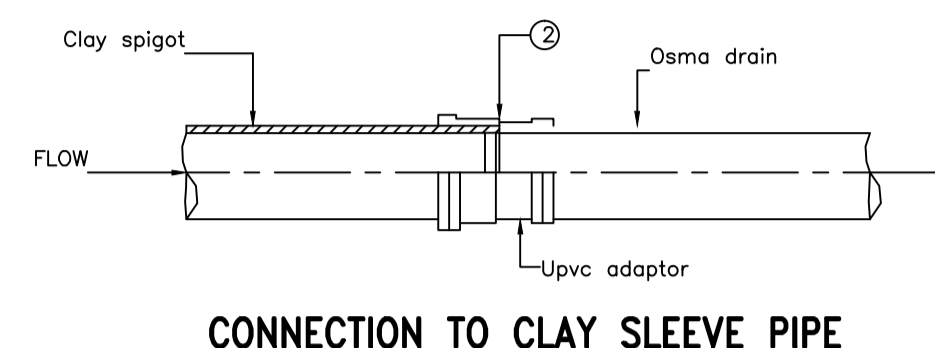
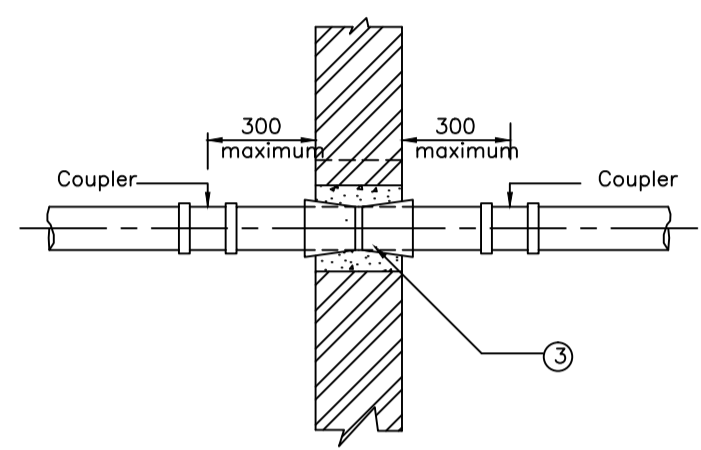


