

Depth from cover level to soffit of pipe 3.0m to 6.0m
Based on the Design and Construction Guidance (DCG) published by Water UK.
Scale 1:20

Pipe nominal size (DN)	Nominal maximum particle size (mm) See note (c)	Class of bedding See note (d)	Suitable Materials	
			Either: Maximum CF value for acceptability See note (b)	Or: Materials specified in British Standards See note (a)
100	10	S	0.15	10mm nominal single-size
		B	0.30	
		F	0.15	Fine aggregate
		N	0.30	
Over 100 to 150	16	S	0.15	10mm nominal single-size or
		B	0.30	
		F	0.15	Fine aggregate
		N	0.30	
Over 150 to 300	20	S	0.15	10, 14 or 20mm nominal single-size or 14mm to 5mm graded or 20 to 5mm graded
		B	0.30	
		F	0.15	All-in aggregate or fine aggregate
		N	0.30	
Over 300 to 550	20	S	0.15	14 or 20mm nominal single-size or 14mm to 5mm graded or 20 to 5mm graded
		B	0.30	
		F	0.15	All-in aggregate or fine aggregate
		N	0.30	
Over 550	40	S	0.15	14, 20, or 40mm nominal single-size crushed rock or 14mm to 5mm graded or 20mm to 5mm graded or 40mm to 5mm graded
		B	0.30	
		F	0.15	All-in aggregate or fine aggregate
		N	0.30	

- Processed granular materials to include aggregates to BS EN 13242.
- Compaction Fraction value (CF), see WIS No. 4—08—02.
- The nominal maximum particle sizes apply both to processed and as-dug materials (see Section 4 of IG No. 4—08—01 Issue 4 and No. 4—08—01 Amendment (Nov 2008)).
- Bedding classes are defined in BS EN 12953—9883 structure design of buried pipelines under various conditions of loading.
- The sulphate content of bedding and sidefill materials for use with cementitious pipe should not be greater than 0.3% as sulphur trioxide.

Pipe nominal bore (mm) (See note (d))	Nominal maximum particle size (mm)	Either: Maximum CF value for acceptability See note (b)		Suitable Materials
		Non-pressure pipe	Pressure pipe	Or: Materials specified in British Standards See note (a)
100	10	0.15	0.30	10mm nominal single-size
Over 100 to 150	16	0.15	0.30	10 or 14mm nominal single-size or 14mm to 5mm graded
Over 150 to 300	20	0.15	0.30	10, 14 or 20mm nominal single-size or 14mm to 5mm graded or 20mm to 5mm graded
Over 300 to 550	20	0.15	0.30	14 or 20mm nominal single-size or 14mm to 5mm graded or 20mm to 5mm graded
Over 550 to 550	40	0.15	0.30	14, 20 or 40mm single-size or 14mm to 5mm graded or 20mm to 5mm graded or 40mm to 5mm graded

- (a) Processed granular materials to include aggregates to BS EN 13242.
- (b) Compaction Fraction value (CF), see WIS IG No. 4-08-02.
- (c) For the purpose of this table, PE pipes of 630mm OD can be regarded as having nominal bores of over 550mm, irrespective of wall thickness.
- (d) Nominal bore is used in preference to DN because of the different nominal size classification for flexible pipes.
- (e) For PE80 and PE100 polyethylene pipe complying with current relevant Water Industry Specifications, the maximum sidefill particle size may be increased to 10% of the pipe nominal size.
- (f) For modulus of soil reaction E' values for processed granular materials reference should be made to Table A.3 of WIS IG No. 4-08-02 where specified site tests have not been performed.
- (g) For ferrous cementitious pipeline materials, the sulphate content of bedding and sidefill materials should not be greater than 0.3% as sulphur trioxide.

