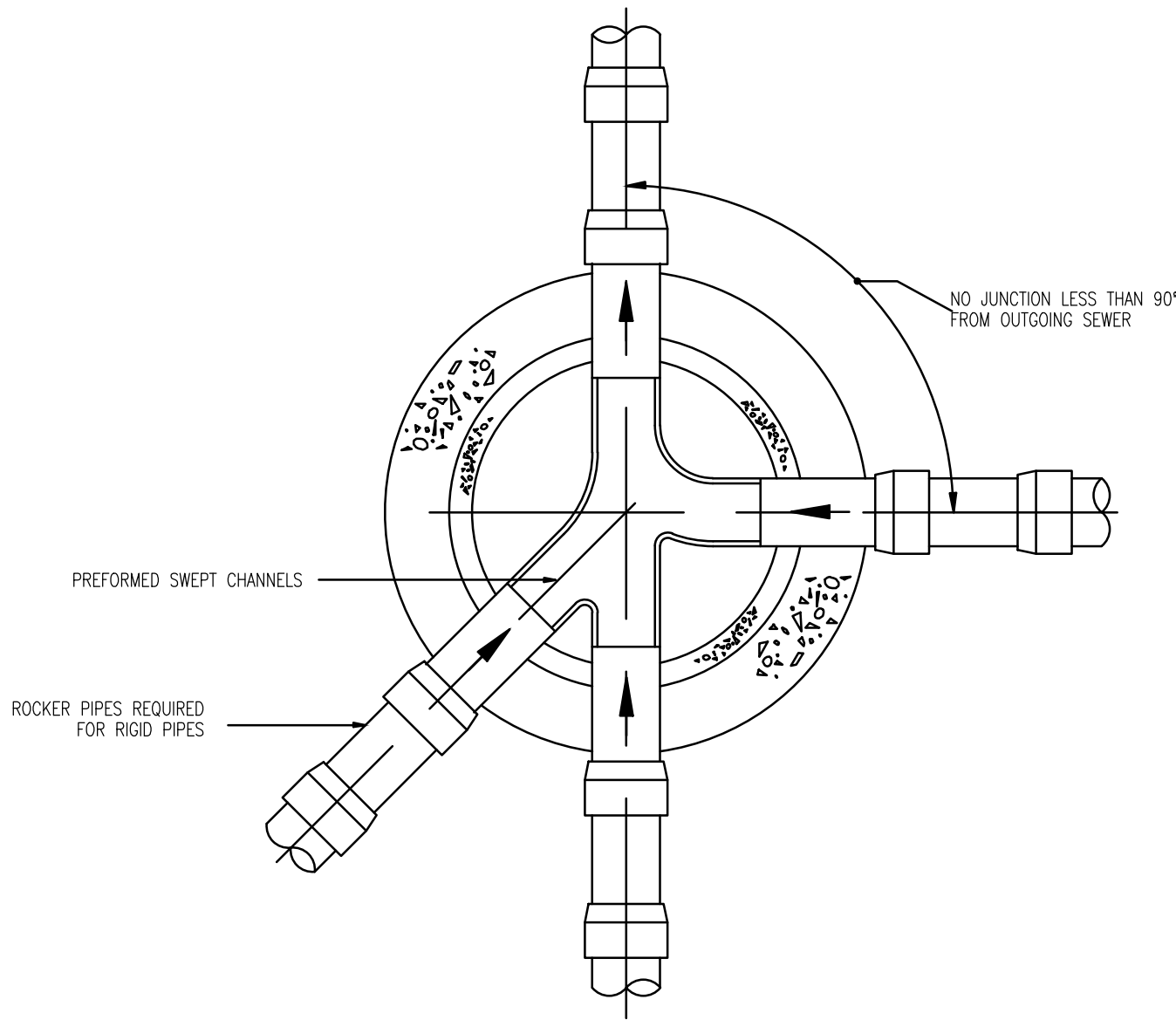


FIGURE B.14 TYPICAL ARRANGEMENT OF PIPES JUNCTIONS WITHIN MANHOLES



RIGID PIPES BUILT INTO MANHOLE SHOULD HAVE A FLEXIBLE JOINT AS CLOSE AS FEASIBLE TO THE EXTERNAL FACE OF THE STRUCTURE AND THE LENGTH OF THE NEXT ROCKER PIPE SHOULD BE AS SHOWN.

