

MH COVER AND FRAME BEDDED ON MORTAR. MANHOLE COVERS MUST BE TO BS EN 124 CLASS D400 AND HAVE 600x600mm OPENING AND 150mm DEEP FRAME

MORTAR HAUNCHING TO M.H. COVER AND FRAME

MIN. 2 MAX. 4 COURSE OF CLASS B ENGINEERING BRICKWORK OR TYPE 2 PCC COVER FRAME SEATING RINGS WITH 600x600 CENTRAL ACCESS HOLE TO BE BEDDED WITH MORTAR

MAX 675mm FROM COVER LEVEL TO FIRST DOUBLE STEP

HEAVY DUTY P.C.C. REINFORCED KITEMARKED COVER SLAB WITH 600x600 ECCENTRIC ACCESS HOLE TO BE BEDDED WITH MORTAR, BITUMEN OR RESIN MASTIC SEALANT.

DOUBLE WIDTH STEP IRONS TO BE TYPE D CLASS 1 COMPLYING TO BS EN 13101:2002 SPACED AT 250mm CENTRES. TO BE CAST IN VERTICAL ALIGNMENT FOR MANHOLES LESS THAN 6m DEEP. GALVANISED MILD STEEL AND PLASTIC ENCAPSULATED STEPS ARE PREFERRED.

PRECAST REINFORCED CONCRETE CHAMBER RINGS TO BS5911:PT200 BEDDED ON MORTAR, PROPRIETARY BITUMEN OR RESIN MASTIC SEALANT. ALL SURPLUS MORTAR TO BE REMOVED AND JOINT FINISHED FLUSH. BOTTOM OF RING TO BE BUILT INTO BASE CONCRETE MIN. 75mm.

150 THICK GRADE GEN3 CONCRETE SURROUND CONSTRUCTION JOINTS SHALL NOT BE WITHIN 150mm OF A JOINT IN THE PCC RINGS.

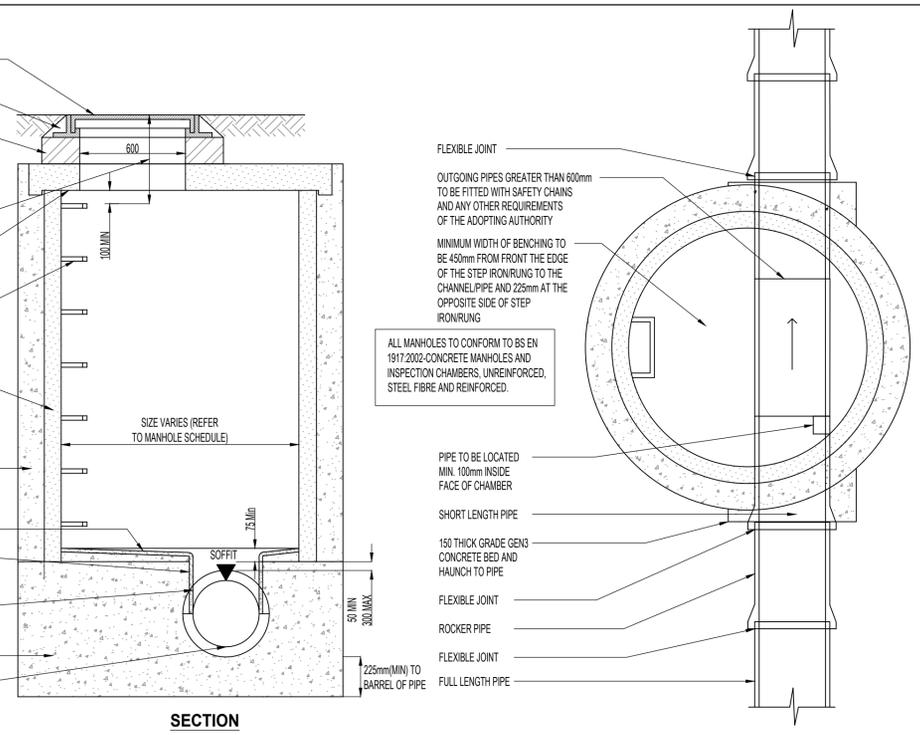
BENCHING SLOPE TO BE 1 IN 10 MAX. TO 1 IN 30 MIN

BOX OUT TO BE PROVIDED IN BENCHING OF PIPE GREATER THAN 600mm DIAMETER FOR ACCESS TO INVERT (I.E. 750mm BOX OUT BETWEEN MIN. 75mm AND MAX. 375mm HEIGHT BENCHING).

