

- Yorkshire Water Notes**
- All adoptable sewer works and material to be in accordance with the "Code for Adoption". The relevant British/European and Yorkshire Water's Standards/Requirements/Addendum to the Mechanical and Electrical Specification and Kitemarked.
  - Manhole covers shall/must have a clear opening of 600mm and shall be Class D400 to BS EN 124 with 150mm deep frames in highways.
  - Filled ground must be filled and consolidated under the supervision and to the satisfaction of Yorkshire Water before any sewer works are carried out.
  - Yorkshire Water is **not** obliged to accept filter drain/land drainage run-off into the public sewer network or adoptable drainage system (directly or in-directly). An alternative method of disposal of the land drainage run-off will therefore be required and you will have to liaise with the Local Authority, Land Drainage Section regarding the disposal of the filter drain/land drainage run-off.
  - The adoptable sewers should be a minimum of 1m and manholes 0.5m from kerb faces and service margins.
  - Sewers must have 5 metres clearance from trees and hedges or the width of the canopy at mature height.
  - Sewers to be laid in Class "S" bedding (150mm granular bed and surround). Where depth of cover to top of the sewer is less than 1.2m in highways and verges (or less than 900mm in none vehicular access areas) then a concrete slab should be provided above the granular bed and surround.
  - Bedding and backfill material to conform to the requirement of Water Industry Specification 4-08-02 (Table A2).
  - Yorkshire Water policy is that Type "C" brick manhole and 1050mm dia manhole rings are not preferred. Instead it is preferred that you use a type "B" manhole with 1200mm dia or 1500mm dia rings, with the opening sited over the channel where depth of cover to pipe soffit is 1-1.5m.
  - Adoptable plastic sewer pipes to be BS1 Kitemarked (Certified to WIS 4-35-01 and BS/EN13476). Adoptable plastic sewer pipes to be laid in maximum 3 metre lengths unless there is a specific operational need to lay longer lengths. Plastic channel sections in manholes are not acceptable and Yorkshire Water would require clay ware channel in manholes.
  - The minimum crushing strength for clay pipes should be as follows: 100mm dia, 40kN/m, 150mm dia, 40kN/m, 225mm dia, 45kN/m and 300mm dia, 72kN/m. The minimum crushing strength for concrete pipes should be - (Class 120 to EN 1916/BS5911-1 2002). Plastic pipes should conform to WIS 4-35-01 and BS EN13476.
  - Where a B125 cover and frame has been approved, this must not be coated in plastic and must have lifting eyes suitably sized to accommodate standard lifting keys. Screw down covers are not acceptable.
  - There must be enough clearance at crossovers to accommodate bedding to both pipes, approx. 300mm. If crossover is near the rocker then the clearance needed may need to be increased.

- General Notes**
- This drawing is to be read in conjunction with all relevant ARP and Architects drawings and project specifications.
  - All drainage works shall be carried out in accordance with the relevant parts of BS EN 752 "Drains and Sewer Systems Outside Buildings", the current Building Regulations and the Local Authority Building Control specifications and requirements.
  - The location, size and depth of all existing drains/sewers and services shall be established by the contractor prior to commencement of works on site. Any discrepancies from the information indicated on these drawings shall immediately be brought to the attention of the engineers.
  - All levels and dimensions shall be verified on site prior to commencement of any works. Any discrepancies shall immediately be brought to the attention of the engineers.
  - All pipes shall be laid with soffits level. All manhole/inspection chamber invert levels shown are for the outlet pipe (unless specified otherwise). All pipe runs shall be laid to the levels indicated.
  - All private foul and surface water pipes to be 100mm Ø unless stated otherwise.
  - All connections to public sewers to be a minimum of 150mm Ø.
  - All private manholes within drives to have B125 covers with concrete collar, all others to be A15.
  - All private backdrop manholes to be 900mmØ PCC chambers unless stated otherwise.
  - 450mmØ chambers for depths greater than 1.2m, restricted access opening to 350mm is required for safety reasons.
  - All RWP's & SWP's connections to be 100mm dia (unless specified otherwise by the Architect). Gully connections to be 150mm dia.
  - All RWP's, SWP's and connections are shown inductively or to the latest Architects drawings. Position of down pipes must be confirmed from Architects drawing before laying underground pipework. All down pipes should be provided with a roddable access point above the FFL.
  - All private drainage laid within 1m from tree canopies and hedges to have concrete bed and surround.
  - Filled ground or soft spots must be excavated, backfilled and consolidated before any drainage works are carried out.
  - All excavations in areas of high water tables and granular materials with high sand/silt contents shall be wrapped with a suitable geotextile filter membrane to prevent migration of sands/silts. Full height clay slanks across trenches and/or at manhole locations at 25m intervals to restrict water movement along the excavation shall be provided.
  - No water should be allowed to discharge from any private drives onto the adoptable highways. All private gullies and channel drainage positions shown may vary to suit on site working conditions.
  - Do not scale from this drawing.

