

TABLE (i)	
Diameter of largest pipe in manhole (mm)	Internal diameter of manhole (mm)
Less than 375	1200 (1050 where depth to soffit is 1.35m to 1.5m)
375 - 450	1350
451 - 750	1500
751 - 900	1600

TABLE (ii)		
Pipe Diameter (mm)	Rocker Pipe Length (mm)	
150 - 450	500 - 750	
451 - 750	750 - 1000	
> 750	Refer to Engineer	

ALL PCC RINGS ARE TO BE SPIGOT AND SOCKET BOND CONSTRUCTION.

TABLE (iii)		
MH Location	Cover Grade	Test Load
Non-trafficked Pedestrian areas	A15	15
Private drives	B125	125
Parking courts	C250	250
Carriageway	D400	400
Airfields/Dockyards	E600	600
Airfields/Dockyards	F900	900

TABLE (iv)		
NRSWA Road Category	Description	Minimum Frame Depth (mm)
I	Trunk roads and dual carriageways	150
II	All other 'A' roads	150
III	Bus Services	150
IV	All other roads except residential cul-de-sacs	150
	Residential cul-de-sacs	100

HIGH STRENGTH TOPPING (vi)

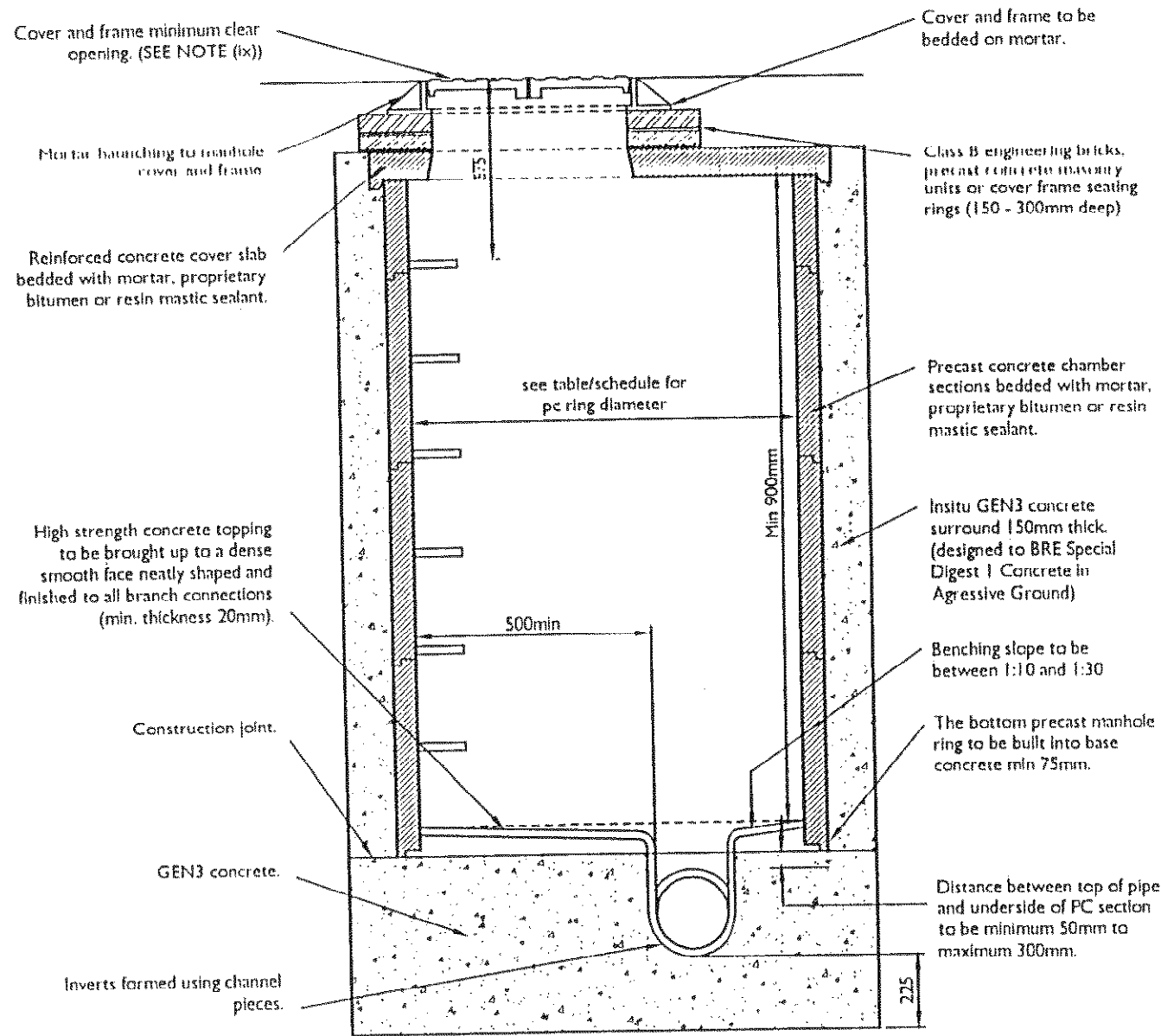
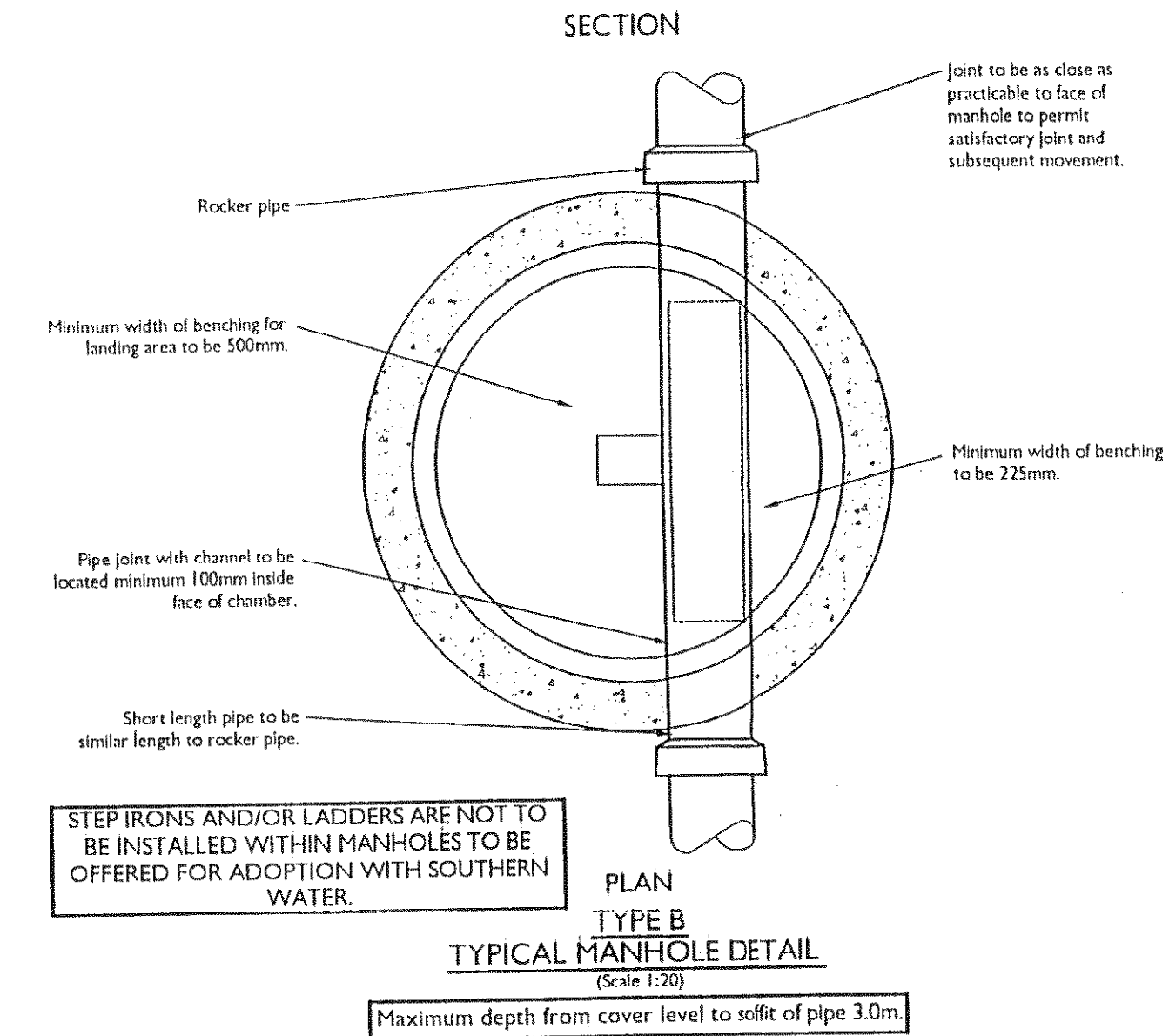
- High-strength concrete topping shall be produced, laid and finished in accordance with the relevant provisions of BS 8204: Part 2 and the following approximate proportions by weight shall be used: 1 part cement, 1 part natural sand and 2 parts single sized coarse aggregate.

