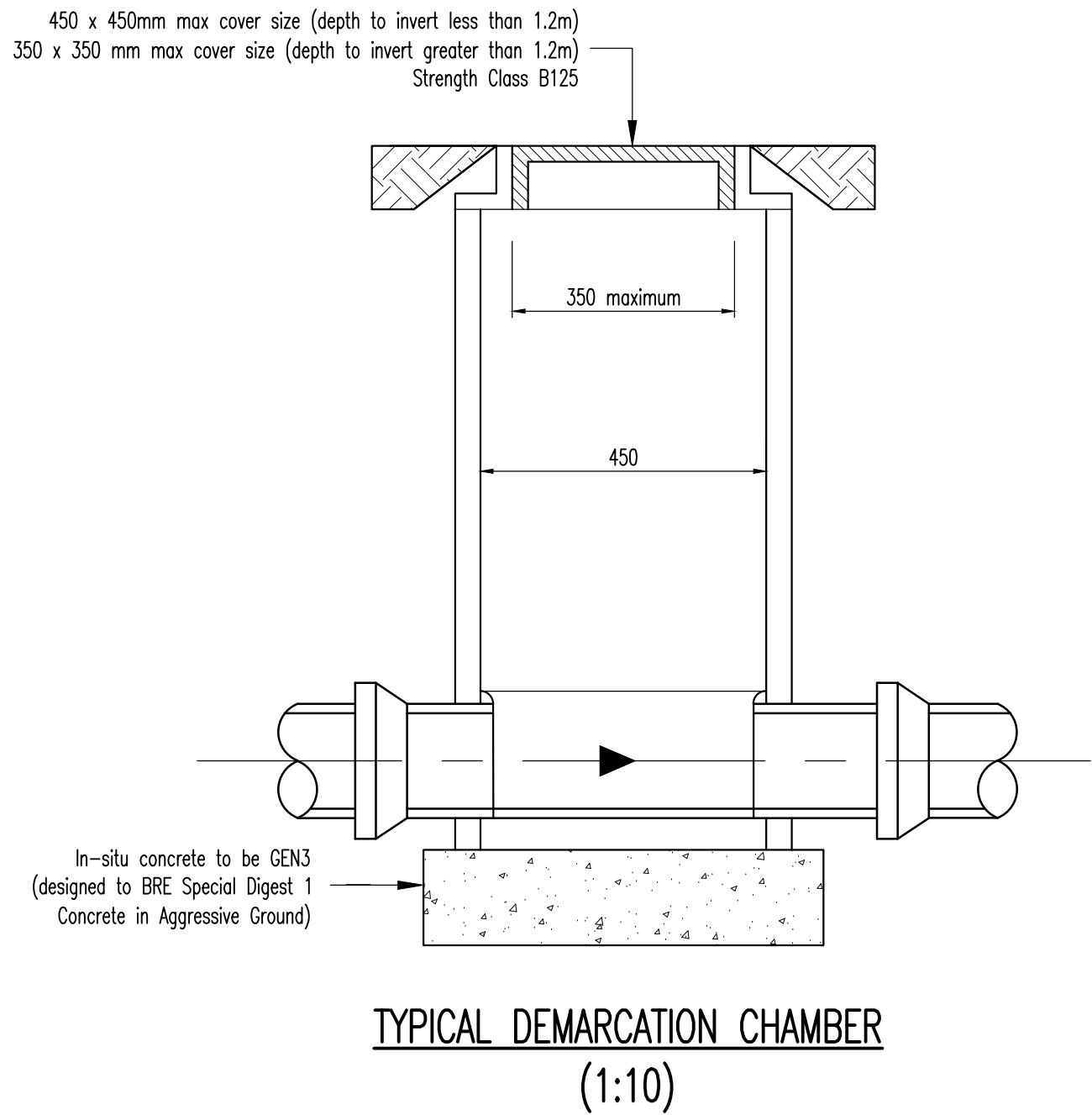


