

SEWERAGE STANDARD DRAWINGS

DRAWING INDEX - SHEET 1 OF 3

DRAWING No.	DRAWING TITLE			REV No.
SEQ-SEW-INDEX	GRAVITY SEWERAGE	DRAWING INDEX	SHEET 1 OF 3	C
SEQ-SEW-INDEX	GRAVITY SEWERAGE	DRAWING INDEX	SHEET 2 OF 3	C
SEQ-SEW-INDEX	GRAVITY SEWERAGE	DRAWING INDEX	SHEET 3 OF 3	A
SEQ-SEW-1100-1	DESIGN LAYOUT	NUSEWERS	TYPICAL LOCALITY & SITE PLAN	B
SEQ-SEW-1100-2	DESIGN LAYOUT	RIGSS	TYPICAL LOCALITY & SITE PLAN	B
SEQ-SEW-1101-1	DESIGN LAYOUT	PE NUSEWERS	TYPICAL LONGITUDINAL SECTIONS	B
SEQ-SEW-1101-2	DESIGN LAYOUT	RIGSS	TYPICAL LONGITUDINAL SECTIONS	C
SEQ-SEW-1101-3	SEWERAGE RETICULATION	TYPICAL ESTATE DETAILS AND NOTES		A
SEQ-SEW-1101-4	SEWERAGE RETICULATION	MAINTENANCE HOLE NOTES	SHEET 1 OF 3	A
SEQ-SEW-1101-5	SEWERAGE RETICULATION	MAINTENANCE HOLE NOTES	SHEET 2 OF 3	A
SEQ-SEW-1101-6	SEWERAGE RETICULATION	MAINTENANCE HOLE NOTES	SHEET 3 OF 3	A
SEQ-SEW-1102-1	DESIGN LAYOUTS	CONNECTION TO EXISTING SEWER	TYPICAL SCHEDULE OF WORKS	C
SEQ-SEW-1103-1	RIGSS PIPELAYING	TYPICAL ARRANGEMENTS		A
SEQ-SEW-1103-2	NUSEWER PIPELAYING	TYPICAL ARRANGEMENTS		C
SEQ-SEW-1103-3	SEWER ROAD CROSSING MARKING	TYPICAL LAYOUT		A
SEQ-SEW-1104-1	SEWERAGE HOUSE CONNECTION	TYPICAL CONSTRUCTION DETAILS	RIGSS - SHEET 1	C
SEQ-SEW-1104-2	DRAWING WITHDRAWN			A
SEQ-SEW-1105-1	SEWERAGE HOUSE CONNECTION	TYPICAL CONSTRUCTION DETAILS	RIGSS - SHEET 2	C
SEQ-SEW-1106-1	PE NUSEWERS	PROPERTY CONNECTIONS	TYPICAL LAYOUT	C
SEQ-SEW-1106-2	PE NUSEWERS	TYPICAL PROPERTY CONNECTION	TYPE A1, A2 STANDARD AND EXTENDED	C
SEQ-SEW-1106-3	PE NUSEWERS	TYPICAL PROPERTY CONNECTION	TYPE A3, A4 STANDARD AND EXTENDED	C
SEQ-SEW-1106-4	PE NUSEWERS	TYPICAL PROPERTY CONNECTION	TYPE B1 TO B4 SLOPED CONNECTIONS	C
SEQ-SEW-1106-5	PE NUSEWERS	TYPICAL PROPERTY CONNECTION	TYPE C1 TO C4 VERTICAL RISER	C
SEQ-SEW-1106-6	PE NUSEWERS	TYPICAL TWIN PROPERTY CONNECTIONS		B
SEQ-SEW-1106-7	DRAWING WITHDRAWN			B
SEQ-SEW-1200-1	SOIL CLASSIFICATION GUIDELINES	AND ALLOWABLE BEARING PRESSURES	FOR ANCHORS AND THRUST BLOCKS	A
SEQ-SEW-1200-2	EMBEDMENT & TRENCHFILL	TYPICAL ARRANGEMENT		A
SEQ-SEW-1201-1	TYPICAL STANDARD EMBEDMENT	FLEXIBLE & RIGID PIPES		A
SEQ-SEW-1202-1	TYPICAL SPECIAL EMBEDMENT	INADEQUATE FOUNDATIONS REQUIRING	OVER EXCAVATION AND REPLACEMENT	A
SEQ-SEW-1203-1	TYPICAL SPECIAL EMBEDMENT	CONCRETE AND STABILISED SUPPORTS		A
SEQ-SEW-1204-1	TYPICAL SPECIAL EMBEDMENT	SUPPORT UTILISING PILES		A
SEQ-SEW-1205-1	TYPICAL TRENCH AND BEDDING DETAILS	WITHIN EXISTING ROADS	TYPE 14 TO 17	A
SEQ-SEW-1206-1	TYPICAL BULKHEADS AND TRENCH STOPS			B
SEQ-SEW-1207-1	TRENCH DRAINAGE	TYPICAL SYSTEMS		A
SEQ-SEW-1207-2	TYPICAL DRAINAGE OF SEWER TRENCHES	AND DIVERSION DRAINS		A
SEQ-SEW-1300-1	MAINTENANCE HOLES	≤ DN300 SEWER TYPES P1, P2 & P3	TYPICAL PRE-CAST	C
SEQ-SEW-1301-1	CAST IN-SITU MAINTENANCE HOLE	TYPICAL COPING & ANCHOR	BRACKET DETAILS	B
SEQ-SEW-1301-2	"G" TYPE - PE NUSEWERS	MAINTENANCE HOLE	GENERAL ARRANGEMENT DETAILS	C
SEQ-SEW-1301-3	"G" TYPE - PE NUSEWERS	MAINTENANCE HOLE AND SLAB	GENERAL ARRANGEMENT DETAILS	C
SEQ-SEW-1301-4	"G" TYPE - PE NUSEWERS	STRUCTURAL GENERAL ARRANGEMENT DETAILS	FOR TYPE 'A' DROP	C
SEQ-SEW-1301-5	"G" TYPE - PE NUSEWERS	STRUCTURAL GENERAL ARRANGEMENT DETAILS	FOR TYPE 'C' AND TYPE 'D' DROP	C
SEQ-SEW-1301-6	"G" TYPE - PE NUSEWERS	STRUCTURAL REINFORCEMENT DETAILS	SHEET 1 OF 2	B
SEQ-SEW-1301-7	"G" TYPE - PE NUSEWERS	STRUCTURAL REINFORCEMENT DETAILS	SHEET 2 OF 2	B
SEQ-SEW-1301-8	"F" TYPE - PE NUSEWERS	MAINTENANCE HOLE	GENERAL ARRANGEMENT DETAILS	C
SEQ-SEW-1301-9	"F" TYPE - PE NUSEWERS	MAINTENANCE HOLE AND SLAB	GENERAL ARRANGEMENT DETAILS	C
SEQ-SEW-1301-10	"F" TYPE - PE NUSEWERS	STRUCTURAL GENERAL ARRANGEMENT DETAILS	FOR TYPE 'A' DROP	B
SEQ-SEW-1301-11	"F" TYPE - PE NUSEWERS	STRUCTURAL GENERAL ARRANGEMENT DETAILS	FOR TYPE 'C' AND TYPE 'D' DROP	B
SEQ-SEW-1301-12	"F" TYPE - PE NUSEWERS	STRUCTURAL REINFORCEMENT DETAILS	SHEET 1 OF 2	C
SEQ-SEW-1301-13	"F" TYPE - PE NUSEWERS	STRUCTURAL REINFORCEMENT DETAILS	SHEET 2 OF 2	A
SEQ-SEW-1301-14	"X" TYPE DEEP MAINTENANCE HOLE	TYPICAL ARRANGEMENT AND G.A. DETAILS	SEWER ≤ 1200 NB	A
SEQ-SEW-1301-15	"X" TYPE DEEP MAINTENANCE HOLE	TYPICAL ARRANGEMENT AND G.A. DETAILS	SEWER > 1200 NB	A
SEQ-SEW-1301-16	"X" TYPE DEEP MAINTENANCE HOLE	TYPICAL ARRANGEMENT AND G.A. DETAILS	SEWER ≤ 600 NB OR LESS WITH DROP PIPE	A
SEQ-SEW-1301-17	"X" TYPE DEEP MAINTENANCE HOLE	TYPICAL ARRANGEMENT AND G.A. DETAILS	SEWER > 600 NB TO 900 NB WITH DROP PIPE AND SAFETY CHAIN	A
SEQ-SEW-1301-18	"X" TYPE DEEP MAINTENANCE HOLE	TYPICAL JUNCTION DETAILS		A

REV. No.	DATE	DESCRIPTION	AUTH.	SEWERAGE STANDARD DRAWING					CoGC	LCC	RCC	QUU	UW	
				SEQ WATER SERVICE PROVIDERS					DRAWING No.					
									GRAVITY SEWERAGE DRAWING INDEX SHEET 1 OF 3					SEQ-SEW-INDEX-01
C	30/6/19	UPDATED DRGS AND REVISION NUMBERS		WORK PRACTICES MUST COMPLY WITH ALL APPLICABLE OCCUPATIONAL HEALTH & SAFETY LEGISLATION					NOT TO SCALE					ORG DATE: 1/1/2013
B	06/04/16	UPDATED REVISION NUMBERS AND DRG. SEQ-SEW-1104-2A ADDED												

SEWERAGE STANDARD DRAWINGS

DRAWING INDEX - SHEET 2 OF 3

DRAWING No.	DRAWING TITLE			REV No.
SEQ-SEW-1301-19	"X" TYPE DEEP MAINTENANCE HOLE	TYPICAL TOP SLAB G.A. DETAILS		A
SEQ-SEW-1301-20	"X" TYPE DEEP MAINTENANCE HOLE	STRUCTURAL GENERAL ARRANGEMENT DETAILS	SEWER ≤ 600 NB	A
SEQ-SEW-1301-21	"X" TYPE DEEP MAINTENANCE HOLE	STRUCTURAL REINFORCEMENT DETAILS	SEWER ≤ 600 NB	A
SEQ-SEW-1301-22	"X" TYPE DEEP MAINTENANCE HOLE	STRUCTURAL GENERAL ARRANGEMENT DETAILS	SEWER > 600 NB TO 1200 NB	A
SEQ-SEW-1301-23	"X" TYPE DEEP MAINTENANCE HOLE	STRUCTURAL REINFORCEMENT DETAILS	SEWER > 600 NB TO 1200 NB	A
SEQ-SEW-1301-24	"X" TYPE DEEP MAINTENANCE HOLE	STRUCTURAL GENERAL ARRANGEMENT DETAILS	SEWER > 1200 NB	A
SEQ-SEW-1301-25	"X" TYPE DEEP MAINTENANCE HOLE	STRUCTURAL REINFORCEMENT DETAILS	SEWER > 1200 NB	A
SEQ-SEW-1301-26	MAINTENANCE HOLES	"G" , "F" , "X" MAINTENANCE HOLES	TOP SLAB REINFORCEMENT DETAILS	A
SEQ-SEW-1301-27	TYPICAL M.S. AND S.S.	LADDER AND ASSOCIATED FITTINGS		A
SEQ-SEW-1302-1	MAINTENANCE HOLES	CAST IN-SITU AND PRECAST	TYPICAL PIPE CONNECTION DETAILS	B
SEQ-SEW-1303-1	MAINTENANCE HOLES	SEWERS ≤ DN300	TYPICAL CHANGES IN LEVEL DETAILS	C
SEQ-SEW-1303-2	IRON INSPECTION BENDS FOR	TYPICAL INTERNAL DROP PIPES	IN SEWERAGE MANHOLES	A
SEQ-SEW-1303-4	TYPICAL STAINLESS STEEL BRACKETS FOR	DN100 AND DN150	uPVC DROP PIPES	A
SEQ-SEW-1304-1	MAINTENANCE HOLES	SEWERS ≤ DN300	TYPICAL CHANNEL ARRANGEMENTS	B
SEQ-SEW-1305-1	MAINTENANCE HOLES	TYPICAL CHANNEL DETAILS		A
SEQ-SEW-1306-1	MAINTENANCE HOLES	TYPICAL ALTERNATIVE DROP CONNECTIONS		A
SEQ-SEW-1307-1	DN1000 TO DN1500 CAST IN-SITU	MAINTENANCE HOLES	TYPICAL DETAILS	B
SEQ-SEW-1307-2	SULPHIDE CONTROL	SEWER MAINTENANCE HOLE - PE LINED	GENERAL ARRANGEMENT	B
SEQ-SEW-1307-3	SULPHIDE CONTROL	SEWER MAINTENANCE HOLE - PE LINED	DETAILS AND VENT POLE DETAILS	B
SEQ-SEW-1307-4	SULPHIDE CONTROL	SEWER MAINTENANCE HOLE - PE LINED	CUT-IN TO EXISTING MH DETAILS	B
SEQ-SEW-1307-5	SULPHIDE CONTROL	SEWER MAINTENANCE HOLE - PE LINED	STRUCTURAL GENERAL ARRANGEMENT DETAILS	A
SEQ-SEW-1307-6	SULPHIDE CONTROL	SEWER MAINTENANCE HOLE - PE LINED	STRUCTURAL REINFORCEMENT DETAILS	A
SEQ-SEW-1307-7	SULPHIDE CONTROL	SEWER MAINTENANCE HOLE - PE LINED	TOP SLAB REINFORCEMENT DETAILS	A
SEQ-SEW-1308-1	TYPICAL MAINTENANCE HOLE COVER	AND SURROUND DETAIL		C
SEQ-SEW-1308-2	MAINTENANCE HOLE COVER	SEWER - CLASS B - CONCRETE INFILL	TYPICAL FRAME DETAILS	A
SEQ-SEW-1308-3	MAINTENANCE HOLE COVER	SEWER - CLASS B - CONCRETE INFILL	TYPICAL COVER DETAILS	A
SEQ-SEW-1308-4	MAINTENANCE HOLE COVER	SEWER - CLASS B - CONCRETE INFILL	TYPICAL LIFTING HOLE DETAILS	A
SEQ-SEW-1308-5	MAINTENANCE HOLE COVER	SEWER - CLASS B - BOLT DOWN	TYPICAL FRAME DETAILS	A
SEQ-SEW-1308-6	MAINTENANCE HOLE COVER	SEWER - CLASS B - BOLT DOWN	TYPICAL COVER DETAILS	A
SEQ-SEW-1308-7	MAINTENANCE HOLE COVER	SEWER - CLASS B - BOLT DOWN	TYPICAL COVER DETAILS	A
SEQ-SEW-1308-8	MAINTENANCE HOLE COVER	SEWER - CLASS D - BOLT DOWN	TYPICAL BASE FRAME DETAILS	A
SEQ-SEW-1308-9	MAINTENANCE HOLE COVER	SEWER - CLASS D - BOLT DOWN	TYPICAL RISER RING DETAILS	A
SEQ-SEW-1308-10	MAINTENANCE HOLE COVER	SEWER - CLASS D - BOLT DOWN	TYPICAL COVER DETAILS	A
SEQ-SEW-1308-11	MAINTENANCE HOLE COVER	SEWER - CLASS D - BOLT DOWN	TYPICAL COVER DETAILS	A
SEQ-SEW-1309-1	"Y" TYPE MAINTENANCE HOLE	SEWERS DN600 AND DN750	TYPICAL ARRANGEMENT	A
SEQ-SEW-1309-2	"Y" TYPE MAINTENANCE HOLE	DN1500 AND DN1800 MH	STRUCTURAL GENERAL ARRANGEMENT DETAILS	A
SEQ-SEW-1309-3	"Y" TYPE MAINTENANCE HOLE	DN1500 AND DN1800 MH	STRUCTURAL REINFORCEMENT DETAILS	A
SEQ-SEW-1309-4	"Y" TYPE MAINTENANCE HOLE	DN1500 AND DN1800 MH	TOP SLAB REINFORCEMENT DETAILS	A
SEQ-SEW-1310-1	"Z1" TYPE NON-TRAFFICABLE	TYPICAL GRP MH OPTION DN1200	AND LARGER SEWERS	B
SEQ-SEW-1311-1	"Z2" TYPE TYPICAL TUNNEL	JACKING SHAFT - CAISSON OPTION		B
SEQ-SEW-1312-1	"Z3" TYPE TYPICAL TUNNEL	RECEIVAL SHAFT MANHOLE OPTION		B
SEQ-SEW-1313-1	MAINTENANCE HOLE	SEWER CONNECTION DETAILS	ALL PIPE MATERIALS	B
SEQ-SEW-1314-1	MAINTENANCE STRUCTURES FOR	DN225 AND SMALLER RIGSS	TYPICAL ARRANGEMENT DETAILS	C
SEQ-SEW-1314-2	MAINTENANCE SHAFTS	MS AND VARIABLE BEND FOR RIGSS	TYPICAL ARRANGEMENT DETAILS	C
SEQ-SEW-1314-3	GRAVITY SEWERS RIGSS	TYPICAL IN-LINE BEND DETAILS		C
SEQ-SEW-1315-1	PE NUSEWERS	TYPICAL MAINTENANCE SHAFT AND	TERMINAL ENTRY POINT	C
SEQ-SEW-1316-1	PE NUSEWERS	TYPICAL MAINTENANCE STRUCTURE	COVER FRAME AND SUPPORT DETAILS	B
SEQ-SEW-1400-1	BURIED CROSSINGS	TYPICAL SIPHON ARRANGEMENT		A
SEQ-SEW-1401-1	TYPICAL BURIED CROSSINGS	RAILWAYS		B
SEQ-SEW-1402-1	TYPICAL BURIED CROSSINGS	MAJOR ROADWAYS		B
SEQ-SEW-1403-1	TYPICAL BURIED CROSSINGS	BORED AND JACKED	ENCASING PIPE DETAILS	C
SEQ-SEW-1404-1	TYPICAL AERIAL CROSSINGS	AQUEDUCT		B
SEQ-SEW-1405-1	TYPICAL AERIAL CROSSINGS	AQUEDUCT PROTECTION GRILLE		B
SEQ-SEW-1406-1	AERIAL CROSSINGS	TYPICAL BRIDGE CROSSING CONCEPTS		B

REV. No.	DATE	DESCRIPTION	AUTH.	SEWERAGE STANDARD DRAWING					CoGC	LCC	RCC	QUU	UW		
				SEQ WATER SERVICE PROVIDERS <small>WORK PRACTICES MUST COMPLY WITH ALL APPLICABLE OCCUPATIONAL HEALTH & SAFETY LEGISLATION</small>					GRAVITY SEWERAGE DRAWING INDEX SHEET 2 OF 3					<small>DRAWING No.</small> SEQ-SEW-INDEX-02	<small>VERSION</small> C
C	30/6/19	UPDATED DRGS AND REVISION NUMBERS												NOT TO SCALE	
B	28/07/15	UPDATED REVISION NUMBERS													

SEWERAGE STANDARD DRAWINGS

DRAWING INDEX - SHEET 3 OF 3

DRAWING No.		DRAWING TITLE		REV No.
SEQ-SEW-1407-1	TYPICAL VENTILATION SYSTEMS	INDUCT VENT		A
SEQ-SEW-1408-1	WATER SEAL ARRANGEMENTS	TYPICAL MAINS TYPE		A
SEQ-SEW-1408-2	WATER SEAL ARRANGEMENTS	TYPICAL MAINTENANCE HOLE SYSTEM		A
SEQ-SEW-1409-1	STANDARD OVERFLOW FLAP VALVE	CHAMBER - TYPE 1	TYPICAL CHAMBER DETAILS	B
SEQ-SEW-1409-2	STANDARD OVERFLOW FLAP VALVE	CHAMBER - TYPE 1	TYPICAL TOP SLAB AND FLAP DETAILS	B
SEQ-SEW-1410-1	STANDARD OVERFLOW FLAP VALVE	CHAMBER - TYPE 2	TYPICAL CHAMBER DETAILS	B
SEQ-SEW-1410-2	STANDARD OVERFLOW FLAP VALVE	CHAMBER - TYPE 2	TYPICAL TOP SLAB AND FLAP DETAILS	B
SEQ-SEW-1411-1	STANDARD OVERFLOW FLAP VALVE	CHAMBER - TYPE 3	TYPICAL CHAMBER DETAILS	B
SEQ-SEW-1411-2	STANDARD OVERFLOW FLAP VALVE	CHAMBER - TYPE 3	TYPICAL TOP SLAB AND FLAP DETAILS	B
SEQ-SEW-1411-3	STANDARD OVERFLOW FLAP VALVE	CHAMBER - TYPE 1, 2 & 3	STRUCTURAL GENERAL ARRANGEMENT DETAILS	A
SEQ-SEW-1411-4	STANDARD OVERFLOW FLAP VALVE	CHAMBER - TYPE 1, 2 & 3	TYPICAL REINFORCEMENT DETAILS	A
SEQ-SEW-1411-5	STANDARD OVERFLOW FLAP VALVE	CHAMBER - TOP SLAB	REINFORCEMENT DETAILS	A
SEQ-SEW-1412-1	TYPICAL OVERFLOW DETAILS FROM	PUMP WELL OR MANHOLE	SHIELDED OUTLET	B
SEQ-SEW-1412-2	TYPICAL OVERFLOW SHIELD	SHIELDED OUTLET		B
SEQ-SEW-1413-1	SEWAGE OVERFLOW ARRANGEMENT	TYPICAL OVERFLOW WITH	SCREENED OUTLET	C
SEQ-SEW-1413-2	SEWAGE OVERFLOW ARRANGEMENT	TYPICAL OVERFLOW WITH	"COMB SEPARATOR" SCREENED OUTLET	A
SEQ-SEW-1500-1	INSERTIONS AND REPAIR SYSTEMS	TYPICAL PIPE CUT-IN METHODS		B
SEQ-SEW-1501-1	INSERTIONS AND REPAIR SYSTEMS	TYPICAL INSERTION OF JUNCTIONS		B
SEQ-SEW-1502-1	INSERTIONS AND REPAIR SYSTEMS	TYPICAL MAINTENANCE STRUCTURES		B

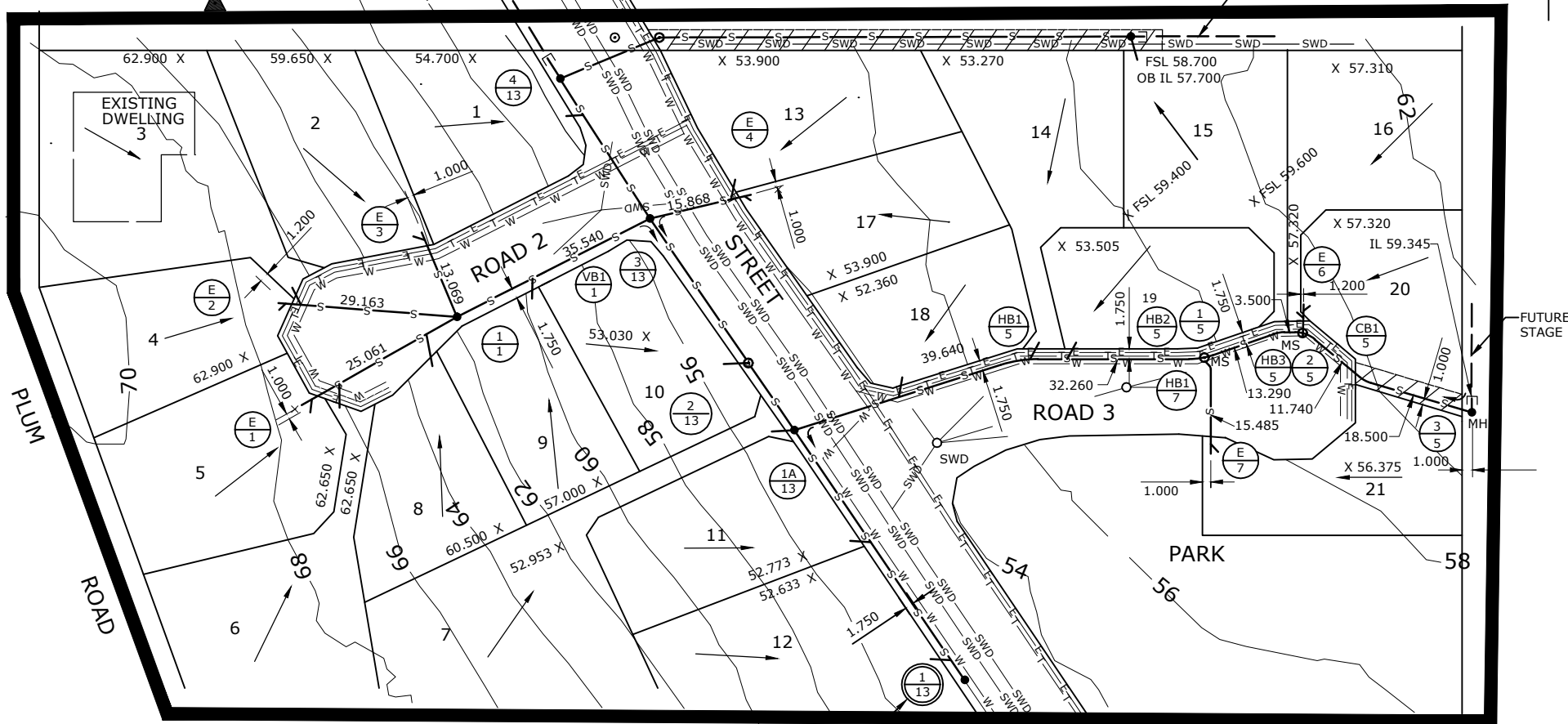
REV. No.	DATE	DESCRIPTION	AUTH.	SEWERAGE STANDARD DRAWING					CoGC	LCC	RCC	QUU	UW		
				SEQ WATER SERVICE PROVIDERS					GRAVITY SEWERAGE DRAWING INDEX SHEET 3 OF 3					DRAWING No.	VERSION
									<small>WORK PRACTICES MUST COMPLY WITH ALL APPLICABLE OCCUPATIONAL HEALTH & SAFETY LEGISLATION</small>					SEQ-SEW-INDEX-03	
									NOT TO SCALE					ORG DATE: 30/6/2019	

EXAMPLE ONLY

BM PSM RL 64.039 AHD

DETAIL PLAN NUMBER
(OR DRAWING NUMBER)

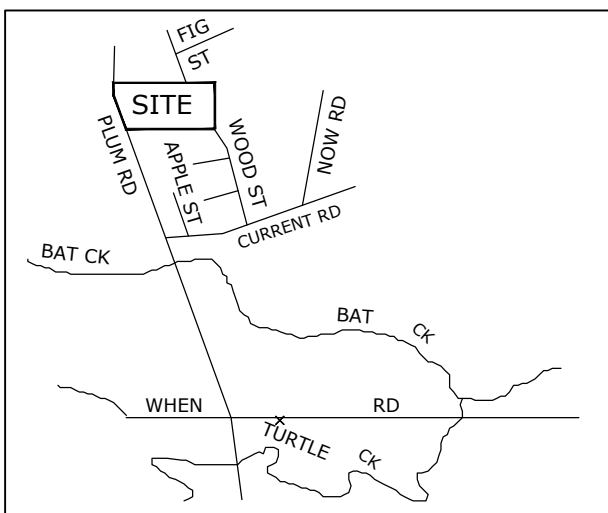
FUTURE STAGE



TO BE RAISED
REFER ITEM 7
OF LIVE SEWER
WORKS SHOWN ON
SEQ-SEW-1102-1

EXISTING

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 JUNCTION DETAILS REFER SEQ-SEW-1106-1 TO SEQ-SEW-1106-7

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

REV. No.	DATE	DESCRIPTION	AUTH.
B	20/07/15	AMENDED DRAWING SYMBOLS TO BE CONSISTENT	

SEQ WATER SERVICE PROVIDERS

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

SEWERAGE STANDARD DRAWING
DESIGN LAYOUT
NUSEWERS
TYPICAL LOCALITY & SITE PLAN

GC	LC	RC	QUU	UW
DRAWING No.				VERSION
SEQ-SEW-1100-1				B
NOT TO SCALE				ORG DATE: 1/1/2013

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 SOUTH EAST QUEENSLAND 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 SEQ SERVICE PROVIDER SEWERAGE SYSTEM.
4. ALL WORK ASSOCIATED WITH LIVE SEWERS OR MAINTENANCE HOLES SHALL BE CARRIED OUT BY THE SEQ 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 INTO THE PROPERTY A MINIMUM OF 300 mm AND A MAXIMUM OF 750 mm. UNITYWATER REQUIRES MINIMUM EXTENSION OF 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 SEQ 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 SEQ 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 WITH PROCEDURES SET OUT IN THE SEQ SEWER CODE.
13. BENCH MARK AND LEVELS TO AHD.
14. THE EXISTING DWELLING ON LOT 3, REFER SEQ-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 SEQ SERVICE PROVIDER AT THE DEVELOPERS COST.

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.	SEQ WATER SERVICE PROVIDERS		SEWERAGE STANDARD DRAWING		GCCC	LCC	RCC	QUU	UW
				WORK PRACTICES MUST COMPLY WITH ALL APPLICABLE OCCUPATIONAL HEALTH & SAFETY LEGISLATION		SEWERAGE RETICULATION TYPICAL ESTATE DETAILS AND NOTES		DRAWING No.				VERSION
			SEQ-SEW-1101-3					A				
			NOT TO SCALE					ORG DATE: 1/1/2013				

MAINTENANCE HOLES

DESIGN REQUIREMENTS

D1. Design and construction of all sewerage infrastructure shall be RPEQ certified.

D2. Top slabs have been designed for the following loads and locations.

Location	Live Load	Access covers to AS 3996
Reserves, residential allotments, footpaths and verges	25 kN	Class Rating B
Roadways and driveways; Commercial, industrial and non-residential allotments	80 kN	Class Rating D

- Design Life 100 years
- Dead load as determined from SEQ Sewer Code Standard Drawings.
- Live loads to AS 1170.1 and AS 5100-2.

D3. Durability Classification

Structure	Cover Location	Exposure Classification AS 3600, AS 3735	Reinforcement Cover (mm)
Slabs	Top	B2 to AS 3600	40
	Bottom	B2 to AS 3735	50 including PE liner thickness

D4. SEQ Code Sewer MH Standard Drawings that are applicable to QUU have assumed that a minimum soil bearing pressure of 50 kPa can be achieved. Responsibility for all aspects of the design and construction of sewer infrastructure rests solely with the certifying RPEQ.

GENERAL

- G1. These notes relate to all top slabs and cast-insitu maintenance holes for QUU and Unitywater.
- G2. Maintenance hole top slabs shall be precast elements.
- G3. Dimensions in millimetres.
- G4. Dimensions not to be scaled from drawings.
- G5. Verify all dimensions on site prior to commencing work on site.
- G6. Materials and workmanship to comply with the current Standards Australia codes, Building code of Australia, WSAA Product Specifications, By-laws and ordinances of relevant building authorities.
- G7. Existing structures to be maintained in a stable condition and no part to be over-stressed during construction.

MAINTENANCE HOLES

- MH1. Maintenance Holes shall be located centrally over sewers unless specified otherwise. Refer Drawings SEQ-SEW-1304-1 and SEQ-SEW-1305-1.
- MH2. Obvert level of the upstream sewer pipe shall always be above the obvert level of the downstream sewer pipe unless approved otherwise.
- MH3. All construction joints shall include hydrophilic seals installed to manufacturer's specifications.
- MH4. Maintenance Hole connectors, including hydrophilic seals and puddle flanges shall be the pre-fabricated type unless approved otherwise.
- MH5. Ends of sewer pipes shall finish flush with the inside face of Maintenance Hole wall.
- MH6. Finished benching shall provide a smooth non-turbulent flow.
- MH7. Safety chains and all connections shall be stainless steel Grade 316.
- MH8. Property connection junctions shall not be constructed on short pipes at Maintenance Holes or bulkheads.

MAINTENANCE HOLE CIRCULAR ACCESS COVERS

- AC1. Circular access covers and frames shall be rated to Class Rating B or Class Rating D to AS 3996.
- AC2. Product certification to AS 3996 shall be supplied for each cover assembly.
- AC3. Covers, frames and riser rings, where required, shall be supplied assembled.
- AC4. Covers shall be solid top. In QUU areas only, Class B concrete infill covers may be used.
- AC5. Covers shall have identification tags detailing, Sewer / Vacuum Sewer / Class Rating B, D / Sealed / Cover pattern detail / SEQ-SP name / Weight.
- AC6. Bolt down covers shall be provided in flood prone areas, storm surge areas, surcharging sewers and where specified in the design.
- AC7. Bolt down cover frames to be fixed to the top slab with 4 M16 stainless steel chemical anchors. Embedment length shall be minimum 110 mm unless approved otherwise.

SAFETY IN DESIGN

- SD1. The Safety in Design, design and risk mitigation measures for these drawings do not necessarily account for all design, construction, operation, maintenance and demolition assessments. It does not reduce or limit the obligations of the constructor, user, operator, maintainer and demolisher to perform their own Safety in Design risk assessment.
- SD2. Develop construction and installation safe work method statements to eliminate and minimise installation risks. The safe method statement shall be reviewed and approved by a suitably qualified structural engineer.

STEP IRONS AND LADDERS (QUU ONLY)

- SL1. Step irons shall comply to AS 1657.
- SL2. Step irons are required where depths of benching from top slab is greater than 850 mm but does not exceed 4.25 m.
- SL3. Step irons shall not be placed closer than 150 mm from the benching.
- SL4. Step irons shall be placed over the downstream outlet.
- SL5. Step irons shall be placed directly under the ladder where step irons are used with a ladder when shown in the Standard Drawings.
- SL6. Ladders shall comply with SEQ-SEW-1301-27.
- SL7. Ladders shall be used in all Maintenance holes where depth from ground level to invert of Sewer exceeds 4.25 m.
- SL8. Ladders shall be placed over downstream outlet for sewer pipes 600 mm or smaller.
- SL9. Ladders shall be placed perpendicular to the downstream outlet for sewer pipes greater than 600 mm.
- SL10. Cages, Extendable handrails and platforms are not to be installed in Maintenance Holes.

REV. No.	DATE	DESCRIPTION	AUTH.	SEWERAGE STANDARD DRAWING				CoGC	LEC	RCC	QUU	UW
				SEQ WATER SERVICE PROVIDERS				DRAWING No. SEQ-SEW-1101-4				VERSION A
								WORK PRACTICES MUST COMPLY WITH ALL APPLICABLE OCCUPATIONAL HEALTH & SAFETY LEGISLATION				MAINTENANCE HOLES NOTES SHEET 1 OF 3
								NOT TO SCALE				

MAINTENANCE HOLES

STAINLESS STEEL

- SS1. Stainless steel to comply to ASTM A240/A240M and ASTM A480/ A480M.
- SS2. Fabrication by manufacturers ASSDA Accredited or approved equivalent.
- SS3. Stainless steel to be grade 316 or 316L u.n.o.
- SS4. Storage, fabrication and welding to be in approved dedicated areas.
- SS5. Welding, cleaning, pickling and passivation to comply to AS 1554.6 and WTIA Technical Note 16 Welding or Stainless steel.
- SS6. Surface finish to be 2B or better to ASTM A480.
- SS7. Members to be acid passivated after fabrication.
- SS8. Anti galling compound "Duralac" or SEQ-SP approved equivalent required on all fasteners unless approved otherwise.

POLYETHYLENE LINER (PE LINER)

- PL1. The PE Liner shall form a completely sealed and welded robust continuous membrane system. The PE Liner shall be built to the MH construction tolerances without any defects such as bulging, warping, pinching, overlapping.
- PL2. The PE sheets shall:
 - Have a minimum thickness of 2.5 mm.
 - Achieve a mechanical bond between the concrete and liner.
 - Be installed by an accredited applicator approved by the Manufacturer.
 - Be tensioned over the formwork within the yield elongation limit prior to securing to the formwork.
- PL3. Preparation, Application and Installation to comply with the manufacturer's specification.
- PL4. Poured concrete to be at a cooler ambient temperature than the temperature when the PE sheets were attached to the formwork.
- PL5. Extrusion welding and weld testing at seams to be undertaken by the approved applicator to the manufacturer's specification.
- PL6. Encapsulation of anchors to be checked by tapping the surface to detect hollow sounds that indicate voids. Voids to be filled by injection grout and PE sheet repaired by extrusion welding over the injection hole.

STRUCTURAL STEEL

- S1. Structural steel workmanship and materials to comply with AS 4100.
- S2. Steel to comply with:
 - AS 1163 Grade C350 for rectangular and hollow sections.
 - AS 3678 for plates and floor plates.
 - AS 3679.1 Grade 300 or BHP Grade 300 Plus for parallel flange channels.
 - AS 3679.2 Grade 300 for welded beams and columns.
 - Other sections to comply with AS 3678 or AS 3679 Grade 250.
- S3. Welds to AS 1554.
 - Weld category SP.
 - Butt welds to be full penetration welds.
 - Welds to be 6 mm continuous fillet welds all round interfaces.
 - Electrodes to AS 1554 classification E48XX.
- S4. Bolts to AS 1275. Commercial grade 4.6/s to AS 1111 and AS 1112. High strength structural bolts to AS 1252.
 - Bolts, nuts and washers M16 and larger to grade 8.8/s. M12 to be grade 4.6/s.
 - Structural connections to be 2 M16 8.8/s with 10 mm thick cleat plate Unless noted otherwise.
 - Install washers under bolt head and nut. Install tapered washers as required.
 - Bolt projection beyond nut to be minimum two threads and maximum 10 mm.
- S5. Hold down bolts to be Grade 4.6/s unless noted otherwise. Hold down bolts groups to be rigidly tied for correct set-out and location.
- S6. Seal weld hollow sections with 3 mm thick cap plate unless noted otherwise.
- S7. Grout base plates with high strength non-shrink pre-mixed grout before columns are loaded.

STEEL WORK PROTECTIVE COATING

- P1. Steelwork to be hot dip galvanised to AS 4680 system designation HDG600 and threaded fasteners to AS 1214.
- P2. Damaged galvanised coating repair:
 - Power clean to AS 1627.2
 - Solvent clean/ degrease to AS 1627.1
 - Apply tin/zinc to pre-heated steel overlapping the galvanising coating.

REPAIR OF EXPOSED REINFORCEMENT AND CONCRETE AROUND NEW PIPE PENETRATION IN EXISTING CONCRETE

- NP1. Exposed reinforcement and concrete repaired as follows:
 - Core holes on each corner of area to be cut.
 - Saw cut concrete, perpendicular to concrete surface, 15 mm deep around perimeter of the opening.
 - Breakout remaining concrete around the opening without damaging reinforcement.
 - Cut exposed reinforcement so that is 30 mm clear of the pipe.
 - Clean concrete surface and remove all loose material.
 - Abrasive blast clean exposed reinforcement. If it is corroded and apply "Nitoprime" zinc rich primer unless approved otherwise.
 - Thoroughly soak substrate with clean water for a minimum of two hours.
 - Place N12 circular trimmer on both sides of the pipe flange.
 - Install Hydrotite CJ-07-25 seal on pipe 50 mm from concrete surface unless approved otherwise.
 - Apply "Nitobond HAR" primer to concrete surface unless approved otherwise.
 - Pour concrete/grout under pressure to fill opening.
 - Fill concrete/grout to supplier requirements.

REPAIR OF EXPOSED REINFORCEMENT AND ANCHOR AT CONCRETE SURFACE

- ES1. All exposed reinforcement and mild steel anchored to be repaired as follows:
 - Saw cut or chisel cut concrete, perpendicular to concrete surface, 15 mm deep around reinforcement/anchor.
 - Breakout concrete around reinforcement/anchor to a depth of 60 mm.
 - Cut exposed reinforcement/anchor at a minimum depth of 50 mm from concrete surface.
 - Clean concrete surface and remove all loose material.
 - Abrasive blast clean exposed reinforcement/anchor. Apply "Nitoprime" Zinc rich primer to reinforcement/anchor unless approved otherwise.
 - Thoroughly soak substrate with clean water.
 - Apply "Nitobond HAR" primer to concrete unless approved otherwise.
 - Apply "Renderoc HB40" to fill opening unless approved otherwise.

