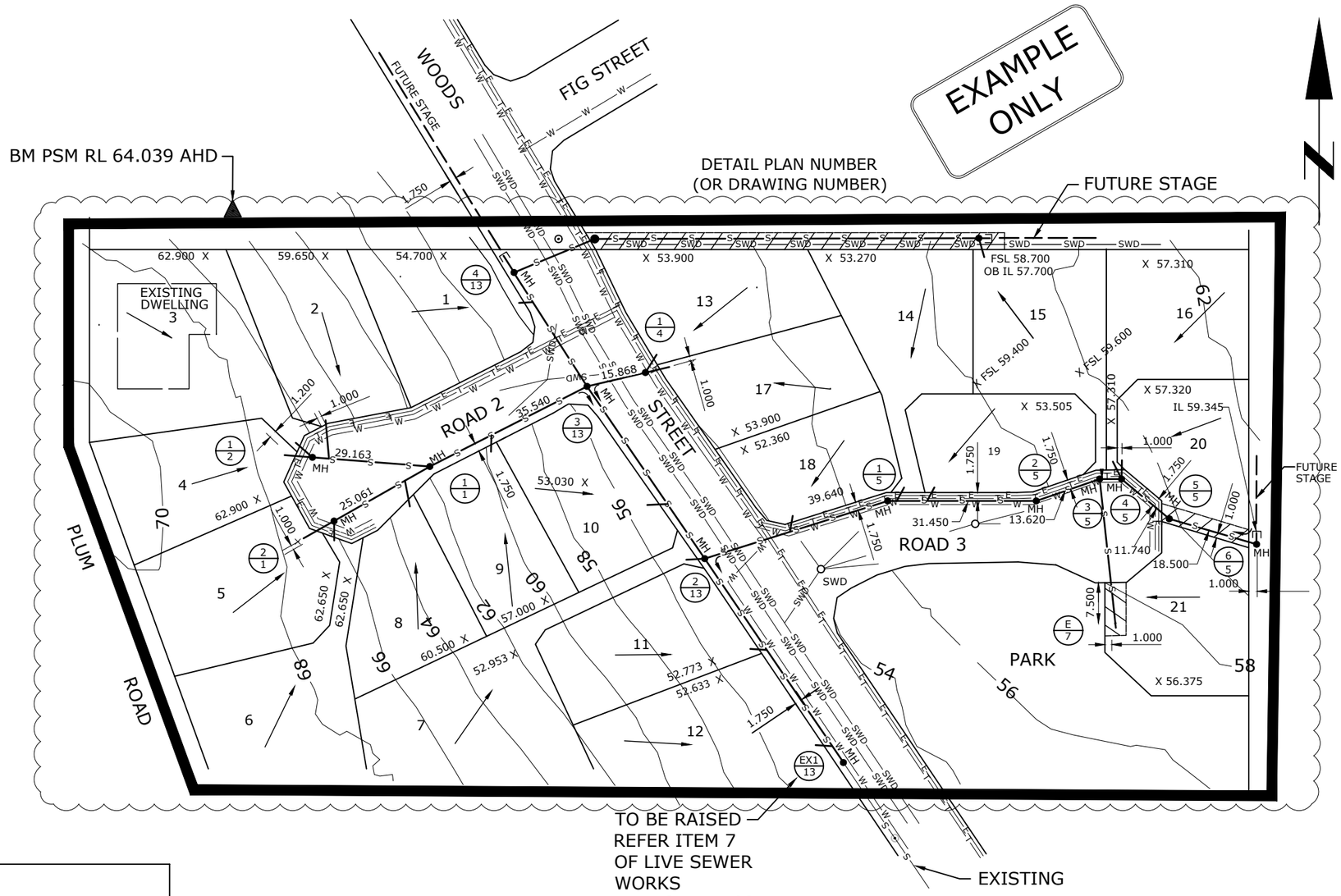
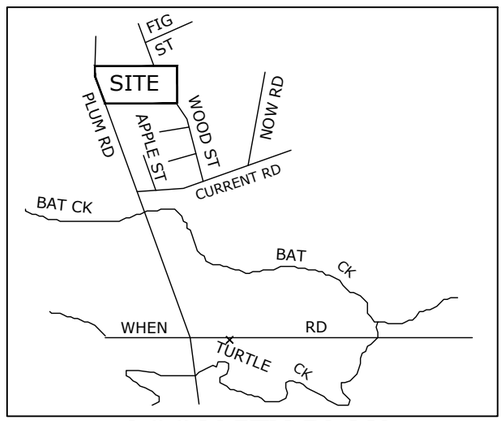


SITE PLAN

SCALE 1 : 500



LOCALITY PLAN

SCALE 1:2500 MAP GRID NO. J10

EXAMPLE ONLY

PROPERTY CONNECTIONS HAVE BEEN DESIGNED TO CONTROL THE REQUIRED SERVICE AREA OF EACH LOT AT A GRADE OF 1:60 AND A MAXIMUM DEPTH OF PROPERTY CONNECTION AT 1.5 m. UNLESS OTHERWISE STATED. FOR PROPERTY CONNECTION DETAILS REFER **WBB-SEW-1104 AND WBB-SEW-1106 SET AS APPROVED.**

SEWER DISUSED				JOB NO. W.O. 4653		NUMBER OF MH & RODDING END			
LOCATION	DWG NO.	DIA.	TYPE	LENGTH	YEAR LAID	MH IN-SITU	MH PRECAST	RODDING END	OTHER
PRIVATE PROP.	78/91	150	PVC	71.000	1990	-	-	-	-

REV. No.	DATE	DESCRIPTION	AUTH.
A		BASED ON WBB-SEW-1100-2 VERSION B DATED 20/07/15	

WBBROC WATER SERVICE PROVIDERS

WORK PRACTICES MUST COMPLY WITH ALL APPLICABLE OCCUPATIONAL HEALTH & SAFETY LEGISLATION

SEWERAGE STANDARD DRAWING

DESIGN LAYOUT
RIGSS/ NUSEWER
TYPICAL LOCALITY & SITE PLAN

BRC	FCRC	GRC	NBRC	SBRC

DRAWING No. WBB-SEW-1100-2

VERSION A

NOT TO SCALE

ORG DATE:

EXAMPLE ONLY

PROPERTY CONNECTION (PC) DETAILS
LOT No. xx PC INVERT LEVEL (IL) xx.xxx
PC CH TO DS MH/MS xx.xxx PC DEPTH (D) x.xxx

SERVICE CONFLICT DETAILS
SERVICE SIZE ØDN. xxx SERVICE TYPE XXXXXX
CROWN LEVEL CR xx.xxx CLEARANCE CL x.xxx
OR INVERT LEVEL I.L. xx.xxx

DATUM

MAINTENANCE HOLE/SHAFT No.	3/13	1/1	2/1	1/1	2/2	3/13	1/4	1A/13	1/5	2/5	3/5	4/5	5/5	6/5
MH COVER TYPE	D	B	B	B	B	B	B	B	B	B	B	B	B	B
MH TYPE	B	J	J	J	J	B		A	B	B	B	B	B	B
MH DROP TYPE	V	V	V	V	V	V	V	V	V	V	V	V	V	V
BRANCH LINE No.	4	2	3	1	3	1		1						
PROPERTY CONNECTION TYPE	A	A	A	A	B	A	A		B	B	B			

PROPERTY DESCRIPTION	LINE 1				LINE 2			LINE 4			LINE 5				
PIPE NOMINAL DIAMETER (DN) TYPE, CLASS	DN150 PVC SN8				DN150 PVC SN8			DN150 PVC SN8			DN150 PVC SN8				
GRADE (1 IN X)	6.580	6.690			7.38			99.18			25.820	13.780	13.78	13.400	9.340
LENGTH	35.540	25.016			29.163			15.868			39.640	31.450	13.620	0.980	14.740	18.500
EMBEDMENT TYPE	TYPE 3				TYPE 3			TYPE 5			TYPE 3				
DEPTH OF INVERT BELOW FSL	1.795	1.595	1.700	1.660	1.700	1.620	1.380	1.795	1.595	1.620	3.390	1.750	1.835	2.275	2.350	2.515	2.515	2.450	1.860	1.780
INVERT LEVEL (IL)	53.220	53.420	58.820	58.860	62.600	58.820	58.900	62.850	53.220	53.420	53.580	49.670	51.310	52.845	55.205	56.115	56.185	56.185	57.285	59.265	59.345
FINISHED SURFACE LEVEL (FSL)	55.015		60.520		63.960	60.520		64.230	55.015		55.200	53.060		54.680	57.480	58.465	58.700	59.735	61.125		
EXISTING SURFACE LEVEL (ESL)	54.728		61.570		66.954	61.570		67.112	54.728		55.200	53.285					59.135		61.290		
CHAINAGE (CH)	0.000		35.540	58.553	60.556	0.000	26.813	29.163	0.000	7.796	12.774	15.868	0.000	39.640	71.090	84.710	85.690	100.430	118.930		

LINE NUMBER

SCALES: 1 : 1000 HORIZONTAL
1 : 100 VERTICAL

LEGEND
FP = VERGE
PP = PRIVATE PROPERTY

MAINTENANCE HOLE TYPES
P1-P3 = PRE-CAST CONCRETE
A = CONCRETE **1.050**Ø
B = CONCRETE 1.200Ø
C = CONCRETE 1.500Ø
FOR OTHER TYPES REFER TO WBB-SEW-1300 SET
MH COVER TYPES REFER TO WBB-SEW-1308 SET

LONGITUDINAL SECTIONS

Ⓑ **= CLASS B NON TRAFFICABLE**

Ⓓ **= CLASS D TRAFFICABLE**

THE LONGITUDINAL SECTION FOR LINES No.6, No.7 AND No.13 HAS NOT BEEN PROVIDED.

SOME UTILITY INFORMATION HAS BEEN OMITTED FOR CLARITY AT THIS SCALE. HOWEVER, CHAINAGE, INVERT OR CROWN LEVEL AND DESCRIPTION eg. 2 x 100 TELSTRA CONDUITS etc, SHALL BE SHOWN FOR ALL UTILITY SERVICES.

NOTES:

1. ALL LEVELS, CHAINAGES & DISTANCES IN METRES.
2. REFER WBB-SEW-1200 SERIES FOR BEDDING & BACKFILL REQUIREMENTS.
3. REFER WBB-SEW-1300 SERIES FOR MAINTENANCE STRUCTURE TYPES AND DROPS.
4. PIPE MATERIAL TO BE SPECIFIED AS REQUIRED.
5. REFER WBB-SEW-1104 AND WBB-SEW-1106 FOR PROPERTY CONNECTION TYPES.
6. **DELETED**.
7. REFER WBB-SEW-1206-1 FOR BULKHEAD AND TRENCHSTOP DETAILS.
   FOR SPACING REQUIREMENTS REFER TABLE 8.1 OF SEWERAGE CODE.

EXAMPLE ONLY

REV. No.	DATE	DESCRIPTION	AUTH.
A		BASED ON WBB-SEW-1101-2 VERSION B DATED 2/07/15	

WBBROC WATER
SERVICE PROVIDERS

WORK PRACTICES MUST COMPLY WITH ALL APPLICABLE OCCUPATIONAL HEALTH & SAFETY LEGISLATION

SEWERAGE STANDARD DRAWING

DESIGN LAYOUT
RIGSS/ NUSEWER
TYPICAL LONGITUDINAL SECTIONS

BRC	FCRC	GRC	NBRC	SBRC

DRAWING No. WBB-SEW-1101-2

VERSION A

NOT TO SCALE

ORG DATE:

TYPICAL NOTES TO BE INCLUDED WITH DRAWING SET

ENVIRONMENTAL CONDITIONS

PLACE ON YOUR DRAWING NOTES AS RECEIVED IN YOUR APPROVAL LETTER FROM THE ENVIRONMENTAL REGULATOR OR MANAGER. IF NOTES RELEVANT TO THIS ESTATE ARE NOT SPECIFIED IN YOUR APPROVAL LETTER, TYPICAL NOTES AS FOLLOWS SHALL BE PLACED ON ALL DRAWINGS.

VEGETATION PROTECTION

A. TREES LOCATED ALONG THE FOOTPATH SHALL BE, TRANSPLANTED PRIOR TO CONSTRUCTION, OR REPLACED IF DESTROYED.
B. WHEN WORKING WITHIN 4 m OF TREES, RUBBER OR HARDWOOD GIRDLES SHALL BE CONSTRUCTED WITH 1.8 m BATTENS CLOSELY SPACED AND ARRANGED VERTICALLY FROM GROUND LEVEL. GIRDLES SHALL BE STRAPPED TO TREES PRIOR TO CONSTRUCTION AND REMAIN UNTIL COMPLETION.
C. TREE ROOTS SHALL BE TUNNELLED UNDER, RATHER THAN SEVERED. IF ROOTS ARE SEVERED THE DAMAGED AREA SHALL BE TREATED WITH A SUITABLE FUNGICIDE. CONTACT RELEVANT COUNCIL ARBORIST FOR FURTHER ADVICE.
D. ANY TREE LOPPING REQUIRED SHOULD BE UNDERTAKEN BY AN APPROVED ARBORIST.

SOIL

A. TOPSOIL AND SUBSOIL SHALL BE STOCKPILED SEPARATELY.
B. CARE SHALL BE TAKEN TO PREVENT SEDIMENT FROM ENTERING THE STORMWATER SYSTEM. THIS MAY INVOLVE PLACING APPROPRIATE SEDIMENT CONTROLS AROUND STOCKPILES.
C. ACID SULPHATE SOILS EXIST IN THE WORKS AREA. THE OUTPUTS FROM THE RISK ASSESSMENT BASED ON THE QUEENSLAND ACID SULPHATE SOIL TECHNICAL MANUAL REQUIRES THAT ACID SULPHATE SOILS BE MANAGED AS FOLLOWS: (DELETE IF NO ACID SULPHATE SOILS)

CREEK CROSSINGS

A. SILTATION CONTROL MEASURES SHALL BE PLACED DOWNSTREAM OF ANY EXCAVATION WORK.
B. APPROPRIATE SEDIMENT CONTROLS SHALL BE USED TO PREVENT SEDIMENT FROM ENTERING THE CREEK.
C. NO SOIL SHALL BE STOCKPILED WITHIN 5 m OF THE CREEK.

REHABILITATION

A. PREDISTURBANCE SOIL PROFILES AND COMPACTION LEVELS SHALL BE REINSTATED.
B. PREDISTURBANCE VEGETATION PATTERNS SHALL BE RESTORED.

SAFETY

A. THE DESIGN AND CONSTRUCTION OF THE WORKS SHALL COMPLY WITH ALL QUEENSLAND LEGISLATION.

ALL ENVIRONMENT PROTECTION MEASURES SHOULD BE IMPLEMENTED PRIOR TO ANY CONSTRUCTION WORK, INCLUDING CLEARING, COMMENCING.

GENERAL NOTES

1. ALL WORK AND MATERIALS SHALL BE IN ACCORDANCE WITH CURRENT WIDE BAY BURNETT REGIONAL ORGANISATION OF COUNCILS SEWERAGE CODE SPECIFICATIONS AND STANDARDS.
2. UNLESS SPECIFIED OTHERWISE ALL MATERIALS AND WORK SHALL COMPLY WITH THE RELEVANT AUSTRALIAN STANDARDS.
3. THE CONSTRUCTION OF THE SEWERAGE WORK SHOWN ON THIS DRAWING SHALL BE SUPERVISED BY AN ENGINEER WHO HAS RPEQ REGISTRATION. SEWERAGE WORKS NOT COMPLYING WITH THIS REQUIREMENT WILL NOT BE PERMITTED TO CONNECT INTO THE WBBROC SERVICE PROVIDER SEWERAGE SYSTEM.
4. ALL WORK ASSOCIATED WITH LIVE SEWERS OR MAINTENANCE HOLES SHALL BE CARRIED OUT BY THE WBBROC SERVICE PROVIDER AT THE DEVELOPER'S COST.
5. ALL PIPES AND MATERIALS SHALL COMPLY WITH THE REQUIREMENTS OF THE "ACCEPTED PRODUCTS AND MATERIALS" LIST.
6. EACH ALLOTMENT SHALL BE SERVED BY A DN110 PE (OR DN100 PVC) PROPERTY CONNECTION. FOR ALLOTMENTS OTHER THAN SINGLE RESIDENTIAL, A DN160 PE (OR DN150 PVC) PROPERTY CONNECTION SHALL BE PROVIDED.
7. PROPERTY CONNECTIONS SHALL BE LOCATED WITHIN THE PROPERTY AS SHOWN IN THE DRAWINGS.
8. PROPERTY CONNECTION BRANCHES SHALL EXTEND 500 mm INTO PROPERTY.
9. WHERE PIPES ARE LAID IN FILL, THE FILLING SHALL BE CARRIED OUT IN LAYERS NOT EXCEEDING 300 mm (LOOSE) IN DEPTH AND SHALL BE COMPACTED UNTIL THE COMPACTION IS NOT LESS THAN 95% OF THE MATERIALS MAXIMUM COMPACTION WHEN TESTED IN ACCORDANCE WITH A.S. 1289 (MODIFIED COMPACTION). TESTING SHALL BE CARRIED OUT AFTER EACH ALTERNATE LAYER. IN ALL SUCH CASES APPROVAL OF CONSTRUCTED SEWERS WILL NOT BE ISSUED BY THE WBBROC SERVICE PROVIDER UNLESS CERTIFICATES ARE PRODUCED CERTIFYING THAT THE REQUIRED COMPACTION HAS BEEN ACHIEVED.
10. WHERE SEWERS HAVE A GRADE OF 1 IN 20 OR STEEPER,BULKHEADS SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE WBBROC SEWER CODE.
11. THE CONTRACTOR SHALL VERIFY THE LOCATION AND DEPTH OF EXISTING SERVICES WITH RELEVANT AUTHORITIES BEFORE COMMENCING WORKS.
12. SEWERS SHALL BE DISUSED /ABANDONED IN ACCORDANCE **SP DIRECTIVE**.
13. BENCH MARK AND LEVELS TO AHD.
14. THE EXISTING DWELLING ON LOT 3, REFER WBB-SEW-1100, SERVED BY A SEPTIC SYSTEM, SHALL BE CONNECTED TO THE NEW SEWER BY A LICENCED PLUMBER IN ACCORDANCE WITH THE RELEVANT STATUTORY AND COUNCIL REQUIREMENTS. THE SEPTIC SYSTEM, INCLUDING TRENCHES,SHALL BE REMOVED AT THE DEVELOPER'S COST. ALL FIXTURES SHALL BE UPGRADED IF REQUIRED BY PLUMBING CODE.
15. EXISTING ALLOTMENTS REQUIRING A PROPERTY CONNECTION FROM EXISTING SEWERS SHALL BE PROVIDED BY THE WBBROC SERVICE PROVIDER AT THE DEVELOPERS COST.
16. **SOME SP MIGHT ALLOW CONTRACTORS TO PERFORM WORK ASSOCIATED WITH NOTE 4 AND 15 UNDER SP SUPERVISION. WRITTEN APPROVAL MUST BE OBTAINED FROM SP.**

NAME OF ESTATE		SUNRISE ESTATE
SUBDIVIDER		JOPET PTY LTD
APPLICATION No.		253/50/5-CA20/95
SP DELEGATE APPROVAL DATE		7.12.94
DRAWING/PLAN No.		
No. OF ALLOTMENTS		26
AREA IN Ha.		2.828
LENGTH OF SEWERS	100 mm	40.000
	150 mm	327.100

REV. No.	DATE	DESCRIPTION	AUTH.
A		BASED ON SEQ-SEW-1101-3 VERSION A DATED 1/1/2013	

WBBROC WATER SERVICE PROVIDERS

WORK PRACTICES MUST COMPLY WITH ALL APPLICABLE OCCUPATIONAL HEALTH & SAFETY LEGISLATION

SEWERAGE STANDARD DRAWING

SEWERAGE RETICULATION
TYPICAL ESTATE DETAILS AND NOTES

BRC	FCRC	GRC	NBRC	SBRC

DRAWING No. WBB-SEW-1101-3

VERSION A

NOT TO SCALE

ORG DATE:

SERVICE PROVIDER AND CONSTRUCTOR LIVE SEWER WORKS - TYPICAL SCHEDULE

No.	DESCRIPTION (SOME WORKS LISTED ARE NOT SHOWN ON WBB-SEW-1100-2)	DIA. SEWER	MH NO.	MH/MS TYPE	COVER TYPE	LOT NO.	F.S.L.	E.S.L.	I.L.	DEPTH TO INVERT
1(A)	AGENCY * TO BREAK INTO EXISTING MAINTENANCE HOLE 5/1 AND CONSTRUCT A 150 mm STUB (TEMPORARILY END CAPPED) PRIOR TO START OF CONSTRUCTION.	150	1/1	P2	Ⓑ		61.227	61.227	59.530	1.697
1(B)	0.5m FROM STUB END CAP, CONSTRUCTOR TO LAY NEW LINE 5. AFTER CLEANSING, TESTING AND INSPECTING, NOTIFY AGENCY.									
1(C)	AGENCY TO REMOVE TEMPORARY END CAPS ON STUB & LINE 5 AND MAKE LIVE CONNECTIONS AFTER SUCCESSFUL "ON MAINTENANCE" INSPECTION.									
2(A)	AGENCY TO BREAK INTO EXISTING MAINTENANCE HOLE 3/13 AND CONSTRUCT 2/150 mm STUBS (TEMPORARILY END CAPPED) PRIOR TO START OF CONSTRUCTION.	225	3/13	P2	△		55.015	54.728	53.220	1.795
				(EXISTING D/S OUTLET)						
2(B)	CONSTRUCTOR TO LAY NEW LINES 1 AND 4. AFTER CLEANSING, TESTING AND INSPECTING, NOTIFY AGENCY.	150	3/13	P2	(LINE 1)		55.015	54.728	53.420	1.595
		150	3/13	P2	(LINE 4)		55.015	54.728	53.420	1.595
					(NEW STUBS)					
2(C)	AGENCY TO REMOVE TEMPORARY END CAPS ON STUBS & LINES 1 & 4 AND MAKE LIVE CONNECTIONS AFTER SUCCESSFUL "ON MAINTENANCE" INSPECTION.									
2(D)	AGENCY TO RAISE EXISTING MAINTENANCE HOLE 3/13 BY 0.287 m AND TO REPLACE TOP SLAB, COVER AND FRAME WITH A TRAFFICABLE ARRANGEMENT.	225	3/13	P2	Ⓓ		55.015	54.728	53.220	1.795
3(A)	CONSTRUCTOR TO CONSTRUCT NEW MAINTENANCE HOLE 1A/13 OVER EXISTING SEWER AND BENCH AND RENDER UP TO PIPE BUT NOT REMOVE CROWN OF PIPE.	225	1A/13	P2	Ⓑ		54.580	54.580	53.028	1.552
3(B)	CONSTRUCTOR TO LAY LINE 5 AND INSTALL HOUSE CONNECTIONS.	150	1A/13	P2	Ⓑ		54.580	54.580	53.230	1.350
		100				7	54.580	54.580	53.600	0.980
3(C)	AGENCY TO REMOVE CROWN OF PIPE AND COMPLETE BENCHING AFTER SUCCESSFUL "ON MAINTENANCE" INSPECTION OF LINE 5.	100				11	54.580	54.580	53.600	0.980
4(A)	AGENCY TO BREAK INTO EXISTING MAINTENANCE HOLE 2 AND CONSTRUCT 2/150 mm STUBS (TEMPORARILY END CAPPED) PRIOR TO START OF CONSTRUCTION.	150	2	C2	Ⓑ		58.913	58.913	57.293	1.620
4(B)	CONSTRUCTOR TO LAY NEW LINE 8 AND 9. AFTER CLEANSING AND TESTING, NOTIFY AGENCY.	150	2	C2	(LINE 8)		58.913	58.913	57.493	1.420
		150	2	C2	(LINE 9)		58.913	58.913	57.493	1.420
4(C)	AGENCY TO REMOVE TEMPORARY END CAPS ON STUBS & LINES 8 & 9 AND MAKE LIVE CONNECTIONS AFTER SUCCESSFUL "ON MAINTENANCE" INSPECTION.									
5(A)	AGENCY TO SEAL THE EXISTING 150Ø INLET IN EXISTING MAINTENANCE HOLE 2 AND 150Ø OUTLET IN THE EXISTING MAINTENANCE HOLE 1/1 (ADJACENT TO LOT 20) TO ABANDON THIS SECTION OF SEWER AFTER SUCCESSFUL "ON MAINTENANCE" INSPECTION.	150	2	D1	Ⓑ		58.913	58.913	57.293	1.620
		150	1/1	D1	Ⓑ		61.227	61.227	59.530	1.697
5(B)	CONSTRUCTOR TO REMOVE ABANDONED SEWER AND REINSTATE GROUND.									
6	AGENCY TO PROVIDE NEW HOUSE CONNECTION.	100				1	55.750	55.750	54.450	1.300
		100				12	54.250	54.250	52.950	1.300
7	AGENCY TO RAISE EXISTING MAINTENANCE HOLE 1/13 IN WOODS STREET BY 0.160 m TO SUIT NEW FOOTWAY LEVEL.	225	1/13	C2	Ⓑ		54.410	54.250	53.028	1.552

*AGENCY MEANS BUNDABERG REGIONAL COUNCIL OR FRASER COAST REGIONAL COUNCIL OR GYMPIE REGIONAL COUNCIL OR NORTH BURNETT REGIONAL COUNCIL OR SOUTH BURNETT REGIONAL COUNCIL (APPROVAL VALID FOR 12 MONTHS FROM DATE SHOWN) WITH ALL AGENCY WORK TO BE PAID FOR BY DEVELOPER VIA QUOTATION APPLICATION. AGENCY MAY PERMIT CONTRACTORS TO CARRY OUT ALL OR PART OF THE LIVE WORKS.

REV. No.	DATE	DESCRIPTION	AUTH.
A		BASED ON SEQ-SEW-1102-1 VERSION B DATED 22/07/15	

WBBROC WATER
SERVICE PROVIDERS

WORK PRACTICES MUST COMPLY WITH ALL APPLICABLE OCCUPATIONAL HEALTH & SAFETY LEGISLATION

SEWERAGE STANDARD DRAWING

DESIGN LAYOUTS
CONNECTION TO EXISTING SEWER
TYPICAL SCHEDULE OF WORKS

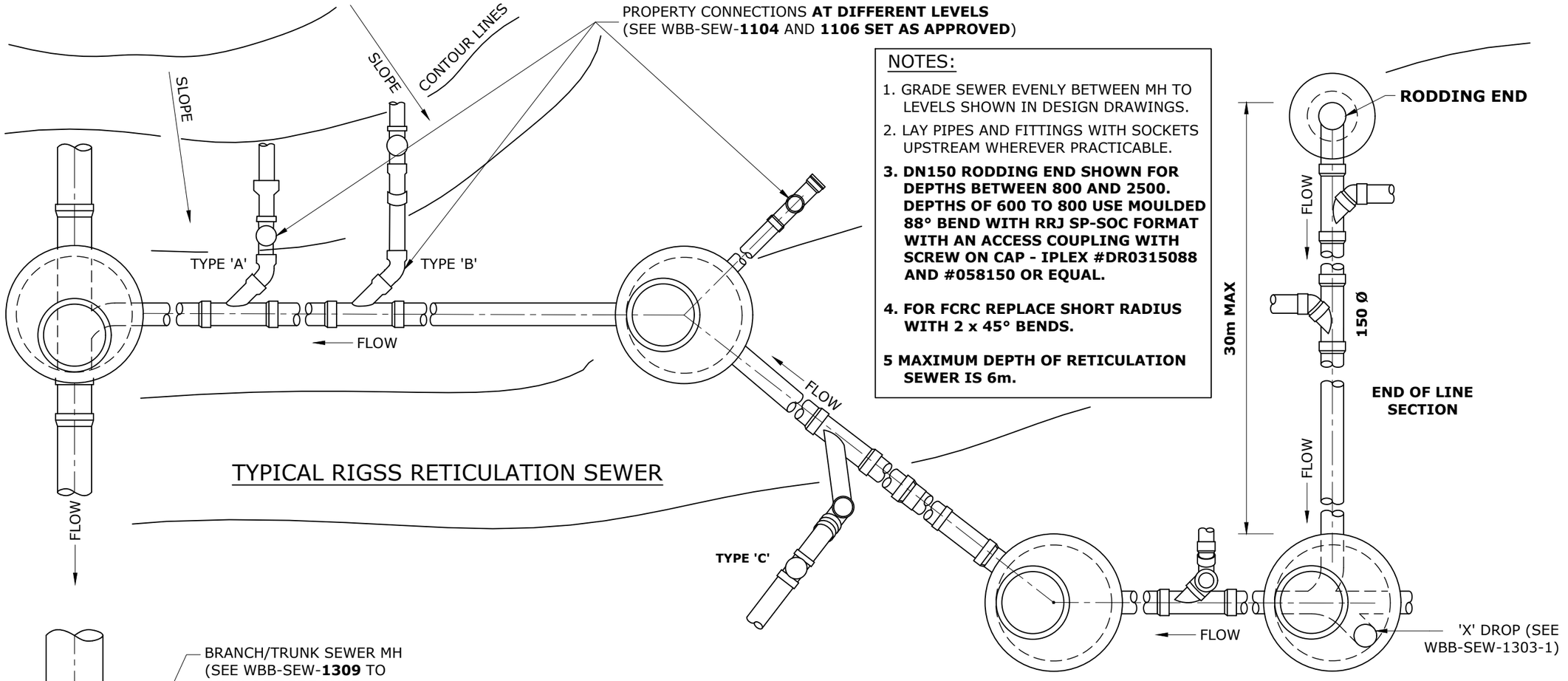
BRC	FCRC	GRC	NBRC	SBRC

DRAWING No. WBB-SEW-1102-1

VERSION A

NOT TO SCALE

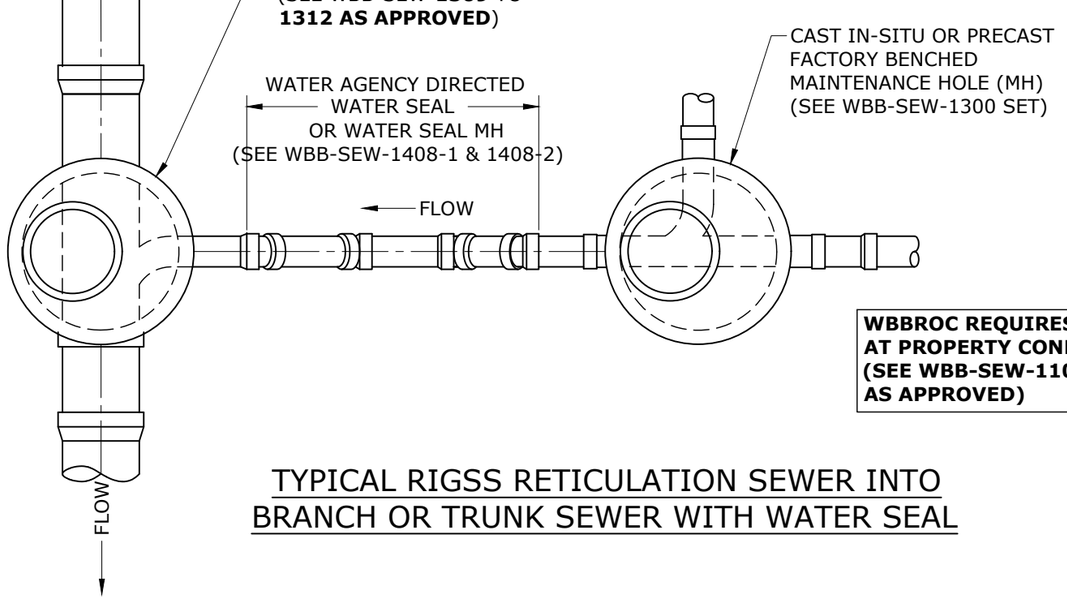
ORG DATE:



TYPICAL RIGSS RETICULATION SEWER

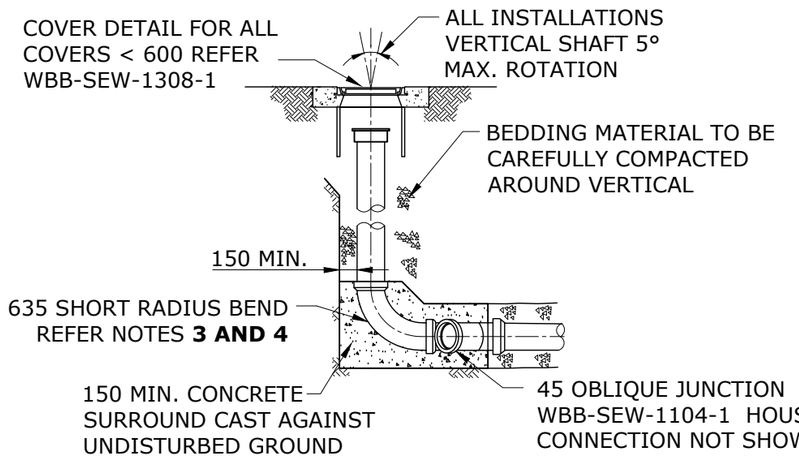
NOTES:

1. GRADE SEWER EVENLY BETWEEN MH TO LEVELS SHOWN IN DESIGN DRAWINGS.
2. LAY PIPES AND FITTINGS WITH SOCKETS UPSTREAM WHEREVER PRACTICABLE.
3. **DN150 RODDING END SHOWN FOR DEPTHS BETWEEN 800 AND 2500. DEPTHS OF 600 TO 800 USE MOULDED 88° BEND WITH RRJ SP-SOC FORMAT WITH AN ACCESS COUPLING WITH SCREW ON CAP - IPLEX #DR0315088 AND #058150 OR EQUAL.**
4. **FOR FCRC REPLACE SHORT RADIUS WITH 2 x 45° BENDS.**
5. **MAXIMUM DEPTH OF RETICULATION SEWER IS 6m.**



TYPICAL RIGSS RETICULATION SEWER INTO BRANCH OR TRUNK SEWER WITH WATER SEAL

WBBROC REQUIRES INSPECTION WYE AT PROPERTY CONNECTION POINTS (SEE WBB-SEW-1104 AND 1106 SET AS APPROVED)



ELEVATION
RODDING END AT SEWER END
Ø150 ONLY

REV. No.	DATE	DESCRIPTION	AUTH.
A		BASED ON SEQ-SEW-1103-1 VERSION A DATED 1/1/2013	

WBBROC WATER SERVICE PROVIDERS

WORK PRACTICES MUST COMPLY WITH ALL APPLICABLE OCCUPATIONAL HEALTH & SAFETY LEGISLATION

SEWERAGE STANDARD DRAWING

RIGSS PIPELAYING
TYPICAL ARRANGEMENTS

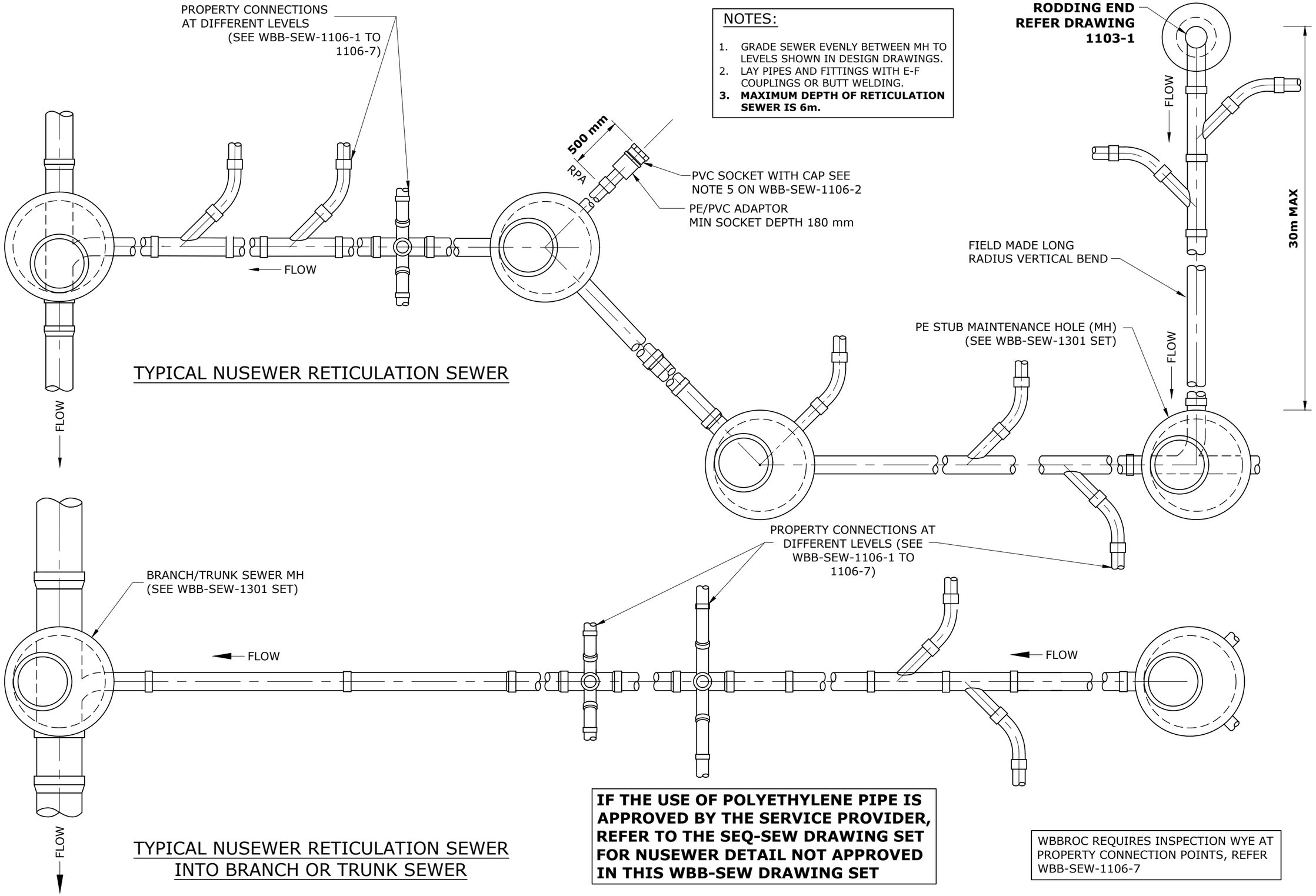
BRC	FCRC	GRC	NBRC	SBRC

DRAWING No. WBB-SEW-1103-1

VERSION A

NOT TO SCALE

ORG DATE:



NOTES:

1. GRADE SEWER EVENLY BETWEEN MH TO LEVELS SHOWN IN DESIGN DRAWINGS.
2. LAY PIPES AND FITTINGS WITH E-F COUPLINGS OR BUTT WELDING.
3. **MAXIMUM DEPTH OF RETICULATION SEWER IS 6m.**

TYPICAL NUSEWER RETICULATION SEWER

TYPICAL NUSEWER RETICULATION SEWER INTO BRANCH OR TRUNK SEWER

IF THE USE OF POLYETHYLENE PIPE IS APPROVED BY THE SERVICE PROVIDER, REFER TO THE SEQ-SEW DRAWING SET FOR NUSEWER DETAIL NOT APPROVED IN THIS WBB-SEW DRAWING SET

WBBROC REQUIRES INSPECTION WYE AT PROPERTY CONNECTION POINTS, REFER WBB-SEW-1106-7

REV. No.	DATE	DESCRIPTION	AUTH.
A		BASED ON SEQ-SEW-1103-2 VERSION B DATED 25/06/15	

WBBROC WATER SERVICE PROVIDERS

WORK PRACTICES MUST COMPLY WITH ALL APPLICABLE OCCUPATIONAL HEALTH & SAFETY LEGISLATION

SEWERAGE STANDARD DRAWING

NUSEWER PIPELAYING
TYPICAL ARRANGEMENTS

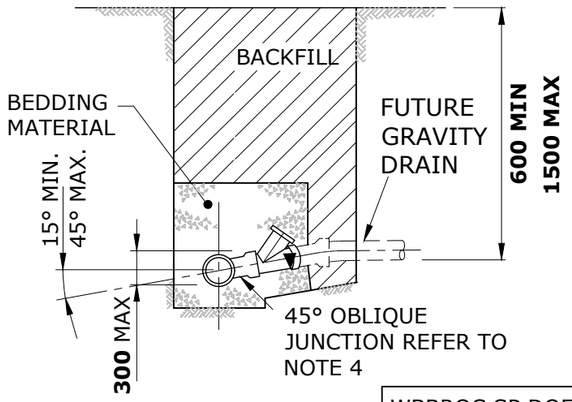
BRC	FCRC	GRC	NBRC	SBRC

DRAWING No. WBB-SEW-1103-2

VERSION A

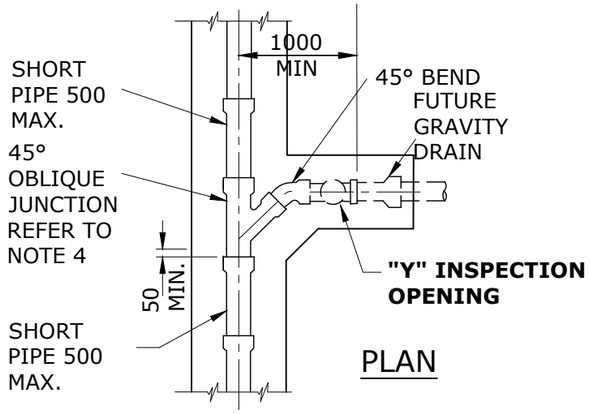
NOT TO SCALE

ORG DATE:



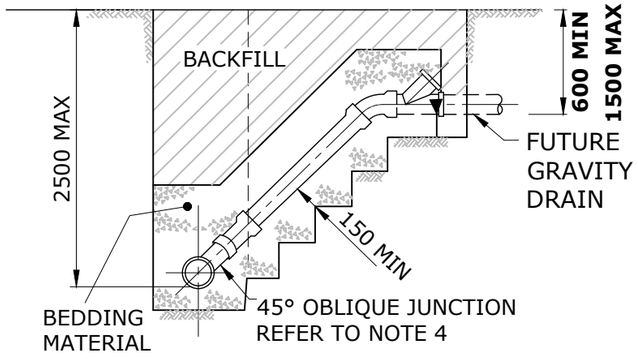
ELEVATION
(VERTICAL DROP 0 - 300)

WBBROC SP DOES NOT REQUIRE A SHORT PIPE ON SEWER, EACH SIDE OF JUNCTION

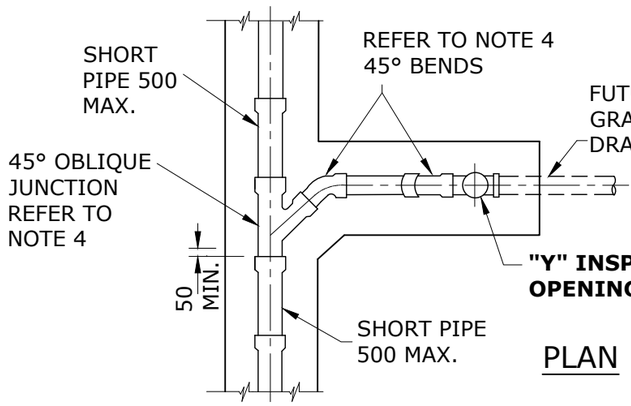


PLAN

TYPE A
SP HOUSE CONNECTION WITHIN PRIVATE PROPERTY

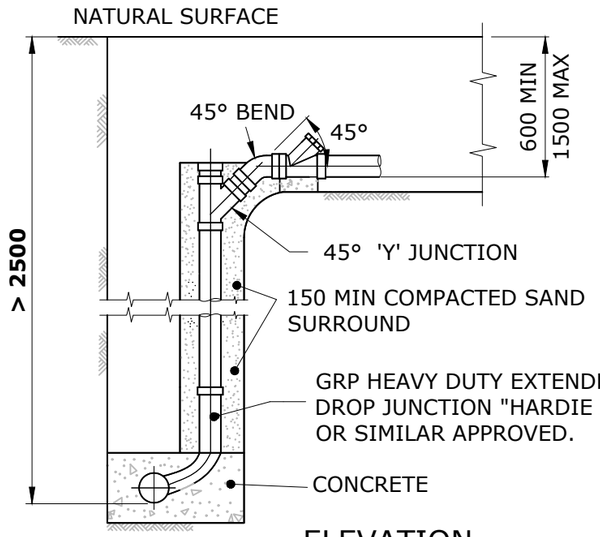


ELEVATION
(VERTICAL DROP 300 - 1900)

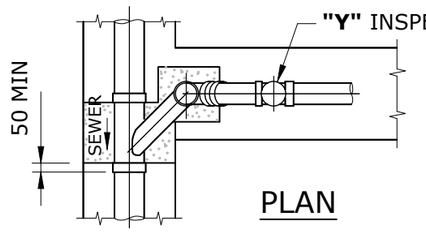


PLAN

'TYPE B'
SP HOUSE CONNECTION WITHIN PRIVATE PROPERTY SLOPE UP TYPE



ELEVATION
(VERTICAL DROP 1900 AND ABOVE)



PLAN

'TYPE C'
VERTICAL H.C. BRANCH

NOTES:

1. ALL HOUSE CONNECTION BRANCHES SHALL HAVE A MINIMUM GRADE OF 1 IN 60 FOR Ø100 AND 1 IN 100 FOR Ø150.
2. LIMIT OF WORKS - ALL HOUSE CONNECTION BRANCHES SHALL FINISH WITH AN INSPECTION **WYE** WITH THE END AND INSPECTION OPENING SCREW CAPPED. INSPECTION **WYE** INSTALLED TO THE INVERT LEVEL SHOWN ON THE DRAWINGS.
3. **FOR** HOUSE CONNECTION BRANCHES CROSSING ROADS REFER WBB-SEW-**1106-1**).
4. **DELETED**.
5. BEDDING MATERIAL SHALL COMPLY WITH THE REQUIREMENTS OF THE SPECIFICATION.
6. ALL PIPE JOINTS SHALL CONFORM WITH CODE SPECIFICATION AND THE MANUFACTURERS RECOMMENDATIONS.
7. FOR RESPONSIBILITY LIMITS OF CONSTRUCTED WORKS, REFER STD DRG WBB-SEW-**1104-2**.
8. DIMENSIONS ARE IN MILLIMETRES UNLESS SHOWN OTHERWISE.
9. **TYPE B REQUIRES APPROVAL OF FCRC.**

REV. No.	DATE	DESCRIPTION	AUTH.
A		BASED ON SEQ-SEW-1104-1 VERSION B DATED 21/07/15	

WBBROC WATER SERVICE PROVIDERS

WORK PRACTICES MUST COMPLY WITH ALL APPLICABLE OCCUPATIONAL HEALTH & SAFETY LEGISLATION

SEWERAGE STANDARD DRAWING

SEWERAGE HOUSE CONNECTION
TYPICAL CONSTRUCTION DETAILS
RIGGS - SHEET 1

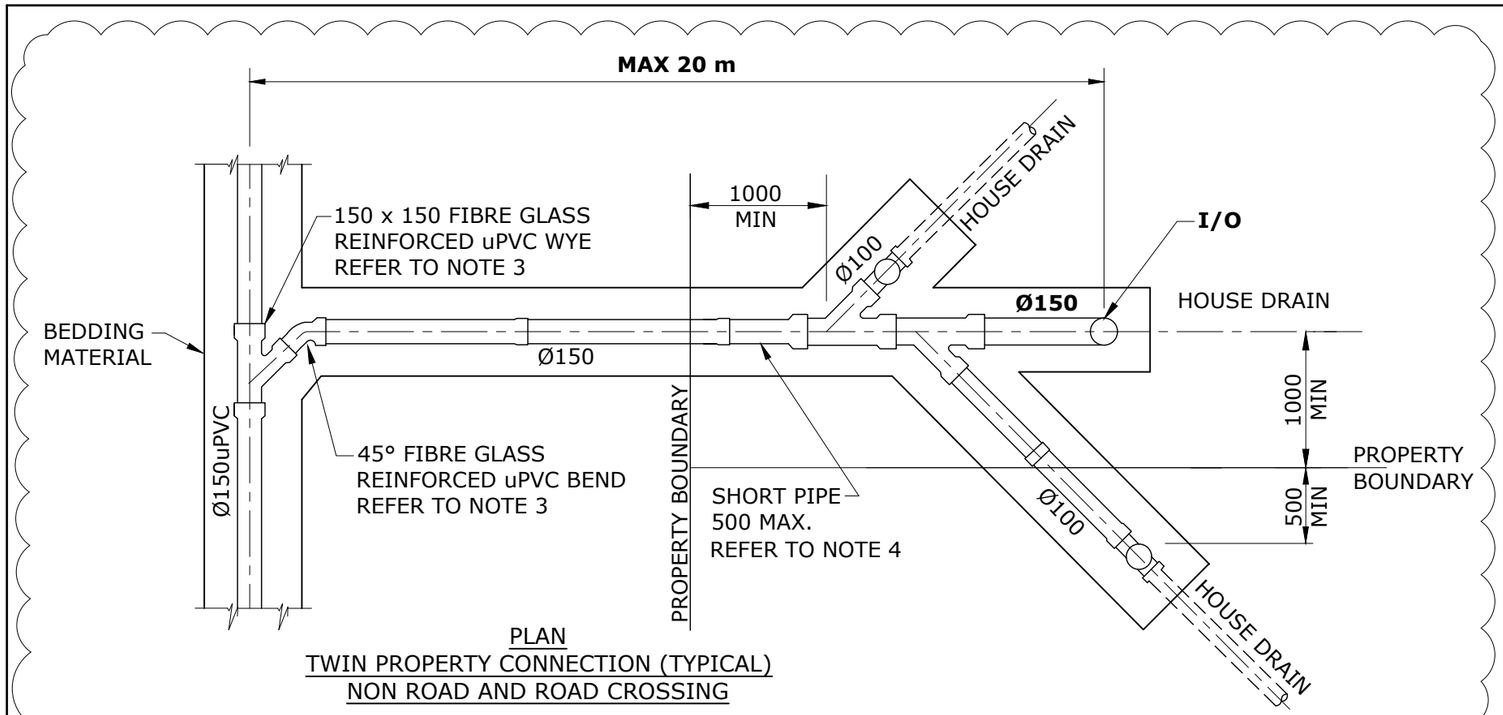
BRC	FCRC	GRC	NBRC	SBRC

DRAWING No.
WBB-SEW-1104-1

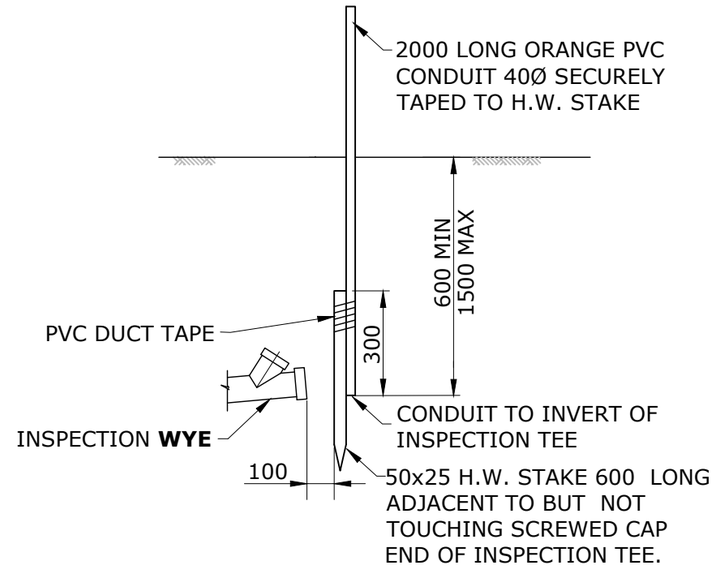
VERSION
A

NOT TO SCALE

ORG DATE:



PLAN
TWIN PROPERTY CONNECTION (TYPICAL)
NON ROAD AND ROAD CROSSING



HOUSE CONNECTION INSPECTION **WYE**
LOCATION MARKER ARRANGEMENT

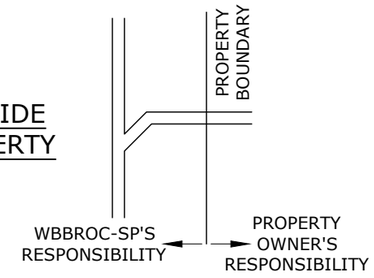
ONLY TYPE A CONNECTION SHOWN HERE. REFER DWG. WBB-SEW-1104-1 FOR TYPE B AND C CONNECTIONS.

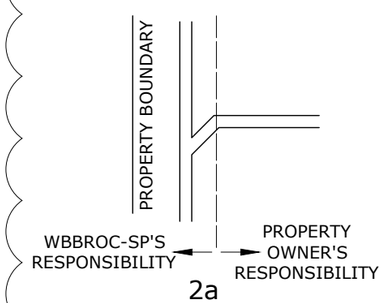
NOTES:

1. ALL HOUSE CONNECTION BRANCHES SHALL HAVE A MINIMUM GRADE OF 1 IN 60 FOR 100 DIA AND 1 IN 80 FOR 150 DIA.
2. LIMIT OF WORKS - ALL HOUSE CONNECTION BRANCHES SHALL FINISH WITH AN INSPECTION **WYE** WITH SCREWED CAP.
3. ALL HOUSE CONNECTION BRANCH FITTINGS INCLUDING THE I.O. SHALL BE FIBRE GLASS REINFORCED.
4. ALL PIPE JOINTS SHALL BE RUBBER RING.
5. **BRC AND GRC DO NOT ALLOW TWIN PROPERTY CONNECTIONS ON A HOUSE BRANCH. USE END OF LINE CONFIGURATION FOR MORE THAN ONE PROPERTY CONNECTION. SEE WBB-SEW-1106-1.**
6. **FCRC AND NBRC WILL ALLOW TWIN PROPERTY CONNECTIONS TO CROSS ROAD RESERVE, REQUIRING A RODDING END WITHIN THE PROPERTY. SEE WBB-SEW-1106-1.**

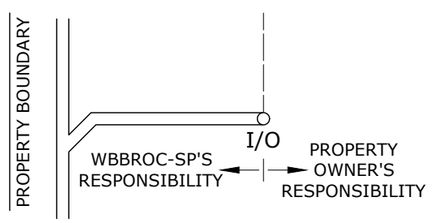
	1	2a	2b	2c
BRC	X	X		X
FCRC	X	X		X
GRC	X		X	X
NBRC	X	X		X
SBRC	X		X	X

1) MAIN OUTSIDE PRIVATE PROPERTY

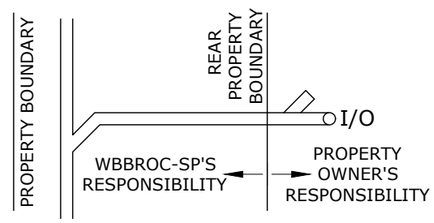




2a



2b



2c

2) MAIN INSIDE PRIVATE PROPERTY

RESPONSIBILITY DEMARCATION

FOR ADDITIONAL DETAIL REFER TO SP POLICY

REV. No.	DATE	DESCRIPTION	AUTH.
A		BASED ON SEQ-SEW-1104-2 VERSION A DATED 29/03/2016	

WBBROC WATER
SERVICE PROVIDERS

WORK PRACTICES MUST COMPLY WITH ALL APPLICABLE OCCUPATIONAL HEALTH & SAFETY LEGISLATION

SEWERAGE STANDARD DRAWING

TYPICAL TWIN
PROPERTY CONNECTIONS
RIGSS

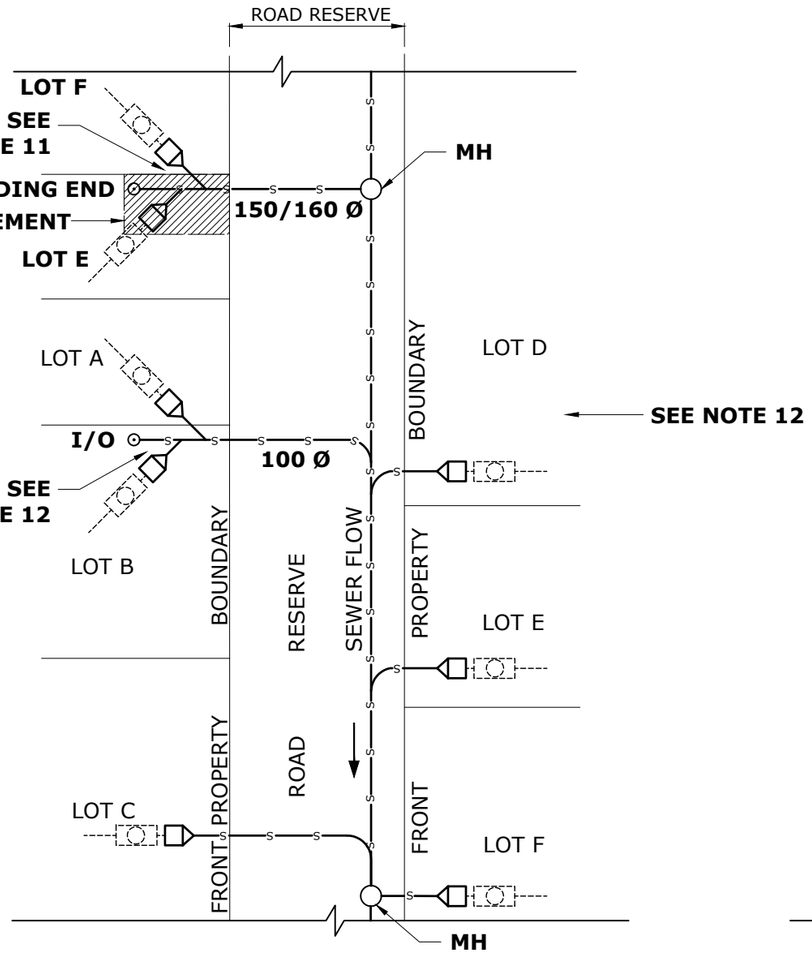
BRC	FCRC	GRC	NBRC	SBRC

DRAWING No.
WBB-SEW-1104-2

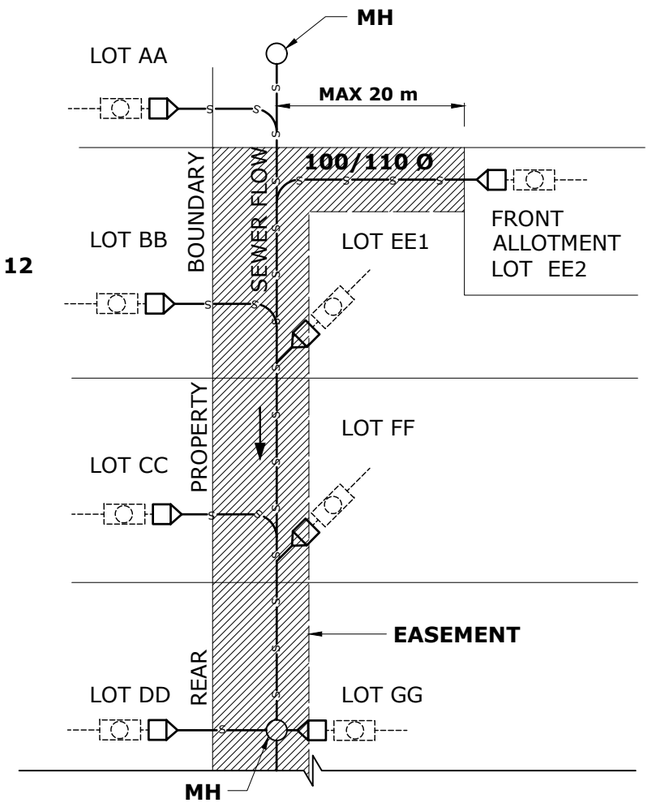
VERSION
A

NOT TO SCALE

ORG DATE:



PROPERTY CONNECTIONS
SEWER IN ROAD RESERVE



PROPERTY CONNECTIONS
SEWER AT REAR OF LOTS

NOTES

1. MAXIMUM DEPTH TO PROPERTY CONNECTION INVERT SHALL BE 1500 mm.
2. CONCRETE SHALL BE CLASS N20 TO WSA PS-357 EXCEPT FOR MAINTENANCE HOLES WHICH ARE SPECIAL CLASS TO WSA PS-358.
3. EACH SINGLE RESIDENTIAL ALLOTMENT SHALL BE SERVED BY A MINIMUM DN110 PROPERTY CONNECTION. FOR OTHER PREMISES, THE DIAMETER OF PROPERTY CONNECTIONS SHALL BE PROVIDED AS SPECIFIED IN THIS CODE.
4. PROPERTY CONNECTION JUNCTIONS SHALL BE LOCATED **1.0** m FROM THE DOWNSTREAM ALIGNMENT. IF THIS IS NOT POSSIBLE PROPERTY CONNECTION JUNCTIONS SHALL NOT BE GREATER THAN 3.5 m FROM THE DOWNSTREAM ALIGNMENT.
5. THE CENTRE OF THE OPENING OF PROPERTY CONNECTION BRANCHES SHALL EXTEND 500 mm INTO PROPERTY.
6. PROPERTY CONNECTION BRANCHES OF **DN100/110** SHALL BE GRADED AT A MIN OF 1 IN 60. FOR **DN150/160** PC BRANCHES THE GRADE SHALL BE MIN 1 IN 100.
7. THE OBVERT LEVEL OF THE PROPERTY CONNECTION JUNCTION SHALL NOT BE LOWER THAN THE OBVERT LEVEL OF THE SEWER AT THE JUNCTION.
8. ALL PIPES, FITTINGS AND CONCRETE SHALL HAVE A MINIMUM COVER OF 1150 mm IN FOOTPATHS AND ROADWAYS.
9. LOCATE SEWERS AND PROPERTY CONNECTIONS AS SHOWN ON THE DRAWINGS.
10. REFER DRAWING No WBB-SEW-1106-2 TO WBB-SEW-**1106-5** FOR PROPERTY CONNECTION DETAILS.
11. **BRC AND GRC DO NOT ALLOW TWIN PROPERTY CONNECTIONS ON A HOUSE BRANCH. USE END OF LINE CONFIGURATION FOR MORE THAN ONE PROPERTY CONNECTION.**
12. **FCRC AND NBRC WILL ALLOW TWIN PROPERTY CONNECTIONS TO CROSS ROAD RESERVE, REQUIRING A RODDING END WITHIN THE PROPERTY.**

LEGEND

PE/PVC ADAPTOR

VERTICAL RISER

CUSTOMER'S HOUSE DRAIN - INSPECTION SHAFT RISER TO COMPLY WITH AS/NZS 3500.2

THIS DRAWING REFLECTS TYPICAL HOUSE CONNECTION LAYOUT ASSOCIATED WITH NUSEWERS AS WELL AS RIGGS.

