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

COMPRESSIBLE FILLER TABLE

(BITUMEN IMPREGNATED INSULATING BOARD TO BS EN 120 AND BS EN 317)

NOMINAL PIPE DIA (mm)	SINGLE SIZED (mm)	GRADED (mm)
150	10 OR 14	14 TO 5
200 TO 300	10, 14 OR 20	14 TO 5 OR 20 TO 5
375 TO 525	14 OR 20	14 TO 5 OR 20 TO 5
GREATER THAN 525	14, 20 OR 40	14 TO 5, 20 TO 5 OR 40 TO 5

GRANULAR BEDDING MATERIAL

(AGGREGATES TO BS 882, AIR COOLED BLAST FURNACE SLAG TO BS 1047 AND LIGHTWEIGHT AGGREGATE TO BS 3797) (SEE NOTE S9)

NOTES

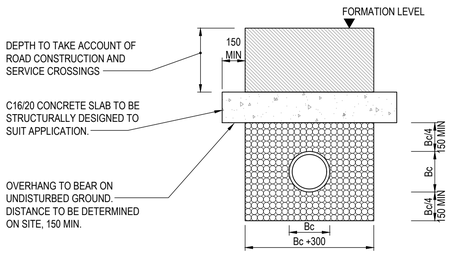
A) Bc = OUTSIDE DIAMETER OF PIPE BARREL.

B) DIMENSION Y:-
SLEEVE JOINTED PIPES, MIN. 150mm OR 1/4Bc, WHICHEVER IS THE GREATER. SOCKETED PIPE, MIN. 200mm OR 1/4Bc. WHICHEVER IS THE GREATER UNDER BARRELS AND NOT LESS THAN 150mm UNDER/OVER SOCKETS.

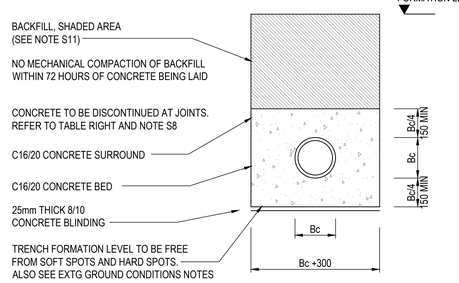
NOMINAL PIPE DIA (mm)	MAXIMUM WIDTH (mm)
100	600
150	700
225	800
300	900
375	1050
450	1150
525	1200
600	1350
675	1450

MAXIMUM TRENCH WIDTHS (EXCEEDANCE COULD COMPROMISE STRUCTURAL DESIGN OF PIPELINE)

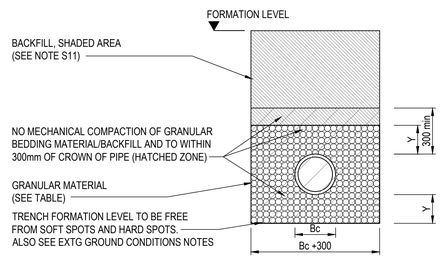
RIGID PIPE TRENCH BEDDING DETAILS



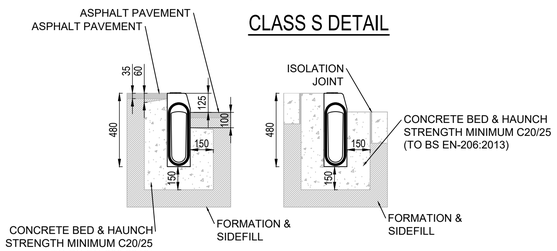
CONCRETE SLAB PROTECTION (SEE NOTE S8)



CLASS Z DETAIL (SEE NOTE S8)

