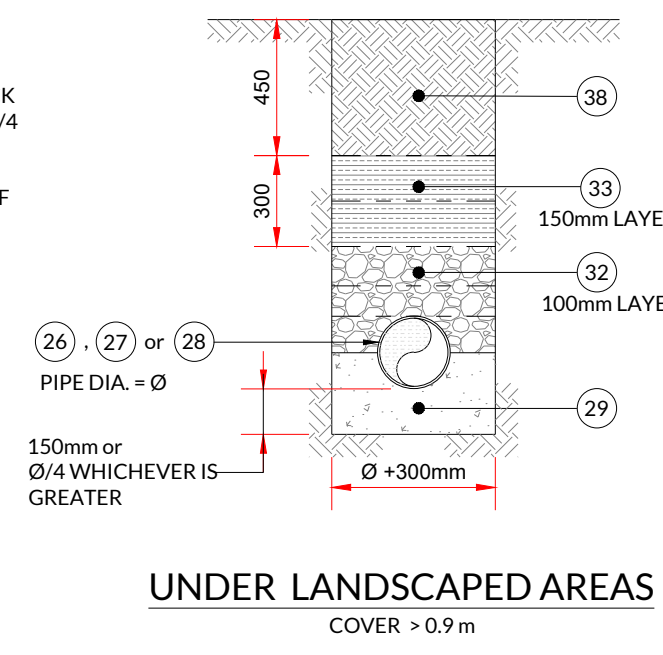
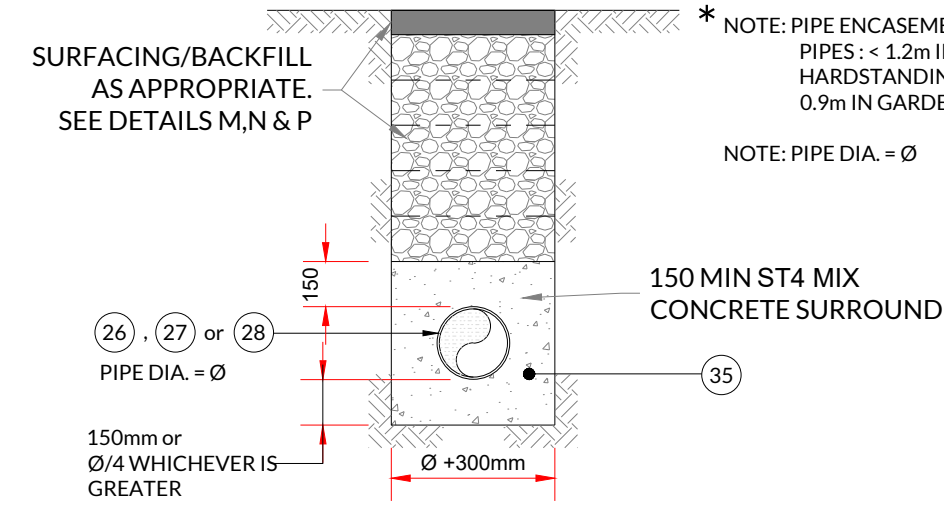