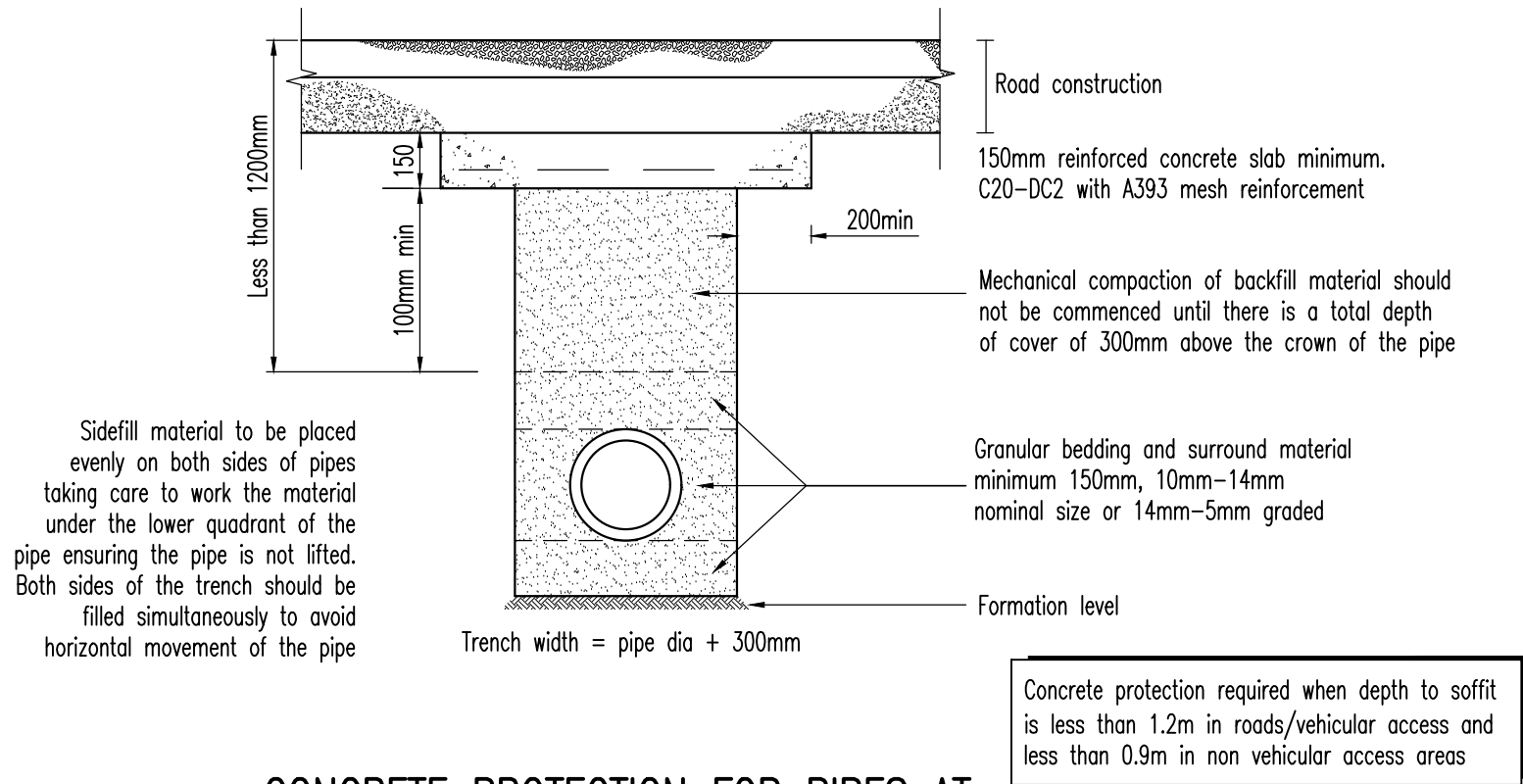
