22.950	1.187	1800		1 1.005	21.873	450
SWMH 08	526904.652	118890.503	22.950	1.299	1800		1 6.000 2 5.003 3 1.007	21.763	150 450 450
SWMH 09	526915.981	118892.217	22.700	1.069	1800		0 1.008	21.651	450
SWMH 10	526923.685	118889.376	22.700	1.090	1800		1 1.009	21.631	450
SWMH 11	526940.345	118893.118	22.700	1.107	1800		0 1.010	21.610	450
SWMH 12	526913.479	118826.592	23.215	1.085	1200		1 1.011	21.610	450
SWMH 13	526942.960	118874.220	23.000	0.700	600		1 1.012	21.593	450
SWMH 14	526937.578	118874.197	23.000	0.850	600		0 1.013	21.593	225
SWMH 15	526881.033	118784.799	23.950	1.519	600		0 2.000	22.130	300
							0 3.000	22.300	225
							1 3.000	22.250	225
							0 3.001	22.150	300
							0 4.000	22.431	300

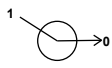
Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)
SWMH 16	526858.585	118793.478	23.800	1.470	600		1 4.000	22.330	300
							0 4.001	22.330	300
SWMH 17	526866.565	118816.210	23.650	1.421	600		1 4.001	22.229	300
							0 4.002	22.229	300
SWMH 18	526873.301	118834.479	23.140	0.993	600		1 4.002	22.147	300
							0 4.003	22.147	300
SWMH 19	526881.985	118858.032	23.100	1.058	600		1 4.003	22.042	300
							0 4.004	22.042	300
SWMH 20	526848.966	118793.455	23.680	1.735	1800		1 5.000	21.945	450
							0 5.001	21.945	450
SWMH 21	526880.328	118873.725	23.000	1.248	1800		1 11.000	22.003	150
							2 10.000	22.029	150
							3 9.000	22.048	150
							4 8.000	22.106	150
							5 7.000	22.110	150
							6 5.001	21.752	450
							0 5.002	21.752	450
SWMH 21.1	526895.337	118892.353	23.000	1.325	1800		1 5.002	21.675	450
							0 5.003	21.675	450
SWMH 22	526917.250	118884.312	22.950	0.859	450				
							0 6.000	22.091	150
SWMH 23	526860.888	118806.735	23.750	1.050	450				
							0 7.000	22.700	150
SWMH 24	526850.247	118813.530	23.600	1.030	450				
							0 8.000	22.570	150
SWMH 25	526863.112	118848.319	22.900	0.793	450				
							0 9.000	22.107	150
SWMH 26	526878.855	118855.461	23.140	1.039	450				
							0 10.000	22.101	150

Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)
SWMH 27	526873.328	118875.900	22.900	0.822	450	 0	11.000	22.078	150
SWMH 28	526919.432	118902.439	22.700	0.977	450	 0	12.000	21.723	150
SWMH 29	526927.422	118899.493	22.700	1.063	450	 1 0	12.000 12.001	21.637 21.637	150 150
SWMH 30	526911.095	118789.085	24.000	2.094	1800	 0	13.000	21.906	400
SWMH 31	526931.733	118852.188	23.300	1.600	1800	 1 2 0	14.001 13.001 13.002	22.400 21.700 21.700	150 400 400
SWMH 32	526937.717	118868.417	23.150	1.500	1800	 0 1	13.002 13.003	21.650 21.650	400 400
SWMH 33	526931.126	118882.895	22.850	1.240	1800	 0 1	13.003 13.004	21.610 21.610	400 400
SWMH 34	526914.988	118827.826	23.200	0.446	450	 0	14.000	22.754	150
SWMH 35	526925.067	118854.344	23.100	0.630	450	 1 0	14.000 14.001	22.470 22.470	150 150
TANK1	526848.202	118791.235	23.660	1.709	1	 0	5.000	21.951	450
TANK2	526930.698	118849.380	23.286	1.576	1	 1 0	13.000 13.001	21.711 21.710	400 400
TANK3	526912.594	118893.466	22.700	1.060	1	 1 0	1.008 1.009	21.640 21.640	450 450
TANK4	526937.851	118894.037	22.700	1.100	1	 2 3 1 0	13.004 12.001 1.011 1.012	21.600 21.600 21.600 21.600	400 150 450 450

Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)
OIL SEP	526900.604	118890.450	22.900	1.242	1		1	1.006	21.758 450
HW	526947.013	118890.659	22.700	1.150	1		0 1	1.007 1.013	21.658 450 21.550 225

Simulation Settings

Rainfall Methodology	FEH-22	Analysis Speed	Detailed	Starting Level (m)
Rainfall Events	Singular	Skip Steady State	x	Check Discharge Rate(s) x
Summer CV	1.000	Drain Down Time (mins)	4000	Check Discharge Volume x
Winter CV	1.000	Additional Storage (m³/ha)	20.0	

Storm Durations

15	60	180	360	600	960	2160	4320	7200	10080
30	120	240	480	720	1440	2880	5760	8640	

Return Period (years)	Climate Change (CC %)	Additional Area (A %)	Additional Flow (Q %)
10	0	0	0
30	0	0	0
100	45	0	0

