

- Yorkshire Water General Notes**
- All adoptable sewer works and material to be in accordance with "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.
  - Cover slabs must carry the BSI Kitemark or will be rejected by the Yorkshire Water inspector. Where the clear opening of the Kitemarked product is different to that of the cover and frame, a loading bearing slab should be fitted above the cover slab to bring the size down to 600x600mm for the Yorkshire Water specified cover size. Please refer to the Concrete Pipe Systems Association (CPSA), Technical Bulletin issued autumn 2004 for kitemarked cover slab opening sizes.
  - 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.
  - 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 non vehicular access areas) then a concrete slab should be provided above the granular bed and surround.
  - Adoptable plastic sewer pipes to be BSI Kitemarked (Certified to WS 4-35-01 and BS/EN13476). Adoptable 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 clayware is preferable. Plastic channels are difficult to set in concrete and a satisfactory finish cannot be obtained on the benching.
  - The chamber size of manholes with more than one connection in them may need to be increased an increment to accommodate the connections and bends.
  - Yorkshire Water policy is not to accept Type "C" brick manhole and 1050mm dia manhole rings. Instead it is preferred that you use a type "B" manhole with 1200mm dia or 1500mm dia. rings, with the opening sized over the channel where depth of cover to pipe soffit is 1-1.5m.
  - Surface water and foul rising mains to be provided with marker tape above the rising mains.
  - If plastic pipes are to be used then the following should apply:
    - All adoptable sewers to be BSI Kitemarked (certified to WS 4-35-01).
    - Bedding and backfill material to conform to the requirements of Water industry specification 4-08-02 (Table A2)
  - Where plastic pipes are proposed for adoptable sewers, structural calculations for the plastic pipes and a site investigation report to prove that the ground condition is suitable for the plastic pipes are to be produced.
  - Where plastic pipes are installed into the ground prior to getting full technical approval, the developer must provide a CCTV survey of the prospectively adoptable sewers and a deformation test (Light-Line test) of the plastic pipes.
  - Demarcation chambers to be a min. 450mm dia chamber for 100mm dia foul & 150mm dia surface water pipes up to 1.2m deep. For depths greater than 1.2m, restricted access opening to 350mm is required for safety reasons.
  - Maximum depth of demarcation chamber to be 2m, where depth exceeds 2m, manhole to be constructed as type B manhole.
  - 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.
  - Yorkshire Water is not obliged to accept filter drain/land drainage runoff into the public sewer network or adoptable drainage system (directly or in-directly). An alternative method of disposal of the land drainage runoff will therefore be required and you will have to liaise with the Land Drainage Authority/Land Drainage Section with regard to the disposal of the filter drain/land drainage runoff is required.
  - Sulphate resisting cement (C20-DC2) and precast concrete products must be used or a laboratory report provided proving that such precautions are not necessary.
  - 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 WS 4-35-01 and BS EN13476.6.
  - All levels of existing drainage to be confirmed prior to work commencing on site.
  - The contractor must allow for any fees required for road and sewer opening permits, sewer connections and make the appropriate applications.
  - Bedding and backfill material to conform to the requirement of Water Industry Specification 4-08-02 (Table A2).

- KMC Structures AIP - For MH chambers of 1500mm diameter and above.**
- Technical approval for the design of circular RC cover slabs up to and including 3.0m (internal diameter) will not be required subject to the following conditions:
- Proof that the circular RC cover slabs units to be used at this site are marked with BS EN 1917 & BS 5911-3' R to confirm that the product represents a manufacturer's declaration that the product meets the requirement of the standards.
  - Confirmation of Design Chemical Class (DC-Class) of concrete in the cover slab units.
  - Submission of a satisfactory Design & Check Certificate (Category 0) in compliance with BD2/12-Technical Approval of Highway Structures.
  - Submission of a satisfactory Construction Compliance Certificate in accordance with BD2/12 upon the completion of works.