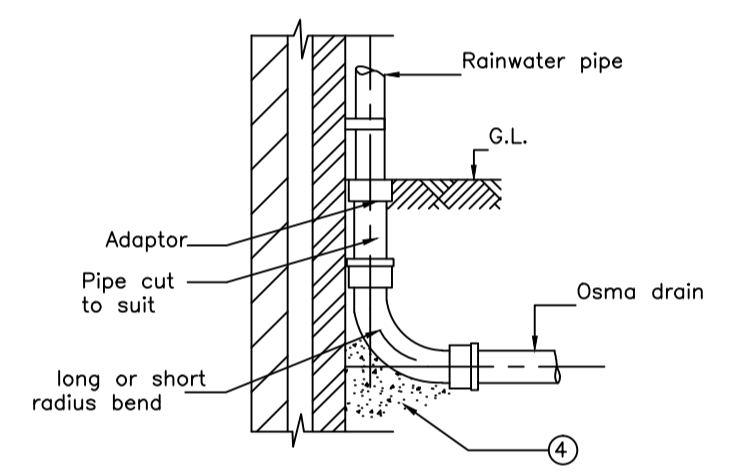
CONNECTION TO CLAY OR CAST IRON SPIGOT



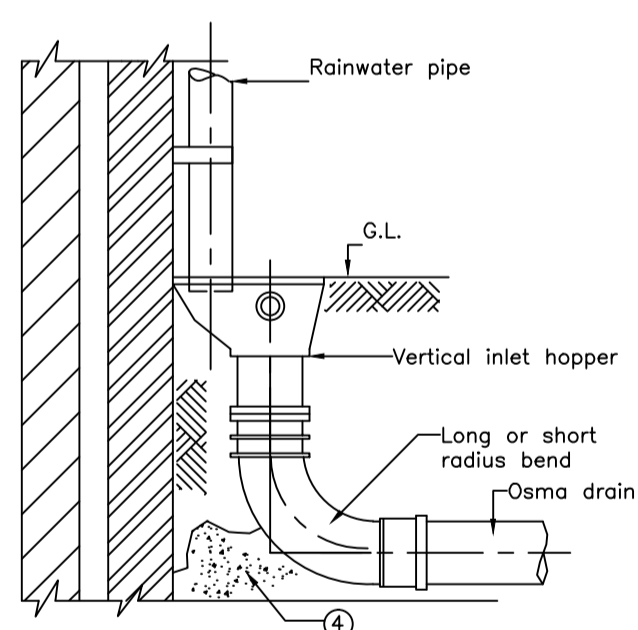
CONNECTION TO CLAY SLEEVE PIPE



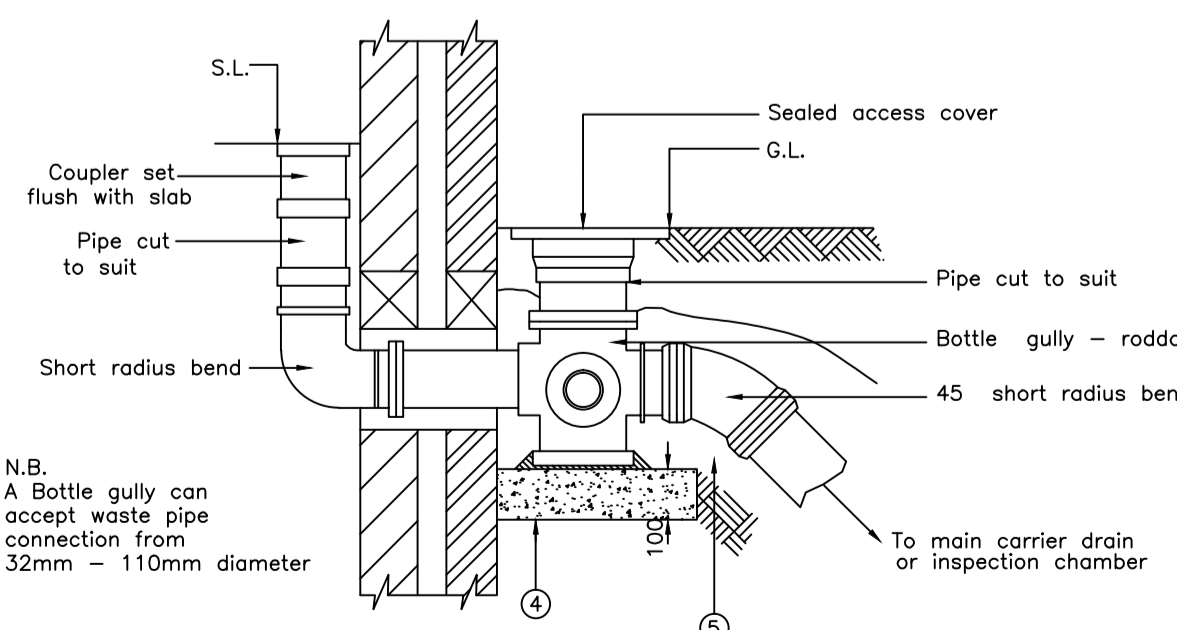
WALL PROTECTION SLEEVE



RAINWATER PIPE CONNECTION TO DRAIN