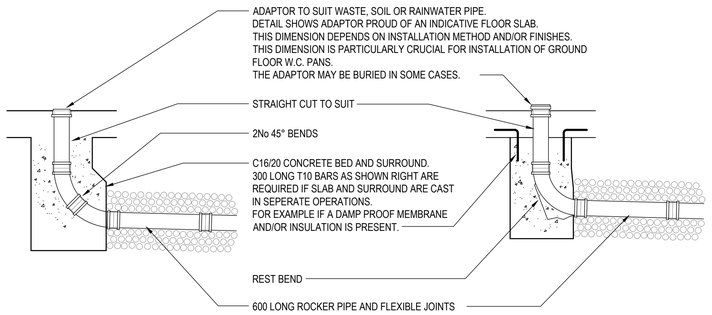


CLASS S DETAIL

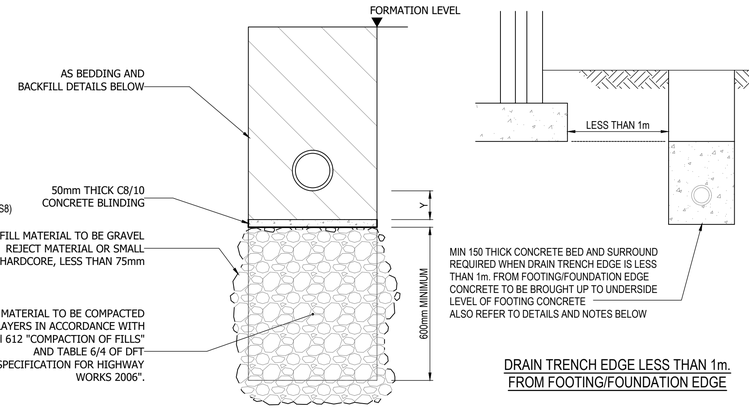


ACO KERB DRAIN HB480

(AREAS WHERE AN ASPHALT PATH DROPS TO A CONCRETE YARD, AN ISOLATION JOINT IS REQUIRED ON THE YARD SIDE)

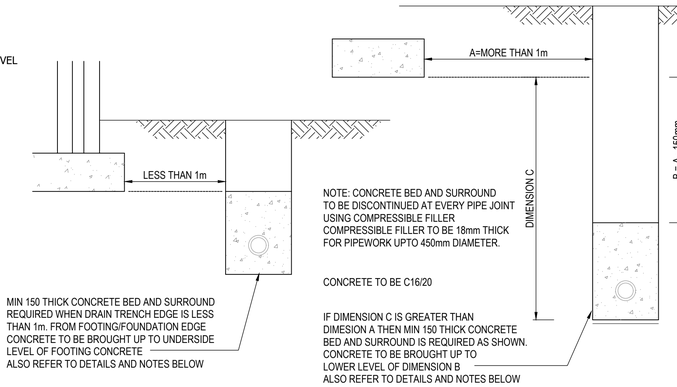


TYPICAL INTERNAL DRAINAGE POP-UP



SOFT GROUND DETAIL

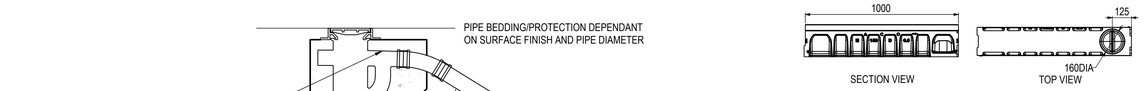
(APPLICABLE TO PIPE TRENCHES AND DRAINAGE STRUCTURES)



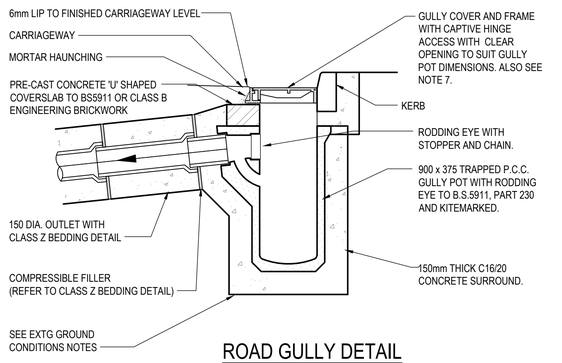
DRAIN TRENCH EDGE LESS THAN 1m. FROM FOOTING/FOUNDATION EDGE

DRAIN TRENCH EDGE MORE THAN 1m. FROM FOOTING/FOUNDATION EDGE

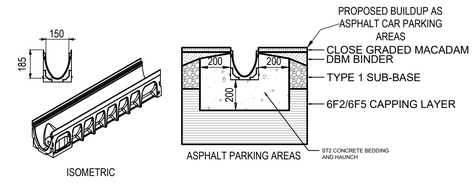
BEDDING DETAIL IN VICINITY OF FOOTINGS/FOUNDATIONS



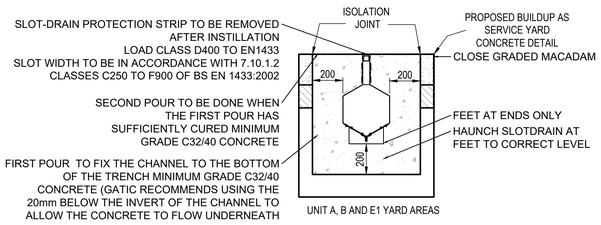
YARD GULLY DETAIL IN NON TRAFFICKED AREAS