REV. No.	DATE	DESCRIPTION	AUTH.
A		BASED ON SEQ-SEW-1106-1 VERSION B DATED 19/06/15	

WBBROC WATER SERVICE PROVIDERS

WORK PRACTICES MUST COMPLY WITH ALL APPLICABLE OCCUPATIONAL HEALTH & SAFETY LEGISLATION

SEWERAGE STANDARD DRAWING

PROPERTY CONNECTIONS
TYPICAL LAYOUT

BRC	FCRC	GRC	NBRC	SBRC

DRAWING No. WBB-SEW-1106-1

VERSION A

NOT TO SCALE

ORG DATE:

PREPARING THE TEST AREA:

CONDUCT ALL NATIVE SOIL IDENTIFICATION TESTS ON A FRESHLY EXPOSED, DAMP, HAND TRIMMED AREA OF THE TRENCH WALL IN THE PIPE ZONE. TAKE CARE THAT THE SOIL IN THE EXPOSED TEST AREA IS NOT COMPACTED OR LOOSENED DURING TRENCH EXCAVATION. IF THE SOIL IN THE TRENCH FLOOR AND WALL IS VERY DRY AT THE TIME THE TRENCH IS OPENED THEN FLOOD THE TEST AREA AND ALLOW TIME FOR THE WATER TO BE ABSORBED BY THE SOIL BEFORE IT IS TRIMMED AND TESTED.

IDENTIFYING CLAY SOILS:

A LUMP OF CLAY SOIL WILL BE DIFFICULT TO BREAK WHEN DRY. IT WILL BE STICKY AND NEED SOME EFFORT TO MOULD WITH THE FINGERS WHEN WET. CLAY WILL NOT WASH OFF EASILY. INDIVIDUAL CLAY PARTICLES ARE HARD TO SEE.

TESTING CLAY SOILS:

CLAY SOILS ARE BEST TESTED IN THE WALL OF THE TRENCH. THE FIST, THE THUMB OR THE THUMBNAIL ARE USED TO DETERMINE THE CONSISTENCY (STRENGTH) OF THE CLAY (SEE TABLE.)

IDENTIFYING CLEAN SAND SOILS:

THE INDIVIDUAL GRAINS OF SAND WILL BE VISIBLE TO THE EYE. A LUMP OF CLEAN SAND, IF IT CAN BE PICKED UP AT ALL, WILL CRUMBLE WITH VERY LITTLE EFFORT. CLEAN SAND WASHES OFF EASILY.

TESTING CLEAN SAND SOILS:

CLEAN SAND SOILS ARE BEST TESTED IN THE FLOOR OF THE TRENCH BY PUSHING WITH THE WHOLE BODY WEIGHT ON ONE FOOT. THE DEPTH OF THE DEPRESSION LEFT BY THE BOOT IS RELATED TO THE DENSITY OF THE SAND (SEE TABLE). TAKE CARE TO ENSURE THAT THE SAND IN THE TRENCH FLOOR WAS NOT COMPACTED OR LOOSENED DURING THE EXCAVATION OF THE TRENCH OR THE TRIMMING OF THE TEST AREA.

TESTING ROCK:

THE RECOMMENDED FIELD IDENTIFICATION TESTS FOR ROCK RELY ON OBSERVING THE EASE WITH WHICH THE ROCK CAN BE DUG WITH A PICK, AND ESTIMATING THE SPACING OF THE JOINTS IN THE ROCK. (JOINTS ARE COMMONLY CALLED CRACKS OR BREAKS). THE SPACING BETWEEN JOINTS IS IMPORTANT BECAUSE THE ALLOWABLE BEARING PRESSURE ON ROCK IS USUALLY CONTROLLED BY THE JOINTS IN IT, RATHER THAN THE INHERENT STRENGTH OF THE BLOCK OF ROCK. JOINTS MAY BE TIGHTLY CLOSED (LIKE HAIRLINE CRACKS), BUT CAN ALSO BE OPEN (FILLED WITH AIR) OR FILLED WITH SOFT CLAY OR OTHER SOIL.

SOIL CLASSIFICATION		FIELD IDENTIFICATION TEST	▲AHBP kPa
CLAY SOILS	VERY SOFT	EASILY PENETRATED 40 mm WITH FIST.	< 50 *
	SOFT	EASILY PENETRATED 40 mm WITH THUMB.	< 50 *
	FIRM	MODERATE EFFORT NEEDED TO PENETRATE 30 mm WITH THUMB.	< 50 *
	STIFF	READILY INDENTED WITH THUMB BUT PENETRATED ONLY WITH GREAT EFFORT.	50
	VERY STIFF	READILY INDENTED WITH THUMBNAIL.	100
	HARD	INDENTED WITH DIFFICULTY BY THUMBNAIL.	200
SAND & GRAVEL	LOOSE CLEAN SAND	TAKES FOOTPRINT MORE THAN 10 mm DEEP.	< 50 *
	MEDIUM-DENSE CLEAN SAND	TAKES FOOTPRINT 3 mm TO 10 mm DEEP.	50
	DENSE CLEAN SAND OR GRAVEL	TAKES FOOTPRINT LESS THAN 3 mm DEEP.	100
ROCK	BROKEN OR DECOMPOSED ROCK	DIGGABLE. HAMMER BLOW "THUDS". JOINTS (BREAKS IN ROCK) SPACED AT LESS THAN 300 mm APART.	100
	SOUND ROCK	DIGGABLE. HAMMER BLOW "THUDS". JOINTS (BREAK IN ROCK) SPACED AT MORE THAN 300 mm APART.	200
	UNCOMPACTED FILL DOMESTIC REFUSE	OBSERVATION AND KNOWLEDGE OF THE SITE HISTORY.	< 50 *

LEGEND

▲ AHBP ALLOWABLE HORIZONTAL BEARING PRESSURE FOR:

- 10 mm MOVEMENT.
- CENTRE OF THRUST 800 mm BELOW THE NATURAL SURFACE LEVEL.

(EXCLUDES ENGINEERED FILL AND DISTURBED GROUND AND GROUND WITH HIGH WATER TABLE)

* SPECIAL GEOTECHNICAL ASSESSMENT REQUIRED

ADDITIONAL INFORMATION PROVIDED IN SEW-1200 SERIES COMMENTARY

REV. No.	DATE	DESCRIPTION	AUTH.
A		BASED ON SEQ-SEW-1200-1 VERSION A DATED 1/1/2013	

WBBROC WATER SERVICE PROVIDERS

WORK PRACTICES MUST COMPLY WITH ALL APPLICABLE OCCUPATIONAL HEALTH & SAFETY LEGISLATION

SEWERAGE STANDARD DRAWING

SOIL CLASSIFICATION GUIDELINES AND ALLOWABLE BEARING PRESSURES FOR ANCHORS AND THRUST BLOCKS

BRC	FCRC	GRC	NBRC	SBRC

DRAWING No. WBB-SEW-1200-1

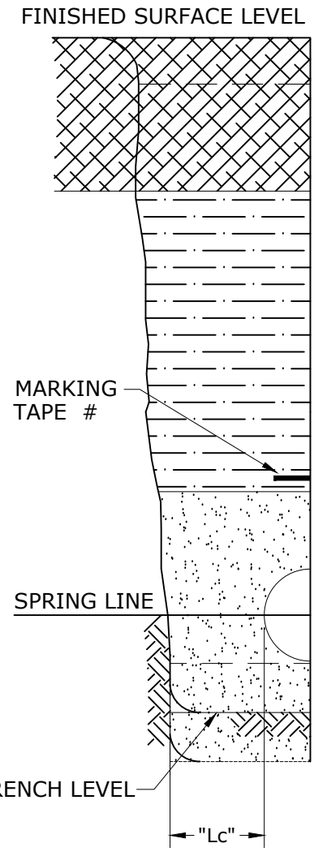
VERSION A

NOT TO SCALE

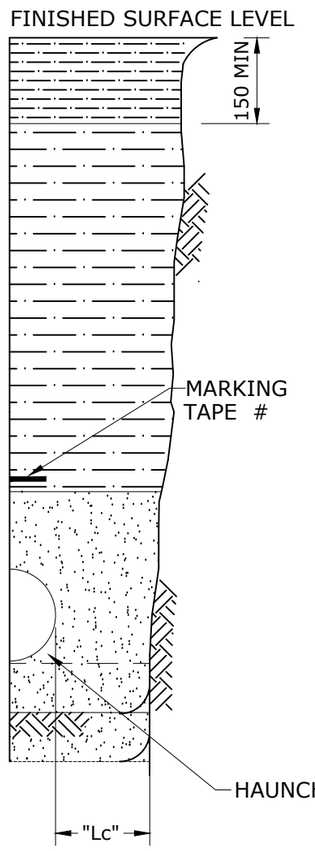
ORG DATE:

MATERIAL		ZONE	
ROAD SURFACE	VERGE & TRACK		
ROAD SURFACE LAYER	TO MATCH EXISTING	SURFACE COURSE	
TO MATCH EXISTING ROAD BASE OR TO ROAD OWNER'S REQUIREMENTS		ROAD BASE	
TO ROAD OWNER'S REQUIREMENTS OR INORGANIC FILL WITH 75 MAXIMUM STONE SIZE	TO ROAD OWNER'S REQUIREMENTS OR INORGANIC FILL WITH MAXIMUM 75 STONE SIZE	TRENCH FILL	
EMBEDMENT MATERIAL IN ACCORDANCE WITH DESIGN DRAWINGS AND WBBROC-SP REQUIREMENTS. WHERE APPROVED BY WBBROC-SP BEDDING MAY BE OMITTED IF TRENCH BASE IS GRANULAR SAND		OVERLAY	EMBEDMENT
		SIDE SUPPORT	
		BEDDING	
		OVER-EXCAVATION	

PIPE COVER



LOCATION	MINIMUM
PRIVATE RESIDENTIAL PROPERTY AND PUBLIC LAND NOT SUBJECT TO VEHICULAR LOADING	600 - NEW DEVELOPMENTS 450 - EXISTING DEVELOPMENTS
PRIVATE RESIDENTIAL PROPERTY SUBJECT TO VEHICULAR LOADING	750
FOOTWAYS, NATURE STRIPS, INDUSTRIAL PROPERTY, SEALED ROAD PAVEMENTS OTHER THAN ARTERIAL ROADS SUBJECT TO VEHICULAR LOADING	900 (1150 FOR QUU)
SEWER IN A FOOTWAY CONTAINING A DN225 TO DN300 WATER MAIN	900 (1650 FOR QUU)
UNSEALED ROAD CARRAIGEWAYS	1200
ARTERIAL ROAD CARRAIGEWAYS	1200
FUTURE ROAD, RAIL AND TRAM PAVEMENTS	1200

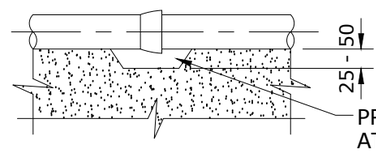


ZONE		MATERIAL
TOPSOIL OR FOOTWAY SURFACE		ORIGINAL MATERIAL OR IMPORTED MATERIAL OF EQUAL QUALITY
TRENCH FILL		INORGANIC FILL WITH 75 MAXIMUM STONE SIZE
EMBEDMENT	OVERLAY	EMBEDMENT MATERIAL IN ACCORDANCE WITH DESIGN DRAWINGS AND WBBROC-SP REQUIREMENTS. WHERE APPROVED BY WBBROC-SP BEDDING MAY BE OMITTED IF TRENCH BASE IS GRANULAR SAND.
	SIDE SUPPORT	
	BEDDING	
OVER-EXCAVATION		

VEHICULAR LOADING

NO VEHICULAR LOADING

(INCLUDES LOCATIONS WHERE OCCASIONAL VEHICLES LOADINGS OCCUR EG. PARKLANDS, FOOTWAYS)



PROVIDE POCKETS IN BEDDING, AT JOINTS PRIOR TO LAYING PIPES. FILL VOID DURING PLACEMENT OF EMBEDMENT.

PIPE JOINT BEDDING POCKETS

FOR JOINT PROJECTIONS (SOCKETS, FLANGES ETC)

LEGEND:

\# SPECIFIED BY THE DESIGNER IN DESIGN DRAWINGS

NOTES

1. ALL DIMENSIONS IN MILLIMETRES.
2. BEDDING - SPECIAL BEDDING SHALL BE SPECIFIED TO SUIT THE CONDITIONS IF THE TRENCH FLOOR HAS:
   - IRREGULAR OUTCROPS OF ROCK.
   - AHBP OF <50 kPa (SEE WBB-WAT-1200-01), OR
   - UNCONTROLLED GROUND WATER HAS DISTURBED THE FLOOR OF THE TRENCH.
3. EMBEDMENT, TRENCH FILL AND COMPACTION TO MEET THE REQUIREMENTS OF WSA-02 PART 3 AND THE RELEVANT WBBROC-SP **OR AS APPROVED BY RPEQ**.
4. SIDES OF EXCAVATION TO BE KEPT VERTICAL TO AT LEAST 150 ABOVE THE PIPE.
5. DESIGNER TO CHECK ON RELEVANT ROAD AUTHORITIES REQUIREMENTS.
6. ADDITIONAL INFORMATION PROVIDED IN WBB-WAT-1200 SERIES COMMENTARY.

SPRING LINE TRENCH CLEARANCE

NOMINAL DIAMETER (DN)	MINIMUM CLEARANCE "Lc" TO AS/NZS 2566.1
≤300	150
>300-≤450	200
>450-≤900	300
>900-≤1500	350

TRENCH WIDTH TO BE SUFFICIENT TO SAFELY LAY THE PIPE AND COMPACT THE SIDE SUPPORT ZONE.

REV. No.	DATE	DESCRIPTION	AUTH.
A		BASED ON SEQ-SEW-1200-2 VERSION A DATED 1/1/2013	

WBBROC WATER SERVICE PROVIDERS

WORK PRACTICES MUST COMPLY WITH ALL APPLICABLE OCCUPATIONAL HEALTH & SAFETY LEGISLATION

SEWERAGE STANDARD DRAWING

EMBEDMENT & TRENCHFILL TYPICAL ARRANGEMENT

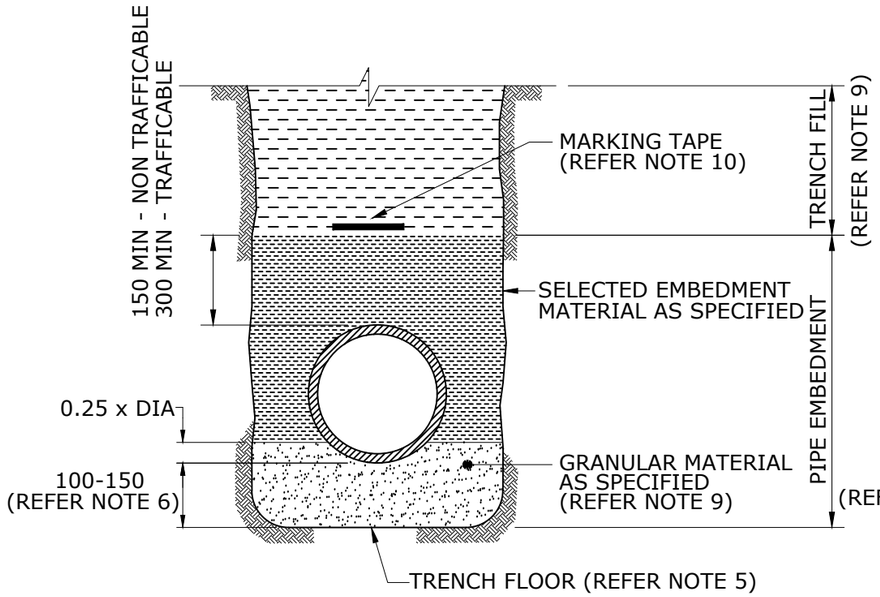
BRC	FCRC	GRC	NBRC	SBRC

DRAWING No. WBB-SEW-1200-2

VERSION A

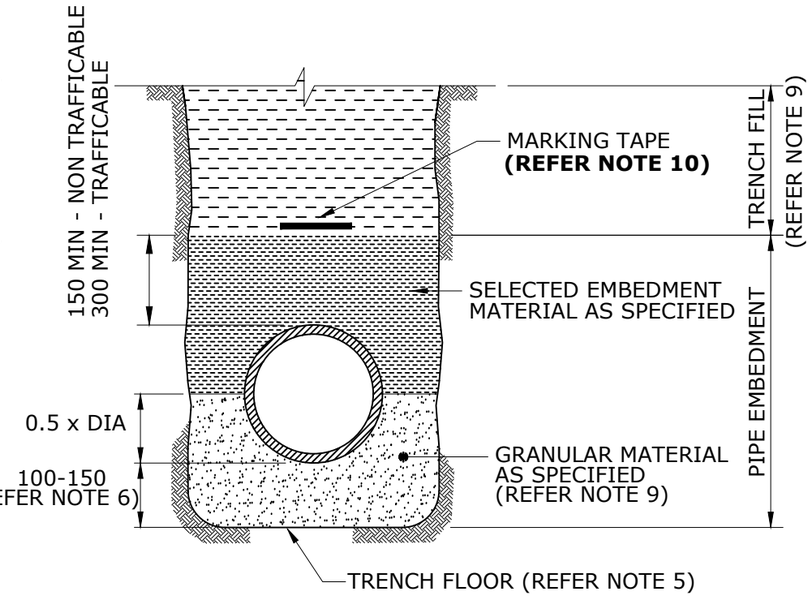
NOT TO SCALE

ORG DATE:



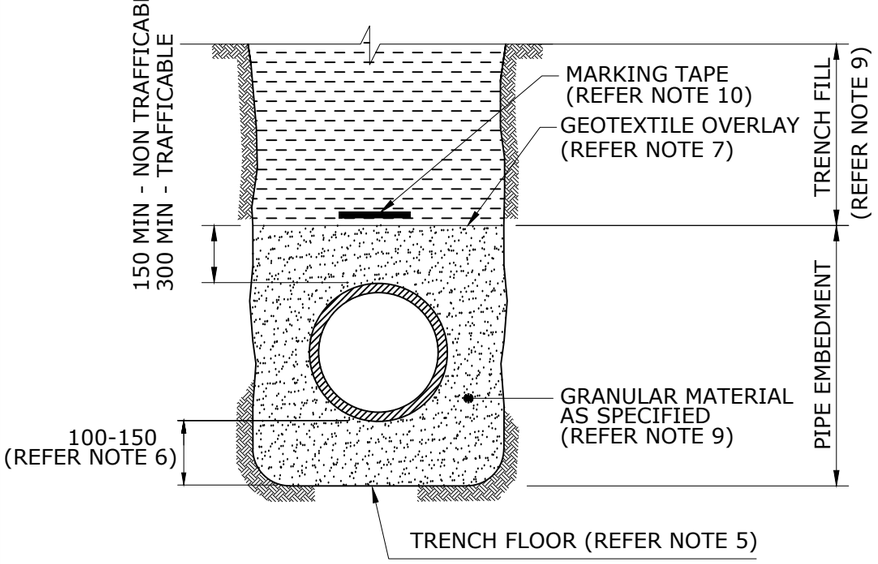
TYPE 1 SUPPORT

FOR RIGID PIPES ONLY (REFER NOTE 3)



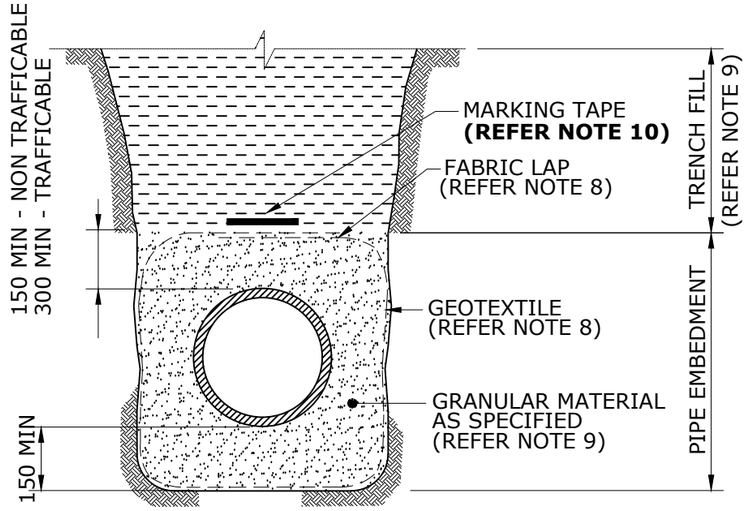
TYPE 2 SUPPORT

FOR RIGID PIPES ONLY (REFER NOTE 3)



TYPE 3 SUPPORT

FOR FLEXIBLE & RIGID PIPES (REFER NOTE 3)



TYPE 4 SUPPORT - WITH GEOTEXTILE

FOR FLEXIBLE & RIGID PIPES (REFER NOTE 3)

NOTES

1. ALL DIMENSIONS IN MILLIMETRES.
2. THIS DRAWING TO BE READ IN CONJUNCTION WITH WBB-SEW-1200 SERIES DRAWINGS.
3. PIPE CLASSIFICATION
   (a) RIGID PIPES: VC AND RC
   (b) FLEXIBLE PIPES: PVC, GRP, STEEL, DI AND PE.
4. PLACEMENT OF EMBEDMENT, TRENCHFILL & COMPACTION TO MEET THE REQUIREMENTS OF THE CODE.
5. EXCAVATE OR COMPACT TRENCH FLOOR TO PROVIDE A FLAT FIRM BASE TO SUPPORT BEDDING MATERIAL AND MIMIMISE PIPELINE SETTLEMENT. WHEN EXCAVATED, REPLACE WITH GRANULAR MATERIAL AS SPECIFIED FOR BEDDING OR ADOPT TYPE 5, 6, 7 OR 8 SUPPORT AS REQUIRED.
6. ENSURE BEDDING IS DEEP ENOUGH THAT PIPE JOINT PROJECTIONS (SOCKETS, FLANGES) DO NOT TOUCH TRENCH FLOOR.

7A. GEOTEXTILE TO BE USED WHERE TRENCH FILL IS A MIGRATORY NATIVE SOIL OR SAND OR FINE CLAY MATERIAL.

7B. TYPE 4 SUPPORT TO BE USED WHERE MIGRATORY NATIVE SOILS 7B. (SANDS & CLAYS) ARE ENCOUNTERED ADJACENT TO THE EMBEDMENT ZONE AND SINGLE SIZE AGGREGATE IS USED:

8. LAY GEOTEXTILE FILTER FABRIC AGAINST TRENCH FLOOR AND WALLS SUCH THAT IT FULLY ENCASES THE EMBEDMENT.
   - PRESS FABRIC INTO THE VOIDS BEFORE INSTALLING EMBEDMENT TO PREVENT FABRIC TEARING.
   - PROVIDE A MINIMUM OF 250 OVERLAP AT ALL FABRIC JOINTS.
9. PURCHASE SPECIFICATIONS FOR EMBEDMENT MATERIAL ARE DETAILED IN THE WBBROC CODE ACCEPTED PRODUCTS AND MATERIALS LIST. TRENCH FILL SHALL COMPLY WITH WBB-SEW-1200-2.
10. DETECTABLE MARKER TAPE SHALL BE PROVIDED EITHER ABOVE THE EMBEDMENT ZONE OR 1000 BELOW THE F.S.L, WHICHEVER IS CLOSEST TO F.S.L.

11. EMBEDMENT TYPES TO BE SPECIFIED IN DESIGN DRAWINGS.

WHERE THIS DRAWING IS USED FOR THE VACUUM CODE, ADDITIONAL INFORMATION IS PROVIDED IN SEQ-VAC-1400 SERIES COMMENTARY

REV. No.	DATE	DESCRIPTION	AUTH.
A		BASED ON SEQ-SEW-1201-1 VERSION A DATED 1/1/2013	

WBBROC WATER SERVICE PROVIDERS

WORK PRACTICES MUST COMPLY WITH ALL APPLICABLE OCCUPATIONAL HEALTH & SAFETY LEGISLATION

SEWERAGE STANDARD DRAWING

TYPICAL STANDARD EMBEDMENT
FLEXIBLE & RIGID PIPES

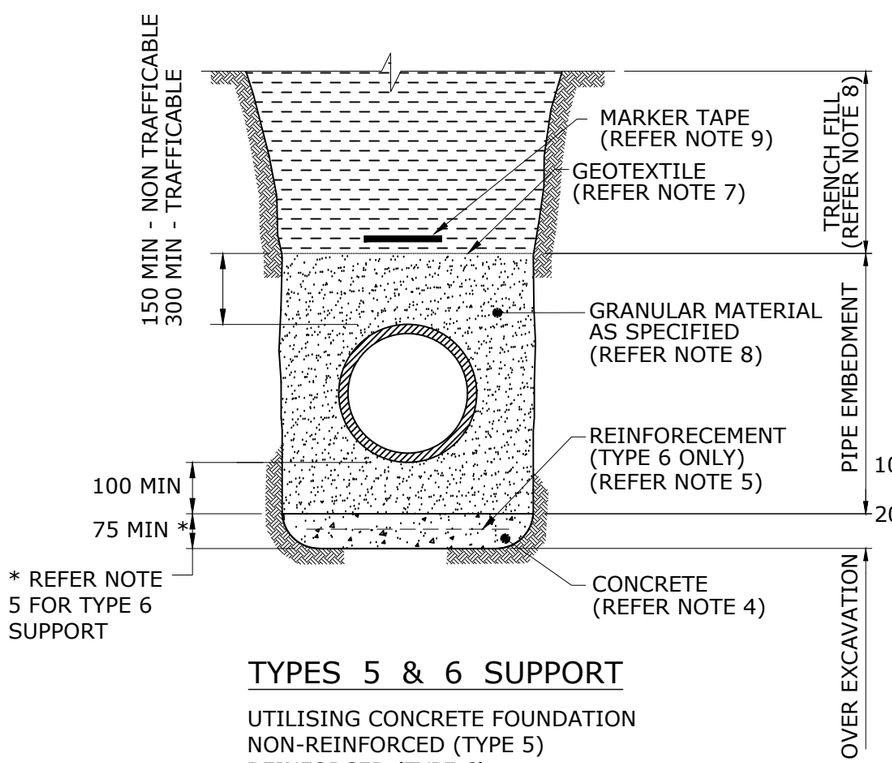
BRC	FCRC	GRC	NBRC	SBRC

DRAWING No. WBB-SEW-1201-1

VERSION A

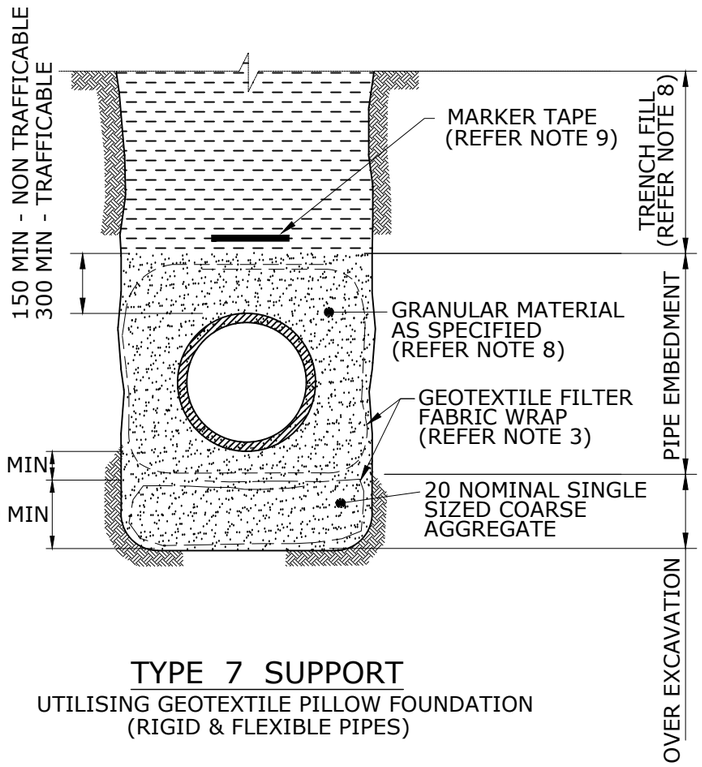
NOT TO SCALE

ORG DATE:



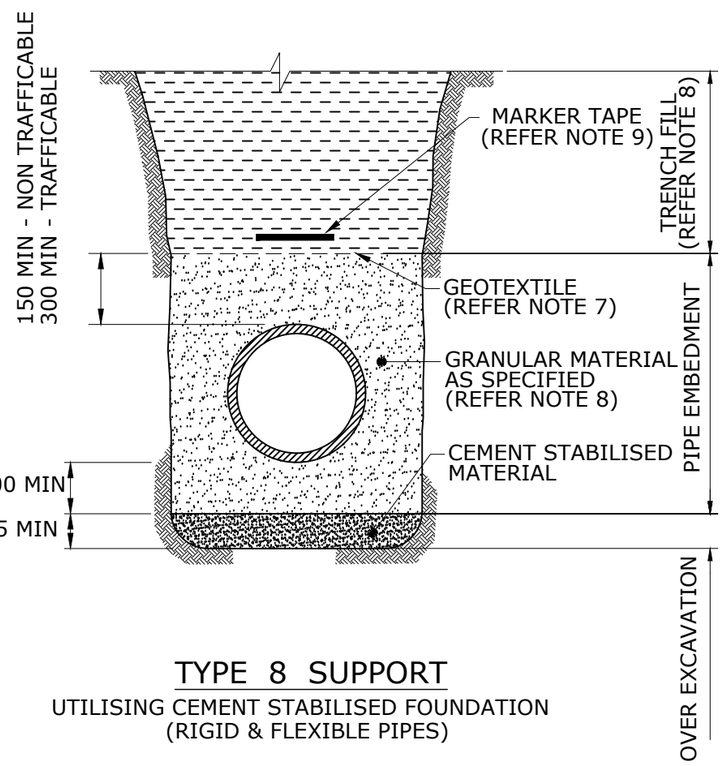
TYPES 5 & 6 SUPPORT

UTILISING CONCRETE FOUNDATION
NON-REINFORCED (TYPE 5)
REINFORCED (TYPE 6)
(RIGID & FLEXIBLE PIPES)
USE LIMITED TO 1 000 SPANS OF LOW BEARING CAPACITY GROUND. (SOFT CLAYS AND LOOSE SAND) LONGER LENGTHS SUBJECT TO INDIVIDUAL ASSESSMENT.



TYPE 7 SUPPORT

UTILISING GEOTEXTILE PILLOW FOUNDATION
(RIGID & FLEXIBLE PIPES)



TYPE 8 SUPPORT

UTILISING CEMENT STABILISED FOUNDATION
(RIGID & FLEXIBLE PIPES)

EMBEDMENT TYPES TO BE SPECIFIED IN DESIGN DRAWINGS

WHERE THIS DRAWING IS USED FOR THE VACUUM CODE, ADDITIONAL INFORMATION IS PROVIDED IN SEQ-VAC-1400 SERIES COMMENTARY

NOTES

1. ALL DIMENSIONS IN MILLIMETRES.
2. USE THESE SUPPORT TYPES ONLY WHERE SPECIFIED BY THE DESIGNER. DETAILS TO BE PROVIDED IN DESIGN DRAWINGS.
3. LAY GEOTEXTILE FILTER FABRIC AGAINST THE TRENCH FLOOR AND WALL SUCH THAT IT FULLY ENCASES THE FOUNDATION MATERIAL IN THE OVER EXCAVATION. EMBEDMENT (IF REQUIRED) ENCASE SEPARATELY. PROVIDE A MINIMUM OF 250 LAP AT ALL FILTER FABRIC JOINTS. REFER WBB-SEW-1201-1 FOR GEOTEXTILE SYSTEM DETAILS.
4. UNREINFORCED CONCRETE TO BE CLASS N20, AND REINFORCED CONCRETE N25. FOR AGGRESSIVE CONDITIONS USE SPECIAL CLASS CONCRETE.
5. MINIMUM STEEL REINFORCEMENT OF 0.4% OF CONCRETE CROSS SECTION PLACED CENTRALLY AND WITH 65 MINIMUM COVER TO EXTERNAL FACE. REINFORCEMENT DETAILS FOR THE APPLICABLE LOADING TO BE INCLUDED IN THE DESIGN DRAWINGS.
6. BEDDING TO BE DEEP ENOUGH TO ENSURE PIPE JOINT PROJECTIONS (SOCKETS, FLANGES) DO NOT TOUCH FOUNDATION.
7. GEOTEXTILE FILTER FABRIC IS REQUIRED FOR AGGREGATE EMBEDMENT. (IE SINGLE SIZED GRANULAR FILL ≥ 5 mm).
8. PURCHASE SPECIFICATIONS FOR EMBEDMENT MATERIAL ARE DETAILED IN THE WBBROC CODE ACCEPTED PRODUCTS AND MATERIALS LIST.TRENCH FILL SHALL COMPLY WITH WBB-SEW-1200-2.
9. DETECTABLE MARKER TAPE, REFER NOTE 10 ON WBB-SEW-1201-01.

REV. No.	DATE	DESCRIPTION	AUTH.
A		BASED ON SEQ-SEW-1202-1 VERSION A DATED 1/1/2013	

WBBROC WATER SERVICE PROVIDERS

WORK PRACTICES MUST COMPLY WITH ALL APPLICABLE OCCUPATIONAL HEALTH & SAFETY LEGISLATION

SEWERAGE STANDARD DRAWING

TYPICAL SPECIAL EMBEDMENT
INADEQUATE FOUNDATIONS REQUIRING OVER EXCAVATION AND REPLACEMENT

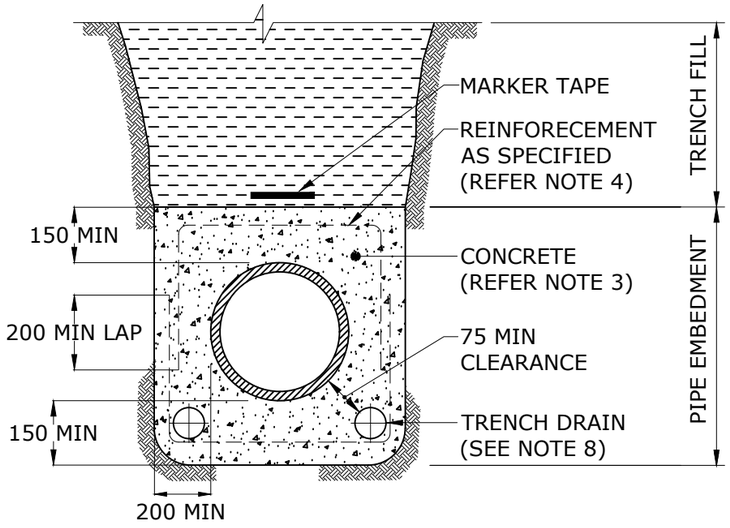
BRC	FCRC	GRC	NBRC	SBRC

DRAWING No. WBB-SEW-1202-1

VERSION A

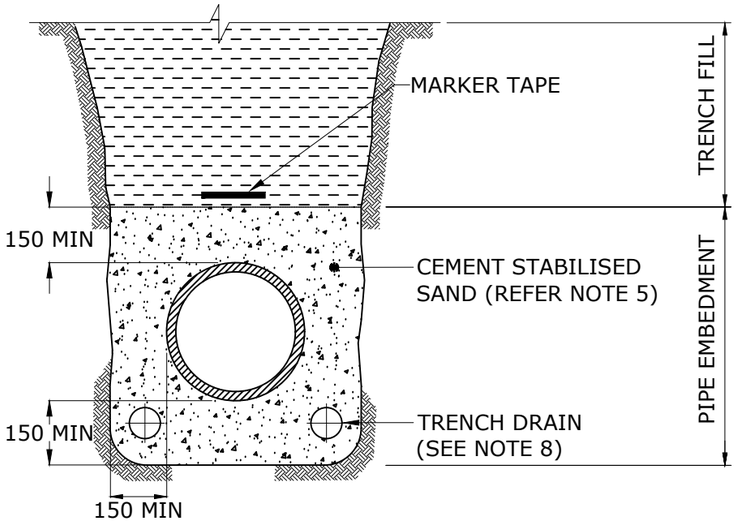
NOT TO SCALE

ORG DATE:



TYPE 9 SUPPORT
UTILISING CONCRETE EMBEDMENT
(RIGID & FLEXIBLE PIPES)

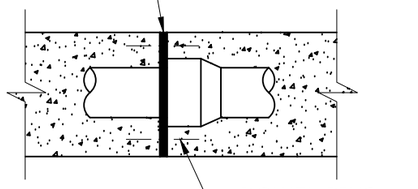
NOT PREFERRED



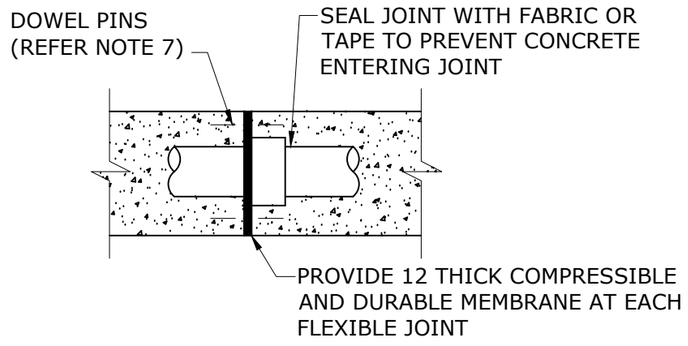
TYPE 10 SUPPORT
UTILISING CEMENT STABILISED EMBEDMENT
(RIGID & FLEXIBLE PIPES)

NOTES

1. ALL DIMENSIONS IN MILLIMETRES.
2. USE THESE SUPPORT SYSTEMS WHERE SPECIFIED BY DESIGNER. DETAILS TO BE PROVIDED IN DESIGN DRAWINGS, REFER NOTE 9.
3. USE UNREINFORCED CONCRETE CLASS N20 MIN, AND REINFORCED CONCRETE N25 MIN.
   FOR AGGRESSIVE CONDITIONS USE SPECIAL CLASS CONCRETE.
   PLASTIC PIPES SHALL BE MANAGED FOR THERMAL REVERSION AND FLOATATION.
4. WHERE SPECIFIED MINIMUM STEEL REINFORCEMENT OF 0.4% CONCRETE CROSS SECTION PLACED CENTRALLY AND WITH 65 MINIMUM COVER TO EXTERNAL FACE. SPECIFY REINFORCEMENT FOR THE APPLICABLE LOADING IN DESIGN DRAWINGS.
5. CEMENT STABILISED SAND OR WELL GRADED CRUSHED ROCK TO BE 25:1 SAND:CEMENT (PLACED DRY).
6. DURING THE ENCASEMENT PROCESS PIPES WILL REQUIRE A RESTRAINT SYSTEM TO PREVENT PIPE MOVEMENT AND/OR FLOTATION AND/OR THERMAL REVERSION.
7. PROVIDE DOWEL PINS, AS DETAILED IN DESIGN DRAWINGS AT EACH CONCRETE ENCASEMENT JOINT TO PREVENT PIPE DAMAGE.
8. SEE WBB-SEW-1207-1 FOR TRENCH DRAINAGE DETAILS.
9. THE USE OF TYPE 9 AND 10 TO BE APPROVED BY WBBROC-SP.
10. DETECTABLE MARKER TAPE, REFER NOTE 10 ON WBB-SEW-1201-1.



SPIGOT/SOCKET JOINT



SLEEVED COUPLING

CONCRETE ENCASEMENT JOINT DETAILS

NOT PREFERRED

EMBEDMENT TYPES TO BE SPECIFIED IN DESIGN DRAWINGS

WHERE THIS DRAWING IS USED FOR THE VACUUM CODE, ADDITIONAL INFORMATION IS PROVIDED IN SEQ-VAC-1400 SERIES COMMENTARY

REV. No.	DATE	DESCRIPTION	AUTH.
A		BASED ON SEQ-SEW-1203-1 VERSION A DATED 1/1/2013	

WBBROC WATER SERVICE PROVIDERS

WORK PRACTICES MUST COMPLY WITH ALL APPLICABLE OCCUPATIONAL HEALTH & SAFETY LEGISLATION

SEWERAGE STANDARD DRAWING

TYPICAL SPECIAL EMBEDMENT CONCRETE AND STABILISED SUPPORTS

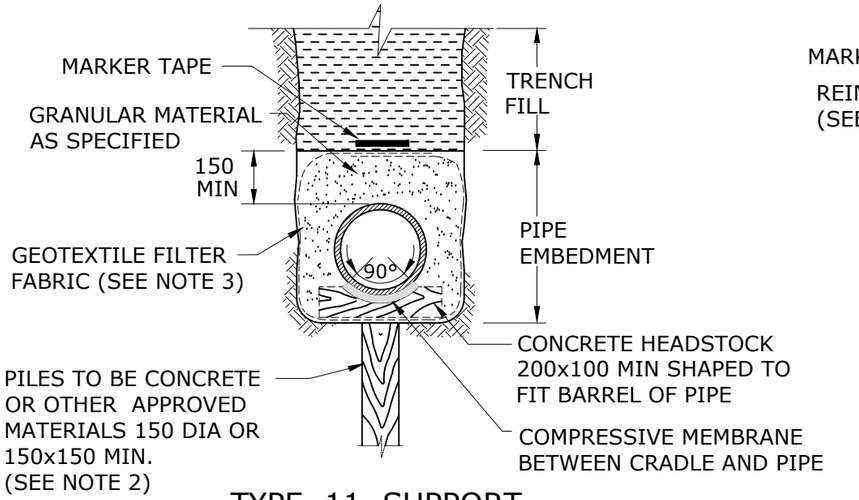
BRC	FCRC	GRC	NBRC	SBRC

DRAWING No. WBB-SEW-1203-1

VERSION A

NOT TO SCALE

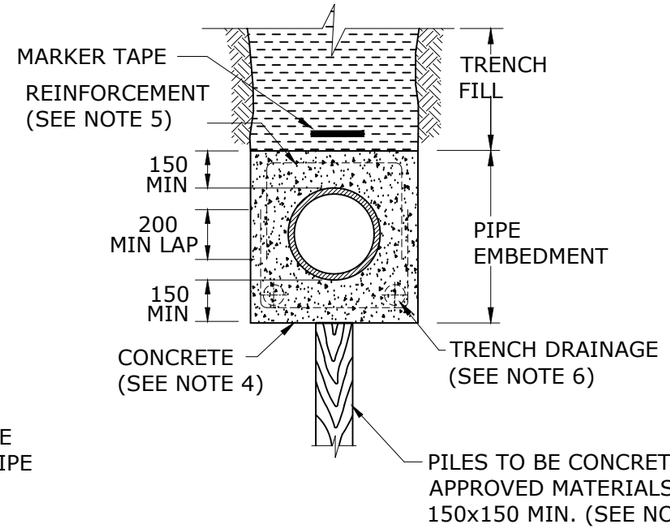
ORG DATE:



TYPE 11 SUPPORT

ALL PIPE TYPES (DI PREFERRED)

≤DN 375 SINGLE PILE
>DN 375 TWIN PILE

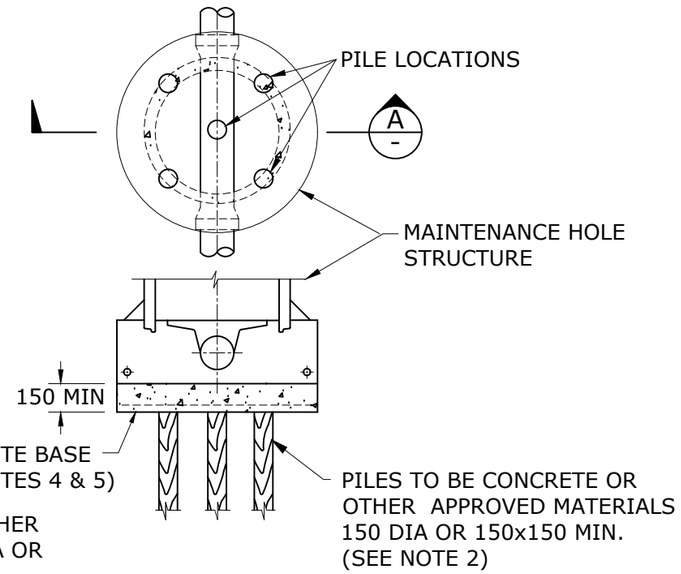


TYPE 12 SUPPORT

(ALL PIPE TYPES)

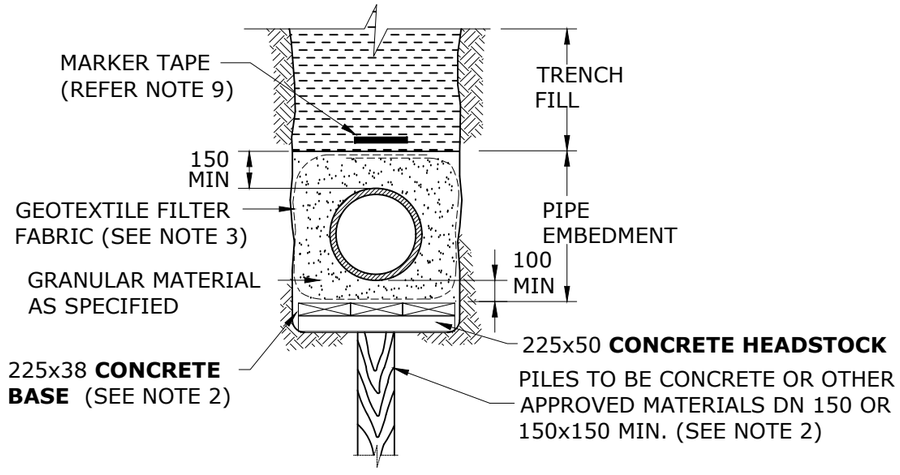
NOTE: THIS METHOD ALSO RESTRICTS PIPE FLOTATION

≤DN 300 SINGLE PILE
>DN 300 TWIN PILE



SECTION A

PILE FOUNDATION FOR MAINTENANCE HOLES

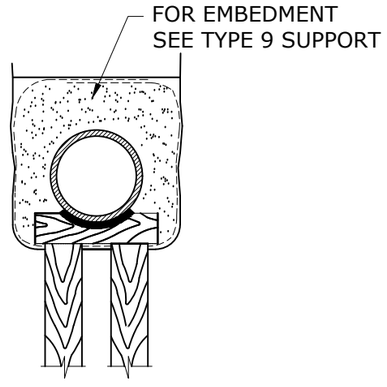


TYPE 13 SUPPORT

(ALL PIPE TYPES)

≤DN 375 SINGLE PILE
>DN 375 TWIN PILE

EMBEDMENT TYPES TO BE SPECIFIED IN DESIGN DRAWINGS



TWIN PILE ARRANGEMENT

NOTES

1. ALL DIMENSIONS IN MILLIMETRES.
2. USE THESE SUPPORT TYPES WHERE SPECIFIED BY DESIGNER AND WHERE APPROVED BY WBBROC-SP. PILE DETAILS AND SPACINGS TO BE AS SHOWN IN DESIGN DRAWINGS.
3. LAY GEOTEXTILE FILTER FABRIC AGAINST THE TRENCH FLOOR AND WALL SUCH THAT IT FULLY ENCASES THE EMBEDMENT. PROVIDE MINIMUM 250 LAP AT ALL FILTER FABRIC JOINTS.
4. USE UNREINFORCED CONCRETE CLASS N20 MIN, AND REINFORCED CONCRETE N25 MIN. FOR AGGRESSIVE CONDITIONS USE SPECIAL CLASS CONCRETE. PLASTIC PIPES SHALL BE MANAGED FOR THERMAL REVERSION AND FLOATATION.
5. MINIMUM STEEL REINFORCEMENT OF 0.4% OF CONCRETE CROSS SECTION PLACED CENTRALLY AND WITH 65 MINIMUM COVER TO EXTERNAL FACE. SPECIFY REINFORCEMENT FOR THE APPLICABLE LOADING IN DESIGN DRAWINGS.
6. SEE WBB-SEW-1207-1 IF CONTINUOUS TRENCH DRAINAGE REQUIRED.
7. SEE CODE FOR TABLES DETAILING SOIL CHARACTERISTICS, PIPE DETAILS AND LOADS.
8. DESIGN PILES IN ACCORDANCE WITH AS 2159.
9. DETECTABLE MARKER TAPE, REFER NOTE 10 ON WBB-SEW-1201-1.

REV. No.	DATE	DESCRIPTION	AUTH.
A		BASED ON SEQ-SEW-1204-1 VERSION A DATED 1/1/2013	

WBBROC WATER SERVICE PROVIDERS

WORK PRACTICES MUST COMPLY WITH ALL APPLICABLE OCCUPATIONAL HEALTH & SAFETY LEGISLATION

SEWERAGE STANDARD DRAWING

TYPICAL SPECIAL EMBEDMENT SUPPORT UTILISING PILES

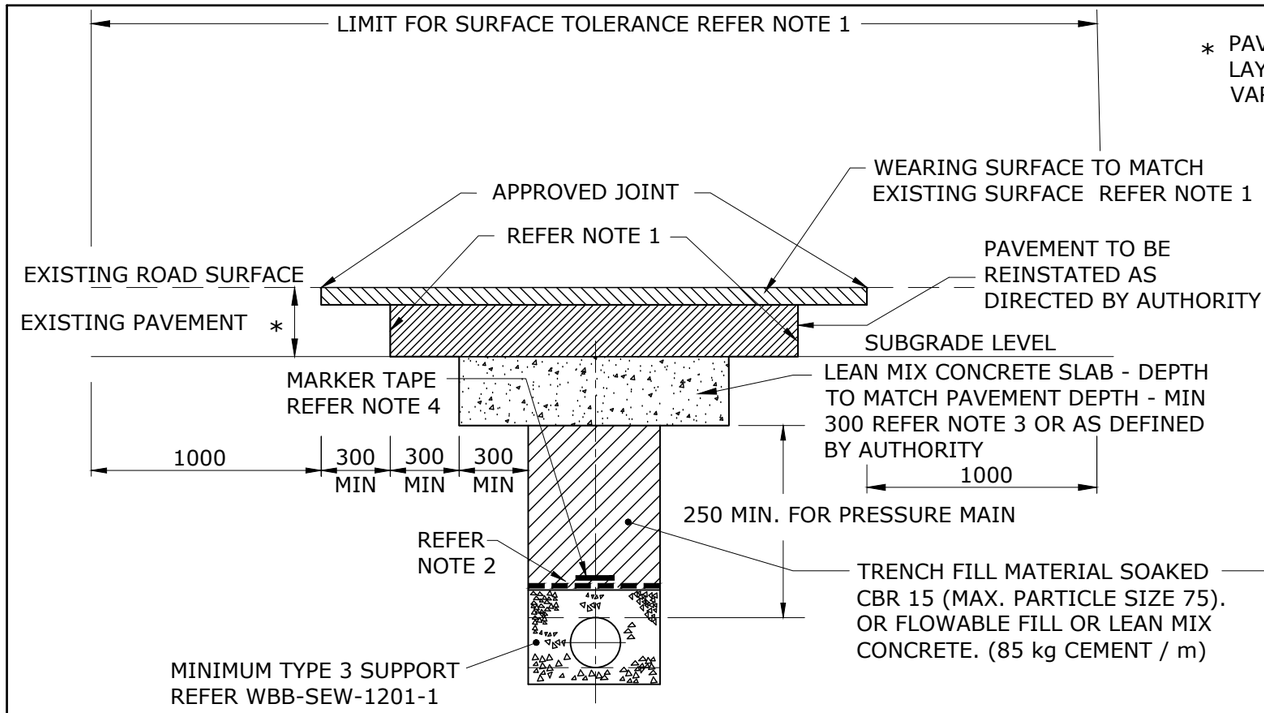
BRC	FCRC	GRC	NBRC	SBRC

DRAWING No. WBB-SEW-1204-1

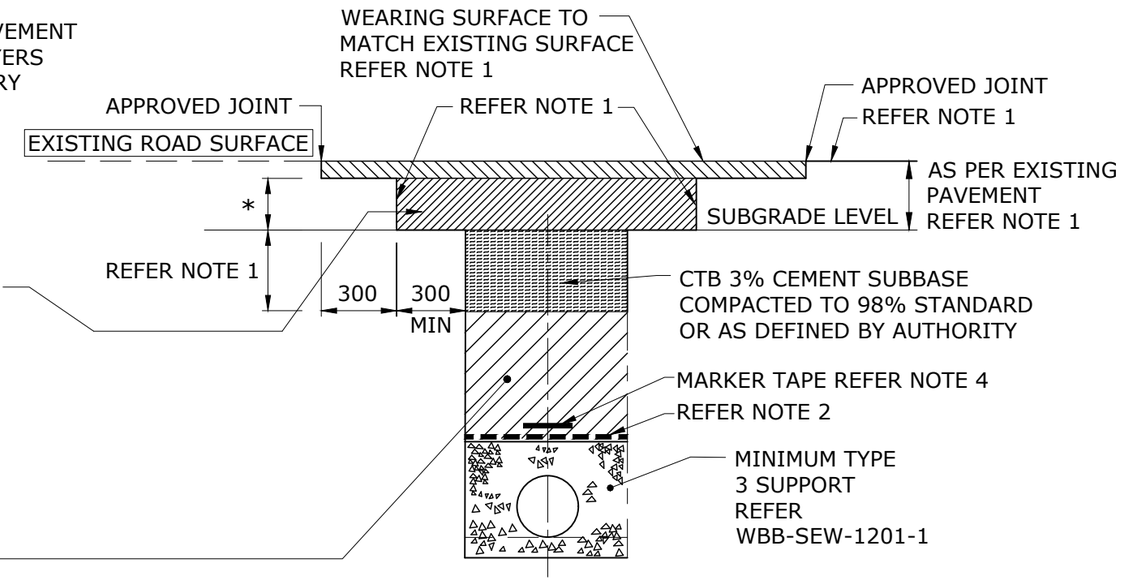
VERSION A

NOT TO SCALE

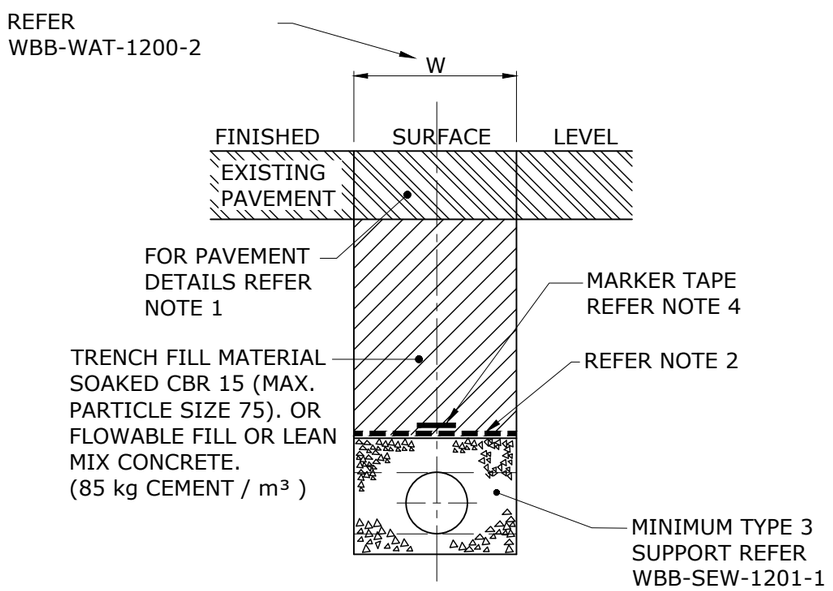
ORG DATE:



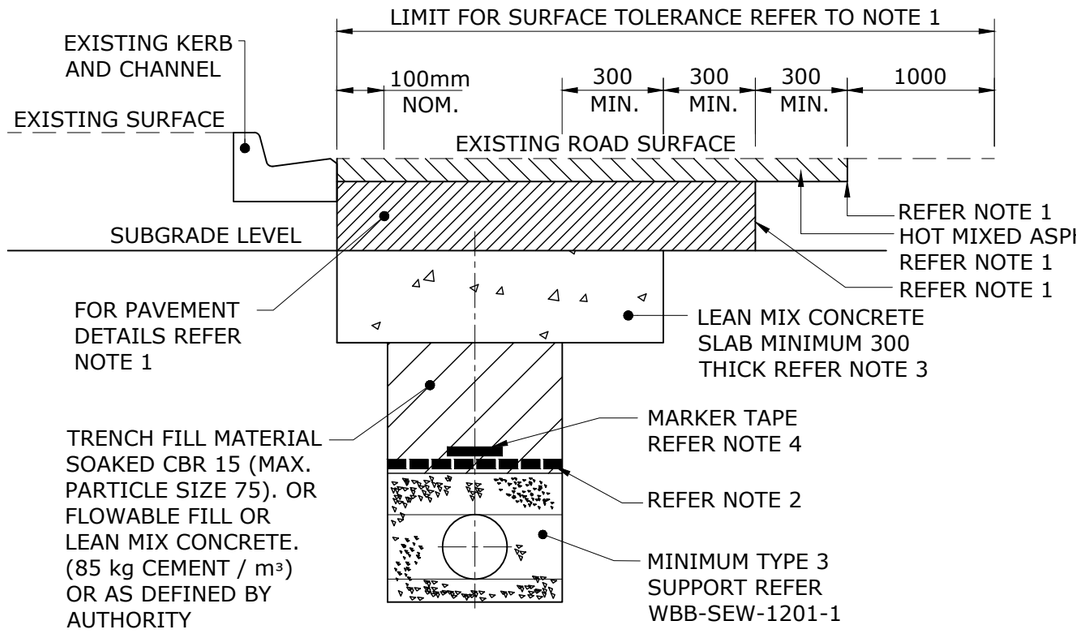
TYPE 14 CONSTRUCTION CROSSING SEALED ROADS



TYPE 15 CONSTRUCTION ALONG SEALED ROAD



TYPE 16 CONSTRUCTION ALONG UNSEALED ROAD SHOULDERS



TRENCH TYPE 17 CONSTRUCTION ALONG SEALED ROAD ADJACENT TO KERB

(REINSTATMENT TO AVOID EXISTING SUB-SOIL DRAINAGE SYSTEM)

NOTES

1. FOR EXCAVATION, BEDDING AND TRENCH FILL REQUIREMENTS REFER WBBROC CODES. FOR PAVEMENT AND WEARING SURFACE AND SUB-BASE OR SUBGRADE DETAILS REFER TO THE RELEVANT ROAD AUTHORITIES SPECIFICATION.
2. A GEOTEXTILE BARRIER SHALL BE PROVIDED AT THE INTERFACE OF EMBEDMENT ZONE AND TRENCH FILL ZONE.
3. THE SLAB USED IN TYPE 14 CONSTRUCTION SHALL BE GRADE N15 CONCRETE WITH ZERO SLUMP AND PLACED AND COMPACTED IN 100 THICK LAYERS.
4. THE ALIGNMENT OF ALL PIPES SHALL BE DEFINED BY A MARKER TAPE PLACED AS SHOWN AT TOP OF EMBEDMENT. THE TAPE SHALL CONTAIN A CONTINUOUS METAL STRIP AND BE COLOURED AND PROVIDED WITH A DESCRIPTION OF THE SEWAGE PRODUCT WITHIN.
5. DIMENSIONS ARE IN MILLIMETRES UNLESS SHOWN OTHERWISE.

