



J ROBERTS DESIGN LTD
STRUCTURAL AND CIVIL ENGINEERING CONSULTANTS

**NIFTY LIFTS
PLATTS COMMON
INDUSTRIAL ESTATE
MASON WAY
HOYLAND
BARNSELEY, S74 9TF**


**DRAINAGE REPORT
PROPOSED EXTENSION**

Client – JHA Architecture Ltd

4076 / Sept 2024

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	Nifty Lifts, Barnsley				4076	
	Section				Sheet no./rev.	
Drainage Design – Proposed Extension				1		
Calc. by	Date	Chk'd by	Date	App'd by	Date	
JR	18/09/2024					

Introduction

It is proposed to construct a new industrial unit extension with associated yards / parking and access road within the northwest side of the site at Nifty Lifts, Barnsley.

In accordance with Building Regulations 2000 Part H3 surface water from a development should discharge to once of the following in priority order:

- Soakaway or Infiltration System
- Watercourse
- Public Sewer

From a site investigation undertaken by G&M Consulting – Report C617 dated Dec 2023 the general site consist of 2.9m to 6.9m of Made Ground over Sandstone bedrock or stiff very gravelly Clay. The Made Ground description is sandy subangular fine to coarse Gravel, with a low cobble content.

In consideration of the SPT tests the made ground has a very variable degree of compaction with N values between 3 and 39 indicating loose to dense conditions.

A single falling head permeability testing has been undertaken on site within the boreholes for viability, which has confirmed an average infiltration rate of 3.1×10^{-6} which is considered to be low. The test depths were wholly within the made ground depths.


Due to the significant depths of made ground soakaways are not recommended for this site due to the risk of inundation settlement.

In addition from a CCTV survey of the existing drainage there is an existing soakaway on site to the east of the new unit, however the report noted the camera was underwater within the drain connecting to the soakaway indicating this soakaway is either significantly undersized or not working correctly.

There are no watercourses within economical distance of the development.

It is therefore proposed to install a new drainage system for the proposed building and external works with an attenuated discharge into the sewers within the Mason Road to the east of the development. A maximum greenfield run-off rate of 2L/s will be used for this development in line with national policy.

The following calculations are for the surface water drainage design for the project. There are no new foul water connections required for the new unit.

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	Nifty Lifts, Barnsley				4076	
	Section				Sheet no./rev.	
Drainage Design – Proposed Extension				2		
Calc. by	Date	Chk'd by	Date	App'd by	Date	
JR	18/09/2024					

Standards and References

BS EN 752:2008 Drain and sewer systems outside buildings
BS EN 12056-2:2000 Gravity Drainage systems inside buildings
Building Regulations - Pt H Drainage and waster disposal
British Water – (CoP) Flows and Loads – 4 Sizing Criteria, Treatment Capacity for Sewerage Treatment Systems

Software

Tekla Tedds 2024
Infodrainage 2025

Construction, Design and Management (CDM)

J Roberts Design Ltd have undertaken the role of Designer for this project. It is assumed that an Architect has been appointed to the role of Principal Designer and has advised the Client of their responsibilities under the act.

If an Architect has not been appointed, the roles and responsibilities under the CDM regulations normally pass to the principal contractor.

Under CDM 2015 it is our duty as designers to provide adequate information about any significant risks associated with the design project.


Our scope of work on this project is:

- Surface Water Drainage

The structural concept and form of construction of the proposed work are conventional. In our opinion, the design solution reduces foreseeable risk to an acceptable level and no significant risks remain from the structural design in the construction or use that could reasonably have been avoided. We believe that the level of residual risk is normal for this type of project and would be obvious to a competent contractor.

Additional information regarding the responsibility of a client commissioning domestic building work under the CDM regulations 2015 can be found on the HSE website:

<http://www.hse.gov.uk/construction/cdm/2015/responsibilities.htm>

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	Nifty Lifts, Barnsley				4076	
	Section				Sheet no./rev.	
Drainage Design – Proposed Extension				3		
Calc. by	Date	Chk'd by	Date	App'd by	Date	
JR	18/09/2024					

SURFACE WATER DRAINAGE DESIGN

The existing drained site area affected by the proposed development is 5848m².

The total proposed drained area is 11903m².

Within a previous development on site a flow control was installed with a Peak Flow Rate = 2.0L/s at a design standard 1 in 100yr plus 40% Climate change without flooding occurring with an outlet connection made into a sewer within Mason Way.

The existing hydrobrake reference is MD-SHE-0057-2000-2000-2000 which has a 2m head.

As the opening size is 57mm additional upstream protection is required to minimise the risk of blockages to a minimum by installing a SiltBlock Silt traps. These have an additional filter block within the chamber to capture silts and debris.

As the existing soakaway does not work effectively and the ground has been proven not to be suitable for soakaways due to the deep depth of made ground the extension proposal is to connect onto the existing drainage system with the 2L/s total peak flow limit.

The location of the proposed development falls to the north boundary by around 4m height difference, therefore it has been proposed to terrace the site to lift site levels to provide more usable gradients across the site. Retaining walls will be constructed to facilitate the difference in levels as proposed.


All of the new surface water drainage will therefore be directed to the lowest part of the site and pumped back up to the point of connection into the existing drainage system to the east side of the development.

From the detailed design of the drainage with a restricted total flow off site of 2L/s attenuation storage of 1623m³ (Tank 2) is required to the north of the site below the carparking area and an additional 116m³ (Tank 1) of storage to the east of the new building to further balance out the flows upstream of the flow control.

Flow control measures are proposed to the north side of the site using another hydrobrake limited to 1.5L/s upstream of a package pumping station. The package pumping station is to lift the surface water run-off up to Tank 1. The flow control is to ensure the average flow rate from the package pumping station is limited to 1.5L/s to prevent Tank 1 from being inundated causing flooding during an extreme event. Tank 2 is designed to store the surface water run-off for the peak discharge of 1.5L/s.

The proposed hydrobrake reference is MD-SHE-0049-1500-2000-1500 which has a 2m head.

To protect the attenuation tanks and flow controls from silt bypass separators are provided from each yard connection prior to connection with Tank 2.

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	Nifty Lifts, Barnsley				4076	
	Section				Sheet no./rev.	
Drainage Design – Proposed Extension				4		
Calc. by	Date	Chk'd by	Date	App'd by	Date	
JR	18/09/2024					

Pollution Control Mitigation Indices for Bypass Separators are:-

TSS 0.8, Metals 0.6 and Hydrocarbons 0.9.

The pollution hazard indices for a commercial yard and delivery area for a medium hazard level is:-

TSS 0.7, Metals 0.6 and Hydrocarbons 0.7.


Therefore a bypass separator provides an appropriate level of treatment to mitigate the risk of pollution.

To mitigate the risk of pump failure during a storm a battery backup system will be installed in case of a power cut. Two pumps are to be installed such that should one pump fail the second pump can take over whilst the first pump is being repaired.

Should there be a complete failure of the pumping station the carpark will flood once the attenuation crates storage capacity has been exceeded. Flood water in this case would be captured behind the boundary retaining wall which provides an additional storage volume of circa 100m³. In the extremely unlikely scenario that flood water overtopped the retaining wall the flows would pass over a large area of grass land prior to entering the public highway to the north some 90m away from the site boundary. No properties would be affected in this scenario.

Refer to Appendix A for the Drainage General Arrangement and Drainage Details Drawings.

Refer to Appendix B for the Infodrainage Calculations.

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	Nifty Lifts, Barnsley				4076	
	Section				Sheet no./rev.	
Drainage Design – Proposed Extension				5		
Calc. by	Date	Chk'd by	Date	App'd by	Date	
JR	18/09/2024					

MAINTENANCE

Below Ground Drainage and drainage channels

1. No work shall be carried out on the drainage system without permission from a nominated person, who has access to information/a working knowledge of the system.
2. Maintenance/inspection work shall be carried out in a safe/planned manner.
3. All work is to be carried out by competent persons suitably trained and equipped in accordance with current statutory safe working policies.
4. Entry into confined spaces shall be kept to a minimum and be restricted to suitably qualified/equipped persons working in accordance with current statutory safe working policies.
5. High levels of hygiene shall be maintained at all times, with adequate welfare facilities being provided for the personnel.
6. Drainage systems shall be inspected on a regular basis or should any problems be suspected. Any debris/ defects discovered shall be recorded and a programme of cleaning/ repair initiated. Urgent repairs/ cleaning shall be actioned as soon as practicable.
7. The following operations should be carried out annually.
 - a) Covers of inspection chambers and manholes shall be removed and the sides, benchings and channels cleared.
 - b) Accumulated deposits of silt in soakaways, catchpit manholes, drainage channels, gullies etc. shall be removed. Any traps shall then be plunged and thoroughly flushed out with clean water.
 - c) Main and branch drains shall be cleared as required and afterwards be flushed with clean water. Any obstructions found shall be removed and not flushed down the system.
 - d) Covers of inspection chambers, manholes, gullies etc. shall be replaced, bedded in suitable grease or other sealing material as required and bolted/locked down as appropriate. Missing bolts and broken items shall be replaced in accordance with the manufacturer's details.
8. Trapped gullies shall be checked and replenished as necessary in order to maintain the seal, preventing the escape of odours.
9. Clearing of the drainage system can be achieved by a number of methods depending on the nature of the work
 - a) Rodding – Manual/Mechanical with flexible rods.
 - b) Jetting – High pressure water jetting.
 - c) Plunging.
10. Pumping Station to be maintained by the installer or equivalent servicing company at least annually or as required to maintain operation of the pumping station. The pumping station is to have two pumps such that if one break down a second pump can take over whilst the first one is being repaired.



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Project				Job Ref.	
Nifty Lifts, Barnsley				4076	
Section				Sheet no./rev.	
Drainage Design – Proposed Extension				6	
Calc. by	Date	Chk'd by	Date	App'd by	Date
JR	18/09/2024				

Maintenance Schedule for Cellular Crate Storage Tanks

Regular Maintenance		
Element	Maintenance / Action Required	Frequency
Crate Structures	CCTV / jetting through central channel to assess and clear any build-up of silt	Annually – Autumn after leaf fall
Permeable Paving	Jet Wash and suction sweeper	
Regular Monitoring		
Inlets / outlets / vents	Inspect all inlets / outlets and vents to ensure in a good working condition and operating as designed	Annually and after large storms
Remedial Actions		
Inlets / outlets / vents	Repair as necessary	As required.
Crates	Inspect and replace crate where necessary	As required.



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Project		Nifty Lifts, Barnsley		Job Ref.		4076					
Section				Drainage Design – Proposed Extension				Sheet no./rev.		7	
Calc. by		Date		Chk'd by		Date		App'd by		Date	
JR		18/09/2024									

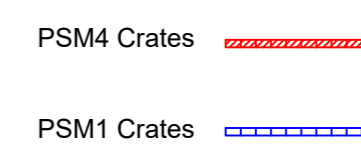
Appendix A

Drawings

NOTES

- DO NOT SCALE - Use figured dimensions only.
- All dimensions shown are in millimetres unless otherwise stated.
- The Contractor is to verify all dimension on site before commencing work or preparing shop drawings.
- This drawing is to be read in conjunction with all Engineers and Architects drawings and specifications.
- 100 & 150 dia. Vitrifed Clay pipes to be a strength of FH40kNm. & 225 dia. pipes to be a strength of FH45kNm to BS: EN295-1, (kitemarked), Hepworth.
- Plastic drainage to be Hepworth Plastic Drainage, kitemarked, to BS: 4660:2000 & BS: EN1401-1:1988.
Plastic structural wall sewer pipes to be Hepworth Plastic Drainage to BS: EN13476-1/2 and WS-A-35-01, Kitemarked.
- Plastic pipes less than 500mm. dia. shall have a nominal short term ring stiffness not less than 8kN/m² (SN8).
- Plastic pipes greater than 500mm. dia. shall have a nominal short term ring stiffness not less than 2kN/m² (SN2), unless supported by design calculations.
- Plastic chambers & inlets to BS: EN13398-1 and 2, Kitemarked.
- Drainage pipes to be laid in maximum 3m lengths.
- All pipe connections at manholes to be soffit to soffit.
- Filled ground must be filled and consolidated under the supervision and to the satisfaction of Building Control before any sewer works are carried out.
- Bedding and backfill material to conform to the requirement of Water Industry Specification 4-08-02 (Table A2).
- All private drains & manholes to be constructed in accordance with Building Regulations Part H.
 - 1000 Private Foul Drains to be laid at 1:80 minimum where 1 toilet connected or 1:40 where no toilets are connected. 1500 sewers are to be laid at a minimum of 1:150.
 - 1500 Private Surface water drains to be laid at 1:150 minimum.
- All road gully connections to be 150 dia. at 1 : 150 fall.
- Gully connections to be enclosed in concrete (ST4) 150th. where depth of cover is less than 1.2m. 18mm. Flexcell board to be provided at each pipe joint.

Key



P2	Revised to latest site plan	JR	17.09.2024
P1	Initial Issue	LM	JR 05.02.2024
Rev	Description	Dr	Ch Date
Drawing Status: Planning			
Client: JHA Architecture Ltd			
Project: Niftylifts, Platts Common Ind. Estate Hoyland, Barnsley, S74 9TF			
Title: DRAINAGE PLAN			
Sheet Size: A0		Scale: 1:200	
Drawn: None		Drawing Number: 4076/800	
Checked: -		Rev: P2	
Approved: -			

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Ex Soakaway to be abandoned
CL 150.73
IL 148.67
Depth 2.060m

Ex MH4 Proprietary Flow Control Manhole (CPM15000)
CL 151.52
IL 148.80
Peak Flow Rate 2L/s @ 1 in 100yr + 40% CC
Hydraulic Reference MD-SHE-0057-2000-2000-2000
Design Head 2000mm

Existing MH CL 149.5 Approx IL 147.12 Approx

Existing MH CL 149.90 IL 148.670

Existing MH (C600)
CL 149.90
IL 148.670

Existing MH (B1800)
CL 151.50
IL 149.10

Ex MH6 Siltblok Silttrap SB300
CL 151.79
IL 151.00

Ex MH3 Siltblok Silttrap SB600
CL 151.5
IL 149.02

Attenuation storage pipe (concrete or twinwall plastic) 16m³ volume required. Or use cellular storage crates 22m x 1m x 0.8m deep (HGV loading capacity)

3000 Stuck for future connection IL 148.85

Rippable gully

RWP's be provided along the face of the building and to drop into gully

El Sub Sta

BRICK CLADDING WAREHOUSE

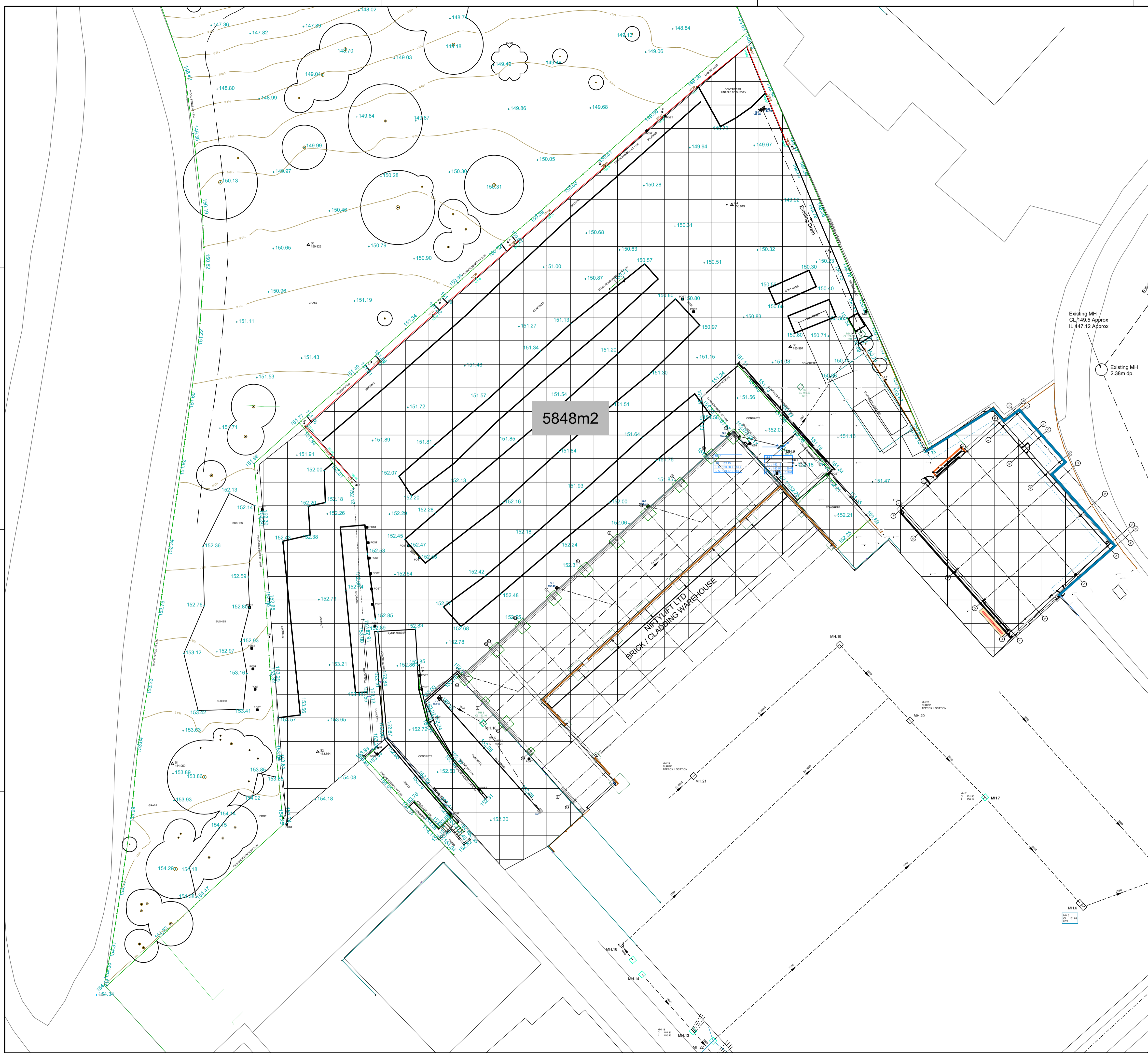
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Rev	Description	Dr	Ch
Drawing Status		Preliminary	
Client JHA Architecture Ltd			
Project Niftylifts, Platts Common Ind. Estate Hoyland, Barnsley, S74 9TF			
Title Existing Drainage Plan			
Sheet Size	A1	Scale	1:200
Drawn	LM	Drawing Number	4076/801
Checked	JR	Rev	P1
Approved	-		

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Rev	Description	Dr	Ch	Date
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P1	Initial Issue	LM	JR	05.02.2024
Drawing Status: Preliminary				
Client: JHA Architecture Ltd				
Project: Niftylifts, Platts Common Ind. Estate Hoyland, Barnsley, S74 9TF				
Title: Existing Drainage Areas				
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Checked: JR		Approved: -		