M - DETAIL: CONCRETE BEDDING
SCALE 1:25

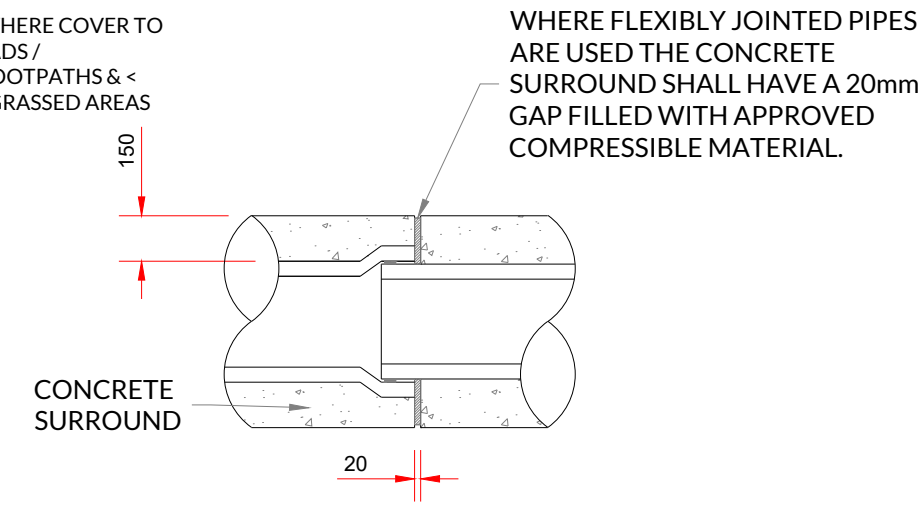


UNDER LANDSCAPED AREAS
COVER > 0.9m

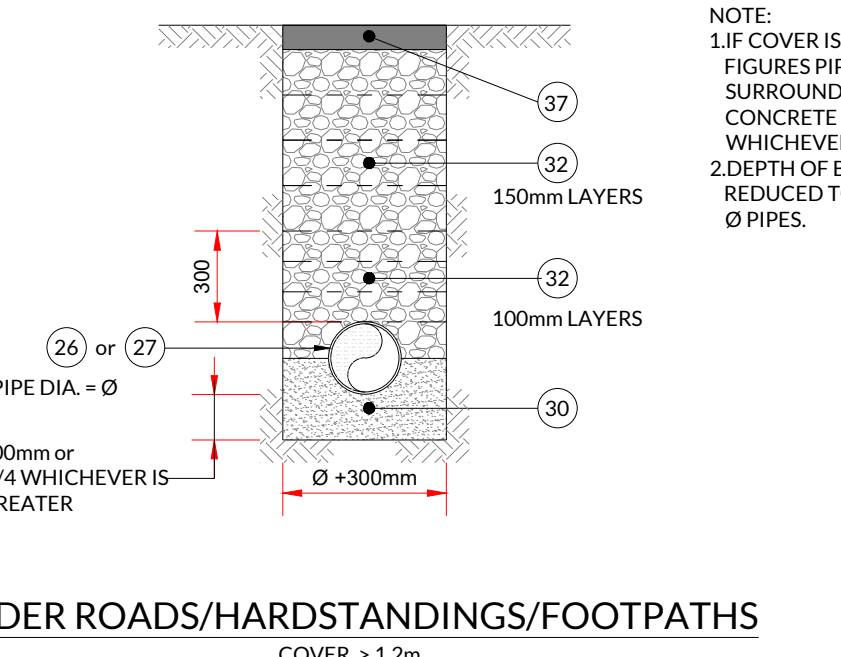


CONCRETE PIPE ENCASEMENT DETAIL

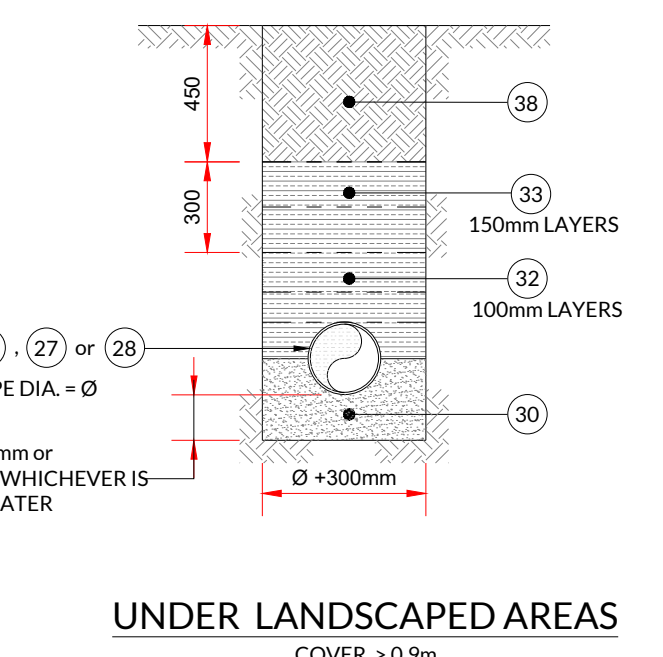
Q - DETAIL: CONCRETE ENCASEMENT
SCALE 1:25