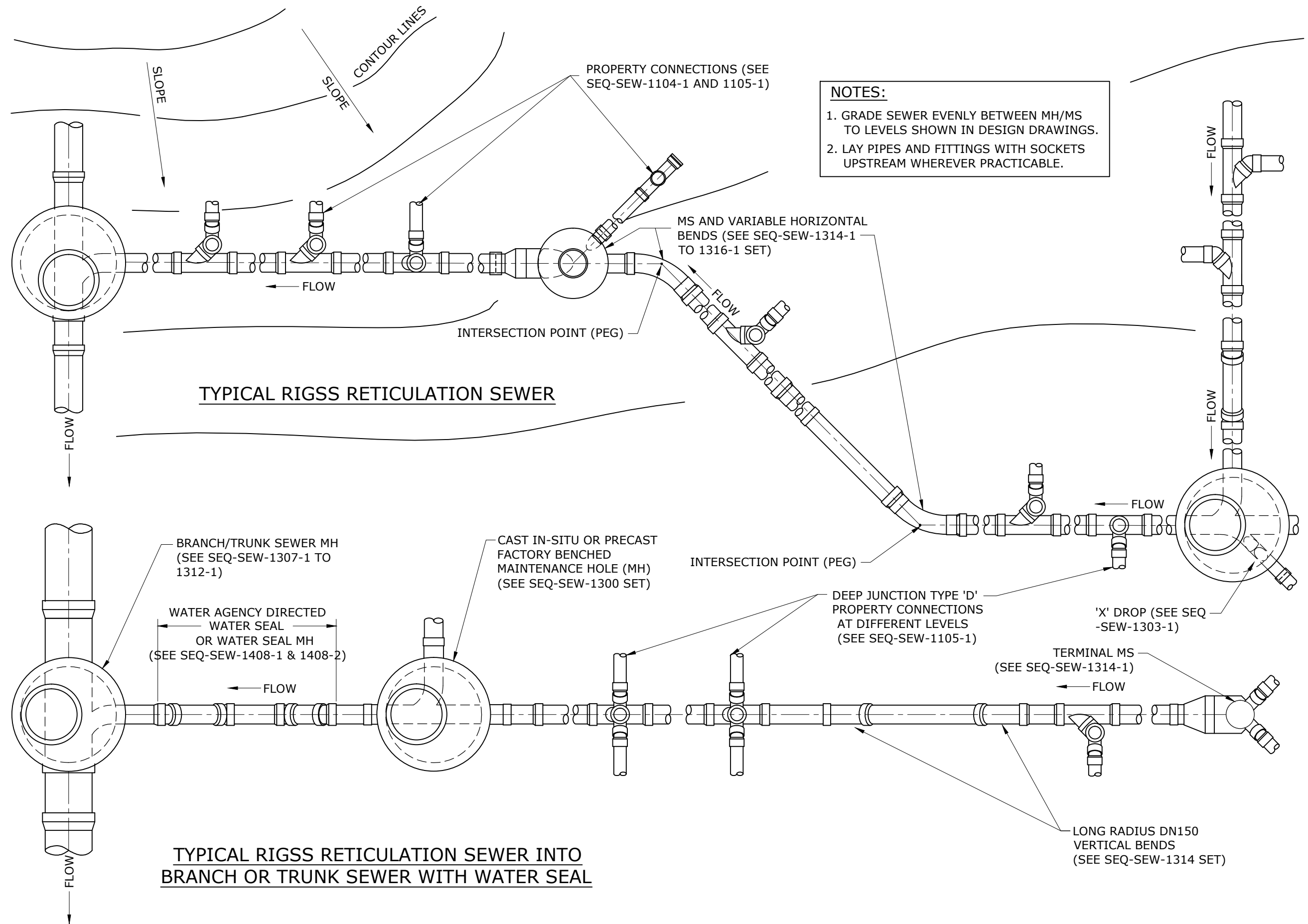
REV. No.	DATE	DESCRIPTION	AUTH.	SEQ WATER SERVICE PROVIDERS				SEWERAGE STANDARD DRAWING				CoG	LEC	REC	QUU	UW			
				SEQ WATER SERVICE PROVIDERS <small>WORK PRACTICES MUST COMPLY WITH ALL APPLICABLE OCCUPATIONAL HEALTH & SAFETY LEGISLATION</small>				MAINTENANCE HOLES NOTES SHEET 3 OF 3				DRAWING No.		SEQ-SEW-1101-6		VERSION		A	
												NOT TO SCALE				ORG DATE:		15/05/2019	

SERVICE PROVIDER AND CONSTRUCTOR LIVE SEWER WORKS - TYPICAL SCHEDULE

No.	DESCRIPTION (SOME WORKS LISTED ARE NOT SHOWN ON SEQ-SEW-1100-1 & 1100-2)	DIA. SEWER	EXISTING ASSET ID AT CONNECTION	MH/MS TYPE	COVER TYPE	LOT & PLAN NO.	F.S.L.	E.S.L.	CONNECTION I.L.	CONNECTION DEPTH TO INVERT	ALTERATION TO EXISTING MH BENCHING REQUIRED (Y/N)
1(A)	3m FROM EXISTING NETWORK, CONSTRUCTOR TO LAY NEW LINE 5. AFTER TESTING AND INSPECTING, NOTIFY AGENCY.*	150	1/1	P2	ⓑ		61.227	61.227		1.697	Y
1(B)	AGENCY TO 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	Y
2(B)	CONSTRUCTOR TO LAY NEW LINES 1 AND 4. AFTER CLEANSING, TESTING AND INSPECTING, NOTIFY AGENCY.	150 150	3/13 3/13	P2 P2	(LINE 1) (LINE 4) (NEW STUBS)		55.015 55.015	54.728 54.728	53.420 53.420	1.595 1.595	
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 53.420	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	N
3(B)	CONSTRUCTOR TO LAY LINE 5 AND INSTALL HOUSE CONNECTION.	150	1A/13	P2	ⓑ	LOT 7 SP2024	54.580	54.580	53.230	1.350	
3(C)	AGENCY TO REMOVE CROWN OF PIPE AND COMPLETE BENCHING AFTER SUCCESSFUL "ON MAINTENANCE" INSPECTION OF LINE 5.	150					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	Y
4(B)	CONSTRUCTOR TO LAY NEW LINE 8 AND 9. AFTER CLEANSING AND TESTING, NOTIFY AGENCY.	150 150	2 2	C2 C2	(LINE 8) (LINE 9)		58.913 58.913	58.913 58.913	57.493 57.493	1.420 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.	150 150	2 1/1	D1 D1	ⓑ ⓑ		58.913 61.227 55.750	58.913 61.227	57.293 59.530	1.620 1.697	Y
5(B)	CONSTRUCTOR TO REMOVE ABANDONED SEWER AND REINSTATE GROUND.										
6	AGENCY TO PROVIDE NEW HOUSE CONNECTION.	100				LOT 1 SP2024	55.750	55.750	54.450	1.300	N
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	N

*AGENCY MEANS GOLD COAST CITY COUNCIL OR LOGAN CITY COUNCIL OR REDLAND CITY COUNCIL OR QUEENSLAND URBAN UTILITIES OR UNITYWATER (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, REFER TO SEQ-SP CONNECTION POLICY FOR DETAILS.

REV. No.	DATE	DESCRIPTION	AUTH.	<p align="center">SEQ WATER SERVICE PROVIDERS</p> <p align="center"><small>WORK PRACTICES MUST COMPLY WITH ALL APPLICABLE OCCUPATIONAL HEALTH & SAFETY LEGISLATION</small></p>	SEWERAGE STANDARD DRAWING				CoGC	LCC	RCC	QUU	UW
					DESIGN LAYOUTS				DRAWING No.				VERSION
					CONNECTION TO EXISTING SEWER				SEQ-SEW-1102-1				C
C	15/02/19	AMENDED TABLE HEADINGS AND DESCRIPTION TEXT			TYPICAL SCHEDULE OF WORKS				NOT TO SCALE				ORG DATE: 1/1/2013
B	22/07/15	AMENDED AGENCY NOTES.											



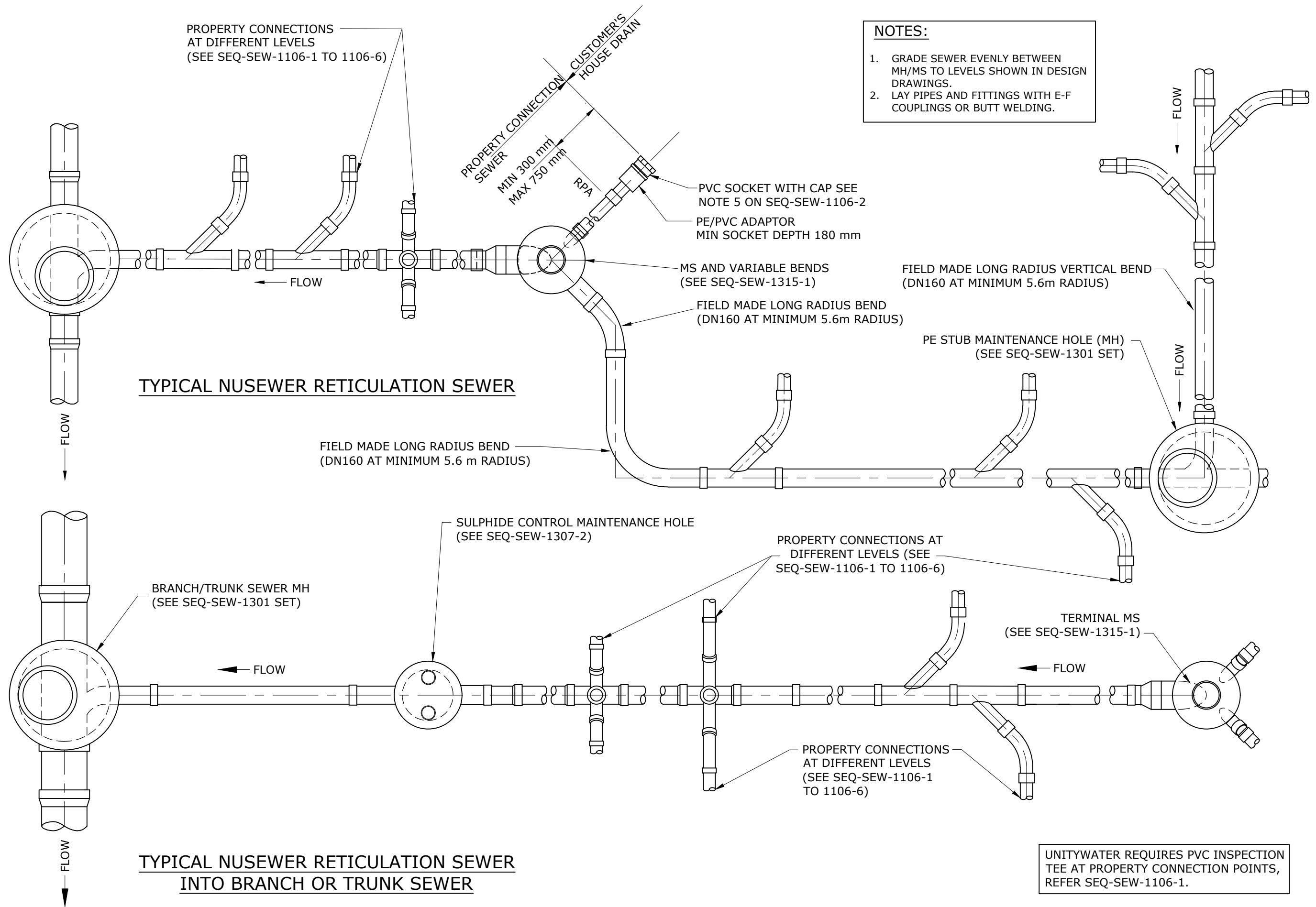
REV. No.	DATE	DESCRIPTION	AUTH.

SEQ WATER SERVICE PROVIDERS

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

SEWERAGE STANDARD DRAWING
RIGSS PIPELAYING
TYPICAL ARRANGEMENTS

GCCC	LCC	RCC	QUU	UW
DRAWING No.				VERSION
SEQ-SEW-1103-1				A
NOT TO SCALE				ORG DATE: 1/1/2013



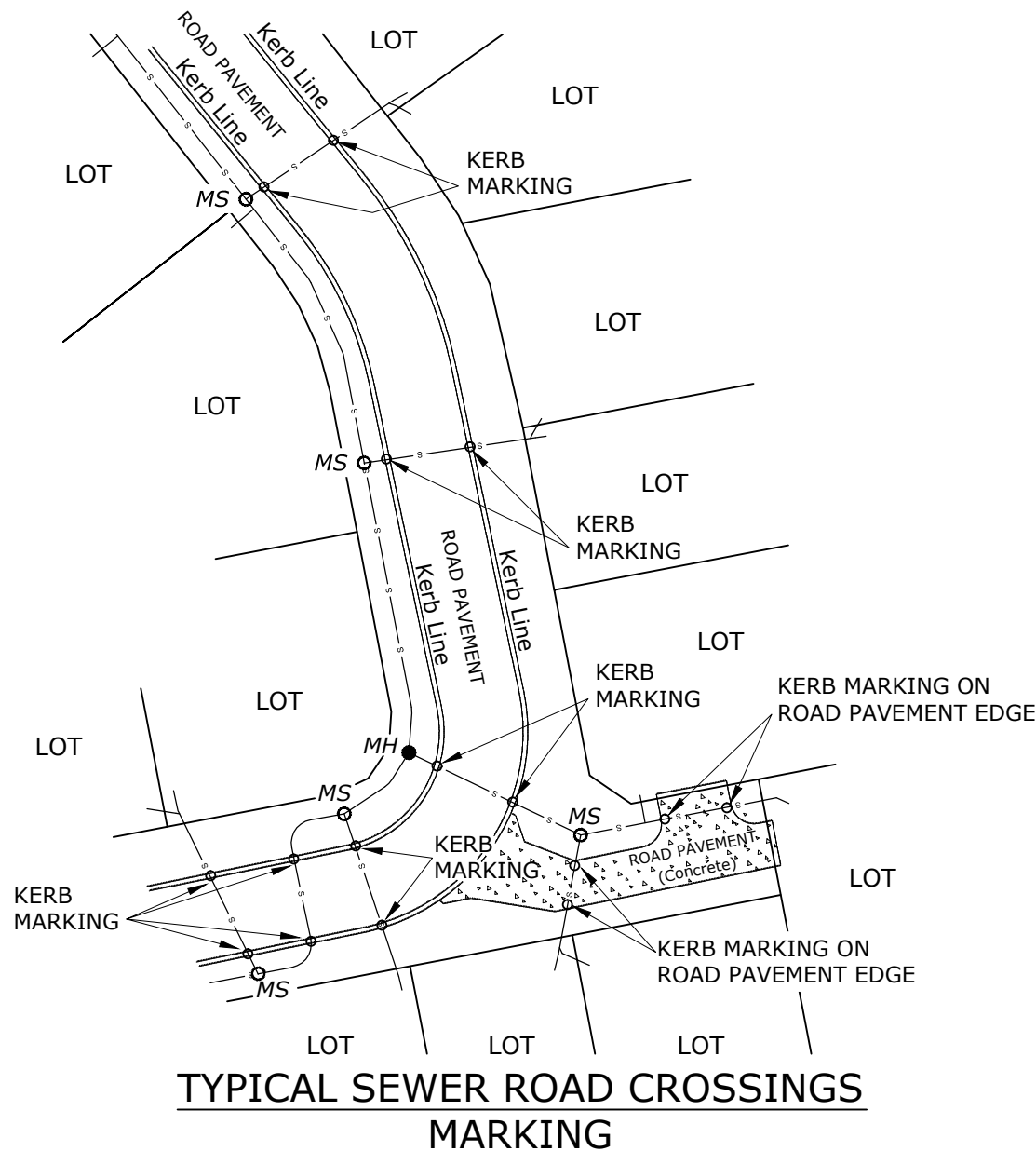
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B	25/06/15	REMOVE SEDIMENT TRAP.	

SEQ WATER SERVICE PROVIDERS

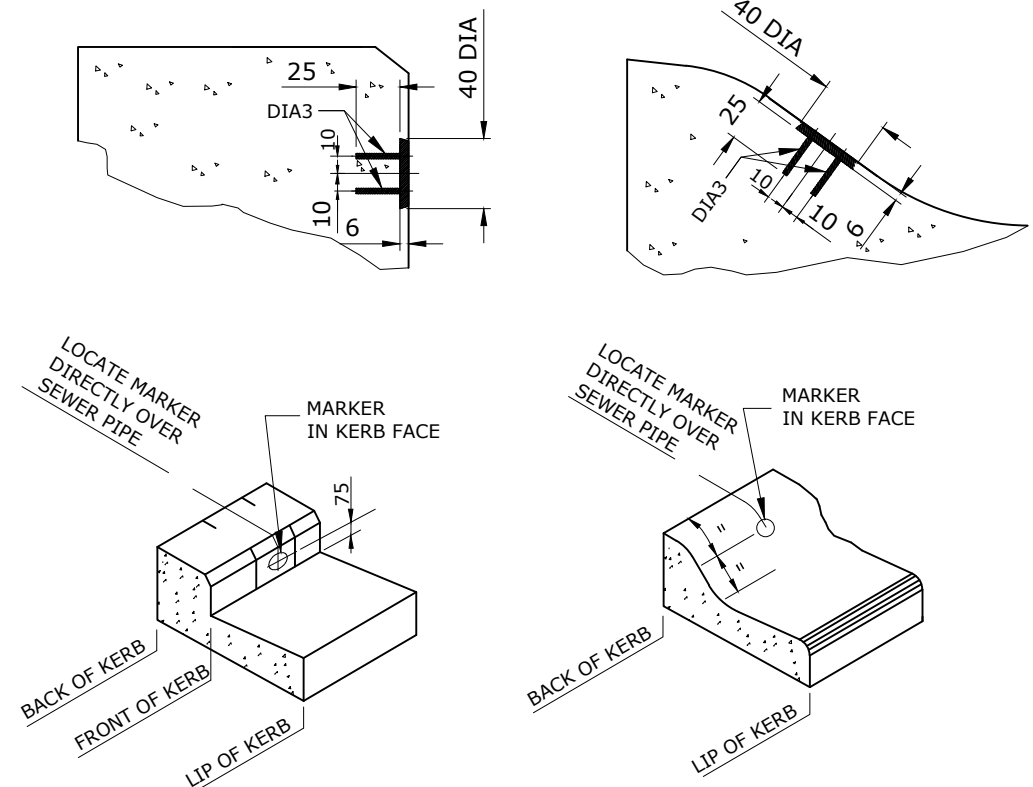
WORK PRACTICES MUST COMPLY WITH ALL APPLICABLE OCCUPATIONAL HEALTH & SAFETY LEGISLATION

SEWERAGE STANDARD DRAWING
NUSEWER PIPELAYING
TYPICAL ARRANGEMENTS

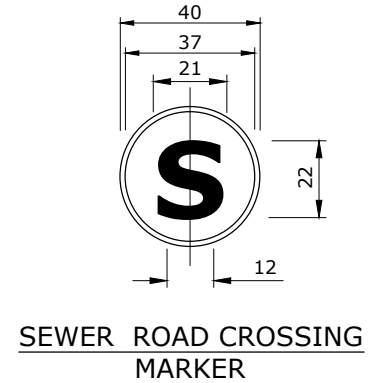
C&C	L&C	R&C	QUU	UW
DRAWING No.				VERSION
SEQ-SEW-1103-2				C
NOT TO SCALE			ORG DATE: 1/1/2013	



TYPICAL SEWER ROAD CROSSINGS MARKING

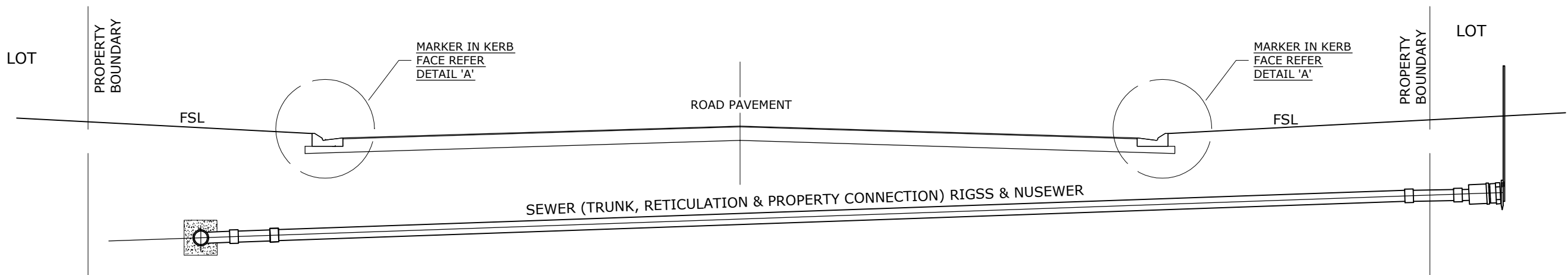


KERB MARKING DETAIL A



NOTES

1. ALL DIMENSIONS ARE IN MILLIMETRES.
2. KERB MARKERS SHALL BE LOCATED DIRECTLY OVER THE CENTRE-LINE OF THE SEWER.
3. REFER SEQ IPAM FOR APPROVED KERB MARKERS



TYPICAL SEWER ROAD CROSSING SECTION

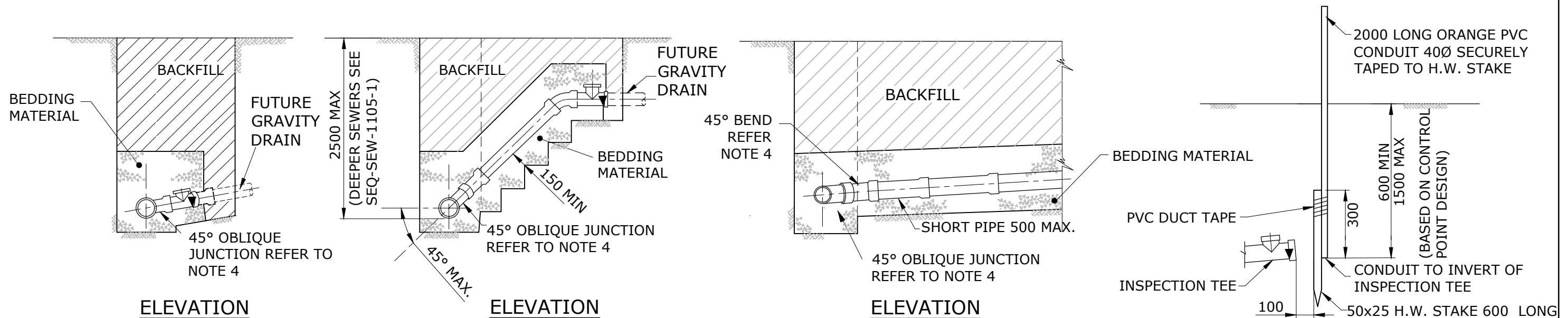
REV. No.	DATE	DESCRIPTION	AUTH.

SEQ WATER SERVICE PROVIDERS

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

SEWERAGE STANDARD DRAWING
SEWER ROAD CROSSINGS
KERB MARKING REQUIREMENTS

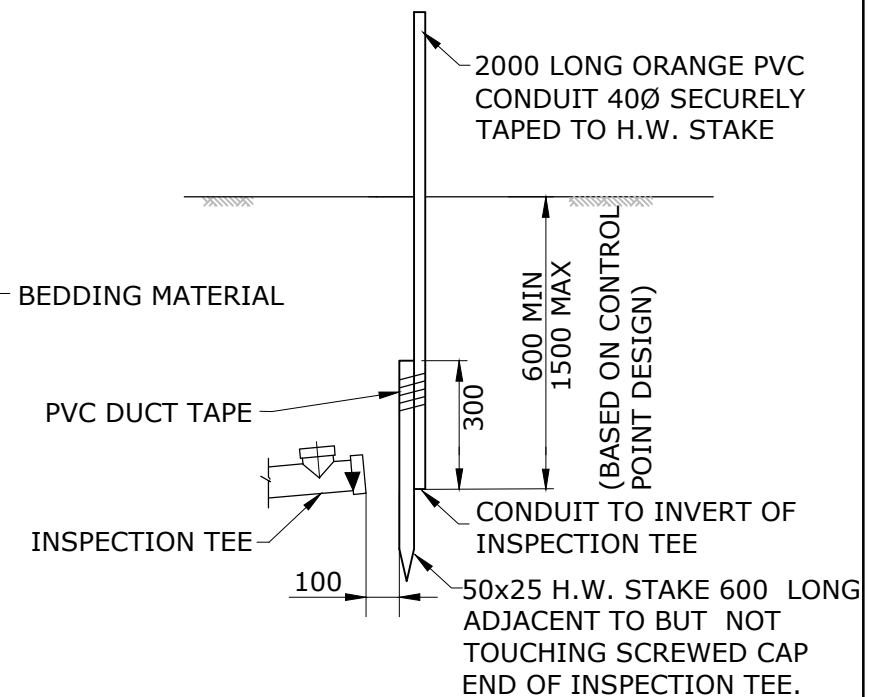
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SEQ-SEW-1103-3				A
NOT TO SCALE				ORG DATE: 20/05/2019



ELEVATION

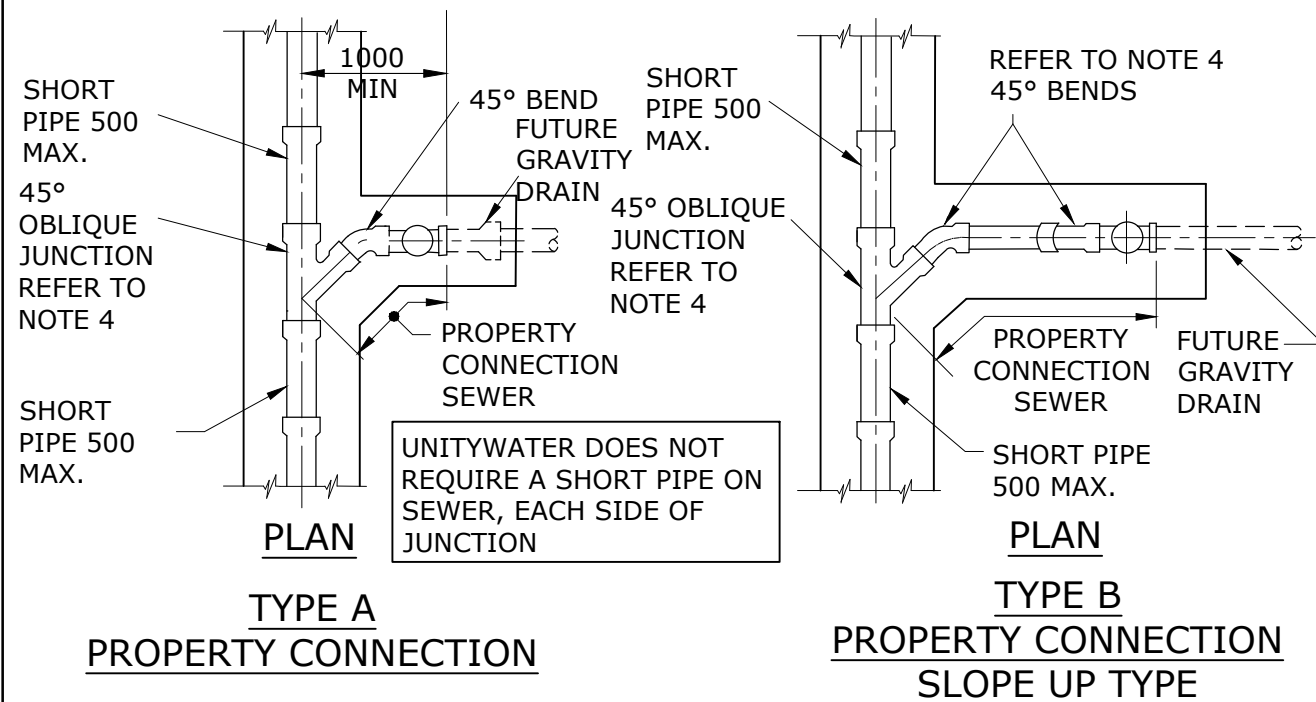
ELEVATION

ELEVATION



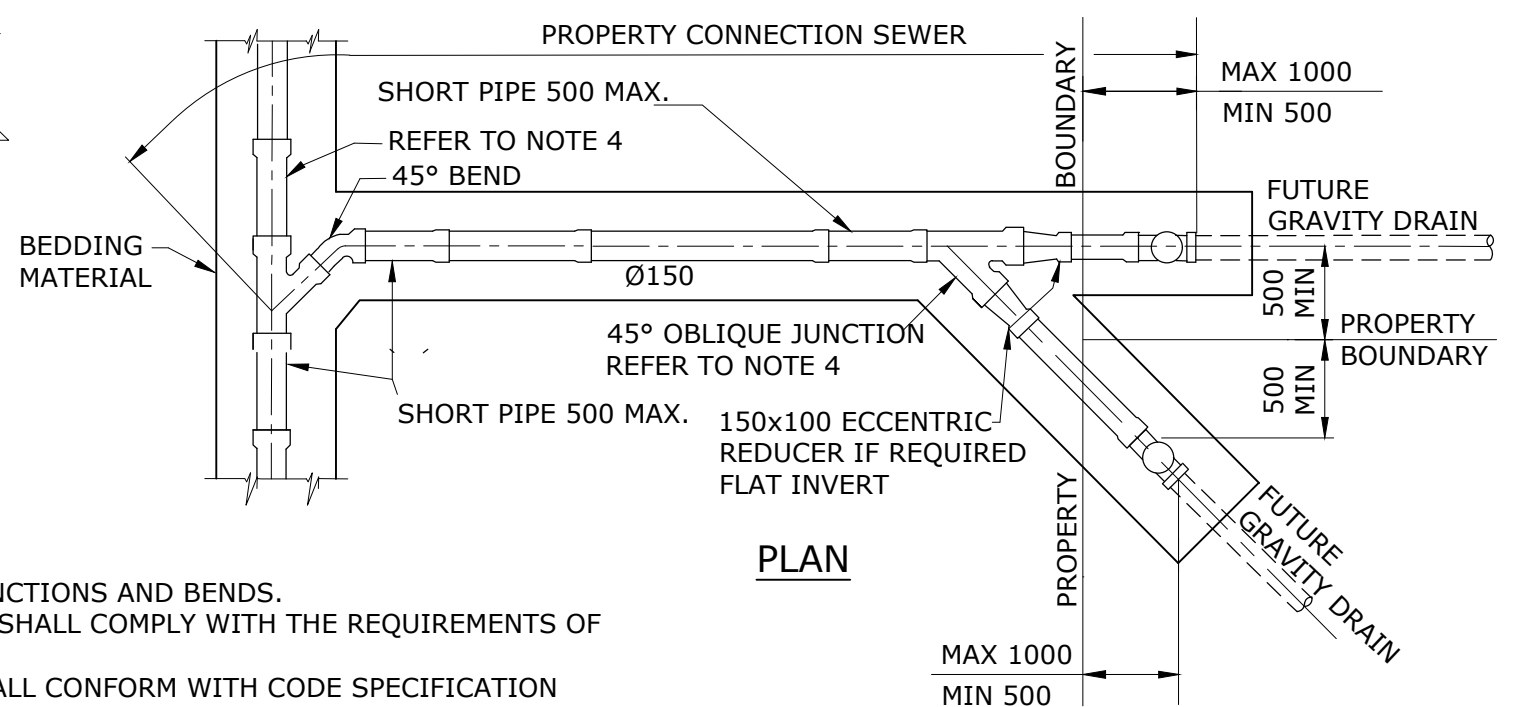
SP HOUSE CONNECTION INSPECTION TEE LOCATION MARKER ARRANGEMENT

CONNECTION POINT INVERT LEVEL, REFER SEQ-SEW-1100-2 AND SEQ-SEW-1101-2 FOR DESIGN FORMAT



TYPE A PROPERTY CONNECTION

TYPE B PROPERTY CONNECTION SLOPE UP TYPE



DUAL PROPERTY CONNECTION TYPE A SHOWN

FOR ROAD CROSSING REFER TO NOTE 3

NOTES:

- ALL PROPERTY CONNECTION SEWERS SHALL HAVE A MINIMUM GRADE OF 1 IN 60 FOR Ø100 AND 1 IN 100 FOR Ø150.
- LIMIT OF WORKS - ALL PROPERTY CONNECTION SEWERS SHALL FINISH WITH AN INSPECTION TEE WITH THE END AND INSPECTION OPENING SCREW CAPPED. INSPECTION TEE INSTALLED TO THE INVERT LEVEL SHOWN ON THE DRAWINGS.
- ALL PROPERTY CONNECTION SEWERS CROSSING ROADS SHALL CONNECT INTO MAINTENANCE STRUCTURES.
- ALL PROPERTY CONNECTION SEWER FITTINGS SUCH AS MOULDED OBLIQUE JUNCTIONS AND BENDS, SHALL BE FIBREGLASS REINFORCED AS DETAILED FOR THE TYPE 'D' JUNCTION WITHIN STD DRG SEQ-SEW-1105-1 OR MAY BE APPROVED G.R.P JUNCTIONS AND BENDS.
- BEDDING MATERIAL SHALL COMPLY WITH THE REQUIREMENTS OF THE SPECIFICATION.
- ALL PIPE JOINTS SHALL CONFORM WITH CODE SPECIFICATION AND THE MANUFACTURERS RECOMMENDATIONS.
- FOR RESPONSIBILITY LIMITS OF CONSTRUCTED WORKS, REFER STD DRG SEQ-SEW-1105-1.
- DIMENSIONS ARE IN MILLIMETRES UNLESS SHOWN OTHERWISE.
- FOR RCC, PROVIDE AT LEAST ONE MAINTENANCE SHAFT ON THE PROPERTY CONNECTION SEWER IF IT TRAVERSES A LOT OTHER THAN THE LOT IT IS SERVICING FOR MORE THAN 10 METRES.

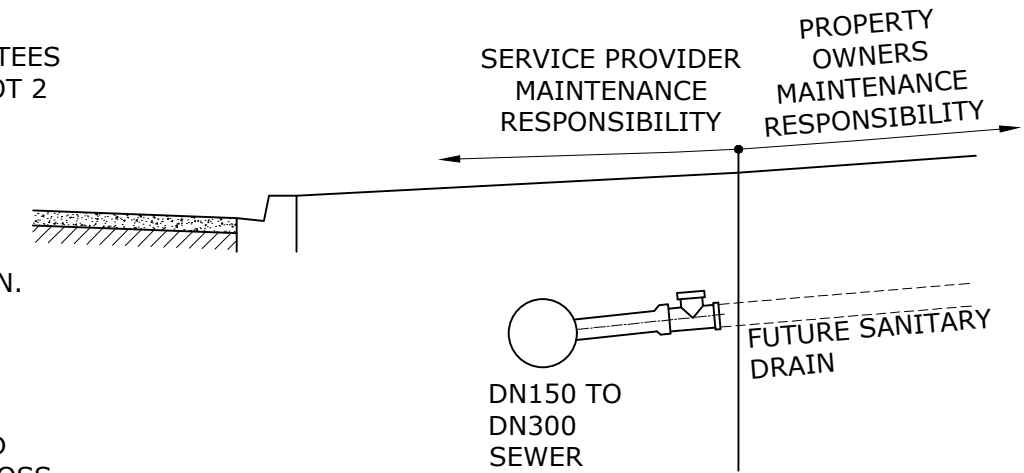
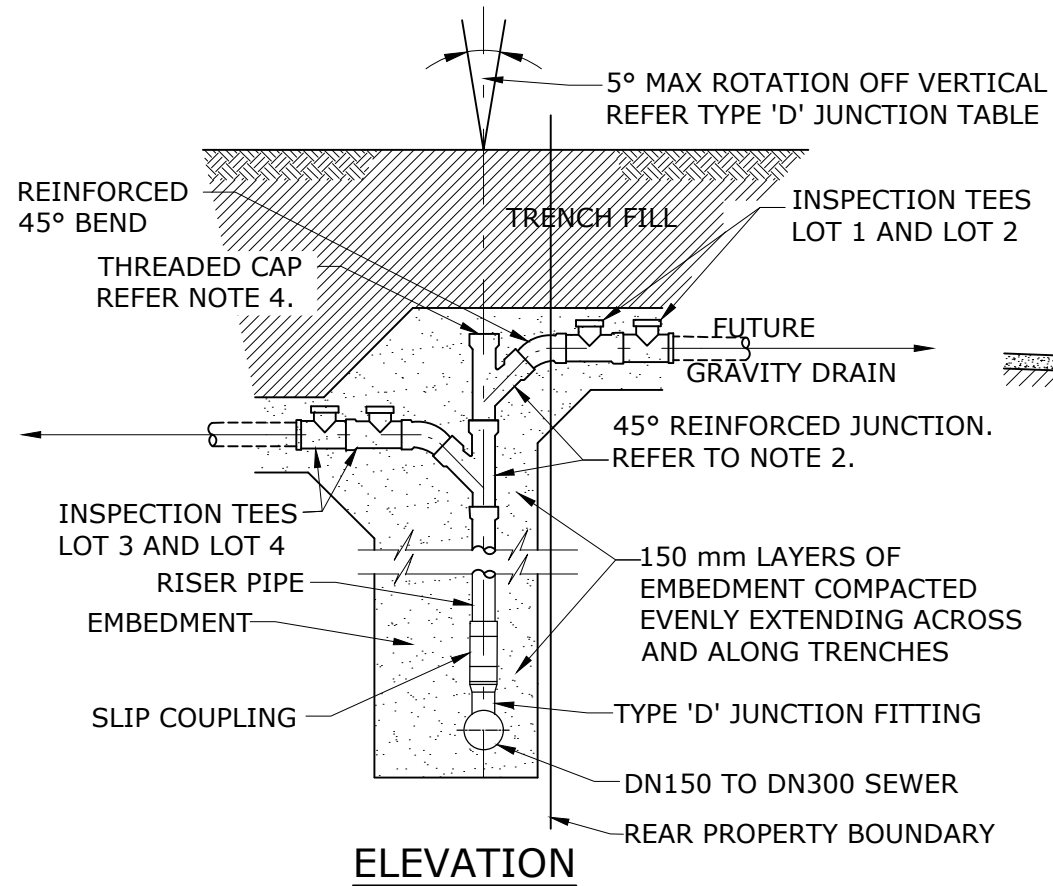
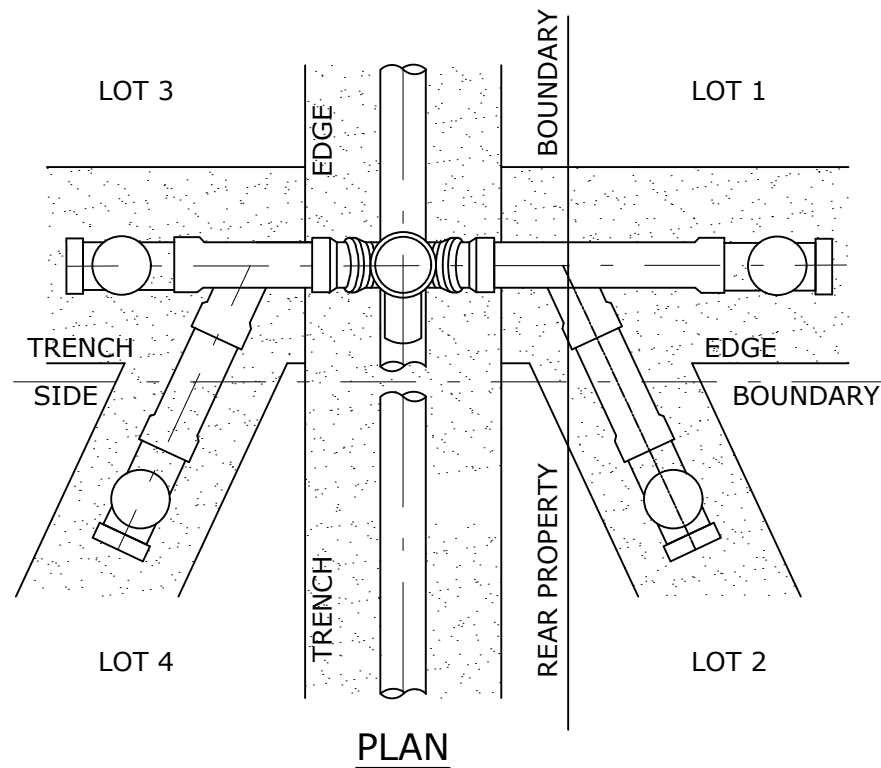
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C	04/02/19	ECCENTRIC REDUCER, NOTE 3, REMOVED UW VARIATION. MINOR CHANGES	
B	21/07/15	AMENDED LABELS AND NOTE 3	

SEQ WATER SERVICE PROVIDERS

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

SEWERAGE STANDARD DRAWING
PROPERTY CONNECTION SEWER
TYPICAL CONSTRUCTION DETAILS
RIGSS - SHEET 1

CoGC	LCC	RCC	QUU	UW
DRAWING No.				VERSION
SEQ-SEW-1104-1				C
NOT TO SCALE				ORG DATE: 1/1/2013

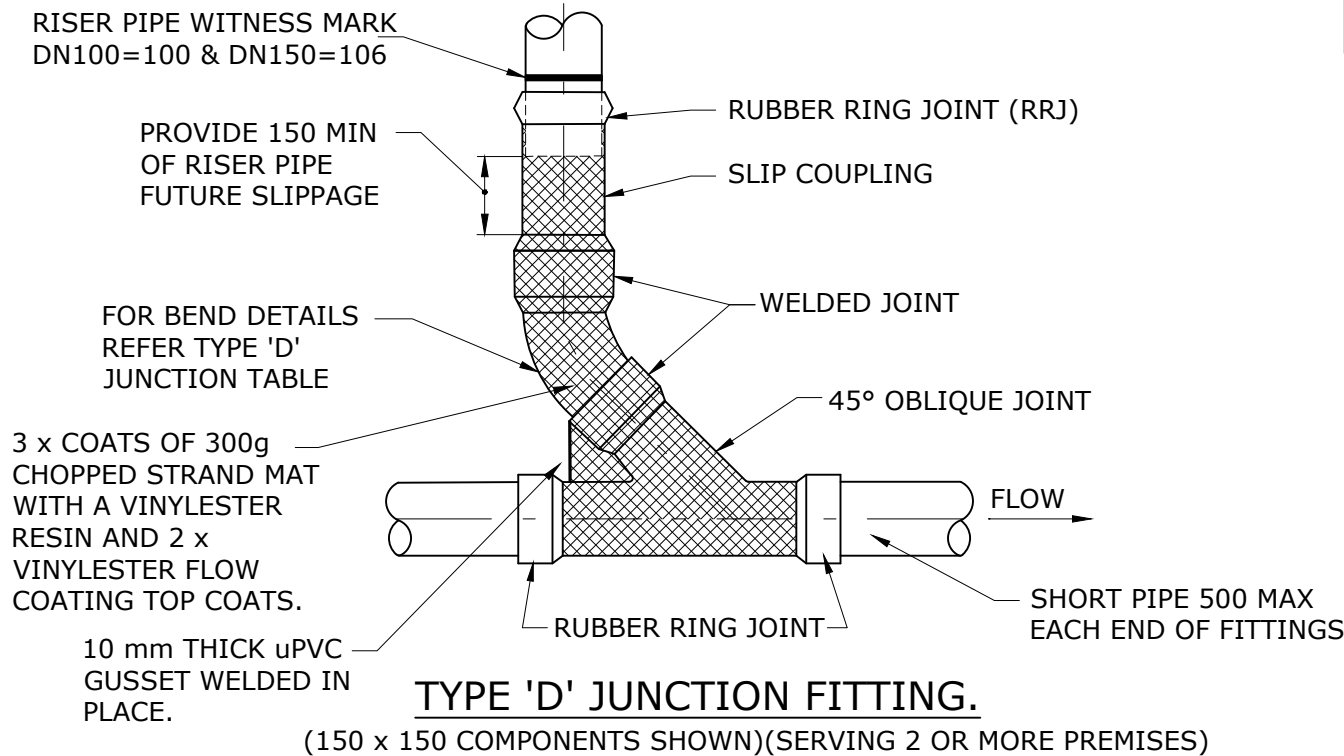


TYPICAL CONNECTION MAINTENANCE RESPONSIBILITY
(TYPE A SHOWN)

TYPE D PROPERTY CONNECTION
(MINIMUM OF 1 MAXIMUM OF 4)

TYPE D JUNCTIONS USED FOR SEWERS DEEPER THAN 2500

TYPE 'D' JUNCTION TABLE		
OPTIONS	BEND	SEWER GRADE
D-1	45°	1:150 TO 1:20
D-2	40°	1:20 TO 1:10
D-3	35°	1:10 TO 1:6
D-4	AS REQUIRED	1:5 TO 1:1



NOTES:

- BEDDING MATERIAL AND GENERAL COMPONENTRY SHALL COMPLY WITH THE REQUIREMENTS OF THE CODE SPECIFICATION AND ANY ADDENDUMS.
- TYPE "D" JUNCTION FITTINGS SHALL BE FACTORY ASSEMBLED AND CERTIFIED uPVC SEWER FITTINGS COMPLYING WITH AS/NZS 1260 THAT HAVE BEEN ASSEMBLED AND REINFORCED WITH FIBREGLASS AS SHOWN IN THE DRAWING. OBLIQUE JUNCTIONS AND 45° BENDS SHALL BE REINFORCED WITH FIBREGLASS AS SHOWN FOR A TYPE D JUNCTION OR MAY BE APPROVED G.R.P JUNCTIONS AND BENDS.
- THE SLIP COUPLING COMPONENT OF TYPE "D" JUNCTION FITTING SHALL BE MARKED TO IDENTIFY THE INSTALLATION REQUIREMENTS OF THE FITTING AND THE VERTICAL RISER PIPE, SEE TABLE ABOVE.
- THREADED LOCK DOWN QUICK RELEASE END CAPS SHALL BE SEALED BY A RUBBER RING, SCREW DOWN CAPS THAT UTILISE STAINLESS STEEL SCREWS ARE NOT PERMITTED.
- FOR TYPICAL INSTALLATION DETAILS OF PROPERTY CONNECTION OPTIONS AND THE INSPECTION TEES AND FOR THE CONNECTION POINT DEPTH CONTROL, REFER SEQ-SEW-1104-1.
- DIMENSIONS ARE IN MILLIMETRES UNLESS SHOWN OTHERWISE.

