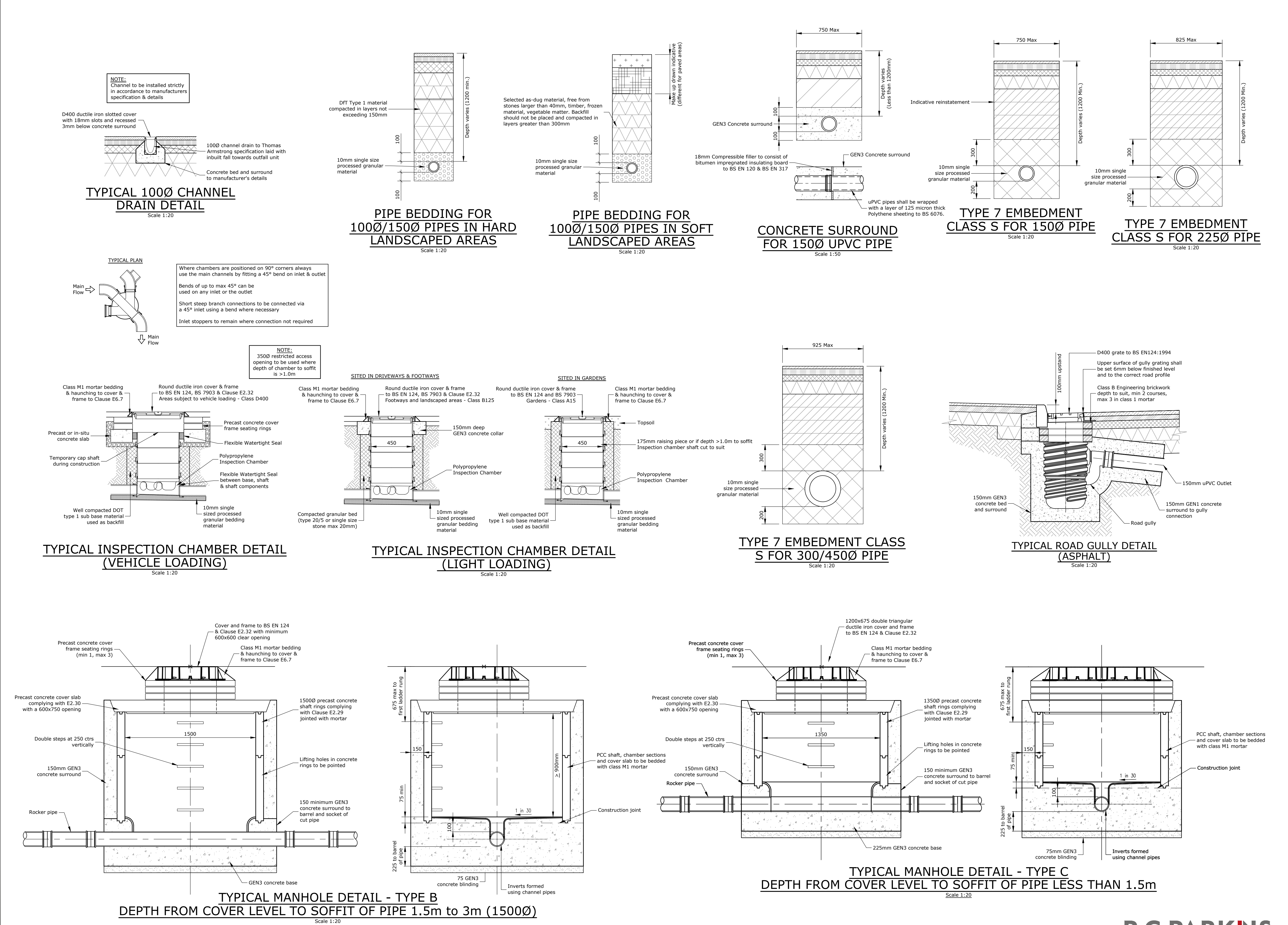




- Drainage Construction Notes**
1. **Specifications**
- All drainage construction is to be in accordance with all relevant details and clauses from the following:
- Civil Engineering Specification for the Water Industry (CESWI) - 8th edition
 - Design and Construction Guidance (DCG) for foul and surface water sewers offered for adoption under the code for adoption agreements for water and sewerage companies operating wholly or mainly in England - Approved version 2.3, November 2023 (Sewer Sector Guidance Appendix C)
 - Approved Document H from the Building Regulations 2015
 - Specific details and drawings provided by United Utilities for adoption of new sewers and manholes
2. **Plot Drainage**
- All foul and surface water drainage pipes within the curtilage of the dwelling to be min. 1000 unless otherwise indicated. All lateral connections/drag-outs to main sewers to be min. 1500 unless otherwise indicated.
- Min. depth of cover for plot drainage pipework (SN4 nominal ring stiffness) is as follows:
- Under footpaths/gardens = 600mm
 - Under driveways/car parking = 900mm
- Where min. depth of cover cannot be achieved plot drainage should be laid with 100mm GEN3 concrete bed and surround. Alternatively, SN8 rated pipework could be used where the min. depth of cover is 400mm and would not require a concrete bed & surround.
3. **Sewer Pipes**
- The specification for all sewer pipes shall comply with the following Clauses from the DCG:
- E2.18 Vitrified clay pipes & fittings
 - E2.19 Concrete pipes & fittings
 - E2.20 Ductile iron pipes & fittings
 - E2.21 Thermoplastic solid wall pipes & fittings
 - E2.22 Thermoplastic structured wall pipes & fittings
4. **Pipes Connection into Manholes**
- Pipe connections into manholes shall be constructed with the soffits at the same level unless detailed differently on the contract drawings. Invert levels shown on all incoming and outgoing pipes for manholes indicate the invert levels at the intersection of the pipes within the manhole.
5. **Lateral Connections**
- All proposed lateral connections from plot drainage that do not enter a new manhole are to be connected via the installation of an oblique pre-formed junction onto the main sewer pipe.
6. **In-situ Concrete Bases**
- Cast in-situ concrete bases shall be min. 225mm to underside of channel and comprise GEN3 concrete complying with Clause E4.1 from the DCG and 'BRE Special Digest 1'. Concrete shall be placed in a single continuous operation from top of base slab to top of benching and pipe surround.
7. **Benching Concrete**
- Min. 20mm thick high-strength concrete topping complying with Clauses E4.3 and E6.5 from the DCG to be used for benching. To be neatly shaped and finished to all branch connections.
8. **Concrete surround to Manholes**
- Concrete surround to manholes, chambers and wet wells shall be min. 150mm thick GEN3 concrete complying with 'BRE Special Digest 1'. The height of each concrete pour shall not exceed 2m. Each construction joint shall break joint with the precast sections by at least 150mm.