| NOMINAL DIAMETER (mm) | MAXIMUM EFFECTIVE LENGTH (m) |
|-----------------------|------------------------------|
| 150 – 600             | 0.6                          |
| 601 – 750             | 1.00                         |
| OVER 750              | 1.25                         |

FIGURE B.24 CONNECTIONS TO SEWER NTS

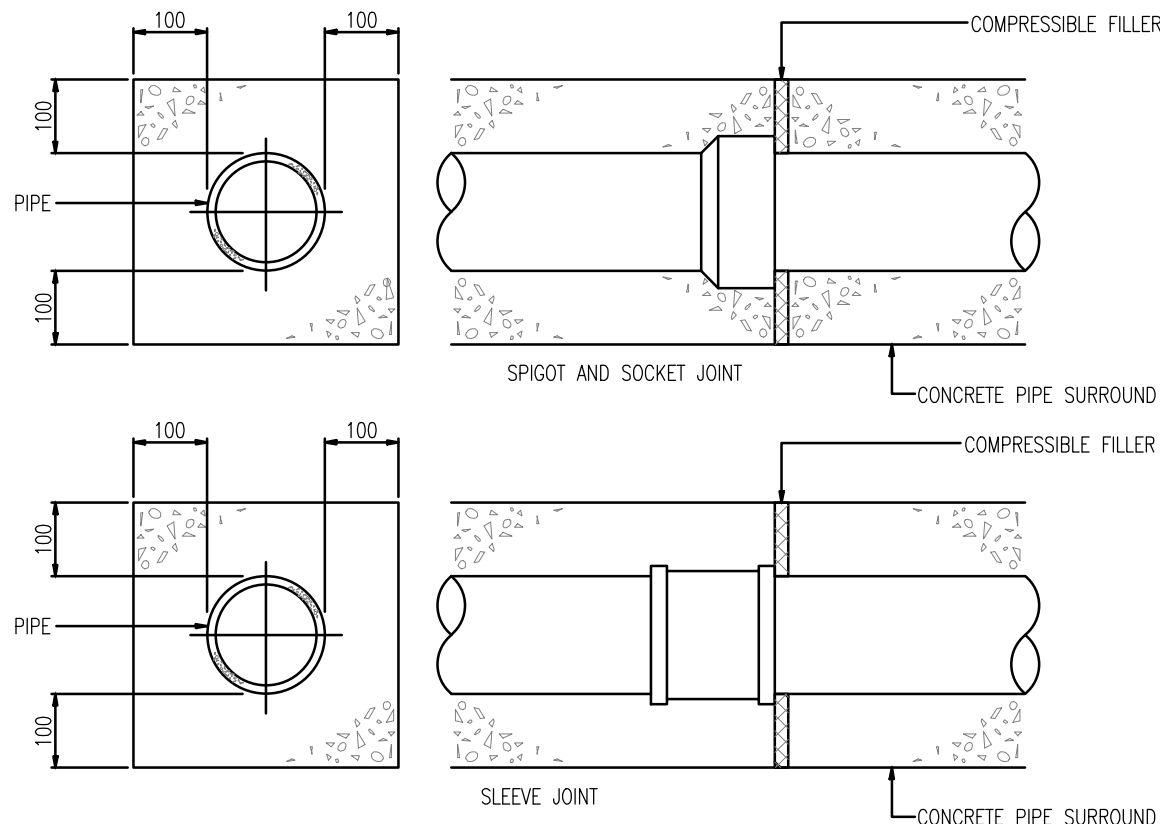
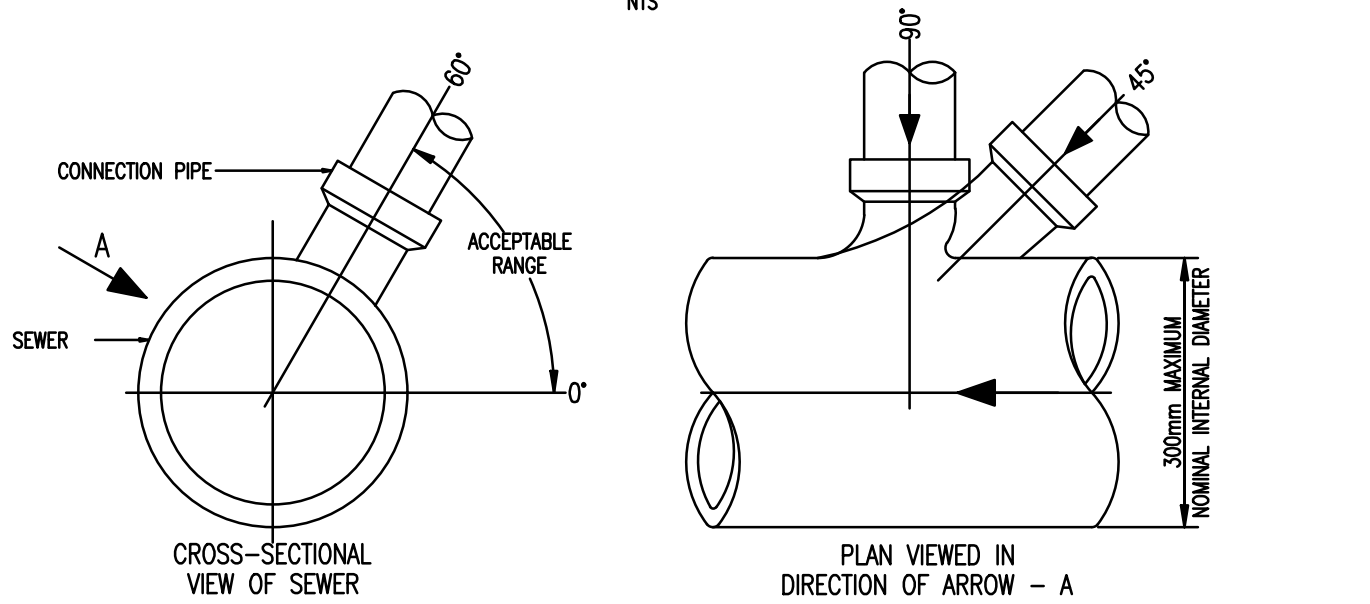