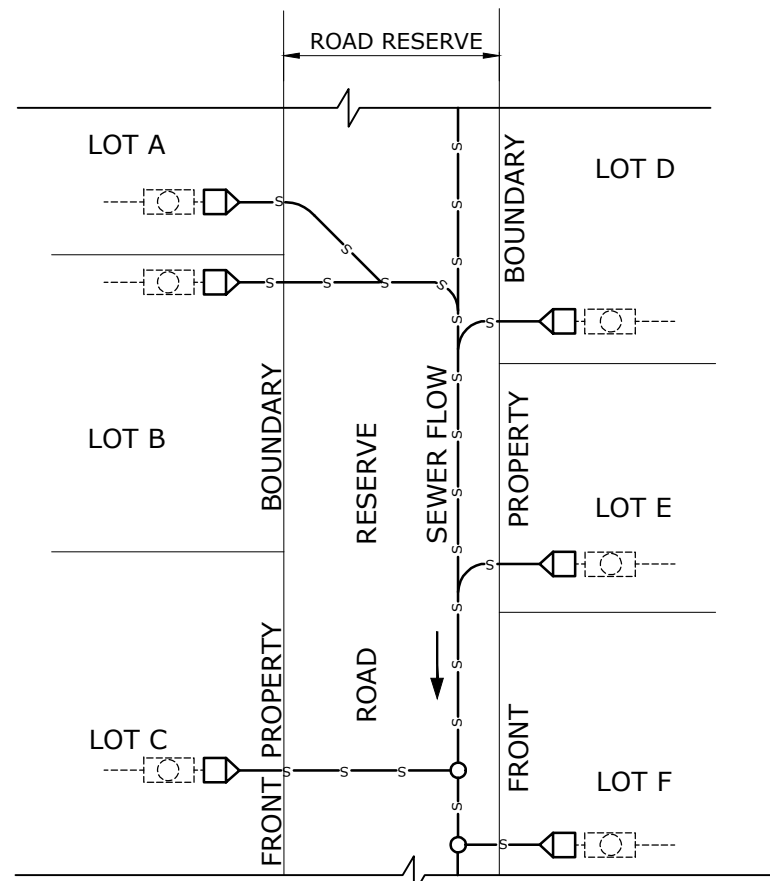
REV. No.	DATE	DESCRIPTION	AUTH.
C	02/01/19	DRAWING TITLE, REMOVED UW BOXED NOTE, MINOR CHANGES	
B	19/06/15	MAINTENANCE RESPONSIBILITY DETAIL AMENDED.	

SEQ WATER SERVICE PROVIDERS

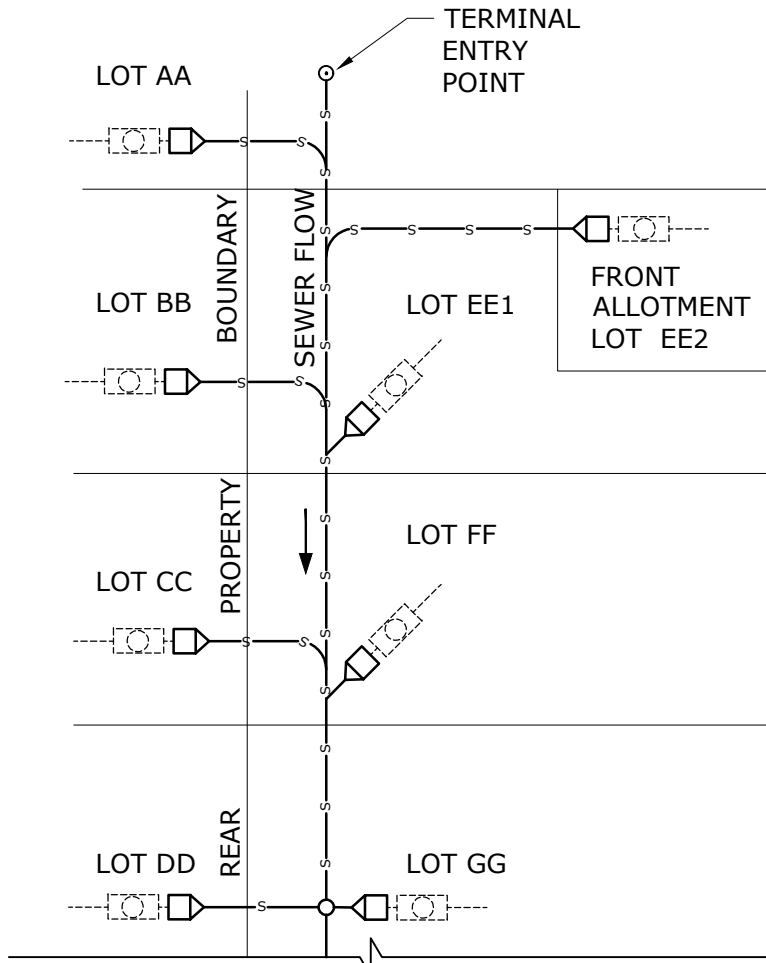
WORK PRACTICES MUST COMPLY WITH ALL APPLICABLE OCCUPATIONAL HEALTH & SAFETY LEGISLATION

SEWERAGE STANDARD DRAWING
PROPERTY CONNECTION SEWER
TYPICAL CONSTRUCTION DETAILS
RIGSS - SHEET 2

CoGC	LCC	RCC	QUU	UW
DRAWING No.				VERSION
SEQ-SEW-1105-1				C
NOT TO SCALE				ORG DATE: 1/1/2013






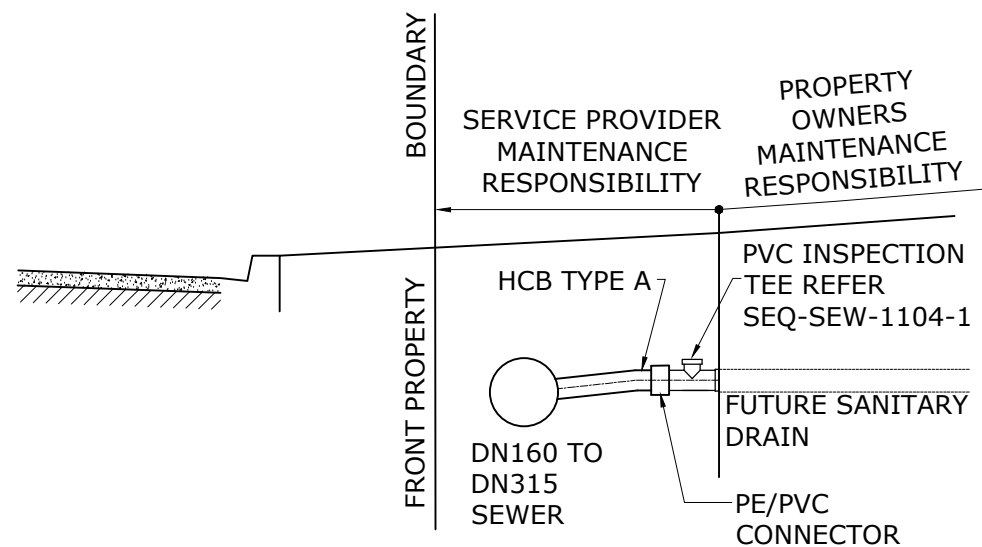
**PROPERTY CONNECTIONS
SEWER IN ROAD RESERVE**



**PROPERTY CONNECTIONS
SEWER AT REAR OF LOTS**

LEGEND

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



**UNITYWATER TYPICAL CONNECTION
MAINTENANCE RESPONSIBILITY**

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 1.2 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 INTO THE PROPERTY A MINIMUM OF 300 mm AND A MAXIMUM OF 750 mm. UNITYWATER REQUIRES MINIMUM EXTENSION OF 500 mm INTO PROPERTY.
6. PROPERTY CONNECTION BRANCHES OF DN110 SHALL BE GRADED AT A MIN OF 1 IN 60. FOR DN160 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 SEQ-SEW-1106-2 TO SEQ-SEW-1106-6 FOR PROPERTY CONNECTION DETAILS.
11. UNITYWATER REQUIRES INSTALLATION OF A FIBREGLASS REINFORCED uPVC INSPECTION TEE AT ALL PROPERTY CONNECTION POINTS DOWNSTREAM OF CUSTOMER DRAINS, REFER SEQ-SEW-1104-1 NOTE 2.

REV. No.	DATE	DESCRIPTION	AUTH.
C	12/02/19	DWG REFS AMENDED, NOTE 11 AND UNITYWATER DETAIL ADDED	
B	19/06/15	REMOVE SEDIMENT TRAPS. MINOR CHANGES TO NOTES.	

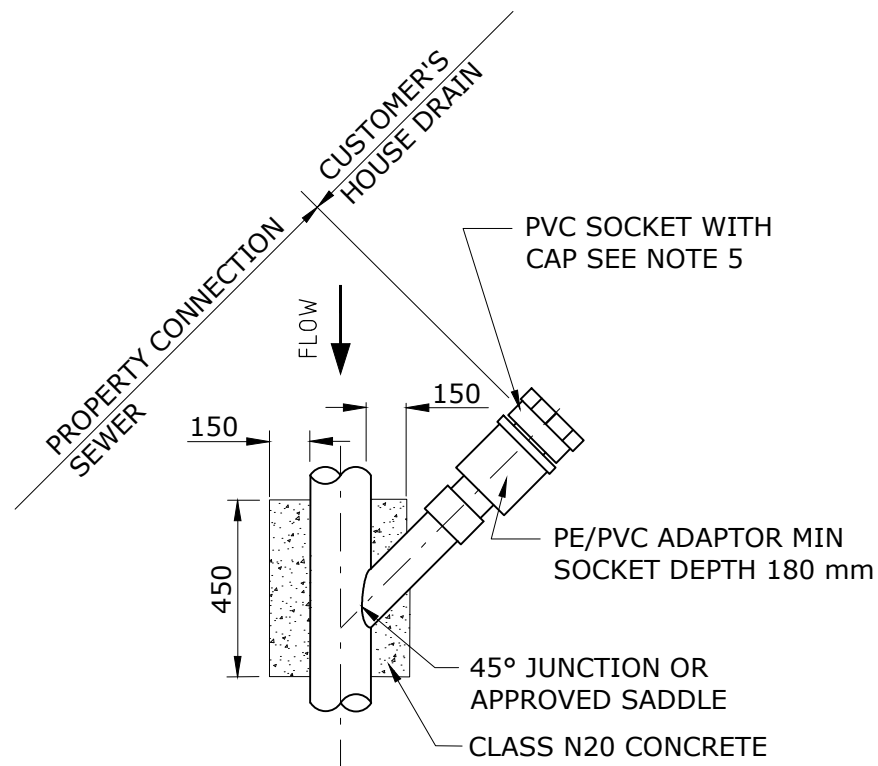
**SEQ WATER
SERVICE PROVIDERS**

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

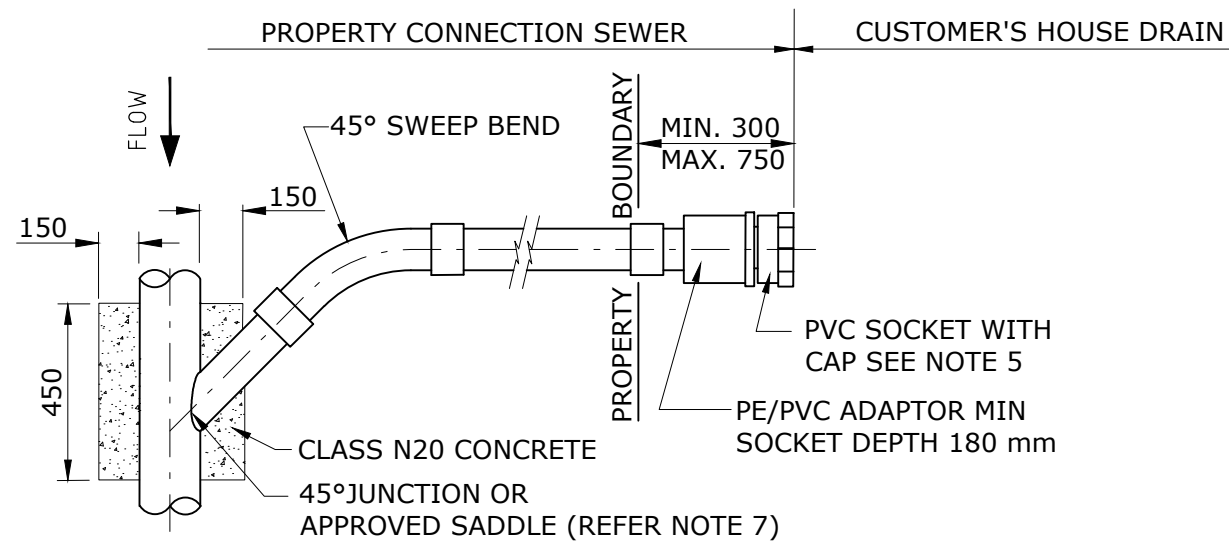
SEWERAGE STANDARD DRAWING

PE NUSEWERS
PROPERTY CONNECTIONS
TYPICAL LAYOUT

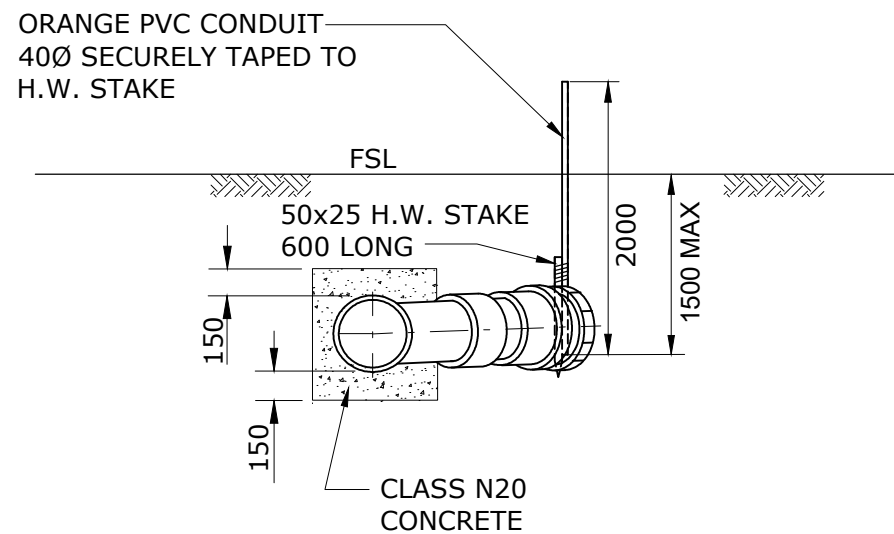
CoC	L&C	R&C	QUU	UW
DRAWING No.				VERSION
SEQ-SEW-1106-1				C
NOT TO SCALE				ORG DATE: 1/1/2013



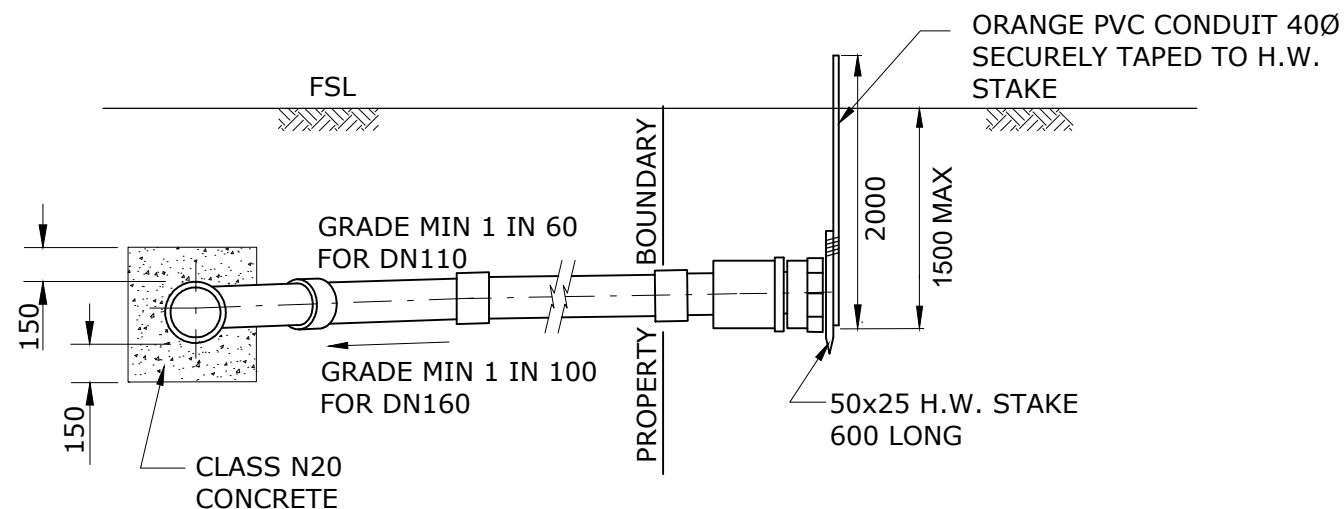
PLAN - TYPE A1



PLAN - TYPE A2



ELEVATION - TYPE A1



ELEVATION - TYPE A2

UNITYWATER REQUIRES INSPECTION TEE AT PROPERTY CONNECTION POINTS, REFER SEQ-SEW-1106-1 NOTE 11

NOTES

1. ALL PROPERTY CONNECTION SEWERS SHALL HAVE A PE/PVC ADAPTOR.
2. ORANGE PVC CONDUIT AND HARDWOOD STAKE SHALL BE INSTALLED AT THE END OF EACH PROPERTY CONNECTION AS SHOWN.
3. PROVIDE MIN150 CONCRETE CLASS N20 SURROUND TO JUNCTIONS WHERE SHOWN ON DRAWINGS. THE CONCRETE SURROUND SHALL BE MIN 450 IN LENGTH OR TO SUIT THE JUNCTION LENGTH
4. FOR MORE NOTES REFER DRAWING SEQ-SEW-1106-1.
5. A PVC SOCKET WITH RUBBER SEALED SCREWED CAP IS REQUIRED BEFORE HOUSE DRAIN PLUMBING IS CONNECTED INTO THE PE/PVC ADAPTOR.
6. FOR RADIUS OF A SWEEP BEND REFER TO CLAUSE 4.3.7 OF SEWERAGE CODE.
7. AN 88° SWEEP JUNCTION MAY BE USED IN LIEU OF A 45° JUNCTION AND 45° SWEEP BEND.

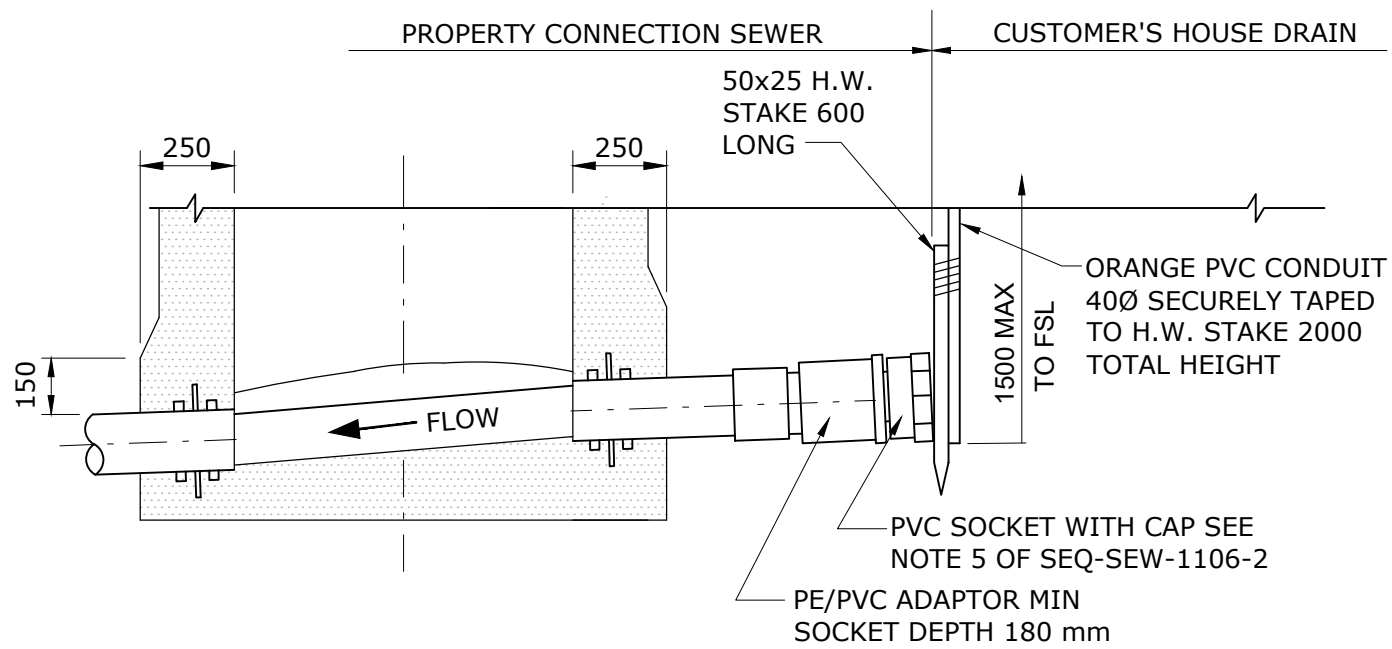
REV. No.	DATE	DESCRIPTION	AUTH.
C	11/04/18	BOXED NOTE ADDED FOR UNITYWATER	
B	19/06/15	REMOVE SEDIMENT TRAPS. MINOR CHANGES TO NOTES.	

SEQ WATER SERVICE PROVIDERS

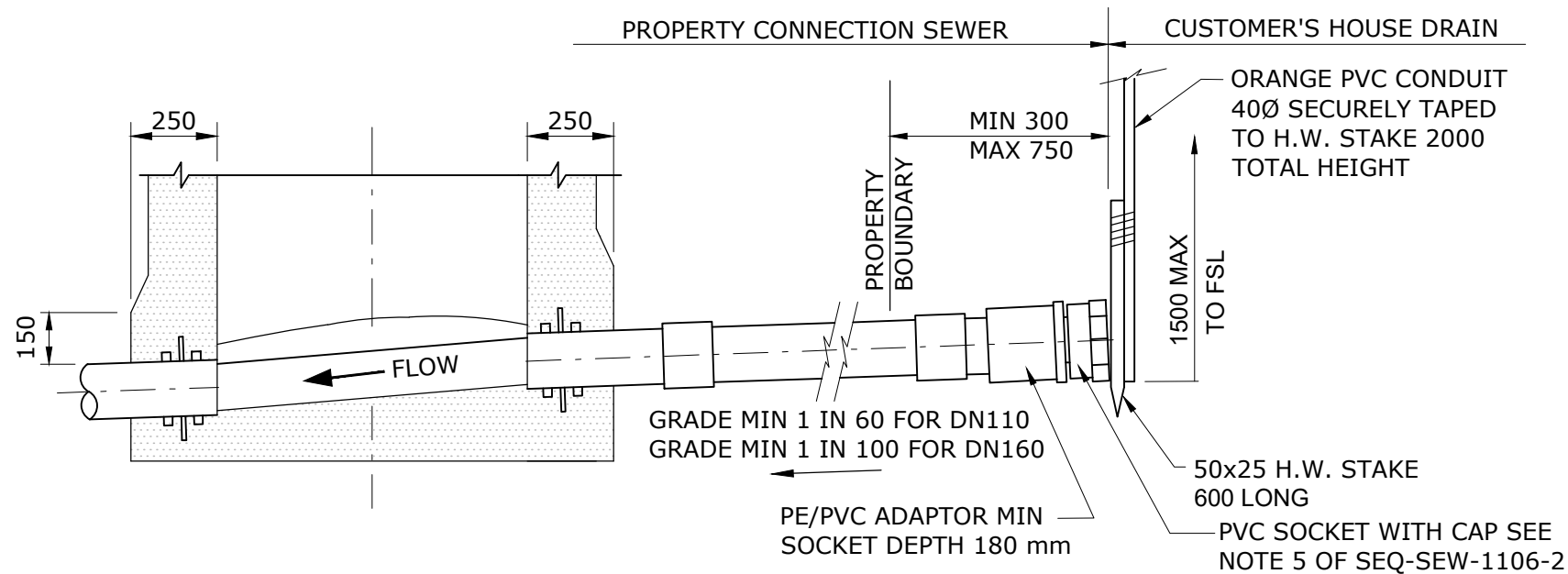
WORK PRACTICES MUST COMPLY WITH ALL APPLICABLE OCCUPATIONAL HEALTH & SAFETY LEGISLATION

SEWERAGE STANDARD DRAWING
PE NUSEWERS
TYPICAL PROPERTY CONNECTION
TYPE A1, A2 STANDARD AND EXTENDED

CoGC	LEC	RCC	QUU	UW
DRAWING No.				VERSION
SEQ-SEW-1106-2				C
NOT TO SCALE				ORG DATE: 1/1/2013



ELEVATION - TYPE A3



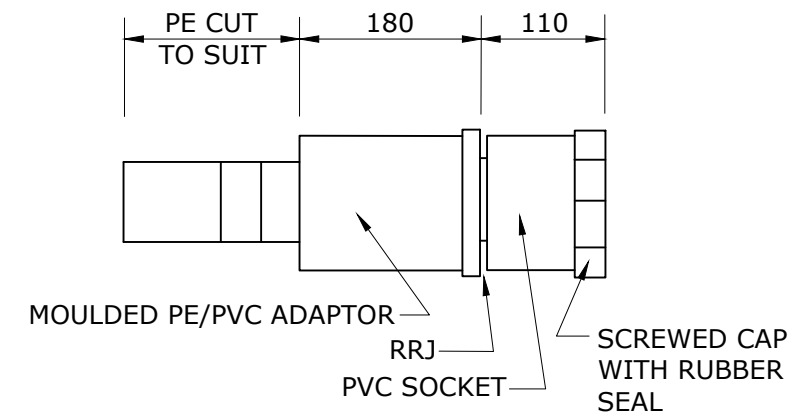
ELEVATION - TYPE A4

PROPERTY CONNECTION TABLE

	1	2	3**	4**
TYPE A FULL DEPTH SEWER DEPTH <1500				

* PB STANDS FOR PROPERTY BOUNDARY.

** THIS DRAWING SHALL BE USED IN CONJUNCTION WITH SEQ-SEW-1301-2 & 4 AND SEQ-SEW-1315-1 FOR TYPES A3 & A4.



**PE/PVC ADAPTOR AND
PVC SOCKET WITH CAP**

NOTES

1. REFER DWG No SEQ-SEW-1106-1 & 2 FOR NOTES.

UNITY WATER REQUIRES
INSPECTION TEE AT PROPERTY
CONNECTION POINTS,
REFER SEQ-SEW-1106-1 NOTE 11

REV. No.	DATE	DESCRIPTION	AUTH.
C	11/04/18	REF AMENDED IN BOXED NOTE	
B	19/06/15	REMOVE SEDIMENT TRAPS. MINOR CHANGES TO NOTES.	

**SEQ WATER
SERVICE PROVIDERS**

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

SEWERAGE STANDARD DRAWING

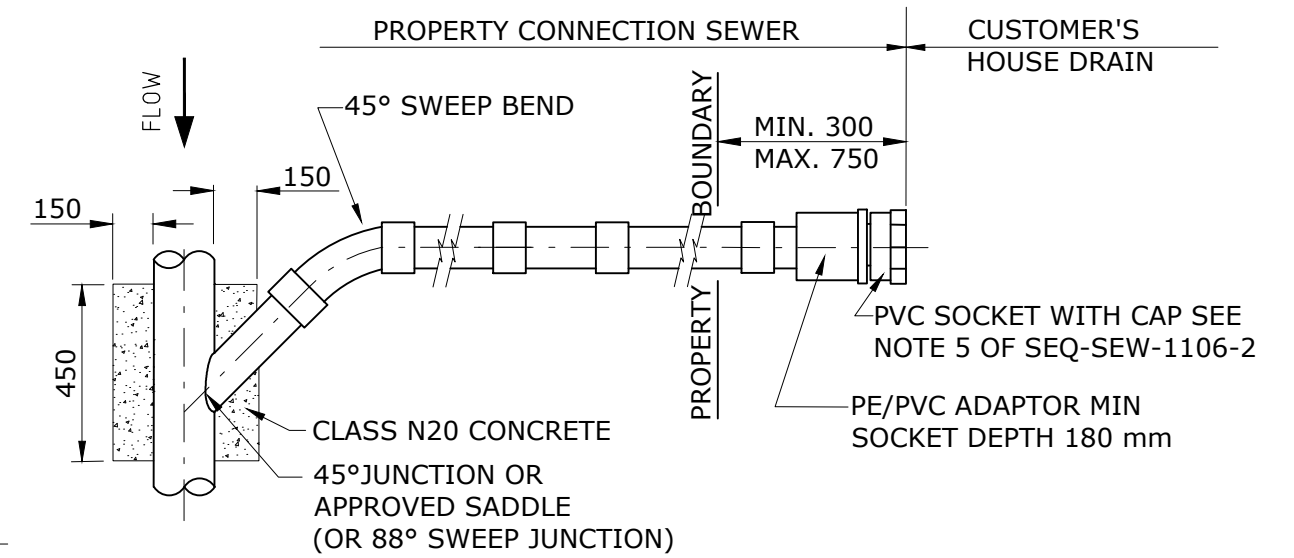
PE NUSEWERS
TYPICAL PROPERTY CONNECTION
TYPE A3, A4 STANDARD AND EXTENDED

CoGC	LCC	RCC	QUU	UW
DRAWING No.				VERSION
SEQ-SEW-1106-3				C
NOT TO SCALE				ORG DATE: 1/1/2013

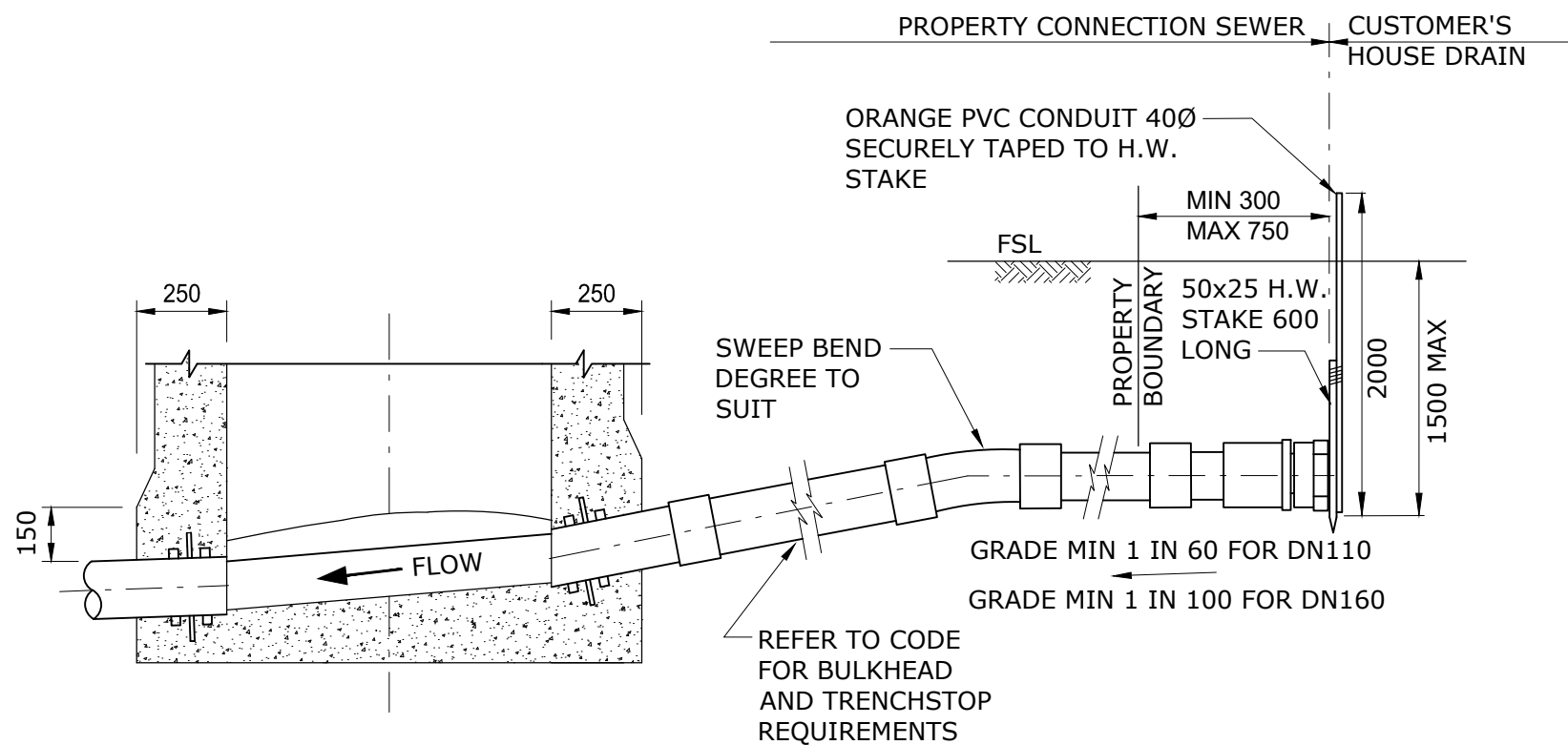
PROPERTY CONNECTION TABLE

	1**	2**	3***	4***
TYPE B SLOPED CONNECTION SEWER DEPTH > 1500				

- * PB STANDS FOR PROPERTY BOUNDARY.
- ** TYPES B1 & B2 MAY ONLY BE USED FOR SEWER DEPTHS UP TO 3 METRES.
- *** THIS DRAWING SHALL BE USED IN CONJUNCTION WITH SEQ-SEW-1301-2 & 4 AND SEQ-SEW-1315-1 FOR TYPES B3 & B4.

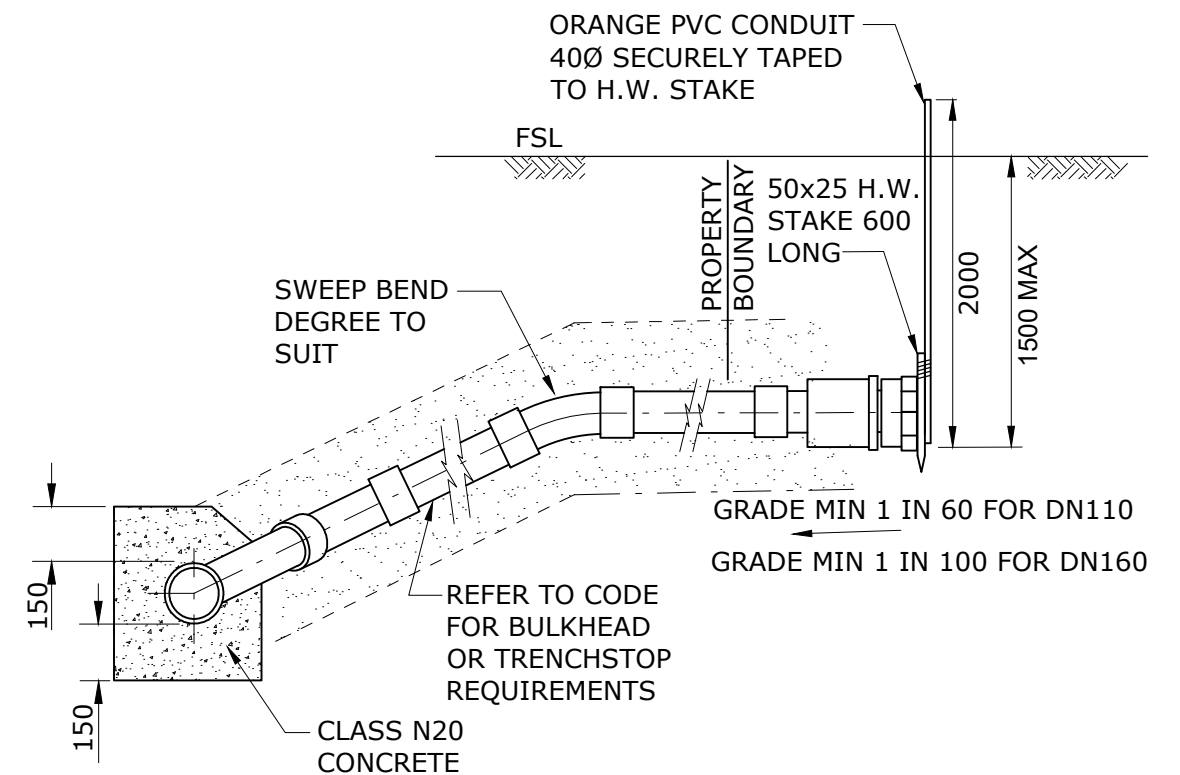


PLAN - TYPE B2
(B1 SIMILAR)



ELEVATION - TYPE B4
(B3 SIMILAR)

UNITYWATER REQUIRES INSPECTION TEE AT PROPERTY CONNECTION POINTS, REFER SEQ-SEW-1106-1 NOTE 11



ELEVATION - TYPE B2
(B1 SIMILAR)

NOTES

1. REFER DRAWING No. SEQ-SEW-1106-1 & 2 FOR NOTES.

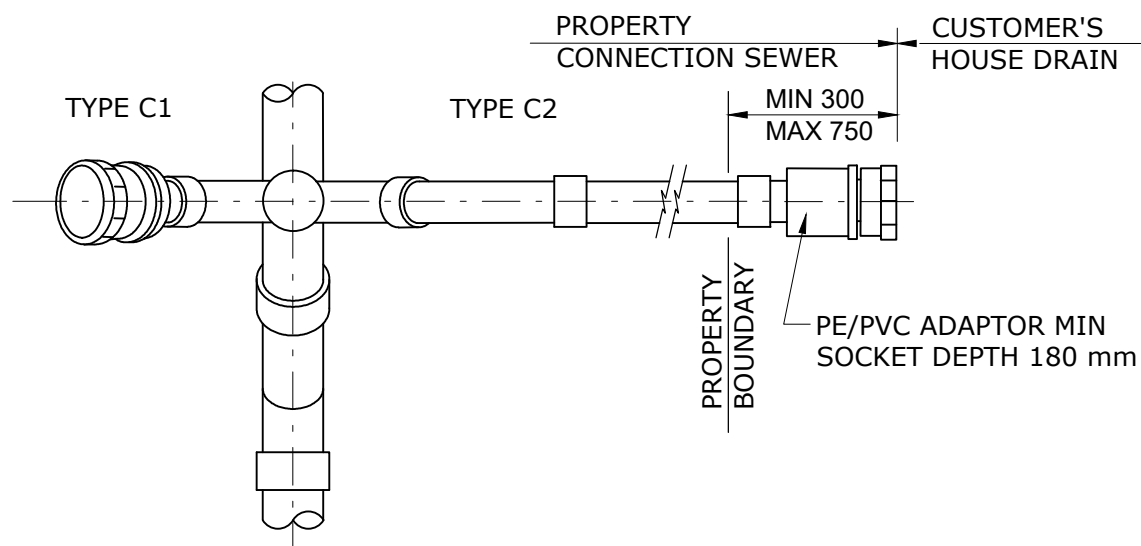
REV. No.	DATE	DESCRIPTION	AUTH.
C	11/04/18	UW BOXED NOTE ADDED	
B	19/06/15	REMOVE SEDIMENT TRAPS. CHANGES TO NOTES & TABLE.	

SEQ WATER
SERVICE PROVIDERS

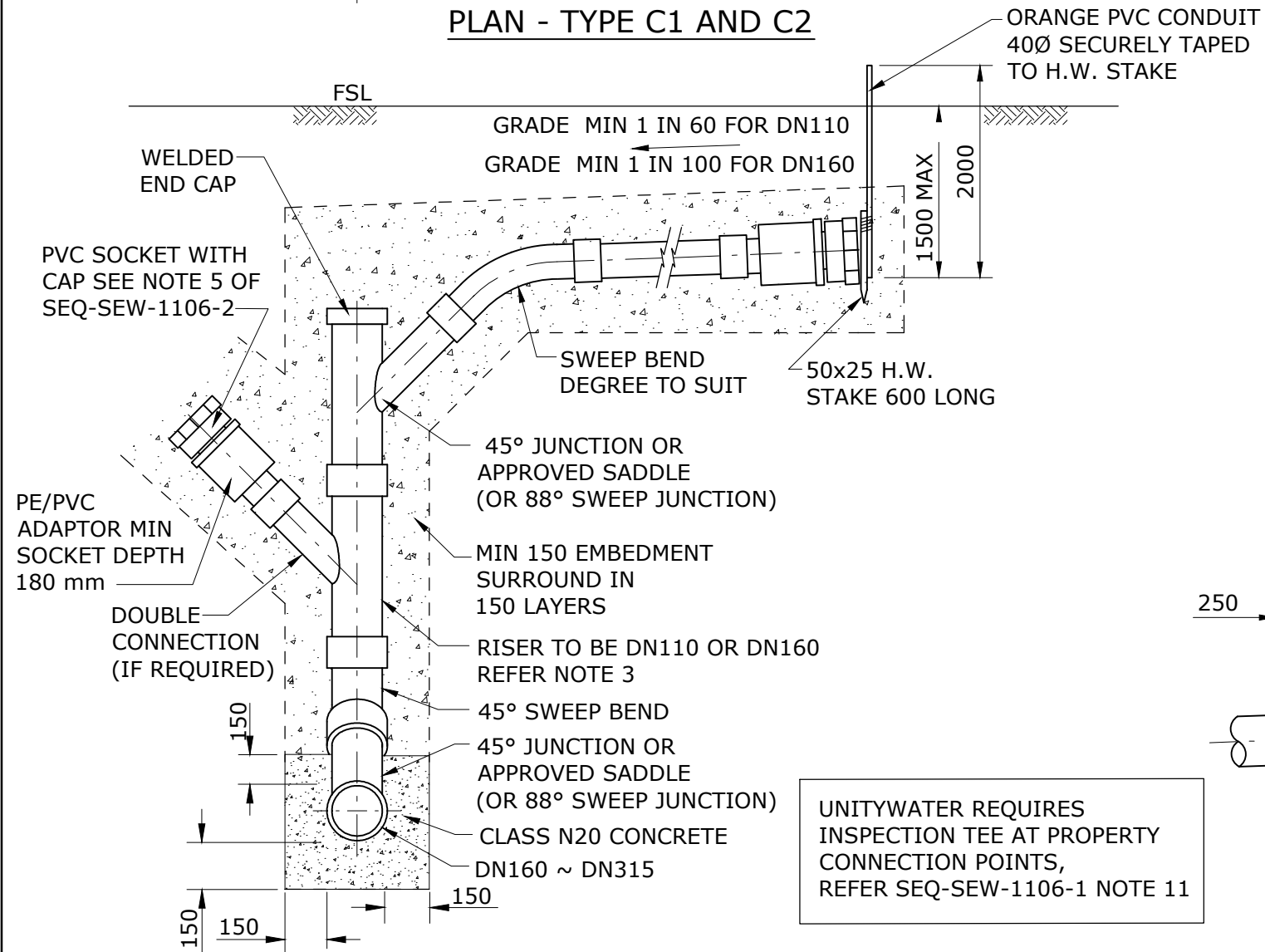
WORK PRACTICES MUST COMPLY WITH ALL APPLICABLE OCCUPATIONAL HEALTH & SAFETY LEGISLATION

SEWERAGE STANDARD DRAWING
PE NUSEWERS
TYPICAL PROPERTY CONNECTION
TYPE B1 TO B4 SLOPED CONNECTIONS

CoGC	LCC	RCC	QUU	UW
DRAWING No.				VERSION
SEQ-SEW-1106-4				C
NOT TO SCALE				ORG DATE: 1/1/2013



PLAN - TYPE C1 AND C2

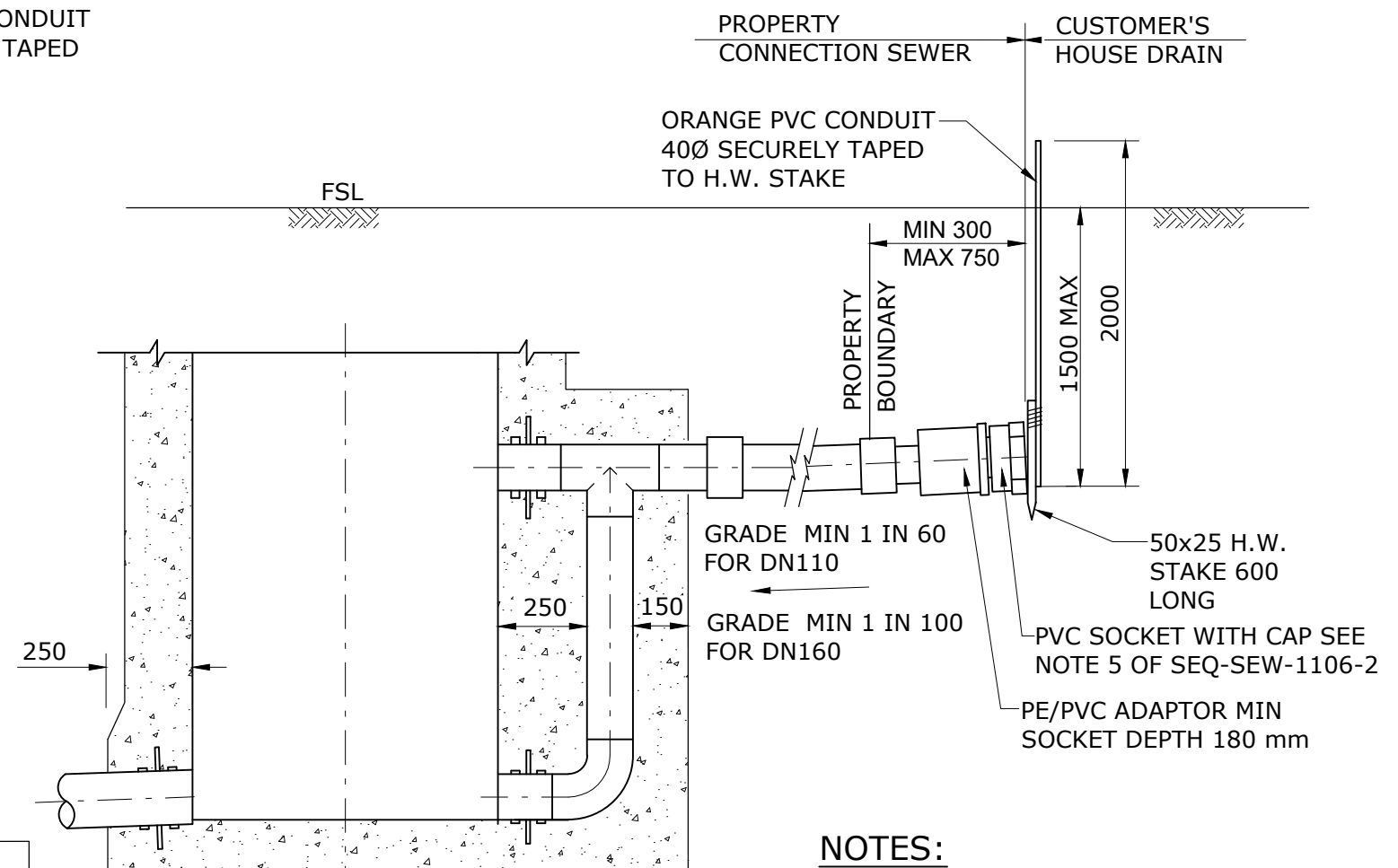


ELEVATION - TYPE C1 AND C2
VERTICAL RISER SINGLE OR DOUBLE CONNECTIONS

PROPERTY CONNECTION TABLE

	1**	2**	3***	4***
TYPE C VERTICAL RISER AND MH/MS DROP				
SEWER DEPTH > 1500				

- * PB STANDS FOR PROPERTY BOUNDARY.
- ** TYPES C1 & C2 MAY ONLY BE USED FOR SEWER DEPTHS UP TO 3 METRES.
- *** THIS DRAWING SHALL BE USED IN CONJUNCTION WITH SEQ-SEW-1301-2 & 4 AND SEQ-SEW-1315-1 FOR TYPES C3 & C4.