REV. No.	DATE	DESCRIPTION	AUTH.
A		BASED ON SEQ-SEW-1205-1 VERSION A DATED 1/1/2013	

WBBROC WATER SERVICE PROVIDERS

WORK PRACTICES MUST COMPLY WITH ALL APPLICABLE OCCUPATIONAL HEALTH & SAFETY LEGISLATION

SEWERAGE STANDARD DRAWING

TYPICAL TRENCH AND BEDDING DETAILS WITHIN EXISTING ROADS TYPE 14 TO 17

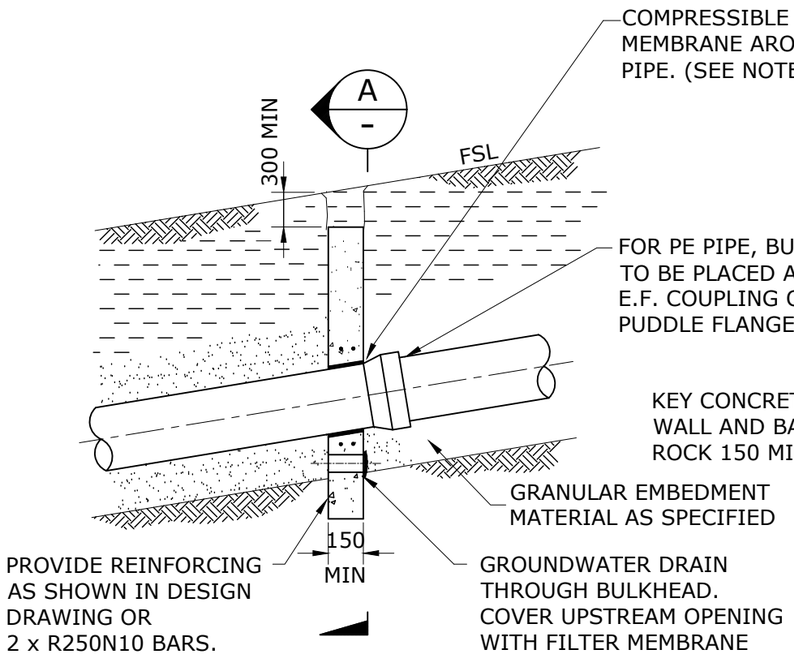
BRC	FCRC	GRC	NBRC	SBRC

DRAWING No. WBB-SEW-1205-1

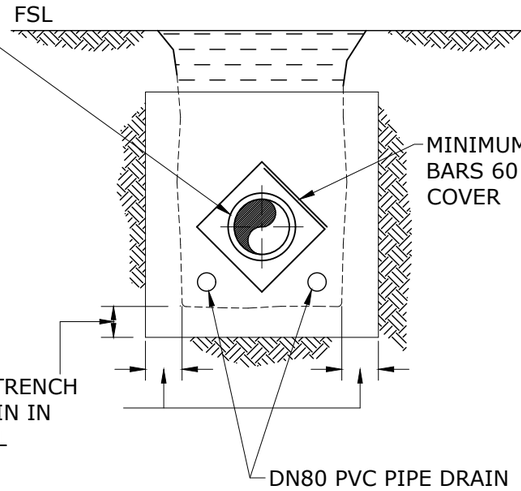
VERSION A

NOT TO SCALE

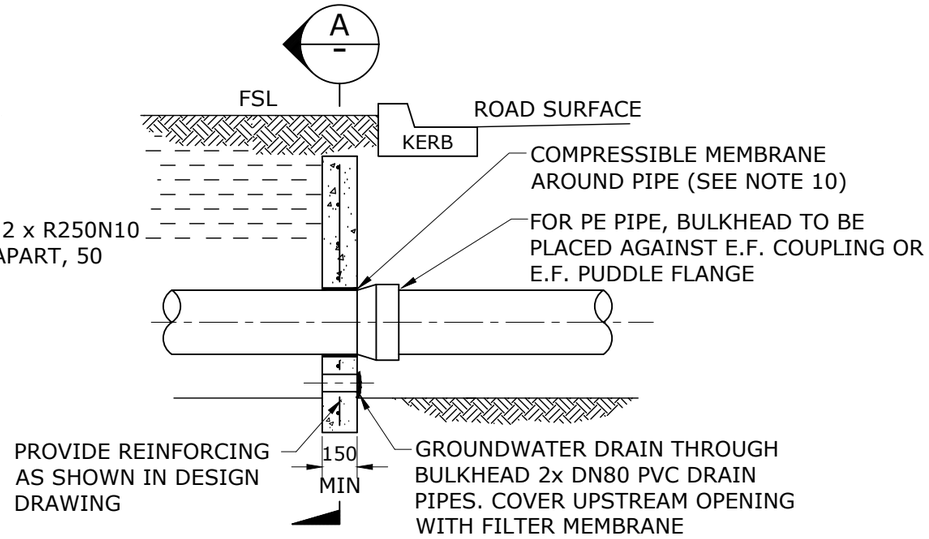
ORG DATE:



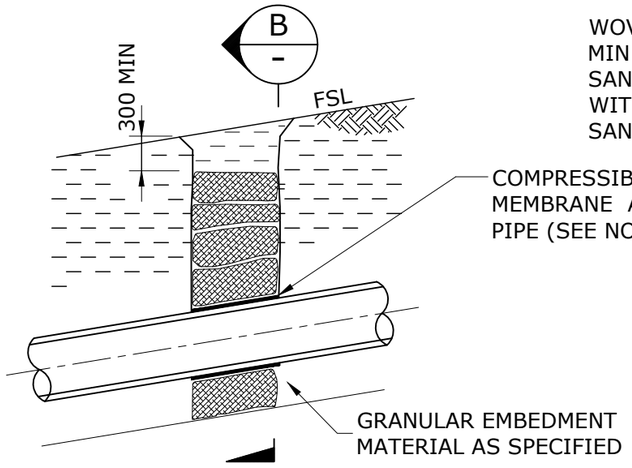
CONCRETE BULKHEAD DETAIL



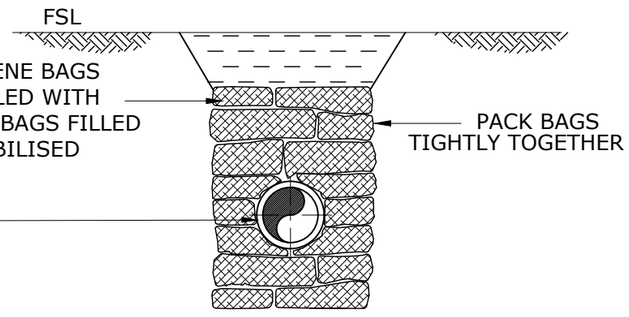
SECTION A-



TYPICAL ROAD CROSSING BULKHEAD



TRENCH STOP DETAIL



SECTION B-

NOTES:

1. ALL DIMENSIONS IN MILLIMETRES.
2. CONSTRUCT CONCRETE BULKHEADS AND TRENCH STOPS AT LOCATIONS SPECIFIED IN DESIGN DRAWINGS AND BASED ON THE SPACINGS IN TABLE 8.1 OF THE WBBROC SEWERAGE CODE.
3. CONSTRUCT ROAD CROSSING BULKHEAD ADJACENT TO KERB AND GUTTER WHERE ROAD FORMATION REQUIRES SUPPORT DUE TO PIPE GRADIENT OR GROUND CONDITIONS.
4. LOCATE BULKHEAD AT A DEVELOPMENTS RETAINING WALL UNDER THE WALL.
5. KEY CONCRETE BULKHEADS INTO SIDES AND BOTTOM OF TRENCH AGAINST A BEARING SURFACE OF UNDISTURBED SOIL.
6. CONCRETE TO BE CLASS N25.
7. DO NOT DEFORM PIPES DURING PLACEMENT OF CONCRETE.
8. SEAL BAGS TO PREVENT LEAKAGE OF CONTAINED MATERIAL.
9. PROVIDE CONTINUOUS DRAINAGE PATH
   - THROUGH BULKHEADS AND TRENCHSTOPS
   - AROUND MAINTENANCE HOLES
   - IN TRENCH EXCAVATIONS ACROSS ROADWAYS.

   TRENCH DRAINAGE TO BE IN ACCORDANCE WITH WBB-SEW-1207-1.
10. COMPRESSIBLE MEMBRANE AROUND PIPE TO BE 10 THICK POLYSTYRENE FOR BULKHEADS ADJACENT TO KERBS AND 3 MIN THICK RUBBER FOR BULKHEADS AND TRENCHSTOPS ON SLOPES.
11. TRENCH STOPS AND BULKHEADS ARE TO BE USED TO PREVENT OR IMPEDE THE MOVEMENT OF SURFACE AND GROUND WATER THAT WILL DAMAGE THE PIPE TRENCH OR THE PIPE EMBEDMENT.
12. TOP OF BULKHEADS AND TRENCHSTOPS TO BE IN THE RANGE 50MM ABOVE THE PIPE EMBEDMENT MATERIAL AND 300 mm BELOW FSL AS DETERMINED BY THE DESIGNER TO SUIT LOCAL GOVERNMENT CONDITIONS

REV. No.	DATE	DESCRIPTION	AUTH.
A		BASED ON SEQ-SEW-1206-1 VERSION B DATED 23/07/15	

WBBROC WATER SERVICE PROVIDERS

WORK PRACTICES MUST COMPLY WITH ALL APPLICABLE OCCUPATIONAL HEALTH & SAFETY LEGISLATION

SEWERAGE STANDARD DRAWING

TYPICAL BULKHEADS AND TRENCH STOPS

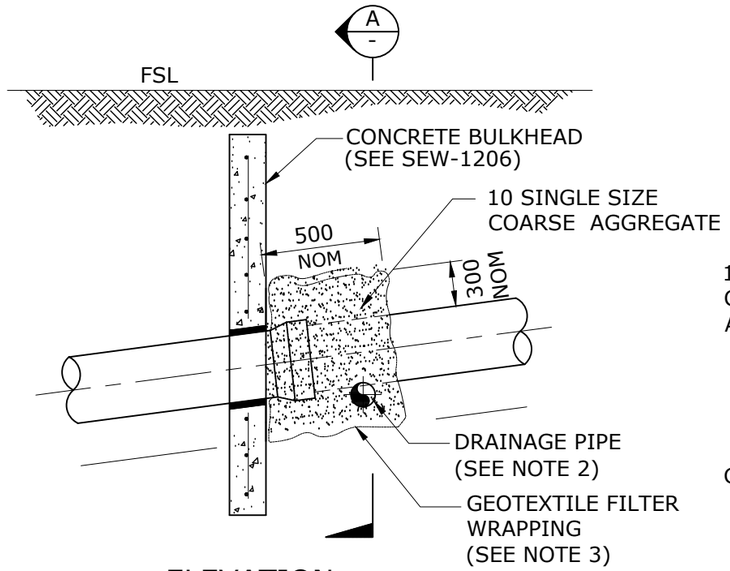
BRC	FCRC	GRC	NBRC	SBRC

DRAWING No. WBB-SEW-1206-1

VERSION A

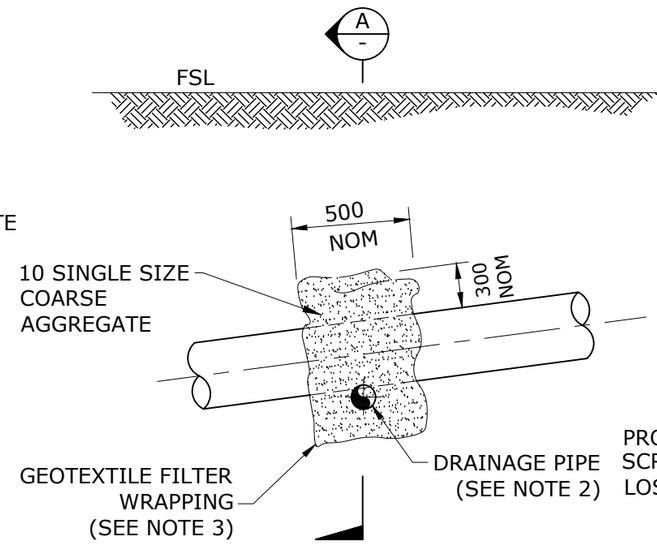
NOT TO SCALE

ORG DATE:



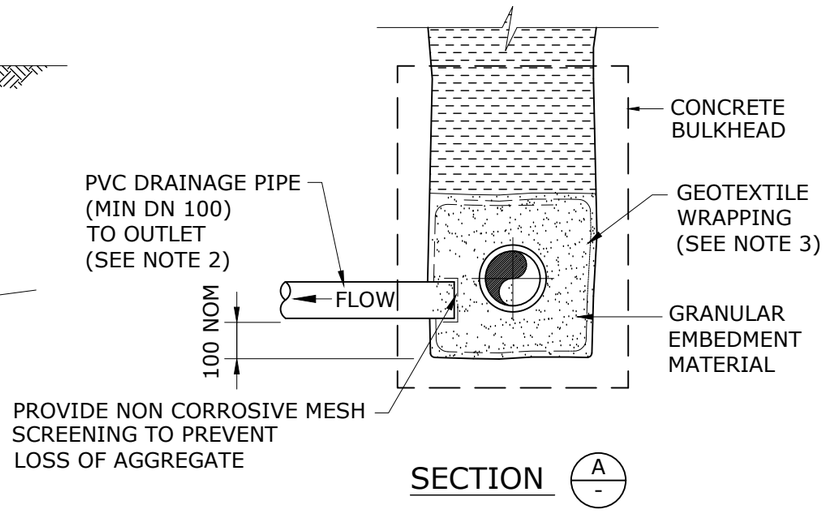
ELEVATION

DRAINAGE SYSTEM WITH BULKHEADS



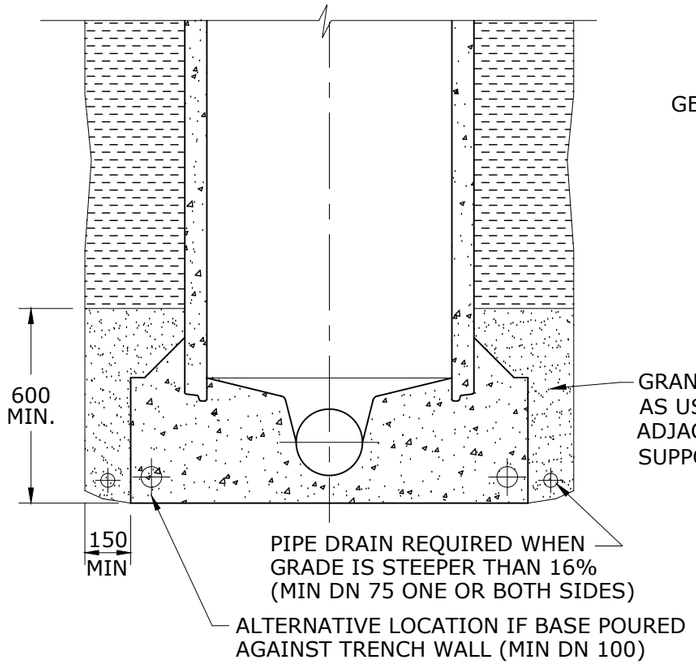
ELEVATION

DRAINAGE SYSTEM WITHOUT BULKHEADS

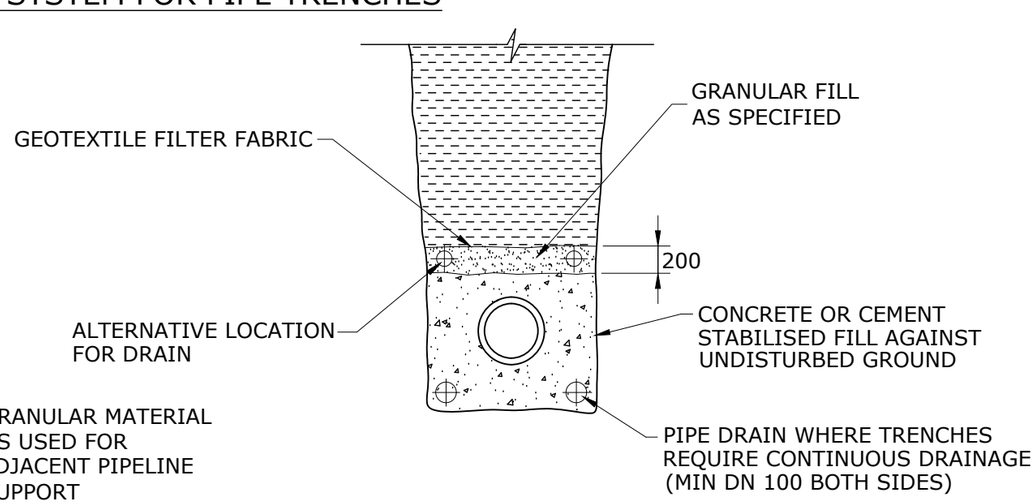


SECTION A -

TYPICAL DISCHARGE SYSTEM FOR PIPE TRENCHES



DRAINAGE PAST MAINTENANCE HOLES



TRENCH DRAINAGE FOR

CONCRETE ENCASEMENT/STABILISATION

NOTES

1. ALL DIMENSIONS IN MILLIMETRES.
2. DRAINAGE PIPES TO DISCHARGE INTO AUTHORISED WATER DISCHARGE AREAS AS DETAILED IN DESIGN DRAWINGS. LAY GEOTEXTILE FILTER FABRIC IN TRENCH
3. TO FULLY ENCAPSULATE THE DRAINAGE MATERIAL (GRANULAR EMBEDMENT). PROVIDE MINIMUM OF 250 LAP AT ALL FILTER FABRIC JOINTS. USE DRAINAGE SYSTEMS AS SPECIFIED WHERE SEWER IS LAID AT A GRADE OF >16%
4. PROVIDE CONTINUOUS DRAINAGE PATH
   - THROUGH BULKHEADS
   - AROUND MAINTENANCE STRUCTURES
   - IN TRENCH EXCAVATIONS ACROSS ROADWAYS

REV. No.	DATE	DESCRIPTION	AUTH.
A		BASED ON SEQ-SEW-1207-1 VERSION A DATED 1/1/2013	

WBBROC WATER
SERVICE PROVIDERS

WORK PRACTICES MUST COMPLY WITH ALL APPLICABLE OCCUPATIONAL HEALTH & SAFETY LEGISLATION

SEWERAGE STANDARD DRAWING

TRENCH DRAINAGE
TYPICAL SYSTEMS

BRC	FCRC	GRC	NBRC	SBRC

DRAWING No.

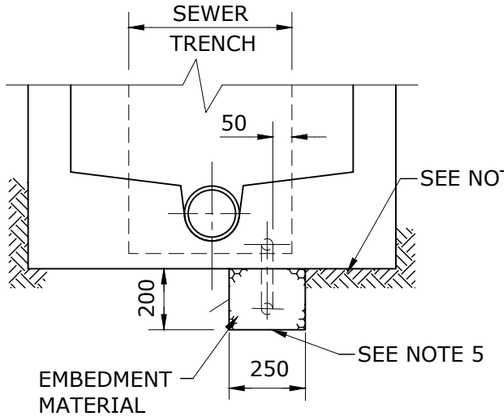
WBB-SEW-1207-1

VERSION

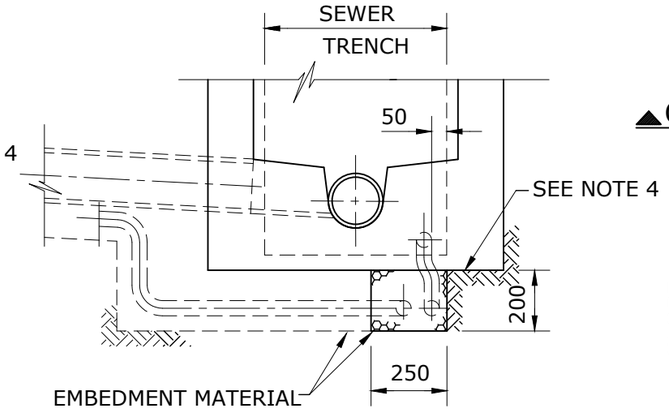
A

NOT TO SCALE

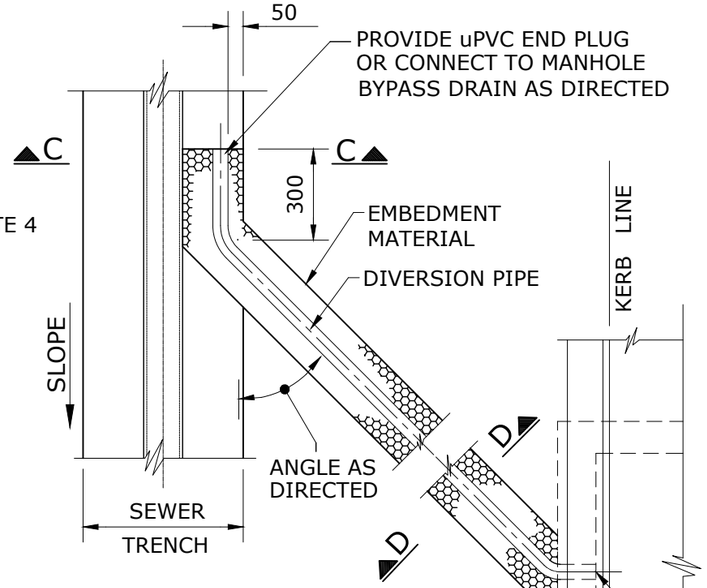
ORG DATE:



SECTION A-A

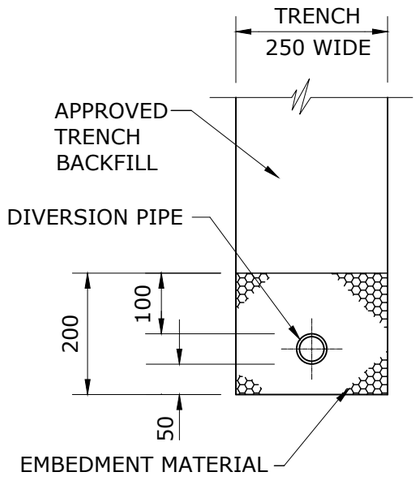


SECTION B-B

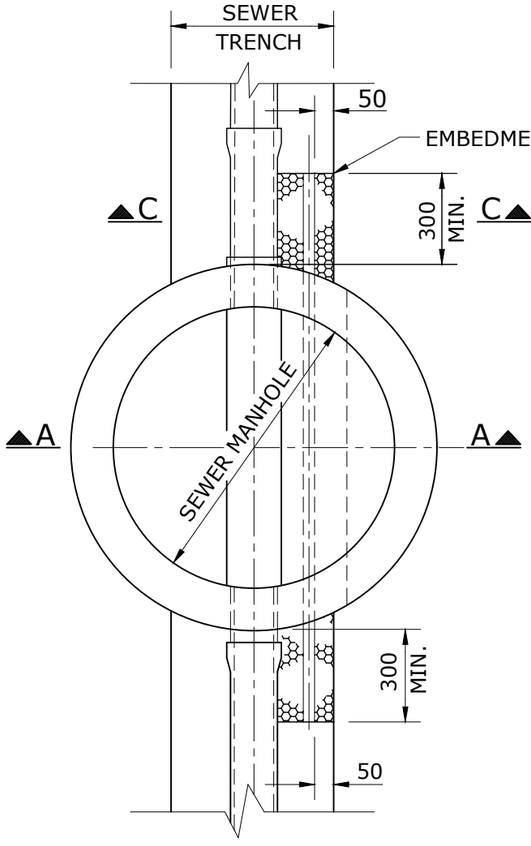


PLAN

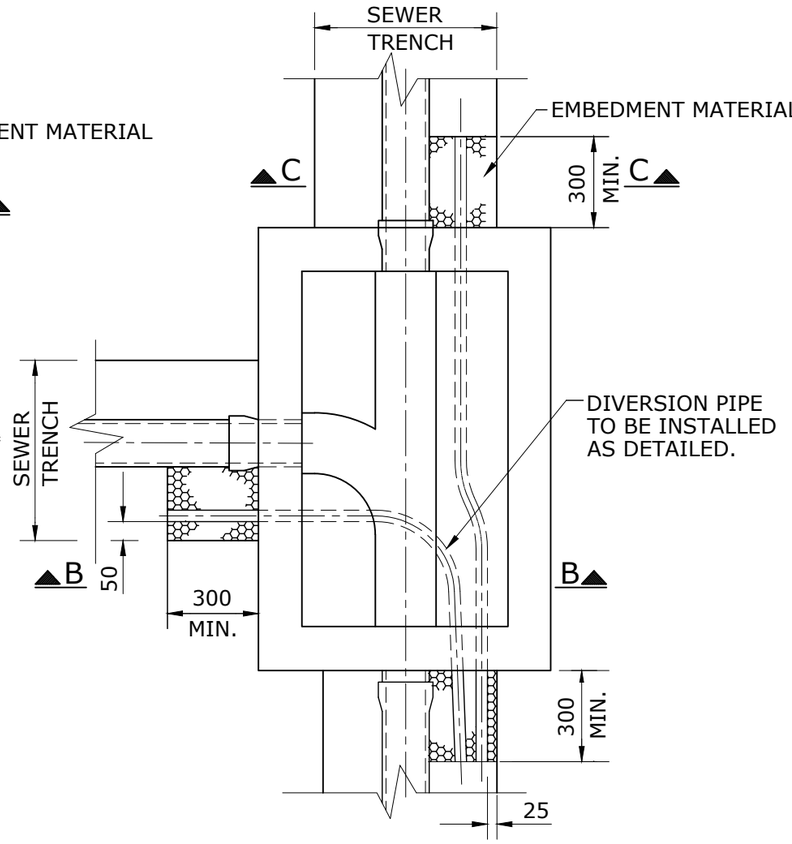
DIVERSION DRAIN TO STORMWATER OUTLET



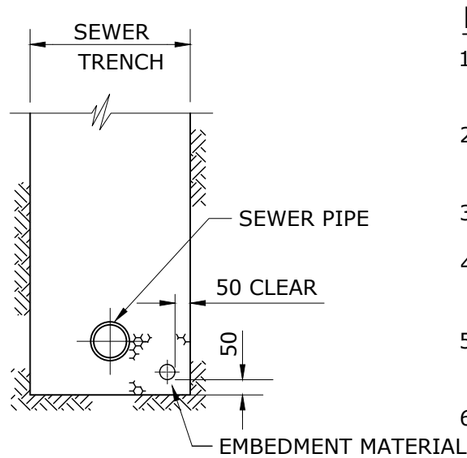
SECTION D-D
DIVERSION DRAIN
TRENCH



PLAN



PLAN



SECTION C-C

NOTES

1. DIVERSION PIPES AND FITTINGS TO BE Ø100 SLOTTED POLYTHYLENE CLASS 400 TO A.S.2439.
2. FOR EMBEDMENT MATERIAL REQUIREMENTS (GRADE 5/7) REFER TO WBBROC SEWERAGE CODE.
3. DIVERSION DRAINS SHALL BE FITTED WITH A FILTER SLEEVE/SOCK.
4. 0.5 THICK VISQUEEN ECOMEMBRANE OR SIMILAR TO BE LAID UNDER THE LIMITS OF THE MANHOLE.
5. LOCATE THE DIVERSION PIPE CENTRALLY IN TRENCH 50 ABOVE TRENCH FLOOR. PROVIDE END CAPS AT ALL PIPE ENDS.
6. DIMENSIONS ARE IN MILLIMETRES UNLESS SHOWN OTHERWISE.

REV. No.	DATE	DESCRIPTION	AUTH.
A		BASED ON SEQ-SEW-1207-2 VERSION A DATED 1/1/2013	

WBBROC WATER
SERVICE PROVIDERS

WORK PRACTICES MUST COMPLY WITH ALL APPLICABLE OCCUPATIONAL HEALTH & SAFETY LEGISLATION

SEWERAGE STANDARD DRAWING

TYPICAL DRAINAGE OF SEWER TRENCHES AND DIVERSION DRAINS

BRC	FCRC	GRC	NBRC	SBRC

DRAWING No.

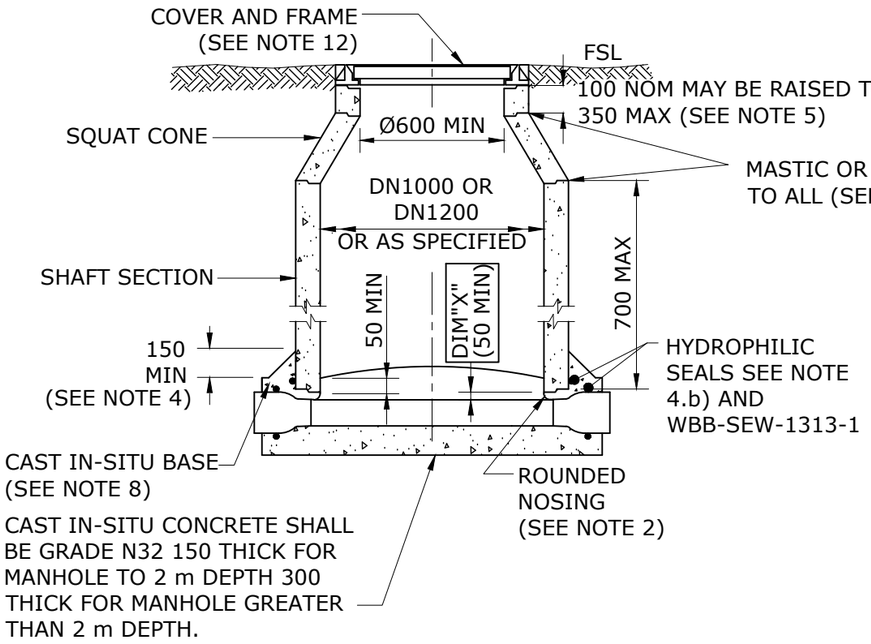
WBB-SEW-1207-2

VERSION

A

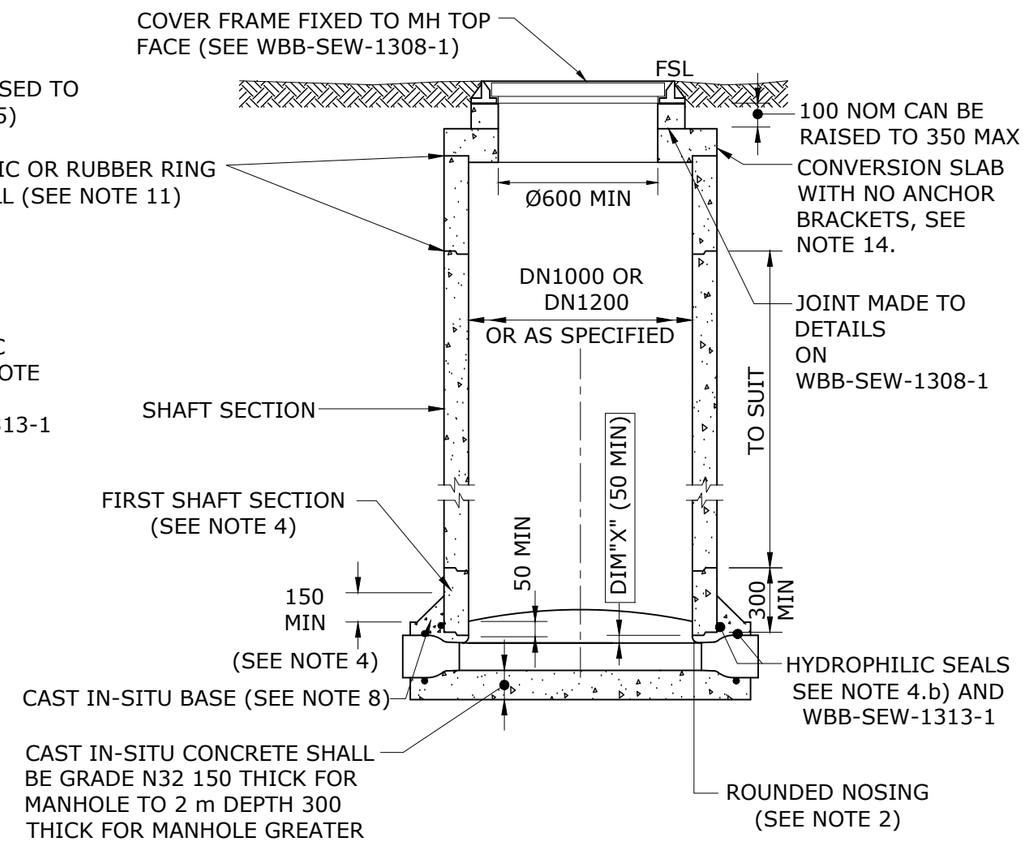
NOT TO SCALE

ORG DATE:



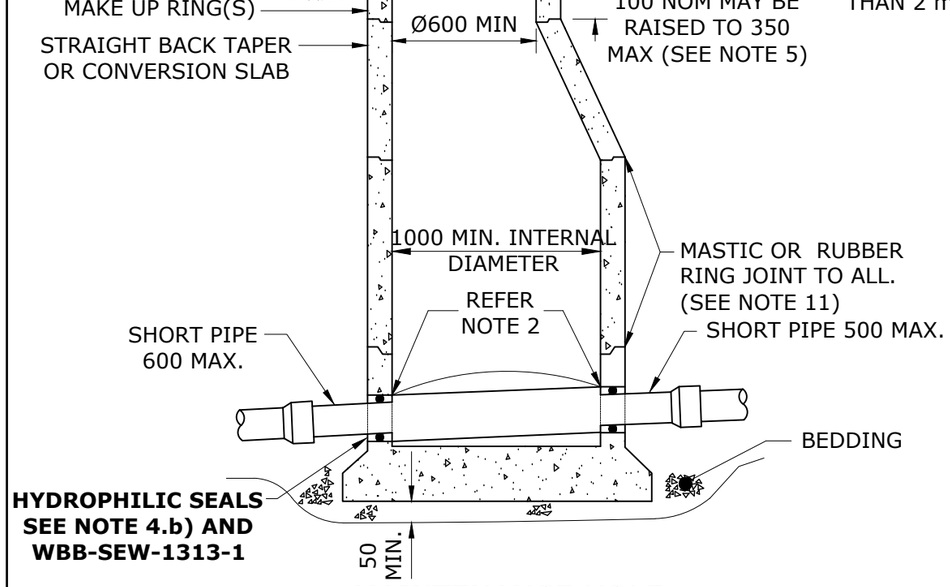
MAINTENANCE HOLE TYPE P1

(SEE NOTE 10)



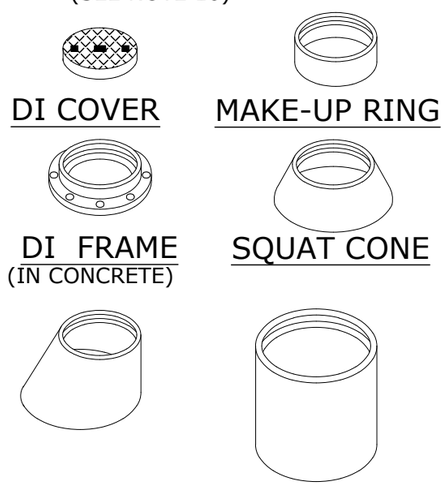
MAINTENANCE HOLE TYPE P2

FOR COMPONENT DEPTH TO 6000
(SEE NOTE 10)



MAINTENANCE HOLE TYPE P3 PRE-CAST BASE

(SEE NOTE 10)



NOTES

1. **ALL PRE CAST MANHOLES 3 m AND DEEPER AS WELL AS RECEIVING MANHOLES REQUIRES APPROVAL BY THE RELEVANT SP.**
2. PROVIDE ROUNDED NOSING ON INLET AND OUTLET PIPE TO PREVENT DAMAGE TO JETTING EQUIPMENT AND CCTV GUIDES AND CABLES.
3. CONSTRUCTION MAY BE A COMBINATION OF PRECAST AND IN-SITU TO SUIT APPLICATION. TYPE P3 PREFERRED. REFER NOTE 13.
4. LOCATION OF FIRST SHAFT SECTION FOR CAST IN-SITU BASE:
   a) FIRST SHAFT SECTION TO BE BETWEEN 300-600 LONG TO ALLOW FORMING OF CHANNEL AND BENCH.
   b) PLACE HYDROPHILIC SEAL WITH 100 COVER FOR CAST IN-SITU CONCRETE BASE.
   c) PRIME COMPONENT 200 FROM BOTTOM WITH CEMENT SLURRY. EMBED SHAFT SECTION 50 INTO WET CONCRETE BUILD UP OUTSIDE FILLET TO 150.
5. MAKE-UP RINGS:
   a) USE MINIMUM OF ONE MAKE-UP RING (PREFERABLY 100 OR 150) PER MH DURING CONSTRUCTION TO ALLOW FOR FUTURE SURFACE ADJUSTMENT WITHOUT AFFECTING THE SHAFT SECTIONS.
   b) USE TAPERED MAKE UP RING OR TAPERED SPACERS ON SLOPING GROUND..
6. BACKFILL AROUND MH
   a) THE METHOD OF BACKFILL AND COMPACTION AROUND MH TO BE AS FOR PIPE EMBEDMENT.
   b) TAKE CARE TO RAISE BACKFILL EQUALLY ALL AROUND THE MH TO AVOID UNBALANCED LATERAL LOADING
7. FOR ALL MH'S, STEP IRONS OR LADDERS ARE PROHIBITED.
8. CAST IN-SITU CONCRETE BASE TO BE N32.
9. IN WATER CHARGED GROUND OR WHERE THERE IS SIGNIFICANT RISK OF SURCHARGE USE ONLY FULL CAST IN-SITU MH.
10. FOR PIPE CONNECTIONS TO MH SEE WBB-SEW-1302-1.
11. ALL JOINTS WITHIN 1200 OF SURFACE TO HAVE EXTERNALLY APPLIED AT FOUR LOCATIONS AROUND THE JOINT A 100 LONG APPLICATION OF MEGAPOXY INTO THE JOINT. ALL JOINTS 1000 BELOW SURFACE OR DEEPER TO HAVE EXTERNALLY APPLIED A 150 WIDE BITUMASTIC SEAL TAPE THAT INCLUDES PRIMING THE CONCRETE SURFACE. INTERNAL JOINTS ARE NOT TO BE BAGGED OR MEGAPOXIED.
12. FOR MH COVER CLASS SELECTION AND FINISHED LEVELS SEE WBB-SEW-1308-1.
13. **DELETED**.
14. **DELETED**.
15. **BRC ACCEPTS TYPE P2 WITH CONVERSION SLAB ONLY.**
16. **WBBROC SP DO NOT ACCEPT STRAIGHT BACK TAPER.**

REV. No.	DATE	DESCRIPTION	AUTH.
A		BASED ON SEQ-SEW-1300-1 VERSION B DATED 08/09/15	

WBBROC WATER SERVICE PROVIDERS

WORK PRACTICES MUST COMPLY WITH ALL APPLICABLE OCCUPATIONAL HEALTH & SAFETY LEGISLATION

SEWERAGE STANDARD DRAWING

MAINTENANCE HOLES
≤ DN300 SEWER TYPES P1, P2 & P3
TYPICAL PRE-CAST

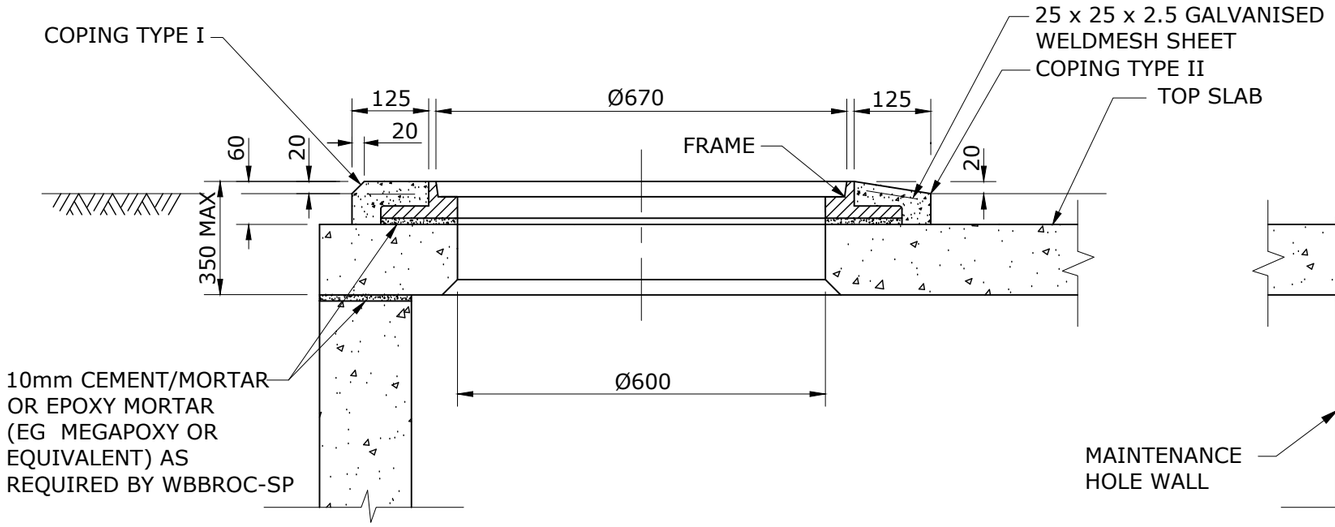
BRC	FCRC	GRC	NBRC	SBRC

DRAWING No. WBB-SEW-1300-1

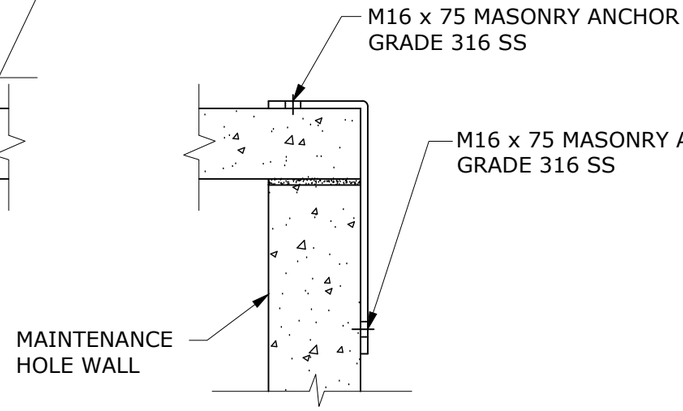
VERSION A

NOT TO SCALE

ORG DATE:



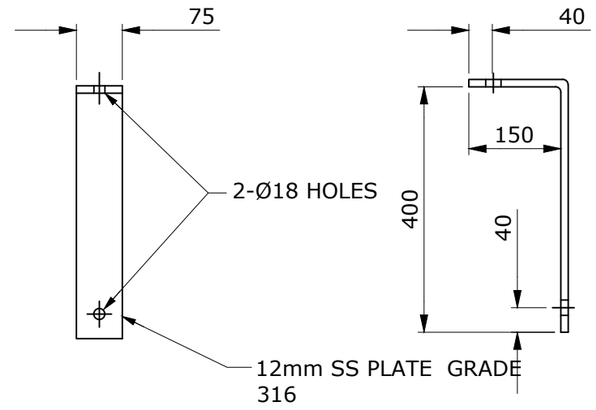
PRIVATE PROPERTY & FOOTPATH
COPING DETAILS
CLASS 'B' COVER AND FRAME



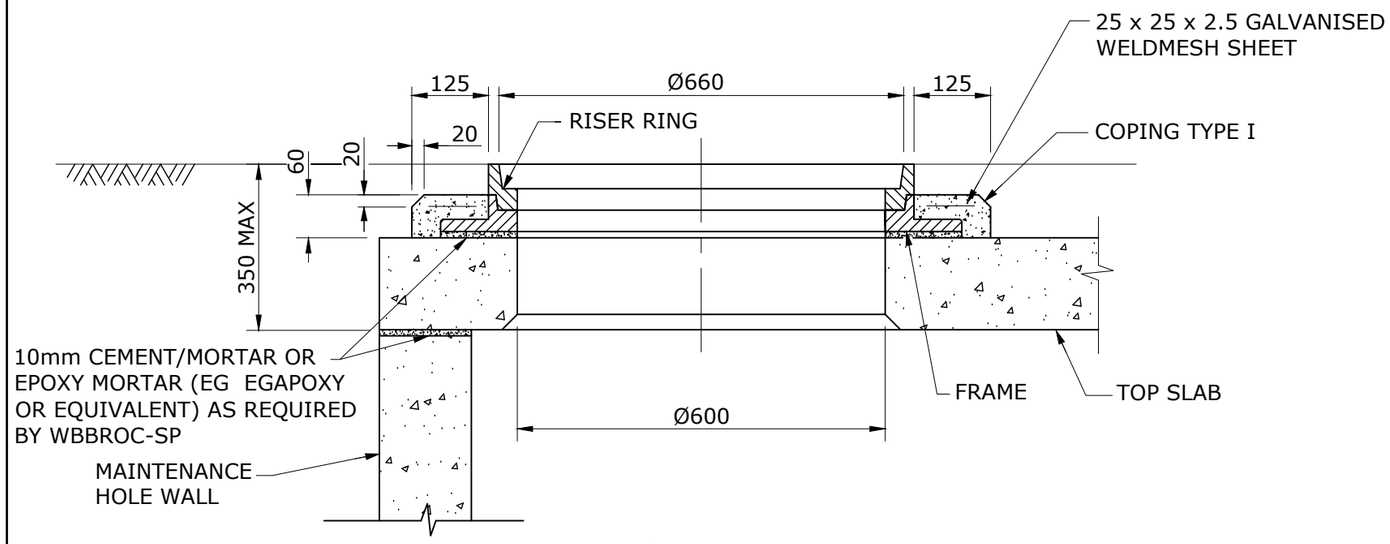
3 ANCHOR BRACKETS REQUIRED SPACED EQUALLY AROUND TOP SLAB SEE NOTE 4

TOP SLAB ANCHOR BRACKET DETAIL
FOR USE WITH BOLT DOWN COVERS
(SEE NOTE 4B)

COPING TO BE CONCRETE CAST IN-SITU	
TYPE	LOCATION
I	PRIVATE PROPERTY, FOOTPATH, SEALED & UNSEALED ROADWAY
II	PRIVATE PROPERTY & FOOTPATH



TOP SLAB ANCHOR BRACKET
(SEE NOTE 4B)



ROADWAY
COPING DETAILS
CLASS 'D' COVER AND FRAME

NOTES

1. ALL WORK AND MATERIALS SHALL BE IN ACCORDANCE WITH CURRENT WBBROC CODE SPECIFICATIONS AND STANDARDS.
2. UNLESS SPECIFIED OTHERWISE ALL MATERIALS AND WORK SHALL COMPLY WITH THE RELEVANT AUSTRALIAN STANDARDS.
3. ALL CASTINGS SHALL BE SERVICE PROVIDER APPROVED.
4. ANCHOR BRACKETS SHALL BE USED WITH ALL BOLT DOWN COVERS.

4B. DELETED.

5. ALL CONCRETE SHALL BE CLASS N20 EXCEPT MAINTENANCE HOLES WHICH ARE SPECIAL CLASS TO WSA PS-358 WITH CALCAREOUS AGGREGATES.
6. ALL DIMENSIONS ARE IN MILLIMETRES.
7. COVER FRAME TO MATCH FINISHED SURFACE LEVEL PROFILE.
8. WHERE BOLT DOWN LIDS ARE REQUIRED THE FRAME SHALL BE FIXED TO THE TOP SLAB WITH 4 - M16 x 100 MASONRY ANCHORS AND THE TOP SLAB FIXED DOWN WITH THREE EVENLY SPACED ANCHOR BRACKETS.

REV. No.	DATE	DESCRIPTION	AUTH.
A		BASED ON SEQ-SEW-1301-1 VERSION A DATED 1/1/2013	

WBBROC WATER
SERVICE PROVIDERS

WORK PRACTICES MUST COMPLY WITH ALL APPLICABLE OCCUPATIONAL HEALTH & SAFETY LEGISLATION

SEWERAGE STANDARD DRAWING

CAST IN-SITU MAINTENANCE HOLE
TYPICAL COPING & ANCHOR
BRACKET DETAILS

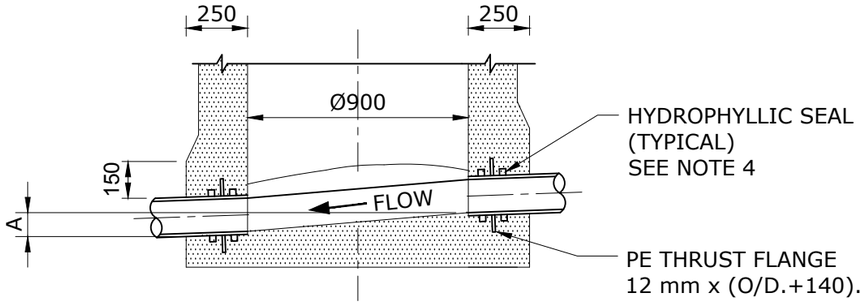
BRC	FCRC	GRC	NBRC	SBRC

DRAWING No.
WBB-SEW-1301-1

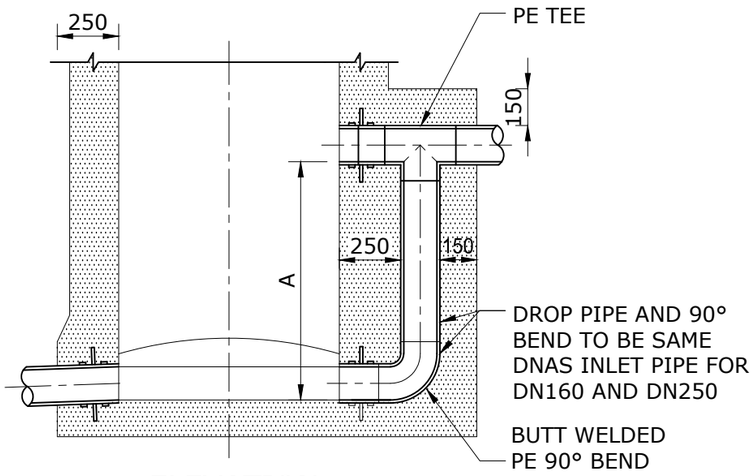
VERSION
A

NOT TO SCALE

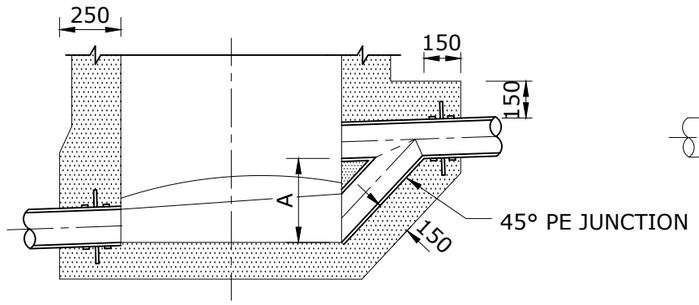
ORG DATE:



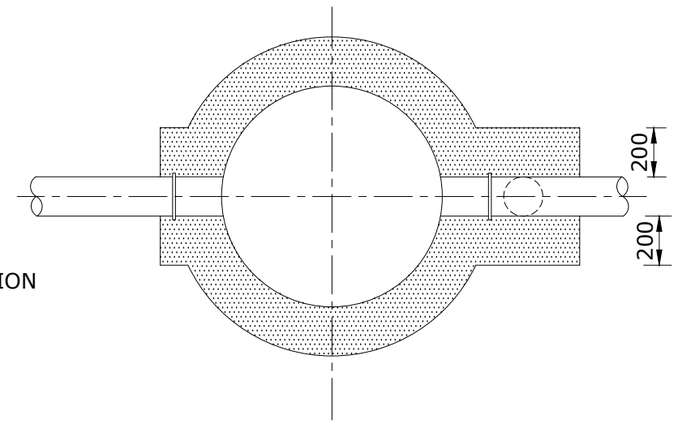
STRAIGHT THROUGH SEWER
TYPE "A"



ELEVATION



OBLIQUE BACKDROP
TYPE "C"



PLAN
EXTERNAL BACKDROP
TYPE "D"

FALL ACROSS MAINTENANCE HOLE (INLET TO OUTLET INVERT)			
DEFLECTION ANGLE		DIAGRAM	"A" MIN
0°			20
>0° to≤45°			30
>45° to ≤90°			40
BRANCH AT ANGLE	≤30°		30
	>30° to ≤60°		50
	>60° to ≤90°		80

NOTE:-
SEWERS CHANGING DIAMETER SHALL BE GRADED OBVERT TO OBVERT.

DIMENSION 'A' TABLE

NOM DIA	TYPE 'A'		TYPE 'C'		TYPE 'D'	
	MIN	MAX	MIN	MAX	MIN	MAX
110	*	200	200	460	460	-
160	*	250	250	600	600	-
250	*	280	280	700	700	-

* MINIMUM FALL ACROSS MAINTENANCE HOLE AS TABLED.

NOTES

1. **DELETED.**
2. **DELETED.**
3. MH CONNECTORS INCLUDING HYDROPHILIC SEALS & PUDDLE FLANGES TO BE PRE-FABRICATED TYPE.
4. MH CONNECTORS SHALL COMPLY WITH THE DETAILS ON DWG. WBB-SEW-1313-1.
5. STEP IRONS AND LADDERS SHALL NOT BE PROVIDED FOR WBBROC MANHOLES.
6. REFER WBB-SEW-1301-1 FOR TOP SLAB AND COPING INSTALLATION DETAILS.
7. ALL WORK AND MATERIALS SHALL BE IN ACCORDANCE WITH CURRENT WBBROC-SPS SPECIFICATIONS AND STANDARDS.
8. UNLESS SPECIFIED OTHERWISE ALL MATERIALS AND WORK SHALL COMPLY WITH THE RELEVANT AUSTRALIAN STANDARDS.
9. CONCRETE SHALL BE SPECIAL CLASS TO WSA PS-358 WITH CALCAREOUS AGGREGATE.
10. **DELETED.**
11. TOP SLAB THICKNESS SHALL BE INCREASED FROM 115 mm TO 150 mm WHERE CLASS 'D' COVERS ARE SPECIFIED FOR TRAFFICABLE LOCATIONS.
12. ALL CONCRETE SHALL BE VIBRATED.
13. THIS STANDARD DRAWING APPLIES FOR ALL RETICULATION SEWERS UP TO DN250 DIAMETER NUSEWERS.
14. DEPTH OF CHANNEL SHALL BE MAXIMUM 2 x DIAMETER FOR DN110 & DN160 DIAMETER SEWERS AND EQUAL TO DIAMETER FOR DN250 DIAMETER SEWERS.
15. ABBREVIATIONS C.J.-CONSTRUCTION JOINT
16. MAINTENANCE HOLE FRAME & COVER SHALL SUIT APPLICATION. REFER STANDARD DRAWING WBB-SEW-1308-2 TO WBB-SEW-1308 FOR DETAILS.
17. INTERNAL DROPS ARE NOT PERMITTED IN 'G' TYPE MAINTENANCE HOLES.
18. ENDS OF SEWERS SHALL FINISH FLUSH WITH INSIDE FACE OF MAINTENANCE HOLE WALL.
19. THE OBVERT LEVEL OF THE UPSTREAM SEWER SHALL NOT BE LOWER THAN THE OBVERT LEVEL OF THE DOWNSTREAM SEWER.
20. MAINTENANCE HOLES SHALL BE LOCATED CENTRALLY OVER SEWERS.
21. MAINTENANCE HOLE BENCHING SHALL BE CONSTRUCTED TO PROVIDE A SMOOTH, NON-TURBULENT FLOW.
22. BENCHING SHALL BE FINISHED WITH AN EQUAL PARTS SAND AND CEMENT TOPPING.