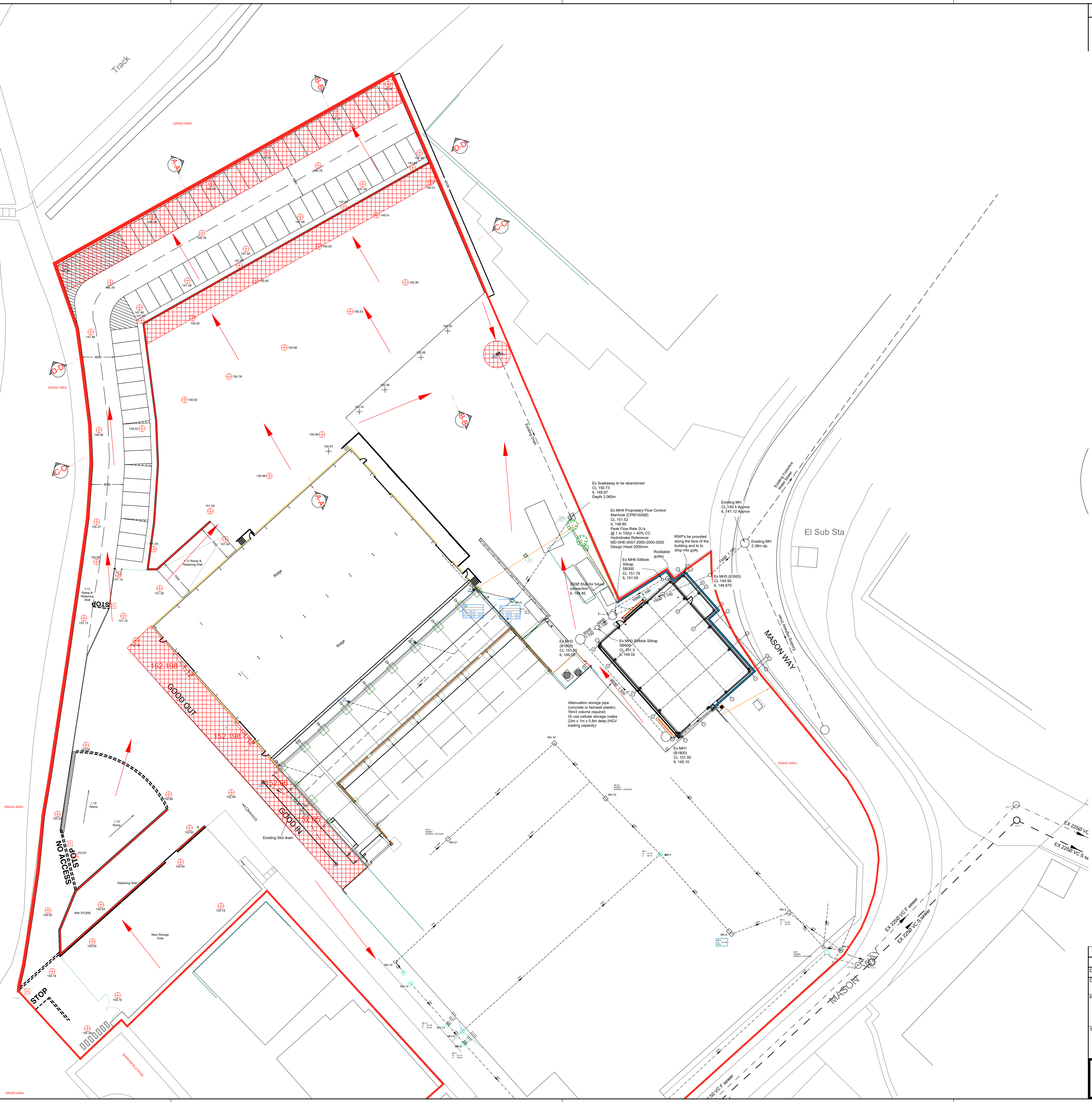


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→ FLOOD FLOW PATHS

⊗ POTENTIAL FLOOD AREAS SHOULD BLOCKAGES OCCUR WITHIN THE DRAINAGE SYSTEM OR CAPACITY OF ATTENUATION STORAGE IS EXCEEDED.



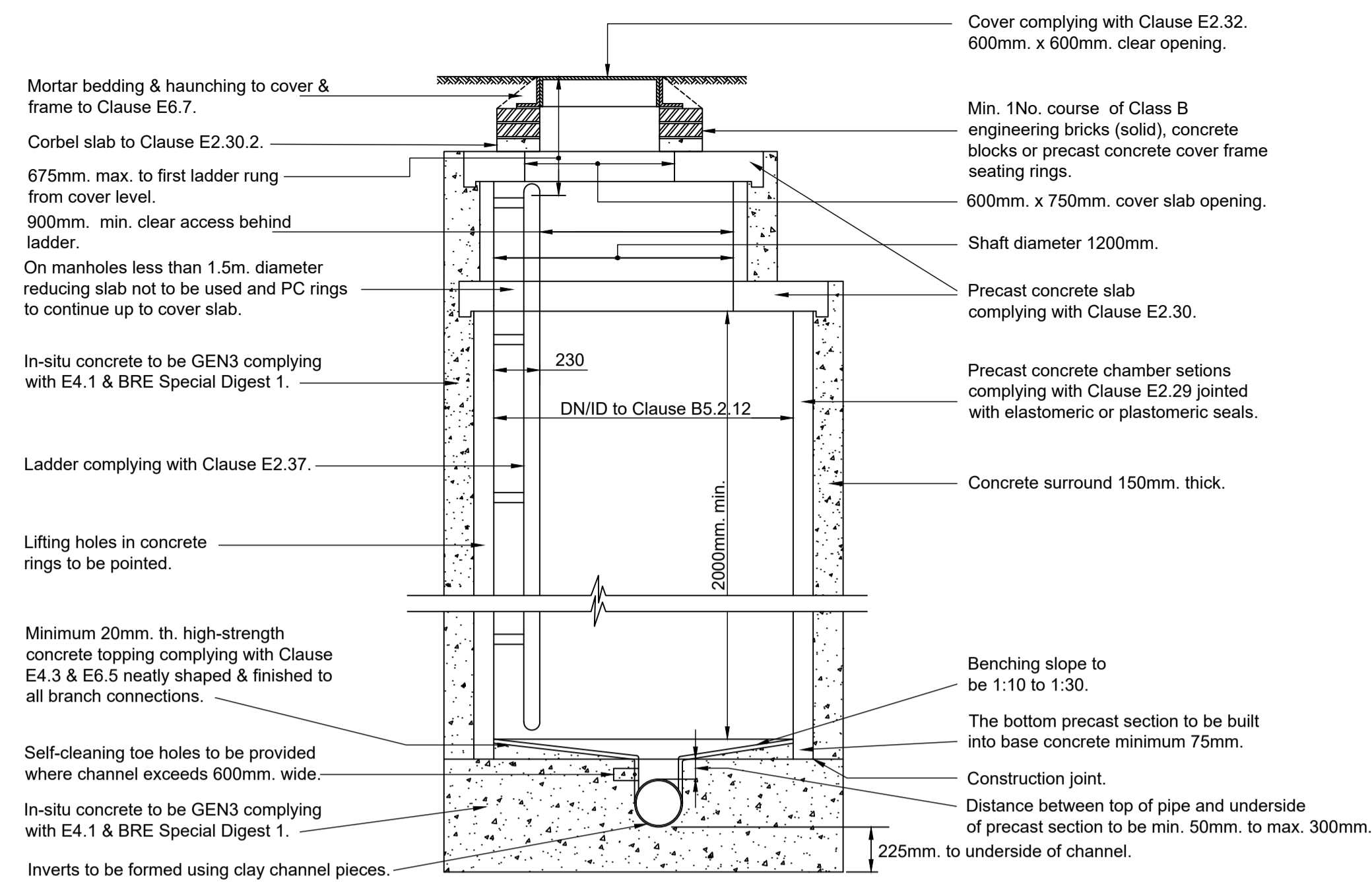
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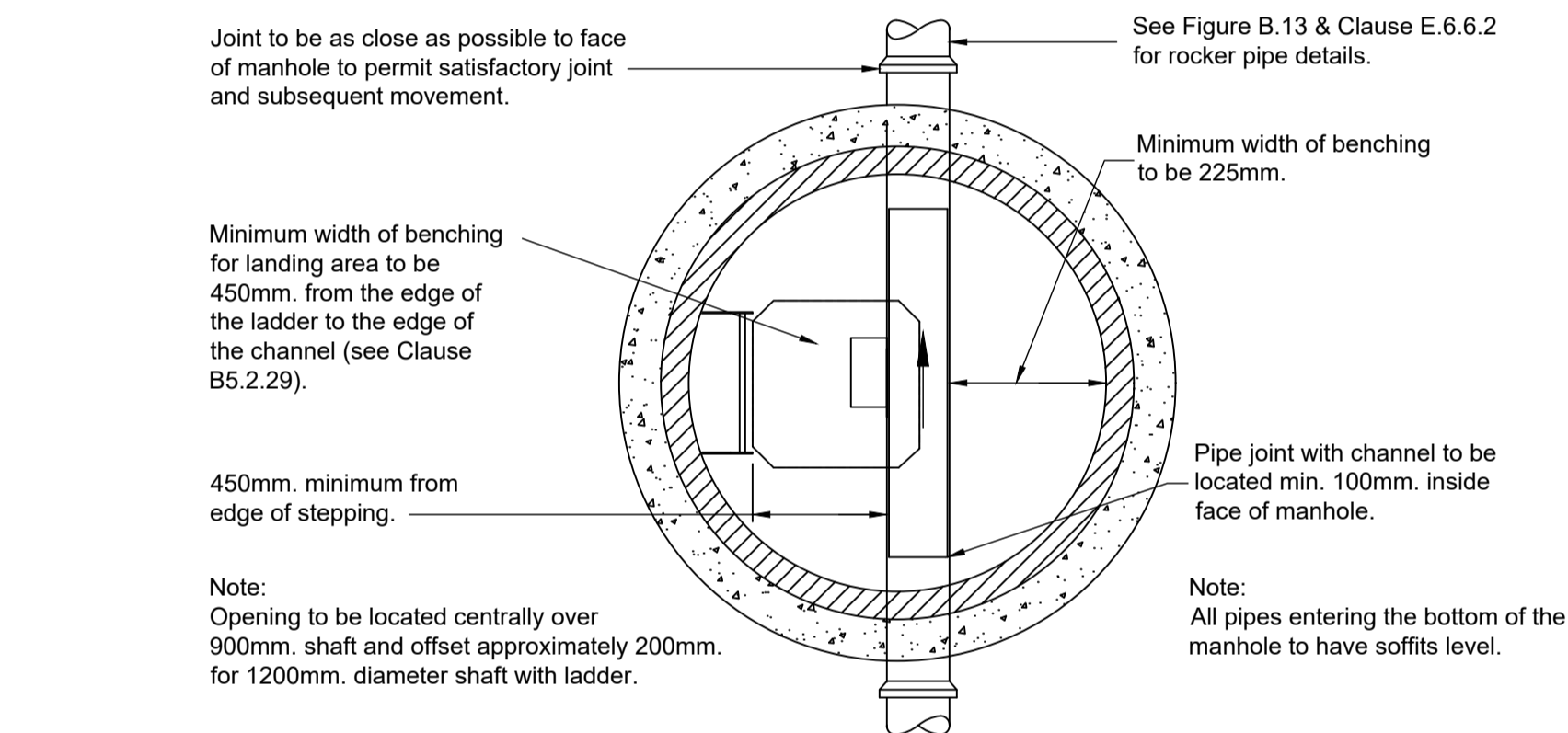
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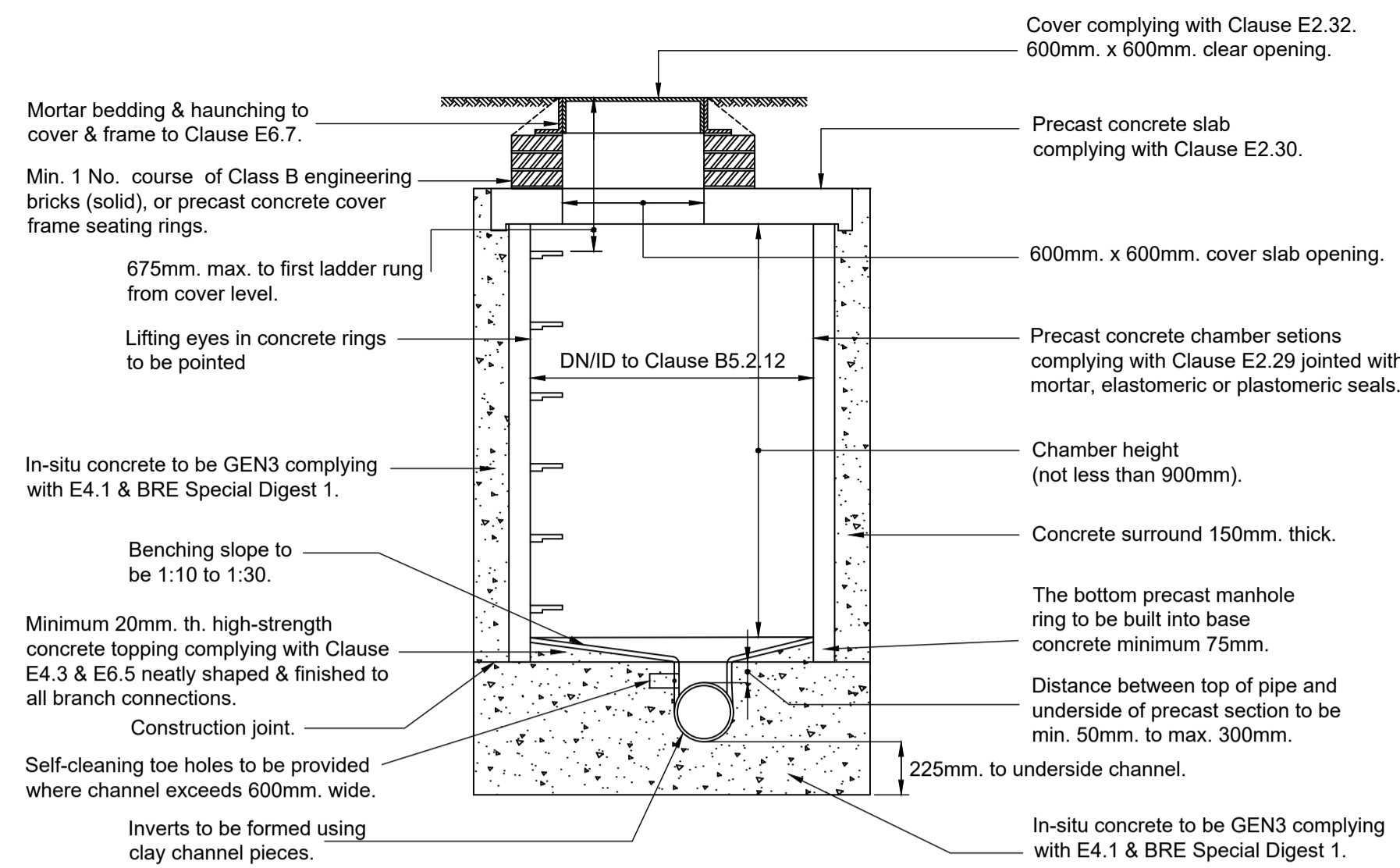


SECTION THROUGH TYPICAL MANHOLE OVER 3000 DEEP
SCALE 1:25

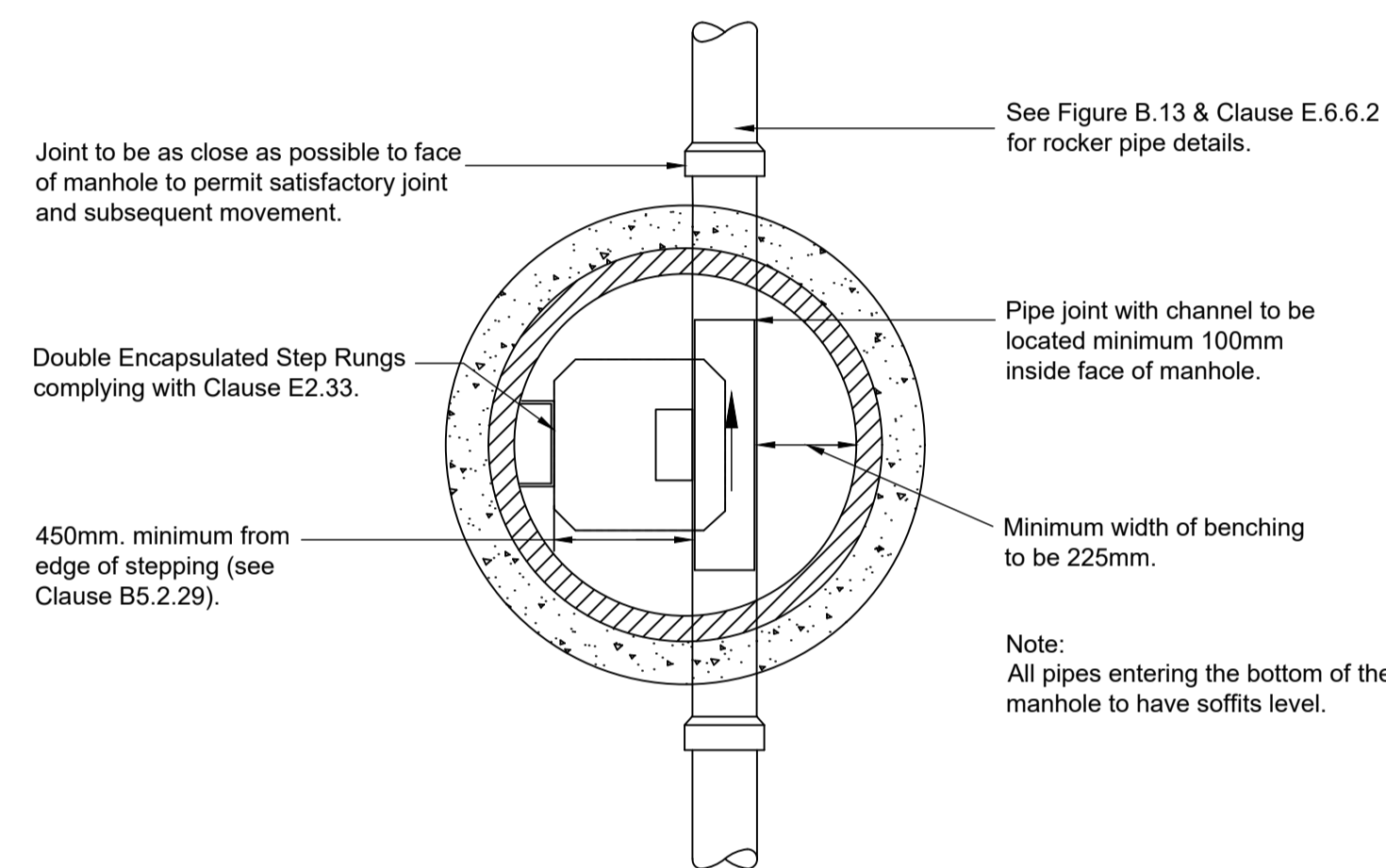


PLAN TYPICAL MANHOLE OVER 3000 DEEP
Depth from cover level to soffit of pipe 3.0m. to 6.0m.
SCALE 1:25

MANHOLE DETAIL TYPE 'A'