FIGURE B.26 JOINTS FOR CONCRETE ENCASED PIPES NTS

SPECIFIC ADOPTABLE FOUL DRAINAGE NOTES:

- THE PLANNING, DESIGN AND CONSTRUCTION OF SEWERS SHALL BE IN ACCORDANCE WITH SEWERS FOR ADOPTION 7TH EDITION, A DESIGN AND CONSTRUCTION GUIDE FOR DEVELOPERS, THE CIVIL ENGINEERING SPECIFICATION FOR THE WATER INDUSTRY 7TH EDITION AND SOUTH WEST WATER AMENDMENTS TO CESWI DATED MAY 2011.
- JUNCTION CONNECTIONS MUST BE MADE BY CUTTING IN A 'PURPOSE MADE JUNCTION' JOINTED USING 'BAND SEAL' COUPLINGS OR SIMILAR. THE USE OF SADDLES WILL NOT NORMALLY BE PERMITTED. CONNECTIONS INTO MANHOLES MUST BE MADE WITH SOFFITS LEVEL AND MUST ENTER 'WITH THE FLOW'. BACKDROPS MUST BE CONSTRUCTED OUTSIDE THE MANHOLE CHAMBER.
- COMPLIANCE WITH HEALTH & SAFETY MATTERS ON ANY TRENCH/MANHOLE IS OBLIGATORY AND A PERMIT TO ENTER A CONFINED SPACE IS REQUIRED WHEN CONNECTING SITE DRAINAGE TO THE EXISTING PUBLIC SEWERAGE SYSTEM. A PERMIT TO ENTER A CONFINED SPACE WILL BE OBTAINED FROM SOUTH WEST WATER BY THE CONTRACTOR PRIOR TO THE WORKS COMMENCING ON ANY PUBLIC SEWERAGE SYSTEM (S106).
- WHERE PROPOSED SITE DRAINAGE CONNECTS TO THE PUBLIC SEWERAGE SYSTEM EITHER BY NEW JUNCTION, NEW MANHOLE OR AT AN EXISTING MANHOLE, IT WILL REQUIRE THE SUBMISSION OF AN APPLICATION FOR SEWER CONNECTION FORM BY THE CONTRACTOR TO SOUTH WEST WATER PRIOR TO WORKS COMMENCING.
- MANHOLE COVERS AND FRAMES IN THE HIGHWAY SHALL BE CLASS D DUCTILE IRON WITH A MINIMUM SQUARE OPENING OF 600 X 600mm. FOUL DRAIN COVERS IN THE HIGHWAY SHALL BE DOUBLE TRIANGLE FOR 675mm SQUARE OPENINGS AND BE PROVIDED WITH LOOSE BOLTED CONNECTIONS.
- THE USE OF LADDERS OR STEPS IN MANHOLES, WET WELLS AND VALVE CHAMBERS SHALL COMPLY WITH THE FOLLOWING: STEEL PLASTIC ENCAPSULATED MH SINGLE STEPS SHALL NOT BE USED IN MHS OF A GREATER DEPTH THAN 1.0m. STEEL PLASTIC ENCAPSULATED DOUBLE STEPS MAY BE PROVIDED IN MHS UP TO 3.0m IN DEPTH. LADDERS SHALL BE PROVIDED IN ACCORDANCE WITH BS 4211 IN MHS BETWEEN 3.0 & 6.0m DEEP. MHS GREATER THAN 6.0m DEEP SHALL BE SPECIALLY DESIGNED AND HAVE INTERMEDIATE LANDINGS. ACCESS HOLES IN INTERMEDIATE LANDINGS SHALL BE PROVIDED WITH GALVANISED MILD STEEL GRATINGS TO PREVENT PERSONS FALLING THROUGH. THE DESIGN OF DEEP MHS SHALL PERMIT THE USE OF A WINCH OR LIFTING GEAR MOUNTED AT GROUND LEVEL IN CASE OF EMERGENCIES.
- ONLY LOW CARBON STEEL OR STAINLESS STEEL LADDERS FOR VERTICAL FIXING TO MANHOLES WILL BE ACCEPTABLE.
