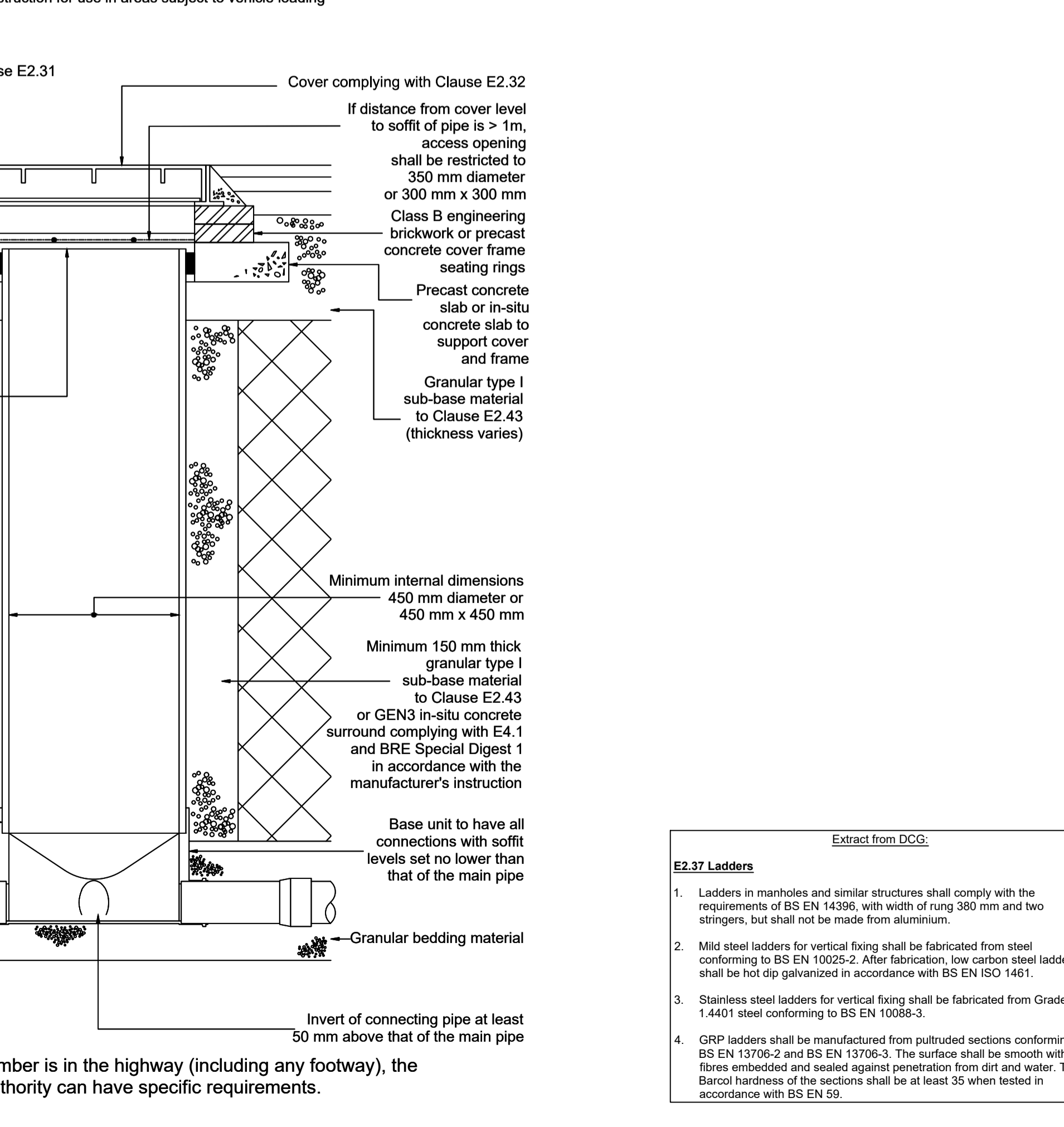
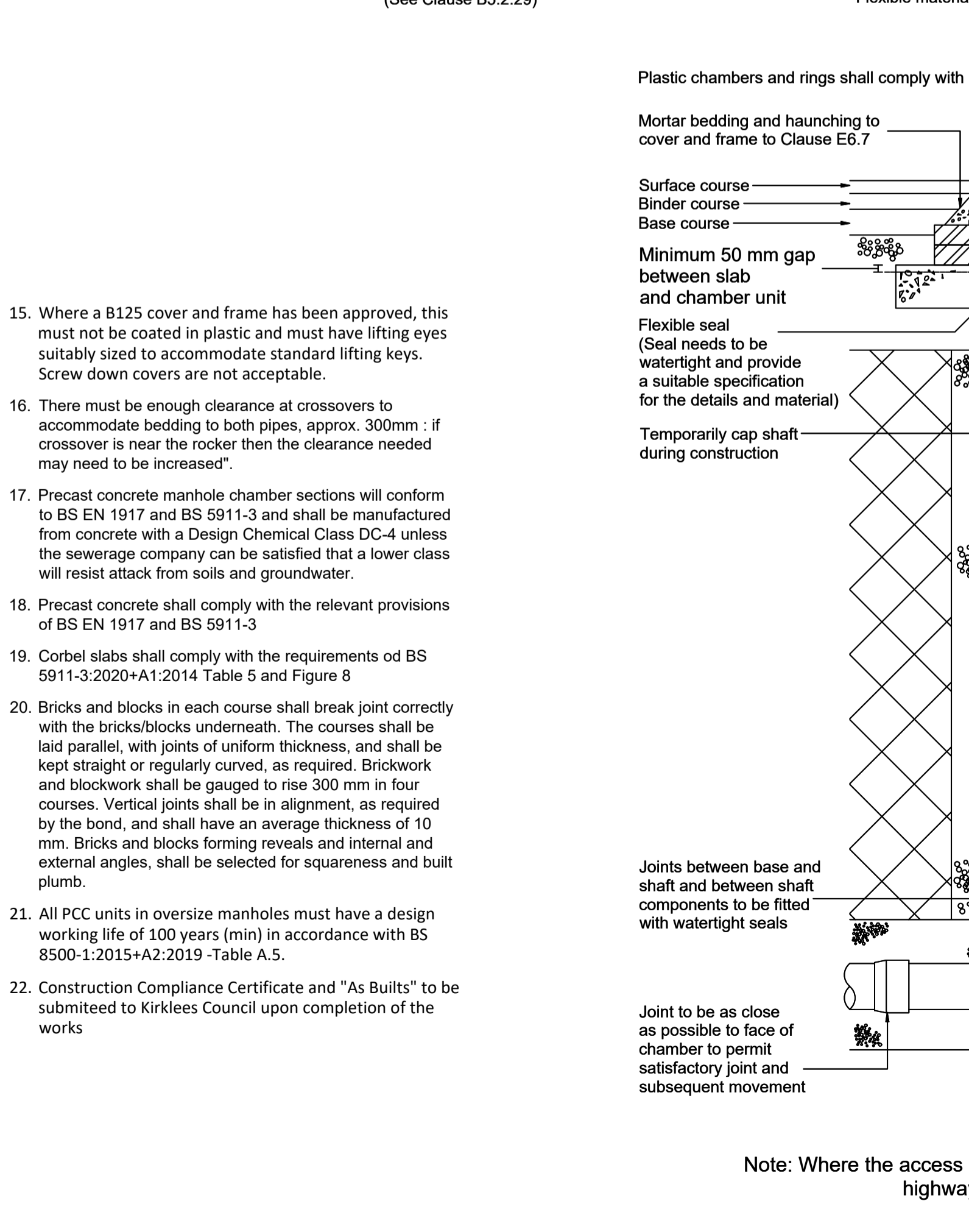