9. **Landing Area & Benching Width**
- In accordance with Clause B5.2.29, at the foot of each ladder or set of step rungs, a min. of 450mm landing area should be provided from the outer edge of the step or ladder. On the opposite side of the channel the minimum benching width shall be 225mm.
10. **Channel Fittings**
- Proprietary channel fittings are to be used up to and including 300mm a pipes, above which granolithic in-situ channels can be used. Incoming and outgoing 'Y' junctions, square junctions and 90° bends are not acceptable especially on foul systems, to be replaced by 'Y' junctions, oblique junctions and 2 No. 45° bends respectively.
11. **Backdrops**
- In accordance with Clause B5.2.27 where required, backdrops should be constructed at manholes as shown in Figure B16 or Figure B17 from the DCG. Ramped backdrops should be used for manholes rather than vertical backdrops.
12. **Manhole Covers and Frames**
- Manhole covers and frames shall be in accordance with Clause E2.32 from the DCG and comply with the relevant provisions of BS EN 124, BS 7903 and 'Design Manual for Roads and Bridges 4.2 Part 9' HA 104/09. As a minimum, 150mm deep Class D covers shall be used in all areas subject to traffic loads. Frame to be set as per manufacturers specification. Class B125 covers shall be used in footways, pedestrian areas, driveways serving a single house and comparable locations.
13. **Manhole Steps**
- Steps for manholes shall be in accordance with Clause E2.33 from the DCG. Steps shall be Type D Class 1, complying with the requirements of BS EN 13101. Galvanised mild steel steps and plastic encapsulated steps are preferred.
14. **Metalwork**
- Ladders, handrails and safety chains shall be in accordance with Clauses E2.35, E2.36, E2.37 & E2.38 from the DCG.
15. **Rigid Pipes & Joints Adjacent to Structures**
- In accordance with Clause E6.6 from the DCG, where rigid pipes are used, a flexible joint shall be provided as close as is feasible to the outside face of any structure into which the pipe is built, within 150mm for pipe diameters less than 300mm. The recommended effective length of the next pipe (rocker pipe) away from the structure shall be as follows:
- 150-600mm Ø pipes = 0.6m
 - 601-750mm Ø pipes = 1.0m
 - over 750mm Ø pipes = 1.25m
16. **Attenuation Storage Tanks**
- Proprietary attenuation storage tanks and all pipe connections to be installed in strict accordance with the manufacturers specification and as detailed on the relevant drawings.

Rev	Description	Date	Revised by	Checked by	Approved
Issue Purpose: Planning					
Do not scale from this drawing					

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Client:	Thomas Armstrong	Project No:	K42601
Project:	Barfs Road, Distington	Drawing No:	46
Drawing Title:	Typical Drainage Construction Details - Sheet 1 of 2	BIM No:	

Scale @ A1:	1:20	First Issue:	11/08/26	Office of Origin:	Kendal
Drawn by:	TM	Checked by:	CA	Approved:	TM