Private Drainage Notes:

1. Inspection chamber covers and frames as follows:-

Brickwork and pre-cast concrete:

i) Private drives accepting vehicle traffic: BS EN124 class D400, 600mm clear opening, solid top cover and frame.
ii) Footpaths, verges and gardens: BS EN124 class B125, 600mm clear opening, solid top cover and frame.

Polypropylene:

iii) Areas accepting vehicle traffic: Class B
iv) Soft landscaped areas: Class C

2. Mortar haunching to inspection chamber and frames.

3. i) For use with brick inspection chambers in non adopted roads, private drives, footways and verges; heavy duty (150mm nominal thickness) precast reinforced concrete cover slab to BS 5911, bedded on 10mm thick mortar bed; or 150mm grade C25P in-situ concrete (reinforced with A393 mesh to BS 4483) cover slab.
Other locations inaccessible to vehicles; light duty (75mm nominal thickness) precast reinforced concrete cover slab to BS 5911, bedded on 10mm thick mortar bed; or 100mm grade C25P in-situ concrete (reinforced with A193 mesh to BS 4483) cover slab.
ii) For use with precast concrete inspection chambers in non adopted roads, private drives, footways and verges; heavy duty (150mm nominal thickness) precast reinforced concrete cover slab to BS 5911, of size and type to suit chamber sections.
Other locations inaccessible to vehicles: light duty (75mm nominal thickness) precast reinforced concrete cover slab to BS 5911, of size and type to suit chamber sections.

4. With precast or brick inspection chambers, cover slabs with a clear opening of 600x600mm are required. Offset to suit chosen face for step rungs.

5. 215mm thick walls in Class B engineering bricks to BS 3921 layered in English bond with frogs up. Inner faces to be plumb and in true alignment. Brick course to be level. Flush jointing to brickwork inner faces and precast concrete chamber sections to BS 5911.

6. All step rungs to BS 1247

i) General purpose pattern (with 230mm tail) to be built into chamber wall of brick inspection chambers.

ii) Precast concrete manhole pattern "let in" to chamber wall of precast inspection chambers. All step rungs to be horizontally and vertically staggered as shown on section x-x. Step rungs are not required to either type of inspection chamber where depth to soffit is less than 750mm.

7. Mass concrete infill.

8. Benching to rise vertically from edges of channel to a height not less than pipe (full section) soffit level. Steel float smooth hard surface with cement mortar 1:1 mix, 25mm thick.

9. 50mm min. thick mortar bed to half round channels.

10. 150mm min. thick mass concrete base slab (grade C20P) to precast, uPVC and brick types of inspection chamber.

11. 75mm thick lean mix concrete blinding.

12. Minimum of 2, and maximum of 4 courses of 215mm thick engineering bricks (Class B) to underside of cover & frame, built off cover slab, may be required to facilitate road or drive construction.

13. A brick relieving arch shall be turned over all pipes where they pass through the walls of a brick inspection chamber.

14. Pipes entering inspection chambers shall have a flexible joint within 150mm of the outer face of the brickwork or concrete surround.

15. Channel junctions within brick or precast concrete inspection chambers to be half round channel sections.

16. Backfill material to be as detailed above for normal pipe bedding.

17. Following the flexible joint from either a precast or brick inspection chamber (note 14 above) a `rocker' pipe of 600mm length shall be installed.

18. Precast concrete inspection chambers may (if chosen for use) have a purpose made base units.

19. Where precast concrete inspection chambers are constructed wholly above the water table, joints are to be sealed with mortar. In waterlogged ground or where the water table is above the base slab, joints are to be water tight using a mastic sealant or rubber rings of a type suitable to the chamber units.

Private Drainage Notes:

1. Formation of trench beds and inspection chambers

i) Excavate immediately before laying beds and pipes or base slabs for inspection chambers.

ii) Remove all mud, rock projections, boulders and hard spots and replace with well compacted selected fill. Localised soft spots are to be hardened by tamping in granular bedding material.

iii) If oil contamination is found adjacent to trench, the trench profile is to be cut back by 150mm from the face of bedding material and replaced with crushed concrete.

2. Concrete and mortar

i) The concrete used to surround pipes and in the construction of gullies and inspection chambers is to be grade C20P (unless noted otherwise) and mixed using SRPC unless directed otherwise by the engineer or local authority. Sulphate resisting cement is to be used for in-situ or precast concrete and mortars to foul drains.