- Drainage Notes**
- All adoptable sewer works and material to be in accordance with Design and Construction Guidance (DCG) / Code for Adoption. The Relevant British/European and Water Authority's Standards/Requirements/Addendum to the Mechanical and Electrical Specification and Kitemarked.
 - Manhole covers shall/must have a clear opening of 600mm and shall be Class D400 to BS EN 124 with 150mm deep frames in highways.
 - Filled ground must be filled and consolidated under the supervision and to the satisfaction of Water Authority before any sewer works are carried out.
 - Water Authority is not obliged to accept filter drain/land drainage run-off into the public sewer network or adoptable drainage system (directly or in-directly). An alternative method of disposal of the land drainage run-off will therefore be required and you will have to liaise with the Local Authority, Land Drainage Section with regard to the disposal of the filter drain/land drainage run-off.
 - Cover slabs must carry the BSI Kitemark or will be rejected by Water Authority Inspector. Where the clear opening of the Kitemarked product is different to that of the cover and frame, a loading bearing slab should be fitted above the cover slab to bring the size down to 600mm x 600mm for the Water Authority specified cover size. Please refer to Concrete Pipe Systems Association (CPSA), 'Technical Bulletin' issued Autumn 2004 for Kitemarked cover slab opening sizes
 - Sulphate resistant cement (C20-DC2) and precast concrete products must be used or a laboratory report provided proving that such precautions are not necessary.
 - The adoptable sewers should be a minimum of 1m and manholes 0.5m from kerb faces and service margins.
 - Sewers must have 5 metres clearance from trees and hedges.
 - Sewers to be laid in Class "S" Bedding (150mm granular bed and surround). Where depth of cover to top of the sewer is less than 1.2m in highways and verges (or less than 900mm in none vehicular access areas) then a concrete slab should be provide above granular bed and surround.
 - Bedding and backfill material to conform to the requirement of Water Industry Specification 4-08-02 (Table A2).
 - The chamber size of manholes with more than one connection in them may need to be increased an increment to accommodate the connections and bends.
 - Adoptable plastic sewer pipes to be BSI Kitemarked (certified to WIS 4-35-01 and BS/EN13476). Adoptable plastic sewer pipes to be laid in maximum 3 metre lengths unless there is a specific operational need to lay longer lengths. Plastic channel sections in manholes are not acceptable and Water Authority would prefer clayware channel in manholes. We have found that plastic channels are difficult to set in concrete because they float and a satisfactory finish cannot be obtained on the benching.
 - The minimum crushing strength for clay pipes should be as follows :
 - 100mm dia. 40KN/m,
 - 150mm dia. 40KN/m,
 - 225mm dia. 45KN/m,
 - 300mm dia. 72KN/m.
 - The minimum crushing strength for concrete pipes should be - (Class 120 to EN 1916/BS5911-1 2002). Plastic pipes should conform to WIS4-35-01 and BS EN13476.
 - Where a B125 cover and frame has been approved, this must not be coated in plastic and must have lifting eyes suitably sized to accommodate standard lifting keys. Screw down covers are not acceptable.
 - There must be enough clearance at crossovers to accommodate bedding to both pipes, approx. 300mm : if crossover is near the rocker then the clearance needed may need to be increased.
 - Precast concrete manhole chamber sections will conform to BS EN 1917 and BS 5911-3 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.
 - Precast concrete shall comply with the relevant provisions of BS EN 1917 and BS 5911-3
 - Corbel slabs shall comply with the requirements of BS 5911-3:2020+A1:2014 Table 5 and Figure 8
 - Bricks and blocks in each course shall break joint correctly with the bricks/blocks underneath. The courses shall be laid parallel, with joints of uniform thickness, and shall be kept straight or regularly curved, as required. Brickwork and blockwork shall be gauged to rise 300 mm in four courses. Vertical joints shall be in alignment, as required by the bond, and shall have an average thickness of 10 mm. Bricks and blocks forming reveals and internal and external angles, shall be selected for squareness and built plumb.
 - All PCC units in oversize manholes must have a design working life of 100 years (min) in accordance with BS 8500-1:2015+A2:2019 - Table A.5.
 - Construction Compliance Certificate and "As Builts" to be submitted to Kirklees Council upon completion of the works