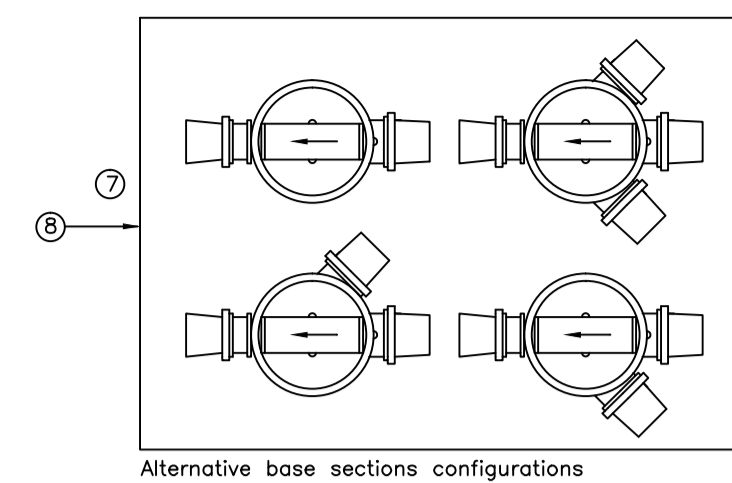


UNIVERSAL GULLY WITH VERTICAL INLET

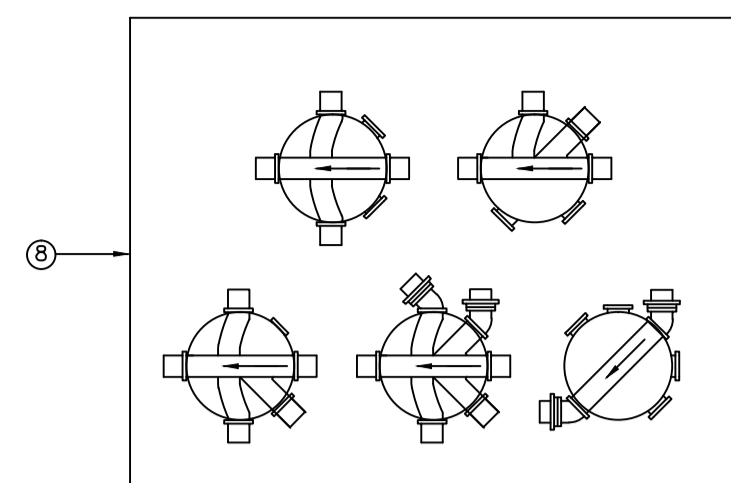


BOTTLE GULLY AS BACK INLET CONNECTION

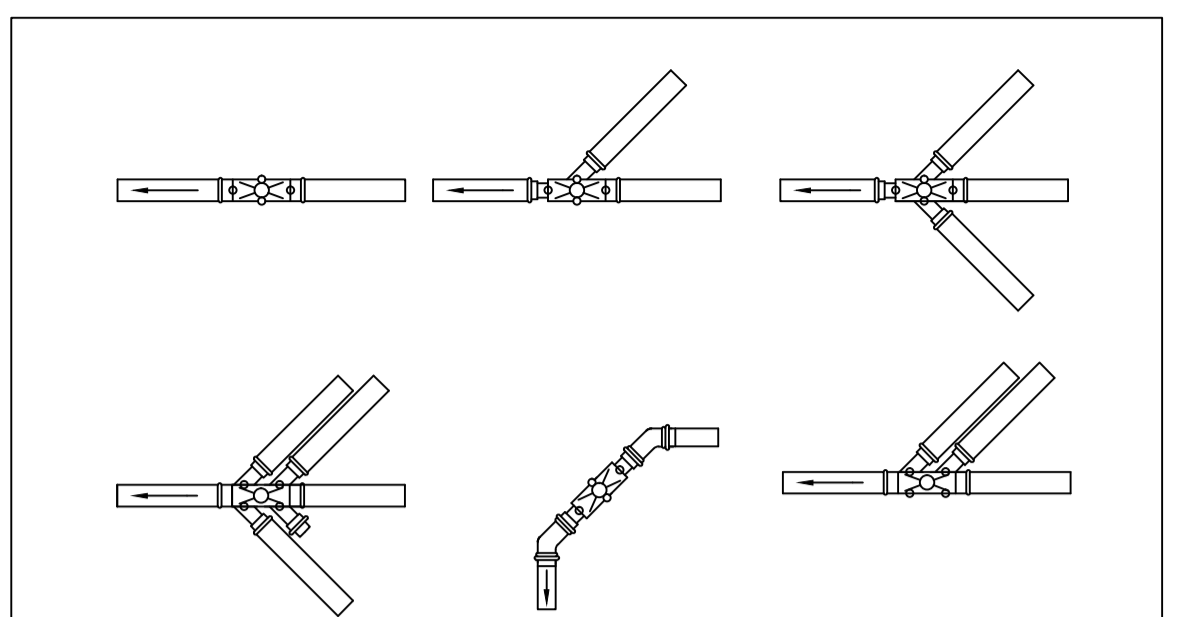
N.B. A bottle gully can accept waste pipe connection from 32mm - 110mm diameter