3. Covers and frames

All inspection chamber cover and frames are to be laid to have the top surface in alignment with both the longitudinal and transverse gradients of adjacent roads, drives, footways and verges. They are otherwise to be laid level. All cover levels as shown on the drainage layout/longsection are approximate. Actual cover levels are to be determined on site from the position in the road, drive, footpath or otherwise.

4. Pipes to as follows:

Pipe dia. (mm)	Type	Remark
100 Internal (110 NOM. dia.)	uPVC	BS EN 1401
150 Internal (160 NOM. dia.)	uPVC	BS EN 1401

5. The contractor/devloper is to ensure that all of the works comply with the following:

i) BS 8301: 1985 (code of practice for building drainage)

ii) The Building Regulations: Approved Document H 2002

iii) NHBC Technical requirements

iv) BRE Digest No. 363

6. The storage and installation of all proprietary drainage items used are to be strictly in accordance with the manufacturers instructions.

7. All uPVC items as specified on this drawing are to comply with BS EN 1401.

8. Mortar
Mortar shall be mixed only as and when required, the relevant proportions indicated in the following table, until its colour and consistency are uniform. The constituent materials shall be accurately gauged, allowance being made for bulking of sand.

Alternative Nominal Mixes by Volume		
Cement:Lime:Sand	Cement:Sand	Cement:Sand with plasticiser
1 : $\frac{1}{4}$: 3	1 : 3	1 : 2$\frac{1}{2}$ to 3

9. Ready-mixed lime: Sand for mortar and ready-to-use retarded mortar shall comply with the relevant provisions of BS 4721 and to be of category 1.12 and designation (i) respectively.

10. All mortar shall be conveyed fresh to the works as required for use. Mortar which has begun to set or which has been site-mixed for a period of more than 1 hour shall not be used. Plasticising and set retarding mortar admixtures shall comply with BS 4887: part 1 and 2, respectively and shall be supplied with instructions for use.

11. Crushed natural stone and shall comply in all respects with BS 1200.

Minimum Dimensions for Access Fittings and Inspection Chambers

Type	Depth to invert from cover level (m)	Internal dimensions		Cover dimensions	
		Length (mm) x width (mm)	Circular dia. (mm)	Length (mm) x width (mm)	Circular dia. (mm)
Rodding eye		As drain but 100 min.			Same size as pipework.1
Access fitting Small 150 dia. 150x100 Large 225x100	0.6 or less, except where situated in a chamber	150x100 225x100	150 225	150x100.1 225x100.1	Same size as access fitting
Inspection chamber shallow Deep	0.6 or less 1.2 or less >1.2	225x100 450x450 450x450	190.2 450 450	- MIN. 430x430 MAX 300x300.3	190.1 430 access restricted to max 350.3

NOTES
1. The clear opening may be reduced by 20mm in order to provide proper support for the cover and frame.
2. Drains up to 150mm.
3. A larger clear opening cover may be used in conjunction with a restricted access. the size is restricted for health and safety reasons to deter entry.

Table of Protection Requirements Relative to Cover

Location	Gardens (no traffic loading)		Paved or hard surfaces (light traffic loading)		Roads (carriageways & footways)	
Cover (mm) [from barrel of pipe]	Less than 600	More than 600	Less than 900	More than 900	Less than 900	More than 900
Type of protection required	Reinforced conc. or paving slab bridging	None	Reinforced conc. or paving slab bridging	None	Concrete surround	None

Notwithstanding these requirements the contractor is to give further consideration to the protection of drainage items from construction traffic and building works

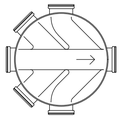
Materials for Access Points

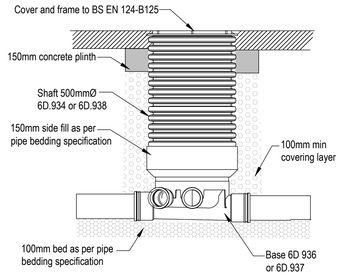
Material	British Standard
1. Inspection chambers and manholes.	
Clay brick & blocks	BS 3921
Vitrified clay	BS EN 295, BS 65
Concrete-precast	BS 5911
Concrete-in situ	BS 8110
Plastics	BS 7158
2. Rodding eyes and access fittings (excludes covers and frames).	As pipes refer to materials for below ground drainage

Materials for Below Ground Drainage

Material	British Standard
1. Rigid pipes:	
Vitrified clay	BS 65, BS EN 295
Concrete	BS 5911
Grey iron	BS 437
Ductile iron	BS EN 598
2. Flexible pipes:	
UPVC	BS EN 1401*
PP	BS EN 1852*
Structure walled Plastic pipes	BS EN 13476

*Application area code "UD" should normally be specified
Note
Some of these materials may not be suitable for conveying trade effluent.