Node SWMH 11 Online Hydro-Brake® Control

Flap Valve	x	Objective	(HE) Minimise upstream storage
Replaces Downstream Link	✓	Sump Available	✓
Invert Level (m)	21.593	Product Number	CTL-SHE-0105-4800-0925-4800
Design Depth (m)	0.925	Min Outlet Diameter (m)	0.150
Design Flow (l/s)	4.8	Min Node Diameter (mm)	1200

Node TANK3 Soakaway Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Invert Level (m)	21.640	Depth (m)	0.700
Side Inf Coefficient (m/hr)	0.00000	Time to half empty (mins)	3120	Inf Depth (m)	
Safety Factor	2.0	Pit Width (m)	8.000	Number Required	1
Porosity	0.95	Pit Length (m)	16.000		

Node TANK4 Soakaway Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Invert Level (m)	21.600	Depth (m)	0.700
Side Inf Coefficient (m/hr)	0.00000	Time to half empty (mins)	3330	Inf Depth (m)	
Safety Factor	2.0	Pit Width (m)	8.000	Number Required	1
Porosity	0.95	Pit Length (m)	16.000		

Node TANK2 Soakaway Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Invert Level (m)	21.710	Depth (m)	0.800
Side Inf Coefficient (m/hr)	0.00000	Time to half empty (mins)	2040	Inf Depth (m)	
Safety Factor	2.0	Pit Width (m)	7.000	Number Required	1
Porosity	0.95	Pit Length (m)	62.000		

Node TANK1 Soakaway Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Invert Level (m)	21.951	Depth (m)	0.800
Side Inf Coefficient (m/hr)	0.00000	Time to half empty (mins)	1320	Inf Depth (m)	
Safety Factor	2.0	Pit Width (m)	11.500	Number Required	1
Porosity	0.95	Pit Length (m)	35.000		

Node SWMH 30 Carpark Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Invert Level (m)	21.906	Slope (1:X)	96.0
Side Inf Coefficient (m/hr)	0.00000	Time to half empty (mins)	2400	Depth (m)	0.400
Safety Factor	2.0	Width (m)	5.000	Inf Depth (m)	
Porosity	0.30	Length (m)	9.600		

Node TANK2 Carpark Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Invert Level (m)	21.710	Slope (1:X)	85.0
Side Inf Coefficient (m/hr)	0.00000	Time to half empty (mins)	1110	Depth (m)	0.400
Safety Factor	2.0	Width (m)	5.000	Inf Depth (m)	
Porosity	0.30	Length (m)	54.700		

Node SWMH 34 Carpark Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Invert Level (m)	22.754	Slope (1:X)	510.0
Side Inf Coefficient (m/hr)	0.00000	Time to half empty (mins)	6	Depth (m)	0.400
Safety Factor	2.0	Width (m)	5.000	Inf Depth (m)	
Porosity	0.30	Length (m)	30.600		

Node TANK1 Carpark Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Invert Level (m)	21.951	Slope (1:X)	9999.0
Side Inf Coefficient (m/hr)	0.00000	Time to half empty (mins)	2250	Depth (m)	0.400
Safety Factor	2.0	Width (m)	12.000	Inf Depth (m)	
Porosity	0.30	Length (m)	48.850		

Node SWMH 23 Carpark Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Invert Level (m)	22.700	Slope (1:X)	108.0
Side Inf Coefficient (m/hr)	0.00000	Time to half empty (mins)	3	Depth (m)	0.400
Safety Factor	2.0	Width (m)	5.000	Inf Depth (m)	
Porosity	0.30	Length (m)	13.140		

Node SWMH 24 Carpark Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Invert Level (m)	22.570	Slope (1:X)	248.0
Side Inf Coefficient (m/hr)	0.00000	Time to half empty (mins)	3	Depth (m)	0.400
Safety Factor	2.0	Width (m)	5.000	Inf Depth (m)	
Porosity	0.30	Length (m)	19.200		

Node SWMH 17 Carpark Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Invert Level (m)	22.229	Slope (1:X)	80.0
Side Inf Coefficient (m/hr)	0.00000	Time to half empty (mins)	6	Depth (m)	0.400
Safety Factor	2.0	Width (m)	5.000	Inf Depth (m)	
Porosity	0.30	Length (m)	46.372		

Node SWMH 25 Carpark Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Invert Level (m)	22.107	Slope (1:X)	58.0
Side Inf Coefficient (m/hr)	0.00000	Time to half empty (mins)	510	Depth (m)	0.400
Safety Factor	2.0	Width (m)	5.000	Inf Depth (m)	
Porosity	0.30	Length (m)	27.098		

Node SWMH 27 Carpark Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Invert Level (m)	22.078	Slope (1:X)	9999.0
Side Inf Coefficient (m/hr)	0.00000	Time to half empty (mins)	1290	Depth (m)	0.400
Safety Factor	2.0	Width (m)	5.000	Inf Depth (m)	
Porosity	0.30	Length (m)	21.600		

Node SWMH 28 Carpark Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Invert Level (m)	21.723	Slope (1:X)	9999.0
Side Inf Coefficient (m/hr)	0.00000	Time to half empty (mins)	3540	Depth (m)	0.400
Safety Factor	2.0	Width (m)	8.100	Inf Depth (m)	
Porosity	0.30	Length (m)	10.000		

