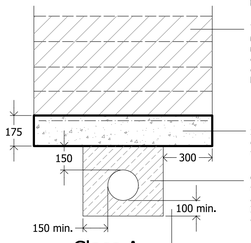
FEEDBACK: This drawing is one of a series that have been prepared to define the civil element of the development. If this, or any, drawing in the series could be improved to better communicate the proposed design please do not hesitate to contact Stafford IE.

PIPE BEDDING: Class A & S



NOTE
Under carriageway, backfill to be Type 1 granular material.

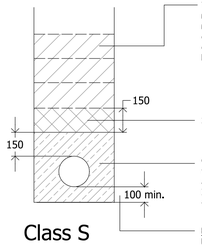
Type B Cl.505 free draining uniformly readily compactible material free from rubbish and organic matter. frozen soil, clay lumps and large stones. to be compacted by an approved method in layers not exceeding 150mm thick.

175mm thick Gen 3 concrete slab, with expansion joints provided every 6m. Reinforced with one sheet A393 mesh 50 from the top.

Class 'S' fill and surround in accordance with 'Sewers For Adoption' 6th Edition and the Water Authorities Association' Information and Guidance Note No 4-08-01 March 1988'

BEDDING DEPTH
Depth of bedding beneath pipe = Pipe Dia./6 or minimum 100mm whichever is the greater.

Class A
Less Than 1200mm
Under carriageway 900mm under open space.



Type B Cl.505 free draining uniformly readily compactible material free from rubbish and organic matter. frozen soil, clay lumps and large stones. to be compacted by an approved method in layers not exceeding 150mm thick.

150mm lightly compacted backfill.

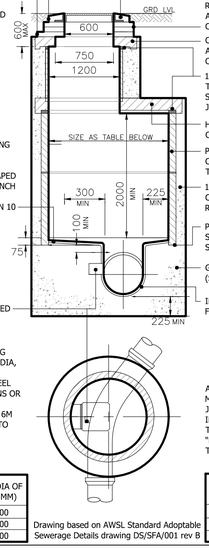
Class 'S' fill and surround in accordance with 'Sewers For Adoption' 6th Edition and the Water Authorities Association' Information and Guidance Note No 4-08-01 March 1988'

BEDDING DEPTH
Depth of bedding beneath pipe = Pipe Dia./6 or minimum 100mm whichever is the greater.

Class S
More Than 1200mm

BEDDING SPECIFICATION
Class S bedding material is to be graded in accordance with IGN No. 4-08-01. For 150mm dia. pipes use 14-5mm graded bedding aggregate.

TYPICAL MANHOLE TYPE A. NTS
[Depth to soffit 3m to 6m]



CLASS M1, M2 OR EPOXY MORTAR HAUNCHING TO MH COVER AND FRAME.

TYPE 1 COVER FRAME SEATING RING WITH 600 X 600 ECCENTRIC ACCESS HOLE (BS EN 752-3) BEDDED ON MORTAR.

GRANO CONCRETE BENCHING (MIN 20MM THICK) TO BE BROUGHT UP TO A DENSE SMOOTH FACE NEATLY SHAPED AND FINISHED TO ALL BRANCH CONNECTIONS. BENCHING SLOPE TO BE BETWEEN 1 IN 10 AND 1 IN 30.

TOE HOLES TO BE PROVIDED IN CHANNEL OF SEWERS ABOVE 600MM DIA.

CHAMBERS WITH OUTGOING PIPES 600MM OR GREATER DIA, SHALL BE FITTED WITH REMOVABLE STAINLESS STEEL (GRADE 316) SAFETY CHAINS OR POLYPROPYLENE ROPE. MANHOLES GREATER THAN 6M DEPTH SHALL BE SUBJECT TO SPECIFIC DESIGN.

DUCTILE IRON COVER AND FRAME TO BS EN124 D400, BEDDED ON CLASS M1, M2 OR EPOXY MORTAR. APPROVED PACKING MATERIAL MAY BE USED IF REQUIRED.

TYPE 2 COVER FRAME SEATING RINGS WITH 600 X 600 CENTRAL ACCESS HOLE. OR 2-4 COURSES CLASS 'B' ENG BWK

COVER SLAB WITH 750 X 600 ACCESS (BS752-3) BEDDED ON MORTAR.

10MM UNCOMPRESSED THICKNESS OF APPROVED SEALANT TO ALL HORIZONTAL JOINTS.