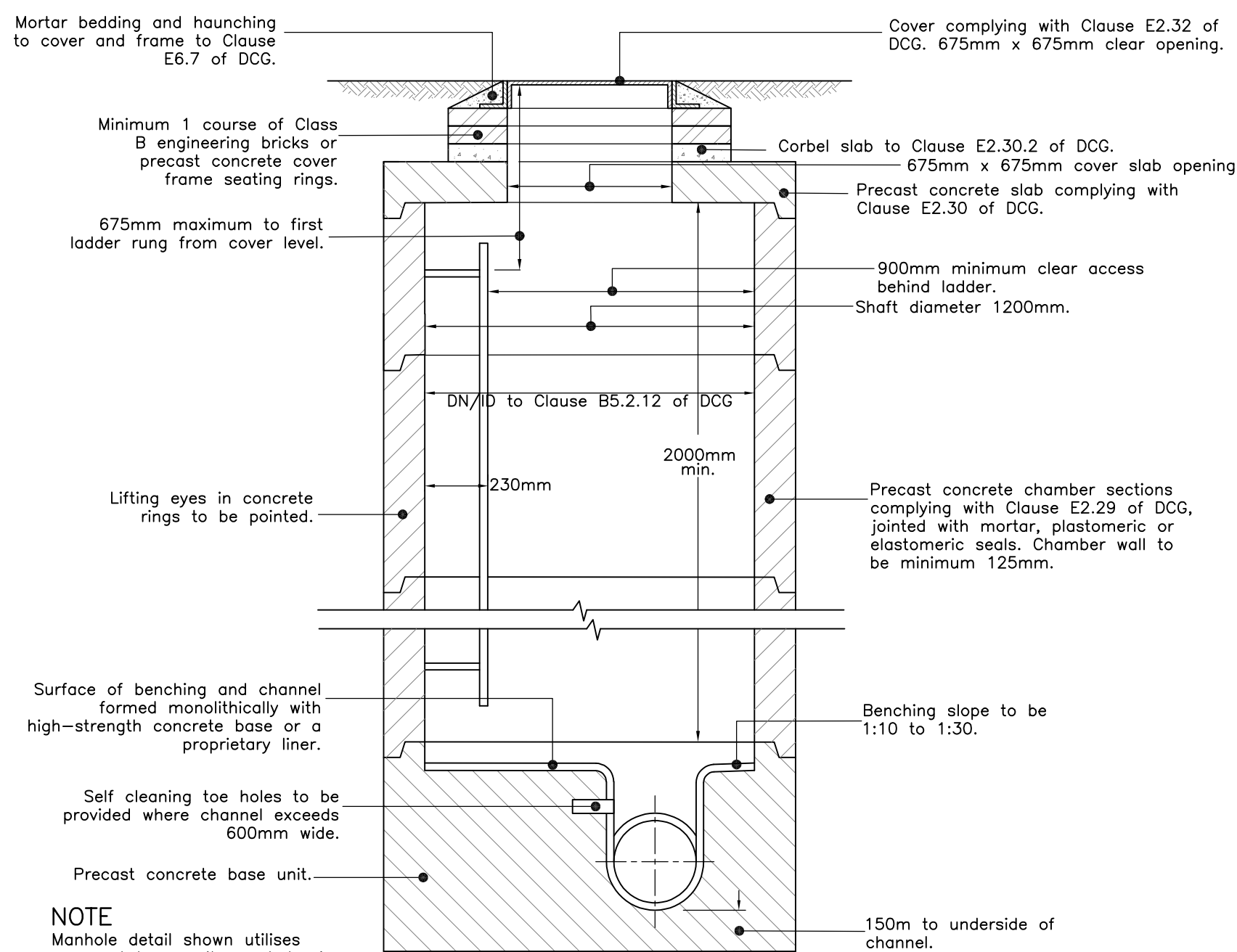
Type of Access	Depth to Soffit from Cover Level	Diameter of Largest Pipe in Chamber	Nominal Chamber/ Shaft Size	Minimum Clear Opening Size
	m	mm	mm	
Manhole	≥1.5	≤375 375–450 500–700 750–900 >900	1200 dia 1350 dia 1500 dia 1800 dia 1800 or DN +900	675 x 675
Manhole Shaft	>3.0	No steps/ ladder Steps/ladder	900 dia 1200 dia	675 x 675

Figure 10 shows two typical cross-sections of GEN 3 concrete slabs. The left cross-section shows a slab with a circular opening, surrounded by granular bedding material. The right cross-section shows a slab with a circular opening, surrounded by granular bedding material. Both cross-sections show a minimum 900mm cover and a 150mm thick slab. The left cross-section also shows a 150mm thick bedding layer. The right cross-section shows a 150mm thick bedding layer and a 300mm thick bedding layer. Labels include 'Backfill material', 'GEN 3 Concrete Slab', and 'Granular bedding material'.