Node SWMH 09 Carpark Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Invert Level (m)	21.631	Slope (1:X)	9999.0
Side Inf Coefficient (m/hr)	0.00000	Time to half empty (mins)	3900	Depth (m)	0.400
Safety Factor	2.0	Width (m)	2.700	Inf Depth (m)	
Porosity	0.30	Length (m)	10.000		

Results for 10 year Critical Storm Duration. Lowest mass balance: 99.91%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute summer	SWMH 01	11	22.322	0.093	11.0	0.1344	0.0000	OK
15 minute summer	SWMH 02	11	22.316	0.202	47.8	0.6631	0.0000	OK
15 minute summer	SWMH 03	11	22.299	0.236	67.4	0.8152	0.0000	OK
15 minute summer	SWMH 04	11	22.272	0.352	64.2	0.8970	0.0000	OK
15 minute summer	SWMH 05	11	22.264	0.391	74.4	1.2270	0.0000	OK
15 minute summer	SWMH 06	11	22.244	0.437	176.3	1.7379	0.0000	OK
15 minute summer	SWMH 07	11	22.163	0.400	208.9	1.7537	0.0000	OK
480 minute winter	SWMH 08	464	22.039	0.388	29.7	0.9866	0.0000	OK
480 minute winter	SWMH 09	464	22.039	0.408	27.0	4.3535	0.0000	OK
480 minute winter	SWMH 10	464	22.039	0.429	26.5	1.0908	0.0000	OK
480 minute winter	SWMH 11	464	22.039	0.446	4.9	1.1340	0.0000	SURCHARGED
15 minute summer	SWMH 12	10	22.322	0.192	22.0	0.4153	0.0000	OK
15 minute summer	SWMH 13	10	22.340	0.040	3.1	0.0205	0.0000	OK
15 minute summer	SWMH 14	11	22.266	0.116	6.2	0.0327	0.0000	OK
15 minute summer	SWMH 15	10	22.560	0.129	25.9	0.1486	0.0000	OK
15 minute summer	SWMH 16	10	22.496	0.166	37.7	0.1148	0.0000	OK
15 minute summer	SWMH 17	11	22.461	0.232	57.8	2.4715	0.0000	OK
15 minute summer	SWMH 18	11	22.424	0.277	64.9	0.3242	0.0000	OK
15 minute summer	SWMH 19	11	22.346	0.304	75.4	0.2982	0.0000	SURCHARGED
480 minute winter	SWMH 20	464	22.039	0.094	4.8	0.2389	0.0000	OK
30 minute summer	SWMH 21	21	22.040	0.288	23.1	0.7326	0.0000	OK
480 minute winter	SWMH 21.1	464	22.039	0.364	4.2	0.9256	0.0000	OK
15 minute summer	SWMH 22	1	22.091	0.000	0.0	0.0000	0.0000	OK
15 minute summer	SWMH 23	10	22.726	0.026	3.1	0.0640	0.0000	OK
15 minute summer	SWMH 24	10	22.599	0.029	3.9	0.1712	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute summer	SWMH 01	1.000	SWMH 02	10.0	0.303	0.089	1.4685	448.0
15 minute summer	SWMH 02	1.001	SWMH 03	45.4	0.726	0.405	1.0720	
15 minute summer	SWMH 03	1.002	SWMH 04	64.2	1.013	0.570	1.7039	
15 minute summer	SWMH 04	1.003	SWMH 05	64.0	0.581	0.391	2.5280	
15 minute summer	SWMH 05	1.004	SWMH 06	76.2	0.514	0.463	3.8263	
15 minute summer	SWMH 06	1.005	SWMH 07	173.5	1.129	1.056	2.5764	
15 minute summer	SWMH 07	1.006	OIL SEP	207.7	1.524	1.228	0.2440	
480 minute winter	SWMH 08	1.008	TANK3	29.5	0.828	0.181	0.6243	
480 minute winter	SWMH 09	1.010	SWMH 10	26.5	0.460	0.163	1.2592	
480 minute winter	SWMH 10	1.011	TANK4	26.4	0.764	0.157	0.5752	
480 minute winter	SWMH 11	Hydro-Brake®	HW	4.8				
15 minute summer	SWMH 12	2.000	SWMH 02	21.5	0.491	0.375	0.2889	
15 minute summer	SWMH 13	3.000	SWMH 14	3.1	0.678	0.062	0.0246	
15 minute summer	SWMH 14	3.001	SWMH 04	4.4	0.443	0.060	0.5382	
15 minute summer	SWMH 15	4.000	SWMH 16	25.9	0.756	0.362	0.8300	
15 minute summer	SWMH 16	4.001	SWMH 17	37.4	0.828	0.522	1.1593	
15 minute summer	SWMH 17	4.002	SWMH 18	47.9	0.834	0.667	1.2304	
15 minute summer	SWMH 18	4.003	SWMH 19	61.0	0.940	0.853	1.7378	
15 minute summer	SWMH 19	4.004	SWMH 06	72.4	1.114	1.011	1.4158	
480 minute winter	SWMH 20	5.001	SWMH 21	-4.8	0.126	-0.031	5.6226	
30 minute summer	SWMH 21	5.002	SWMH 21.1	-11.6	0.184	-0.075	4.1345	
480 minute winter	SWMH 21.1	5.003	SWMH 08	-4.2	0.116	-0.026	1.3414	
15 minute summer	SWMH 22	6.000	SWMH 08	0.0	0.000	0.000	0.0552	
15 minute summer	SWMH 23	7.000	SWMH 21	3.1	1.573	0.060	0.0139	
15 minute summer	SWMH 24	8.000	SWMH 21	3.7	1.597	0.075	0.0142	