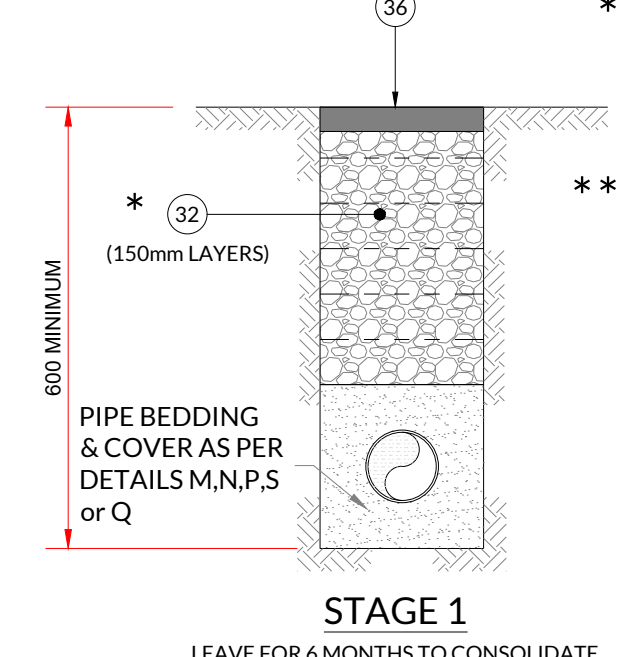
JOINT IN CONCRETE SURROUND



N - DETAIL: GRANULAR BEDDING
SCALE 1:25

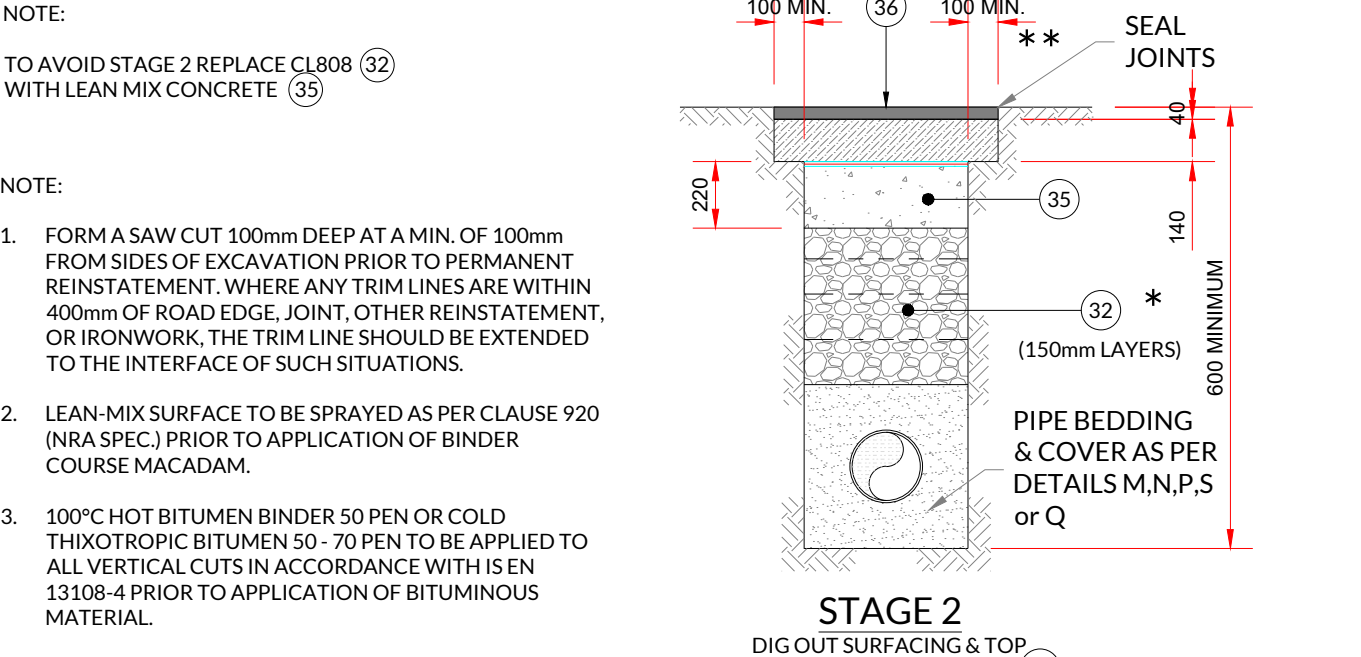


UNDER LANDSCAPED AREAS
COVER > 0.9m

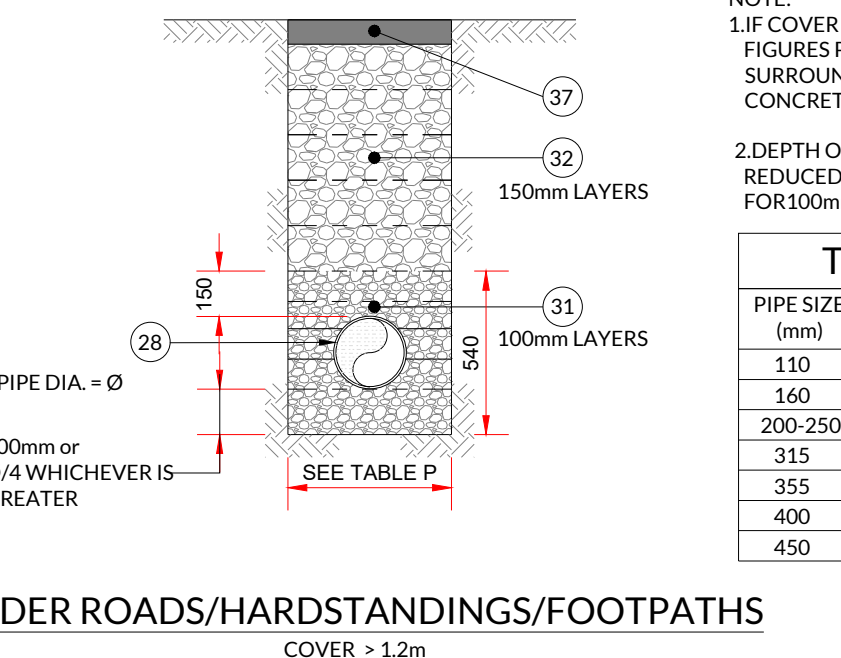


STAGE 1
LEAVE FOR 6 MONTHS TO CONSOLIDATE

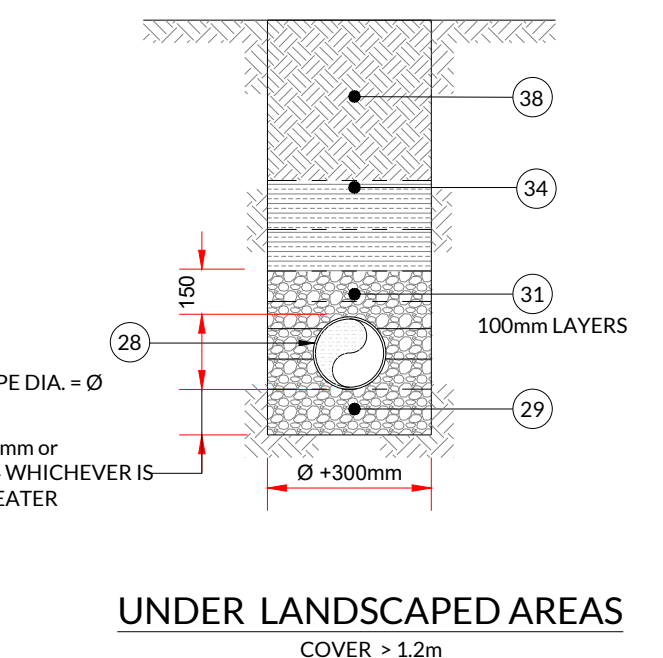
R - DETAIL: REINSTATEMENT OF PIPE TRENCH IN EXISTING ROAD
SCALE 1:25



STAGE 2
DIG OUT SURFACING & TOP 220mm OF C18/08 MATERIAL (32) & REPLACE WITH NEW WIDER SURFACING ON 220mm LAYER OF LEAN-MIX CONCRETE (36)

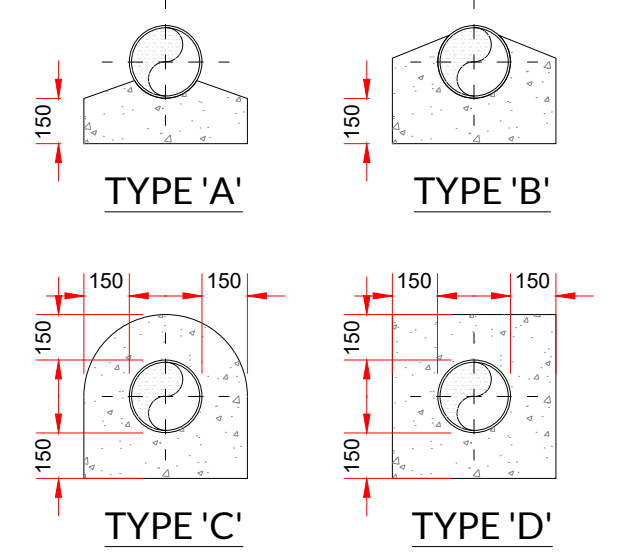


P - DETAIL: UPVC PIPES BEDDING
SCALE 1:25

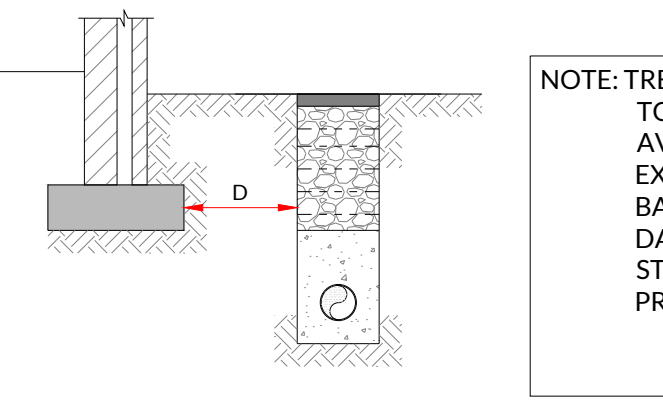


UNDER LANDSCAPED AREAS
COVER > 1.2m

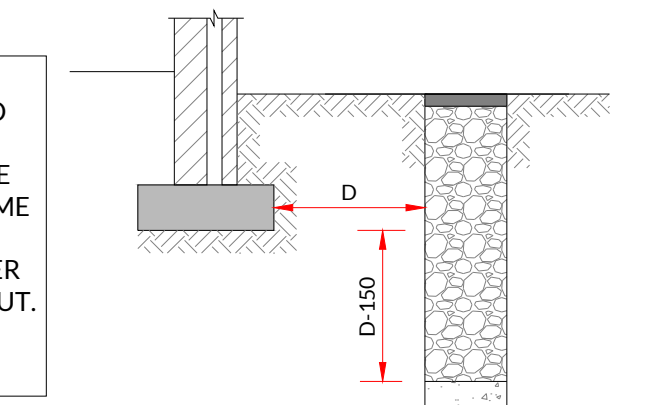
PIPE SIZE (mm)	WIDTH OF TRENCH (mm)
110	450
160	450
200-250	600
315	700
355	750
400	800
450	850



S - DETAIL
SCALE 1:25



WHERE 'D' IS LESS THAN 1m
CONCRETE FILL TO LEVEL OF FOUNDATION BOTTOM)