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

E2.37 Ladders

Extract from DCG:

- Ladders in manholes and similar structures shall comply with the requirements of BS EN 14396, with width of rung 380 mm and two stringers, but shall not be made from aluminium.
- Mild steel ladders for vertical fixing shall be fabricated from steel conforming to BS EN 10025-2. After fabrication, low carbon steel ladders shall be hot dip galvanized in accordance with BS EN ISO 1461.
- Stainless steel ladders for vertical fixing shall be fabricated from Grade 1.4401 steel conforming to BS EN 10088-3.
- GRP ladders shall be manufactured from pultruded sections conforming to BS EN 13706-2 and BS EN 13706-3. The surface shall be smooth with fibres embedded and sealed against penetration from dirt and water. The Barcol hardness of the sections shall be at least 35 when tested in accordance with BS EN 59.

Do Not Scale

DESIGN REVIEW

| | | | |
|-------------------|----|-------------|----|
| Design review by: | ** | Checked by: | ** |
|-------------------|----|-------------|----|

Residual hazards:

Health, Safety & Environmental Notes

NOTES

Kirklees Highways Notes

All oversize precast concrete manhole circular vertical units and cover slabs including all ancillary concrete products are in full compliance with "BS EN 1917" & "BS 5911-3+A1"

Precast concrete manhole units including their PCC cover slabs shall comply with the relevant provisions of BS EN 1917 and BS 5911-3 and shall be manufactured from concrete with a Design Chemical Class DC-4 unless satisfactory evidence through soil analysis can be provided that a lower class will resist attack from soils and ground water.

All precast concrete manhole shaft units, circular cover, reducing, landing and corbel slabs together with all other ancillary concrete units intended for installation in the highway are marked with "BS EN 1917" & "BS 5911-3" R to confirm that the products represent a manufacturer's declaration that their products meet the requirement of these standards.

Cover slabs are to be installed with a minimum of 300 mm cover to finished levels to comply with National Specifications.

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|----------|---------------------------------------|----|----|----|
| 04.12.25 | Updated to suit Kirklees requirements | WD | AT | P2 |
| 07.02.25 | Initial Issue | WD | AT | P1 |

| Date | Description | By | Chk | Rev |
|------|-------------|----|-----|-----|
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Blackmoorfoot, Huddersfield

S104 - Drainage Details
Sheet 1 of 3

Client
Countryside Partnerships

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|------------|----------------|-----------------|----------|--------------|
| Scale @ A1 | Initial author | Initial checker | Approver | Initial Date |
| 1:20 | WD | AT | RP | Feb 25' |

| | | |
|--------|-------------|-----------|
| Status | Purpose | Adapt Ref |
| S2 | Preliminary | 08.24007 |

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|-----------------------------|------------|--------|-------|------|------|----------|------|
| Project Number | Originator | Volume | Level | Type | Role | Org. No. | Rev. |
| 08.24007-ACE-00-ZZ-D-C-1351 | | | | | | | P2 |