TABLE (i)

Diameter of largest pipe in manhole (mm)	Internal diameter of manhole (mm)
Less than 375	1200 (1050 where depth to soffit is 1.35m to 1.5m)
375 - 700	1500
750- 900	1800
Greater than 900	Consult Undertaker/Engineer's Specification

TABLE (ii)

Pipe Diameter (mm)	Rocker Pipe Length (mm)
150 - 600	600
601- 750	1000
> 750	1250

ALL PCC RINGS ARE TO BE SPIGOT AND SOCKET BOND CONSTRUCTION.

TABLE (iii)

MH Location	Cover Grade	Test Load
Non-trafficked/ Pedestrian areas	A15	15
Private drives	B125	125
Parking courts	C250	250
Carriageway	D400	400
Airfields/Dockyards	E600	600
Airfields/Dockyards	F900	900

TABLE (iv)

NRSWA Road Category	Description	Minimum Frame Depth (mm)
I	Trunk roads and dual carriageways	150
II	All other 'A' roads	150
III	Bus Services	150
IV	All other roads except residential cul-de-sacs	150
	Residential cul-de-sacs	100

HIGH STRENGTH TOPPING

1. High-strength concrete topping shall be produced, laid and finished in accordance with the relevant provisions of BS 8204: Part 2 and the following approximate proportions by weight shall be used: 1 part cement, 1 part natural sand and 2 parts single sized coarse aggregate.

RECESSED COVERS

1. Where inspection chamber is located in areas of block paving it shall be fitted with a recessed cover to accommodate paving blocks.

MANHOLE COVERS & FRAMES

1. Manhole cover and frames shall comply with the relevant provisions of BS EN 124, BS 7903 and Highway Agency Guidance Document HA 104/09. They shall be of a non-rocking design which does not rely on the use of cushion inserts.
2. All manhole covers shall be the non-ventilating type and shall have closed keyways.
3. Refer to Table iii for cover grades.

Catchpit Sizing:

Pipe Depth	Catchpit Dia.
<1000mm	900Ø
1000-1350mm	1050Ø
1350-2700mm	1200Ø

PRE-CAST CONCRETE PRODUCTS

1. Products shall comply with the relevant provisions of BS 5911-4:2002

LIMITS OF COVER FOR STANDARD STRENGTH RIGID PIPE IN ANY WIDTH OF TRENCH

	Fileds and gardens		Light traffic roads		Heavy traffic roads	
PIPE BORE BEDDING CLASS	MIN	MAX	MIN	MAX	MIN	MAX
100mm						
D or N	0.4	4.2	0.7	4.1	0.7	3.7
F	0.3	5.8	0.5	5.8	0.5	5.5
B	0.3	7.4	0.4	7.4	0.4	7.2
150mm						
D or N	0.6	2.7	1.1	2.5	--	--
F	0.6	3.9	0.7	3.8	0.7	3.3.
B	0.6	5.0	0.6	5.0	0.6	4.6
225mm	--	--	--	--	--	--
D or N	0.6	2.5	1.2	2.1	--	--
F	0.6	3.3	0.8	3.2	0.9	2.4
B						

PIPEWORK SPECIFICATIONS

Unless otherwise qualified on the drawings all pipe materials shall be selected as follows:

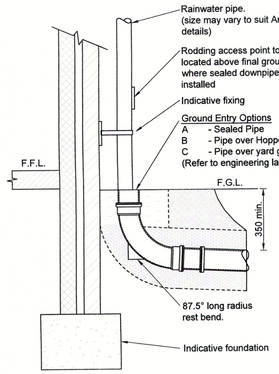
CLAY: (1000-1200Ø)
All pipe shall be Class 120 clayware to BS EN 295-1:2013.

UPVC: (1000-1100Ø)
All pipes shall be to BS EN 1401-1:2009.
All pipes shall be ribbed 'twin wall' to provide a suitable network (pipes & couplings).

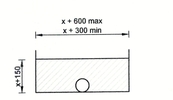
CONCRETE: (225Ø-3000Ø)
All pipes shall be to BS EN 5911-1:2002.

ALL materials shall be BBA certified.

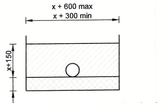
For Public Highway Drainage all materials shall comply with the Specification for Highway Works.



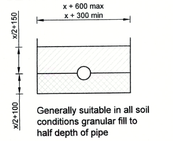
RAINWATER PIPE DETAIL
(Scale 1:20)



CLASS 'D' PIPE BEDDING



CLASS 'N' PIPE BEDDING



CLASS 'B' PIPE BEDDING

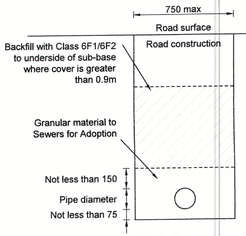
LEGEND:

Selected fill: free from stones larger than 40mm, lumps of clay over 100mm, timber frozen material and vegetable matter.

