

Drainage Notes

1.0 Standards

- 1.1 All drawings shall be read in conjunction with the CampbellReith specifications.
- 1.2 All private drainage works shall be in accordance with 'The Building Regulations Approved Document H' and British Standard EN 752.
- 1.3 All works in or adjacent to the Public Highway shall be in accordance with the requirements of the Highway Authority. The Contractor shall obtain all necessary licences to carry out works within the Public Highway.
- 1.4 All works to new or existing Public Sewers shall be to the approval of the Local Water Authority and in accordance with 'Sewers for Adoption'-latest edition.

2.0 Generally

- 2.1 Prior to commencement of the works the Contractor shall liaise with all relevant authorities to confirm their requirements and to obtain approval of the method of working and where appropriate the intended choice of materials.
- 2.2 Refer to site survey for details of existing site conditions and benchmarks.
- 2.3 Prior to commencement of the works the Contractor shall liaise with all relevant authorities to locate, protect and where necessary divert all existing services affected by the works.
- 2.4 All excavations shall be kept free of standing water.
- 2.5 The Contractor shall ensure the stability of all excavations is maintained at all times.
- 2.6 Prior to commencement of the works all drainage outfall points, whether existing sewer, drain or watercourse, shall be verified on site by the Contractor. If the outfall point is found to be higher or significantly lower than shown on the drawings then CampbellReith shall be notified immediately (significant redesign of drainage and levels may be necessary). Prior to commencement of construction on-site the Contractor shall install all off-site drainage connections, or satisfy themselves that there are no obstructions or other reasons why, the drain connections cannot be made.
- 2.7 All cover levels shown on the drainage drawing are approximate. Exact levels of new covers and frames to be determined on site to match level and profile of finished surface.
- 2.8 Exact location of gullies to be determined on site to suit low points. The Contractor shall ensure that all finished surfaces are laid to falls that are sufficient for all surface water to drain without surface ponding.
- 2.9 For the exact location of soil pipes, stubstacks, W.C.'s and other drainage connections refer to the large scale architectural building plans.
- 2.10 All rainwater pipes, Soil Vent pipes and Stub Stacks, shall be fitted with a rodding access set at a minimum of 100mm above ground floor level unless noted otherwise.
- 2.11 Prior to commencement of any works the existing drainage must be traced to ensure that no 'live' connections remain. Any such connections must be reported to CampbellReith, prior to diversion into the new drains.
- 2.12 All new service installations shall be strictly in accordance with NJUG recommendations
- 2.13 Deviation from design is not permitted unless a design has been submitted and approved by CampbellReith.
- 2.14 Storage of all material is the responsibility of the Contractor. If damaged due to improper handling and/or storage, the Contractor shall replace the items at their costs.
- 2.15 When required the contractor shall provide sufficient calculations and/or method statements to substantiate any proposed temporary works at least fourteen days prior to starting such works.
- 2.16 Contractor to make allowance for temporary works to protect below ground drainage systems until the full construction of any proposed pavement has been completed.

3.0 Pipework

- 3.1 Unless noted otherwise all pipework shall be 150mm diameter laid to a fall of 1 in 150 or steeper for surface water and 100mm diameter at 1 in 40 or steeper for foul water. Foul drains with more than one W.C. connected may be laid at 1 in 80 or steeper.
- 3.2 Unless noted otherwise all pipework shall be constructed from 'super strength' vitrified clay to BS 65, BS EN 295 or uPVC to BS EN 1201 bedded and backfilled as per the manufacturers recommendations and the above listed publications.
- 3.3 All materials to be kite marked and to the relevant BS and BS EN.
- 3.4 Laying of pipelines to be true and regular gradient on even bed for the full length with sockets facing up the gradient. Ends of uncompleted runs sealed to prevent ingress of materials.
- 3.5 All pipes to be cut clean and filed to ensure all burrs have been removed.
- 3.6 Class S bedding trench width up to 300mm, above crown of pipe (maximum) for DN150 nominal pipe size is 700mm. Granular material to be natural to Water Industry Specification WIS 4-08-02 (as amended by WIS 4-08-02A, 2008). Bedding material to be granular, compacted over full width of trench. Thickness of surround for sleeve jointed pipes is min 50mm and 100mm for socket jointed pipes. Where trench bottom is uneven, increase depth by 100mm. Surround material to be granular set to 50mm above crown of pipe and compacted by hand in 100mm layers. Material excavated from trench, compacted in layers 300mm (maximum) thick. Material free from vegetation matter, rubbish, frozen soil and material retained on a 40mm sieve.
- 3.7 Compaction: By hand in 100mm layers. Initial testing before placing surround is required. Do not use heavy compactors before there is 600mm (total) of material over pipe