WHERE 'D' IS 1m OR MORE
CONCRETE FILL TO WITHIN D-150mm OF LEVEL OF FOUNDATION BOTTOM

T - DETAIL: CONCRETE PIPE LAID NEAR FOUNDATIONS
SCALE 1:50

- NOTES:
- 225mm REINFORCED CONCRETE BASE, GRADE 30/37.
 - PERFORMED HALF CIRCLE CHANNEL PIPES, THE PIPELINE MAY, WHERE PRACTICABLE, BE LAID THROUGH THE MANHOLE & THE CROWN CUT OUT TO HALF DIAMETER, PROVIDED FLEXIBLE JOINTS ARE SITUATED ON EACH SIDE NO FURTHER THAN 600mm FROM INNER FACE OF THE MANHOLE WALL.
 - MANHOLE CONSTRUCTION:
 - BLOCK WORK MANHOLE:
 - SOLID BLOCK WORK TO BE OF HIGH STRENGTH (20N/mm²) TO IS EN 771.
 - MAXIMUM DEPTH IS 1.20m (THE USE OF BLOCK WORK IN DEEPER MANHOLES WILL BE CONSIDERED BUT SUCH USE WILL REQUIRE DETAILED STRUCTURAL DESIGN AND BE SUBJECT TO IRISH WATER REVIEW).
 - WALLS TO BE FLUSH AND NOT PLASTERED INTERNALLY, INTERNAL LINING OF ENGINEERING BRICK TO IS EN 771-1 TO A HEIGHT OF 1.0m ABOVE BENCHING. ENGINEERING BRICK TO BE BONDED TO BLOCK WORK USING ENGLISH GARDEN WALL BOND.
 - BLOCK WORK SHALL BE EMBEDDED & JOINTED USING MORTAR TO IS 406. BEDS & VERTICAL JOINTS TO BE COMPLETELY FILLED WITH MORTAR AS THE BLOCKS ARE LAID.
 - PRE-CAST CONCRETE MANHOLE:
 - THE UNITS ARE TO COMPLY WITH REQUIREMENTS OF IS EN 1917 AND BS 5911-PART 3.
 - THICKER MANHOLE BASES REQUIRED FOR SEWERS IN EXCESS OF 3.0m DEEP WHERE THE SIZE IS GREATER THAN THE STANDARD MINIMUM SIZE.
 - APPROVED PRE-CAST CONCRETE BASES MAY BE USED INCORPORATING CHANNELS, BENCHING ETC. SUBJECT TO IRISH WATER REVIEW AND COMPLYING WITH BS 5911-PART 4:2002.
 - IN-SITU CONCRETE MANHOLE:
 - TO HAVE A MINIMUM WALL AND FLOOR THICKNESS OF 225mm FOR MANHOLE DEPTHS UP TO 3.0m AND 300mm OR MORE WHEN THE MANHOLE DEPTHS EXCEEDS 3.0m.
 - RELIEVING ARCH FORMED BY 215x103x65 SOLID ENGINEERING BRICK CLASS A OR B, (RELIEVING ARCHES ARE USED IN BRICK OR BLOCK WORK MANHOLES EXTENDED OVER FULL THICKNESS OF WALLS). A DOUBLE ARCH TO BE FORMED FOR PIPE DIAMETER GREATER THAN 600mm.
 - BENCHING AND PIPE SURROUND - C30/37 CONCRETE.
 - 1:3 CEMENT: SAND MORTAR WITH STEEL TROWEL FINISH AT SLOPE OF 1:30 TOWARDS THE CHANNEL.
 - MANHOLE STEPS TO COMPLY WITH IS EN 13101, TYPE D, CLASS 1. GALVANIZED MILD STEEL STEP RUNGS, 20mm DIAMETER, SHALL BE PROVIDED WITH PLASTIC ENCAPSULATED FINISH. STEP RUNGS ARE TO BE PROVIDED IN MANHOLES WHERE THE DEPTH FROM GROUND TO THE SOFFIT OF THE PIPE IS UP TO 3.0m. FIXED LADDERS ARE REQUIRED IN MANHOLES WHERE THE DEPTH FROM GROUND TO THE SOFFIT OF THE PIPE EXCEEDS A DEPTH OF 3.0m AND UP TO 6.0m, AND SHALL COMPLY WITH IS EN 14396. ALL LADDER RUNGS, HANDRAILS, SAFETY CHAINS ETC. TO COMPLY WITH BS 729 OR EQUIVALENT.
 - 600mm SQUARE OPE IN ROOF.
 - MANHOLE ROOFS SHALL CONSIST OF REINFORCED CONCRETE SLAB OF IN-SITU CONCRETE 30/37, WITH A MINIMUM THICKNESS OF 225mm DESIGNED TO CARRY ALL LIVE AND DEAD LOADS. ALTERNATIVELY, APPROVED PRE-CAST CONCRETE ROOF SLABS MAY BE USED SUBJECT TO IRISH WATER REVIEW AND COMPLIANCE WITH BS 5911 PART 4:2002. IN CONJUNCTION WITH IS EN 1979:2002 AND IS 420:2004.
 - 1 TO 3 MAX. COURSES OF CLASS B ENGINEERING BRICKS TO IS 91:1983 SE IN C 50/60 MORTAR.
 - MANHOLE COVER AND FRAME SHALL COMPLY TO IS EN 124 AND BS 7903 (ALL CLASS D400 COVERS SHALL HAVE MIN. FRAME DEPTH 100-150mm). MIN. OPE 600x600mm. COVER TO BE SE IN C 50/60 MORTAR.
