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- Any information given regarding existing underground services is given in good faith after consultation with the relevant authority, however accuracy is not certain. The main contractor is responsible for checking all information on site prior to work commencing and taking due care whilst undertaking the works.
- All dimensions to be checked on site. All details and dimensions relating to sub-contractors work must be checked and agreed between the sub-contractor or supplier and the general contractor.
- The electronic information from this drawing can not be guaranteed as dimensionally drawn exact. Figured dimensions must be used for setting out and detailing. BP Civils logos and company information must be removed from copies if information is re-used.
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- The client shall ensure that all licences, consents and approvals required to implement the works are in place prior to commencing construction.

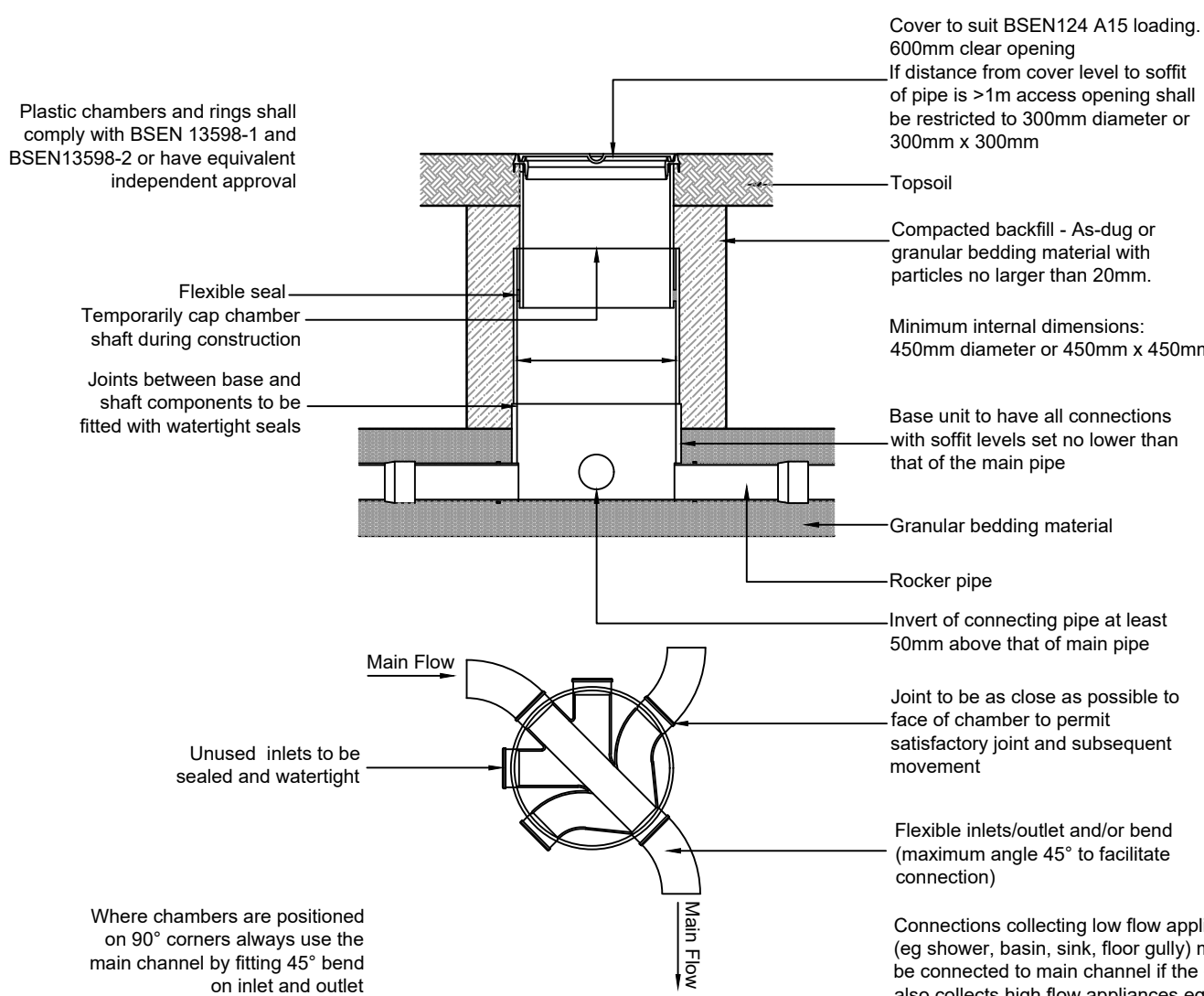
RESIDUAL HAZARDS

- In addition to the hazards/risks normally associated with the type of work detailed on this drawing, note the following:
- Buried services. Contractor to refer to record drawings and use CAT to locate existing services and undertake necessary precautions and investigation prior to excavating.
 - Working in live traffic. Contractor to ensure traffic management is designed, erected and maintained to protect the workforce and the public. Contractor to undertake necessary precautions and ensure suitable traffic management is in place prior to commencement.
 - Working in live sewers. Contractor to ensure operatives are familiar and competent with the dangers of working in live sewers.
 - Excavations close to existing structures. Contractor to prepare method statement to ensure stability of existing structure.

Appropriate risk assessments and method statements should be prepared to manage these risks as required.

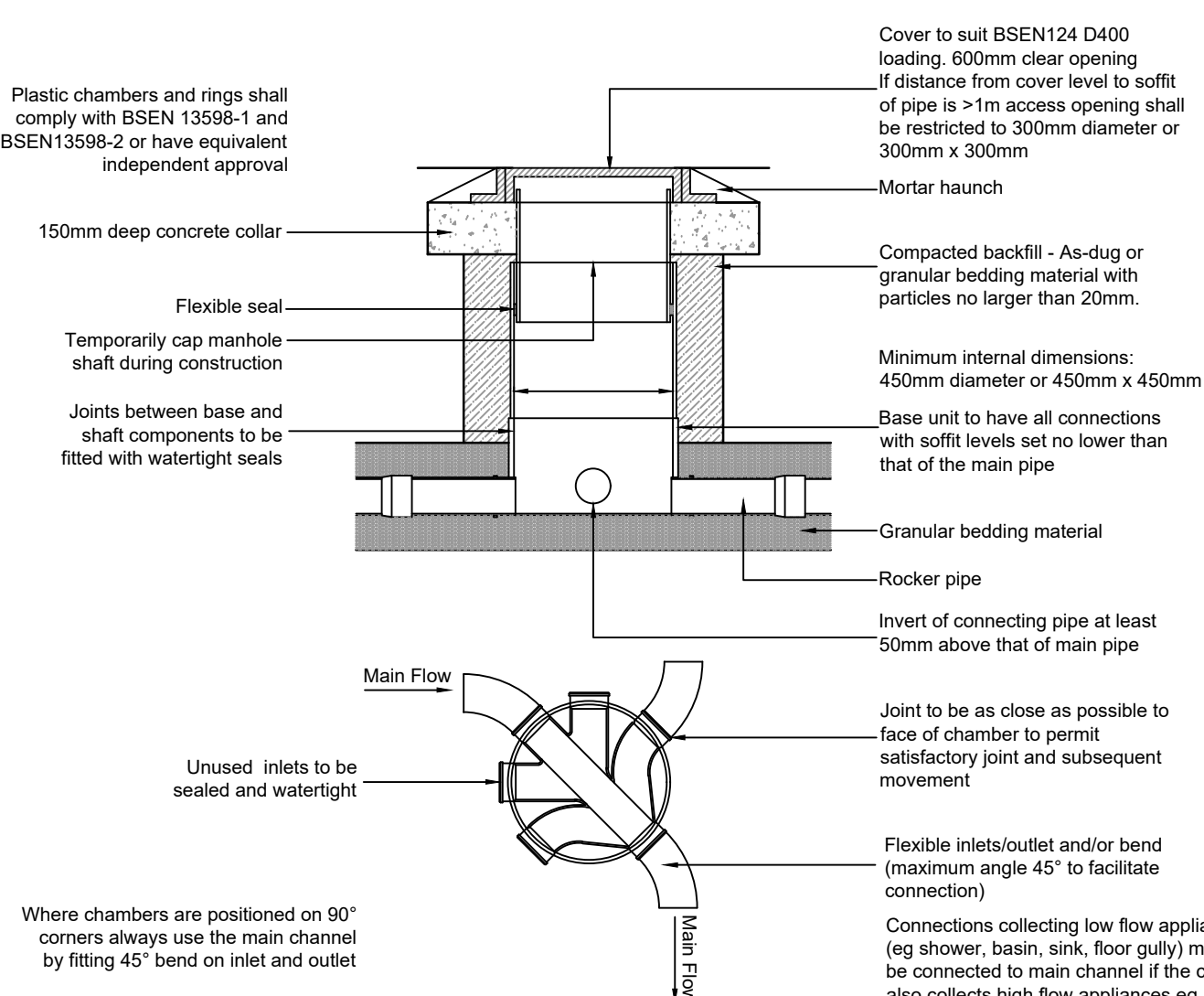
DRAINAGE NOTES:

- All drainage works to be constructed in strict accordance with specification of the Local Authority, Building Regulations, Design and Construction Guidance (published by Water UK), BS5301 & BSEN752-1.
- For location and setting out of building drainage points refer to architects drawings.
- All pipe runs near buildings to comply with the Building Regulations 2002 part H1. Where a pipe is within 1m of a foundation the trench shall be filled with class gen3 concrete up to the lowest level of the foundation. Where the trench is further than 1m from the foundation, the trench shall be filled with class gen2 concrete to a level below the lowest level for the foundation equal to the distance from the foundation less 150mm. In both cases the pipe shall be bedded and surrounded in 150mm thick class GEN3 concrete.
- Where pipes, external to the structures, have a depth to soffit from ground level of less than 450mm they shall have a class GEN3 concrete encasement (150mm thick).
- Where a pipe, under a carriageway, has a depth of cover of less than 1.2m the pipe shall be laid in a concrete bed and surround.
- In any circumstances where pipes are bedded and surrounded in concrete flexible joints should be provided. compressible boards (fibroboard or polystyrene) shall be provided at a maximum of 8m centres (coinciding with pipe joints). the boards shall be pre-cut to pipe diameter and to a height and width equal to the concrete cross section. a board thickness of 16mm for pipes up to 450mm nominal diameter and 30mm for pipes over 450mm nominal diameter.
- All private building drainage shall be constructed in strict accordance with BS EN 752-1. Foul drainage beneath the floor slab shall be laid, shall be laid no flatter than 1:40. Unless otherwise specified below ground building drainage external to the building shall be 100mm diameter and shall be laid at a minimum gradient of $<1\text{ in }6$ in 40 $>1\text{ in }6$ in 80 for foul drains and 1 in 80 for surface water drains.
- All building drains shall be laid in conjunction with 'non adoptive bedding details' (class d, n or b) unless otherwise specified.
- All pipes, bends and junction for private building drainage shall be UPVC conforming to BS4660, BSEN13598 and BS4660 as appropriate and shall be laid in accordance with the manufacturer's specification.
- All pipes, bends and junction materials for adoptable drainage shall be vitrified clay, extra strength or super strength to BS4660, with flexible joints and kitemark certified.
- All back inlet gullies to be roddable or connected to inspection chambers.
- All gully connections other than at manholes to be 'y' junctions.
- All road gully connections to be 150mm diameter.
- All stub stacks to be fitted with air admittance valves where branch drain exceeds 12m except at the head of the run. Soil vent pipes located at the head of a run to terminate to fresh air.
- No low point shall be without a method of drainage.
- All connections to be soffit to soffit unless otherwise noted.
- All concrete and concrete products to be in accordance with BRE 363 for subpates.
- The locations of all building drainage points shall be cross referenced against the architects drawings during setting out.
- Before connections are made to existing public sewers an application under 106 must be made to relevant sewerage undertaker.
- The precise depth and location and size of existing pipes, watercourses or manholes where connections or diversion are proposed must be confirmed and reported to the engineer before works commence on site.
- Existing drains - any existing drains to be abandoned to be decommissioned in view of building regulations by either building out, infilled or sealed.
- Should ground water be encountered on site during construction BPC shall be informed to determine if additional measures are required with regard to flotation.
- The drainage drainage system shall be fully cleaned on completion of the project using methods that ensure pollution off site does not occur.
- Any existing land drains severed during construction shall be reinstated.