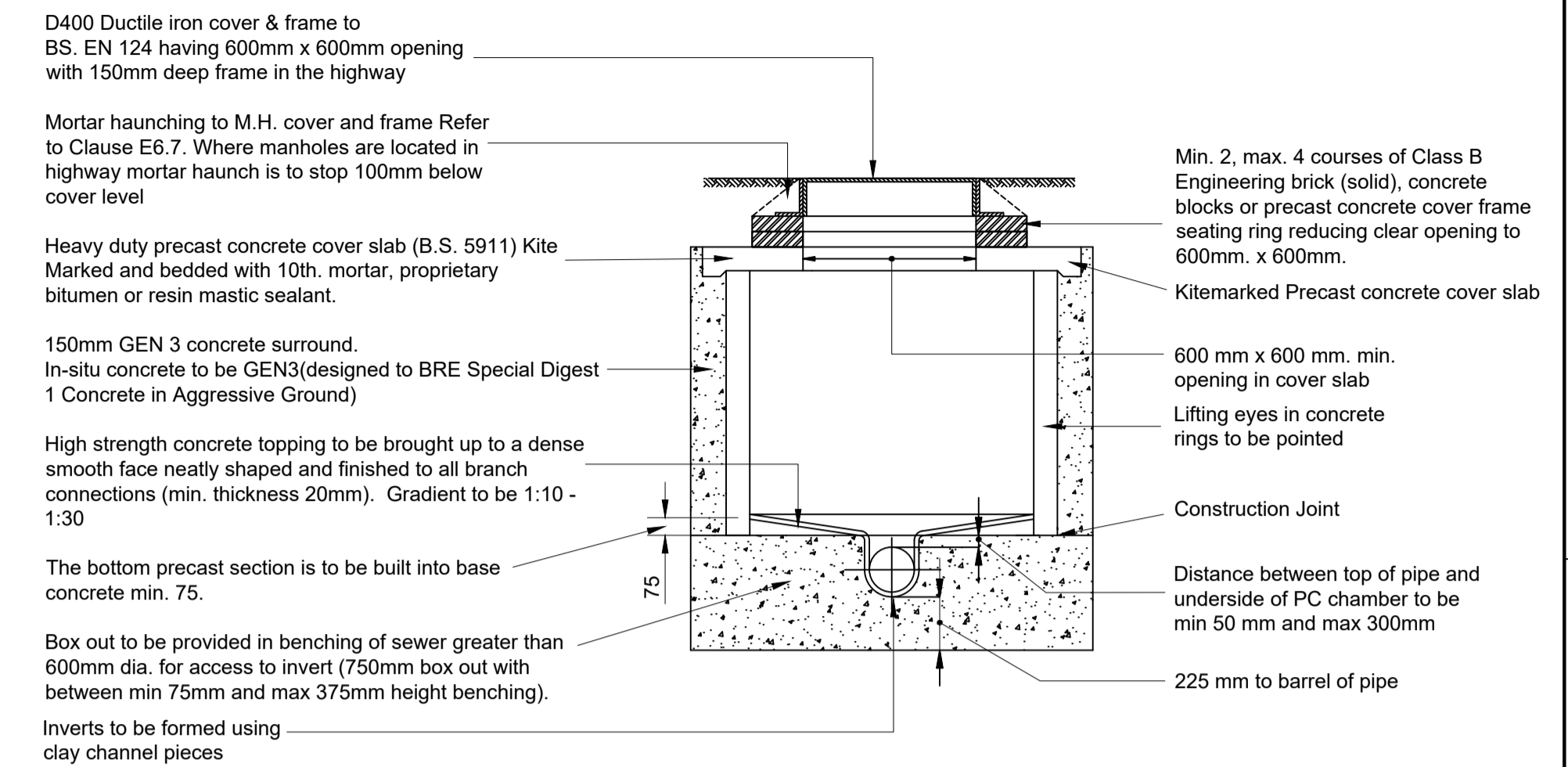


SECTION THROUGH TYPICAL MANHOLE UP TO 3000 DEEP
SCALE 1:25



PLAN TYPICAL MANHOLE UP TO 3000 DEEP
Maximum depth from cover level to soffit of pipe 1.5m. to 3.0m.
SCALE 1:25

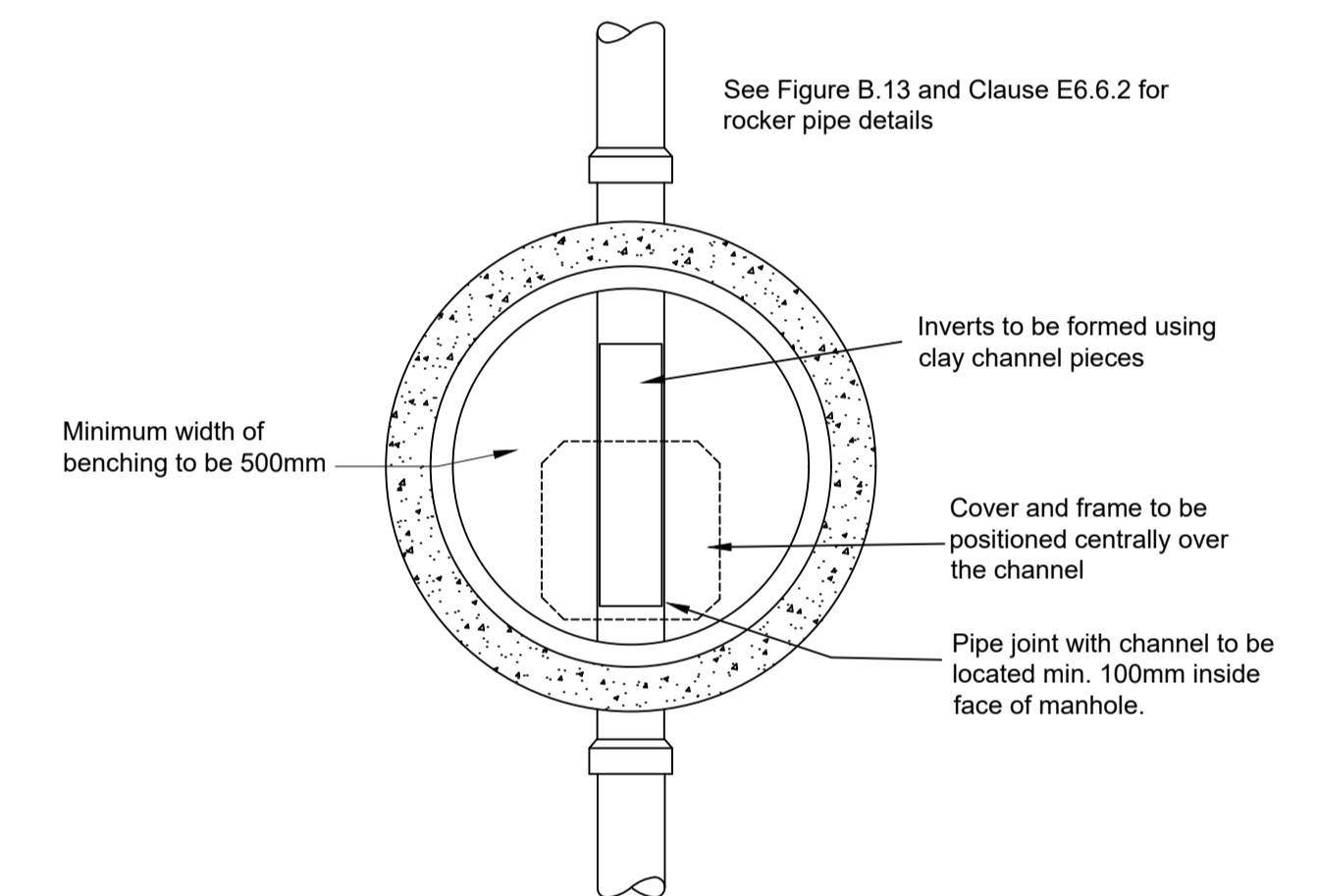
MANHOLE DETAIL TYPE 'B'



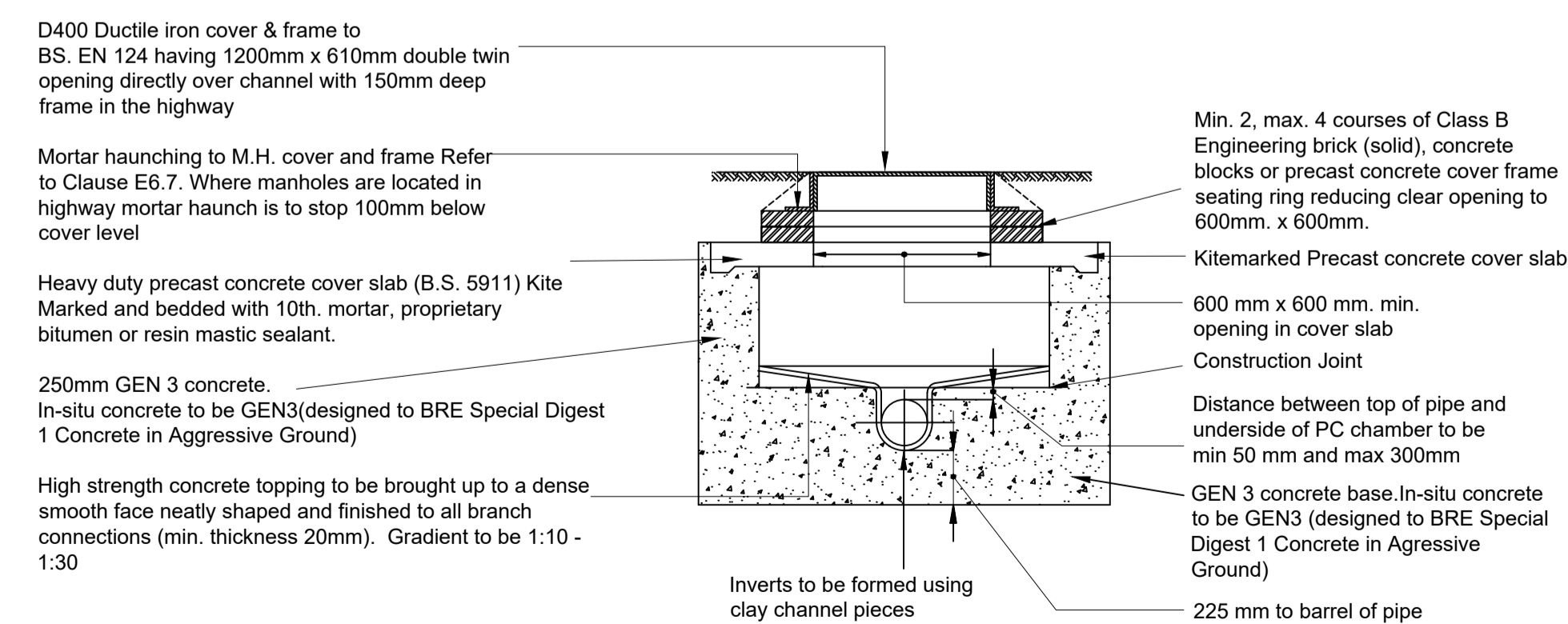
TYPICAL MANHOLE DETAIL - TYPE E

Depth from cover level to soffit of pipe less than 1.5m

NOTE: Manholes less than 1.5m to soffit with 1500mmØ chamber size or larger should have a 1200 x 675 (central or eccentric) sited over the channel with double twin 600 x 600 covers.