 - MANHOLE COVER AND FRAME SHALL COMPLY TO IS EN 124 AND BS 7903 (ALL CLASS D400 COVERS SHALL HAVE MIN. FRAME DEPTH 100-150mm). MIN. OPE 600x600mm. COVER TO BE SE IN C 50/60 MORTAR.
 - SHORT LENGTH PIPE & PIPE JOINT EXTERNAL TO MANHOLES SHALL NOT EXCEED 600mm FROM THE INNER FACE OF THE MANHOLE WALL.
 - TOE HOLES OF 230mm MINIMUM DEPTH & GALVANIZED SAFETY RELINGS TO BE PROVIDED IN BENCHING OF SEWERS GREATER THAN 525mm Ø & DEPTH TO INVERT - 3.0m FOR ACCESS TO INVERT.
 - STAINLESS STEEL CHAIN IS TO BE PROVIDED ON PIPES THAT EXCEEDED 450mm Ø, COMPLYING WITH BS4942 PART 2 OR EQUIVALENT.
 - PIPE SHOULD BE CUT FLUSH WITH THE INSIDE SURFACE OF THE MANHOLE WALLS SO THAT CHANNEL EXTENDS THE FULL LENGTH OF THE MANHOLE.
 - POSITION OF 910 SQUARE OPE IN INTERMEDIATE ROOF SLABS:
 - ALL MANHOLES SHALL BE WATERTIGHT TO THE SATISFACTION OF THE ENGINEER.
 - FORMWORK TO REINFORCED CONCRETE & MASS CONCRETE SHALL COMPLY WITH CLASS 2 SECTION 6.2.7, BS 8110 PART 1:1997.
 - FINISH TO THE TOP OF SLAB SHALL COMPLY WITH TYPE A SECTION 6.2.7, BS 8110 PART 1:1997.
 - PLAN DIMENSIONS OF MANHOLES ARE BASED ON BLOCK WORK HAVING A COORDINATING SIZE OF 450x225x100. FORT PIPE DIAMETER OF > 750mm USE MANHOLE WITH INTERNAL DIAMETER SIZE = PIPE SIZE + 10mm + 300mm.
 - MANHOLES ARE DESIGNED TO BS 8005 & WALL THICKNESS TO IS 325. BLOCK WORK DESIGN CODE TAKING MANHOLE FILL PRESSURE & H.S. SURCHARGE.
 - REINFORCEMENTS TO SLABS TO ENGINEERS DETAILS.
- FOR MANHOLES > 3m DEPTH TO INVERT USE C30/37 IN-SITU CONCRETE, REINFORCING MESH REF. A393 TO BE FIXED AT MID POINT OF WALL. ADDITIONAL REINFORCEMENT TO BE SUPPLIED OVER PIPE CROWN.
- PRECAST MANHOLES, CHAMBER WALLS & COVER SLAB TO BE CONSTRUCTED TO IS EN 1917 & IS 420:2004.
- MANHOLE OPENINGS TO BE SITUATED FURTHEST FROM THE NEAREST CARRIAGEWAY. MANHOLE STEPS ACCESS TO BE POSITIONED TO ALLOW VIEWING OF ONCOMING TRAFFIC.
- FOR BEDDING AND CEILING OF CHAMBER RINGS, THE TOP RING (TO PRECAST OVER SLAB) & BOTTOM RING TO BE BEDDED WITH CEMENT MORTAR. FOR INTERMEDIATE RINGS, JOINTS TO BE SEALED WITH APPROVED PREFORMED JOINTING STRAP.
- PRECAST MANHOLES TO BE SURROUNDED WITH A MINIMUM OF 150mm THICK GRADE C16/20 CONCRETE.
- 225mm GRADE C 25/30 CONCRETE SURROUND.
- 75mm GRADE C 12/15 BLINDING CONCRETE.
- ANY SPECIAL ROAD REINSTATEMENT AROUND COVER AND FRAME SHALL BE TO ROAD AUTHORITY'S REQUIREMENTS, NEW ROAD CONSTRUCTION AND SURFACE FINISH TO BE ROAD AUTHORITY'S REQUIREMENTS. EXISTING ROAD REINSTATEMENT TO COMPLY WITH CURRENT VERSION OF 'GUIDELINE FOR MANAGEMENT OF PUBLIC ROADS' BY THE DEPT. OF TRANSPORT, TOURISM & SPORT, OR TRANSPORT INFRASTRUCTURE IRELAND REQUIREMENTS.
- PRECAST CONCRETE MANHOLE RINGS TO IS 420 IN CONJUNCTION WITH EN 1917:2004.
- CONCRETE SEWER PIPES WITH SPIGOT & SOCKET JOINTS & RUBBER FITTINGS TO COMPLY WITH IS EN 1916 & IS 6:2004 OR EQUIVALENT STANDARD CLASS OR CLASS H.
- VITRIFIED CLAY PIPES AND FITTINGS COMPLYING WITH THE REQUIREMENTS OF IS EN 295-1/2/3: 1992 OR EQUIVALENT STANDARD CLASS 160 OR CLASS 200.
- UNPLASTICIZED POLYVINYL CHLORIDE (UPVC) PIPES & FITTINGS IN ACCORDANCE WITH THE REQUIREMENTS OF IS 424.