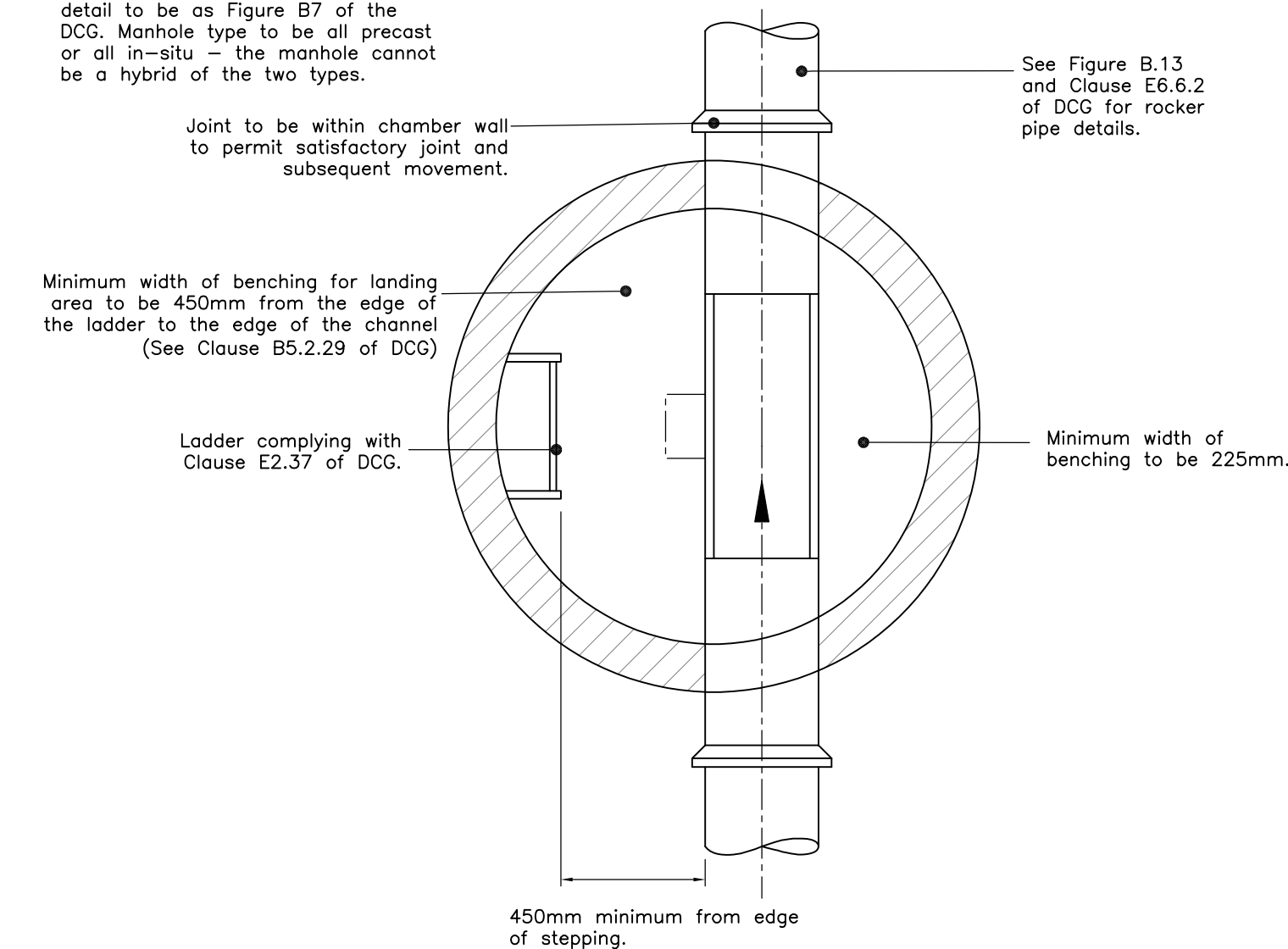
Scale 1:20

Pipes under carriageways with less than 1.2m of cover to soffit shall be installed with Bed Type 7