HIGH STRENGTH CONCRETE TOPPING TO BE BROUGHT UP TO A DENSE SMOOTH FACE NEATLY SHAPED AND FINISHED TO ALL BRANCH CONNECTIONS (MINIMUM THICKNESS 20mm)

GRADE GEN3 CONCRETE

INVERTS TO BE FORMED USING CHANNEL PIPES/PLASTIC CHANNEL PIECES WILL NOT BE USED UNDER ANY CIRCUMSTANCES. CLAY WILL BE USED FOR PIPES SIZES 3000 AND LESS AND IN-SITU CONCRETE FOR GREATER THAN 3000.

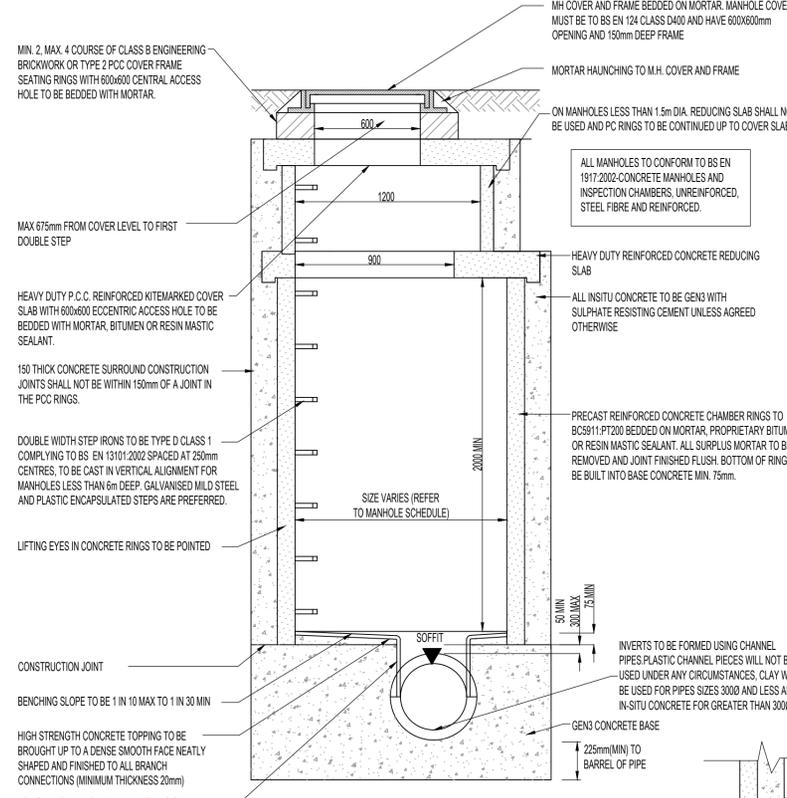


TYPICAL MANHOLE DETAIL - TYPE B
DEPTH TO SOFFIT OF PIPE 1.5m TO 3.0m

PLAN

NOMINAL SIZE	EFFECTIVE LENGTH (mm)
150 TO 600	600
675 TO 675	1000
825 AND ABOVE	1250

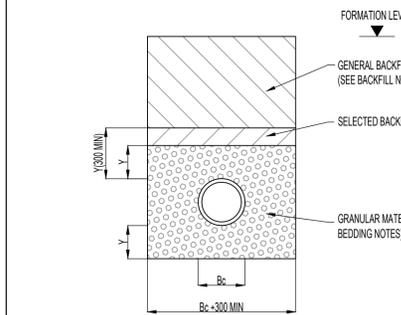
SHORT AND ROCKER PIPE LENGTHS TABLE
APPLICABLE TO ALL MANHOLE TYPES



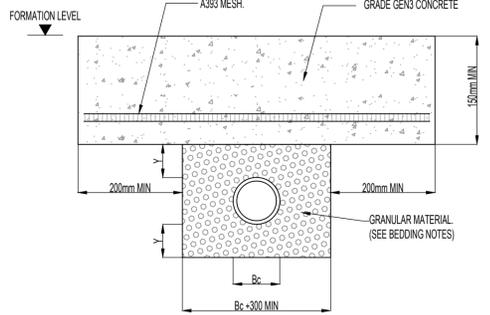
TYPICAL MANHOLE DETAIL - TYPE A
DEPTH TO SOFFIT OF PIPE 3.0m TO 6.0m

SEWER TRENCHES IN ADAPTABLE CARRIAGEWAYS ARE TO BE BACKFILLED WITH TYPE 2 GRANULAR MATERIAL UNLESS OTHERWISE AGREED WITH THE ADOPTING HIGHWAY AUTHORITY.