Results for 10 year Critical Storm Duration. Lowest mass balance: 99.91%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute summer	SWMH 25	10	22.168	0.061	5.5	0.1764	0.0000	OK
15 minute summer	SWMH 26	1	22.101	0.000	0.0	0.0000	0.0000	OK
30 minute summer	SWMH 27	20	22.115	0.037	3.8	1.0903	0.0000	OK
480 minute winter	SWMH 28	464	22.039	0.316	0.9	7.8231	0.0000	SURCHARGED
480 minute winter	SWMH 29	464	22.039	0.402	0.4	0.0639	0.0000	SURCHARGED
480 minute winter	SWMH 30	464	22.039	0.133	0.4	1.5416	0.0000	OK
480 minute winter	SWMH 31	464	22.039	0.339	18.7	0.8618	0.0000	OK
480 minute winter	SWMH 32	464	22.039	0.389	18.3	0.9890	0.0000	OK
480 minute winter	SWMH 33	464	22.039	0.429	18.5	1.0908	0.0000	SURCHARGED
15 minute summer	SWMH 34	12	22.806	0.052	7.1	1.0805	0.0000	OK
15 minute summer	SWMH 35	12	22.525	0.055	4.5	0.0087	0.0000	OK
480 minute winter	TANK1	464	22.039	0.088	6.0	48.7017	0.0000	OK
480 minute winter	TANK2	464	22.039	0.329	20.5	139.9558	0.0000	OK
480 minute winter	TANK3	464	22.039	0.399	30.5	48.6499	0.0000	OK
480 minute winter	TANK4	464	22.039	0.439	27.3	53.5005	0.0000	OK
30 minute summer	OIL SEP	20	22.086	0.428	190.2	0.0000	0.0000	OK
15 minute summer	HW	1	21.550	0.000	4.8	0.0000	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute summer	SWMH 25	9.000	SWMH 21	5.4	0.839	0.303	0.0378	
15 minute summer	SWMH 26	10.000	SWMH 21	0.0	0.000	0.000	0.0000	
30 minute summer	SWMH 27	11.000	SWMH 21	2.2	0.666	0.121	0.0247	
480 minute winter	SWMH 28	12.000	SWMH 29	-0.3	0.259	-0.019	0.1499	
480 minute winter	SWMH 29	12.001	TANK4	-0.4	0.304	-0.021	0.0647	
480 minute winter	SWMH 30	13.000	TANK2	0.3	0.513	0.001	0.2448	
480 minute winter	SWMH 31	13.002	SWMH 32	-18.0	-0.326	-0.142	2.0520	
480 minute winter	SWMH 32	13.003	SWMH 33	-18.3	-0.232	-0.155	1.9837	
480 minute winter	SWMH 33	13.004	TANK4	-18.5	0.272	-0.115	0.2723	
15 minute summer	SWMH 34	14.000	SWMH 35	4.5	0.810	0.254	0.1588	
15 minute summer	SWMH 35	14.001	SWMH 31	4.5	0.807	0.253	0.0389	
480 minute winter	TANK1	5.000	SWMH 20	-4.6	-0.336	-0.029	0.0536	
480 minute winter	TANK2	13.001	SWMH 31	-18.5	-0.732	-0.135	0.3340	
480 minute winter	TANK3	1.009	SWMH 09	26.6	0.417	0.166	0.5405	
480 minute winter	TANK4	1.012	SWMH 11	4.9	0.214	0.030	0.4194	
30 minute summer	OIL SEP	1.007	SWMH 08	189.5	1.406	1.178	0.4175	