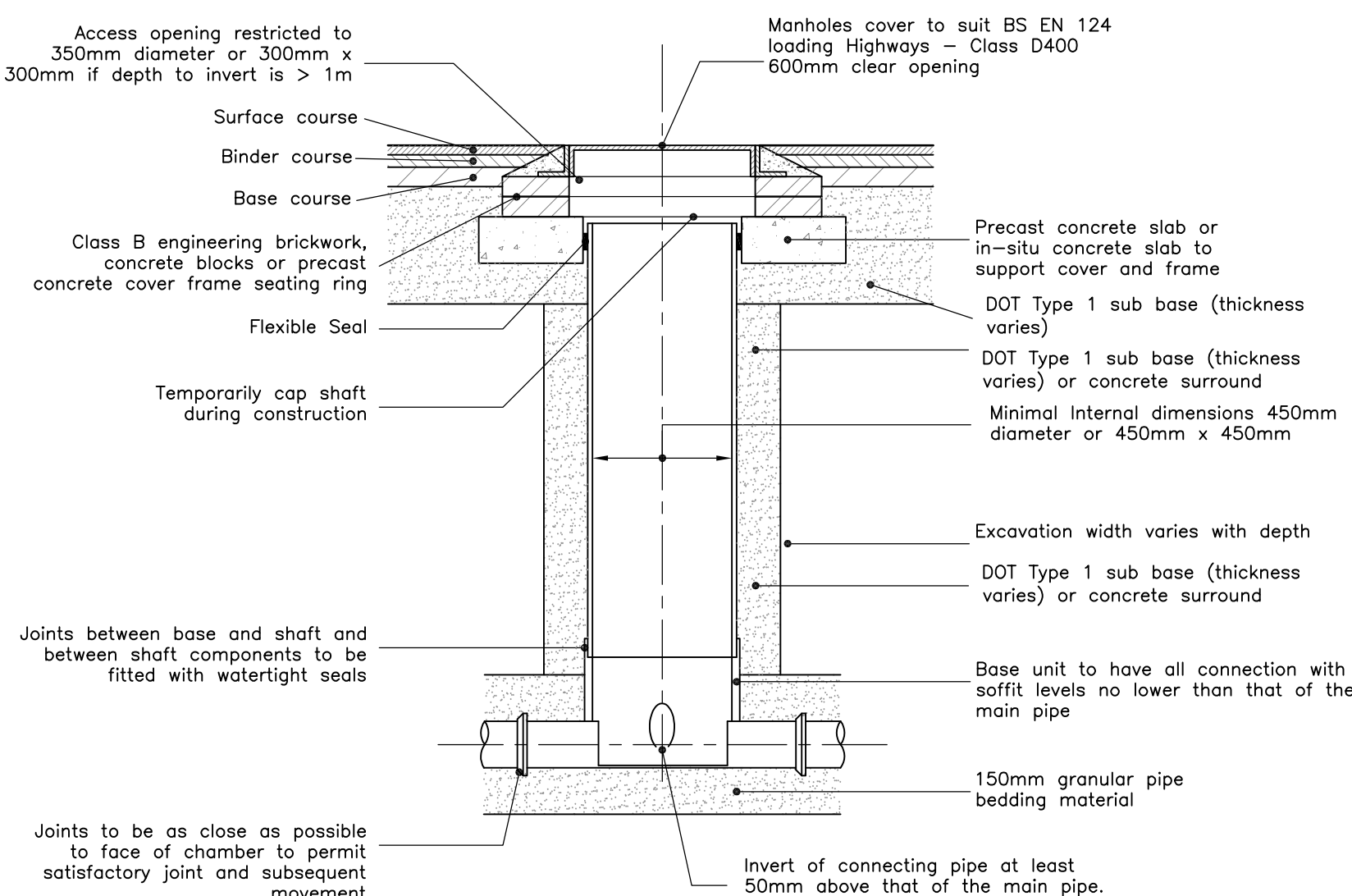
Depth from cover level to soffit of pipe 3.0m to 6.0m
Based on the Design and Construction Guidance (DCG) published by Water UK.
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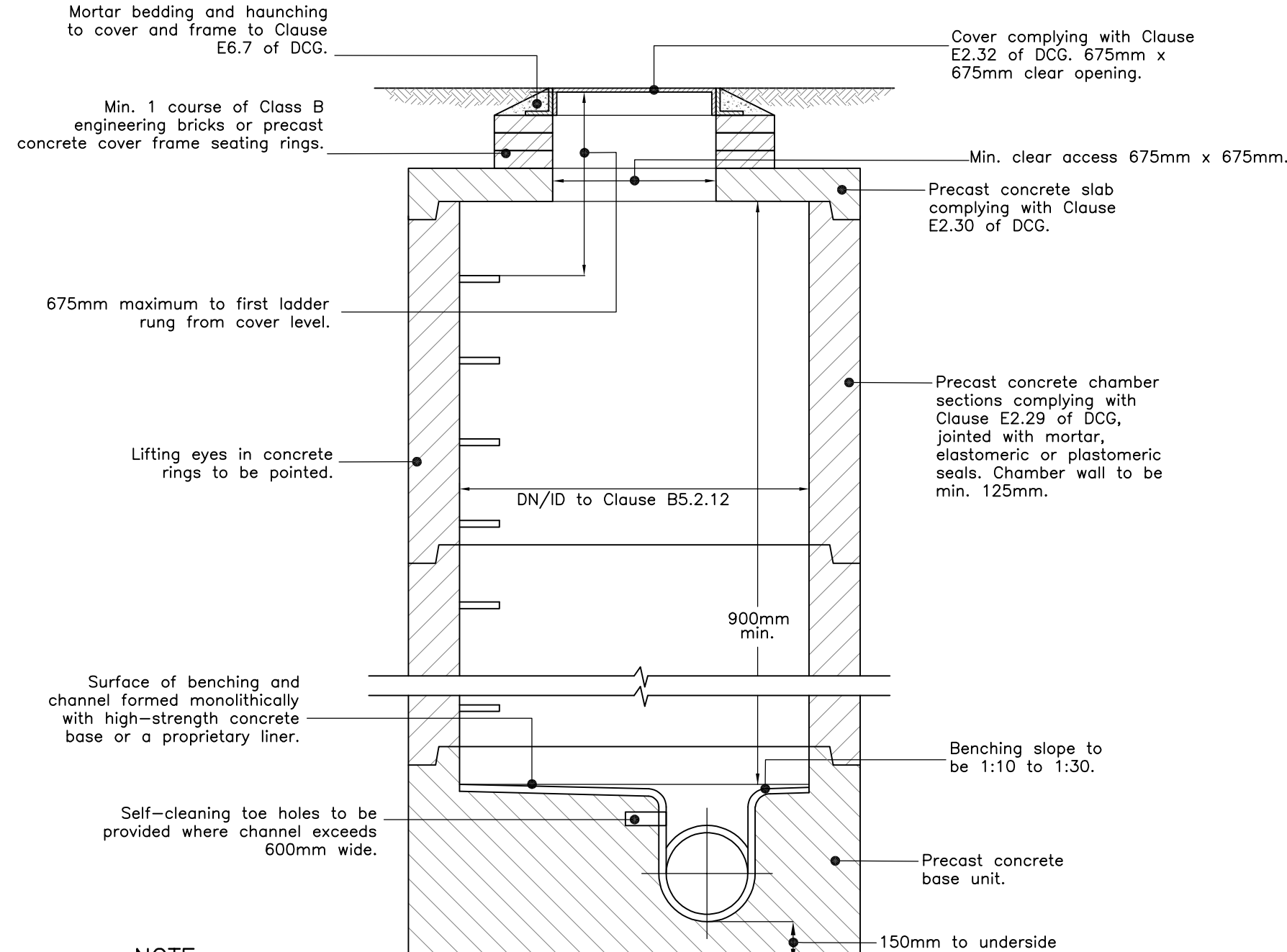
Manhole detail shown utilises pre-cast base unit, manhole rings with no concrete surround. If cast in-situ base unit and concrete surround is required, construction detail to be as Figure B7 of the DCG. Manhole type to be all precast or all in-situ – the manhole cannot be a hybrid of the two types.



