

### Manhole cover to suit BS EN 124 loading highways - Class D400.

Access opening restricted to 350mm diameter or 300mm x 300mm if depth of chamber to invert is > 1m Class B engineering brickwork or precast concrete cover frame seating rings

Pavement sub base (thickness varies) - Precast concrete slab or in-situ concrete slab to support cover and frame Minimum internal dimensions

450mm diameter or 450mm x 450mm (600mm diameter for 225 to 300mm pipe) Minimum 150mm thick granular Type 1 sub-base material to Clause E2.43 or GEN3 in-situ concrete surround complying with E4.1 and BRE Special Digest 1 in accordance with the

manufacturer's instructions. Base unit to have all connections with soffit levels set no lower than that of the main pipe Granular bedding material

> Invert of connecting pipe at least 50mm above that of the main pipe

## - Cover complying with BS EN 124 and BS 7903 Driveways, footways and landscaped areas - Class B125 See Clause E2.32

<ul> <li>Access opening restricted to 350 mm diameter or 300 mm x 300 mm if depth of chamber to invert is &gt; 1 r</li> </ul>
<ul> <li>Minimum internal dimension</li> <li>450 mm diameter or</li> <li>450 mm x 450 mm</li> </ul>

### Cover complying with BS EN 124 and BS 7903 Gardens - Class A15 See Clause E2.32

Topsoil
Access opening restricted to 350 mm diameter or
300 mm x 300 mm if depth of chamber to invert is > 1 m
Minimum internal dimensions
450 mm x 450 mm

	X+600 max X+300 min	
20	300	
x 100	<sup>min</sup> TYPE S	
NOTES 1. Dimens 2. The mi applied	ion X is the external diameter of nimum or maximum width of the on and below a line 300mm abo	the pipe. trench ove the

outside top of the pipe. Above the 300mm line the trench backfill shall be as described in SHW Clause 505. The concrete bed or surround may extend to the sides of the trench or be or minimum width. Class 8 material is to be used to fill any voids so

formed. 4. For Type Z trench the concrete cover may be formed to a radius batter or horizontal or surface. Min. cover of concrete shall be 150.

# TRENCH AND BEDDING DETAILS

Design code: MHCW Volume 3 Section 1 - Highway Construction Details - F Series - Drainage - Figures F1 (Scale 1:20)



Pavement surfacing Pavement structure Bottom of permeable sub-base to be laid to 1:200 falls toward nearest filter drain trench unless noted otherwise Red line denotes impermeable

PERVIOUS PAVING FILTER DRAIN See drainage layout for pipe locations and levels (Scale 1:20)



joint face or at not more than 5m intervals PIPE RUNS NEAR BUILDINGS Based on Building Regulations H1 Diagrams 8 & 12 (not to scale)



Section View of Quadraceptor Chamber

**VORTEX SEPARATOR - ACO QUADRACEPTOR** ACO Quadraceptorl shown as example. To be installed to manufacturers' instructions. (Scale 1:20)







