



Melksham, Blackmore Farm

David Wilson Homes

10466 - 105 Sewer Construction Details

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Revision -

PHOENIX DESIGN PARTNERSHIP LTD.

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Figure	Type	Description
B23	A1	Depth from cover level to soffit of pipe 3m to 6m with ladder and reducing slab. Rigid material construction without concrete surround
B24	A1	Depth from cover level to soffit of pipe 3m to 6m with ladder and reducing slab. Rigid material construction with concrete surround
B6	A2	Depth from cover level to soffit of pipe 3m to 6m with ladder Rigid material construction without concrete surround
B7	A2	Depth from cover level to soffit of pipe 3m to 6m with ladder Alternative rigid material construction with concrete surround
B8	A2	Depth from cover level to soffit of pipe 3m to 6m with ladder Flexible material construction
B9	B	Depth from cover level to soffit of pipe 1.5m to 3m Rigid material construction without concrete surround
B10	B	Depth from cover level to soffit of pipe 1.5m to 3m Alternative rigid material construction with concrete surround
B11		Alternative base detail for Type A and Type B manholes without concrete surround
B12	B	Depth from cover level to soffit of pipe 1.5m to 3m Flexible material construction
B13		Typical arrangement of pipe junctions within manholes
B33	C	Depth from cover level to soffit of pipe less than 1.5m. Maximum pipe size 450 mm diameter. Rigid material (brickwork or concrete block) construction
B15	C	Depth from cover level to soffit of pipe less than 1.5m. Maximum pipe size 450 mm diameter. Rigid material (pre-cast ring) construction
B16		Typical vertical and ramped backdrop detail (rigid materials)
B36		Typical vertical and ramped backdrop detail (flexible materials)
B37	D	Depth from cover level to soffit of pipe up to 3m. Flexible material construction for use in areas subject to vehicle loading
B38	D	Flexible material construction alternative top details for use in areas of light vehicle loading or landscaped areas
B39	D	Depth from cover level to soffit of pipe up to 3m. Rigid material construction for use in areas subject to vehicle loading
B40	D	Depth from cover level to soffit of pipe up to 3m. Rigid material construction for use in areas subject to vehicle loading or landscaped areas
B22		Typical base layouts for Type D chambers
B42	E	Depth from cover level to soffit of pipe up to 2m. Flexible material construction
B43	E	Depth from cover level to soffit of pipe up to 1m. Rigid material construction
B44	E	Depth from cover level to soffit of pipe up to 2m. Flexible material construction
B26		Connections to sewer
B27		Protection of pipes laid at shallow depths
B28		Joints for encased pipes
C3		Typical outfall safety grille for outfalls 350 mm diameter or greater
-		Phoenix Class S Bedding and Pipe Crossing Detail

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General notes

1. All works to be adopted under a Section 104 agreement shall be carried out in accordance with "Sewerage Sector Guidance - Appendix C" and shall be to the approval of **Wessex Water**
2. Access cover grades to be BS EN 124 class D400 in all areas with 150mm frame depth
3. Where a future connection is provided in the manhole the pipe shall be supplied with a stopper
4. Reduction shaft is optional for manholes greater than 3.0m depth and where the manhole diameter is 1.5m or greater
5. Ladders shall be either stainless steel or hot-dipped mild steel. Fixings to be stainless steel
6. Step rungs shall be double polypropylene encapsulated galvanised mild steel.
7. Sulphate resisting Portland cement shall be used for all concretes and moprtars having equivalent compressive strength of 20n/mm or greater (including precast concrete products), unless tests indicate otherwise.
8. Penultimate downstream adoptable manholes to have temporary debris screens.

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Figure B 23
Typical manhole detail – Type A1

Depth from cover level to soffit of pipe 3 m to 6 m with ladder and reducing slab
Rigid material construction without concrete surround

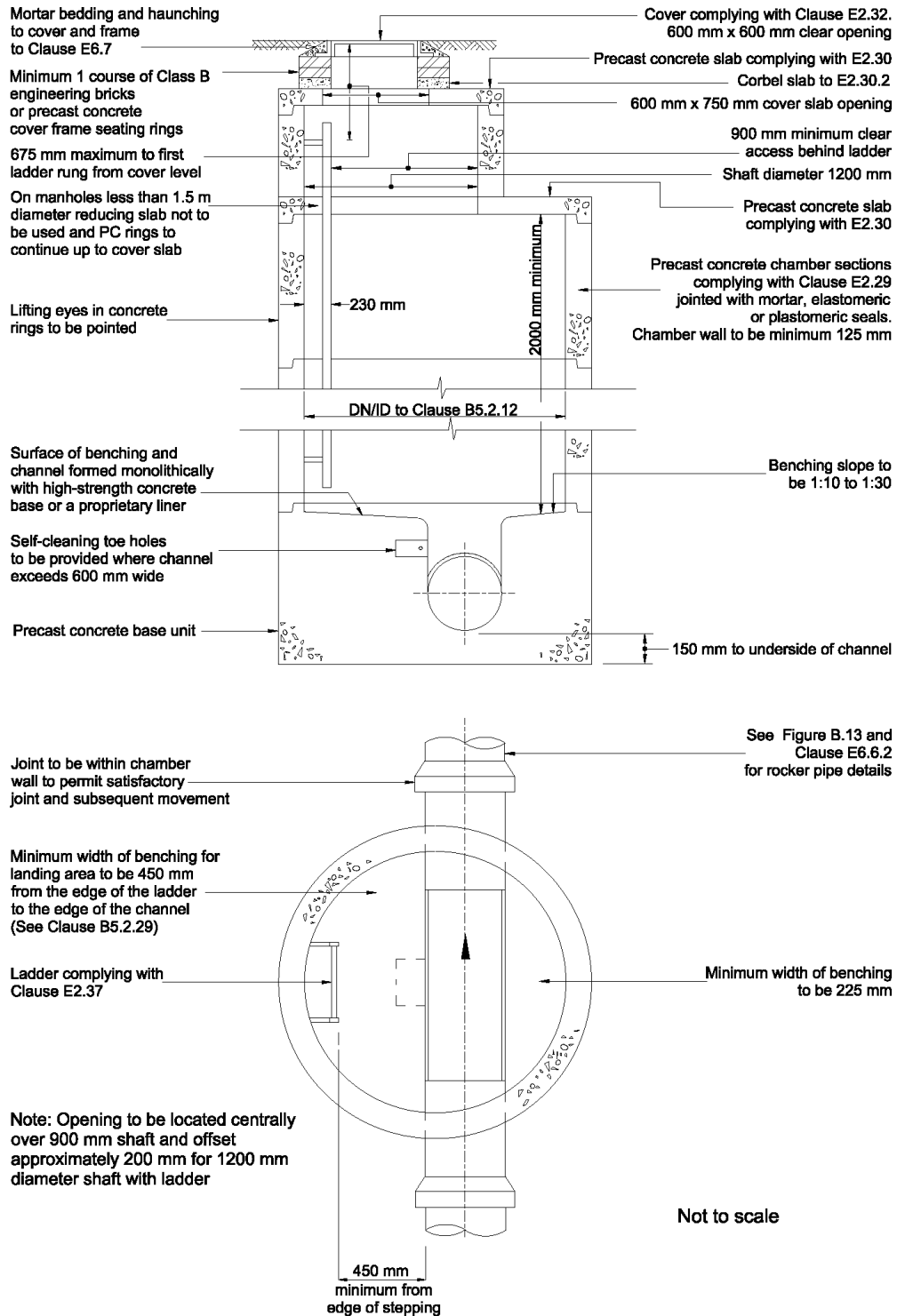


Figure B 24
Typical manhole detail – Type A1

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

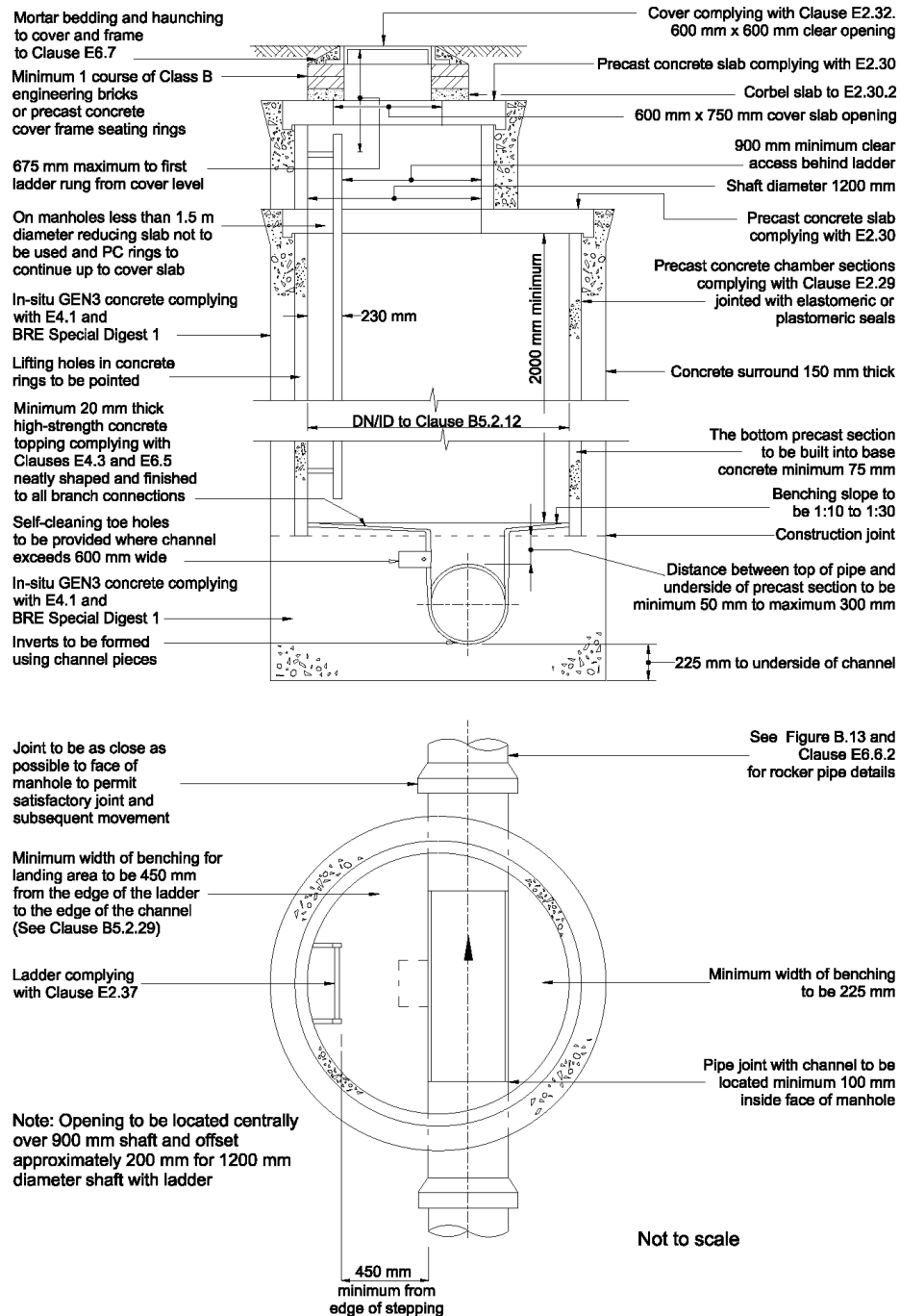


Figure B 6
Typical manhole detail – Type A2
Depth from cover level to soffit of pipe 3 m to 6 m with ladder
Rigid material construction without concrete surround

