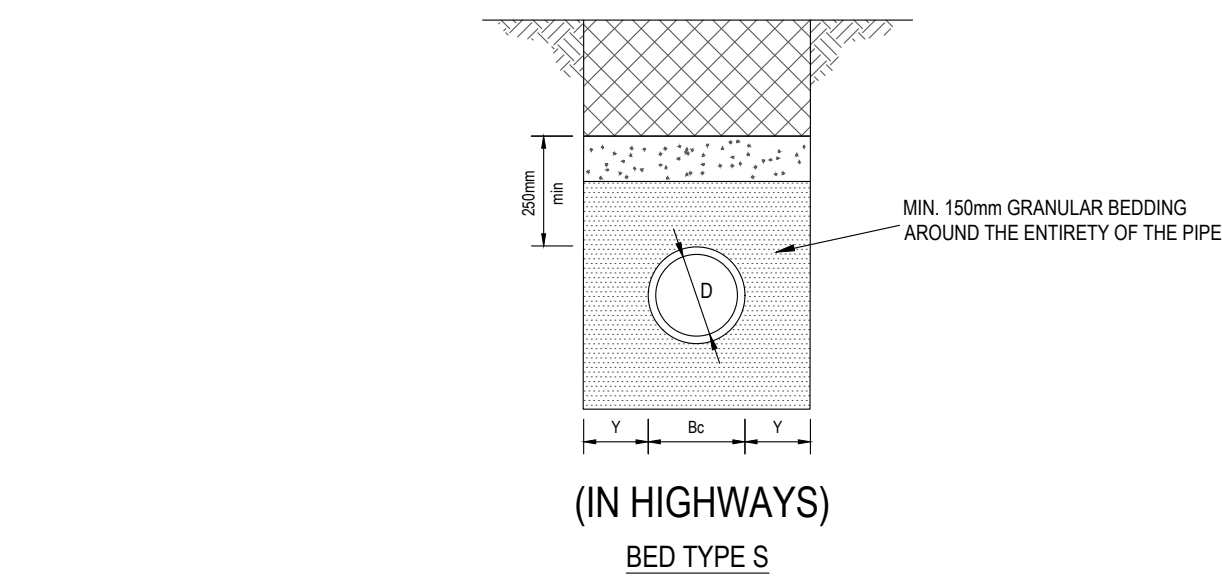
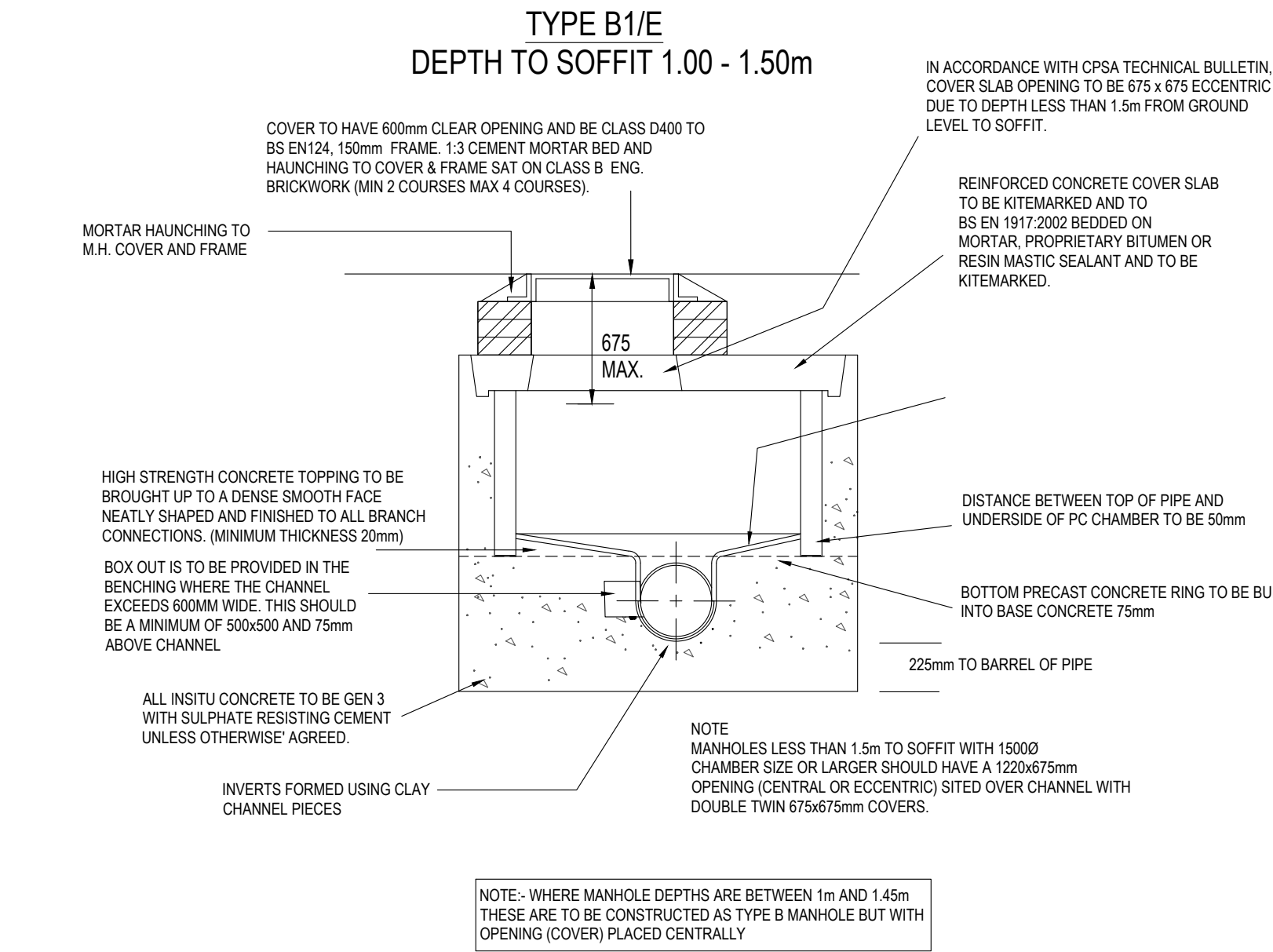