Results for 30 year Critical Storm Duration. Lowest mass balance: 99.91%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute summer	SWMH 01	12	22.403	0.174	14.3	0.2505	0.0000	OK
15 minute summer	SWMH 02	11	22.403	0.289	59.7	0.9513	0.0000	OK
15 minute summer	SWMH 03	11	22.392	0.329	80.1	1.1358	0.0000	OK
15 minute summer	SWMH 04	11	22.366	0.446	71.9	1.1340	0.0000	OK
15 minute summer	SWMH 05	11	22.350	0.477	87.2	1.4974	0.0000	SURCHARGED
15 minute summer	SWMH 06	11	22.328	0.521	195.6	2.0715	0.0000	SURCHARGED
15 minute summer	SWMH 07	11	22.228	0.465	242.5	2.0371	0.0000	SURCHARGED
720 minute winter	SWMH 08	690	22.112	0.461	26.2	1.1728	0.0000	SURCHARGED
720 minute winter	SWMH 09	690	22.112	0.481	23.1	4.5534	0.0000	SURCHARGED
720 minute winter	SWMH 10	690	22.112	0.502	22.7	1.2770	0.0000	SURCHARGED
720 minute winter	SWMH 11	690	22.112	0.519	4.9	1.3202	0.0000	SURCHARGED
15 minute summer	SWMH 12	11	22.408	0.278	28.7	0.6019	0.0000	OK
15 minute summer	SWMH 13	11	22.360	0.060	4.1	0.0306	0.0000	OK
15 minute summer	SWMH 14	11	22.371	0.221	4.7	0.0627	0.0000	OK
15 minute summer	SWMH 15	12	22.608	0.177	33.8	0.2042	0.0000	OK
15 minute summer	SWMH 16	12	22.601	0.271	49.3	0.1875	0.0000	OK
15 minute summer	SWMH 17	12	22.586	0.357	70.7	5.6613	0.0000	SURCHARGED
15 minute summer	SWMH 18	11	22.540	0.393	70.9	0.4597	0.0000	SURCHARGED
15 minute summer	SWMH 19	11	22.450	0.408	81.5	0.4008	0.0000	SURCHARGED
600 minute winter	SWMH 20	585	22.112	0.167	10.0	0.4249	0.0000	OK
720 minute winter	SWMH 21	690	22.112	0.360	9.1	0.9158	0.0000	OK
720 minute winter	SWMH 21.1	690	22.112	0.437	8.1	1.1118	0.0000	OK
720 minute winter	SWMH 22	690	22.112	0.021	0.0	0.0033	0.0000	OK
15 minute summer	SWMH 23	10	22.730	0.030	4.1	0.0831	0.0000	OK
15 minute summer	SWMH 24	10	22.604	0.034	5.1	0.2237	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute summer	SWMH 01	1.000	SWMH 02	15.2	0.312	0.135	2.4984	609.7
15 minute summer	SWMH 02	1.001	SWMH 03	51.4	0.721	0.458	1.5564	
15 minute summer	SWMH 03	1.002	SWMH 04	71.4	0.963	0.634	2.2562	
15 minute summer	SWMH 04	1.003	SWMH 05	77.5	0.581	0.473	2.8655	
15 minute summer	SWMH 05	1.004	SWMH 06	89.7	0.566	0.546	3.9966	
15 minute summer	SWMH 06	1.005	SWMH 07	196.4	1.240	1.195	2.6664	
15 minute summer	SWMH 07	1.006	OIL SEP	242.3	1.628	1.433	0.2705	
720 minute winter	SWMH 08	1.008	TANK3	26.0	0.719	0.159	0.6735	
720 minute winter	SWMH 09	1.010	SWMH 10	22.7	0.431	0.140	1.3010	
720 minute winter	SWMH 10	1.011	TANK4	22.5	0.707	0.134	0.5821	
720 minute winter	SWMH 11	Hydro-Brake®	HW	4.8				
15 minute summer	SWMH 12	2.000	SWMH 02	27.2	0.511	0.474	0.4077	
15 minute summer	SWMH 13	3.000	SWMH 14	4.3	0.723	0.086	0.0816	
15 minute summer	SWMH 14	3.001	SWMH 04	5.8	0.428	0.079	0.9328	
15 minute summer	SWMH 15	4.000	SWMH 16	33.9	0.786	0.473	1.3278	
15 minute summer	SWMH 16	4.001	SWMH 17	44.1	0.864	0.616	1.6556	
15 minute summer	SWMH 17	4.002	SWMH 18	57.4	0.862	0.800	1.3711	
15 minute summer	SWMH 18	4.003	SWMH 19	65.8	0.949	0.919	1.7677	
15 minute summer	SWMH 19	4.004	SWMH 06	74.0	1.088	1.032	1.4260	
600 minute winter	SWMH 20	5.001	SWMH 21	-10.0	-0.143	-0.066	8.1593	
720 minute winter	SWMH 21	5.002	SWMH 21.1	-7.9	0.117	-0.052	4.9608	
720 minute winter	SWMH 21.1	5.003	SWMH 08	-8.1	0.117	-0.050	1.4986	
720 minute winter	SWMH 22	6.000	SWMH 08	0.0	-0.001	0.000	0.1339	
15 minute summer	SWMH 23	7.000	SWMH 21	4.1	1.703	0.079	0.0169	
15 minute summer	SWMH 24	8.000	SWMH 21	4.9	1.720	0.098	0.0172	