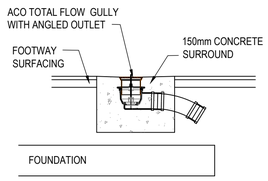
ROAD GULLY DETAIL



M150D CHANNEL DRAIN



GATIC SLOT DRAIN



EXTERNAL CONDENSATE GULLY

GENERAL NOTES

1. THIS DRAWING SHALL BE READ IN CONJUNCTION WITH ALL OTHER RELEVANT TTE DRAWINGS, SPECIFICATIONS, STANDARD DETAILS AND C.D.M. RISK MANAGEMENT FORMS, AS WELL AS THIRD PARTY DRAWINGS, SPECIFICATIONS AND SUPPORTING DOCUMENTS.
2. ALL GIVEN DIMENSIONS ARE IN MILLIMETRES, UNLESS OTHERWISE SPECIFIED.
3. SPECIFIC INSTALLATION INSTRUCTION PROVIDED ON THE ACO DRAWING: '21949 ACO KERBDRAIN KDHB480 INSTALLATION DETAIL DRAWING' SHALL BE READ BEFORE INSTALLATION OF THIS ACO KERB DRAIN PRODUCT. THIS CAN BE PROVIDED BY TTE UPON REQUEST.
4. SPECIFIC INSTALLATION INSTRUCTION PROVIDED ON THE ACO DRAWING: '21824 ACO MULTIDRAIN M150D/DS 0.0 CHANNEL INSTALLATION DETAIL DRAWING' SHALL BE READ BEFORE INSTALLATION OF THIS ACO CHANNEL DRAIN PRODUCT. THIS CAN BE PROVIDED BY TTE UPON REQUEST.