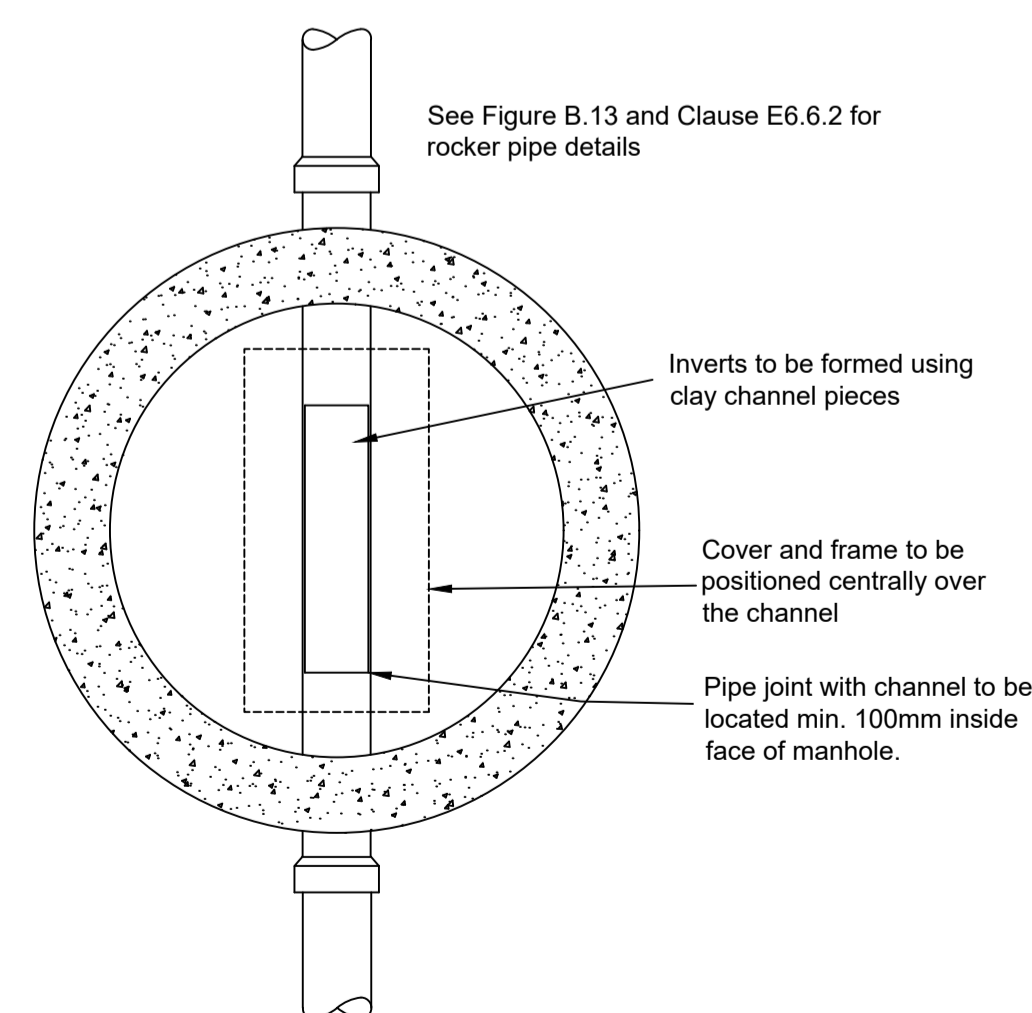


PLAN TYPE E MANHOLE
SCALE 1:25



TYPICAL SHALLOW MANHOLE DETAIL TYPE S

Depth from cover level to soffit of pipe less than 1.0m

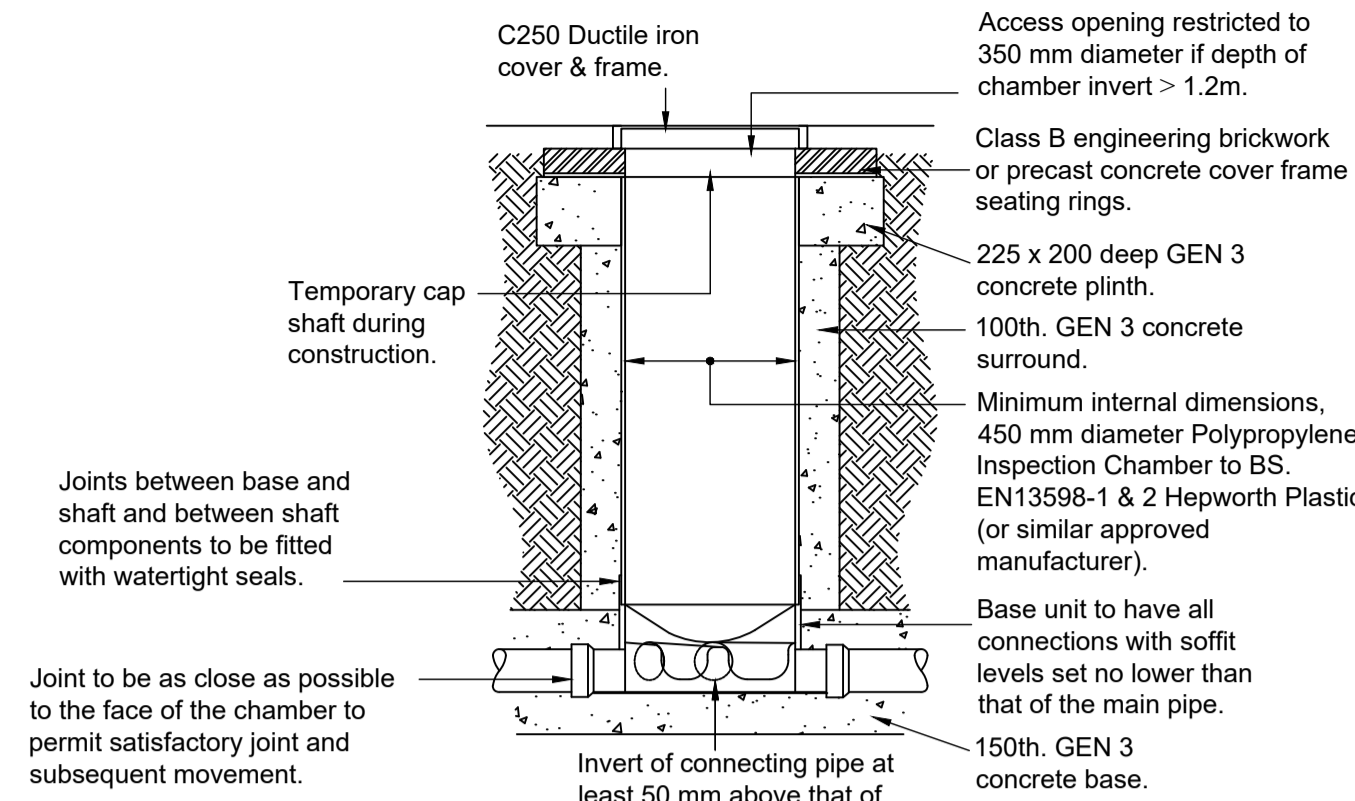


PLAN TYPE S MANHOLE
SCALE 1:25

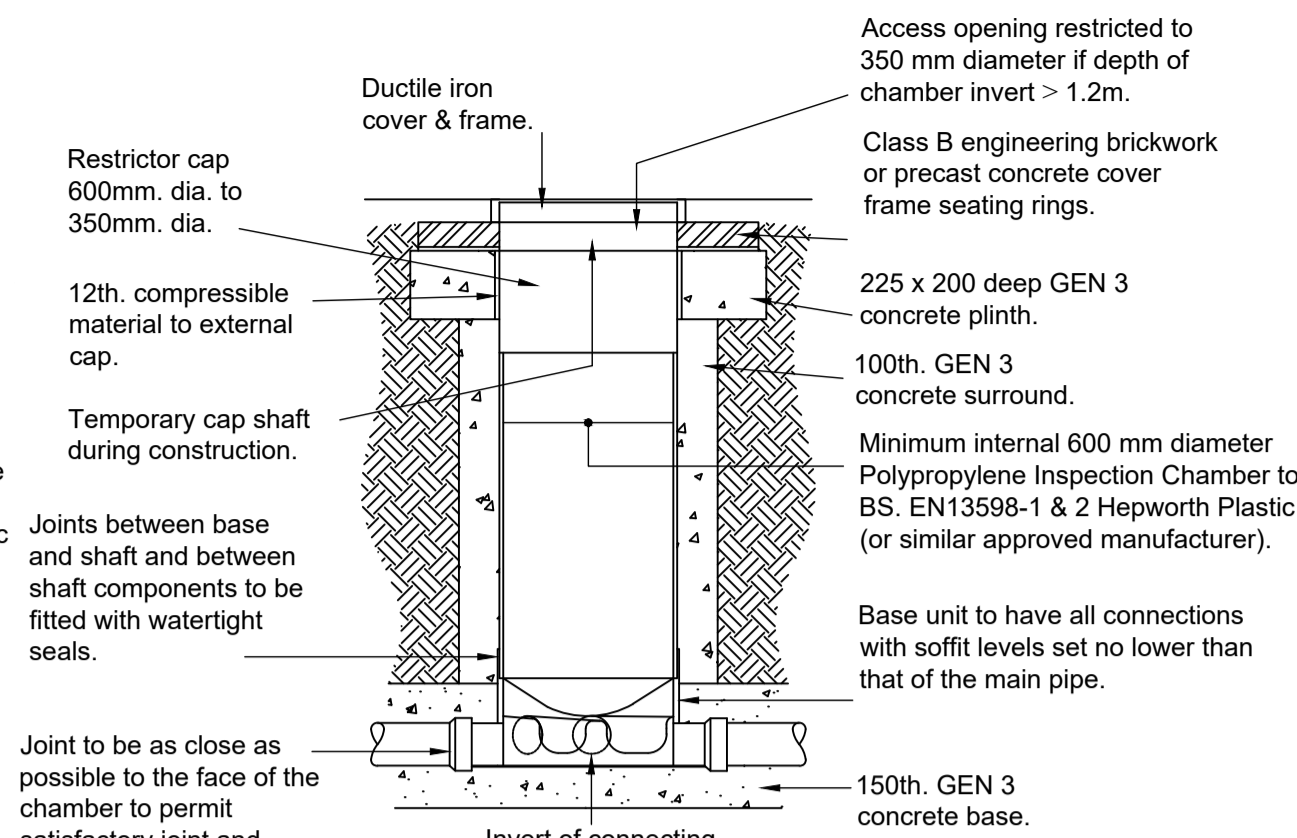
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Project Niftylifts, Platts Common Ind. Estate Hoyland, Barnsley, S74 9TF				
Title Drainage Details Sheet 1				
Sheet Size	A1	Scale	As Shown	
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Checked	JR	Approved		P2
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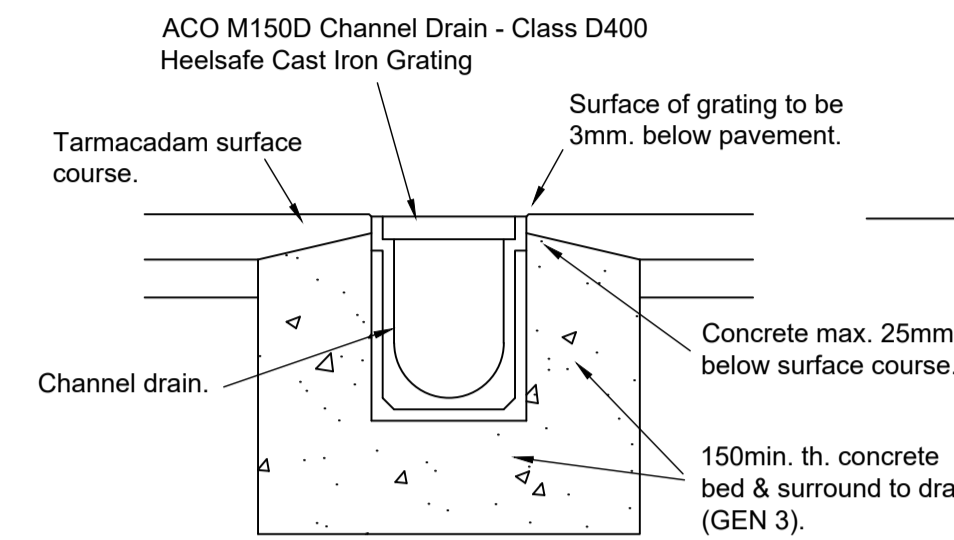
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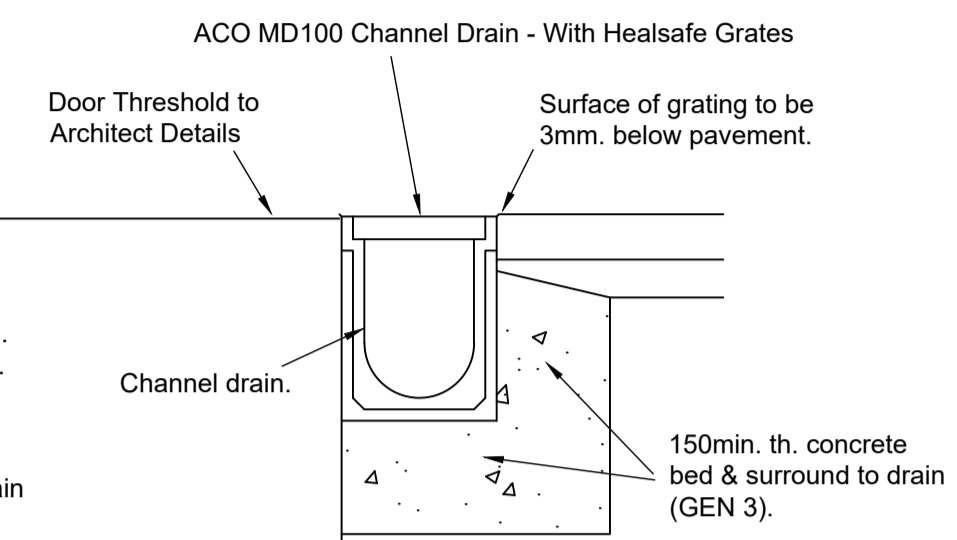
450mm. DIA. INSPECTION CHAMBER DETAIL
100 & 150 DIA.
SCALE 1 : 20



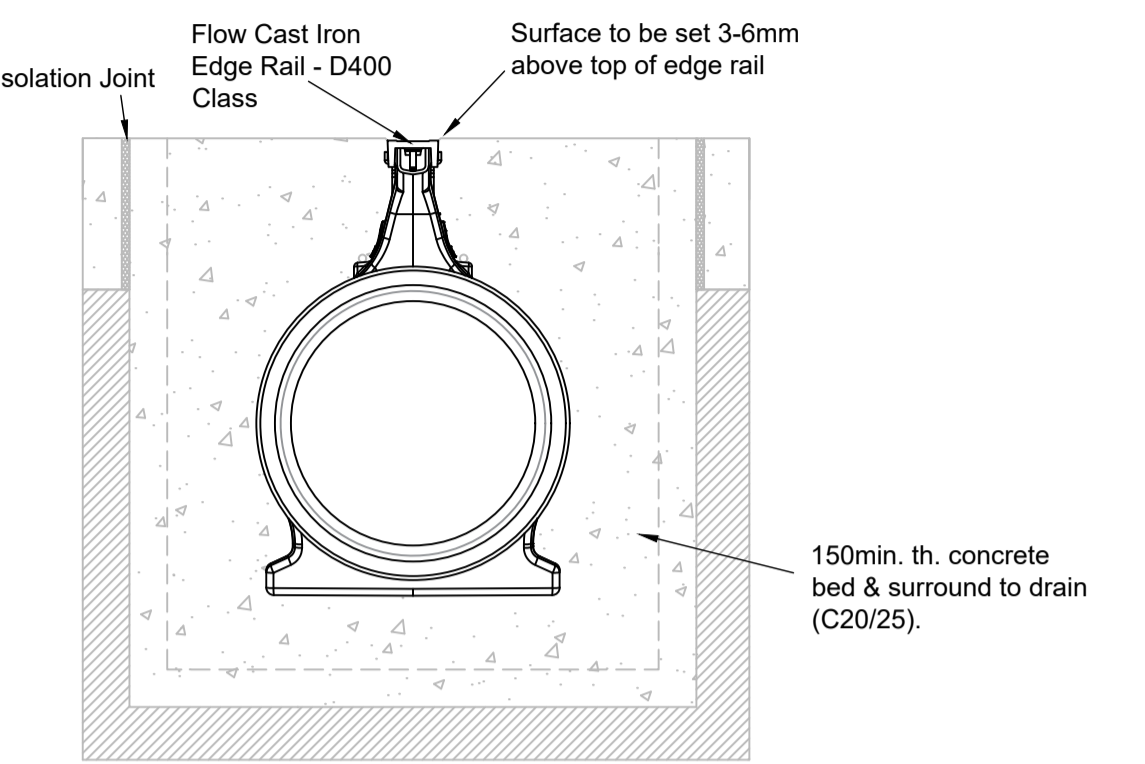
600mm. DIA. INSPECTION CHAMBER DETAIL
150, 225 & 300 DIA.
SCALE 1 : 20



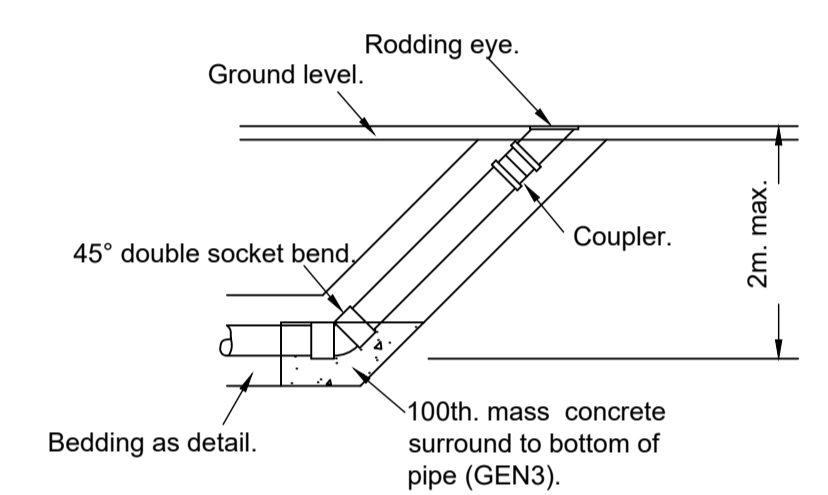
CHANNEL DRAIN DETAIL (Tarmacadam)
SCALE 1 : 10



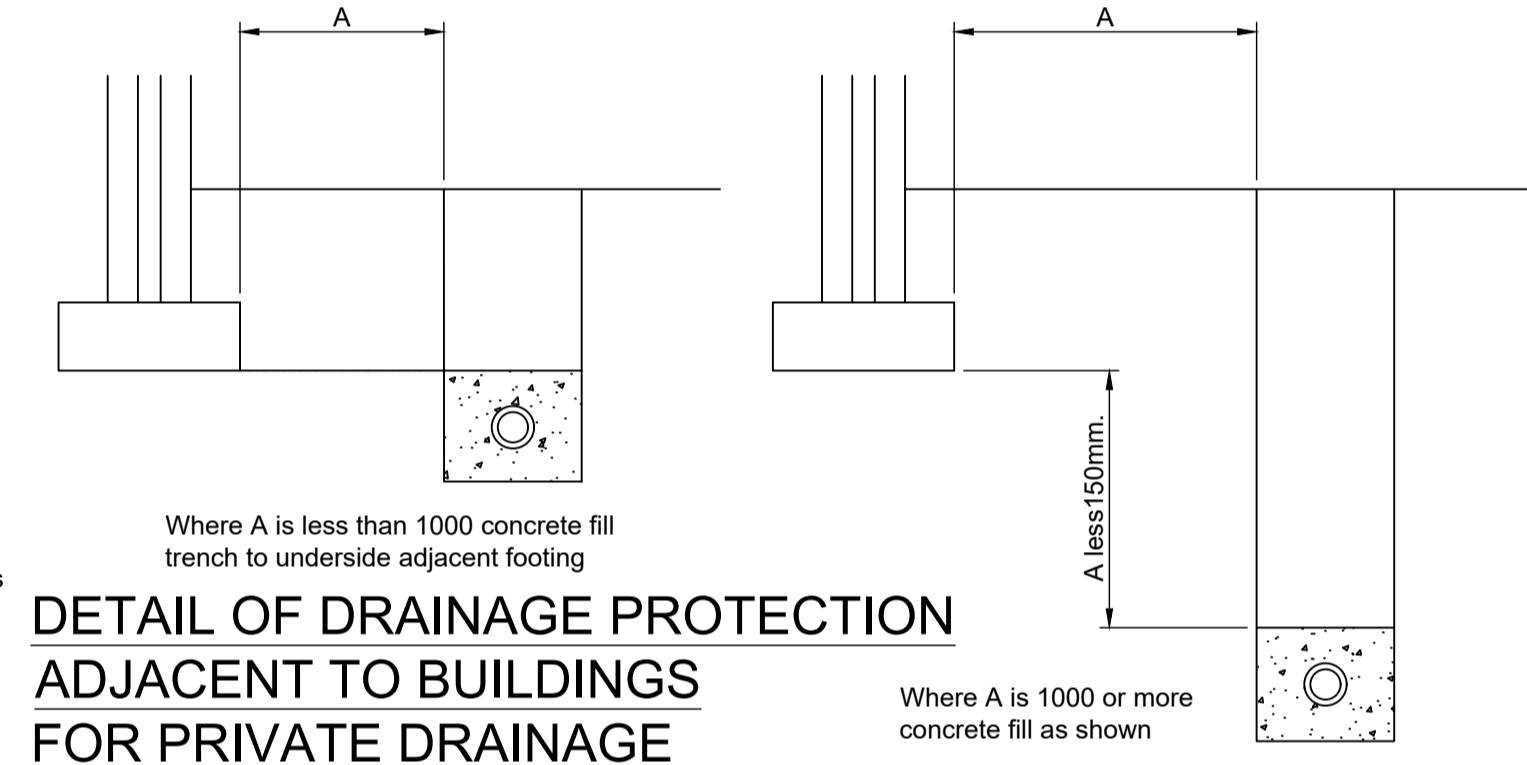
THRESHOLD DRAIN DETAIL TO PERSONNEL DOORS
SCALE 1 : 10



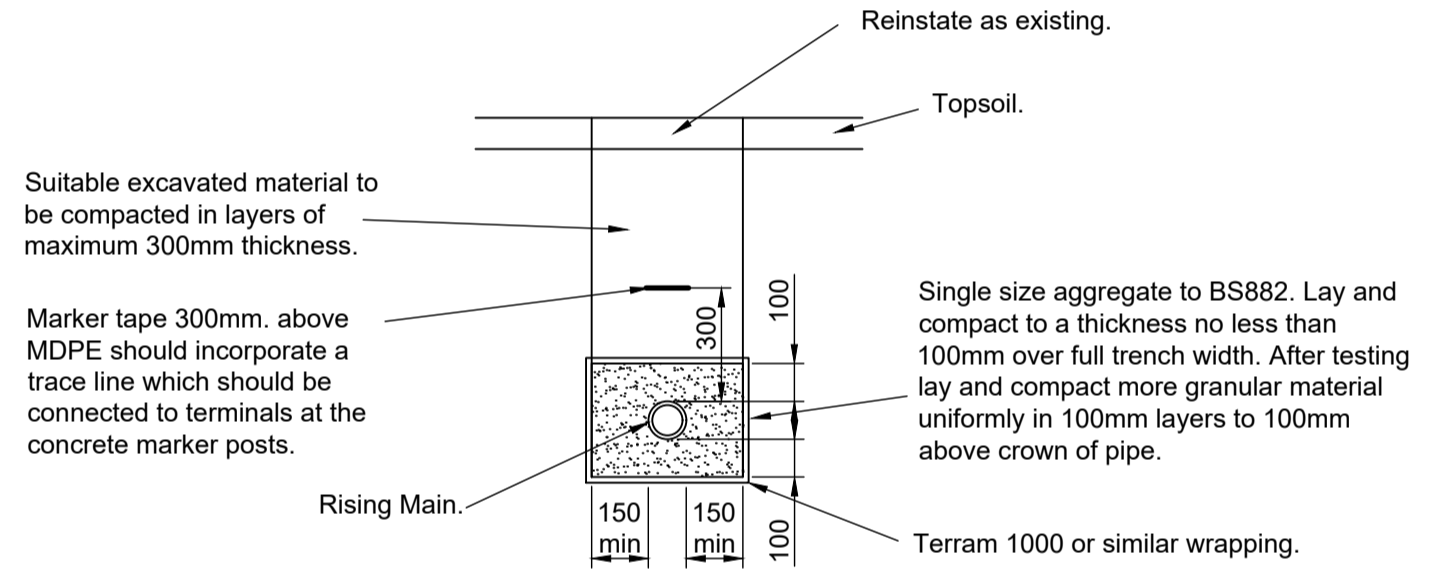
ACO Q-MAX 350 SLOT DRAIN DETAIL
SCALE 1 : 10



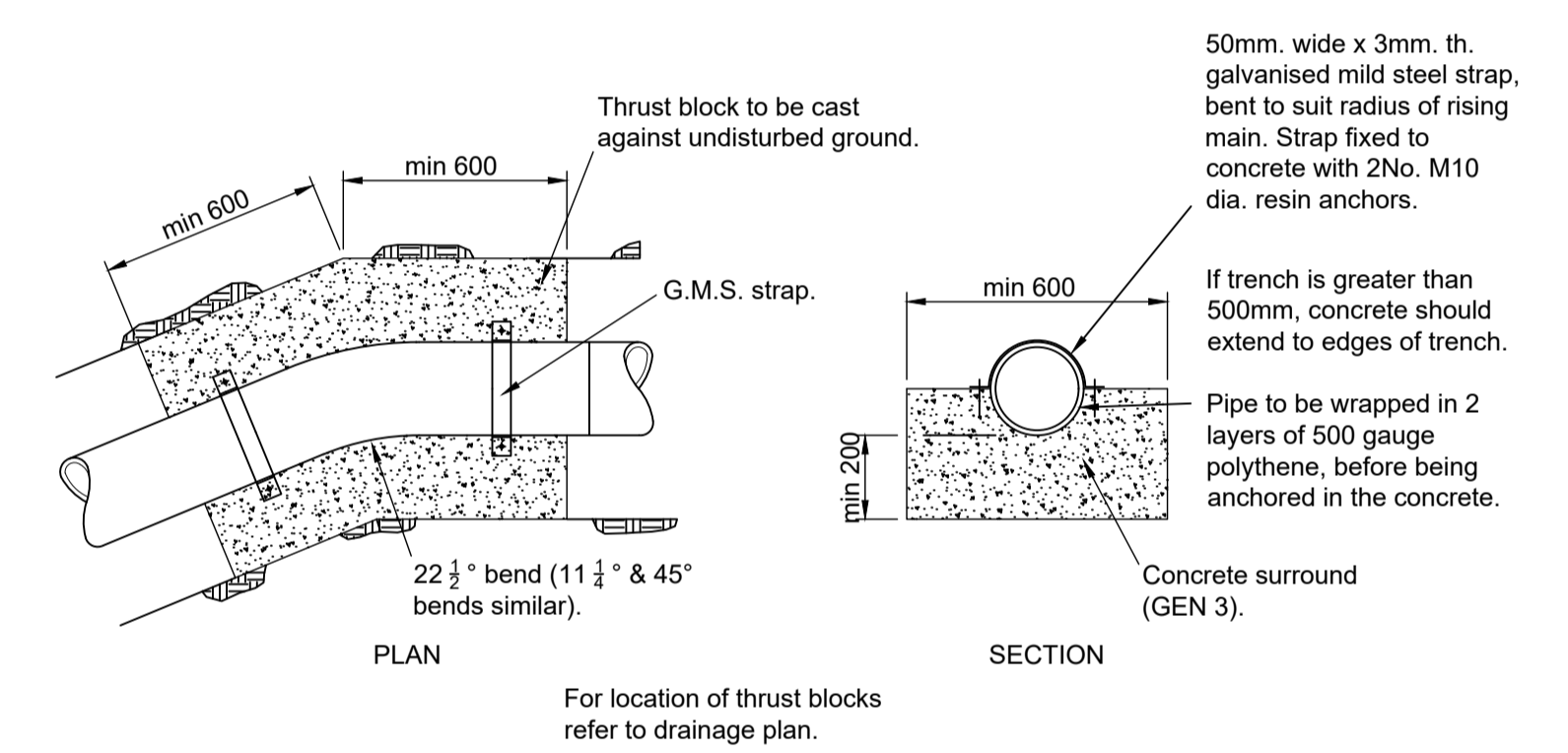
RODDING EYE DETAIL



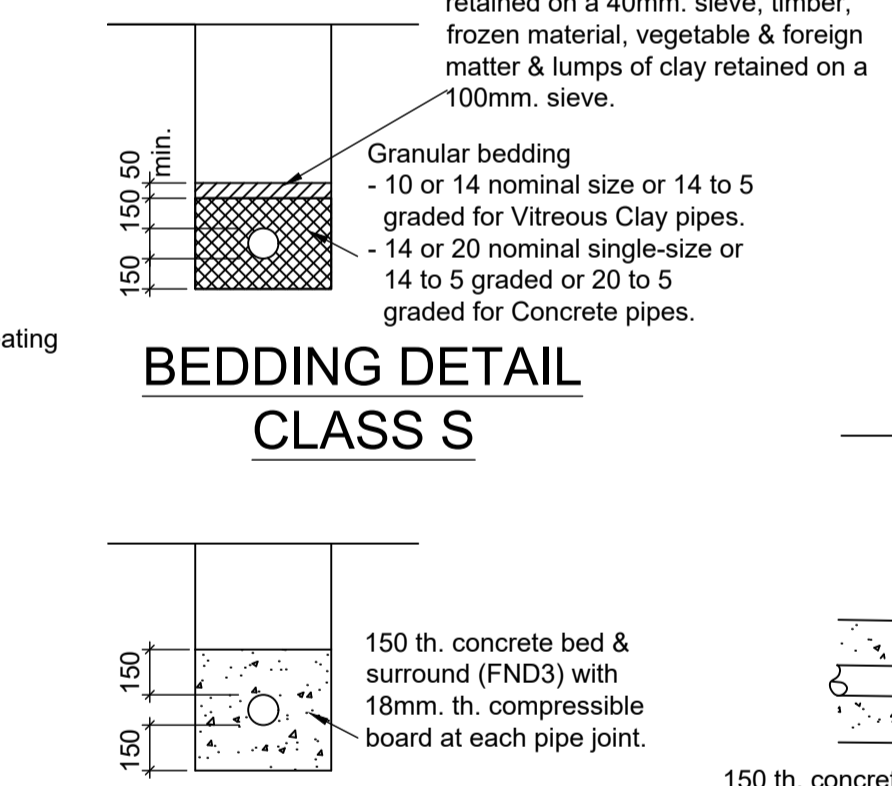
DETAIL OF DRAINAGE PROTECTION ADJACENT TO BUILDINGS FOR PRIVATE DRAINAGE
SCALE 1:25