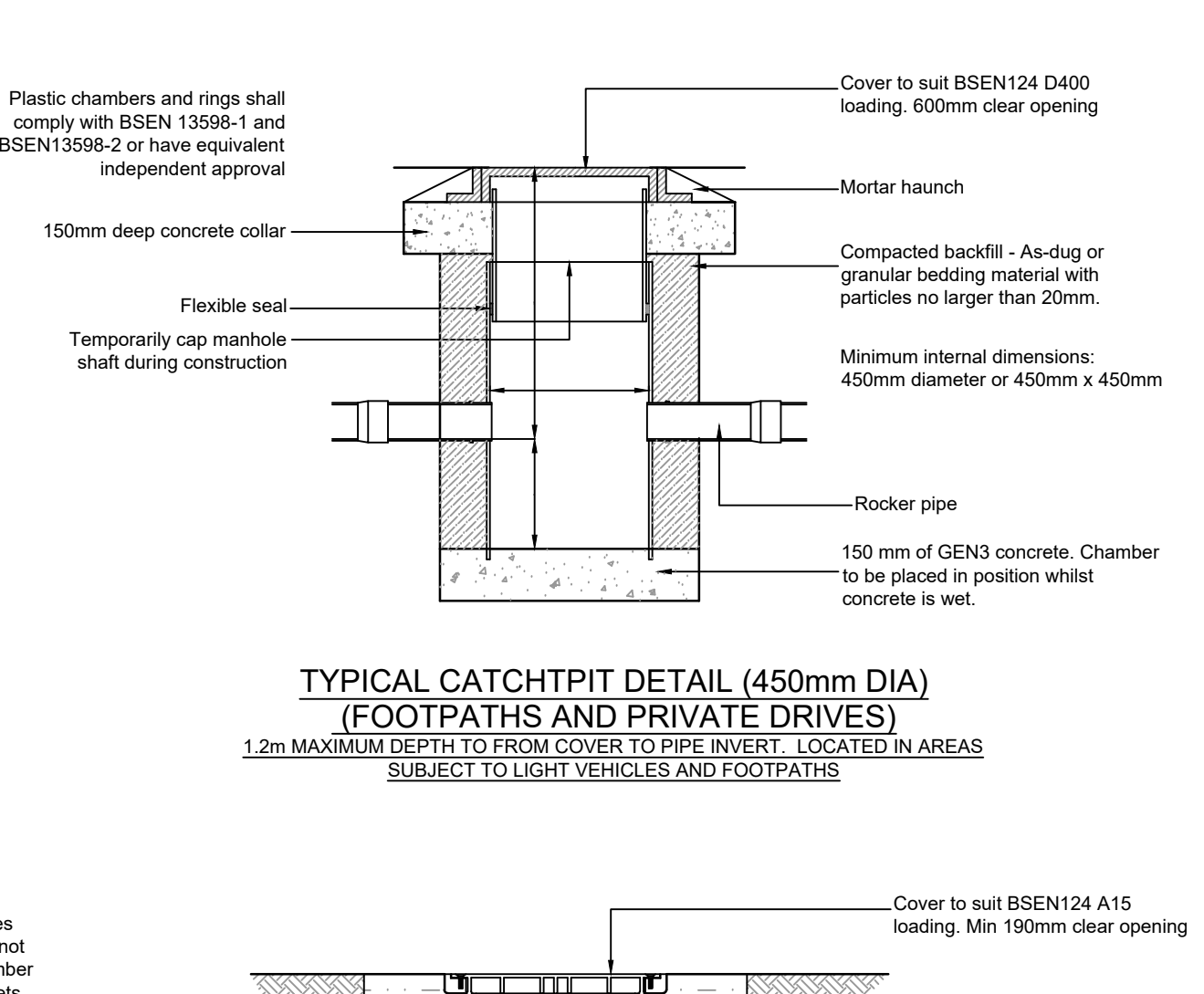
TYPICAL ACCESS CHAMBER DETAIL - TYPE 4 (LANDSCAPED AREAS)