SPECIFICATION NOTES

1. ALL SEWERAGE WORKS SHALL BE IN GENERAL ACCORDANCE WITH THE WORKS SPECIFICATIONS AND CODES FOR ADOPTION.
2. POSITION SIZE AND DEPTH OF ALL EXISTING SEWERS AND SERVICES ESTABLISHED PRIOR TO COMMENCEMENT ON SITE.
3. IN-SITU AND PRECAST CONCRETE UNITS SHOULD HAVE SULPHATE RESISTING PORTLAND CEMENT TO BS 4027, UNLESS AGREED OTHERWISE WITH THE ADOPTING AUTHORITY.
4. PRE-CAST CONCRETE PRODUCTS SHOULD COMPLY WITH THE RELEVANT PROVISIONS OF BS 5911 AND BE KITEMARKED. CONCRETE PIPES SHOULD BE CLASS 120.
5. VITRIFIED CLAY PIPES AND FITTINGS SHOULD COMPLY WITH THE RELEVANT PROVISIONS OF BS EN295 AND BE KITEMARKED. PIPE CRUSHING STRENGTH CLASS 200. IN AGGRESSIVE ENVIRONMENTS CAREFUL CONSIDERATION SHOULD BE GIVEN TO THE JOINTING SYSTEM.
6. MANHOLE COVERS AND FRAMES SHOULD COMPLY WITH THE RELEVANT PROVISIONS OF BS EN124 AND HAVE THE MINIMUM CLEAR OPENINGS WITH 150 DEEP FRAMES UNLESS OTHERWISE SPECIFIED. MANHOLE COVERS AND FRAMES TO BE OF A NON-ROCKING DESIGN AND KITEMARKED. LOAD CLASS D400 IN VEHICULAR TRAFFICKED AREAS AND LOAD CLASS B125 IN FOOTWAYS AND PEDESTRIAN AREAS.
7. RECESSED MANHOLE COVERS SHOULD COMPLY WITH THE RELEVANT PROVISIONS OF THE FABRICATED ACCESS COVERS TRADE ASSOCIATION (F.A.C.T.A) MANHOLE COVERS AND FRAMES TO BE RATED AS CLASS B, PROVIDED WITH DOUBLE SEALS AND LOCKING SCREWS.
8. GRANULAR TYPE 1 SUB BASE SHOULD BE IN ACCORDANCE WITH CL. 803 OF Dtp SPECIFICATION FOR HIGHWAY WORKS 2006 AND LAID IN ACCORDANCE WITH CL. 802. NO MECHANICAL COMPACTION WITHIN 300mm OF CROWN OF PIPE. GRANULAR TYPE 1 SUB BASE WITHIN 300mm OF CROWN OF PIPE 40mm DOWN. LIMESTONE AGGREGATE NOT PERMITTED IF A PH OF 6 OR LESS IS LIKELY OR GROUNDWATER IS PRESENT.
9. SELECTED EXCAVATED MATERIAL OF A UNIFORM NATURE SHOULD BE FREE FROM STONES LARGER THAN 37.5mm, CLAY LUMPS LARGER THAN 75mm, TREE ROOTS, ORGANIC MATTER AND FROZEN SOIL (REFER TO CESSWI CLAUSE 2.49). MECHANICALLY COMPACTED SELECTED EXCAVATED MATERIAL TO BE COMPACTED IN LAYERS WITH A VIBRATORY ROLLER COMPLYING WITH METHOD 2 OF TABLE 6/4 OF Dtp SPECIFICATION FOR HIGHWAY WORKS 2006.
10. BACKFILL IN PROPOSED TRAFFICKED AREAS:- TYPE 1 AS NOTE 8.
11. BACKFILL IN NON-TRAFFICKED EXTERNAL AREAS:- SELECTED EXCAVATED MATERIAL REGARDED AS SUITABLE BY THE CONTRACT ADMINISTRATOR.
12. BACKFILLING AND REINSTATEMENT TO TRENCHES IN EXISTING PUBLIC HIGHWAYS IN ACCORDANCE WITH THE REQUIREMENTS AND SPECIFICATIONS OF THE HIGHWAY AUTHORITY, OR, IN THE ABSENCE OF SUCH, IN ACCORDANCE WITH THE REQUIREMENTS OF "THE STREET WORKS REGULATIONS 1992" AND RELEVANT PROVISIONS OF H.A.U.C. "SPECIFICATION FOR THE REINSTATEMENT OF OPENINGS IN HIGHWAYS" JUNE 1992, BOTH UNDER SECTION 71 OF THE NEW ROADS AND STREET WORKS ACT 1991.
13. ANY HANDRAILING REQUIRED SHOULD BE COMPRISED OF 38mm DIA SOLID STANDARDS WITH 70mm DIA BALLS AND 42.4mm o/d 3.2mm THICK WALL TUBULAR HANDRAILS. ALL ANCILLIARIES (eg BASE FIXING, SAFETY CHAINS) AS RECOMMENDED BY THE SUPPLIER AND AGREED WITH ADOPTING AUTHORITIES INSPECTOR. ALL STEELWORK GRADE S275. ALL STEELWORK GALVANISED IN ACCORDANCE WITH BS729. WELDED STEEL PAINTED WITH 2No COATS OF GALVAFROID.