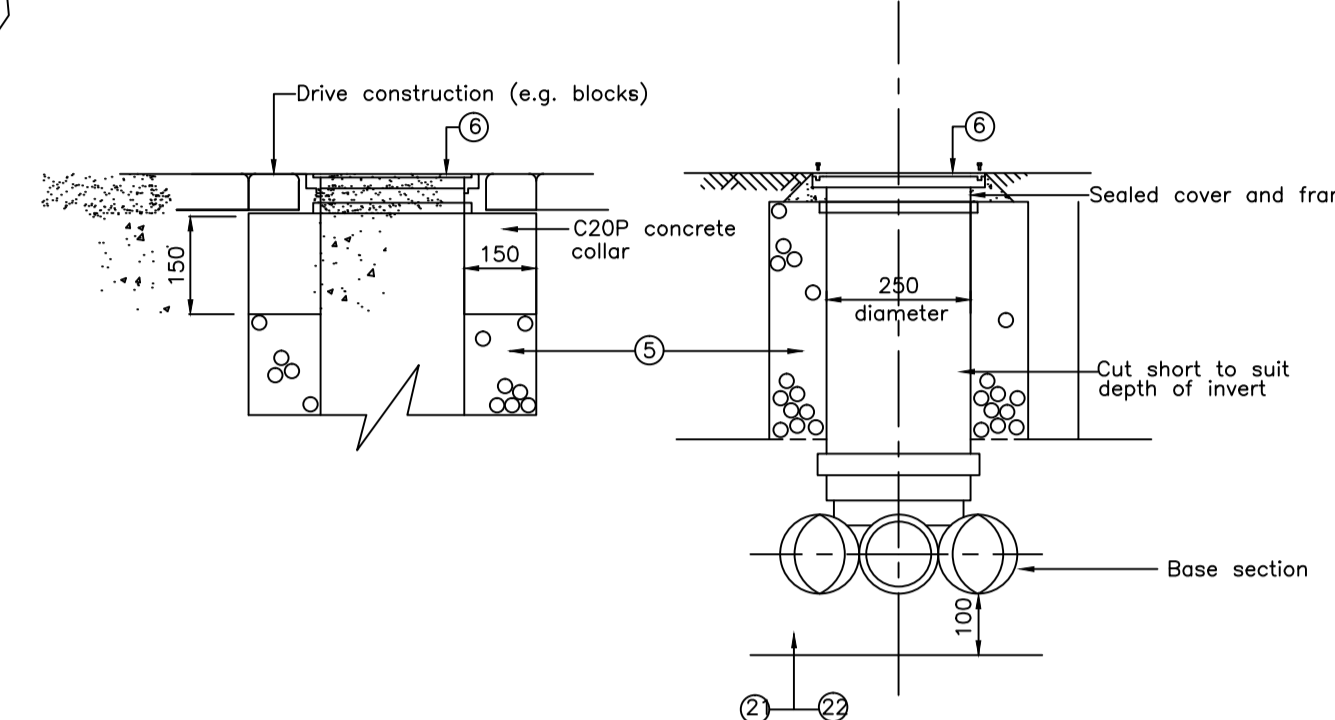
Alternative base sections configurations