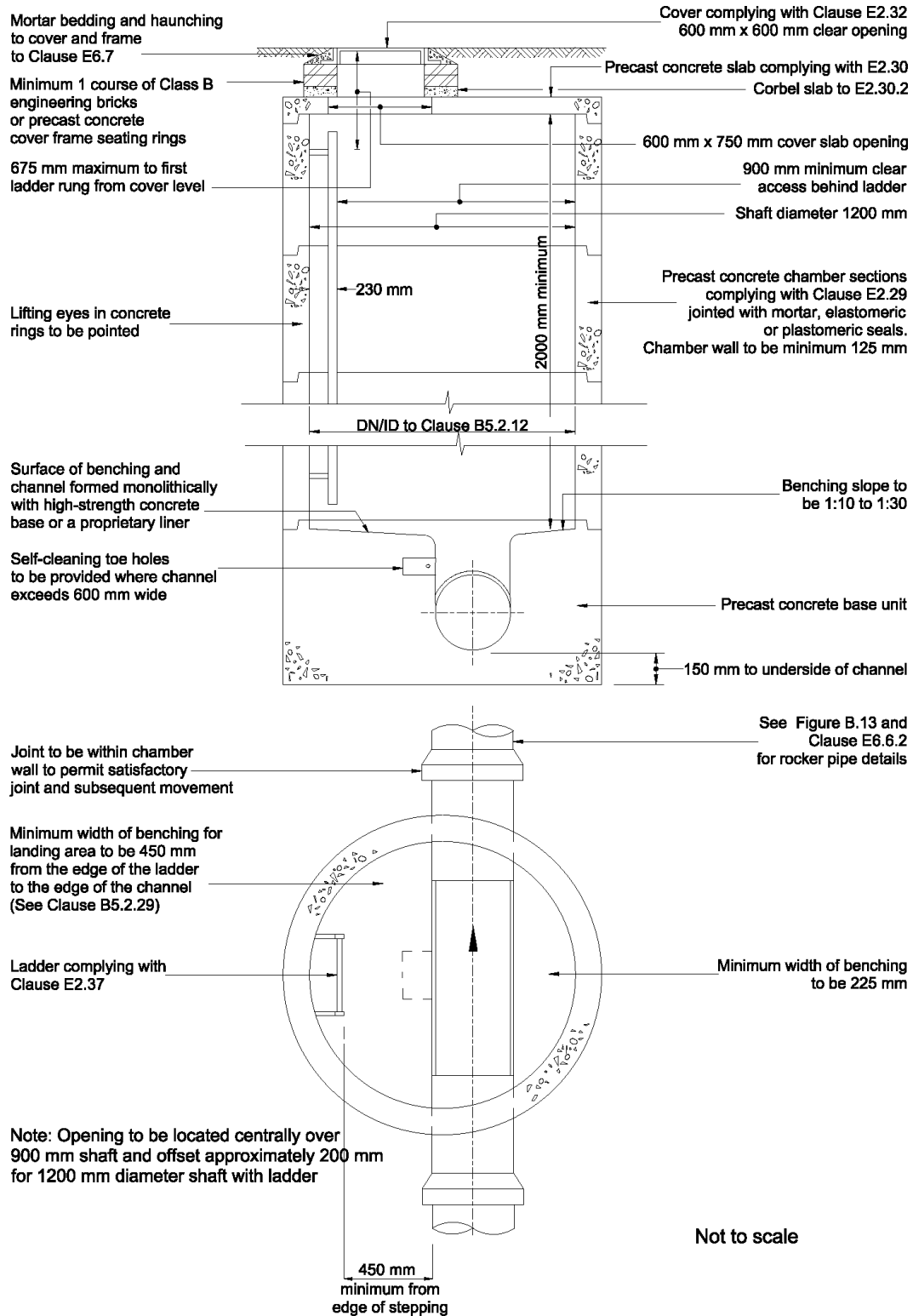


Figure B 7
Typical manhole detail – Type A2

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

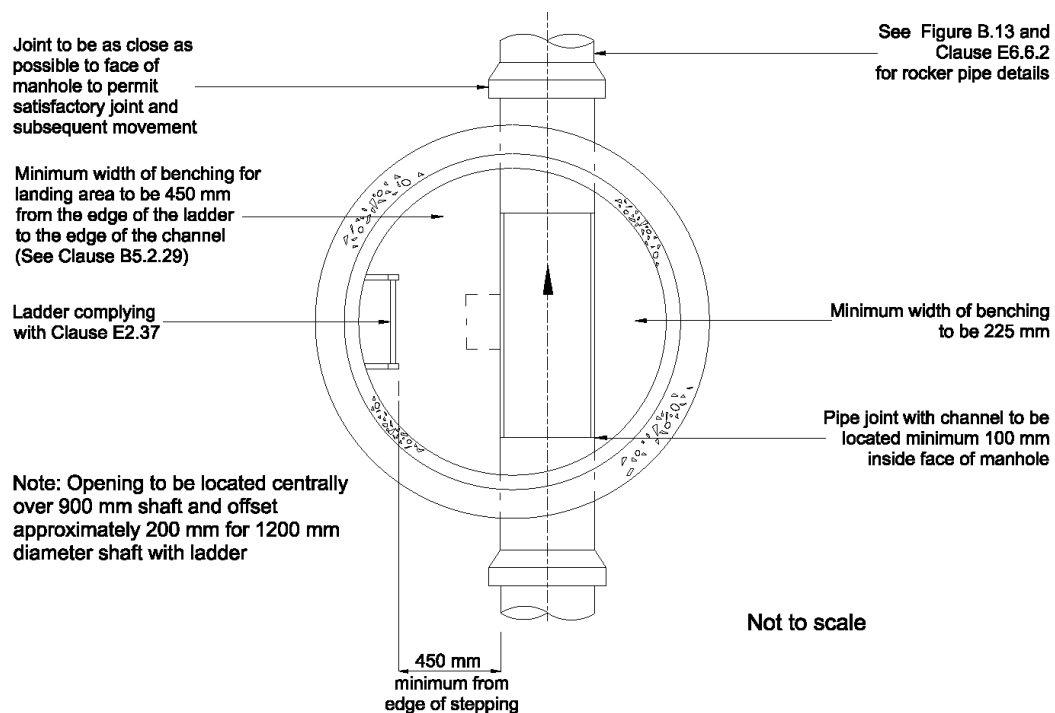
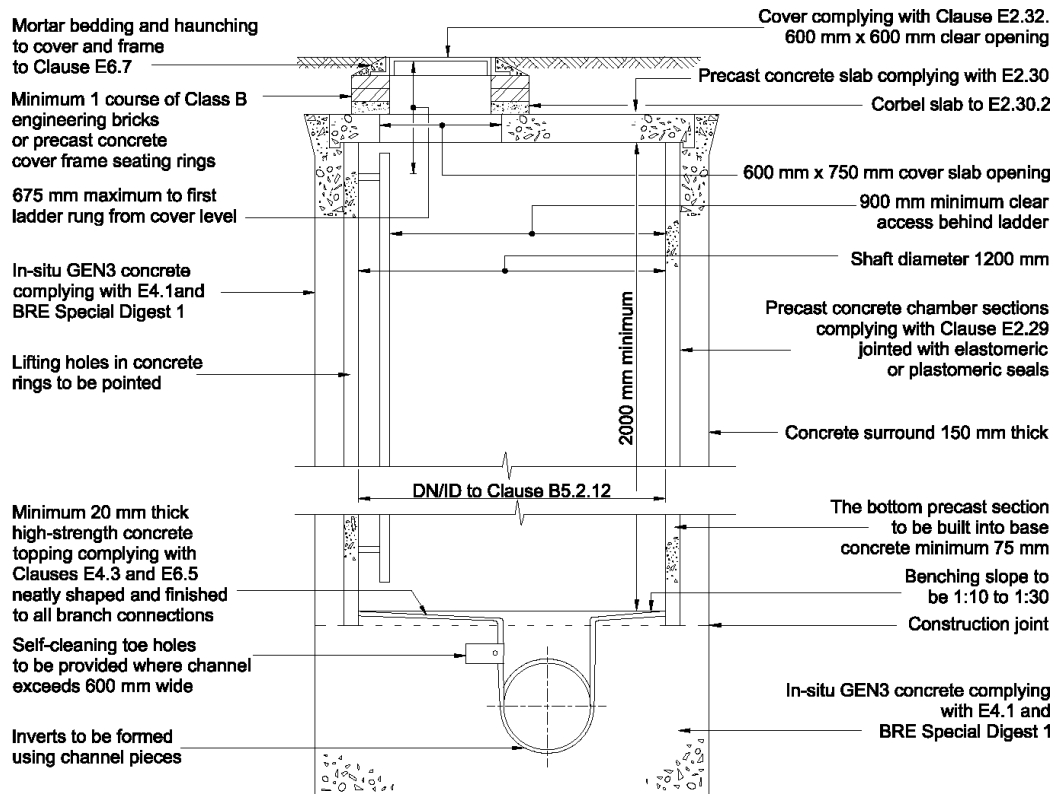


Figure B 8
Typical manhole detail – Type A2
Depth from cover level to soffit of pipe 3 m to 6 m with ladder
Flexible material construction

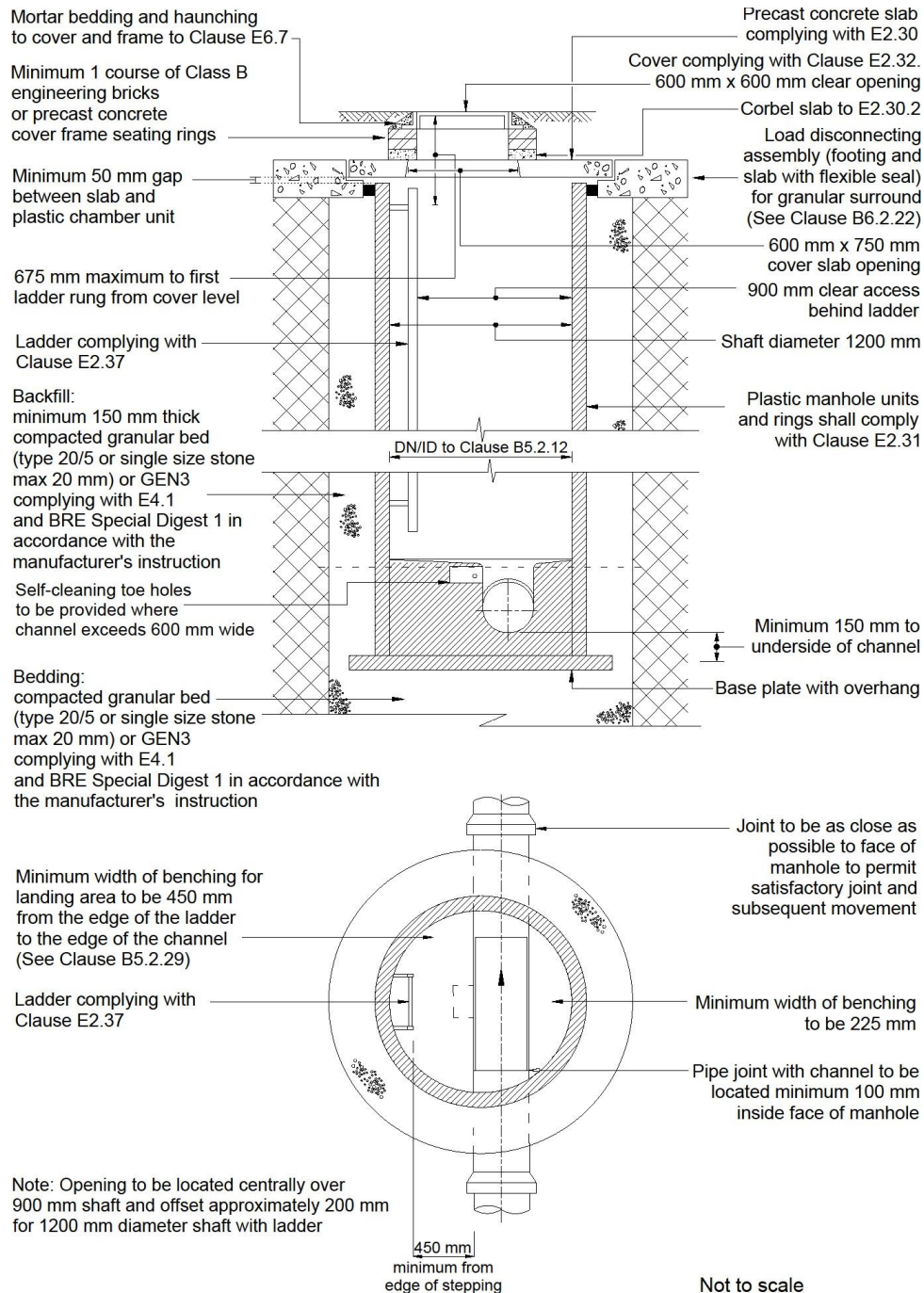


Figure B 9
Typical manhole detail – Type B
Depth from cover level to soffit of pipe 1.5 m to 3 m
Rigid material construction without concrete surround

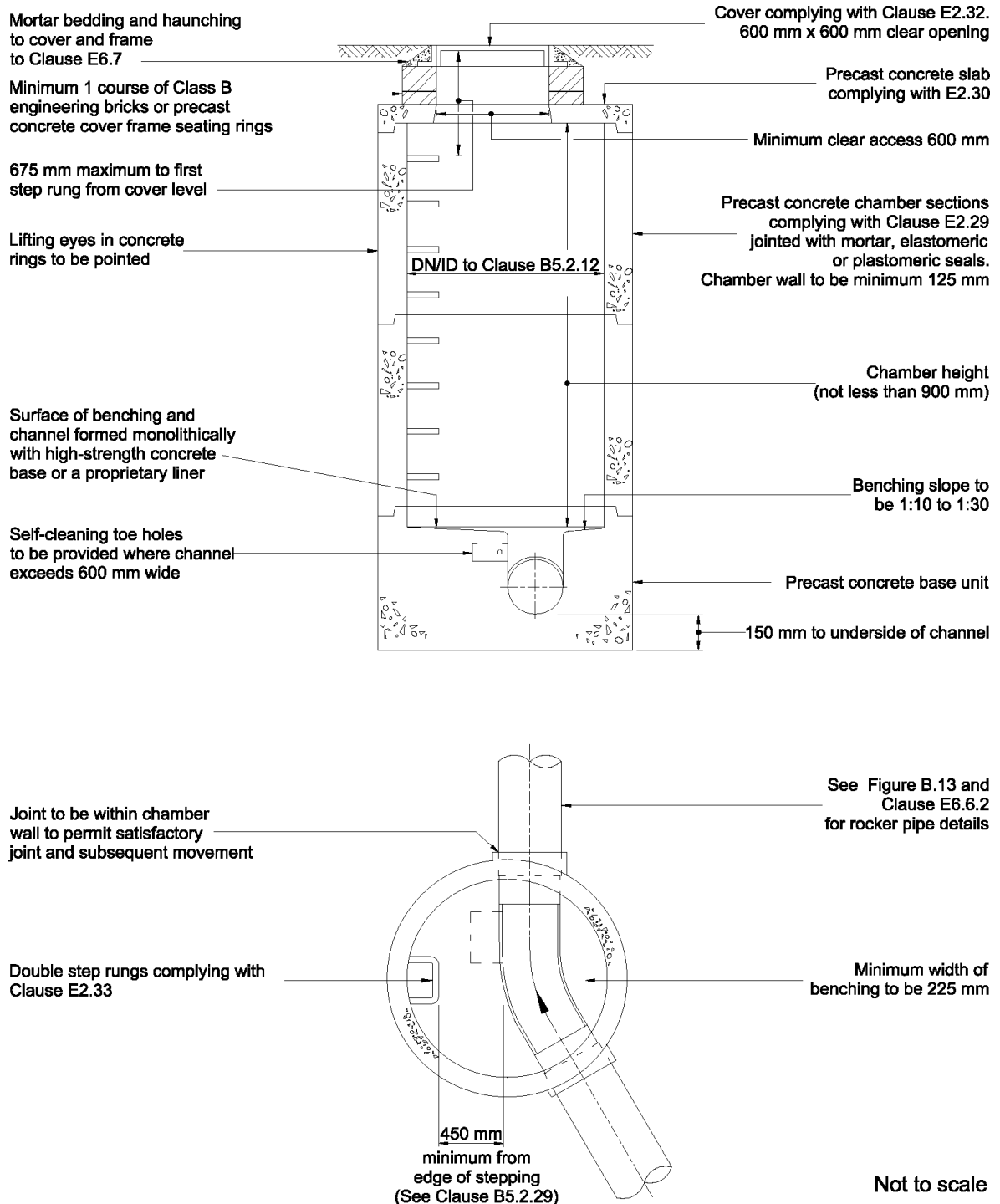


Figure B 10
Typical manhole detail – Type B
Depth from cover level to soffit of pipe 1.5 m to 3 m
Alternative rigid material construction with concrete surround

