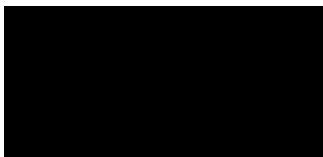


Barton Peveril College, Art Block
Chestnut Avenue, Eastleigh

Drainage Network Maintenance Manual

Date: September 2024
Project No. 304011
Revision: First Issue

Prepared by:
Tim Killingback Engtech



Structural
Engineering



Civil
Engineering



CDM
Consultants



Sustainability
and BREEAM



Traffic and
Transport



Flood Risk
Assessments



Highway
Engineering



Event
Engineering

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Appendix A – Drainage Layout and Details
Appendix B - Specific Product Maintenance requirements

1.0 Introduction

- 1.1** Scott White and Hookins LLP have been appointed to undertake the Civil Engineering design works for the Art Block development within Barton Peveril College, Chestnut Avenue, Eastleigh.
- 1.2** As part of the discharge of the planning, the Local Authority have requested a maintenance manual to cover the onsite drainage system
- 1.3** The document provides details on the general maintenance associated with drainage systems, and the specific manufacturers details of the key elements
- 1.4** The drainage layout and details can be located in Appendix A
- 1.5** All the drainage is located within the site boundary and is classified as private.

2.0 In Service maintenance

2.1 Maintenance

2.2 This section sets out the inspection and maintenance requirements for long term management of the developments surface water drainage strategy. This work is to be undertaken by the college maintenance manager – Paul Munday [07917 454108].

2.3 All those responsible for maintenance should take appropriate health, safety and welfare precautions for all activities including lone working, if relevant, and risk assessments should always be undertaken. The sites infrastructure Health and Safety File should be consulted before carrying out any works either inside or outside of the development's boundary and information regarding the location of existing utilities passed on to operatives.

2.4 The requirements of the Health and Safety at Work Act 1974 and The Construction (Design and Management) Regulations 2015 should be adhered to and any residual risks identified in the Health and Safety File should be managed and information passed on the maintenance operatives through task specific risk assessments.

2.5 There are three types of maintenance activities associated with surface water drainage systems.

The SuDS Manual, CIRIA C753, defines these as:

- Regular Maintenance – 'basic tasks undertaken on a frequent and predictable schedule' including vegetation management, litter and debris removal, and inspections.'
- Occasional Maintenance – 'tasks that are likely to be required periodically, but on a much less frequent and predictable basis than the routine tasks (sediment removal is an example).'
- Remedial Maintenance – 'intermittent tasks that may be required to rectify faults associated with the system, although the likelihood of faults can be minimised by good design. Where remedial work is found to be necessary, it is likely to be due to site-specific characteristics or unforeseen events, and as such timings are difficult to predict.'

Operation and Maintenance Activity	SuDs Component		
	Piped Network / Inspection Chambers	Cellular / Modular Storage	Permeable Pavement
Regular Maintenance			
Inspection	■	■	■
Litter and debris removal	■	□	■
Grass cutting		□	□
Weed and invasive plant control			□
Occasional Maintenance			
Sediment management	■	■	■
Vacuum sweeping and brushing			■
Remedial Maintenance			
Structure rehabilitation/ repair	□	□	□
Infiltration surface reconditioning			□
■ Will be required □ May be required			
Extract from The SuDs Manual Table 32.1 : Typical key SuDs components operation and maintenance activities			

Piped Network/Chambers Maintenance Schedule	Required Action	Typical Frequency
Regular Maintenance	Inspect and identify any features that are not operating correctly. If required take remedial action	Monthly for three months, then six monthly
	Debris removal from catchment surface / gratings (where may cause risks to performance)	Monthly (and after large storms)
	Remove sediment from trapped sumps, manholes and catchpits.	Annually or as required
Remedial Maintenance	Repair / rehabilitation of gratings, inlets and outlets	As required
Monitoring	Inspect / check all gratings, trapped sumps, manholes and catchpits to ensure that they are in good condition and operating as designed	Annually and after large storm events
Structure Rehabilitation / Repair	Regular Maintenance and Monitoring to identify if repair and / or replacement of features or pipework is required.	As required

Permeable Pavement Maintenance Schedule	Required Action	Typical Frequency
Regular Maintenance	Brushing and vacuuming (standard cosmetic sweep over the whole surface). Care should be taken in adjusting vacuuming equipment to avoid removal of jointing material if present. Any lost material should be replaced.	Once a year, after autumn leaf fall, or reduced frequency as required, based on site-specific observations of clogging or manufacturers' recommendations – pay particular attention to areas where water runs 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 weed or management using glyphosate applied directly to the weeds by an applicator rather than spraying.	As required – once per year on less frequently used pavements
Remedial Maintenance	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 work to any depressions, rutting and cracked or broken blocks considered detrimental to the structured performance or a hazard to users, and replace lost jointing material.	As required
	Rehabilitation of surface and upper substructure by remedial sweeping	Every 10 to 15 year or as required (if infiltration and filtration 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, forty-eight hours after large rainfall events in the first six months
	Inspect silt accumulation rates and establish appropriate brushing frequencies	Annually
	Monitor inspection chambers	Annually
The SuDS Manual Table 20.15: Operation and maintenance requirements for pervious pavements		

Cellular Storage / Soakaway Maintenance Schedule	Required Action	Typical Frequency
Regular Maintenance	Inspect and identify any features that are not operating correctly. If required take remedial action	Monthly for three months, then annually.
	Remove debris from catchment surface (where may cause risks to performance)	Monthly
	Remove debris from catchment surface (where may cause risks to performance)	Annually or as required
Remedial Maintenance	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 and after large storm events
	Survey inside of tank for sediment build-up and remove if necessary	Every 5 years or as required
Structure Rehabilitation / Repair	Regular Maintenance and Monitoring to identify if repair and / or replacement of storage units is required.	As required
The SuDS Manual Table 21.3: Operation and maintenance requirements for attenuation storage tanks		

3.0 Maintenance for Individual Drainage Elements

3.1 Please refer to Appendix B for product specific advice for as installed elements.

3.2 These include:

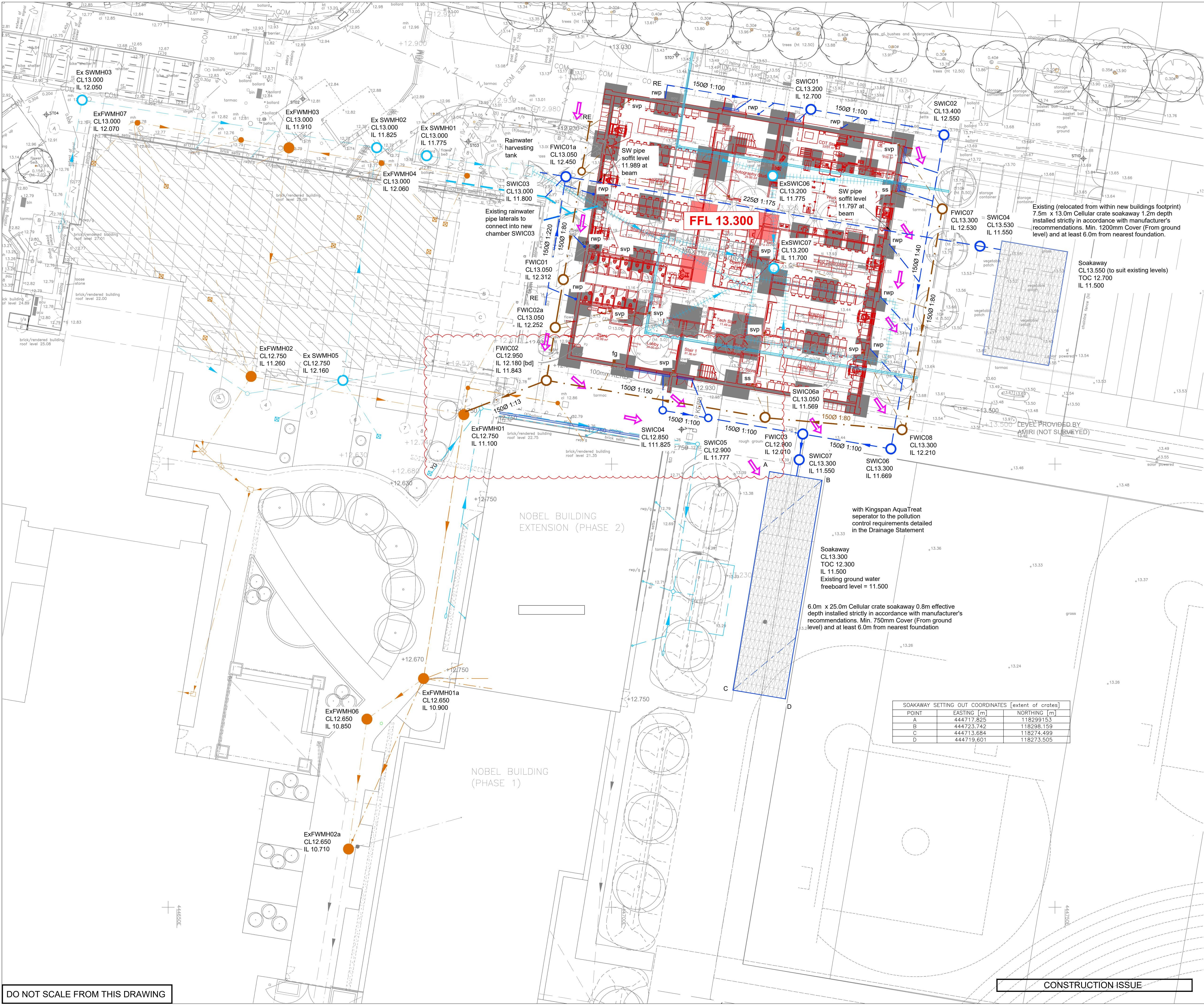
- Hepworth Clay Pipes
- OSMA Plastic Pipes
- Hydro WMS Soakaway Tanks