RECESSED COVERS (vii)

- Where inspection chamber is located in areas of block-paving it shall be fitted with a recessed cover to accommodate paving blocks.

MANHOLE COVERS & FRAMES (ix)

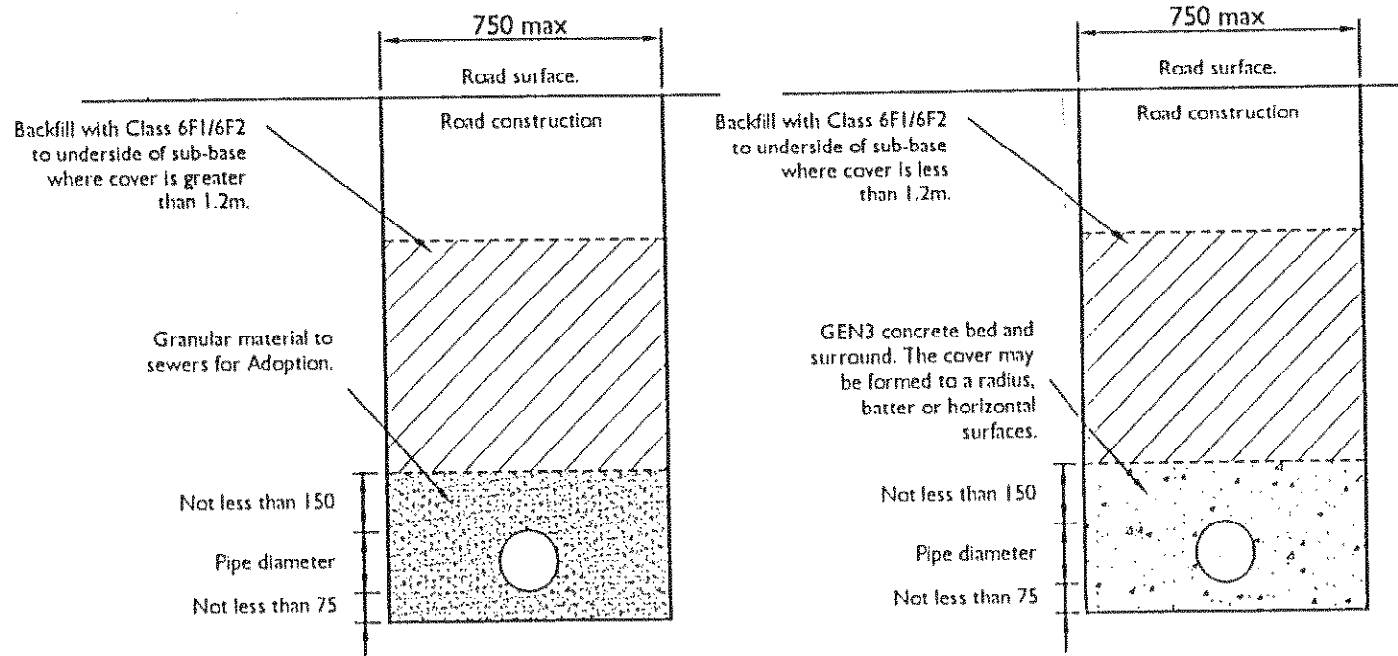
- Manhole cover and frames shall comply with the relevant provisions of BS EN 124, BS 7903 and Highway Agency Guidance Document HA 104/02. They shall be of a non-rocking design which does not rely on the use of cushion inserts.
- All manhole covers shall be the non-ventilating type and shall have closed keyways.
- Refer to TABLE (v) for frame depths.
- Refer to Manhole Schedule/Drainage Drawing for cover grades.