REV. No.	DATE	DESCRIPTION	AUTH.
A		BASED ON SEQ-SEW-1301-2 VERSION B DATED 21/08/15	

WBBROC WATER
SERVICE PROVIDERS

WORK PRACTICES MUST COMPLY WITH ALL APPLICABLE OCCUPATIONAL HEALTH & SAFETY LEGISLATION

SEWERAGE STANDARD DRAWING

"G" TYPE - PE NUSEWERS
TYPICAL MAINTENANCE HOLE DETAILS

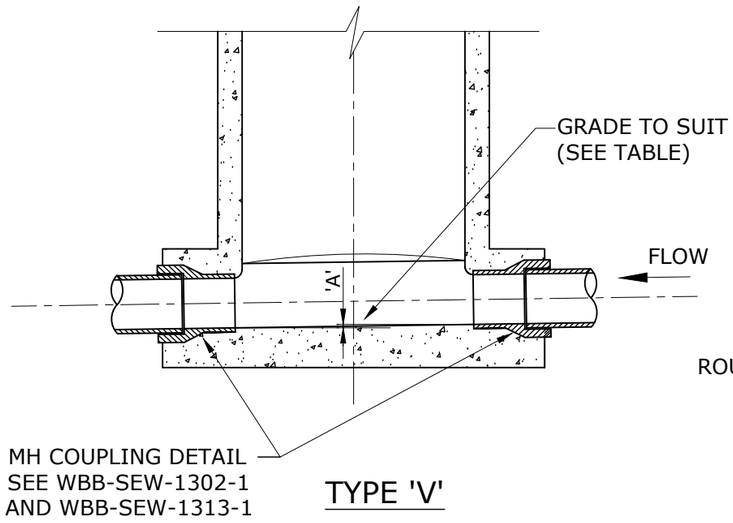
BRC	FCRC	GRC	NBRC	SBRC

DRAWING No.
WBB-SEW-1301-2

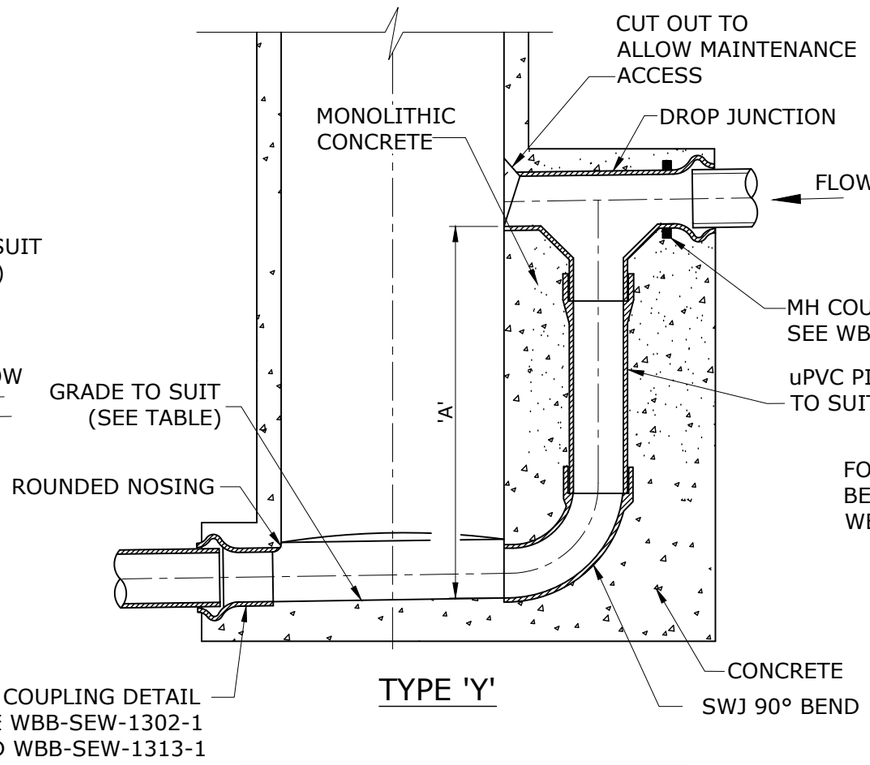
VERSION
A

NOT TO SCALE

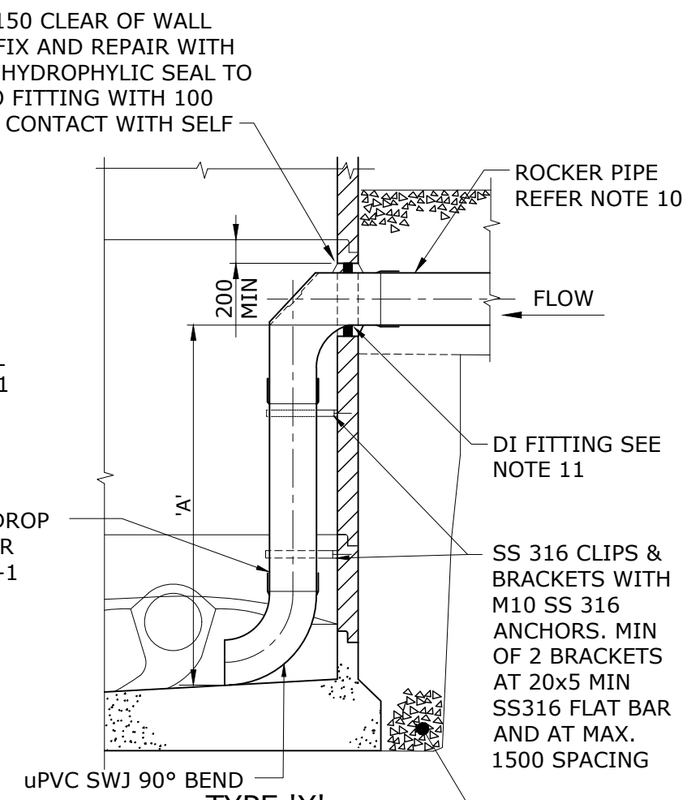
ORG DATE:



TYPE 'V'



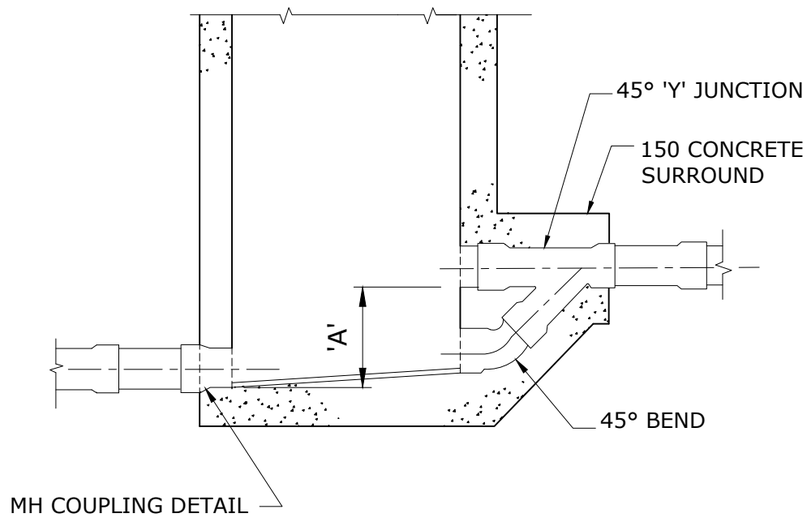
TYPE 'Y'



TYPE 'X'

(REFER TO NOTE 6**,** 11 **AND 12**)

FOR WBBROC, D.I. FITTING SHALL BE REPLACED WITH uPVC FITTING RRJ



TYPE 'W'

FALL ACROSS MAINTENANCE HOLE (INLET TO OUTLET INVERT)			
DEFLECTION ANGLE		DIAGRAM	"A" MIN
0°			20
>0° to≤45°			30
>45° to ≤90°			40
BRANCH AT ANGLE	≤30°		30
	>30° to ≤60°		50
	>60° to ≤90°		80

NOTE:-
SEWERS CHANGING DIAMETER SHALL BE GRADED OBVERT TO OBVERT

DIMENSION 'A' TABLE

NOM	TYPE 'V'		TYPE 'W'		TYPE 'X'		TYPE 'Y'	
DIA	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX
100	*	200	200	460	460	-	460	-
150	*	250	250	600	600	-	600	-
225	*	280	280	700	700	-	700	-
300	*	330	-	-	-	-	-	-

* MINIMUM DROP THROUGH MAINTENANCE HOLE AS TABLED

NOTES

1. ALL DIMENSIONS IN MILLIMETRES.
2. THIS DRAWING APPLICABLE TO PRECAST AND IN-SITU MH.
3. ALL CONNECTION TYPES SHOWN IN THIS DRAWING ARE APPLICABLE TO VC, PVC RUBBER RING (RRJ), PP & GRP PIPES, UNLESS OTHERWISE SPECIFIED.
4. TO ENSURE BONDING COAT PVC AND GRP PIPES CAST INTO MH WALL AND BASE WITH RESIN/SOLVENT & SAND OR ABRADE FOR THE LENGTH OF WALL PENETRATION IN ADDITION TO HYDROPHYLIC SEAL.
5. ROCKER PIPE LENGTHS AND CONNECTION SYSTEMS TO BE AS SHOWN IN WBB-SEW-1302-1.
6. Ø1200 MANHOLES SHALL BE USED WHERE MORE THAN ONE (1) TYPE 'X' DROP ENTERS A MANHOLE OR WHERE SHOWN ON THE DRAWINGS.
7. FLEXIBLE JOINTS SHALL BE CLEAR OF ALL CONCRETE.
8. MANHOLE DROP TYPES 'V', 'W', 'X' AND 'Y' SHALL ONLY BE USED IN SEWERS FROM Ø100 TO Ø225.
9. DETAILS SHOWN ARE LIMITED TO DEPTHS OF 6000. FOR DEPTHS > 6000 REFER TO STRUCTURAL DESIGN DRAWINGS.
10. INTERNAL DROPS ARE NOT PERMITTED WITHOUT THE USE OF AN EXTERNAL L.R BEND WHERE THE SEWER GRADIENT EXCEEDS 1 IN 10 (10%).
11. FOR WBBROC SP, DI FITTING SHALL BE REPLACED WITH uPVC FITTING RRJ.
12. **INTERNAL DROPS REQUIRE APPROVAL OF FCRC.**

REV. No.	DATE	DESCRIPTION	AUTH.
A		BASED ON SEQ-SEW-1303-1 VERSION B DATED 21/08/15	

WBBROC WATER
SERVICE PROVIDERS

WORK PRACTICES MUST COMPLY WITH ALL APPLICABLE OCCUPATIONAL HEALTH & SAFETY LEGISLATION

SEWERAGE STANDARD DRAWING

MAINTENANCE HOLES
SEWERS ≤ DN300
TYPICAL CHANGES IN LEVEL DETAILS

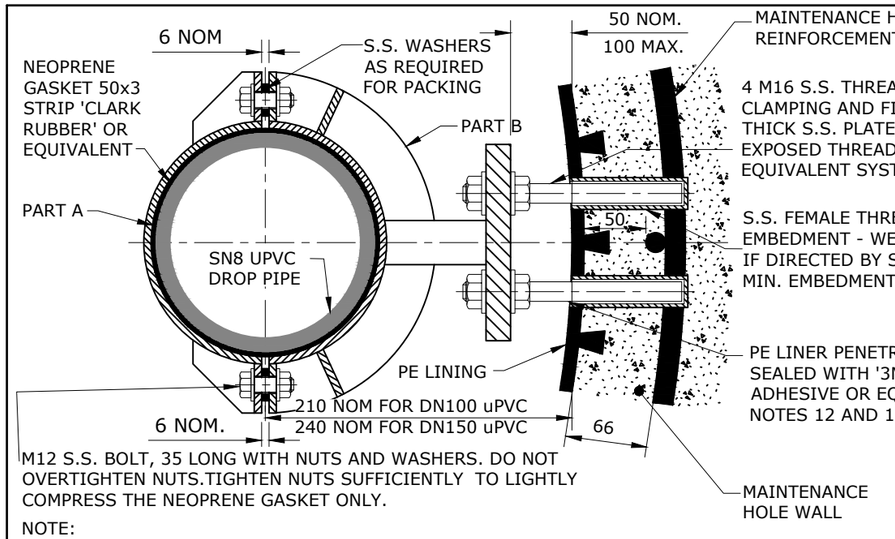
BRC	FCRC	GRC	NBRC	SBRC

DRAWING No.
WBB-SEW-1303-1

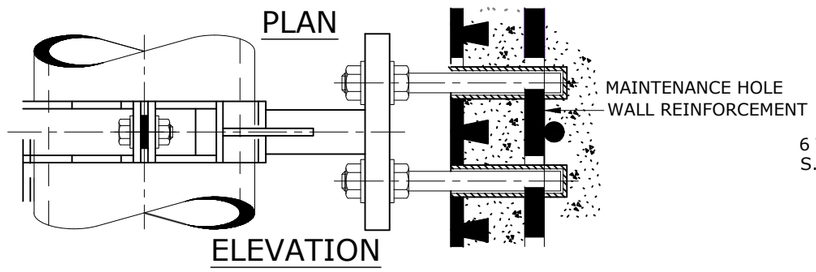
VERSION
A

NOT TO SCALE

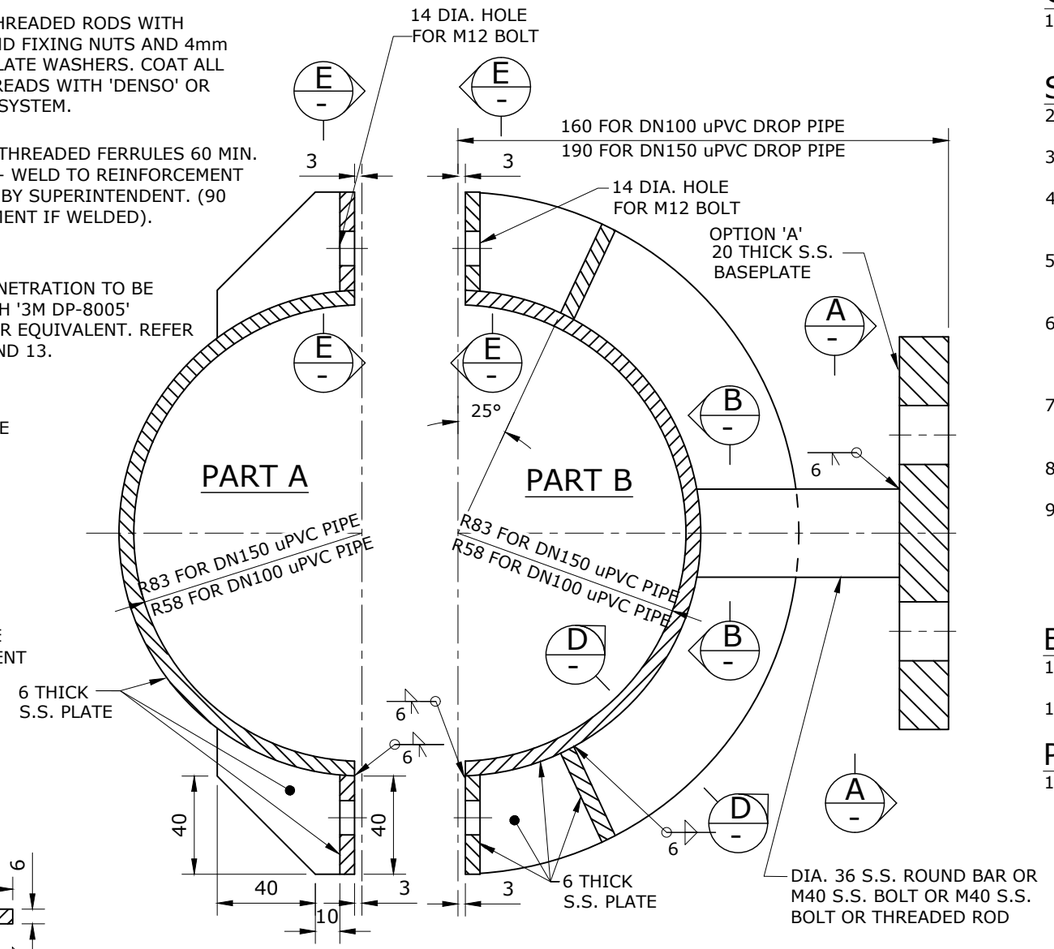
ORG DATE:



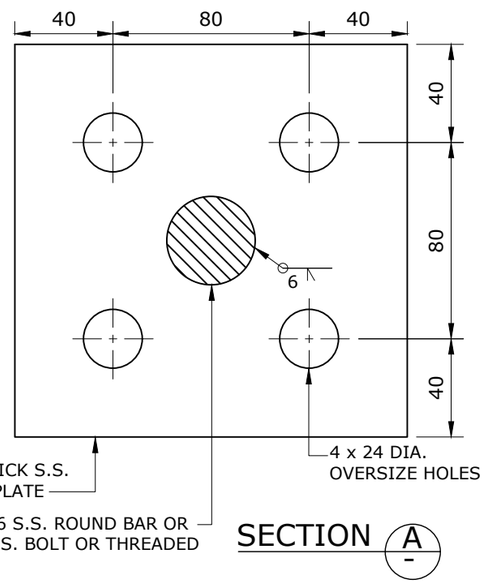
NOTE:
GLUE THE NEOPRENE GASKET TO THE BRACKET USING A SUITABLE CONTACT CEMENT. SIMILARLY GLUE ANY ADDITIONAL NEOPRENE GASKETS REQUIRED TO THE GASKET ALREADY INSTALLED.

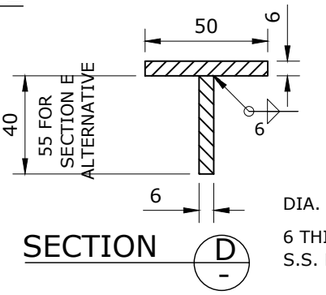


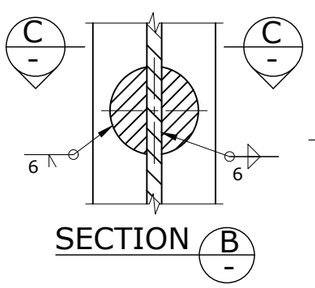
BRACKET ASSEMBLY - OPTION 'A' BASE

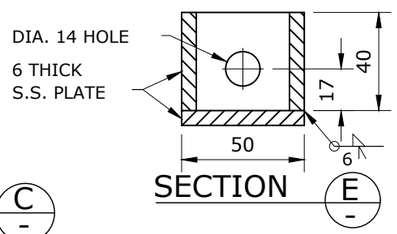


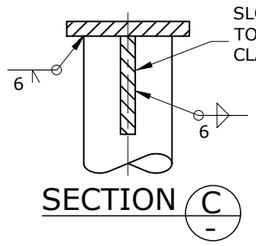
BRACKET DETAILS - OPTION 'A' BASE

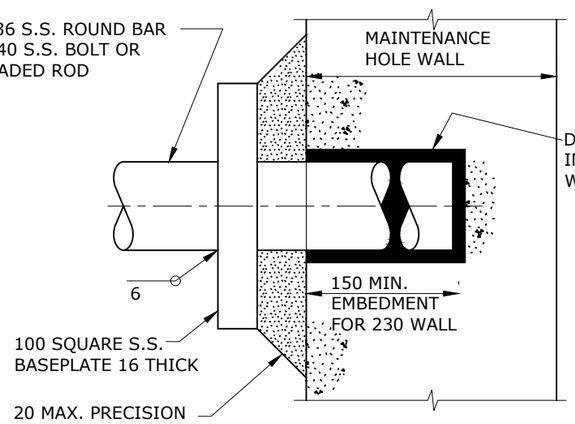


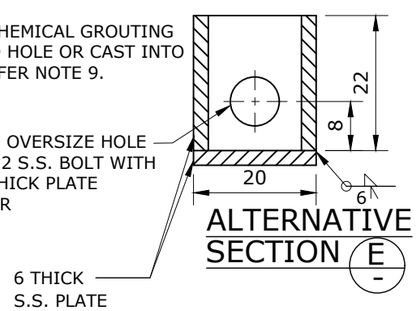












NOTES

GENERAL

1. BRACKETS TO BE INSTALLED AT MAXIMUM 1500 CENTRES BUT AT LEAST ONE AT TOP AND ONE AT BOTTOM OF DROP PIPE.

STAINLESS STEEL

2. STAINLESS STEEL WORK SHALL COMPLY TO AS1554.6-1994 OR APPROVED EQUIVALENT.
3. STAINLESS STEEL MATERIALS SHALL BE SUPPLIED TO MIN ASTM GRADE 316 OR EQUIVALENT.
4. WELDING SHALL COMPLY TO AUSTRALIAN WELDING RESEARCH ASSOCIATION TECHNICAL NOTE 16 - WELDING STAINLESS STEELS.
5. WELDS SHALL BE 6mm CONTINUOUS FILLET WELDS (AWS A5.9 ELECTRODE (2209) UNLESS NOTED OTHERWISE.
6. ALL STORAGE, FABRICATION AND WELDING OF STAINLESS STEEL SHALL BE CARRIED OUT IN AN AREA SPECIFICALLY DEDICATED TO THE PARTICULAR GRADE OF STAINLESS STEEL BEING USED.
7. WELD SURFACE FINISH TO BE:
   (a) INTERNAL WELDS 1B, II
   (b) EXTERNAL WELDS 1B, I (200#)
8. USE OVERSIZE WASHERS AS REQUIRED FOR OVERSIZE HOLES.
9. ALL SHAFTS FOR OPTION 'B' AND AT LEAST ONE FERRULE FOR OPTION 'A' SHALL BE WELDED TO REINFORCEMENT WHERE BRACKETS ARE INSTALLED WITHIN 60 METRES OF HIGH VOLTAGE ELECTRICAL POWER TRANSMISSION TOWERS OR AS DIRECTED BY THE AUTHORITY.

BASE DEAL

10. OPTION 'A' BASE IS APPLICABLE FOR PE-LINED MAINTENANCE HOLES.
11. OPTION 'B' BASE IS APPLICABLE TO EXISTING OR NEW MAINTENANCE HOLES NOT REQUIRING PE LINING.

PE LINER

12. THE FERRULES SHOULD BE INSTALLED THROUGH THE PE LINER IF NOT REQUIRED TO BE WELDED TO WALL REINFORCEMENT. OTHERWISE, THE THREADED RODS SHOULD BE INSTALLED THROUGH THE PE LINER INTO THE PRE-INSTALLED FERRULES. AT THE INTERFACE BETWEEN THE PE-LINED WALL AND THE THREADED STAINLESS STEEL RODS, THE GAP SHALL BE SEALED USING '3M'S DP-8005' ADHESIVE OR SIMILAR APPROVED PRODUCT TO CREATE A GAS TIGHT SEAL, INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS (APPLYING A CONTINUOUS BEAD AROUND THE INTERFACE POINT OF THE THREADED ROD AND THE PE LINER).
13. OPERATORS SHOULD NOTE THAT '3M' DP-8005 ADHESIVE HAS A VERY SHORT WORKING LIFE (3 TO 4 MINUTES).

REV. No.	DATE	DESCRIPTION	AUTH.
A		BASED ON SEQ-SEW-1303-4 VERSION A DATED 1/1/2013	

WBBROC WATER SERVICE PROVIDERS

WORK PRACTICES MUST COMPLY WITH ALL APPLICABLE OCCUPATIONAL HEALTH & SAFETY LEGISLATION

SEWERAGE STANDARD DRAWING

TYPICAL STAINLESS STEEL BRACKETS FOR DN100 AND DN150 uPVC DROP PIPES

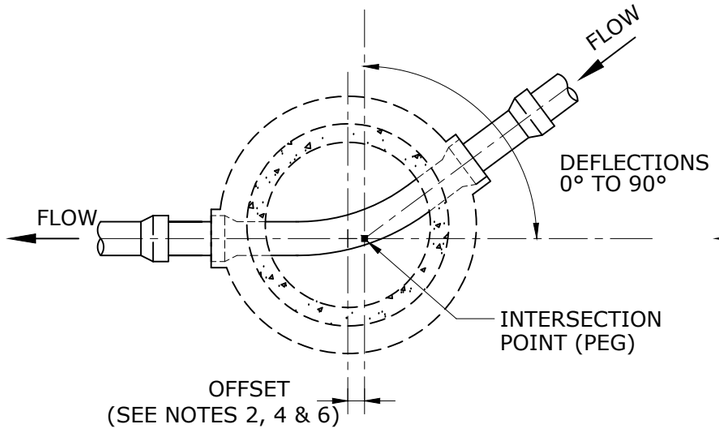
BRC	FCRC	GRC	NBRC	SBRC

DRAWING No. WBB-SEW-1303-4

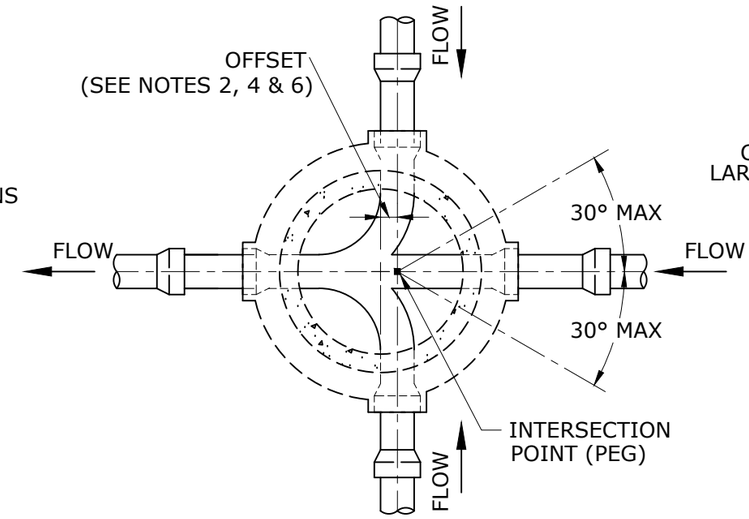
VERSION A

NOT TO SCALE

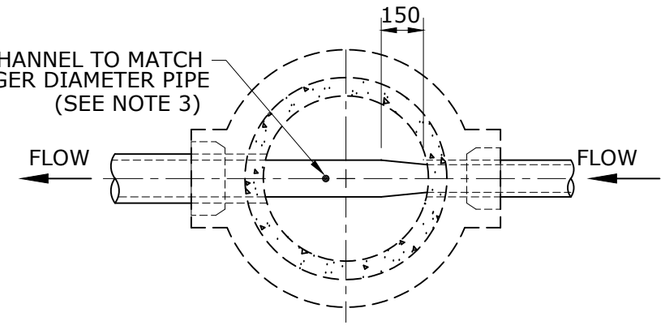
ORG DATE:



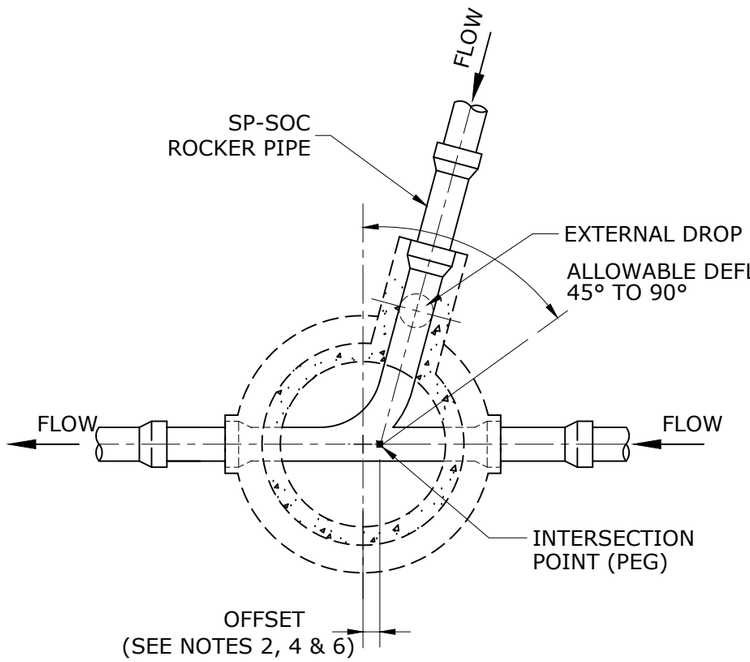
CHANGE IN DIRECTION OF SEWER

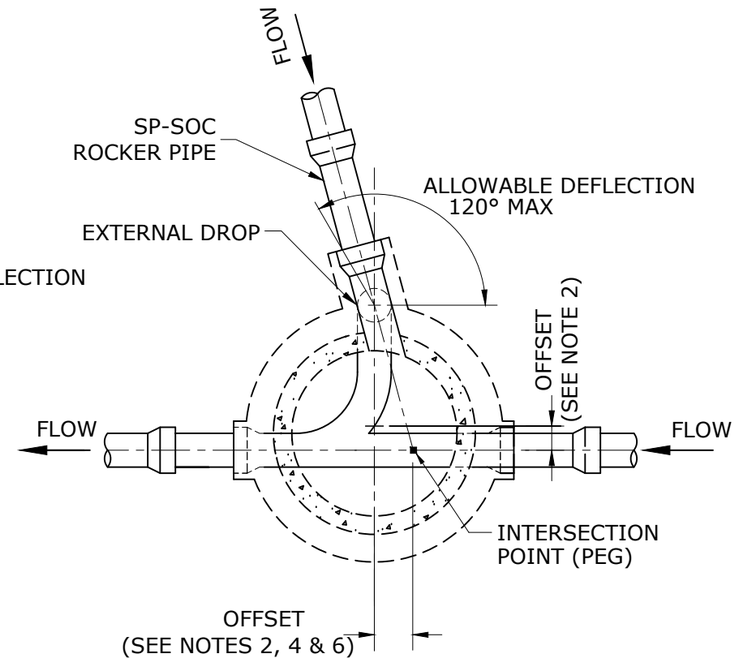


MULTIPLE INCOMING SEWERS



CHANGE IN DIAMETER OF SEWER





INCOMING SEWERS HAVING EXTERNAL DROP

LEGEND

- INTERSECTION POINT
- CENTRELINE OF MH

NOTES

1. ALL DIMENSIONS IN MILLIMETRES.
2. WHERE NECESSARY PULL MH OFF CENTRELINE OF SEWER (MAX 200) TO IMPROVE FLOW AND ACCESSIBILITY PROVIDED THE FOLLOWING CONDITIONS ARE MET:
   - ALL TANGENT POINTS TO BE CONTAINED WITHIN MH.
   - SUFFICIENT WORK AREA AVAILABLE AS 2xØ300 FOOT AREAS.
   - MAINTENANCE EQUIPMENT CAN BE USED IN ALL MAINS.
   - OFFSET AS SPECIFIED.
3. INVERT LEVELS TO BE AS SHOWN IN DESIGN DRAWINGS.
4. FOR CHANNEL INTERSECTION AND OFFSET DETAILS SEE WBB-SEW-1305-1.
5. FOR INLET - OUTLET CHANGES IN LEVEL REQUIREMENTS SEE WBB-SEW-1301-4 AND WBB-SEW-1303-1.
6. **DELETED**

REV. No.	DATE	DESCRIPTION	AUTH.
A		BASED ON SEQ-SEW-1304-1 VERSION A DATED 1/1/2013	

WBBROC WATER
SERVICE PROVIDERS

WORK PRACTICES MUST COMPLY WITH ALL APPLICABLE OCCUPATIONAL HEALTH & SAFETY LEGISLATION

SEWERAGE STANDARD DRAWING

MAINTENANCE HOLES
SEWERS ≤ DN300
TYPICAL CHANNEL ARRANGEMENTS

BRC	FCRC	GRC	NBRC	SBRC

DRAWING No.

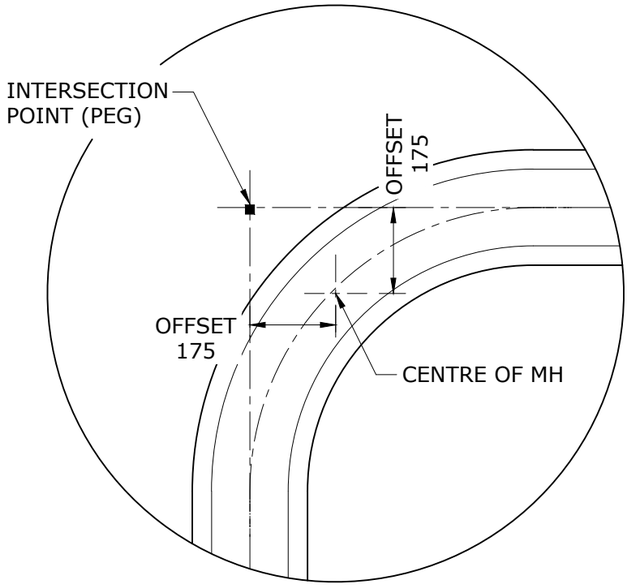
WBB-SEW-1304-1

VERSION

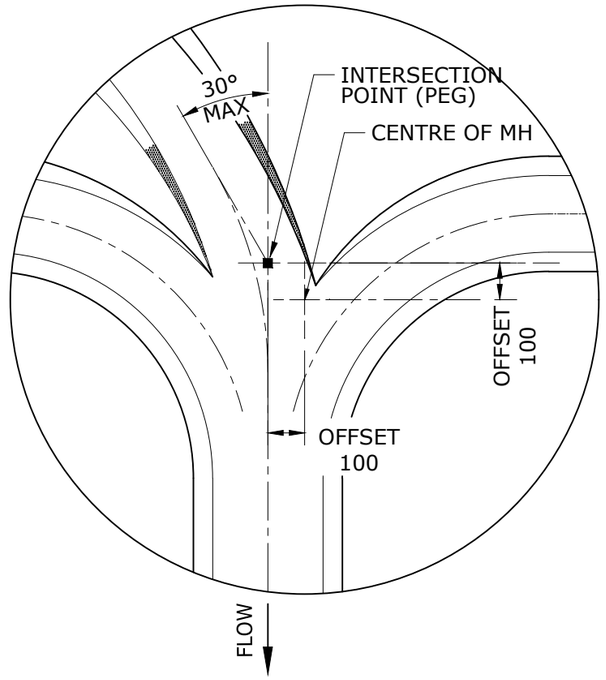
A

NOT TO SCALE

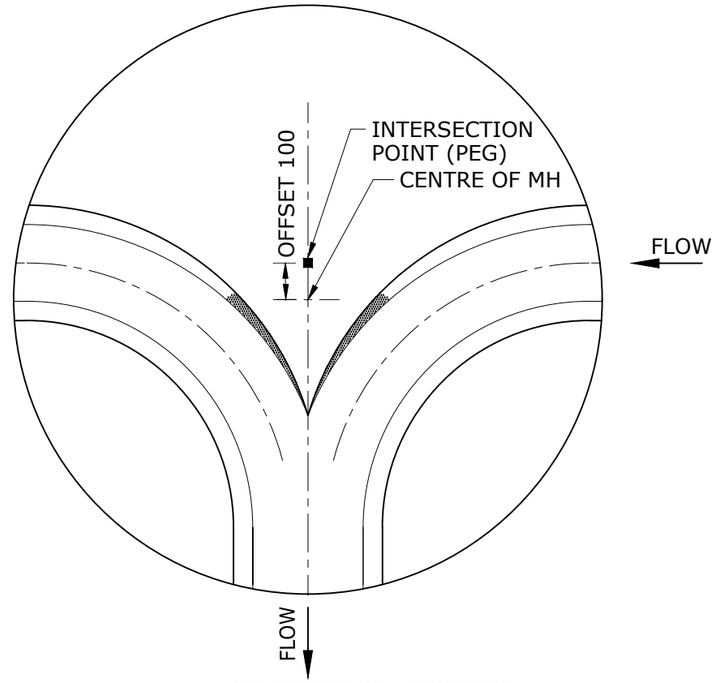
ORG DATE:



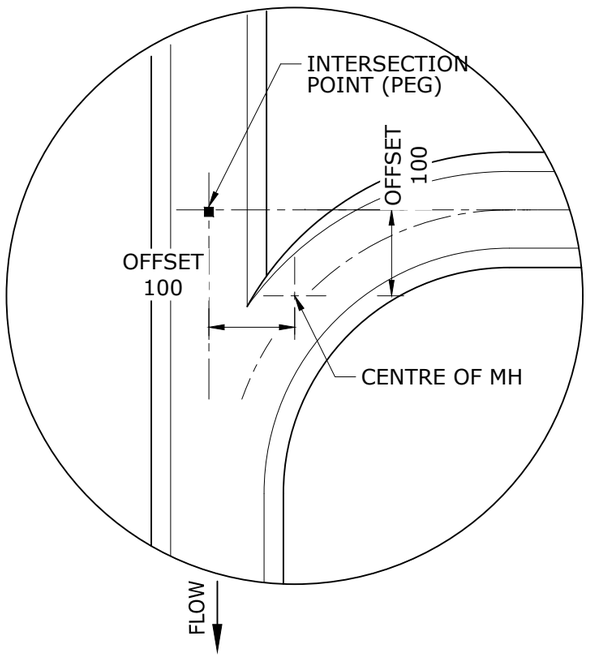
90° BEND



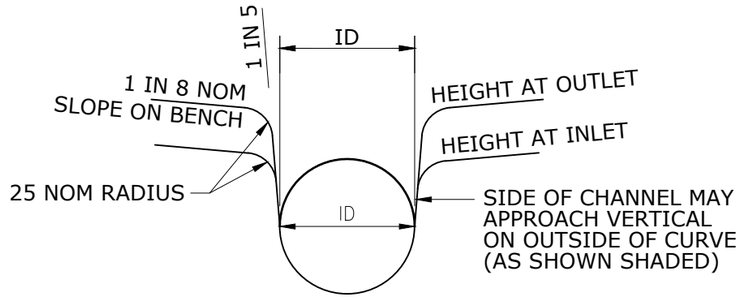
LARGER MAIN LINE WITH BEND &
2 x SMALLER 90° OPPOSING INLETS



OPPOSING INLETS
90° OUTLET



STRAIGHT THROUGH & 90° INLET



TYPICAL CHANNEL DETAILS

NOTES

1. ALL DIMENSIONS IN MILLIMETRES.
2. AREAS SHOWN ▨ INDICATE WHERE THE SIDE OF THE CHANNEL APPROACHES VERTICAL ON OUTSIDE OF CURVE
3. CHANNELS SHOWN ARE FOR DN 150 & DN 225 PIPES IN STANDARD DN 1050 MH.
4. SHAPES ARE OPTIMUM HYDRAULICALLY, ALTERNATIVES BY APPROVED DESIGN DETAIL.
5. WHERE INCOMING SEWERS EXCEED 10% GRADE DESIGNER TO USE LONG RADIUS BENDS AS ROCKER PIPES.
6. ACUTE ANGLE ENTRY MAY BE APPROVED FOR LOW FLOWS OR MAY BE ACCOMMODATED BY EXTERNAL DROP JUNCTION OR DROP CHAMBER SEE WBB-SEW-1304-1 & WBB-SEW-1306-1.
7. OFFSET DIMENSIONS SHOWN ARE MINIMUMS.

REV. No.	DATE	DESCRIPTION	AUTH.
A		BASED ON SEQ-SEW-1305-1 VERSION A DATED 1/1/2013	

WBBROC WATER
SERVICE PROVIDERS

WORK PRACTICES MUST COMPLY WITH ALL APPLICABLE OCCUPATIONAL HEALTH & SAFETY LEGISLATION

SEWERAGE STANDARD DRAWING

MAINTENANCE HOLES
TYPICAL CHANNEL DETAILS

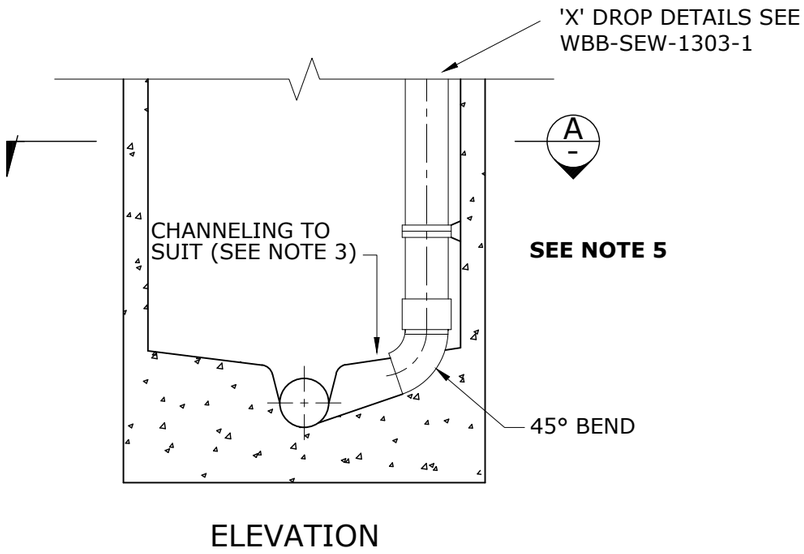
BRC	FCRC	GRC	NBRC	SBRC

DRAWING No. WBB-SEW-1305-1

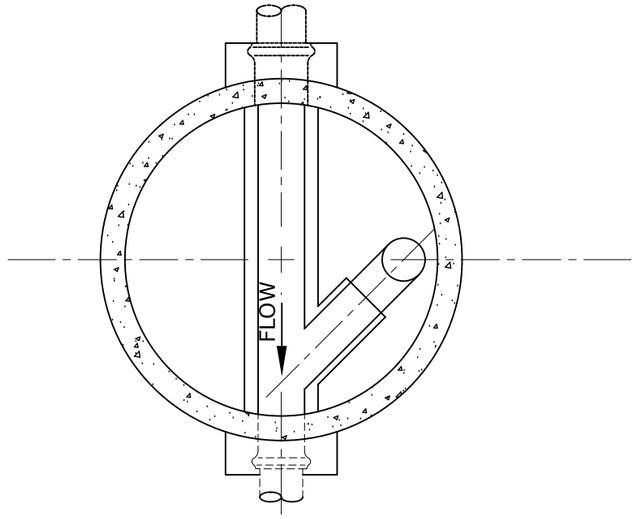
VERSION A

NOT TO SCALE

ORG DATE:



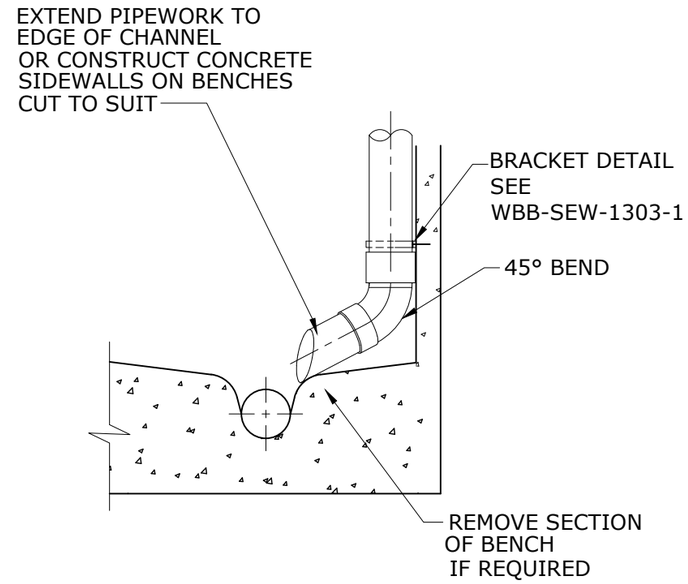
ELEVATION



SECTION A - (IN-SITU MH SHOWN)

TYPICAL INTERNAL DROP

SUITABLE FOR IN-SITU AND PRECAST MH



EXISTING MANHOLE INSTALLATION DETAIL

(WHERE AUTHORISED)

NOTES

1. ALL DIMENSIONS IN MILLIMETRES.
2. THIS DRAWING TO BE READ IN CONJUNCTION WITH WBB-SEW-1300-1 & WBB-SEW-1303-1.
3. DISCHARGE PIPE AND CHANNEL PLACEMENT TO DIRECT SEWAGE IN DIRECTION OF MAIN FLOW. SEE WBB-SEW-1304-1 AND WBB-SEW-1305-1.
4. DN 1200 MH TO BE USED WHERE DROP PIPE >DN 150 OR MORE THAN TWO x DN 150 INTERNAL DROPS ARE USED.
5. **INTERNAL DROPS REQUIRE APPROVAL OF FCRC SP.**

REV. No.	DATE	DESCRIPTION	AUTH.
A		BASED ON SEQ-SEW-1306-1 VERSION A DATED 1/1/2013	

WBBROC WATER SERVICE PROVIDERS

WORK PRACTICES MUST COMPLY WITH ALL APPLICABLE OCCUPATIONAL HEALTH & SAFETY LEGISLATION

SEWERAGE STANDARD DRAWING

MAINTENANCE HOLES
TYPICAL ALTERNATIVE DROP CONNECTIONS

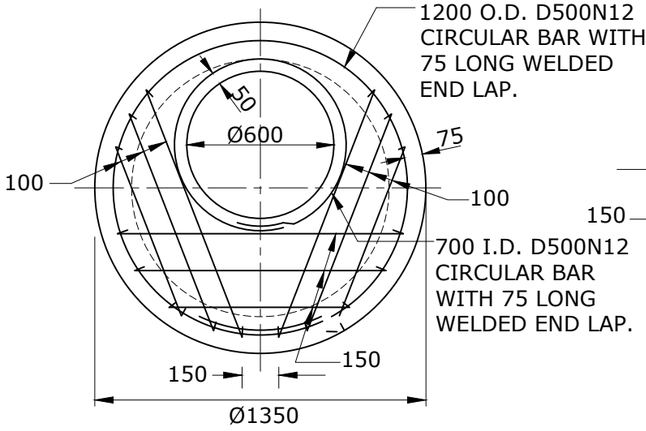
BRC	FCRC	GRC	NBRC	SBRC

DRAWING No. WBB-SEW-1306-1

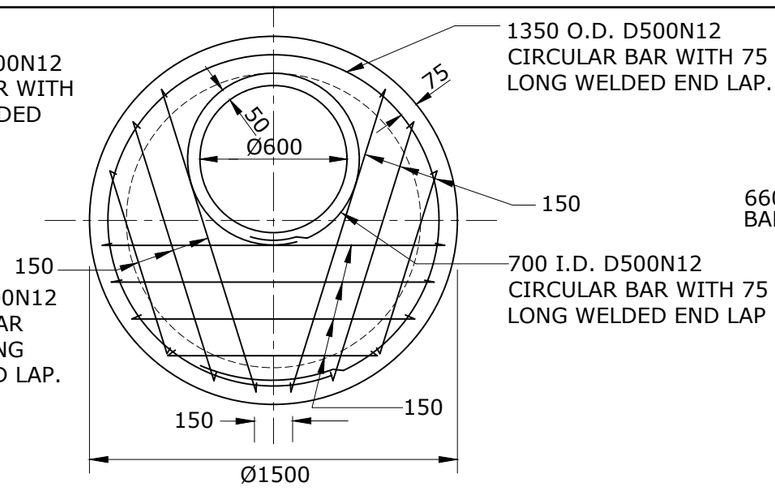
VERSION A

NOT TO SCALE

ORG DATE:

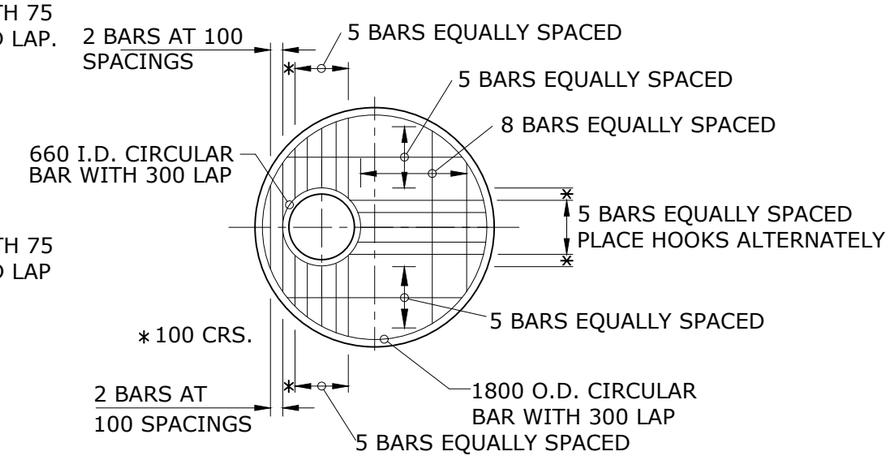


DN1050 - 175 THICK



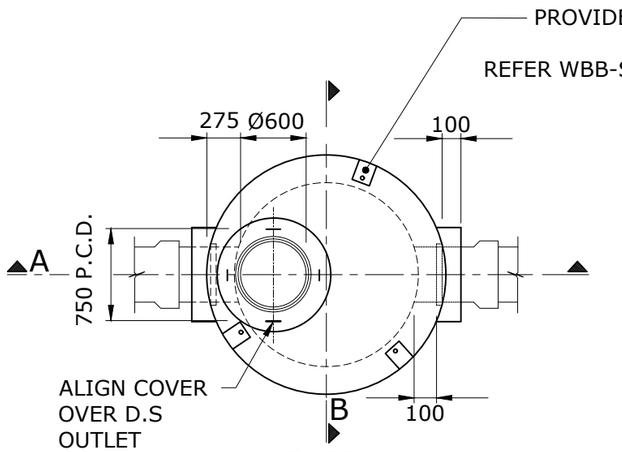
DN1200 - 200 THICK

CONVERTOR SLAB REINFORCEMENT FOR ≥ DN1000 TO DN1200 MAINTENANCE HOLE DETAIL ALL LOCATIONS



DN1500 - 225 THICK CONVERTOR SLAB REINFORCEMENT

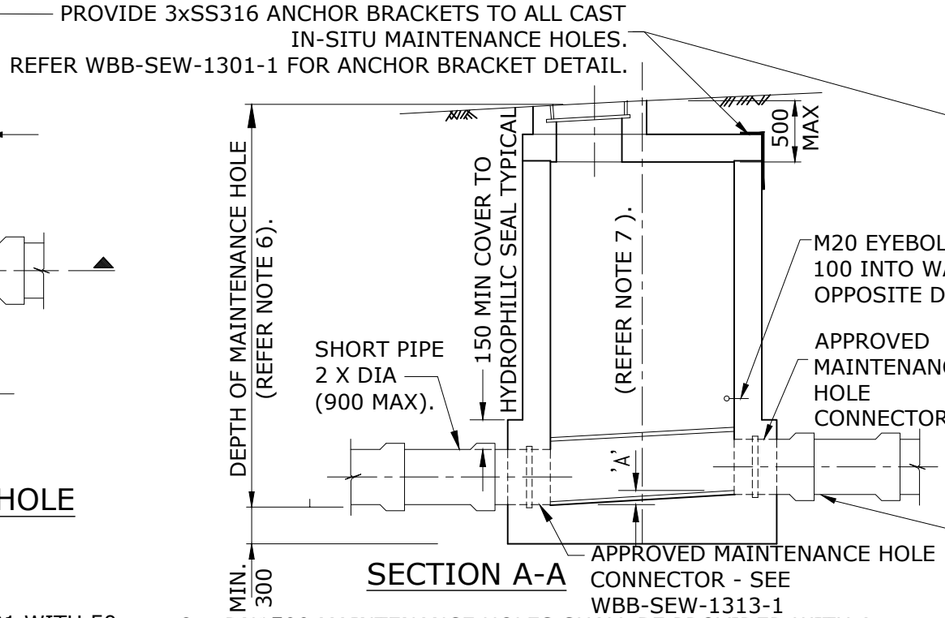
ALL REINFORCEMENT TO BE 12 DIA. GRADE 410Y DEFORMED BAR ALL REINFORCEMENT TO HAVE HOOKED ENDS UNLESS NOTED OTHERWISE



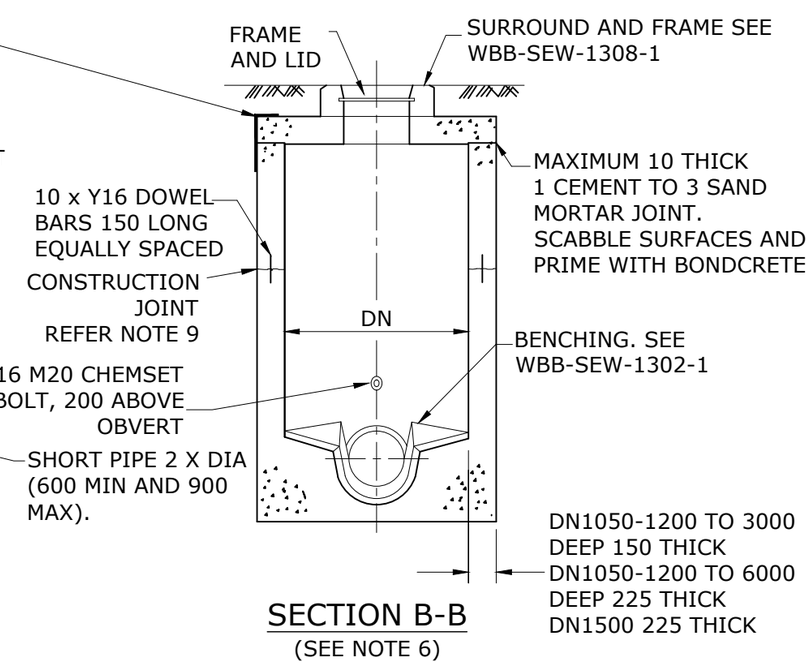
PLAN

TYPICAL MAINTENANCE HOLE

(DN1500 SHOWN)



SECTION A-A



SECTION B-B

(SEE NOTE 6)

DN1050 TO DN1500 CAST IN-SITU MAINTENANCE HOLE DETAIL

NOTES:

1. ALL DIMENSIONS ARE IN MILLIMETRES
2. ALL INSITU CONCRETE SHALL BE GRADE N32.
3. REINFORCING BARS TO BE TO AS/NZS 4671:2001 WITH 50 COVER BOTTOM FACE.
4. RECTANGULAR MAINTENANCE HOLES SHALL BE CONSIDERED WHERE DEPTH OF MAINTENANCE HOLE IS LESS THAN 1200.
5. DN300 TO DN600 SEWERS SHALL USE DN1500 MAINTENANCE HOLES.
6. MAINTENANCE HOLES OVER 6000 DEEP SHALL BE DESIGNED FOR THE SPECIFIC INSTALLATION DEPTH.
7. DIMENSION 'A', REFER TABLE ON WBB-SEW-1303-1. ONLY 'V' DROPS OR APPROVED INTERNAL VORTEX DROPS PERMITTED FOR DN300 AND LARGER SEWERS. TYPE'V' DROPS WITH PIPE DN CHANGES SHALL BE GRADED OBVERT TO OBVERT.
8. DN1500 MAINTENANCE HOLES SHALL BE PROVIDED WITH A H2S RESISTANT COATING AS SPECIFIED IN THE CODE. THE COATING SHALL PROTECT THE CONCRETE OF THE NECK, CONVERTER SLAB AND WALLS. THE COATING SHALL BE REBATED AT IT'S TERMINATIONS AND IT SHALL BRIDGE CONSTRUCTION JOINTS TO THE MANUFACTURERS REQUIREMENTS.
9. ALL CAST CONSTRUCTION JOINTS SHALL INCLUDE EITHER PVC WATERSTOPS OR HYDROPHILIC SEAL INSTALLED TO MANUFACTURER'S REQUIREMENTS. PRIOR TO THE NEXT CAST, SCABBLE THE EXISTING SURFACE AND PRIME WITH BONDCRETE.