- CONCRETE BED & SURROUND MUST BE A MINIMUM 150mm THICK IN-SITU CONCRETE C16/20 & HAUNCHED HALF WAY UP THE BARREL OF THE PIPE.
- GRANULAR BED AND SURROUND OF RIGID PIPES TO BE EITHER:
 - 14mm TO 5mm GRADED AGGREGATE OR
 - 10mm SINGLE SIZE AGGREGATE.
- GRANULAR BED, SURROUND & COVER FOR UPVC TO BE
 - 14mm TO 5mm GRADED AGGREGATE 315mm + PIPE DIAMETER
 - 10mm SINGLE SIZE AGGREGATE PIPE DIAMETER < 315mm
- ALL COMPLYING WITH THE REQUIREMENTS OF IS EN 12620:2002 & SHOULD HAVE A COMPACTION FACTOR VALUE OF NOT GREATER THAN 0.2 WHEN MEASURED IN ACCORDANCE WITH BS EN 752:2017. GRANULAR BED & COVER TO BE PLACED UNIFORMLY ON EITHER SIDE OF THE PIPE IN LAYERS NOT EXCEEDING 100mm EACH LAYER BEING COMPACTED BY HAND TAMPING UNTIL THE PIPE HAS A MINIMUM COMPACTED COVER OF 150mm.
- GRANULAR BACKFILL MATERIAL SHALL BE IN COMPLIANCE WITH CLAUSE 804 (GRANULAR MATERIAL TYPE B) OF THE NRA SPECIFICATION FOR ROAD WORKS. GRANULAR FILL SHOULD BE PLACED ON EITHER SIDE OF THE FILL IN UNIFORM LAYERS NOT EXCEEDING 100mm. EACH LAYER BEING COMPACTED BY HAND & UNDERGOING TAMPING UNTIL IT HAS A MINIMUM LAYER OF 300mm COMPACTED OVER. CARE SHOULD BE TAKEN SO THAT THE TAMPING DOES NOT DISPLACE THE PIPE FROM ITS CORRECT LINE AND LEVEL. SUBSEQUENT LAYER OF GRANULAR MATERIAL TO BE COMPACTED IN 150mm THICK LAYERS TO THE LOCAL AUTHORITY ROAD DIVISION SPECIFICATION. MECHANICAL COMPACTING EQUIPMENT SHOULD NOT BE USED UNTIL THERE IS A MINIMUM 450mm THICK COMPACTED COVER OVER THE CROWN OF THE PIPE.
- SELECTED FILL SHOULD BE FREE FROM STONES LARGER THAN 37mm, LUMPS OF CLAY OVER 75mm, TIMBER, FROZEN MATERIAL & VEGETABLE OR FOREIGN MATTER. SELECTED FILL ON EITHER SIDE OF THE PIPE SHOULD BE LAID IN 100mm THICK LAYERS. EACH LAYER BEING COMPACTED BY HAND & UNDERGOING TAMPING UNTIL IT HAS A MINIMUM LAYER OF 450mm COMPACTED OVER. CARE SHOULD BE TAKEN SO THAT THE TAMPING DOES NOT DISPLACE THE PIPE FROM ITS CORRECT LINE AND LEVEL & COMPACTED IN 150mm LAYERS.
- GENERAL BACKFILL MATERIAL SUITABLE FOR BACKFILL ABOVE SELECTED FILL MATERIAL SHOULD BE FREE FROM BOULDERS, LUMPS OF CONCRETE, TIMBER & VEGETABLE OR FOREIGN / CONTAMINATED MATTER. GENERAL BACK FILL SHOULD BE PLACED IN LAYERS NOT EXCEEDING 300mm. EACH LAYER BEING WELL COMPACTED. MECHANICAL COMPACTION EQUIPMENT SHOULD NOT BE USED UNTIL THERE IS MINIMUM OF 450mm COMPACTED COVER OVER THE CROWN OF THE PIPE.
- PIPES WITH INADEQUATE COVE TO BE SURROUNDED IN 150mm THICK C 16/20 CONCRETE.
- LEAN MIX BACKFILL IN EXISTING ROADS, WHERE REQUIRED BY THE LOCAL AUTHORITY TO BE GRADE 20N/20mm CONCRETE.
- PAVING TO BE IN ACCORDANCE WITH THE ROAD SPECIFICATION & IF APPROPRIATE, THE LOCAL AUTHORITY REQUIREMENTS.
- GOOD QUALITY TOPSOIL 450mm MINIMUM THICKNESS, TO BE PLACED OVER BACKFILL IN ACCORDANCE WITH PARKS DEPARTMENTS/LANDSCAPE ARCHITECTS.
- AJ'S (ARMSTRONGS JOINTIONS)
 - TO BE USED FOR PIPE DEPTHS UP TO 600mm
 - INTERNAL AJ'S IF REQUIRED TO HAVE DOUBLE SEALED COVERS
 - EXTERNAL AJ'S TYPICALLY TO BE PROPRIETARY UPVC WITH 35KN COVER
 - EXTERNAL AJ'S IN AREAS SUBJECT TO TRAFFIC TO BE SURROUNDED IN 150mm C20 CONCRETE & TO HAVE CLASS D COVER AND FRAME SUPPORTED OF THE CONCRETE SURROUND.