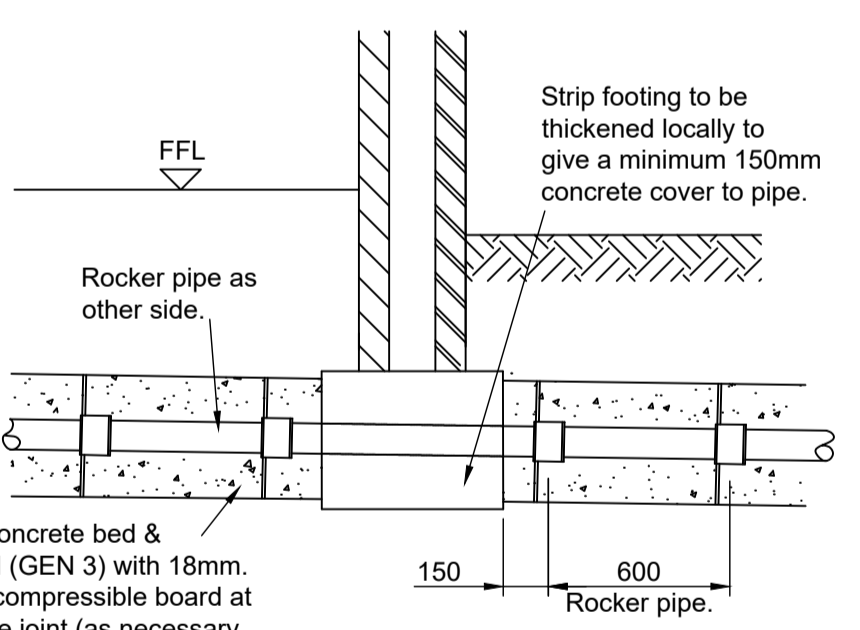
TRENCH DETAIL FOR RISING MAIN TYPE S
SCALE 1:20



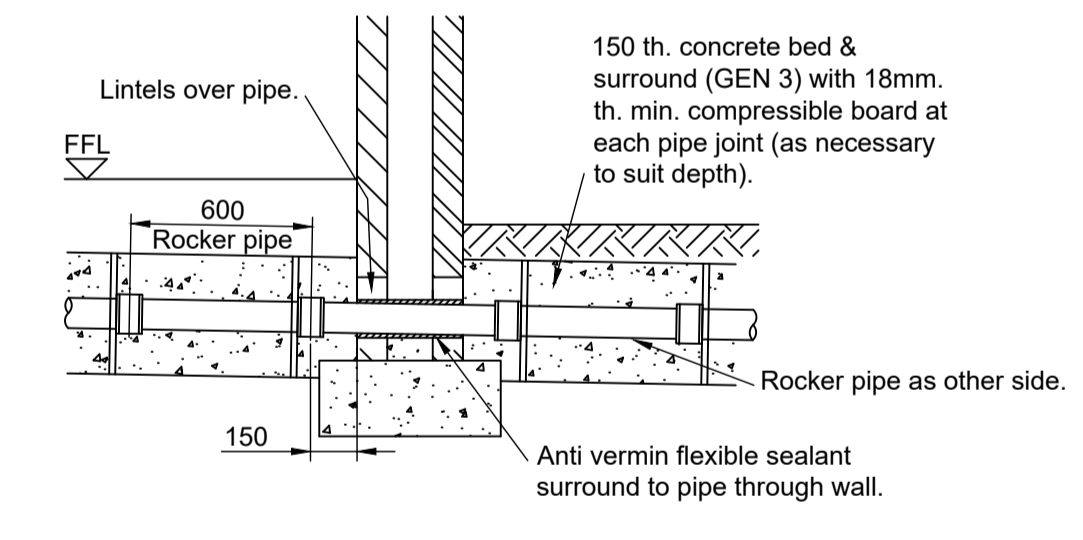
TYPICAL THRUST BLOCK TO FOUL WATER RISING MAIN
SCALE 1:20



BEDDING DETAIL CLASS S



DETAIL OF PIPE THROUGH FOUNDATION
SCALE 1:25



DETAIL OF PIPE THROUGH WALL
SCALE 1:25

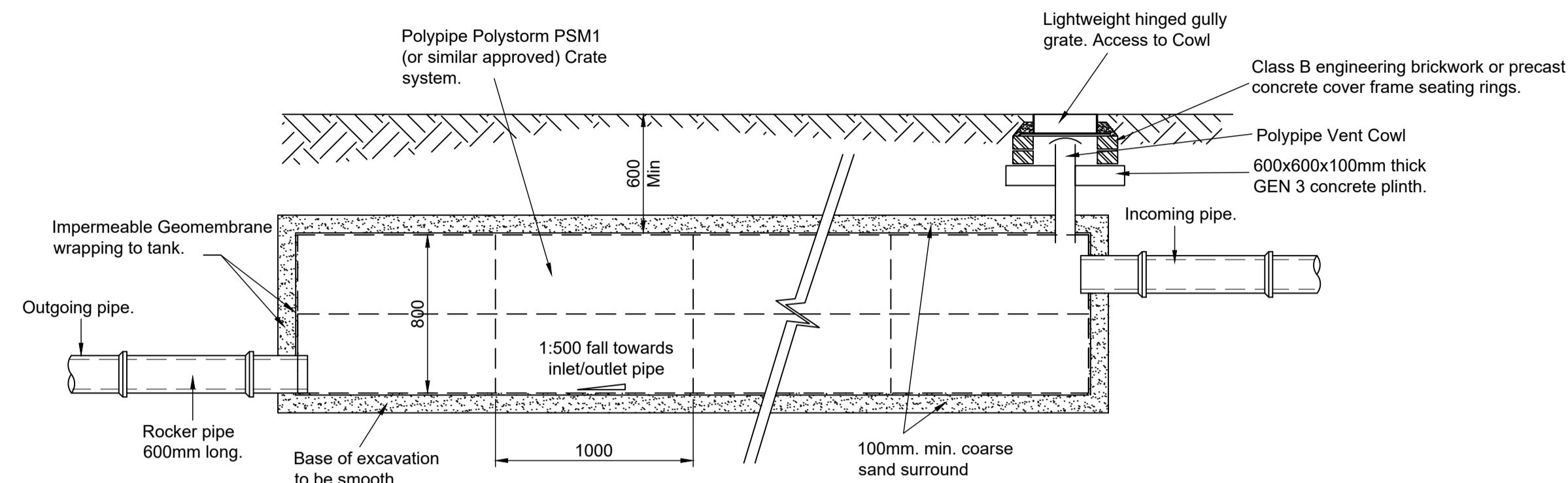
PIPE BEDDING DETAIL DEPTH OF COVER LESS THAN 1.2m. CLASS A
SCALE 1:25

P1	Initial Issue	JR	17.09.2024
Rev	Description	Dr	Ch
Drawing Status Preliminary			
Client JHA Architecture Ltd			
Project Niftylifts, Platts Common Ind. Estate Hoyland, Barnsley, S74 9TF			
Title Drainage Details Sheet 2			
Sheet Size	A1	Scale	As Shown
Drawn	LM	Drawing Number	4076/811
Checked	JR	Rev	P1
Approved	-		



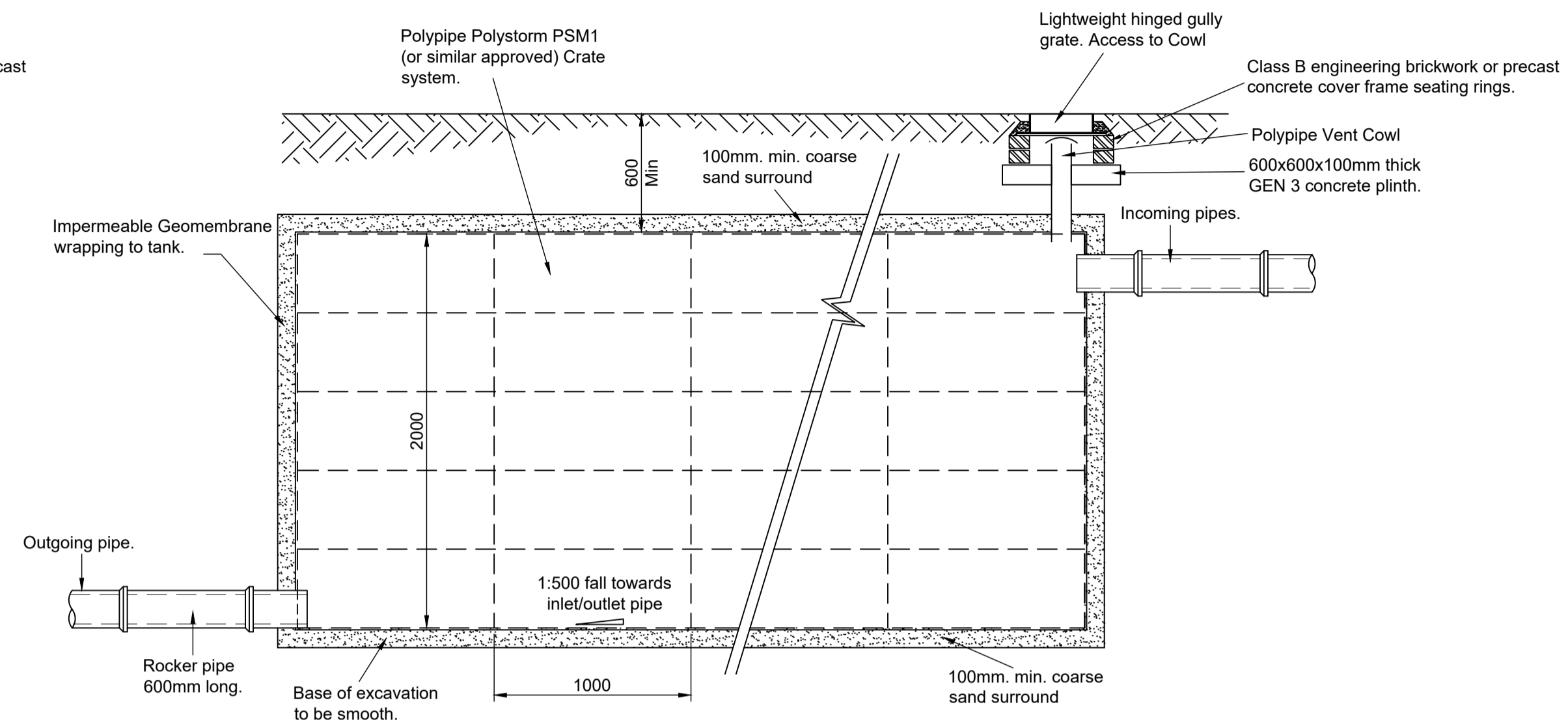
NOTES

1. DO NOT SCALE - Use figured dimensions only.
2. All dimensions shown are in millimetres unless otherwise stated.
3. The Contractor is to verify all dimension on site before commencing work or preparing shop drawings.
4. This drawing is to be read in conjunction with all Engineers and Architects drawings and specifications.



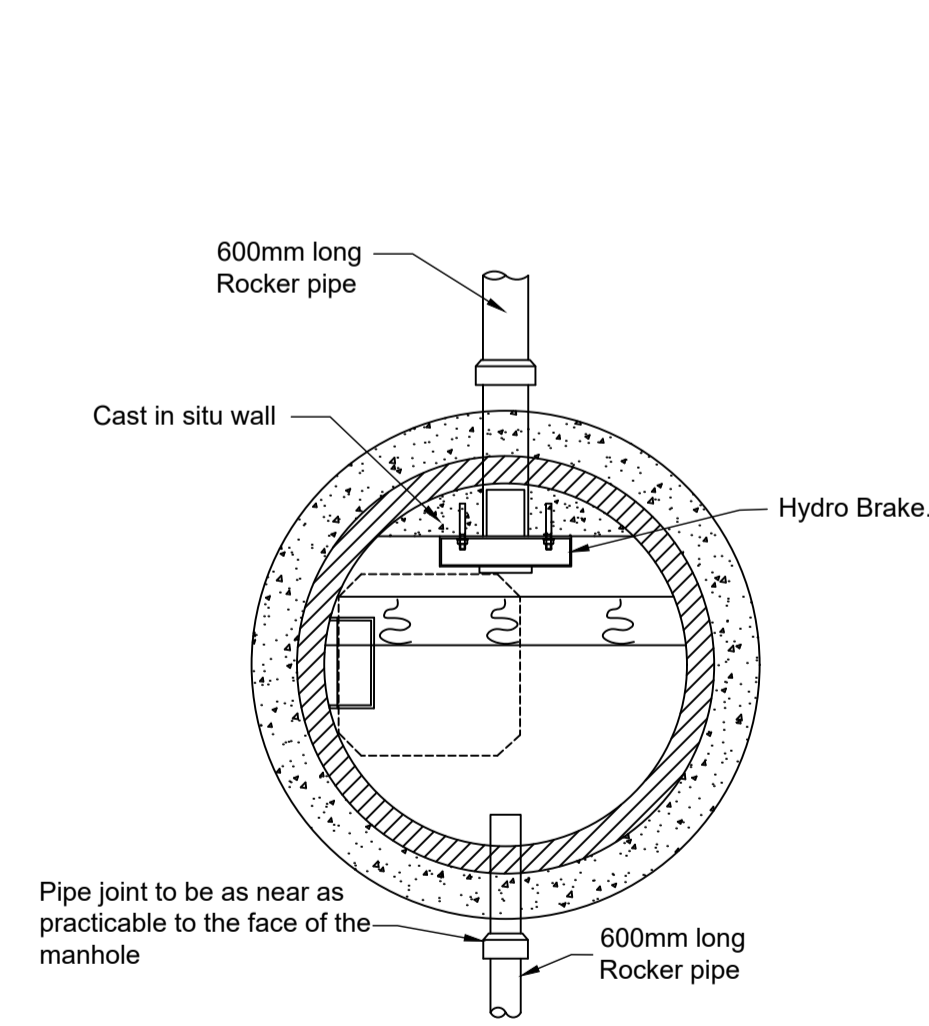
**TYPICAL CRATE ATTENUATION
TANK 1 DETAIL**

SCALE 1:25



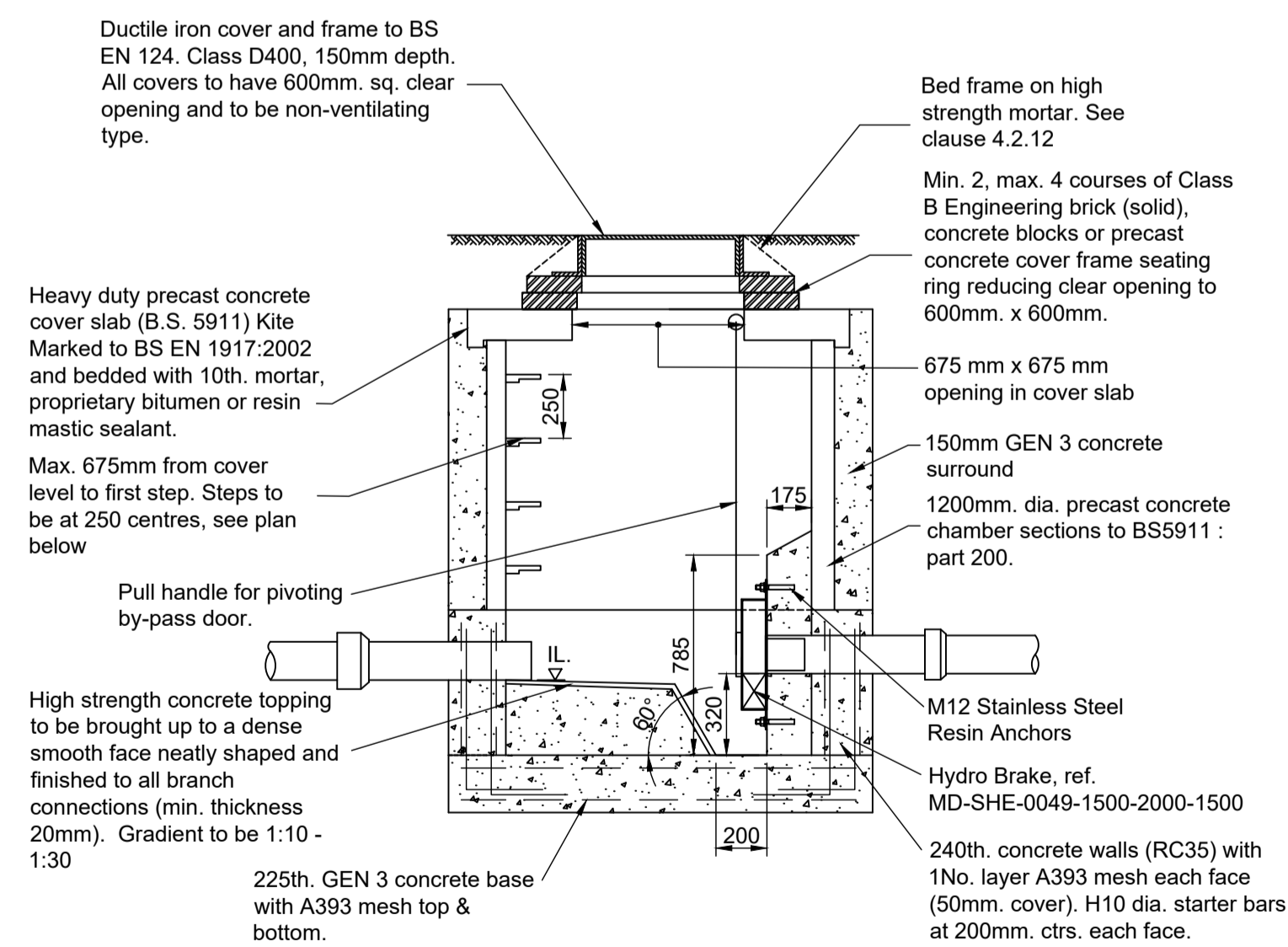
**TYPICAL CRATE ATTENUATION
TANK 2 DETAIL**

SCALE 1:25



**PLAN OF FLOW CONTROL
MANHOLE**

SCALE 1:25



**FLOW CONTROL MANHOLE
OR PRE-CAST CPM CHAMBER**

SCALE 1:25

P1	Initial Issue	JR	17.09.2024
Rev	Description	Dr	Ch
Drawing Status Preliminary			
Client JHA Architecture Ltd			
Project Niftylifts, Platts Common Ind. Estate Hoyland, Barnsley, S74 9TF			
Title Drainage Details Sheet 3			
Sheet Size	A1	Scale	As Shown
Drawn	LM	Drawing Number	Rev
Checked	JR	4076/812	P1
Approved	-		



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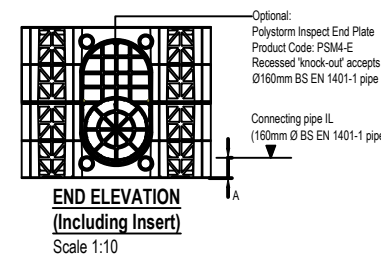
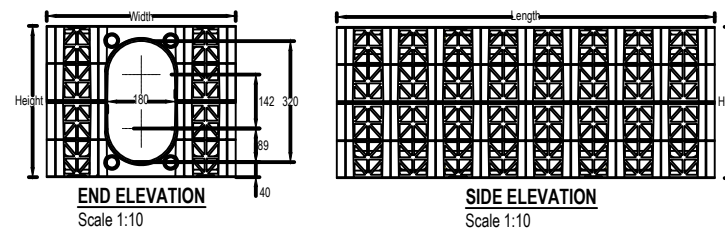
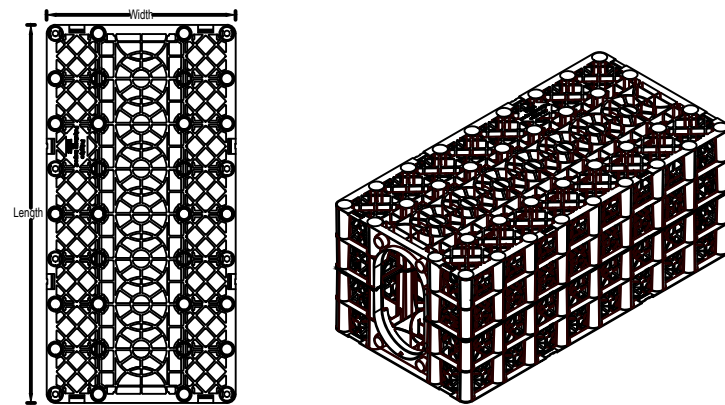
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NOTES

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4. This drawing is to be read in conjunction with all Engineers and Architects drawings and specifications.

