

DRAINAGE NOTES :

1. DRAINAGE TO BE CONSTRUCTED, INSTALLED AND TESTED IN ACCORDANCE WITH THE RECOMMENDATIONS IN BS EN 752:2008, BS EN 1610:1998, SEWERS FOR SCOTLAND – 3RD EDITION AND 'THE SUDS MANUAL – CIRIA C753'.

2. ALL NEW PIPEWORK TO BE BY WAVIN OSMA OR EQUAL APPROVED.

3.0 BioDisc Installation

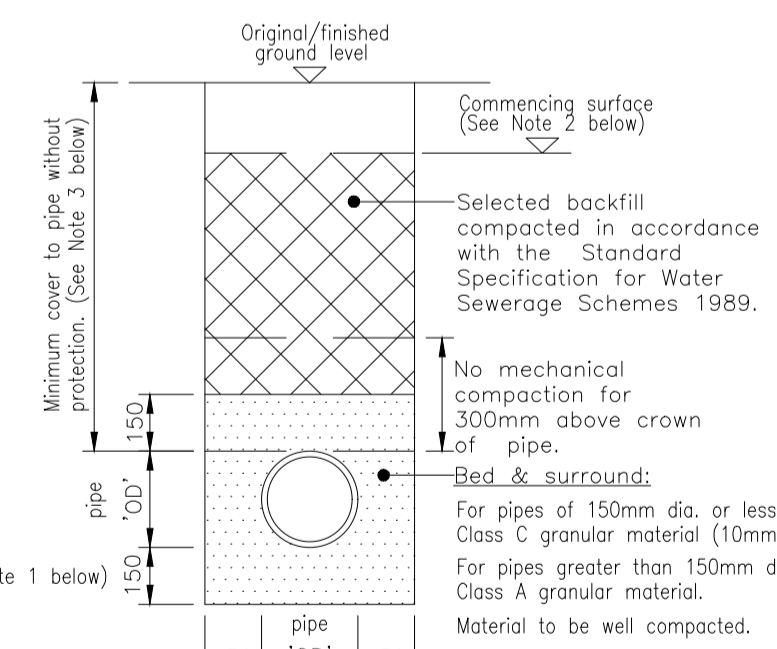
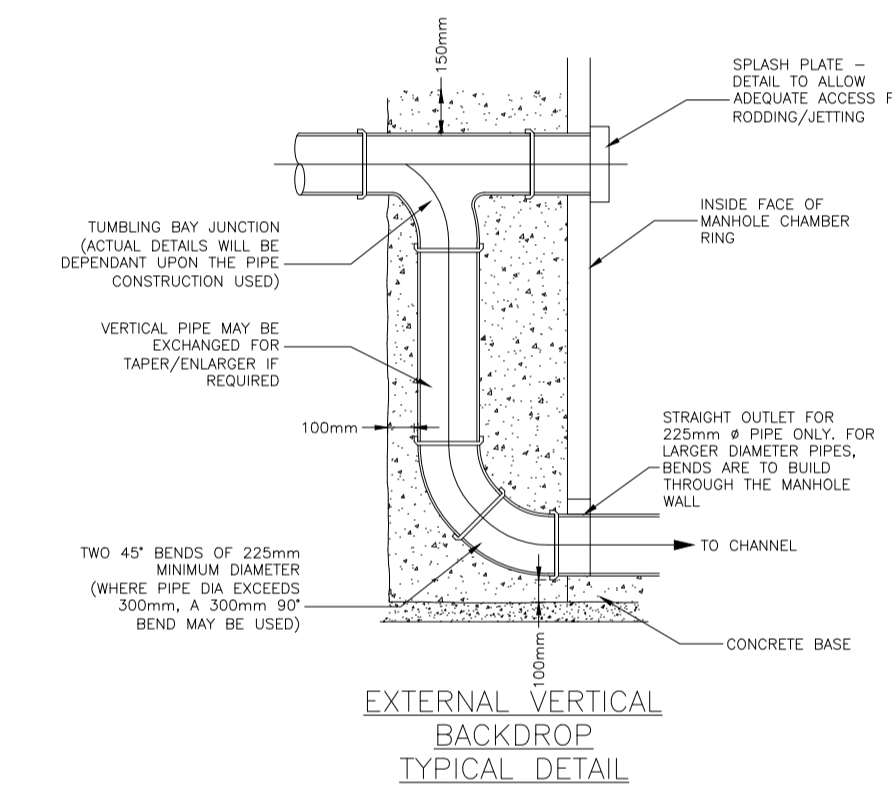
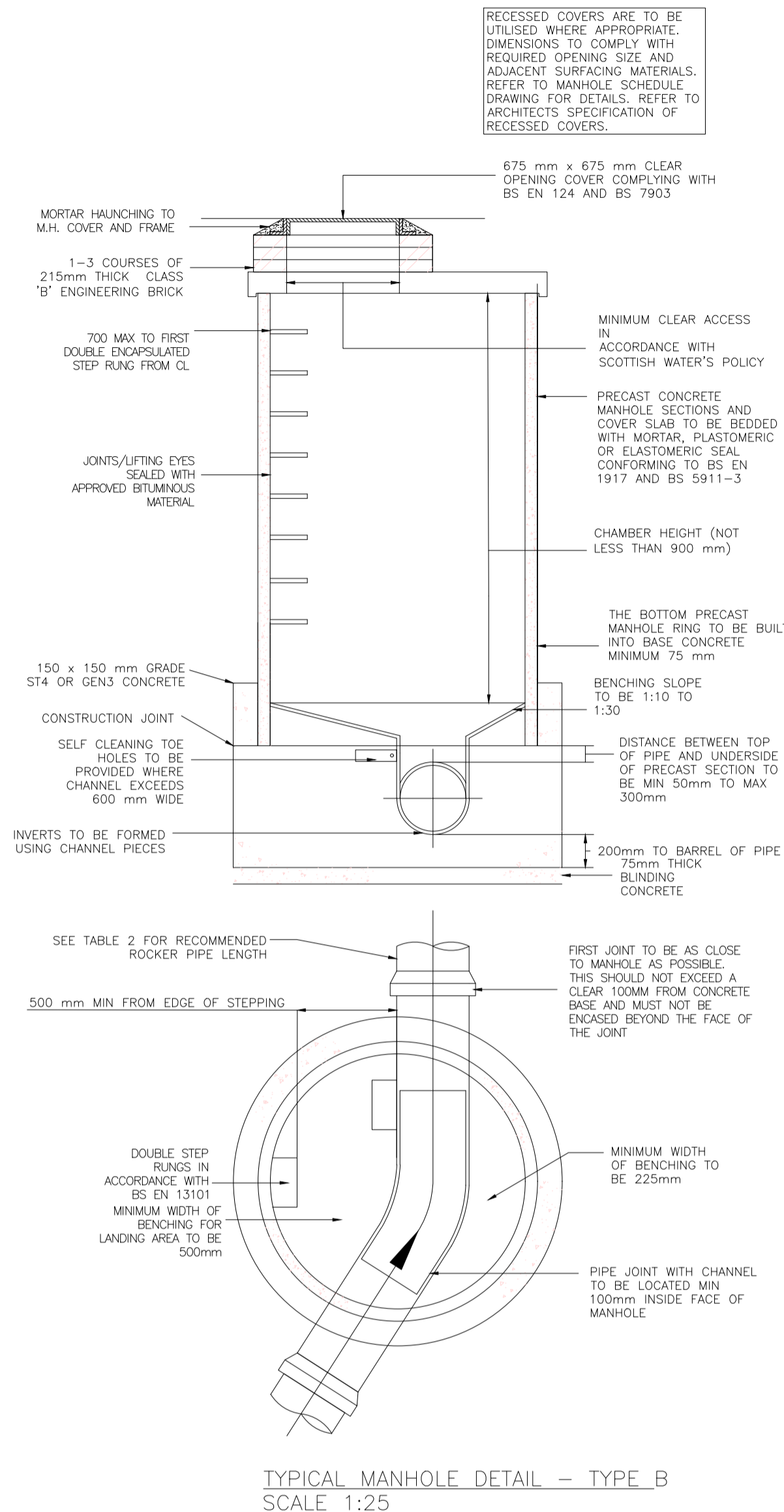
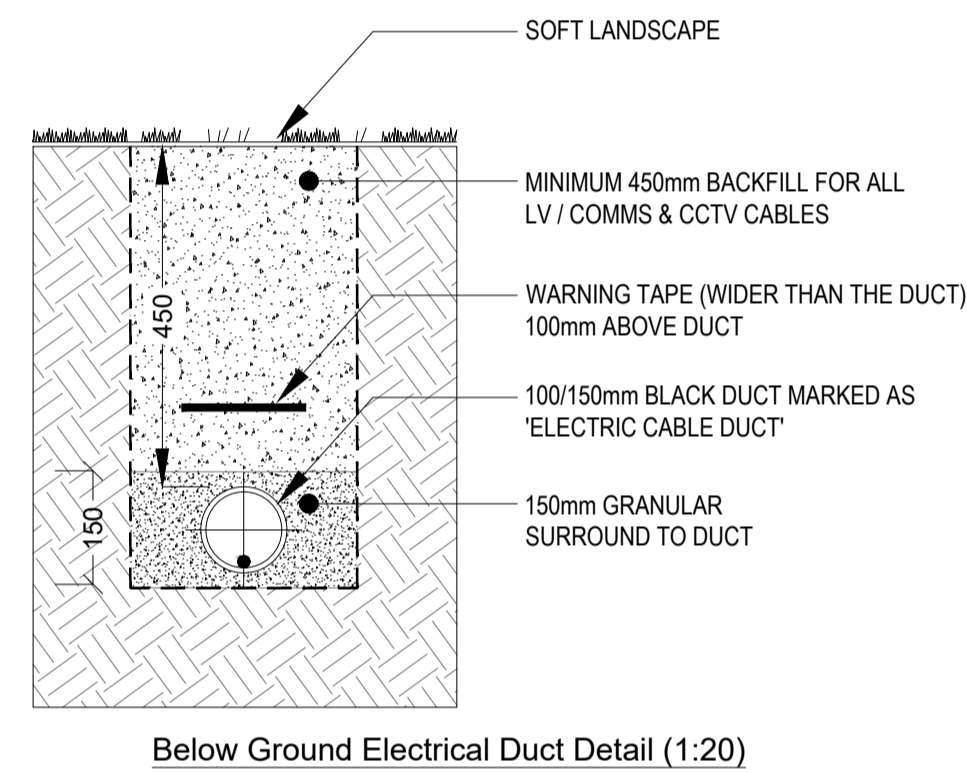
- 3.1 Remove the package tied to the outside of the unit. This contains a cover key.
- 3.2 Excavate a hole of sufficient length and width to accommodate the unit and a minimum of 150mm concrete surround and to a depth which allows for the burial depth of the unit plus a minimum 150mm thick concrete base.
- 3.3 Construct a suitable concrete base slab, a minimum of 150 mm thick, appropriate to site conditions. In wet or unstable ground conditions it may be necessary to lay a hard-core sub-base. Ensure that the slab is flat and level. Allow the slab to set sufficiently to support the installed load, but not so much as to prevent subsequent backfill bonding fully to the base.