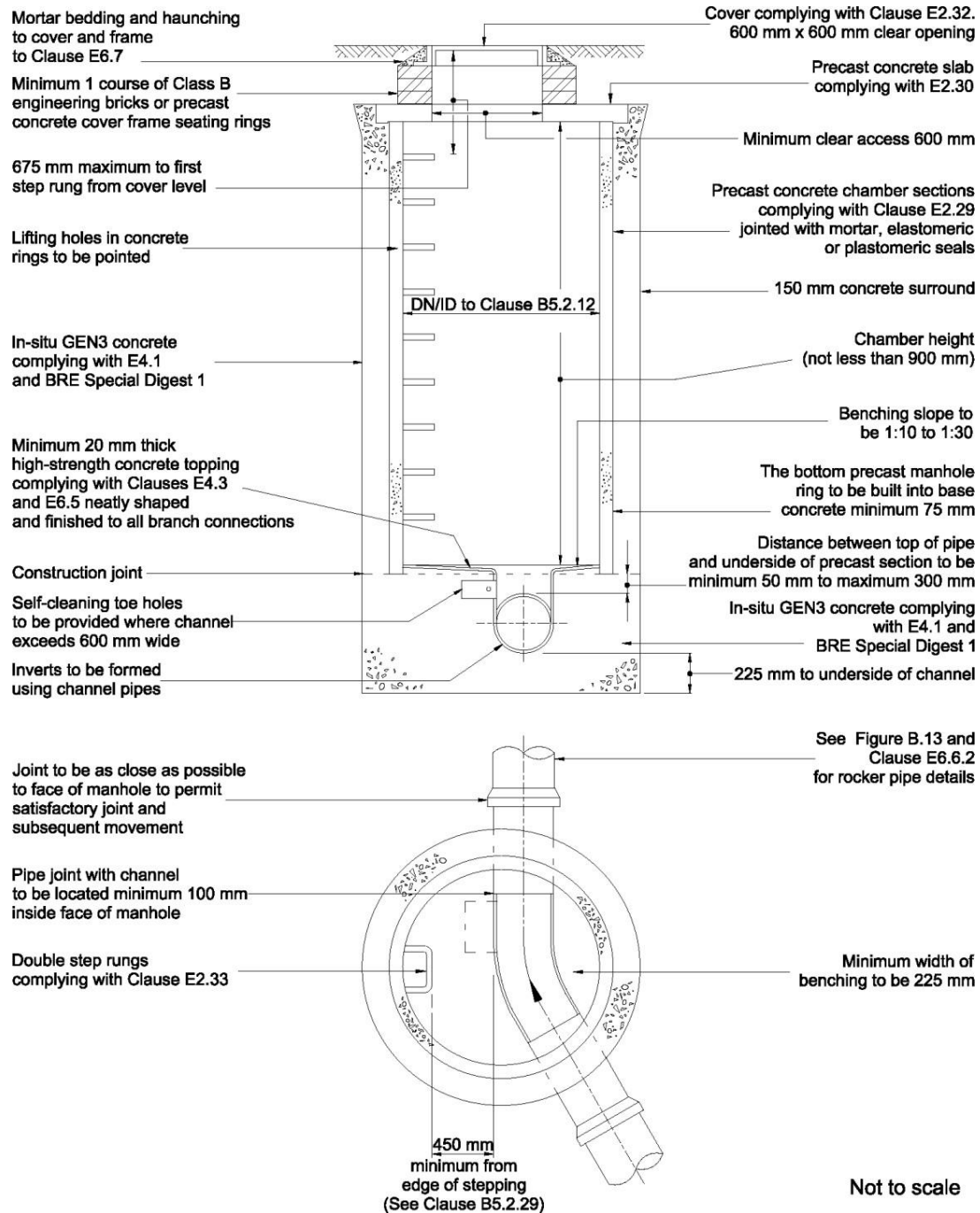


Figure B 11
Alternative base detail for Type A and Type B manholes without concrete surround

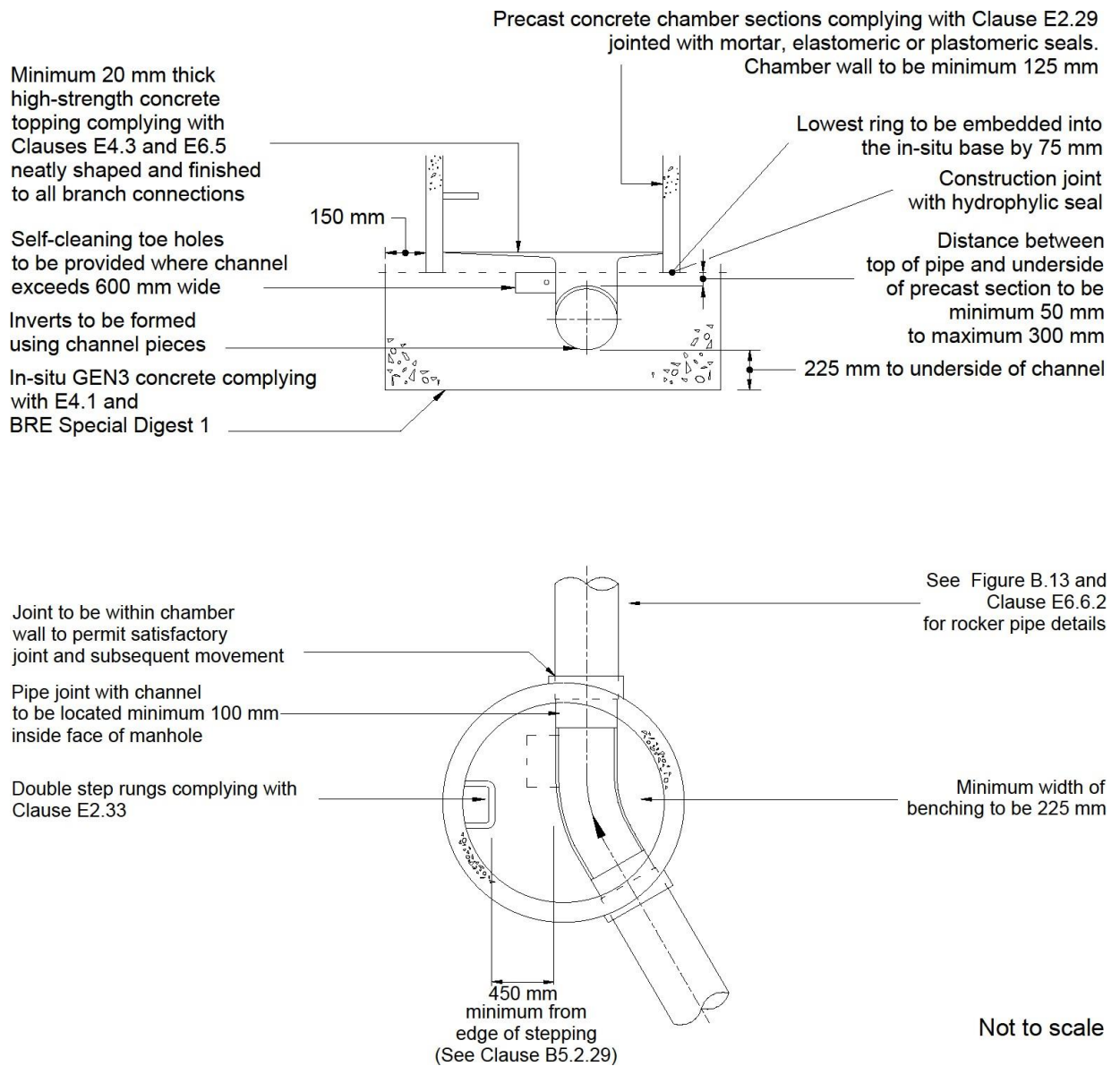


Figure B 12
Typical manhole detail – Type B
Depth from cover level to soffit of pipe 1.5 m to 3 m
Flexible material construction

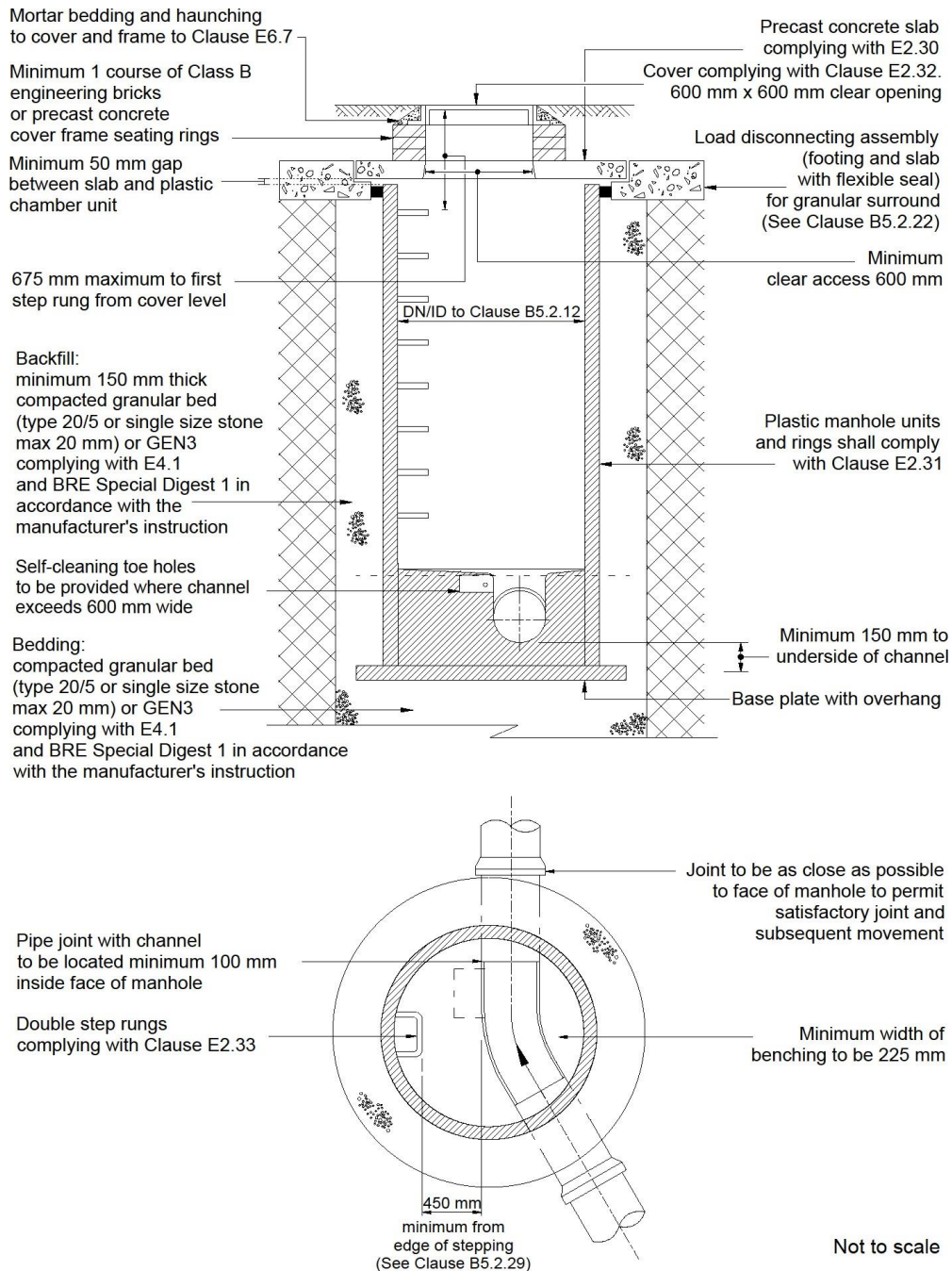
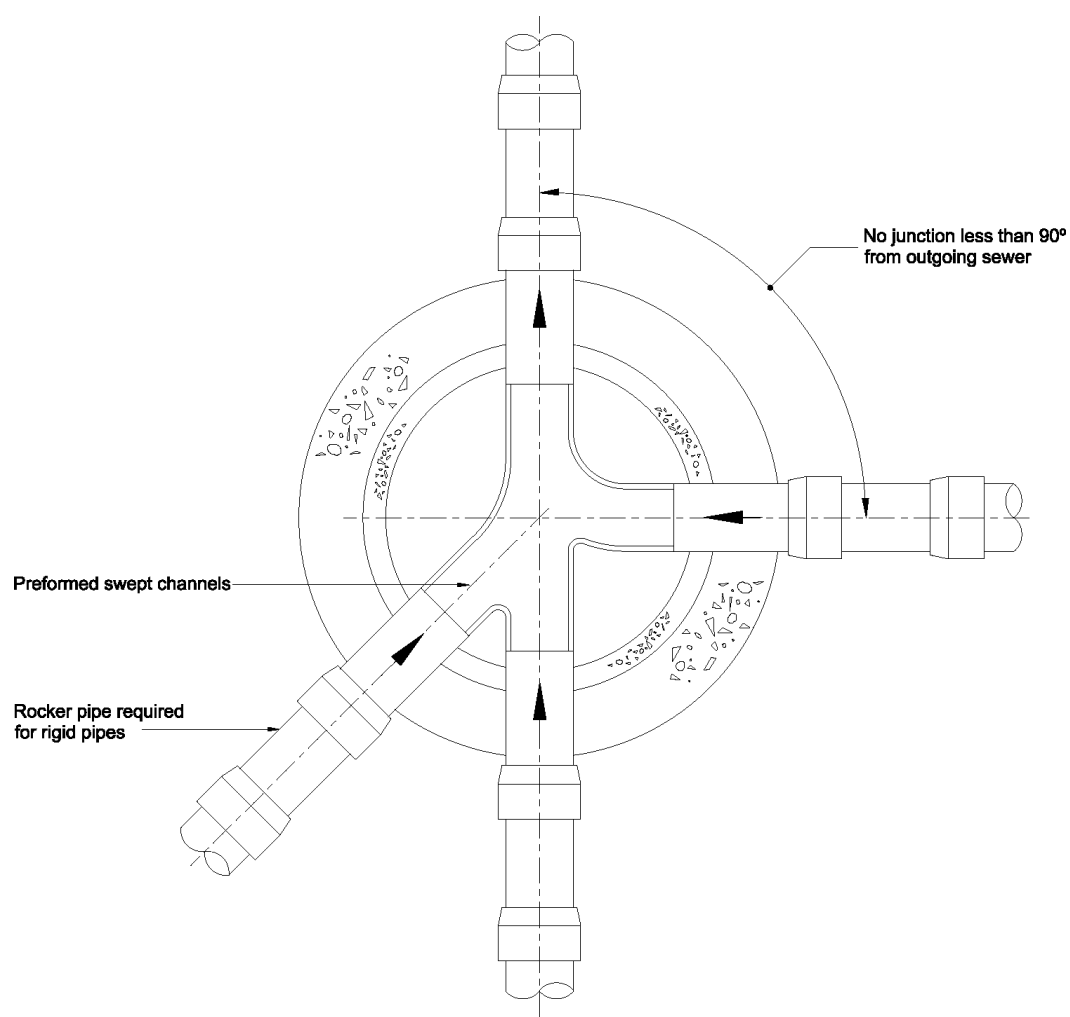