4.0 Concrete works

- 4.1 Refer to Site Investigation Report for existing ground conditions and any special requirements for buried concrete (special requirements for buried concrete shall include all pre-cast and in-situ concrete and mortars). Where appropriate refer to contamination reports for details of chemicals affecting choice of materials and other additional requirements. Unless otherwise stated all buried concrete shall be designed to BRE Special Digest 1 - Concrete in Aggressive Ground.

- 4.2 All mortars specified for drainage works shall be Class (i) in accordance with BS EN 998-2, unless otherwise specified on the detail.
- 4.3 All pre-cast and in-situ concrete and mortars used in the construction of foul drains and sewers shall be made from sulphate resisting cement.
- 4.4 Concrete generally to BS 8500-2 and either Type GEN1 or GEN3. Aggregates maximum 20mm Size to BS 8500-2 and BS EN 12620. Coarse recycled aggregates are not permitted. Consistence and chloride class are 4 and Cl 1.0 respectively. Cement to be sulphate resisting to Design Chemical Class DC-4 as BRE Special Digest 1. GEN3 type concrete as per GEN1 with the exception of the consistence class is S2. Calcium chloride and admixtures containing calcium chloride are prohibited.
- 4.5 All ready mixed concrete to be sourced from a body accredited by UKAS to BS EN ISO/IEC 17065 for product conformity certification of ready-mixed concrete.
- 4.6 All castings to be single pour unless details show construction joints.

5.0 Manholes / Inspection chambers

- 5.1 Access fittings, inspection chambers and manholes shall be constructed to the dimensions shown in Tables 11 and 12 of 'The Building Regulations Approved Document H' and from the materials listed in Table 14. Access points, inspection chambers and manholes shall be constructed from products designed/rated for the location in which they are to be used. They shall be installed in accordance with the manufacturers/suppliers instructions.
- 5.2 All covers, gratings and frames to chambers, gullies, channels etc. shall be of the correct load class to suit their location.
- Load Class A15 Pedestrian access only
- Load Class B125 Pedestrian areas (with occasional vehicular access)
- Load Class C250 Lightly trafficked areas.
- Load Class D400 Main Roads.
- 5.3 Gratings in pedestrian areas to be designed for pedestrian use (i.e. heel safe).
- 5.4 All existing chambers, gullies channels, pipes and other drainage apparatus shall be protected from damage during the works. The Contractor shall take all necessary measures to ensure that no material enters the drains (other than that which they are designed to carry).
- 5.5 Unless noted otherwise all drains and sewers to connect soffit to soffit.
- 5.6 Chamber invert levels relate to outgoing pipe.
- 5.7 Catchpit invert levels relate to outgoing pipe.
- 5.8 All materials to be kite marked and to the relevant BS and BS EN.
- 5.9 Manhole cover slabs to be designed to loading class D400.
- 5.10 Access covers to be single seal ductile iron with self finish and flush with adjacent ground. Haunching material to be 1:3 cement - sand mortar.