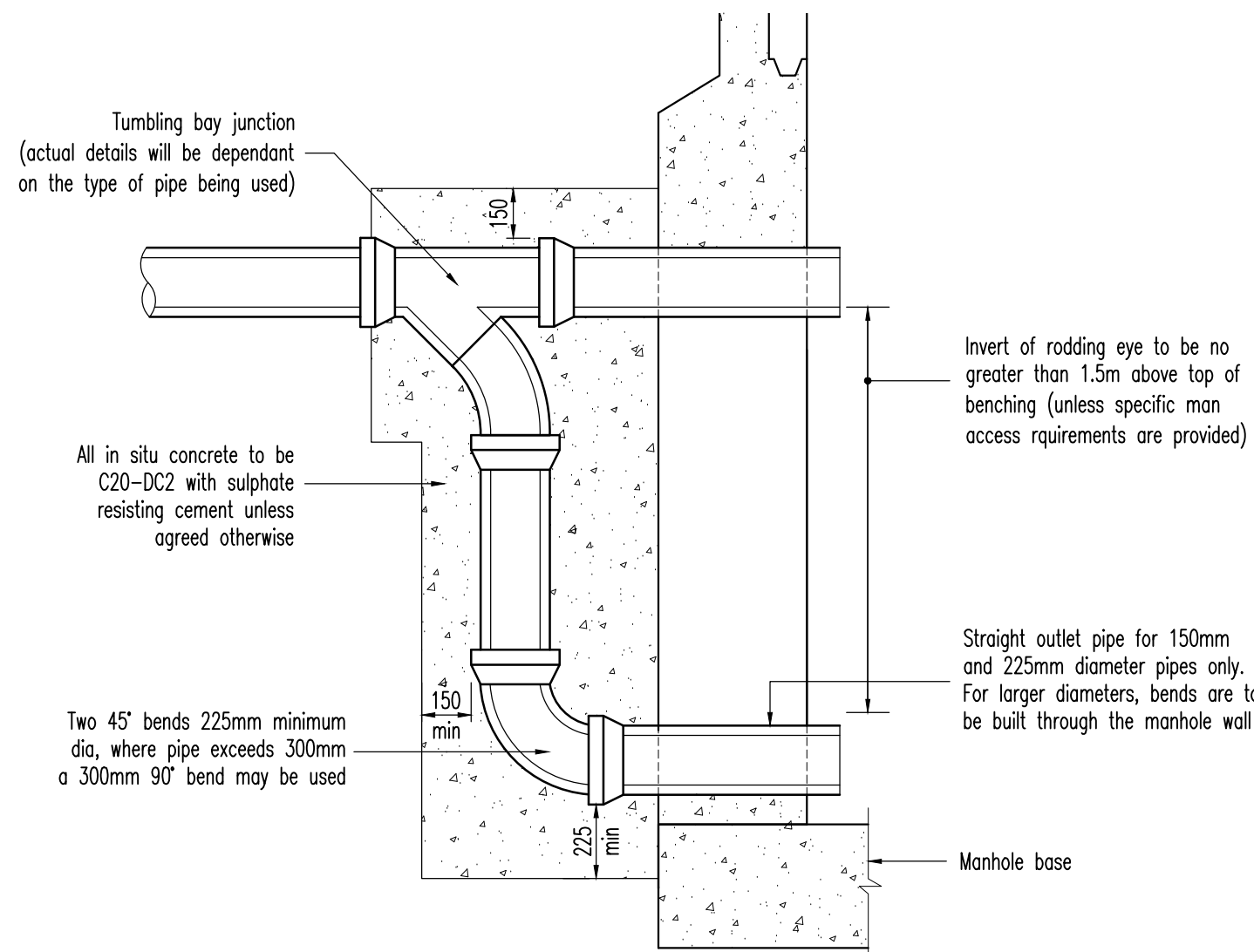
Manufacturer List