SECTION - TYPE C4
(C3 SIMILAR)

NOTES:

1. MAX. 2 DN110 CONNECTIONS OR 1 DN160 CONNECTION FOR EACH VERTICAL RISER OR MAINTENANCE SHAFT.
2. REFER SEQ-SEW-1106-1 & 2 FOR MORE NOTES.
3. DIAMETER OF RISER IS NOT TO BE LESS THAN THE LARGEST CONNECTED PROPERTY SEWER.

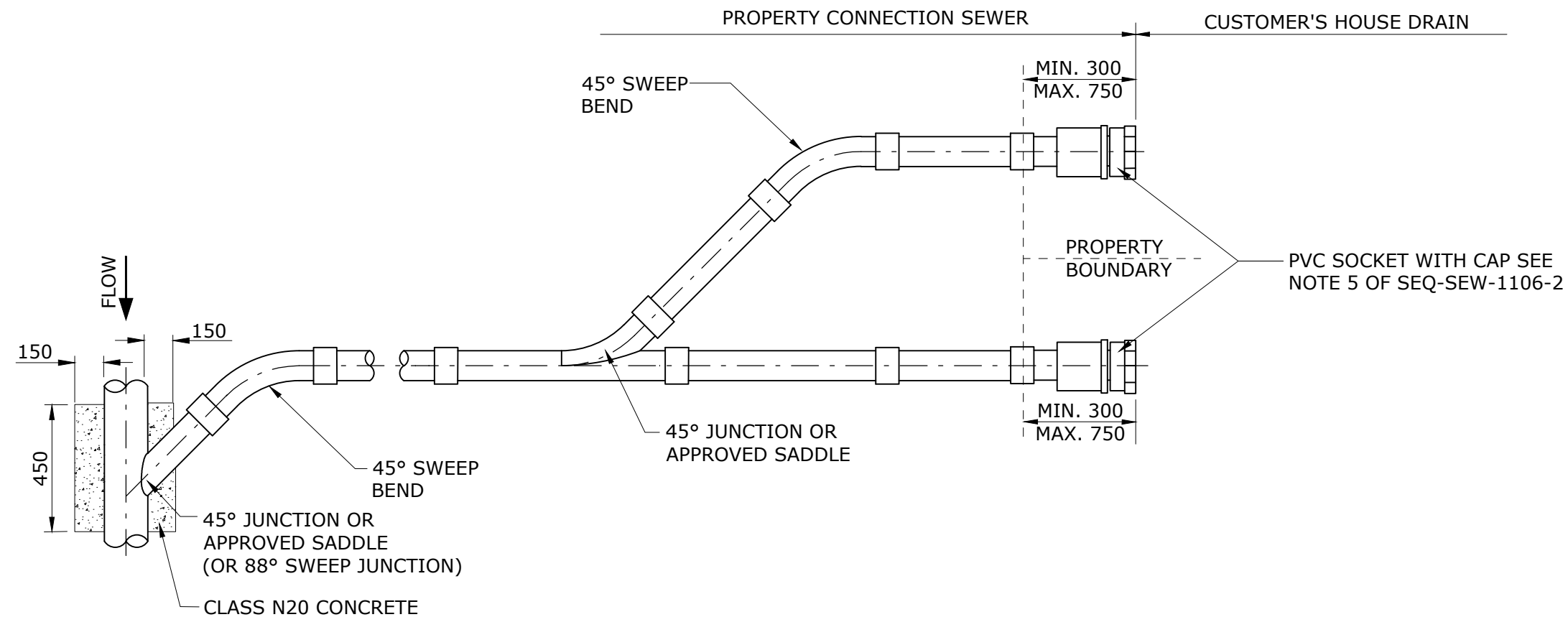
REV. No.	DATE	DESCRIPTION	AUTH.
C	11/04/18	REF AMENDED IN BOX NOTE	
B	19/06/15	REMOVE SEDIMENT TRAPS. CHANGES TO NOTES & TABLE.	

SEQ WATER SERVICE PROVIDERS

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

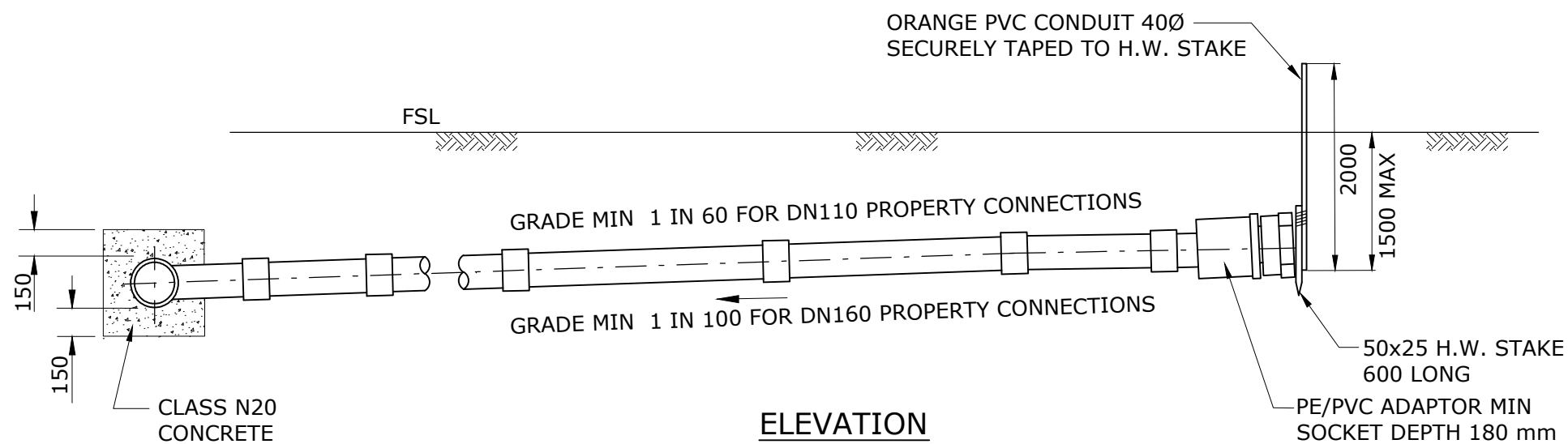
SEWERAGE STANDARD DRAWING
PE NUSEWERS
TYPICAL PROPERTY CONNECTION
TYPE C1 TO C4 VERTICAL RISER

CoGC	LCC	RCC	QUU	UW
DRAWING No.				VERSION
SEQ-SEW-1106-5				C
NOT TO SCALE				ORG DATE: 1/1/2013



PLAN

TYPE A CONNECTION SHOWN. REFER DWG. SEQ-SEW-1106-4 & SEQ-SEW-1106-5 FOR TYPE B AND TYPE C CONNECTIONS.



ELEVATION

TWIN PROPERTY CONNECTIONS

NOTES:

1. FOR NOTES REFER DRAWING SEQ-SEW-1106-1 & 2.
2. UNITYWATER REQUIRES INSPECTION TEE AT PROPERTY CONNECTION POINTS, REFER SEQ-SEW-1106-1 NOTE 11.

REV. No.	DATE	DESCRIPTION	AUTH.
C	11/04/18	UW CROSS REMOVED, NOTE 2 ADDED, PIPE SIZES REMOVED ON PLAN VIEW	
B	19/06/15	REMOVE SEDIMENT TRAPS. MINOR CHANGES TO NOTES.	

SEQ WATER SERVICE PROVIDERS

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

SEWERAGE STANDARD DRAWING
PE NUSEWERS
TYPICAL TWIN PROPERTY CONNECTIONS

CoGC	LSC	RSC	QUU	UW
DRAWING No.				VERSION
SEQ-SEW-1106-6				C
NOT TO SCALE				ORG DATE: 1/1/2013

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 *

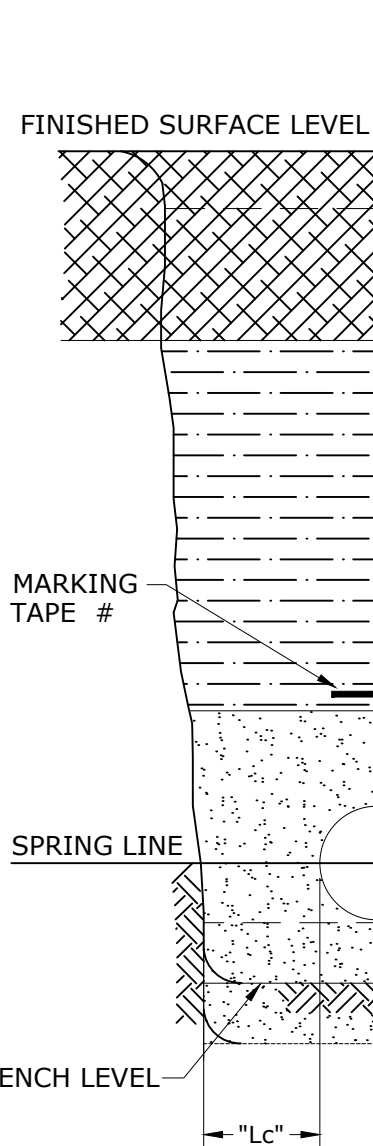
LEGEND

- ▲ 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

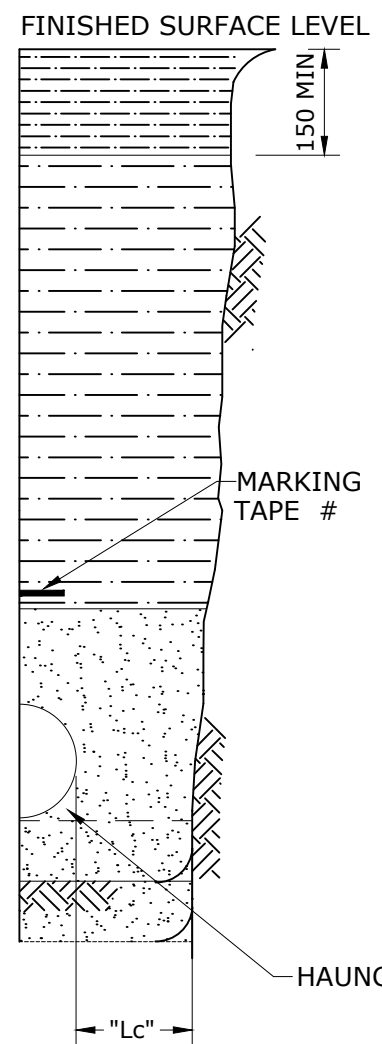
REV. No.	DATE	DESCRIPTION	AUTH.	SEQ WATER SERVICE PROVIDERS <small>WORK PRACTICES MUST COMPLY WITH ALL APPLICABLE OCCUPATIONAL HEALTH & SAFETY LEGISLATION</small>	SEWERAGE STANDARD DRAWING					GCCC	LCC	RCC	QUU	UW
					SOIL CLASSIFICATION GUIDELINES AND ALLOWABLE BEARING PRESSURES FOR ANCHORS AND THRUST BLOCKS					DRAWING No.				VERSION
										SEQ-SEW-1200-1				A
										NOT TO SCALE				ORG DATE: 1/1/2013

MATERIAL		ZONE	
ROAD SURFACE	VERGE & TRACK	SURFACE COURSE	
ROAD SURFACE LAYER	TO MATCH EXISTING		
TO MATCH EXISTING ROAD BASE OR TO ROAD OWNER'S REQUIREMENTS		ROAD BASE	
TO ROAD OWNER'S REQUIREMENTS	TO ROAD OWNER'S REQUIREMENTS	TRENCH FILL	
OR	OR		
INORGANIC FILL WITH 75 MAXIMUM STONE SIZE	INORGANIC FILL WITH MAXIMUM 75 STONE SIZE		
EMBEDMENT MATERIAL IN ACCORDANCE WITH DESIGN DRAWINGS AND SEQ-SP REQUIREMENTS. WHERE APPROVED BY SEQ-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 CARRAIGWAYS	1200
ARTERIAL ROAD CARRAIGWAYS	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 SEQ-SP REQUIREMENTS. WHERE APPROVED BY SEQ-SP BEDDING MAY BE OMITTED IF TRENCH BASE IS GRANULAR SAND.
	SIDE SUPPORT	
	BEDDING	
OVER-EXCAVATION		

VEHICULAR LOADING

LEGEND:

SPECIFIED BY THE DESIGNER IN DESIGN DRAWINGS

NOTES

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

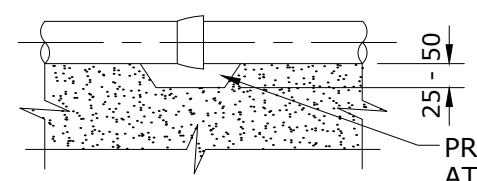
SPRING LINE TRENCH CLEARANCE

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.

NO VEHICULAR LOADING

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



PIPE JOINT BEDDING POCKETS
FOR JOINT PROJECTIONS (SOCKETS, FLANGES ETC)

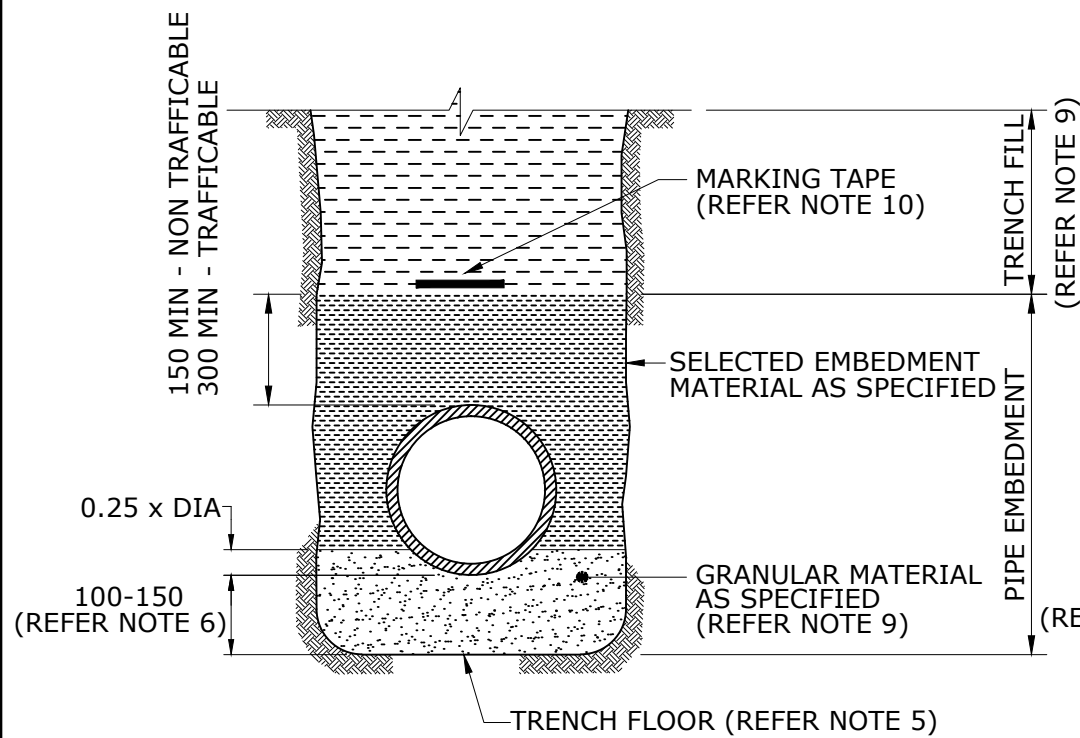
REV. No.	DATE	DESCRIPTION	AUTH.

SEQ WATER SERVICE PROVIDERS

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

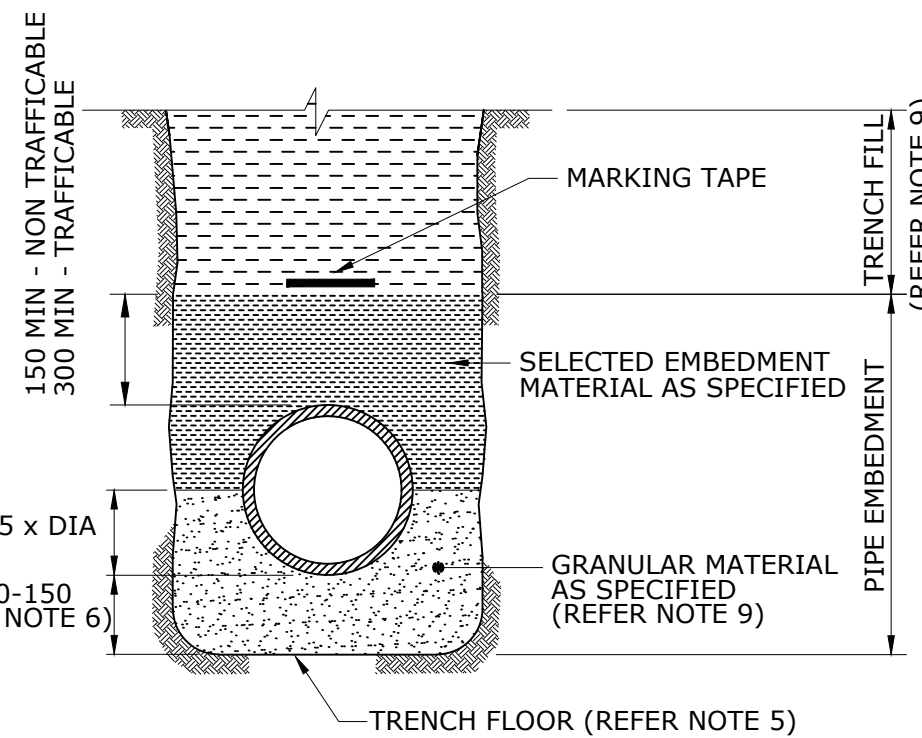
SEWERAGE STANDARD DRAWING
EMBEDMENT & TRENCHFILL
TYPICAL ARRANGEMENT

GCCC	LCC	RCC	QUU	UW
DRAWING No.				VERSION
SEQ-SEW-1200-2				A
NOT TO SCALE				ORG DATE: 1/1/2013



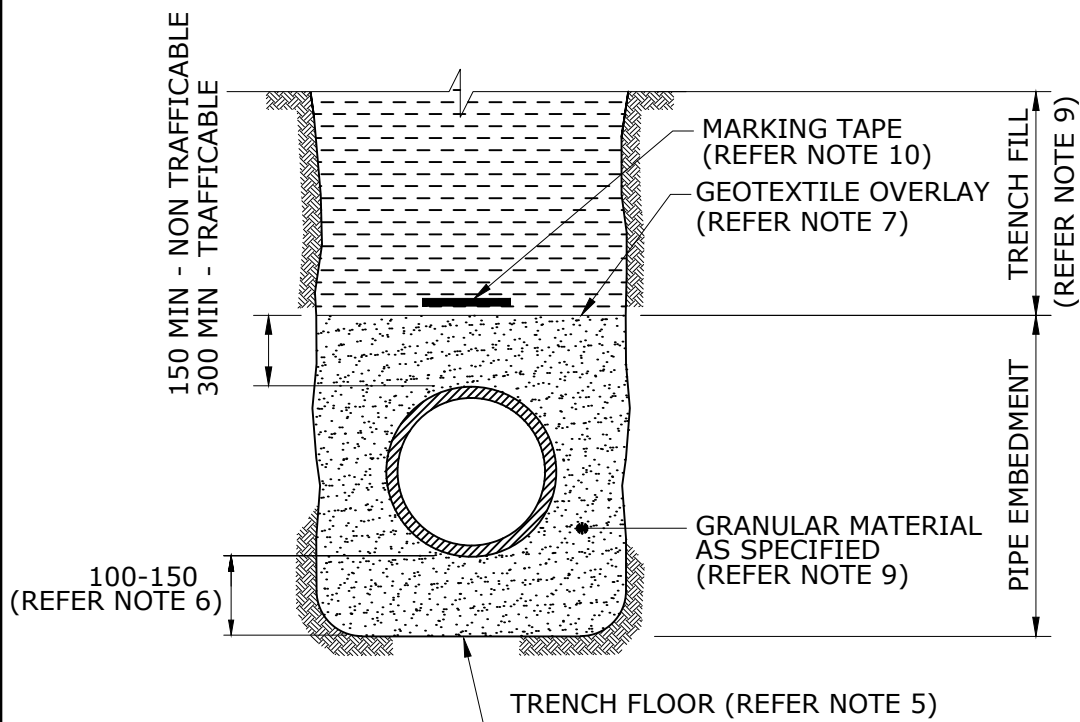
TYPE 1 SUPPORT

FOR RIGID PIPES ONLY (REFER NOTE 3)



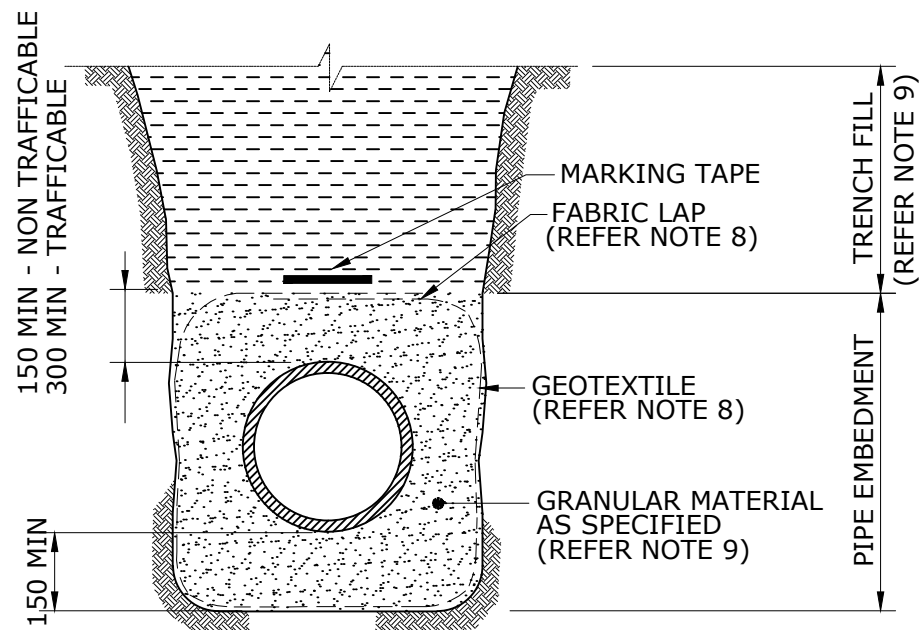
TYPE 2 SUPPORT

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 SEQ-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 MINIMISE 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 SEQ CODE ACCEPTED PRODUCTS AND MATERIALS LIST. TRENCH FILL SHALL COMPLY WITH SEQ-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.

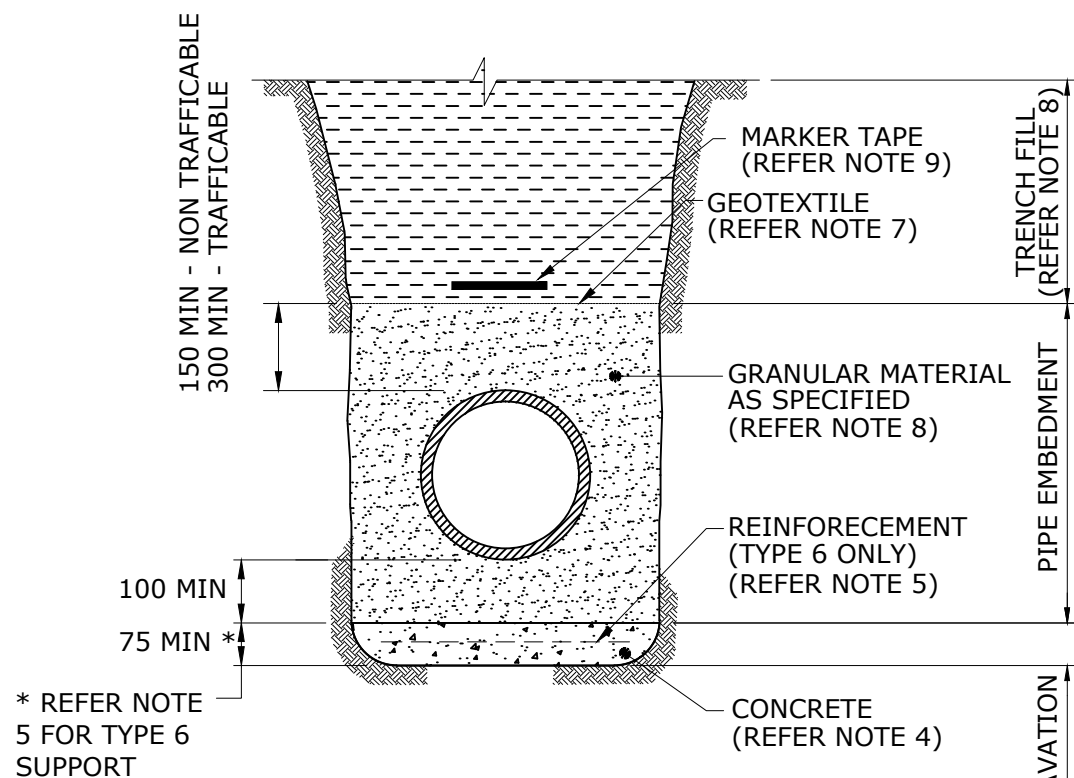
REV. No.	DATE	DESCRIPTION	AUTH.

SEQ WATER SERVICE PROVIDERS

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

SEWERAGE STANDARD DRAWING
TYPICAL STANDARD EMBEDMENT
FLEXIBLE & RIGID PIPES

GCCC	LCC	RCC	QUU	UW
DRAWING No.				VERSION
SEQ-SEW-1201-1				A
NOT TO SCALE				ORG DATE: 1/1/2013

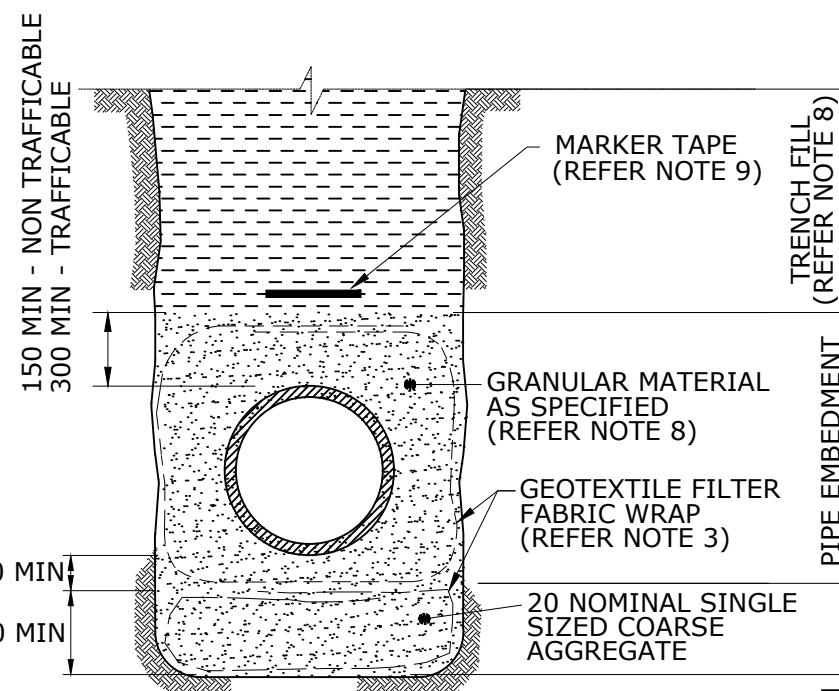


TYPES 5 & 6 SUPPORT

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.

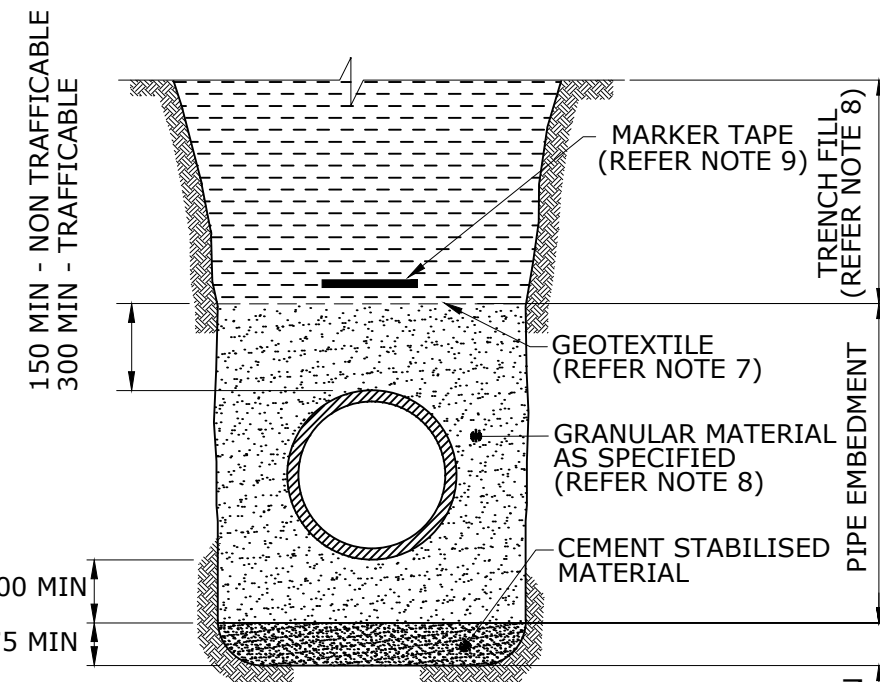
* REFER NOTE
 5 FOR TYPE 6
 SUPPORT

**EMBEDMENT TYPES TO BE SPECIFIED
 IN DESIGN DRAWINGS**



TYPE 7 SUPPORT

UTILISING GEOTEXTILE PILLOW FOUNDATION
 (RIGID & FLEXIBLE PIPES)



TYPE 8 SUPPORT

UTILISING CEMENT STABILISED FOUNDATION
 (RIGID & FLEXIBLE PIPES)

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 SEQ-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 \geq 5 mm).
8. PURCHASE SPECIFICATIONS FOR EMBEDMENT MATERIAL ARE DETAILED IN THE SEQ CODE ACCEPTED PRODUCTS AND MATERIALS LIST. TRENCH FILL SHALL COMPLY WITH SEQ-SEW-1200-2.
9. DETECTABLE MARKER TAPE, REFER NOTE 10 ON SEQ-SEW-1201-01.

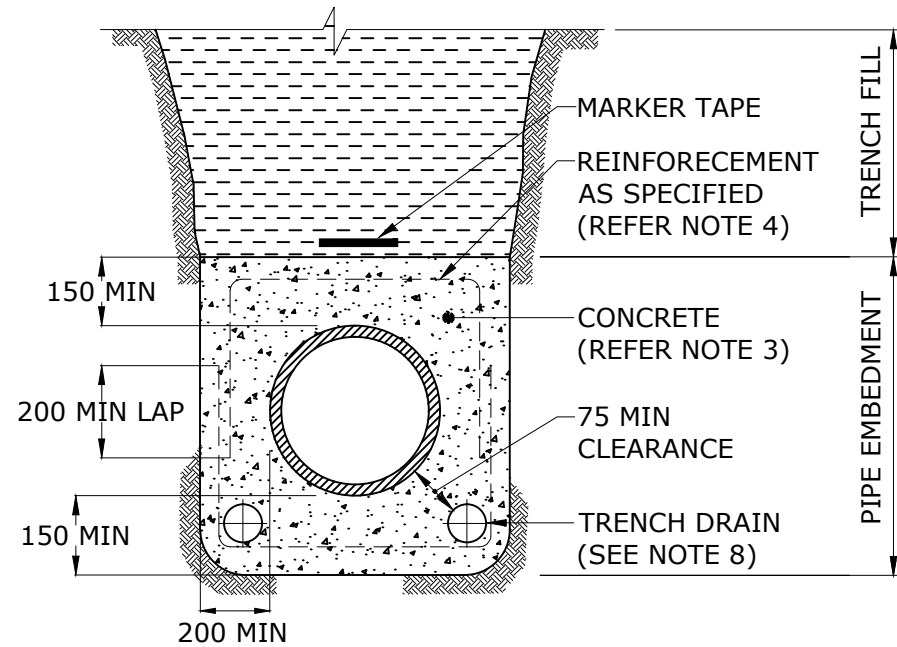
REV. No.	DATE	DESCRIPTION	AUTH.

**SEQ WATER
 SERVICE PROVIDERS**

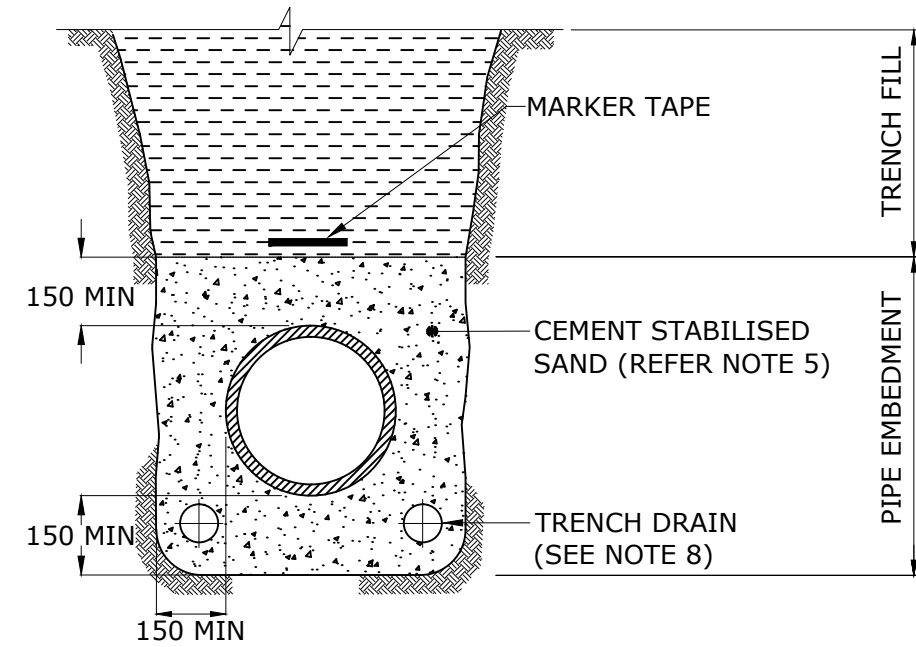
WORK PRACTICES MUST COMPLY WITH ALL APPLICABLE
 OCCUPATIONAL HEALTH & SAFETY LEGISLATION

SEWERAGE STANDARD DRAWING
 TYPICAL SPECIAL EMBEDMENT
 INADEQUATE FOUNDATIONS REQUIRING
 OVER EXCAVATION AND REPLACEMENT

GCCC	LCC	RCC	QUU	UW
DRAWING No.				VERSION
SEQ-SEW-1202-1				A
NOT TO SCALE				ORG DATE: 1/1/2013

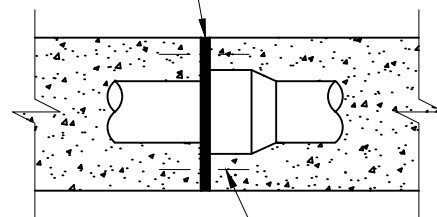


TYPE 9 SUPPORT
UTILISING CONCRETE EMBEDMENT
 (RIGID & FLEXIBLE PIPES)



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

PROVIDE 12 THICK COMPRESSIBLE AND DURABLE MEMBRANE AT EACH FLEXIBLE JOINT

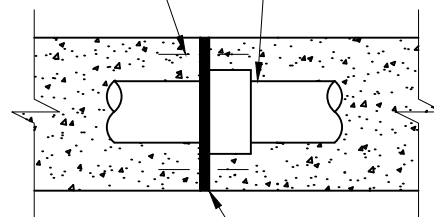


DOWEL PINS (REFER NOTE 7)

SPIGOT/SOCKET JOINT

DOWEL PINS (REFER NOTE 7)

SEAL JOINT WITH FABRIC OR TAPE TO PREVENT CONCRETE ENTERING JOINT



PROVIDE 12 THICK COMPRESSIBLE AND DURABLE MEMBRANE AT EACH FLEXIBLE JOINT

SLEEVED COUPLING

CONCRETE ENCASEMENT JOINT DETAILS

EMBEDMENT TYPES TO BE SPECIFIED IN DESIGN DRAWINGS

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 SEQ-SEW-1207-1 FOR TRENCH DRAINAGE DETAILS.
9. THE USE OF TYPE 9 AND 10 TO BE APPROVED BY SEQ-SP.
10. DETECTABLE MARKER TAPE, REFER NOTE 10 ON SEQ-SEW-1201-1.

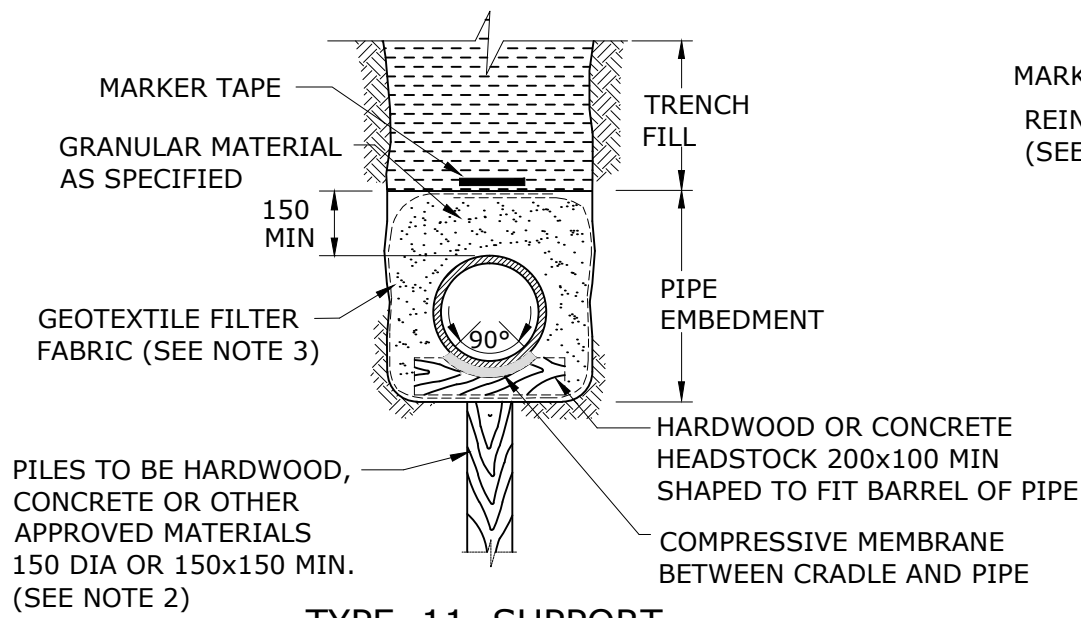
REV. No.	DATE	DESCRIPTION	AUTH.

