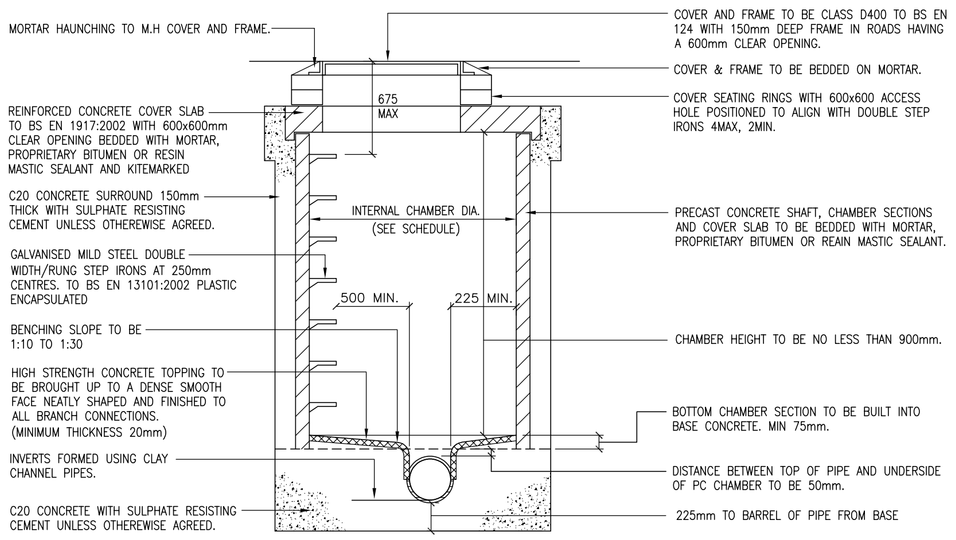
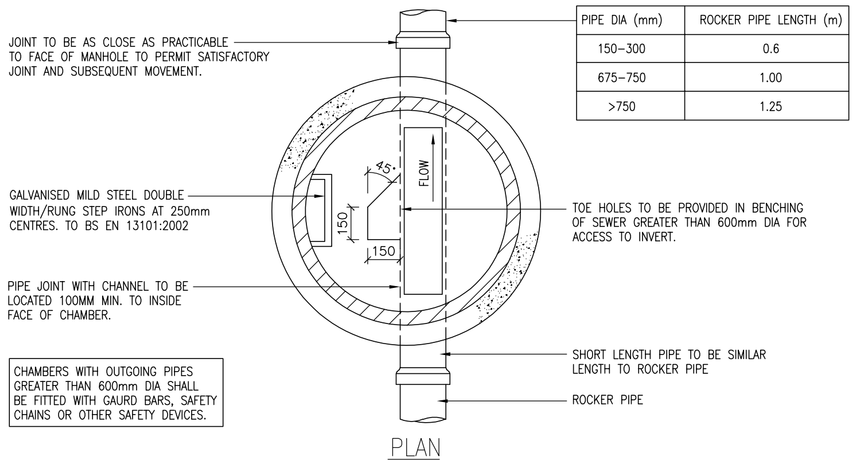
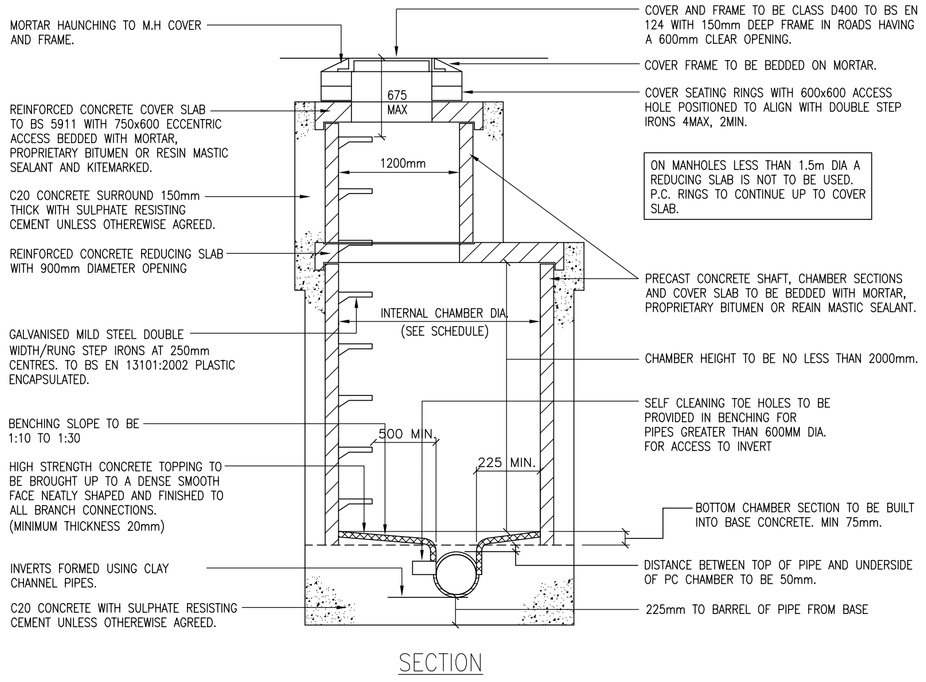