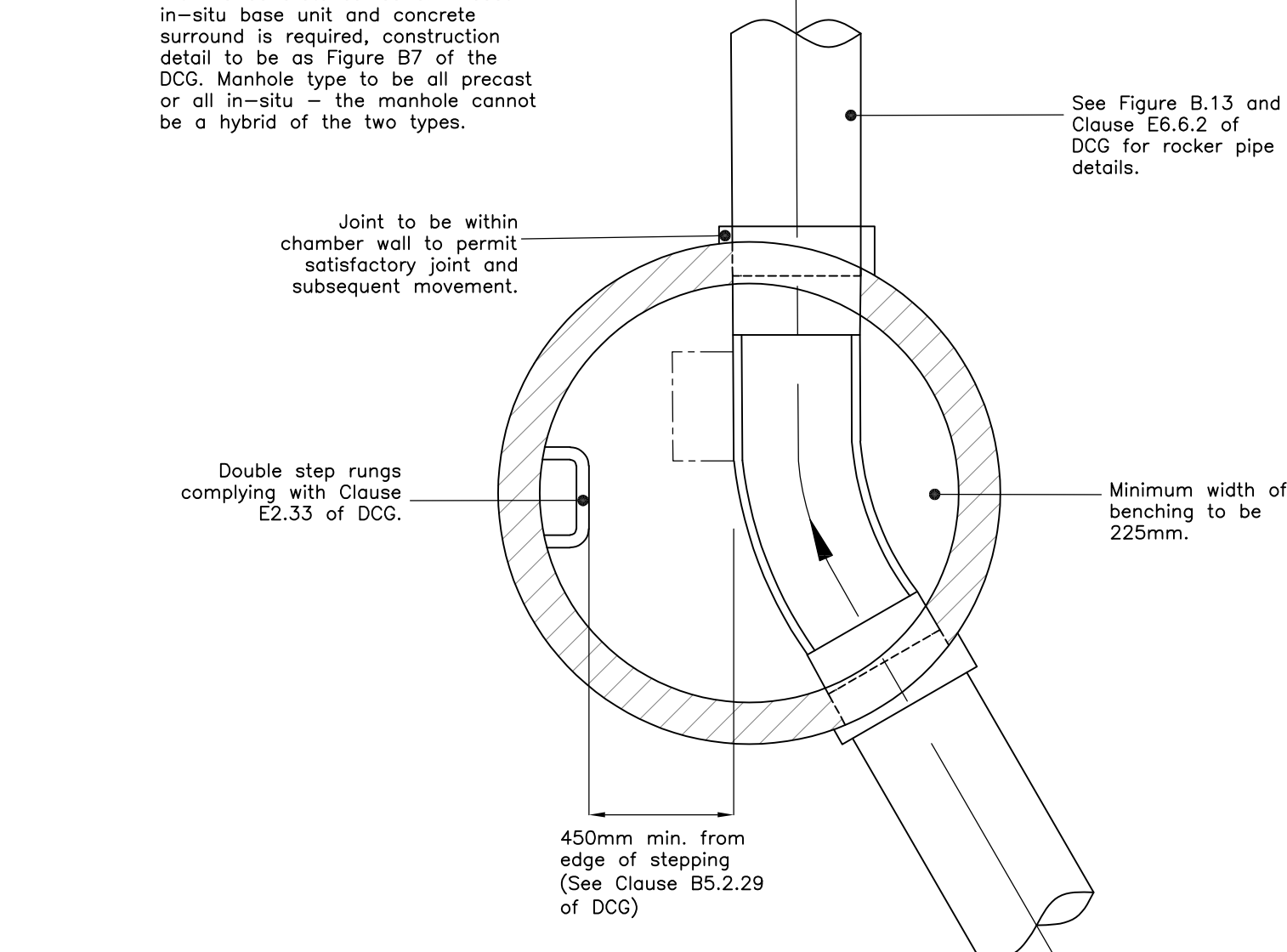
Maximum depth from cover level to soffit of pipe for areas subject to vehicle loading 3m, non entry
DCG Version 2.1 dated 25 May 2021
Scale 1:20



