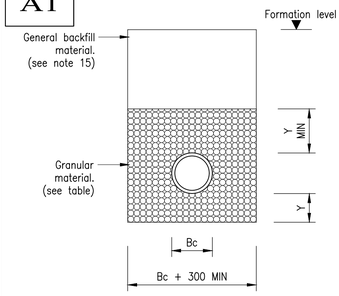
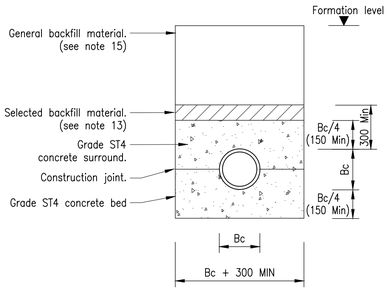
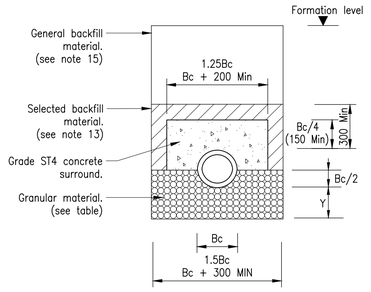
A1



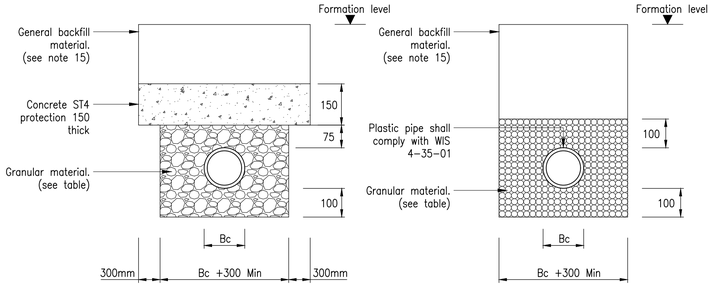
CLASS S DETAIL (see notes 13 & 15)



CLASS Z DETAIL (see notes 11, 13 & 15)



CLASS A DETAIL (see notes 11, 13 & 15)



CLASS Q DETAIL
(where cover to pipe less than 1.2m)

(plastic pipes shall comply with WIS 4-35-01 and shall be kitemarked)

CLASS T DETAIL

TRENCH WIDTHS	
PIPE I.D	OVERALL TRENCH WIDTH
100	550
150	600
225	700
300	850
375	1050
450	1150
525	1200
600	1350
675	1450
750	1500
825	1600
900	1900
1050	2100
1200	2300
1350	2500
1500	2700
1800	3100

NOMINAL PIPE DIA (mm)	SINGLE SIZED (mm)	GRADED (mm)
150 200 to 300 375 to 525 Greater than 525	10 or 14 10, 14 or 20 14 or 20 14, 20 or 40	14 to 5 14 to 5 ot 20 TO 5 14 to 5 ot 20 to 5 14 to 5, 20 to 5 or 40 to 5

GRANULAR BEDDING MATERIAL
(all aggregates to table 4 of BS 882 :1983)

NOMINAL PIPE DIA (mm)	THICKNESS OF COMPRESSIBLE FILLER (mm)
Less than 450	18
450 to 1200	36
Greater than 1200	54

COMPRESSIBLE FILLER TABLE
(bitumen impregnated insulating board to BS 1142: Part 3)

Notes
A) Bc = outside diameter of pipe barrel.
B) Y = for uniform soils:
Sleeve jointed pipes, min. 50mm or 1/6Bc, whichever is the greater.
Socketed pipe, min. 100mm or 1/6Bc, whichever is the greater under barrels and not less than 50mm under sockets. For rock or mixed soils containing rock bands, boulders, stones or other irregular hard spots:
Sleeve jointed pipes, min. 150mm or 1/4Bc, whichever is the greater.
Socketed pipe, min. 200mm or 1/4Bc, whichever is the greater under barrels and not less than 150mm under sockets.