SECTION

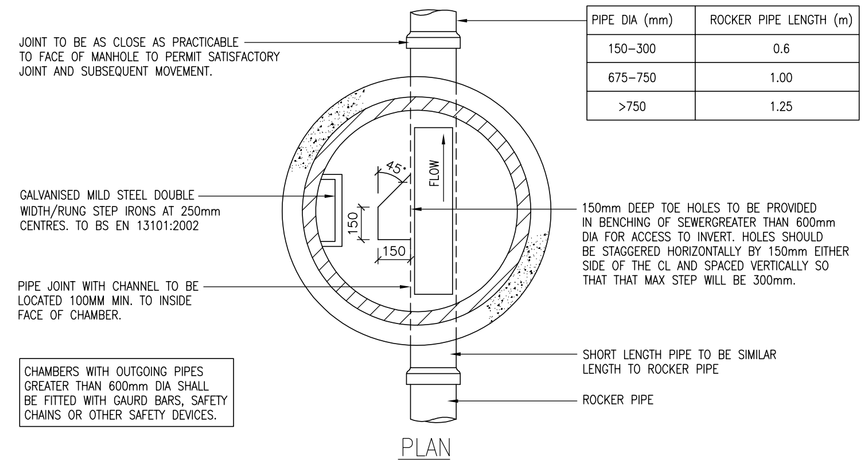


PLAN

TYPE B
MAX DEPTH FROM COVER TO SOFFIT OF PIPE 1.50 m – 3.00m

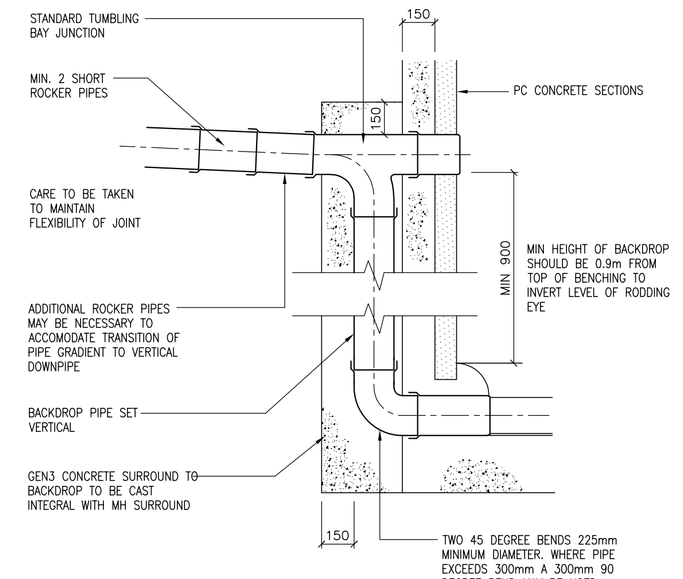


SECTION



PLAN

TYPE A
DEPTH TO SOFFIT OF PIPE 3.00 – 6.00m



TYPICAL VERTICAL BACKDROP DETAIL

MANHOLE NOTES

REFER TO TABLE BELOW FOR DETAILS OF CHAMBERS TO BE FITTED WITH GUARD BARS, SAFETY CHAINS OR OTHER SAFETY DEVICES.

THE SAFETY POLICY OF YORKSHIRE WATER MAY REQUIRE A LARGER MINIMUM CLEAR OPENING INTO MANHOLES AND THE FITTING OF GUARD BARS, SAFETY CHAINS OR OTHER SAFETY DEVICES IN MANHOLES WITH OUTGOING PIPES OF LESS THAN 600MM DIAMETER.

SELF CLEANING TOE HOLES TO BE PROVIDED IN BENCHING OF SEWER GREATER THAN 600MM DIAMETER FOR ACCESS TO INVERT.

MANHOLES TO BE CONSTRUCTED IN ACCORDANCE WITH "SEWERS FOR ADOPTION" – 6TH EDITION

NOTES FOR SAFETY CHAINS

1. MILD STEEL – SAFETY CHAIN SHALL BE 8MM NOMINAL SIZE GRADE M(4) NON–CALIBRATED CHAIN, TYPE 1, COMPLYING WITH BS 4942: PART 2. AFTER MANUFACTURE, MILD STEEL SAFETY CHAINS SHALL BE HOT–DIP GALVANIZED IN ACCORDANCE WITH BS 729.

2. STAINLESS STEEL – SAFETY CHAIN SHALL BE MANUFACTURED FROM GRADE 316S31 STEEL COMPLYING WITH BS 970: PART 1. CHAIN LINKS SHALL BE WELDED AND HAVE AN INTERNAL LENGTH NOT EXCEEDING 45MM AND AN INTERNAL WIDTH OF BETWEEN 12MM AND 18MM. THE FINS CAUSED BY WELDING SHALL BE REMOVED AND THE WELD SHALL BE SMOOTHLY FINISHED ALL ROUND. WHEN TESTED IN ACCORDANCE WITH CLAUSE 7.3 OF BS 4942: PART 2, EACH CHAIN SHALL WITHSTAND A BREAKING FORCE OF 30KN AND A PROOF FORCE OF 15KN.

1. DO NOT SCALE THIS DRAWING. IF IN DOUBT ASK.

2. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL RELEVANT ARCHITECT'S, ENGINEER'S AND SPECIALIST'S DRAWINGS AND SPECIFICATIONS.

3. ALL DIMENSIONS IN MILLIMETRES UNLESS NOTED OTHERWISE. ALL LEVELS IN METRES UNLESS NOTED OTHERWISE.

4. ANY DISCREPANCIES NOTED ON SITE ARE TO BE REPORTED TO THE ENGINEER IMMEDIATELY.

5. ALL ADOPTABLE SEWER WORKS AND MATERIAL TO BE IN ACCORDANCE WITH "SEWERS FOR ADOPTION" 6TH EDITION AND YORKSHIRE WATER'S REQUIREMENTS.

6. MANHOLE COVERS MUST / SHALL HAVE A CLEAR OPENING OF 600mm AND SHALL BE CLASS D400 TO BS EN 124 WITH 150mm DEEP FRAMES IN HIGHWAYS.

7. FILLED GROUND MUST BE FILLED AND CONSOLIDATED UNDER THE SUPERVISION AND TO THE SATISFACTION OF YORKSHIRE WATER BEFORE ANY SEWER WORKS ARE CARRIED OUT.

8. THE ADOPTABLE SEWERS SHOULD BE A MINIMUM OF 1m AND MANHOLES 0.5m FROM KERB FACES AND SERVICE MARGINS.

9. SEWERS TO BE LAID IN CLASS 'S' BEDDING (150mm GRANULAR BED AND SURROUND). WHERE DEPTH OF COVER TO TOP OF THE SEWER IS LESS THAN 1.2m IN HIGHWAYS AND VERGES (OR LESS THAN 900mm IN NONE VEHICULAR AREAS) THEN A CONCRETE SLAB SHOULD BE PROVIDED ABOVE GRANULAR BED AND SURROUND.

10. SEWERS MUST HAVE 5m CLEARANCE FROM TREES AND HEDGES.

11. 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.

12. ALL HIGHWAY AND DRAINAGE DETAILS ARE SUBJECT TO THE APPROVAL OF THE RELEVANT AUTHORITIES PRIOR TO CONSTRUCTION.

13. COVER SLABS MUST CARRY THE BSI KITEMARK OR WILL BE REJECTED BY YORKSHIRE WATER INSPECTOR. A 600mm x 600mm CLEAR OPENING IS REQUIRED.

DRAINAGE NOTES

1. DRAINAGE TO BE CONSTRUCTED IN ACCORDANCE WITH SEWERS FOR ADOPTION 6TH EDITION AND THE REQUIREMENTS OF YORKSHIRE WATER.

2. THE MINIMUM CRUSHING STRENGTH FOR CONCRETE PIPES SHOULD BE TO BS EN 1916 / BS 5911–1 : 2002

3. ALL PIPE RUNS TO BE LAID WITH FLEXI–JOINTS.

4. ALL PIPES ENTERING AND EXITING MANHOLES ARE TO BE CONNECTED WITH PIPE SOFFITS LEVEL WHEREVER POSSIBLE.

5. BEDDING AND BACKING TO BE AS FOLLOWS:–

LOCATION	COVER TO SOFFIT	BEDDING
SEWERS UNDER ROADS, CAR PARKING AND VERGES	>1.2m	CLASS S GRANULAR BED AND SURROUND
	<1.2m	CONCRETE SLAB
SEWERS UNDER NON VEHICLE ACCESS AREAS	>0.9m	CLASS S GRANULAR BED AND SURROUND
	<0.9m	CONCRETE SLAB

6. THE FOLLOWING CONCRETE MIXES ARE TO BE USED (ALL IN ACCORDANCE WITH BS5328) :–

LOCATION	MIX REFERENCE	DETAILS (WHERE APPLICABLE)
CONCRETE SURROUND TO PIPES	GEN3	
CONCRETE BASE AND SURROUND TO MANHOLES	GEN3	

7. THE ABOVE CONCRETE MIXES HAVE BEEN SELECTED FOR BRE 365 CLASS 1 SULPHATES.

8. MANHOLE COVERS AND FRAMES TO BE DUCTILE IRON HEAVY DUTY GRADE D400 DOUBLE TRIANGULAR TO BS EN124 AND ARE TO BE GRADE A STANDARD IN VEHICULAR TRAFFICKED AREAS & HIGHWAYS.

9. MANHOLE COVERS AND FRAMES TO BE DUCTILE IRON MEDIUM DUTY GRADE B125 OR C250 CIRCULAR OR RECTANGULAR TO BS EN124 POSITIONS OUTSIDE VEHICULAR TRAFFICKED AREAS. REFER TO MANHOLE SCHEDULES FOR SPECIFIC TYPES AND LOCATIONS.

10. FIRST FLEXIBLE JOINT IN PIPES ADJACENT TO A MANHOLE SHALL BE A MAXIMUM OF 600MM FROM INSIDE FACE OF MANHOLE, CONNECTING TO ROCKER PIPE. THE MINIMUM LENGTH OF ROCKER PIPE IS AS FOLLOWS:–

PIPE DIAMETER	LENGTH OF ROCKER PIPE
150mm – 450mm	600mm
675mm – 750mm	1000mm
GREATER THAN 825mm	1250mm

11. GULLY CONNECTIONS SHALL BE TYPE Z BED AND SURROUND TO 1.2M DEPTH.

12. CHAMBERS SHALL BE SUBSTANTIALLY WATERTIGHT. JOINING MATERIAL FOR CHAMBER UNITS SHALL BE DESIGNATION:

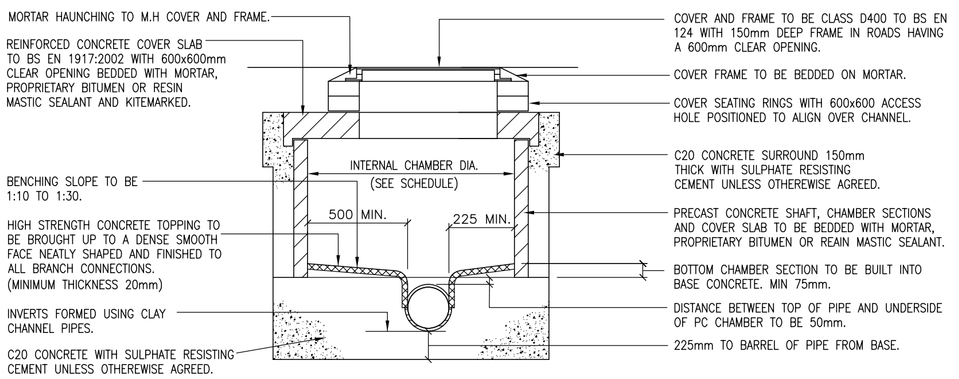
(I) MORTAR OR A PROPRIETARY BITUMEN OR RESIN MASTIC SEALANT WITH THE CONCRETE SURFACES PRIMED WITH AN APPROPRIATE COMPOUND.

13. ALL PRECAST CONCRETE PRODUCTS (IE PIPES, MANHOLES RINGS ETC.) SHALL BE OF SUITABLE CONCRETE MIX TO CATER FOR CLASS 1 SULPHATES.