Minimum Dimensions for Access Fittings and Chambers					
Type	Internal Sizes		Cover Sizes		
	Depth to invert (m)	Length x Width (mm)	Circular (mm)	Length x Width (mm)	Circular (mm)
Rodding Eye		As Drain but Minimum 100mm			
Shallow Access					
Small	0.6 or less	150x100	150	150x100	150
Large	1.0 or less	225x100	-	225x100	-
Inspection Chamber	0.6 or less	-	190	-	190
	1.0 or less	450x450	450	450x450	450
Manhole	1.5 or less	1200x750	1050	600x600	600
	Over 1.5	1200x750	1200	600x600	600
Manhole Shaft	Over 2.7	900x840	900	600x600	600

BUILDING REGULATIONS MINIMUM DIMENSIONS FOR MANHOLES (Not to Scale)

This plan complies with the Building Regulations 2002 Section 'H' - Drainage & Waste Disposal.



PIPE BEDDING DETAILS (ADOPTABLE SEWERS) (Scale 1:20)

STANDARD NOTES:

- THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL OTHER OPUS DRAWINGS, AND WITH ALL RELEVANT ARCHITECT'S AND ENGINEER'S DRAWINGS AND SPECIFICATION.
- NO DIMENSIONS ARE TO BE SCALED FROM THIS DRAWING, UNLESS NOTED OTHERWISE ALL DIMENSIONS ARE IN MILLIMETRES AND ALL LEVELS ARE IN METRES FROM THE SITE DATUM.
- ALL DIMENSIONS TO BE CHECKED ON SITE. ALL DETAILS AND DIMENSIONS RELATING TO SUB-CONTRACTORS WORK MUST BE CHECKED AND AGREED BETWEEN THE SUB-CONTRACTOR OR SUPPLIER AND THE GENERAL CONTRACTOR.
- THE EXISTING INFORMATION FROM THIS DRAWING CAN NOT BE GUARANTEED AS DIMENSIONALLY DRAWN EXACT. DIMENSIONED DIMENSIONS MUST BE USED FOR SETTING OUT AND DETAILING. OPUS LOGOS AND COMPANY INFORMATION MUST BE REMOVED FROM COPIES IF OR INFORMATION IS RE-USED.
- THE MAIN CONTRACTOR IS RESPONSIBLE FOR THE DESIGN OF ALL TEMPORARY WORKS, AND IS ALSO RESPONSIBLE FOR THE SAFE MAINTENANCE AND STABILITY OF EXISTING BUILDINGS AT ALL TIMES.
- THE MAIN CONTRACTOR IS RESPONSIBLE FOR ALL OCCURRENCES OF GROUND WATER DURING THE CONSTRUCTION PERIOD.
- ANY INFORMATION GIVEN REGARDING EXISTING UNDERGROUND SERVICES IS GIVEN IN GOOD FAITH AFTER CONSULTATION WITH THE RELEVANT AUTHORITY, HOWEVER ACCURACY IS NOT CERTAIN. THE MAIN CONTRACTOR IS RESPONSIBLE FOR CHECKING ALL INFORMATION ON SITE PRIOR TO WORK COMMENCING AND TAKING DUE CARE AND ATTENTION WHILEST UNDERTAKING THE WORKS.
- THE CONTRACTOR MUST COMPLY WITH ALL CURRENT LEGISLATION RELATING TO HEALTH & SAFETY.