- PROPOSED ADOPTABLE SEWERS ARE ONLY PERMITTED TO HAVE OTHER SEWER/GULLY CONNECTIONS AND OTHER SERVICES LAID AT AN ANGLE OF BETWEEN 45° AND 90° ACROSS THE LINE WITH A VERTICAL CLEARANCE IN EXCESS OF 300mm.
- ALL IRONWORK TO BE KITE MARKED BY BSI OR CERTIFIED BY EQUAL INSPECTION AUTHORITY. RED COLOURED PLASTIC MARKER TAPE AT LEAST 150mm WIDE SHALL BE LAID AT A MINIMUM OF 200mm ABOVE THE SOFFIT OF THE PIPE. THE TAPE SHALL BE PRINTED WITH THE WORDS GRAVITY SEWER IN BOLD CAPITAL LETTERS THROUGHOUT ITS LENGTH AND AT INTERVALS NOT EXCEEDING 700mm AND SHALL INCORPORATE A CORROSION RESISTANT TRACING SYSTEM FOR NON-METALLIC PIPES.
- PIPES TO BE CONCRETE OR CLAY TO SFA7/CESW16 SPECIFICATION FOR FOUL DRAINS AND CONCRETE ENCASED WHERE COVER < 800mm WITH 150mm ST4. SEE PIPE BEDDING DETAILS. ALL PIPES TO PASS PRESSURE TESTS. ALL CHAMBERS TO BE WATERTIGHT.
- CONTRACTOR TO ALLOW FOR REPLACING BACKFILL TO EXISTING SERVICES WHERE COMPACTION IS INADEQUATE, AS 'PIPE BEDDING' DETAIL.
- PIPE CONNECTION TO EXISTING SOUTH WEST WATER DRAIN. 150mm DIA. UNLESS OTHERWISE SHOWN. MANHOLE CONNECTION TO EXISTING PIPES. CONNECTION LOCATIONS ARE APPROXIMATE AND MAY REQUIRE ADJUSTMENT TO SUIT CONDITIONS AND LEVELS. TO BE AGREED WITH THE DESIGNER AND SOUTH WEST WATER. AGREEMENTS FOR NEW CONNECTIONS TO MADE WITH SOUTH WEST WATER BY THE CONTRACTOR.
- INTERNAL CONNECTIONS TO BE DESIGNED BY OTHERS, THOSE SHOWN ARE INDICATIVE ONLY.
- ALL SYSTEMS TO BE INSPECTED ON AT LEAST A MONTHLY BASIS AND CLEARED OF ALL SILT OR DEBRIS.
- MANHOLE COVERS AND FRAMES SHALL COMPLY WITH THE RELEVANT PROVISIONS OF BS EN 124. THEY SHALL BE OF A NON-ROCKING DESIGN WHICH DOES NOT RELY ON THE USE OF CUSHION INSERTS.
- ALL MANHOLES SHOULD HAVE A CONCRETE SURROUND. CONCRETE RINGS SHALL BE SEALED USING 'TOKSTRIP' AND LIFTING EYES POINTED WITH RESIN MODIFIED MORTAR.
- ALL INTERNAL INSPECTION COVERS TO BE DOUBLE SEALED AND AIRTIGHT. TO BE TESTED IN ACCORDANCE WITH SEWERS FOR ADOPTION 7TH EDITION.
- FOUL SEWER MINIMUM DEPTHS TO BE 0.45m IN PRIVATE GARDENS, 0.9m IN PRIVATE DRIVEWAYS, 1.2m IN HIGHWAYS AND PARKING AREAS.
- THE CONTRACTOR WILL BE RESPONSIBLE FOR ARRANGING ALL PERMITS AND LICENCES NECESSARY FOR THE WORKS.
- FOUL DRAINAGE DEPTHS/LOCATIONS TO BE CONFIRMED FOLLOWING BUILDING REGULATIONS APPROVALS.
- WHERE CROSSING PIPES HAVE LESS THAN 300mm SEPARATION PIPES MUST BE CONCRETE ENCASED.
- ALL LEVELS TO OS DATUM.