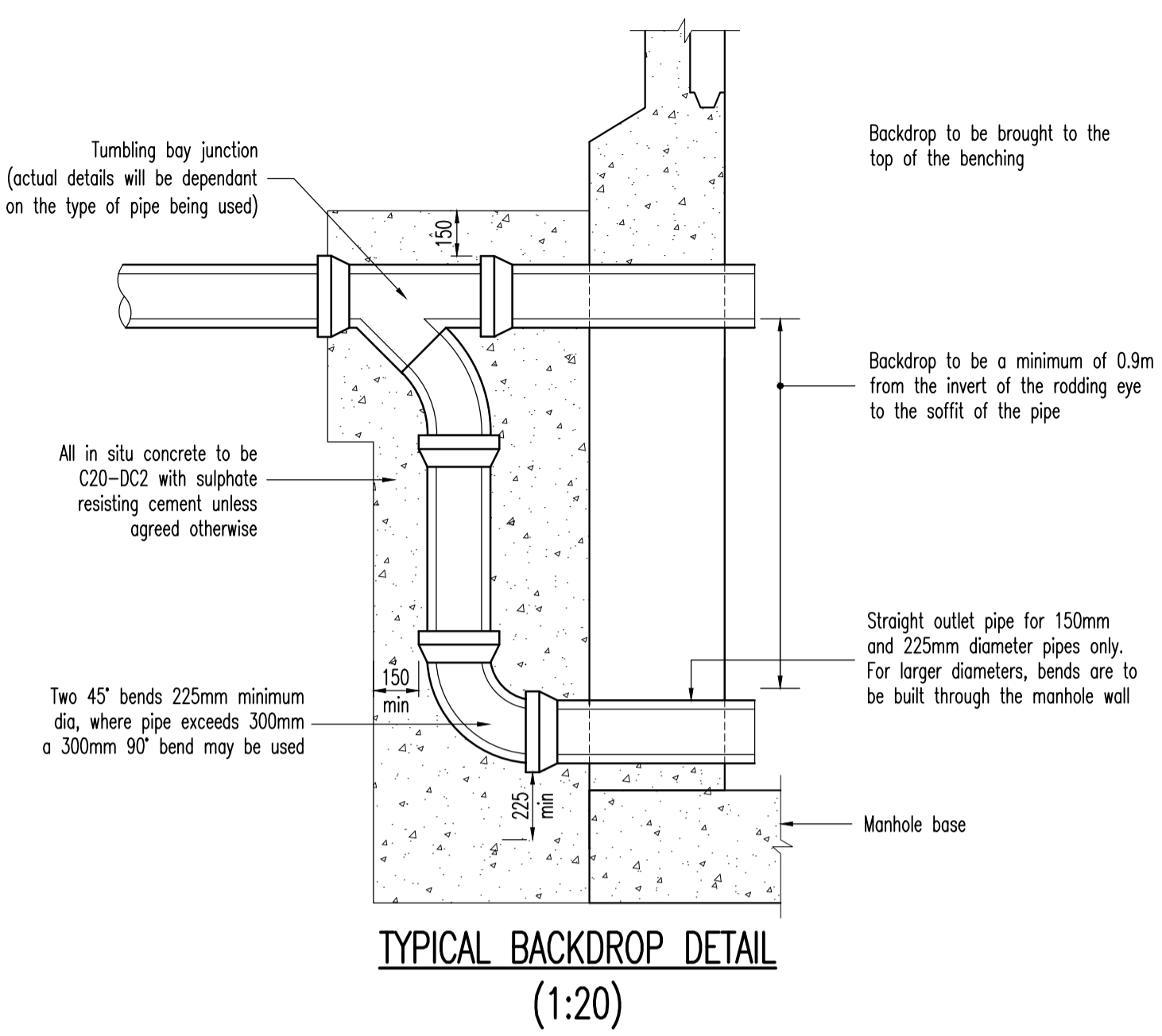
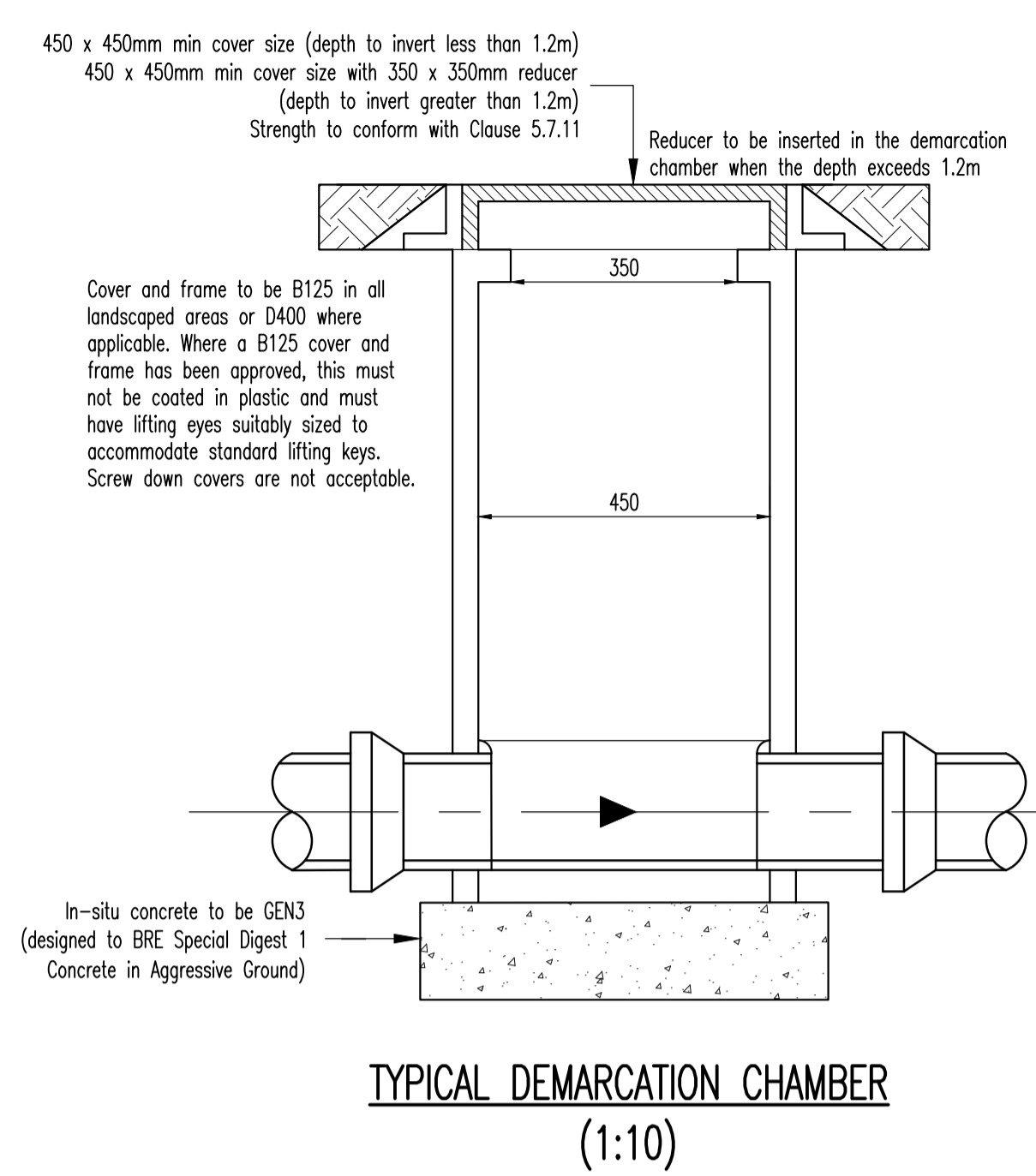
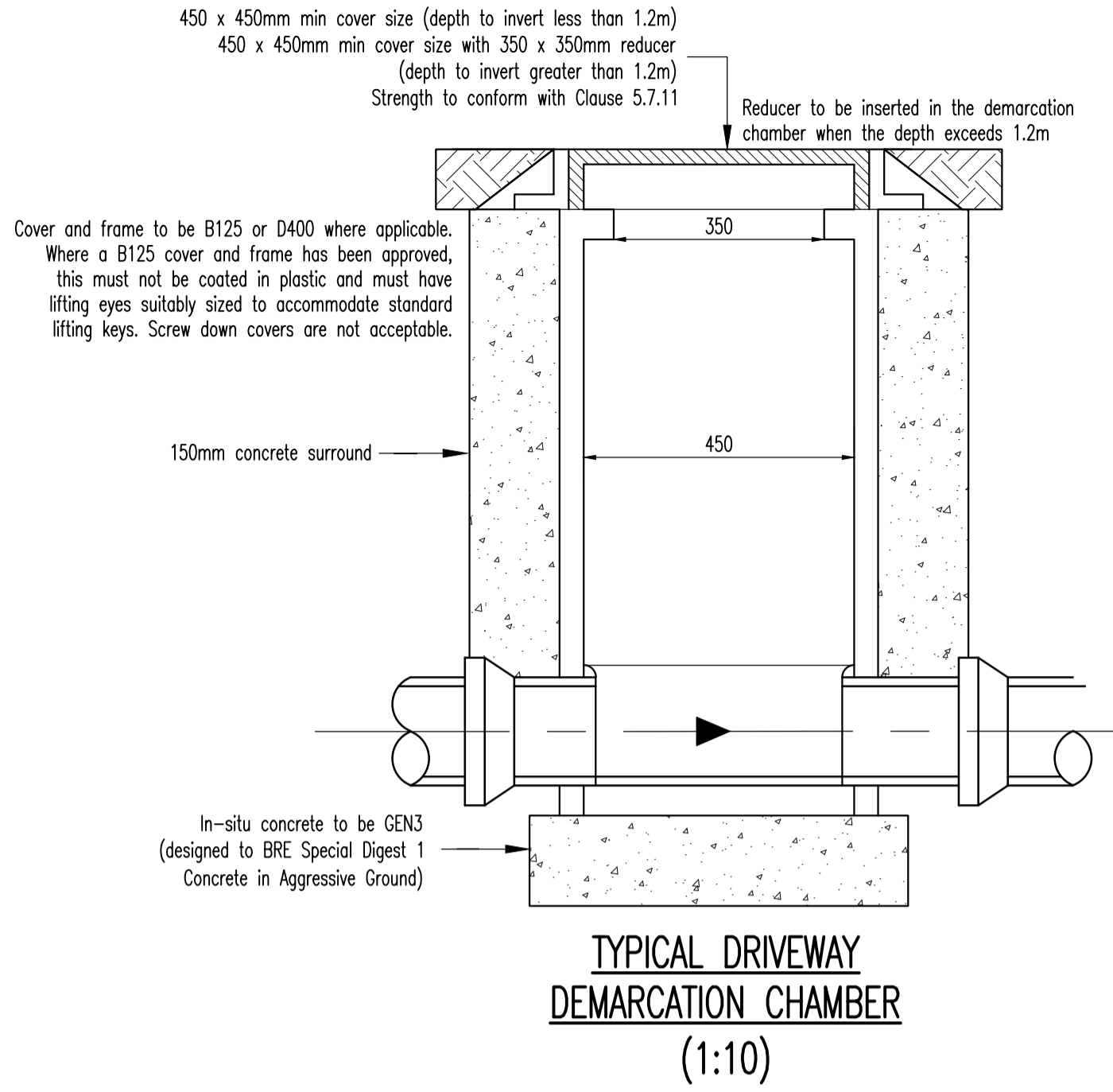
/	JC	28.02.25	Issued for approval	MI	MI
Rev	By	Date	Revision	Chk	Appd

**ARP ASSOCIATES**  
Chartered Consulting Engineers

Northwest House • 5 & 6 Northwest Business Park • Servia Hill, Leeds • LS6 2QH  
0113 245 9498 • 0113 244 3864 • Leeds@arpassociates.co.uk • www.arpassociates.co.uk

ARP Associates is a trading division of ARP Geotechnical Ltd, a company registered in England and Wales with company number 371831, whose registered office is at 5/6 Northwest Business Park, Servia Hill, Leeds LS6 2QH

TITLE	TYPICAL DRAINAGE DETAILS SHEET 2 OF 2		
PROJECT	BLACKMOORFOOT ROAD, HUDDERSFIELD		
CLIENT	MILLER HOMES YORKSHIRE		
DRAWING STATUS	PRELIMINARY		
Scale	Date	Drawn	JC
AS SHOWN @ A1	FEB 25	Chk.	MI
Drg. No.	0425/92/07.02	Rev	/



Note:  
Where depth to soffit exceeds 2.0m on the lateral connections a type B manhole is to be installed

**NOTE**  
Lateral sewers to be Plastidrain (110 & 160 O.D.) in UPVC manufactured by Hepworth and approved by Yorkshire Water. Demarcation chamber to be polypropylene Non-Entry Inspection Chamber up to 2.0m depth manufactured by Wavin and approved by Yorkshire Water to BS EN 13598-1:2003.