HEAVY DUTY REINFORCED CONCRETE REDUCING SLAB.

PRECAST CONCRETE SHAFT AND CHAMBER SECTIONS. LIFTING EYES TO BE POINTED.

150MM THICK GRADE GEN3 CONCRETE SURROUND (SULPHATE RESISTING).

PRECAST CONCRETE CHAMBER SECTIONS SET 75MM INTO BASE SLAB.

GRADE GEN3 CONCRETE (SULPHATE RESISTING).

INVERT WITHIN CHAMBER TO BE FORMED USING A CHANNEL PIPE.

ALL PIPES ENTERING OR LEAVING MANHOLES SHALL HAVE A FLEXIBLE JOINT WITHIN 600MM OF THE INSIDE FACE OF THE MANHOLE. THE NEXT PIPE SHALL BE A SHORT "ROCKER PIPE" WITH LENGTH AS TABLE BELOW.

SHAFT DIAMETERS

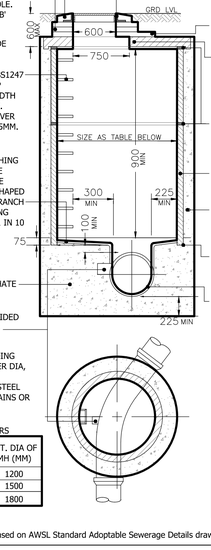
DIA OF LARGEST PIPE IN MH (MM)	INT. DIA OF MH (MM)
LESS THAN 375	1200
375 TO 700	1500
750 TO 900	1800

ROCKER PIPES

SEWER DIAMETER (MM)	EFFECTIVE LENGTH (MM)
150 TO 600	600
675 TO 750	1000
825 AND OVER	1250

Drawing based on AWSL Standard Adoptable Sewerage Details drawing DS/SFA/001 rev B

TYPICAL MANHOLE TYPE B. NTS
[Depth to soffit 1.45 to 3.0m]



CLASS M1,M2 OR EPOXY MORTAR HAUNCHING TO MH COVER AND FRAME.

TYPE 2 COVER FRAME SEATING RINGS WITH 600 X 600 CENTRAL ACCESS HOLE. OR 2-4 COURSES CLASS 'B' ENG BWK

STAINLESS STEEL (GRADE 316S31 BS5970) OR POLYPROPYLENE ENCAPSULATED ALL TO BS1247 PARTS 1-2, DOUBLE STEP RUNGS (280MM MIN. WIDTH AT 250MM CENTRES MAX. MAX DISTANCE FROM COVER LEVEL TO FIRST STEP 675MM.

GRANO CONCRETE BENCHING (MIN 20MM THICK) TO BE BROUGHT UP TO A DENSE SMOOTH FACE NEATLY SHAPED AND FINISHED TO ALL BRANCH CONNECTIONS. BENCHING SLOPE TO BE BETWEEN 1 IN 10 AND 1 IN 30.

GEN 3 CONCRETE (SULPHATE RESISTING).

TOE HOLES TO BE PROVIDED IN CHANNEL OF SEWERS ABOVE 600MM DIA.

CHAMBERS WITH OUTGOING PIPES 600MM OR GREATER DIA, SHALL BE FITTED WITH REMOVABLE STAINLESS STEEL (GRADE 316) SAFETY CHAINS OR POLYPROPYLENE ROPE.

600 X 600 DUCTILE IRON COVER AND FRAME TO BS EN124, BEDDED ON CLASS M1, M2 OR EPOXY MORTAR. APPROVED PACKING MATERIAL MAY BE USED IF REQUIRED.

TYPE 1 COVER FRAME SEATING RING WITH 600 X 600 ECCENTRIC ACCESS HOLE (BS EN 752-3) BEDDED ON MORTAR.

COVER SLAB WITH 750 X 600 ACCESS (BS EN 752-3) BEDDED ON MORTAR.

10MM UNCOMPRESSED THICKNESS OF APPROVED SEALANT TO ALL HORIZONTAL JOINTS.

PRECAST CONCRETE CHAMBER SECTIONS. LIFTING EYES TO BE POINTED.

150MM THICK GRADE GEN3 CONCRETE SURROUND (SULPHATE RESISTING).

PRECAST CONCRETE CHAMBER SECTIONS SET 75MM INTO BASE SLAB.

