Extract from Table A2 WIS 4-08-02

Processed granular bedding and sidefill material for flexible pipes

Pipe nominal bore (mm) se note (d)	Nominal maximum particle size (mm)	Material specified in British Standards see note (a)
100	10	10mm nominal single size
Over 100 to 150	14	10 or 14mm nominal single size or 14mm to 5mm graded
Over 150 to 300	20	10-14 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	14-20 or 40mm nominal single size or 14mm to 5mm graded or 20mm to 5mm graded or 40mm to 5mm graded

Notes:

(a) Proposed granular material to include aggregates to BS 882, air-cooled blast furnace slag to BS1047 and lightweight aggregates BS3797

(c) For the purpose of this table, PE pipe of 630mm O.D. can be regarded as having a nominal bore of over 550mm irrespective of wall thickness

(d) Nominal bore is used in preference to DN because of the different nominal size classifications for flexible pipes

Minimum recommended trench widths for structural 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 = 6.00 meter max.
Traffic Loading = Main Road
Pipe Stiffness = SN8

Note: Where the native soil modulus is below 3Mpa or the depth of cover exceeds 6.0m guidance should be sought from the pipe manufacturer regarding structural design and installation details

Nominal Bore of Pipe (mm)	Alternative Aggregate Sizes Single Sized	(mm) Graded (Where directed)
100 - 125	10	-
150 - 200	10 or 14	14 - 5
225 - 300	10, 14 or 20	14-5 or 20-5
375 - 500	14 or 20	14-5 or 20-5
Exceed 500	14, 20 or 40	14-5 or 20-5 or 40-5

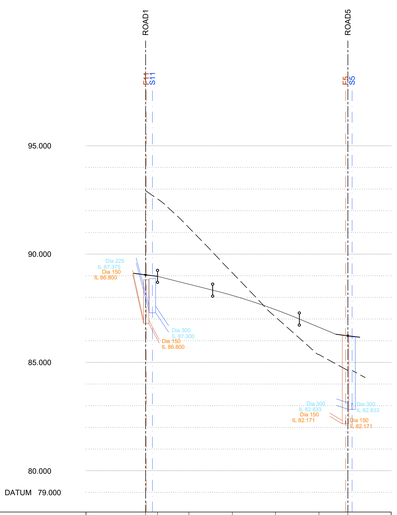
Pipe Diameter (mm)	Minimum Crushing Strength Clay Pipes
150	40KN/m
225	45KN/m
300	72KN/m
375 Concrete	45KN/m
1200 Concrete	144KN/m
1500 Concrete	180KN/m

Concrete ,minimum crushing strength should conform to class 120 EN1916/BS5911-1:2002

SEWERS TO BE LAID IN CLASS 'S' BEDDING 150mm GRANULAR BED AND SURROUND

THE CLEARANCE OF THE CROSSOVER POINTS (MIN 300MM) BETWEEN THE SURFACE WATER, FOUL SEWERS, RISING MAIN AND OTHER SERVICES SHOULD BE SUFFICIENT CLEARANCE TO PROVIDE 150MM GRANULAR BED AND SURROUND AROUND BOTH PIPES

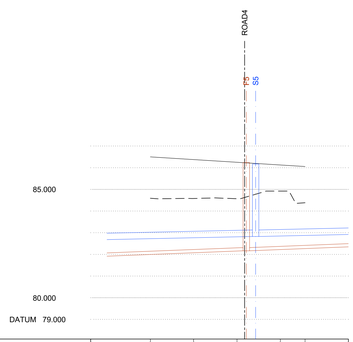
ALL ADOPTABLE SEWER WORK AND MATERIAL TO BE IN ACCORDANCE WITH SEWER FOR ADOPTION 6th EDITION, THE RELEVANT BRITISH / EUROPEAN AND YORKSHIRE WATER STANDARD / REQUIREMENTS / ADDENDUM TO THE MECHANICAL AND ELECTRICAL SPECIFICATION AND KITEMARKED



CHAINAGE	0.000	2.700	10.000	20.000	30.000	40.000	46.671
EXISTING GROUND LEVEL	92.931		91.223	89.144	87.097	85.365	84.633
ALIGNMENT LEVEL	89.977		88.614	88.097	87.439	86.631	86.304
VERTICAL ALIGNMENT	G=-5.000% 1: -20.0			L= 20.000 KF= -6.00001		G= -8.330% 1: -12.0	
HORIZONTAL ALIGNMENT				R= 50.000			
STORMWATER COVER LEVEL	CL 88.878					CL 86.179	
STORMWATER DETAILS							
FOULWATER COVER LEVEL	CL 88.821					CL 86.244	
FOULWATER DETAILS							