3.3 All drainage elements can be excavated and replaced if their life span has been achieved. This would be undertaken by a qualified and experienced Civil Engineering Contractor.

4.0 Appendices

Appendix A

Drainage layout and Details



- ### Notes
- GENERAL**
- This drawing is to be read in conjunction with all relevant engineers and architects drawings.
 - For setting out refer to architects drawings.
 - All dimensions are in millimetres and levels are in metres unless noted otherwise.
 - Contractor to take all relevant dimensions on site. any discrepancies to be advised to the engineer.
 - Contractor to check/scan for services prior to construction to avoid any damage during works.
- DRAINAGE**
- This drawing is to be read in conjunction with all relevant architects and engineers drawings, details and specifications, for all setting out refer to architects drawings.
 - Bedding of pipes to be in accordance with approved document H1.2.17, refer to relevant drawings for details.
 - All pipes to be constructed with flexible joints.
 - For details of manhole construction and cover types refer to relevant drawings.
 - All pipes to be verified clay extra strength classification, protected in accordance with the specified details.
 - Manhole access covers are to be located at the outgoing side of the manhole.
 - All soft spots and unacceptable material encountered in drainage excavations is to be removed and replaced with granular material to the requirements of the building control officer.
 - Rocker pipes with flexible joints are to be provided at a distance of 150mm and 750mm from the face of construction to manholes, where pipes pass or run through foundations, at gully connections and bases of soil stacks.
 - Manhole positions are indicative only.
 - Access points to be located at base of all RWP's and SVP's.
 - The information given on this drawing regarding existing services is believed to be correct. the ground works contractor must determine the nature and location of all existing services for the various statutory authorities before commencing any excavation works and report any discrepancies or services not shown on the drawing immediately.
 - All gullies to be trapped.
 - All surface water pipes to be 150mm diameter unless noted otherwise.
 - All foul water pipes to be 100mm diameter unless noted otherwise.
 - All surface water pipes to have a min. gradient of 1:150 unless noted otherwise.
 - All foul water pipes to have a min. gradient of 1:80 typically and 1:40 under buildings unless noted otherwise.

Key

FFL 88.90 Finished Floor Level.
Subject to co-ordination with architect

Existing SW manhole, Plastic Inspection Chamber

Existing FW manhole, Plastic Inspection Chamber

Proposed SW manhole, Plastic Inspection Chamber

Proposed FW manhole, Plastic Inspection Chamber

Existing FW sewer

Existing SW sewer

Existing FW sewer abandoned

Existing SW sewer abandoned

Proposed FW sewer

Proposed SW sewer

Proposed FW connection

Proposed SW connection

RWP Rainwater downpipe

SVP/SS Soil Vent Pipe / Stub Stack

Road gully

fg/yg Foul Floor / Yard gully

Yard gully

Linear drainage channel

Linear drainage channel abandoned

Rodding eye

Cellular Soakaway

Exceedance flow arrow

C05	Construction	TK	TK	TK	01.03.24
C04	Construction	TK	TK	TK	22.02.24
C03	Construction	TK	TK	TK	18.01.24
C02	Construction	TK	TK	MC	16.10.23
C01	Construction	TK	TK	MC	23.08.23
T04	Tender	RD	TK	MC	05.06.23
T03	Tender	RD	TK	MC	31.05.23
Rev.	Amendment	Drn.	Chkd.	Appd.	Date

Art Block
Barton Peveril College

Drawing

Client
Barton Peveril College

Scott White and Hookins
Structural Engineering Civil Engineering Sustainability and BREEAM CDM Consultancy

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T: +44 (0)1962 844855 W: www.swh.co.uk E: info@swh.co.uk