- 3.4 Ensure that the slab is free of any stones or other material which could damage the unit. Lower the unit onto the slab using suitable webbing slings and lifting equipment.
- 3.5 Remove the covers by undoing the locks and folding the end covers back over the inner covers before lifting them off.
- 3.6 Remove the Control Panel and Owners Pack from the walkway inside the unit.
- 3.7 Check that the inlet and outlet orientation is correct and that the unit is level. It is essential that the unit is installed in a level plane to avoid undue stress on the bearings. The rotor shaft must be level end to end, to within ±3mm, measured at the bearing caps or directly on the shaft. The unit must also be level to within ±5mm from side to side, measured at the GRP walkway on either side of the rotor. If necessary, lift the unit off the base and apply further concrete as needed to level up.
- Note : The top flange of the BioDisc should not be used for levelling as manufacturing tolerances may result in it not being parallel with the rotor shaft.
- 3.8 It is essential that levels given above are checked regularly throughout the installation process. Should the unit become out of level, immediate remedial action is advised, to maintain the unit within the levels stated in section 3.7.
- 3.9 Pour no more than 1 metre depth of water into both primary (inlet) chambers and the final (outlet) chamber ensuring that there is never more than 250mm difference in water level between any of the sections.
- 3.10 BG BioDisc have an off-set centre of gravity and should not be lifted by the base channels as this would risk tipping over the unit. The old slinging points are still in the bottom of the mould, they are not to be used under any circumstances. Lift using the 4 new metal lifting brackets as indicated by labels on the unit.
- 3.11 Place concrete backfill to approximately 500mm depth around the unit ensuring good compaction to avoid voids. Do not use vibrating rammers.