REV. No.	DATE	DESCRIPTION	AUTH.
A		BASED ON SEQ-SEW-1307-1 VERSION A DATED 1/1/2013	

WBBROC WATER SERVICE PROVIDERS

WORK PRACTICES MUST COMPLY WITH ALL APPLICABLE OCCUPATIONAL HEALTH & SAFETY LEGISLATION

SEWERAGE STANDARD DRAWING

DN1000 TO DN1500 CAST IN-SITU MAINTENANCE HOLES TYPICAL DETAILS

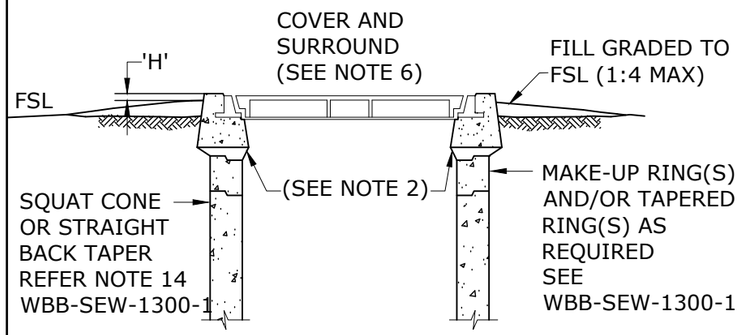
BRC	FCRC	GRC	NBRC	SBRC

DRAWING No. WBB-SEW-1307-1

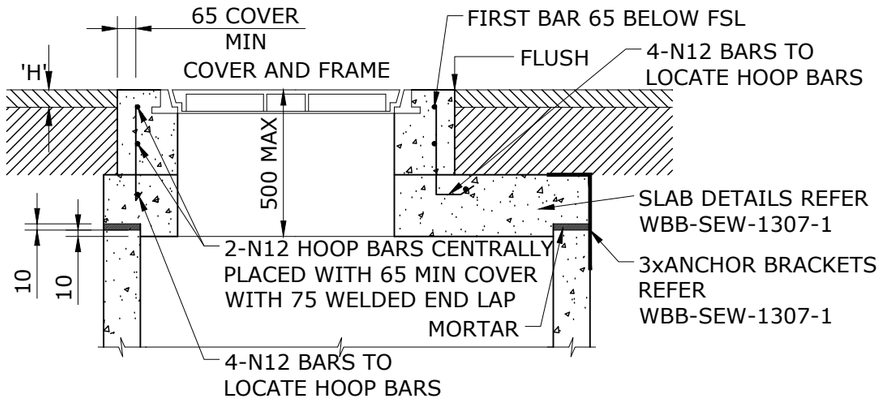
VERSION A

NOT TO SCALE

ORG DATE:

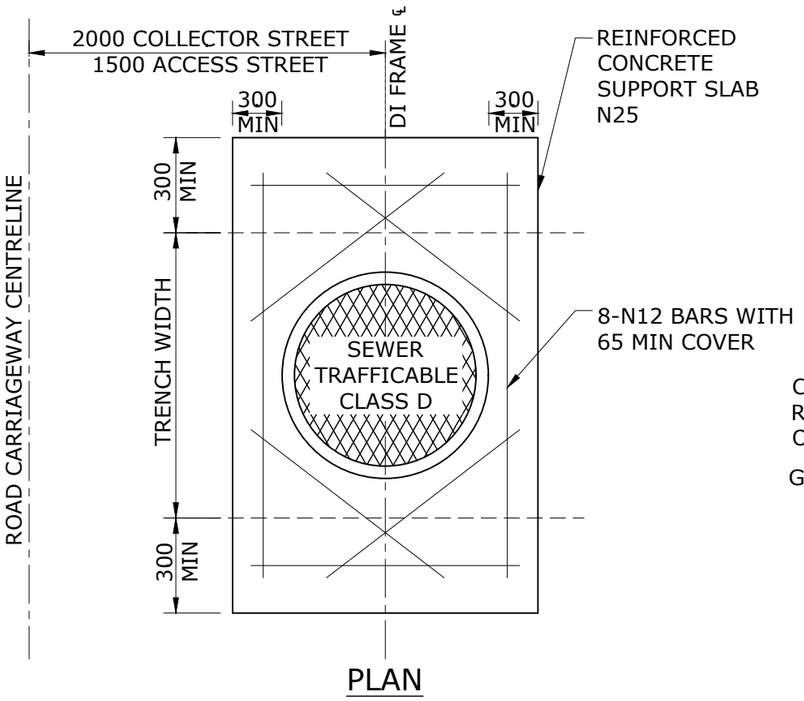


PRECAST ALLOTMENT INSTALLATION

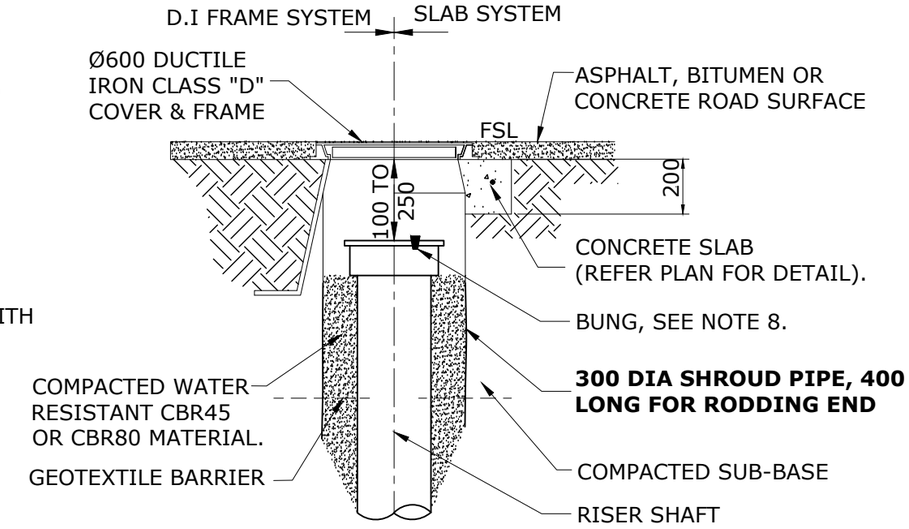


CAST IN-SITU PAVED INSTALLATION

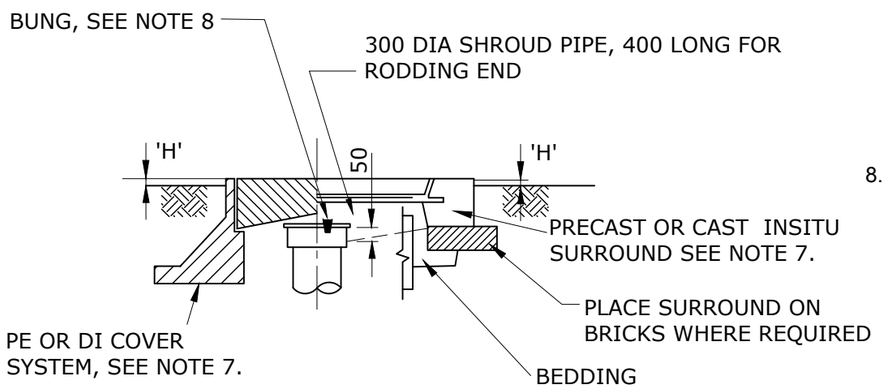
SELECTION OF DN600 MH COVERS	
ALL COVERS TO BE WATER TIGHT, SEE NOTE 6	
LOCATION	CLASS
RESERVES, ALLOTMENTS, FOOTPATHS, VERGES	B - NON-TRAFFICABLE
ROADWAYS & DRIVEWAYS	D - TRAFFICABLE
LOCATIONS SUBJECT TO Q100 FLOODING AND SURCHAGE	CLASS B OR D WITH BOLT-DOWN (SEE NOTE 3)



PLAN



TRAFFICABLE MAINTENANCE AND RODDING SHAFT SURROUND DETAILS



NON-TRAFFICABLE MAINTENANCE AND RODDING SHAFT SURROUND DETAILS

DIMENSION 'H'	
FINISHED LEVELS OF MH COVERS	
LOCATION	H
UNDEVELOPED AREAS	300
NEW SUBDIVISIONS	50
ROADS, LANE WAYS, FOOTWAYS & DRIVEWAYS	FLUSH
EXISTING DEVELOPED AREAS	25
OTHER AS SPECIFIED (EG ABOVE Q100 FLOOD LEVEL)	

NOTES:

1. ALL DIMENSIONS IN MILLIMETERS.
2. SEALING METHODS FOR COVER-FRAME SURROUND TO WALLS
   (a) MAKE JOINTS BETWEEN SHAFT TOP/MAKE-UP RING AND COVER SUPPORT RING USING BUTYL-MASTIC OR RUBBER RING.
   (b) APPLY BUTYL-MASTIC OR RING IN ACCORDANCE WITH MANUFACTURERS SPECIFICATION.
   (c) FOLLOWING (b) ABOVE, APPLY EXTERNALLY 4X100 LONG SECTIONS OF 'MEGAPOXY P1' OR EQUAL TO PRECAST SURROUND/RING JOINT TO REINFORCE JOINT.
3. IN AREAS SUBJECT TO Q100 FLOODING AND SURCHARGE, USE CAST IN-SITU MH WITH ANCHOR BRACKETS SO THAT SEPARATION DURING SURCHARGE IS PREVENTED. SEE WBB-SEW-1307-1.
4. MAXIMUM PERMISSIBLE SLOPE OF COVERS:
   CLASS "B" 1 IN 4
   CLASS "D" 1 IN 10
5. COVERS AND FRAMES, REFER CODE.
6. CAST IN-SITU AND ALL CLASS D COVERS AND FRAMES SHALL BE TYPE 'd' WATERSEALED SOLID TOP IN ACCORDANCE WITH CLAUSE 1.5.3.1 OF AS3996.
7. a.) STORMWATER PRECAST SURROUND, FRAME & LID MAY BE USED FOR ALL NON CARRIAGEWAY LOCATIONS EXCEPT THAT THE DI COVER SHALL BE MARKED FOR SEWERAGE PURPOSES.
   b.) DELETED.
   c.) DUCTILE IRON COVERS SHALL BE 600 mm DIAMETER AT CLASS "D" FOR ROAD CARRIAGE WAY INSTALLATION AND AT CLASS "B" FOR ALL OTHER LOCATIONS.
8. LOCK DOWN QUICK RELEASE END CAPS ARE SWJ FIXED TO THE RISER AND ARE RUBBER RING SEALED BETWEEN THE CAP AND ITS FRAME AND OPEN WITH LESS THAN A 15 DEGREE TURN. SCREW DOWN CAPS ARE NOT PERMITTED. PRIOR TO ON-MAINTENANCE, ALL MS CAPS SHALL BE PROVIDED WITH 20-25 mm DIAMETER. RUBBER BUNGS IN A 20 mm DRILL HOLE. CONTRACTOR TO DRILL HOLE AND FIT BUNG FOLLOWING PRESSURE TEST PASS.

REV. No.	DATE	DESCRIPTION	AUTH.
A		BASED ON SEQ-SEW-1308-1 VERSION B DATED 24/07/15	

WBBROC WATER SERVICE PROVIDERS

WORK PRACTICES MUST COMPLY WITH ALL APPLICABLE OCCUPATIONAL HEALTH & SAFETY LEGISLATION

SEWERAGE STANDARD DRAWING

TYPICAL MAINTENANCE HOLE AND SHAFT COVER AND SURROUND DETAIL

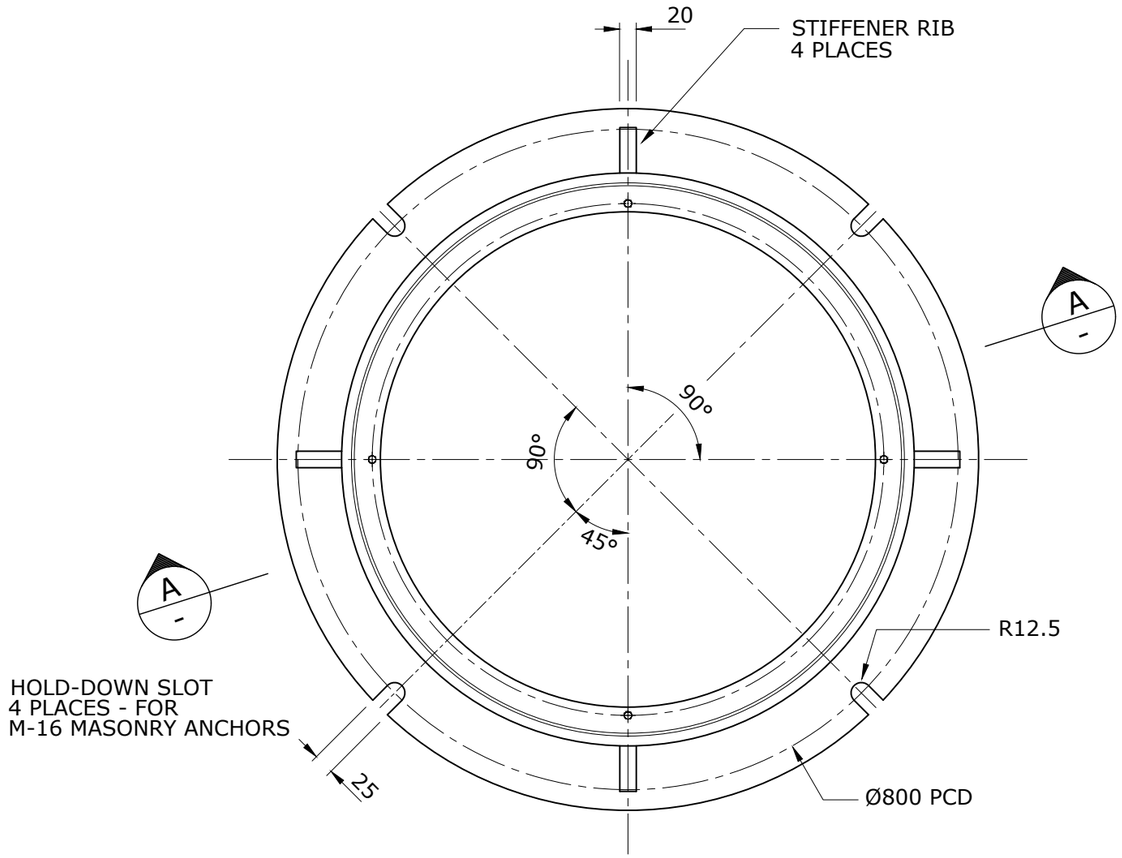
BRC	FCRC	GRC	NBRC	SBRC

DRAWING No. WBB-SEW-1308-1

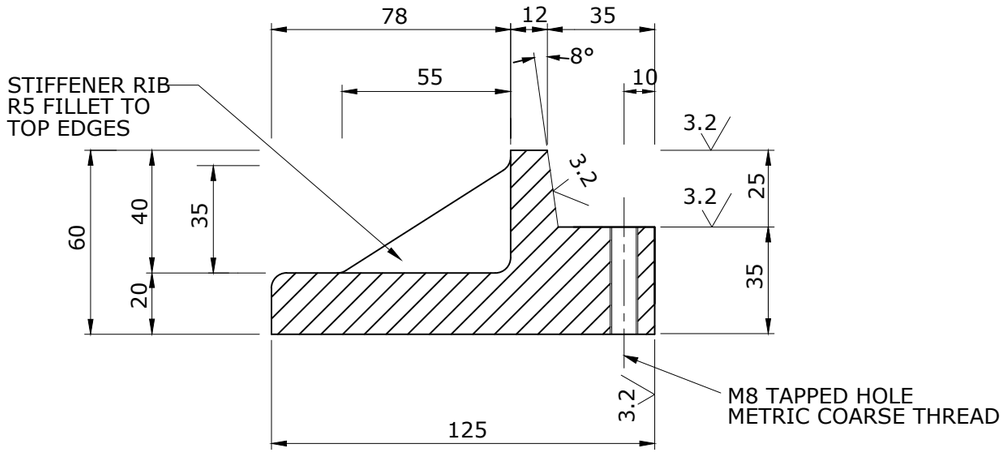
VERSION A

NOT TO SCALE

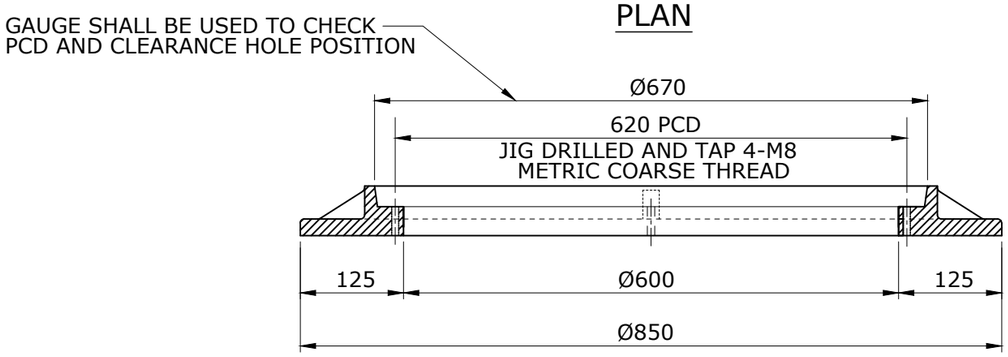
ORG DATE:



PLAN



TYPICAL SECTION



SECTIONAL ELEVATION A / -

MAINTENANCE HOLE FRAME

MASS: 59.5KG

WBBROC SP ACCEPTS ALL CLASS B COVERS AND FRAMES WITH CERTIFICATION TO AS 3996 AS DETAILED IN CLAUSE 3.2 FOR SEALS AND REGISTERS.

FOR USE IN NON TRAFFICABLE LOCATIONS

NOTES

1. ALL EDGES TO BE SQUARE.
2. ALL EDGES TO BE ARRISED UNLESS SHOWN OTHERWISE.
3. ALL FILLETS TO BE 5mm RADIUS UNLESS SHOWN OTHERWISE.
4. CASTING TO BE FREE OF BURRS AND PITS.
5. MACHINE SURFACE SYMBOL 3.2
6. MATERIAL: GREY CAST IRON (AS1830)
   TENSILE STRENGTH: ISO 185/JL/225
   HARDNESS: 145 - 215 (HB)
   ULTIMATE DESIGN LOAD: 210 KN (AS3996)
7. TOLERANCES:

CAST DIMENSIONS	±1.00mm
ANGLE PROFILE	±0.25°
MACHINED DIMENSIONS	±0.125mm
OVERALL MAJOR DIAMETER OF COVER	+0 -0.25mm
DFT OF COATING	50um

8. ALL MACHINED SURFACES SHALL HAVE A COATING APPROVED AS FIT FOR THE PURPOSE OF PROVIDING A RUST PROOF, NON-STICK AND GAS/WATER PROOF JOINT.
9. ALL NON MACHINED SURFACES TO BE BITUMINOUS COATED IN ACCORDANCE WITH AS 3750-4.
10. FRAME FIXED TO TOP SLAB WITH 4-M16 HEAVILY GALVANISED MASONRY ANCHORS. AFTER ASSEMBLY ALL STEELWORK TO BE PAINTED WITH AN APPROVED BITUMASTIC ENAMEL.
11. FOR SURCHARGE AREAS AND FOR OVERLAND FLOW AREAS AND WHERE SPECIFIED IN THE DESIGN DRAWINGS, COVERS AND FRAMES TO BE SUPPLIED WITH 4-M8 COARSE THREADED 316 SS BOLTS 45mm LONG WITH NYLON WASHERS.
12. ALL WORK SHALL BE IN ACCORDANCE WITH CURRENT QUEENSLAND CODE, SPECIFICATIONS AND STANDARDS.
13. COVERS AND FRAMES TO BE SUPPLIED ASSEMBLED.
14. CERTIFICATION OF COMPLIANCE TO A.S. 3996 TO BE SUPPLIED FOR EACH CASTING.

REV. No.	DATE	DESCRIPTION	AUTH.
A		BASED ON SEQ-SEW-1308-5 VERSION A DATED 1/1/2013	

WBBROC WATER
SERVICE PROVIDERS

WORK PRACTICES MUST COMPLY WITH ALL APPLICABLE OCCUPATIONAL HEALTH & SAFETY LEGISLATION

SEWERAGE STANDARD DRAWING

MAINTENANCE HOLE COVER
SEWER - CLASS B - BOLT DOWN
TYPICAL FRAME DETAILS

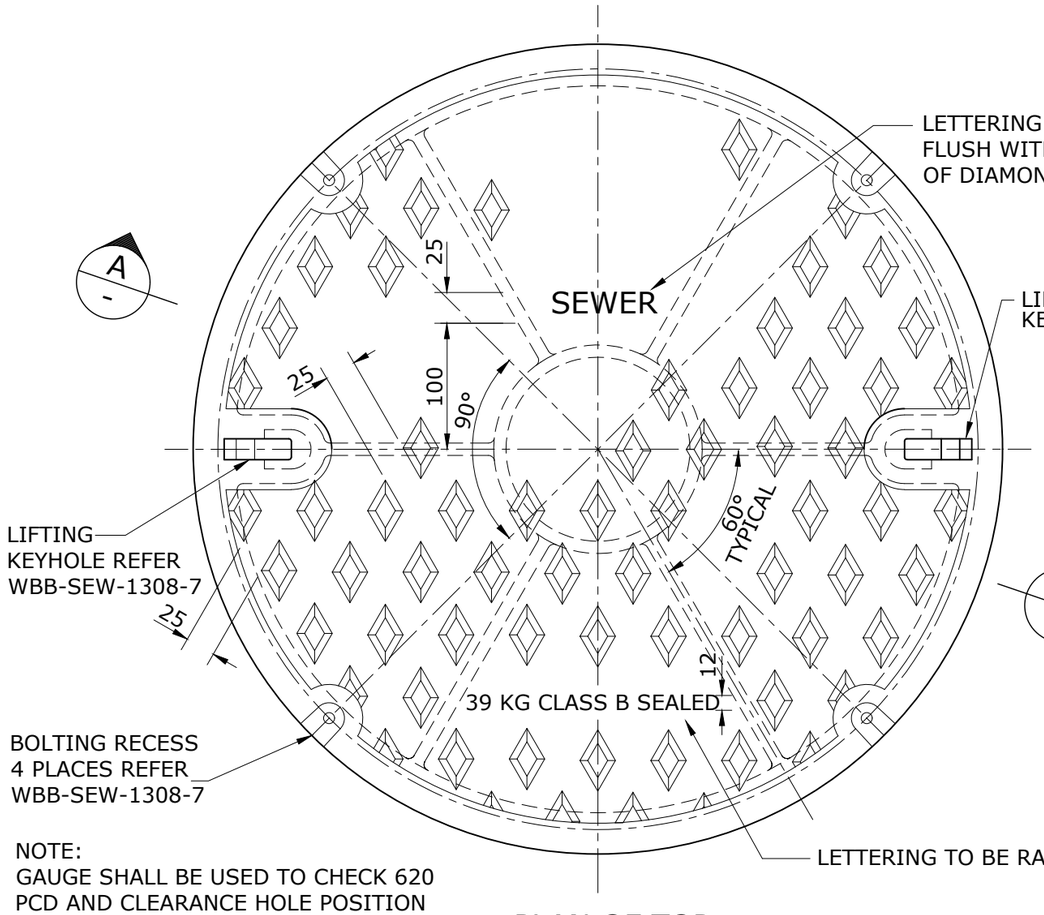
BRC	FCRC	GRC	NBRC	SBRC

DRAWING No. WBB-SEW-1308-5

VERSION A

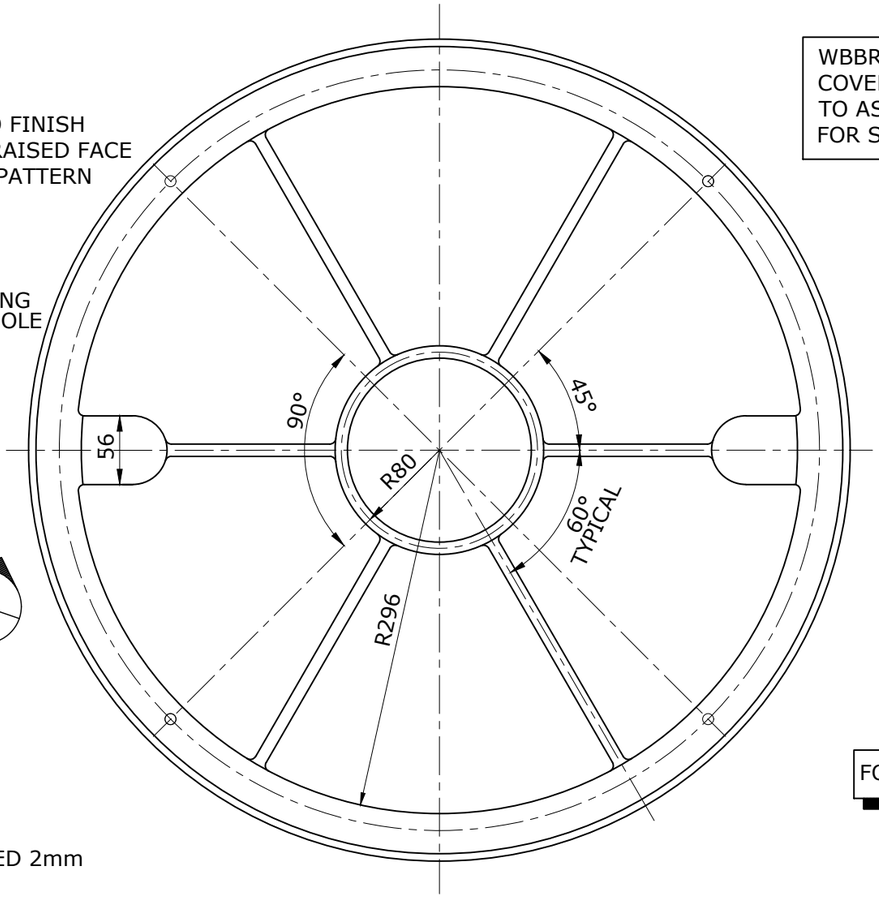
NOT TO SCALE

ORG DATE:



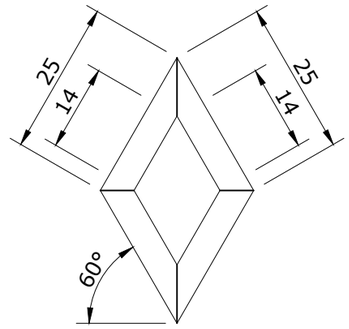
NOTE:
GAUGE SHALL BE USED TO CHECK 620 PCD AND CLEARANCE HOLE POSITION

PLAN OF TOP



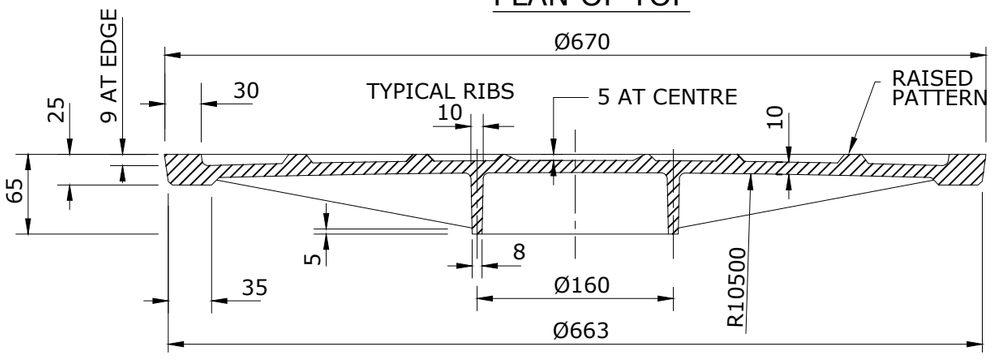
PLAN OF BOTTOM

WBBROC SP WATER ACCEPTS ALL CLASS B COVERS AND FRAMES WITH CERTIFICATION TO AS 3996 AS DETAILED IN CLAUSE 3.2 FOR SEALS AND REGISTERS.



COVER PATTERN DETAIL

FOR USE IN NON TRAFFICABLE LOCATIONS



SECTIONAL ELEVATION A-

MAINTENANCE HOLE COVER

MASS: 39KG

NOTES

1. ALL EDGES TO BE SQUARE.
2. ALL EDGES TO BE ARRISED UNLESS SHOWN OTHERWISE.
3. ALL FILLETS TO BE 5mm RADIUS UNLESS SHOWN OTHERWISE.
4. CASTING TO BE FREE OF BURRS AND PITS.
5. MACHINE SURFACE SYMBOL 3.2
6. MATERIAL: DUCTILE CAST IRON
   TENSILE STRENGTH: ISO 1083/JS/600-3/S (AS1831)
   HARDNESS: 190 - 270 (HB)
   ULTIMATE DESIGN LOAD: 80 KN (AS3996)
7. TOLERANCES:

CAST DIMENSIONS	± 1.00mm
ANGLE PROFILE	± 0.25°
MACHINED DIMENSIONS	± 0.125mm
OVERALL MAJOR DIAMETER OF COVER	+0 -0.25mm
DFT OF COATING	50um

8. ALL MACHINED SURFACES SHALL HAVE A COATING APPROVED AS FIT FOR THE PURPOSE OF PROVIDING A RUST PROOF,NON-STICK AND GAS/WATER PROOF JOINT.
9. ALL NON MACHINED SURFACES TO BE BITUMINOUS COATED IN ACCORDANCE WITH AS 3750-4.
10. FRAME FIXED TO TOP SLAB WITH 4-M16 HEAVILY GALVANISED MASONRY ANCHORS OR CAST IN-SITU AS SHOWN IN DRAWINGS. AFTER ASSEMBLY ALL STEELWORK TO BE PAINTED WITH AN APPROVED BITUMASTIC ENAMEL.
11. FOR SURCHARGE AREAS AND FOR OVERLAND FLOW AREAS AND WHERE SPECIFIED IN THE DESIGN DRAWINGS, COVERS AND FRAMES TO BE SUPPLIED WITH 4-M8 COARSE THREADED 316 SS BOLTS 45mm LONG.
12. ALL WORK SHALL BE IN ACCORDANCE WITH CURRENT QUEENSLAND CODE, SPECIFICATIONS AND STANDARDS.
13. COVERS AND FRAMES TO BE SUPPLIED ASSEMBLED.
14. CERTIFICATION OF COMPLIANCE TO A.S. 3996 TO BE SUPPLIED FOR EACH CASTING.

REV. No.	DATE	DESCRIPTION	AUTH.
A		BASED ON SEQ-SEW-1308-6 VERSION A DATED 1/1/2013	

WBBROC WATER SERVICE PROVIDERS

WORK PRACTICES MUST COMPLY WITH ALL APPLICABLE OCCUPATIONAL HEALTH & SAFETY LEGISLATION

SEWERAGE STANDARD DRAWING

MAINTENANCE HOLE COVER
SEWER - CLASS B - BOLT DOWN
TYPICAL COVER DETAILS

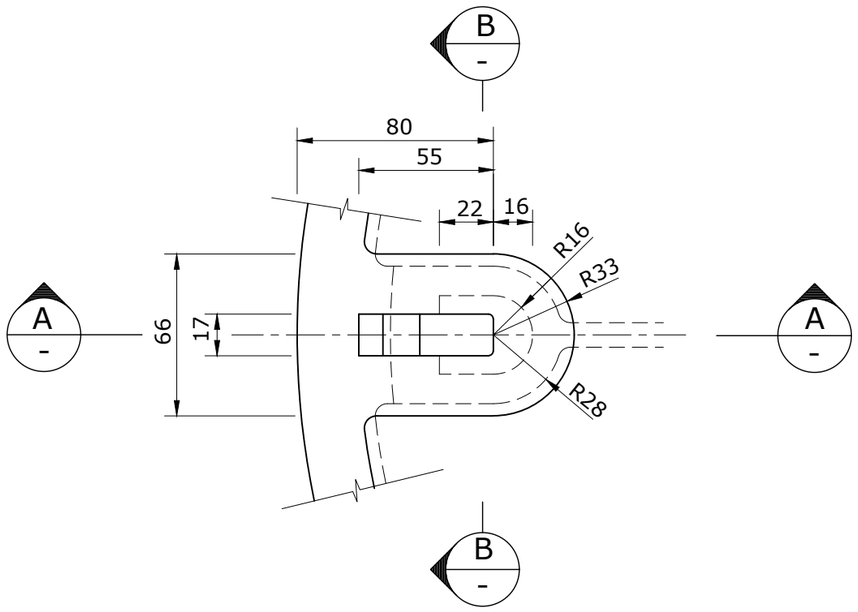
BRC	FCRC	GRC	NBRC	SBRC

DRAWING No. WBB-SEW-1308-6

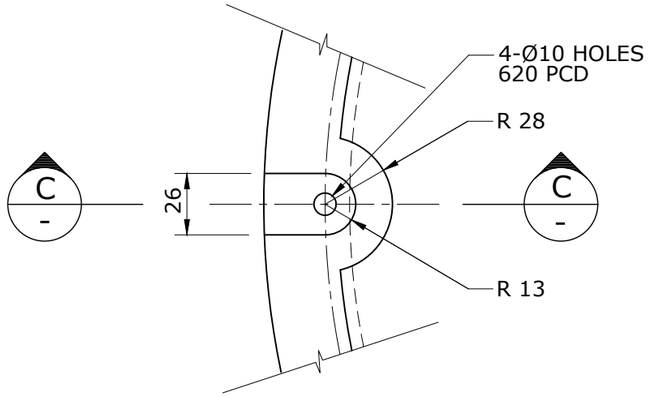
VERSION A

NOT TO SCALE

ORG DATE:



PLAN



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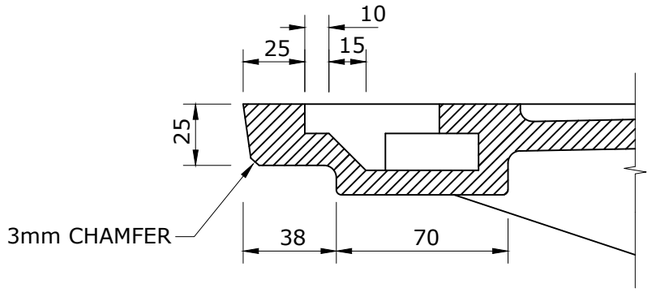
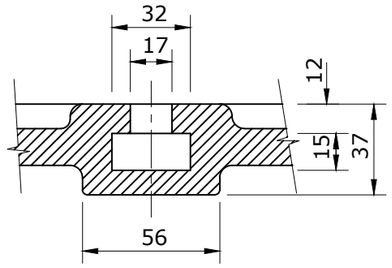
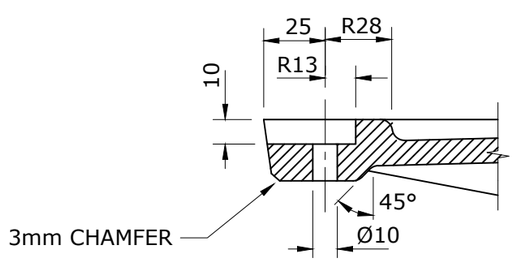


SECTION A -



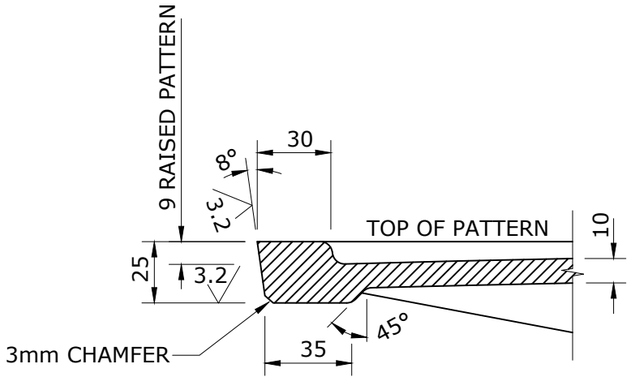
SECTION B -

KEYHOLE DETAIL



SECTION C -

BOLT RECESS DETAIL



TYPICAL EDGE DETAIL

REFER WBB-SEW-1308-6 FOR NOTES

FOR USE IN NON TRAFFICABLE LOCATIONS

REV. No.	DATE	DESCRIPTION	AUTH.
A		BASED ON SEQ-SEW-1308-7 VERSION A DATED 1/1/2013	

WBBROC WATER
SERVICE PROVIDERS

WORK PRACTICES MUST COMPLY WITH ALL APPLICABLE OCCUPATIONAL HEALTH & SAFETY LEGISLATION

SEWERAGE STANDARD DRAWING

MAINTENANCE HOLE COVER
SEWER - CLASS B - BOLT DOWN
TYPICAL COVER DETAILS

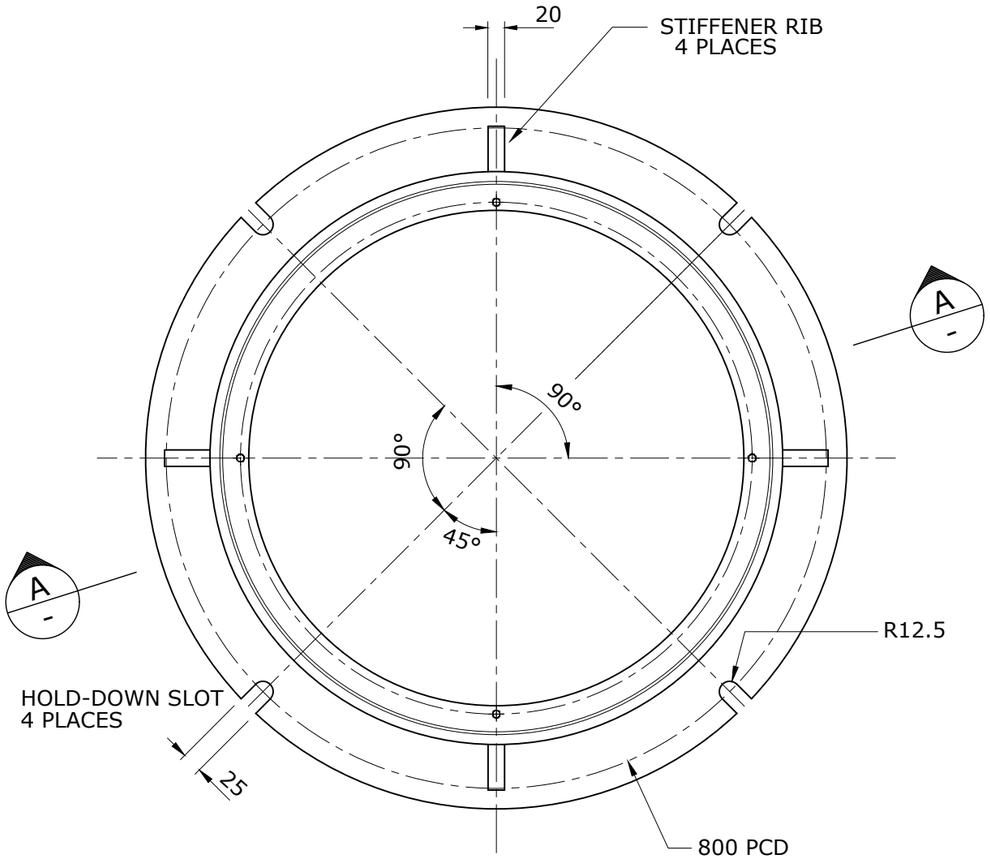
BRC	FCRC	GRC	NBRC	SBRC

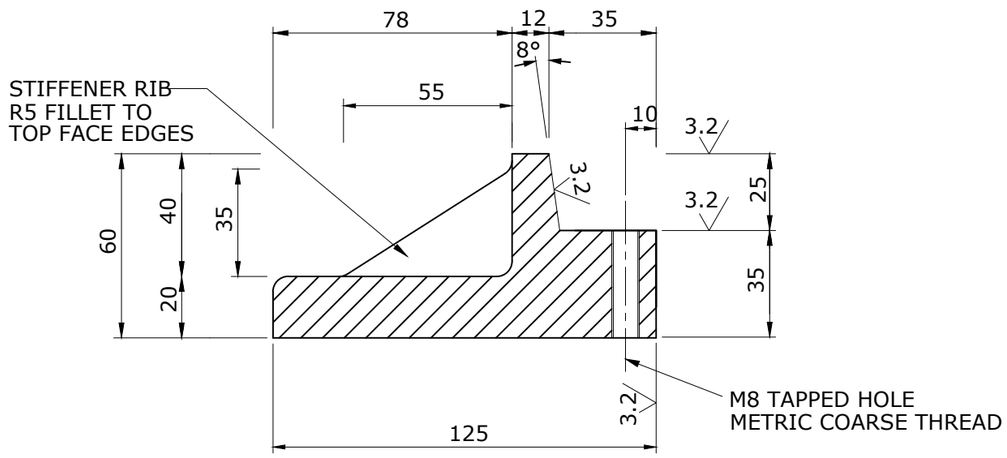
DRAWING No. WBB-SEW-1308-7

VERSION A

NOT TO SCALE

ORG DATE:

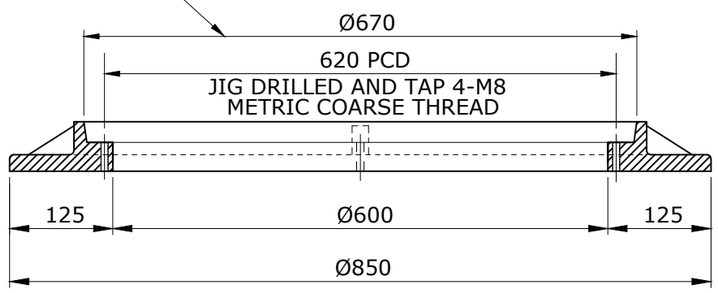




TYPICAL SECTION

GAUGE SHALL BE USED TO CHECK
PCD AND CLEARANCE HOLE POSITION

PLAN



SECTIONAL ELEVATION A-

MAINTENANCE HOLE BASE FRAME

MASS: 59.5KG

WBBROC SP ONLY ACCEPTS THIS CLASS D FRAME, RISER AND COVER SYSTEM OR EQUAL WITH CERTIFICATION TO AS 3996.

FOR USE IN TRAFFICABLE ROADWAY LOCATIONS. THIS BASE FRAME SHALL BE USED WITH THE 60 RISER RING SHOWN IN WBB-SEW-1308-9.

NOTES

1. ALL EDGES TO BE SQUARE.
2. ALL EDGES TO BE ARRISED UNLESS SHOWN OTHERWISE.
3. ALL FILLETS TO BE 5mm RADIUS UNLESS SHOWN OTHERWISE.
4. CASTING TO BE FREE OF BURRS AND PITS.
5. MACHINE SURFACE SYMBOL 3.2
6. MATERIAL: GREY CAST IRON (AS1830)
   TENSILE STRENGTH: ISO 185/JL/225
   HARDNESS: 145 - 215 (HB)
   ULTIMATE DESIGN LOAD: 210 KN (AS3996)
7. TOLERANCES:

CAST DIMENSIONS	±	1.00mm
ANGLE PROFILE	±	0.25°
MACHINED DIMENSIONS	±	0.125mm
OVERALL MAJOR DIAMETER OF COVER		+0 -0.25mm
DFT OF COATING		50um

8. ALL MACHINED SURFACES SHALL HAVE A COATING APPROVED AS FIT FOR THE PURPOSE OF PROVIDING A RUST PROOF, NON-STICK AND GAS/WATER PROOF JOINT.
9. ALL NON MACHINED SURFACES TO BE BITUMINOUS COATED IN ACCORDANCE WITH AS 3750-4.
10. COVERS, FRAMES AND 60mm RISER RINGS TO BE SUPPLIED ASSEMBLED.
11. ALL WORK SHALL BE IN ACCORDANCE WITH CURRENT QUEENSLAND CODE, SPECIFICATIONS AND STANDARD DRAWINGS.
12. CERTIFICATION OF COMPLIANCE TO A.S. 3996 TO BE SUPPLIED FOR EACH CASTING.

REV. No.	DATE	DESCRIPTION	AUTH.
A		BASED ON SEQ-SEW-1308-8 VERSION A DATED 1/1/2013	

WBBROC WATER
SERVICE PROVIDERS

WORK PRACTICES MUST COMPLY WITH ALL APPLICABLE OCCUPATIONAL HEALTH & SAFETY LEGISLATION

SEWERAGE STANDARD DRAWING

MAINTENANCE HOLE COVER
SEWER - CLASS D - BOLT DOWN
TYPICAL BASE FRAME DETAILS

BRC	FCRC	GRC	NBRC	SBRC

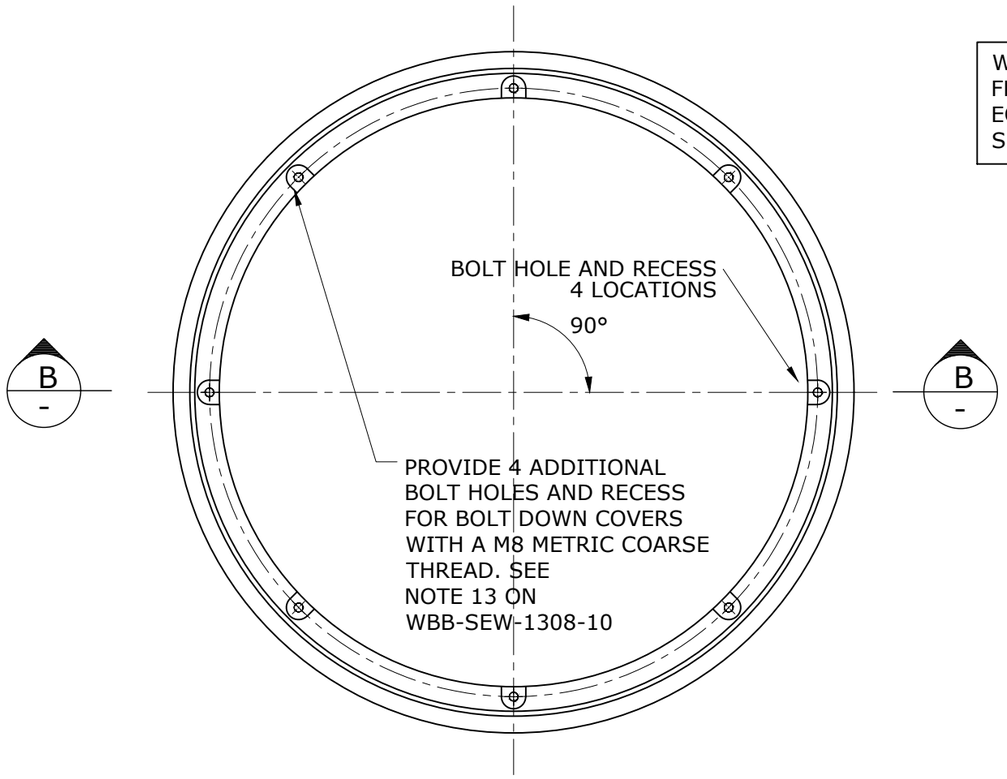
DRAWING No. WBB-SEW-1308-8

VERSION A

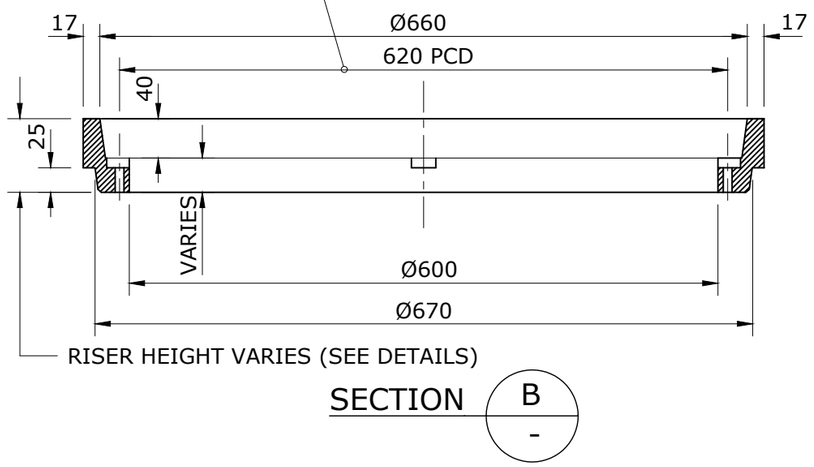
NOT TO SCALE

ORG DATE:

WBBROC SP ONLY ACCEPTS THIS CLASS D FRAME, RISER AND COVER SYSTEM OR EQUAL WITH CERTIFICATION TO AS 3996 SEE WBB-SEW-1308-8

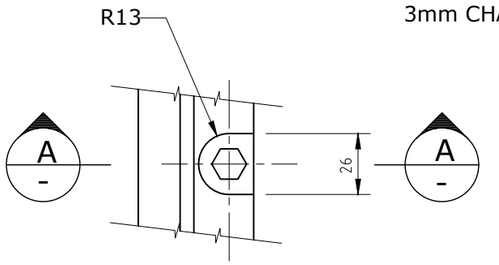


PLAN

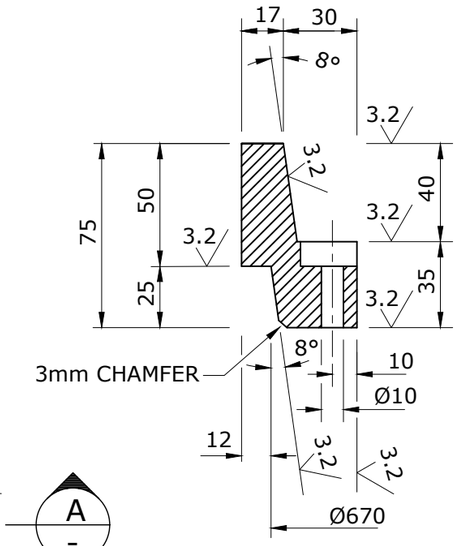


SECTION B -

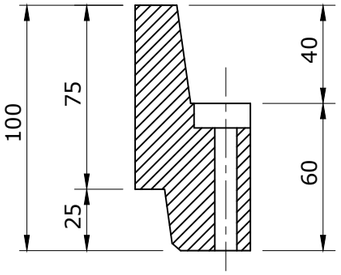
RISER RING



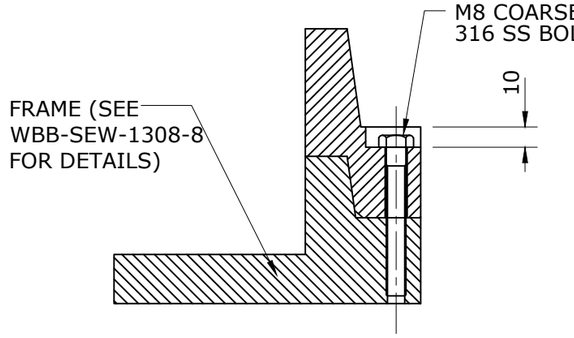
PLAN OF BOLT RECESS



35mm RISER
MASS : 27.5KG

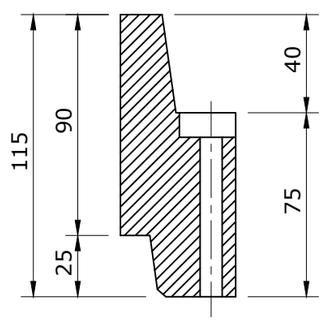


60mm RISER
MASS : 32KG

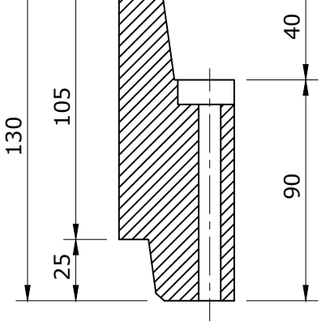


SECTION A -

TYPICAL ASSEMBLY



75mm RISER
MASS : 38KG



90mm RISER
MASS : 44KG

4 x BOLTS: 60mm LONG FOR 35mm RISER
90mm LONG FOR 60mm RISER
100mm LONG FOR 75mm RISER
115mm LONG FOR 90mm RISER

ADDITIONAL BOLTS SEE NOTE 13 ON WBB-SEW-1308-10

REFER TO 35mm RISER FOR TYPICAL DIMENSIONS TO ALL RISERS.

REFER WBB-SEW-1308-10 FOR NOTES

FOR USE IN TRAFFICABLE ROADWAY LOCATIONS.

REV. No.	DATE	DESCRIPTION	AUTH.
A		BASED ON SEQ-SEW-1308-9 VERSION A DATED 1/1/2013	

WBBROC WATER SERVICE PROVIDERS

WORK PRACTICES MUST COMPLY WITH ALL APPLICABLE OCCUPATIONAL HEALTH & SAFETY LEGISLATION

SEWERAGE STANDARD DRAWING

MAINTENANCE HOLE COVER
SEWER - CLASS D - BOLT DOWN
TYPICAL RISER RING DETAILS

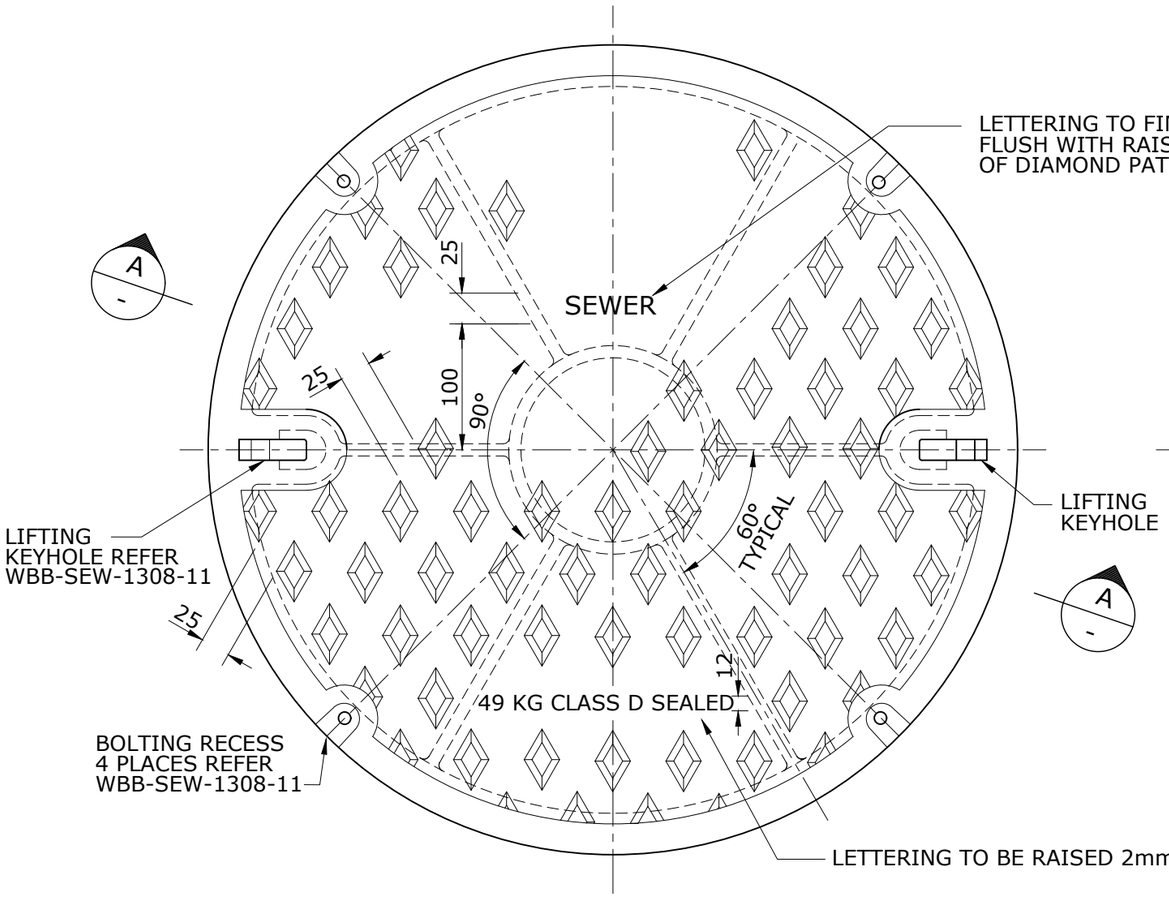
BRC	FCRC	GRC	NBRC	SBRC

DRAWING No. WBB-SEW-1308-9

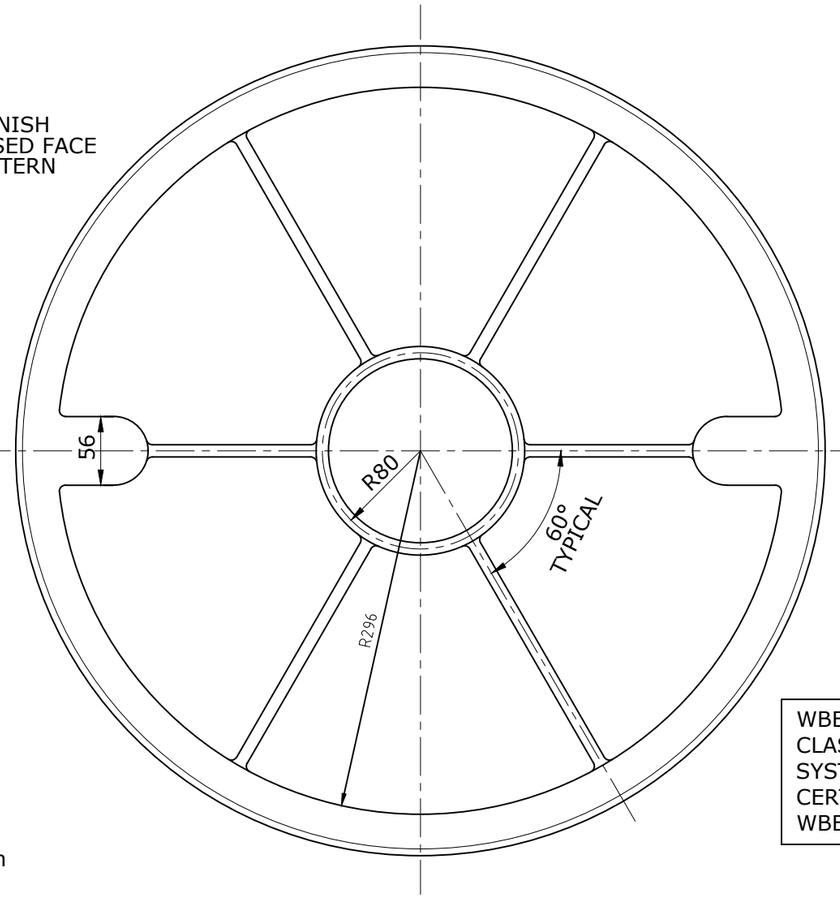
VERSION A

NOT TO SCALE

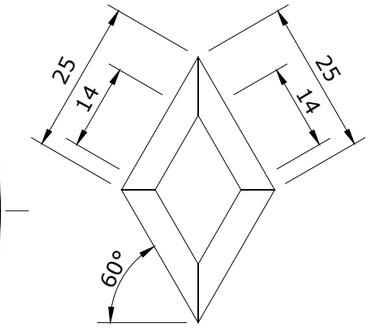
ORG DATE:



PLAN OF TOP

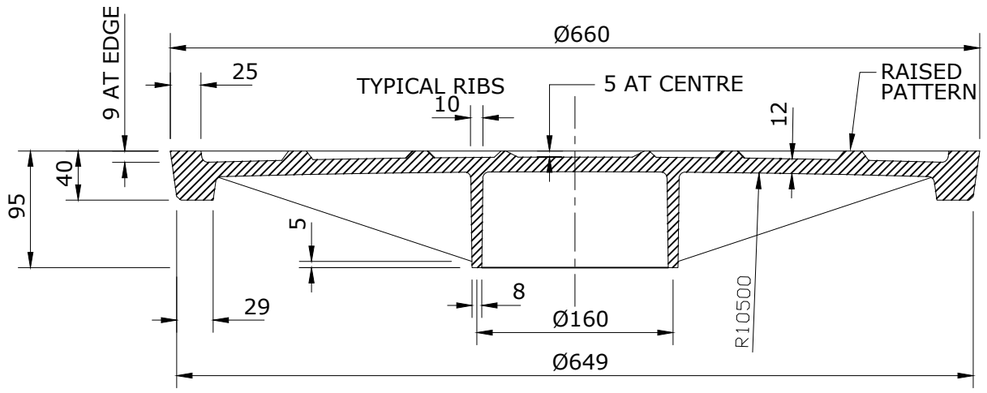


PLAN OF BOTTOM



COVER PATTERN DETAIL

WBBROC SP ONLY ACCEPTS THIS CLASS D FRAME, RISER AND COVER SYSTEM OR EQUAL WITH CERTIFICATION TO AS 3996, SEE WBB-SEW-1308-8



SECTIONAL ELEVATION A-

MAINTENANCE HOLE COVER

MASS: 49KG

FOR USE IN TRAFFICABLE ROADWAY LOCATIONS.

NOTES

1. ALL EDGES TO BE SQUARE.
2. ALL EDGES TO BE ARRISED UNLESS SHOWN OTHERWISE.
3. ALL FILLETS TO BE 5mm RADIUS UNLESS SHOWN OTHERWISE.
4. CASTING TO BE FREE OF BURRS AND PITS.
5. MACHINE SURFACE SYMBOL 3.2
6. MATERIAL: DUCTILE CAST IRON (AS1831)
   TENSILE STRENGTH: ISO 1083/JS/600-3/S
   HARDNESS: 190 - 270 (HB)
   ULTIMATE DESIGN LOAD: 210 KN (AS3996)
7. TOLERANCES:

CAST DIMENSIONS	± 1.00mm
ANGLE PROFILE	± 0.25°
MACHINED DIMENSIONS	± 0.125mm
OVERALL MAJOR DIAMETER OF COVER	+0 -0.25mm
DFT OF COATING	50um

8. ALL MACHINED SURFACES SHALL HAVE A COATING APPROVED AS FIT FOR THE PURPOSE OF PROVIDING A RUST PROOF, NON-STICK AND GAS/WATER PROOF JOINT.
9. ALL NON MACHINED SURFACES TO BE BITUMINOUS COATED IN ACCORDANCE WITH AS 3750-4.
10. COVERS, FRAMES AND 60mm RISER RINGS TO BE SUPPLIED ASSEMBLED.
11. ALL WORK SHALL BE IN ACCORDANCE WITH CURRENT QUEENSLAND CODE, SPECIFICATIONS AND STANDARD DRAWINGS.
12. CERTIFICATION OF COMPLIANCE TO A.S. 3996 TO BE SUPPLIED FOR EACH CASTING.
13. FOR SURCHARGE AREAS AND FOR OVERLAND FLOW AREAS AND WHERE SPECIFIED IN THE DESIGN DRAWINGS, COVERS AND FRAMES TO BE SUPPLIED WITH 4-M8 COARSE THREADED 316 SS BOLTS 45mm LONG WITH NYLON WASHERS.