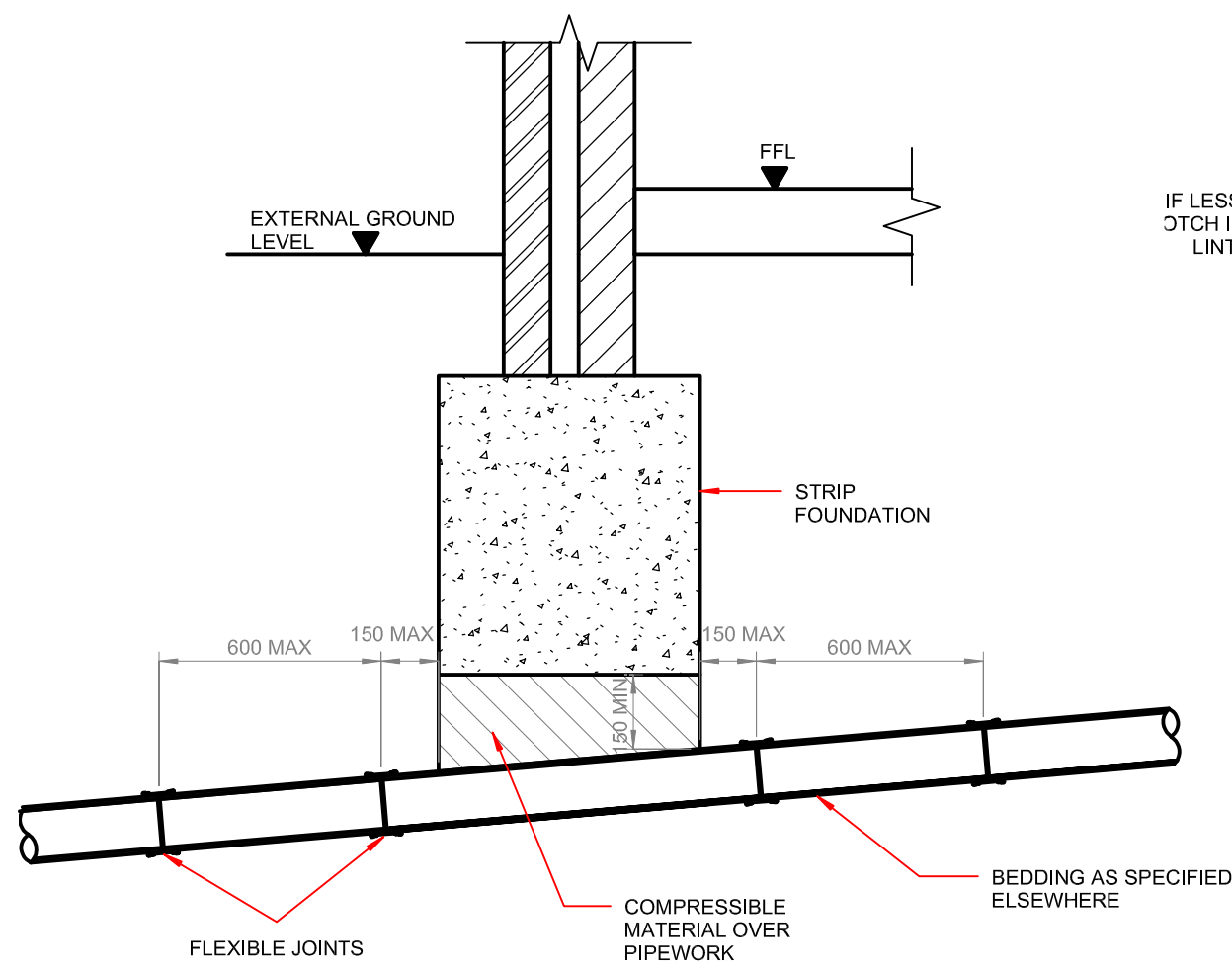
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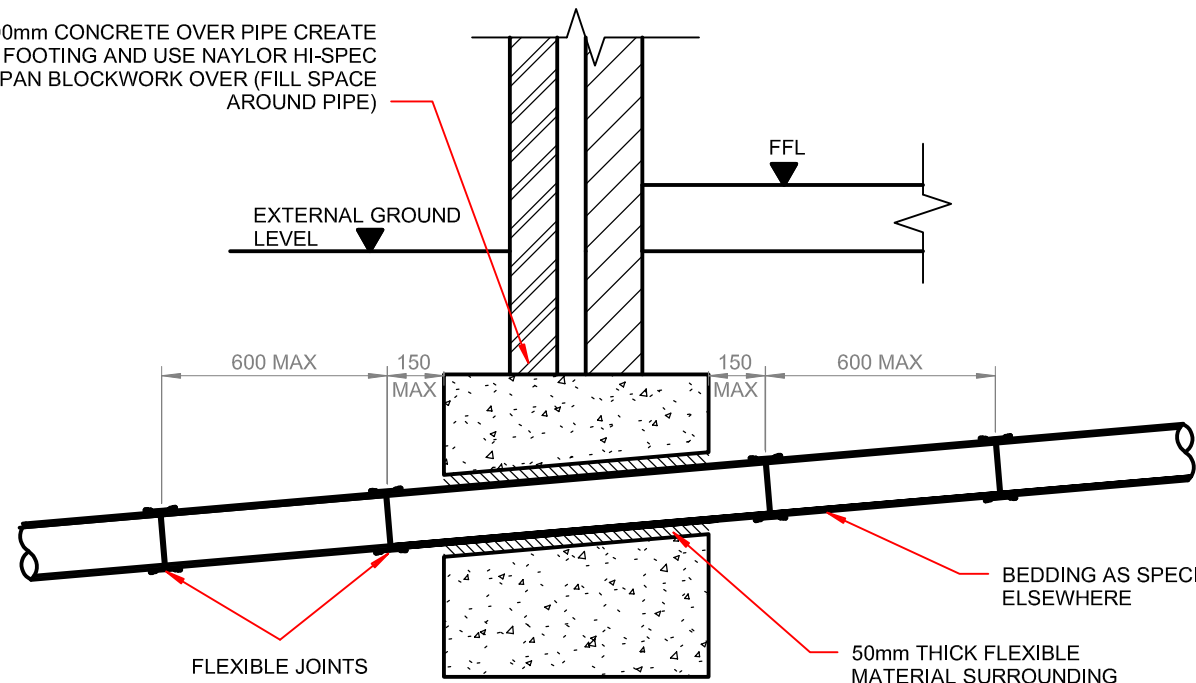
Project | Originator | Zone | Level | Type | Role | Number | Rev.

CP004-01_FM_ST_008_D

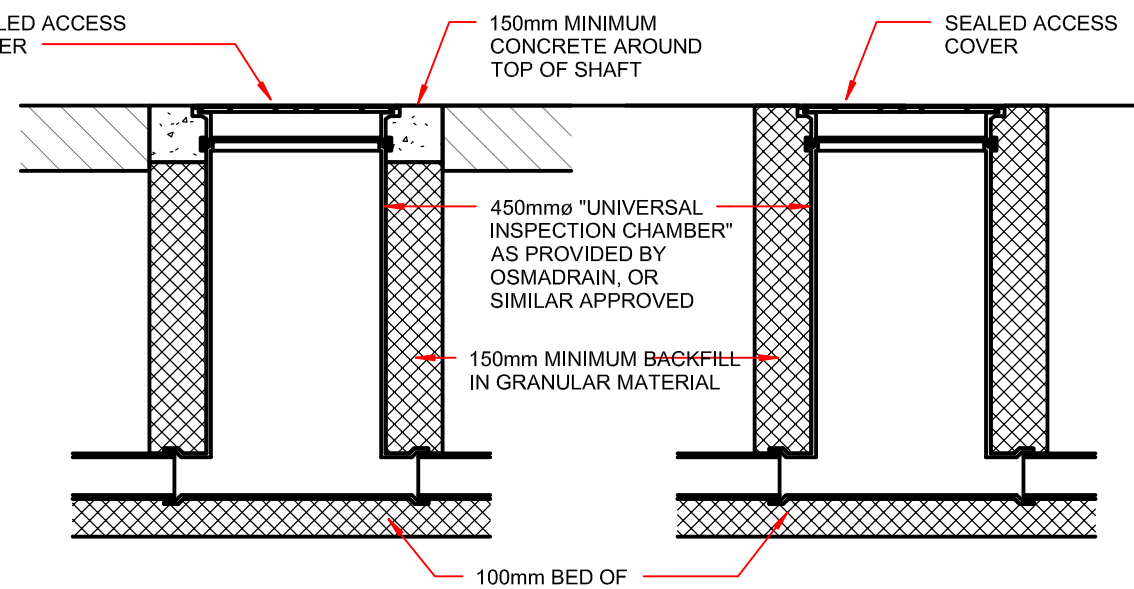
- GENERAL
- THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL RELEVANT ENGINEERS AND ARCHITECTS DRAWINGS.
 - FOR SETTING OUT REFER TO ARCHITECTS DRAWINGS.
 - ALL DIMENSIONS ARE IN MILLIMETRES AND LEVELS ARE IN METRES UNLESS NOTED OTHERWISE.
 - CONTRACTOR TO TAKE ALL RELEVANT DIMENSIONS ON SITE. ANY DISCREPANCIES TO BE ADVISED TO THE ENGINEER.
 - CONTRACTOR TO CHECK/SCAN FOR SERVICES PRIOR TO CONSTRUCTION TO AVOID ANY DAMAGE DURING WORKS.