Photo 1: Existing electrical board inside visitor center for connection to provide power for NG treatment plant and UVC-032 Chamber

- 3.12 Continue backfilling with concrete up to the level of the outlet. Keep the concrete at an even level all round the unit, compacting in layers. As backfilling progresses keep the ballast water level inside the unit 250–500mm above the concrete backfill level, but do not attempt to fill the unit with water above the outlet level.
- 3.13 BG only: Ensure that concrete is fed into the area between the two casings to eliminate voids as far as possible and assist in anchoring the unit.
- 3.14 Connect the inlet and outlet pipework when safe access can be gained. Short lengths of "rocker" pipe with flexible joints should be used adjacent to the unit to allow for any minor differential movement.
- 3.15 Check the cables attached to the control panel and drill the corresponding number of 40mm holes in the BioDisc case, 100mm below ground level and adjacent to one end of the interior walkway. If an Independent Remote Alarm is to be fitted this will also require a 40mm hole.
- 3.16 Erect the Control Panel as described in Section 6.0.
- 3.17 Continue backfilling to ground level with concrete, pea shingle (3–18mm), or similar non-cohesive, non-compressible free-flowing granular material. Do not use sand. The finished surface should be 65mm minimum lower than the lip of the cover.
- 3.18 Important : Read section 8.2 regarding delayed electrical installation.

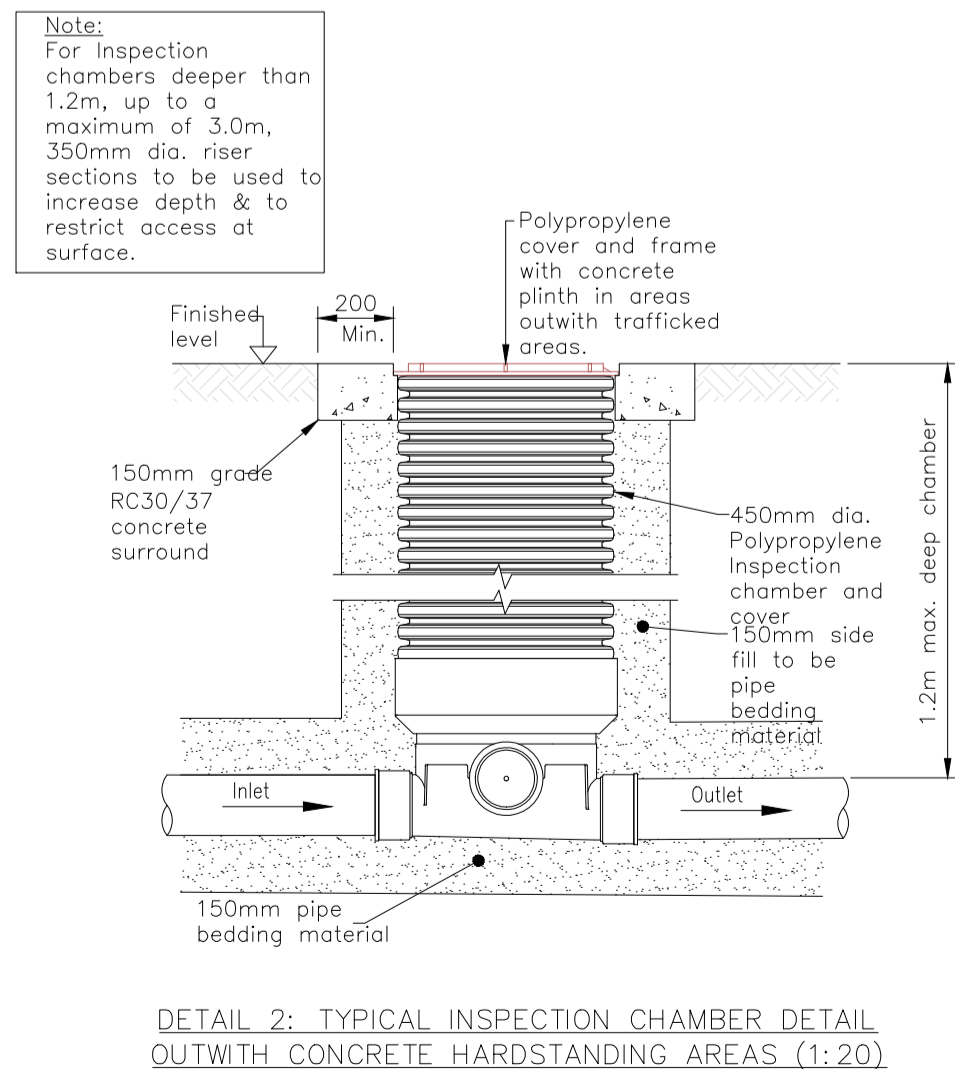
Refer to Klargester recommendations and installation guide for further instructions including for power units and UV Chamber