DRAINAGE NOTES:

- ALL WORKS TO BE CONSTRUCTED IN STRICT ACCORDANCE WITH SPECIFICATION OF THE LOCAL AUTHORITY, BS8301 1985 & BS EN 752-1.
- ALL PIPE RUNS NEAR BUILDINGS TO COMPLY WITH THE BUILDING REGULATIONS 2002 PART H. WHERE A PIPE IS WITHIN 1M OF A FOUNDATION THE TRENCH SHALL BE FILLED WITH CLASS GEN3 CONCRETE UP TO THE LOWEST LEVEL OF THE FOUNDATION. WHERE THE TRENCH IS FURTHER THAN 1M FROM THE FOUNDATION, THE TRENCH SHALL BE FILLED WITH CLASS GEN3 CONCRETE TO A LEVEL BELOW THE LOWEST LEVEL FOR THE FOUNDATION EQUAL TO THE DISTANCE FROM THE FOUNDATION LESS 150MM. IN BOTH CASES THE PIPE SHALL BE BEDDED AND SURROUNDED IN 150MM THICK CLASS GEN3 CONCRETE.
- WHERE PIPES, EXTERNAL TO THE STRUCTURES, HAVE A DEPTH TO SOFFIT FROM GROUND LEVEL OF LESS THAN 450MM THEY SHALL HAVE A CLASS GEN3 CONCRETE ENCASEMENT (150MM THICK).
- WHERE A PIPE, UNDER A CARRIAGEWAY, HAS A DEPTH OF COVER OF LESS THAN 1.2M THE PIPE SHALL BE LAID IN A CLASS Z BEDDING.
- IN ANY CIRCUMSTANCES WHERE PIPES ARE BEDDED AND SURROUNDED IN CONCRETE FLEXIBLE JOINTS SHOULD BE PROVIDED. COMPRESSIBLE BOARDS (FIBREGLASS OR POLYESTER) SHALL BE PROVIDED AT A MAXIMUM OF 8M CENTRES (CONCORDING WITH PIPE JOINTS). THE BOARDS SHALL BE PRE-CUT TO PIPE DIAMETER AND TO A HEIGHT AND WIDTH EQUAL TO THE CONCRETE CROSS SECTION. A BOARD THICKNESS OF 18MM FOR PIPES UP TO 450MM NOMINAL DIAMETER AND 30MM FOR PIPES OVER 450MM NOMINAL DIAMETER.
- ALL PRIVATE BUILDING DRAINAGE SHALL BE CONSTRUCTED IN STRICT ACCORDANCE WITH BS EN 752-1. UNLESS OTHERWISE SPECIFIED BUILDING DRAINAGE SHALL BE 100MM DIAMETER AND SHALL BE LAID AT A MINIMUM GRADIENT OF (1/100) SEC = 1 IN 100 FOR 100M. THE BOARDS SHALL BE PRE-CUT TO PIPE DIAMETER AND TO A HEIGHT AND WIDTH EQUAL TO THE CONCRETE CROSS SECTION. A BOARD THICKNESS OF 18MM FOR PIPES UP TO 450MM NOMINAL DIAMETER AND 30MM FOR PIPES OVER 450MM NOMINAL DIAMETER.
- ALL PIPES, BODIES AND JUNCTION MATERIALS SHALL BE VITRIFIED CLAY, EXTRA STRENGTH OR SUPER STRENGTH TO BS EN 205/191, WITH FLEXIBLE JOINTS AND VITRIFIED CERTIFIED. ALTERNATIVELY ALL PIPES AND FITTINGS CAN BE UPVC CONFORMING TO BS4640 AND BS5481/1990 AS APPROPRIATE AND SHALL BE LAID IN ACCORDANCE WITH THE MANUFACTURER'S SPECIFICATION. IF UPVC PIPES ARE TO BE USED THEN THE MANUFACTURER SHALL BE APPROVED BY THE ENGINEER PRIOR TO CONSTRUCTION.
- ALL GULLIES TO BE ROADABLE OR CONNECTED TO INSPECTION CHAMBERS.
- ALL GULLY CONNECTIONS OTHER THAN AT MANHOLES TO BE 'Y' JUNCTIONS.
- GULLIES COINCIDENT WITH PEDESTRIAN/DRIVE CROSSINGS TO HAVE PEDESTRIAN TYPE GULLY COVERS.
- ALL ROAD GULLY CONNECTIONS TO BE 150MM DIAMETER.
- ALL STUB STACKS TO BE FITTED WITH AIR ADMITTANCE VALVES WHERE DRAIN DECREASES 12M EXCEPT AT THE HEAD OF THE RUN. SOIL VENT PIPES LOCATED AT THE HEAD OF A RUN TO BE INSTALLED WITH ROOF FLE VENT.
- ALL CONNECTIONS TO BE SOFFIT TO SOFFIT.
- TRENCH TEMPORARY FORMWORK IS REQUIRED TO ALL EXCAVATIONS EXCEEDING 1.2M DEPTH TO PROVIDE ADEQUATE SUPPORT AND STABILITY AT ALL TIMES.
- SEWERS EXCEEDING 1.2M DEPTH TO BE CONSTRUCTED IN SHALE SECTIONS BETWEEN MANHOLES ONLY. TRENCHES TO BE BACKFILLED PRIOR TO EXCAVATING THE SUCCEEDING SEWER RUN.
- ALL CONCRETE AND CONCRETE PRODUCTS TO BE IN ACCORDANCE WITH BRE 363 FOR SULPHATES.
- WHERE SEWER OR DRAINS ARE TO BE ABANDONED THEY SHALL BE REMOVED OR FILLED BY GRouting IN ACCORDANCE WITH THE CIVIL ENGINEER SPECIFICATION FOR THE WATER INDUSTRY 6TH EDITION, CLAUSE 5.23.