1.2m MAXIMUM DEPTH TO FROM COVER TO PIPE INVERT. LOCATED IN LANDSCAPED AREAS



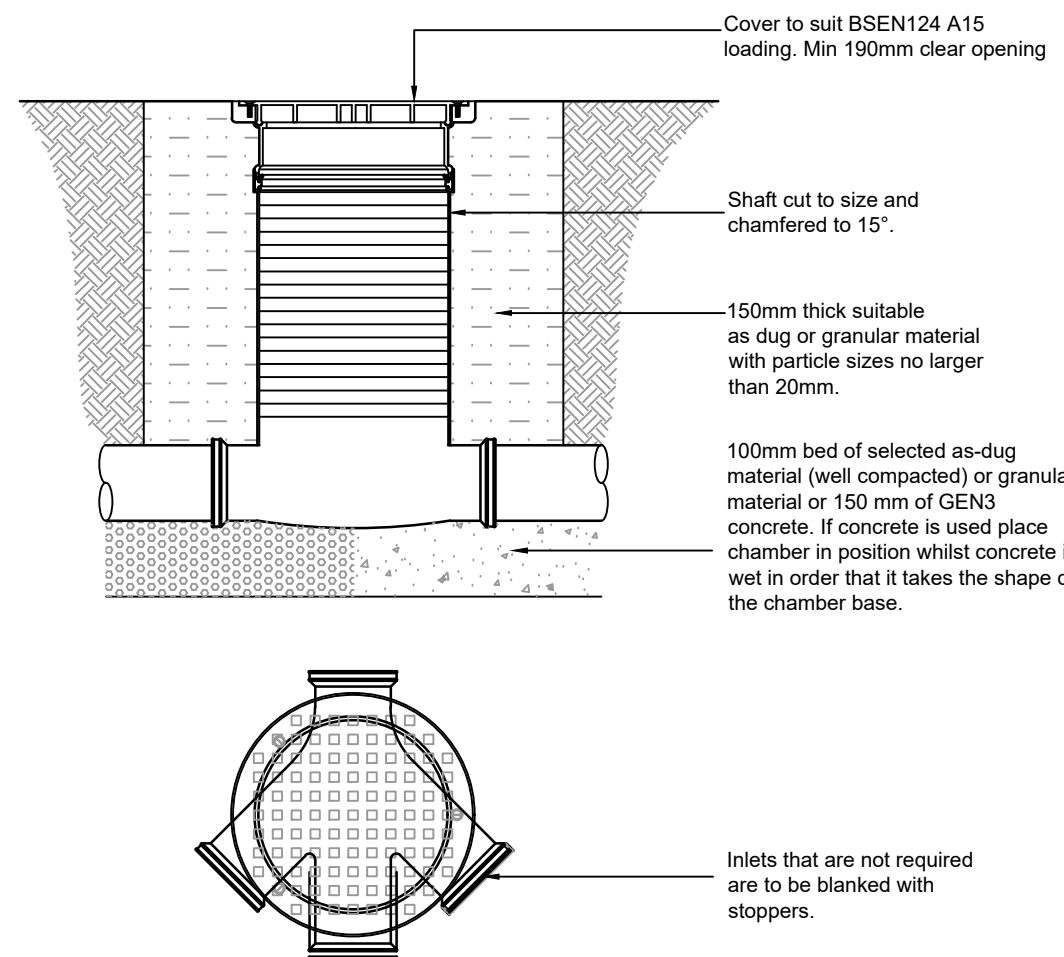
TYPICAL ACCESS CHAMBER DETAIL - TYPE 4 (FOOTPATHS AND PRIVATE DRIVES)

1.2m MAXIMUM DEPTH TO FROM COVER TO PIPE INVERT. LOCATED IN AREAS SUBJECT TO LIGHT VEHICLES AND FOOTPATHS



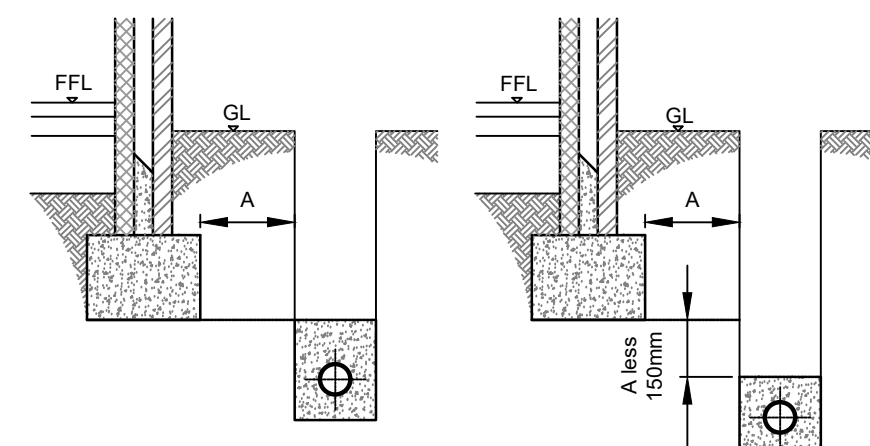
TYPICAL CATCHPIT DETAIL (450mm DIA) (FOOTPATHS AND PRIVATE DRIVES)