Results for 30 year Critical Storm Duration. Lowest mass balance: 99.91%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute summer	SWMH 25	10	22.179	0.072	7.2	0.2337	0.0000	OK
720 minute winter	SWMH 26	690	22.112	0.011	0.0	0.0017	0.0000	OK
30 minute summer	SWMH 27	19	22.122	0.044	5.0	1.3053	0.0000	OK
720 minute winter	SWMH 28	690	22.112	0.389	0.9	9.6394	0.0000	SURCHARGED
720 minute winter	SWMH 29	690	22.112	0.475	0.2	0.0755	0.0000	SURCHARGED
720 minute winter	SWMH 30	690	22.112	0.206	0.5	2.7872	0.0000	OK
720 minute winter	SWMH 31	690	22.112	0.412	14.3	1.0479	0.0000	SURCHARGED
720 minute winter	SWMH 32	690	22.112	0.462	13.9	1.1752	0.0000	SURCHARGED
720 minute winter	SWMH 33	690	22.112	0.502	14.1	1.2769	0.0000	SURCHARGED
15 minute summer	SWMH 34	12	22.814	0.060	9.2	1.4164	0.0000	OK
15 minute summer	SWMH 35	12	22.533	0.063	5.8	0.0100	0.0000	OK
600 minute winter	TANK1	585	22.112	0.161	12.1	89.5644	0.0000	OK
720 minute winter	TANK2	690	22.112	0.402	15.6	172.2646	0.0000	SURCHARGED
720 minute winter	TANK3	690	22.112	0.472	26.9	57.5782	0.0000	SURCHARGED
720 minute winter	TANK4	690	22.112	0.512	23.3	62.4240	0.0000	SURCHARGED
30 minute summer	OIL SEP	20	22.147	0.489	227.3	0.0000	0.0000	SURCHARGED
15 minute summer	HW	1	21.550	0.000	4.8	0.0000	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute summer	SWMH 25	9.000	SWMH 21	7.0	0.896	0.395	0.0462	
720 minute winter	SWMH 26	10.000	SWMH 21	0.0	0.001	0.000	0.0379	
30 minute summer	SWMH 27	11.000	SWMH 21	3.3	0.659	0.186	0.0580	
720 minute winter	SWMH 28	12.000	SWMH 29	0.2	0.259	0.014	0.1499	
720 minute winter	SWMH 29	12.001	TANK4	0.2	0.327	0.013	0.0647	
720 minute winter	SWMH 30	13.000	TANK2	0.3	0.513	0.001	0.3186	
720 minute winter	SWMH 31	13.002	SWMH 32	-13.6	-0.260	-0.107	2.1654	
720 minute winter	SWMH 32	13.003	SWMH 33	-13.9	-0.179	-0.118	1.9915	
720 minute winter	SWMH 33	13.004	TANK4	-14.1	0.199	-0.088	0.2723	
15 minute summer	SWMH 34	14.000	SWMH 35	5.8	0.861	0.327	0.1923	
15 minute summer	SWMH 35	14.001	SWMH 31	5.8	0.861	0.326	0.0471	
600 minute winter	TANK1	5.000	SWMH 20	-9.7	-0.456	-0.060	0.1225	
720 minute winter	TANK2	13.001	SWMH 31	-14.1	-0.542	-0.103	0.3746	
720 minute winter	TANK3	1.009	SWMH 09	22.7	0.407	0.142	0.5720	
720 minute winter	TANK4	1.012	SWMH 11	4.9	0.193	0.030	0.4211	
30 minute summer	OIL SEP	1.007	SWMH 08	227.0	1.486	1.411	0.4420	