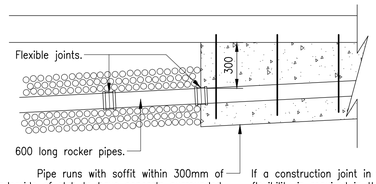
NOMINAL PIPE DIA (mm)	SINGLE SIZED (mm)	GRADED (mm)
100	10	Not permitted
110 to 150	10 or 14	14 to 5 graded
160 to 300	10, 14 or 20	Either 20 to 5 graded or 14 to 5 graded
310 to 500	14 or 20	Either 20 to 5 graded or 14 to 5 graded
Over 550	14, 20 or 40	Either 40 to 5 graded or 20 to 5 graded or 14 to 5 graded

GRANULAR BEDDING MATERIAL
Extract from Table A2 WIS 4-08-02
(all aggregates to table 4 of bs 882 :1983)

MINIMUM RECOMMENDED TRENCH WIDTHS FOR PIPES IN POOR GROUND CONDITIONS	
NOM PIPE DIA (mm)	MIN TRENCH WIDTH (mm)
150	450
225	525
300 And above	Two times nom. diameter

THE FOLLOWING UPVC PIPES ARE ACCEPTABLE FOR USE	
UPONOR ULTRA DRAIN	110 & 160 (O.D.)
HEPWORTH PLASTIDRAIN	110 & 160 (O.D.)
WAVIN OSMA DRAIN	110 & 160 (O.D.)
WAVIN OSMA ULTRA RIB	150 & 225 (I.D.)
MARLEY SOLID WALL	110 & 160 (O.D.)
MARLEY QUANTUM	150 & 225 (I.D.)
POLYPIPE RIDGISEWER	150 & 225 (I.D.)
POLYPIPE UNDERGROUND DRAIN	110 & 160 (O.D.)

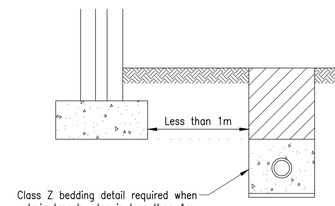
RIGID PIPE TRENCH BEDDING DETAILS



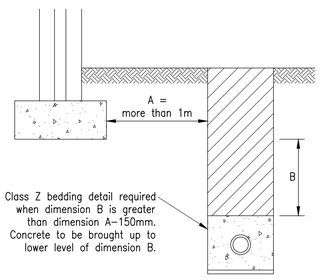
Pipe runs with soffit within 300mm of underside of slab to have concrete surrounded. T10 hangers at 400 ctrs required if surround not cast integral with slab.

If a construction joint in the slab is encountered then flexibility is required in the concrete surrounded pipe run. A pipe joint will be required.
The concrete surround to be fully discontinued at this pipe joint using compressible filler.