Plan View of Quadraceptor Chamber

	<ol> <li>THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL RELEVANT ARCHITECTS AND ENGINEERS DRAWINGS AND SPECIFICATIONS.</li> <li>DO NOT SCALE THIS DRAWING. ANY AMBIGUITIES, OMISSIONS AND</li> </ol>
<ul> <li>Drainage Notes:</li> <li>1. This drawing is to be read in conjunction with all relevant architects and engineers drawings and specifications.</li> </ul>	ERRORS ON DRAWINGS SHALL BE BROUGHT TO THE ENGINEERS ATTENTION IMMEDIATELY. ALL DIMENSIONS MUST BE CHECKED / VERIFIED ON SITE.
<ol> <li>Do not scale this drawing. Any ambiguities, omissions or errors on drawings shall be brought to the engineers attention immediately. All dimensions must be checked / verified on site.</li> <li>Design based on available topographical survey and gets survey information</li> </ol>	3. ALL DIMENSIONS ARE IN METRES UNLESS NOTED OTHERWISE.
<ol> <li>Design based on available topographical survey and cerv survey information at the time of design.</li> <li>All drainage works to be in accordance with the Civil Engineering Specification for the Water Industry (CESWI) as included in Sewer Sector</li> </ol>	4. FOR GENERAL NOTES REFER TO DRAWING.
<ul> <li>Guidance (SSG), the requirements of The Building Regulations: Approved Document H (Part H) and Curtins drainage Specification.</li> <li>All dimensions are in mm and levels in m above ordnance datum unless</li> </ul>	
<ul><li>otherwise noted. Diameters are expressed in millimeters and denoted by a Ø symbol.</li><li>6. It is advised that the contractor survey retained existing drainage prior to</li></ul>	
<ul> <li>commencement to confirm location and condition, with cleansing to facilitate survey if required.</li> <li>7. Existing sever locations where the proposed drainage is to connect, are to be surveyed and event levels are firmed and event levels are firmed and event levels.</li> </ul>	
<ul> <li>surveyed and exact levels confirmed and provided to engineer prior to commencement of works.</li> <li>8. All existing services to be located prior to commencement of any drainage works, and where processary protection or diversions to be undertaken to any drainage.</li> </ul>	
<ul> <li>avoid conflict with the proposed work.</li> <li>All existing drains to be abandoned shall be either removed or grouted up if not possible. Grouting to be performed by capping all ends / connections and</li> </ul>	
<ul><li>filling the retaining void with grout, in accordance with CESWI.</li><li>10. All soft spots to be removed from bottom of excavations and to be refilled to formation level in accordance with groundworks specifications.</li></ul>	
<ol> <li>Raised ground must be filled in accordance with groundworks specifications and consolidated before any sewer works are carried out.</li> <li>All adoptable drainage works including works to existing public sewers to be</li> </ol>	
<ul> <li>undertaken in accordance with SSG, CESWI and the relevant statutory undertakers details.</li> <li>13. All private drainage works to be in accordance with CESWI, BS EN 752 2017</li> </ul>	
<ul> <li>14. All drains, unless agreed otherwise stated, shall be:</li> <li>100mm to 300mm diameter to be vitrified clay.</li> </ul>	
<ul><li>15. All diameters given are nominal internal pipe diameters.</li><li>16. Pipe materials in accordance with the following:</li><li>all vitrified clay pipes to BS EN 295-1:</li></ul>	
<ul> <li>all concrete pipes to be to BS EN 1916.</li> <li>all concrete manholes to be to BS EN 1917.</li> <li>17 As an alternative the contractor may use an approved unplasticized polywind.</li> </ul>	
<ul> <li>chloride (uPVC).</li> <li>18. All private drainage pipes with a cover of less than 600mm in non-trafficked areas and less than 1200mm in trafficked areas to have a concrete protection</li> </ul>	
slab or be bedded and surrounded in concrete (Class Z). Compressible material shall be provided at every pipe joint. Where cover exceeds this depth, pipes are typically bedded and surrounded in Class S. Refer to pipe	
<ul> <li>embedment details drawing for specific types.</li> <li>19. Backfill to drainage trenches under hardstanding areas to be Type 1 sub base material, elsewhere backfill to be free draining readily compatible material free from detritus, organic matter, frozen soil clay lumps and large</li> </ul>	
<ul> <li>stones. To be compacted in layers not exceeding 150mm thick.</li> <li>20. Bedding and backfill materials to conform to the requirements of WIS 4-08-02 (Table A2).</li> </ul>	
<ul><li>21. Where foul drains run above surface drains, concrete protection may be required at crossovers to prevent any potential contamination.</li><li>22. The first pipe out of manholes to be as short as practicable so as to provide a</li></ul>	
<ul><li>flexible joint as close as possible to the outside face of the concrete surround and connected to a length of rocker pipe.</li><li>23. All connections passing through bases or edge beams to be in sealed</li></ul>	
<ul> <li>sleeves. Alternatively connections may be cast-in with flexible joints not greater than 150mm from face of concrete.</li> <li>24. Where drainage pipes are less than 300mm below the underside of the ground floor slob concrete supervision of 1/2 in T in Concrete.</li> </ul>	
<ul><li>ground floor slab, concrete encasement is required (Class 2). Compressible joints are to be provided at every pipe joint within the concrete.</li><li>25. Where pipes are more than 300mm below the underside of the slab, Class S bedding is accentable.</li></ul>	
<ul> <li>26. Drain pipes to be laid in maximum 3 metre lengths unless there is a specific operational need to lay longer lengths.</li> <li>27. Plastic channel sections will not be permitted within maphole chambers.</li> </ul>	