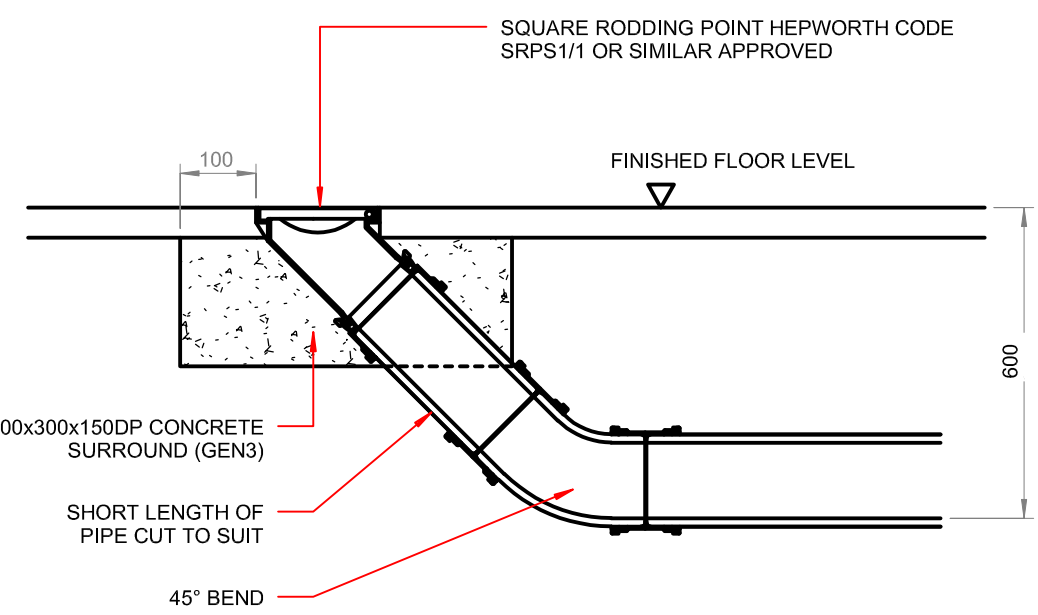
PIPE BENEATH FOUNDATION
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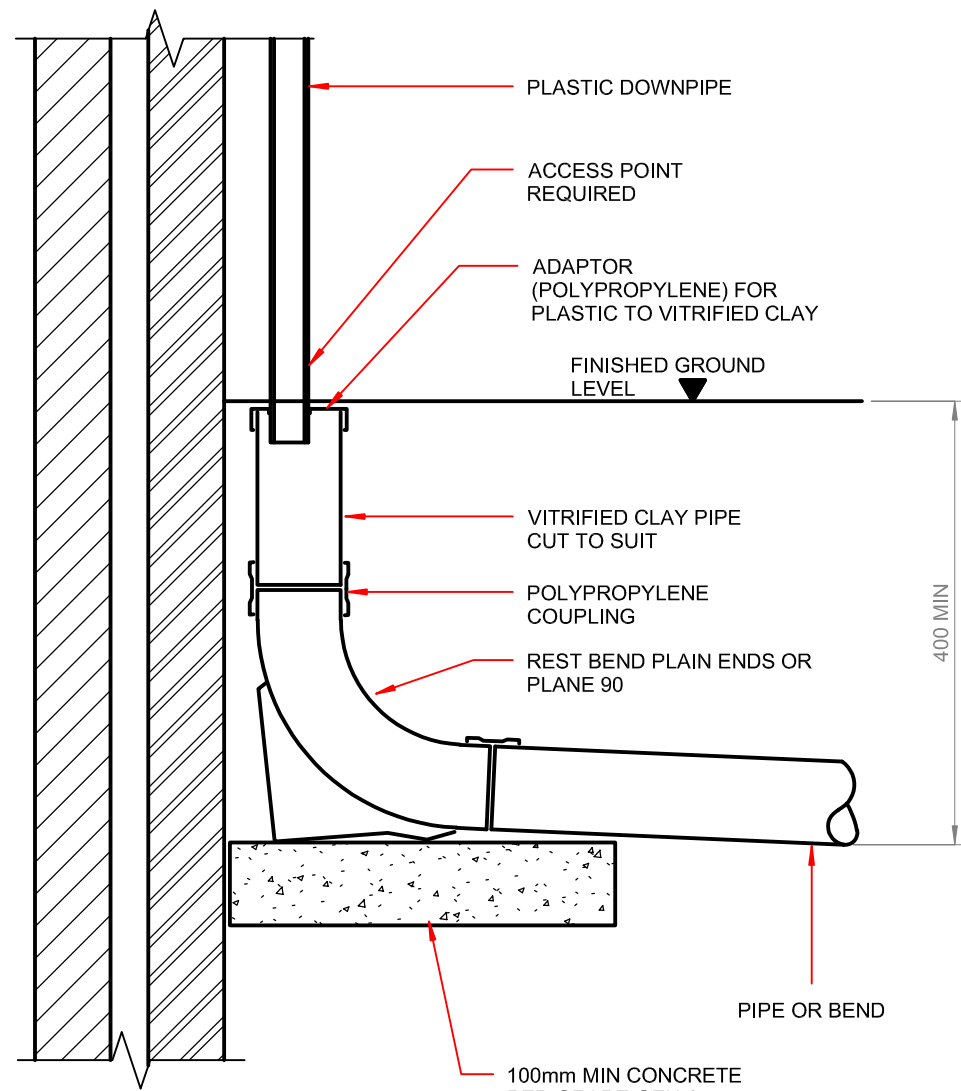
PIPE THROUGH FOUNDATION
1 : 20