- NOTES:
- FIGURED DIMENSIONS ONLY TO BE TAKEN FROM THIS DRAWING.
 - ALL DRAWINGS TO BE CHECKED BY THE CONTRACTOR ON SITE.
 - ENGINEER/EMPLOYERS REPRESENTATIVE, AS APPROPRIATE, TO BE INFORMED BY THE CONTRACTOR OF ANY DISCREPANCIES BEFORE ANY WORK COMMENCES.
 - THE CONTRACTOR SHALL UNDERTAKE A THOROUGH CHECK FOR THE ACTUAL LOCATION OF ALL SERVICES/UTILITIES, ABOVE AND BELOW GROUND, BEFORE ANY WORK COMMENCES.
 - ALL LEVELS SHOWN RELATE TO ORDNANCE SURVEY DATUM AT MALIN HEAD.
 - PIPE BEDDING FOR FOUL SEWER TO BE IN ACCORDANCE WITH IRISH WATER STANDARD DETAILS AND CODE OF PRACTICE - IRISH WATER DETAILS & REQUIREMENTS WILL TAKE PRECEDENCE.

Rev	Date	Description	By	Chkd.
P02	15.08.2022	Issued For Planning	MN	BH
P01	07.08.2022	Draft Planning	MN	BH

Client:

Project: **Residential Development, Ennis, Co. Clare**

Title: **Standard Pipe Bedding Details**

Scale @ A1: **As Shown**

Prepared by: **MN** Checked: **BH** Date: **August 2022**

Project Director: **Brian Carroll**

Drawing Status: **Planning**

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Drawing No: **11269-2129 P02**