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) CONCRETE SLAB SHOULD BE PROVIDED ABOVE GRANULAR BED AND SURROUND.



CLASS S DETAIL



RC SLAB OVER DETAIL

PIPE TRENCH BEDDING DETAILS

NOTES

A) Bc = OUTSIDE DIAMETER OF PIPE BARREL

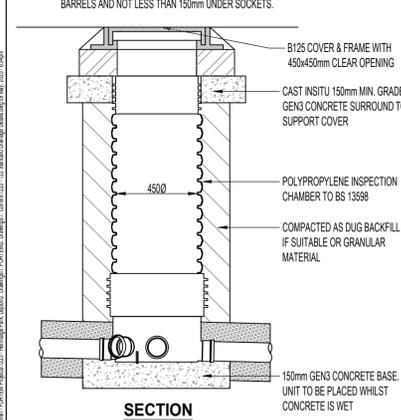
B) Y = FOR UNIFORM SOILS:
SLEEVE JOINTED PIPES, MIN. 150mm. SOCKETED PIPE, MIN. 150mm OR 180mm WHICHEVER IS THE GREATER.

Y = FOR ROCK OR MIXED SOILS CONTAINING ROCK BANDS, BOULDERS, STONES OR OTHER IRREGULAR HARD SPOTS:
SLEEVE JOINTED PIPES, MIN. 150mm OR 148mm, WHICHEVER IS THE GREATER. SOCKETED PIPE, MIN. 200mm OR 148mm, WHICHEVER IS THE GREATER UNDER BARRELS AND NOT LESS THAN 150mm UNDER SOCKETS.

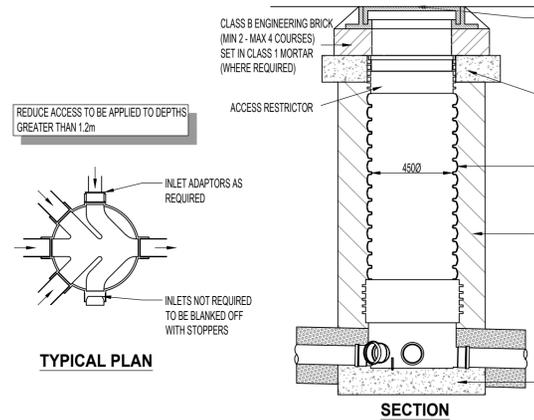
COMPRESSIBLE FILLER TABLE
(BITUMEN IMPREGNATED INSULATING BOARD TO BS 1142: PART 3)

NOMINAL PIPE DIA. (mm)	THICKNESS OF COMPRESSIBLE FILLER (mm)
LESS THAN 450	18
450 TO 1200	36
GREATER THAN 1200	54

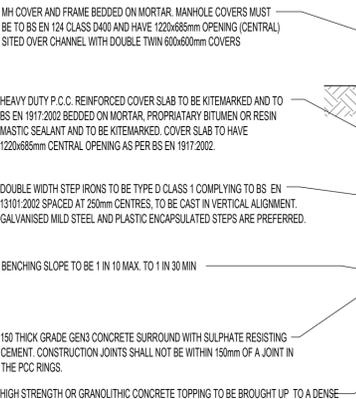
- SUITABLE BACKFILL MATERIAL (REFER TO NOTES)
- SELECTED SIDEFILL AND SURROUND (REFER TO NOTES)
- GRANULAR BEDDING MATERIAL (REFER TO NOTES)
- GEN3 CONCRETE BED AND SURROUND (REFER TO NOTES)



TYPICAL POLYPROPYLENE DEMARCATION CHAMBER - TYPE D (PPIC) DEPTH UP TO 1.2m
(SCALE 1:20)



TYPICAL POLYPROPYLENE DEMARCATION CHAMBER - TYPE D (RAPPIC) DEPTH OF 1.2m TO 3.0m
(SCALE 1:20)