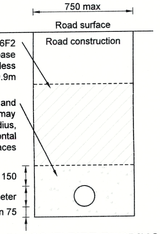
Granular material: should conform to Part H of the Building Regulations 2010 Diagram 10

'x' - Denotes external pipe diameter.

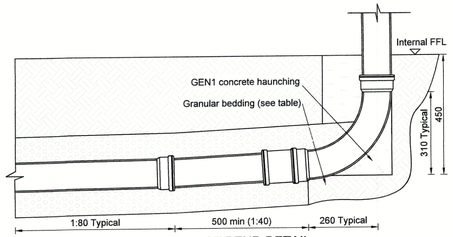
PIPE BEDDING DETAILS
(PRIVATE DRAINS)
(Scale 1:20)



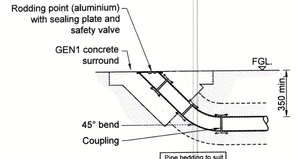
CLASS 'S' PIPE BEDDING
PIPE BEDDING DETAILS
(PRIVATE SEWERS)
(Scale 1:20)



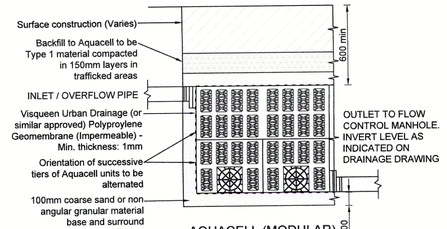
CLASS 'Z' PIPE BEDDING
PIPE BEDDING DETAILS
(PRIVATE SEWERS)
(Scale 1:20)



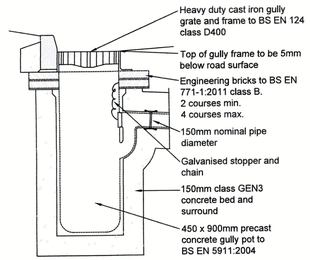
FOUL REST BEND DETAIL
(Scale 1:20)



RODDING EYE DETAIL
(Scale 1:20)



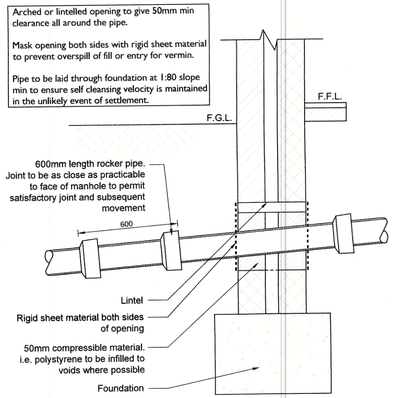
AQUACELL (MODULAR) ATTENUATION TANK DETAIL
(Scale 1:20)



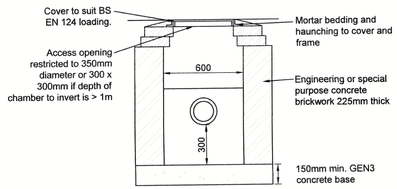
All gullies to be sealed/trapped in accordance with The Environment Agency requirements.

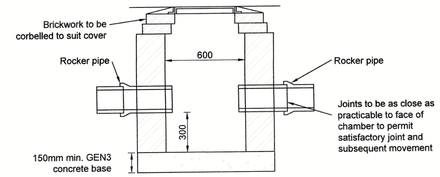
Alternatively a 450Ø x 900 deep plastic trapped road gully may be used surrounded with 150mm concrete. Plastic gullies should be weighted down until concrete surround has set.

TYPICAL ROAD GULLY
(Scale 1:20)



TYPICAL SECTION DETAILING PIPE 'SLEEVE' THROUGH LINTEL OPENING
(Scale 1:20)





CATCHPIT CHAMBER DETAIL
(Scale 1:20)

Minimum Dimensions for Access Fittings and Chambers

Type	Internal Sizes: Depth to invert (m)	Internal Sizes: Length x Width (mm)	Internal Sizes: Circular (mm)	Cover Sizes: Length x Width (mm)	Cover Sizes: Circular (mm)
Rodding Eye	As Drain but Minimum 100mm				
Shallow Access					
Small	0.6 or less	150x100	150	150x100	150
Large	-	225x100	-	225x100	-
Inspection Chamber	0.6 or less	-	190	-	190
	1.0 or less	450x450	450	450x450	450
Manhole	1.5 or less	1200x750	1050	600x600	600
	Over 1.5	1200x750	1200	600x600	600
Manhole Shaft	Over 2.7	900x840	900	600x600	600

BUILDING REGULATIONS MINIMUM DIMENSIONS FOR MANHOLES
(Not to Scale)

This plan complies with the Building Regulations 2010 Section 'H' - Drainage & Waste Disposal.