REV. No.	DATE	DESCRIPTION	AUTH.
A		BASED ON SEQ-SEW-1308-10 VERSION A DATED 1/1/2013	

WBBROC WATER SERVICE PROVIDERS

WORK PRACTICES MUST COMPLY WITH ALL APPLICABLE OCCUPATIONAL HEALTH & SAFETY LEGISLATION

SEWERAGE STANDARD DRAWING

MAINTENANCE HOLE COVER
SEWER - CLASS D - BOLT DOWN
TYPICAL COVER DETAILS

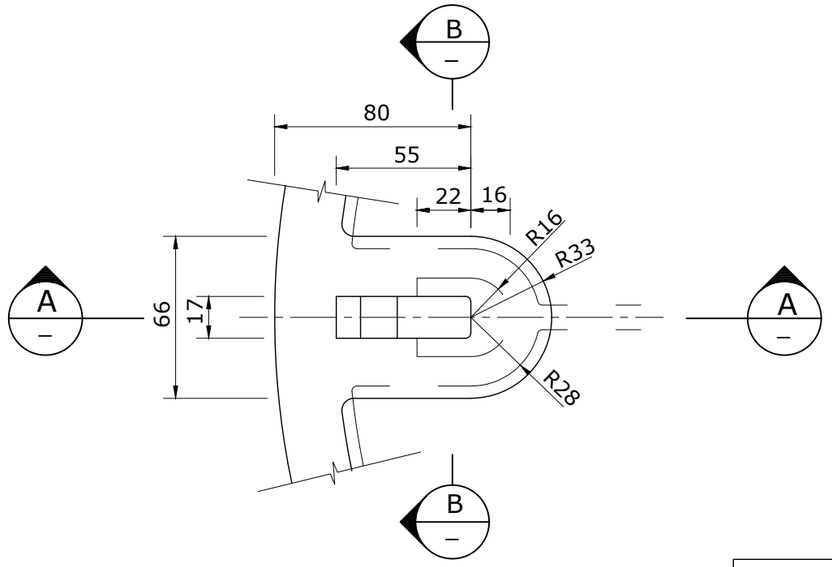
BRC	FCRC	GRC	NBRC	SBRC

DRAWING No. WBB-SEW-1308-10

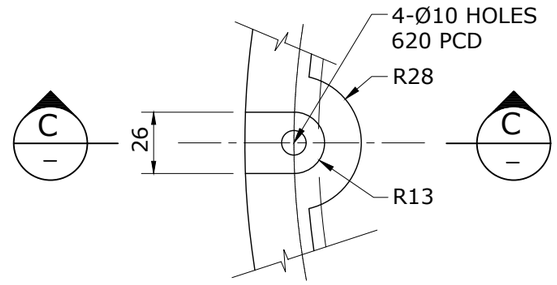
VERSION A

NOT TO SCALE

ORG DATE:

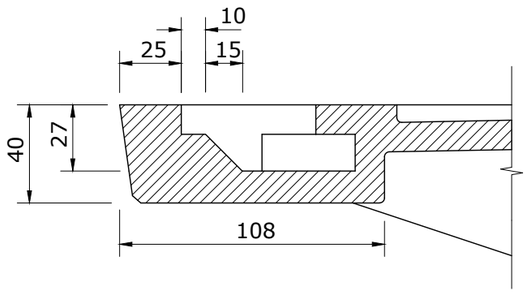


PLAN



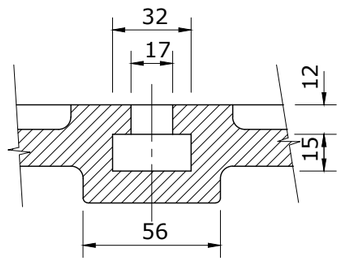
PLAN

WBBROC SP ACCEPTS THIS CLASS D FRAME, RISER AND COVER SYSTEM OR EQUAL WITH CERTIFICATION TO AS 3996 SEE WBB-SEW-1308-8

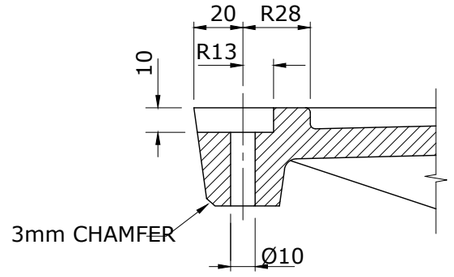


SECTION A -

KEYHOLE DETAIL

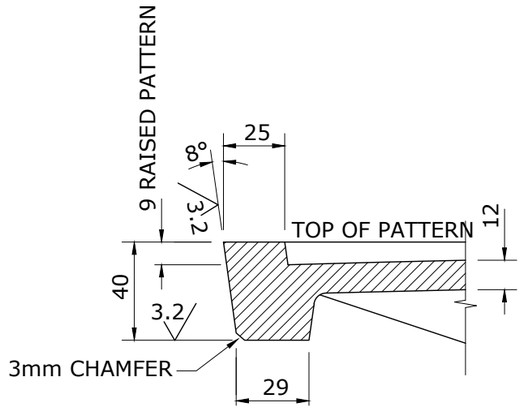


SECTION B -



SECTION C -

BOLT RECESS DETAIL



TYPICAL EDGE DETAIL

REFER WBB-SEW-1308-10 FOR NOTES

FOR USE IN TRAFFICABLE ROADWAY LOCATIONS.

REV. No.	DATE	DESCRIPTION	AUTH.
A		BASED ON SEQ-SEW-1308-11 VERSION A DATED 1/1/2013	

WBBROC WATER SERVICE PROVIDERS

WORK PRACTICES MUST COMPLY WITH ALL APPLICABLE OCCUPATIONAL HEALTH & SAFETY LEGISLATION

SEWERAGE STANDARD DRAWING

MAINTENANCE HOLE COVER
SEWER - CLASS D - BOLT DOWN
TYPICAL COVER DETAILS

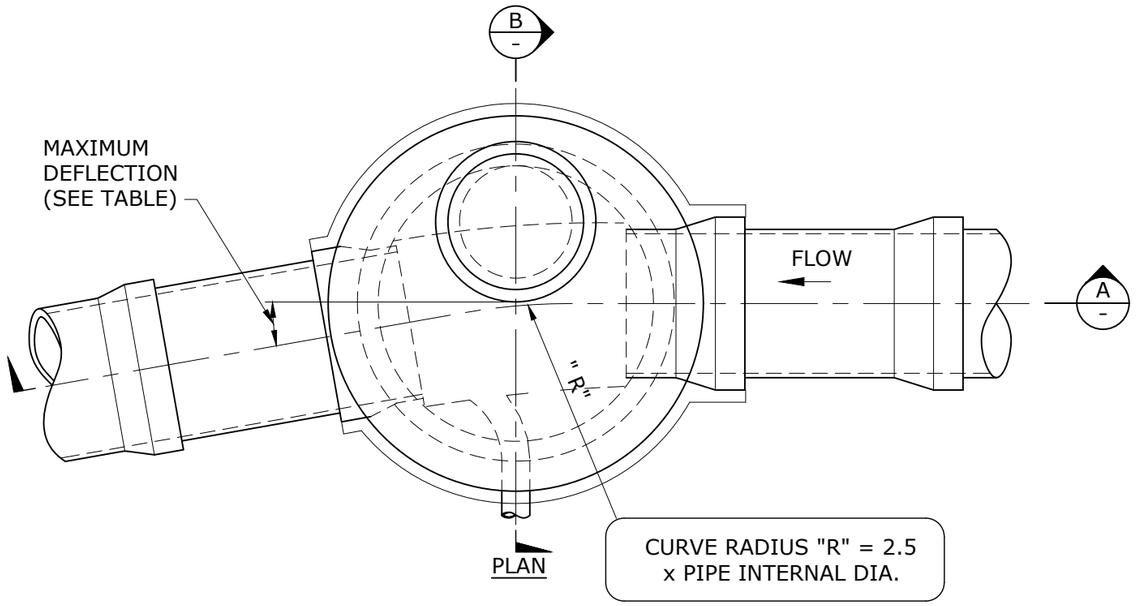
BRC	FCRC	GRC	NBRC	SBRC

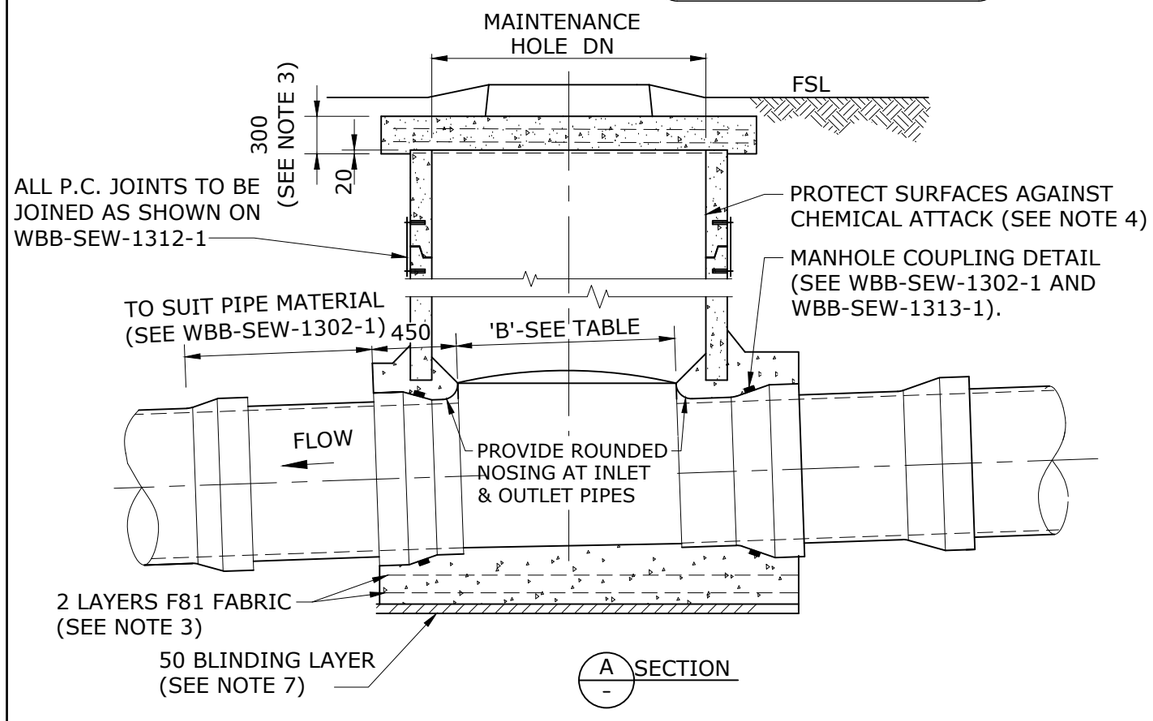
DRAWING No. WBB-SEW-1308-11

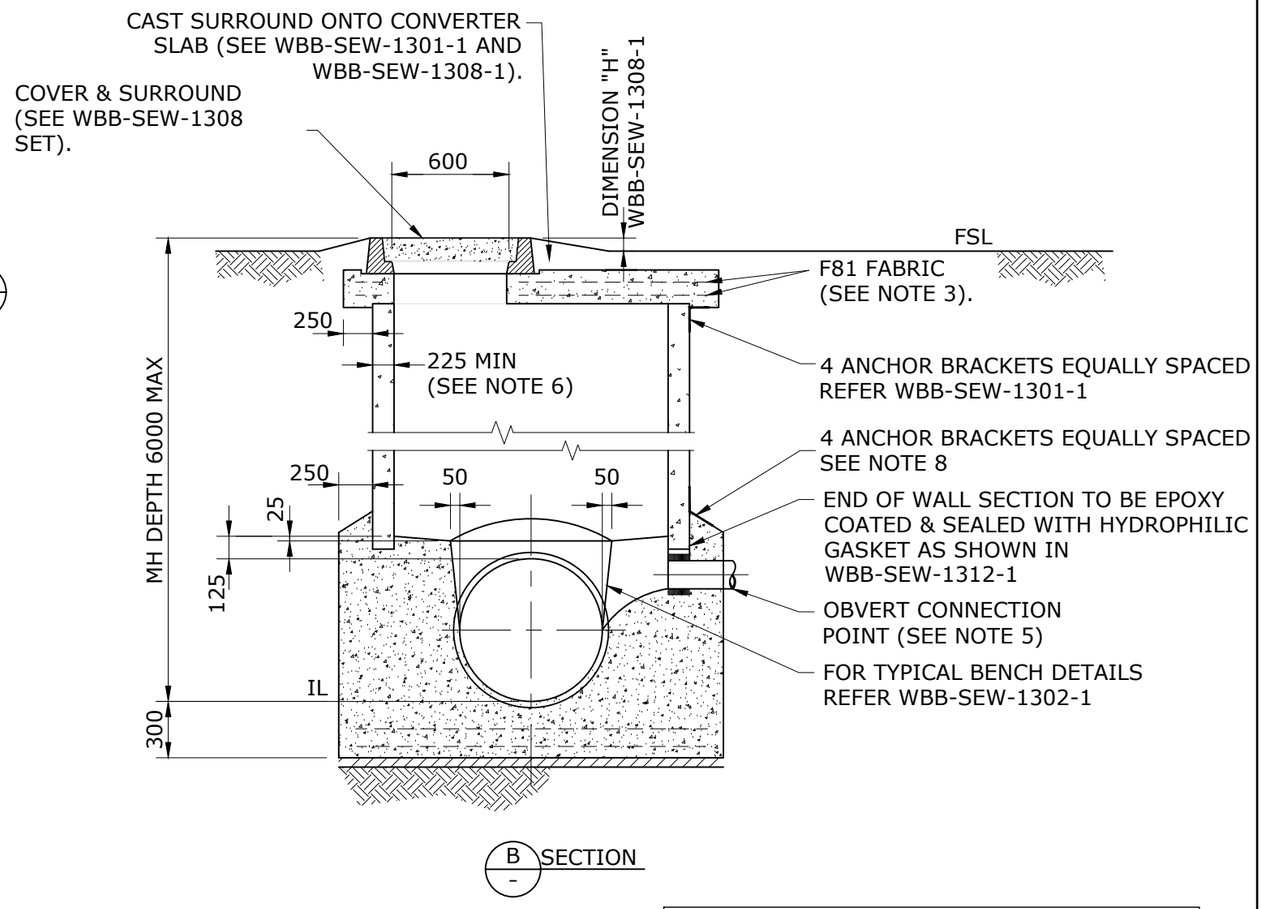
VERSION A

NOT TO SCALE

ORG DATE:







SEWER SIZE	MAXIMUM HORIZONTAL DEFLECTION AT CHAMBER	NOMINAL MH DIAMETER	'B'
DN 600 TO 675	35°	DN 1500	1100
	45°	DN 1800	1400
DN 750	40°	DN 1800	1400

DESIGN INPUT BY RPEQ REQUIRED FOR TRAFFIC LOADS, STRUCTURAL DESIGN AND NATIVE SOIL CONDITIONS, REFER NOTES 3, 6 AND 7

NOTES:

1. ALL DIMENSIONS IN MILLIMETRES.
2. CONCRETE TO BE S40 MIN
3. SLAB AND BASE REINFORCEMENT AS PER STRUCTURAL DESIGN WITH 65 MINIMUM COVER.
4. INSIDE SURFACE OF MH AND UNDERSIDE OF ROOF AND OPENING TO HAVE EPOXY COATING, PVC LINING OR PE LINING AS SPECIFIED IN THE CODE. BENCH TO BE STANDARD MORTAR, REFER WBB-SEW-1302-1.
5. ALTERNATIVELY INCORPORATE VERTICAL DROP FOR HIGH LEVEL SEWERS SEE WBB-SEW-1306-1.
6. WALL THICKNESS TO BE 250 MIN AT S40 WHERE LOCATED IN AGGRESSIVE SOILS, HIGH WATER TABLE AND SALINE ENVIRONMENTS. PROVIDE 0.2 THICK SOLVENT FREE EPOXY COATING TO OUTSIDE FACE OF WALLS.
7. FORMAT SHOWN BASED ON > 100KPa ALLOWABLE BEARING PRESSURE OF NATIVE SOIL.
8. BOTTOM ANCHOR BRACKET 12x75 SS316 PLATE 300 LONG WITH Ø18 BOLT HOLES 40 FROM ENDS AND FIXED AS SHOWN ON WBB-SEW-1301-1. BRACKET ANGLE TO SUIT BUILT FORM OF PRECAST WALL AND CAST BASE JOINT.

REV. No.	DATE	DESCRIPTION	AUTH.
A		BASED ON SEQ-SEW-1309-1 VERSION B DATED 20/08/15	

WBBROC WATER
SERVICE PROVIDERS

WORK PRACTICES MUST COMPLY WITH ALL APPLICABLE OCCUPATIONAL HEALTH & SAFETY LEGISLATION

SEWERAGE STANDARD DRAWING

"Y" TYPE MAINTENANCE HOLE
SEWERS DN600 AND DN750
TYPICAL ARRANGEMENT

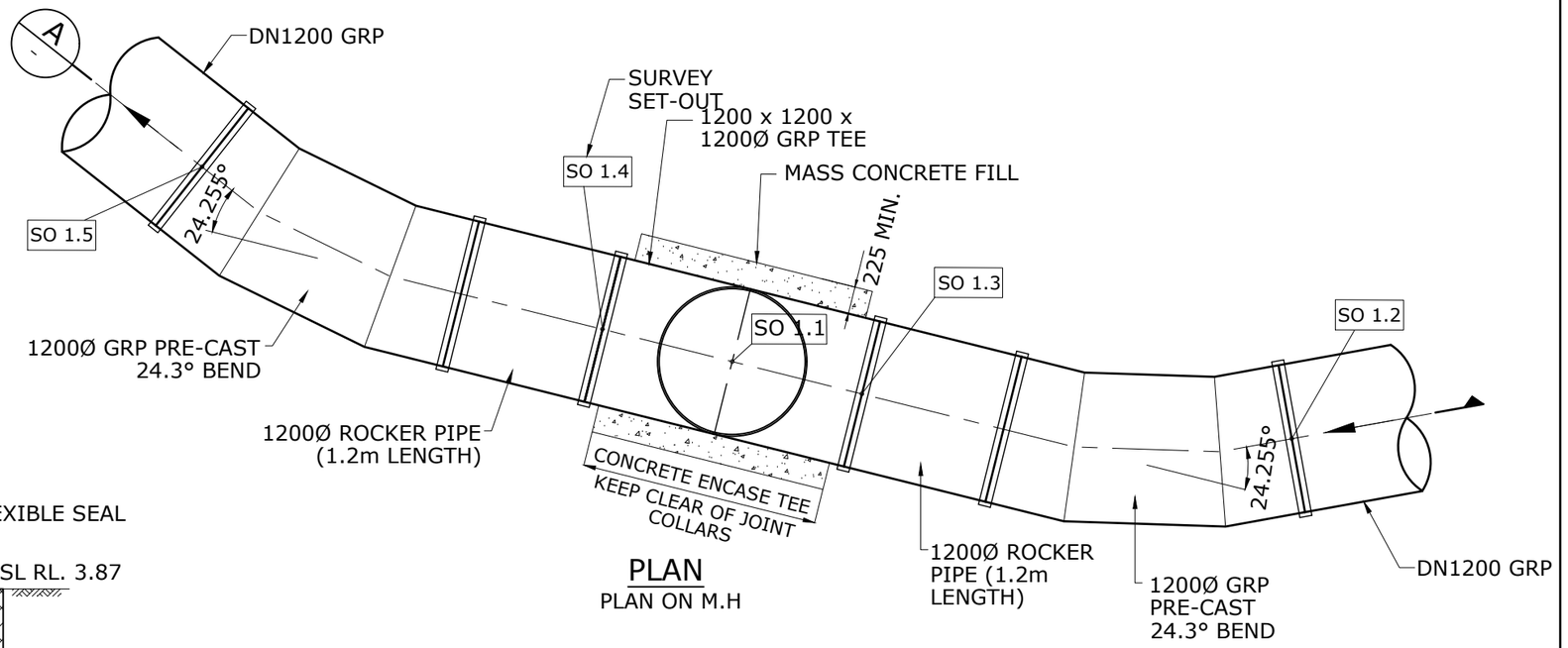
BRC	FCRC	GRC	NBRC	SBRC

DRAWING No.
WBB-SEW-1309-1

VERSION
A

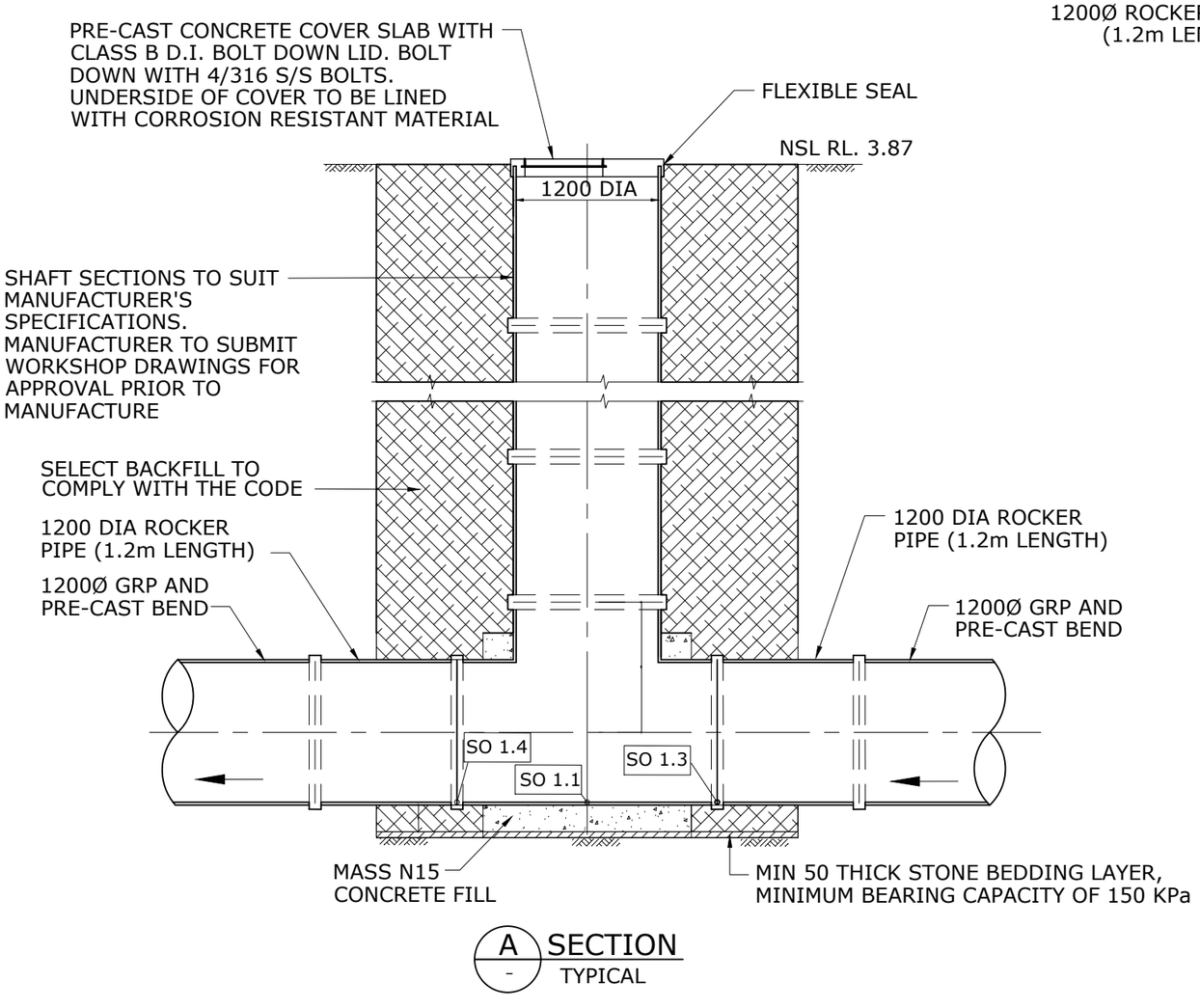
NOT TO SCALE

ORG DATE:



PLAN

PLAN ON M.H



A - SECTION

TYPICAL

DESIGN INPUT BY RPEQ REQUIRED FOR TRAFFIC LOADS, STRUCTURAL STEEL DESIGN AND NATIVE SOIL CONDITIONS, REFER NOTES

USE IN WBBROC SP AREAS SUBJECT TO SPECIFIC APPROVAL

NOTES

1. MANHOLE SHAFT TO BE SUITABLE TO SUPPORT DESIGN TRAFFIC LOAD.
2. COVER SLAB TO BE DESIGNED AND SUPPLIED BY MANHOLE MANUFACTURER.
3. ALL MATERIALS REQUIRED FOR MANHOLE INSTALLATION TO BE SUPPLIED BY MANHOLE SUPPLIER WITH EXCEPTION OF BACKFILL MATERIALS AND IN-SITU CONCRETE.
4. VARIATIONS TO DESIGN SUBJECT TO APPROVAL BY WBBROC-SP.
5. SUPPLIER TO SPECIFY EXTENTS, LOCATION AND VOLUME OF CONCRETE REQUIRED FOR PREVENTING FLOTATION. NO CONCRETE ALLOWED OVER FLEXIBLE JOINTS.
6. ALL INTERNAL EXPOSED SURFACES TO BE CORROSION RESISTANT.
7. MANUFACTURER TO PROVIDE DETAIL DRAWINGS FOR APPROVAL PRIOR TO MANUFACTURE.
8. ALL GRP TEES, BENDS AND RISER COMPONENTS SHALL BE MINIMUM STIFFNESS OF SN10,000.

REV. No.	DATE	DESCRIPTION	AUTH.
A		BASED ON SEQ-SEW-1310-1 VERSION A DATED 1/1/2013	

WBBROC WATER SERVICE PROVIDERS

WORK PRACTICES MUST COMPLY WITH ALL APPLICABLE OCCUPATIONAL HEALTH & SAFETY LEGISLATION

SEWERAGE STANDARD DRAWING

"Z1" TYPE NON-TRAFFICABLE TYPICAL GRP MH OPTION DN1200 AND LARGER SEWERS

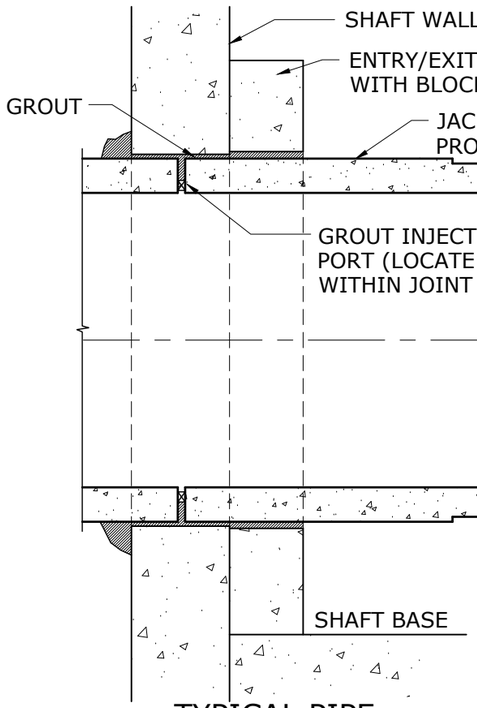
BRC	FCRC	GRC	NBRC	SBRC

DRAWING No. WBB-SEW-1310-1

VERSION A

NOT TO SCALE

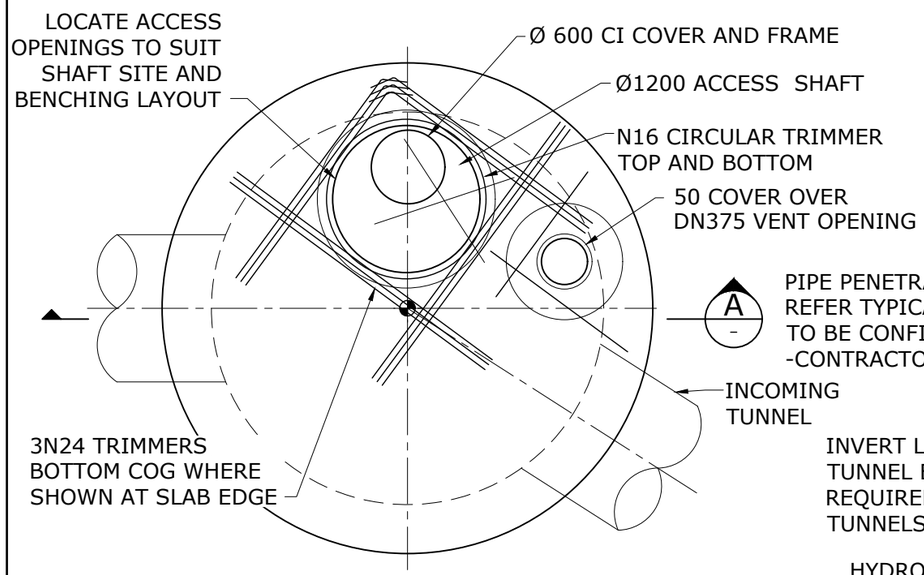
ORG DATE:



TYPICAL PIPE PENETRATION DETAIL

DESIGN INPUT BY RPEQ REQUIRED FOR TRAFFIC LOADS, STRUCTURAL STEEL DESIGN AND NATIVE SOIL CONDITIONS, REFER NOTES.

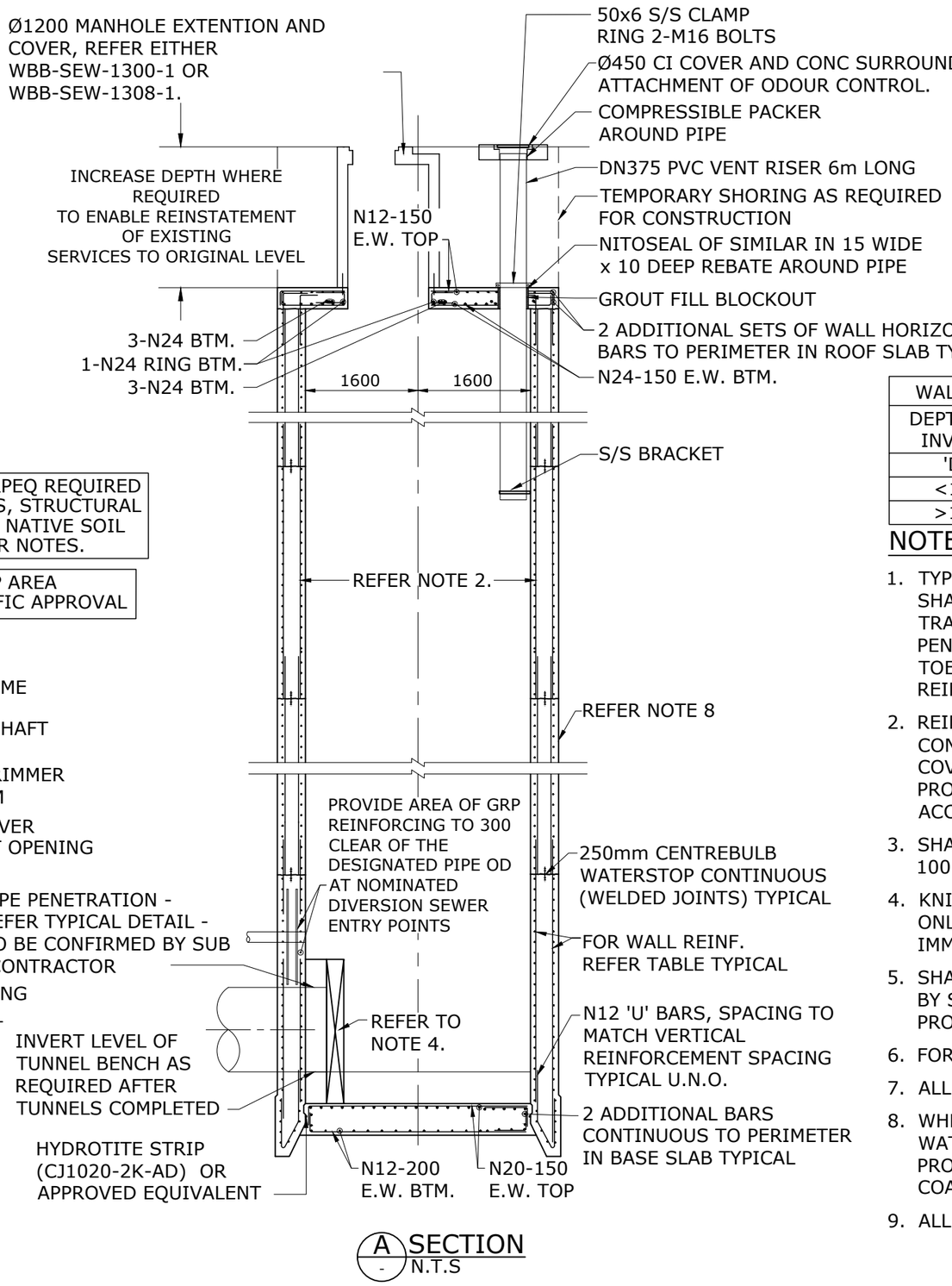
USE IN WBBROC SP AREA SUBJECT TO SPECIFIC APPROVAL



PLAN - RECEPTION SHAFT ROOF SLAB

MAIN REINFORCEMENT OMITTED FOR CLARITY

DENOTES SETOUT POINT
REFER TO SHAFT SITE PLANS FOR COORDINATES



A SECTION
N.T.S

WALL THICKNESS AND REINFORCING		
DEPTH TO INVERT	WALL THICKNESS	WALL
'D'	'T'	REINFORCING
<13m	425	N16-150 EW EF
>13m	500	N16-125 EW EF

NOTES:

1. TYPICAL DETAILS SHOWN. PERMANENT WORKS SHAFTS SHALL BE INDIVIDUALLY DESIGNED FOR TRAFFIC LOADING, JACKING FORCES, PENETRATION SEALING, ANTI FLOATATION, SHAFT TOE DESIGN FOR SOIL CONDITIONS, REINFORCING STEEL AND VENTILATION.
2. REINFORCEMENT AS PER STRUCTURAL DESIGN. CONCRETE SHALL BE S40 MINIMUM WITH 75 COVER WITH ALL INTERNAL SURFACES TO BE PROVIDED WITH A PE PROTECTIVE COATING IN ACCORDANCE WITH THE CODE.
3. SHAFTS SHALL HAVE A MINIMUM DESIGN LIFE OF 100 YEARS.
4. KNIFE GATE DETAILS AS PER THE CODE REQUIRED ONLY FOR COLLECTION MANHOLE LOCATED IMMEDIATELY UP STREAM OF PUMP STATION.
5. SHAFT DETAILS ARE SUBJECT TO CONFIRMATION BY SUB-CONTRACTOR AND APPROVAL BY SERVICE PROVIDER PRIOR TO WORKS COMMENCING.
6. FOR BENCHING DETAILS REFER WBB-SEW-1309-1.
7. ALL STAINLESS STEEL TO BE GRADE 316.
8. WHERE LOCATED IN AGGRESSIVE SOILS, HIGH WATER TABLE AND SALINE ENVIRONMENTS, PROVIDE 0.3 THICK SOLVENT FREE EPOXY COATING TO OUTSIDE FACE OF WALL.
9. ALL DIMENSIONS ARE IN MILLIMETRES.

REV. No.	DATE	DESCRIPTION	AUTH.
A		BASED ON SEQ-SEW-1311-1 VERSION A DATED 1/1/2013	

WBBROC WATER SERVICE PROVIDERS

WORK PRACTICES MUST COMPLY WITH ALL APPLICABLE OCCUPATIONAL HEALTH & SAFETY LEGISLATION

SEWERAGE STANDARD DRAWING

"Z2" TYPE TYPICAL TUNNEL JACKING SHAFT - CAISSON OPTION

BRC	FCRC	GRC	NBRC	SBRC

DRAWING No. WBB-SEW-1311-1

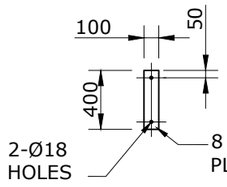
VERSION A

NOT TO SCALE

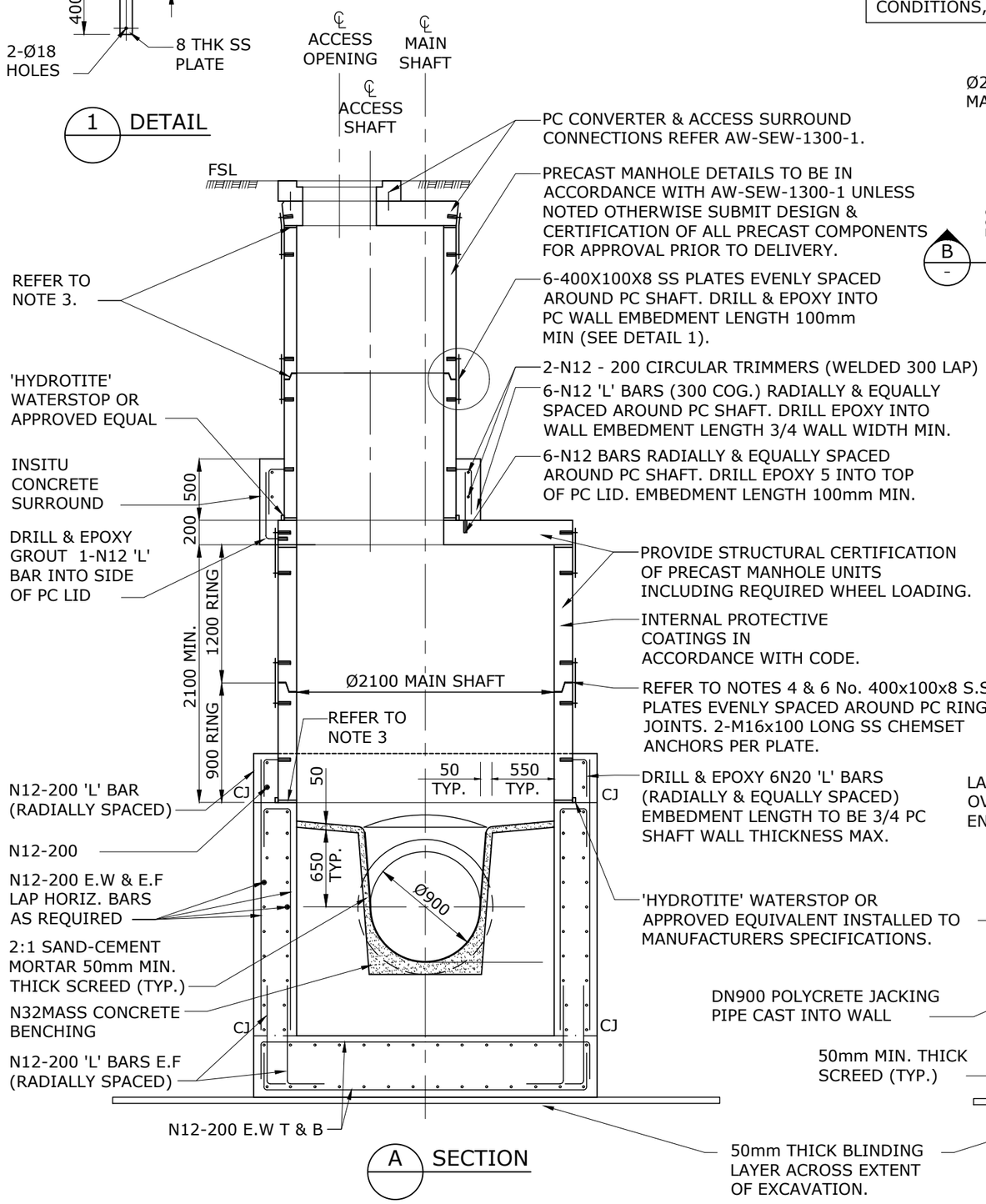
ORG DATE:

USE IN WBBROC SP AREA
SUBJECT TO SPECIFIC APPROVAL

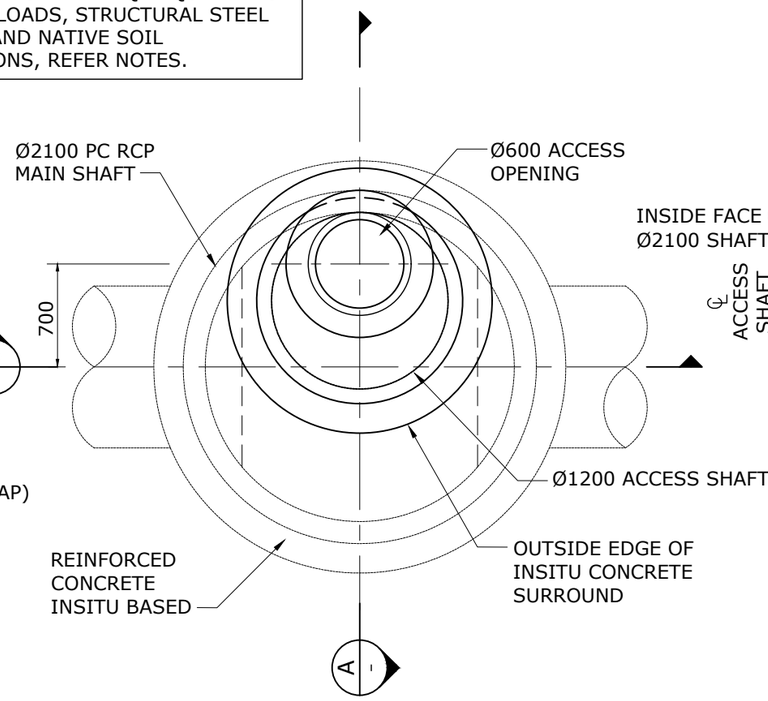
DESIGN INPUT BY RPEQ REQUIRED FOR TRAFFIC LOADS, STRUCTURAL STEEL DESIGN AND NATIVE SOIL CONDITIONS, REFER NOTES.



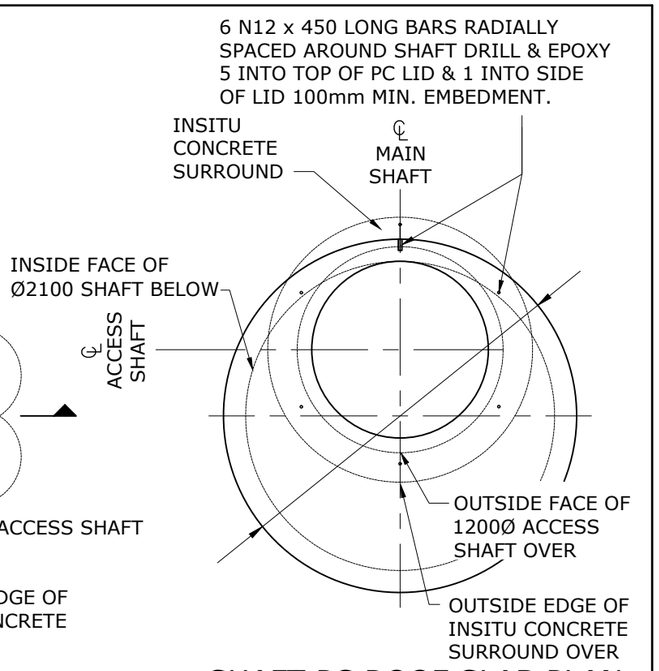
1 DETAIL



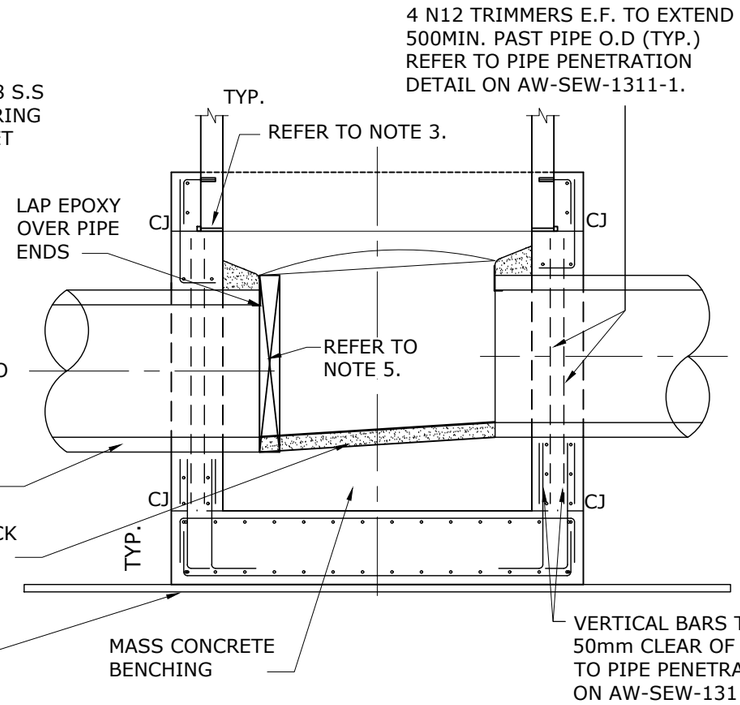
A SECTION



MANHOLE ACCESS PLAN



SHAFT PC ROOF SLAB PLAN



NOTES:

1. TYPICAL DETAILS SHOWN, PERMANENT WORKS SHAFTS SHALL BE INDIVIDUALLY DESIGNED FOR TRAFFIC LOADING, JACKING FORCES, SHAFT TOE DESIGN FOR SOIL CONDITIONS, REINFORCING STEEL & VENTILATION.
2. FORMAT SHOWN FOR USE WHERE DEPTH IS 8.0M AND TEMPORARY WORKS (SHEETPILE) USED. FLOATATION CONTROL SHALL BE DESIGNED FOR EACH STRUCTURE.
3. 'MEGAPOXY' OR APPROVED MASTIC SEALANT IS TO BE PLACED BETWEEN ALL SHAFT JOINTS. ALL JOINTS ARE TO BE POINTED INTERNALLY.
4. EXTERNAL STRAPPING TO BE SS316 FOR ALL COMPONENTS.
5. KNIFE GATE DETAILS REFER TO CODE. REQUIRED ONLY FOR COLLECTION MANHOLE LOCATED IMMEDIATELY UP STREAM OF PUMP STATION.
6. ALL CAST INSITU CONCRETE S40 WITH 75mm COVER TO REINFORCEMENT.
7. ALL DIMENSIONS ARE IN MILLIMETRES.

REV. No.	DATE	DESCRIPTION	AUTH.
A		BASED ON SEQ-SEW-1312-1 VERSION A DATED 1/1/2013	

WBBROC WATER SERVICE PROVIDERS

WORK PRACTICES MUST COMPLY WITH ALL APPLICABLE OCCUPATIONAL HEALTH & SAFETY LEGISLATION

SEWERAGE STANDARD DRAWING

"Z3" TYPE TYPICAL TUNNEL RECEIVAL SHAFT MANHOLE OPTION

BRC	FCRC	GRC	NBRC	SBRC

DRAWING No.

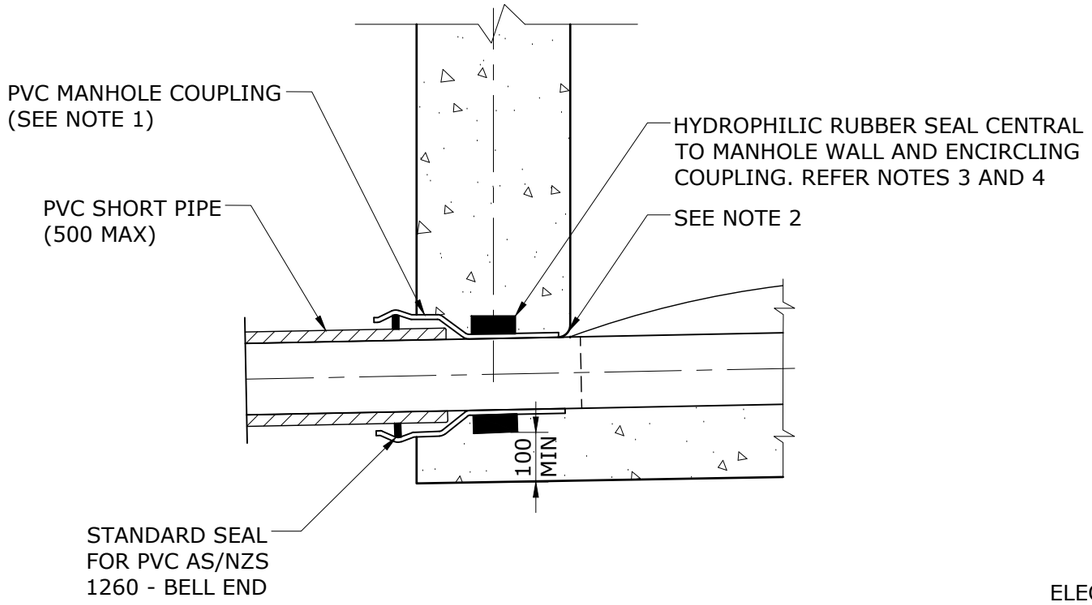
WBB-SEW-1312-1

VERSION

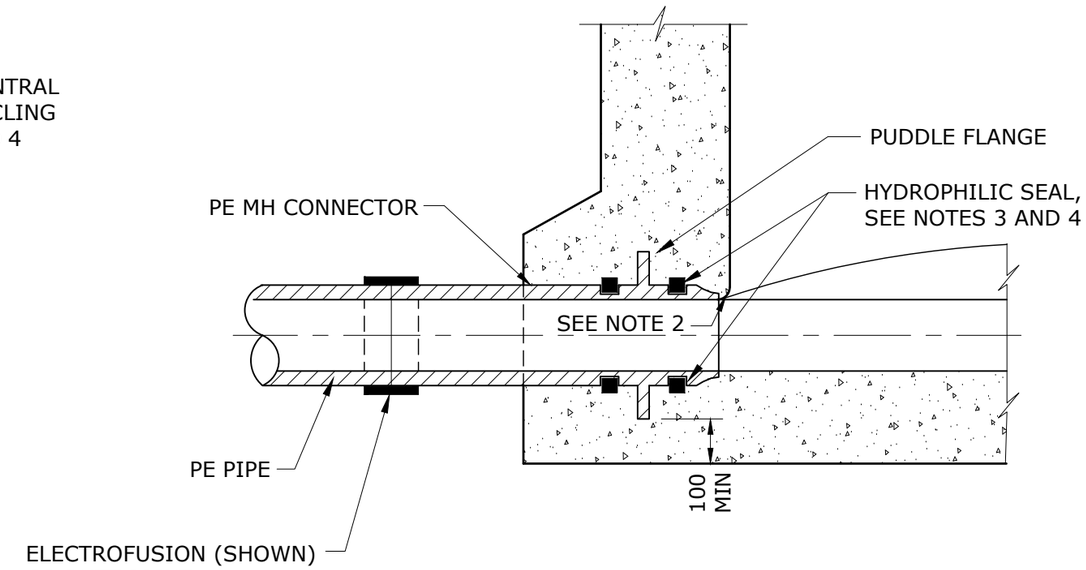
A

NOT TO SCALE

ORG DATE:



CONNECTION PVC - PVC
(SEE NOTE 1)



CONNECTION PE - PE

NOTES:

1. FOR CONNECTIONS TO OTHER PIPE MATERIALS SEE WBB-SEW-1302-1. HYDROPHILIC SEALS TO ALL PIPE MATERIALS.
2. FORM ROUNDED NOSING ON INLET AND OUTLET PIPES TO PREVENT DAMAGE TO JETTING EQUIPMENT, CCTV CABLES AND GUIDES.
3. HYDROPHILIC RUBBER SEALS SHALL BE MINIMUM OF 6x25 AND SHALL FULLY ENCIRCLE THE PIPE FITTING WITH A MINIMUM 50 OVERLAP THAT IS IN CONTACT WITH ITSELF.
4. FIX AND MAKE CONTINUOUS THE HYDROPHILIC RUBBER SEAL WITH GUN GRADE HYDROPHILIC WATERSTOP MASTIC BEAD.

REV. No.	DATE	DESCRIPTION	AUTH.
A		BASED ON SEQ-SEW-1313-1 VERSION B DATED 20/07/15	

WBBROC WATER
SERVICE PROVIDERS

WORK PRACTICES MUST COMPLY WITH ALL APPLICABLE OCCUPATIONAL HEALTH & SAFETY LEGISLATION

SEWERAGE STANDARD DRAWING

MAINTENANCE HOLE
SEWER CONNECTION DETAILS
ALL PIPE MATERIALS

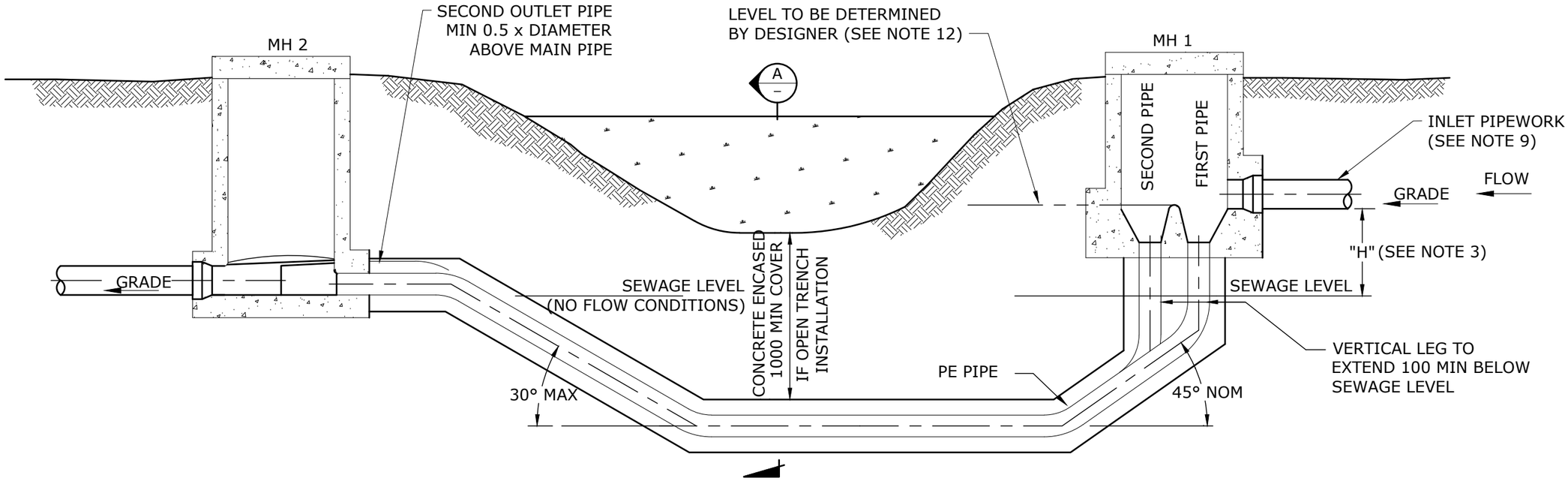
BRC	FCRC	GRC	NBRC	SBRC

DRAWING No.
WBB-SEW-1313-1

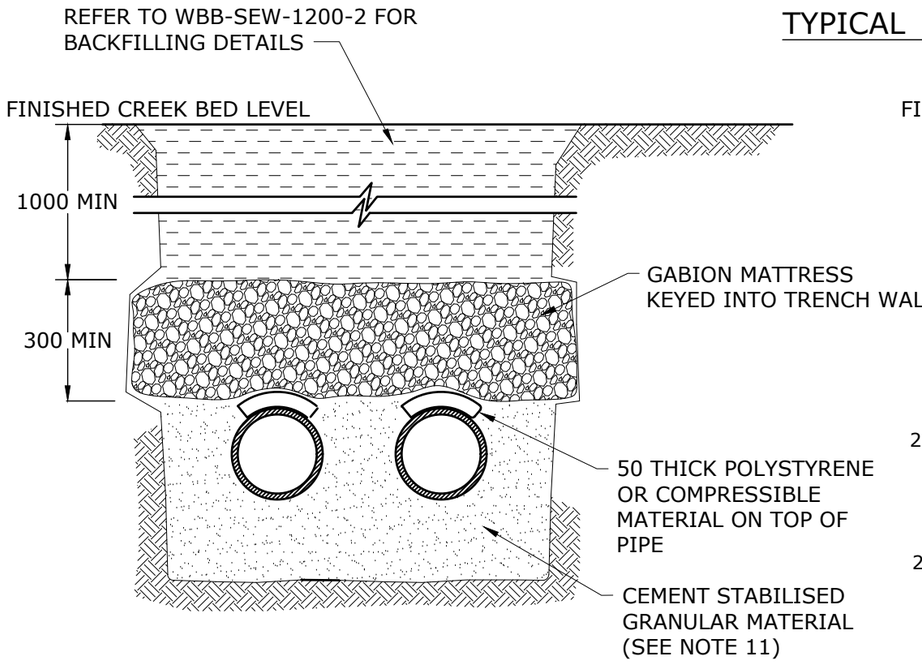
VERSION
A

NOT TO SCALE

ORG DATE:

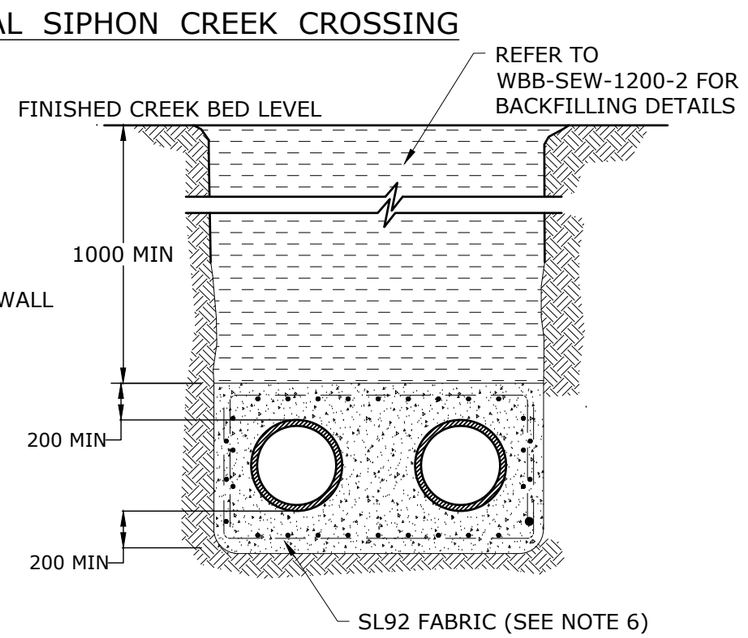


TYPICAL SIPHON CREEK CROSSING



NOT CONCRETE ENCASED PIPE - SECTION A

(ALTERNATIVELY CAN BE INSTALLED BY DIRECTIONAL BORING, WHERE MINIMUM COVER OF 1300 IS MET)



CONCRETE ENCASED PIPE - SECTION A

(SEE NOTES 7 & 8)

NOTES:

1. ALL DIMENSIONS IN MILLIMETRES.
2. NUMBER AND DIAMETER OF SIPHON PIPES AS SPECIFIED IN DESIGN DRAWINGS.
3. DIMENSION "H" AS SHOWN IN DESIGN DRAWINGS.
4. PROVIDE MAINTENANCE STRUCTURES EITHER SIDE OF SIPHON.
5. CONCRETE TO BE SPECIAL CLASS FOR MAINTENANCE STRUCTURES AND N25 FOR ENCASEMENT.
6. 75 MIN CLEAR CONCRETE COVER TO REINFORCEMENT.
7. PLACE CONCRETE ENCASEMENT ONLY AFTER WELDING AND TESTING OF PE JOINTS HAS BEEN COMPLETED.
8. STEEL REINFORCEMENT SHALL BE PROVIDED FOR ENCASED PIPES. CONTRACTOR TO CONTROL THERMAL REVERSION AND FLOATATION OF PE PIPE DURING ENCASEMENT POUR AND CURE.
9. PROVIDE SILT TRAP MANHOLE ADJOINING SIPHON MH1 WHERE DIRECTED BY WBBROC-SP.
10. POSITION OF SIPHON PIPE MAY VARY IF DIRECTIONAL BORING UTILISED.
11. CEMENT STABILISED EMBEDMENT TO COMPLY WITH CODE.
12. FIRST PIPE TO SERVE PDWF WITH SECOND PIPE TO SERVE FLOWS UP TO PWWF.