TYPICAL MANHOLE DETAIL - TYPE C
MAX DEPTH TO SOFFIT OF PIPE < 1.5m

MH COVER AND FRAME BEDDED ON MORTAR. MANHOLE COVERS MUST BE TO BS EN 124 CLASS D400 AND HAVE 1200x685mm OPENING (CENTRAL) SITED OVER CHANNEL WITH DOUBLE TWIN 600x600mm COVERS

HEAVY DUTY P.C.C. REINFORCED COVER SLAB TO BE KITEMARKED AND TO BS EN 1917:2002 BEDDED ON MORTAR, PROPRIETARY BITUMEN OR RESIN MASTIC SEALANT AND TO BE KITEMARKED. COVER SLAB TO HAVE 1220x685mm CENTRAL OPENING AS PER BS EN 1917:2002.

DOUBLE WIDTH STEP IRONS TO BE TYPE D CLASS 1 COMPLYING TO BS EN 13101:2002 SPACED AT 250mm CENTRES. TO BE CAST IN VERTICAL ALIGNMENT. GALVANISED MILD STEEL AND PLASTIC ENCAPSULATED STEPS ARE PREFERRED.

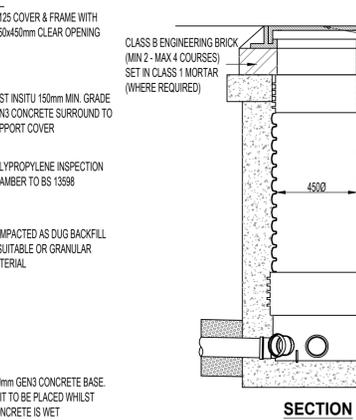
BENCHING SLOPE TO BE 1 IN 10 MAX. TO 1 IN 30 MIN

150 THICK GRADE GEN3 CONCRETE SURROUND WITH SULPHATE RESISTING CEMENT. CONSTRUCTION JOINTS SHALL NOT BE WITHIN 150mm OF A JOINT IN THE PCC RINGS.

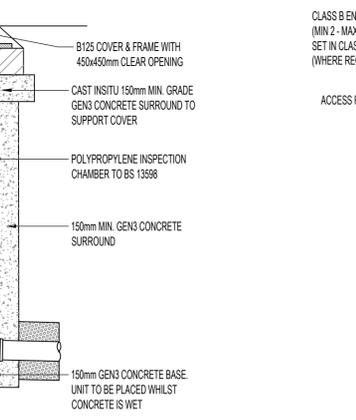
HIGH STRENGTH OR GRANOLITHIC CONCRETE TOPPING TO BE BROUGHT UP TO A DENSE SMOOTH FACE NEATLY SHAPED AND FINISHED TO ALL BRANCH CONNECTIONS (MINIMUM THICKNESS 20mm)

GRADE GEN3 CONCRETE

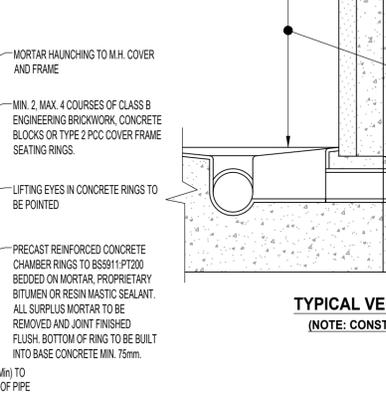
INVERTS TO BE FORMED USING CHANNEL PIPES/PLASTIC CHANNEL PIECES WILL NOT BE USED UNDER ANY CIRCUMSTANCES. CLAY WILL BE USED FOR PIPES SIZES 3000 AND LESS AND IN-SITU CONCRETE FOR GREATER THAN 3000.



TYPICAL POLYPROPYLENE DEMARCATION CHAMBER - TYPE D (PPIC) DEPTH UP TO 1.2m (LOCATED IN DRIVEWAYS)
(SCALE 1:20)



TYPICAL POLYPROPYLENE DEMARCATION CHAMBER - TYPE D (RAPPIC) DEPTH OF 1.2m TO 3.0m (LOCATED IN DRIVEWAYS)
(SCALE 1:20)



TYPICAL VERTICAL BACKDROP MANHOLE DETAIL
(NOTE: CONSTRUCTION DETAILS AS STANDARD PPC MANHOLE.)