1.2m MAXIMUM DEPTH TO FROM COVER TO PIPE INVERT. LOCATED IN AREAS SUBJECT TO LIGHT VEHICLES AND FOOTPATHS



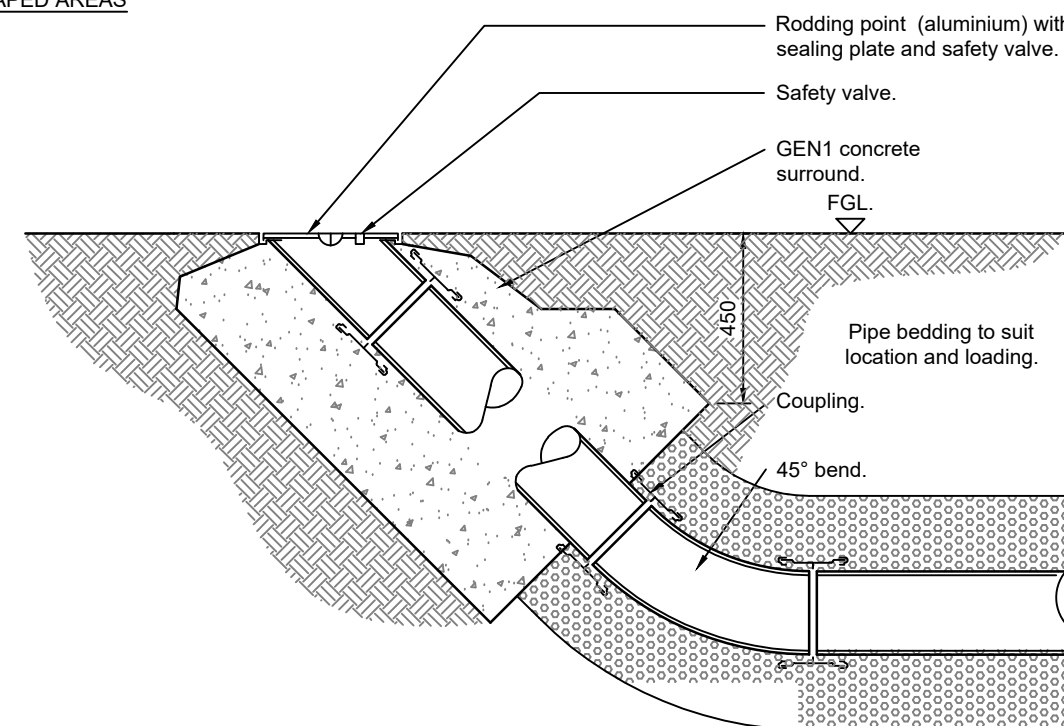
POLYPROPYLENE SHALLOW ACCESS CHAMBER DETAIL - TYPE 5