COMPRESSIBLE FILLER AND PACKING FOR PIPELINES
1. COMPRESSIBLE FILLER FOR INTERRUPTING CONCRETE PROTECTION TO PIPES SHALL CONSIST OF BITUMEN IMPREGNATED INSULATING BOARD TO BS 1142: PART 3 OR OTHER EQUALLY COMPRESSIBLE MATERIAL. THE THICKNESS OF COMPRESSIBLE FILLER SHALL BE AS FOLLOWS:

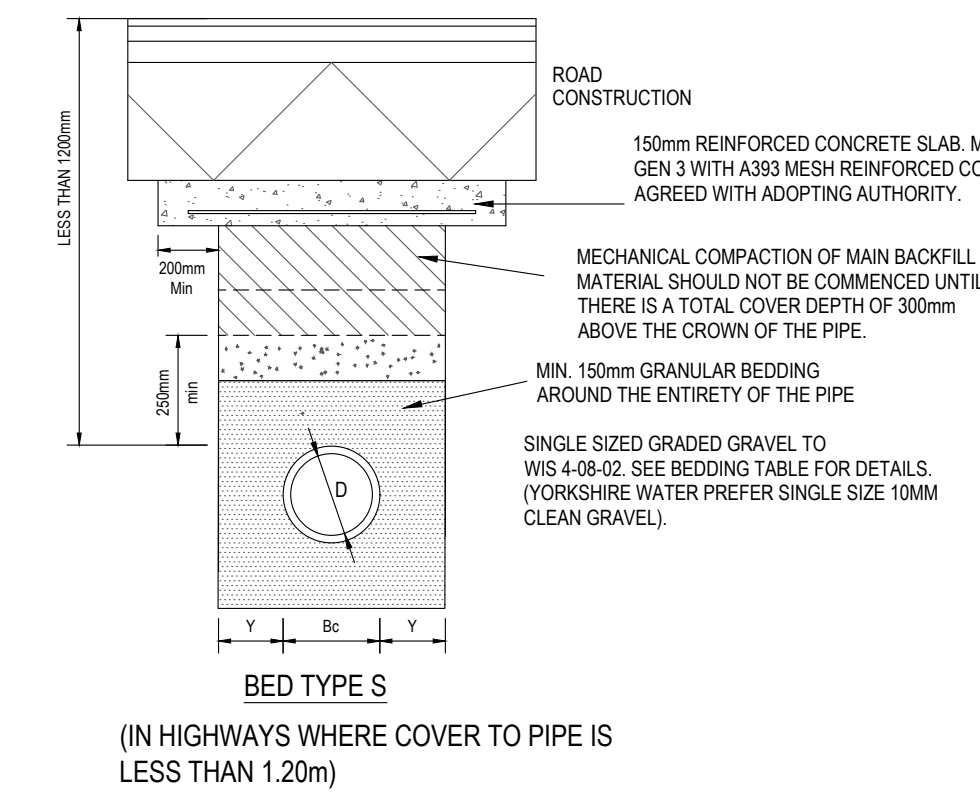
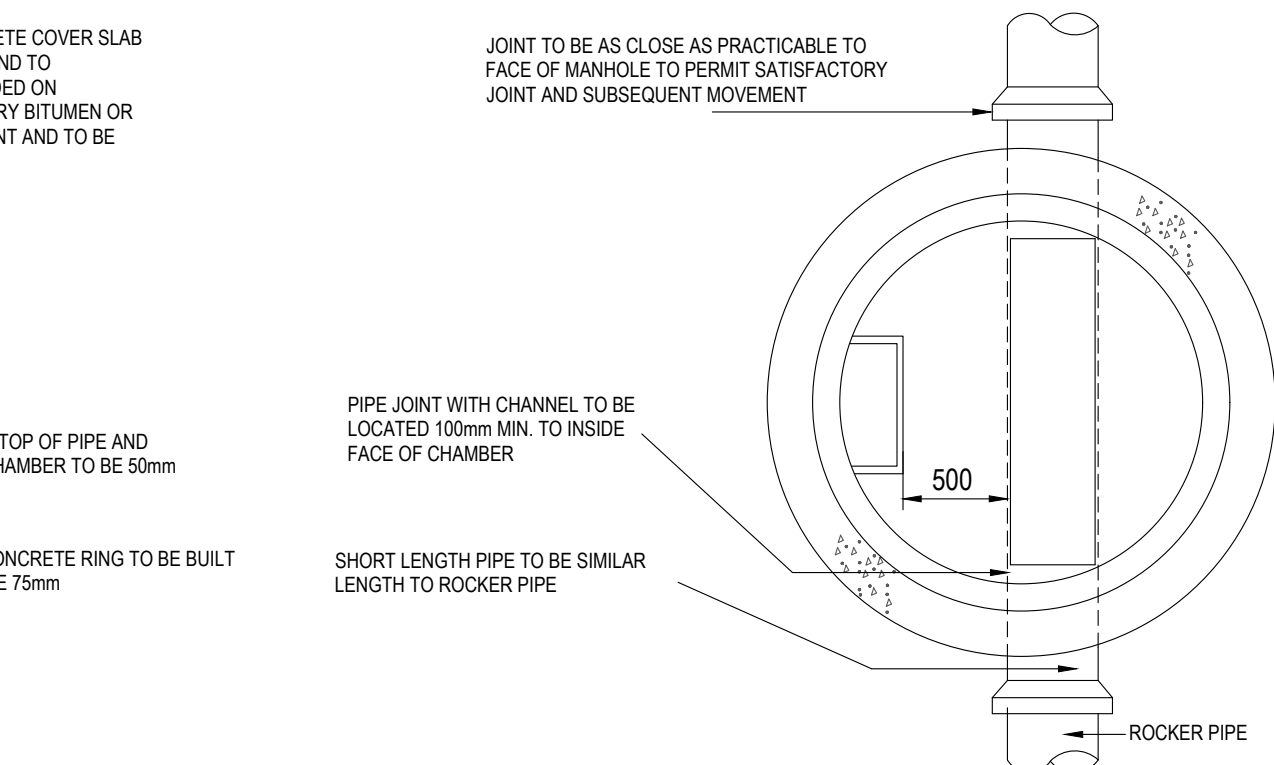
NOMINAL DIAMETER OF PIPE (mm)	THICKNESS OF COMPRESSIBLE FILLER
LESS THAN 450	18
450 - 1200	36
EXCEEDING 1200	54

2. COMPRESSIBLE PACKING FOR USE BETWEEN PIPES AND PRE-CAST CONCRETE SETTING BLOCKS SHALL CONSIST OF BITUMEN DAMP-PROOF SHEETING COMPLYING WITH BS 743