ADOPTABLE DRAINAGE NOTES:

(THESE NOTES APPLY TO ALL ADOPTABLE DRAINAGE WORKS)

ALL ADOPTABLE SEWER WORKS AND MATERIAL TO BE IN ACCORDANCE WITH 'DESIGN AND CONSTRUCTION GUIDANCE (DCG) (CODE FOR ADOPTION)', THE RELEVANT BRITISH / EUROPEAN AND THE ADOPTING WATER AUTHORITIES' STANDARDS / REQUIREMENTS / ADDENDUM TO THE MECHANICAL AND ELECTRICAL SPECIFICATION AND KITEMARKED.

MANHOLE COVERS MUST HAVE A CLEAR OPENING OF 600mm AND SHALL BE CLASS D400 TO BS EN 124 WITH 150mm DEEP FRAMES IN HIGHWAYS.

COVER SLABS MUST CARRY THE BS1 KITEMARK OR WILL BE REJECTED BY THE ADOPTING WATER AUTHORITY. 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 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 (C20-0C2) AND PRECAST CONCRETE PRODUCTS MUST BE USED OR A LABORATORY REPORT PROVIDED PROVING THAT SUCH PRECAUTIONS ARE NOT NECESSARY.

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 PROVIDED 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 BS1 KITEMARKED (CERTIFIED TO WIS 4-35-01 AND BS EN 13476). ADOPTABLE PLASTIC SEWER PIPES TO BE LAID IN MAXIMUM 3 METRE LENGTHS UNLESS THERE IS A SPECIFIC OPERATIONAL NEED TO LAY LONGER LENGTHS. CLAYWARE CHANNELS SHOULD BE USED IN MANHOLES AS 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/m², 150mm DIA 40kN/m², 225mm DIA 45kN/m² AND 300mm DIA 72kN/m². THE MINIMUM CRUSHING STRENGTH FOR CONCRETE PIPES SHOULD BE - (CLASS 120 TO EN 1916/BS5911-1:2002). PLASTIC PIPES SHOULD CONFORM TO WIS 4-35-01 AND BS EN 13476.

THE CLEARANCE OF THE CROSSOVER POINTS (MIN 300mm) BETWEEN THE SURFACE WATER SEWERS, FOUL WATERS SEWERS, RISING MAINS AND OTHER SERVICES SHOULD BE SUFFICIENT CLEARANCE TO PROVIDE 150mm GRANULAR BED AND SURROUND AROUND BOTH PIPES. THERE SHOULD BE ENOUGH CLEARANCE TO ACCOMMODATE THE BEDDING FOR BOTH PIPES. APPROX. 300mm. IF CROSSOVER IS NEAR THE ROCKER THEN THE CLEARANCE NEEDED MAY BE INCREASED.

GENERAL NOTES

ALL DIMENSIONS ARE IN MILLIMETRES UNLESS OTHERWISE STATED.

ALL DRAINAGE WORKS SHALL BE CARRIED OUT IN ACCORDANCE WITH THE WATER SERVICES ASSOCIATION 'SEWERS FOR ADOPTION - CODES ADDITION' AND 'THE ADOPTING WATER AUTHORITY' SPECIFICATIONS' SPECIAL REQUIREMENTS.

INSTITU AND PRECAST CONCRETE UNITS SHALL HAVE SULPHATE RESISTING PORTLAND CEMENT TO BS 427, UNLESS AGREED WITH THE ADOPTING AUTHORITY.

CONCRETE

FOR DESIGNED, DESIGNATED OR STANDARDISED PRESCRIBED CONCRETE REFER TO BS EN 206-1 AND BS 8500.

PIPES

CONCRETE PIPES TO BE TO BS EN 1916 & BS 5911-1. CLAYWARE PIPES TO BE TO BS EN 295.