<ul><li>Clayware channels shall be used within manholes for pipe sizes up to and including 300mm diameter.</li><li>28. All new connections into existing manholes (or into existing sewers) to be</li></ul>	
<ul><li>'soffits level' unless otherwise noted.</li><li>29. Sulphate resistant cement (C20-DC2) and precast concrete products must be used or a laboratory report provided to prove that such precautions are not</li></ul>	
<ul> <li>30. Sewers must have 5m clearance from trees and hedges or to have suitable root protection in accordance with SSG requirements.</li> <li>21. The cherrine size of manipulate with successful and the successful and</li></ul>	
<ul> <li>31. The chamber size of manifoles with more than one connection in them may need to be increased to accommodate the connections and bends.</li> <li>32. All internal drainage connections are provided to the penetration positions shown on architect and M&amp;E drawings. Refer to dimensioned locations on</li> </ul>	
architect's ground floor setting-out plans. 33. Rainwater and foul water pop up locations and sizes to be confirmed by others.	
<ul><li>34. All underground foul drainage should be suitably vented at or near to the head of runs.</li><li>35. All access fittings, stacks, RWPs and gullies to be roddable. All to have low</li></ul>	
<ul> <li>level rodding access plates unless an alternative means of access is agreed.</li> <li>Access point to be above any ground floor connected appliance spill level.</li> <li>36. Large access fitting required above ground where greater than 12m up to</li> </ul>	
<ul> <li>37. All gully and channel drain outlets and termination points to be trapped and roddable. Internal gullies and channel drains to be specified by others.</li> <li>38. All branch connections to be made with awart bands is the direction of flow in</li> </ul>	
<ul><li>the main sewer.</li><li>39. Where no WCs are connected upstream, under slab foul water drainage to be laid at 1:40 min. After the connection of at least 1no WC, a min. fall of 1:80</li></ul>	
<ul><li>applies.</li><li>40. All internal covers to have mechanically jointed corners and be double sealed with recessed tray suit finishes.</li></ul>	
<ul> <li>41. All mannole covers in block/slab and external paving areas to have recessed covers of the appropriate grade to accept architect's paving proposal.</li> <li>42. Unless noted otherwise in the manhole schedule, all manhole, gully and channel covers (ironwork) should be the following specification:</li> </ul>	
<ul> <li>B125 load class in pedestrian areas</li> <li>D400 load class in vehicular areas.</li> </ul>	
44. Cover levels, gully positions, and building location are approximate and shall be confirmed by architect/landscape architect. Contractor to allow for adjustment to suit agreed positions and finished levels, and confirm all cover levels on site.	
<ul><li>45. Outfall connection(s) subject to agreement with the approving authority.</li><li>46. The contractor shall comply with the following:-</li><li>(i) All operations should be carried out in accordance with the general health and</li></ul>	
safety policy of the developer as required by sections 2 of the Health and Safety at Work Act 1974 and in particular The Construction (Health, Safety and Welfare) Regulations 1996.	
<ul> <li>(ii). The local authority and utilities companies are to be notified prior to commencement of work on site.</li> <li>(iii). Prior to construction the actual positions and depths of services likely to be affected by the works should be established by means of hand dig in close.</li> </ul>	
liaison with the utility companies. The contractor shall immediately advise the engineer of any services exposed which may affect the design. (iiii). All operatives working on the highway works must have street works	
<ul><li>accreditation.</li><li>47. The contractor shall be responsible for ensuring that pipes are adequately protected from concentrated loading by construction traffic during the</li></ul>	
<ul><li>construction period.</li><li>48. The contractor shall allow for the protection, temporary and permanent support, and temporary and permanent diversion works, as necessary to all winter support.</li></ul>	
<ul> <li>49. The contractor shall allow for keeping trenches and excavations as dry as practicable by pumping from temporary sumps and de-watering as appropriate. The point and method of discharge to be agreed with the</li> </ul>	P02     REVISED TO NEW PROPOSALS FOR PLANNING     08/04/25     CC     GW       P01     STAGE 3 ISSUE     07/07/23     AMG     GW
<ul><li>drainage authority &amp; LLFA and environment agency.</li><li>50. It is advised that drainage works are to be constructed from the outfall towards the head of run to ensure the outfall can be achieved.</li></ul>	Rev:     Description:     Date:     By:     Chkd:
<ul><li>51. All drains to be CCTV surveyed on completion of the works.</li><li>52. Grease traps should be provided above ground within an enzyme treatment system, by appropriate specialist designer.</li></ul>	Curting
	Units 24-25 Riverside Place K Village Lound Road Kendal LA9 7FH 01539 724 823
	kendal@curtins.com www.curtins.com Civils & Structures • Transport Planning • Environmental • Infrastructure • Geotechnical • Conservation & Heritage • Principal Designer
	Status: SUITABLE FOR INFORMATION
	Client:
	STORY Cumberland Council
	Project: MILLOM IRON LINE
	Drg Title:
	DRAINAGE DETAILS
	SHEELI
	Drawn By Designed By Checked By
1:20 0 0.5m 1m 1.5m 2m	Drawn By       Designed By       Checked By         AMG       GW       GW         Date       Scales @ A0         JULY 23       AS SHOWN

GENERAL NOTES: