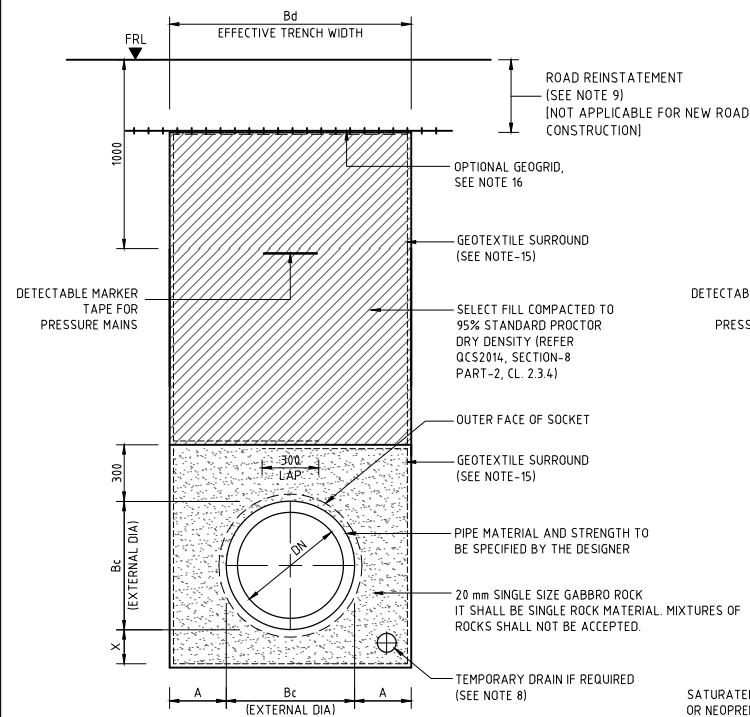
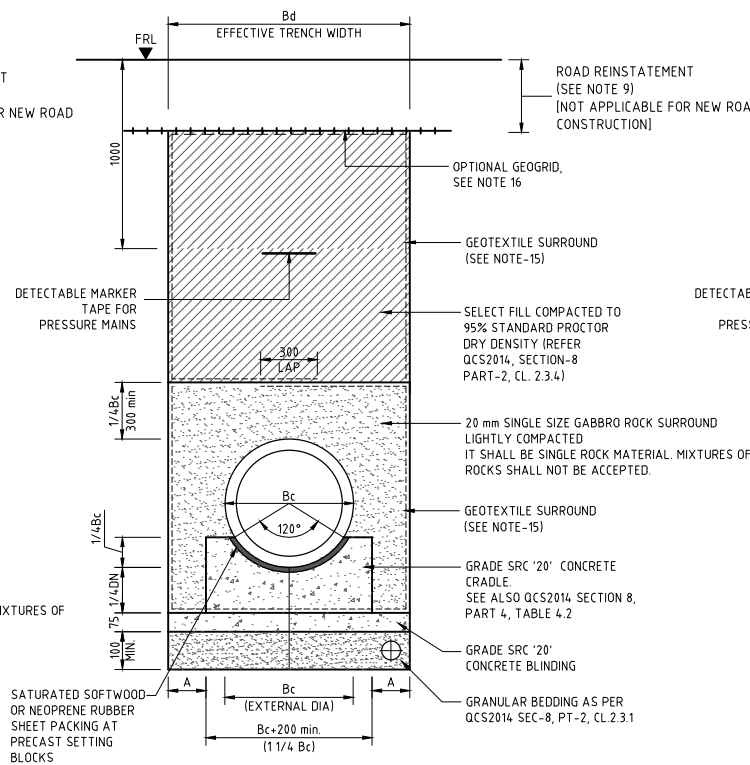
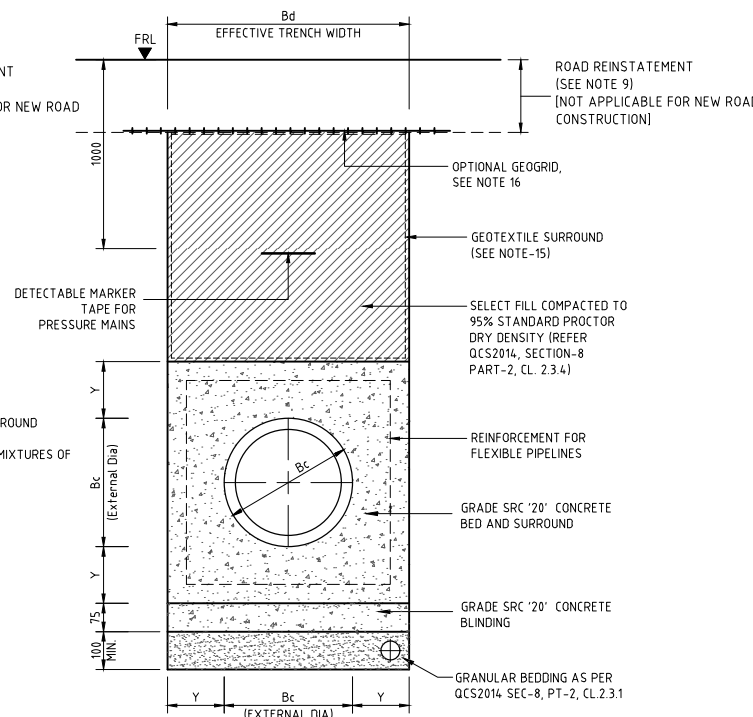




**GRANULAR BED & SURROUND
CLASS-S
BEDDING FACTOR = 2.2**



**CONCRETE CRADLE
BEDDING FACTOR = 2.6**



**CONCRETE SURROUND
BEDDING FACTOR = 4.5**

**TABLE OF DIMENSIONS
CONCRETE SURROUND**

NOMINAL BORE	ASSUMED EXTERNAL PIPE DIA	MIN THICKNESS CONCRETE
DN	Bc	Y
100	130	150
150	185	150
200	245	150
300	370	150
400	500	150
500	615	150
600	730	250
800	970	250
900	1140	250
1000	1250	300
1100 [SEE NOTE 9]	1350	300
1200	1490	350
1300	1605	350
1400	1725	350
> 1400	-	400

NOMINAL DIA	'T'	T2
LESS THAN 300	13	25
300 < D < 600	25	
600 < D < 1200	38	
1200 < D < 2000	50	38

SEE SD 8-2-104 FOR DETAIL OF PIPE WITH COLLAR FITTINGS

NOTE:

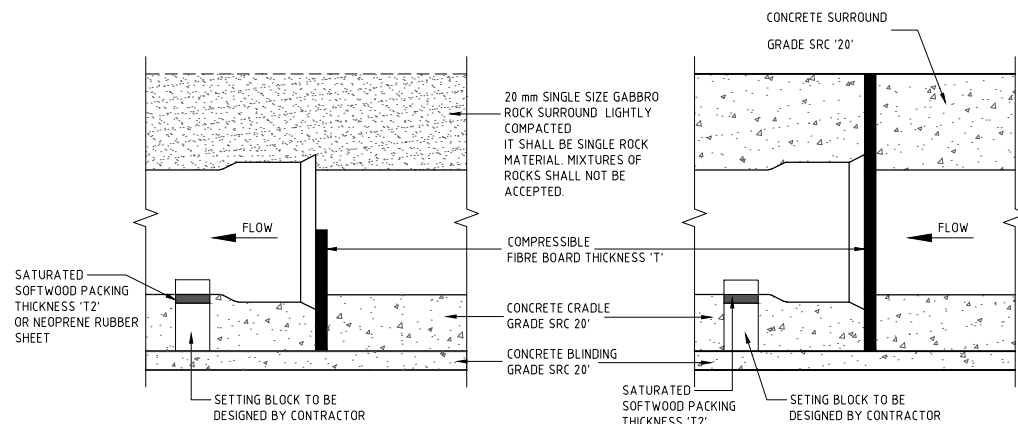
- FOR CONCRETE CRADLE & SURROUND TRENCHES THE BLINDING LAYER IS FOR STABILIZATION OF FOUNDATION TRENCH FOR RIGID/FLEXIBLE PIPE TRENCH. THIS IS TEMPORARY WORKS AT CONTRACTOR'S EXPENSE.
- NEOPRENE RUBBER SHEET SHALL BE OF THICKNESS 'T2' MENTIONED ABOVE AND SHALL HAVE DENSITY 160 KG/M³, TENSILE STRENGTH 4KG/M² (MIN.) AND HEAT SHRINKAGE LESS THAN 4% AND WATER ABSORPTION 0.5% (MAX.)

NOTES:

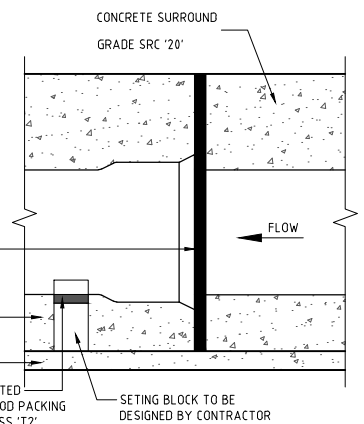
- ALL DIMENSIONS ARE IN MILLIMETRES UNLESS OTHERWISE STATED.
- ALL MATERIALS AND WORKMANSHIP SHALL BE IN ACCORDANCE WITH THE CURRENT Q.C.S. UNLESS OTHERWISE AGREED WITH THE ENGINEER.
- VARIATION TO STANDARD DETAILS ARE PERMITTED TO MEET SITE SPECIFIC REQUIREMENTS SUBJECT TO ENGINEERS APPROVAL.
- PIPE MATERIAL AND REQUIRED STRENGTH TO BE SPECIFIED BY THE DESIGNER.
- PIPE BEDDING FACTOR IN ACCORDANCE WITH BS 1295-1:1998.
- WHERE TRENCH WIDTHS EXCEED THE MAXIMUM PERMISSIBLE WIDTH DETAILED ABOVE AND/OR THE CRUSHING STRENGTH OF PIPE IS NOT THE SAME AS SPECIFIED. THE CONTRACTOR SHALL SUBMIT TO THE ENGINEER CALCULATIONS TO PROVE THE INTEGRITY OF THE PIPELINE. ANY ADDITIONAL COST AS A RESULT OF ANY REQUIRED CHANGE IN BEDDING SHALL BE THE CONTRACTOR'S RESPONSIBILITY.
- WATER SHALL NOT BE PERMITTED IN THE TRENCH DURING CONSTRUCTION.
- TEMPORARY DRAIN (PERFORATED PIPE) IS TO BE PROVIDED IN TRENCH EXTENDING BELOW WATER TABLE. ABANDON AND GROUT UPON COMPLETION.
- SEE REINSTATEMENT DETAILS DRG Nos. SD 6-1-201 TO SD 6-1-205 FOR CONSTRUCTION IN EXISTING PAVEMENT.
- DETECTABLE WARNING TAPE TO BE PLACED 300-500 BELOW FINISHED GROUND LEVEL FOR PRESSURE MAINS.
- CUT-OFF WALLS TO BE INSTALLED TO REQUIREMENTS OF Q.C.S.
- WHERE CONCRETE BED OR SURROUNDS ARE USED WITH GRP AND PVC-U PIPES, THE MAXIMUM SPACING BETWEEN JOINTS SHALL BE 3.0m.
- MATERIAL TESTING FREQUENCIES SHALL BE IN ACCORDANCE WITH QCS 2014.
- LIMITS OF PHYSICAL, CHEMICAL AND MECHANICAL PROPERTIES FOR GRADED AGGREGATE SHALL BE IN ACCORDANCE WITH QCS 2014, SECTION 6, PART 17, TABLE 17.4.
- GEOTEXTILE SHALL BE NONWOVEN NEEDLE-PUNCHED GEOTEXTILE MANUFACTURED FOR SUBSURFACE DRAINAGE APPLICATIONS AS PER QCS 2014, SECTION 6, PART 18, CLAUSE 18.2.2
- GEOGRID TO BE PLACED BETWEEN MODIFIED SELECT FILL AND SUB-BASE WHEN TRAFFIC LOADS EXCEED 20 MILLION ESAL'S. GEOGRID TO BE USED SHOULD BE AS PER QCS SECTION 6, PART 18 AND AS DIRECTED BY THE ENGINEER IF REQUIRED. OVERLAP OF GEOGRID SHALL BE AS PER MANUFACTURERS SPECIFICATIONS.
- WHERE REQUIRED, FILL FOR TEMPORARY DRAIN SHALL BE GRANULAR MATERIAL AS PER QCS2014 SEC-8, PT-2, CL.2.3.1

LEGEND:

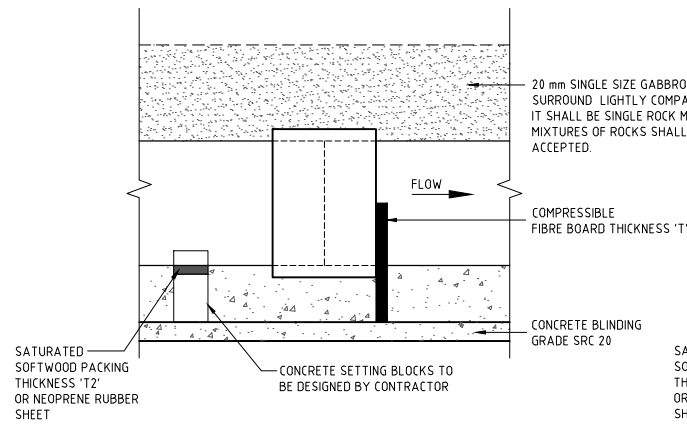
- FRL FINISHED ROAD LEVEL
- CLSM CONTROLLED LOW STRENGTH MATERIAL
- FTB FLUIDIZED THERMAL BACKFILL
- SRC SULPHATE RESISTANT CEMENT CONCRETE



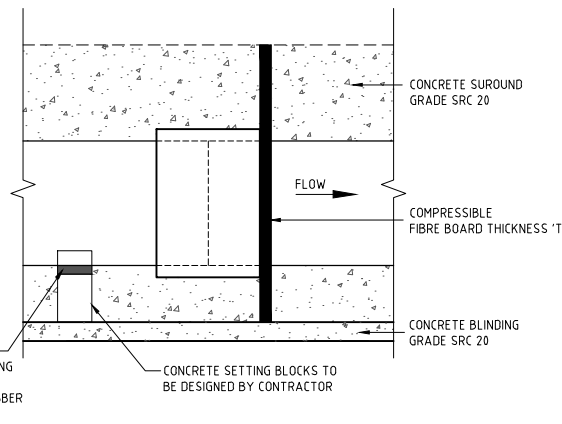
**DETAIL AT SPIGOT & SOCKET IN
CONCRETE CRADLE**



**DETAIL AT SPIGOT & SOCKET IN
CONCRETE SURROUND**



**DETAIL AT DOUBLE BELL COUPLING IN
CONCRETE CRADLE**



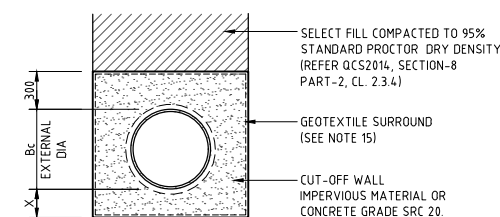
**DETAIL AT DOUBLE BELL COUPLING IN
CONCRETE SURROUND**

**TABLE OF DIMENSIONS FOR GRANULAR BED,
SURROUND & GRAVEL SIZE - FLEXIBLE PIPES**

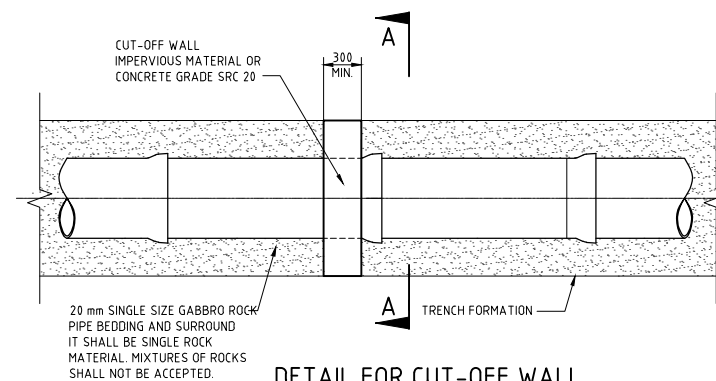
PIPE DIA	MAXIMUM PERMISSIBLE TRENCH WIDTH	X	A	PIPE BEDDING MATERIAL SIZE
D	AT 300MM ABOVE CROWN OF PIPE			
100	550	250	100	10
150	600	250	100	10
200	800	250	150	10
300	900	250	150	14
400	1000	250	200	14
500	1250	250	200	14
600	1350	250	300	14
800	1550	250	300	14
1000	2000	250	450	14
1200	2300	250	450	14
1400	2500	250	450	14
1500	2700	250	450	14

NOTE:

- BEDDING AT SIDES OF PIPE TO BE WELL COMPACTED.
- DIMENSION X:
 - MINIMUM THICKNESS OF GRANULAR BEDDING UNDER SOCKET FOR UNIFORM SOIL, MACHINE DUG & ROCK IS 50mm, 100mm & 150mm RESPECTIVELY.
 - MACHINE DUG: 1/6Bc OR 100MM UNDER BARRELS & 100MM UNDER SOCKETS WHICHEVER IS GREATER (400 MAX).
 - ROCK etc: 1/4Bc OR 200MM UNDER BARRELS & 150MM UNDER SOCKET (400 MAX).
 - FOR GRP PIPES, THE MINIMUM THICKNESS BELOW PIPE BARREL SHALL BE 300.
- FOUNDATION STABILIZATION WHERE DIRECTED, FOUNDATION STABILIZATION SHALL BE PLACED PRIOR TO PLACEMENT OF PIPE BEDDING.
- WHERE APPROPRIATE GEOTEXTILES MAY BE USED TO CONTAIN BEDDING MATERIAL.
- GRADING FOR GRANULAR MATERIAL FOR PIPE BEDDING TO BE IN ACCORDANCE WITH TABLE 2.4 OF Q.C.S. SECTION 08, PART 02.



SECTION A-A



DETAIL FOR CUT-OFF WALL

9	JULY 24	REPLACE IGNEOUS OR METAMORPHIC WITH GABBRO	
8	FEB 22	REPLACE GABBRO WITH IGNEOUS OR METAMORPHIC	
7	MAR 21	TABLE 1 AND TEXT REMOVED, NOTE 17	
6	MAR 20	NOTE ON GEOTEXTILE, GEOGRID ADDED & CAPPING CONC. REMOVED	
Rev.	Date	Revision Details	Appd.

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QCS Section:
**Section 8 - Drainage Works
Part 2 - Earthworks**

Drawing Title:
**PIPE BEDDING DETAILS
FOR FLEXIBLE PIPES**

Approved:	Sheet No: 1 OF 1
Date: MAR 20	Scale: N.T.S.
Drawing Number: SD 8-2-308	Revision: 9