Figure B 13
Typical arrangement of pipe junctions within manholes



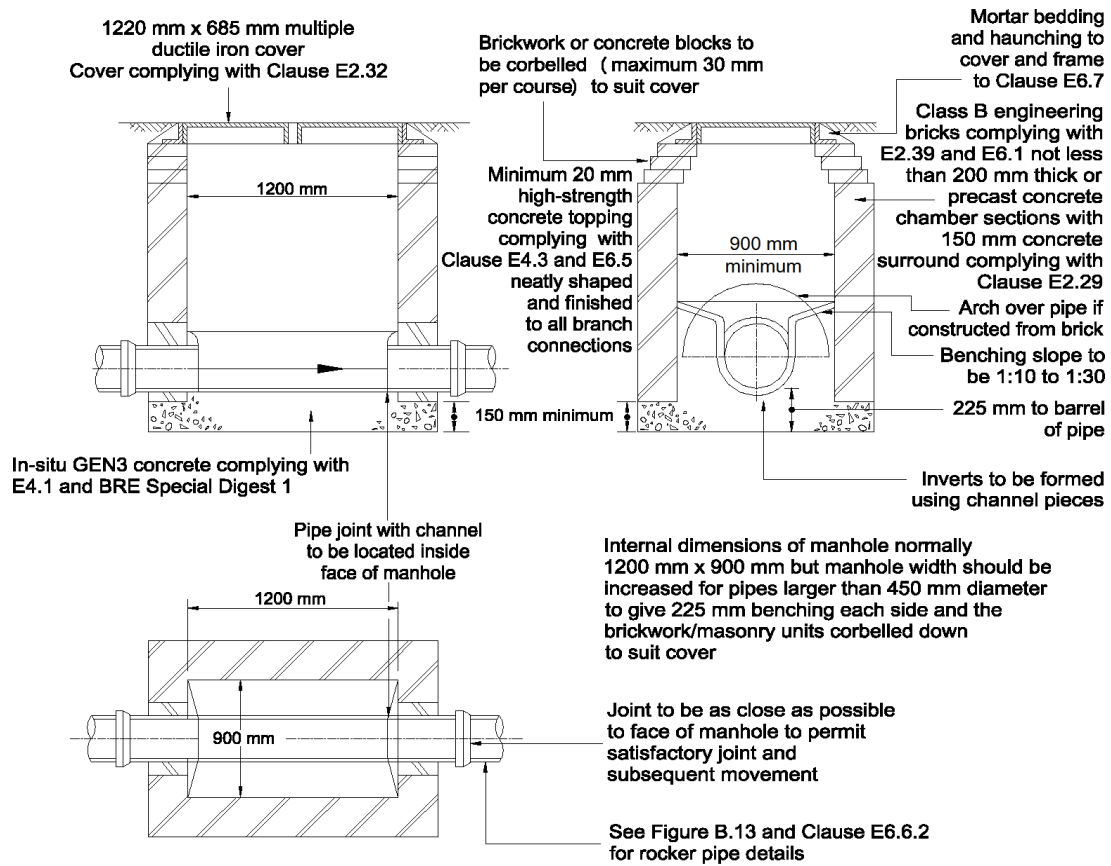
Sectional Plan

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 diameter (mm)	Maximum effective length (m)
150 - 600	0.6
601 - 750	1.00
over 750	1.25

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

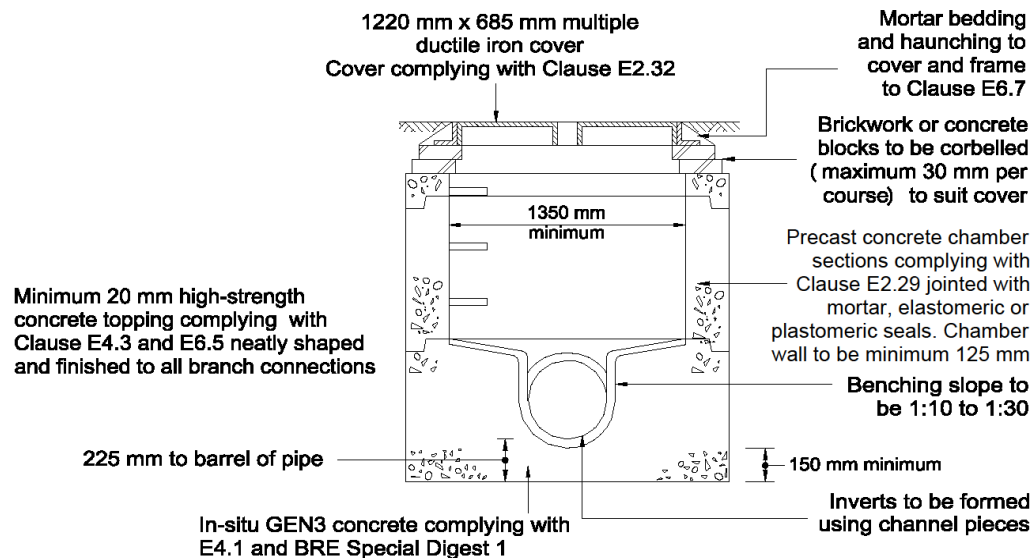
Figure B 33
Typical manhole detail – Type C
Depth from cover level to soffit of pipe less than 1.5 m
Maximum pipe size 450 mm diameter
Rigid material construction



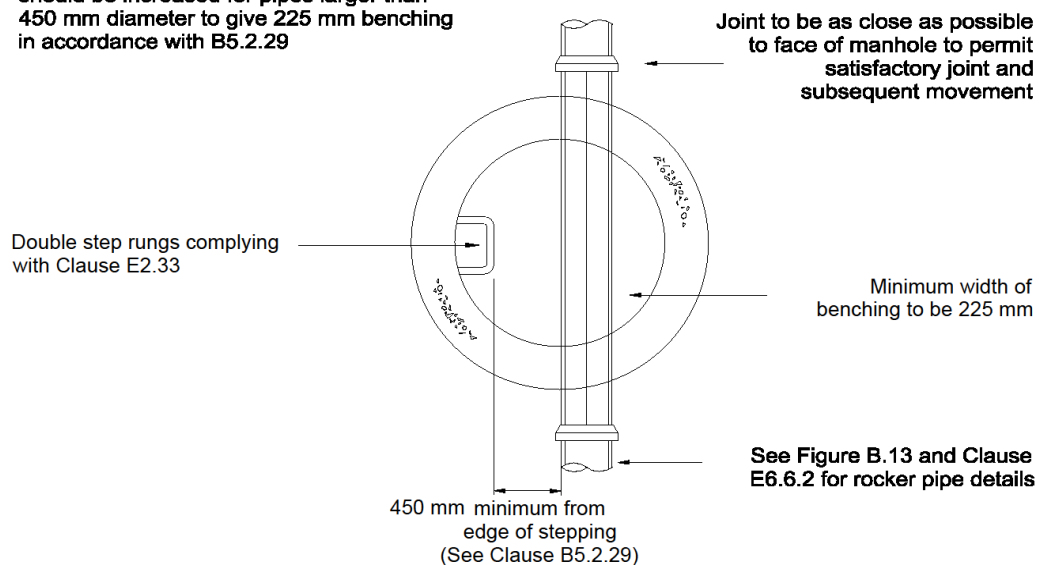
Note: The use of precast concrete chamber units to E2.29 with 150 mm GEN3 in-situ concrete complying with E4.1 and BRE Special Digest 1 in place of brickwork construction is permitted.

Not to scale

Figure B 15
Typical manhole detail – Type C
Depth from cover level to soffit of pipe less than 1.5 m
Maximum pipe size 450 mm diameter
Rigid material construction



Internal dimensions of manhole normally 1350 mm but manhole diameter should be increased for pipes larger than 450 mm diameter to give 225 mm benching in accordance with B5.2.29

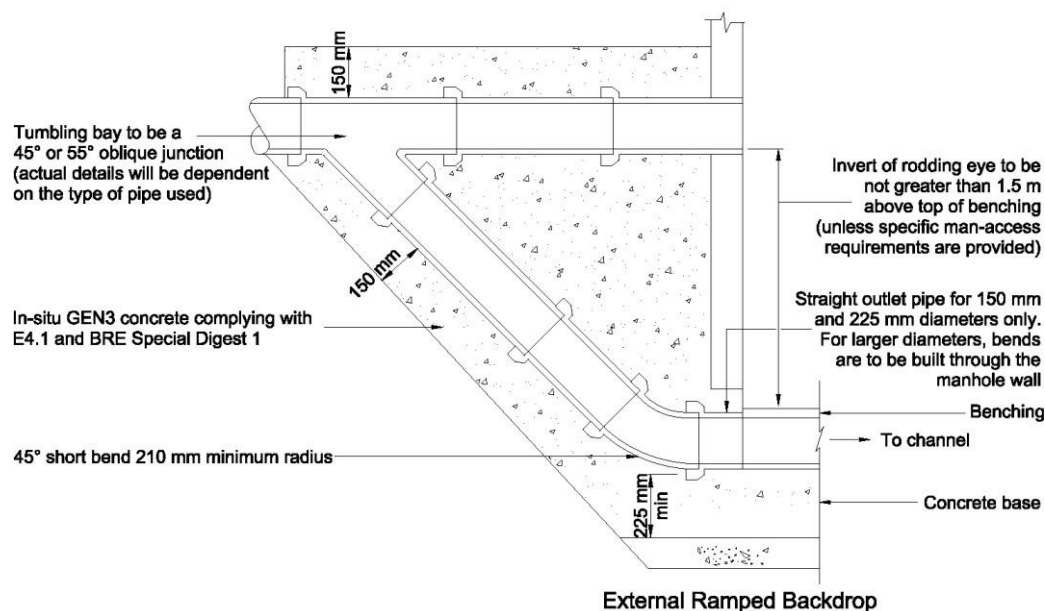
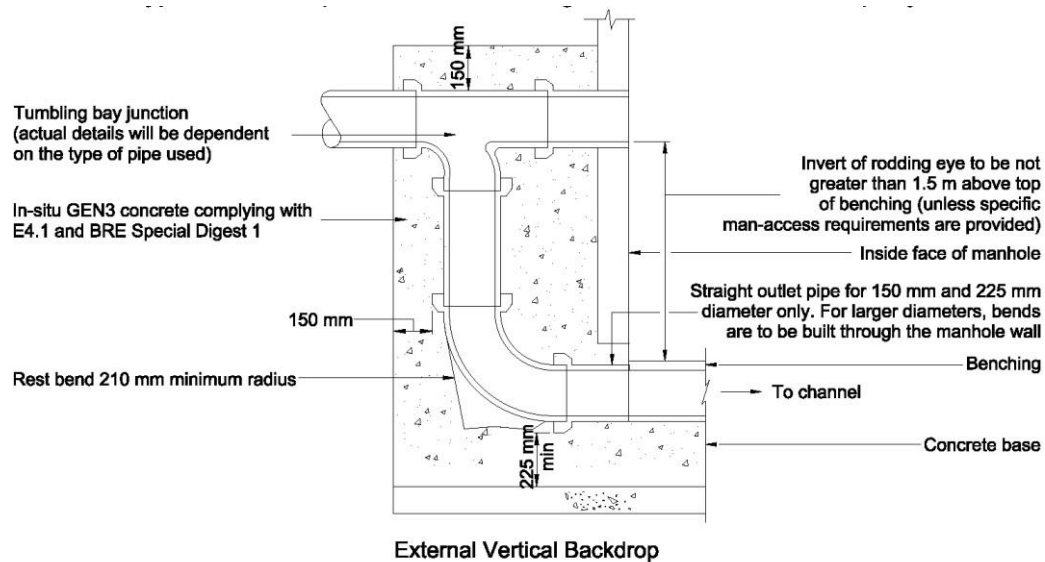


Note: The use of precast concrete chamber units to E2.29 with 150 mm GEN3 in-situ concrete complying with E4.1 and BRE Special Digest 1 in place of brickwork construction is permitted.

