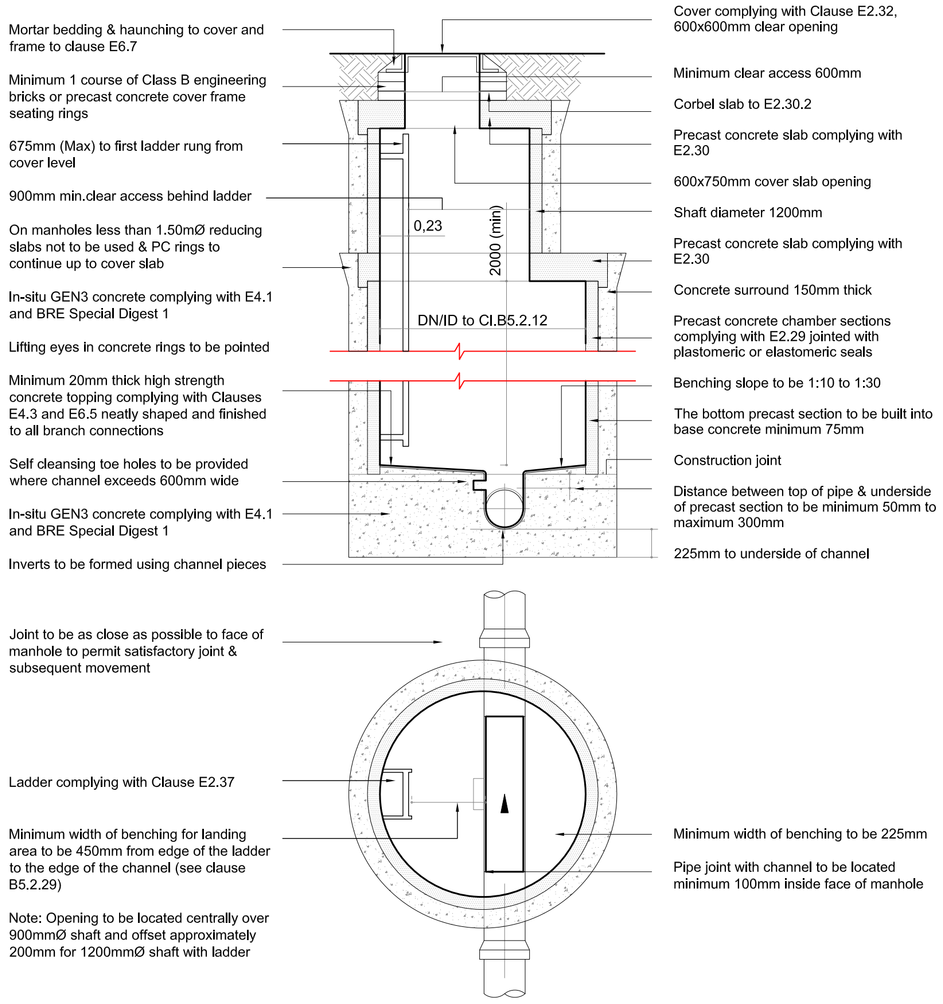