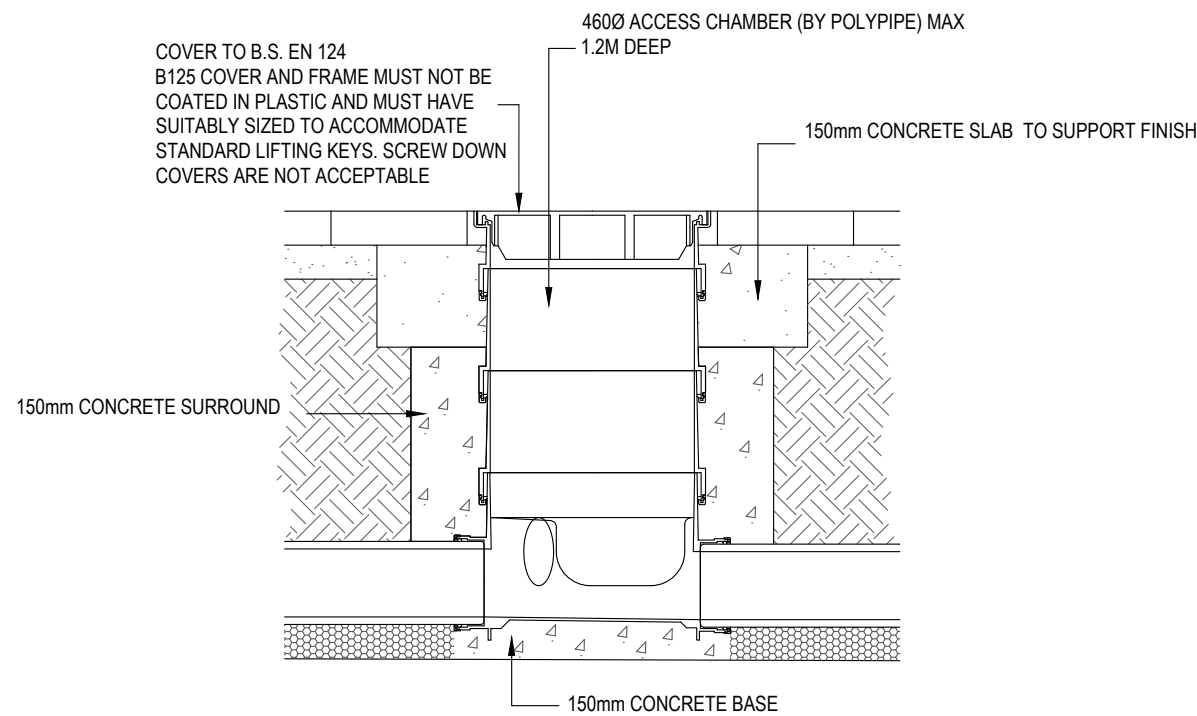
MORTAR
1. MORTAR SHALL BE MIXED ONLY AS AND WHEN REQUIRED, IN THE RELEVANT PROPORTIONS INDICATED IN THE FOLLOWING TABLE. UNTIL ITS COLOUR AND CONSISTENCY ARE UNIFORM, THE CONSTITUENT MATERIALS SHALL BE ACCURATELY GAUGED, ALLOWANCE BEING MADE FOR BULKING OF SAND.

ALTERNATIVE NOMINAL MIXES BY VOLUME		
CEMENT-LIME-SAND	CEMENT-SAND	CEMENT SAND WITH PLASTICIZER
1: 1:3 1/4	1:3	1:2 to 3 1/8

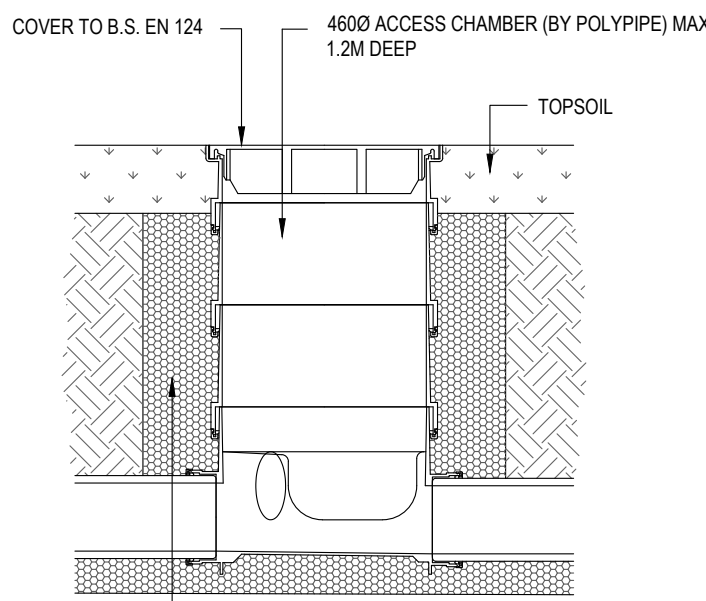
PIPE DIA. mm	ROCKER PIPE LENGTH mm
150-450	0.50-0.75
451-750	0.75-1.00
>750	SEEK GUIDANCE