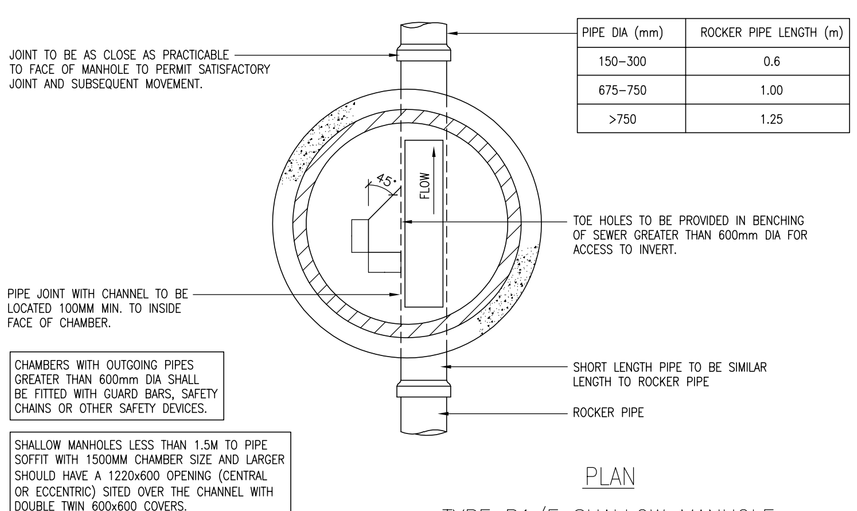
MINIMUM CLEAR ACCESS OPENING SIZES AND REQUIREMENTS FOR FITTINGS

SHAFT/CHAMBER SIZE DN	STANDARD ACCESS (SEWER DIAMETER–mm) MANHOLES TYPE 1.5m DEPTH TO SOFFIT OR GREATER			MANHOLE FITTING REQUEMENTS ALL MANHOLE TYPES		
WATER COMPANY	150mm to 874mm	875mm to 1074mm	1075mm or greater	DEPTH OF MANHOLE PERMITTED WITH DOUBLE ENCAPSULATED STEP RINGS	SAFETY CHAINS REQUIRED FOR PIPE SIZES	DEPTH OF MANHOLE REQUIRING LADDERS
ANGLIAN WATER	600mm x 600mm			LESS THAN 3m	600mm OR GREATER	GREATER THAN 3m
UNITED UTILITIES				LESS THAN 3m	600mm OR GREATER	GREATER THAN 3m
YORKSHIRE WATER				LESS THAN 6m	NO	GREATER THAN 6m
THAMES WATER				LESS THAN 3m	900mm OR GREATER	GREATER THAN 3m
SEVERN TRENT WATER				LESS THAN 3m	NO	GREATER THAN 3m
WELSH WATER	675mm x 675mm			NO	600mm OR GREATER (hooks only)	NO
NORTHUMBRIAN WATER				LESS THAN 3m	600mm OR GREATER	GREATER THAN 3m
SOUTHERN WATER				NO	NO	NO
SOUTH WEST WATER				LESS THAN 3m	375mm OR GREATER	GREATER THAN 3m LESS THAN 6m
WESSEX WATER				LESS THAN 3m	600mm OR GREATER	GREATER THAN 3m

DETAILS TAKEN FROM CPSA (CONCRETE PIPELINE SYSTEMS ASSOCIATION) TECHNICAL BULLETIN AUTUMN 2004.