DO NOT SCALE

NOTES:

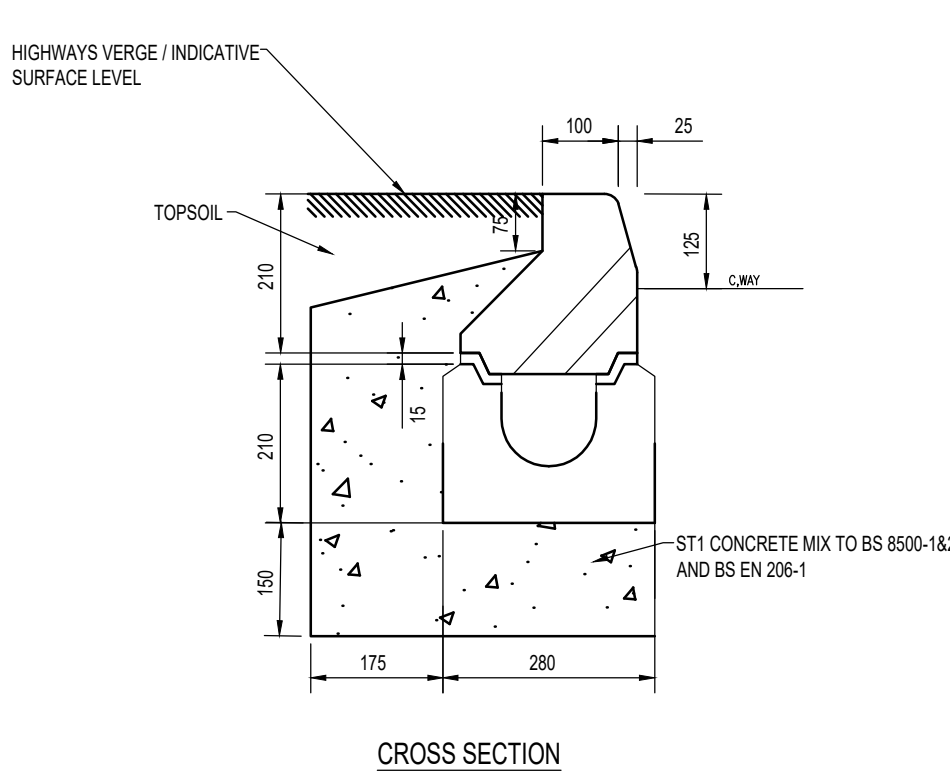
- DIMENSIONS ARE IN MILLIMETRES UNLESS STATED OTHERWISE.
- THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL RELEVANT DESIGN DRAWINGS, ENGINEERING DETAILS AND THE SPECIFICATION.
- ALL LEVELS AND DIMENSIONS SHALL BE VERIFIED ON SITE PRIOR TO THE COMMENCEMENT OF ANY WORKS. ANY DISCREPANCIES SHALL IMMEDIATELY BE BROUGHT TO THE ATTENTION OF THE ENGINEER.