INSPECTION CHAMBER MAXIMUM 1.2m DEEP

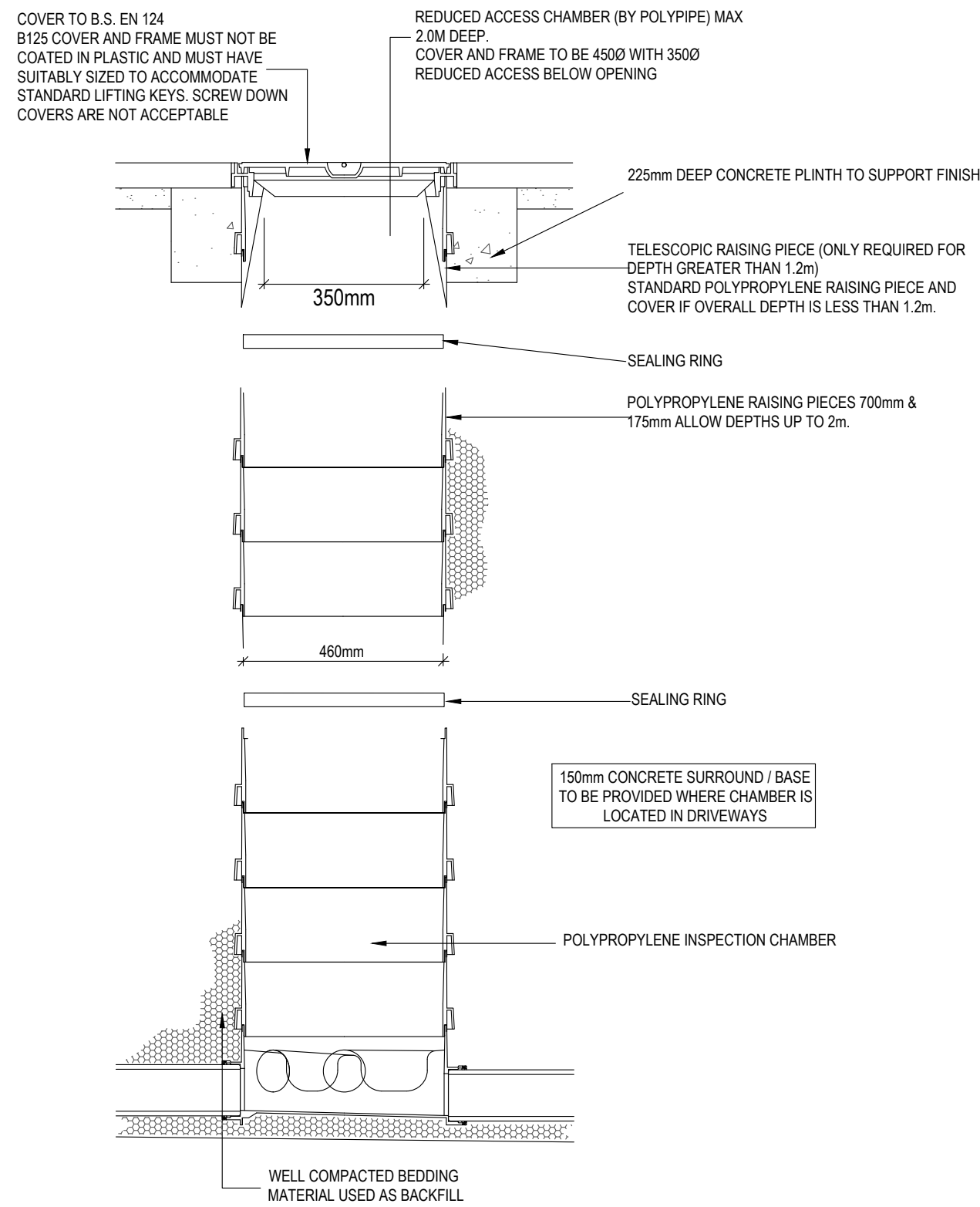


SITED IN DRIVEWAYS/PAVED AREAS



SITED IN LANDSCAPED AREAS

NON ENTRY CHAMBER MAXIMUM 2.0m DEEP



Only PDF/DWF issues of this drawing are controlled. All other formats (eg. DWG/AutoCAD FILES) are UN-controlled and are used at your own risk.