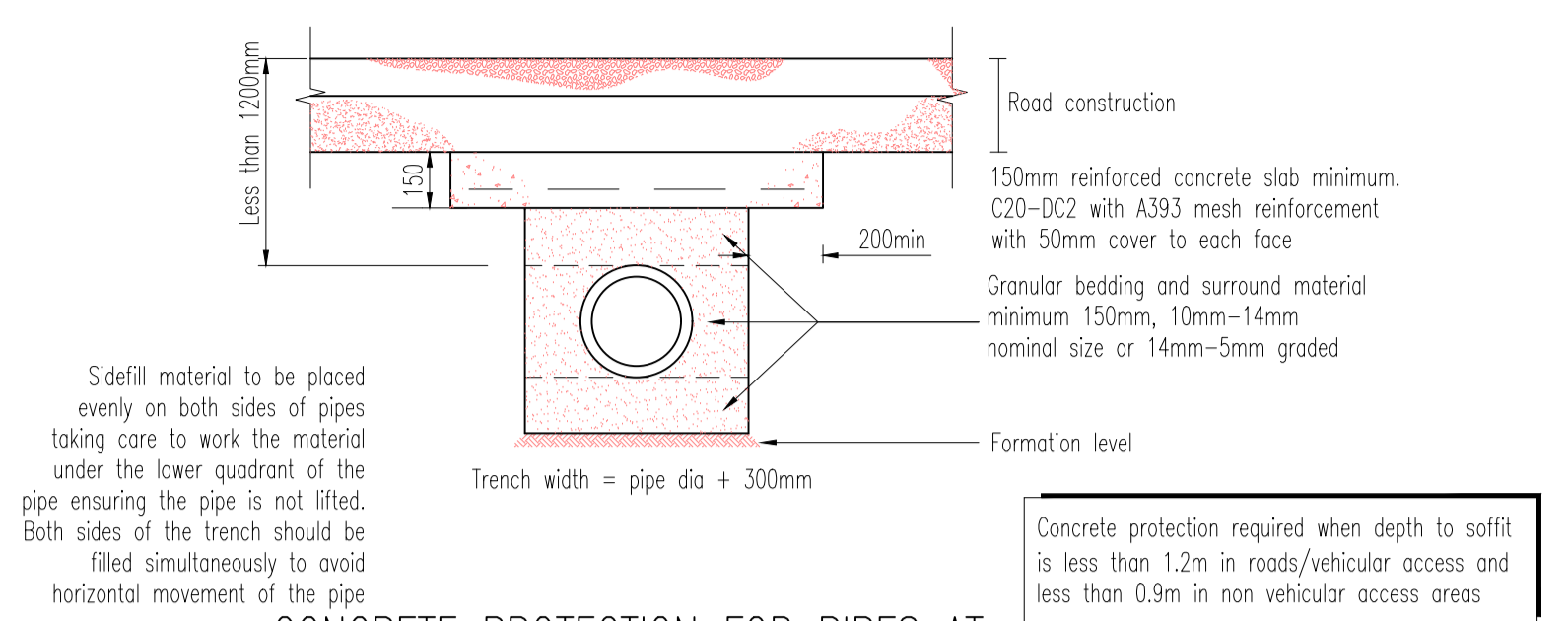
Rev	By	Date	Revision	Issued for approval	RJ	MI
					Chk	Appd.