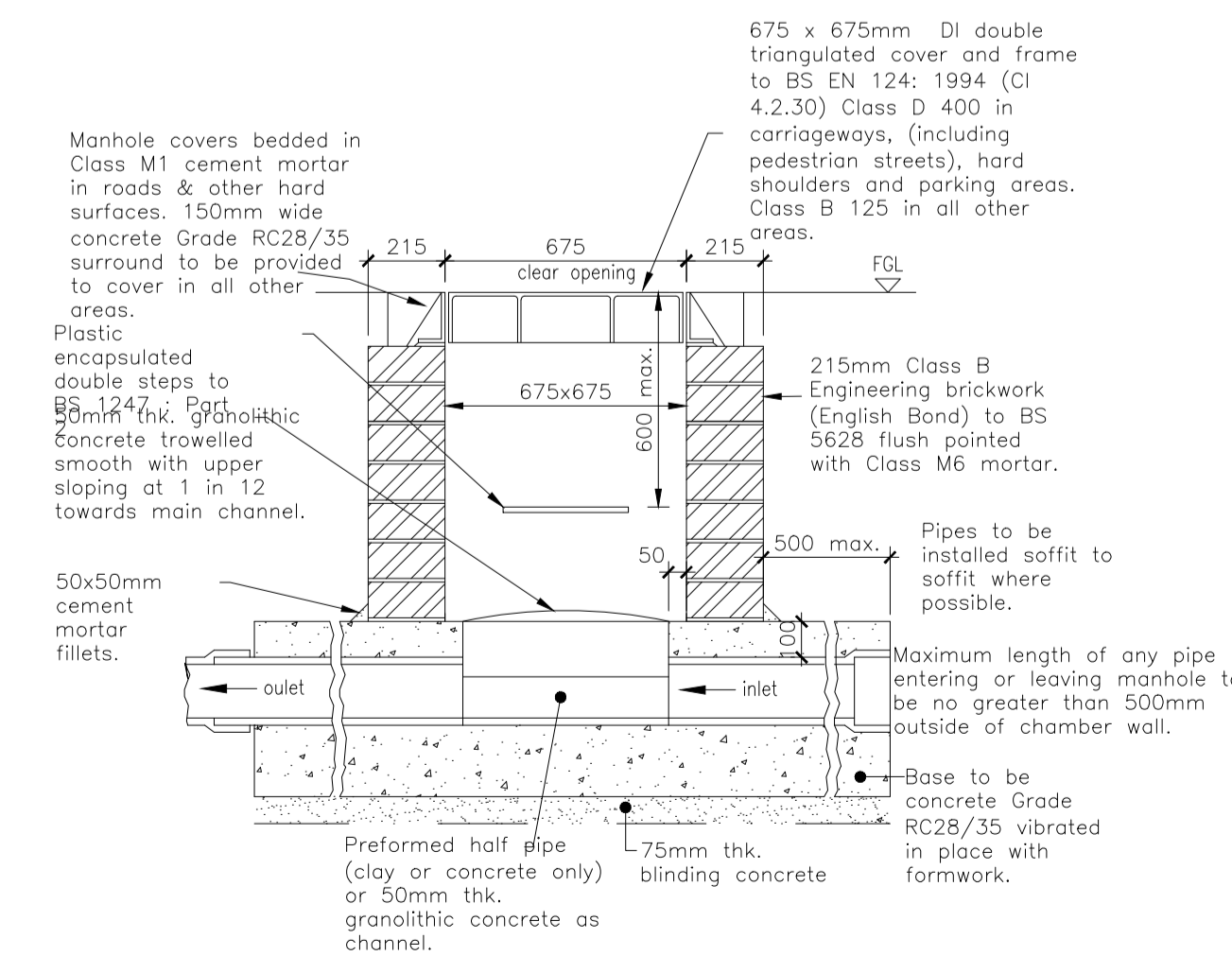
- NOTES:**
1. Where poor ground conditions are encountered, guidance on depth & type of bedding shall be sought from the Authority.
 2. Commencing surface shall be:
 - a) In existing roads: Level after removal of surfacing/roadbase.
 - b) In proposed roads: 300mm below proposed finished road level.
 - c) In arable & grass land: level after stripping of topsoil.
 - d) In waste ground: original ground level.
 3. Minimum cover to pipe 1.2m where vehicle loading will occur, 0.9m in all other locations. Where minimum cover cannot be achieved, concrete protection must be provided.