GENERAL NOTES:
1. DO NOT USE THIS DRAWING IN ISOLATION. THIS DRAWING HAS BEEN PREPARED AS PART OF A SET, AND MUST THEREFORE BE READ IN CONJUNCTION WITH ALL OTHER DRAWINGS. ANY DISCREPANCIES MUST BE REPORTED TO THE ENGINEER PRIOR TO COMMENCING WORKS.
2. THIRD PARTY INFORMATION IS USED TO PREPARE THE ENGINEERING DESIGN (INCLUDING ARCHITECTURAL LAYOUT, GROUND INVESTIGATION, EXISTING UTILITIES RECORDS, AND SPECIALIST DESIGN ITEMS). THE ENGINEERING DESIGN MUST THEREFORE BE READ IN CONJUNCTION WITH ALL THIRD PARTY INFORMATION PRIOR TO COMMENCING WORK. QUEENSBERRY DESIGN LTD ARE NOT RESPONSIBLE FOR ANY THIRD PARTY INFORMATION OR DETAILS.
3. DRAWING STATUS WILL REMAIN PRELIMINARY UNTIL FULL TECHNICAL APPROVAL IS RECEIVED FROM LOCAL AUTHORITY AND SEWERAGE UNDERTAKER. WORKS COMMENCED PRIOR TO TECHNICAL APPROVAL ARE DONE SO AT RISK AND MAY BE SUBJECT TO CHANGE.
4. THE CONTRACTOR IS EXPECTED TO PREPARE APPROPRIATE CONSTRUCTION METHOD STATEMENTS FOR ALL ASPECTS OF APPROPRIATE WORK. THIS SHOULD INCLUDE ANY TEMPORARY PROTECTION / WORKS.
5. LAND DRAINAGE IS NOT PERMITTED TO DISCHARGE INTO THE PUBLIC SEWER NETWORK. ANY NEED FOR LAND DRAINAGE SHOULD BE ASSESSED BY THE GROUND WORKER AND LANDSCAPER DURING CONSTRUCTION AND PLACEMENT OF GARDENS ON AN INDIVIDUAL PLOT BASIS. IF LAND DRAINAGE DESIGNS ARE REQUIRED, THEY SHOULD BE APPOINTED PRIOR TO PLOT COMPLETION.
6. THE CONTRACTOR IS EXPECTED TO CROSS CHECK ALL DRAINAGE INVERTS PRIOR TO COMMENCING WORK. THIS MAY INVOLVE COMPLETION OF TRIAL HOLES IF INVERT LEVELS HAVE BEEN INTERPOLATED. THE POSITION, LINE AND DIAMETER OF ALL EXISTING DRAINAGE APPARATUS SHOULD BE CONFIRMED ON SITE PRIOR TO THE COMMENCEMENT OF THE WORKS. ANY DISCREPANCIES MUST BE REPORTED TO THE ENGINEER IMMEDIATELY.
7. THE CONTRACTOR MUST MONITOR THE 'AS BUILT' PROGRESS OF EACH CONSTRUCTION STAGE (ROADS/SEWER/PILOT WORKS ETC), TO ENABLE THE NEXT STAGES OF CONSTRUCTION TO BE CHECKED BEFORE INSTALLATION.

HIGHWAYS
1. ALL HIGHWAY WORKS TO BE CARRIED OUT IN ACCORDANCE WITH THE CURRENT LOCAL AUTHORITY DESIGN GUIDE AND SPECIFICATION.
2. ALL EXCAVATIONS BELOW PROPOSED AND EXISTING HIGHWAYS TO BE BACK FILLED WITH GRANULAR TYPE 1 SUB-BASE AND WELL COMPACTED IN LAYERS NOT EXCEEDING 150mm UNLESS OTHERWISE AGREED.
3. HIGHWAY AUTHORITY TO BE NOTIFIED BY THE CONTRACTOR PRIOR TO THE COMMENCEMENT OF WORKS.