Results for 100 year +45% CC Critical Storm Duration. Lowest mass balance: 99.91%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute summer	SWMH 01	11	23.167	0.938	55.7	1.3487	0.0000	SURCHARGED
15 minute summer	SWMH 02	11	23.172	1.058	111.9	3.4780	0.0000	FLOOD RISK
15 minute summer	SWMH 03	11	23.125	1.062	145.2	3.6653	0.0000	FLOOD RISK
15 minute summer	SWMH 04	11	22.983	1.063	138.7	2.7043	0.0000	FLOOD RISK
15 minute summer	SWMH 05	11	22.931	1.058	165.3	3.3230	0.0000	FLOOD RISK
15 minute summer	SWMH 06	11	22.835	1.028	304.5	4.0871	0.0000	SURCHARGED
30 minute summer	SWMH 07	19	22.602	0.839	365.1	3.6739	0.0000	SURCHARGED
1440 minute winter	SWMH 08	1380	22.511	0.860	25.6	2.1885	0.0000	SURCHARGED
1440 minute winter	SWMH 09	1380	22.511	0.880	18.5	5.6437	0.0000	FLOOD RISK
1440 minute winter	SWMH 10	1380	22.511	0.901	18.1	2.2927	0.0000	FLOOD RISK
1440 minute winter	SWMH 11	1380	22.511	0.918	4.9	2.3358	0.0000	FLOOD RISK
15 minute summer	SWMH 12	11	23.192	1.062	52.1	2.2969	0.0000	FLOOD RISK
15 minute summer	SWMH 13	11	22.974	0.674	8.2	0.3445	0.0000	FLOOD RISK
15 minute summer	SWMH 14	11	22.972	0.822	18.0	0.2326	0.0000	FLOOD RISK
15 minute summer	SWMH 15	11	23.176	0.745	61.4	0.8578	0.0000	SURCHARGED
30 minute summer	SWMH 16	20	23.131	0.801	76.1	0.5535	0.0000	SURCHARGED
30 minute summer	SWMH 17	21	23.099	0.870	117.2	28.7602	0.0000	SURCHARGED
30 minute summer	SWMH 18	20	23.040	0.893	85.0	1.0434	0.0000	FLOOD RISK
30 minute summer	SWMH 19	19	22.940	0.898	93.3	0.8822	0.0000	FLOOD RISK
1440 minute winter	SWMH 20	1380	22.511	0.566	12.3	1.4404	0.0000	SURCHARGED
1440 minute winter	SWMH 21	1380	22.511	0.759	12.8	1.9314	0.0000	SURCHARGED
1440 minute winter	SWMH 21.1	1380	22.511	0.836	11.4	2.1275	0.0000	SURCHARGED
1440 minute winter	SWMH 22	1380	22.511	0.420	0.0	0.0668	0.0000	SURCHARGED
15 minute summer	SWMH 23	10	22.741	0.041	7.4	0.1486	0.0000	OK
15 minute summer	SWMH 24	10	22.616	0.046	9.3	0.4166	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute summer	SWMH 01	1.000	SWMH 02	36.4	0.330	0.323	3.9605	
15 minute summer	SWMH 02	1.001	SWMH 03	93.1	0.844	0.830	1.7712	
15 minute summer	SWMH 03	1.002	SWMH 04	136.7	1.239	1.213	2.3412	
15 minute summer	SWMH 04	1.003	SWMH 05	138.2	0.872	0.844	2.8675	
15 minute summer	SWMH 05	1.004	SWMH 06	164.9	1.041	1.003	3.9966	
15 minute summer	SWMH 06	1.005	SWMH 07	300.9	1.899	1.831	2.6664	
30 minute summer	SWMH 07	1.006	OIL SEP	359.6	2.270	2.126	0.2863	
1440 minute winter	SWMH 08	1.008	TANK3	20.8	0.662	0.127	0.6735	
1440 minute winter	SWMH 09	1.010	SWMH 10	18.1	0.400	0.112	1.3010	
1440 minute winter	SWMH 10	1.011	TANK4	18.0	0.628	0.107	0.5821	
1440 minute winter	SWMH 11	Hydro-Brake®	HW	4.8				1298.6
15 minute summer	SWMH 12	2.000	SWMH 02	48.3	0.687	0.843	0.4166	
15 minute summer	SWMH 13	3.000	SWMH 14	6.3	0.794	0.127	0.2140	
15 minute summer	SWMH 14	3.001	SWMH 04	-12.3	0.441	-0.166	1.0546	
15 minute summer	SWMH 15	4.000	SWMH 16	58.3	0.835	0.814	1.6948	
30 minute summer	SWMH 16	4.001	SWMH 17	73.8	1.048	1.030	1.6965	
30 minute summer	SWMH 17	4.002	SWMH 18	78.0	1.107	1.086	1.3711	
30 minute summer	SWMH 18	4.003	SWMH 19	86.2	1.224	1.205	1.7677	
30 minute summer	SWMH 19	4.004	SWMH 06	94.6	1.343	1.320	1.4260	
1440 minute winter	SWMH 20	5.001	SWMH 21	-12.3	0.159	-0.081	13.6545	
1440 minute winter	SWMH 21	5.002	SWMH 21.1	-11.2	0.116	-0.073	5.3644	
1440 minute winter	SWMH 21.1	5.003	SWMH 08	-11.4	0.115	-0.071	1.5047	
1440 minute winter	SWMH 22	6.000	SWMH 08	0.0	-0.003	0.002	0.2471	
15 minute summer	SWMH 23	7.000	SWMH 21	7.4	2.000	0.142	0.0622	
15 minute summer	SWMH 24	8.000	SWMH 21	8.9	2.010	0.180	0.0577	

Results for 100 year +45% CC Critical Storm Duration. Lowest mass balance: 99.91%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
1440 minute winter	SWMH 25	1380	22.511	0.404	0.6	6.3073	0.0000	SURCHARGED
1440 minute winter	SWMH 26	1380	22.511	0.410	0.0	0.0652	0.0000	SURCHARGED
1440 minute winter	SWMH 27	1380	22.511	0.433	0.7	12.6495	0.0000	SURCHARGED
1440 minute winter	SWMH 28	1380	22.511	0.788	0.7	10.1354	0.0000	FLOOD RISK
1440 minute winter	SWMH 29	1380	22.511	0.874	0.7	0.1389	0.0000	FLOOD RISK
1440 minute winter	SWMH 30	1380	22.511	0.605	0.4	6.6375	0.0000	SURCHARGED
1440 minute winter	SWMH 31	1380	22.511	0.811	10.7	2.0636	0.0000	SURCHARGED
1440 minute winter	SWMH 32	1380	22.511	0.861	10.3	2.1909	0.0000	SURCHARGED
1440 minute winter	SWMH 33	1380	22.511	0.901	10.5	2.2926	0.0000	SURCHARGED
15 minute summer	SWMH 34	12	22.839	0.085	16.8	2.6051	0.0000	OK
15 minute summer	SWMH 35	12	22.562	0.092	10.6	0.0146	0.0000	OK
1440 minute winter	TANK1	1380	22.511	0.560	15.0	284.6393	0.0000	SURCHARGED
1440 minute winter	TANK2	1380	22.511	0.801	11.7	354.9000	0.0000	SURCHARGED
1440 minute winter	TANK3	1380	22.511	0.871	21.5	85.5588	0.0000	FLOOD RISK
1440 minute winter	TANK4	1380	22.511	0.911	18.6	85.5287	0.0000	FLOOD RISK
1440 minute winter	OIL SEP	1380	22.511	0.853	25.6	0.0000	0.0000	SURCHARGED
15 minute summer	HW	1	21.550	0.000	4.8	0.0000	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
1440 minute winter	SWMH 25	9.000	SWMH 21	0.6	0.436	0.034	0.1040	
1440 minute winter	SWMH 26	10.000	SWMH 21	0.0	-0.005	0.002	0.1268	
1440 minute winter	SWMH 27	11.000	SWMH 21	0.4	0.400	0.023	0.1317	
1440 minute winter	SWMH 28	12.000	SWMH 29	0.7	0.253	0.038	0.1499	
1440 minute winter	SWMH 29	12.001	TANK4	0.7	0.104	0.037	0.0647	
1440 minute winter	SWMH 30	13.000	TANK2	0.2	0.510	0.000	0.4198	
1440 minute winter	SWMH 31	13.002	SWMH 32	-10.1	0.229	-0.080	2.1654	
1440 minute winter	SWMH 32	13.003	SWMH 33	-10.3	0.158	-0.087	1.9915	
1440 minute winter	SWMH 33	13.004	TANK4	-10.5	0.103	-0.065	0.2723	
15 minute summer	SWMH 34	14.000	SWMH 35	10.6	0.987	0.596	0.3055	
15 minute summer	SWMH 35	14.001	SWMH 31	10.6	0.993	0.595	0.0745	
1440 minute winter	TANK1	5.000	SWMH 20	-11.8	-0.458	-0.073	0.3720	
1440 minute winter	TANK2	13.001	SWMH 31	-10.5	0.323	-0.077	0.3747	
1440 minute winter	TANK3	1.009	SWMH 09	18.2	0.400	0.113	0.5720	
1440 minute winter	TANK4	1.012	SWMH 11	4.9	0.153	0.029	0.4211	
1440 minute winter	OIL SEP	1.007	SWMH 08	25.6	0.389	0.159	0.4422	