SEQ WATER SERVICE PROVIDERS

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

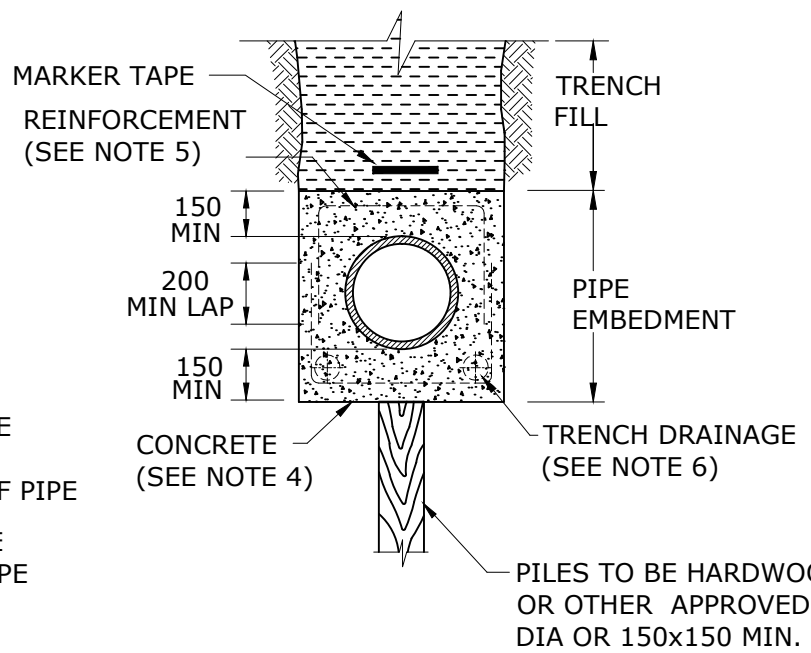
SEWERAGE STANDARD DRAWING
 TYPICAL SPECIAL EMBEDMENT
 CONCRETE AND STABILISED SUPPORTS

GCCC	LCC	RCC	QUU	UW
DRAWING No.				VERSION
SEQ-SEW-1203-1				A
NOT TO SCALE				ORG DATE: 1/1/2013



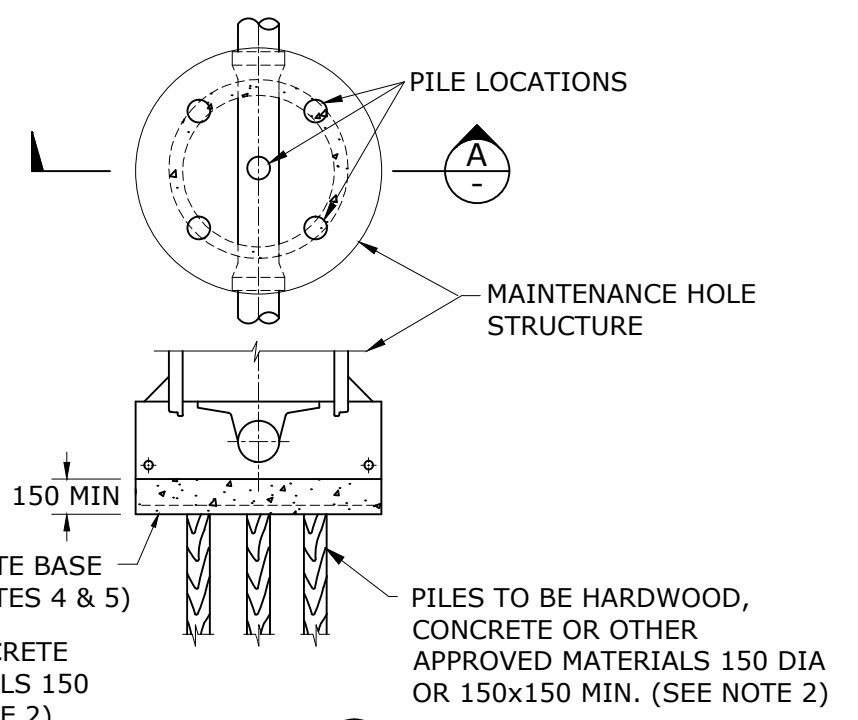
TYPE 11 SUPPORT

ALL PIPE TYPES (DI PREFERRED)
 ≤DN 375 SINGLE PILE
 >DN 375 TWIN PILE

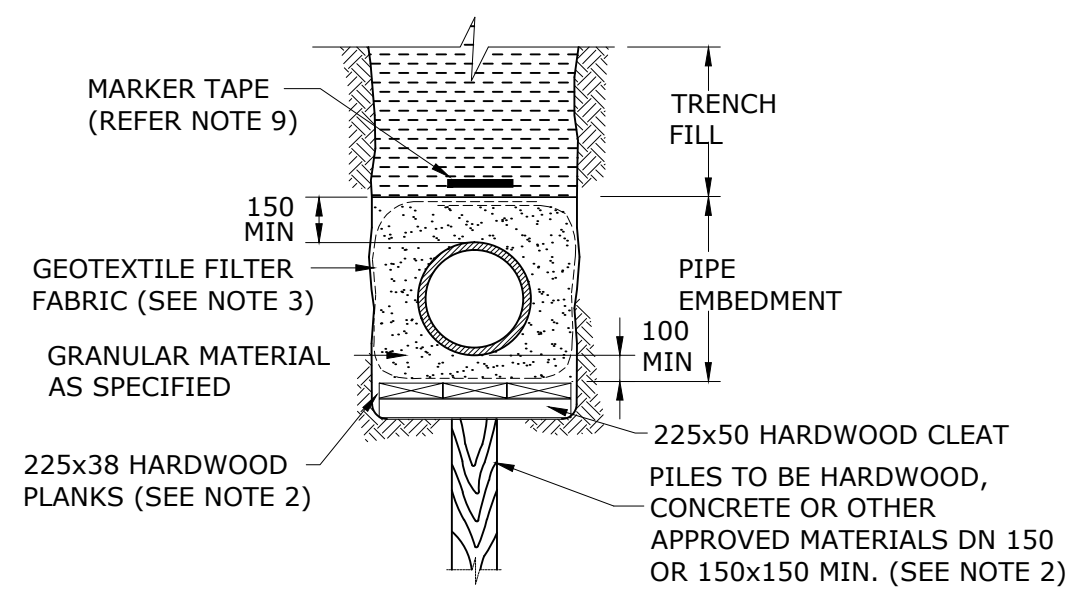


TYPE 12 SUPPORT

(ALL PIPE TYPES)
 NOTE: THIS METHOD ALSO RESTRICTS PIPE FLOTATION
 ≤DN 300 SINGLE PILE
 >DN 300 TWIN PILE

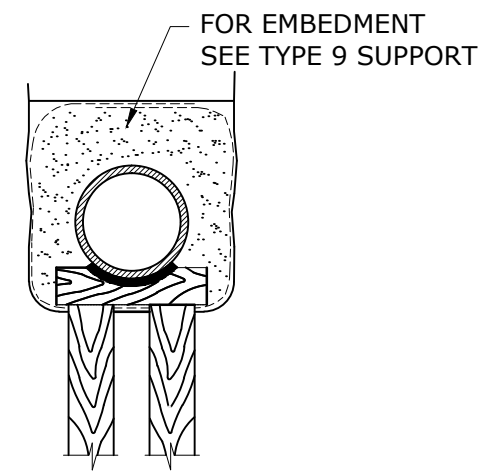


SECTION A
PILE FOUNDATION FOR MAINTENANCE HOLES



TYPE 13 SUPPORT

(ALL PIPE TYPES)
 ≤DN 375 SINGLE PILE
 >DN 375 TWIN PILE



TWIN PILE ARRANGEMENT

NOTES

1. ALL DIMENSIONS IN MILLIMETRES.
2. USE THESE SUPPORT TYPES WHERE SPECIFIED BY DESIGNER AND WHERE APPROVED BY SEQ-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 FLOTATION.
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 SEQ-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 SEQ-SEW-1201-1.

EMBEDMENT TYPES TO BE SPECIFIED IN DESIGN DRAWINGS

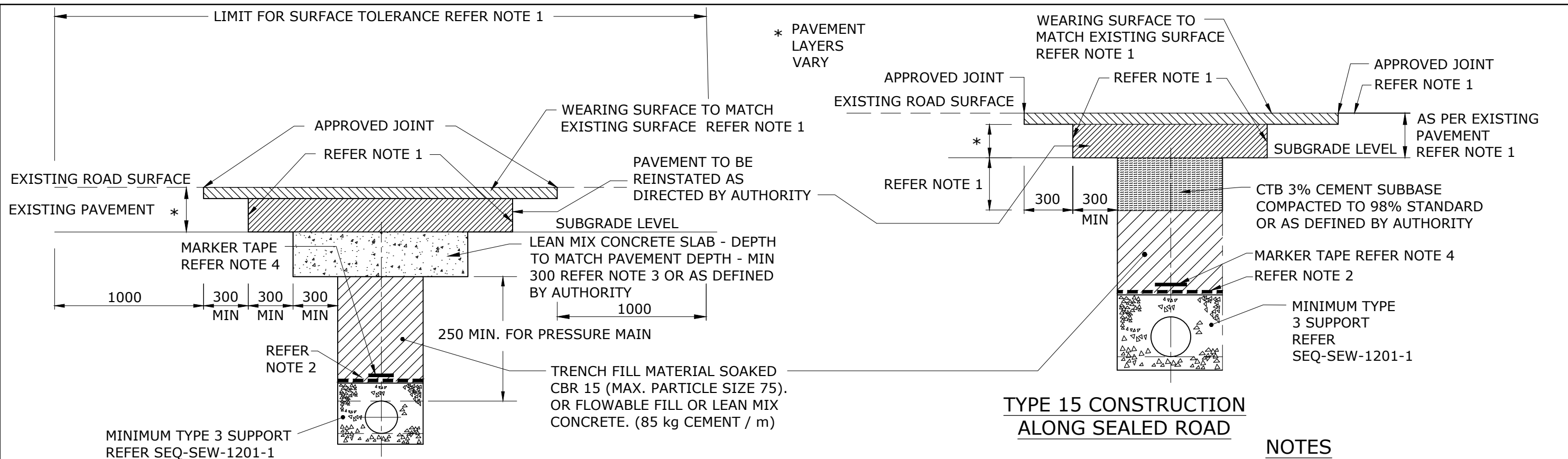
REV. No.	DATE	DESCRIPTION	AUTH.

SEQ WATER SERVICE PROVIDERS

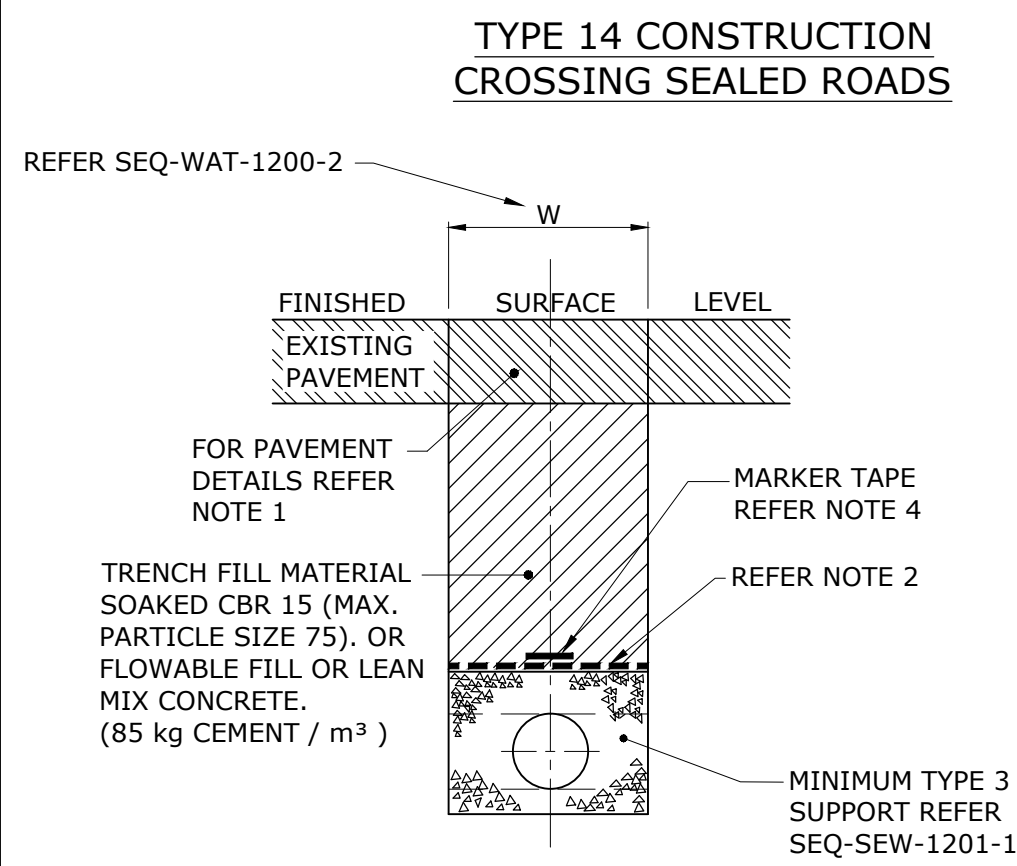
WORK PRACTICES MUST COMPLY WITH ALL APPLICABLE OCCUPATIONAL HEALTH & SAFETY LEGISLATION

SEWERAGE STANDARD DRAWING
 TYPICAL SPECIAL EMBEDMENT SUPPORT UTILISING PILES

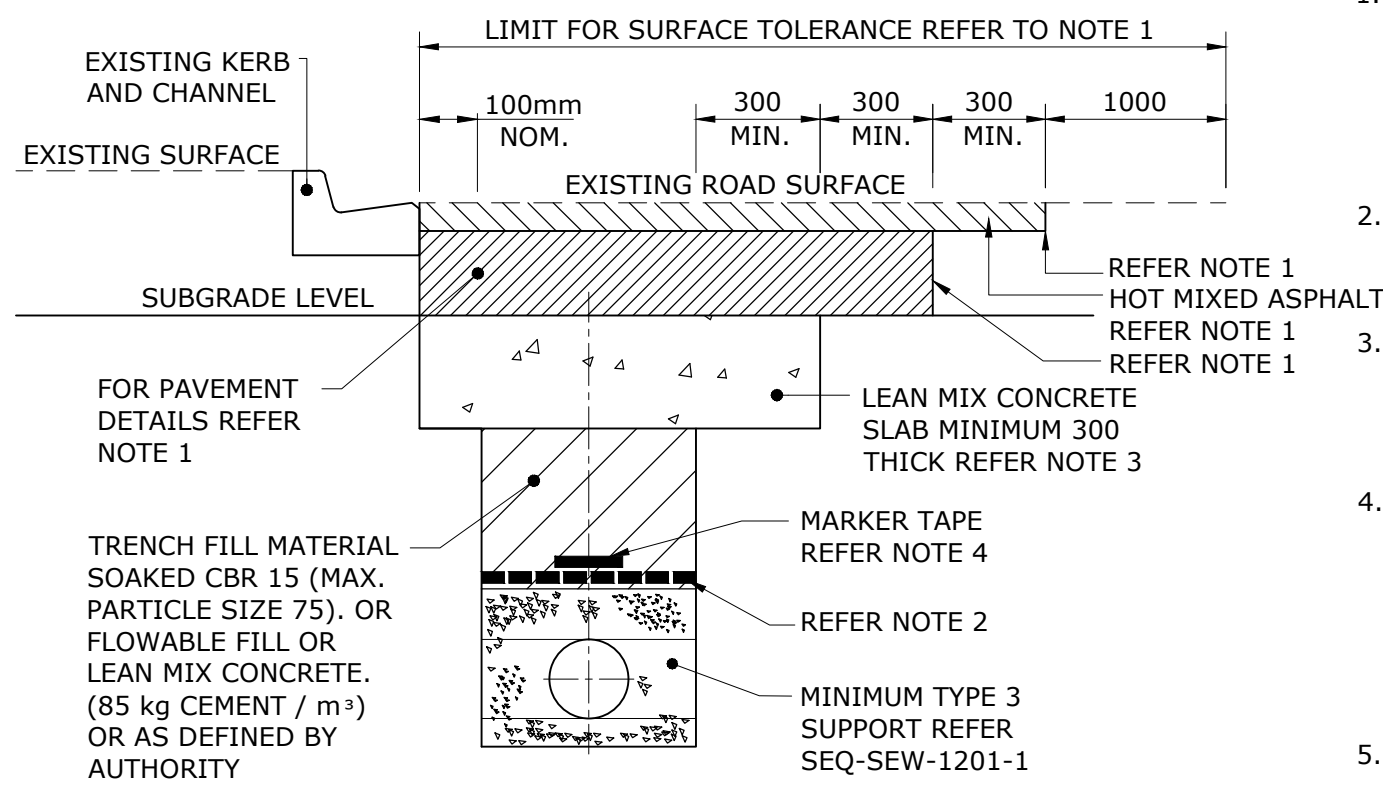
GCCC	LCC	RCC	QUU	UW
DRAWING No.				VERSION
SEQ-SEW-1204-1				A
NOT TO SCALE				ORG DATE: 1/1/2013



**TYPE 15 CONSTRUCTION
ALONG SEALED ROAD**



**TYPE 14 CONSTRUCTION
CROSSING SEALED ROADS**



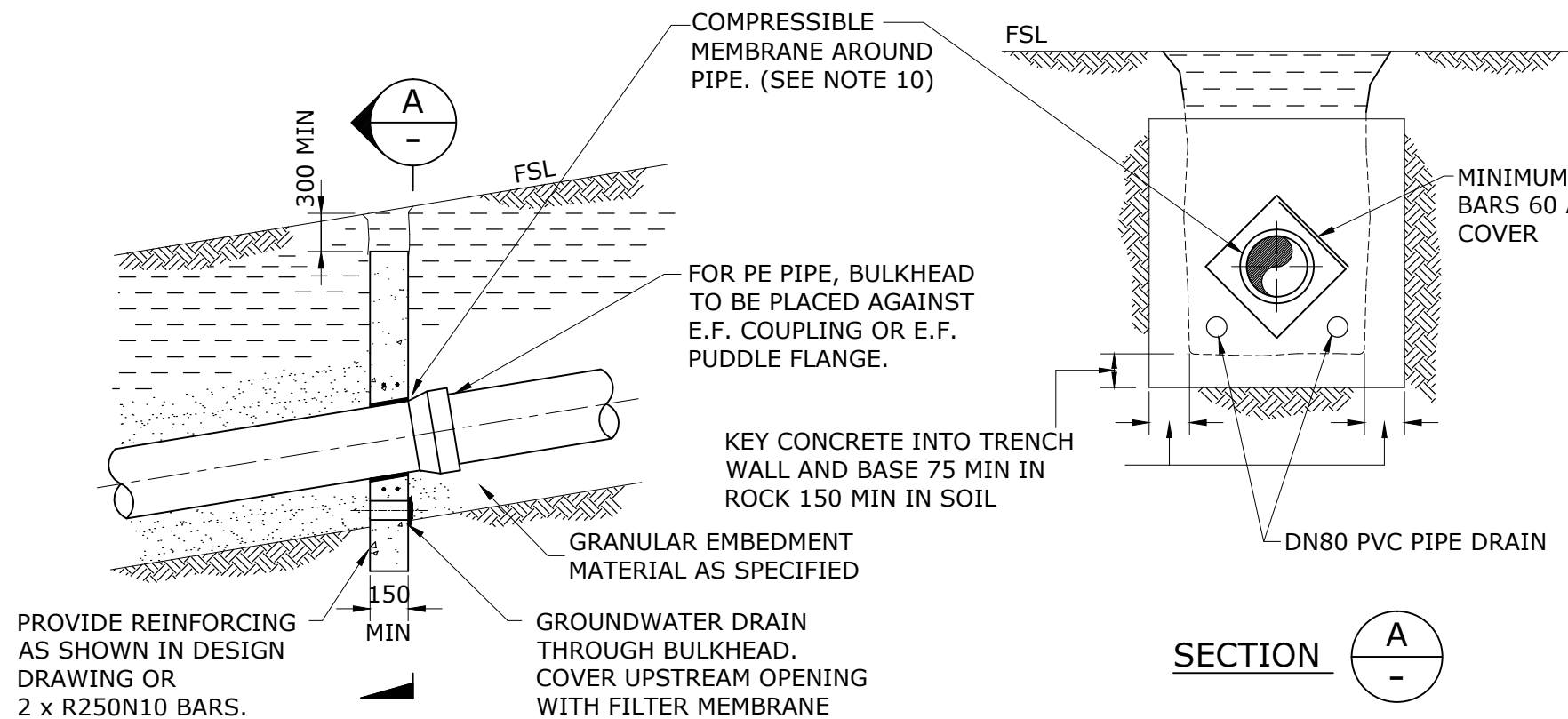
**TRENCH TYPE 17 CONSTRUCTION
ALONG SEALED ROAD ADJACENT TO KERB
(REINSTATMENT TO AVOID EXISTING SUB-SOIL DRAINAGE SYSTEM)**

NOTES

1. FOR EXCAVATION, BEDDING AND TRENCH FILL REQUIREMENTS REFER SEQ 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.

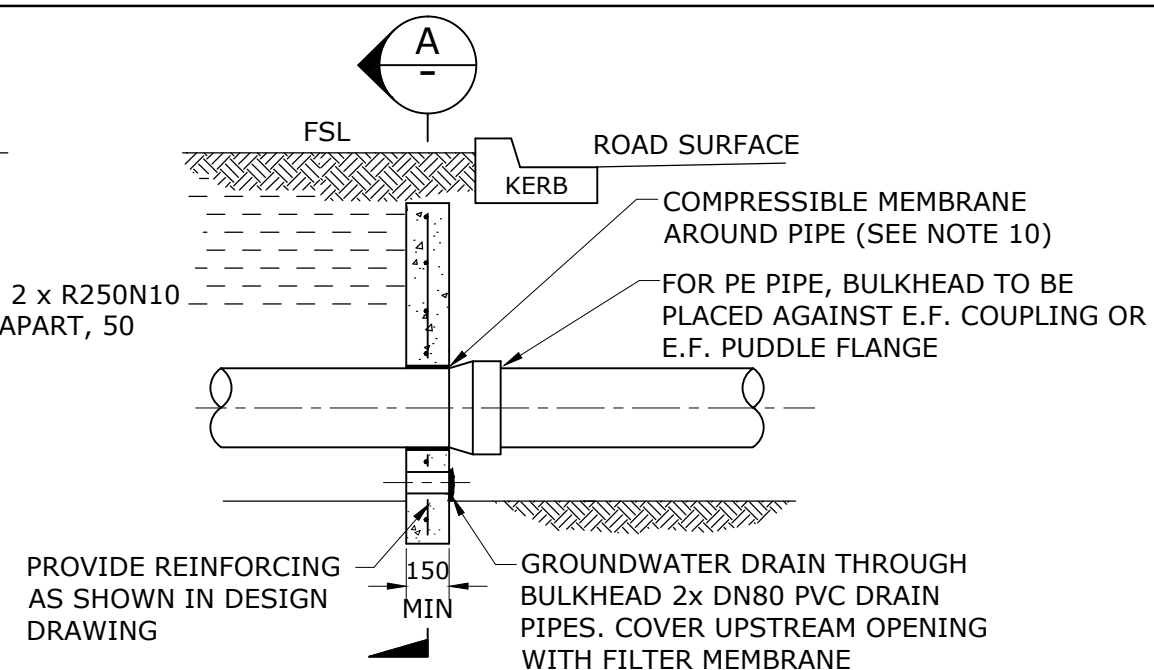
**TYPE 16 CONSTRUCTION
ALONG UNSEALED ROAD SHOULDERS
(REFER NOTE 6 AND 10)**

REV. No.	DATE	DESCRIPTION	AUTH.	SEWERAGE STANDARD DRAWING					GCCC	LCC	RCC	QUU	UW
				SEQ WATER SERVICE PROVIDERS					DRAWING No.				
									TYPICAL TRENCH AND BEDDING DETAILS WITHIN EXISTING ROADS TYPE 14 TO 17				
				WORK PRACTICES MUST COMPLY WITH ALL APPLICABLE OCCUPATIONAL HEALTH & SAFETY LEGISLATION					NOT TO SCALE				
									VERSION				
									A				
									ORG DATE: 1/1/2013				



CONCRETE BULKHEAD DETAIL

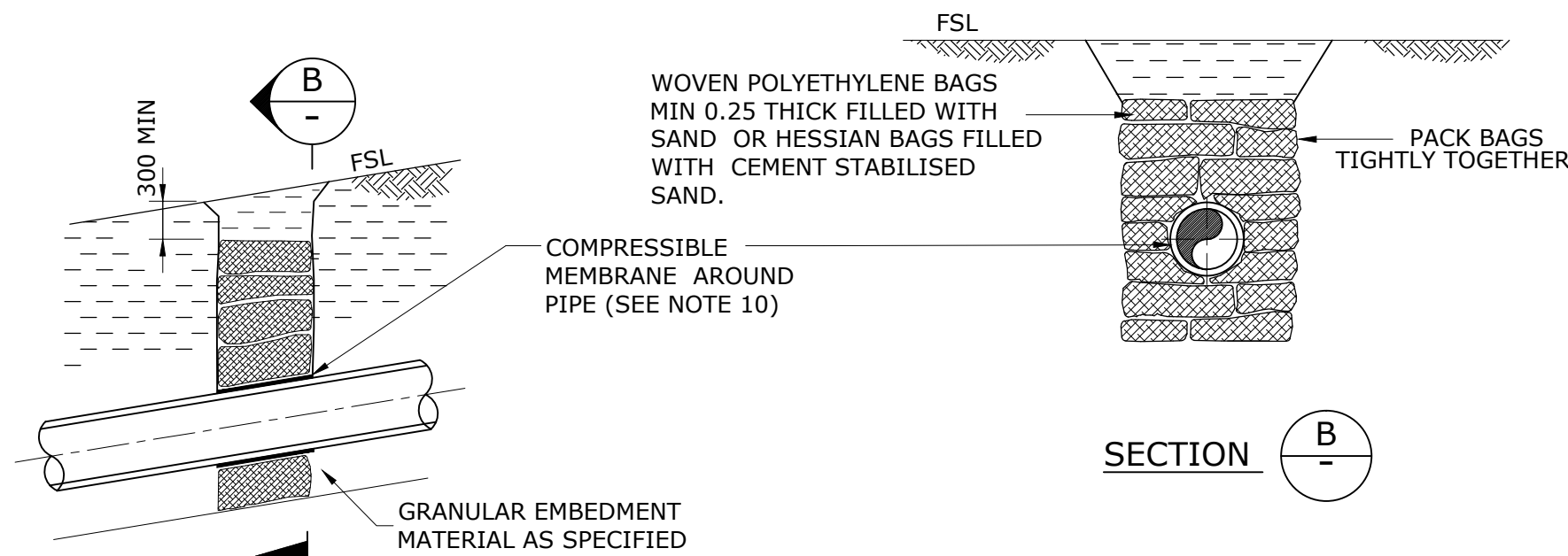
PROVIDE REINFORCING AS SHOWN IN DESIGN DRAWING OR 2 x R250N10 BARS.



TYPICAL ROAD CROSSING BULKHEAD

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 SEQ 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.
10. TRENCH DRAINAGE TO BE IN ACCORDANCE WITH SEQ-SEW-1207-1.
11. COMPRESSION MEMBRANE AROUND PIPE TO BE 10 THICK POLYSTYRENE FOR BULKHEADS ADJACENT TO KERBS AND 3 MIN THICK RUBBER FOR BULKHEADS AND TRENCHSTOPS ON SLOPES.
12. 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.
13. 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



TRENCH STOP DETAIL

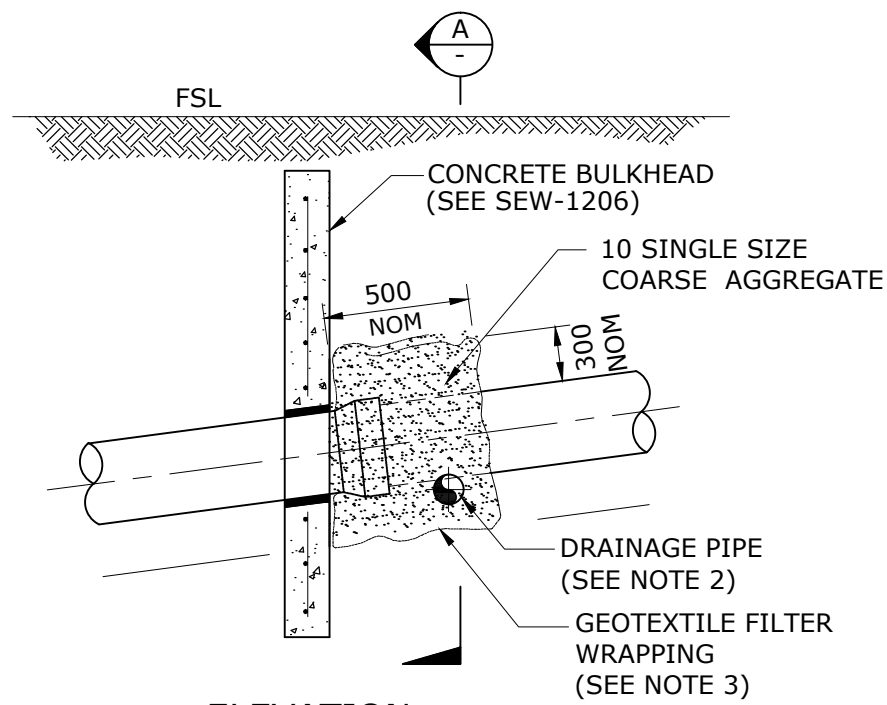
REV. No.	DATE	DESCRIPTION	AUTH.
B	23/07/15	AMENDED NOTE 3 AND ADDED NEW NOTE 12.	

SEQ WATER SERVICE PROVIDERS

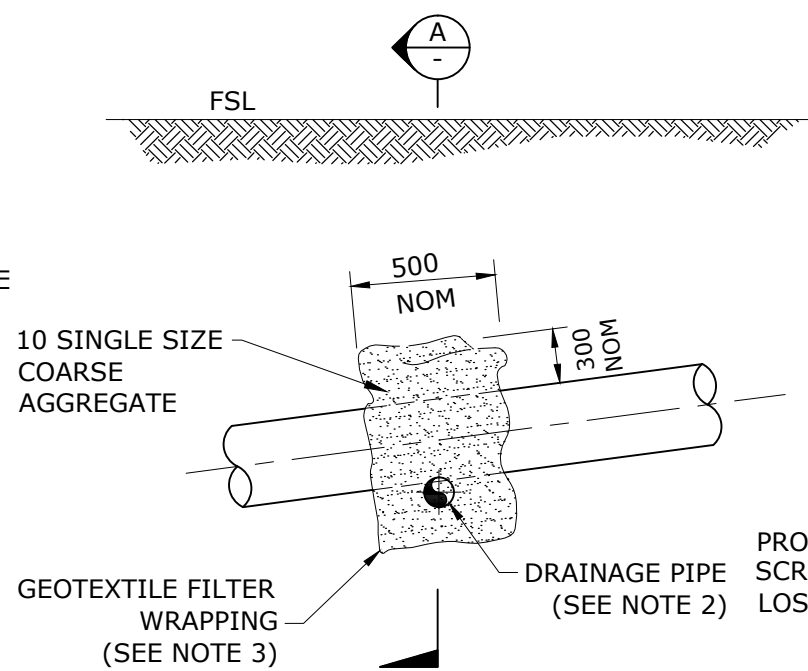
WORK PRACTICES MUST COMPLY WITH ALL APPLICABLE OCCUPATIONAL HEALTH & SAFETY LEGISLATION

SEWERAGE STANDARD DRAWING
TYPICAL BULKHEADS AND TRENCH STOPS

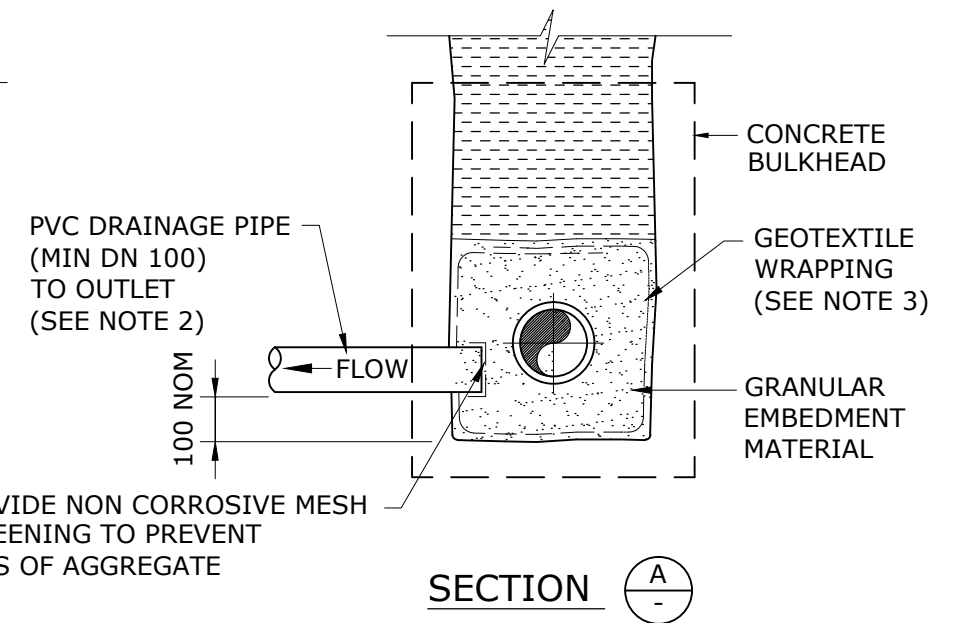
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DRAWING No.				VERSION
SEQ-SEW-1206-1				B
NOT TO SCALE				ORG DATE: 1/1/2013



ELEVATION
DRAINAGE SYSTEM WITH BULKHEADS

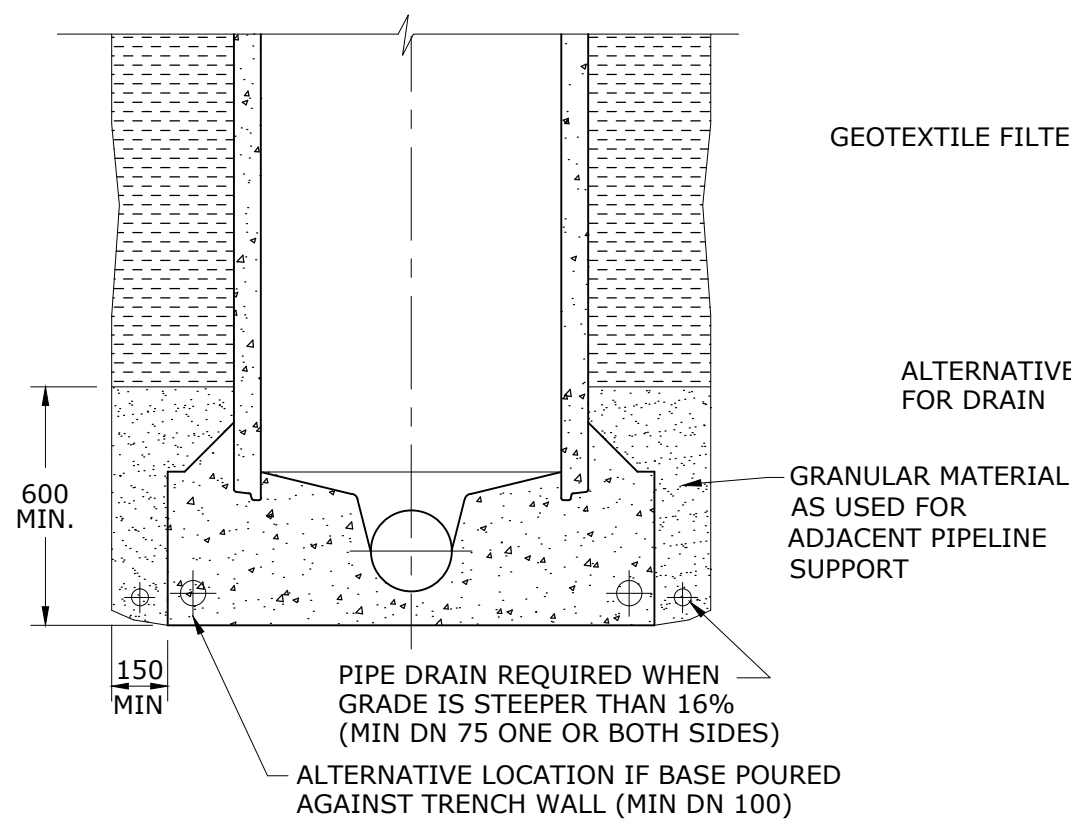


ELEVATION
DRAINAGE SYSTEM WITHOUT BULKHEADS

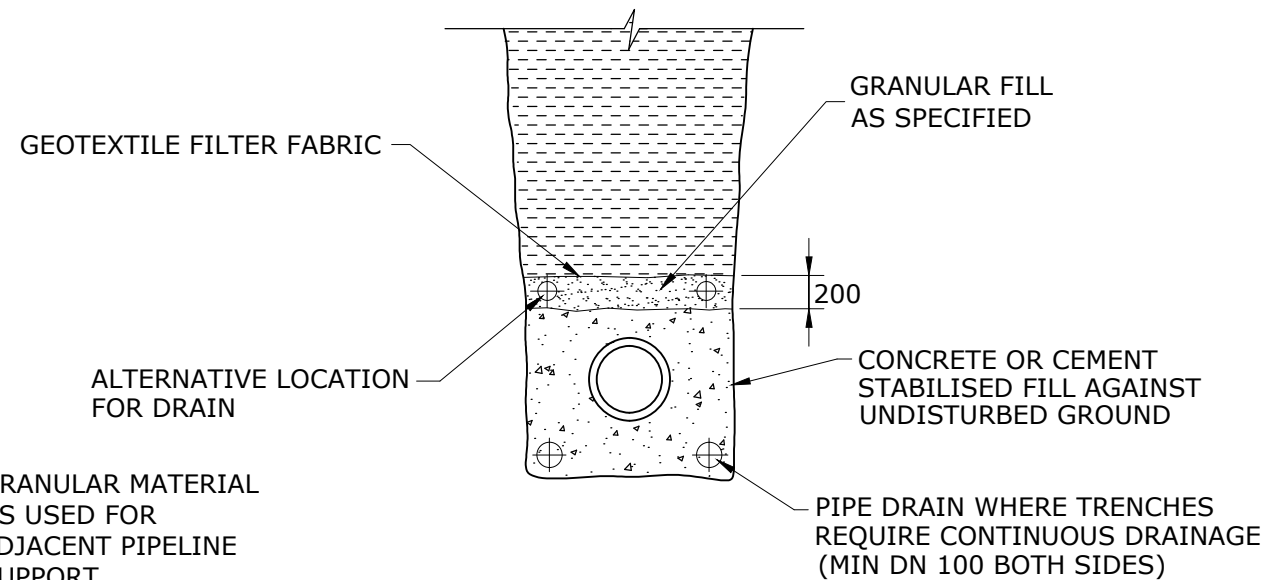


SECTION A-A

TYPICAL DISCHARGE SYSTEM FOR PIPE TRENCHES



DRAINAGE PAST MAINTENANCE HOLES

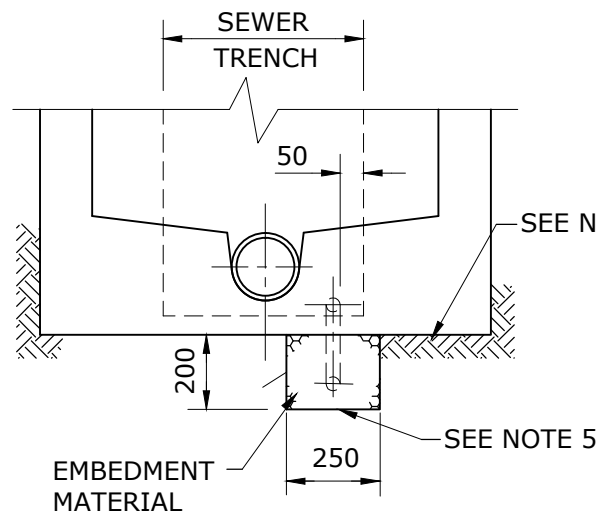


TRENCH DRAINAGE FOR
CONCRETE ENCASEMENT/STABILISATION

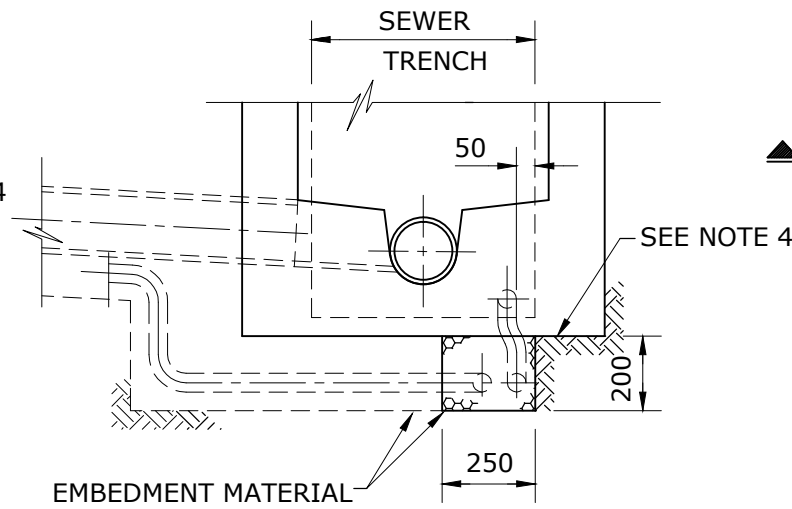
NOTES

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

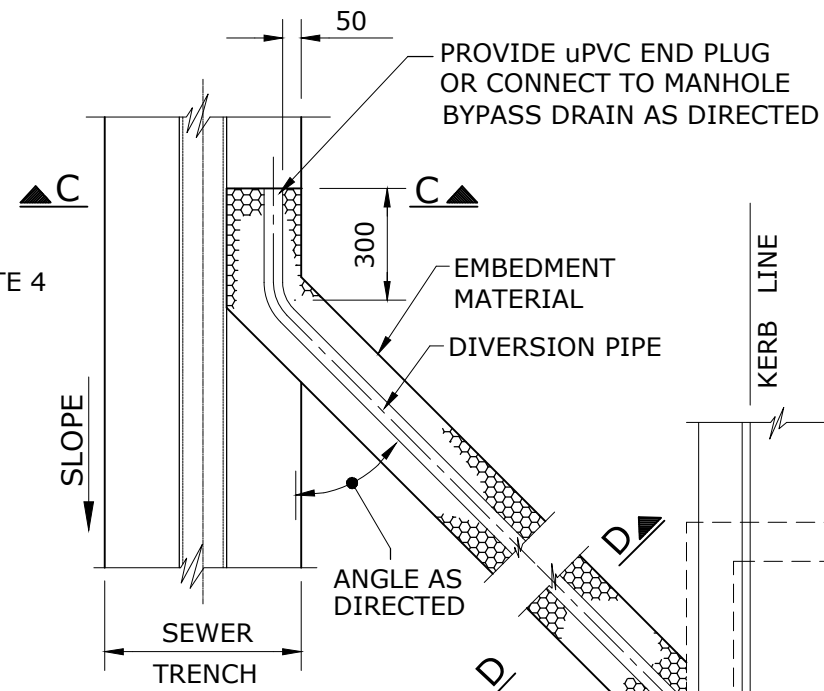
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				SEQ WATER SERVICE PROVIDERS					DRAWING No.				
									TRENCH DRAINAGE TYPICAL SYSTEMS				
				WORK PRACTICES MUST COMPLY WITH ALL APPLICABLE OCCUPATIONAL HEALTH & SAFETY LEGISLATION					NOT TO SCALE				
									VERSION				
									ORG DATE: 1/1/2013				