6.0 Proprietary products

- 6.1 Installation of proprietary products, such as petrol interceptors, grease traps or flow restricting devices, shall be strictly in accordance with the manufacturers' specification and installation instructions. Any variance or conflict between specifications shall be brought to the attention of CampbellReith immediately

7.0 Brickwork

- 7.1 Brickwork to be engineering Class B bricks to BS EN 771-1 laid to English bond style with flush joints
- 7.2 Courses laid level and true to line with faces, angles and features plumb. Permissible deviations for straightness in any 5m length is ± 5mm. For overall thickness of walls, level of bed joints and verticality up to 3m height, allowable deviation is ± 10mm.
- 7.3 Work in air temperature requirements prohibited when at or below 5°C and falling or unless it is at least 5°C and rising, curing occurring during freezing temperatures. Mortar glues to be used as per manufacturers requirements

8.0 Mortar

- 8.1 Mortar to BS EN 998-2 Mortar mixed to Group 1 with sulphate resisting cement. Group 1 mix 1: 0-0.25: 3 (Portland cement: lime: sand with or without air entraining additive) or 1: 3 (Portland cement: sand and air entraining additive). Mortar joints filled for entire width and height. Mortars mixed using proportions by volume.
- 8.2 Admixtures other than air entraining (plasticizing) admixtures to BS EN 934-3 and compatible with other mortar constituents prohibited.
- 8.3 Sand for site made cement gauged masonry mortars to BS EN 13139 and grading to 0/2 (FP or MP). Fines content where the proportion of sand in a mortar mix is specified as a range with the lower / higher proportion of sand being category 3 / 2 fines.
- 8.4 Cements for mortars to be sulphate resisting Portland cement to BS EN 197-1 with a Strength class of 32.5

9.0 Completion

- 9.1 All chambers to be inspected to ensure they are debris and silt free. All drains and sewers to be thoroughly flushed, washings and detritus to be prevented from discharging to the public sewer
- 9.2 Manholes to be tested before backfilling to BS EN 1610. No identifiable flow of water penetrating the chamber.
- 9.3 All drains/sewers to be inspected using CCTV equipment and must be clearly illuminated.

Notes

1. Do not scale from this drawing on print or electronically. Work from figured dimensions only.
2. No deviation from the details on this drawing is allowed without CampbellReith's prior permission in writing.
3. Read this drawing with all Architect's, Service Engineer's and CampbellReith's relevant details, specifications and drawings.
4. All work is to be done in accordance with the relevant specifications issued by CampbellReith, British Standard Codes of Practice, Statutory Requirements and the Contract Documents.

5. Drawing status:

- P: Preliminary** Evolving drawings for approvals, tenders, billings etc.
- C: Construction** Fully developed drawings issued under instructions for construction.

6. Only status **C** drawings to be used for construction.

7. Suitability code:

Work in progress
S0 - Work in progress
Shared (Non-contractual)
S1 - For coordination, **S2** - For information, **S3** - For internal review and comment, **S4** - For construction approval.
Documentation (For contractors purposes)
D1 - For Costing, **D2** - For Tender, **D3** - For contractor design, **D4** - for manufacture/procurement.
Construction
A - For construction, **B** - For construction but with comments (i.e. areas in abeyance), **CR** - Construction Record (Final Construction ONLY. Any deviations to that which is on site is not the liability of CampbellReith)

C1	Issued for construction	16.05.22	JA
P1	Issued for Tender	02.07.21	SH
Rev	Description	Date	By

CampbellReith
consulting engineers

London	020 7340 1700	☐ Manchester	0161 819 3060
Surrey	01737 784 500	☒ Birmingham	01675 467 484
Bristol	0117 916 1066	☐ Dubai	00 971 4345 7088
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Job Title	Central Arun Crematorium
Client	Westerleigh

Drainage Standard Notes

Drawn by	Date made	Scale @ A1	Checked by	Suitability	CR Project
SH	June'21	n/a	AH	A	13591

Project No.	Originator	Volume	Lvl/Loc	Type	Role	Number	Rev
13591	CRH	XX	XX	DR	C	5300	C1