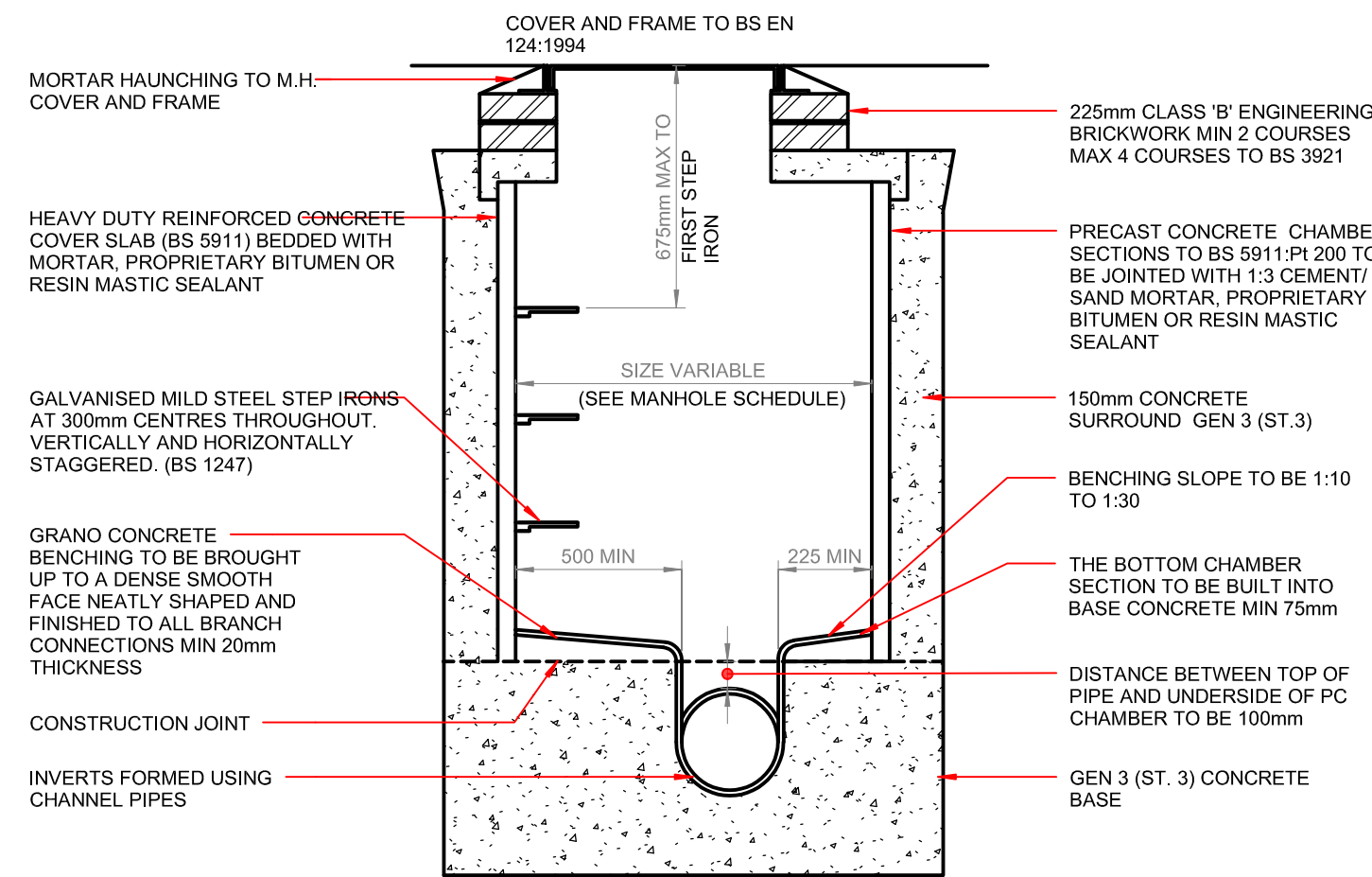
INSPECTION CHAMBER
1 : 20



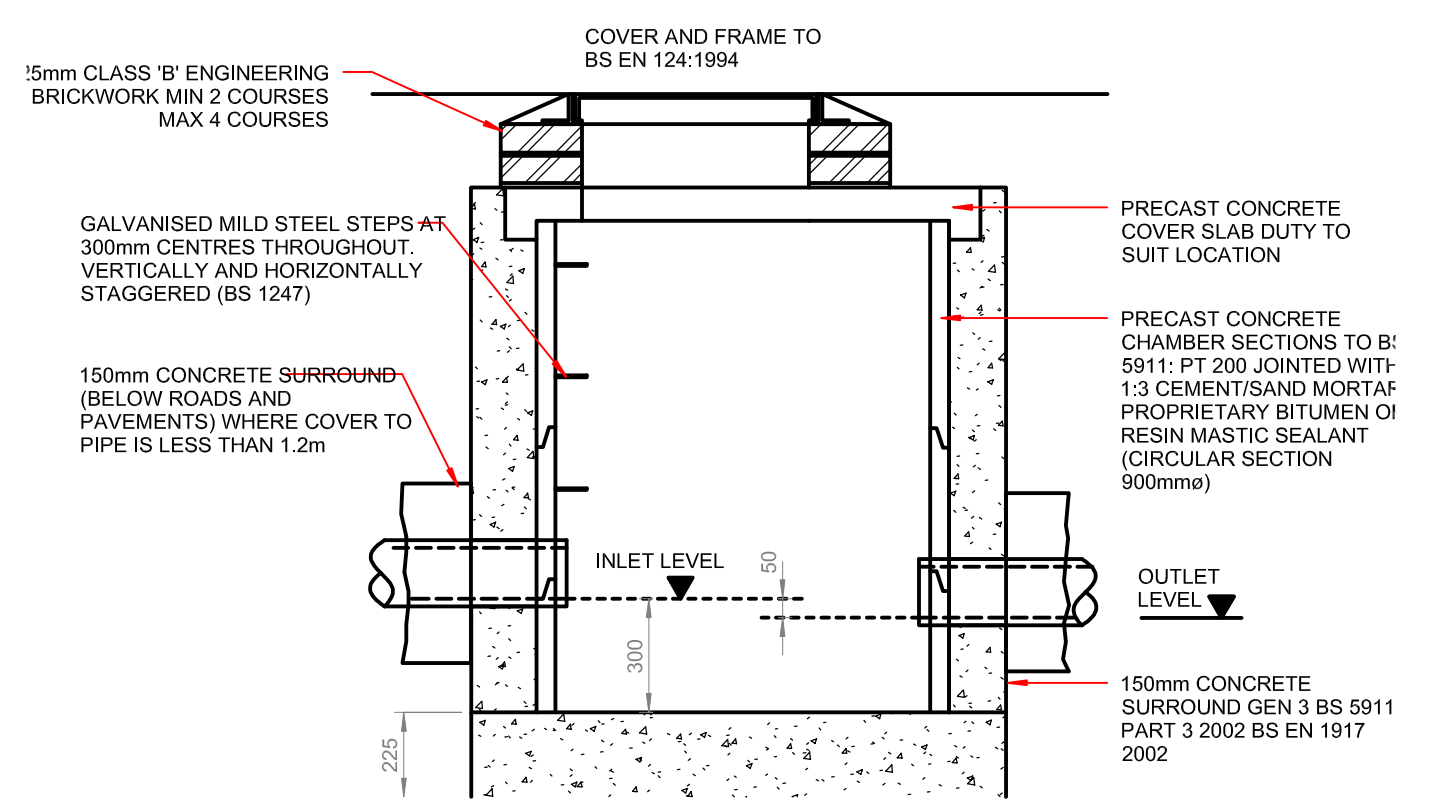
RODDING EYE
1 : 10



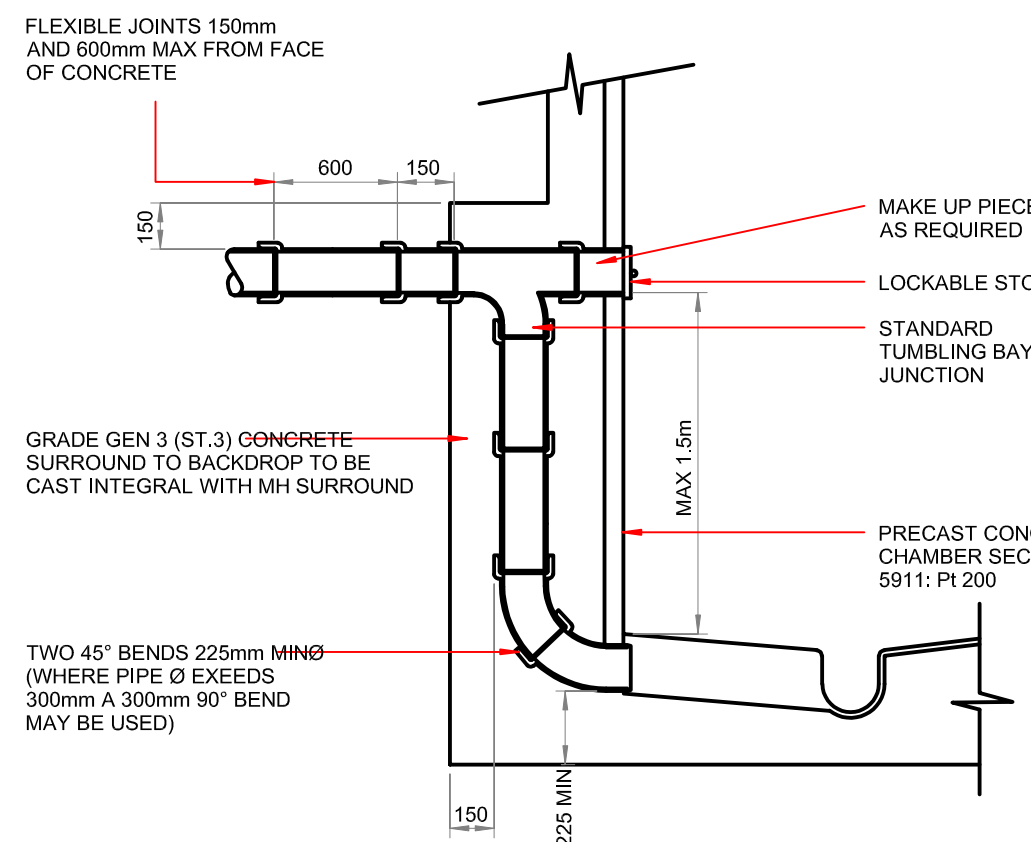
RWP REST BEND DETAIL
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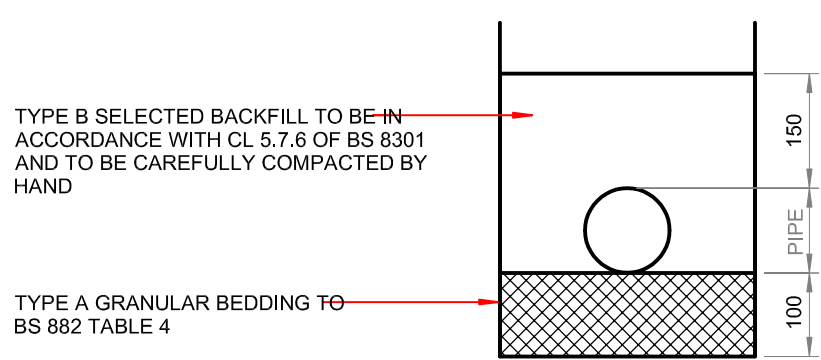
PRECAST CONCRETE RINGMANHOLE (SHALLOW) MAX 3m DEEP
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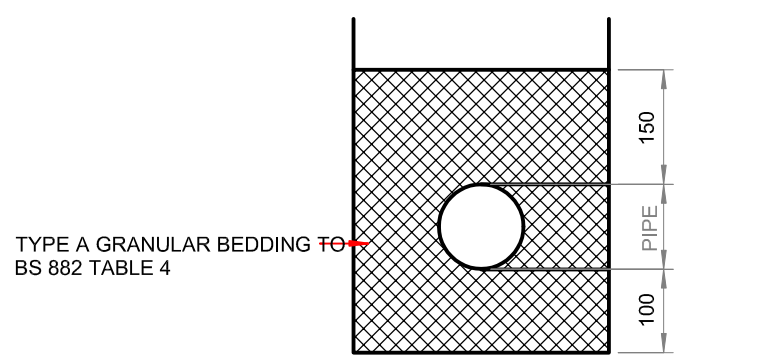
PRECAST CONCRETE RING SILT TRAP
1 : 20