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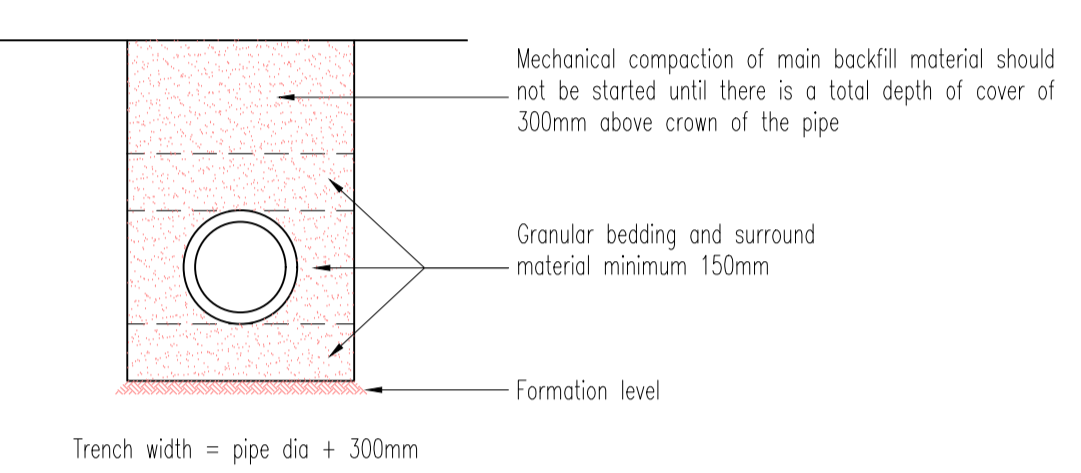
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TITLE	TYPICAL DRAINAGE DETAILS SHEET 2 OF 2	
PROJECT	BLEACHCROFT WAY	
CLIENT	HARRON HOMES	
DRAWING STATUS	PRELIMINARY	
Scale	1:500 @ A1	Date
		Drawn
		Chk.
Org. No.	0873/82/07.02	Rev