13. SPECIFIC WBBROC-SP APPROVAL REQUIRED FOR USE OF SIPHON ARRANGEMENT

REV. No.	DATE	DESCRIPTION	AUTH.
A		BASED ON SEQ-SEW-1400-1 VERSION A DATED 1/1/2013	

WBBROC WATER SERVICE PROVIDERS

WORK PRACTICES MUST COMPLY WITH ALL APPLICABLE OCCUPATIONAL HEALTH & SAFETY LEGISLATION

SEWERAGE STANDARD DRAWING

BURIED CROSSINGS
TYPICAL SIPHON ARRANGEMENT

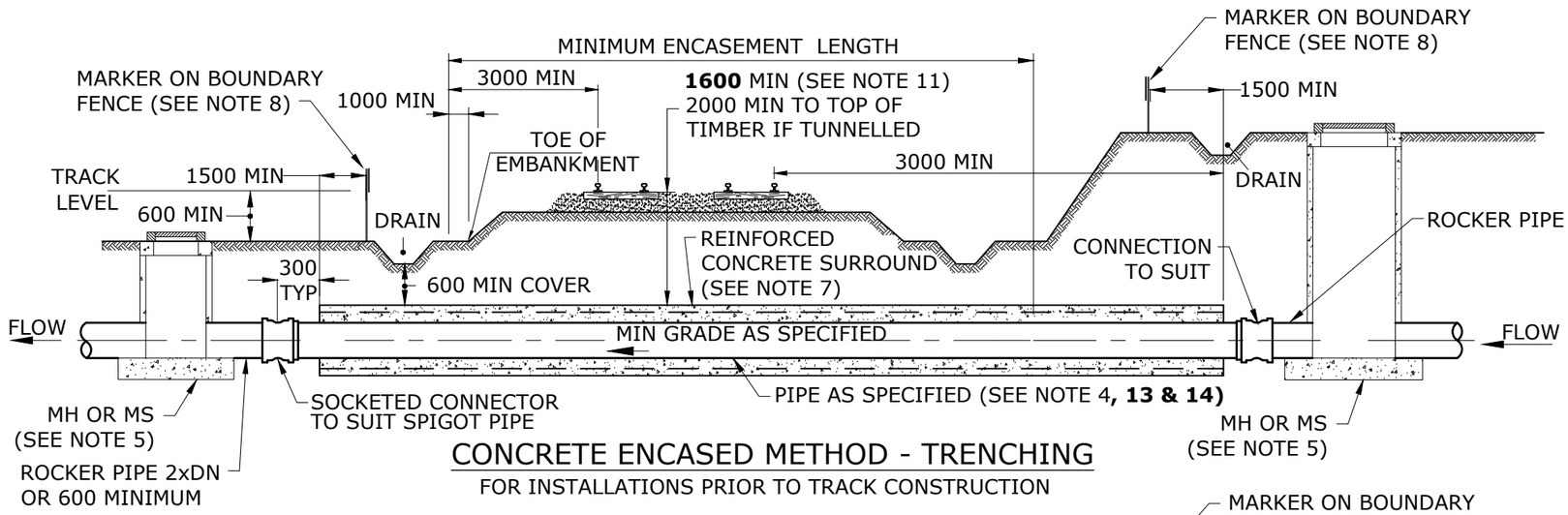
BRC	FCRC	GRC	NBRC	SBRC

DRAWING No. WBB-SEW-1400-1

VERSION A

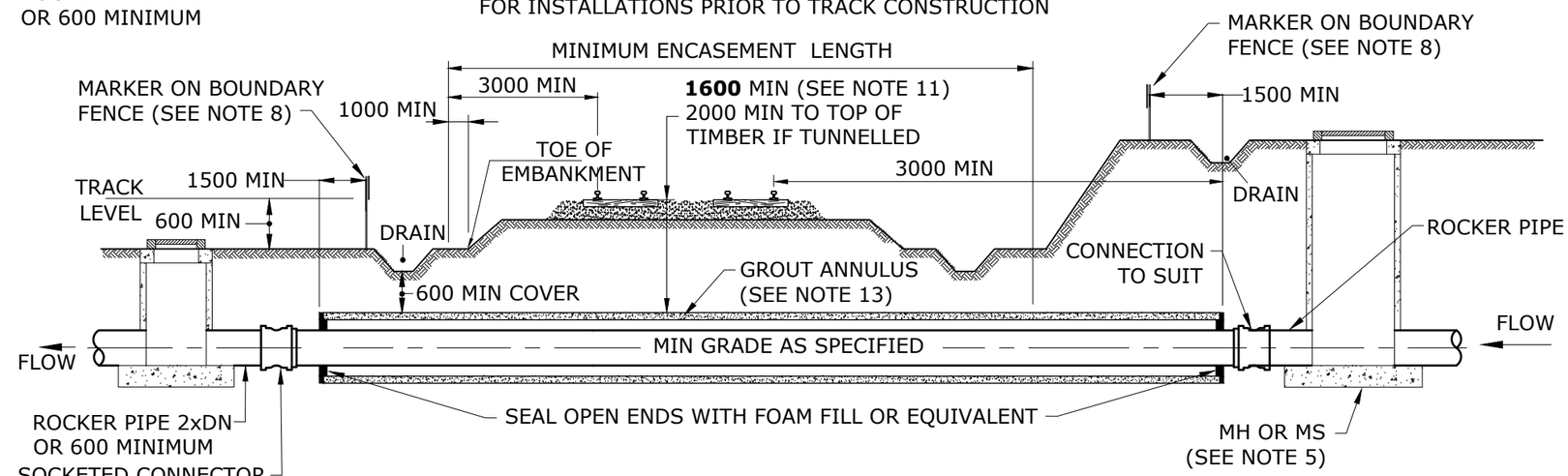
NOT TO SCALE

ORG DATE:



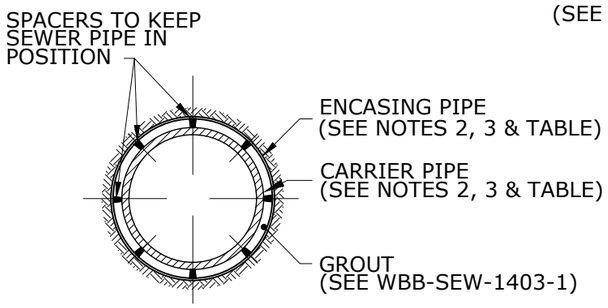
CONCRETE ENCASED METHOD - TRENCHING

FOR INSTALLATIONS PRIOR TO TRACK CONSTRUCTION



BORED OR JACKED ENCASING PIPE METHOD

FOR INSTALLATIONS **PRIOR TO AND** AFTER TRACK CONSTRUCTION
(SEE WBB-SEW-1403-1)



TYPICAL SECTION ENCASING PIPE & SEWER ARRANGEMENTS

BORED & JACKED ENCASING/SEWER PIPE SIZES										
SEWER PIPE (DN)	100	150	225	300	375	400	500	550	650	800
BORED ENCASING PIPE MIN (DN)	300	375	425	500	575	600	700	750	850	1000
JACKED ENCASING PIPE (DN)	**DESIGN**					**DESIGN**				

DETAIL SHOWN ARE TYPICAL. THE DESIGNER MUST OBTAIN PRE APPROVAL FROM SP FOR DIRECTIONAL DRILLING/ JACKED AND SUBMIT A SPECIFIC DESIGN FOR SP APPROVAL.

NOTES:

1. ALL DIMENSIONS IN MILLIMETRES.
2. HORIZONTAL BORING
   ENCASING PIPE
   - REINFORCED CONCRETE CLASS 4 BUTT JOINTED WITH STEEL LOCATING BAND OR MILD STEEL (6mm WALL THK MIN) OR GRP PIPE

   SEWER PIPE
   - STEEL WITH FUSION BONDED PE COATING AND LINING
   - DI WITH POLYMERIC LINING CLASS PN 35
   - PVC CLASS SN 8
   - PE CLASS PN 12.5 MIN
   - GRP CLASS SN 10000 MIN.
3. JACKING
   ENCASING PIPE
   - REINFORCED CONCRETE CLASS 4 BUTT JOINTED WITH STEEL LOCATING BAND OR GRP JACKING PIPE

   SEWER PIPE
   - STEEL WITH FUSION BONDED PE COATING AND LINING
   - DI WITH POLYMERIC LINING CLASS PN 35
   - PVC CLASS SN 8
   - PE CLASS PN 12.5 MIN
   - GRP CLASS SN 10000 MIN.
4. CONCRETE ENCASED
   - THE PIPE MATERIAL TO BE:
     - STEEL WITH FBPE INTERNAL COATING AND LINING
     - PE CLASS PN 12.5 MIN
     - PVC (SWJ) CLASS SN 8
     - GRP CLASS SN 10000 MIN.
   - NO SERVICE CONNECTIONS TO BE MADE TO ENCASED SECTION OF PIPELINE.
   - ENCASING AS SHOWN ON WBB-SEW-1204-1
5. MH OR MS TO BE LOCATED AT LEAST 6000 FROM THE TOE OF EMBANKMENT OR TOP OF CUT AND AT OUTSIDE OF RAIL LAND.
6. FOR DI MAINS, ALL FITTINGS TO BE FUSION BONDED.
7. SEWER PIPE <DN 150 CAN BE DIRECTIONALLY BORED USING PE PIPE.
8. PLACE MARKERS ABOVE PIPELINE AT THE POINTS WHERE IT ENTERS AND LEAVES THE PROPERTY.
9. PROVIDE CATHODIC PROTECTION AS DIRECTED BY RAILWAY AUTHORITY FOR IRON BASED PIPES. PROVIDE ELECTRICAL CONTINUITY AND INSULATION AS SPECIFIED IN DESIGN DRAWINGS.
10. DESIGN TO BE IN ACCORDANCE WITH AS 4799 - RAILWAY REQUIREMENTS.
11. MINIMUM COVER FOR ALL PIPELINES BELOW RAILWAY LINES:
    - NOT LESS THAN **1600** BELOW RAIL LEVEL
    - NOT LESS THAN 600 BELOW FORMATION LEVEL ie THE GROUND LEVEL IMMEDIATELY BELOW THE RAILWAY BALLAST
    - NOT LESS THAN 2000 BELOW RAIL LEVEL TO TOP OF TIMBER FOR TUNNELS.
12. FOR ELECTRIFIED RAILWAY SYSTEMS PREFERENCE SHOULD BE GIVEN TO USE OF NON-METALLIC PIPES.
13. THE ANNULUS SHALL BE GROUTED AS SHOWN IN WBB-SEW-1403-1. PLASTIC PIPE MATERIALS SHALL BE CONTROLLED FOR FLOATATION AND THERMAL REVERSION.
14. **CONCRETE ENCASEMENT NOT ALLOWED.**
15. **RAIL AUTHORITY TO APPROVE ALL WORK ASSOCIATED WITH RAIL CROSSING.**

REV. No.	DATE	DESCRIPTION	AUTH.
A		BASED ON SEQ-SEW-1401-1 VERSION A DATED 1/1/2013	

WBBROC WATER SERVICE PROVIDERS

WORK PRACTICES MUST COMPLY WITH ALL APPLICABLE OCCUPATIONAL HEALTH & SAFETY LEGISLATION

SEWERAGE STANDARD DRAWING

TYPICAL BURIED CROSSINGS
RAILWAYS

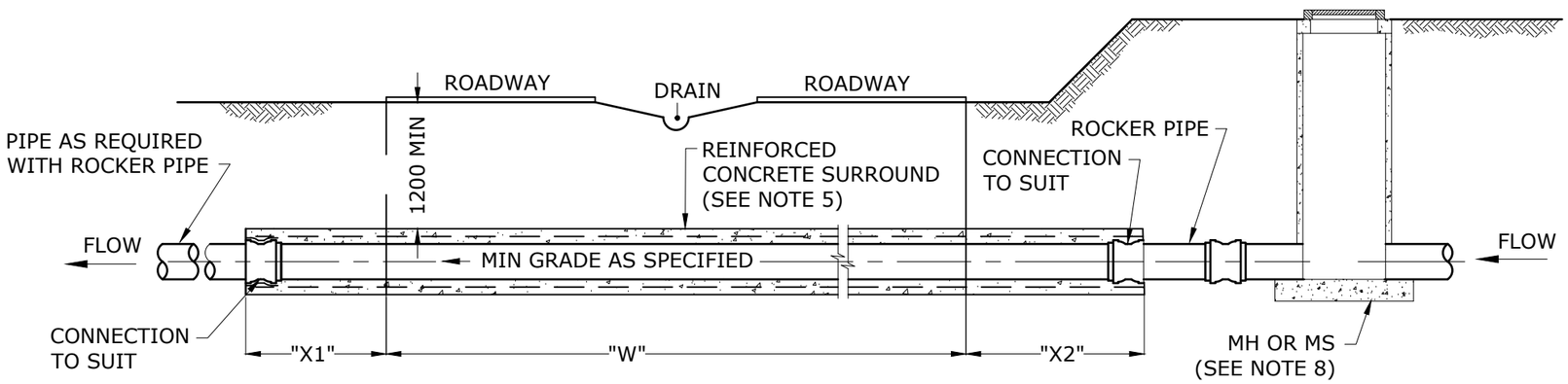
BRC	FCRC	GRC	NBRC	SBRC

DRAWING No. WBB-SEW-1401-1

VERSION A

NOT TO SCALE

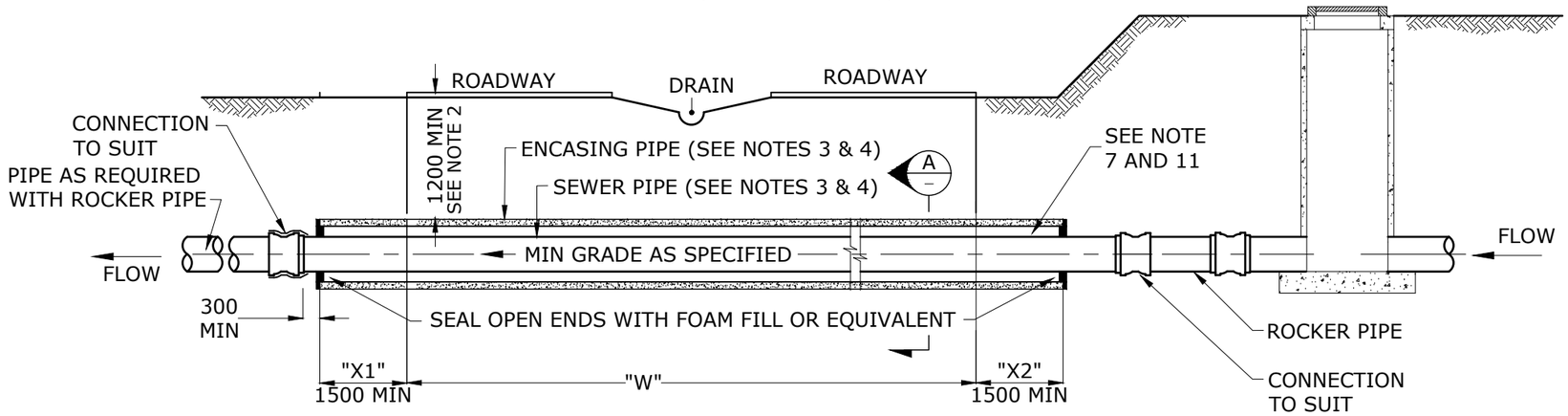
ORG DATE:



CONCRETE ENCASED METHOD - TRENCHING

FOR INSTALLATIONS PRIOR TO ROAD CONSTRUCTION

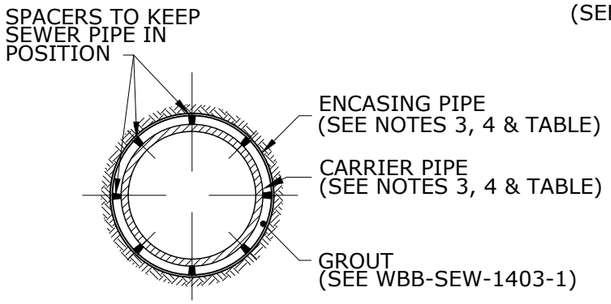
(SEE NOTE 6 **& 12**)



BORED OR JACKED ENCASING PIPE METHOD

FOR INSTALLATIONS **PRIOR TO AND** AFTER TRACK CONSTRUCTION

(SEE WBB-SEW-1403-1)



TYPICAL SECTION (A)

ENCASING PIPE & SEWER ARRANGEMENTS

BORED & JACKED ENCASING/SEWER PIPE SIZES										
SEWER PIPE (DN)	100	150	225	300	375	400	500	550	650	800
BORED ENCASING PIPE MIN (DN)	300	375	425	500	575	600	700	750	850	1000
JACKED ENCASING PIPE (DN)	**DESIGN**					**DESIGN**				

NOTES:

1. ALL DIMENSIONS IN MILLIMETRES.
2. METHODS OF INSTALLATION TO BE AS SHOWN IN DESIGN DRAWINGS OR AS DIRECTED BY THE WATER AGENCY AND ROAD OWNER. DIFFICULT CONDITIONS MAY REQUIRE SPECIAL ARRANGEMENTS.
3. HORIZONTAL BORING
   ENCASING PIPE
   - REINFORCED CONCRETE CLASS 4 OR
   - STEEL (BARE) PIPE, WALL THICKNESS TO BE AS SPECIFIED IN THE DESIGN DRAWINGS OR
   - GRP PIPE

   SEWER PIPE
   - DI WITH POLYMERIC LINING CLASS PN 35
   - PVC CLASS SN 8
   - PE CLASS PN 12.5 MIN
   - GRP CLASS SN 10000 MIN.
4. JACKING
   ENCASING PIPE
   - REINFORCED CONCRETE CLASS 4 BUTT JOINTED WITH STEEL LOCATING BANDS OR GRP JACKING PIPE

   SEWER PIPE
   - DI WITH POLYMERIC LINING CLASS PN 35
   - PVC CLASS SN 8
   - PE CLASS PN 12.5 MIN
   - GRP CLASS SN 10000 MIN.
5. CONCRETE ENCASED
   - THE PIPE MATERIAL TO BE:
     - STEEL WITH FBPE INTERNAL COATING AND LINING
     - PE CLASS PN 12.5 MIN
     - PVC (SWJ) CLASS SN 8
     - GRP CLASS SN 10000 MIN.
   - NO SERVICE CONNECTIONS TO BE MADE TO ENCASED SECTION OF PIPELINE.
   - ENCASING AS SHOWN ON WBB-SEW-1203-1 FOR TYPE 9
   - NO EXTERNAL COATING REQUIRED ON CONCRETE ENCASED WELDED STEEL PIPELINE.
6. MH OR MS TO BE LOCATED AT LEAST 6000 FROM ENDS OF ENCASEMENT.
7. CONSTRUCTION TO BE IN ACCORDANCE WITH DESIGN DRAWINGS.
8. DIMENSIONS "X1" AND "X2" AND LOCATION OF BULKHEADS AND REINFORCING TO BE SHOWN IN DESIGN DRAWINGS.
9. FILL VOID BETWEEN BORED HOLE AND CASING PIPE WITH GROUT AS SHOWN ON WBB-SEW-1403-1.
10. DIRECTIONAL BORING TO INSTALL PE PIPE IS ALSO ACCEPTABLE. GRADE TO BE INCREASED TO ENSURE A POSITIVE GRADE THROUGHOUT PIPE SECTION.
11. DURING GROUT PLACEMENT, PLASTIC PIPE MATERIALS SHALL BE CONTROLLED FOR FLOATATION AND THERMAL REVERSION.
12. **CONCRETE ENCASEMENT NOT PREFERRED.**

REV. No.	DATE	DESCRIPTION	AUTH.
A		BASED ON SEQ-SEW-1402-1 VERSION A DATED 1/1/2013	

WBBROC WATER SERVICE PROVIDERS

WORK PRACTICES MUST COMPLY WITH ALL APPLICABLE OCCUPATIONAL HEALTH & SAFETY LEGISLATION

SEWERAGE STANDARD DRAWING

TYPICAL BURIED CROSSINGS
MAJOR ROADWAYS

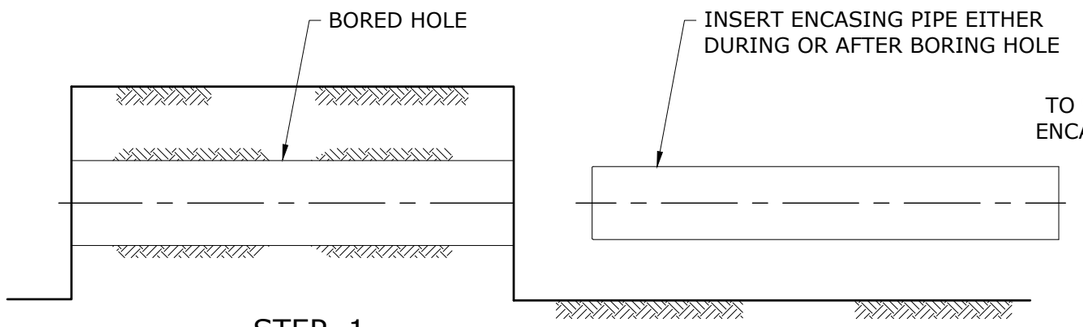
BRC	FCRC	GRC	NBRC	SBRC

DRAWING No. WBB-SEW-1402-1

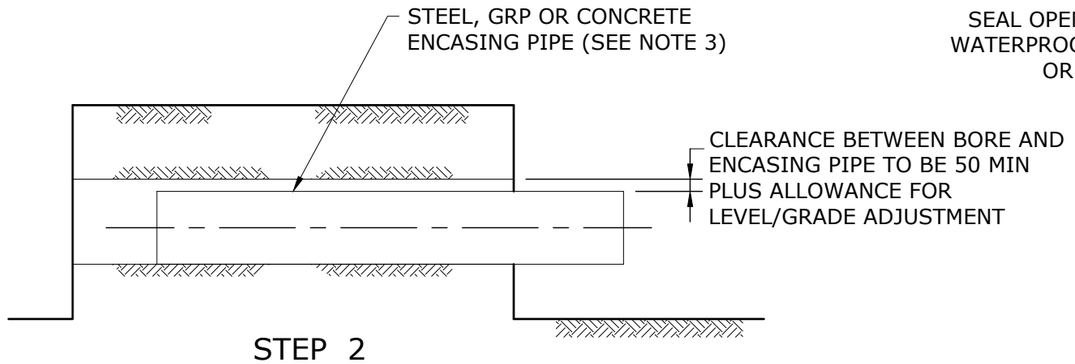
VERSION A

NOT TO SCALE

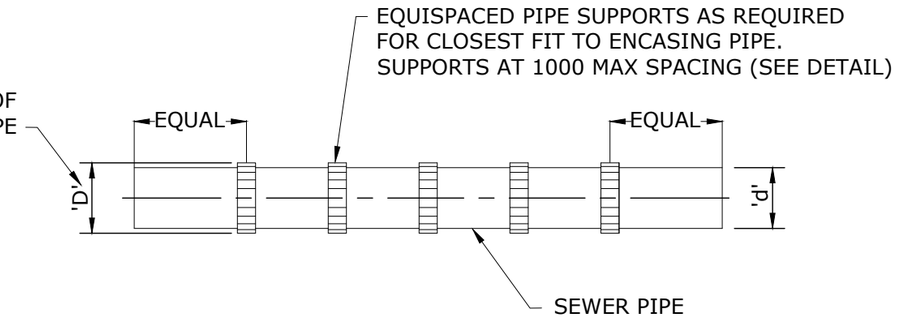
ORG DATE:

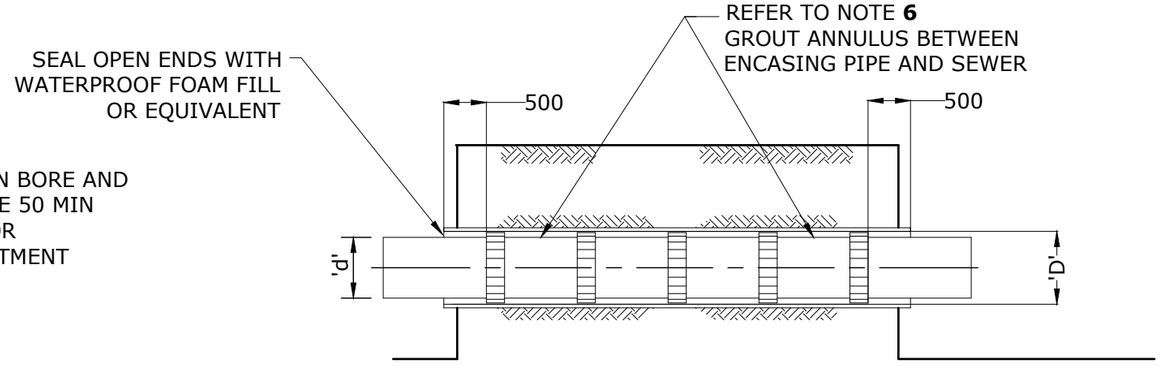


STEP 1

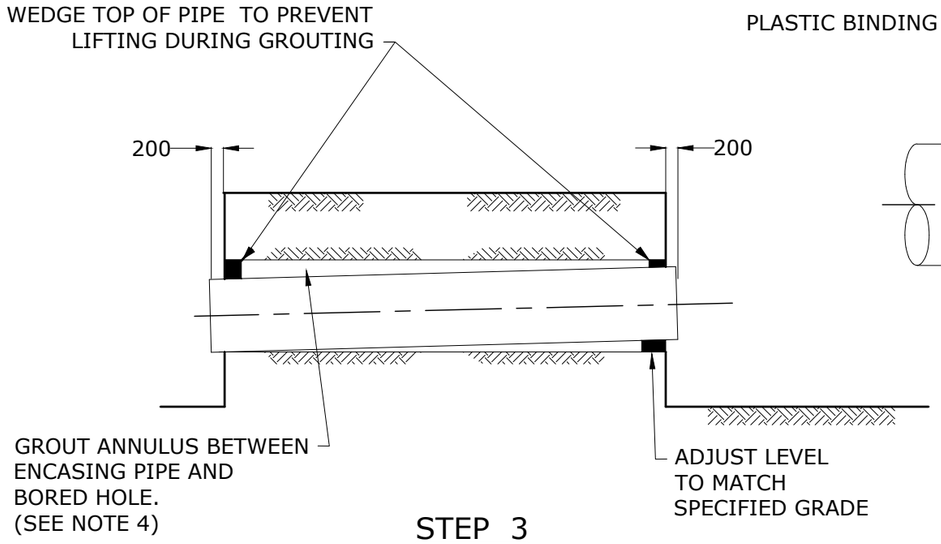


STEP 2



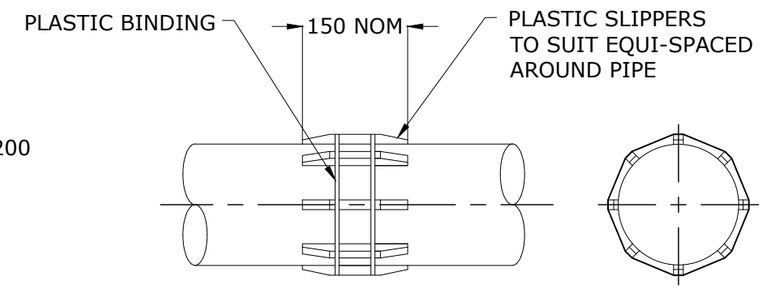


TYPICAL FINISHED INSTALLATION



STEP 3

INSTALLATION OF BORED ENCASING PIPE



PIPE SUPPORTS DETAIL

BORED ENCASING PIPE SYSTEM

STEPS 1, 2 & 3 AS SHOWN.

JACKED ENCASING PIPE SYSTEM

INSTALLATION OF JACKED ENCASING PIPE TO BE CARRIED OUT BY SPECIALIST PIPE JACKING COMPANY AUTHORISED BY THE WATER AGENCY.

NOTES:

1. ALL DIMENSIONS IN MILLIMETRES.
2. PIPE MATERIALS AND 'D' & 'd' TO BE AS SPECIFIED IN DESIGN DRAWING.
3. FULLY BUTT WELDED STEEL ENCASING PIPES PREFERRED.
4. BORED HOLE TO ENCASING PIPE GROUT MIX BY WEIGHT IS 0.67 WATER : 1.0 CEMENT : 1.0 SAND WITH THE SAND TO BE WELL ROUNDED SAND AND WBBROC-SP APPROVED PLASTICISERS MAY BE USED.
5. **DELETED**
6. **ENCASING PIPE TO SEWER PIPE GROUTING IS NOT ALLOWED.**

REV. No.	DATE	DESCRIPTION	AUTH.
A		BASED ON SEQ-SEW-1403-1 VERSION B DATED 19/06/15	

WBBROC WATER
SERVICE PROVIDERS

WORK PRACTICES MUST COMPLY WITH ALL APPLICABLE OCCUPATIONAL HEALTH & SAFETY LEGISLATION

SEWERAGE STANDARD DRAWING

TYPICAL BURIED CROSSINGS
BORED AND JACKED
ENCASING PIPE DETAILS

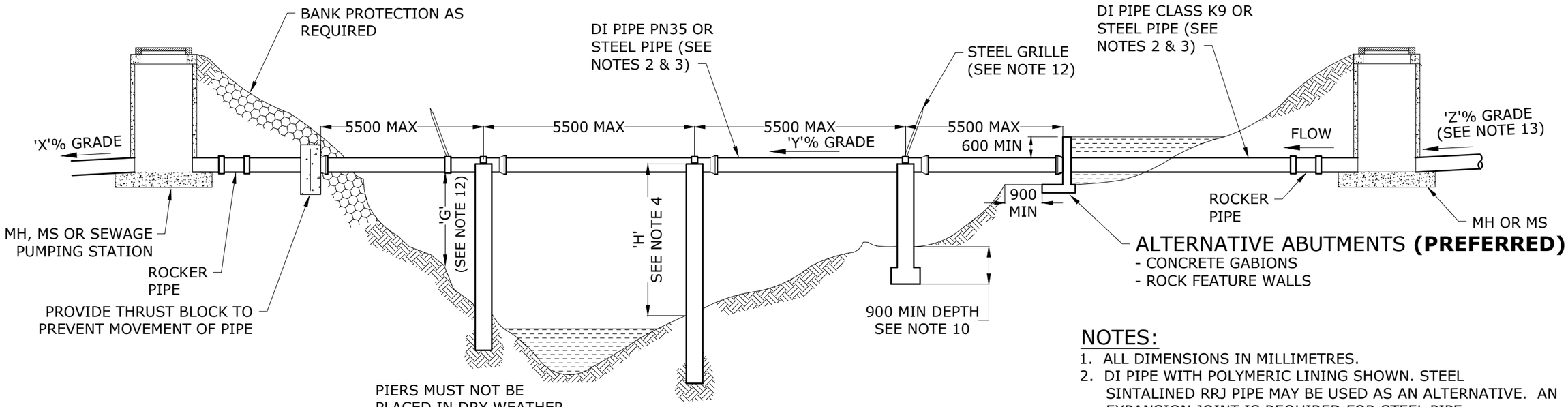
BRC	FCRC	GRC	NBRC	SBRC

DRAWING No. WBB-SEW-1403-1

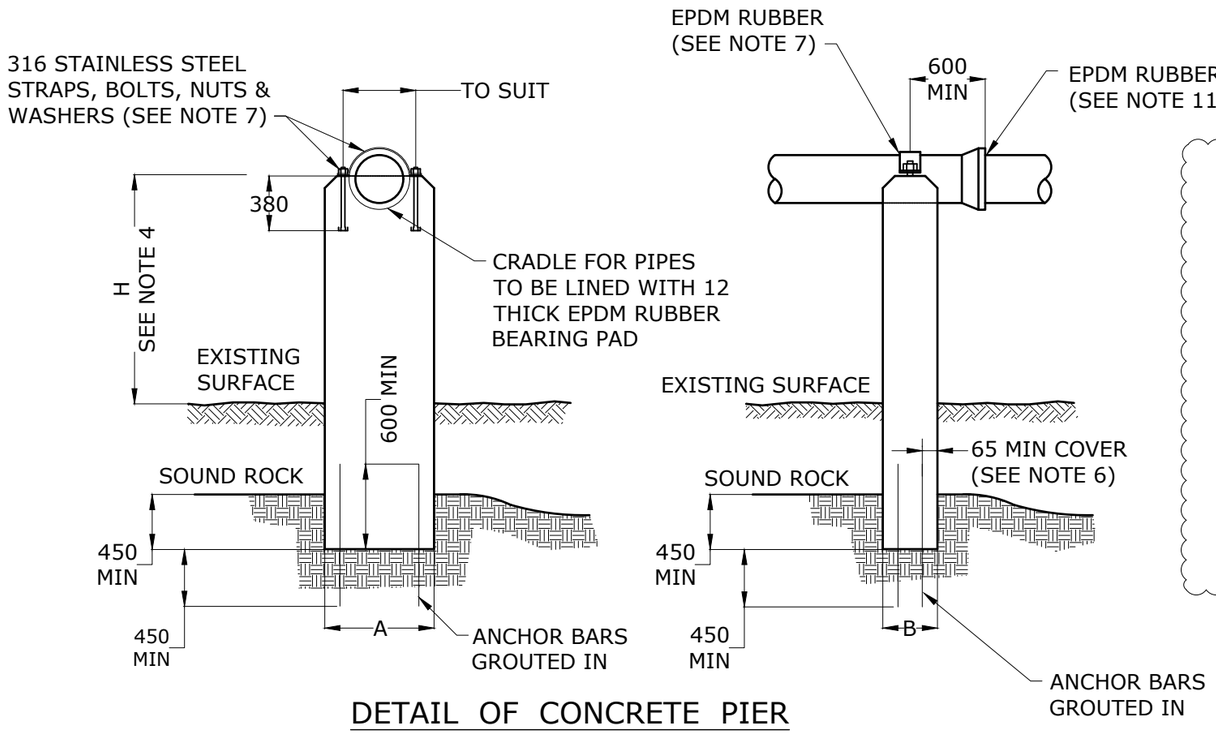
VERSION A

NOT TO SCALE

ORG DATE:



TYPICAL AQUEDUCT



DETAIL OF CONCRETE PIER

(SEE NOTE 6 AND 9)

DELETED

SEE NOTE 14

NOTES:

1. ALL DIMENSIONS IN MILLIMETRES.
2. DI PIPE WITH POLYMERIC LINING SHOWN. STEEL SINTALINED RRJ PIPE MAY BE USED AS AN ALTERNATIVE. AN EXPANSION JOINT IS REQUIRED FOR STEEL PIPE.
3. MINIMUM SIZE OF PIPE AS AQUEDUCT TO BE DN 150.
4. **DELETED**.
5. **DELETED**.
6. REINFORCEMENT AND CONCRETE DETAILS FOR PIERS SHALL BE SPECIFIED IN DESIGN DRAWINGS WITH RPEQ SIGN OFF. 65 MIN COVER TO REINFORCEMENT.
7. STRAPS TO BE GRADE 316 STAINLESS STEEL. PLACE A 3 THICK x 100 WIDE EPDM RUBBER INSERTION AROUND THE PIPE WHERE IN CONTACT WITH THE STRAP. USE NEOPRENE PADS AND NYLON WASHERS ON ALL DISSIMILAR METAL CONTACTS.
8. AS SPECIFIED IN THE DESIGN DRAWINGS, NO ADDITIONAL PROTECTION/COATING TO BE PROVIDED TO MAKE AQUEDUCT PIPES MORE ENVIRONMENTALLY ACCEPTABLE, REFER NOTE 8A ON WBB-SEW-1406-1.
9. **DELETED**.
10. PIERS IN SOIL: SPECIFY DEPTH OF PIER IN SOIL IN DESIGN DRAWINGS, BUT NOT LESS THAN 900. SPECIFY TYPE AND SIZE OF FOOTING TO BE USED IN DESIGN DRAWINGS. CONSTRUCT PIERS WITHOUT FOOTINGS TO THE DEPTHS SPECIFIED IN DESIGN DRAWINGS.
11. ASSEMBLE JOINTS WITH THE SPIGOT END WITHDRAWN 5 TO 10 FROM BACK OF THE SOCKET TO ACCOMMODATE EXPANSION AND CONTRACTION RESULTING FROM TEMPERATURE FLUCTUATIONS.
12. PROVIDE STEEL GRILLES WHERE THE VERTICAL DISTANCE 'G' EXCEEDS 1800. GRILLE TO BE CLAMPED ON TO PIPELINE TO PREVENT MOVEMENT SEE SEW-1405.
13. % GRADES "X", "Y" & "Z" TO BE SHOWN IN DESIGN DRAWINGS.
14. **ALL AQUEDUCT CROSSINGS MUST BE DESIGNED BY RPEQ.**

REV. No.	DATE	DESCRIPTION	AUTH.
A		BASED ON SEQ-SEW-1404-1 VERSION B DATED 17/07/15	

WBBROC WATER SERVICE PROVIDERS

WORK PRACTICES MUST COMPLY WITH ALL APPLICABLE OCCUPATIONAL HEALTH & SAFETY LEGISLATION

SEWERAGE STANDARD DRAWING

TYPICAL AERIAL CROSSINGS
AQUEDUCT

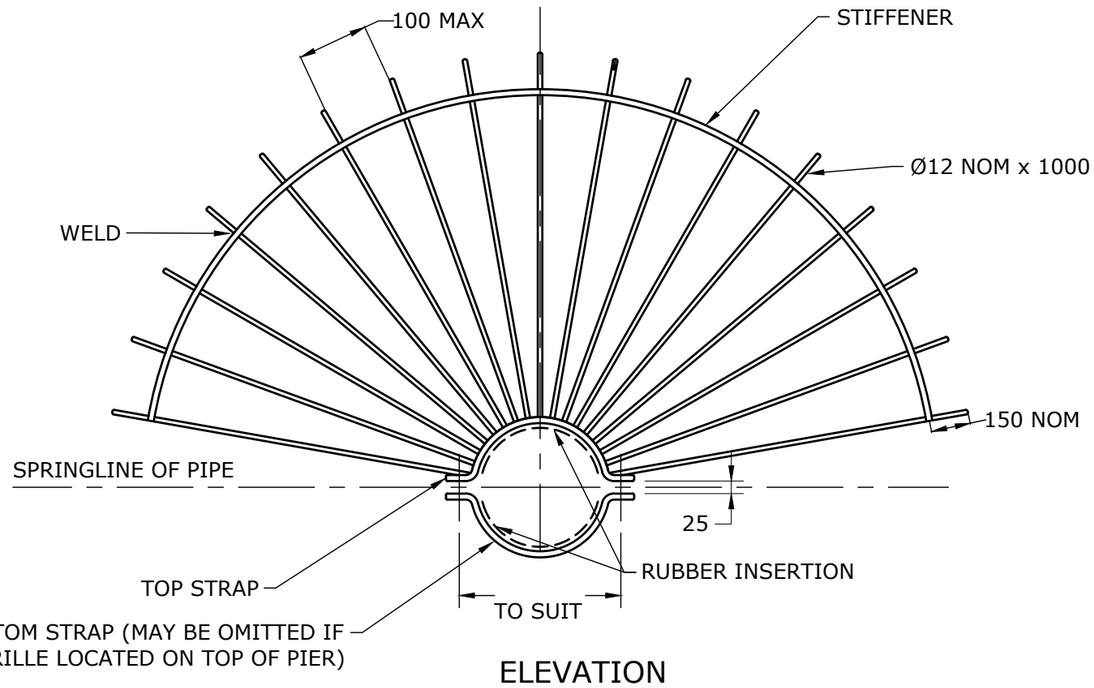
BRC	FCRC	GRC	NBRC	SBRC

DRAWING No. WBB-SEW-1404-1

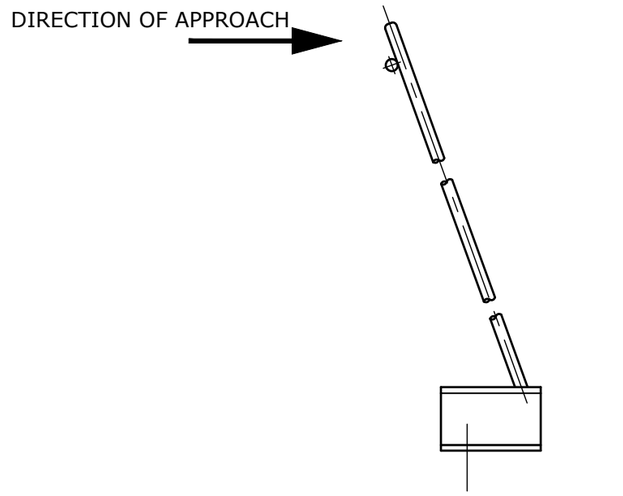
VERSION A

NOT TO SCALE

ORG DATE:

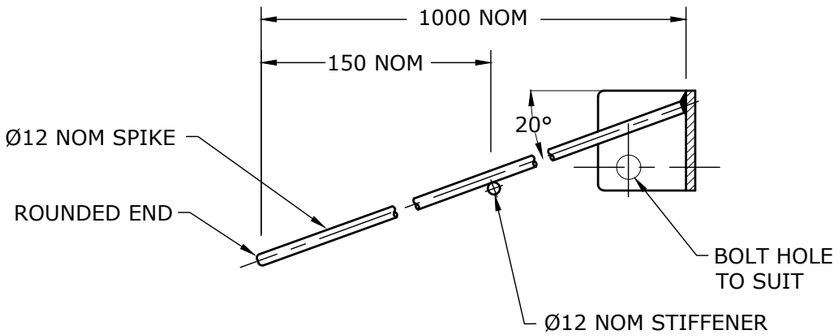


ELEVATION

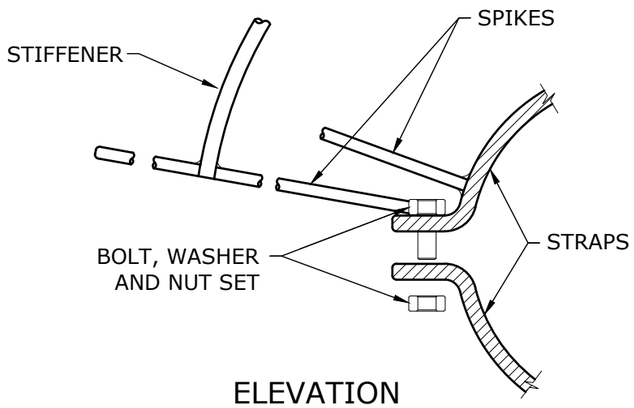


END ELEVATION

STEEL PROTECTION GRILLE



PART PLAN



ELEVATION

NOTES:

1. ALL DIMENSIONS IN MILLIMETRES.
2. ALL ITEMS TO BE STEEL AND HOT DIP GALVANISED AFTER FABRICATION.
3. PLACE 3 THICK RUBBER INSERTION BETWEEN CLAMPS AND PIPELINE.
4. INCLUDE SIGN "DANGER KEEP OFF" WHERE SPECIFIED BY WATER AGENCY.
5. STEEL TO BE GRADE 250 TO AS/NZS 3679.1.

COMPONENT & FABRICATION DETAILS

REV. No.	DATE	DESCRIPTION	AUTH.
A		BASED ON SEQ-SEW-1405-1 VERSION B DATED 20/07/15	

WBBROC WATER SERVICE PROVIDERS

WORK PRACTICES MUST COMPLY WITH ALL APPLICABLE OCCUPATIONAL HEALTH & SAFETY LEGISLATION

SEWERAGE STANDARD DRAWING

TYPICAL AERIAL CROSSINGS
AQUEDUCT PROTECTION GRILLE

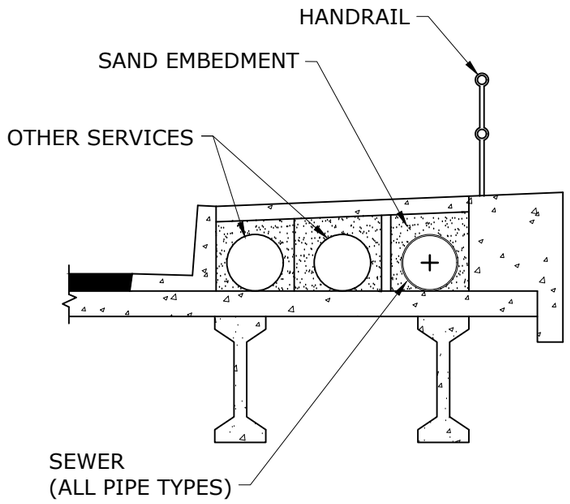
BRC	FCRC	GRC	NBRC	SBRC

DRAWING No. WBB-SEW-1405-1

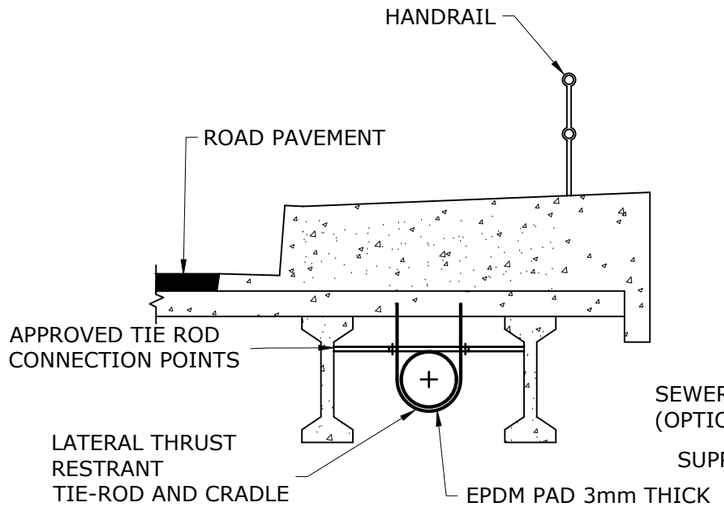
VERSION A

NOT TO SCALE

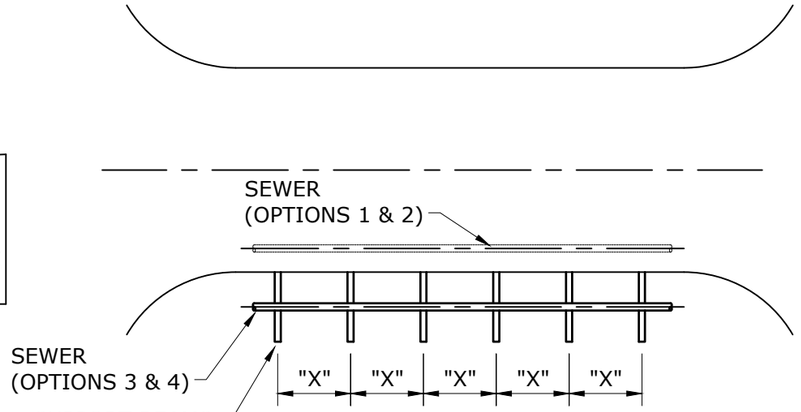
ORG DATE:



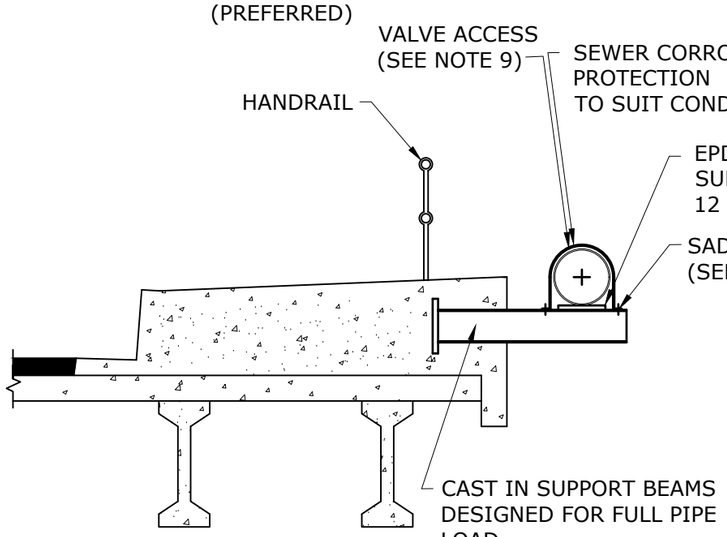
OPTION 1
NEW BRIDGE
(PREFERRED)



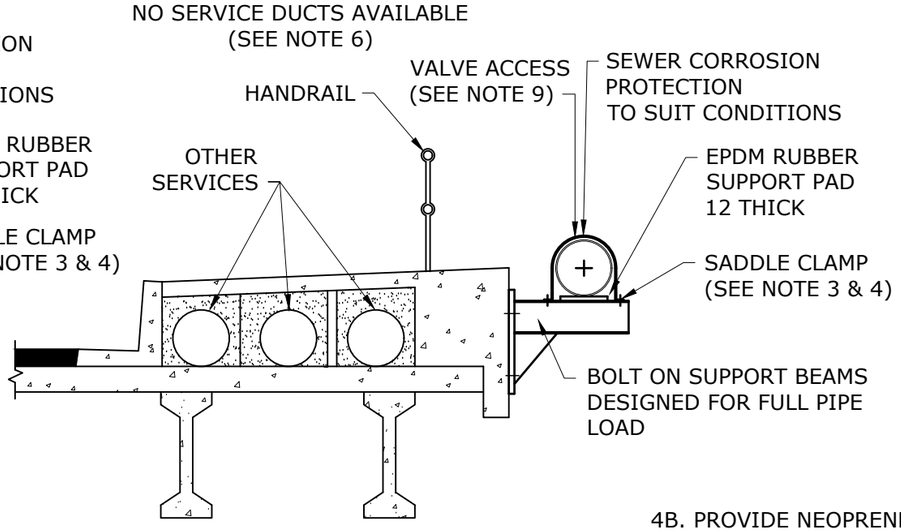
OPTION 2
NEW AND EXISTING BRIDGES
NO SERVICE DUCTS AVAILABLE
(SEE NOTE 6)



BRIDGE CROSSING PLAN
SEE DESIGN DRAWINGS FOR
DIMENSION 'X'



OPTION 3
NEW BRIDGE
NO SERVICE DUCTS AVAILABLE



OPTION 4
NEW AND EXISTING BRIDGES
NO SERVICE DUCTS AVAILABLE

THIS IS NOT A DETAIL DRAWING
CONCEPT ONLY

NOTES

1. ALL DIMENSIONS IN MILLIMETRES.
2. OPTION 1 IS PREFERRED OPTION. OPTION 2 IS FOR DRY CREEKS.
3. FOR GENERAL SERVICE, STEEL SUPPORT TO AS/NZS 3679.1 GRADE 250 AND HOT DIPPED GALVANISED.

4A. IN CORROSIVE ENVIRONMENTS (WITHIN 1km OF COAST LINE) USE STAINLESS STEAL MIN GRADE 316 FOR SUPPORT BEAMS, TIE RODS, CRADLE SUPPORTS, CLAMPS, BOLTS, NUTS AND WASHERS.

4B. PROVIDE NEOPRENE PADS AND NYLON WASHERS ON ALL DISSIMILAR METAL CONTACTS.

5. PROVIDE PIPE EXPANSION JOINTS AT EACH END OF BRIDGE.
6. SCL PIPE ONLY FOR OPTION 1, JUSTIFY FOR OPTIONS 2 AND 3.
7. DI TO BE USED FOR OPTION 2. MATERIAL TYPE DEPENDS ON ENVIRONMENTAL CONDITIONS.

8A. ALL DI PIPES SHALL BE PROVIDED WITH A COLOURED EPOXY COATING AT 500 MICRONS THICK. PIPE COLOUR TO SUIT LOCAL ENVIRONMENT WITH PRODUCT MARKERS AT EACH SOCKET.

8B. ALL FLANGE JOINTS SHALL BE PROTECTED BY A DENSO 400 STEELCOAT SYSTEM OR EQUAL.

9. ALL APPERTENANCES SHALL BE ACCESSIBLE VIA PLATFORMS AND HANDRAILS TO AS 1657.
10. ALL SUPPORTS SHALL MANAGE ALL TEST AND OPERATIONAL THRUSTS AT FULL PIPE LOADS.

REV. No.	DATE	DESCRIPTION	AUTH.
A		BASED ON SEQ-SEW-1406-1 VERSION B DATED 20/07/15	

WBBROC WATER
SERVICE PROVIDERS

WORK PRACTICES MUST COMPLY WITH ALL APPLICABLE OCCUPATIONAL HEALTH & SAFETY LEGISLATION

SEWERAGE STANDARD DRAWING

AERIAL CROSSINGS
TYPICAL BRIDGE CROSSING CONCEPTS

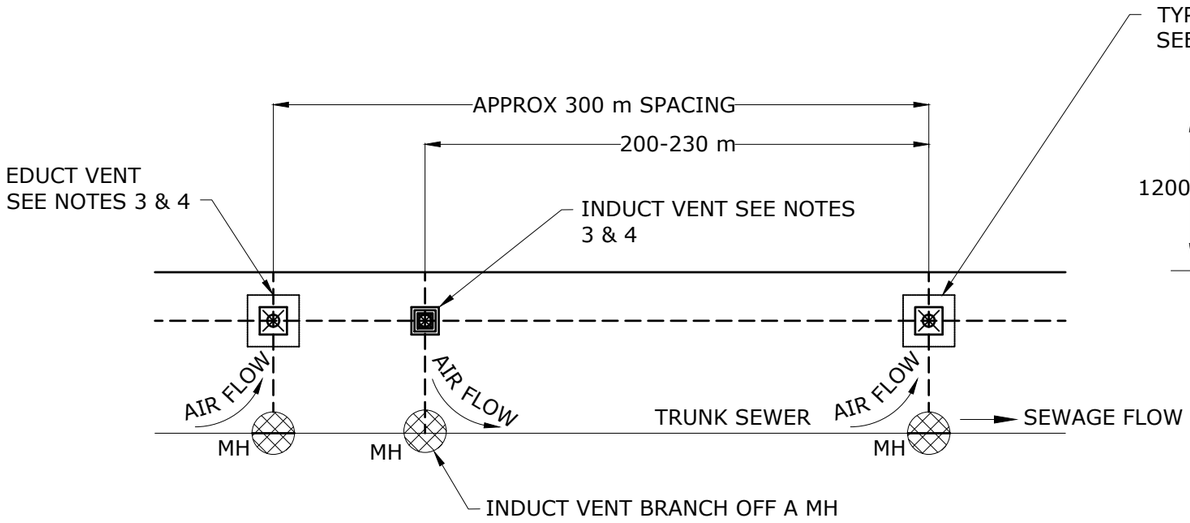
BRC	FCRC	GRC	NBRC	SBRC

DRAWING No. WBB-SEW-1406-1

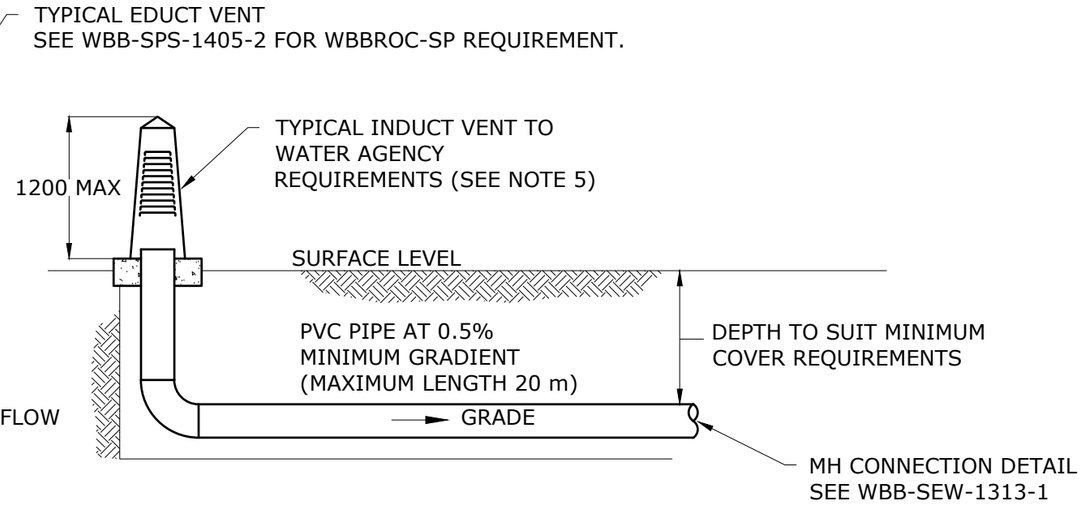
VERSION A

NOT TO SCALE

ORG DATE:



TYPICAL VENTING LAYOUT



TYPICAL INDUCT VENT

NOTES:

1. ALL DIMENSIONS IN MILLIMETRES UNLESS OTHERWISE SHOWN.
2. LOCATE INDUCT AND EDUCT VENTS AS SPECIFIED IN DESIGN DRAWINGS.
3. PHYSICAL POSITION AND SIZE TO BE IN ACCORDANCE WITH WATER AGENCY REQUIREMENTS. POSITION PREFERENCE IS 300 FROM BOUNDARY SUBJECT TO ELECTRICITY AND TELCO SERVICE LOCATIONS.
4. VENTS TO BE SUITABLE FOR INSTALLED LOCATION, SEE WBB-SPS-1405-2 FOR TYPICAL EDUCT.
5. STUDOR AIR ADMITTANCE VALVE/S WITHIN BEIGE COLOURED MODIFIED ELECTRICAL PILLAR WITH VENT LOUVERS FITTED..