**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 maximum particle size (mm)	Materials specified in British Standards see note (a)
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**

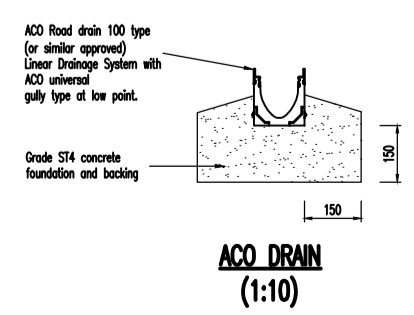
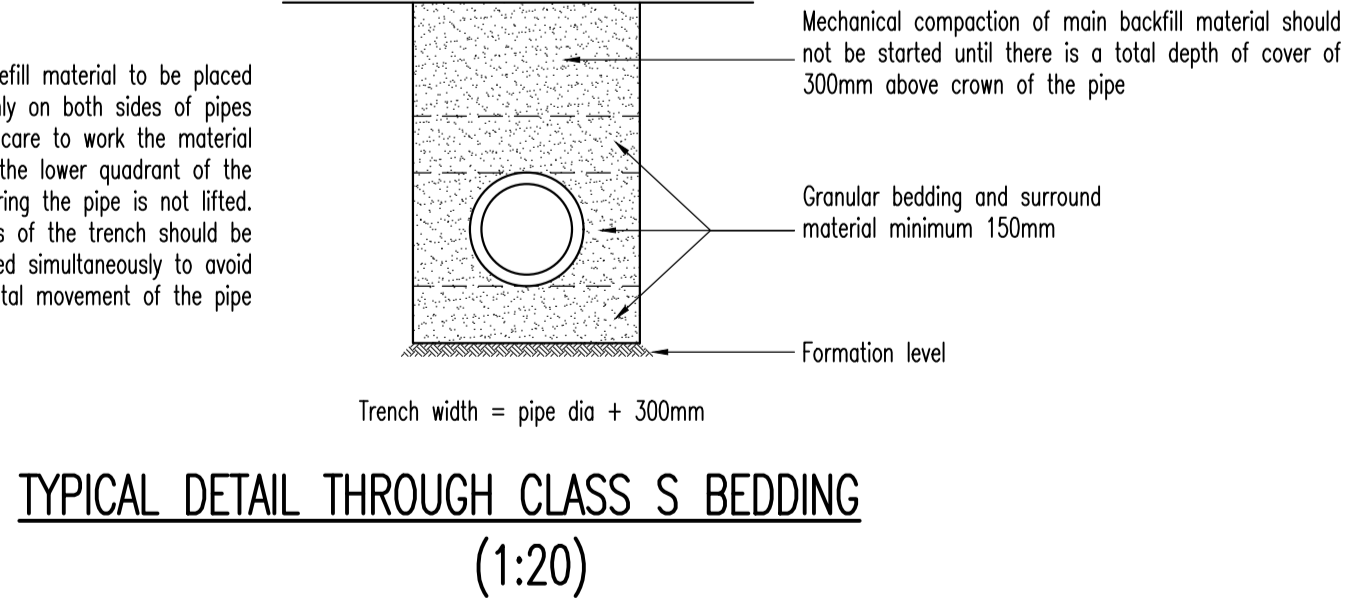
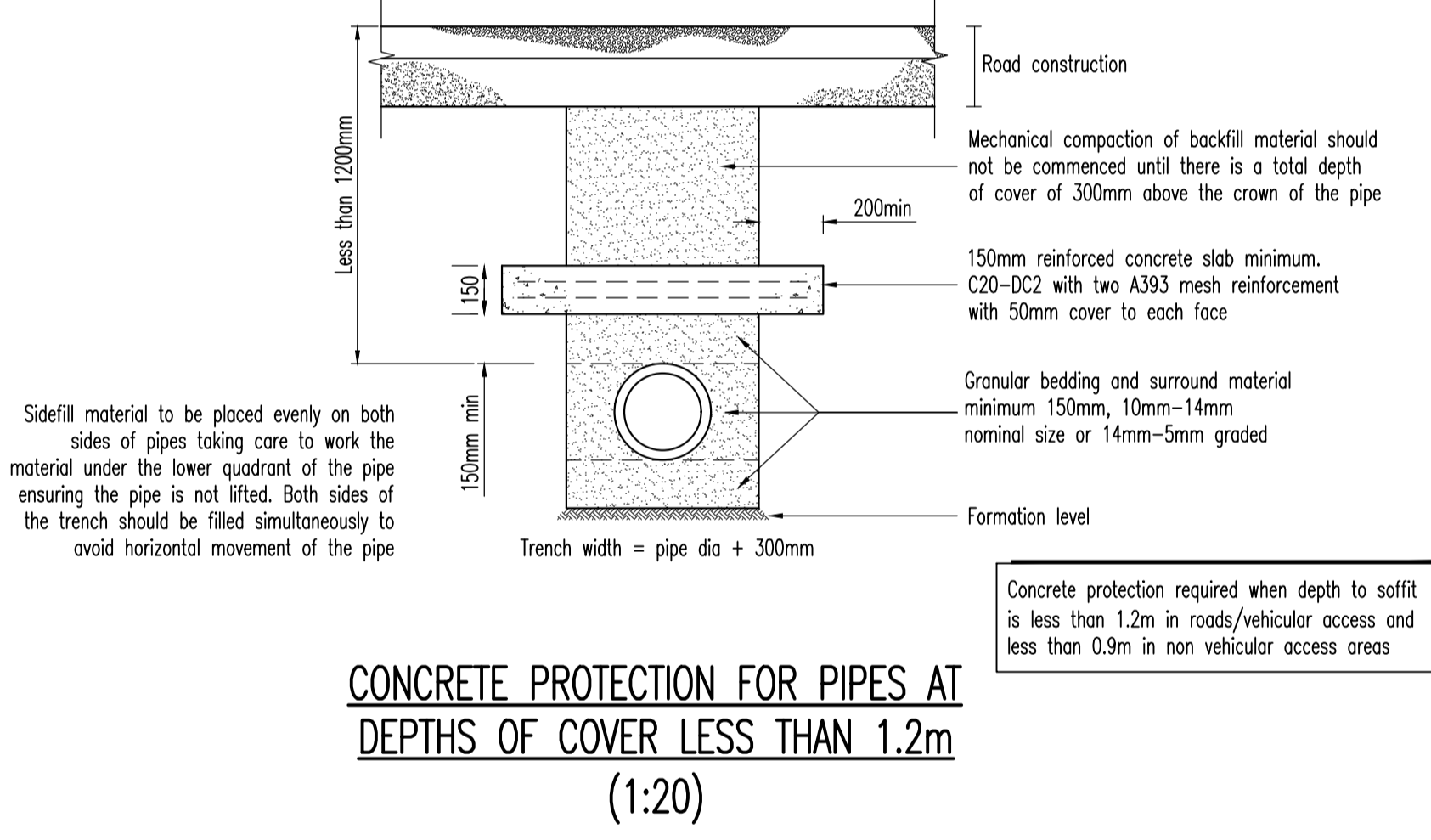
Native Soil Modulus between 3 and 4 Mpa  
Typical Soil Classifications : Very loose gravel, loose sand, medium dense clayey silty sand, firm clay

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	= SNB

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.



SUBJECT TO THE APPROVAL OF ALL RELEVANT AUTHORITIES

Manufacturer List

Product Name	Diameter (mm)	Manufacturer	Material
Supersleeve	100 & 150 (I.D.)	Hepworth	Vitrified Clay
Supersseal	150 & 225 (I.D.)	Hepworth	Vitrified Clay
Densleeve	100,150 & 225 (I.D.)	Naylor	Vitrified Clay
Denseal	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

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

Note:  
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.