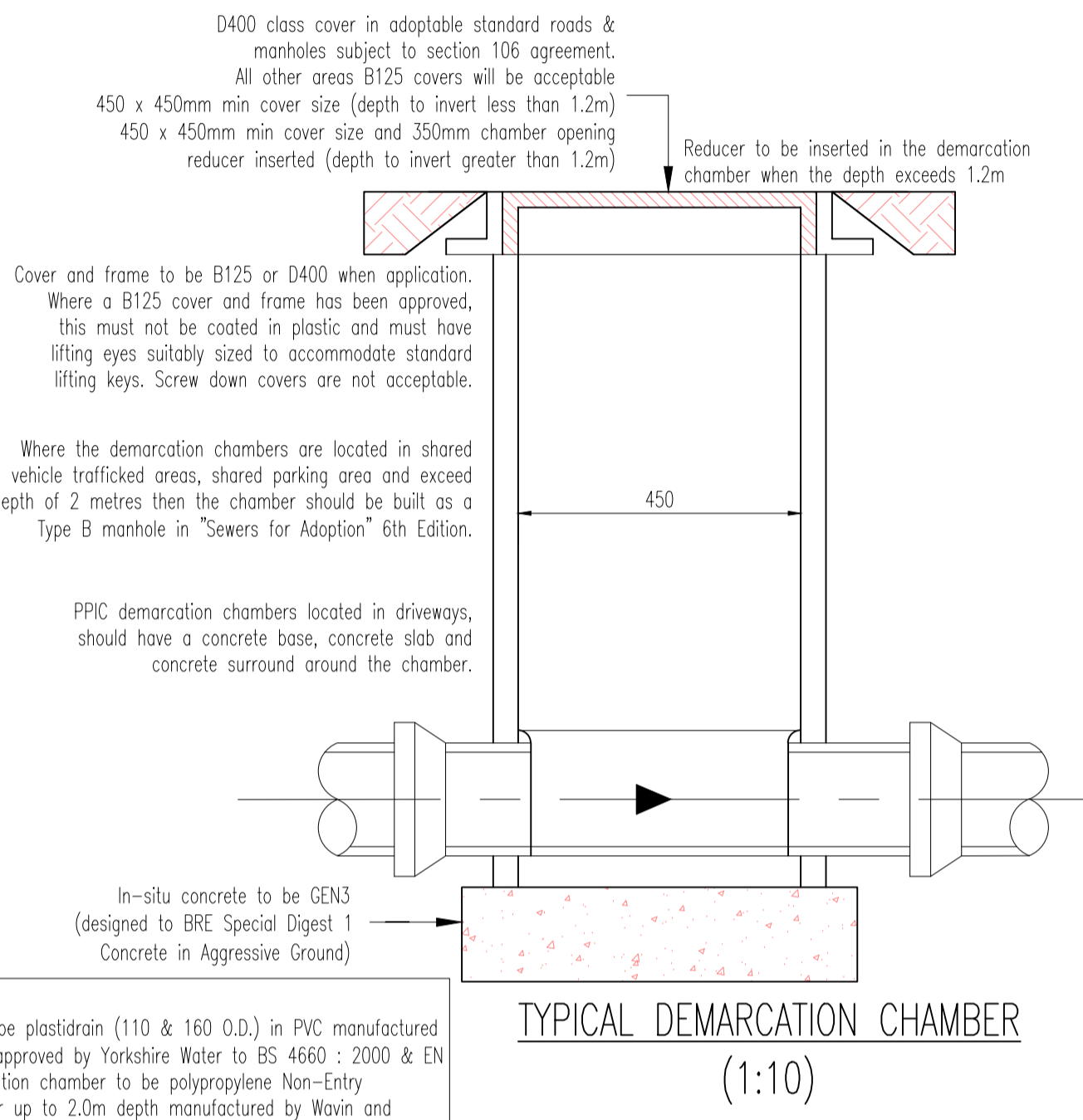


**CONCRETE PROTECTION FOR PIPES AT DEPTHS OF COVER LESS THAN 1.2m**  
(1:20)

Any trench box/sheeting to terminate 150mm above crown of pipe to prevent displacement of granular material. Boxing/sheeting to be removed progressively during placement of main backfill



**TYPICAL DETAIL THROUGH CLASS S BEDDING**  
(1:20)



**NOTE**  
Lateral sewers to be plastidrain (110 & 160 O.D.) in PVC manufactured by Hepworth and approved by Yorkshire Water to BS 4660 : 2000 & EN 1404-01. Demarcation chamber to be polypropylene Non-Entry Inspection Chamber up to 2.0m depth manufactured by Wavin and approved by Yorkshire Water to BS 7158 : 2001

Manufacturer List

PIPES			
Product Name	Diameter (mm)	Manufacturer	Material
Supersleeve	100 & 150 (I.D.)	Hepworth	Vitrified Clay
Supersseal	150 & 225 (I.D.)	Hepworth	Vitrified Clay
Denseleeve	100,150 & 225 (I.D.)	Naylor	Vitrified Clay
Denseseal	100,150 & 225 (I.D.)	Naylor	Vitrified Clay
Ultra-Drain	110 & 160 (O.D.)	Uponor	uPVC
Plastidrain	110 & 160 (O.D.)	Hepworth	uPVC
OsmaDrain	110 & 160 (O.D.)	Wavin	uPVC
Osma UltraRib	150 & 225 (I.D.)	Wavin	uPVC
Solid Wall	110 & 160 (O.D.)	Marley	uPVC
Quantum	150 & 225 (I.D.)	Marley	uPVC
Underground Drain	110 & 160 (O.D.)	Polypipe	uPVC
Ridgisewer	150 & 225 (I.D.)	Polypipe	uPVC

Demarcation Chamber				
Manufacturer	Product Name	Material	Max depth	Cover Type
Naylor	Plastic Inspection Chamber	Polypropylene	Up to 1200mm	Class B125
Hepworth	PPIC	Polypropylene	Up to 1200mm	Class B125
Uponor	Inspection Chamber (450mm Ø)	Polypropylene	Up to 1200mm	Class B125
Marshalls	Inspection Chamber To BS 5911 pt 2	Precast concrete	Up to 1000mm	Class B125
Wavin	Osma UltraRib Inspection Chamber	Polypropylene	Up to 1200mm	Class B125
Wavin	OsmaDrain Universal Inspection Chamber	Polypropylene	Up to 1200mm	Class B125
Wavin	Non Entry Inspection Chamber	Polypropylene	Up to 2000mm	Class B125
Marley	Inspection Chamber (450mm Ø)	Polypropylene	Up to 1200mm	Class B125
Polypipe	110 Inspection Chamber (460mm Ø)	Polypropylene	Up to 1200mm	Class B125
Polypipe	Non man Entry Deep Inspection Chamber System	Polypropylene	Up to 2000mm	Class B125

**Extract from Table A2 WIS 4-08-02**

Processed granular bedding and sidefill materials for flexible pipes.