CLASS 5 BEDDING PIPES

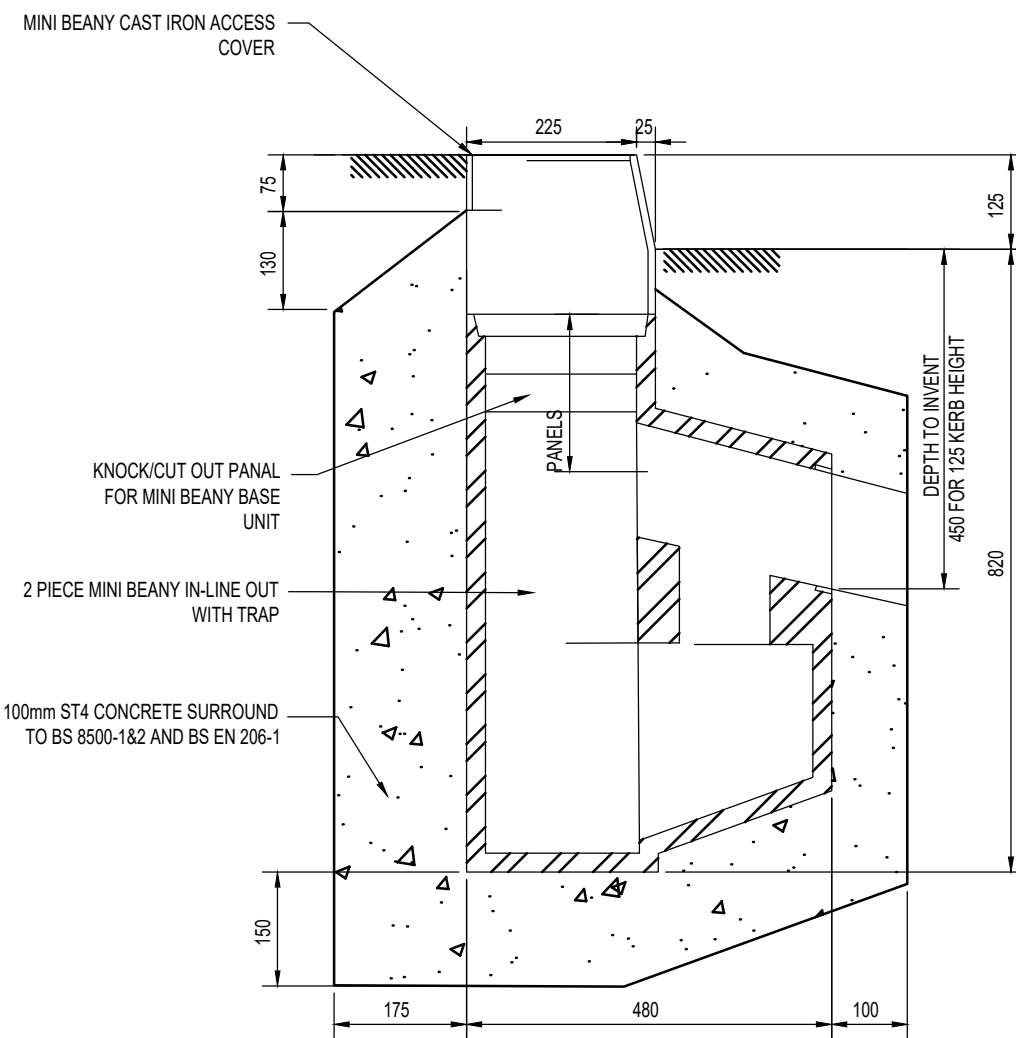
- BACKFILLING UNDER ROADS AND PAVING: BACKFILL FROM TOP OF GRANULAR BEDDING UP TO SPECIFICATION FOR HIGHWAY WORKS 1998 CLAUSE 803, LAID AND COMPACTED IN 150mm LAYERS.
- BACKFILLING UNDER LANDSCAPED AREAS: BACKFILL FROM TOP OF GRANULAR BEDDING UP TO FROM LOCALLY EXCAVATED MATERIAL OR IMPORTED, SHALL CONSIST OF UNIFORM READILY COMPACTABLE MATERIAL, FREE FROM VEGETABLE MATTER, BUILDING RUBBISH AND FROZEN MATERIAL, OR MATERIALS SUSCEPTIBLE TO SPONTANEOUS COMBUSTION, AND EXCLUDING CLAY OF LIQUID LIMIT GREATER THAN 80 AND/OR PLASTIC LIMIT GREATER THAN 55 AND MATERIALS OF EXCESSIVELY HIGH MOISTURE CONTENT. CLAY LUMPS AND STONES RETAINED ON 75mm AND 37.5mm SIEVES RESPECTIVELY SHALL BE EXCLUDED FROM THE FILL MATERIAL. LAID AND COMPACTED IN LAYERS NOT EXCEEDING 300mm.