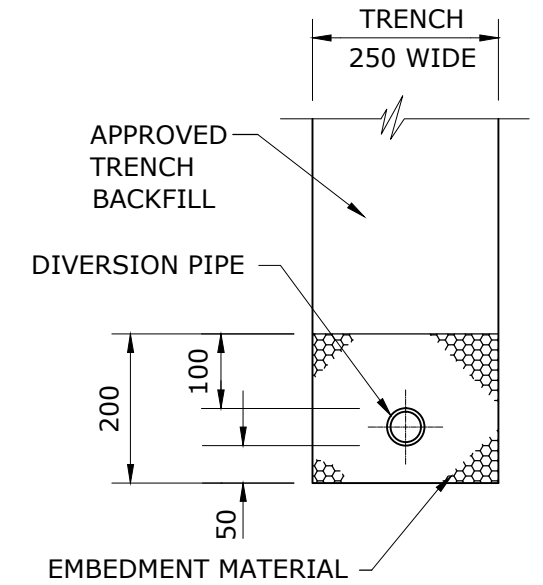
SECTION A-A



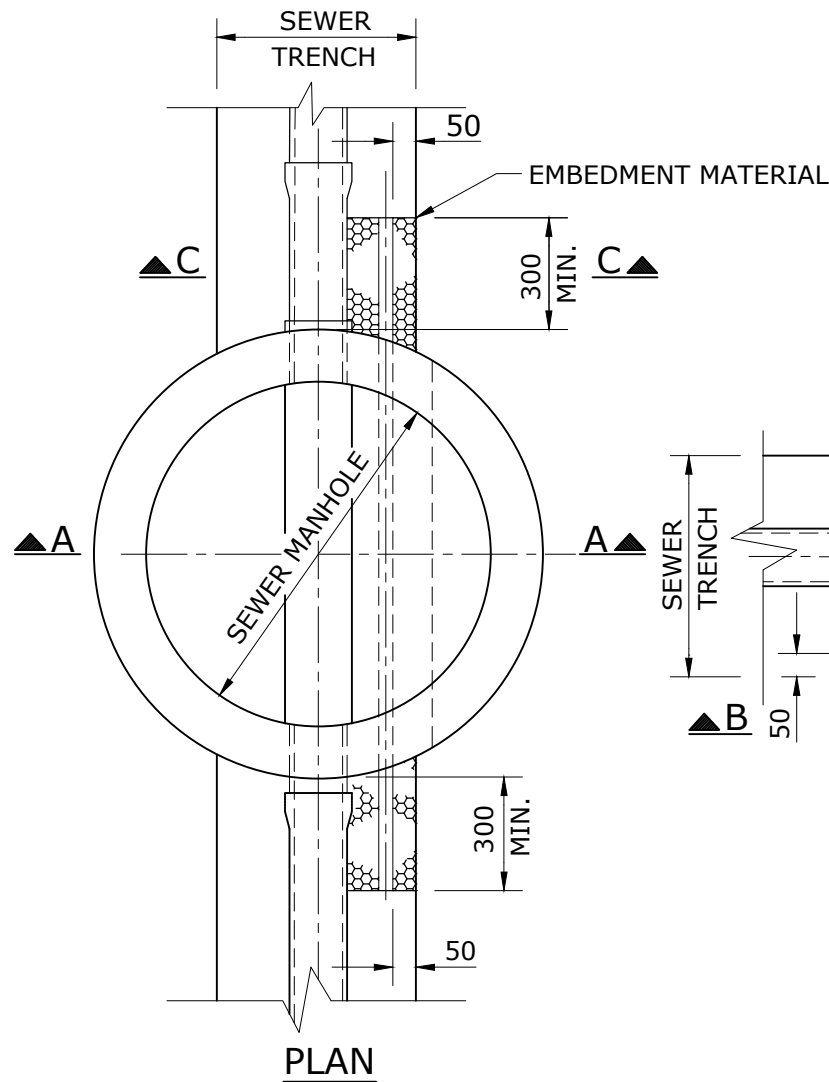
SECTION B-B



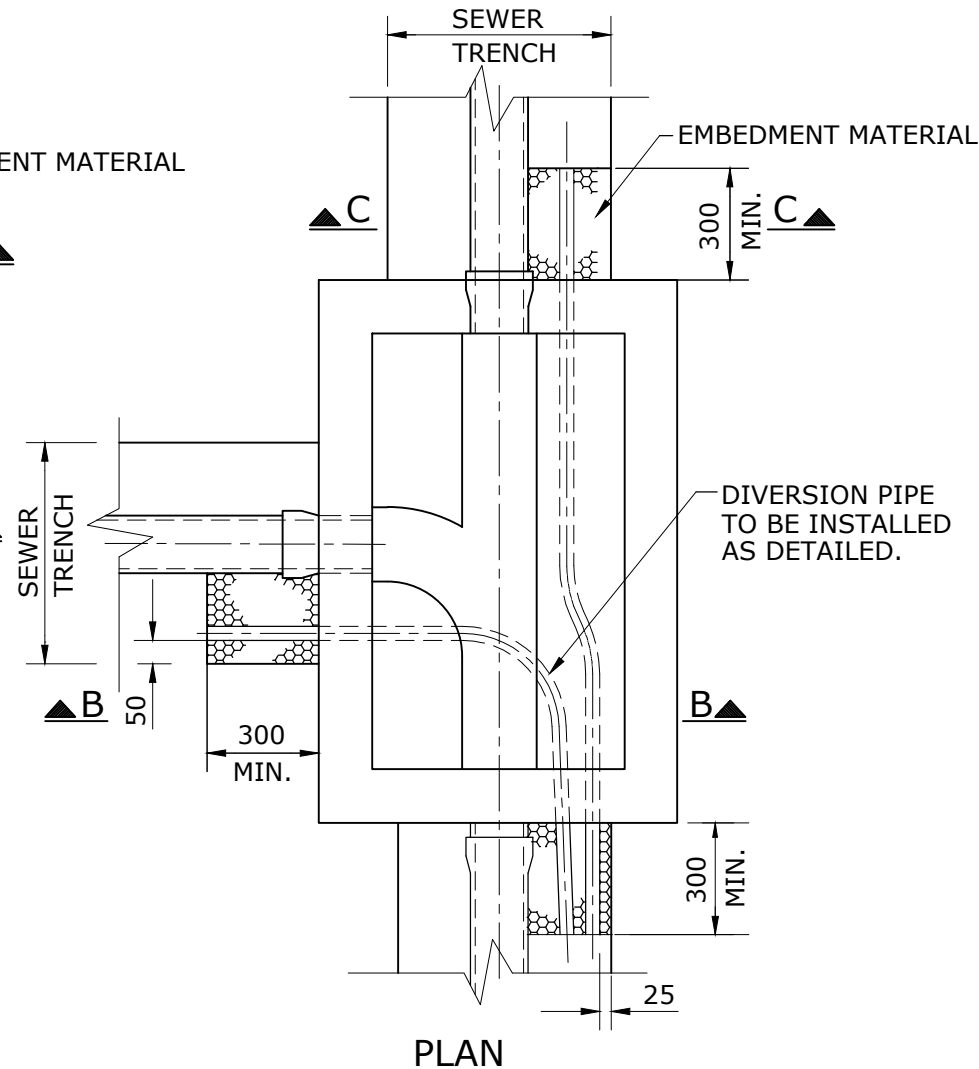
PLAN
DIVERSION DRAIN TO
STORMWATER OUTLET



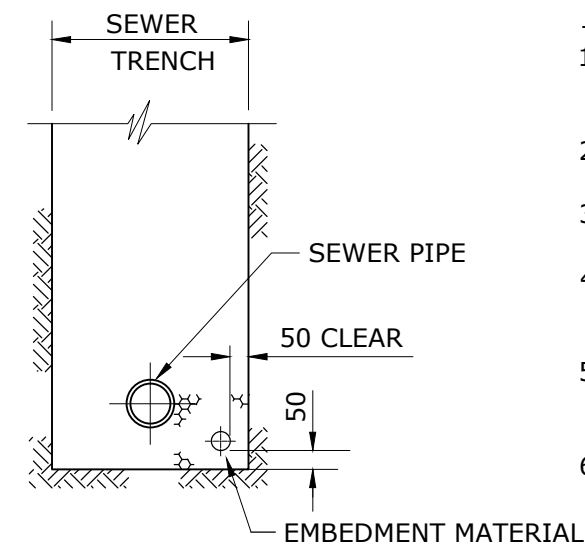
SECTION D-D
DIVERSION DRAIN
TRENCH



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 SEQ 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.

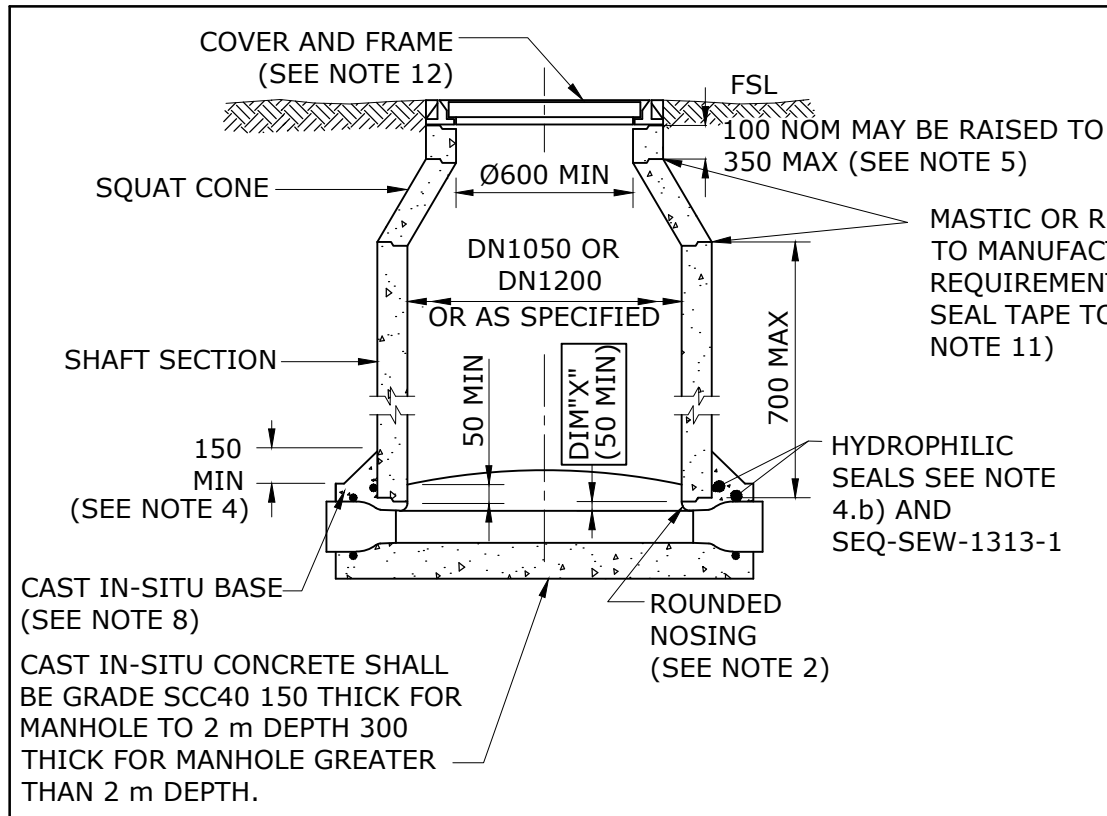
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SEQ WATER SERVICE PROVIDERS

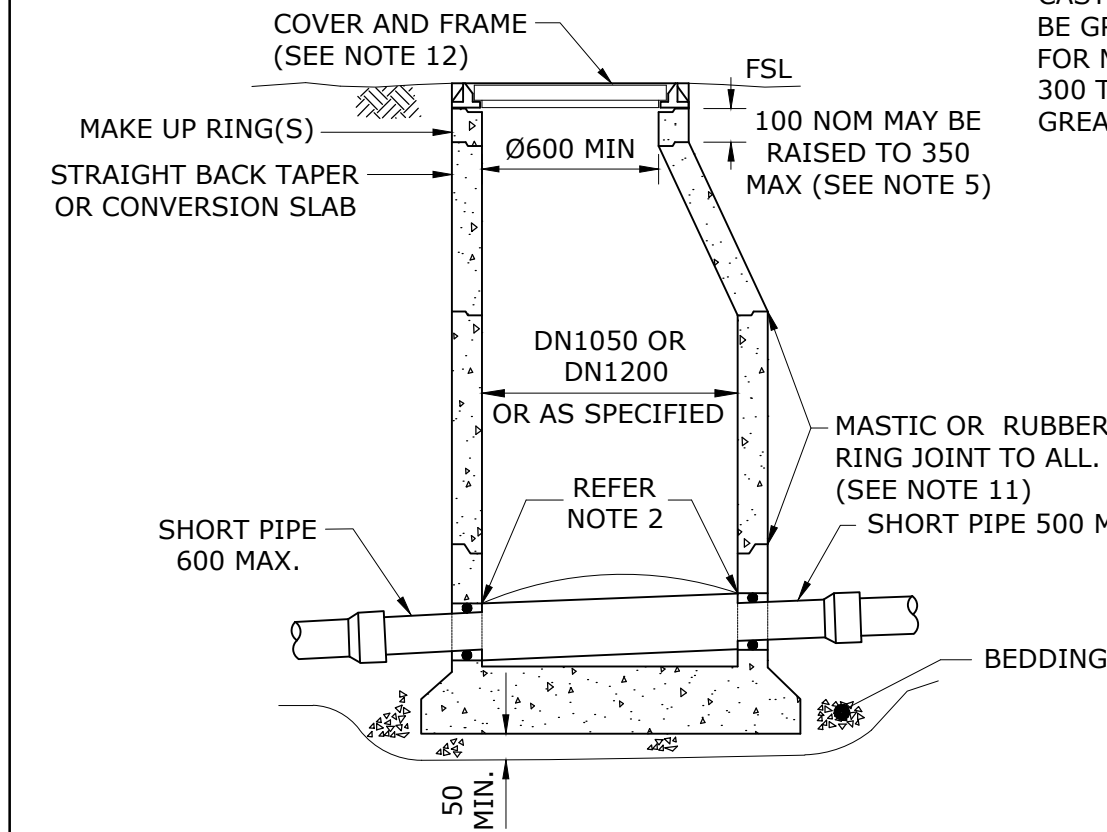
WORK PRACTICES MUST COMPLY WITH ALL APPLICABLE OCCUPATIONAL HEALTH & SAFETY LEGISLATION

SEWERAGE STANDARD DRAWING
TYPICAL DRAINAGE OF SEWER TRENCHES
AND DIVERSION DRAINS

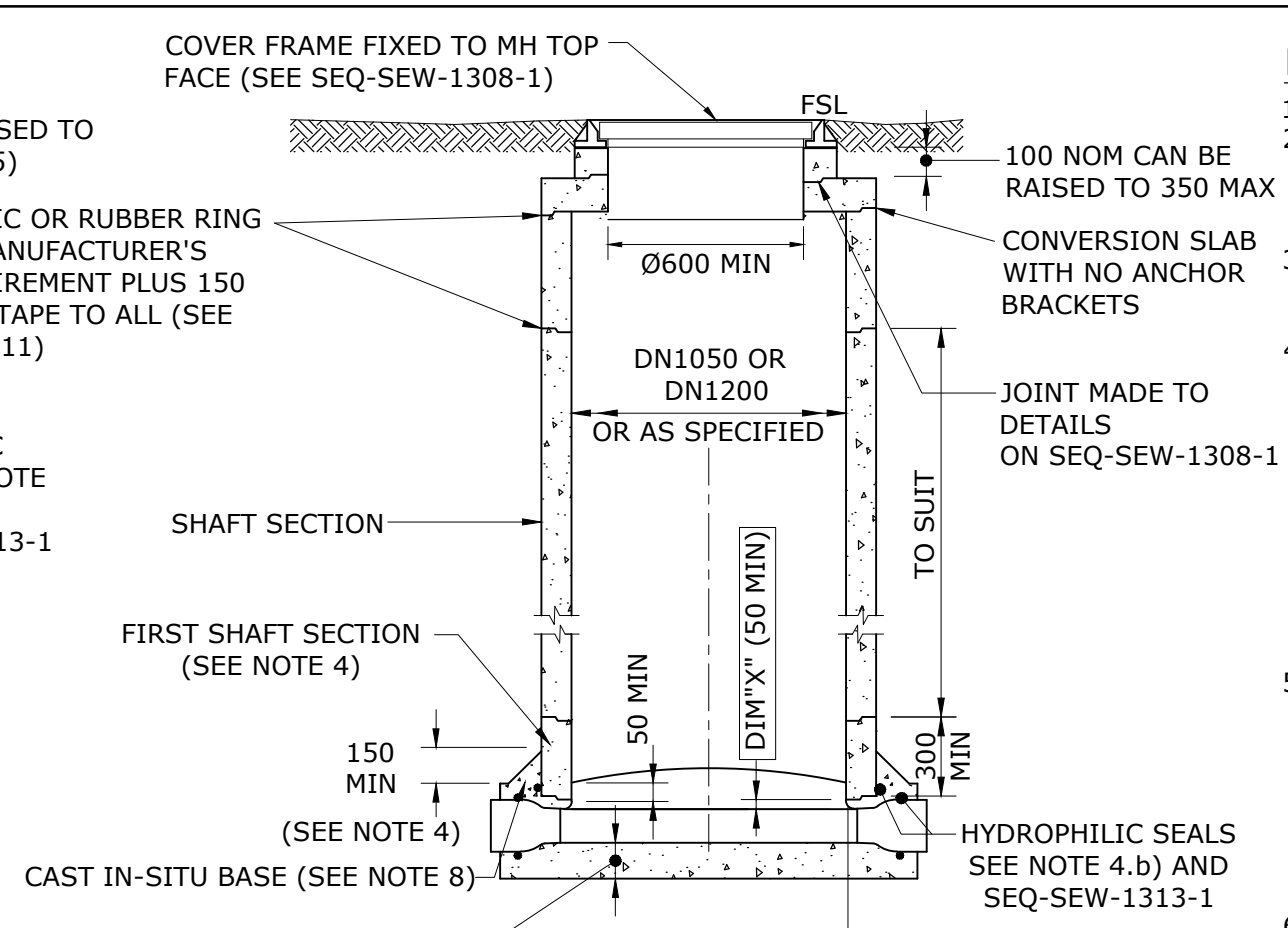
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SEQ-SEW-1207-2				A
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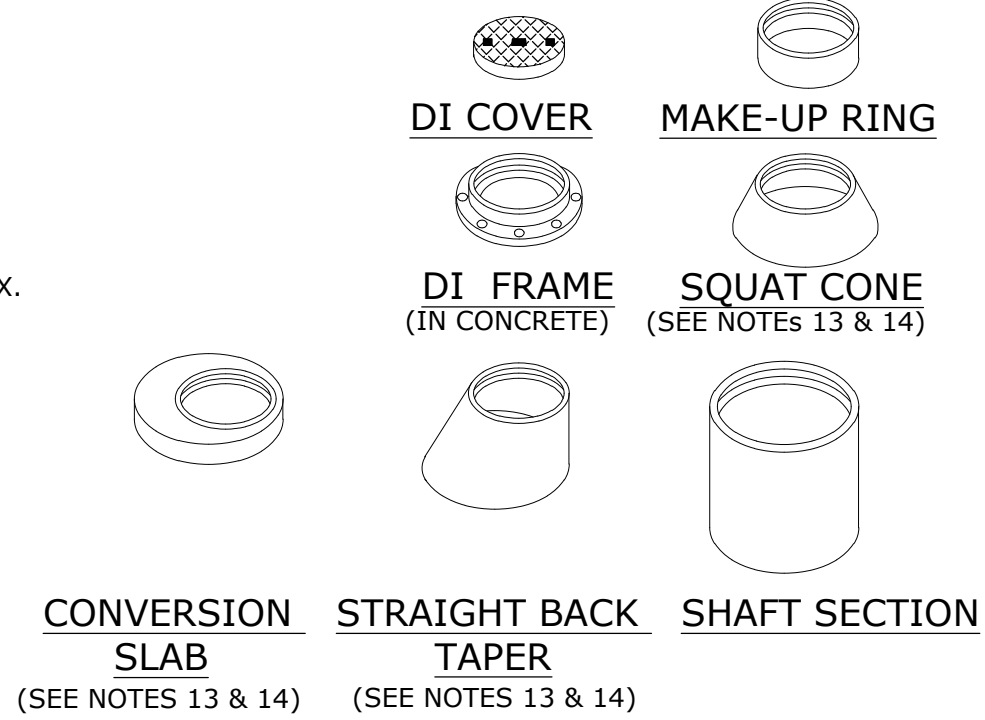
MAINTENANCE HOLE TYPE P1
(SEE NOTE 10, 13 AND 14)
(CAST IN-SITU BASE SHOWN)



MAINTENANCE HOLE TYPE P3
PRE-CAST BASE SHOWN
(SEE NOTE 10, 13 AND 14)



MAINTENANCE HOLE TYPE P2
FOR COMPONENT DEPTH TO 6000
(SEE NOTE 10, 13 AND 14) (CAST IN-SITU BASE SHOWN)



- NOTES**
- ALL PRE CAST MANHOLES TO BE MAX 6 m.
 - PROVIDE ROUNDED NOSING ON INLET AND OUTLET PIPE TO PREVENT DAMAGE TO JETTING EQUIPMENT AND CCTV GUIDES AND CABLES.
 - CONSTRUCTION MAY BE A COMBINATION OF PRECAST AND IN-SITU TO SUIT APPLICATION. TYPE P3 PREFERRED. REFER NOTE 13.
 - LOCATION OF FIRST SHAFT SECTION FOR CAST IN-SITU BASE:
 - FIRST SHAFT SECTION TO BE BETWEEN 300-600 LONG TO ALLOW FORMING OF CHANNEL AND BENCH.
 - PLACE HYDROPHILIC SEAL WITH 100 COVER FOR CAST IN-SITU CONCRETE BASE.
 - PRIME COMPONENT 200 FROM BOTTOM WITH CEMENT SLURRY. EMBED SHAFT SECTION 50 INTO WET CONCRETE BUILD UP OUTSIDE FILLET TO 150.
 - MAKE-UP RINGS:
 - 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.
 - USE TAPERED MAKE UP RING OR TAPERED SPACERS ON SLOPING GROUND..
 - BACKFILL AROUND MH
 - THE METHOD OF BACKFILL AND COMPACTION AROUND MH TO BE AS FOR PIPE EMBEDMENT.
 - TAKE CARE TO RAISE BACKFILL EQUALLY ALL AROUND THE MH TO AVOID UNBALANCED LATERAL LOADING
 - FOR ALL MH'S, STEP IRONS OR LADDERS ARE PROHIBITED.
 - CAST IN-SITU CONCRETE BASE TO BE SCC40.
 - IN WATER CHARGED GROUND OR WHERE BOLT-DOWN COVERS ARE REQUIRED AS PER CLAUSE 7.9.1 OF THE CODE INCLUDING Q100 FLOODING AND SURCHARGE AREAS, USE ONLY FULL CAST IN-SITU MH.
 - FOR PIPE CONNECTIONS TO MH SEE SEQ-SEW-1302-1.
 - ALL JOINTS 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.
 - FOR MH COVER CLASS SELECTION AND FINISHED LEVELS SEE SEQ-SEW-1308-1.
 - CoGC ONLY PERMIT PRE-CAST BASES AND PREFER CONVERSION SLAB.
 - UNITY WATER PERMIT STRAIGHT BACK TAPER OR CONVERSION SLAB ONLY.

REV. No.	DATE	DESCRIPTION	AUTH.
C	31/12/18	AMENDED MH SIZE, CONCRETE CLASS, NOTES 9,11&13. OTHER MINOR CHANGES	
B	08/09/15	AMENDED NOTE 11 AND INCLUDED REFERENCES TO NOTE 10 UNDER MAINTENANCE HOLES DETAILS	

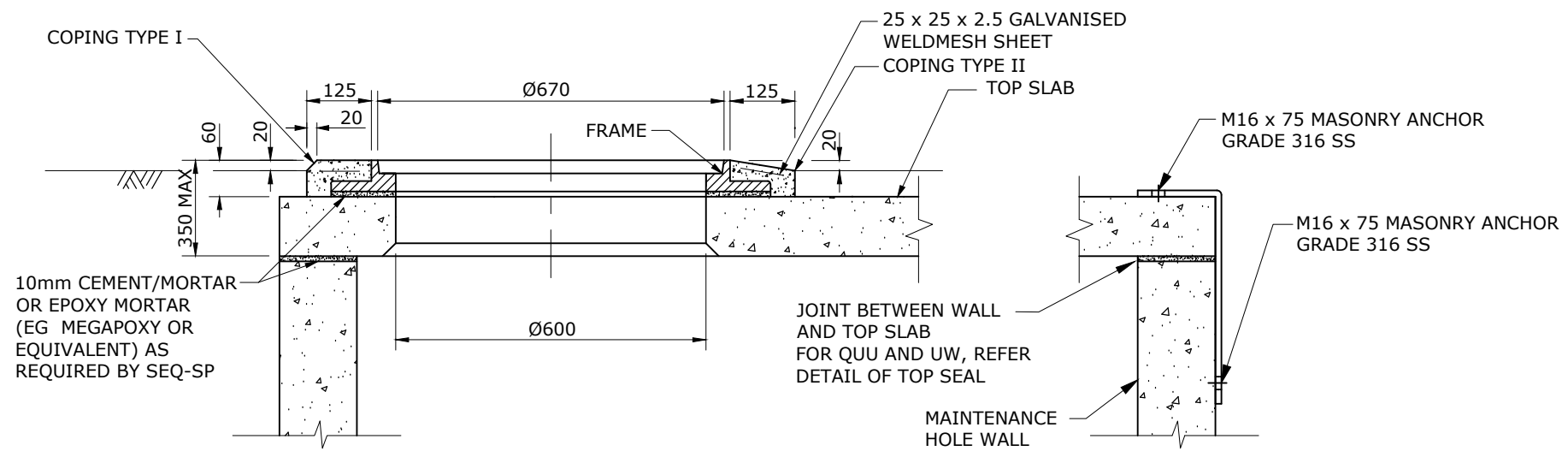
SEQ WATER SERVICE PROVIDERS

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

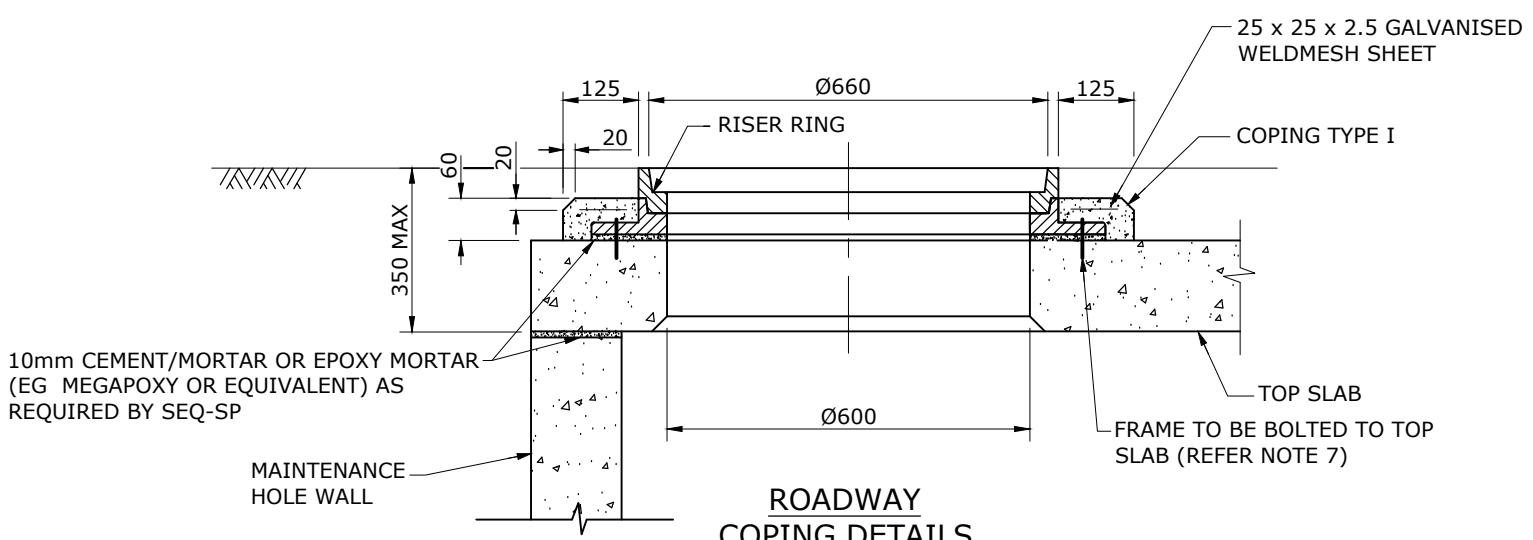
CoGC	LCC	RCC	QUU	UW
DRAWING No.				VERSION
SEQ-SEW-1300-1				C
NOT TO SCALE				ORG DATE: 1/1/2013



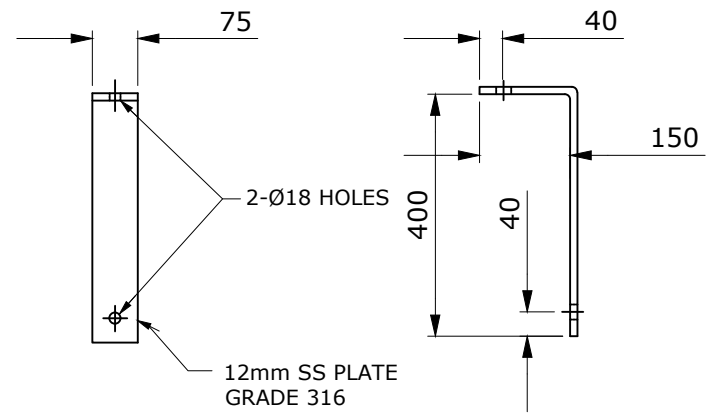
**PRIVATE PROPERTY & FOOTPATH
COPING DETAILS
CLASS 'B' COVER AND FRAME**

**TOP SLAB ANCHOR BRACKET
FOR USE WITH BOLT DOWN COVERS**

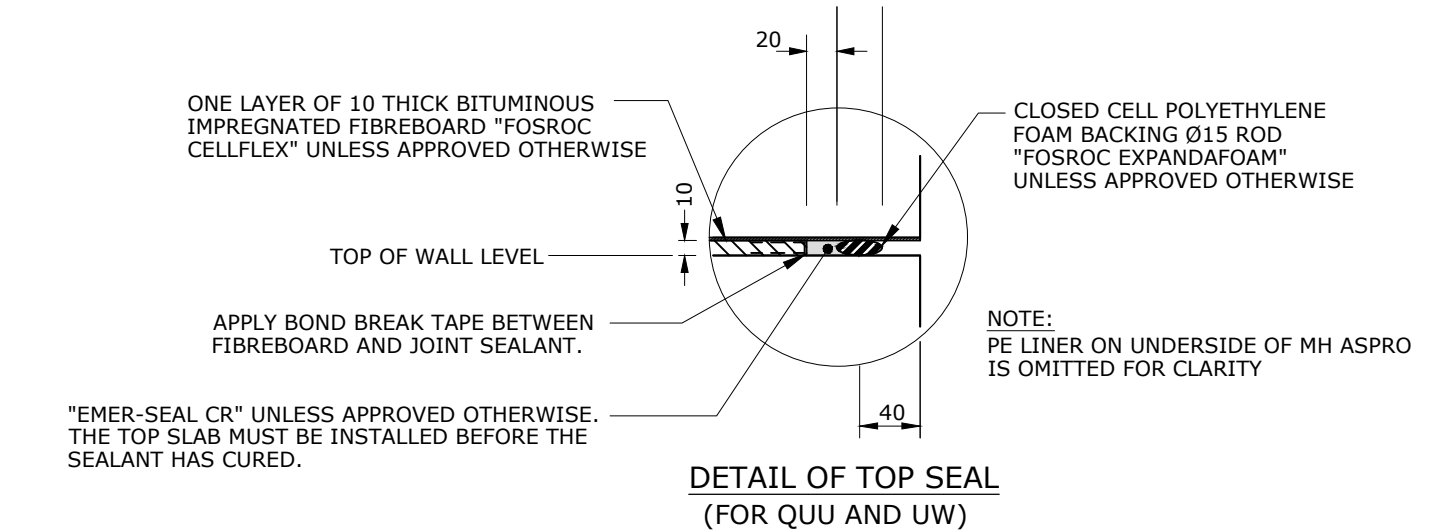
COPING TO BE CONCRETE CAST IN-SITU	
TYPE	LOCATION
I	PRIVATE PROPERTY, SEALED & UNSEALED ROADWAY
II	PRIVATE PROPERTY & FOOTPATH



**ROADWAY
COPING DETAILS
CLASS 'D' COVER AND FRAME**



TOP SLAB ANCHOR BRACKET



**DETAIL OF TOP SEAL
(FOR QUU AND UW)**

NOTES

1. ALL WORK AND MATERIALS SHALL BE IN ACCORDANCE WITH CURRENT SEQ 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. ALL CONCRETE SHALL BE CLASS N20 EXCEPT MAINTENANCE HOLES WHICH ARE SPECIAL CLASS TO WSA PS-358 WITH CALCAREOUS AGGREGATES.
5. ALL DIMENSIONS ARE IN MILLIMETRES.
6. COVER FRAME TO MATCH FINISHED SURFACE LEVEL PROFILE.
7. WHERE BOLT DOWN LIDS ARE REQUIRED THE FRAME SHALL BE FIXED TO THE TOP SLAB WITH 4 - M25 x 100 MASONRY ANCHORS AND THE TOP SLAB FIXED DOWN WITH THREE EVENLY SPACED ANCHOR BRACKETS.
8. COPING TYPE II SHALL BE USED WHERE MH WILL BE TRAVERSED BY PEDESTRIANS AND CYCLISTS.
9. FOR QUU AND UW, REFER SEQ-SEW-1104-1, SEQ-SEW-1101-5 AND SEQ-SEW-1101-6 FOR NOTES.

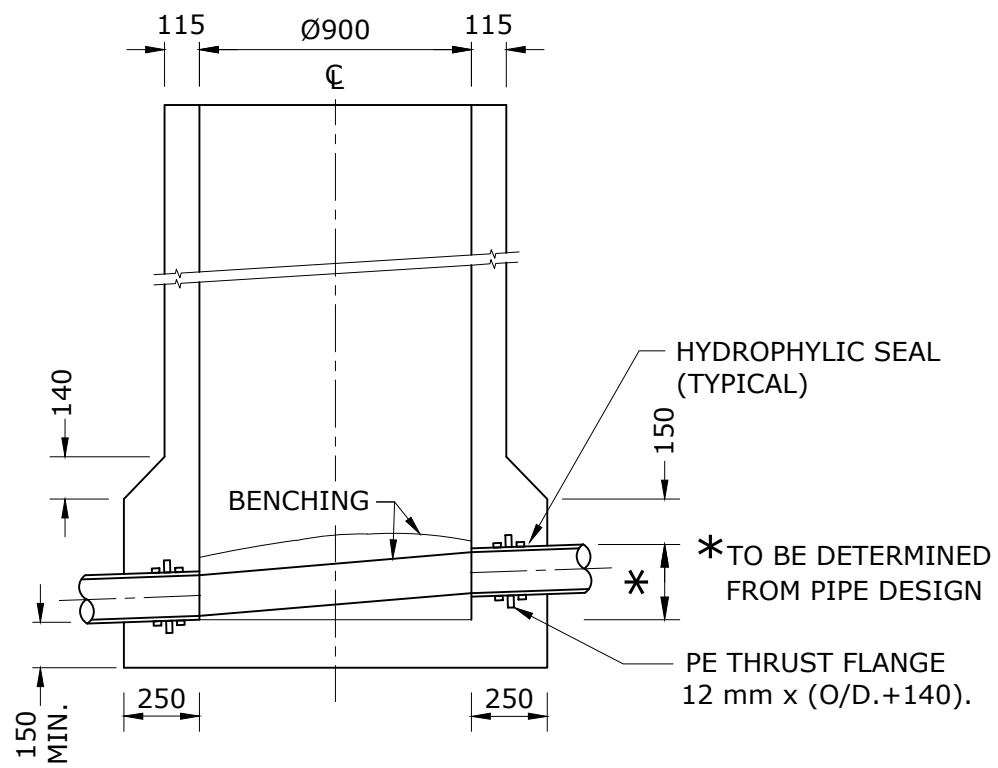
REV. No.	DATE	DESCRIPTION	AUTH.
B	24/05/19	AMENDED NOTES, ADDED TOP SEAL DETAIL. DRG NOT APPLICABLE TO CoGC.	

**SEQ WATER
SERVICE PROVIDERS**

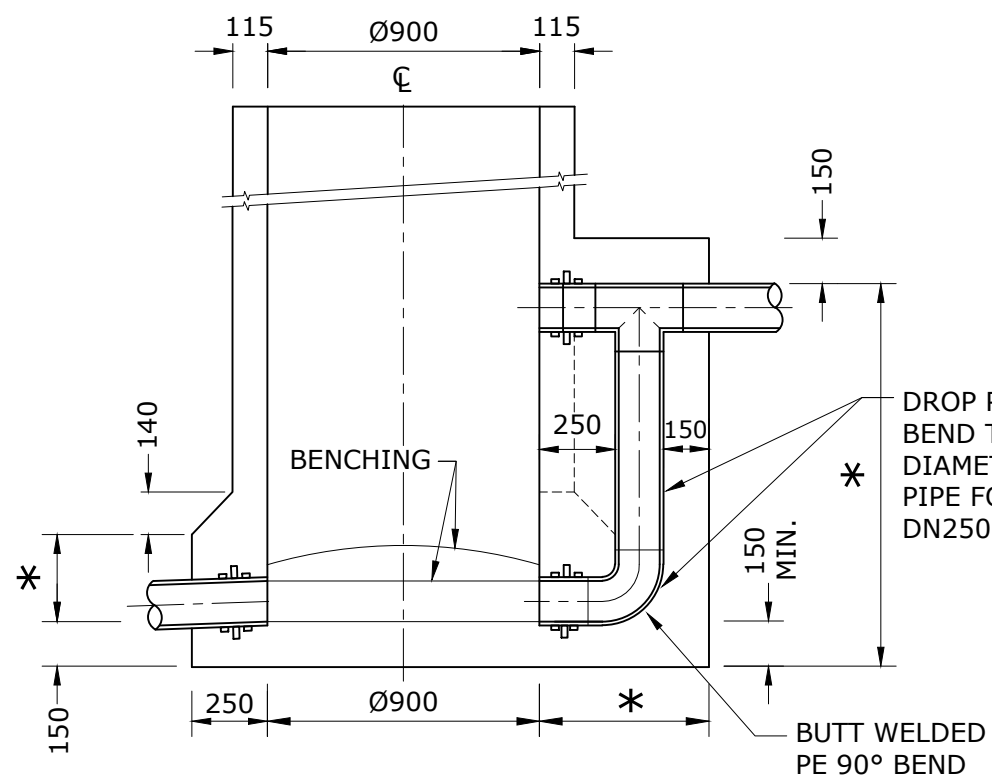
WORK PRACTICES MUST COMPLY WITH ALL APPLICABLE OCCUPATIONAL HEALTH & SAFETY LEGISLATION

**SEWERAGE STANDARD DRAWING
CAST IN-SITU MAINTENANCE HOLE
TYPICAL COPING & ANCHOR
BRACKET DETAILS**

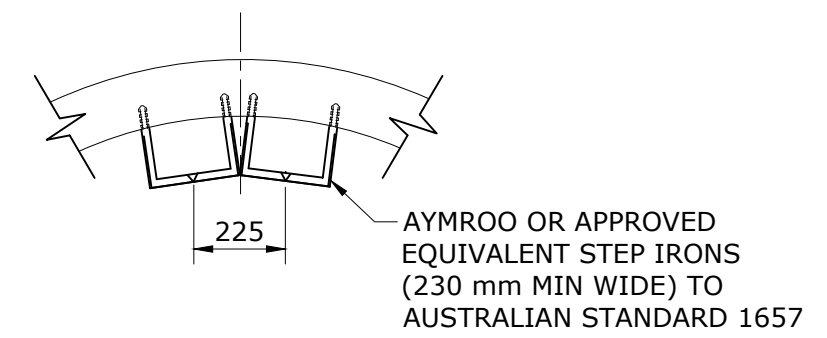
CoGC	LCC	RCC	QUU	UW
DRAWING No.				VERSION
SEQ-SEW-1301-1				B
NOT TO SCALE				ORG DATE: 1/1/2013



**STRAIGHT THROUGH SEWER
TYPE "A"**



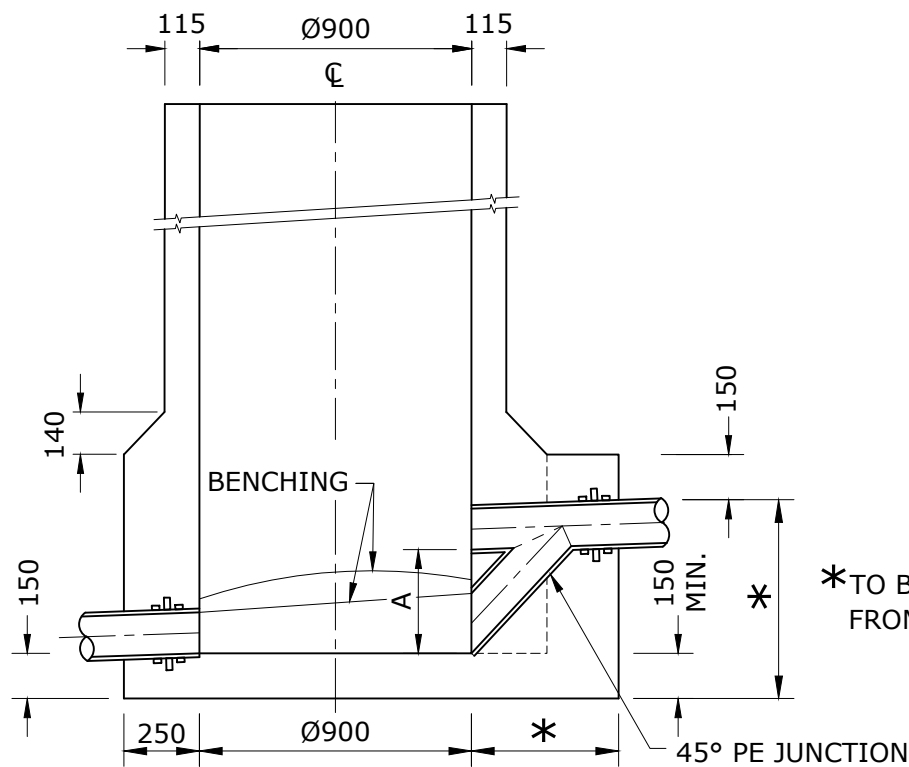
**ELEVATION
EXTERNAL BACKDROP
TYPE "D"**



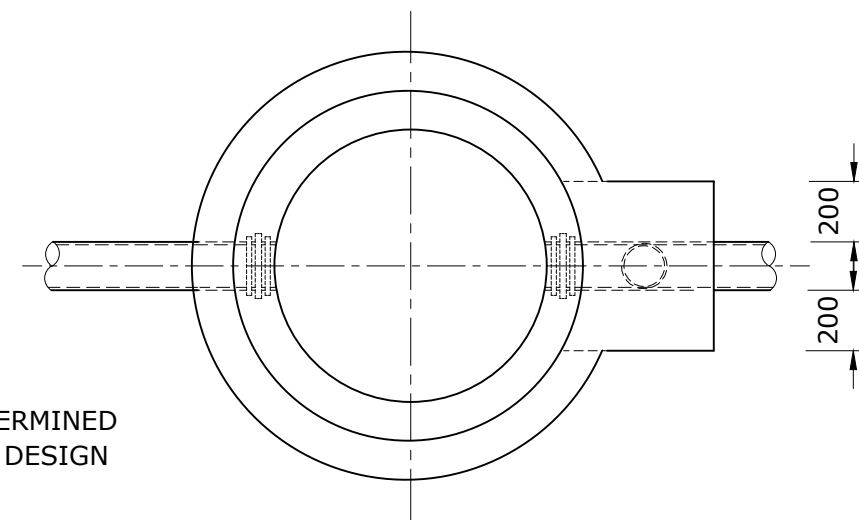
**STEP IRON ARRANGEMENT
(REFER NOTE 6)**

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.