Pipe nominal bore (mm) see note (d)	Nominal minimum particle size (mm)	Materials specified in British Standards see note (c)
100	10	10mm nominal single size
Over 100 to 150	15	10-14mm nominal single size or 14mm to 5mm graded
Over 150 to 300	20	10-14mm or 20mm nominal single size or 14mm to 5mm graded or 20mm to 5mm graded
Over 300 to 500	20	14 or 20mm nominal single size or 14mm to 5mm graded or 20mm to 5mm graded
Over 550	40	14 - 20mm or 40mm nominal single size or 14mm to 5mm graded or 20mm to 5mm graded or 40mm to 5mm graded

- Notes:
- Processed granular materials to include aggregates to BS 882, air-cooled blast furnace slag to BS1047 and lightweight aggregates to BS 3797
  - For the purpose of this table, PE pipe of 630mm O.D. can be regarded as having nominal bores of over 550mm, irrespective of wall thickness.
  - Nominal bore is used in preference to DN because of the different nominal size classifications for flexible pipes

**Minimum recommended trench widths for structured wall pipes in poor ground conditions**

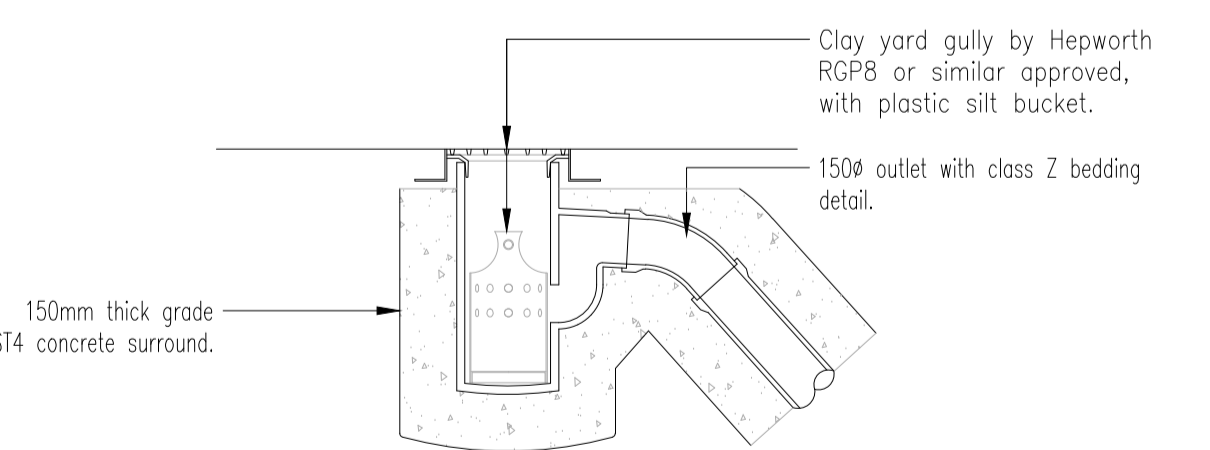
Native Soil Modulus between 3 and 4 Mpa  
 Typical Soil Classifications : Very loose gravel, loose sand, medium dense clayey silt sand, firm clay

Nominal Pipe Diameter (mm)	150	225	300	375	450	525	600	750	900
Minimum Trench Width (mm)*	450	525	600	750	900	1050	1200	1500	1800

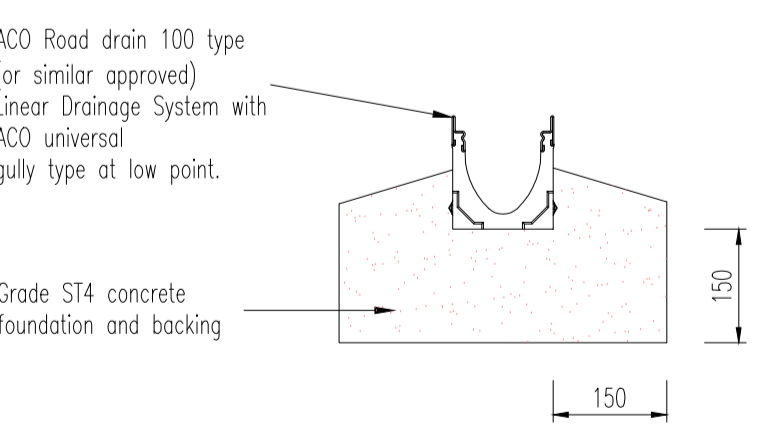
\* A vertical trench face has been assumed to allow a modulus of 7 Mpa to be achieved for the pipe bedding and sidefill material.