Alternative connections

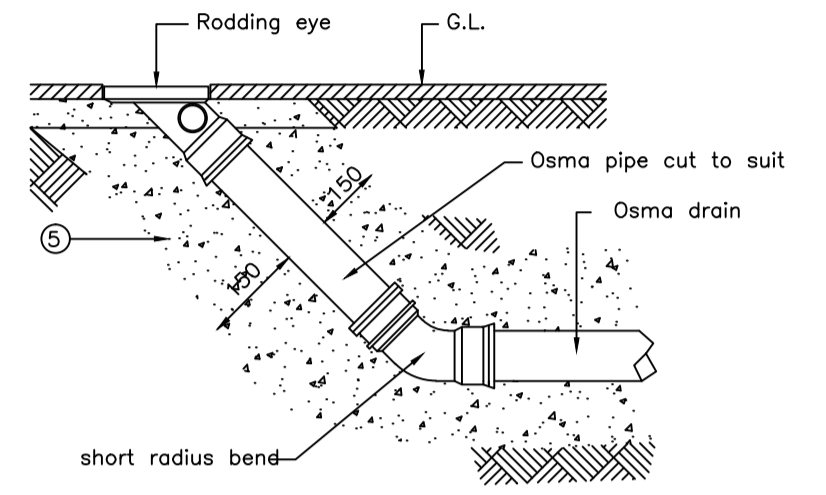


Alternative sealed access fittings configurations and connections

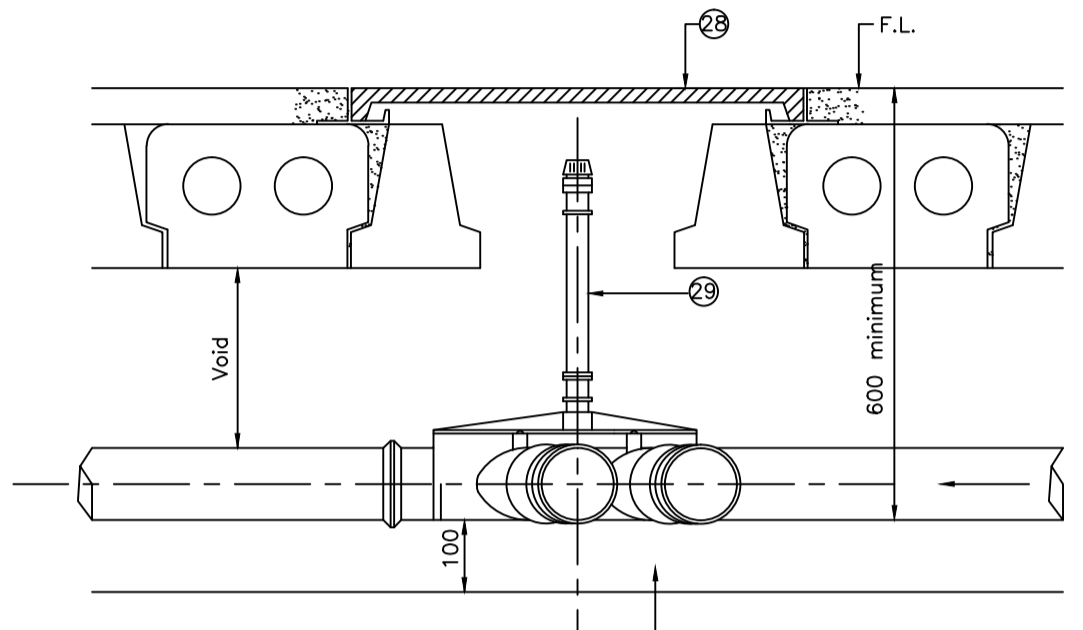


SHALLOW INSPECTION CHAMBER

For invert depths up to 600mm MAX

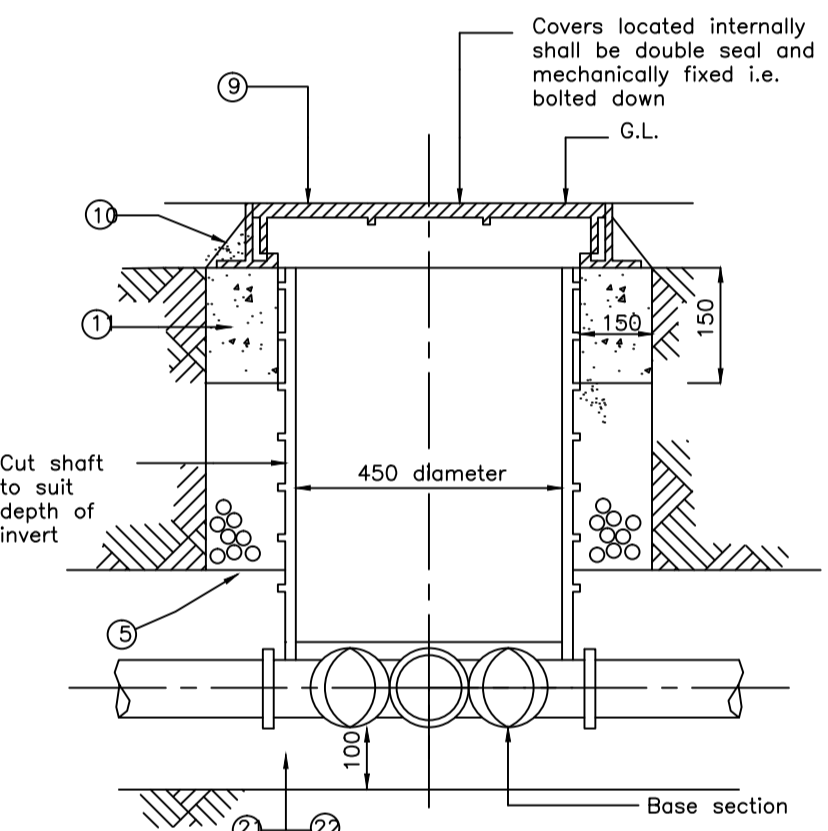


RODDING EYE



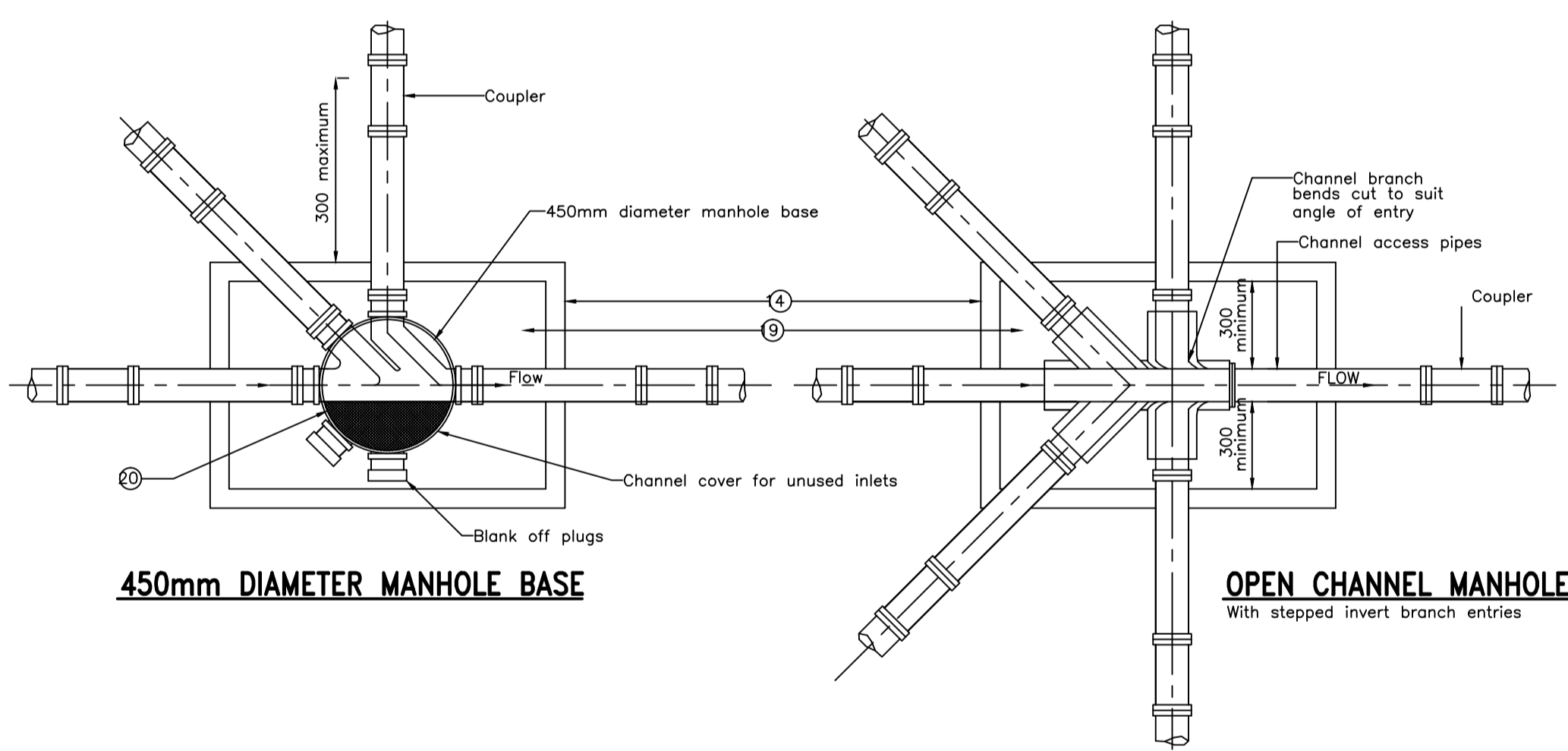
SEALED ACCESS FITTING

For use internally below suspended floors



UNIVERSAL INSPECTION CHAMBER

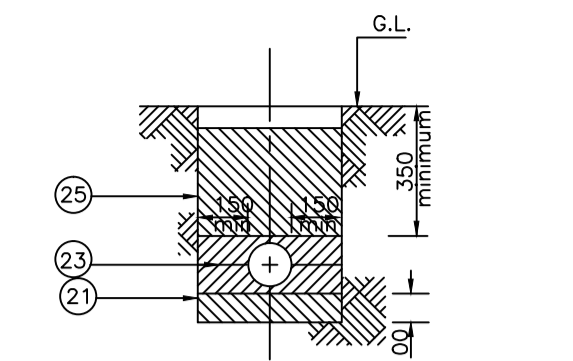
For invert depths up to 3.0m MAX



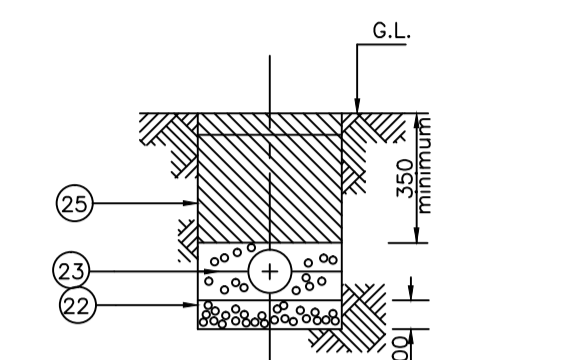
450mm DIAMETER MANHOLE BASE

OPEN CHANNEL MANHOLES

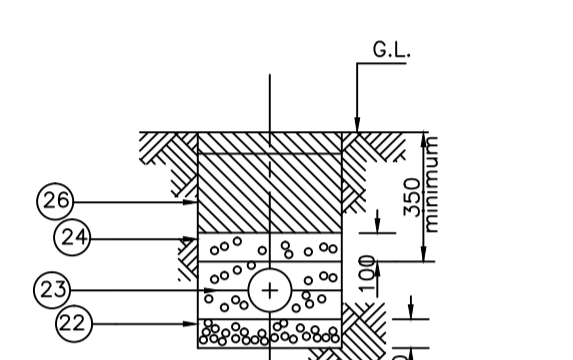
With stepped invert branch entries