**OBLIQUE BACKDROP
TYPE "C"**



**PLAN
EXTERNAL BACKDROP
TYPE "D"**

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

- REFER SEQ-SEW-1101-4, SEQ-SEW-1101-5 AND SEQ-SEW-1101-6 FOR NOTES.
- REFER SEQ-SEW-1301-26 FOR TOP SLAB REINFORCEMENT DETAILS.
- THIS STANDARD DRAWING APPLIES TO ALL RETICULATION NUSEWERS UP TO DN250 IN SIZE.
- INTERNAL DROPS ARE NOT PERMITTED IN 'G' TYPE MAINTENANCE HOLES.
- BENCHING SHALL BE FINISHED WITH EQUAL PARTS SAND AND CEMENT TOPPING.
- STEP IRONS AND LADDERS SHALL NOT BE PROVIDED FOR UW MAINTENANCE HOLES.

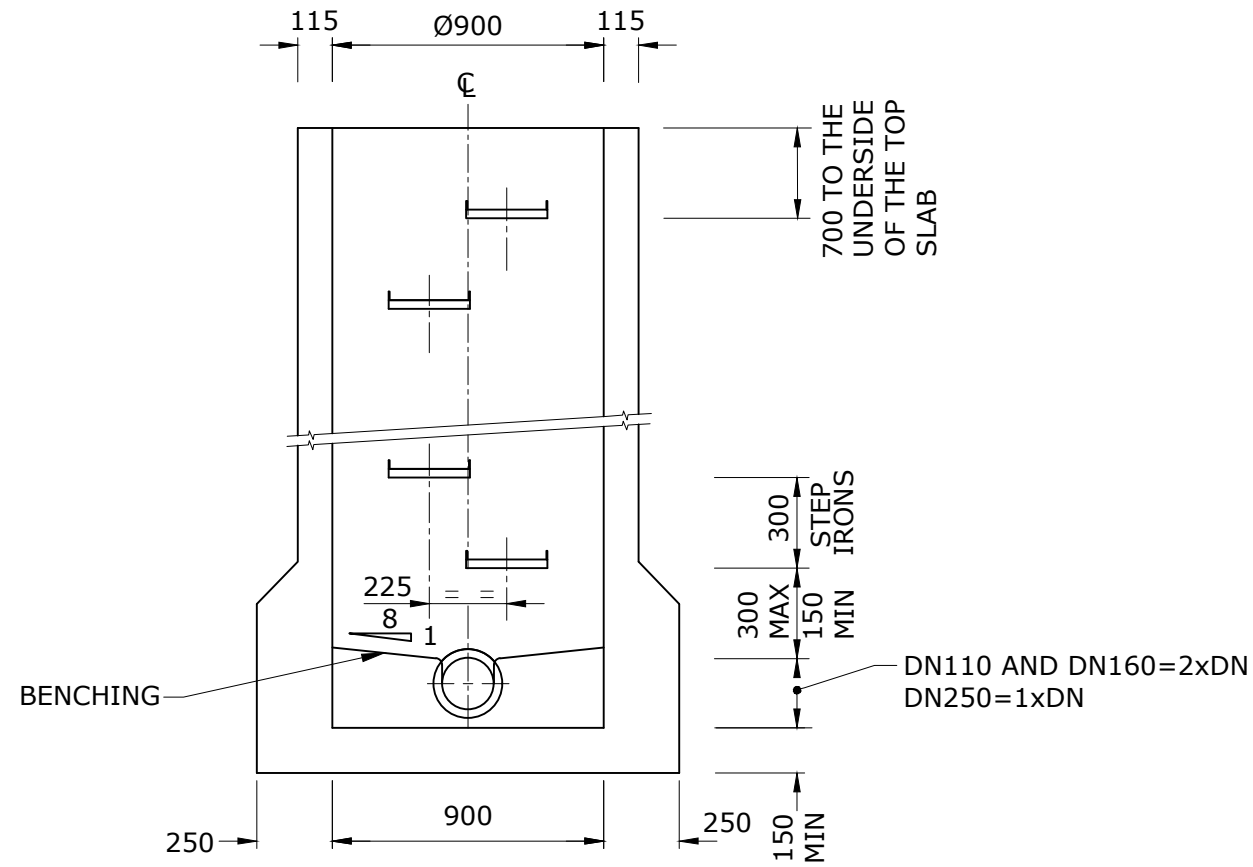
REV. No.	DATE	DESCRIPTION	AUTH.
C	23/05/19	AMENDED 'G' TYPE MH GA DETAILS	
B	11/03/16	NOTE 1 ADDED	

**SEQ WATER
SERVICE PROVIDERS**

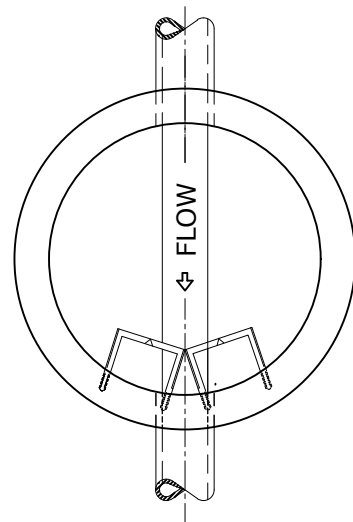
WORK PRACTICES MUST COMPLY WITH ALL APPLICABLE OCCUPATIONAL HEALTH & SAFETY LEGISLATION

**SEWERAGE STANDARD DRAWING
'G' TYPE - PE NUSEWERS
TYPICAL MAINTENANCE HOLE
G.A. DETAILS**

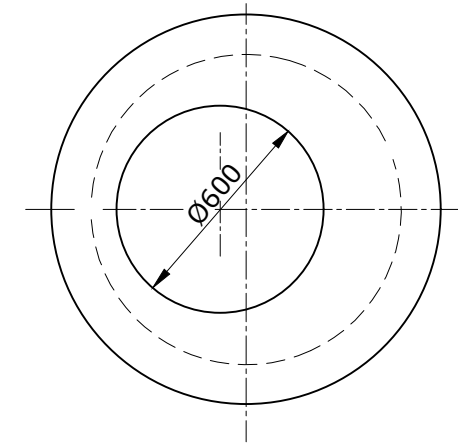
CoC	L&C	R&C	QUU	UW
DRAWING No.				VERSION
SEQ-SEW-1301-2				C
NOT TO SCALE				ORG DATE: 1/1/2013



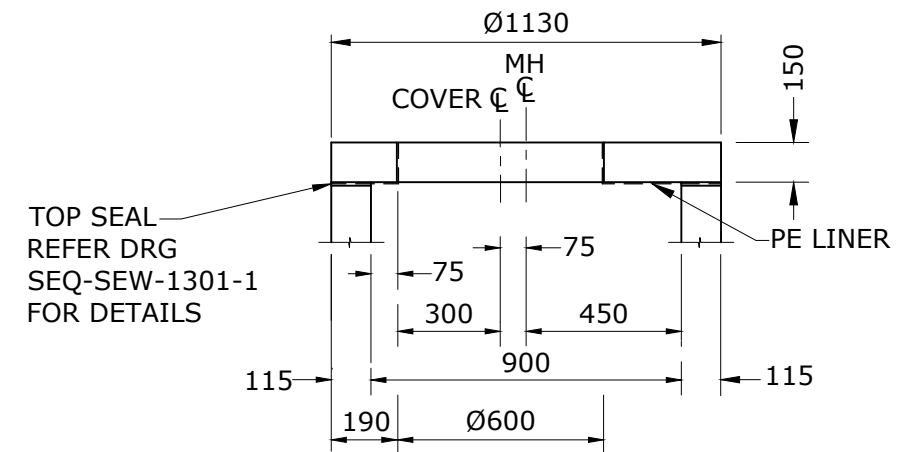
TYPICAL CONSTRUCTION AND STEP IRON DETAILS



PLAN STEP IRON ARRANGEMENT
(REFER NOTE 4)



PLAN - TOP SLAB



TOP SLAB AND WALL DETAILS

NOTES

1. CAST INSITU MAINTENANCE HOLE FOR ROADWAY, PRIVATE PROPERTY AND FOOTPATH LOCATIONS. DEPTHS TO 3.0 m MAXIMUM.
2. REFER SEQ-SEW-1101-4, SEQ-SEW-1101-5 & SEQ-SEW-1101-6 FOR NOTES.
3. REFER SEQ-SEW-1301-26 FOR TOP SLAB REINFORCEMENT DETAILS.
4. STEP IRONS AND LADDERS SHALL NOT BE PROVIDED FOR UW MAINTENANCE HOLES

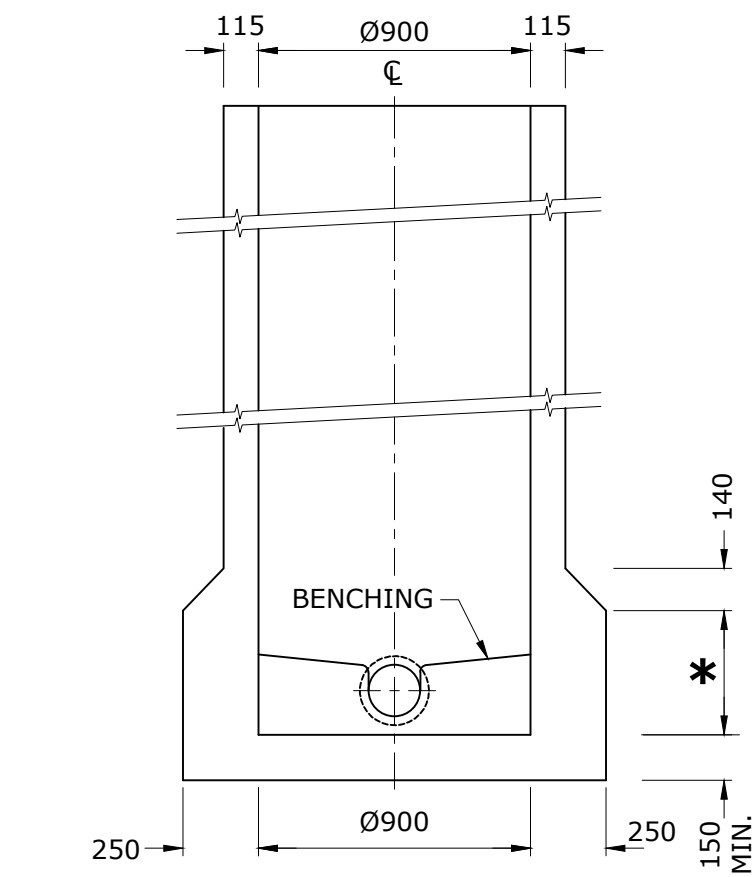
REV. No.	DATE	DESCRIPTION	AUTH.
C	23/05/19	AMENDED TO SHOW 'G' TYPE MH AND SLAB GA DETAILS	
B	21/08/15	AMENDED MANINTENENACE HOLE ANGLE TABLE	

SEQ WATER SERVICE PROVIDERS

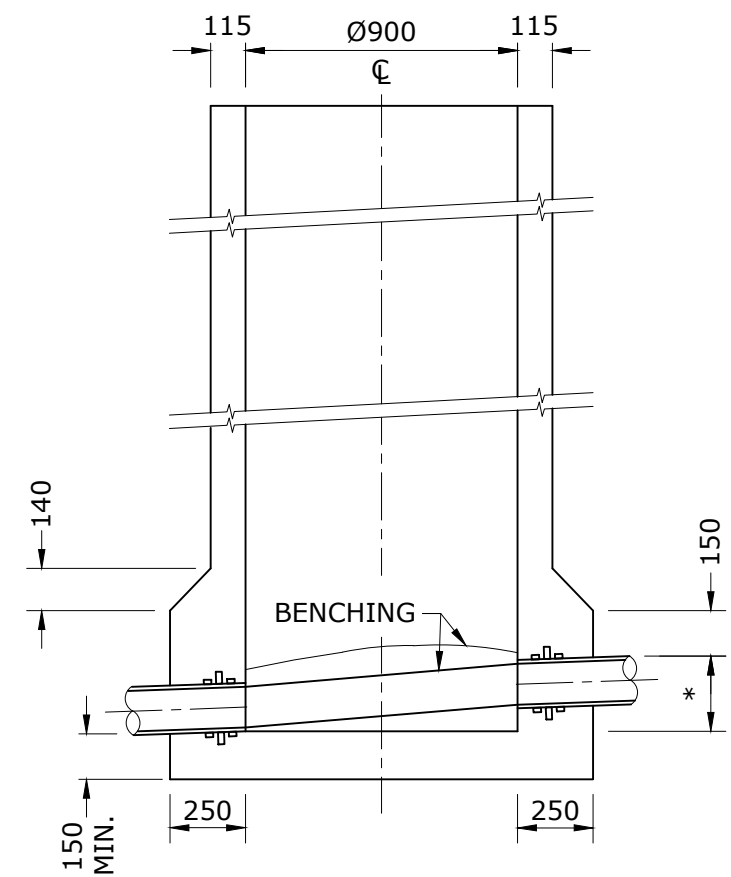
WORK PRACTICES MUST COMPLY WITH ALL APPLICABLE OCCUPATIONAL HEALTH & SAFETY LEGISLATION

SEWERAGE STANDARD DRAWING
'G' TYPE - PE NUSEWERS
TYPICAL MAINTENANCE HOLE
AND SLAB G.A. DETAILS

CoC	L&C	R&C	QUU	UW
DRAWING No.				VERSION
SEQ-SEW-1301-3				C
NOT TO SCALE				ORG DATE: 1/1/2013

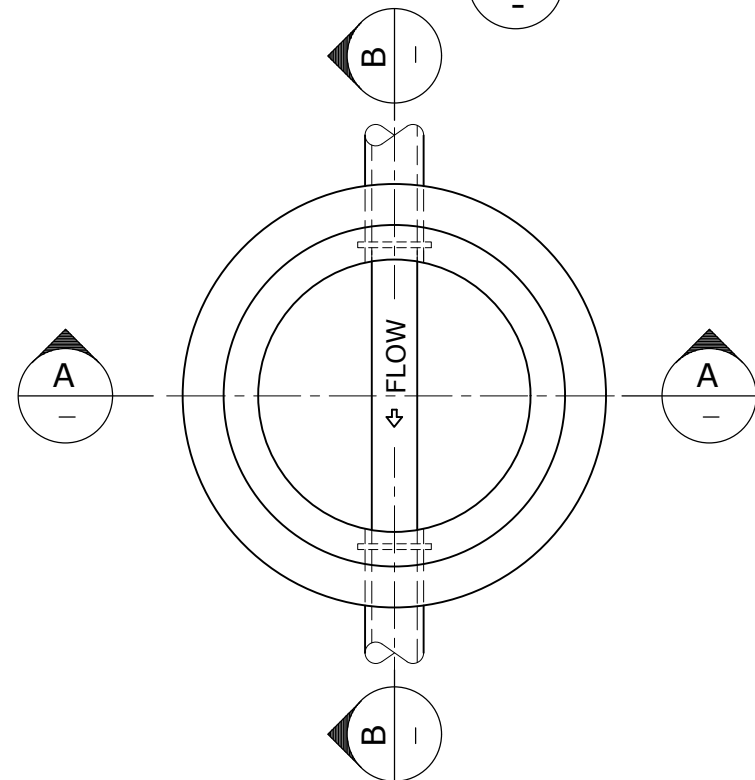


* TO BE DETERMINED FROM PIPE DESIGN



SECTION A

SECTION B



PLAN
STRAIGHT THROUGH SEWER
TYPE 'A'

NOTES

1. DESIGN TO CONSIDER TRAFFIC LOADS, STRUCTURAL STEEL DESIGN AND NATIVE SOIL CONDITIONS, AND BE CERTIFIED BY AN RPEQ.
2. CAST INSITU MAINTENANCE HOLE FOR ROADWAY, PRIVATE PROPERTY AND FOOTPATH LOCATIONS. DEPTHS TO 3.0 m MAXIMUM.
3. REFER TO SEQ-SEW-1301-2 AND SEQ-SEW-1301-3 FOR 'G' TYPE MH GENERAL ARRANGEMENT DRAWINGS.
4. REFER SEQ-SEW-1101-4, SEQ-SEW-1101-5 & SEQ-SEW-1101-6 FOR NOTES.
5. REFER SEQ-SEW-1301-26 FOR TOP SLAB REINFORCEMENT DETAILS.

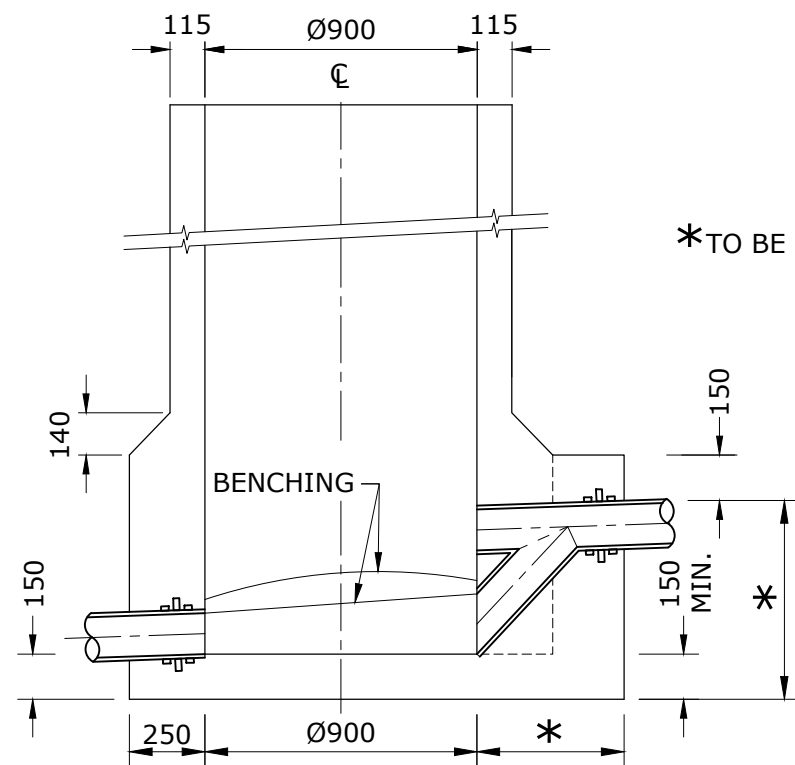
REV. No.	DATE	DESCRIPTION	AUTH.
C	18/06/19	UPDATED DRAWING TO SHOW STRUCTURAL GA DETAILS FOR TYPE 'A' MH	
B	20/07/15	AMENDED INTERNAL DROP TITLE AND MAINTENANCE HOLE ANGLE TABLE	

SEQ WATER SERVICE PROVIDERS

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

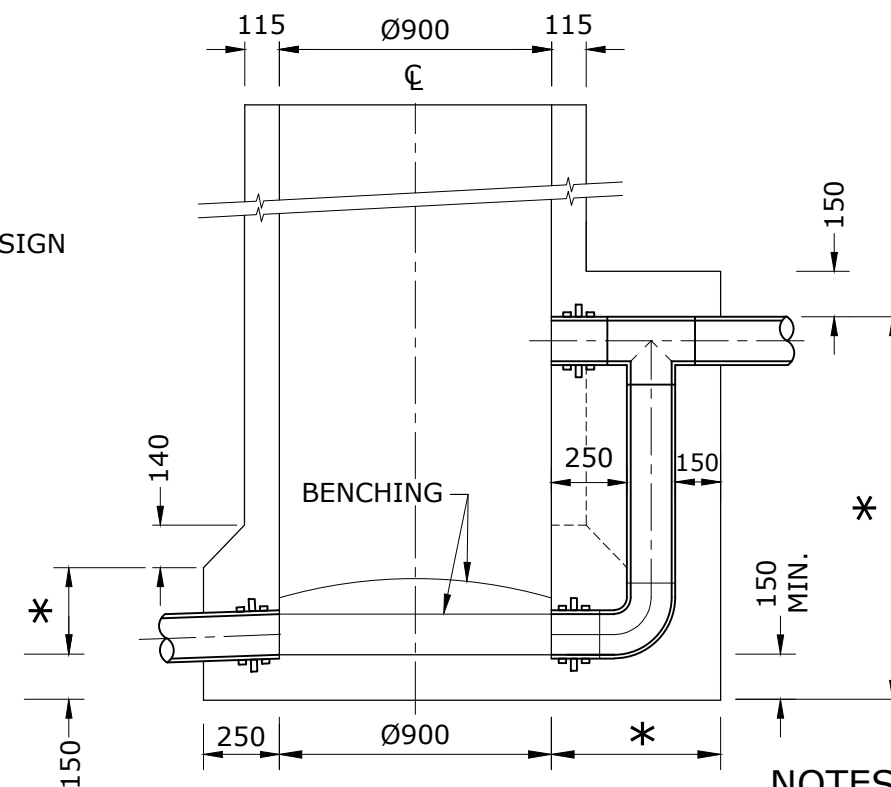
SEWERAGE STANDARD DRAWING
'G' TYPE - PE NUSEWERS
TYPICAL MAINTENANCE HOLE
STRUCTURAL G.A. DETAILS
TYPE 'A'

CoC	L&C	R&C	QUU	UW
DRAWING No.				VERSION
SEQ-SEW-1301-4				C
NOT TO SCALE				ORG DATE: 1/1/2013



SECTION **C**

**OBLIQUE BACKDROP
TYPE "C"**

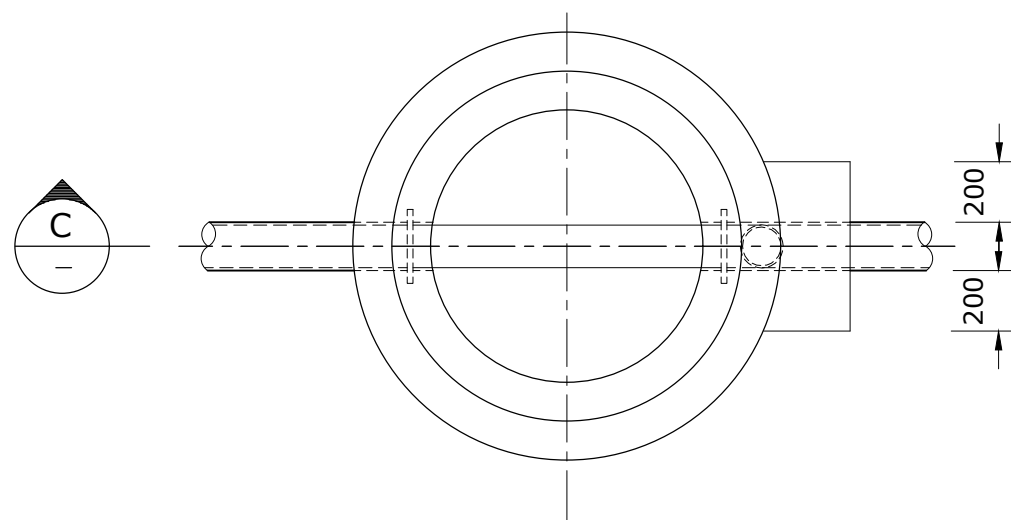


SECTION **D**

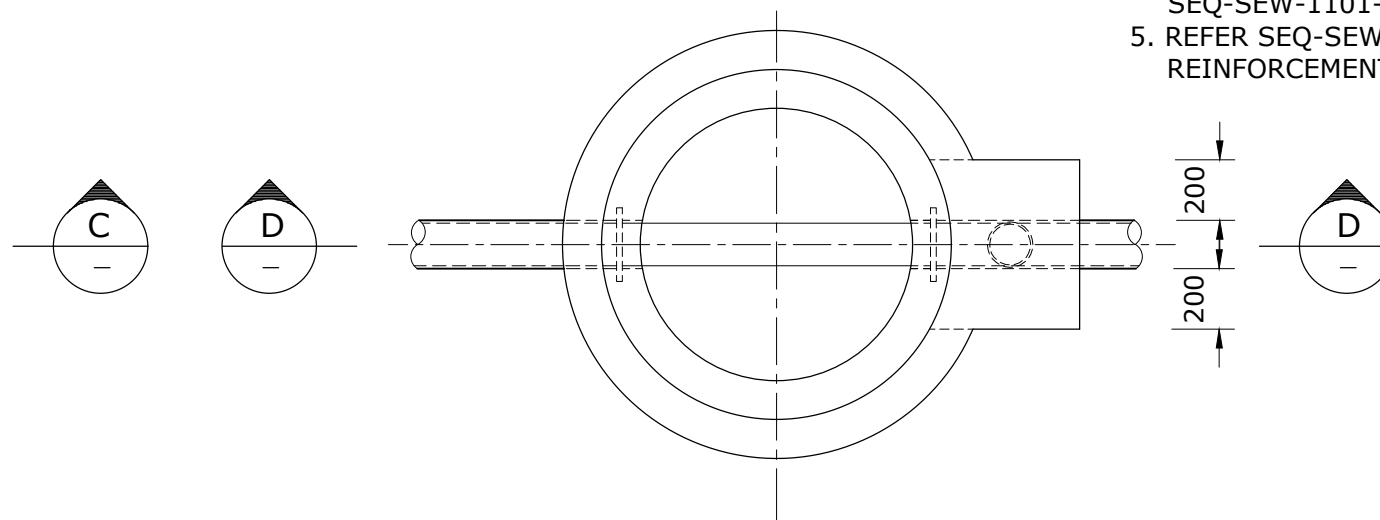
**EXTERNAL BACKDROP
TYPE "D"**

NOTES

1. DESIGN TO CONSIDER TRAFFIC LOADS, STRUCTURAL STEEL DESIGN AND NATIVE SOIL CONDITIONS, AND BE CERTIFIED BY AN RPEQ.
2. CAST INSITU MAINTENANCE HOLE FOR ROADWAY, PRIVATE PROPERTY AND FOOTPATH LOCATIONS. DEPTHS TO 3.0 m MAXIMUM.
3. REFER TO SEQ-SEW-1301-2 AND SEQ-SEW-1301-3 FOR 'G' TYPE MH GENERAL ARRANGEMENT DRAWINGS.
4. REFER SEQ-SEW-1101-4, SEQ-SEW-1101-5 & SEQ-SEW-1101-6 FOR NOTES.
5. REFER SEQ-SEW-1301-26 FOR TOP SLAB REINFORCEMENT DETAILS.



**PLAN
OBLIQUE BACKDROP
TYPE "C"**



**PLAN
EXTERNAL BACKDROP
TYPE "D"**

REV. No.	DATE	DESCRIPTION	AUTH.
C	18/06/19	UPDATED DWG TO SHOW STRUCTURAL GA DETAILS FOR TYPE 'C' & 'D' MHS	
B	11/03/16	NOTE 1 ADDED	

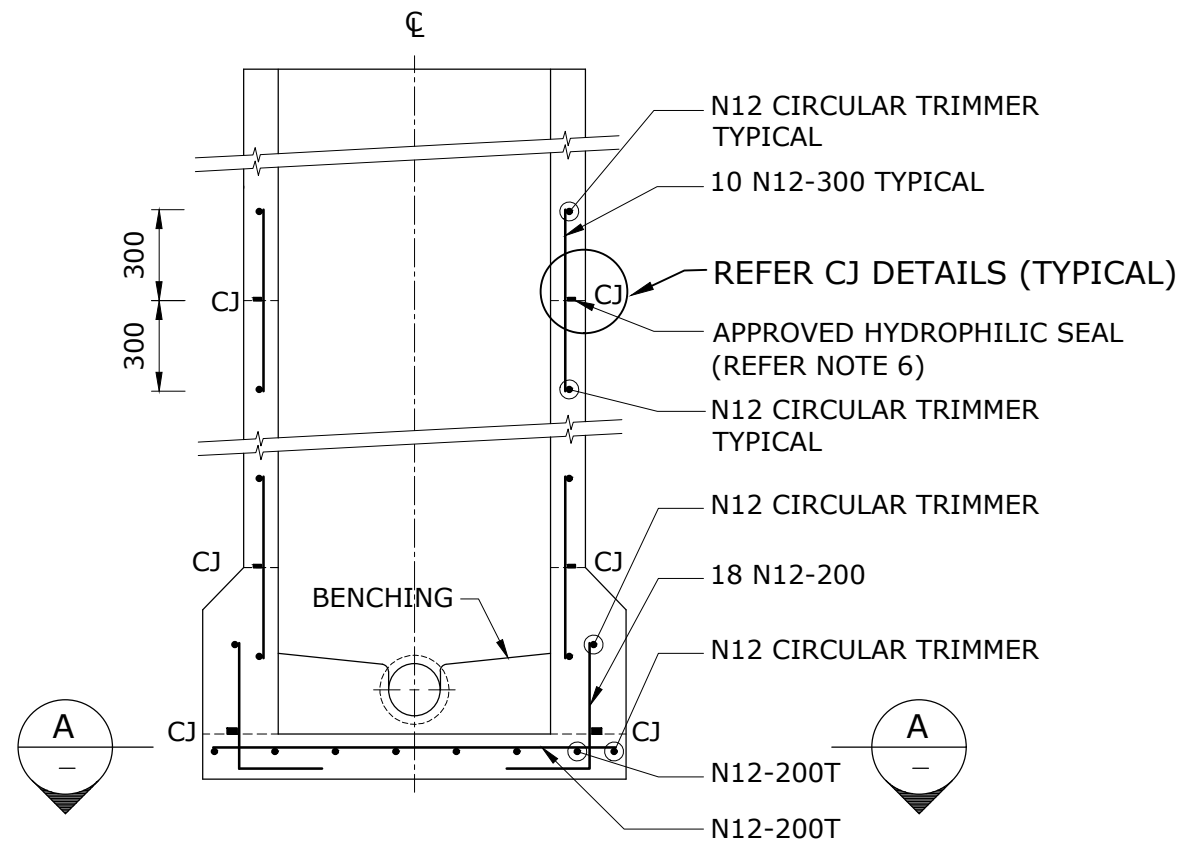
**SEQ WATER
SERVICE PROVIDERS**

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

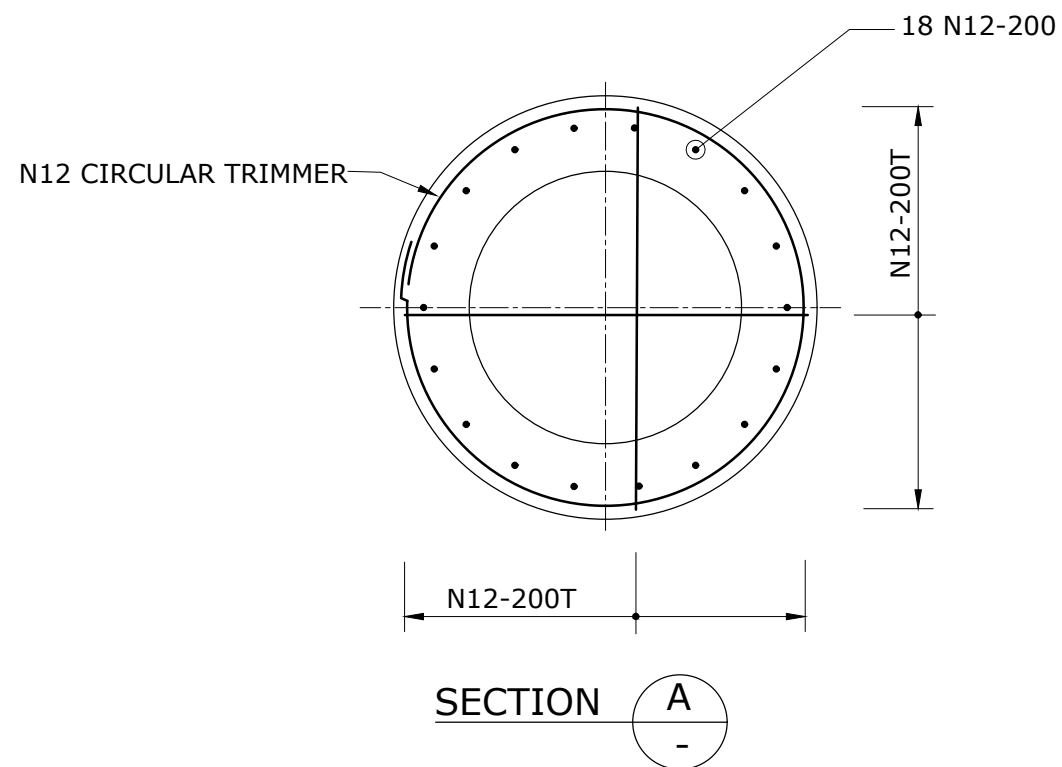
SEWERAGE STANDARD DRAWING

'G' TYPE - PE NUSEWERS
TYPICAL MAINTENANCE HOLE
STRUCTURAL G.A. DETAILS
TYPE 'C' & TYPE 'D'

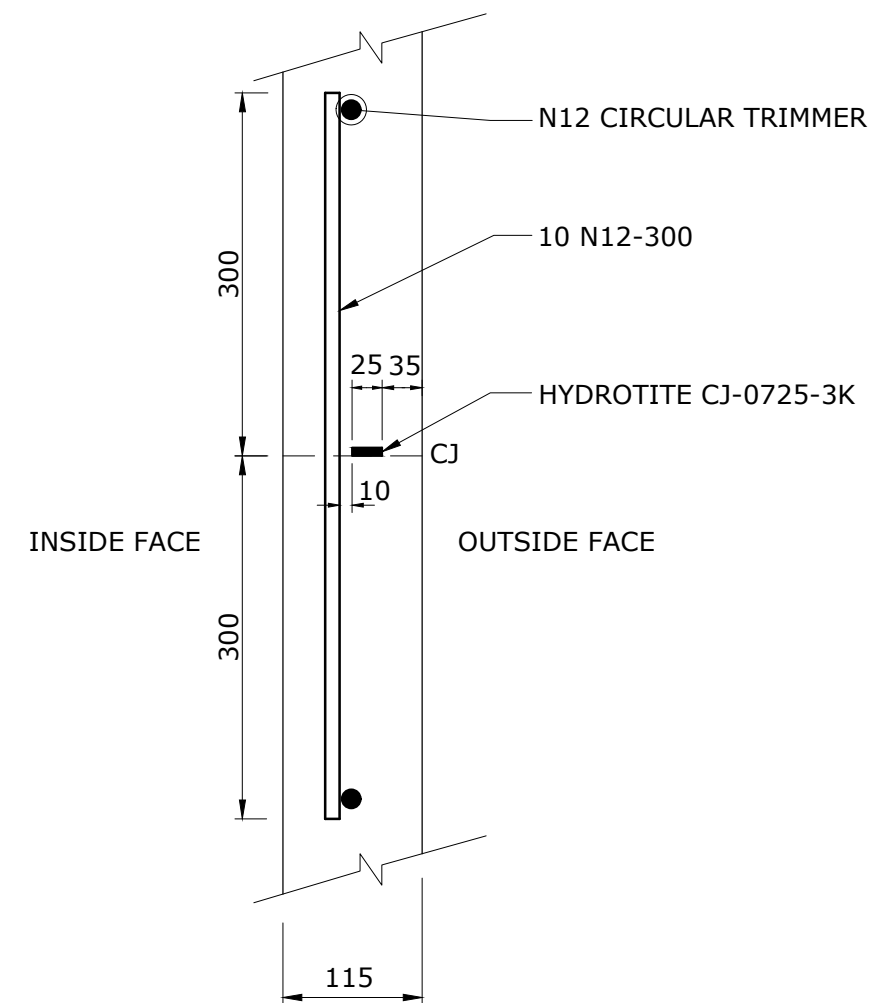
CoC	L&C	R&C	QUU	UW
DRAWING No.				VERSION
SEQ-SEW-1301-5				C
NOT TO SCALE				ORG DATE: 1/1/2013



TYPICAL SECTION



SECTION



TYPICAL CJ DETAIL

NOTES

1. DESIGN TO CONSIDER TRAFFIC LOADS, STRUCTURAL STEEL DESIGN AND NATIVE SOIL CONDITIONS, AND BE CERTIFIED BY AN RPEQ.
2. CAST INSITU MAINTENANCE HOLE FOR ROADWAY, PRIVATE PROPERTY AND FOOTPATH LOCATIONS. DEPTHS TO 3.0 m MAXIMUM.
3. REFER TO SEQ-SEW-1301-2 AND SEQ-SEW-1301-3 FOR 'G' TYPE MH GENERAL ARRANGEMENT DRAWINGS.
4. REFER SEQ-SEW-1101-4, SEQ-SEW-1101-5 & SEQ-SEW-1101-6 FOR NOTES.
5. REFER SEQ-SEW-1301-26 FOR TOP SLAB REINFORCEMENT DETAILS.
6. FOR QUU, HYDROTITE CJ-0725-3K (OR APPROVED EQUIVALENT) IS TO BE USED FOR HYDROPHILIC SEAL.

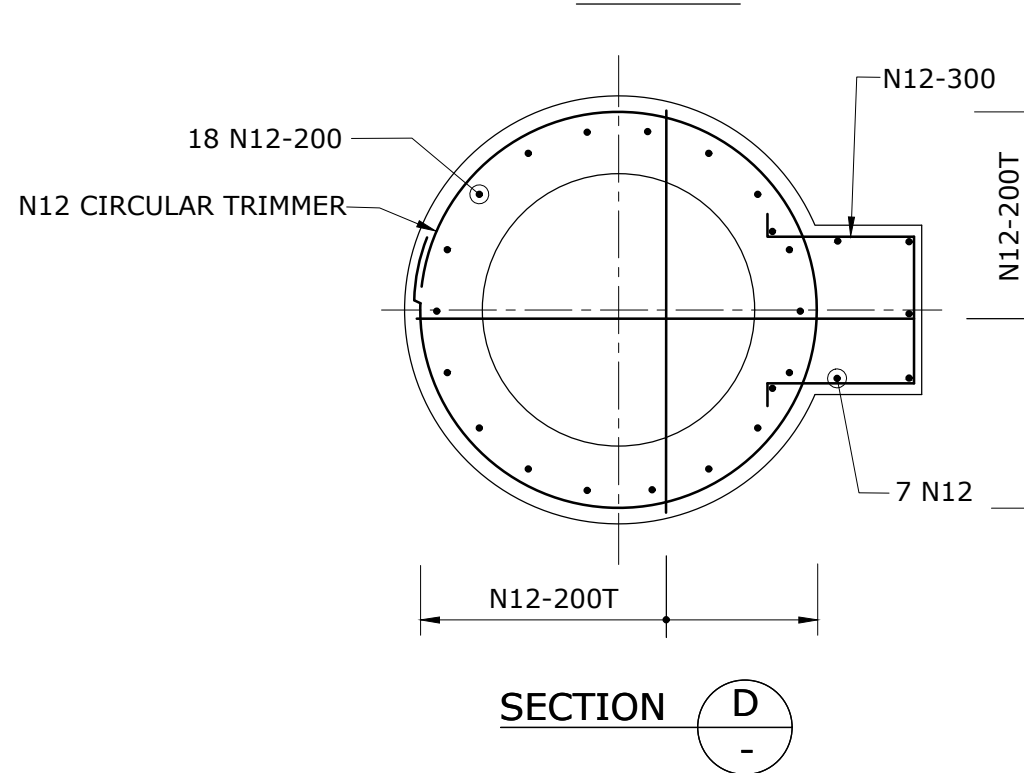
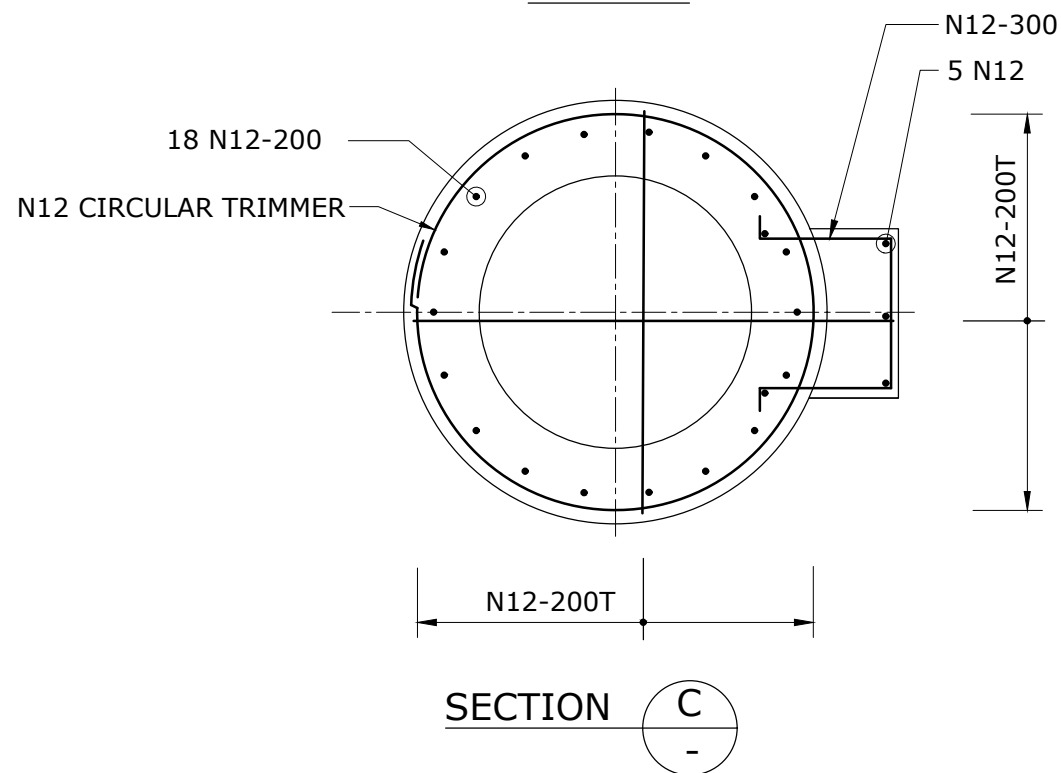
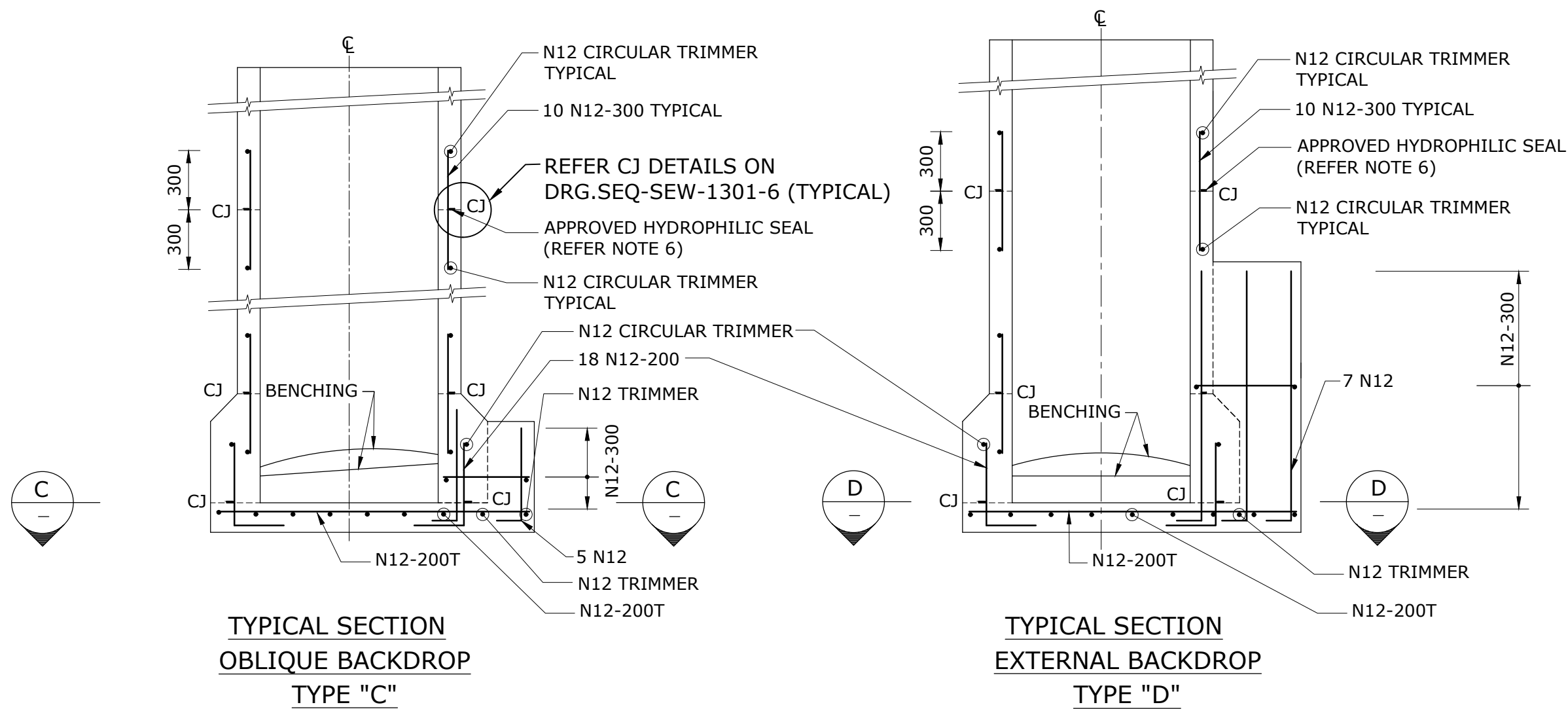
REV. No.	DATE	DESCRIPTION	AUTH.
B	18/06/19	UPDATED DWG TO SHOW 'G' TYPE MH REINFORCEMENT DETAILS	

SEQ WATER SERVICE PROVIDERS

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

SEWERAGE STANDARD DRAWING
 'G' TYPE - PE NUSEWERS
 TYPICAL MAINTENANCE HOLE
 STRUCTURAL REINFORCEMENT DETAILS
 SHEET 1 OF 2

CoC	L&C	R&C	QUU	UW
DRAWING No.				VERSION
SEQ-SEW-1301-6				B
NOT TO SCALE				ORG DATE: 1/1/2013



NOTES

- DESIGN TO CONSIDER TRAFFIC LOADS, STRUCTURAL STEEL DESIGN AND NATIVE SOIL CONDITIONS, AND BE CERTIFIED BY AN RPEQ.
- CAST INSITU MAINTENANCE HOLE FOR ROADWAY, PRIVATE PROPERTY AND FOOTPATH LOCATIONS. DEPTHS TO 3.0 m MAXIMUM.
- REFER TO SEQ-SEW-1301-2 AND SEQ-SEW-1301-3 FOR 'G' TYPE MH GENERAL ARRANGEMENT DRAWINGS.
- REFER SEQ-SEW-1101-4, SEQ-SEW-1101-5 & SEQ-SEW-1101-6 FOR NOTES.
- REFER SEQ-SEW-1301-26 FOR TOP SLAB REINFORCEMENT DETAILS.
- FOR QUU, HYDROTITE CJ-0725-3K (OR APPROVED EQUIVALENT) IS TO BE USED FOR HYDROPHILIC SEAL.