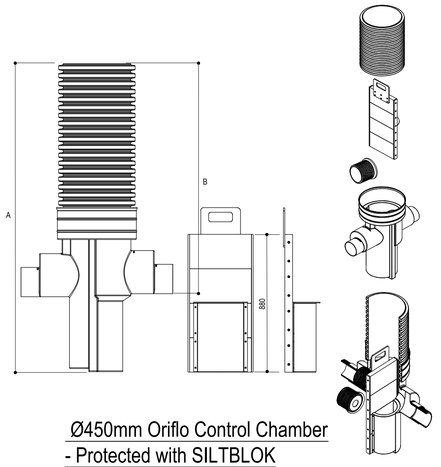




Polypropylene Shallow Inspection Chamber Ø450mm (Light Loading B125)

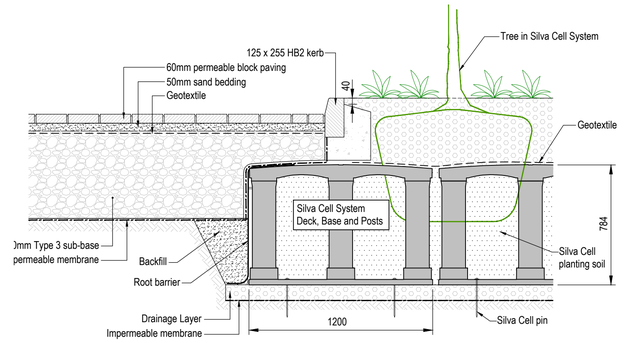
Scale 1:20

Note:
3m maximum depth. Up to Ø150mm pipework for 450mm shaft, or up to 300mm pipework on 500mm shaft. B125 maximum Loading, suitable for car parks and private drives



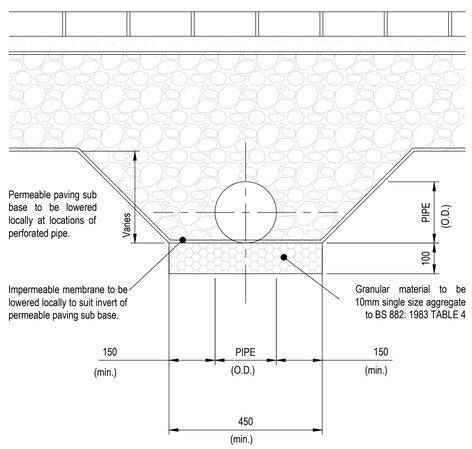
Ø450mm Oriflo Control Chamber - Protected with SILTBLOK

Not to Scale



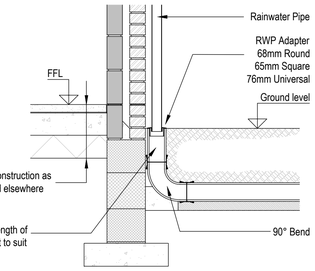
Section Through Tree Pit and Pavement Construction

Silva Cell System Detail 1200mm x 784mm
Scale 1:20



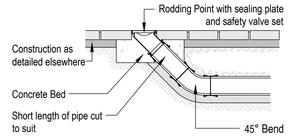
Perforated Pipe Bedding

Scale 1:10



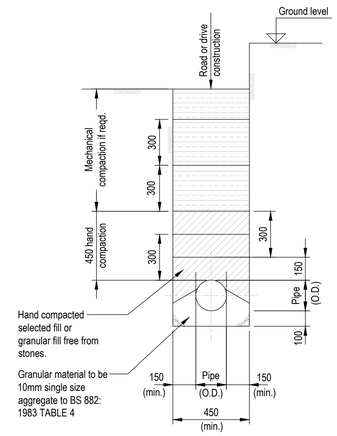
External RWP Connection

Scale 1:20



Rodding Point

Scale 1:20



Normal Bedding

Scale 1:20

Note:
Pipe protection is required by one of the three methods shown where cover is <600mm in un-trafficked areas and <900mm elsewhere.

Scale
As Shown

Issue	Notes	Drawn	Approved	Date
P2	Silva Cell System detail added	AH	BN	01.03.2024
P1	Preliminary Issue	AH	BN	13.09.2023

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Drawing Title
Proposed Drainage Construction Details

Project No.	Drawing No.	Issue
EX23/143/08	202	P2

PRELIMINARY

Original Sheet Size: A1