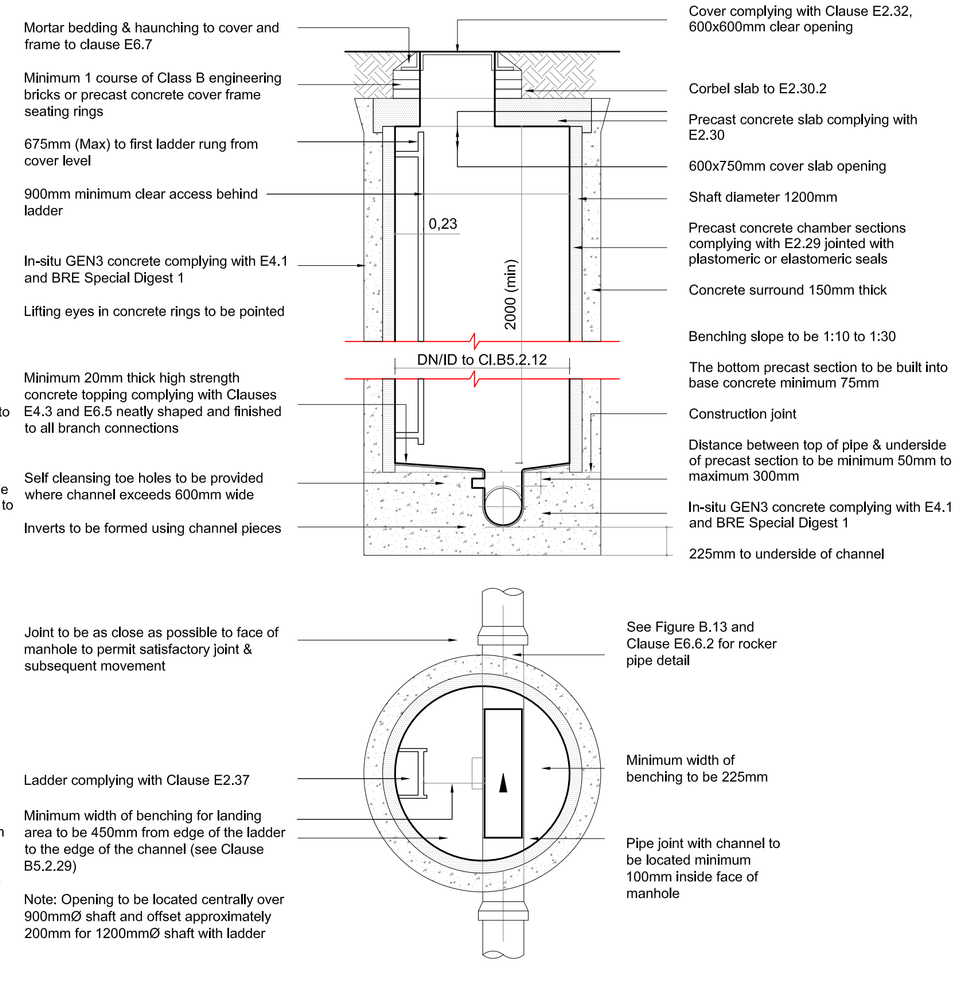
Typical Manhole Detail - Type A1