ADAPTABLE DRAINAGE
1. ALL ADAPTABLE DRAINAGE WORKS AND MATERIALS TO BE IN ACCORDANCE WITH 'SEWERS FOR ADOPTION 6TH EDITION'. THE RELEVANT BRITISH EUROPEAN AND YORKSHIRE WATER'S STANDARD REQUIREMENTS/ADDENDUM AND KITEMARKED.
2. MANHOLE COVERS SHALL HAVE A CLEAR OPENING OF 600mm AND SHALL BE CLASS D400 TO BS EN 124 WITH 150mm DEEP FRAMES IN HIGHWAYS.
3. FILLED GROUND MUST BE FILLED AND CONSOLIDATED UNDER THE SUPERVISION AND TO THE SATISFACTION OF YORKSHIRE WATERS BEFORE ANY SEWER WORKS ARE CARRIED OUT.
4. YORKSHIRE WATER IS NOT OBLIGED TO ACCEPT FILTER DRAIN / LAND DRAINAGE RUNOFF INTO THE PUBLIC SEWER NETWORK OR ADAPTABLE DRAINAGE SYSTEM (DIRECTLY OR IN INDIRECTLY). AN ALTERNATIVE METHOD OF DISPOSAL OF THE LAND DRAINAGE RUNOFF WILL THEREFORE BE REQUIRED AND YOU WILL HAVE TO LIAISE WITH THE LOCAL AUTHORITY LAND DRAINAGE SECTION WITH REGARDS TO THE DISPOSAL OF THE FILTER DRAIN / LAND DRAINAGE RUNOFF.
5. COVER SLABS MUST CARRY THE BS1 KITEMARK OR WILL BE REJECTED BY YORKSHIRE WATER INSPECTOR. WHERE THE CLEAR OPENING OF THE KITEMARKED PRODUCT IS DIFFERENT TO THAT OF THE COVER AND FRAME, A LADING BEARING SLAB SHOULD BE FITTED ABOVE THE COVER SLAB TO BRING THE SIZE DOWN TO 600x800mm FOR THE YORKSHIRE WATER SPECIFIED COVER SIZE. PLEASE REFER TO CONCRETE PIPE SYSTEMS ASSOCIATION (CPSA) TECHNICAL BULLETIN ISSUED AUTUMN 2004 FOR KITEMARKED COVER SLAB OPENING SIZES.
6. 600 X 800mm ACCESS COVER SLABS ARE NOW AVAILABLE WHICH MUST BE KITEMARKED FOR USE ON YORKSHIRE WATERS NETWORK.
7. SULPHATE RESISTANT CEMENT (C20-0C2) AND PRECAST CONCRETE PRODUCTS MUST BE USED ON A LABORATORY REPORT PROVIDED PROVING THAT SUCH PRECAUTIONS ARE NOT NECESSARY.
8. THE ADAPTABLE SEWERS SHOULD BE A MINIMUM OF 1m AND MANHOLES 0.9m FROM KERB FACES AND SERVICE MANSIONS.
9. SEWERS MUST HAVE 5 METRES CLEARANCE FROM TREES AND HEDGES. REFER TO SFA FIGURE 2.3 FOR FURTHER RESTRICTIONS ON TREE PLANTING ADJACENT TO SEWERS.
10. SEWERS LAD IN CLASS 'C' BEDDING (150mm GRANULAR BED AND SURROUND) WHERE DEPTH OF COVER TO TOP OF SEWER IS LESS THAN 1.2m IN HIGHWAY AND VERGES (OR LESS THAN 900mm IN NONE VEHICULAR ACCESS AREAS) THEN A CONCRETE SLAB SHOULD BE PROVIDED ABOVE GRANULAR BED AND SURROUND.