REV. No.	DATE	DESCRIPTION	AUTH.
A		BASED ON SEQ-SEW-1407-1 VERSION A DATED 1/1/2013	

WBBROC WATER
SERVICE PROVIDERS

WORK PRACTICES MUST COMPLY WITH ALL APPLICABLE OCCUPATIONAL HEALTH & SAFETY LEGISLATION

SEWERAGE STANDARD DRAWING

TYPICAL VENTILATION SYSTEMS
INDUCT VENT

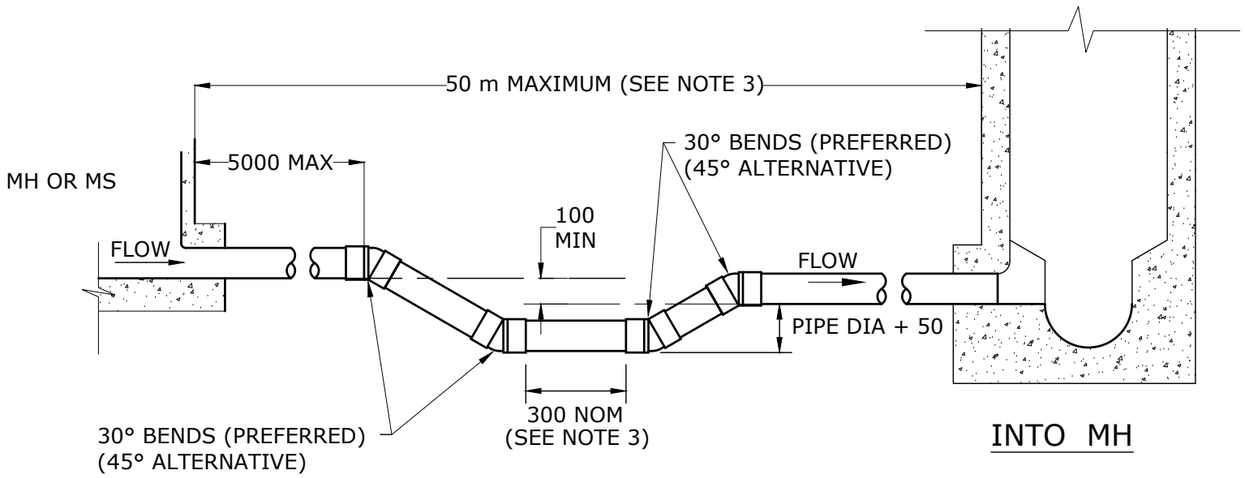
BRC	FCRC	GRC	NBRC	SBRC

DRAWING No.
WBB-SEW-1407-1

VERSION
A

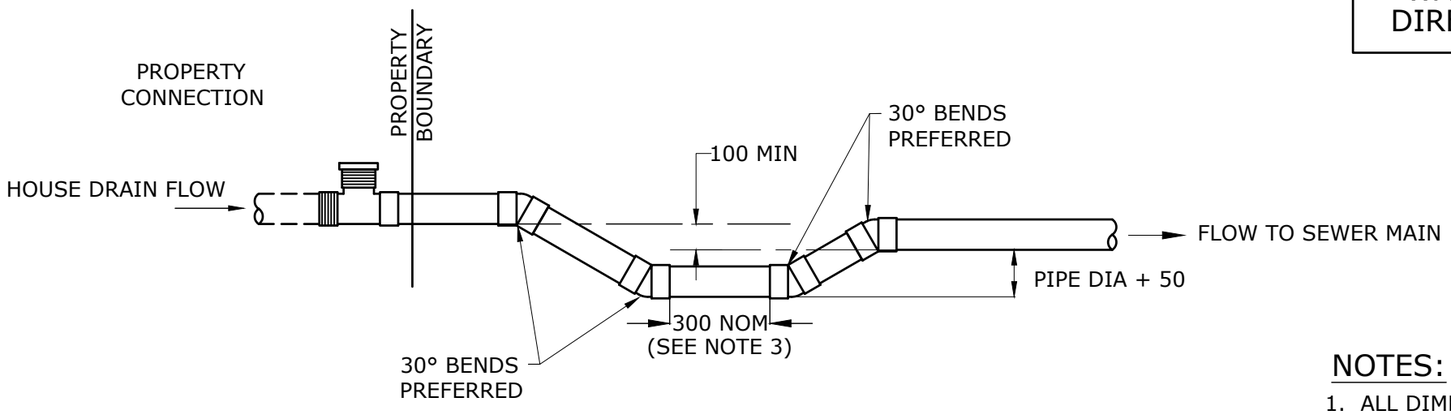
NOT TO SCALE

ORG DATE:



WATER SEAL ON INLET SEWER

WATER SEALS SHALL ONLY BE PROVIDED WHERE DIRECTED BY WBBROC WATER SERVICE PROVIDER



WATER SEAL ON PROPERTY CONNECTION SEWER

NOTES:

1. ALL DIMENSIONS IN MILLIMETRES UNLESS OTHERWISE SHOWN.
2. INSTALL WATER SEALS ONLY WHEN SPECIFIED IN DESIGN DRAWINGS, DN150 SHOWN.
3. LENGTH OF PIPEWORK BETWEEN MAINTENANCE STRUCTURES TO BE SHORT ENOUGH TO FACILITATE ACCESS FOR MAINTENANCE EQUIPMENT.

REV. No.	DATE	DESCRIPTION	AUTH.
A		BASED ON SEQ-SEW-1408-1 VERSION A DATED 1/1/2013	

WBBROC WATER SERVICE PROVIDERS

WORK PRACTICES MUST COMPLY WITH ALL APPLICABLE OCCUPATIONAL HEALTH & SAFETY LEGISLATION

SEWERAGE STANDARD DRAWING

WATER SEAL ARRANGEMENTS
TYPICAL MAINS TYPE

BRC	FCRC	GRC	NBRC	SBRC

DRAWING No.

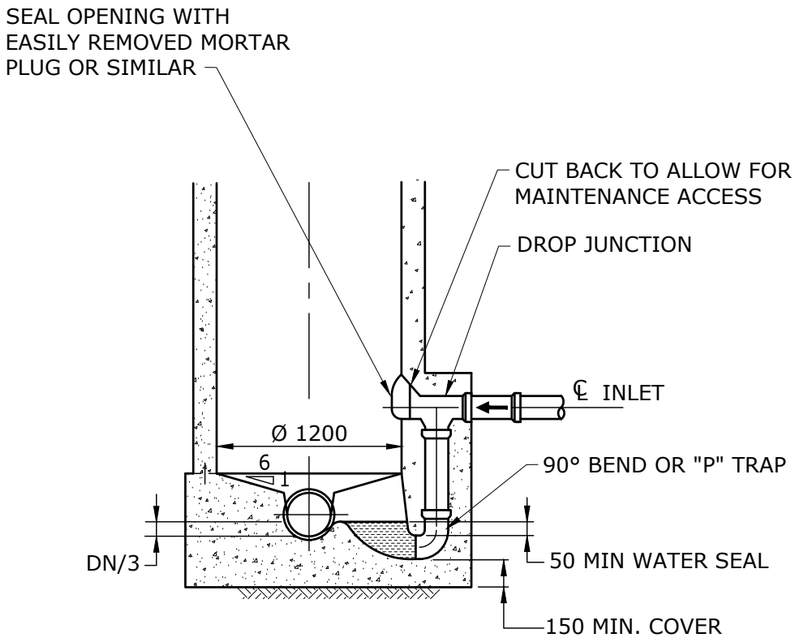
WBB-SEW-1408-1

VERSION

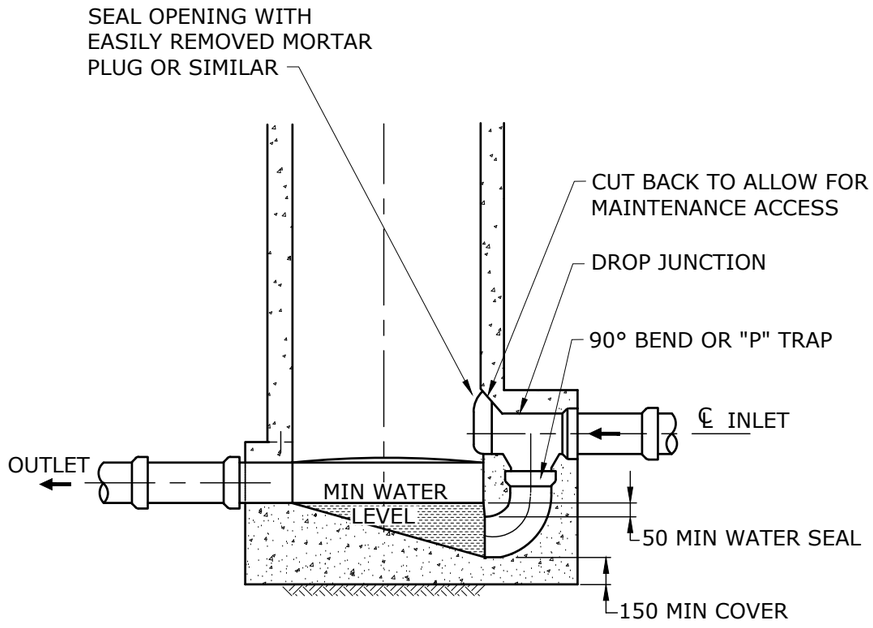
A

NOT TO SCALE

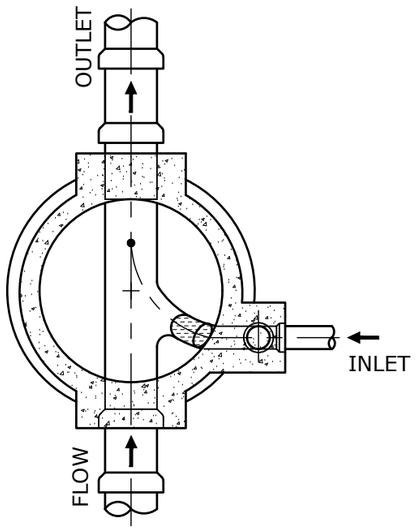
ORG DATE:



END ELEVATION

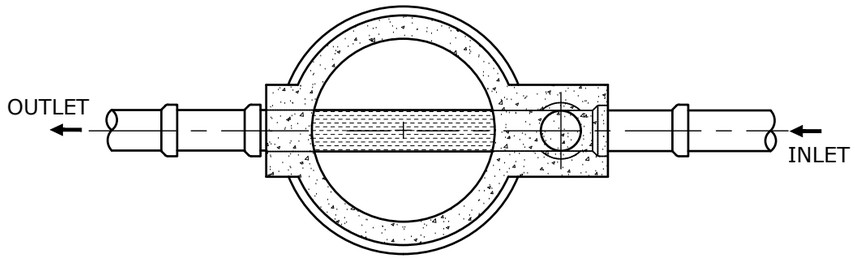


ELEVATION



PLAN
WATER SEALED MAINTENANCE HOLE
WITH EXTERNAL DROP

WATER SEALS SHALL ONLY BE PROVIDED WHERE DIRECTED BY WBBROC WATER SERVICE PROVIDER



PLAN
WATER SEALED MAINTENANCE HOLE
WITH MINIMUM DROP

NOTES:

1. ALL DIMENSIONS IN MILLIMETRES UNLESS OTHERWISE SHOWN.
2. PROVIDE WATER SEALS ONLY WHERE SHOWN IN DESIGN DRAWINGS.
3. FOR CHANNEL DETAILS SEE WBB-SEW-1304-1 AND 1305-1.

REV. No.	DATE	DESCRIPTION	AUTH.
A		BASED ON SEQ-SEW-1408-2 VERSION A DATED 1/1/2013	

WBBROC WATER
SERVICE PROVIDERS

WORK PRACTICES MUST COMPLY WITH ALL APPLICABLE OCCUPATIONAL HEALTH & SAFETY LEGISLATION

SEWERAGE STANDARD DRAWING

WATER SEAL ARRANGEMENTS
TYPICAL MAINTENANCE HOLE SYSTEM

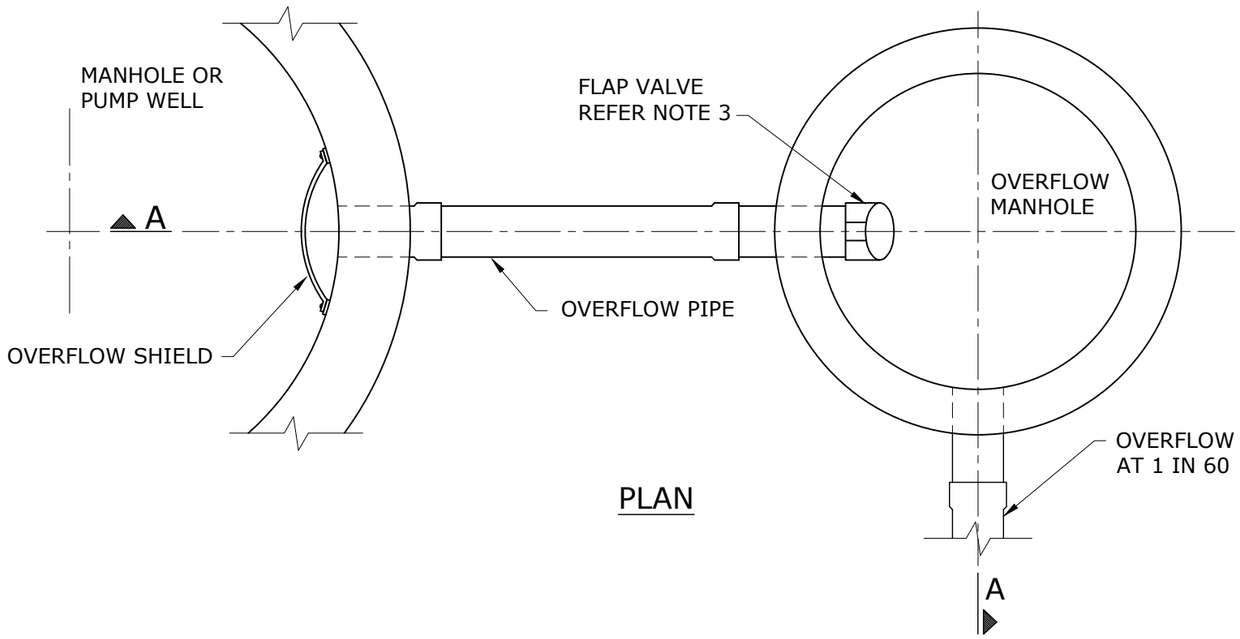
BRC	FCRC	GRC	NBRC	SBRC

DRAWING No. WBB-SEW-1408-2

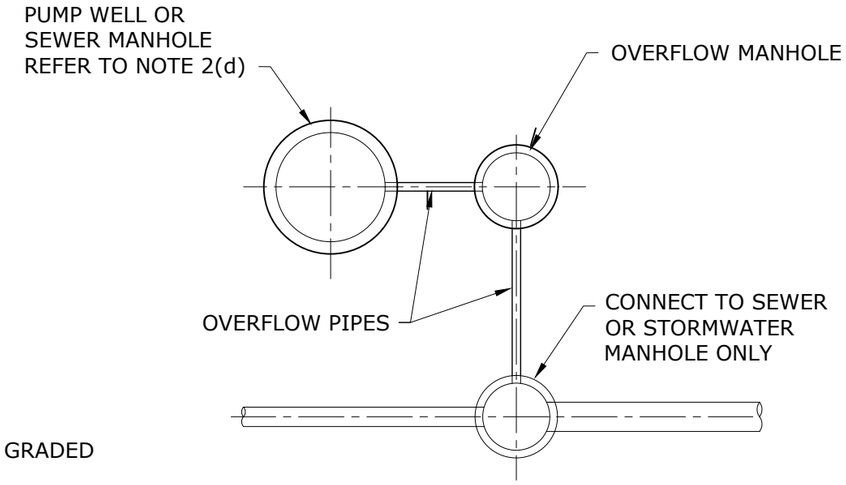
VERSION A

NOT TO SCALE

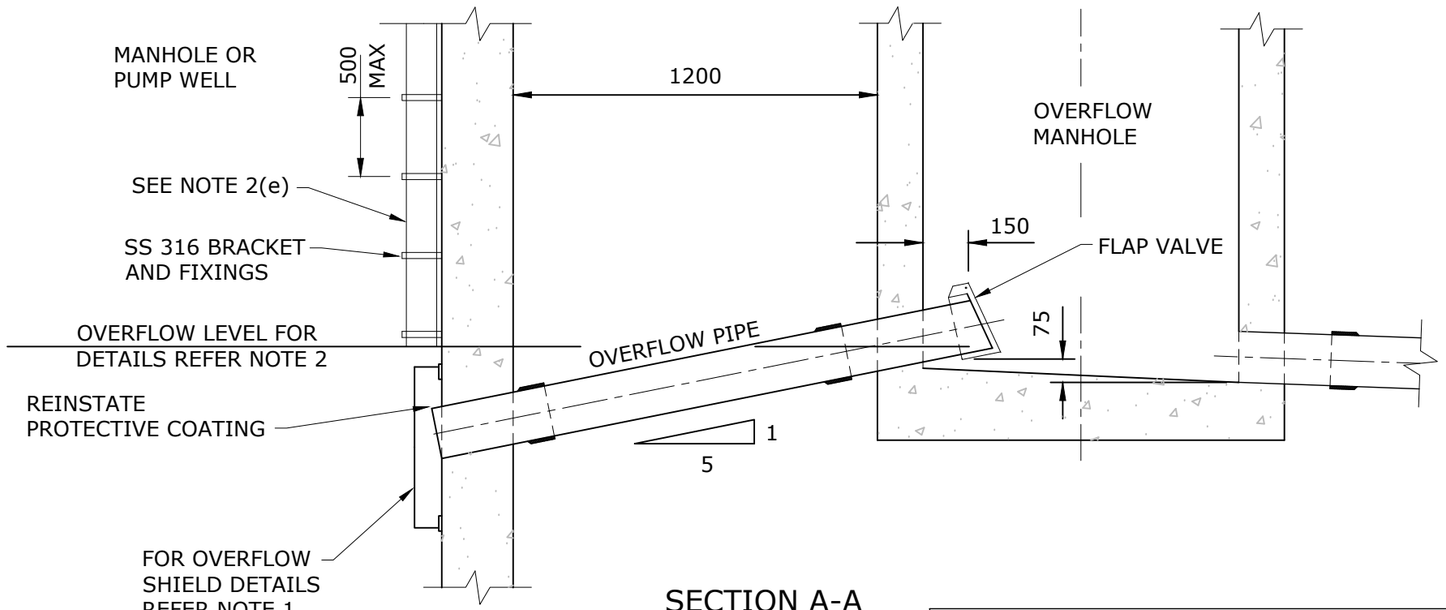
ORG DATE:



PLAN



LAYOUT ARRANGEMENT



SECTION A-A

NOTES:

1. FOR OVERFLOW SHIELD DETAILS REFER WBB-SEW-1412-2.
2. THE OVERFLOW LEVEL SHALL BE:
   (a) AT LEAST 300 BELOW UNDERSIDE OF PUMP WELL ROOF SLAB.
   (b) THE SURFACE LEVEL OF THE LOWEST MANHOLE IN THE SYSTEM.
   (c) THE LOWEST FLOOR SLAB OR RELIEF GULLY TRAP (WHICHEVER IS THE LOWER OF (a), (b) OR (c).
   (d) MARKED BY A BRASS PLATE ENGRAVED WITH THE DEPTH TO OVERFLOW AND ATTACHED TO TOPSIDE OF PUMP WELL ROOF SLAB, AND
   (e) SUBJECT TO THE LEVEL, VISIBLY MARKED BY EITHER A SIMILAR DN ORANGE COLOURED PLASTIC CONDUIT, SPLIT AND ATTACHED TO THE PIPEWORK RISERS BY 316 SS CLAMPS ATTACHED AT 500 CRS OR BY A DN 100 ORANGE COLOURED PLASTIC CONDUIT ATTACHED TO THE WALL OF THE WET WELL, IN A VISIBLE LOCATION, WITH THE BASE OF EITHER CONDUIT AT OVERFLOW LEVEL.
3. FLAP VALVE SHALL BE ALUMINIUM ALLOY 6061-T6 OR FIBREGLASS.
4. DIMENSIONS ARE IN MILLIMETRES UNLESS SHOWN OTHERWISE.

APPROVAL FOR THE USE, LOCATION AND CONFIGURATION OF OVERFLOW STRUCTURES MUST BE OBTAINED FROM THE SP AT CONCEPT STAGE

REV. No.	DATE	DESCRIPTION	AUTH.
A		BASED ON SEQ-SEW-1412-1 VERSION A DATED 1/1/2013	

WBBROC WATER SERVICE PROVIDERS

WORK PRACTICES MUST COMPLY WITH ALL APPLICABLE OCCUPATIONAL HEALTH & SAFETY LEGISLATION

SEWERAGE STANDARD DRAWING

TYPICAL OVERFLOW DETAILS FROM PUMP WELL OR MANHOLE SHIELDED OUTLET

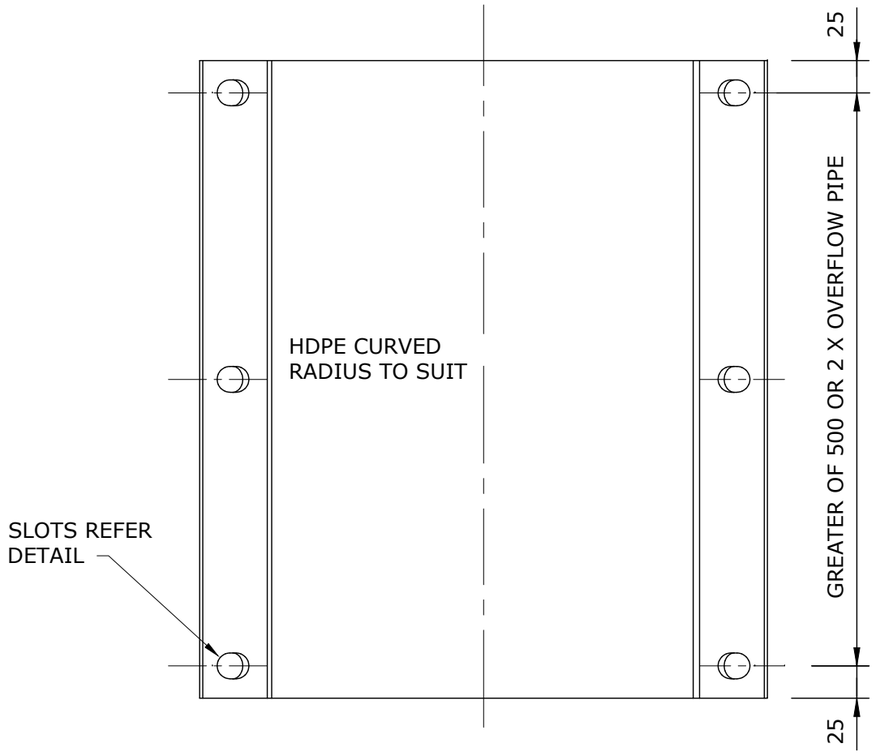
BRC	FCRC	GRC	NBRC	SBRC

DRAWING No. WBB-SEW-1412-1

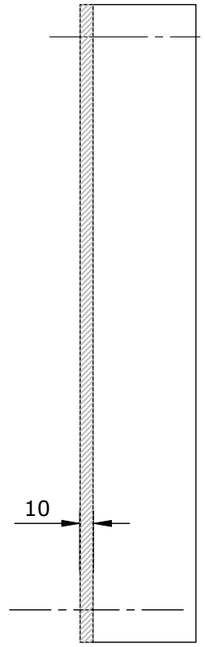
VERSION A

NOT TO SCALE

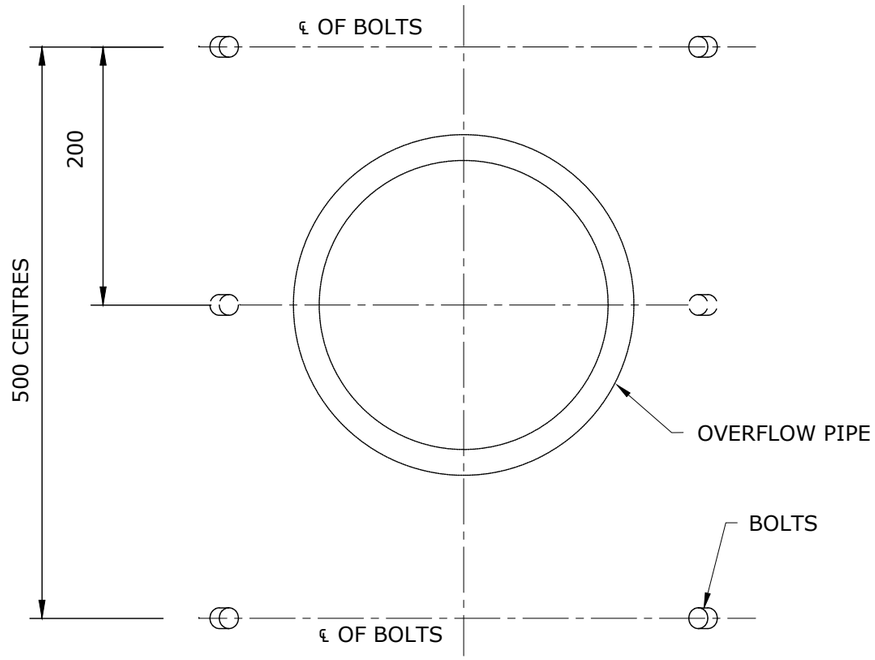
ORG DATE:



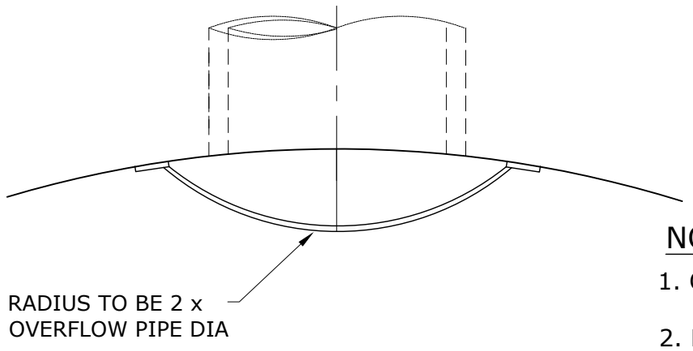
ELEVATION



SECTION

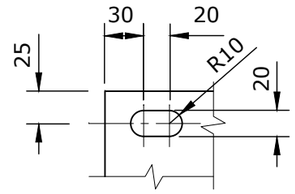


ELEVATION



PLAN

OVERFLOW SHIELD

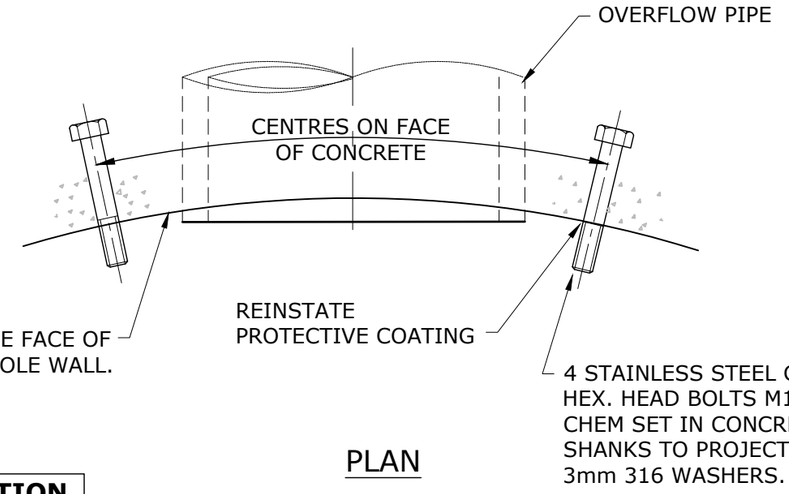


DETAIL OF SLOTS

NOTES:

1. OVERFLOW SHIELD SHALL BE 10mm HDPE FABRICATED.
2. DIMENSIONS ARE IN MILLIMETRES UNLESS SHOWN OTHERWISE.

APPROVAL FOR THE USE, LOCATION AND CONFIGURATION OF OVERFLOW STRUCTURES MUST BE OBTAINED FROM THE SP AT CONCEPT STAGE



PLAN

POSITION OF SET-IN BOLTS

REV. No.	DATE	DESCRIPTION	AUTH.
A		BASED ON SEQ-SEW-1412-2 VERSION A DATED 1/1/2013	

WBBROC WATER
SERVICE PROVIDERS

WORK PRACTICES MUST COMPLY WITH ALL APPLICABLE OCCUPATIONAL HEALTH & SAFETY LEGISLATION

SEWERAGE STANDARD DRAWING

TYPICAL OVERFLOW SHIELD
SHIELDED OUTLET

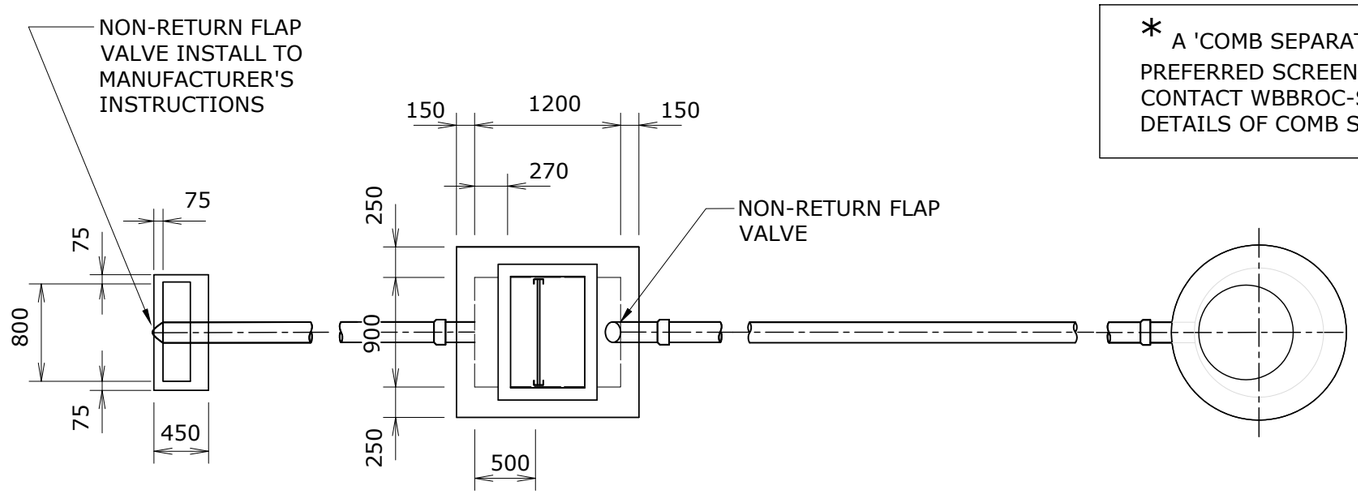
BRC	FCRC	GRC	NBRC	SBRC

DRAWING No. WBB-SEW-1412-2

VERSION A

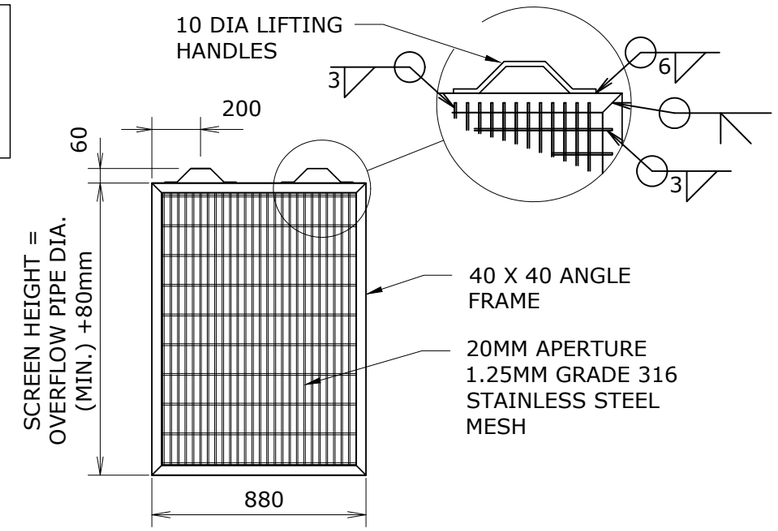
NOT TO SCALE

ORG DATE:



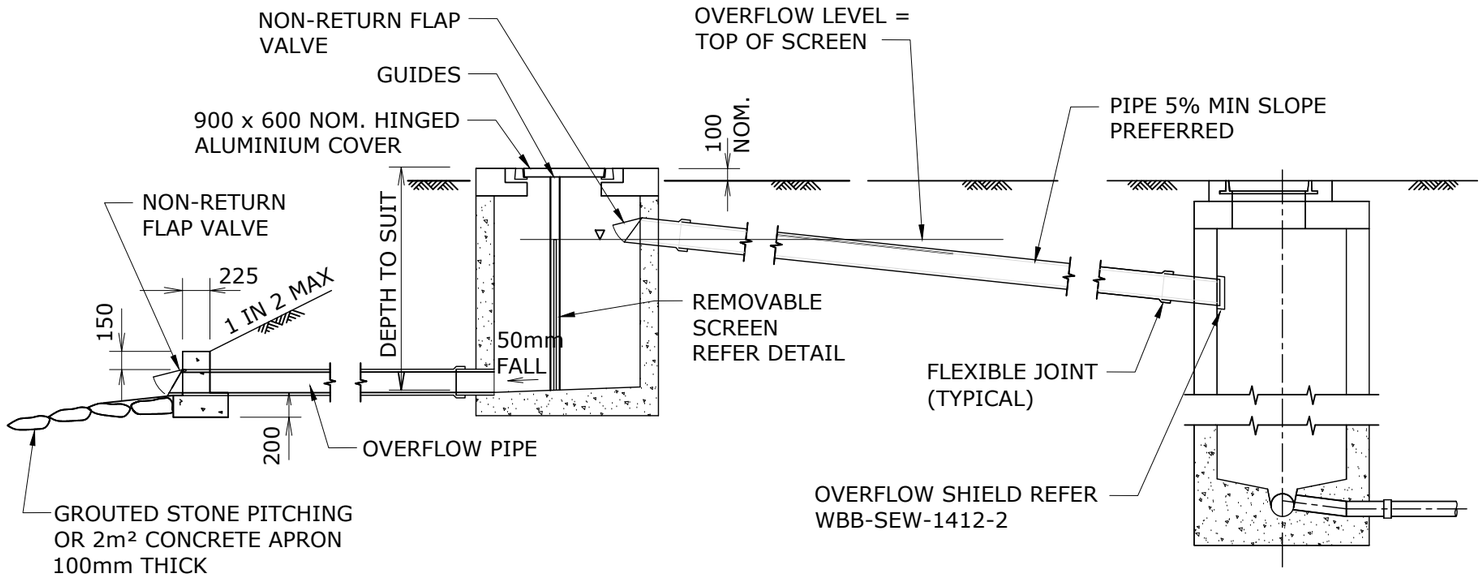
* A 'COMB SEPARATOR' IS THE PREFERRED SCREEN.
CONTACT WBBROC-SP TO OBTAIN DETAILS OF COMB SEPARATORS.

OUTLET OVERFLOW CHAMBER RECEIVING ACCESS CHAMBER



SCREEN DETAIL*

PLAN



OUTLET OVERFLOW CHAMBER RECEIVING ACCESS CHAMBER
(REFER WBB-SEW-1300 STANDARD DRAWING SET)

SECTIONAL ELEVATION

APPROVAL FOR THE USE, LOCATION AND CONFIGURATION OF OVERFLOW STRUCTURES MUST BE OBTAINED FROM THE SP AT CONCEPT STAGE

SCREEN GUIDE RAIL

NOTES:

1. PIPES SHOWN ARE DIAGRAMMATIC ONLY, REFER PROJECT DRAWINGS FOR LAYOUT, LEVELS, AND PIPE SIZES.
2. CONCRETE S32 IN ACCORDANCE WITH AS 1379 AND AS 3600.
3. ALL STEELWORK TO BE EITHER ALUMINIUM OR STAINLESS STEEL.
4. ALL BOLTS, NUTS AND WASHERS SHALL BE GRADE AS 2837/316 STAINLESS STEEL WITH APPROVED ANTI-GALLING COMPOUND.
5. ALL WELDS TO AS 1554. ALL WELDING SYMBOLS TO COMPLY WITH AS 1101.3.
6. THE COVERS SHALL BE GAS TIGHT. ALL COMPONENTS OF ACCESS COVERS AND FRAMES SHALL BE FABRICATED FROM ALUMINIUM ALLOY 6061-T6, TO AS 2848. ALL EMBEDDED SURFACES SHALL BE PAINTED WITH 2 COATS OF ALKALI RESISTANT BITUMINOUS PAINT. THE COVERS SHALL BE DESIGNED AS A PLATFORM IN ACCORDANCE WITH AS 1657. FABRICATION DETAILS SHALL BE SUBMITTED TO THE SUPERINTENDENT FOR APPROVAL PRIOR TO MANUFACTURE.
7. IF COVERS ARE SUBJECT TO VEHICULAR LOADING, USE APPROPRIATELY RATED D.I. COVERS.
8. ALL DIMENSIONS IN MILLIMETRES.

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A		BASED ON SEQ-SEW-1413-1 VERSION B DATED 29/07/15	

WBBROC WATER SERVICE PROVIDERS

WORK PRACTICES MUST COMPLY WITH ALL APPLICABLE OCCUPATIONAL HEALTH & SAFETY LEGISLATION

SEWERAGE STANDARD DRAWING

SEWAGE OVERFLOW ARRANGEMENT
TYPICAL OVERFLOW WITH SCREENED OUTLET

BRC	FCRC	GRC	NBRC	SBRC

DRAWING No. WBB-SEW-1413-1

VERSION A

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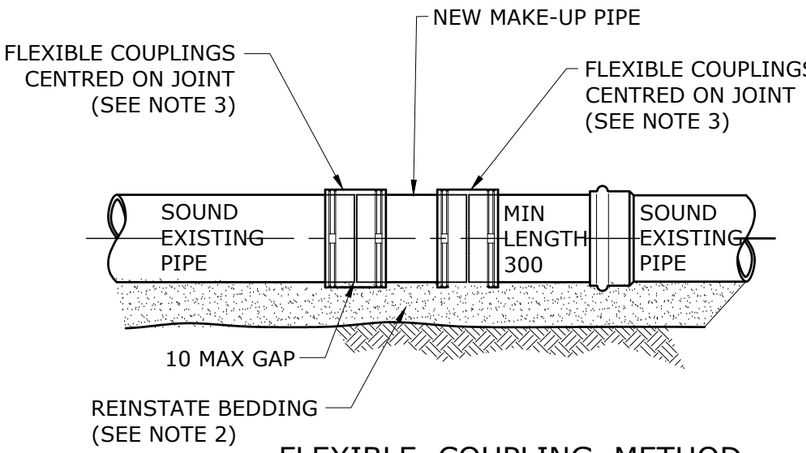
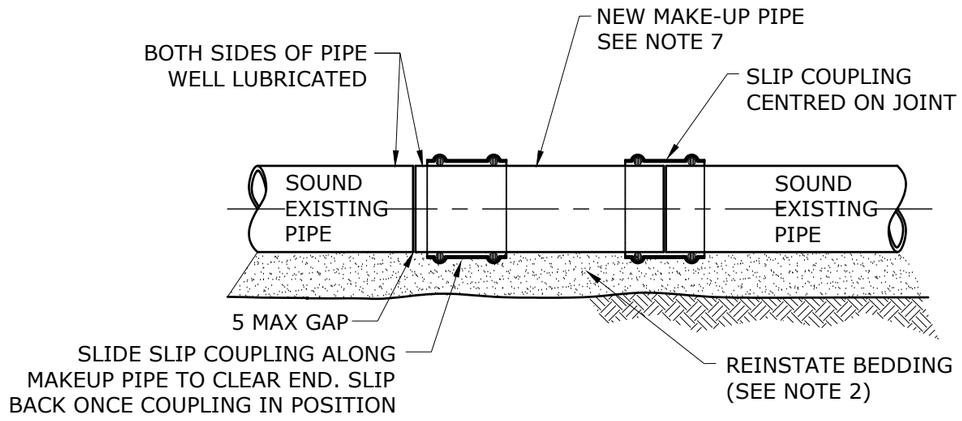
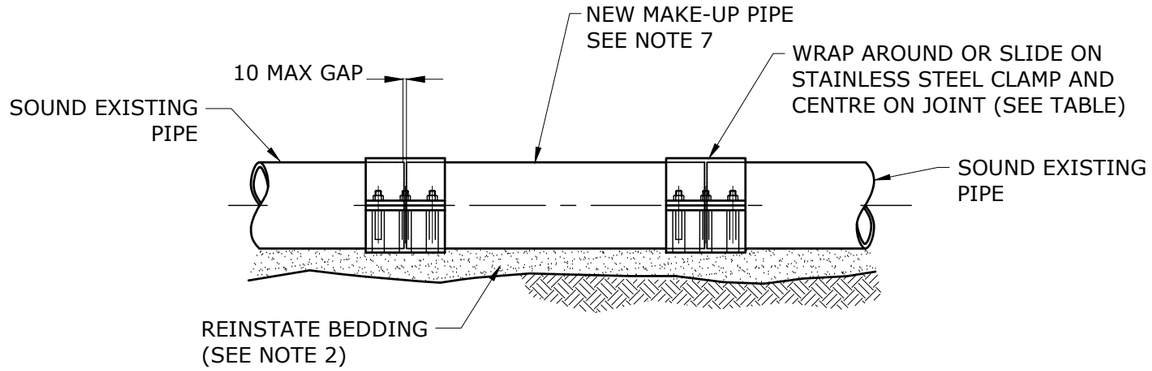
ORG DATE:



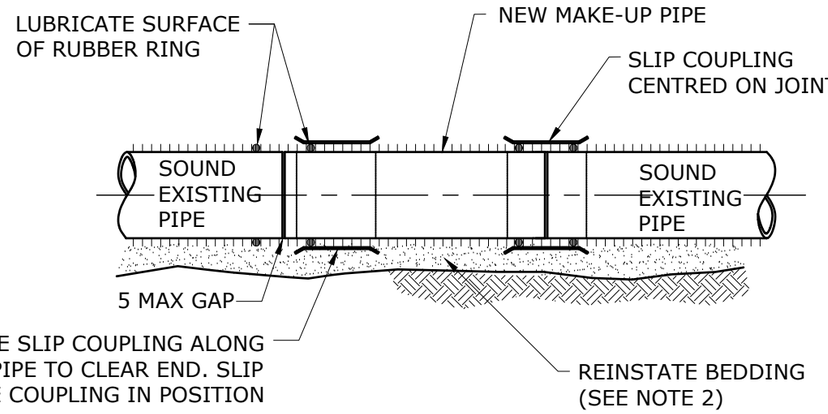
FLEXIBLE COUPLING METHOD



SLIP COUPLING METHOD
PLAIN PIPE



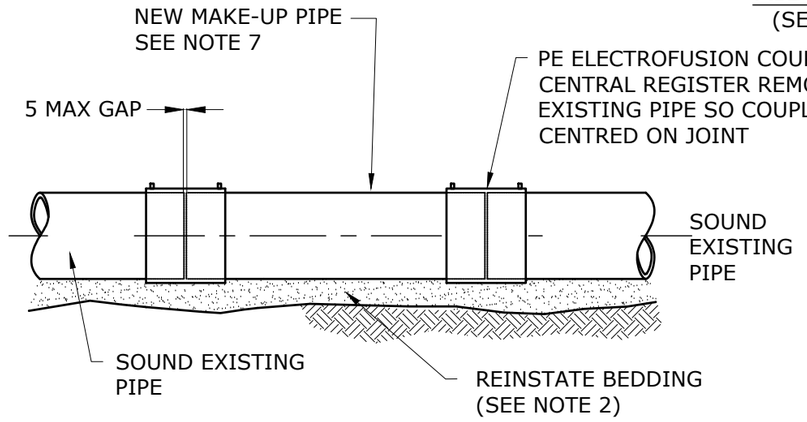
STAINLESS STEEL REPAIR CLAMP METHOD
(SEE NOTE 5)



SLIP COUPLING METHOD
RIBBED PIPE
(SEE NOTE 6)

NOTES

1. FOR WBBROC WATER SERVICE PROVIDER USE ONLY.
2. PLACE **CEMENT STABILISED SAND** UNDER AND AROUND ALL INSTALLED PIPE SECTIONS AND SPACERS AND COMPACT TO MAINTAIN GRADE AND MINIMISE SETTLEMENT.
3. FLEXIBLE COUPLINGS TO HAVE GRADE 316 SS CLAMPS & SHEAR BANDS AND BE IN ACCORDANCE WITH AS 4327.
4. SLIP COUPLINGS TO BE AS SPECIFIED BY PIPE MANUFACTURER OR WATER AGENCY.
5. A SINGLE REPAIR CLAMP MAY BE USED FOR REPAIR OF SMALL CRACKS OR HOLES. MINIMUM CLAMP LENGTH EITHER SIDE OF THE DAMAGE TO BE AS SHOWN ON THE TABLE.
6. FLEXIBLE COUPLINGS AND STAINLESS REPAIR CLAMPS ARE NOT APPLICABLE TO RIBBED PIPE.
7. USE THESE METHODS FOR JUNCTION INSERTION OR MAINTENANCE STRUCTURE CUT-IN, SEE WBB-SEW-1501-1 AND WBB-SEW-1502-1.
8. THOROUGHLY CLEAN SURFACE OF EXISTING PIPE BEFORE INSTALLING CLAMPS OR COUPLINGS.
9. ALL DIMENSIONS IN MILLIMETRES.



PE ELECTROFUSION METHOD

SS WRAP AROUND CLAMPS	
DN	MIN CLAMP LENGTH EITHER SIDE OF PIPE CUT OR DAMAGE
100 - ⩽200	75
>200 - ⩽300	100
>300 - 600	150

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WBBROC WATER SERVICE PROVIDERS

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SEWERAGE STANDARD DRAWING

INSERTIONS AND REPAIR SYSTEMS
TYPICAL PIPE CUT-IN METHODS

BRC	FCRC	GRC	NBRC	SBRC

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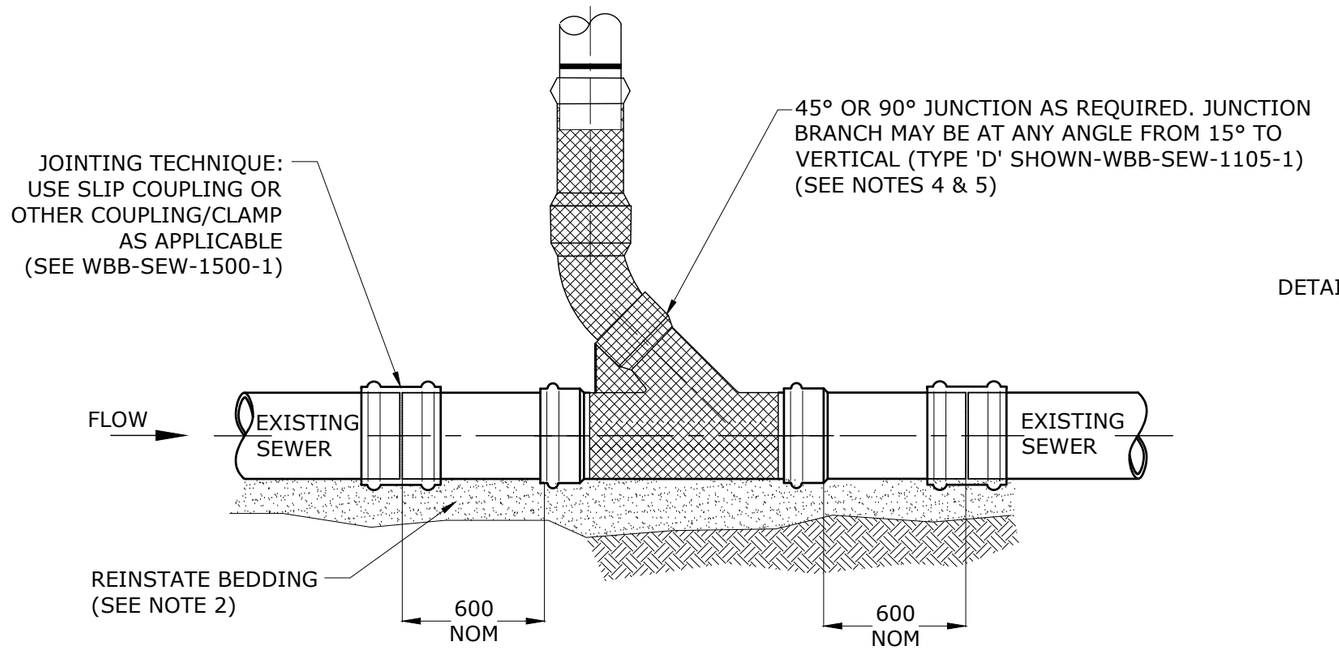
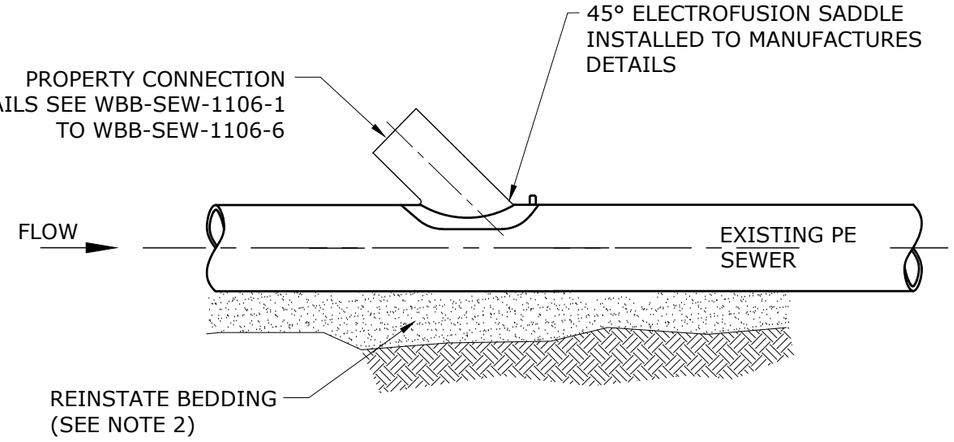
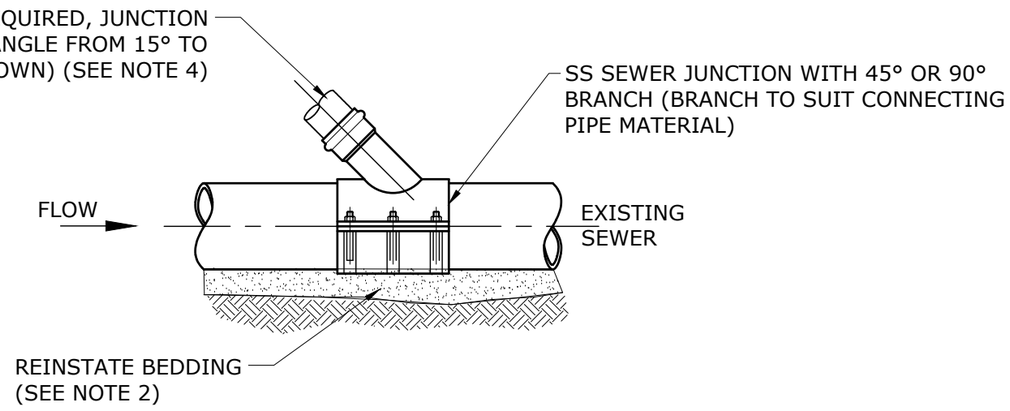


INSERTION OF JUNCTION INTO EXISTING SEWER

(DEEP JUNCTION FORMAT SHOWN)



ELECTROFUSION JUNCTION ONTO EXISTING PE SEWER



CONNECTION OF SS SEWER JUNCTION TO EXISTING SEWER

PLAIN WALL

(SEE NOTES 6 TO 8)

NOTES:

1. ALL DIMENSIONS IN MILLIMETRES.
2. PLACE **CEMENT STABILISED SAND** UNDER AND AROUND ALL INSTALLED PIPE SECTIONS
   AND SPACERS AND COMPACT TO MAINTAIN GRADE AND MINIMISE SETTLEMENT.
3. ENSURE MINIMUM GRADE REQUIREMENTS ARE MET WHEN HOUSE CONNECTION BRANCH LAID NEAR HORIZONTAL SEE WBB-SEW-1106-1.
4. WHERE AVAILABLE A SP-SP JUNCTION MAY BE INSERTED DIRECTLY INTO EXISTING SEWER AND COUPLED USING ANY OF THE CUT-IN METHODS SHOWN IN WBB-SEW-1500-1.
5. THOROUGHLY CLEAN SURFACES OF EXISTING PIPES BEFORE CONNECTING CLAMPS OR COUPLINGS.
6. PLACE CLAMP-ON BRANCH ON PIPE AND MARK THE INSIDE SHAPE OF THE JUNCTION BRANCH ON MAIN PIPE.
7. REMOVE CLAMP AND CUT HOLE USING APPROPRIATE TYPE OF SAW AND CLEAN AND DE-BURR HOLE EDGES.
8. ALIGN JUNCTION BRANCH WITH CUT HOLE. POSITION CLAMPS AND TIGHTEN TO REQUIRED TORQUE.

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WBBROC WATER
SERVICE PROVIDERS

WORK PRACTICES MUST COMPLY WITH ALL APPLICABLE OCCUPATIONAL HEALTH & SAFETY LEGISLATION

SEWERAGE STANDARD DRAWING

INSERTIONS AND REPAIR SYSTEMS
TYPICAL INSERTION OF JUNCTIONS

BRC	FCRC	GRC	NBRC	SBRC

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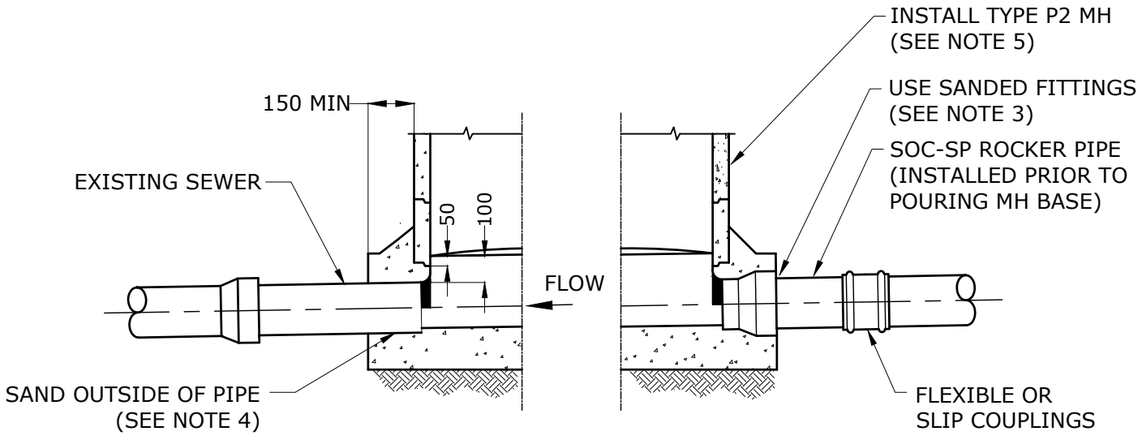


CONSTRUCTION OF MAINTENANCE HOLE OVER EXISTING SEWER

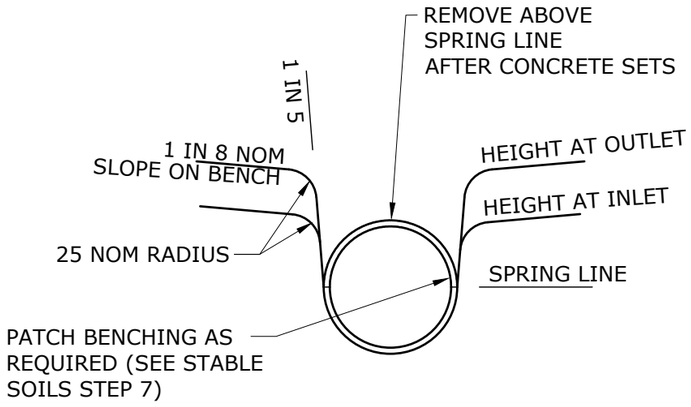
INSTALLATION PROCEDURE FOR MANHOLE

IN STABLE SOILS

1. WHERE NECESSARY ESTABLISH A TEMPORARY BY-PASS SYSTEM.
2. DIG 200 DEEP UNDER AND AROUND EXISTING SEWER TO PROVIDE A BASE APPROX 1700 IN DIAMETER.
3. CLEAN AND ABRADE EXTERNAL PIPE SURFACE AND COAT WITH RESIN/SOLVENT AND SAND AND APPLY HYDROPHILIC SEAL.
4. POUR CONCRETE TO 150 ABOVE TOP OF PIPE.
5. EITHER INSTALL FIRST SECTION OF PRE-CAST SHAFT SECTIONS SHOWN OR MAKE CONSTRUCTION JOINT FOR CAST IN-SITU (SEE WBB-SEW-1300 SERIES).
6. FORM GULLET TO SPRING LINE OF PIPE AND FULL LENGTH OF INSIDE OF MH.
7. WHEN CONCRETE IS SET, CUT OR BREAK OUT THE TOP HALF OF THE EXISTING SEWER FOR THE FULL LENGTH INSIDE THE MH.
8. PATCH BENCHING/PIPE SECTIONS TO REMOVE SHARP OBSTRUCTIONS, GAPS ETC USING 2:1 SAND:CEMENT MORTAR.
9. COMPLETE THE REMAINDER OF MH IN ACCORDANCE WITH WBB-SEW-SERIES.

IN REACTIVE SOILS (SOIL BEARING PRESSURE <100 kPa)

1. WHERE NECESSARY ESTABLISH A TEMPORARY BY-PASS SYSTEM.
2. USING THE SYSTEMS SHOWN ON WBB-SEW-1500-1 AND WBB-SEW-1501-1 INSERT PIPE SECTIONS AND SET UP RRJ SOCKET STUB PIPES AND ROCKER PIPES EACH END OF THE PROPOSED MH LOCATION SO THAT THE SOCKET ENDS ARE LOCATED ADJACENT TO OUTSIDE FACE OF CONCRETE SEE WBB-SEW-1302-1.
3. COMPLETE INSTALLATION OF MH IN ACCORDANCE WITH STEPS 2 TO 9 ABOVE.



CHANNEL DETAILS

NOTES:

1. ALL DIMENSIONS IN MILLIMETRES.
2. CARRY OUT INSTALLATION OF MAINTENANCE STRUCTURE ONLY AT PERIODS OF LOW SEWAGE FLOW OR WHEN BYPASSING SEWAGE FLOWS.
3. FOR MH IN SEWERS INSTALLED ON SLOPES >16% LAY TWIN DRAINAGE PIPES THROUGH THE CONCRETE BASE IN ACCORDANCE WITH WBB-SEW-1200 SERIES.
4. PLACE EMBEDMENT UNDER AND AROUND ALL INSTALLED MS, SURROUNDING PIPES AND COUPLINGS. COMPACT TO MAINTAIN GRADE AND MINIMISE SETTLEMENT.
5. FOR PVC OR GRP PIPE OR FITTINGS TO BE CAST INTO BASE, COAT WITH RESIN/SOLVENT & SAND OR ABRADED TO ENSURE BONDING AND APPLY HYDROPHILIC SEAL.
6. FOR INTERNAL DROP SYSTEM SEE WBB-SEW-1300 SERIES.

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WBBROC WATER SERVICE PROVIDERS

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SEWERAGE STANDARD DRAWING

INSERTIONS AND REPAIR SYSTEMS
TYPICAL MAINTENANCE STRUCTURES

BRC	FCRC	GRC	NBRC	SBRC

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