PIPES BEDDED IN SUITABLE 'AS DUG' MATERIAL

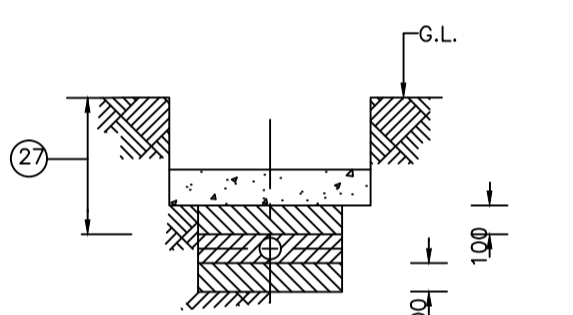


PIPES BEDDED IN GRANULAR MATERIAL

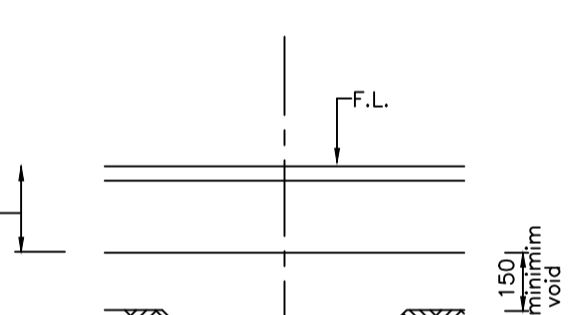


PIPES BEDDED AND SURROUND IN GRANULAR MATERIAL

Used where 'as dug' is unsuitable



PIPES PROTECTED FROM SURFACE LOAD



PIPES BENEATH CONCRETE SUSPENDED FLOORS

KEY CONTINUED

- 28. Grade 'B' class 2 single seal cover and frame 600 x 450mm.
- 29. 32mm diameter standpipe fitted with removable access plug to allow visual inspection.
- 30. Well compacted fill under pipe run using suitable 'as dug' material (see general notes).

Type of Access	Depth to invert (m)	Minimum internal dimensions		Minimum nominal cover size		Remarks
		Rectangular length and width	Circular diameter	Rectangular length and width	Circular diameter	
Inspection chamber	<0.6 >1.0	450 x 450	190 450	450 x 450	190 450 (a)	
Manholes or inspection chamber	<1.5	1200 x 750	1050	600 x 600	600	
	>1.5	1200 x 750	1200	600 x 600	600	
Manhole access (b) shaft	>2.7	900 x 840	900	600 x 600	600	(c)

- (a) In the case of clayware and plastic inspection chambers, the clear opening may be reduced to 430mm in order to provide proper support for the cover and frame.
- (b) Minimum height of chamber in access shaft manhole is 2.0m from crown of pipe to underside of reducing slab.
- (c) Manholes to be constructed in accordance with the current publication 'Sewers for Adoption'.