Not to scale

Figure B 16
Typical vertical and ramped backdrop detail (rigid materials)
For use in manhole types A to D

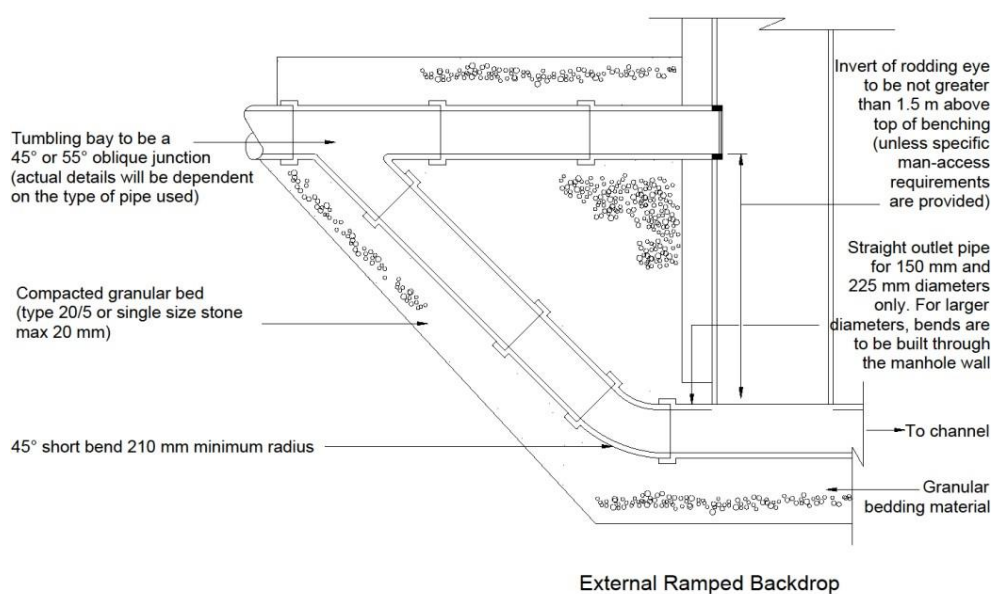
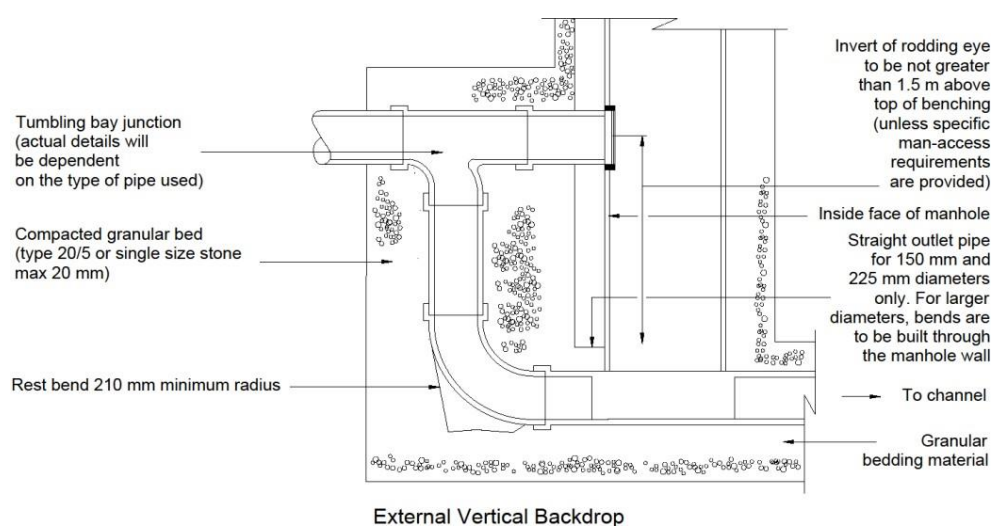
Note: Steeper gradients are preferred to the use of backdrops.
Type of backdrop to be used to be agreed with the sewerage company.



Not to scale

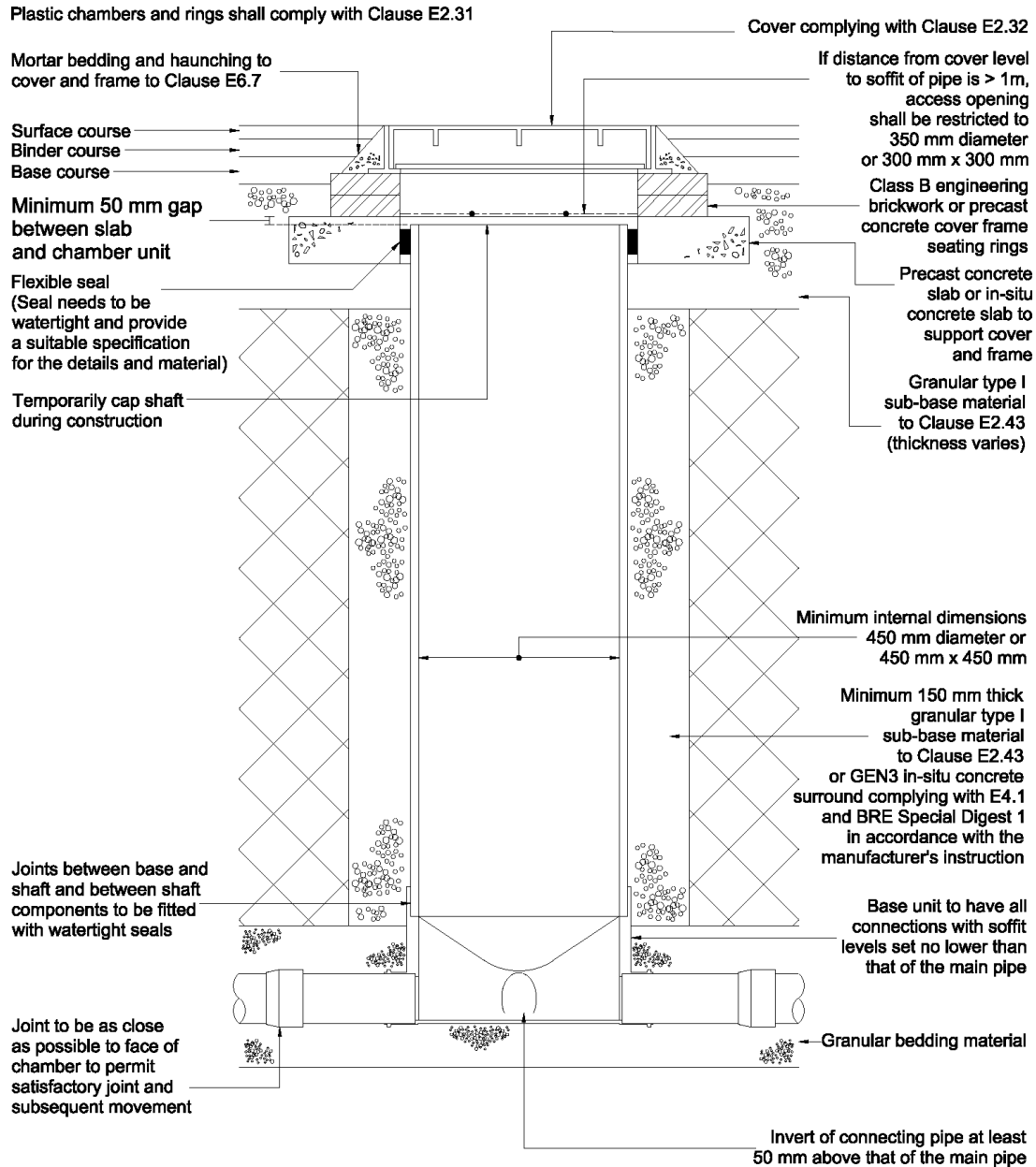
Figure B 36
Typical vertical and ramped backdrop detail (flexible materials)
For use in manhole types A to D

Note: Steeper gradients are preferred to the use of backdrops.
Type of backdrop to be used to be agreed with the sewerage company.



Not to scale

Figure B 37
Typical inspection chamber detail – Type D
Depth from cover level to soffit of pipe up to 3 m
Flexible material construction for use in areas subject to vehicle loading



Note: Where the access chamber is in the highway (including any footway), the highway authority can have specific requirements.

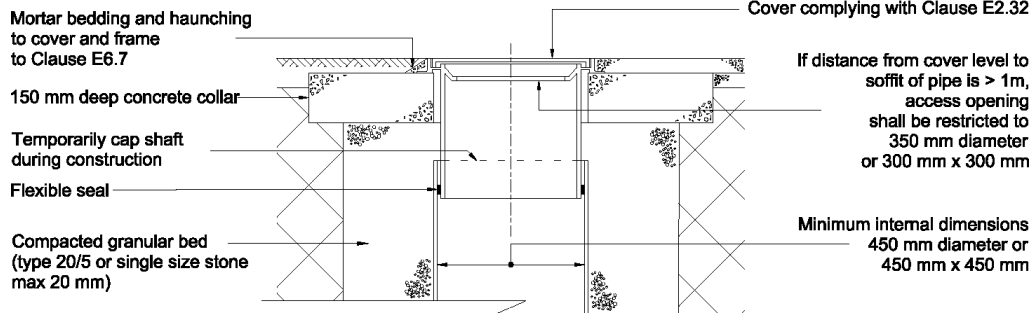
Not to scale

Figure B 38
Typical inspection chamber detail – Type D

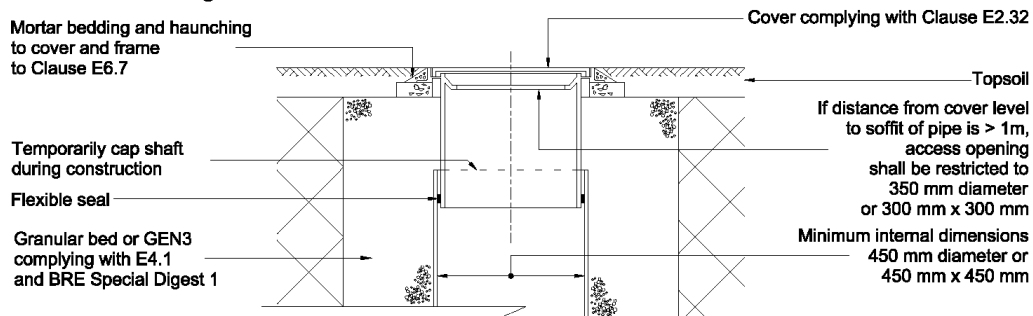
Flexible material construction alternative top details for use in areas of light vehicle loading or landscaped areas