STANDARD NOTES:

1. This drawing is to be read in conjunction with all other OPUS drawings, and with all relevant Architect's and Engineer's drawings and specification.
2. No dimensions are to be scaled from this drawing. Unless noted otherwise all dimensions are in millimeters and all levels are in metres from the site datum. All dimensions to be checked on site. All details and dimensions relating to sub-Contractors work must be checked and agreed between the sub-Contractor or supplier and the general Contractor.
3. The electronic information from this drawing cannot be guaranteed as dimensionally drawn exact. Figured dimensions must be used for setting out and detailing. OPUS logos and company information must be removed from copies if information is re-used."
4. The main Contractor is responsible for the design of all temporary works, and is also responsible for the safe maintenance and stability of existing buildings at all times.
5. The main Contractor is responsible for the mitigation of all occurrences of ground water during the construction period.
6. Any information given regarding existing underground services is given in good faith after consultation with the relevant authority, however accuracy is not guaranteed. The main Contractor is responsible for checking all information on site prior to work commencing and taking due care and attention whilst undertaking the works.
7. The contractor must comply with all current legislation relating to Health & Safety.

DRAINAGE NOTES:

1. All works to be conducted in strict accordance with specification of the Local Authority, BS8301 1985 & BSEN.752-1.
2. All pipe runs near buildings to comply with the Building Regulations 2002 Part H1. Where a pipe is within 1m of a foundation the trench shall be filled with class GEN3 concrete up to the lowest level of the foundation. Where the trench is further than 1m from the foundation, the trench shall be filled with class GEN3 concrete to a level below the lowest level for the foundation equal to the distance from the foundation less 150mm, In both cases the pipe shall be bedded and surrounded in 150mm thick class GEN3 concrete.
3. Where pipes, external to the structures, have a depth to soffit from ground level of less than 450mm they shall have a class GEN3 concrete encasement (150mm thick).
4. Where a pipe, under a carriageway, has a depth of cover of less than 1.2m the pipe shall be laid in a class Z bedding.
5. Where pipes are bedded and surrounded in concrete, flexible joints should be provided. Compressible boards (fibreboard or polystyrene) shall be provided at a maximum of 8m centres (coinciding with pipe joints). The boards shall be pre-cut to pipe diameter and to a height and width equal to the concrete cross section. A board thickness of 18mm for pipes up to 450mm nominal diameter and 36mm for pipes over 450mm nominal diameter.
6. All private building drainage shall be constructed in strict accordance with BSEN.752-1.
7. Unless otherwise specified, building drainage to be 100mm internal diameter.
8. Minimum gradient for Ø100mm surface drainage pipes is 1:60, and Ø150mm is 1:100.
9. Minimum gradients for foul drainage pipes:
 Ø100mm: 1:40 where flow is less than 1l/s, or where no WCs are connected.
 Ø100mm: 1:78 where flow is 1l/s or greater, or where at least 1No. WC is connected.
 Ø150mm: 1:135 where flow is less than 5l/s, or where up to 5No. WCs are connected.
 Ø150mm: 1:150 where flow is 5l/s or greater, or where 5No. or more WCs are connected
10. All gullies not connected to inspection chambers are to be roddable.
11. All gully connections other than those at manholes to be made via 'Y' junctions.
12. Gullies coincident with pedestrian/drive crossings to have pedestrian type gully covers.
13. All road gully connections to be 150mm diameter.
14. All stub stacks to be fitted with air admittance valves where branch drain exceeds 12m except at the head of the run. Soil vent pipes located at the head of a run to be installed with roof tile vent.
15. All connections to be made from soffit to soffit.
16. Trench temporary formwork is required to all excavations exceeding 1.2m depth to provide adequate support and stability at all times.
17. Sewers are to be constructed in single sections between manholes only. Trenches to be backfilled prior to excavating the succeeding sewer run.
18. All concrete and concrete products to be in accordance with BRE 363 for sulphates.
19. Where sewer or drains are to be abandoned they shall be removed or infilled by grouting in accordance with the Civil Engineer Specification for the Water Industry 7th Edition, clause 5.23.

PRELIMINARY

Revision	Amendment	Approved	Revision Date
P1	PRELIMINARY ISSUE	APT	25.01.2018
P2	ADDRESS ADC COMMENTS	APT	05.02.2018

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Drawn	Designed	Approved	Revision Date
JPS	JPS	APT	05.02.2018

Project No.: FA E-E1644.00
Scale: AS SHOWN AT A1

Project: 90 ROSE GREEN ROAD BOGNOR REGIS

Sheet: CONSTRUCTION DETAILS DRAINAGE

Drawing No.: C310
Sheet. No.: SO1
Revision: P2

1:1@ A1
1:2@ A3
0 10 20 30 40 50 60 70 80 90 100 mm

Original Sheet Size A1 [841x594] Plot Date 14 Mar 2018 @ 5:03 PM Path N:\Projects\EE1600-EE1699\EE1644\04 CAD\Current Working Drawings\FA E-E1644.00 C310 C311 Drainage Details.dwg C310

ARUN DISTRICT COUNCIL AW/233/17/DOC