- Drainage Notes**
1. Upvc connection to Clay Sleeve Pipe. Lubricate spigot of clay pipe and fit a upvc adaptor. Insert the upvc pipe spigot in the standard way.
 2. Wall protection sleeves used to protect pipes in passing through walls, other than at manholes, surrounded with mortar or concrete.
 3. 100mm bedding of C20P concrete.
 4. 150mm surround of well compacted (by hand tamped) granular material of 10mm nominal single size aggregate or suitable 'as dug' material (see general notes).
 5. Cover and frame to shallow inspection chambers will only withstand Grade 'C' loadings. Provide 150mm square C20P concrete collar if located in private drives.
 6. Shaft may be cut with a fine toothed saw and chamfered to accept cover assembly to suit depth of invert.
 7. 50l 'Tyc' (200mm) x 77 'A' (100V) UPVC (VdL) (1) s maximum by use of appropriate bend.
 8. Grade 'B' Class 2, or Grade 'C' cover and frame, dependant on location of I.C. (Grade B where vehicular access is necessary and Grade 'C' in soft landscape areas)
 9. Cover and frame bedded on and haunched with 1:3 mix mortar.
 10. C20P concrete collar 150mm square to provide bed for frame. When using Grade 'B' cover shutter external ribs to universal I.C.
 11. Class B engineering brickwork in stretcher bond 2 courses minimum (150mm), 3 courses maximum (225mm) and/or precast concrete frame sealing rings.
 12. Precast concrete light duty cover slab to BS5911 with 600 x 600mm offset access, bedded with mortar proprietary bitumen or resin mastic sealant.
 13. Precast concrete shaft to BS5911, 1200 x 750mm or 1200mm diameter minimum internal dimensions, sections to be bedded and sealed with mortar. If groundwater encountered then proprietary bitumen or resin mastic sealant, e.g. Tokstrip shall be used. Where depth to invert is less than 1.5m then a 1050mm diameter chamber may be used.
 14. Maximum 675mm from cover level to first step iron/ladder rung.
 15. Step irons to BS1247 at intervals of between 250mm and 300mm centres, in two vertical runs staggered at 300mm centres horizontally. The lowest step iron being not more than 300mm above benching. Ladders are to be used for invert depths exceeding 3.0m to BS4211.
 16. 150mm surround of well compacted 'as dug' or granular material in 200mm layers by hand tamping. Where inspection chambers/manholes are constructed in unstable ground or are likely to be subjected to wheel loads then a 150mm surround of C20P concrete shall be provided. Any joints should be staggered to chamber joints.
 17. Base of C20P concrete, 150mm thick.
 18. Benching of C20P concrete, to provide a slope of 1 in 12 topped with a hand smooth surface of 1:3 cement mortar.
 19. Manhole base to be bedded on 150mm thick C20P concrete and benched up to top flange and in accordance with note 19.
 20. 100mm bedding of suitable 'as dug' material well compacted. See general notes for description.
 21. 100mm bedding of granular material, 10mm nominal single size aggregate, well compacted.
 22. 150mm minimum width of side fill material (similar to bedding material) well compacted in 100mm layers by hand tamping to the pipe crown.
 23. 100mm minimum cover of granular material (similar to bedding material) lightly tamped by hand.
 24. 300mm minimum of compacted suitable 'as dug' material light hand tamping for first 100mm over crown and continue hand tamping until a finished layer of 300mm has been placed over the pipe.
 25. 'As dug' backfill hand tamped up to 300mm minimum above crown of pipe.
 26. Provide concrete protection to pipes where depth of cover is less than:
 - a. 600mm in soft landscape areas e.g. gardens, this may be reduced to 350mm if using 'plastic' products or protection may be omitted if footpath or patio provided at ground level.
 - b. 750mm in light traffic areas e.g. private drives and private shared access ways.

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CISTEC
CHARTERED CIVIL & STRUCTURAL ENGINEERING CONSULTANTS

Suite 116, Milton Keynes Business Centre, Foxhunter Drive, Linford Wood, Milton Keynes, MK14 6GD. T: 01582 761211 F: 01582 764100 www.cistec.net e: info@cistec.net

Client **Jarvis Group**
1 The Forresters, High Street, Harpenden, AL5 2FB. T: 01582 761211 F: 01582 764100 www.jarvisgroupplc.co.uk

Drawing **STANDARD DETAILS**
Private Drainage

Project 11 Jameson Road, Harpenden

Scale N.T.S. Date 13.12.11 Approved

Drawing no. 1088/505 P1

STATUS: PRELIMINARY

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