0.6m MAXIMUM DEPTH TO FROM COVER TO PIPE INVERT. LOCATED IN LANDSCAPED AREAS



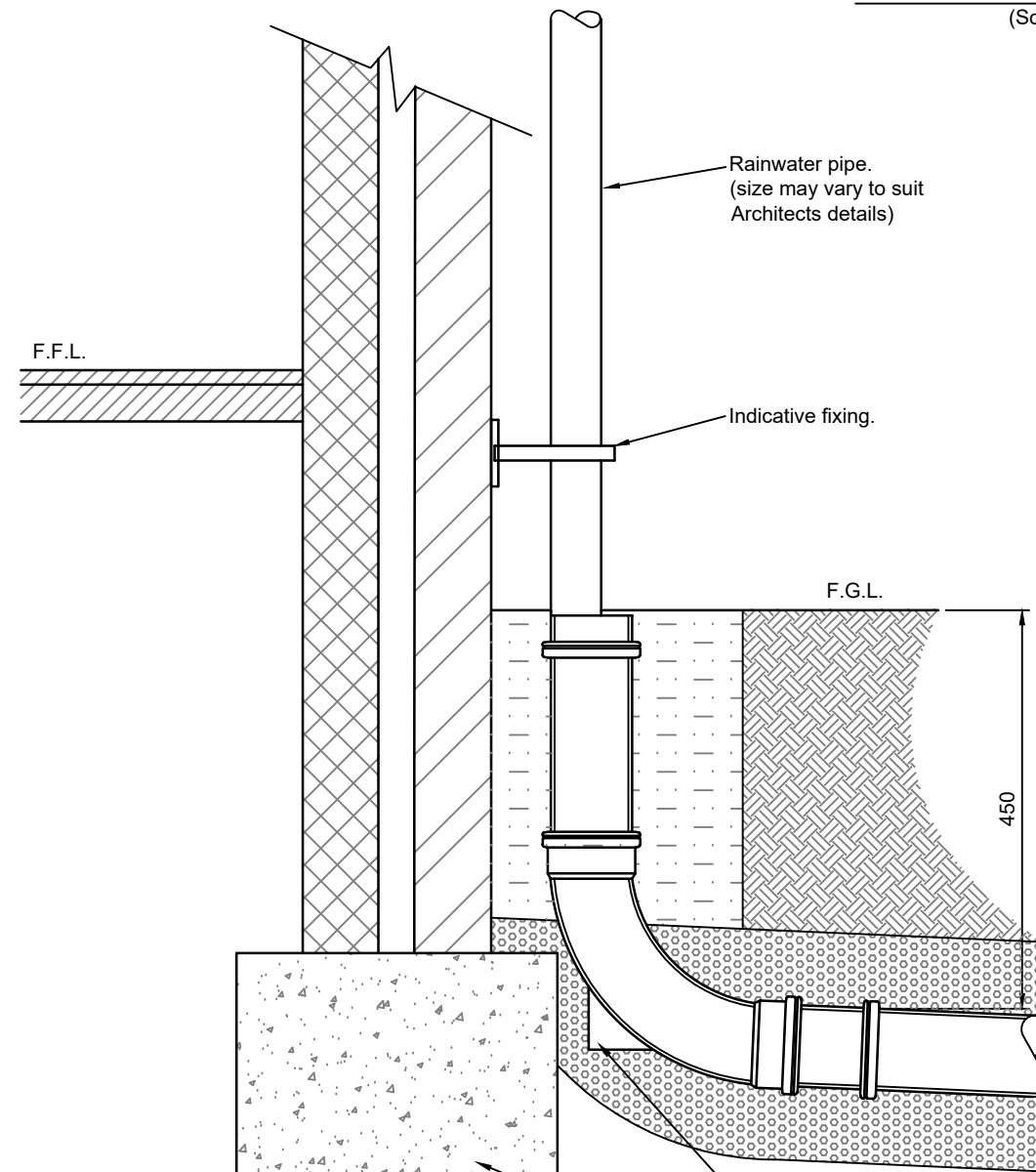
DETAIL OF PIPE RUNS NEAR BUILDINGS

(Scale 1:10)