11. ALL ADAPTABLE SEWERS TO BE BS1 KITEMARK (CERTIFIED TO WS 4-5301).
12. ADAPTABLE SEWER PIPES TO BE LAD IN MAXIMUM 3M LENGTHS UNLESS THERE IS A SPECIFIC OPERATIONAL NEED TO LAY LONGER LENGTHS. 12 BEDDING AND BACKFILL MATERIAL TO CONFORM TO THE REQUIREMENT OF WATER INDUSTRY SPECIFICATION 4-08-02 (TABLE A2).
13. PLASTIC CHANNEL SECTIONS IN MANHOLES ARE NOT ACCEPTABLE AND YORKSHIRE WATER WOULD PREFER CLAYWARE CHANNEL IN MANHOLES. WE HAVE FOUND THAT PLASTIC CHANNELS ARE DIFFICULT TO SET IN CONCRETE BECAUSE THEY FLOAT AND A SATISFACTORY FINISH CANNOT BE OBTAINED ON THE BENCHING.
14. 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.
15. YORKSHIRE WATER POLICY IS NOT TO ACCEPT TYPE 'C' BRICK MANHOLES AND 1050mm Ø MANHOLE RINGS. INSTEAD IT IS PREFERRED THAT YOU USE A TYPE 'B' MANHOLE WITH 1050mm Ø OR 1050mm Ø RINGS. WITH THE OPENING SITED OVER THE CHANNEL WHERE DEPTH OF COVER TO PIPE IS 1 - 1.5m.
16. CONCRETE PIPES SHOULD BE CLASS 100 TO EN 1916 / BS 5911-1:2002.
17. THE POSITION, LINE AND DIAMETER OF ALL EXISTING DRAINAGE APPARATUS SHOULD BE CONFIRMED ON SITE PRIOR TO THE COMMENCEMENT OF THE WORKS. ANY DISCREPANCIES MUST BE REPORTED TO THE ENGINEER IMMEDIATELY.
18. THE CONNECTION OF FOLI AND SURFACE WATER DRAINAGE TO THE EXISTING PUBLIC SEWER SYSTEM SHALL BE SUBJECT TO THE APPROVAL OF THE LOCAL SEWERAGE UNDERTAKER. THE CONTRACTOR IS EXPECTED TO APPLY FOR RELEVANT PERMITS PRIOR TO COMMENCING THE WORK.
19. 1500mm CHAMBER RINGS ARE ALLOWED ON THE ADAPTABLE NETWORK AND ARE TO BE KITEMARKED.
20. THE POSITION, LINE AND DIAMETER OF ALL EXISTING DRAINAGE APPARATUS SHOULD BE CONFIRMED ON SITE PRIOR TO THE COMMENCEMENT OF THE WORKS. ANY DISCREPANCIES MUST BE REPORTED TO THE ENGINEER IMMEDIATELY.
21. THE CONNECTION OF FOLI AND SURFACE WATER DRAINAGE TO THE EXISTING PUBLIC SEWER SYSTEM SHALL BE SUBJECT TO THE APPROVAL OF THE LOCAL SEWERAGE UNDERTAKER. THE CONTRACTOR IS EXPECTED TO APPLY FOR RELEVANT PERMITS PRIOR TO COMMENCING THE WORK.