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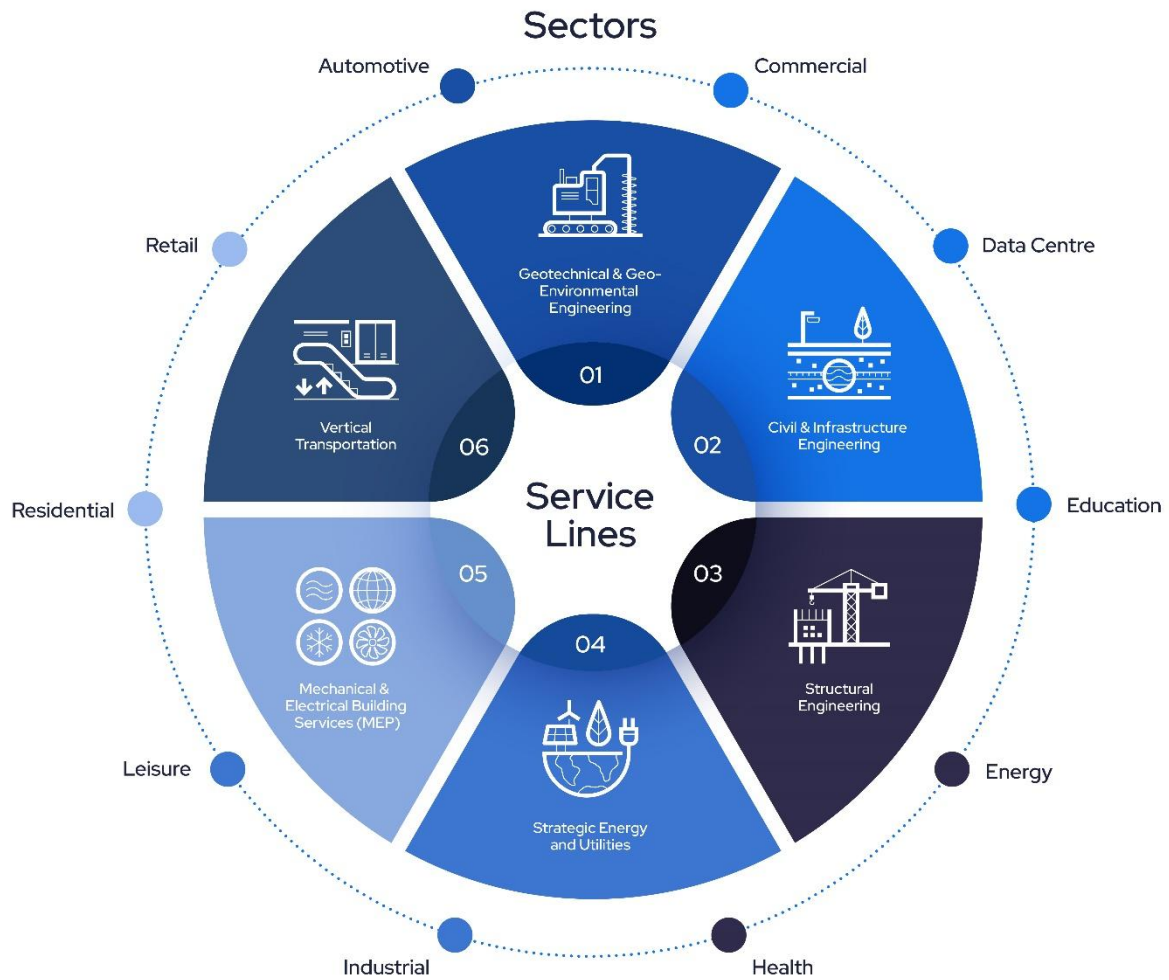
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