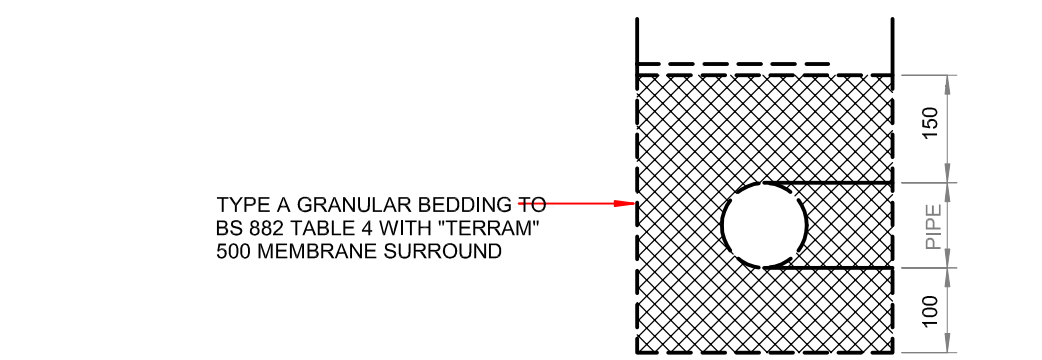
MANHOLE BACKDROP DETAIL
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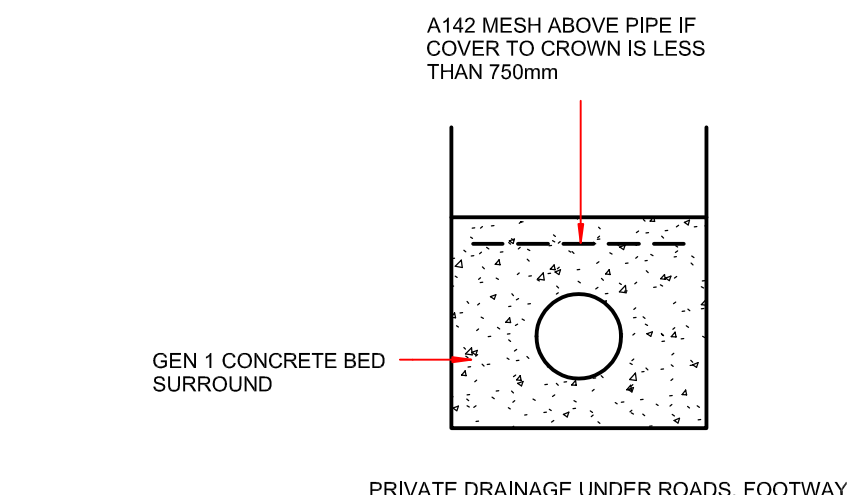
PIPE BEDDING - CLASS F GRANULAR BED
1 : 20



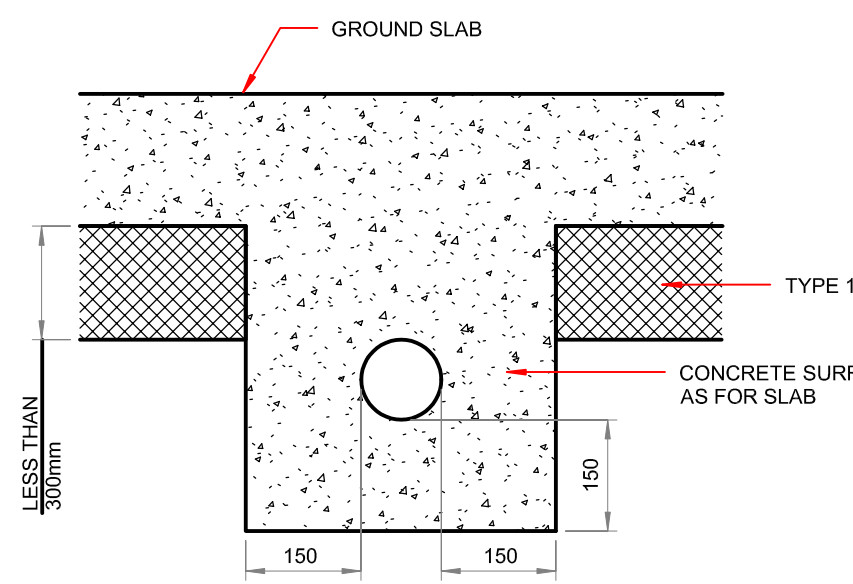
PIPE BEDDING - CLASS S GRANULAR SURROUND
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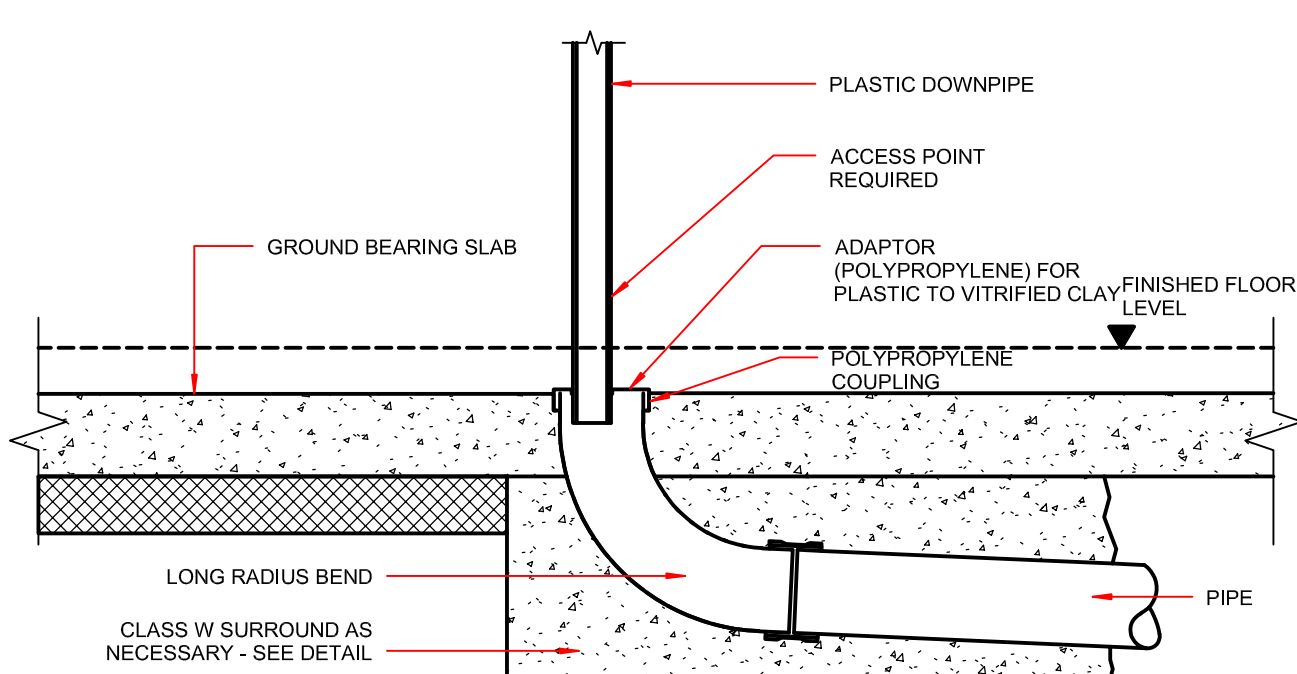
PIPE BEDDING - PROTECTION NEAR TREES
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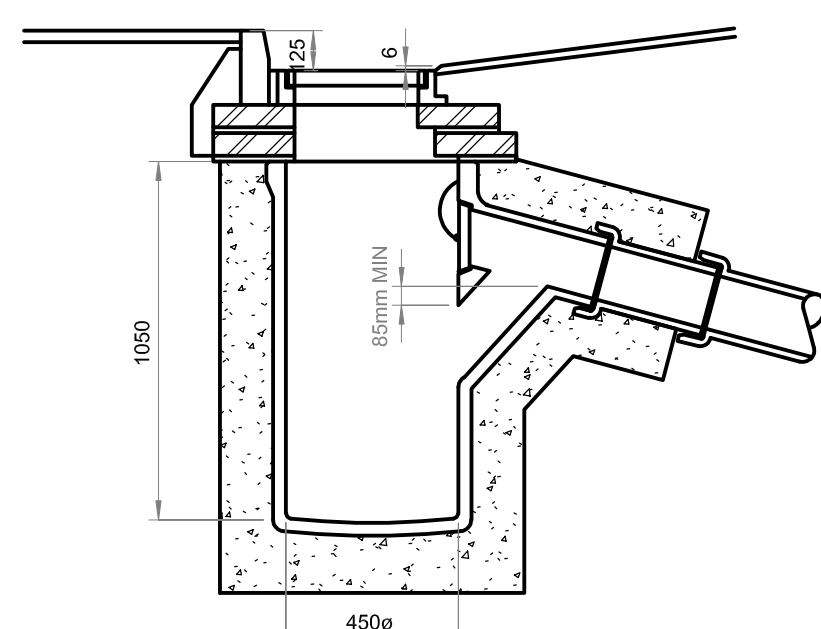
PIPE BEDDING - CLASS Z SHALLOW PIPES
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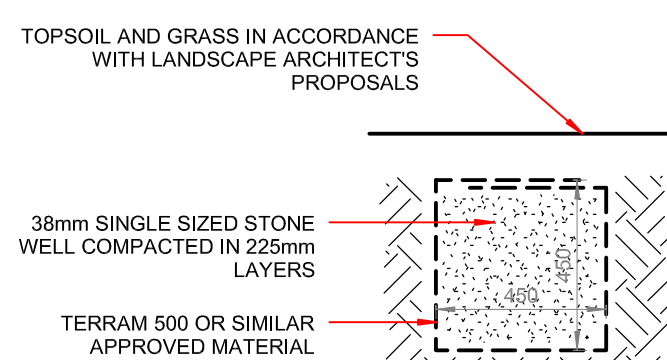
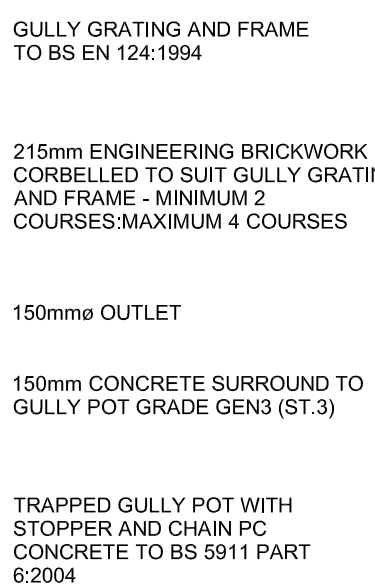
PIPE BEDDING - CLASS W UNDER CONCRETE SLAB
1 : 20