SIZE OF GRANULAR MATERIAL (mm)		
Pipe Dia. (mm)	Single Sized	Graded
100-125	10	-
150-200	10 or 14	14 to 5
225-300	10, 14 or 20	14 to 5 or 20 to 5
375-500	14 or 20	14 to 5 or 20 to 5
Exceeding 500	14, 20 or 40	14 to 5, 20 to 5 or 40 to 5

TABLE 1 – PIPE BEDDING & SURROUND Taken from Water Industry IG 4-11-02
DETAIL 1: TYPICAL BEDDING DETAIL FOR ALL PIPEWORK (1:20)



DETAIL 2: TYPICAL INSPECTION CHAMBER DETAIL OUTWITH CONCRETE HARDSTANDING AREAS (1:20)



S.W. & F.W. : TYPICAL BRICKWORK MANHOLE (1:20) (DEPTH TO CROWN NOT EXCEEDING 1.0m)

NOTE:

GENERAL

- Drawings and areas are indicative only, contractor is responsible for a full measured site survey. All dimension provided should be checked on site and should not be exceeded. DO NOT SCALE DRAWING.
- All construction to be carried out in accordance with all the relevant current Health and safety guidelines and regulations.
- Engineer to be consulted if existing construction differs from those shown on drawings.
- All materials and fixings to be installed fully in accordance with manufacturers recommendations.
- To be read in conjunction with drawing PIC065-021-CE-21-03 and 04

Residual Risks

1. Excavation for instalment of proposed drainage line, treatment plan, UV Chamber and IC
2. Working near road
3. Existing services
4. Abandoned SW pipe
5. Coastal works/Tidal conditions

Reserve:

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PLANNING

MONUMENT: DUNSTAFFNAGE CASTLE

PROJECT: PROPOSED DRAINAGE SYSTEM AND DETAILS (DETAILS)

HISTORIC ENVIRONMENT SCOTLAND | ÀRAINNEACHD EACHDRAIDHEIL ALBA

PROJECT DRAWING NUMBER: PIC065-2021-CE-05

SCALE: AS SHOWN	ENGINEERS: K.A/A.K
DATE: 20.09.2022	DRAWN BY: A.KAMARUDDIN

ARCHIVE NUMBER

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