INVERT WITHIN CHAMBER TO BE FORMED USING A CHANNEL PIPE.

ALL PIPES ENTERING OR LEAVING MANHOLES SHALL HAVE A FLEXIBLE JOINT WITHIN 600MM OF THE INSIDE FACE OF THE MANHOLE. THE NEXT PIPE SHALL BE A SHORT "ROCKER PIPE" WITH LENGTH AS TABLE BELOW.

SHAFT DIAMETERS

DIA OF LARGEST PIPE IN MH (MM)	INT. DIA OF MH (MM)
LESS THAN 375	1200
375 TO 700	1500
750 TO 900	1800

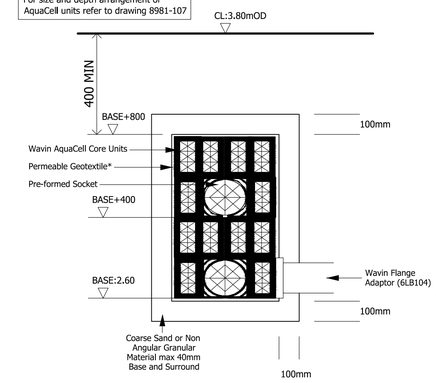
ROCKER PIPES

SEWER DIAMETER (MM)	EFFECTIVE LENGTH (MM)
150 TO 600	600
675 TO 750	1000
825 AND OVER	1250

Drawing based on AWSL Standard Adoptable Sewerage Details drawing DS/SFA/001 rev B

TYPICAL AQUACELL CRATE INSTALLATION

Note
For size and depth arrangement of AquaCell units refer to drawing 8981-107

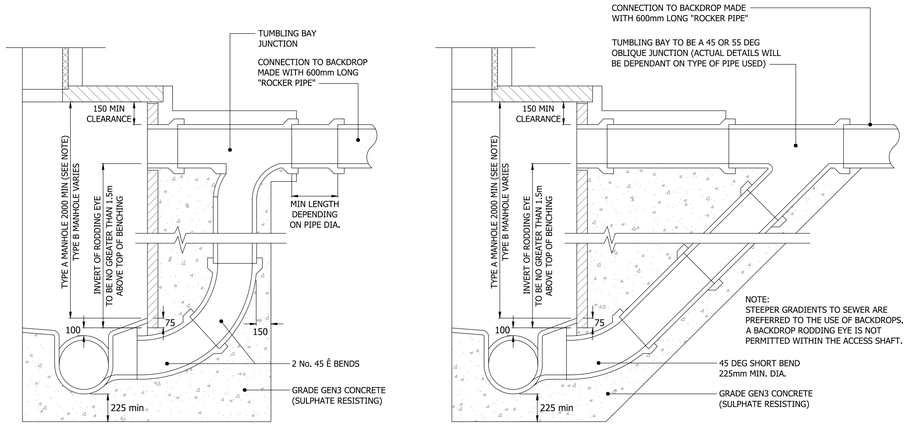


1. Excavate the trench to the required depth ensuring that the plan area is slightly greater than that of the AquaCell units.
2. Lay 100mm bed of coarse sand, or non-angular granular material maximum 40mm, level and compact.
3. Lay the geotextile Terram 4000 [300g non-woven] over the base and up the sides of the trench.
4. In attenuation tank situations ONLY, lay the geomembrane on top of the geotextile over the base & up the sides of the trench. In soakaway situations this membrane is to be omitted.
5. Lay the AquaCell units parallel with each other. In multiple layer applications, wherever possible, continuous vertical joints should be avoided. AquaCell units can be laid in a `brick bonded' formation (i.e. to overlap the joints below). For single layer applications use the Wavin Clips and for multi layers use the Wavin Clips and the Wavin Shear Connectors (vertical rods).
6. Wrap the geotextile around the AquaCell structure and seal to manufacturers recommendations.*
7. Place the Wavin Flange Adaptor into position (at a point other than the pre-formed socket) and fix using self tapping screws. Drill a hole through the Flange Adaptor and connect pipework.
8. In order to prevent silt from entering the tank, clogging inlet pipework and reducing storage capacity, it is recommended that the Wavin Silt Trap (6LB600) is installed prior to the inlet pipework - see separate detail for installation guidelines.
9. Wrap and overlap the geotextile covering the entire AquaCell structure, to protect the geomembrane.
10. Lay 100mm of coarse sand between the trench walls and the Wavin AquaCell units and compact.
11. Lay 100mm bed of coarse sand over the geotextile and compact. Backfill with stone free as-dug material.