Plastic chambers and rings shall comply with Clause E2.31

Sited in domestic driveways or footways



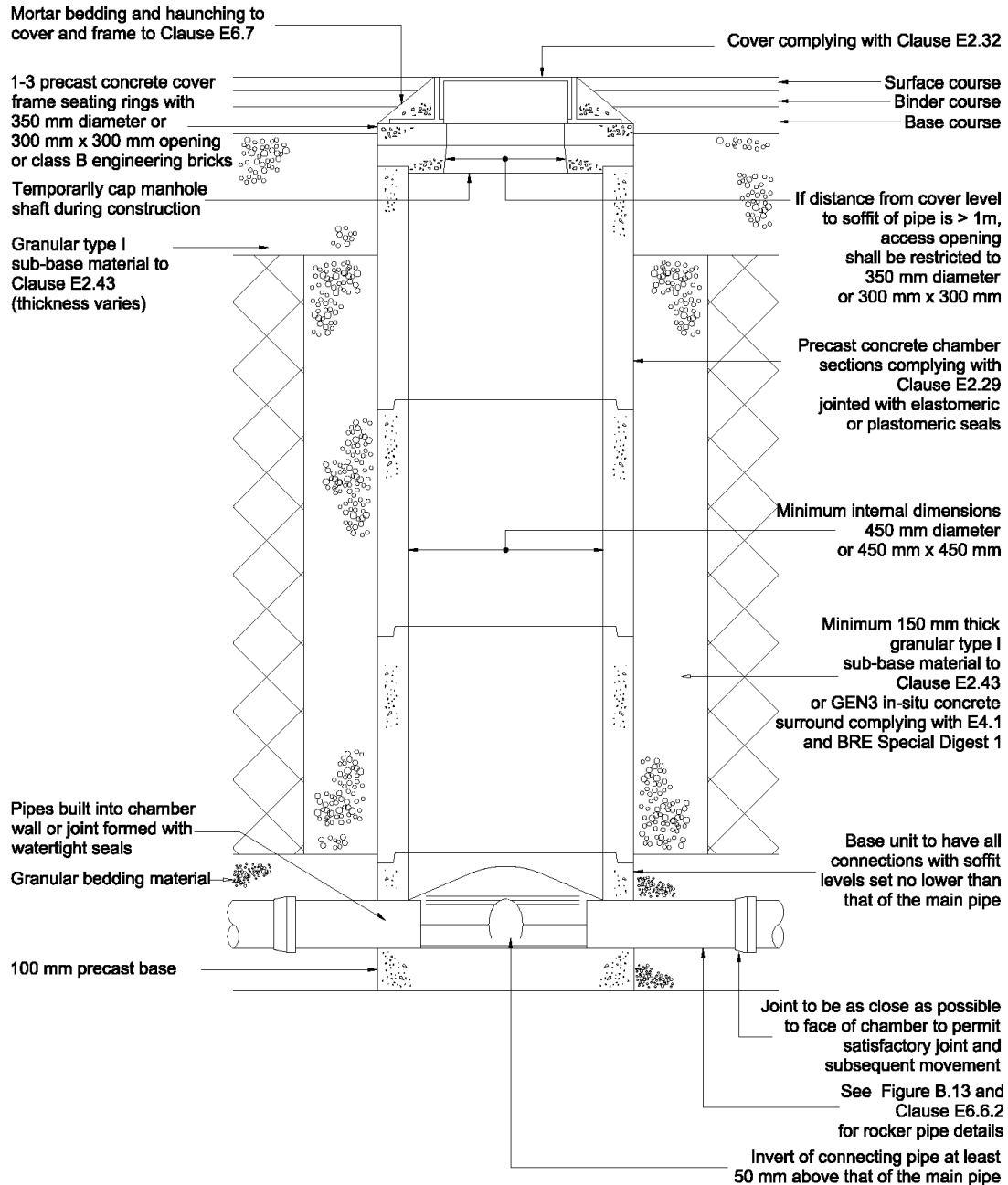
Sited in domestic gardens



Note: Where the access chamber is in the highway (including any footway), the highway authority can have specific requirements.

Not to scale

Figure B 39
Typical inspection chamber detail – Type D
Depth from cover level to soffit of pipe up to 3 m
Rigid material construction for use in areas subject to vehicle loading

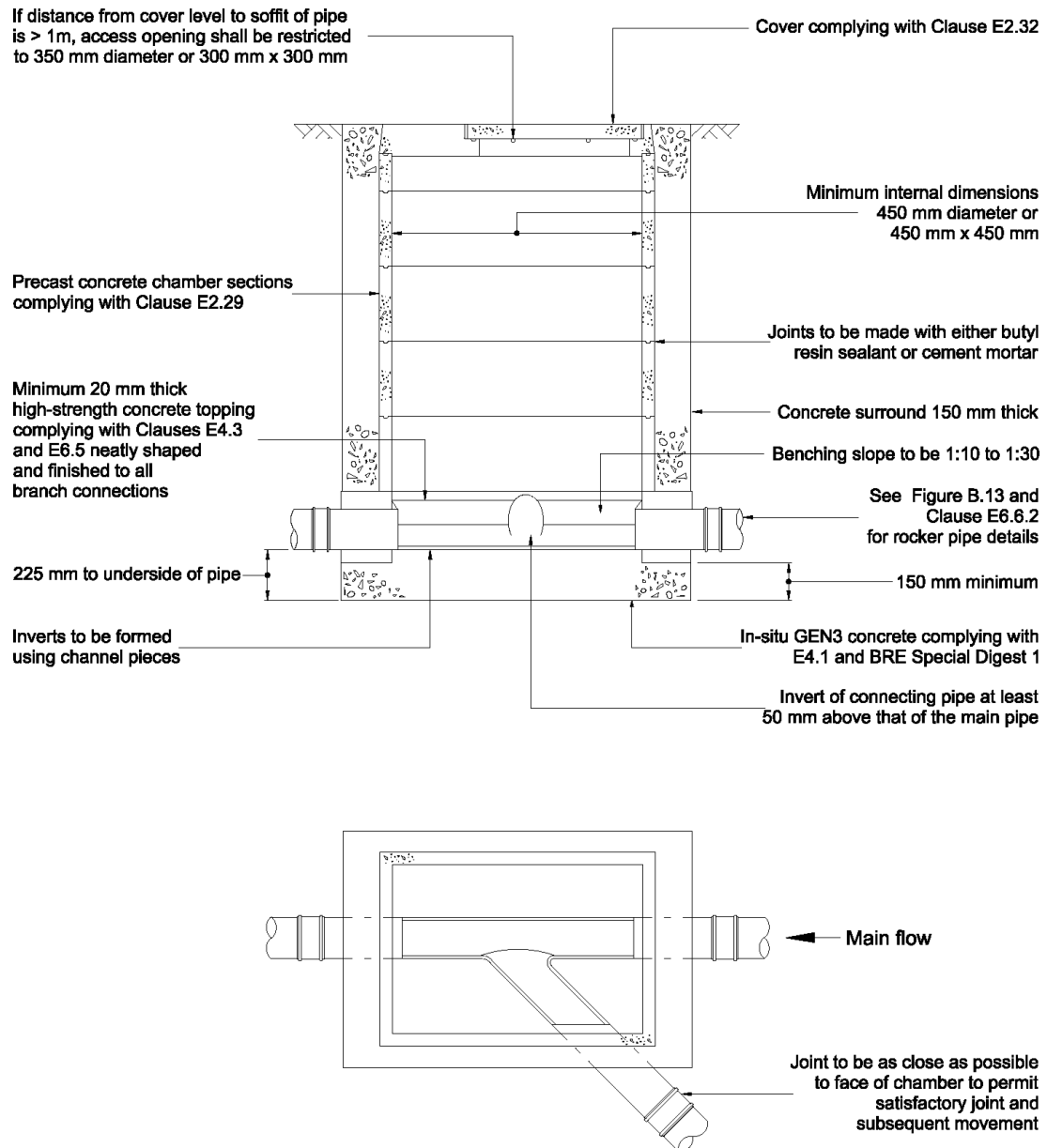


Note: Where the access chamber is in the highway (including any footway), the highway authority can have specific requirements.

Not to scale

Figure B 40
Typical inspection chamber detail – Type D
Depth from cover level to soffit of pipe up to 3 m

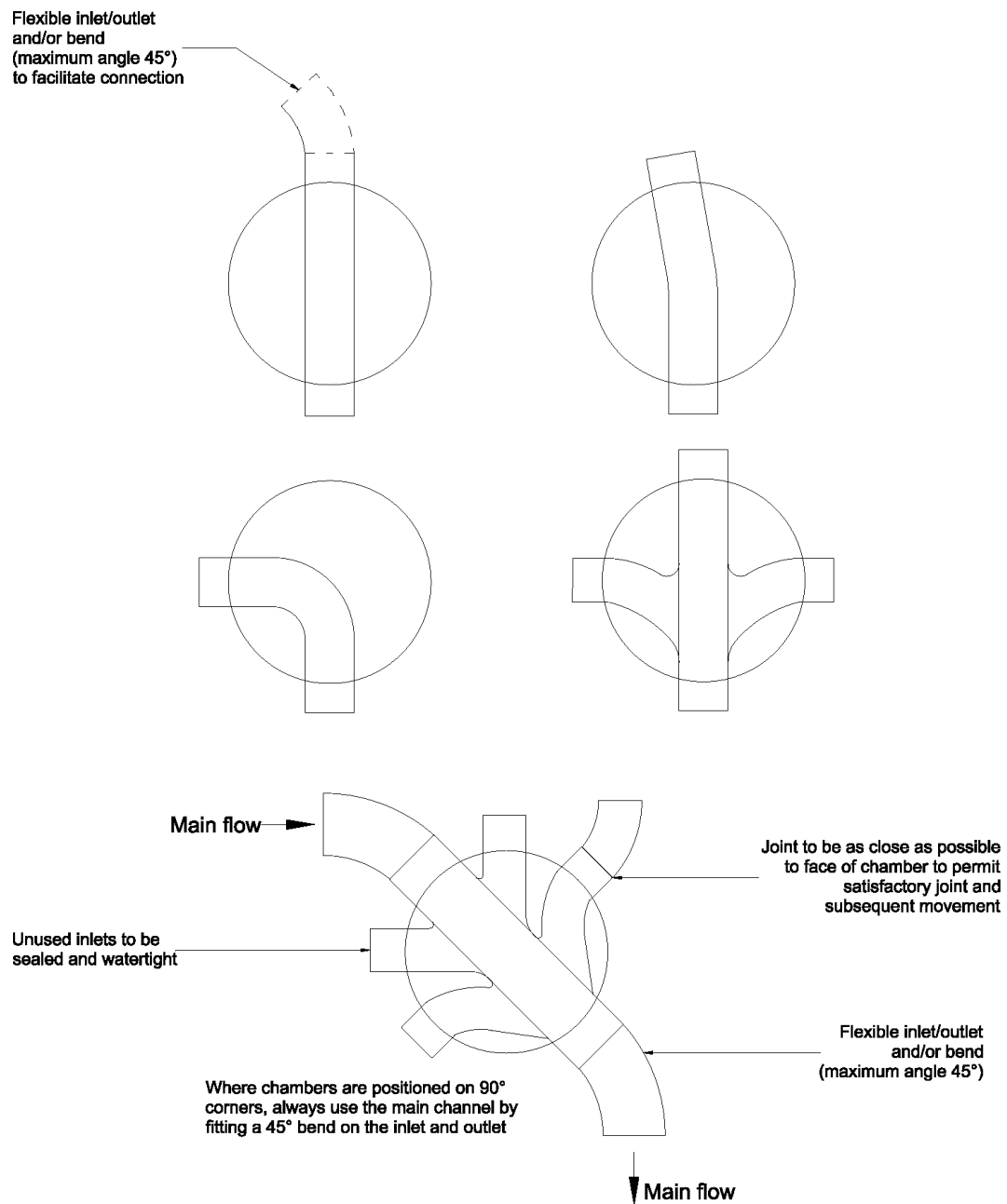
Rigid material construction for use in areas subject to vehicle loading or landscaped areas



Note: Where the access chamber is in the highway (including any footway), the highway authority can have specific requirements.

Not to scale

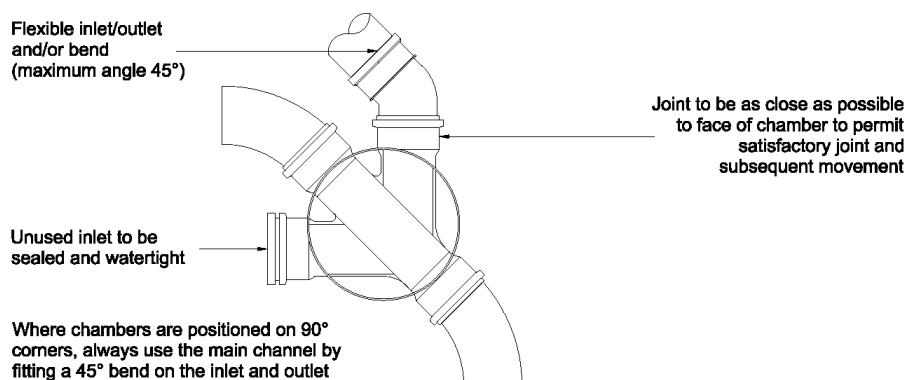
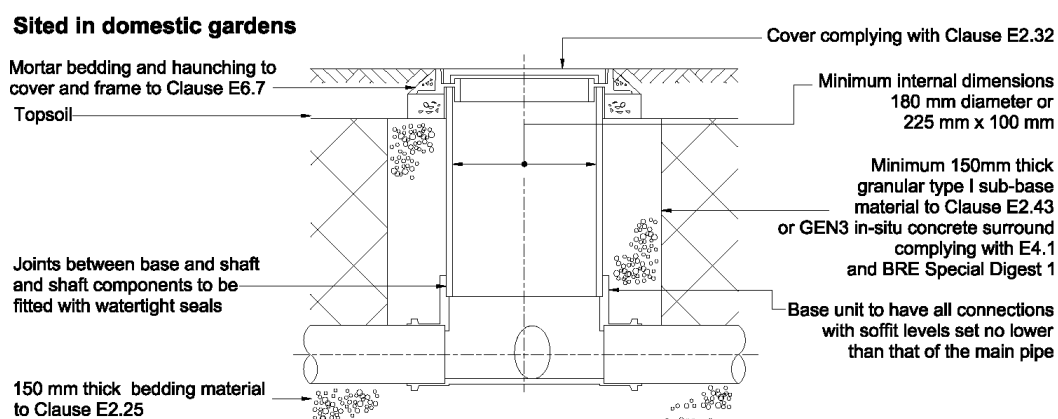
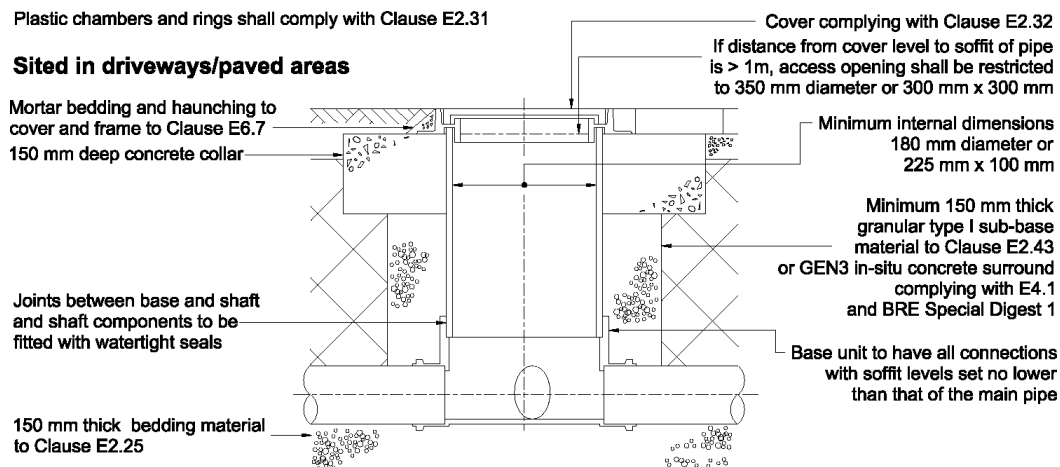
Figure B 22
Typical base layouts for Type D chambers



Note: Where a bend is used immediately outside the manhole, this may be used as the rocker pipe.