Depth from cover level to soffit of pipe 3m to 6m with ladder and reducing slab. Rigid material construction with concrete surround.



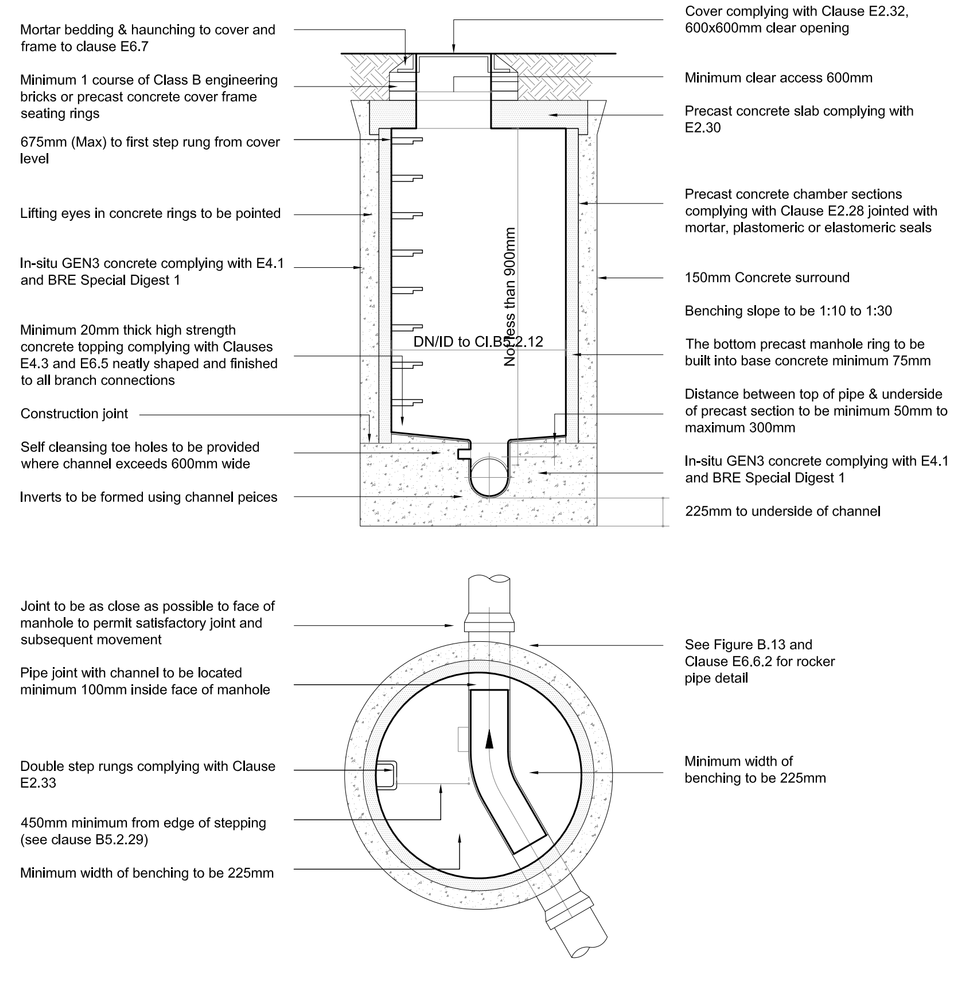
Typical Manhole Detail - Type A2

Depth from cover to soffit of pipe 3m to 6m with ladder. Alternative rigid material construction with concrete surround.

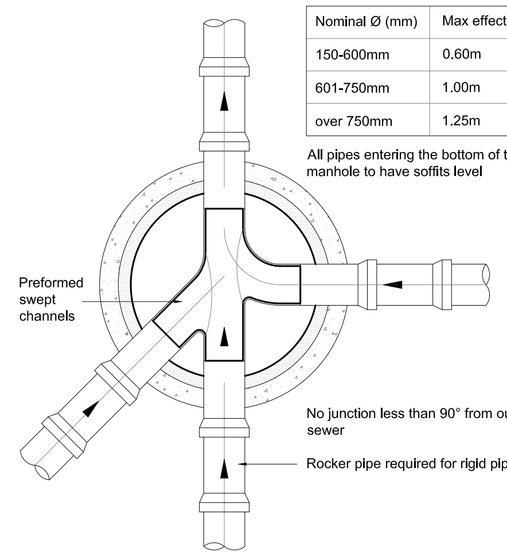


Typical Manhole Detail - Type B

Depth from cover level to soffit of pipe 1.5m to 3m - Rigid construction with concrete surround



Typical Arrangement of pipe junctions within manholes



Rigid pipes built into manhole should have a flexible joint as close as feasible to the external face of the structure and the length of the next rocker pipe should be as shown