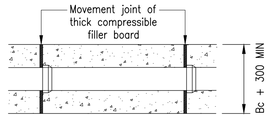
CONCRETE PROTECTION TIEING IN DETAIL



DRAIN TRENCH EDGE LESS THAN 1m. FROM FOOTING/FOUNDATION EDGE



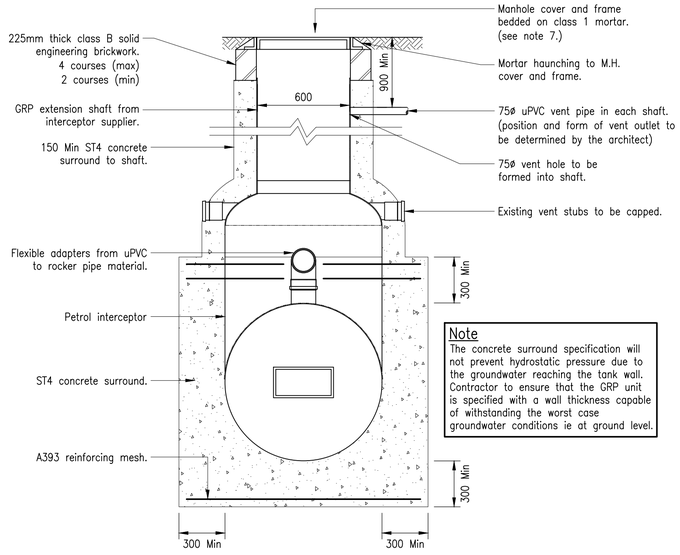
DRAIN TRENCH EDGE MORE THAN 1m. FROM FOOTING/FOUNDATION EDGE



JOINTS FOR CONCRETE ENCASED PIPES

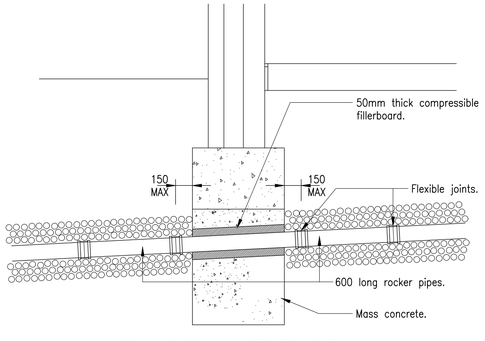
BEDDING DETAIL IN VICINITY OF FOOTINGS/FOUNDATIONS
NOTE:- THIS IS A TYPICAL DETAIL TO BE CROSS REFERENCED WITH 3E STRUCTURAL DRAWINGS

PLASTIC PIPE (u-PVC) TRENCH BEDDING DETAILS

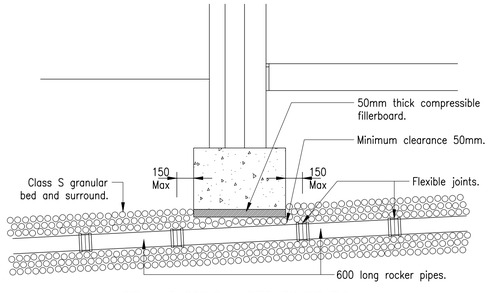


Note
The concrete surround specification will not prevent hydrostatic pressure due to the groundwater reaching the tank wall. Contractor to ensure that the GRP unit is specified with a wall thickness capable of withstanding the worst case groundwater conditions ie at ground level.

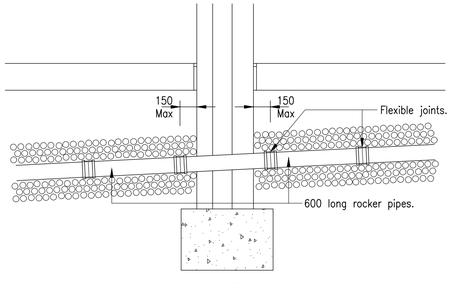
TYPICAL BYPASS TYPE INTERCEPTOR/CESSPOOL/ HOLDING TANK CONSTRUCTION DETAIL
(to be installed in accordance manufacturers instructions)



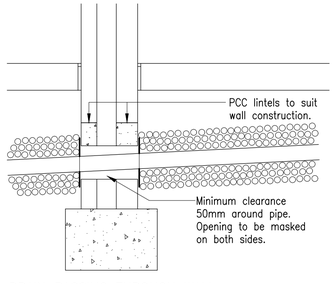
DRAIN PASSING UNDER FOUNDATION THROUGH MASS CONCRETE FILL



DRAIN PASSING UNDER FOUNDATION FILLERBOARD PROTECTION DETAIL



DRAIN PASSING THROUGH WALL BUILT IN DETAIL



DRAIN PASSING THROUGH WALL NOT BUILT IN DETAIL

DO NOT SCALE.

NOTES -CONT....

12. Where two pipelines cross with less than 300mm cover, surround each pipe with a full concrete bed and surround (class Z detail) for not less than 1m centered on the crossing and extended as required to within 150mm of the nearest flexible joint.
13. Selected backfill material shall consist of uniform soil, free from stones larger than 40mm, clay lumps larger than 75mm, tree roots, contaminated material. Selected backfill material is to be placed in layers not exceeding 150mm thickness. Should the excavated material be unsuitable or weather conditions affect the materials stability, then a suitable hard granular material shall be used.
14. No mechanical compaction of fill material shall be permitted within 300mm above the barrel/crown of the pipe.
15. General backfill to drainage trenches in vehicular trafficked areas above the pipe bedding detail, shall be suitably selected material (in accordance with BS 8301 clause 5.7.6.1.) and be placed in layers not exceeding 225mm, each layer compacted to form a stable trench backfill, should the material be unsuitable or weather conditions affect the materials stability, then a hard granular material shall be used up to formation level.
16. All separators shall be in accordance with the environment agency document PPG3.
17. All below ground plastic/grp tanks shall be installed in accordance with the manufacturers instructions. They shall be provided with sufficient concrete surround to counter floatation and shall have a wall thickness adequate to resist the highest ground water level which could be encountered at their location.
18. All excavations in areas of high water tables and granular materials with high sand/silt contents shall be wrapped with a suitable geotechnical filter membrane to prevent migration of sands/silts. Full height clay stanks across trenches and/or at manhole locations at 25m intervals to restrict water movement along the excavation shall be provided.
19. Where utility/land drainage trenches etc cross over drainage trenches, the contractor shall construct an impermeable barrier to prevent groundwater infiltrating into the drainage trench.
20. Non-man entry access chambers shall comply with the relevant provisions of BS EN 752-3.