Not to scale

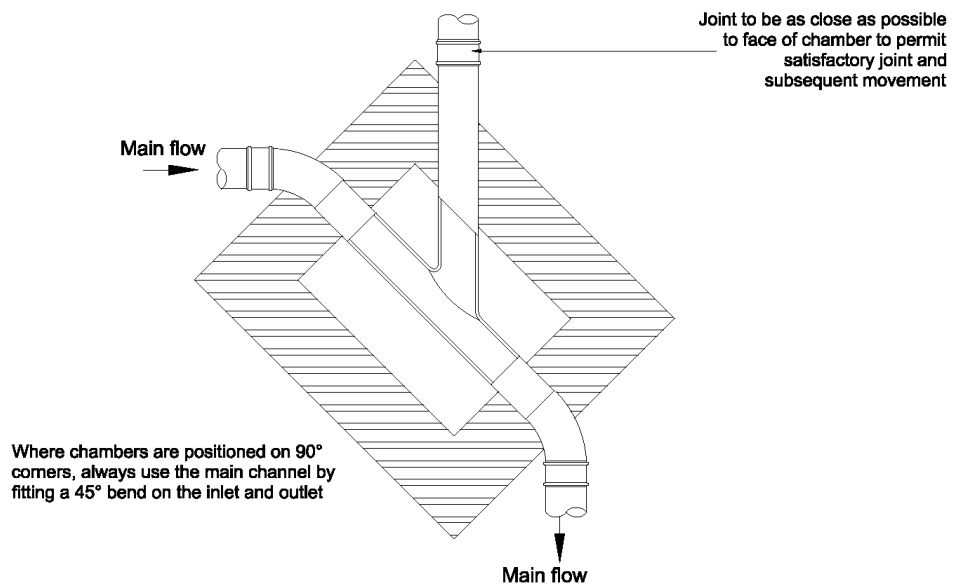
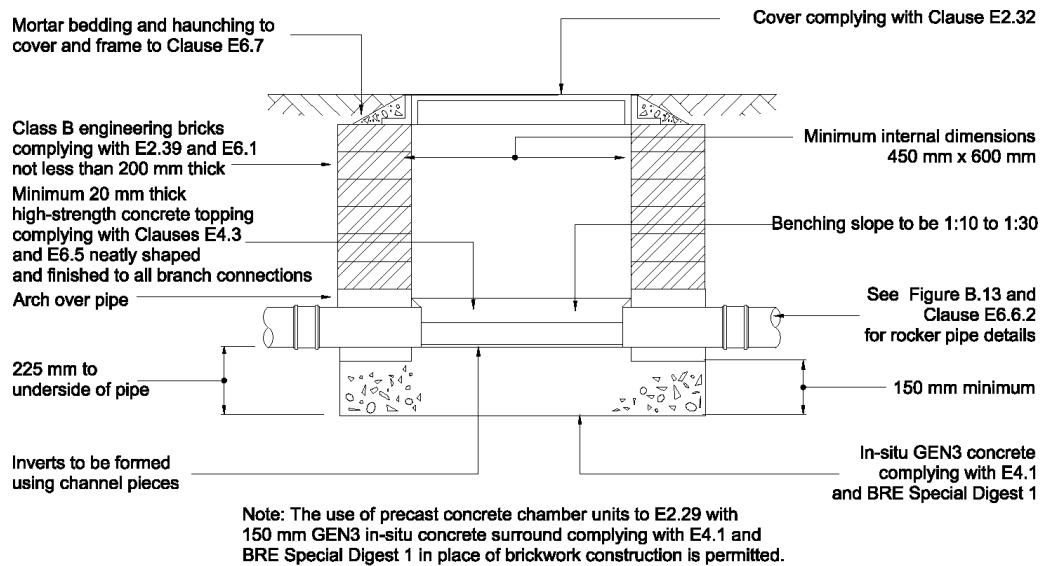
Figure B 42
Typical inspection chamber detail – Type E
Depth from cover level to soffit of pipe up to 2 m
Flexible material construction



Note: Where the access chamber is in the highway (including any footway), the highway authority can have specific requirements.

Not to scale

Figure B 43
Typical inspection chamber detail – Type E
Depth from cover level to soffit of pipe up to 1 m
Rigid material construction

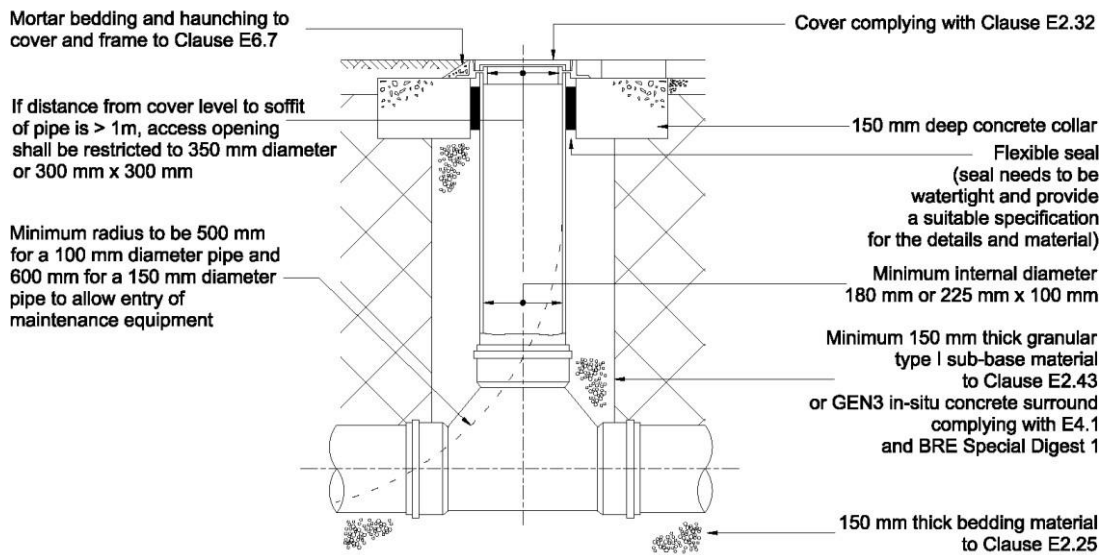


Note: Where the access chamber is in the highway (including any footway), the highway authority can have specific requirements.

Not to scale

Figure B 44
Typical inspection chamber detail – Type E
Depth from cover level to soffit of pipe up to 2 m
Flexible material construction

Plastic chambers and rings shall comply with Clause E2.31



Note: Where the access chamber is in the highway (including any footway), the highway authority can have specific requirements.

Not to scale

B6 RELIABILITY

1. The minimum size for a gravity foul sewer should be:

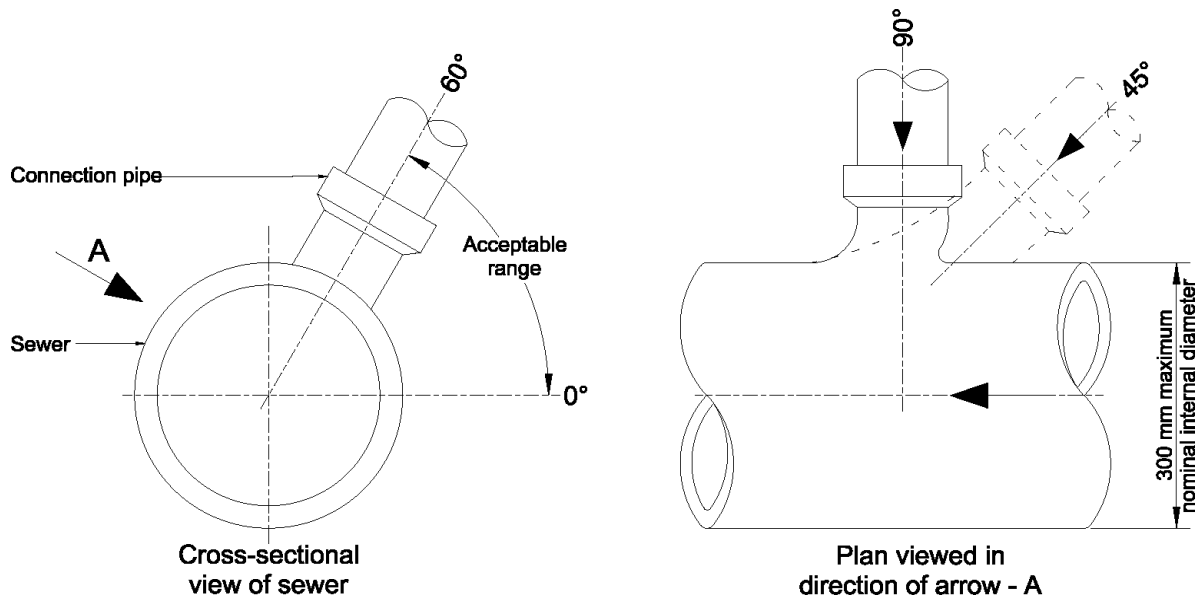
- a) 100 mm nominal internal diameter for ten properties or less; or
- b) 150 mm nominal internal diameter for more than ten properties.

2. The minimum nominal internal diameter for a gravity foul lateral drain should be 100 mm.

3. As far as practicable, junctions should be built in for all planned connections when sewers are constructed to avoid damage to the sewer by installing connections at a later date. Where it is necessary to make a post-construction connection to a sewer, B6.8 and E5.8 will apply. The upstream end of any unused connection should be sealed until required.

4. The vertical angle between the connecting pipe and the horizontal should be greater than 0° and not more than 60° (see Figure B 26).

Figure B 26
Connections to sewer



5. Where the connection is being made to a sewer with a nominal internal diameter of 300 mm or less, connections should be made using 45° angle, or 90° angle curved square junctions (see Figure B 26).

6. Connections made with junction fittings should be made by cutting the existing pipe, inserting the junction fitting and jointing with flexible repair couplings or slip couplers.

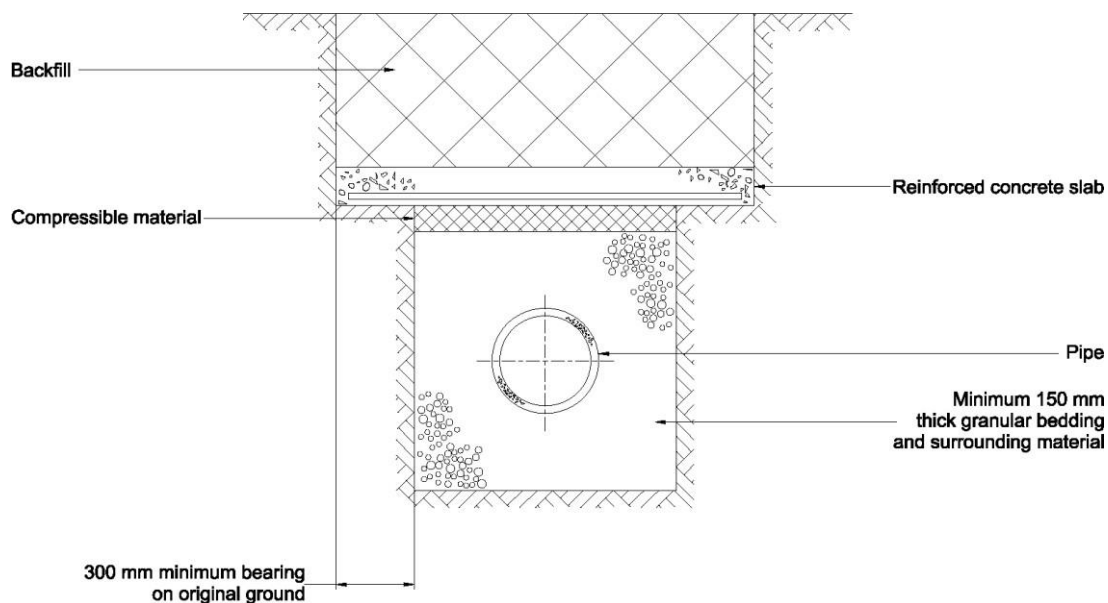
7. Where the connection is being made to a sewer with a nominal internal diameter greater than 300 mm:

- a) where the diameter of the connecting pipe is greater than half the diameter of the sewer, the connection of an access point should be constructed; or
- b) where the diameter of the connecting pipe is less than or equal to half the diameter of the sewer, then the connection should be made using a preformed saddle fitting.

8. Connections made with saddle fittings should be made by cutting and safely removing a core from the pipe and jointing the saddle fitting to the pipe, in accordance with the manufacturer's instructions, to ensure a watertight joint. The connecting pipe should not protrude into the sewer.