- DO NOT USE HEAVY COMPACTORS BEFORE THERE IS 600MM OF MATERIAL OVER PIPE.
- UNDERSIDE OF TOPSOIL WITH SELECTED CLASS 1B MATERIAL. CLASS 1B FILL WHETHER SELECTED FORMATION LEVEL WITH GRANULAR SUBBASE MATERIAL TYPE 1 TO HIGHWAYS AGENCY

CLASS 2 - PRIVATE DRAINAGE ONLY

- IMPORTED GRANULAR MATERIALS TO INCLUDE AGGREGATES TO BS 882, AIR-COOLED BLAST FURNACE SLAG TO BS 1047 AND SINTERED PULVERIZED- FUEL ASH TO BS 3797
- COMPACTION FRACTION VALUE, SEE APPENDIX A
- THE HIGHER THE CF VALUE FOR AS DUG BEDDING AND SIDEFILL MATERIALS THE GREATER THE REQUIRED EFFORT FOR ADEQUATE COMPACTION.
- ANGULAR MATERIALS SHOULD BE CHOSEN TO ENSURE SUFFICIENT SUPPORT IS PROVIDED TO THESE HEAVIER PIPES. CRUSHED ROCK AGGREGATES TO BS 882 ARE RECOMMENDED. AIR-COOLED BLAST FURNACE SLAG TO BS 3797 OR OTHER GRANULAR MATERIALS MAY BE USED IF THEY SHOW A SIMILAR DEGREE OF ANGULARITY