SVP THROUGH SLAB DETAIL
1 : 20



TRAPPED ROAD GULLY
1 : 20



FILTER DRAIN
1 : 20

DO NOT SCALE FROM THIS DRAWING

T01	Tender	RD	TK	MC	23.05.23
Rev.	Amendment	Drn.	Chkd.	Appd.	Date

Project

Art Block
Barton Peveril College

Drawing

Drainage Details

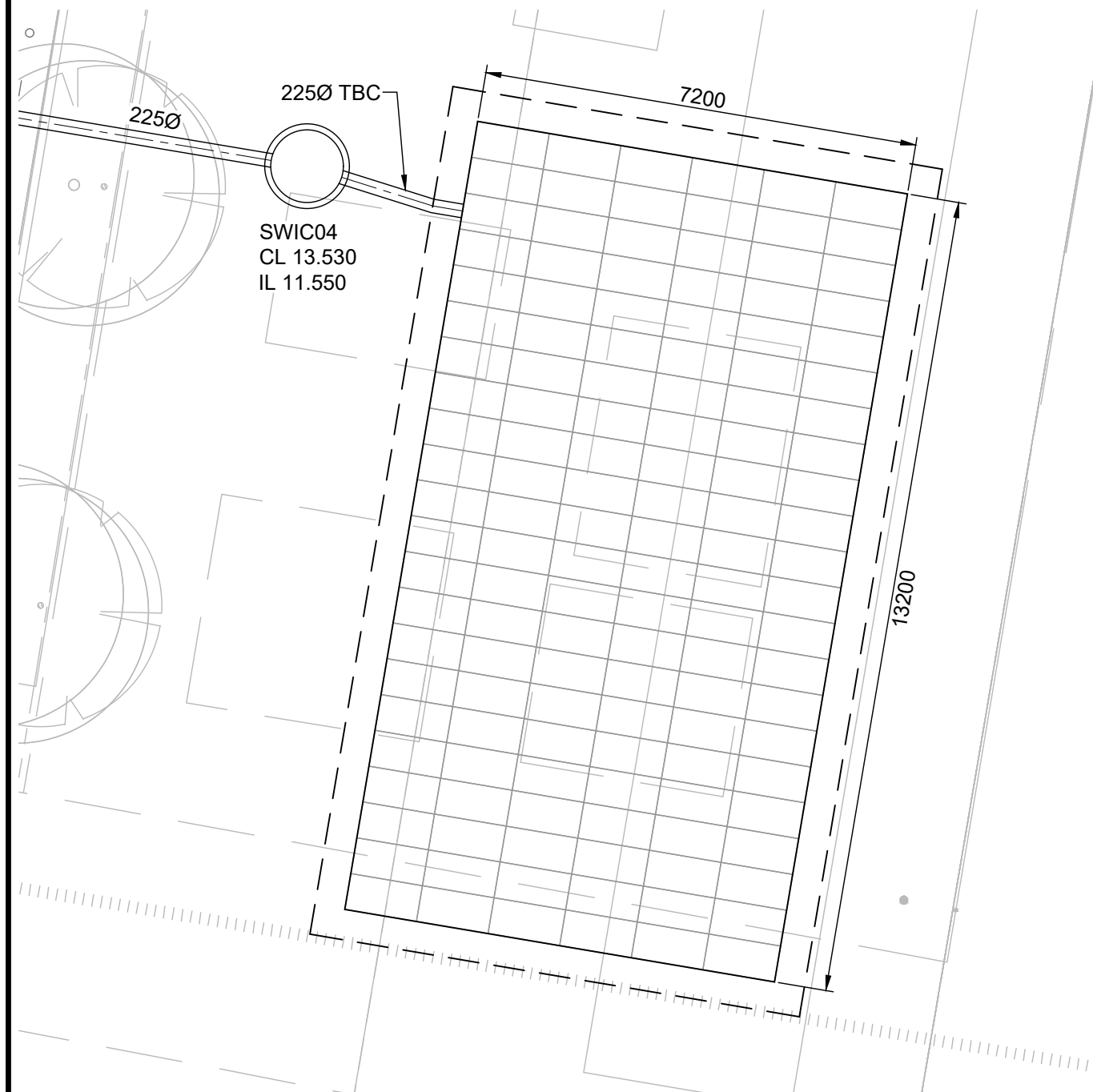
Client
Barton Peveril College

Scott White and Hookins
Structural Engineering Civil Engineering Sustainability and BREEAM CDM Consultancy

Harman House, Andover Road, Winchester, Hampshire SO23 7BS
T: +44 (0)1962 844855 W: www.swh.co.uk E: info@swh.co.uk

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Project	Originator Zone Level Type Role Number Rev.

CP004-01_FM_ST_008_0



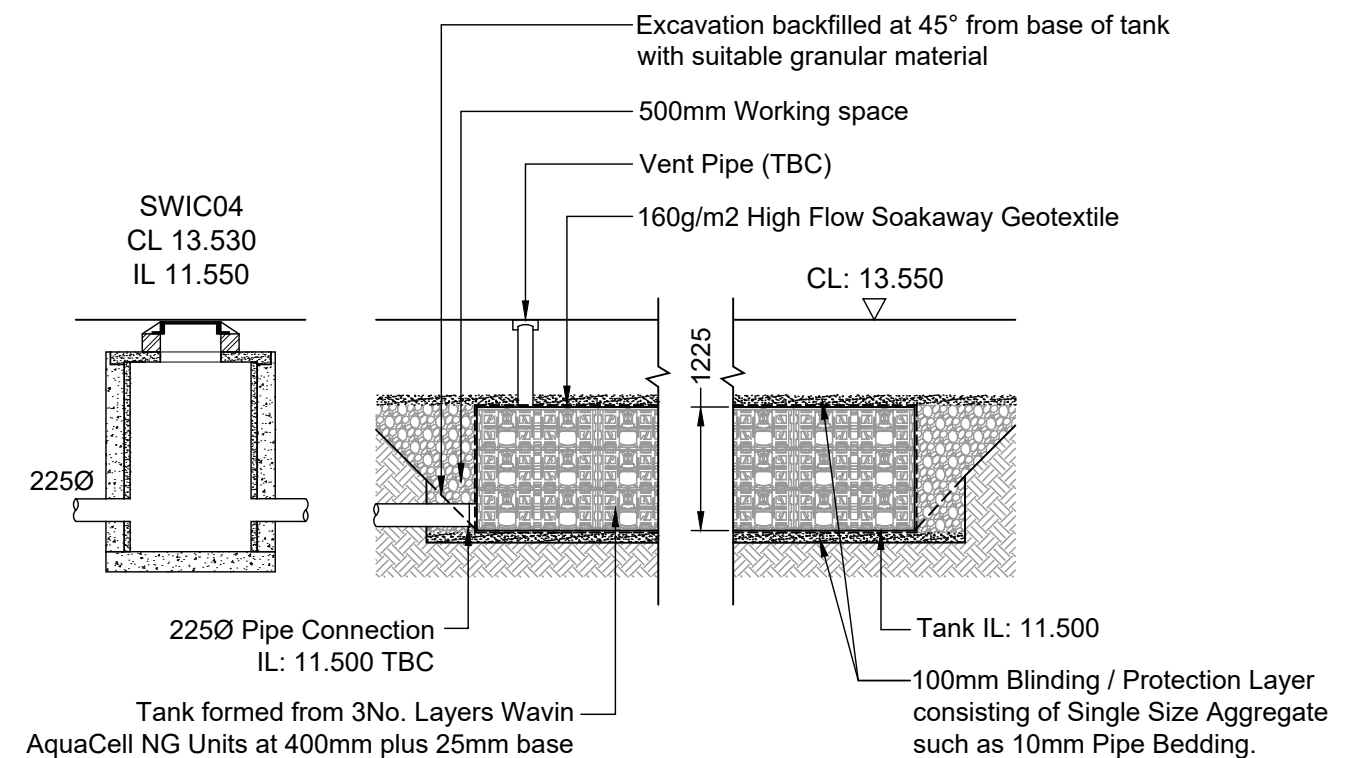
Proposed Plan
(Scale 1:100)