PIPES			
Product Name	Diameter (mm)	Manufacturer	Material
Superseive	100 & 150 (I.D.)	Hepworth	Vitrified Clay
Superseal	150 & 225 (I.D.)	Hepworth	Vitrified Clay
Densiseive	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

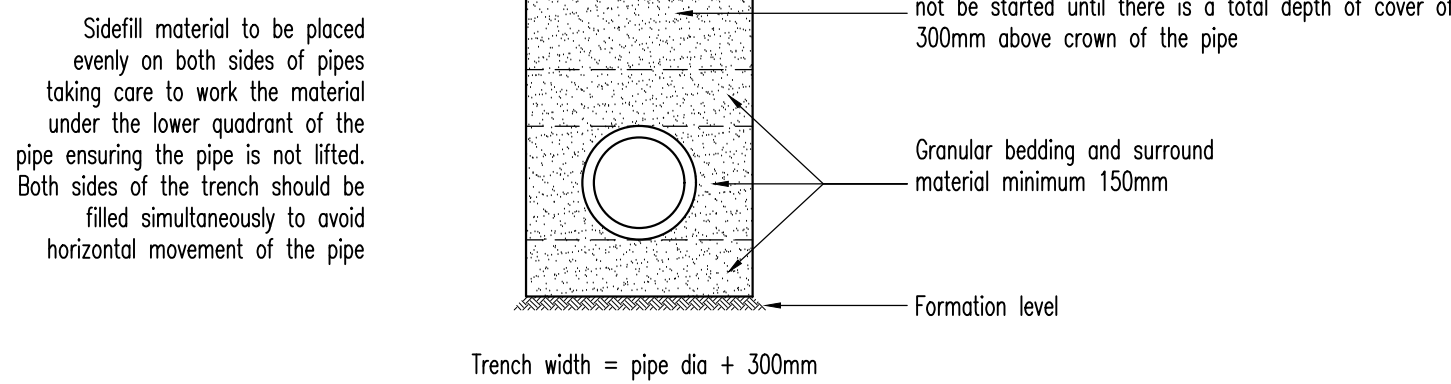
Demarcation Chamber				
Manufacturer	Product Name	Material	Max depth	Cover Type
Naylor	Plastic Inspection Chamber	Polypropylene	Up to 1200mm	Class B125
Hepworth	PPIC	Polypropylene	Up to 1200mm	Class B125
Uponor	Inspection Chamber (450mm Ø)	Polypropylene	Up to 1200mm	Class B125
Marshall's	Inspection Chamber 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
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



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



Extract from Table A2 WIS 4-08-02

Processed granular bedding and sidefill materials for flexible pipes.

Pipe nominal bore (mm) see note (a)	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.

N O T E S

General Notes

- All adoptable sewer works and material to be in accordance with "Sewers for Adoption" 6th Edition, and Kitemarked.
- Manhole covers shall/must have a clear opening of 600mm and shall be Class D400 BS EN 124 with 150mm deep frames in highways.
- Filled ground must be filled and consolidated appropriately before any sewer works are carried out.
- Cover slabs must carry the BSI Kitemark. 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 Authorities specified cover size. Please refer to Concrete Pipe Systems Association (CPSA), Technical Bulletin issued Autumn 2004 for Kitemarked cover slab opening sizes.
- The adoptable sewers/highway drains should be a minimum of 1m and manholes 0.5m from kerb faces and service margins.
- Sewers/highway drainage must have 5 metres clearance from trees and hedges, (Also refer to Figure 2.3 on page 33 in "Sewers for Adoption" 6th Edition for restrictions on tree planting adjacent to Sewers).
- Sewers/highway drainage 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".
- Adoptable sewer/highway drainage pipes to be laid in maximum 3 metre lengths unless there is a specific operational need to lay longer.
- 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.
- 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 Kitemark (certified to WIS 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/highway drainage, 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/highway drainage and a deformation test (Light-Line test) of the plastic pipes.
- Demarcation chambers to be a min. 450mmØ chamber for 100mmØ foul & 150mmØ 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.
- Filter drain/land drainage run-off must not enter 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 with regards to the disposal of the filter drain/land drainage run-off.
- Sulphate resistant cement (C20-DC2) and precast concrete products must be used or a laboratory report provided proving that such precautions are not necessary.
- Strength of vitrified clay pipes (if used) to be 40KN/m for 100Ø, 40KN/m for 150Ø, 45KN/m for 225Ø and 72KN/m for 300Ø. All concrete pipes to be Class 120 concrete to EN 1916/BS 5911-1:2002.

/	RF	22.2.19	Issued for approval	PSC	SAB
Rev	By	Date	Revision	Chk	Apvd

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TITLE		
TYPICAL MANHOLE DETAILS SHEET 2 OF 2		
PROJECT		
MOULTON CHAPEL ROAD COWBIT		
CLIENT		
MINSTER PROPERTY GROUP LTD		
DRAWING STATUS		
FOR APPROVAL		
Scale	Date	Drawn
NTS @ A1	FEB 19	RF
	Chk.	SAB
Drg. No.	1834/02/07.02	
	Rev	/