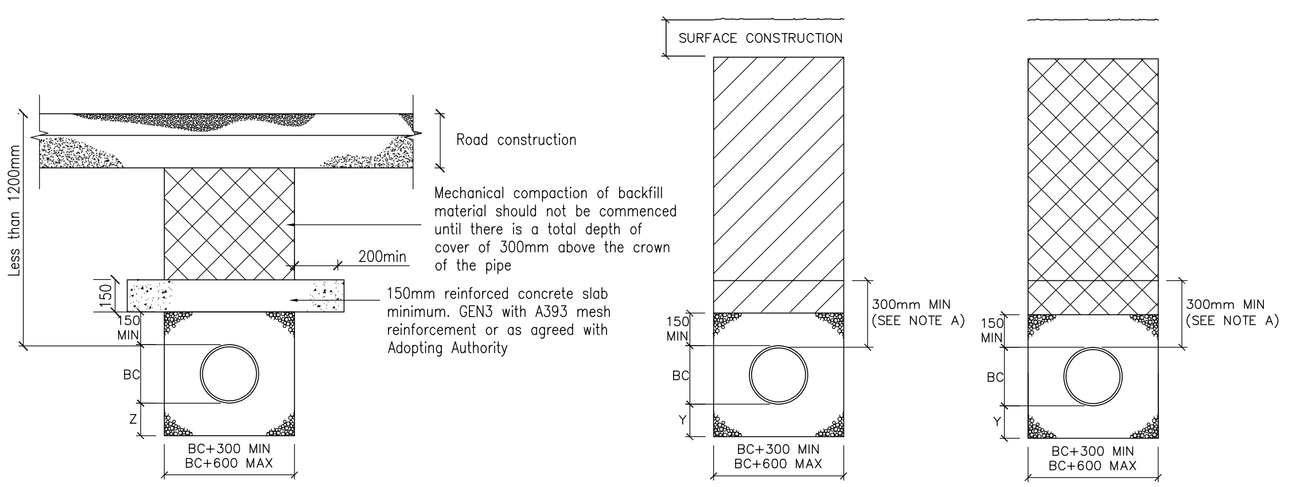


SECTION



PLAN

TYPE B1/E SHALLOW MANHOLE
DEPTH OF COVER TO PIPE 1–1.5m
OPENING TO BE SITED OVER CHANNEL



DRAINS WITH CONCRETE SLAB PROTECTION

APPLICABLE UNDER ROADS AND VERGES WHERE DRAINS HAVE LESS THAN 1200 COVER.

AND

APPLICABLE UNDER NON–TRAFFICKED AREAS WHERE DRAINS HAVE LESS THAN 900 COVER.

DRAINS WITH FLEXIBLE BED & SURROUND

TYPE 'S'

APPLICABLE UNDER ROADS / SERVICE YARDS WHERE DRAINS HAVE MORE THAN 1200 COVER (IF ADOPTED) OR MORE THAN 600 COVER (IF NOT ADOPTED)

TYPE 'S'

APPLICABLE UNDER FOOTPATHS VERGES AND OTHER NON–TRAFFICKED AREAS WHERE DRAINS HAVE MORE THAN 900 COVER (IF ADOPTED) OR MORE THAN 600 COVER (IF NOT ADOPTED) [100 DIA. RIGID PIPE CAN HAVE MIN. COVER OF 300MM].

BEDDING & TRENCH DETAILS

KEY

BC	OUTSIDE DIAMETER OF PIPE.
Y	BC/6 OR 150mm UNDER BARRELS AND UNDER SOCKETS. (400mm MAX.) OR
Y	BC/4 OR 200mm UNDER BARRELS AND 150mm MIN. UNDER SOCKETS WHICHEVER IS GREATER (400mm MAX.) FOR TRENCHES IN HARD MATERIAL.
Z	BC/4 OR 150mm MIN UNDER BARRELS WHICHEVER IS GREATER.
	EARTHWORKS OUTLINE.
	GRANULAR MATERIAL (SEE TABLE)
	SELECTED CLEAN EXCAVATED MATERIAL TO CLAUSE 505 & 601, CLASS 1, 2, OR 3.
	GRANULAR TYPE 1 MATERIAL DEPOSITED IN LAYERS NOT EXCEEDING 225MM UNCONSOLIDATED THICKNESS AND THEN FULLY COMPACTED.
	GRADE GEN3 CONCRETE (20MM AGGREGATE)

GRANULAR MATERIAL	
DIA. OF DRAIN	AGGREGATE
100mm	10mm SINGLE SIZE
150mm	10mm OR 14mm SINGLE SIZE OR 5–20mm GRADED.
225mm–525mm	10mm OR 14mm SINGLE SIZE OR 5–20mm GRADED.
OVER 525mm	10, 14, 20 OR 40mm SINGLE SIZE OR 5–20mm GRADED.

NOTE A
NO MECHANICAL COMPACTION WITHIN 300MM OF CROWN OF PIPE.

NOTE B
WHERE DRAINS ARE LAID UNDER BUILDINGS REFER TO ENGINEER FOR FURTHER DETAILS.

Rev	Details	Date	Drwn	Chk

Partner Construction

Darfield Foulstone School
Nanny Marr Road, Darfield, Barnsley

Typical Yorkshire Water details

Dwg No. : STE/19/03/05

Date : 14-2-19

Scale : NTS

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