Other assumed values: Depth of cover = 6.0 metres (max)  
 Traffic Loading = Main Road  
 Pipe stiffness = SMB

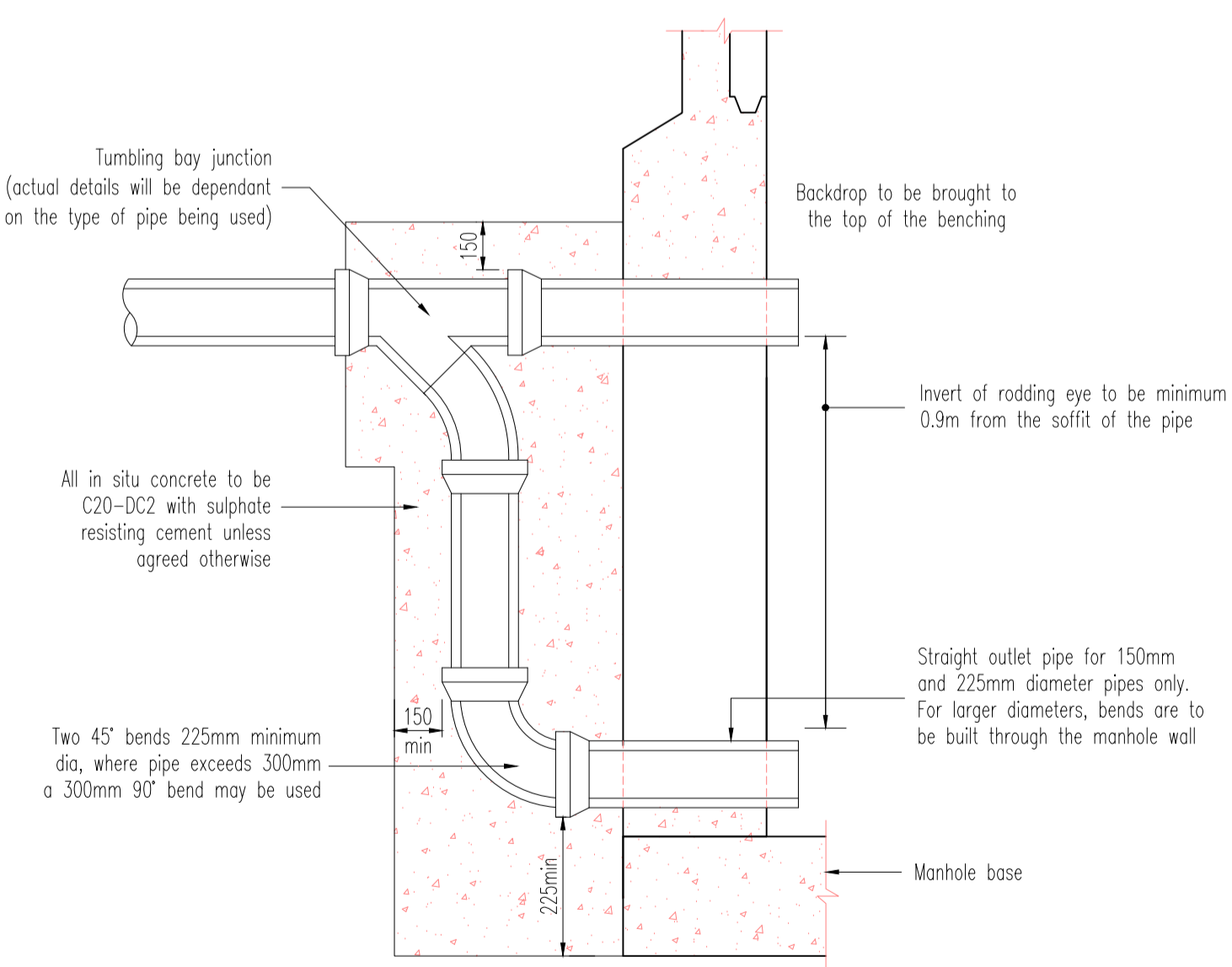
Note: Where the native soil modulus is below 3Mpa or the depth of cover exceeds 6 metres guidance should be sought from the pipe manufacturer regarding structural design and installation details.



**TYPICAL YARD GULLY DETAIL**  
(medium duty-suitable for lightly trafficked areas)  
(1:20)



**ACO DRAIN**  
(1:10)



**TYPICAL BACKDROP DETAIL**  
(1:20)