Manhole Depth from cover level to soffit of pipe 1.5m to 3.0m
Based on the Design and Construction Guidance (DCG) published by Water UK
Scale 1:20



Manhole detail shown utilises pre-cast base unit, manhole rings with no concrete surround. If cast in-situ base unit and concrete surround is required, construction detail to be as Figure B7 of the DCG. Manhole type to be all precast or all in-situ – the manhole cannot be a hybrid of the two types.



Maximum depth from cover level to soffit of pipe for areas subject to vehicle loading 2m, non entry
Based on DCG Version 2.1 dated 25 May 2021
Scale 1:20

Technical drawing of a manhole assembly showing various components and their specifications. The drawing includes a cross-section of the manhole structure, showing the base unit, shaft, and surrounding concrete collar. The following table lists the components and their specifications:

Component / Specification	Value / Requirement
Driveways, footways and landscaped areas	Class B125
Minimum internal dimensions	180mm diameter or 225mm x 100mm
Base unit connections	Greater than 150mm set at soffits level
Granular bedding material	Required at base
DOT Type 1 sub base	Thickness varies or concrete surround
Minimum radius for 100mm diameter pipe	500mm
Minimum radius for 150mm diameter pipe	600mm
150mm deep concrete collar	Required around shaft
Mortar bedding and haunching	To cover and frame to Clause E6.7
Complying with BS EN 124 and BS 7903	Required for the assembly
Joints between base and shaft and between shaft components	To be fitted with watertight seals

Technical drawing of a cover assembly showing the following components and dimensions:

- Mortar bedding and haunching to clause E6.7
- Topsoil
- Cover complying with BS EN 124 and BS 7903
- Girders - Class A15
- Minimum internal dimensions 180mm diameter or 225mm x 100mm
- DOT Type 1 sub base (thickness varies) or concrete surround



This drawing is produced, together with any related data, to inform the setting out and construction of the works. To be read in conjunction with all working drawings.

1. All dimensions shown in mm unless otherwise stated
2. The works shown on this drawing could affect Statutory Undertaker's apparatus and the Contractor is required to verify the location and depth of all such apparatus prior to commencement of the works and to take any precautions necessary when working in the vicinity of any such apparatus.
3. The Contractor shall seek clarification from the Engineer regarding any contradiction between this drawing and the Specification.
4. All adoptable drainage works to be in accordance with DCG Version 2.1 dated 25 May 2021.
5. Bed Type Z shall be used where cover to pipework is less than 0.9m in verges or 1.2m in carriageway and footways/footpaths.
6. SUBJECT TO TECHNICAL APPROVAL.

Rev	Date	Description	Drawn	Checked
#	03/01/22	First Issue.	DBC	JW
A	27/01/22	Class 2 bed and surround amended as requested by Icosa Water.	DRB	CI
B	21/02/22	Drawing revised to 'For Construction', as instructed by Miller Homes.	JM	DRB
C	12/03/23	Drawing revised in accordance with S104 comments #1.	JW	DRB
D	25/01/23	Manhole cover slab openings corrected to 675 x 675mm as requested by Icosa.	DRB	CI

FOR CONSTRUCTION



**Boorley Gardens
Winchester Road
Hedge End
Phase 2**

Adoptable Drainage Details

M434/17

Rev D

Date: January 2022	Scale: As Shown @ A1
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