ADOPTABLE NOTES:

- ALL ADOPTABLE SEWERS SHALL BE IN STRICT ACCORDANCE WITH SEWERS FOR ADOPTION 6TH EDITION. UNLESS OTHERWISE STATED ADOPTABLE SEWERS SHALL BE 150MM DIAMETER AND SHALL BE LAID IN A CLASS S BEDDING. WHERE THE DEPTH TO SOFFIT IS LESS THAN 1.2M UNDER A PUBLIC HIGHWAY OR 0.9M ELSEWHERE THE PIPE SHALL BE LAID WITH A CONCRETE SLAB BRIDGING PROTECTION.
- ALL SOAKAWAY AND/OR INFILTRATION PITS TO SATISFY BUILDING CONTROL OFFICERS/ENVIRONMENT AGENCY.
- ALL ADOPTABLE ROADWORKS SHALL BE IN STRICT ACCORDANCE WITH THE LOCAL AUTHORITY SPECIFICATIONS.
- ALL MATERIALS TO BE AGREED WITH THE LOCAL AUTHORITY PRIOR TO THE COMMENCEMENT OF WORKS.
- ALL FINISHED FLOOR LEVELS SHOWN ARE FOR GUIDANCE ONLY AND MAY NEED TO BE ADJUSTED ON SITE, SUBJECT TO APPROVAL.
- ANY DAMAGE CAUSED TO THE ADJACENT HIGHWAY AS A RESULT OF THE DEVELOPMENT WORK MUST BE REMEDIATED AS NECESSARY FOLLOWING AGREEMENT WITH WSCC HIGHWAY INSPECTOR.
- NO PRIVATE AREAS TO DRAIN ONTO AREAS ALREADY ADOPTED AND NO PRIVATE SURFACE WATER DRAINAGE TO BE DISCHARGED INTO ANY HIGHWAY GULLY, HIGHWAY SURFACE WATER DRAIN, MANHOLE OR SOAKAWAY MAINTAINED BY WSCC.
- MANHOLE COVERS AND FRAMES SITUATED IN THE CARRIAGEWAY AND VEHICULAR ACCESSES SHALL BE CLASS D400 COVER AND FRAME 675x675mm CLEAR OPENING IN ACCORDANCE WITH EN 124.
- MANHOLE COVERS AND FRAMES SITUATED IN AREAS OTHER THAN THE CARRIAGEWAY AND VEHICULAR ACCESSES SHALL BE TO EN 125 CLASS B125 COVER AND FRAME 675x675mm CLEAR OPENING.

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