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Note for Contractors

This 3E drawing should be considered along with the risk information contained in the CDM Pre Construction Information. This information will include details of the SIGNIFICANT risks which 3E have identified which may arise from constructing the designs shown on this drawing. A competent Contractor should be aware of the typical risks associated with doing this work.

Note for Workers

DO NOT START YOUR WORK unless you know the Risks and Controls relating to the work on this drawing (including SAFE SEQUENCES OF WORK and EQUIPMENT).

STOP

Do not issue copies of parts of this drawing without the above Note for Workers (unless you are sure that the Workers can undertake the work safely).

NOTES -

1. This drawing is to be read in conjunction with all relevant 3E, architect and M&E consultants drawings and project specifications.
2. All building drainage works shall be carried out in accordance with the relevent parts of BS EN 752 'Drains and Sewer Systems Outside Buildings', the current building regulations and the local authority building control specifications and requirements.
3. All insitu and precast concrete products shall comply with class DS1 requirements for sulphate exposure in accordance with BRE Special Digest 1, Concrete in Aggresive Ground (2001) Part 1: Table 2.
4. All precast concrete products shall comply with the relevant provisions of BS 5911 and be Kitemarked. All precast concrete pipes shall be class 120 and comply with the requirements of note 3 above.
5. All vitrified clay pipes and fittings shall comply with the relevant provisions of BS EN295 and BS 65 respectively and be Kitemarked, all pipes shall be extra strength to BS 65 or equivalent BS EN295 pipe crushing strength and be of a sleeved system.
6. All u-PVC pipes and fittings shall comply with WIS 4-35-01 and shall be kitemarked.
7. Manhole covers and frames shall comply with the relevant provisions of BS EN214, have 600x600 clear openings unless otherwise specified and be of non-rocking design without cushion inserts and be Kitemarked. Load class D400 in trafficked areas and load class B125 in footways, landscaped and pedestrian areas. where required, covers shall be recessed to receive the architects specified finish.
8. Gully grates and frames shall comply with the relevant provisions of BS EN124 and be of non-rocking design with captive hinge access and be Kitemarked. Load class D400 in industrial estate roads and areas carrying regular heavy traffic and load class C250 in estate roads and car parking areas. In all road locations, the grate shall be hinged on the side of the traffic direction (left hand opening).
9. All external rigid pipework shall be laid with a class S pipe bedding detail with 1.2m minimum cover to the pipe barrel under vehicular trafficked areas, 0.9m cover under fields and 0.6m cover under footways/gardens. Where cover is less than that stated, a class A pipe bedding detail shall be used on pipes 225dia and larger, for pipes less than 225dia use a class Z pipe bedding detail. Under buildings a class S pipe bedding detail shall be used. Where there is less than 300mm between the barrel of the pipe and the underside of the structural floor slab, the pipe shall be cast integral with the floor slab with 150mm minimum concrete surround with vertical reinforcement tied into the slab.
10. All u-PVC pipework shall be laid with a class T pipe bedding detail with 1.2m minimum cover to the pipe barrel under vehicular trafficked areas, 0.9m cover under fields and 0.6m cover under footways/gardens. Where cover is less than that stated a class Q pipe bedding detail shall be used.
11. Where concrete protection is required to pipework, the concrete shall be discontinued at each pipe joint over the full cross section of the concrete by means of a shaped compressible filler.

Date	Revisions	Drawn	Rev.
19.06.17	INITIAL ISSUE	JM	P1

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Client
Aldi Stores Ltd (Goldthorpe North)

Project
Proposed Aldi Store
High Street, Royston

Title
Typical Drainage Details
Sheet 2

Scale	Author	Checked	Date
1:20	JM	ST	June '17

Drawing Status
Preliminary

Job Number	Originator	Zone	Level	Type	Role	Drawing No.	Rev
13690	3E	00	XX	DR	C	1002	P1