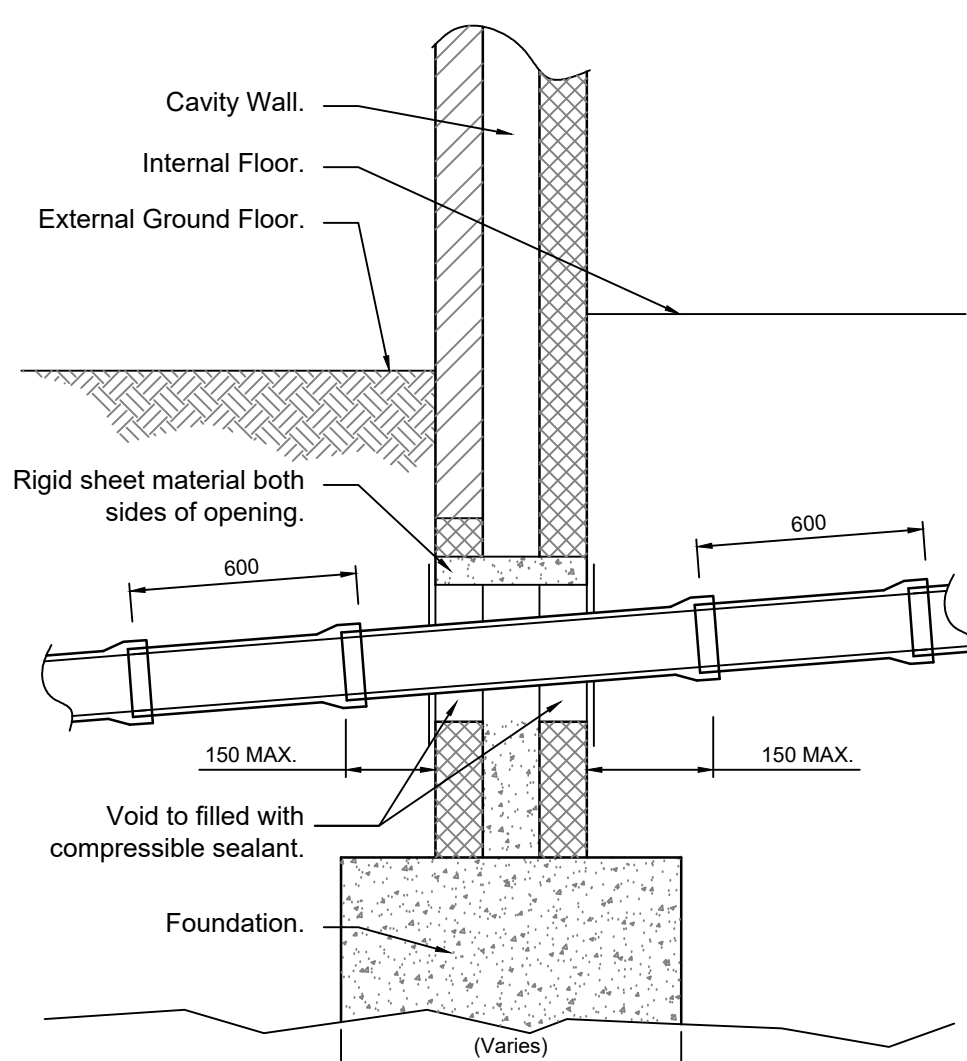
DETAIL OF RODDING EYE

(Scale 1:20)



DETAIL OF RAINWATER PIPE

(Scale 1:20)



TYPICAL SECTION PIPE PASSING THROUGH WALL PIPE THROUGH INTELLET OPENING

(Scale 1:20)

Table 11 Minimum dimensions for access fittings and inspection chambers

Type	Depth to invert from cover level (m)	Internal sizes		Cover sizes	
		Length x width (mm x mm)	Circular (mm)	Length x width (mm x mm)	Circular (mm)
Rodding eye	As drain but min. 100				Same size as pipework ¹
Access fitting small	150 diam.	0.6 or less, except where situated in a chamber	150 x 100	150	150 x 100 ¹
large	225 x 100		225	225 x 100 ¹	Same size as access fitting
Inspection chamber shallow	0.6 or less	225 x 100	190 ²	Min. 430 x 430	190 ¹
deep	1.2 or less > 1.2	450 x 450	450	Max. 300 x 300 ³	Access restricted to max. 350 ³

- Notes:
- The clear opening may be reduced by 20mm in order to provide proper support for the cover and frame.
 - Drains up to 150mm.
 - 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.

BUILDING REGULATIONS MINIMUM DIMENSIONS FOR ACCESS FITTINGS AND INSPECTION CHAMBERS

Table 12 Minimum dimensions for manholes

Type	Size of largest pipe (DN)	Min. internal dimensions ¹		Min. clear opening size ¹	
		Rectangular length and width	Circular diameter	Rectangular length and width	Circular diameter
Manhole					
< 1.5m deep to soffit	≤ 150	750 x 675 ²	1000 ¹	750 x 675 ²	na ³
	225	1200 x 675	1200	1200 x 675 ²	
	300	1200 x 750	1200		
	>300	1800 x (DN+450)	The larger of 1800 or (DN+450)		
> 1.5m deep to soffit	≤ 225	1200 x 1000	1200	600 x 600	600
	300	1200 x 1075	1200		
	375-450	1350 x 1225	1200		
	>450	1800 x (DN+775)	The larger of 1800 or (DN+775)		
Manhole shaft ⁴					
> 3.0m deep to soffit of pipe	Steps ⁵	1050 x 800	1050	600 x 600	600
	Ladder ⁶	1200 x 800	1200		
	Winch ⁶	900 x 800	900	600 x 600	600

- Notes:
- Larger sizes may be required for manholes on bends or where there are junctions.
 - May be reduced to 600 by 600 where required by highway loading considerations, subject to a safe system of work being specified.
 - Not applicable due to working space needed.
 - Minimum height of chamber in shafted manhole 2m from benching to underside of reducing slab.
 - Min. clear space between ladder or steps and the opposite face of the shaft should be approximately 900mm.
 - Winch only - no steps or ladders, permanent or removable.
 - The minimum size of any manhole serving a sewer (i.e. any drain serving more than one property) should be 1200mm x 675mm rectangular or 1200mm diameter.

BUILDING REGULATIONS MINIMUM DIMENSIONS FOR MANHOLES