NOTES RE EXTG GROUND CONDITIONS

1. MADE GROUND REMOVED DOWN TO VIRGIN GROUND, OR AS DIRECTED BY THE CONTRACT ADMINISTRATOR.
2. THE CONTRACTOR SHOULD ALLOW FOR ALL COSTS ASSOCIATED WITH THE DISPOSAL OF ANY MATERIALS ENCOUNTERED THAT REQUIRE SPECIAL DISPOSAL ARRANGEMENTS ON ACCOUNT OF THEIR CLASSIFICATION IN ACCORDANCE WITH THE LAND FILL DIRECTIVE AND ANY ASSOCIATED LEGISLATION.
3. ALL MATERIAL IMPORTED TO SITE FOR BACKFILLING PURPOSES SHOULD BE CLASSIFIED AS INERT FILL IN ACCORDANCE WITH THE WASTE ACCEPTANCE CRITERIA.
4. FORMATION LEVEL FOR MANHOLE BASES/DRAINAGE STRUCTURES AND PIPE TRENCHES ARE STABLE AND OF A UNIFORM NATURE FREE FROM SOFT SPOTS AND HARD SPOTS. IN PEAT OR COHESIVE MATERIALS, A HAND SHEAR VANE TEST GIVING A RESULT LESS THAN 40 KPA WOULD INDICATE A SOFT SPOT. AREAS OF LOOSE OR VERY LOOSE GRANULAR MATERIALS ARE NOT CLASSIFIED AS SOFT SPOTS. BLINDING CONCRETE AND/OR STONE MAY BE USED AS DETERMINED ON SITE TO REINSTATE TRENCH TO FORMATION LEVEL
5. WHERE SIGNIFICANT EXCAVATION IS REQUIRED FOR SOFT SPOTS, FILL MATERIAL IS TO BE PLACED AND COMPACTED IN LAYERS (SOMETIMES REFFERED TO AS SOFT GROUND DETAIL).
6. EXAMPLES OF BAD GROUND COULD BE PEAT, RUNNING SAND, MARSHY GROUND AND SOFT CLAY OR SILTY MATERIAL. THIS IS NOT AN EXHAUSTIVE LIST.ANY GROUND CONDITIONS RESULTING IN THE POSSIBILITY OF FINE MATERIALS ENTERING THE VOIDED GRANULAR MATERIAL SURROUNDING THE PIPE COULD BE CONSIDERED AS BAD GROUND CONDITIONS. IF THE WORKS ARE CONSTRUCTED BELOW NORMAL GROUND WATER THIS COULD BE CONSIDERED AS BAD GROUND CONDITIONS. IN BAD GROUND CONDITIONS WRAPPING THE GRANULAR MATERIAL SURROUNDING THE PIPE WITH GEOTEXTILE IS TO BE CONSIDERED.IN PARTICULARLY BAD GROUND, THE DETAILS SHOWN ON THIS DRAWING MAY NOT BE SUITABLE
7. EXAMPLES OF UNUSUAL GROUND CONDITIONS COULD BE ROCK, FISSURED ROCK, LANDFILL SITES, GEOLOGICAL FAULTS OR MINING SUBSIDENCE. THIS IS NOT AN EXHAUSTIVE LIST. THE DETAILS SHOWN ON THIS DRAWING MAY NOT BE SUITABLE FOR THESE CONDITIONS.

CONTRACTOR NOTES

1. THE CONTRACTOR SHOULD ALLOW FOR THE PROTECTION, TEMPORARY AND PERMANENT SUPPORT, AND TEMPORARY AND PERMANENT DIVERSION WORKS, AS NECESSARY TO ALL EXTG SERVICES.
2. THE CONTRACTOR SHOULD ALLOW FOR ALL TRAFFIC MANAGEMENT IN CONNECTION WITH ROAD AND SEWER WORKS.
3. THE CONTRACTOR SHOULD ALLOW FOR KEEPING SEWER TRENCHES AND EXCAVATIONS AS DRY AS PRACTICABLE BY PUMPING FROM TEMPORARY SUMPS, DE-WATERING AND WELL POINTING AS APPROPRIATE. THE POINT AND METHOD OF DISCHARGE TO BE AGREED WITH THE RELEVANT AUTHORITY.
4. CONTRACTOR SHOULD TAKE MEASURES TO PROTECT HIS OPERATIVES WITH RESPECT TO THE PRESENCE OF GAS IN SEWER TRENCHES AND MANHOLES THROUGH THE USE OF GAS MONITORING EQUIPMENT AND BREATHING APPARATUS AS REQUIRED.
5. CONTRACTOR SHOULD APPLY FOR SEWER PERMITS AND ROAD OPENING PERMITS AS NECESSARY FROM THE APPROPRIATE AUTHORITIES, PRIOR TO COMMENCING WORKS.

0 200 400 600 800 1000mm

SCALE 1:20

CONSTRUCTION ISSUE

Rev	Description	Date	Drn / Chk / App
C02	EXTERNAL CONDENSATE GULLY ADDED	05.12.2024	DH / DH / NM
C01	CONSTRUCTION ISSUE	12.08.2024	LW / DH / NM
T02	TENDER ISSUE	21.11.2023	TR / DH / NM
T01	CAT A - TENDER ISSUE	14.07.2023	DO / DH / NM

Document Control

Issuing Office

Tetra Tech Leeds
3 Sovereign Square, Sovereign Street, Leeds, West Yorkshire, LS1 4ER
Tel: +44 (0)113 278 7111
www.tetratecheurope.com

TETRA TECH

Client

COLUMBIA THREADNEEDLE INVESTMENTS

Project Name

BOX 4

Sheet Title

DRAINAGE STANDARD DETAILS
SHEET 1

TTE Project Number	Drawn By	Date	Checked By	Date	Approved By	Date	Scale @ A1	Suitability
B041631	DO	MAY 23	DH	MAY 23	NM	MAY 23	1:20	S5

Client Project Number	Originator	Volume/System	Level/Location	Type/Code	Role	Number	Revision
B041631	TTE	XX	XX	DR	C	502	C02

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