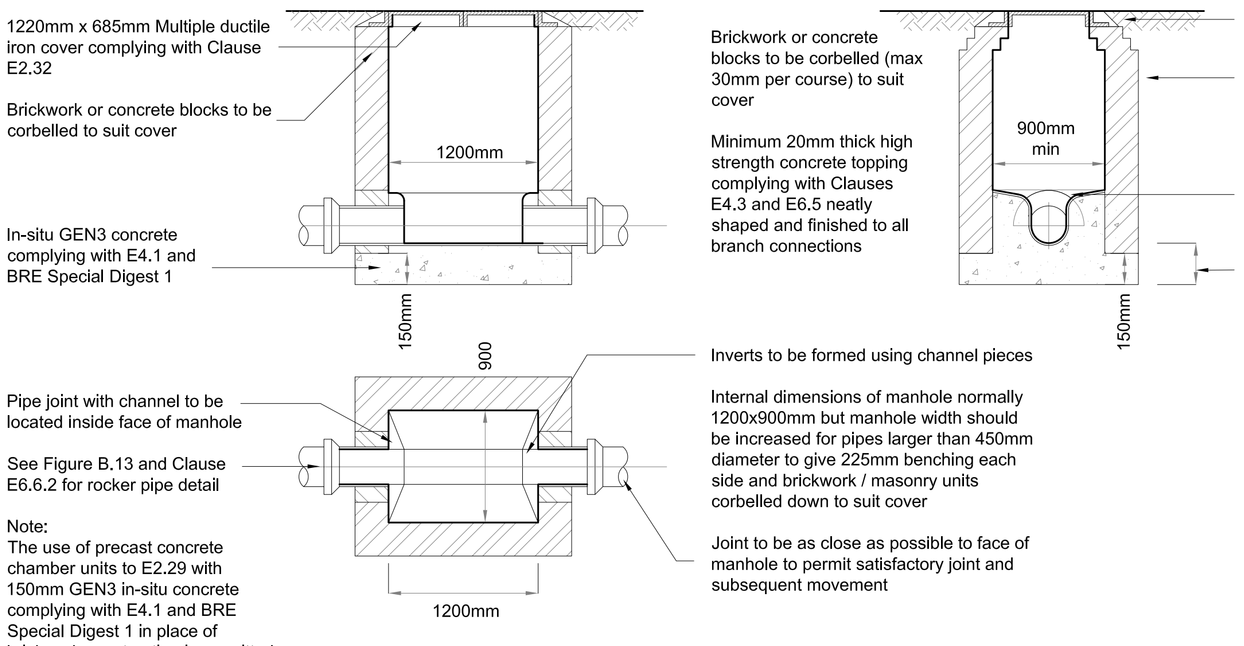
Nominal Ø (mm)	Max effective length (m)
150-600mm	0.60m
601-750mm	1.00m
over 750mm	1.25m

All pipes entering the bottom of the manhole to have soffits level

Nominal internal diameter of largest pipe in manhole	Minimum nominal internal dimension of manhole
Less than 375mm	1200mm
375-450mm	1350mm
500-700mm	1500mm
750-900mm	1800mm
Greater than 900mm	Pipe diameter + 900mm

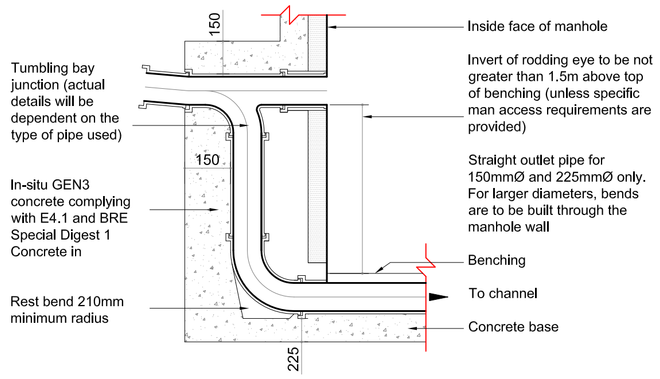
Typical Manhole Detail - Type C

Depth from cover level to soffit of pipe less than 1.5m. Maximum pipe size 450mmØ. Rigid material construction.



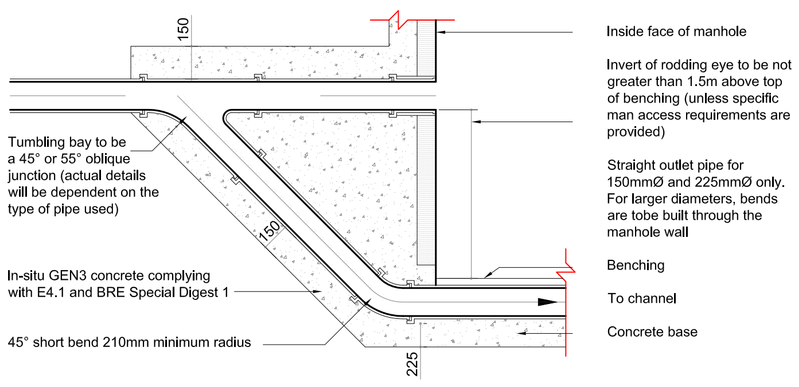
Typical Vertical Backdrop Manhole Detail

Note: Steeper gradients are preferred to the use of back drop manholes, Type of back-drop to be used to be agreed with the sewerage company.