ROAD 4

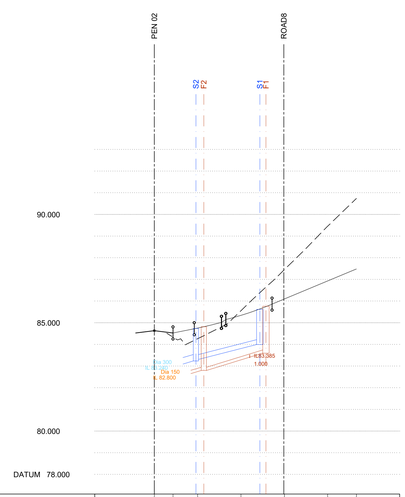
Scales - Horizontal - 1 : 500
Vertical - 1 : 100



CHAINAGE	0.000	10.000	20.000	30.000	35.710
EXISTING GROUND LEVEL	84.096	84.065	84.075	84.026	84.389
ALIGNMENT LEVEL	86.509	86.383	86.258	86.133	86.061
VERTICAL ALIGNMENT	G=-1.250% 1: -80.0				
HORIZONTAL ALIGNMENT					
STORMWATER COVER LEVEL	CL 83.179 IL 82.833				
STORMWATER DETAILS	Dia 300 Circular CLAY 1 in 235 55.592			Dia 300 Circular CLAY 1 in 235 43.639	
FOULWATER COVER LEVEL	CL 85.244 IL 82.711				
FOULWATER DETAILS	Dia 150 Circular CLAY 1 in 130 54.530			Dia 150 Circular CLAY 1 in 130 44.673	

ROAD 5

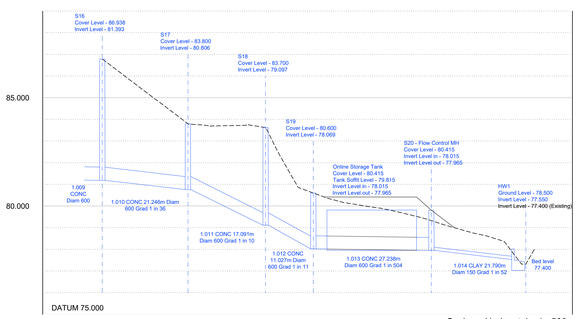
Scales - Horizontal - 1 : 500
Vertical - 1 : 100



CHAINAGE	0.000	4.300	10.000	20.000	30.000	40.000	46.623
EXISTING GROUND LEVEL			84.268	85.066	87.453	89.462	90.742
ALIGNMENT LEVEL	84.533		84.781	85.348	86.101	86.934	87.480
VERTICAL ALIGNMENT	G= 4.000% 1: 25.0	KF= 8.81323 L= 8.250	KF= 3.19465 L= 10.636		G= 8.333% 1: 12.0		
HORIZONTAL ALIGNMENT				R= 20.000			
STORMWATER COVER LEVEL	CL 84.740 IL 83.315			CL 85.622 IL 84.000			
STORMWATER DETAILS			Dia 225 Circular CLAY 1 in 21 14.486				
FOULWATER COVER LEVEL	CL 84.622 IL 82.000			CL 85.769 IL 83.000			
FOULWATER DETAILS			Dia 150 Circular CLAY 1 in 18 14.486				

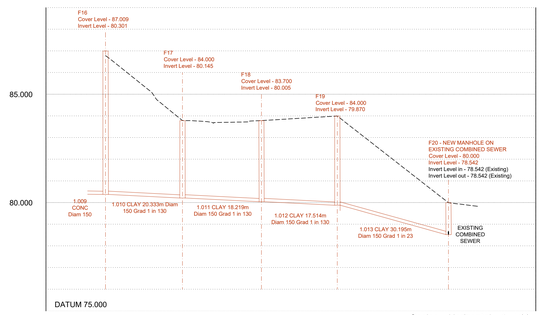
ROAD 7

Scales - Horizontal - 1 : 500
Vertical - 1 : 100



S16 to Outfall

Scales - Horizontal - 1 : 500
Vertical - 1 : 100



F16 to Outfall

Scales - Horizontal - 1 : 500
Vertical - 1 : 100

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NOTES:

1. All statutory undertakers equipment in footway and carriageway to be located and diverted before work commences.
2. A pedestrian route through the works shall be maintained at all times and clearly defined by suitable barriers and lights where necessary.
3. The contractor is obliged to obtain necessary road opening and/or sewer connection licence's prior to commencement of the works.
4. One vertical joint per course of brick work shall be left open to allow drainage during construction.
5. All statutory undertakers covers and frames to be adjusted to suit new carriageway levels prior to surfacing.
6. All existing gullies and drain runs to be cleaned of detritus and high pressure water jetted prior to commencement of works.
7. The existing sewers and culverts shown on this drawing are taken from various archives, drainage plans and sewer records. Some of this information is contradictory and the locations shown are interpreted using existing features and manhole locations shown on the survey. The exact depth and location should be verified on-site prior to commencing construction.
8. All adoptable sewer works and material to be in accordance with Sewer Sector Guidance (SSG) / DCG, and the Water Authorities requirements and Kitemarked.
9. All drainage works that shall be adopted by the Water Authority to be subject to their approval prior to commencement on site.
10. All hard standing and impermeable areas outside the adopted highway boundary to be drained and collected in private drainage systems and discharged into the surface water sewer before water encroaches onto the public highway.
11. Gullies should not be located in the area of dropped crossings.
12. The chamber size of manholes with more than one connection in them may need to be increased and increment to accommodate the connections and bends.
13. 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 granular bed and surround. Refer to Sewer Sector Guidance (SSG) / DCG for protection measures.
14. Granular bedding for pipes shall consist of aggregates from natural sources complying with the relevant provisions of BS 882 sized in accordance with the table across.
15. All pipes with a diameter larger or equal to 375mm shall be concrete. Pipes with a diameter less than 375mm shall be clay or ductile iron.
16. Vitrified clay pipes and fittings for sewers shall have flexible mechanical joints. Pipes for foul Sewers and surface water Sewers shall comply with relevant requirements of BS EN295 and BS 65 (surface water pipes only).
17. Manhole covers shallmust have a clear opening of 600mm and shall be Class D400 to BS EN 124 with 150mm deep frames in highways.
18. Filled ground must be filled and consolidated under the supervision and to the satisfaction of the Water Authority before any sewer works are carried out.
19. The Water Authority is not obliged to accept filter drainfand drainage runoff into the public sewer network or adoptable drainage system (directly or indirectly). An alternative method of disposal of the land drainage runoff will therefore be required and you will have to liaise with the Local Authority, Land Drainage Section with regard to the disposal of the filter drainfand drainage runoff.
20. Cover slabs must carry the BSI Kitemark or will be rejected by the Water Authority Inspectors. 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 600mm x 600mm for the the Water Authorities specified cover size. Please refer to Concrete Pipe Systems Association (CPSA), 'Technical Bulletin' issued Autumn 2004 for Kitemarked cover slab opening sizes.
21. Sulphate Resistant cement (C20-DC2) and precast concrete products must be used or a laboratory report provided proving that such precautions are not necessary.
22. The adoptable sewers should be a minimum of 1m and manholes 0.5m from kerb faces and service margins.
23. Sewers must have 5.0m clearance from trees and hedges. (refer to Sewer Sector Guidance (SSG) / DCG for restrictions on tree planting adjacent to sewers).
24. All private work to be in accordance with current building regulations.
25. Drains passing through buildings to be protected with lintel cover.
26. No building to take place within 3.0m of an adoptable sewer.
27. Where adoptable pipes have 150mm concrete bed and surround protection, all joints to be provided with 18mm thick flexible filler.
28. No services to be sited over or within 1.0m of an adoptable sewer.
29. Private drainage connections not direct to manholes are to be made via a 45 degree junction and not saddles.
30. Bedding and backfill material to conform to the requirement of Water Industry Specification 4-08-02 (Table A2).
31. Any proposed sewers located within 5 meters of the public sewer shall be ductile iron pipe work.

Rev:	Date:	Amendment:	DRN	CHK	APR

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Client: Newett Homes

Status:

Scale: 1:250 Size: A0 - 1189 x 841 Drawn: NB Chkd: IE Apprvd:

Project: Residential Development
Penistone Road, Fenay Bridge

Title: Long Sections

Sheet 2 of 2

Drawing No: 22/491/500/003 Revision:
Job No: 22-491 Date: 06.02.23

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