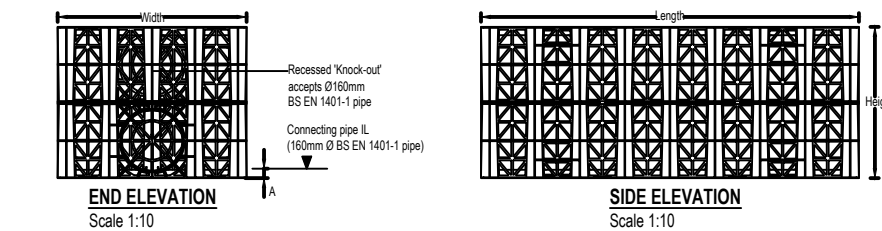
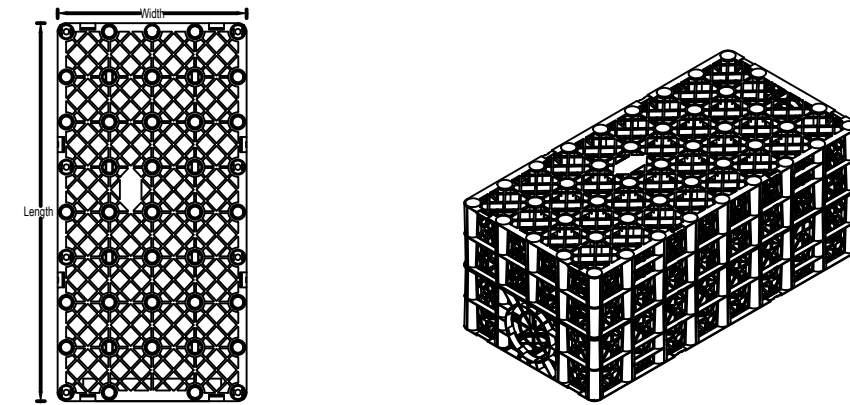
POLYSTORM CELL

Product Code: PSM4



POLYSTORM CELLS

Product Code: PSM1, PSM1A & PSM2



P1	Initial Issue	JR		18.09.2024
Rev	Description	Dr	Ch	Date
Drawing Status		Preliminary		

Client	JHA Architecture Ltd
Project	Niftylifts, Platts Common Ind. Estate Hoyland, Barnsley, S74 9TF
Title	Polystorm Polycell Cell Details

Scale	1:10
Sheet Size	A3
Drawn	LM
Checked	JR
Approved	-



Drawing Number	4076/813	Rev	P1
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J ROBERTS DESIGN LTD
STRUCTURAL AND CIVIL ENGINEERING CONSULTANTS

Project		Nifty Lifts, Barnsley		Job Ref.		4076					
Section				Drainage Design – Proposed Extension				Sheet no./rev.		8	
Calc. by		Date		Chk'd by		Date		App'd by		Date	
JR		18/09/2024									

Appendix B

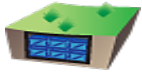
Infodrainage Calculations

Project: Nifty Lifts, Barnsley - Extension SW Drainage Design	Date: 17/09/2024	
	Designed by: JR	Checked by: Approved By:
Report Details: Type: Junctions Storm Phase: Phase	Company Address: J Roberts Design Ltd	



Name	Junction Type	Easting (m)	Northing (m)	Cover Level (m)	Depth (m)	Invert Level (m)	Chamber Shape	Diameter (m)	Lock
SW1	Manhole	436785.954	401431.191	154.000	2.755	151.245	Circular	1.200	None
SW2	Manhole	436783.625	401433.808	152.620	1.425	151.195	Circular	1.200	None
SW3	Manhole	436786.467	401458.726	152.060	1.500	150.560	Circular	1.500	None
SW4	Manhole	436771.633	401477.153	151.450	1.500	149.950	Circular	1.500	None
SW5	Manhole	436767.910	401520.096	148.000	1.500	146.500	Circular	1.500	None
SW13	Manhole	436820.636	401567.543	146.460	1.805	144.655	Circular	1.500	None
SW15-PS	Manhole	436823.814	401562.679	146.950	3.650	143.300	Circular	1.200	None
SW16 - Break Chamber	Manhole	436822.953	401513.182	150.600	1.300	149.300	Circular	1.200	All
SW10	Manhole	436833.294	401545.412	149.720	1.575	148.145	Circular	1.500	None
SW11	Manhole	436830.102	401551.333	149.600	1.600	148.000	Circular	1.500	None
SW12	Manhole	436821.611	401546.550	149.600	3.750	145.850	Circular	1.500	None
RE3	Manhole	436776.899	401472.978	152.060	1.560	150.500	Circular	0.150	None
SW8	Manhole	436817.010	401509.607	150.600	1.500	149.100	Circular	1.500	None
RE2	Manhole	436789.325	401459.101	152.060	1.560	150.500	Circular	0.225	None
SW7	Manhole	436828.821	401496.432	150.900	1.500	149.400	Circular	1.500	None
RE1	Manhole	436800.568	401446.667	152.050	1.550	150.500	Circular	0.150	None
SW6	Manhole	436839.506	401483.915	151.560	1.500	150.060	Circular	0.600	None
ExMH1	Manhole	436873.438	401451.720	151.500	2.400	149.100	Circular	1.800	All
ExMH2	Manhole	436857.582	401469.737	151.500	2.450	149.050	Circular	1.800	All
ExMH4 - FC	Manhole	436863.569	401474.131	151.520	2.720	148.800	Circular	1.500	All
ExMH5	Manhole	436881.576	401481.650	149.900	1.230	148.670	Circular	0.600	All
ExMH10	Manhole	436804.764	401439.920	152.120	0.880	151.240	Circular	0.600	All
ExMH9	Manhole	436845.052	401477.061	152.130	1.610	150.520	Circular	0.600	All
Gullies	Simple Junction	436840.005	401522.309						
SW14-FC	Manhole	436822.690	401564.581	146.700	3.350	143.350	Circular	1.200	None
SW9	Manhole	436824.056	401522.512	150.550	1.450	149.100	Circular	1.200	None

Project: Nifty Lifts, Barnsley - Extension SW Drainage Design	Date: 17/09/2024		
	Designed by: JR	Checked by:	Approved By:
Report Details: Type: Stormwater Controls Storm Phase: Phase	Company Address: J Roberts Design Ltd		



Cellular Storage - High Level

Type : Cellular Storage

Dimensions

Exceedance Level (m)	150.600
Depth (m)	0.800
Base Level (m)	148.850
Number of Crates Long	51
Number of Crates Wide	6
Number of Crates High	2
Porosity (%)	95
Crate Length (m)	1
Crate Width (m)	0.5
Crate Height (m)	0.4
Total Volume (m³)	117.230

Inlets

Inlet (3)

Inlet Type	Point Inflow
Incoming Item(s)	Pipe (9)
Bypass Destination	(None)
Capacity Type	No Restriction

Outlets

Outlet

Outgoing Connection	Pipe (10)
Outlet Type	Free Discharge



Cellular Storage - Low Level

Type : Cellular Storage

Project: Nifty Lifts, Barnsley - Extension SW Drainage Design	Date: 17/09/2024		
	Designed by: JR	Checked by:	
Report Details: Type: Stormwater Controls Storm Phase: Phase	Company Address: J Roberts Design Ltd		

Dimensions

Exceedance Level (m)	146.080
Depth (m)	2.000
Base Level (m)	143.380
Number of Crates Long	61
Number of Crates Wide	28
Number of Crates High	5
Porosity (%)	95
Crate Length (m)	1
Crate Width (m)	0.5
Crate Height (m)	0.4
Total Volume (m³)	1623.300

Inlets

Inlet

Inlet Type	Point Inflow
Incoming Item(s)	Pipe (4)
Bypass Destination	(None)
Capacity Type	No Restriction

Inlet (1)

Inlet Type	Point Inflow
Incoming Item(s)	Pipe (20)
Bypass Destination	(None)
Capacity Type	No Restriction

Inlet (3)

Inlet Type	Point Inflow
Incoming Item(s)	Pipe (5)
Bypass Destination	(None)
Capacity Type	No Restriction

Outlets

Outlet

Outgoing Connection	Pipe (6)
Outlet Type	Free Discharge

Project: Nifty Lifts, Barnsley - Extension SW Drainage Design	Date: 17/09/2024		
	Designed by: JR	Checked by:	
Report Details: Type: Connections Storm Phase: Phase	Company Address: J Roberts Design Ltd		

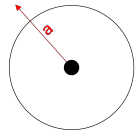
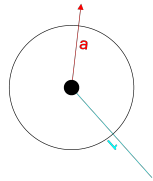
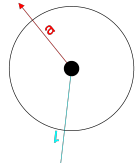
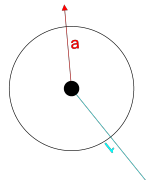
Name	From	To	Length (m)	Connection Type	Slope (1:X)	Manning's n	Colebrook-White Roughness (mm)	No. of Barrels	Diameter / Base Width (mm)	Height (mm)	Upstream Cover Level (m)	Upstream Invert Level (m)
Pipe	SW1	SW2	3.504	Pipe	70.074		0.6	1	225		154.000	151.245
Pipe (1)	SW2	SW3	25.079	Pipe	44.784		0.6	1	225		152.620	151.195
Pipe (2)	SW3	SW4	23.657	Pipe	38.782		0.6	1	300		152.060	150.560
Pipe (3)	SW4	SW5	43.104	Pipe	12.494		0.6	1	300		151.450	149.950
Pipe (8)	SW15-PS	SW16 - Break Chamber	49.504	Pipe	-8.251		0.6	1	100		146.950	143.300
Pipe (22)	SW10	SW11	6.727	Pipe	46.390		0.6	1	375		149.720	148.145
Pipe (23)	SW11	SW12	9.745	Pipe	14.993		0.6	1	375		149.600	148.000
Pipe (18)	RE3	SW8	54.319	Pipe	43.455		0.6	1	150		152.060	150.500
Pipe (16)	RE2	SW7	54.346	Pipe	53.021		0.6	1	225		152.060	150.500
Pipe (14)	RE1	SW6	53.885	Pipe	147.631		0.6	1	225		152.050	150.500
Ex Pipe (25)	ExMH1	ExMH2	24.000	Pipe	480.000		0.6	1	900		151.500	149.100
Ex Pipe (26)	ExMH2	ExMH4 - FC	7.427	Pipe	37.135		0.6	1	300		151.500	149.050
Ex Pipe (11)	ExMH4 - FC	ExMH5	19.514	Pipe	150.107		0.6	1	150		151.520	148.800
Pipe (12)	ExMH10	ExMH9	54.796	Pipe	81.785		0.6	1	150		152.120	151.240
Pipe (24)	Gullies	SW10	24.058	Pipe	102.375		0.6	1	225		149.480	148.530
Pipe (4)	SW5	Cellular Storage - Low Level	7.423	Pipe	6.186		0.6	1	300		148.000	146.500
Pipe (20)	SW12	Cellular Storage - Low Level	7.153	Pipe	10.000		0.6	1	375		149.600	145.850
Pipe (13)	ExMH9	SW6	8.817	Pipe	22.901		0.6	1	225		152.130	150.520
Pipe (15)	SW6	SW7	16.457	Pipe	24.935		0.6	1	300		151.560	150.060
Pipe (17)	SW7	SW8	17.694	Pipe	58.980		0.6	1	300		150.900	149.400
Pipe (9)	SW16 - Break Chamber	Cellular Storage - High Level	1.652	Pipe	16.523		0.6	1	150		150.600	149.300
Pipe (10)	Cellular Storage - High Level	ExMH4 - FC	4.841	Pipe	96.815		0.6	1	300		150.600	148.850
Pipe (5)	SW13	Cellular Storage - Low Level	2.254	Pipe	100.000		0.6	1	300		146.460	144.655
Pipe (6)	Cellular Storage - Low Level	SW14-FC	2.655	Pipe	88.486		0.6	1	225		146.080	143.380
Pipe (7)	SW14-FC	SW15-PS	2.209	Pipe	44.188		0.6	1	225		146.700	143.350
Pipe (19)	SW8	SW12	37.228	Pipe	21.273		0.6	1	300		150.600	149.100
Pipe (21)	SW9	SW10	24.693	Pipe	30.675		0.6	1	225		150.550	149.100

Project: Nifty Lifts, Barnsley - Extension SW Drainage Design	Date: 17/09/2024		
	Designed by: JR	Checked by:	Approved By:
Report Details: Type: Connections Storm Phase: Phase	Company Address: J Roberts Design Ltd		

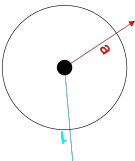
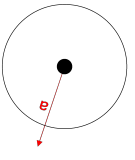
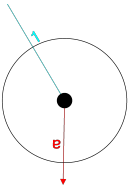
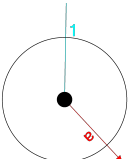


Name	Downstream Cover Level (m)	Downstream Invert Level (m)	Part Family	Lock	Flow Restriction (L/s)	Velocity (m/s)	Culvert Type	Culvert Entrance
Pipe	152.620	151.195		None			(None)	(None)
Pipe (1)	152.060	150.635		All			(None)	(None)
Pipe (2)	151.450	149.950		None			(None)	(None)
Pipe (3)	148.000	146.500		None			(None)	(None)
Pipe (8)	150.600	149.300		None	1.5		(None)	(None)
Pipe (22)	149.600	148.000		None			(None)	(None)
Pipe (23)	149.600	147.350		All			(None)	(None)
Pipe (18)	150.600	149.250		All			(None)	(None)
Pipe (16)	150.900	149.475		All			(None)	(None)
Pipe (14)	151.560	150.135		All			(None)	(None)
Ex Pipe (25)	151.500	149.050		None			(None)	(None)
Ex Pipe (26)	151.520	148.850		All			(None)	(None)
Ex Pipe (11)	149.900	148.670		None	2.2		(None)	(None)
Pipe (12)	152.130	150.570		None			(None)	(None)
Pipe (24)	149.720	148.295		All			(None)	(None)
Pipe (4)	146.080	145.300		All			(None)	(None)
Pipe (20)	146.080	145.135		All			(None)	(None)
Pipe (13)	151.560	150.135		All			(None)	(None)
Pipe (15)	150.900	149.400		None			(None)	(None)
Pipe (17)	150.600	149.100		None			(None)	(None)
Pipe (9)	150.600	149.200		All			(None)	(None)
Pipe (10)	151.520	148.800		None			(None)	(None)
Pipe (5)	146.080	144.632		All			(None)	(None)
Pipe (6)	146.700	143.350		None			(None)	(None)
Pipe (7)	146.950	143.300		None	1.6		(None)	(None)
Pipe (19)	149.600	147.350		All			(None)	(None)
Pipe (21)	149.720	148.295		All			(None)	(None)

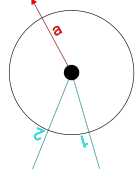
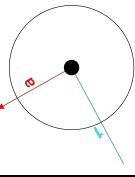
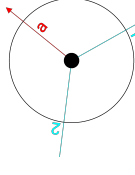
Project: Nifty Lifts, Barnsley - Extension SW Drainage Design	Date: 17/09/2024		
	Designed by: JR	Checked by:	
Report Details: Type: Manhole Schedule Storm Phase: Phase	Company Address: J Roberts Design Ltd		

Name	Cover Level (m) Invert Level (m)	Manhole Schematic	Manhole Size (m)	Connection Details				Type		
				Incoming Connections	Connection Type	Connection Invert (m)	Connection Size (mm)	Junction Type	Flow Control Type	Flow Control IL (m)
Coordinates (m)	Depth (m)			Outgoing Connections				Cover		
SW1	154.000 151.245		Diameter / Length: 1.200					Manhole	{a} Free Discharge	
E:436785.954 N:401431.191	2.755			{a} Pipe	Pipe	151.245	Diam/Width:225	Not Applicable		
SW2	152.620 151.195		Diameter / Length: 1.200	{1} Pipe	Pipe	151.195	Diam/Width:225	Manhole	{a} Free Discharge	
E:436783.625 N:401433.808	1.425			{a} Pipe (1)	Pipe	151.195	Diam/Width:225	Not Applicable		
SW3	152.060 150.560		Diameter / Length: 1.500	{1} Pipe (1)	Pipe	150.635	Diam/Width:225	Manhole	{a} Free Discharge	
E:436786.467 N:401458.726	1.500			{a} Pipe (2)	Pipe	150.560	Diam/Width:300	Not Applicable		
SW4	151.450 149.950		Diameter / Length: 1.500	{1} Pipe (2)	Pipe	149.950	Diam/Width:300	Manhole	{a} Free Discharge	
E:436771.633 N:401477.153	1.500			{a} Pipe (3)	Pipe	149.950	Diam/Width:300	Not Applicable		

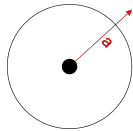
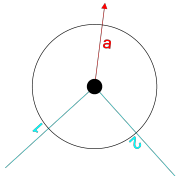
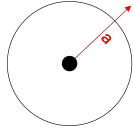
Project: Nifty Lifts, Barnsley - Extension SW Drainage Design	Date: 17/09/2024		
	Designed by: JR	Checked by:	
Report Details: Type: Manhole Schedule Storm Phase: Phase	Company Address: J Roberts Design Ltd		