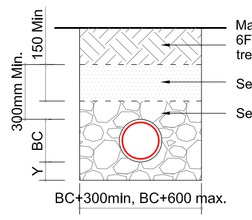


Typical Ramped Backdrop Manhole Detail

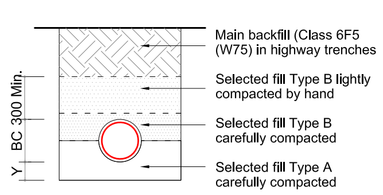
Note: Steeper gradients are preferred to the use of back drop manholes, Type of back-drop to be used to be agreed with the sewerage company.



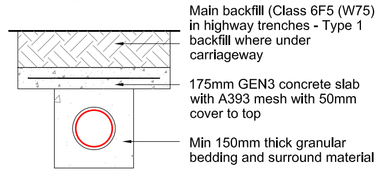
Bedding detail - Class S



Bedding detail - Class B



Bedding detail - Slab



NOTE:
ALL ADOPTABLE DRAINAGE WORKS TO BE IN ACCORDANCE WITH "SEWERAGE SECTOR GUIDANCE".

Important note:

All construction works to be undertaken in strict accordance with the Construction (Design and Management) Regulations 2015.

Pipe Bedding and Fill Material

Granular bedding Type A for pipes and back fill material for temporary drains (trench sub-drains) shall consist of free draining, hard, clean, chemically stable gravel, crushed stone or crushed slag. Shall be aggregates from natural or sintered pulverised fuel ash complying with the relevant provisions of BS 3797 Part 2, respectively sized in accordance with the following:

Nominal bore of pipe (mm)	Alternative aggregate size (mm) Single size	Graded
100	10	-
150	10 or 14	14 to 5
225-300	10, 14 or 20	14 to 5 or 20 to 5
375-525	14 to 20	14 to 5 or 20 to 5
<525	14, 20 or 40	14 to 5, 20 to 5 or 40 to 5

Selected fill Type B, whether selected from locally excavated material or imported, shall consist of uniformly readily compatible material, free from vegetable matter, building material and frozen material or materials susceptable to spontaneous combustion and excluding clay of liquid limit greater than 55 and materials of excessively high moisture content. Clay lumps and stones shall be retained on 75mm and 375mm selves respectively.

Pipe bedding and fill materials to concrete pipes shall not contain more than 0.3 percent sulphate expressed as sulphur trioxide.

Sand for bedding pipes shall comply with the provisions of BS 882 Table 5 for Grading Zone C.

Dimension Y:

In rock or mixed soils containing rock boulders, large flints or stones or irregular hard spots that result in an uneven trench bottom.

Y=200mm minimum but sufficient to provide 150mm minimum under sockets.

In soils that permit an even trench bottom Y=100mm minimum but sufficient to provide 50mm minimum under sockets.

VITRIFIED CLAY PIPES

Vitrified clay pipes and fittings shall have flexible mechanical joints. Pipes for foul foul and surface water sewers shall comply with the relevant requirements of BS EN 295-1 and BS 65 (surface water pipes only)

CONCRETE PIPES

Unreinforced and reinforced concrete pipes and fittings shall comply with the relevant provisions of BS EN 1916 and BS 5911-1 and shall be manufactured from concrete with a Design Chemical Class DC-4 unless the sewerage company can be satisfied that a lower class will resist attack from soils and groundwater.

All pipes and fittings shall have gasket-type joints of spigot and socket or rebated form.

THERMOPLASTICS SOLID WALL PIPES AND FITTINGS FOR GRAVITY SEWERS.

Thermoplastics pipes, joints and fittings for gravity sewers shall comply with the relevant provisions of BS EN 1401-1 (PVC-U), BS EN 1852-1 (PP), or BS EN 12666-1 (PE) as appropriate. Pipes and fittings shall be made from the same material and the same short term ring stiffness class.