9. To provide a self-cleansing regime within gravity foul sewers, the minimum flow velocity should be 0.75 m per second at one-third design flow. Where this requirement cannot be met, then this criterion would be considered to be satisfied if:

Figure B 27
Protection of pipes laid at shallow depths



Not to scale

Figure B 28
Joints for encased pipes

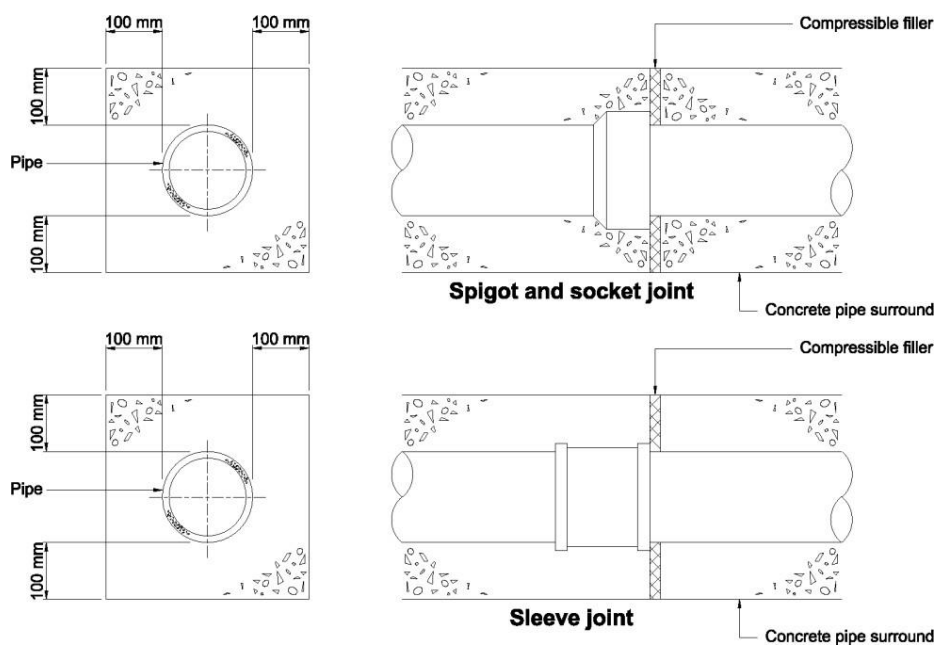
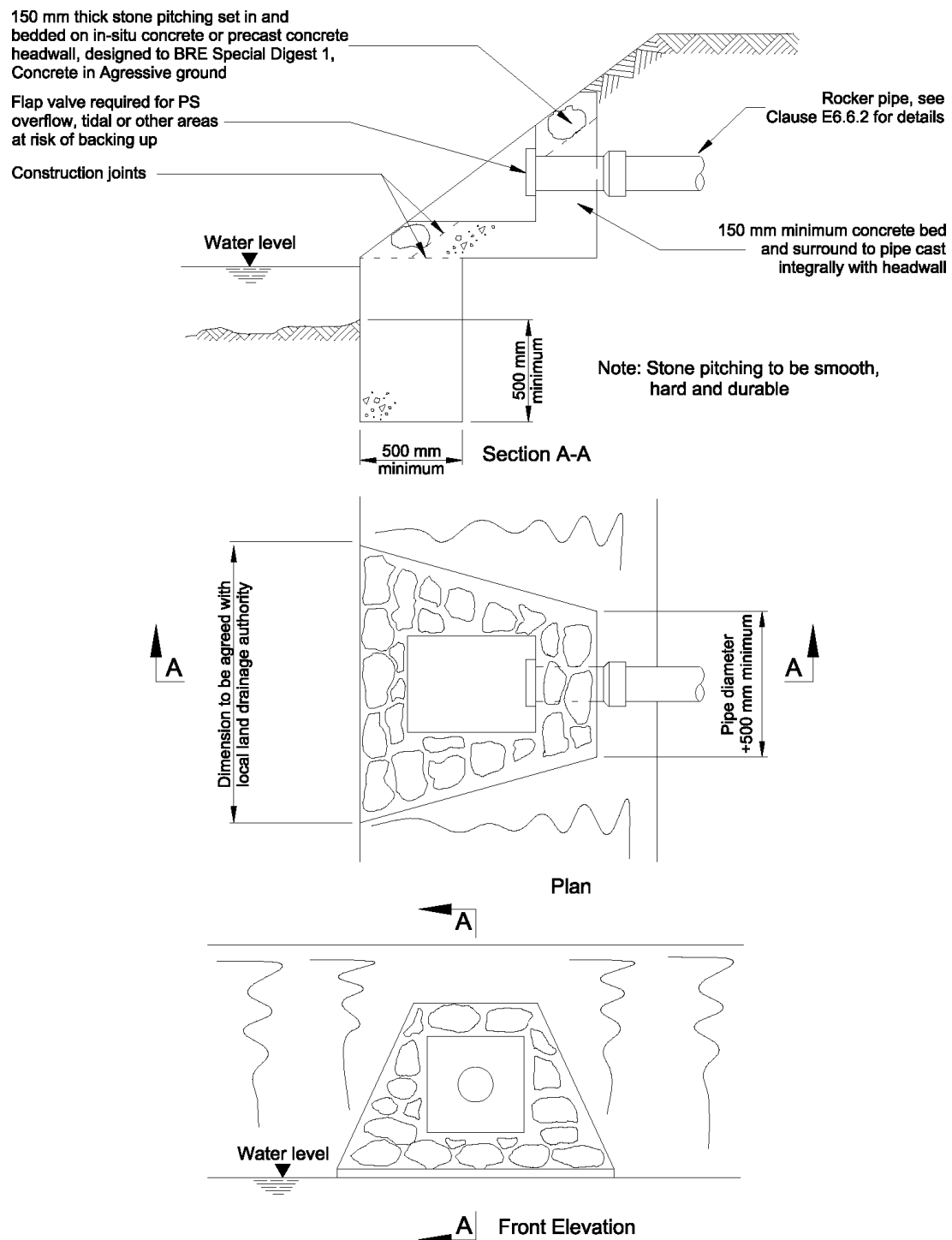
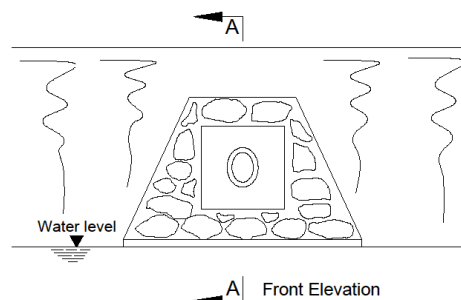
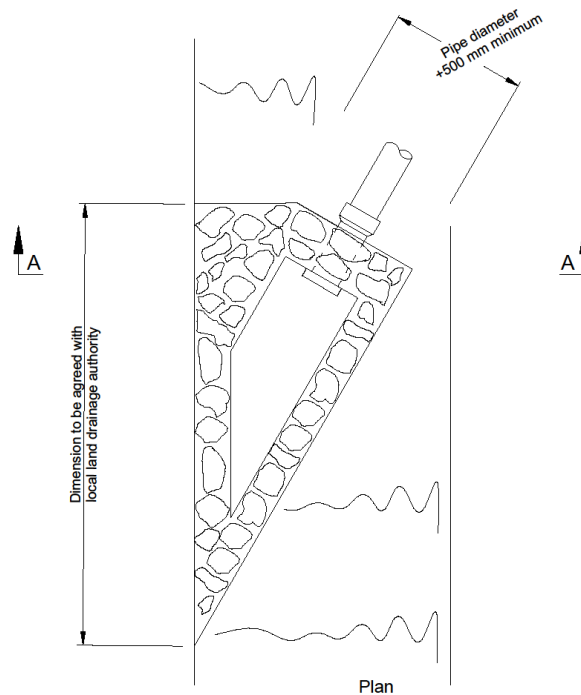
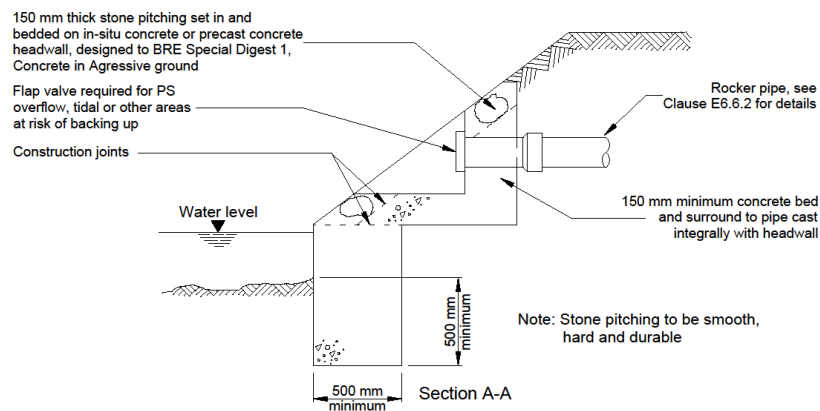


Figure C 1
Typical detail of outfall to watercourse
Suitable for outfall pipes of less than 350 mm



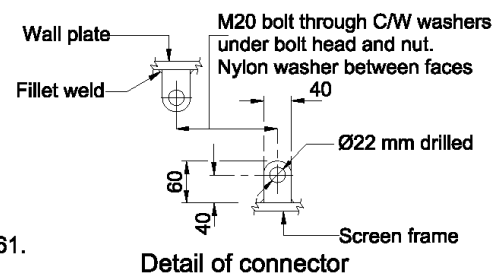
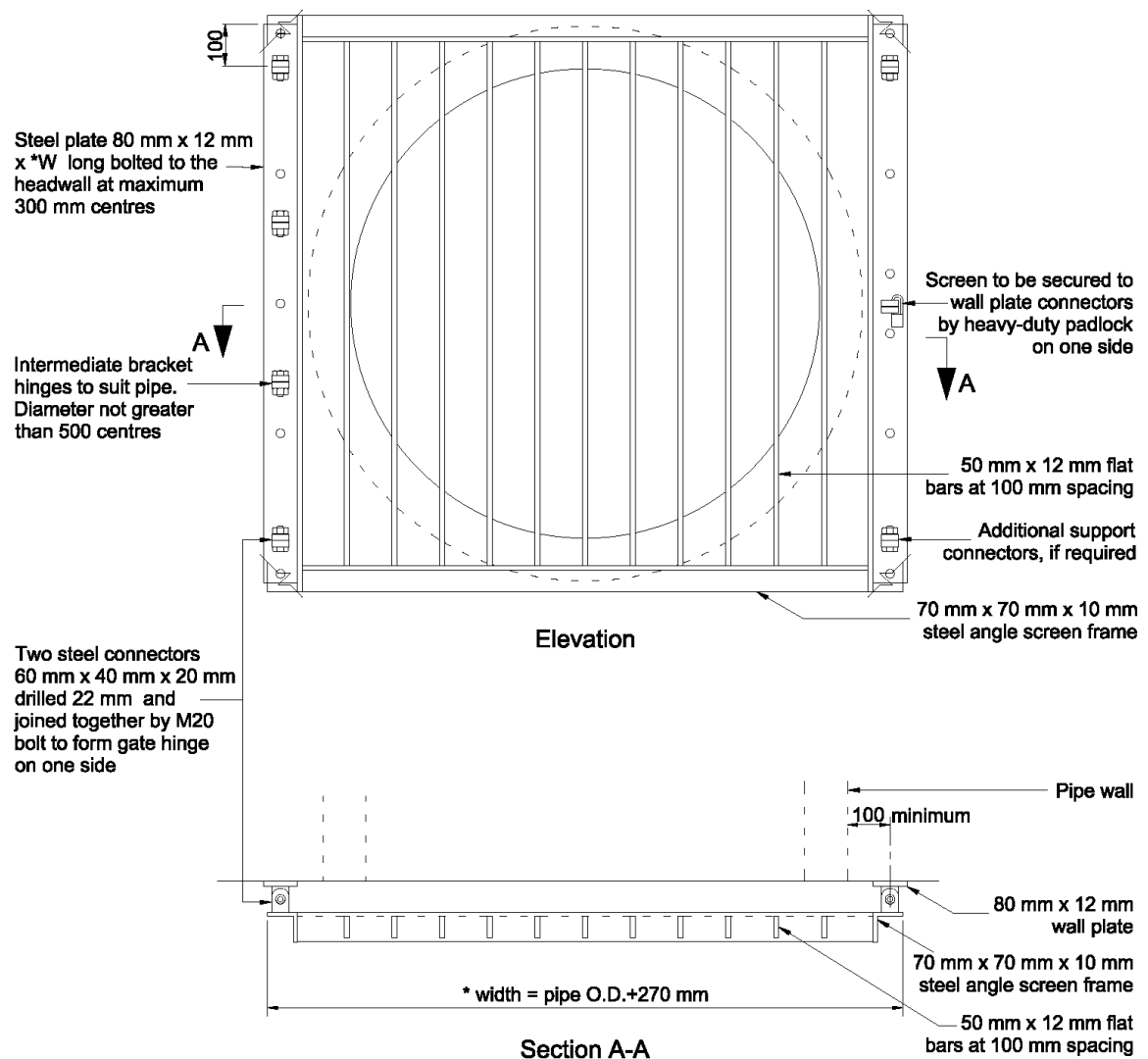
Not to scale, dimensions in millimetres

Figure C 2
Typical detail of angled outfall to watercourse
Suitable for outfall pipes of less than 350 mm



Not to scale, dimensions in millimetres

Figure C 3
Typical outfall safety grille
For outfalls 350 mm diameter or greater



Not to scale, dimensions in millimetres