Name	Cover Level (m) Invert Level (m)	Manhole Schematic	Manhole Size (m)	Connection Details				Type		
				Incoming Connections	Connection Type	Connection Invert (m)	Connection Size (mm)	Junction Type	Flow Control Type	Flow Control IL (m)
Coordinates (m)	Depth (m)	Outgoing Connections	Cover							
SW5	148.000 146.500		Diameter / Length: 1.500	{1} Pipe (3)	Pipe	146.500	Diam/Width:300	Manhole	{a} Free Discharge	
E:436767.910 N:401520.096	1.500			{a} Pipe (4)	Pipe	146.500	Diam/Width:300	Not Applicable		
SW13	146.460 144.655		Diameter / Length: 1.500					Manhole	{a} Free Discharge	
E:436820.636 N:401567.543	1.805			{a} Pipe (5)	Pipe	144.655	Diam/Width:300	Not Applicable		
SW15-PS	146.950 143.300		Diameter / Length: 1.200	{1} Pipe (7)	Pipe	143.300	Diam/Width:225	Manhole	{a} Pump	143.300
E:436823.814 N:401562.679	3.650			{a} Pipe (8)	Pipe	143.300	Diam/Width:100	Not Applicable		
SW16 - Break Chamber	150.600 149.300		Diameter / Length: 1.200	{1} Pipe (8)	Pipe	149.300	Diam/Width:100	Manhole	{a} Free Discharge	
E:436822.953 N:401513.182	1.300			{a} Pipe (9)	Pipe	149.300	Diam/Width:150	Not Applicable		

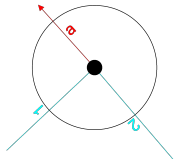
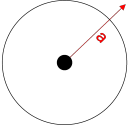
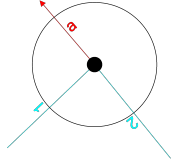
Project: Nifty Lifts, Barnsley - Extension SW Drainage Design		Date: 17/09/2024			
Report Details: Type: Manhole Schedule Storm Phase: Phase		Designed by: JR	Checked by:		Approved By:
		Company Address: J Roberts Design Ltd			

Name	Cover Level (m) Invert Level (m)	Manhole Schematic	Manhole Size (m)	Connection Details				Type		
				Incoming Connections	Connection Type	Connection Invert (m)	Connection Size (mm)	Junction Type	Flow Control Type	Flow Control IL (m)
Coordinates (m)	Depth (m)			Outgoing Connections				Cover		
SW10	149.720 148.145		Diameter / Length: 1.500	{1} Pipe (24)	Pipe	148.295	Diam/Width:225	Manhole	{a} Free Discharge	
E:436833.294 N:401545.412	1.575			{2} Pipe (21)	Pipe	148.295	Diam/Width:225			
				{a} Pipe (22)	Pipe	148.145	Diam/Width:375	Not Applicable		
SW11	149.600 148.000		Diameter / Length: 1.500	{1} Pipe (22)	Pipe	148.000	Diam/Width:375	Manhole	{a} Free Discharge	
E:436830.102 N:401551.333	1.600			{a} Pipe (23)	Pipe	148.000	Diam/Width:375			
SW12	149.600 145.850		Diameter / Length: 1.500	{1} Pipe (23)	Pipe	147.350	Diam/Width:375	Manhole	{a} Free Discharge	
E:436821.611 N:401546.550	3.750			{2} Pipe (19)	Pipe	147.350	Diam/Width:300			
				{a} Pipe (20)	Pipe	145.850	Diam/Width:375	Not Applicable		

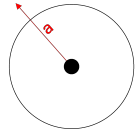
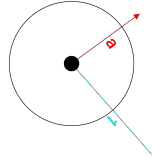
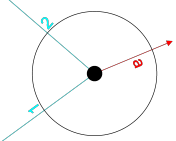
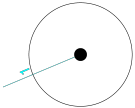
Project: Nifty Lifts, Barnsley - Extension SW Drainage Design	Date: 17/09/2024		
	Designed by: JR	Checked by:	
Report Details: Type: Manhole Schedule Storm Phase: Phase	Company Address: J Roberts Design Ltd		

Name	Cover Level (m) Invert Level (m)	Manhole Schematic	Manhole Size (m)	Connection Details				Type		
				Incoming Connections	Connection Type	Connection Invert (m)	Connection Size (mm)	Junction Type	Flow Control Type	Flow Control IL (m)
Coordinates (m)	Depth (m)			Outgoing Connections				Cover		
RE3	152.060 150.500		Diameter / Length: 0.150					Manhole	{a} Free Discharge	
E:436776.899 N:401472.978	1.560			{a} Pipe (18)	Pipe	150.500	Diam/Width:150	Not Applicable		
SW8	150.600 149.100		Diameter / Length: 1.500	{1} Pipe (18)	Pipe	149.250	Diam/Width:150	Manhole	{a} Free Discharge	
E:436817.010 N:401509.607	1.500			{2} Pipe (17)	Pipe	149.100	Diam/Width:300			
				{a} Pipe (19)	Pipe	149.100	Diam/Width:300	Not Applicable		
RE2	152.060 150.500		Diameter / Length: 0.225					Manhole	{a} Free Discharge	
E:436789.325 N:401459.101	1.560			{a} Pipe (16)	Pipe	150.500	Diam/Width:225	Not Applicable		

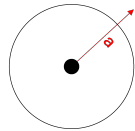
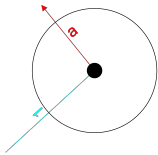

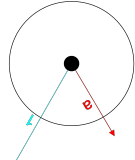
Project: Nifty Lifts, Barnsley - Extension SW Drainage Design		Date: 17/09/2024			
Report Details: Type: Manhole Schedule Storm Phase: Phase		Designed by: JR	Checked by:		Approved By:
		Company Address: J Roberts Design Ltd			

Name	Cover Level (m) Invert Level (m)	Manhole Schematic	Manhole Size (m)	Connection Details				Type		
				Incoming Connections	Connection Type	Connection Invert (m)	Connection Size (mm)	Junction Type	Flow Control Type	Flow Control IL (m)
Coordinates (m)	Depth (m)			Outgoing Connections				Cover		
SW7	150.900 149.400		Diameter / Length: 1.500	{1} Pipe (16)	Pipe	149.475	Diam/Width:225	Manhole	{a} Free Discharge	
E:436828.821 N:401496.432	1.500			{2} Pipe (15)	Pipe	149.400	Diam/Width:300			
				{a} Pipe (17)	Pipe	149.400	Diam/Width:300	Not Applicable		
RE1	152.050 150.500		Diameter / Length: 0.150					Manhole	{a} Free Discharge	
E:436800.568 N:401446.667	1.550			{a} Pipe (14)	Pipe	150.500	Diam/Width:225	Not Applicable		
SW6	151.560 150.060		Diameter / Length: 0.600	{1} Pipe (14)	Pipe	150.135	Diam/Width:225	Manhole	{a} Free Discharge	
E:436839.506 N:401483.915	1.500			{2} Pipe (13)	Pipe	150.135	Diam/Width:225			
				{a} Pipe (15)	Pipe	150.060	Diam/Width:300	Not Applicable		

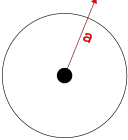
Project: Nifty Lifts, Barnsley - Extension SW Drainage Design		Date: 17/09/2024			
Report Details: Type: Manhole Schedule Storm Phase: Phase		Designed by: JR	Checked by:		Approved By:
		Company Address: J Roberts Design Ltd			

Name	Cover Level (m) Invert Level (m)	Manhole Schematic	Manhole Size (m)	Connection Details				Type		
				Incoming Connections	Connection Type	Connection Invert (m)	Connection Size (mm)	Junction Type	Flow Control Type	Flow Control IL (m)
Coordinates (m)	Depth (m)			Outgoing Connections				Cover		
ExMH1	151.500 149.100		Diameter / Length: 1.800					Manhole	{a} Free Discharge	
E:436873.438 N:401451.720	2.400			{a} Ex Pipe (25)	Pipe	149.100	Diam/Width:900	Not Applicable		
ExMH2	151.500 149.050		Diameter / Length: 1.800	{1} Ex Pipe (25)	Pipe	149.050	Diam/Width:900	Manhole	{a} Free Discharge	
E:436857.582 N:401469.737	2.450			{a} Ex Pipe (26)	Pipe	149.050	Diam/Width:300	Not Applicable		
ExMH4 - FC	151.520 148.800		Diameter / Length: 1.500	{1} Ex Pipe (26)	Pipe	148.850	Diam/Width:300	Manhole	{a} Hydro-Brake®	148.800
E:436863.569 N:401474.131	2.720			{2} Pipe (10)	Pipe	148.800	Diam/Width:300			
				{a} Ex Pipe (11)	Pipe	148.800	Diam/Width:150	Not Applicable		
ExMH5	149.900 148.670		Diameter / Length: 0.600	{1} Ex Pipe (11)	Pipe	148.670	Diam/Width:150	Manhole		
E:436881.576 N:401481.650	1.230							Not Applicable		

Project: Nifty Lifts, Barnsley - Extension SW Drainage Design	Date: 17/09/2024		
	Designed by: JR	Checked by:	
Report Details: Type: Manhole Schedule Storm Phase: Phase	Company Address: J Roberts Design Ltd		

Name	Cover Level (m) Invert Level (m)	Manhole Schematic	Manhole Size (m)	Connection Details				Type		
				Incoming Connections	Connection Type	Connection Invert (m)	Connection Size (mm)	Junction Type	Flow Control Type	Flow Control IL (m)
Coordinates (m)	Depth (m)			Outgoing Connections				Cover		
ExMH10	152.120 151.240		Diameter / Length: 0.600					Manhole	{a} Free Discharge	
E:436804.764 N:401439.920	0.880			{a} Pipe (12)	Pipe	151.240	Diam/Width:150	Not Applicable		
ExMH9	152.130 150.520		Diameter / Length: 0.600	{1} Pipe (12)	Pipe	150.570	Diam/Width:150	Manhole	{a} Free Discharge	
E:436845.052 N:401477.061	1.610			{a} Pipe (13)	Pipe	150.520	Diam/Width:225	Not Applicable		
Gullies			Diameter / Length: 1.200					Simple Junction	{a} Free Discharge	
E:436840.005 N:401522.309				{a} Pipe (24)	Pipe	148.530	Diam/Width:225	Not Applicable		
SW14-FC	146.700 143.350		Diameter / Length: 1.200	{1} Pipe (6)	Pipe	143.350	Diam/Width:225	Manhole	{a} Hydro-Brake®	143.350
E:436822.690 N:401564.581	3.350			{a} Pipe (7)	Pipe	143.350	Diam/Width:225	Not Applicable		

Project: Nifty Lifts, Barnsley - Extension SW Drainage Design	Date: 17/09/2024		
	Designed by: JR	Checked by:	
Report Details: Type: Manhole Schedule Storm Phase: Phase	Company Address: J Roberts Design Ltd		

Name	Cover Level (m) Invert Level (m)	Manhole Schematic	Manhole Size (m)	Connection Details				Type		
				Incoming Connections	Connection Type	Connection Invert (m)	Connection Size (mm)	Junction Type	Flow Control Type	Flow Control IL (m)
Coordinates (m)	Depth (m)	Outgoing Connections	Cover							
SW9	150.550 149.100		Diameter / Length: 1.200					Manhole	{a} Free Discharge	
E:436824.056 N:401522.512	1.450			{a} Pipe (21)	Pipe	149.100	Diam/Width:225	Not Applicable		

Project: Nifty Lifts, Barnsley - Extension SW Drainage Design	Date: 17/09/2024		
	Designed by: JR	Checked by:	Approved By:
Report Details: Type: Inflow Summary Storm Phase: Phase	Company Address: J Roberts Design Ltd		



Inflow Label	Connected To	Flow (L/s)	Runoff Method	Area (ha)	Percentage Impervious (%)	Urban Creep (%)	Adjusted Percentage Impervious (%)	Area Analysed (ha)
Catchment Area	SW1		Time of Concentration	0.075	100	0	100	0.075
Catchment Area (1)	SW2		Time of Concentration	0.020	100	0	100	0.020
Catchment Area (2)	ExMH10		Time of Concentration	0.031	100	0	100	0.031
Catchment Area (3)	SW3		Time of Concentration	0.137	100	0	100	0.137
Catchment Area (4)	SW5		Time of Concentration	0.072	100	0	100	0.072
Catchment Area (5)	SW9		Time of Concentration	0.064	100	0	100	0.064
Catchment Area (6)	ExMH4 - FC		Time of Concentration	0.023	100	0	100	0.023
Catchment Area (7)	ExMH1		Time of Concentration	0.031	100	0	100	0.031
Catchment Area (8)	ExMH4 - FC		Time of Concentration	0.004	100	0	100	0.004
Catchment Area (9)	Gullies		Time of Concentration	0.154	100	0	100	0.154
Catchment Area (10)	SW10		Time of Concentration	0.100	100	0	100	0.100
Catchment Area (11)	SW11		Time of Concentration	0.093	100	0	100	0.093
Catchment Area (12)	SW13		Time of Concentration	0.066	100	0	100	0.066
Catchment Area (13)	SW13		Time of Concentration	0.058	100	0	100	0.058
Catchment Area (14)	RE3		Time of Concentration	0.046	100	0	100	0.046
Catchment Area (15)	RE2		Time of Concentration	0.081	100	0	100	0.081
Catchment Area (16)	RE1		Time of Concentration	0.072	100	0	100	0.072
Catchment Area (17)	SW7		Time of Concentration	0.010	100	0	100	0.010
Catchment Area (18)	ExMH10		Time of Concentration	0.056	100	0	100	0.056
TOTAL		0.0		1.190				1.190

Project: Nifty Lifts, Barnsley - Extension SW Drainage Design	Date: 17/09/2024		
	Designed by: JR	Checked by:	Approved By:
Report Title: Rainfall Analysis Criteria	Company Address: J Roberts Design Ltd		



Runoff Type	Dynamic
Output Interval (mins)	5
Time Step	Shortest
Urban Creep	Apply Global Value
Urban Creep Global Value (%)	0
Junction Flood Risk Margin (mm)	300
Perform No Discharge Analysis	<input type="checkbox"/>

Rainfall

Project: Nifty Lifts, Barnsley - Extension SW Drainage Design	Date: 17/09/2024			
	Designed by: JR	Checked by:	Approved By:	
Report Title: Rainfall Analysis Criteria	Company Address: J Roberts Design Ltd			

FEH

Type: FEH

Site Location	GB 436500 402000 SE 36500 02000	
Rainfall Version		2022
Summer	<input type="checkbox"/>	
Winter	<input checked="" type="checkbox"/>	

Return Period

Return Period (years)	Increase Rainfall (%)
2.0	0.000
30.0	0.000
30.0	30.000
100.0	40.000

Storm Durations

Duration (mins)	Run Time (mins)
15	30
30	60
60	120
120	240
180	360
240	480
360	720
480	960
600	1200
720	1440
960	1920
1440	2880
2160	4320
2880	5760
4320	8640
5760	11520

Project: Nifty Lifts, Barnsley - Extension SW Drainage Design	Date: 17/09/2024		
	Designed by: JR	Checked by:	
Report Details: Type: Junctions Summary Storm Phase: Phase	Company Address: J Roberts Design Ltd		



FEH: 2 years: Increase Rainfall (%): +0: Critical Storm Per Item: Rank By: Max. Depth

Junction	Storm Event	Cover Level (m)	Invert Level (m)	Max. Level (m)	Max. Depth (m)	Max. Inflow (L/s)	Max. Resident Volume (m³)	Max. Flooded Volume (m³)	Max. Outflow (L/s)	Total Discharge Volume (m³)	Status
SW1	FEH: 2 years: +0 %: 15 mins: Winter	154.000	151.245	151.329	0.084	14.1	0.095	0.000	13.9	6.512	OK
SW2	FEH: 2 years: +0 %: 15 mins: Winter	152.620	151.195	151.269	0.074	17.7	0.084	0.000	17.0	8.289	OK
SW3	FEH: 2 years: +0 %: 15 mins: Winter	152.060	150.560	150.668	0.108	42.7	0.191	0.000	42.0	20.186	OK
SW4	FEH: 2 years: +0 %: 15 mins: Winter	151.450	149.950	150.023	0.073	42.0	0.130	0.000	40.9	20.173	OK
SW5	FEH: 2 years: +0 %: 15 mins: Winter	148.000	146.500	146.577	0.077	54.5	0.136	0.000	53.5	26.444	OK
SW13	FEH: 2 years: +0 %: 15 mins: Winter	146.460	144.655	144.761	0.106	23.3	0.187	0.000	22.9	10.751	OK
SW15-PS	FEH: 2 years: +0 %: 60 mins: Winter	146.950	143.300	143.362	0.062	0.9	0.070	0.000	0.9	5.389	OK
SW16 - Break Chamber	FEH: 2 years: +0 %: 60 mins: Winter	150.600	149.300	149.316	0.016	0.9	0.018	0.000	0.9	5.368	OK
SW10	FEH: 2 years: +0 %: 15 mins: Winter	149.720	148.145	148.275	0.130	58.3	0.231	0.000	57.7	27.663	OK
SW11	FEH: 2 years: +0 %: 15 mins: Winter	149.600	148.000	148.107	0.107	75.2	0.189	0.000	74.3	35.753	OK
SW12	FEH: 2 years: +0 %: 15 mins: Winter	149.600	145.850	145.981	0.131	121.2	0.231	0.000	120.3	61.433	OK
RE3	FEH: 2 years: +0 %: 15 mins: Winter	152.060	150.500	150.557	0.057	8.6	0.001	0.000	8.0	3.995	OK
SW8	FEH: 2 years: +0 %: 15 mins: Winter	150.600	149.100	149.192	0.092	49.1	0.163	0.000	46.9	25.690	OK
RE2	FEH: 2 years: +0 %: 15 mins: Winter	152.060	150.500	150.569	0.069	15.2	0.003	0.000	14.1	7.031	OK
SW7	FEH: 2 years: +0 %: 15 mins: Winter	150.900	149.400	149.519	0.119	42.4	0.210	0.000	41.1	21.722	OK
RE1	FEH: 2 years: +0 %: 15 mins: Winter	152.050	150.500	150.584	0.084	13.5	0.002	0.000	12.0	6.256	OK
SW6	FEH: 2 years: +0 %: 15 mins: Winter	151.560	150.060	150.129	0.069	26.7	0.020	0.000	26.4	13.827	OK
ExMH1	FEH: 2 years: +0 %: 15 mins: Winter	151.500	149.100	149.149	0.049	5.8	0.126	0.000	5.3	2.674	OK
ExMH2	FEH: 2 years: +0 %: 15 mins: Winter	151.500	149.050	149.082	0.032	5.3	0.081	0.000	5.0	2.654	OK
ExMH4 - FC	FEH: 2 years: +0 %: 15 mins: Winter	151.520	148.800	149.064	0.264	10.0	0.467	0.000	1.3	5.137	Surcharged

Project: Nifty Lifts, Barnsley - Extension SW Drainage Design				Date: 17/09/2024								
				Designed by: JR			Checked by:		Approved By:			
Report Details: Type: Junctions Summary Storm Phase: Phase				Company Address: J Roberts Design Ltd								

ExMH5	FEH: 2 years: +0 %: 15 mins: Winter	149.900	148.670	148.700	0.030	1.3	0.000	0.000	1.3	1.461	OK
ExMH10	FEH: 2 years: +0 %: 15 mins: Winter	152.120	151.240	151.341	0.101	16.4	0.029	0.000	14.8	7.577	OK
ExMH9	FEH: 2 years: +0 %: 15 mins: Winter	152.130	150.520	150.579	0.059	14.8	0.017	0.000	14.6	7.574	OK
Gullies	FEH: 2 years: +0 %: 15 mins: Winter		148.530	148.656	0.126	28.9			27.9	13.388	OK
SW14-FC	FEH: 2 years: +0 %: 4320 mins: Winter	146.700	143.350	143.926	0.576	0.9	0.651	0.000	0.9	400.734	Surcharged
SW9	FEH: 2 years: +0 %: 15 mins: Winter	150.550	149.100	149.154	0.054	12.0	0.062	0.000	11.5	5.534	OK

Project: Nifty Lifts, Barnsley - Extension SW Drainage Design	Date: 17/09/2024		
	Designed by: JR	Checked by:	
Report Details: Type: Junctions Summary Storm Phase: Phase	Company Address: J Roberts Design Ltd		