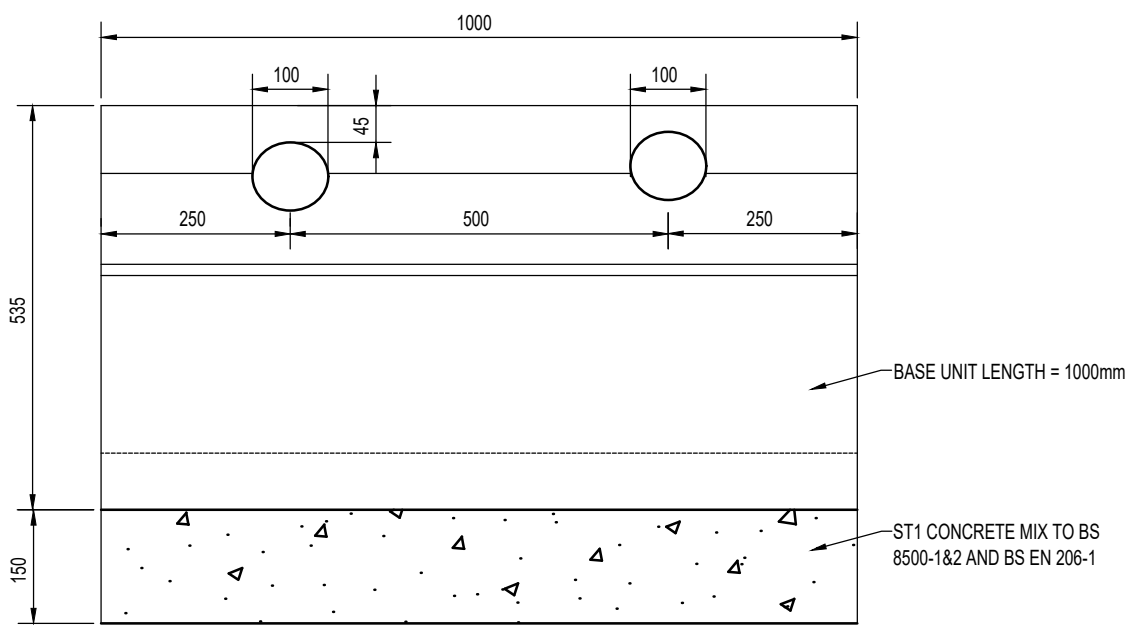


CROSS SECTION



CROSS SECTION

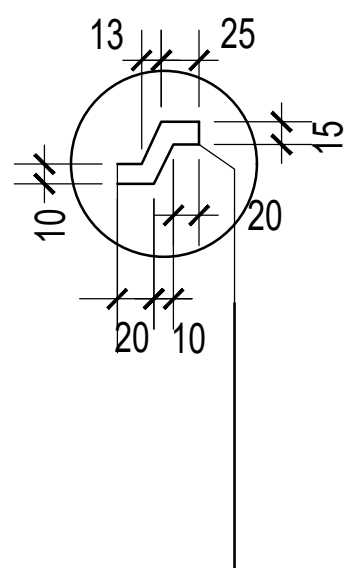
MINI BEANY IN-LINE SIDE OUTFALL



ELEVATION

MINI BEANY HALF BATTERED TOP BLOCK WITH BASE 210

Scale NTS



TOP BLOCK JOINT DETAILS

|     |            |    |             |     |     |
|-----|------------|----|-------------|-----|-----|
| P01 | 17/01/2020 | BT | FIRST ISSUE | RT  | RT  |
| REV | DATE       | BY | DESCRIPTION | CHK | APP |

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| DRAWING STATUS: | S2 - FOR INFORMATION |
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| TITLE: | DRAINAGE STANDARD DETAILS<br>SHEET 2 OF 3 |
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| SCALE @ A1: | NTS      | CHECKED:  | RT | APPROVED: | RT         |
| PROJECT NO: | 70061643 | DESIGNED: | YG | DRAWN:    | BT         |
|             |          |           |    | DATE:     | January 20 |

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| DRAWING No: | 1643-WSP-XXX-NBL-DR-C-0509 | REV: | P01 |
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