NB: A storage tank must be vented, and it is recommended that one vent pipe, 110mm in diameter is provided per 7,500 square metres of impermeable catchment area on a site, see page 8 for design.

* For large scale, deep installations a 1mm thick geomembrane is recommended and joints should be sealed using proprietary techniques. However, for shallow, domestic installations it may be suitable to use a geomembrane with taped joints.

BACKDROP TO MANHOLE. NTS



EXTERNAL VERTICAL BACKDROP

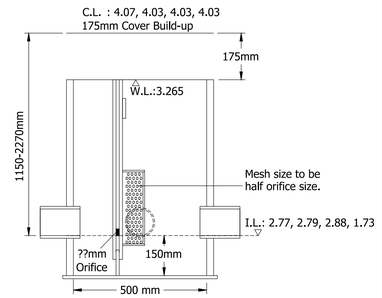
EXTERNAL RAMPED BACKDROP

NOTES:

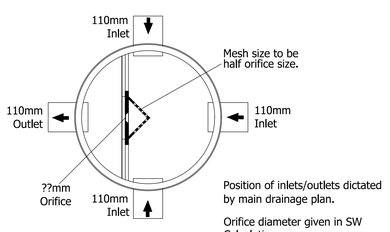
BACKDROPS ARE TO BE DESIGNED OUT OF ADOPTABLE SEWERAGE SYSTEMS WHERE POSSIBLE. STEEP GRADIENTS ARE PREFERRED TO BACKDROPS PROVIDING THE GRADIENT IS NO STEEPER THAN 1 IN 10.

IF A BACKDROP IN UNAVOIDABLE THE EXTERNAL RAMPED BACKDROP IS PREFERRED TO THE EXTERNAL VERTICAL BACKDROP.

Drawing based on AWSL Standard Adoptable Sewerage Details drawing DS/SFA/001 rev B



SUDS02005
Controflow



Position of inlets/outlets dictated by main drainage plan.

Orifice diameter given in SW Calculations.

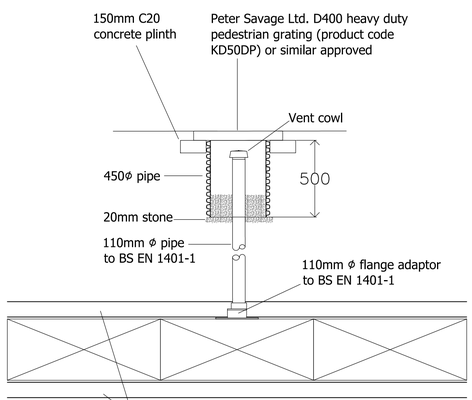
SEL Environmental Ltd, Canal House Bonsall Street Blackburn BB2 4DD
www.selet.co.uk

Product Code: SUDS02005
Description: Controflow 500 Series Universal Level Invert
Status: For Approval

220039 / SUDS	--	19/01/20
SEL Reference	Revision	Date

Client Drawing No: 406_7620_1061<D3_ Ground Floor Drainage.pdf

AIR VENT DETAIL
1:20



Minimum 100mm thick coarse sand or Class 6H selected granular material (100% passing 5mm sieve).

Position of vents to be agreed on site.

NOTES:
All dimensions must be checked on site and not scaled from this drawing.

Anglian Water Notes

All S.104 adoptable drainage shall conform to the design and construction guide for developers, Sewers for Adoption 6th Edition published by WRc plc and any AWSL additions & deletions current at the time of execution.

All covers and frames on adoptable AW sewers are to be D400, kitemarked and be badged 'FW' or 'SW' accordingly. Suppliers shall be Stanton, Paul Savage, Norinco or Wrekin.

Adoptable pipework shall be to the following specification:

Clayware: BS EN 295-1:1991
150 dia. Crushing Strength 34kN/m
225 dia. Class 160

Concrete: BS EN 5911-1:2002
>300 dia. Class 120

PRELIMINARY DRAWING

	Date	Revisions

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Job Title

Land Off Quadring Road,
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Spalding,
PE11 4TB

Drawing Title

Construction Details
Manhole Details
Sheet 3

Date	Scale @ A1	Drawn
FEB 2020	NTS	LCM

Drg.No.	Rev.
8981 -303	-