Ancillary drainage fittings shall comply with BS EN 13598-1 or BS 4660, as appropriate.A1.2

THERMOPLASTICS STRUCTURED WALL PIPE.

Thermoplastics structured wall sewer pipe shall comply with the relevant provisions of BS EN 13476-1 and WIS 4-35-01 and BS EN 13476-2 or BS EN 13476-3, Pipes shall be BSI Kitemarked or have equivalent third party certification.

Pipes less than or equal to 500 mm in diameter shall have nominal short-term ring stiffness not less than 8 kN per m^2 (SN8) or be subject to a quality system for storage and embedment.

Nominal short-term ring stiffness of 2 kN per m^2 (SN2) is acceptable for pipes greater than 500 mm in diameter, subject to structural design load calculations in accordance with BS 9295:2019 which shall be provided to support this.

Maximum length of pipe for laying is 3 m or 10 x DN, whichever is the greater.

COMPRESSIBLE FILLER AND PACKING FOR PIPELINES

Compressible filler for interupting concrete protection to pipes shall consist of bitumen impregnated insulating board to BS EN 622-1 and BS EN 622-4, or other equally compresible material in accordance with the following:

Pipe diameter.	Compressible filler thickness.
<450mm	18mm
450-1200mm	36mm
>1200mm	54mm

Compressible packing for use between pipes and precast concrete seating blocks shall consist of bitumen damp-proof sheeting complying with BS EN 14967.

MANHOLE COVERS AND FRAMES

Manhole covers and frames shall comply with the relevant provisions of BS EN 124, BS 7903 and 'Design Manual for Roads and Bridges 4.2 Part 5' HA 104/09, They shall be of a non-rocking design. Covers that transfer the load to the frame at concentrated points (e.g. at the corners of covers) shall not use cushion inserts between the cover and the frame. Aluminium covers shall not be used.

Manhole covers on foul-only sewers shall be of low leakage types in order to prevent excessive surface water ingress.

As a minimum, Class D 400 covers shall be used in carriageways of roads (including pedestrian streets), hard shoulders, agricultural or recreational land and parking areas used by unrestricted types of road or pneumatic tyred agricultural vehicles.

Class B 125 shall be used in footways, pedestrian areas, driveways serving a single house and comparable locations.

All covers shall be the non-ventilating type and shall have closed keyways.

CAD SECURE
Cadsquare Midlands Ltd
Unit 25, Greenbox
Westonhall Road
Stoke Prior
Bromsgrove
Worcestershire
B60 4AL
t: 01527 878555
www.cadsquaremidlands.co.uk

Architecture
Planning
Engineering

COUNTRYSIDE

PRELIMINARY

LAND OFF A52	STANDARD MANHOLE	21-081 / 501-1
ASH BANK	DETAILS - SECTION 104	SEPT 2021
WERRINGTON	WATER INDUSTRY ACT	
STAFFORDSHIRE	1991	NTS @ A1

RESPONSIBILITY IS NOT ACCEPTED FOR ERRORS MADE BY OTHERS IN SCALING FROM THIS DRAWING. ALL CONSTRUCTION INFORMATION SHOULD BE TAKEN FROM FIGURED DIMENSIONS ONLY. PRIOR TO THE COMMENCEMENT OF ANY WORKS, THE BUILDER IS TO CHECK AND/OR DETERMINE ALL CONSTRUCTION DETAILS,INCLUDING CHECKING EXISTING SITE LEVELS AND DIMENSIONS. THE DRAWING IS TO BE READ IN CONJUNCTION WITH ALL OTHER PROJECT DRAWINGS, CONSTRUCTION NOTES AND/OR PROJECT SPECIFICATION. ALL DISCREPANCIES SHOULD BE REPORTED IMMEDIATELY. THIS DRAWING IS THE COPYRIGHT OF CADSQUARE MIDLANDS LTD AND MUST NOT BE USED IN