EXISTING SERVICES
PRIOR TO THE COMMENCEMENT OF ANY WORKS UNDER GROUND MAPPING SURVEYS AND CONSTRAINTS PLAN IS TO BE REFERRED TO ANY DISCREPANCIES ARE TO BE REPORTED TO ENGINEER.
ANY EXISTING SERVICES WHICH MAY BE AFFECTED BY THE PROPOSED WORKS SHOULD BE LOCATED BY MEANS OF A HAND DIG TO CLOSE LIAISON WITH THE STATUTORY SERVICE AUTHORITIES. THE CONTRACTOR SHALL INFORM THE DEVELOPER OF ANY SERVICES THAT MAY AFFECT THE PROPOSED DESIGN. CONTRACTOR TO NOTIFY STATUTORY SERVICE AUTHORITIES PRIOR TO COMMENCEMENT OF WORK. AS CONSTRUCTED INFORMATION IT IS THE CONTRACTORS RESPONSIBILITY TO PROVIDE THE FOLLOWING AS CONSTRUCTED DRAWINGS TO THE DEVELOPER UPON THE COMPLETION OF THE WORKS COVERED BY THE CONTRACT:
1. POSITION/CO-ORDINATES OF ALL ADAPTABLE MANHOLES.
2. INVERT AND COVER LEVELS OF ALL ADAPTABLE MANHOLES.
3. NEW GULLY POSITIONS AND CONNECTIONS.
4. POSITION AND DEPTH OF SERVICE DUCTS FOR WATER, GAS, ELECTRIC, BT, CABLE AND STREET LIGHTING, STATING SIZE AND NUMBER OF DUCTS.

BEDDING TABLE					
DIAMETER mm	MAX TRENCH WIDTH	Bc	Y (min)	PIPE BEDDING MATERIAL	
				SINGLE SIZE (mm)	GRADED (mm)
150	900	178	150	10 or 14	14-5
225	1021	271	150	10, 14 or 20	14-5 or 20-5
300	1160	410	150	10, 14 or 20	14-5 or 20-5
375	1240	490	150	14 or 20	14-5 or 20-5
450	1326	576	150	14 or 20	14-5 or 20-5
525	1420	670	150	14, 20 or 40	14-5, 20-5 or 40-5
600	1522	772	150	14, 20 or 40	14-5, 20-5 or 40-5

ALL GRANULAR MATERIAL TO COMPLY WITH THE REQUIREMENTS OF BS 882:1983

-	17.09.20	FIRST ISSUE	ND	AL
Rev	Date	Revision Details	Drawn	Checked

© This drawing is the property of Queensberry Design Limited and the information can only be reproduced with their prior permission.

QUEENSBERRY DESIGN
CIVIL, STRUCTURAL, ARCHITECTURAL & GEOTECHNICAL CONSULTANTS
NORTH EAST OFFICE
SUITE 2A METRO HOUSE, METRO CENTRE,
GATESHEAD, NE11 8NH
TEL: 0191 480 8000
NORTH WEST & YORKSHIRE OFFICE
2A ST MARTINS LANE, YORK, YO1 6LN
01904 800000
www.queensberrydesign.co.uk

Client: **KEEPMOAT HOMES**

Project: **THURNSCOE PHASE 3**

Title: **LATERAL DRAINAGE DETAILS**

Drawn	ND	Checked	ND	Date	17.09.2002
Drawing Number	QD1386-08-06				
Drawing Status	APPROVAL	Scale	1:25 - A1	Rev	-