FEH: 30 years: Increase Rainfall (%): +0: Critical Storm Per Item: Rank By: Max. Depth

Junction	Storm Event	Cover Level (m)	Invert Level (m)	Max. Level (m)	Max. Depth (m)	Max. Inflow (L/s)	Max. Resident Volume (m³)	Max. Flooded Volume (m³)	Max. Outflow (L/s)	Total Discharge Volume (m³)	Status
SW1	FEH: 30 years: +0 %: 15 mins: Winter	154.000	151.245	151.384	0.139	31.9	0.157	0.000	31.6	14.762	OK
SW2	FEH: 30 years: +0 %: 15 mins: Winter	152.620	151.195	151.315	0.120	40.3	0.136	0.000	38.9	18.788	OK
SW3	FEH: 30 years: +0 %: 15 mins: Winter	152.060	150.560	150.736	0.176	97.3	0.311	0.000	95.8	45.771	OK
SW4	FEH: 30 years: +0 %: 15 mins: Winter	151.450	149.950	150.064	0.114	95.8	0.201	0.000	93.9	45.753	OK
SW5	FEH: 30 years: +0 %: 15 mins: Winter	148.000	146.500	146.626	0.126	124.7	0.223	0.000	122.6	59.991	OK
SW13	FEH: 30 years: +0 %: 15 mins: Winter	146.460	144.655	144.827	0.172	52.8	0.303	0.000	52.1	24.386	OK
SW15-PS	FEH: 30 years: +0 %: 5760 mins: Winter	146.950	143.300	143.376	0.076	1.2	0.086	0.000	1.1	658.580	OK
SW16 - Break Chamber	FEH: 30 years: +0 %: 5760 mins: Winter	150.600	149.300	149.318	0.018	1.1	0.020	0.000	1.1	658.560	OK
SW10	FEH: 30 years: +0 %: 15 mins: Winter	149.720	148.145	148.362	0.217	132.6	0.383	0.000	131.6	62.737	OK
SW11	FEH: 30 years: +0 %: 15 mins: Winter	149.600	148.000	148.176	0.176	171.3	0.311	0.000	169.4	81.092	OK
SW12	FEH: 30 years: +0 %: 15 mins: Winter	149.600	145.850	146.072	0.222	272.9	0.392	0.000	271.0	139.371	OK
RE3	FEH: 30 years: +0 %: 15 mins: Winter	152.060	150.500	150.593	0.093	19.6	0.002	0.000	18.3	9.064	OK
SW8	FEH: 30 years: +0 %: 15 mins: Winter	150.600	149.100	149.245	0.145	107.7	0.257	0.000	103.5	58.290	OK
RE2	FEH: 30 years: +0 %: 15 mins: Winter	152.060	150.500	150.611	0.111	34.5	0.004	0.000	33.7	15.744	OK
SW7	FEH: 30 years: +0 %: 15 mins: Winter	150.900	149.400	149.592	0.192	93.9	0.339	0.000	89.5	49.256	OK
RE1	FEH: 30 years: +0 %: 15 mins: Winter	152.050	150.500	150.639	0.139	30.7	0.003	0.000	27.7	14.202	OK
SW6	FEH: 30 years: +0 %: 15 mins: Winter	151.560	150.060	150.164	0.104	56.2	0.029	0.000	55.9	31.425	OK
ExMH1	FEH: 30 years: +0 %: 15 mins: Winter	151.500	149.100	149.176	0.076	13.1	0.193	0.000	12.2	6.050	OK
ExMH2	FEH: 30 years: +0 %: 15 mins: Winter	151.500	149.050	149.111	0.061	12.2	0.154	0.000	13.9	6.029	OK
ExMH4 - FC	FEH: 30 years: +0 %: 15 mins: Winter	151.520	148.800	149.103	0.303	25.2	0.536	0.000	1.3	11.489	Surcharged

Project: Nifty Lifts, Barnsley - Extension SW Drainage Design				Date: 17/09/2024								
				Designed by: JR			Checked by:			Approved By:		
Report Details: Type: Junctions Summary Storm Phase: Phase				Company Address: J Roberts Design Ltd								

ExMH5	FEH: 30 years: +0 %: 15 mins: Winter	149.900	148.670	148.700	0.030	1.3	0.000	0.000	1.3	1.908	OK
ExMH10	FEH: 30 years: +0 %: 15 mins: Winter	152.120	151.240	152.120	0.880	37.2	0.324	0.075	28.5	17.231	Flood
ExMH9	FEH: 30 years: +0 %: 15 mins: Winter	152.130	150.520	150.606	0.086	28.5	0.024	0.000	28.5	17.227	OK
Gullies	FEH: 30 years: +0 %: 15 mins: Winter		148.530	148.921	0.391	65.7			63.4	30.371	Surcharged
SW14-FC	FEH: 30 years: +0 %: 5760 mins: Winter	146.700	143.350	144.458	1.108	1.1	1.253	0.000	1.1	658.675	Surcharged
SW9	FEH: 30 years: +0 %: 15 mins: Winter	150.550	149.100	149.185	0.085	27.1	0.096	0.000	26.4	12.548	OK

Project: Nifty Lifts, Barnsley - Extension SW Drainage Design	Date: 17/09/2024		
	Designed by: JR	Checked by:	
Report Details: Type: Junctions Summary Storm Phase: Phase	Company Address: J Roberts Design Ltd		



FEH: 30 years: Increase Rainfall (%): +30: Critical Storm Per Item: Rank By: Max. Depth

Junction	Storm Event	Cover Level (m)	Invert Level (m)	Max. Level (m)	Max. Depth (m)	Max. Inflow (L/s)	Max. Resident Volume (m³)	Max. Flooded Volume (m³)	Max. Outflow (L/s)	Total Discharge Volume (m³)	Status
SW1	FEH: 30 years: +30 %: 15 mins: Winter	154.000	151.245	151.413	0.168	41.5	0.190	0.000	41.1	19.196	OK
SW2	FEH: 30 years: +30 %: 15 mins: Winter	152.620	151.195	151.339	0.144	52.4	0.163	0.000	51.4	24.443	OK
SW3	FEH: 30 years: +30 %: 15 mins: Winter	152.060	150.560	150.771	0.211	127.3	0.372	0.000	123.9	59.506	OK
SW4	FEH: 30 years: +30 %: 15 mins: Winter	151.450	149.950	150.082	0.132	123.9	0.232	0.000	121.6	59.487	OK
SW5	FEH: 30 years: +30 %: 15 mins: Winter	148.000	146.500	146.649	0.149	161.6	0.263	0.000	159.1	77.994	OK
SW13	FEH: 30 years: +30 %: 15 mins: Winter	146.460	144.655	144.857	0.202	68.6	0.358	0.000	67.8	31.700	OK
SW15-PS	FEH: 30 years: +30 %: 4320 mins: Winter	146.950	143.300	143.384	0.084	1.3	0.096	0.000	1.3	556.906	OK
SW16 - Break Chamber	FEH: 30 years: +30 %: 4320 mins: Winter	150.600	149.300	149.319	0.019	1.3	0.021	0.000	1.3	556.883	OK
SW10	FEH: 30 years: +30 %: 15 mins: Winter	149.720	148.145	148.404	0.259	172.1	0.458	0.000	169.7	81.547	OK
SW11	FEH: 30 years: +30 %: 15 mins: Winter	149.600	148.000	148.208	0.208	221.3	0.368	0.000	219.0	105.409	OK
SW12	FEH: 30 years: +30 %: 15 mins: Winter	149.600	145.850	146.117	0.267	349.1	0.472	0.000	346.8	181.128	OK
RE3	FEH: 30 years: +30 %: 15 mins: Winter	152.060	150.500	150.614	0.114	25.5	0.002	0.000	23.7	11.779	OK
SW8	FEH: 30 years: +30 %: 15 mins: Winter	150.600	149.100	149.268	0.168	133.8	0.296	0.000	130.1	75.730	OK
RE2	FEH: 30 years: +30 %: 15 mins: Winter	152.060	150.500	150.630	0.130	44.9	0.005	0.000	43.7	20.429	OK
SW7	FEH: 30 years: +30 %: 15 mins: Winter	150.900	149.400	149.623	0.223	113.5	0.393	0.000	110.1	63.984	OK
RE1	FEH: 30 years: +30 %: 15 mins: Winter	152.050	150.500	150.669	0.169	39.9	0.003	0.000	36.0	18.457	OK
SW6	FEH: 30 years: +30 %: 15 mins: Winter	151.560	150.060	150.172	0.112	64.5	0.032	0.000	64.2	40.839	OK
ExMH1	FEH: 30 years: +30 %: 15 mins: Winter	151.500	149.100	149.187	0.087	17.0	0.220	0.000	15.9	7.863	OK
ExMH2	FEH: 30 years: +30 %: 2880 mins: Winter	151.500	149.050	149.152	0.102	0.5	0.260	0.000	0.5	36.116	OK
ExMH4 - FC	FEH: 30 years: +30 %: 2880 mins: Winter	151.520	148.800	149.152	0.352	1.3	0.622	0.000	1.3	415.710	Surcharged

Project: Nifty Lifts, Barnsley - Extension SW Drainage Design				Date: 17/09/2024								
				Designed by: JR			Checked by:			Approved By:		
Report Details: Type: Junctions Summary Storm Phase: Phase				Company Address: J Roberts Design Ltd								

ExMH5	FEH: 30 years: +30 %: 240 mins: Winter	149.900	148.670	148.700	0.030	1.3	0.000	0.000	1.3	33.594	OK
ExMH10	FEH: 30 years: +30 %: 15 mins: Winter	152.120	151.240	152.122	0.882	48.4	2.199	1.950	28.6	22.391	Flood
ExMH9	FEH: 30 years: +30 %: 15 mins: Winter	152.130	150.520	150.606	0.086	28.6	0.024	0.000	28.6	22.388	OK
Gullies	FEH: 30 years: +30 %: 15 mins: Winter		148.530	149.217	0.687	85.4			81.5	39.478	Surcharged
SW14-FC	FEH: 30 years: +30 %: 4320 mins: Winter	146.700	143.350	144.775	1.425	1.3	1.611	0.000	1.3	557.028	Surcharged
SW9	FEH: 30 years: +30 %: 15 mins: Winter	150.550	149.100	149.198	0.098	35.3	0.111	0.000	34.9	16.299	OK

Project: Nifty Lifts, Barnsley - Extension SW Drainage Design	Date: 17/09/2024		
	Designed by: JR	Checked by:	
Report Details: Type: Junctions Summary Storm Phase: Phase	Company Address: J Roberts Design Ltd		



FEH: 100 years: Increase Rainfall (%): +40: Critical Storm Per Item: Rank By: Max. Depth

Junction	Storm Event	Cover Level (m)	Invert Level (m)	Max. Level (m)	Max. Depth (m)	Max. Inflow (L/s)	Max. Resident Volume (m³)	Max. Flooded Volume (m³)	Max. Outflow (L/s)	Total Discharge Volume (m³)	Status
SW1	FEH: 100 years: +40 %: 15 mins: Winter	154.000	151.245	151.482	0.237	57.3	0.269	0.000	55.9	26.471	Surcharged
SW2	FEH: 100 years: +40 %: 15 mins: Winter	152.620	151.195	151.381	0.186	71.5	0.210	0.000	69.5	33.696	OK
SW3	FEH: 100 years: +40 %: 15 mins: Winter	152.060	150.560	150.849	0.289	174.2	0.510	0.000	168.2	82.056	OK
SW4	FEH: 100 years: +40 %: 15 mins: Winter	151.450	149.950	150.108	0.158	168.2	0.280	0.000	166.7	82.035	OK
SW5	FEH: 100 years: +40 %: 15 mins: Winter	148.000	146.500	146.686	0.186	221.9	0.329	0.000	218.8	107.559	OK
SW13	FEH: 100 years: +40 %: 4320 mins: Winter	146.460	144.655	145.335	0.680	2.1	1.202	0.000	2.1	455.858	Surcharged
SW15-PS	FEH: 100 years: +40 %: 4320 mins: Winter	146.950	143.300	143.399	0.099	1.5	0.111	0.000	1.5	632.950	OK
SW16 - Break Chamber	FEH: 100 years: +40 %: 5760 mins: Winter	150.600	149.300	149.624	0.324	1.5	0.366	0.000	1.6	826.345	Surcharged
SW10	FEH: 100 years: +40 %: 15 mins: Winter	149.720	148.145	148.481	0.336	236.3	0.594	0.000	232.4	112.470	OK
SW11	FEH: 100 years: +40 %: 15 mins: Winter	149.600	148.000	148.263	0.263	303.7	0.464	0.000	301.2	145.380	OK
SW12	FEH: 100 years: +40 %: 15 mins: Winter	149.600	145.850	146.211	0.361	465.0	0.638	0.000	459.9	249.855	OK
RE3	FEH: 100 years: +40 %: 15 mins: Winter	152.060	150.500	150.826	0.326	35.2	0.006	0.000	28.5	16.265	Surcharged
SW8	FEH: 100 years: +40 %: 15 mins: Winter	150.600	149.100	149.296	0.196	166.9	0.347	0.000	163.8	104.491	OK
RE2	FEH: 100 years: +40 %: 15 mins: Winter	152.060	150.500	150.663	0.163	61.9	0.007	0.000	60.1	28.093	OK
SW7	FEH: 100 years: +40 %: 15 mins: Winter	150.900	149.400	149.678	0.278	143.4	0.492	0.000	138.3	88.265	OK
RE1	FEH: 100 years: +40 %: 15 mins: Winter	152.050	150.500	150.792	0.292	55.1	0.005	0.000	46.7	25.465	Surcharged
SW6	FEH: 100 years: +40 %: 15 mins: Winter	151.560	150.060	150.185	0.125	75.2	0.035	0.000	75.5	56.306	OK
ExMH1	FEH: 100 years: +40 %: 5760 mins: Winter	151.500	149.100	149.624	0.524	0.4	1.332	0.000	0.4	52.313	OK
ExMH2	FEH: 100 years: +40 %: 5760 mins: Winter	151.500	149.050	149.624	0.574	0.4	1.460	0.000	0.4	48.856	Surcharged
ExMH4 - FC	FEH: 100 years: +40 %: 5760 mins: Winter	151.520	148.800	149.624	0.824	1.3	1.455	0.000	1.3	819.297	Surcharged

Project: Nifty Lifts, Barnsley - Extension SW Drainage Design				Date: 17/09/2024							
Designed by: JR		Checked by:		Approved By:							
Report Details: Type: Junctions Summary Storm Phase: Phase				Company Address: J Roberts Design Ltd							

ExMH5	FEH: 100 years: +40 %: 240 mins: Winter	149.900	148.670	148.700	0.030	1.3	0.000	0.000	1.3	34.241	OK
ExMH10	FEH: 100 years: +40 %: 15 mins: Winter	152.120	151.240	152.128	0.888	66.8	8.438	8.189	28.6	30.854	Flood
ExMH9	FEH: 100 years: +40 %: 15 mins: Winter	152.130	150.520	150.606	0.086	28.6	0.024	0.000	28.6	30.849	OK
Gullies	FEH: 100 years: +40 %: 15 mins: Winter		148.530	149.756	1.226	117.8			111.3	54.445	Surcharged
SW14-FC	FEH: 100 years: +40 %: 4320 mins: Winter	146.700	143.350	145.335	1.985	1.5	2.245	0.000	1.5	633.093	Surcharged
SW9	FEH: 100 years: +40 %: 15 mins: Winter	150.550	149.100	149.214	0.114	48.7	0.129	0.000	48.0	22.481	OK

Project: Nifty Lifts, Barnsley - Extension SW Drainage Design	Date: 17/09/2024		
	Designed by: JR	Checked by:	Approved By:
Report Details: Type: Stormwater Controls Summary Storm Phase: Phase	Company Address: J Roberts Design Ltd		



FEH: 2 years: Increase Rainfall (%): +0: Critical Storm Per Item: Rank By: Max. Avg. Depth

Stormwater Control	Storm Event	Max. US Level (m)	Max. DS Level (m)	Max. US Depth (m)	Max. DS Depth (m)	Max. Inflow (L/s)	Max. Resident Volume (m³)	Max. Flooded Volume (m³)	Total Lost Volume (m³)	Half Drain Down Time (mins)	Percentage Available (%)	Status
Cellular Storage - High Level	FEH: 2 years: +0 %: 960 mins: Winter	148.950	148.950	0.100	0.100	0.9	14.519	0.000	0.000	177	87.615	OK
Cellular Storage - Low Level	FEH: 2 years: +0 %: 4320 mins: Winter	143.926	143.926	0.546	0.546	6.2	442.628	0.000	0.000	3964	72.733	OK

Project: Nifty Lifts, Barnsley - Extension SW Drainage Design	Date: 17/09/2024		
	Designed by: JR	Checked by:	Approved By:
Report Details: Type: Stormwater Controls Summary Storm Phase: Phase	Company Address: J Roberts Design Ltd		



FEH: 30 years: Increase Rainfall (%): +0: Critical Storm Per Item: Rank By: Max. Avg. Depth

Stormwater Control	Storm Event	Max. US Level (m)	Max. DS Level (m)	Max. US Depth (m)	Max. DS Depth (m)	Max. Inflow (L/s)	Max. Resident Volume (m³)	Max. Flooded Volume (m³)	Total Lost Volume (m³)	Half Drain Down Time (mins)	Percentage Available (%)	Status
Cellular Storage - High Level	FEH: 30 years: +0 %: 1440 mins: Winter	149.040	149.040	0.190	0.190	1.1	27.647	0.000	0.000	328	76.417	OK
Cellular Storage - Low Level	FEH: 30 years: +0 %: 5760 mins: Winter	144.458	144.458	1.078	1.078	8.7	874.691	0.000	0.000	7339	46.116	OK

Project: Nifty Lifts, Barnsley - Extension SW Drainage Design	Date: 17/09/2024		
	Designed by: JR	Checked by:	Approved By:
Report Details: Type: Stormwater Controls Summary Storm Phase: Phase	Company Address: J Roberts Design Ltd		



FEH: 30 years: Increase Rainfall (%): +30: Critical Storm Per Item: Rank By: Max. Avg. Depth

Stormwater Control	Storm Event	Max. US Level (m)	Max. DS Level (m)	Max. US Depth (m)	Max. DS Depth (m)	Max. Inflow (L/s)	Max. Resident Volume (m³)	Max. Flooded Volume (m³)	Total Lost Volume (m³)	Half Drain Down Time (mins)	Percentage Available (%)	Status
Cellular Storage - High Level	FEH: 30 years: +30 %: 2880 mins: Winter	149.152	149.152	0.302	0.302	1.3	43.904	0.000	0.000	450	62.549	OK
Cellular Storage - Low Level	FEH: 30 years: +30 %: 4320 mins: Winter	144.775	144.775	1.395	1.395	14.1	1131.667	0.000	0.000	8475	30.286	OK

Project: Nifty Lifts, Barnsley - Extension SW Drainage Design	Date: 17/09/2024		
	Designed by: JR	Checked by:	Approved By:
Report Details: Type: Stormwater Controls Summary Storm Phase: Phase	Company Address: J Roberts Design Ltd		



FEH: 100 years: Increase Rainfall (%): +40: Critical Storm Per Item: Rank By: Max. Avg. Depth

Stormwater Control	Storm Event	Max. US Level (m)	Max. DS Level (m)	Max. US Depth (m)	Max. DS Depth (m)	Max. Inflow (L/s)	Max. Resident Volume (m³)	Max. Flooded Volume (m³)	Total Lost Volume (m³)	Half Drain Down Time (mins)	Percentage Available (%)	Status
Cellular Storage - High Level	FEH: 100 years: +40 %: 5760 mins: Winter	149.624	149.624	0.774	0.774	1.6	112.439	0.000	0.000	831	4.087	OK
Cellular Storage - Low Level	FEH: 100 years: +40 %: 4320 mins: Winter	145.335	145.335	1.955	1.955	19.1	1586.319	0.000	0.000	10212	2.278	OK