13.2 x 7.2 x 1.225m deep
Total Vol = 116.424m³
Net Vol ≈ 110.603m³
At 95% min Void Ratio
396 AquaCell NG units
132 NG base units

*Extents of excavation to be an additional
500mm around the perimeter of the tank*

NOTES

1. Proposed Hydro WMS layout.
2. All dimensions are in millimetres, all elevations in metres unless otherwise stated.
3. All temporary and enabling works by others.
4. All dimensions of fabricated items are nominal and may vary within manufacturing tolerances.



Proposed Section
(Scale 1:75)

Appendix B

Specific Product Maintenance requirements

Hepworth Clay Pipes

Installation: Health and safety, maintenance

Health and safety

To ensure your safety; Hepworth strongly recommend the use of the correct form of personal protective equipment (PPE) when cutting or handling clay pipes. This should include goggles or similar eye protection, along with sturdy gloves. Further Health and Safety data is available in the form of a Material Safety Data Sheet for Fired Clay Products.

Download from www.hepworthclay.co.uk

The relevant regulations detailed in the Health and Safety at Work Act 1974 must be adhered to on site.

Handling and trench safety

Take care when removing pipes from pipe packs to prevent damage or injury. The metal wires on 100/150mm pipe packs should NOT be cut at any time. See page 100 for the correct dismantling method.

For all sizes take care when cutting the plastic banding on pipe packs as they are under considerable tension and may flail when cut.

Follow the relevant guidance when digging trenches to prevent accidents from trench collapse.

Use the correct fencing and marking as required by the site.

Maintenance

Correctly designed and laid pipelines will need no maintenance with the possible exception of rodding to clear a blockage arising from misuse. Refer to the section on provision of access page 83 for guidance on the location and type of access needed.

An inherent advantage of vitrified clay drainage systems is that any type of drain clearing equipment, including power rodding, can be used, as only gross misuse could result in damage to pipes or fittings.

Clay drainage's resistance to high water pressure jetting means more blockages will be cleared first time with reduced risk. SuperSleve pipe has a Lifetime Jetting Guarantee* of 7,500 psi.

It is desirable that accumulated deposits should be removed periodically from gullies, the frequency of clearing depending on local observations. After clearing, traps should be flushed with clean water.

*When laid in accordance with our instructions and the requirements of the codes of practice and guides relevant to their use.

OSMA Plastic Pipes

Maintenance

The smooth bore of OsmaDrain pipes combined with their long lengths reduce the risk of blockages. However if a blockage does occur, use only flexible or roller type rods. Pointed or boring type metal fittings are NOT recommended. Tests have been carried out on PVC-U pipes and fittings from specialist drain cleaning contractors and their normal equipment is suitable. Do not use specialist cutting attachments.

Building Regulations and Local Authority Bylaws state that rodding eyes must be provided to give ready access to underground drains for maintenance and cleaning.

Check the complete drainage system periodically and clean, making good any defects if necessary.

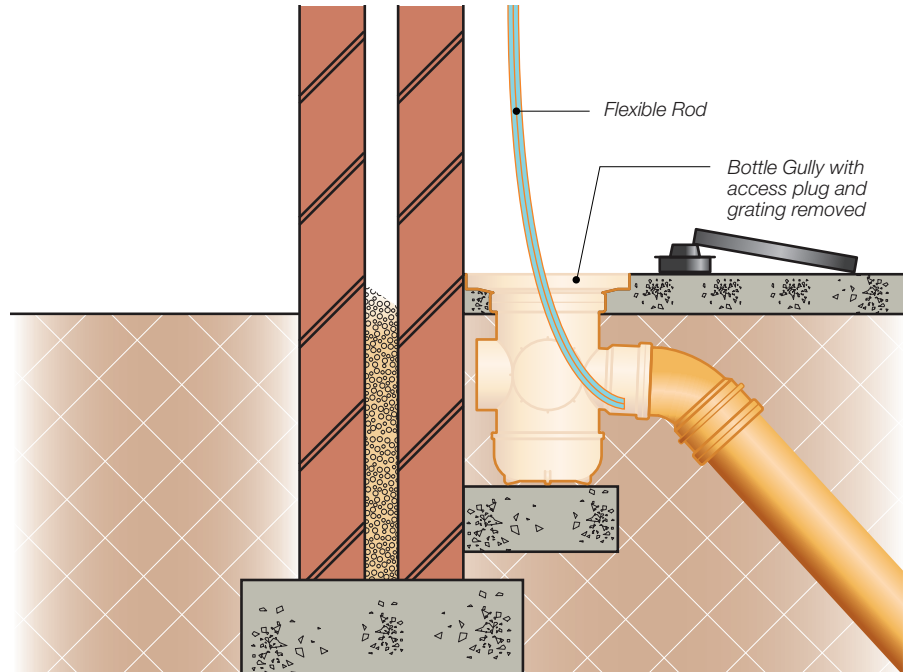
Bottle Gully

The OsmaDrain Bottle Gully allows easy rodding of the drain through the Gully itself. Using the Bottle Gully saves the expense of providing a bend with access plus a purpose made cover and frame (See Figure 39).

To obtain access to the drain, lift the grating by inserting a screwdriver under its edge, and simply lever out the removable access plug (See Figure 39).

Before replacing the plug, clean all mating surfaces.

Figure 39: Rodding through Bottle Gully



Water jetting

For guidance on good working practice when using water jetting equipment for the unblocking and cleaning of all types of drains and sewers refer to the WRc Sewer Jetting Code of Practice. 2nd Edition, Sections 5.4.2., 5.4.3. and 5.4.4.

Copies are available from:

Publications
WRc plc
Frankland Road
Blagrove
Swindon
SN5 8YF

Tel: 01793 511711

Email: Publications@wrplc.co.uk

Hydro WMS Soakaway Tank

Hydro Water Management Solutions Maintenance Requirements

Regular inspection and maintenance is required to ensure the effective long term operation of below ground modular storage systems. The following table details the recommended maintenance requirements for modular systems.

Maintenance schedule	Required action	Frequency
Regular maintenance	Inspect and identify any areas that are not operating correctly. If required take remedial action.	Monthly for 3 months then annually
	Debris removal from catchment surface (where may cause risk to performance)	Monthly or as required
	Remove sediment from pre-treatment structures and/or manifold connections	Monthly or as required
Remedial actions	Repair/rehabilitation of inlets/outlets, overflows and vents	Annual inspection or 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	Annually and after large storms

The maintenance plan and schedule should be developed during the design phase. Specific maintenance requirements should be identified based on upstream drainage sedimentation controls and the schedule developed to suit these needs.

Maintenance details should be detailed in the project Health & safety file and a risk assessment should be undertaken and recorded.

Note,

It is generally recommended that the cells be flushed through with large volumes of water under low pressure.

Certain modular units will allow higher pressure jetting to remove larger objects or heavier deposits of sediment. These modules can be accessed via integral access chambers (where applicable) and surveyed/flushed in a linear fashion or alternately water can be flushed/jetted through via the inlet/outlet pipe connections.

Hydro Water Management Solutions Ltd

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Tel: 01614 563476 Fax: 01614 565820 Email: sales@hydro-wms.co.uk