THERMOPLASTICS STRUCTURED WALL PIPE SHALL COMPLY WITH THE RELEVANT PROVISIONS OF 'WIS 4-35-01'. PIPES SHALL BE BS1 KITEMARKED OR HAVE EQUIVALENT THIRD PARTY CERTIFICATION. PIPES SHALL BE CLASS 800/2 NOMINAL SHORT TERM RING STIFFNESS

BACKFILL TO TRENCHES - WITHIN HIGHWAYS

ALL TRENCHES SITUATED WITHIN HIGHWAYS OR PROSPECTIVE HIGHWAYS TO BE BACKFILLED IN ACCORDANCE WITH THE LOCAL HIGHWAY AUTHORITY REQUIREMENTS OR IF NONE AVAILABLE IN ACCORDANCE WITH CLAUSE 3.6.4 OF CESWI, I.E. HAUC SPECIFICATION FOR THE REINSTATEMENT OF OPENINGS IN HIGHWAYS APPENDIX A CLASSES A,B,C,D.

BACKFILL TO TRENCHES - OUTSIDE HIGHWAYS BELOW HARD PAVED AREAS

BACKFILL TO BE SAME AS WITHIN HIGHWAYS

BACKFILL TO TRENCHES - SOFT AREAS

SIDEFILL TO COMPLY WITH SPECIFICATION FOR HIGHWAY WORKS CLASS 8.

BACKFILL TO COMPLY WITH SPECIFICATION FOR HIGHWAY WORKS CLASS 1, 2 OR 3

SEE BACKFILL TO TRENCHES BELOW HARD PAVED AREA

PIPE BEDDING AND FILL MATERIAL

UNLESS OTHERWISE STATED BEDDING TO ALL PIPES TO BE CLASS 'S'.

NOMINAL BORE OF PIPE (mm)	ALTERNATIVE AGGREGATE SIZES (mm)	
	SINGLE-SIZED	GRADED
150	10 or 14	14 to 5
200-300	10, 14 or 20	14 to 5 or 20 to 5
375-525	14 or 20	14 to 5 or 20 to 5
EXCEEDING 525	14, 20 or 40	14 to 5, 20 to 5 or 40 to 5

REFERENCE SHOULD BE MADE TO BS 882 TABLE 4.

SELECTED FILL TYPE 'B' SHALL COMPLY WITH CLAUSE 2.4.9 OF CESWI.

SHORT PIPES AT CHAMBERS/ROCKER PIPES

NOT WITHSTANDING SPECIFIC REQUIREMENTS FOR INDIVIDUAL CHAMBER TYPES ALL PIPES LEADING TO AND FROM CHAMBERS MUST MEET THE REQUIREMENTS OF CLAUSE 5.19 OF CESWI.

MANHOLE CHAMBERS

ALL PIPES SHALL BE LAID SOFFIT TO SOFFIT UNLESS STATED OTHERWISE ON THE MANHOLE SCHEDULE. MANHOLES, SOAKWAYS & COVER SLABS TO BE BS EN 1917 AND BS 5911-3.

MANHOLE COVERS

ADDITIONAL PIPES MAY BE REQUIRED FOR TRANSITION OF PIPE GRADIENT TO DROP PIPE. CURVED SQUARE TUMBLING BAY JUNCTION PIPE CAST VERTICALLY.

150mm THICK GRADE ST4 CONCRETE SURROUND TO BE CAST INTEGRAL WITH MANHOLE SURROUND.

INVERT OF ROODING EYE TO BE A MINIMUM 900mm FROM SOFFIT.

CONSTRUCTION JOINT.

2 45° BENDS 225mm MIN. DIA. (WHERE PIPE EXCEEDS 300mm A 300mm 90° BEND MAY BE USED).

GROUP	COVER CLASS	USAGE (FIGURE 9a)	MIN. THICKNESS OF STEEL PROTECTION* mm (TABLE 3)
1	B125	PEDESTRIANS AND CAR PARKING ZONES	3
2	C250	FOR GULLY TOPS INSTALLED IN THE KERBSIDE CHANNELS	5
3	D400	AREAS FOR ALL TYPES OF ROAD VEHICLES	6

* WITHOUT THE THICKNESS OF THE ADDITIONAL CORROSION PROTECTION. TABLE AND FIGURE REFERENCE ARE TO BS EN124.

THIS DRAWING IS SUBJECT TO THE APPROVAL OF THE WATER AUTHORITY

Rev	Date	Amendments	By
Drawing Status:			
TENDER PACK			

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Project
HERMITAGE PARK, LEPTON

Drawing Title
STANDARD DRAINAGE DETAILS

Drawn: JOH	Scale: NTS @ A1
Checked: RD	Date: MAY 2025
Drawing No. 1223 - 122	Rev. -