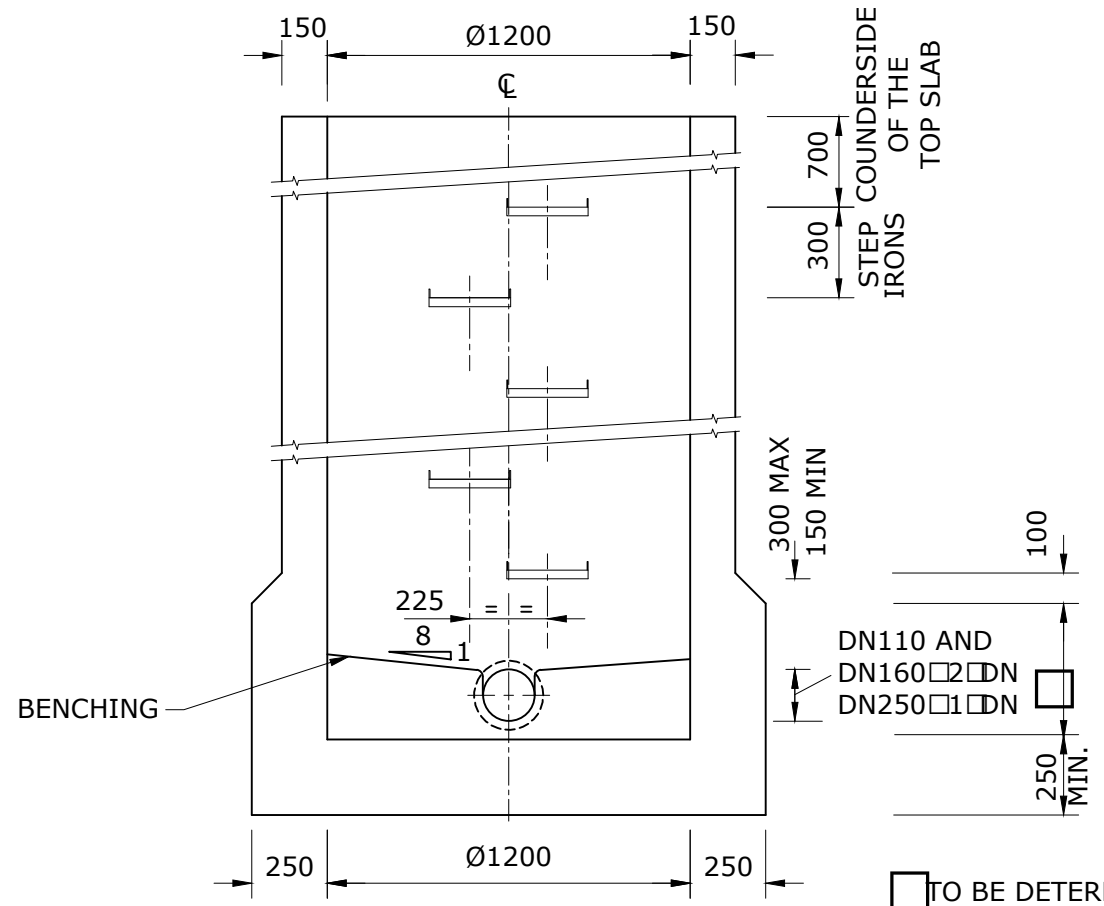
REV. No.	DATE	DESCRIPTION	AUTH.
B	18/06/19	UPDATED DWG TO SHOW 'G' TYPE MH REINFORCEMENT DETAILS	

**SEQ WATER
SERVICE PROVIDERS**

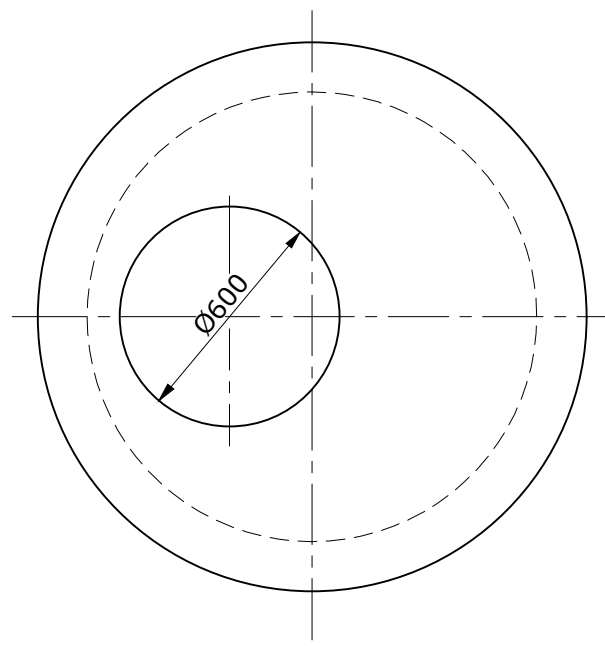
WORK PRACTICES MUST COMPLY WITH ALL APPLICABLE
OCCUPATIONAL HEALTH & SAFETY LEGISLATION

SEWERAGE STANDARD DRAWING
'G' TYPE - PE NUSEWERS
TYPICAL MAINTENANCE HOLE
STRUCTURAL REINFORCEMENT DETAILS
SHEET 2 OF 2

CoC	LCC	RCC	QUU	UW
DRAWING No.				VERSION
SEQ-SEW-1301-7				B
NOT TO SCALE				ORG DATE: 1/1/2013

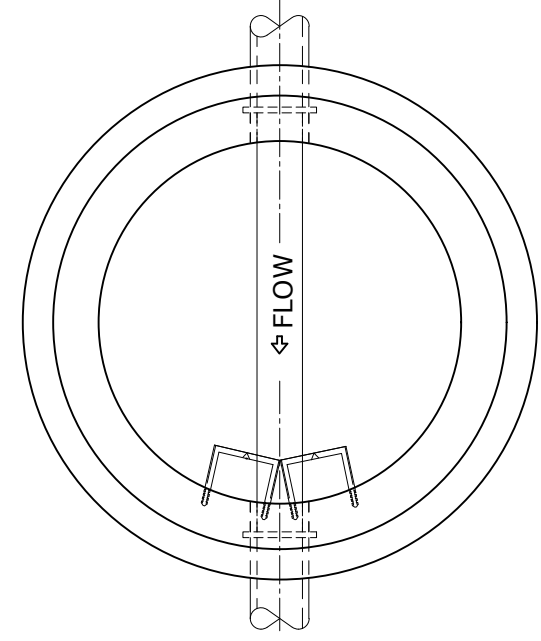


TYPICAL CONSTRUCTION AND STEP IRON DETAILS



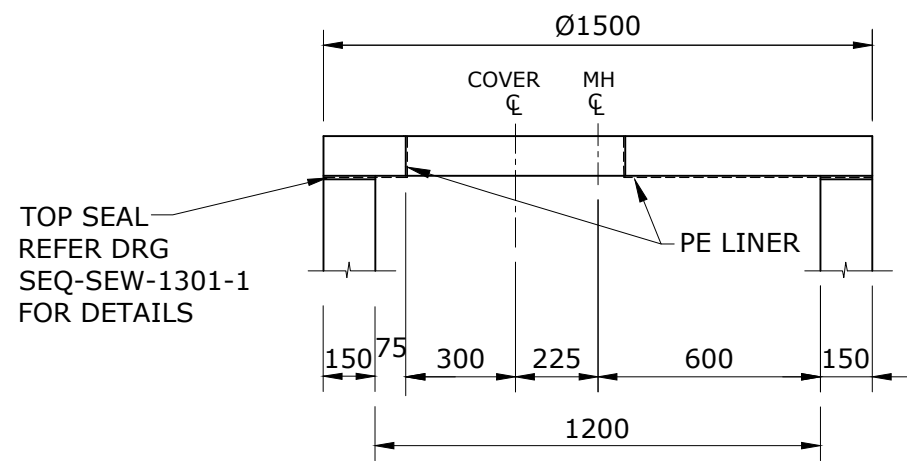
PLAN - TOP SLAB

TO BE DETERMINED FROM PIPE DESIGN



PLAN STEP IRON ARRANGEMENT

REFER NOTE 5



TOP SLAB AND WALL DETAILS

NOTES

1. CAST INSITU MAINTENANCE HOLE FOR ROADWAY, PRIVATE PROPERTY AND FOOTPATH LOCATIONS. DEPTHS LESS THAN OR EQUAL TO 4.25m.
2. HDPE INTERNAL MH LINER REQUIRED FOR MAINTENANCE HOLES GREATER THAN 4.0m DEEP.
3. REFER SEQ-SEW-1101-4, SEQ-SEW-1101-5 AND SEQ-SEW-1101-6 FOR NOTES.
4. REFER SEQ-SEW-1301-26 FOR TOP SLAB REINFORCEMENT DETAILS.
5. STEP IRONS AND LADDERS SHALL NOT BE PROVIDED FOR UW MAINTENANCE HOLES.

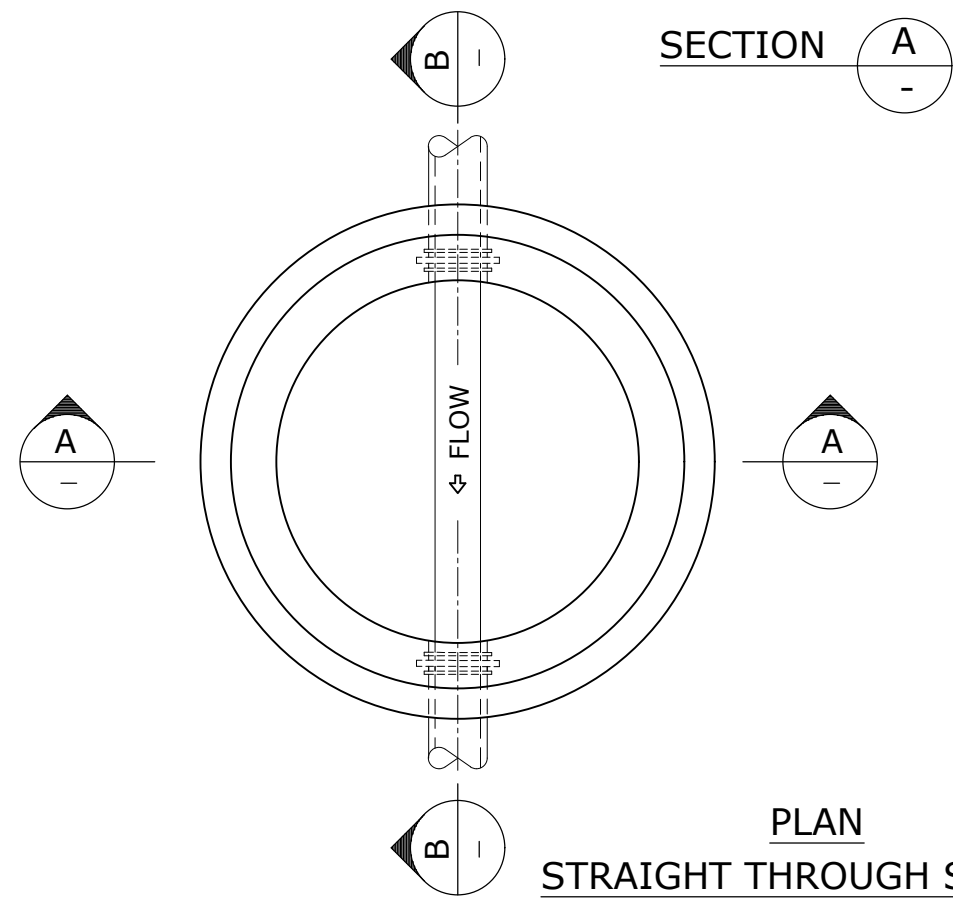
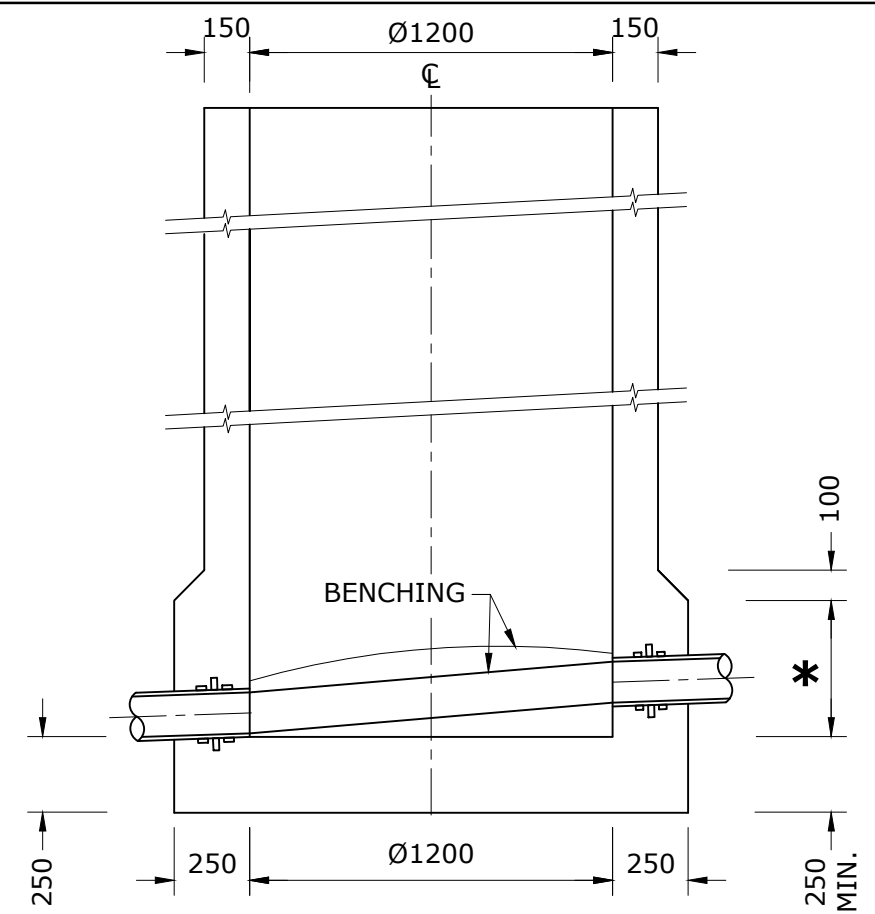
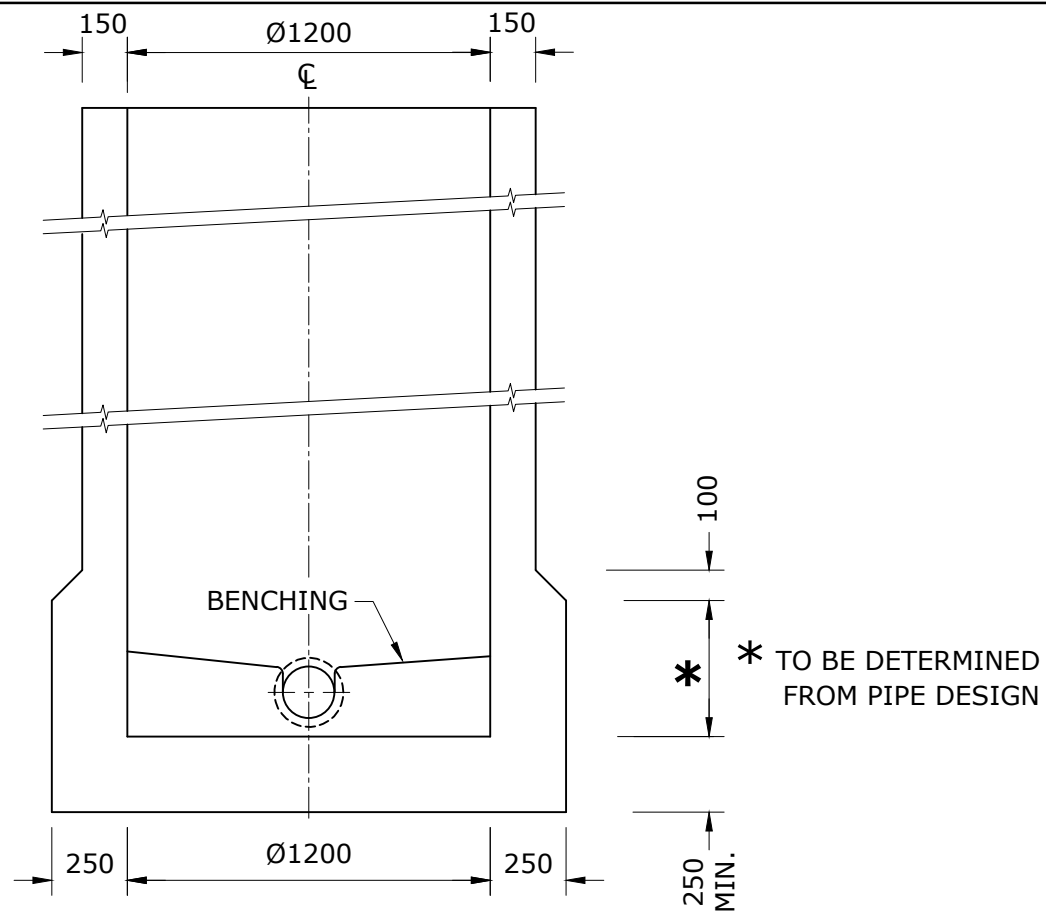
REV. No.	DATE	DESCRIPTION	AUTH.
C	23/05/19	AMENDED TO SHOW TYPE MH AND SLAB GA DETAILS	
B	20/07/15	AMENDED INTERNAL DROP TITLE	

SEQ WATER SERVICE PROVIDERS

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

SEWERAGE STANDARD DRAWING
 TYPE - PE NUSEWERS
 TYPICAL MAINTENANCE HOLE
 AND SLAB G.A. DETAILS

CoC	LCC	BCC	QUU	UW
DRAWING No.				VERSION
SEQ-SEW-1301-9				C
NOT TO SCALE				ORG DATE: 1/1/2013



PLAN
STRAIGHT THROUGH SEWER
TYPE 'A'

NOTES

1. FOR UW, DESIGN TO CONSIDER TRAFFIC LOADS, STRUCTURAL STEEL DESIGN AND NATIVE SOIL CONDITIONS, AND BE CERTIFIED BY AN RPEQ.
2. CAST INSITU MAINTENANCE HOLE FOR ROADWAY, PRIVATE PROPERTY AND FOOTPATH LOCATIONS. DEPTHS TO 4.25 m MAXIMUM.
3. REFER TO SEQ-SEW-1301-8 AND SEQ-SEW-1301-9 FOR 'F' TYPE MH GENERAL ARRANGEMENT DRAWINGS.
4. REFER SEQ-SEW-1101-4, SEQ-SEW-1101-5 & SEQ-SEW-1101-6 FOR NOTES.
5. REFER SEQ-SEW-1301-26 FOR TOP SLAB REINFORCEMENT DETAILS.

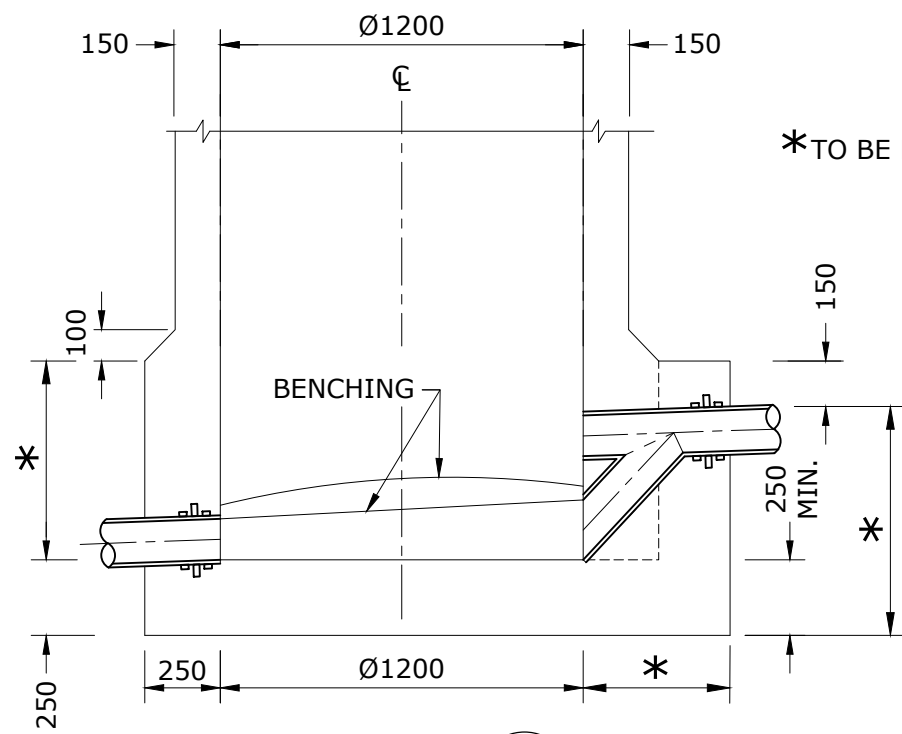
REV. No.	DATE	DESCRIPTION	AUTH.
B	24/05/19	AMENDED TO SHOW 'F' TYPE MH STRUCTURAL GA DETAILS	

SEQ WATER
SERVICE PROVIDERS

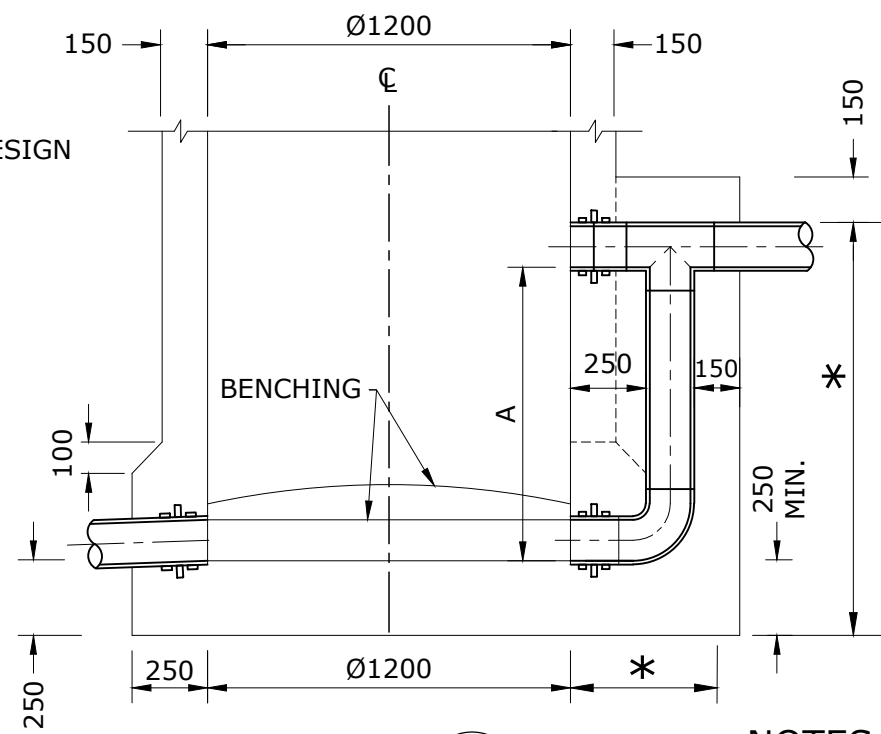
WORK PRACTICES MUST COMPLY WITH ALL APPLICABLE OCCUPATIONAL HEALTH & SAFETY LEGISLATION

SEWERAGE STANDARD DRAWING
'F' TYPE - PE NUSEWERS
TYPICAL MAINTENANCE HOLE
STRUCTURAL G.A. DETAILS
TYPE 'A'

CoGC	L&C	R&C	QUU	UW
DRAWING No.				VERSION
SEQ-SEW-1301-10				B
NOT TO SCALE				ORG DATE: 1/1/2013



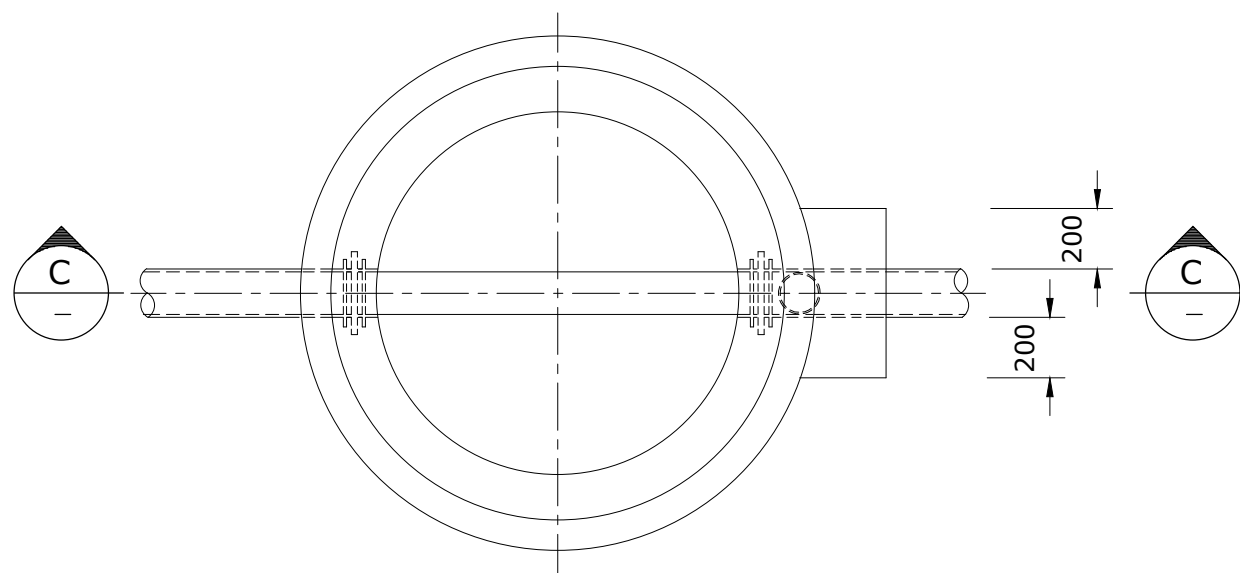
SECTION **C**
OBLIQUE BACKDROP
TYPE "C"



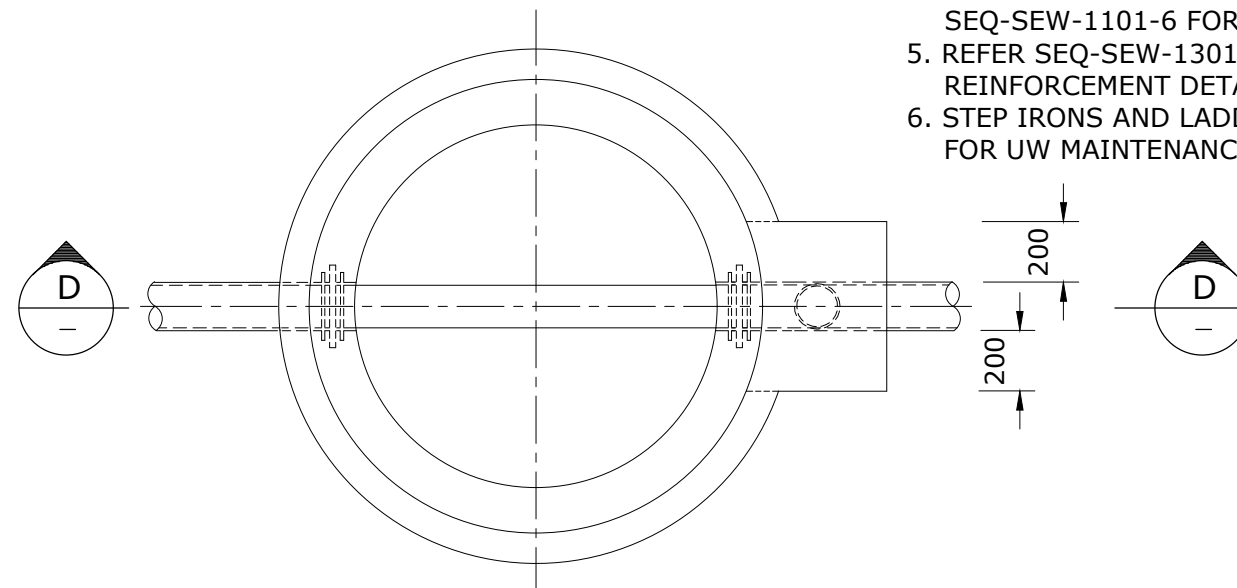
SECTION **D**
EXTERNAL BACKDROP
TYPE "D"

NOTES

1. DESIGN TO CONSIDER TRAFFIC LOADS, STRUCTURAL STEEL DESIGN AND NATIVE SOIL CONDITIONS, AND BE CERTIFIED BY AN RPEQ.
2. CAST INSITU MAINTENANCE HOLE FOR ROADWAY, PRIVATE PROPERTY AND FOOTPATH LOCATIONS. DEPTHS TO 4.25 m MAXIMUM.
3. REFER TO SEQ-SEW-1301-8 AND SEQ-SEW-1301-9 FOR 'F' TYPE MH GENERAL ARRANGEMENT DRAWINGS.
4. REFER SEQ-SEW-1101-4, SEQ-SEW-1101-5 & SEQ-SEW-1101-6 FOR NOTES.
5. REFER SEQ-SEW-1301-26 FOR TOP SLAB REINFORCEMENT DETAILS.
6. STEP IRONS AND LADDERS SHALL NOT BE PROVIDED FOR UW MAINTENANCE HOLES.



PLAN
OBLIQUE BACKDROP
TYPE "C"



PLAN
EXTERNAL BACKDROP
TYPE "D"

REV. No.	DATE	DESCRIPTION	AUTH.
B	18/06/19	AMENDED TO SHOW 'F' TYPE MH STRUCTURAL GA DETAILS	

SEQ WATER SERVICE PROVIDERS

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

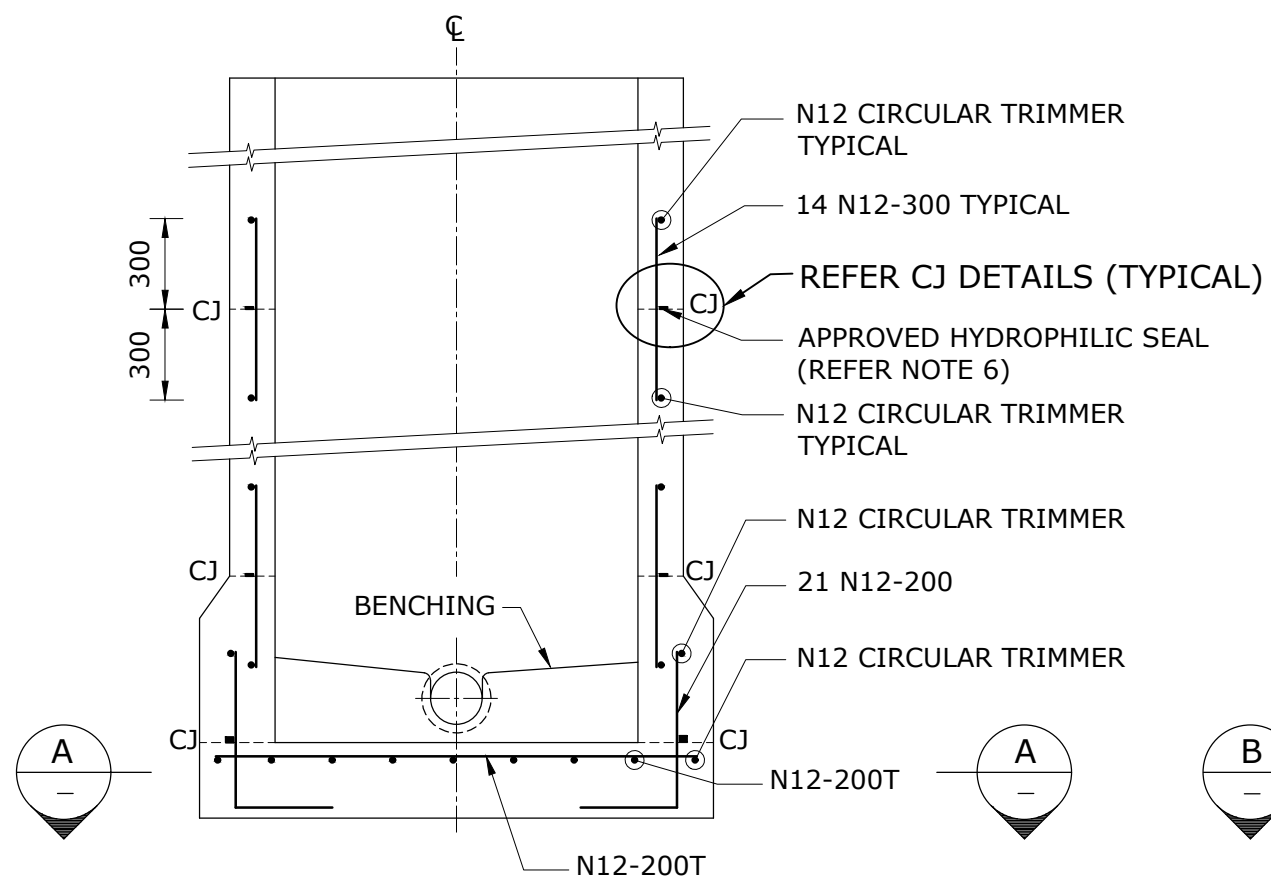
SEWERAGE STANDARD DRAWING

'F' TYPE - PE NUSEWERS
 TYPICAL MAINTENANCE HOLE DETAILS
 STRUCTURAL G.A. DETAILS
 TYPE 'C' & TYPE 'D'

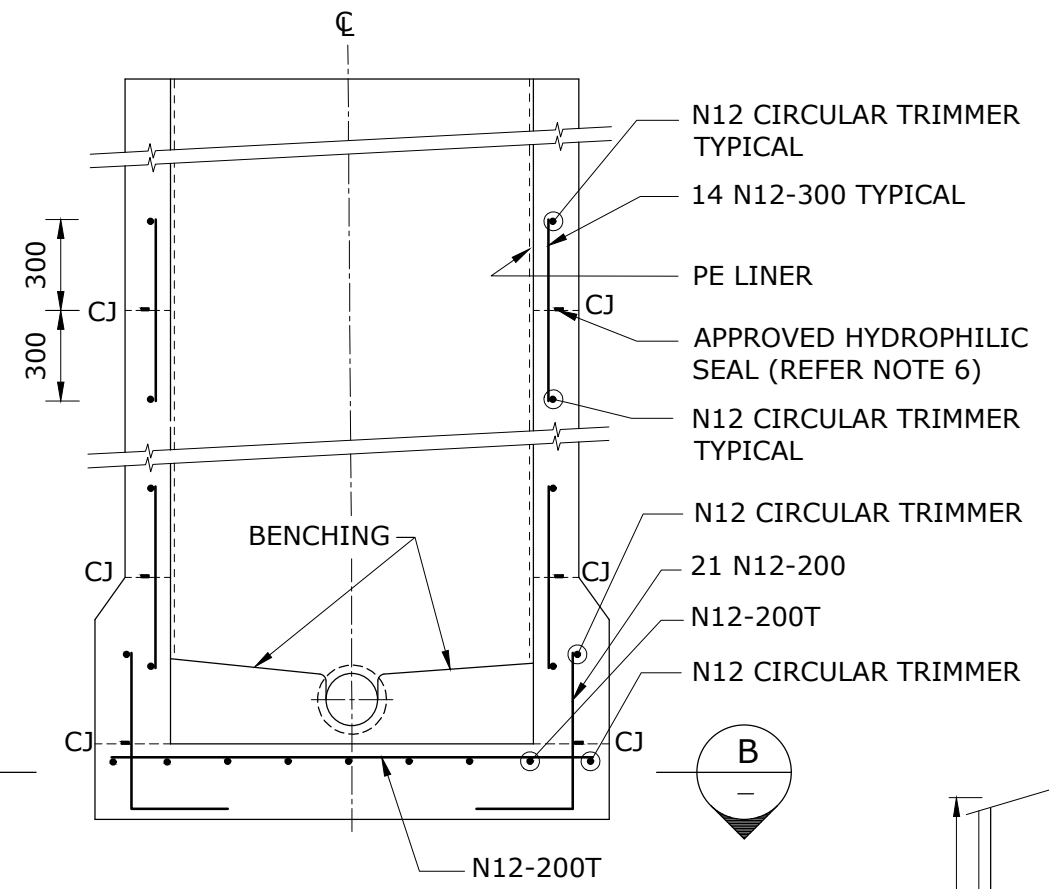
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DRAWING No.				VERSION
SEQ-SEW-1301-11				B
NOT TO SCALE				ORG DATE: 1/1/2013

NOTES

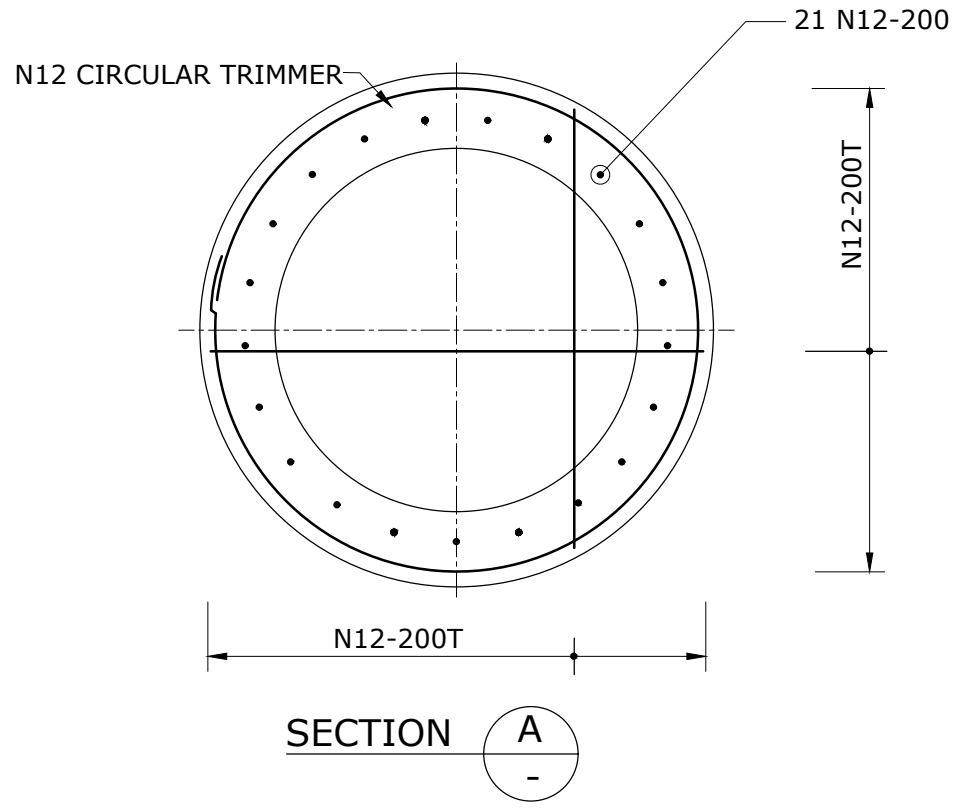
- DESIGN TO CONSIDER TRAFFIC LOADS, STRUCTURAL STEEL DESIGN AND NATIVE SOIL CONDITIONS, AND BE CERTIFIED BY AN RPEQ.
- CAST INSITU MAINTENANCE HOLE FOR ROADWAY, PRIVATE PROPERTY AND FOOTPATH LOCATIONS. DEPTHS TO 4.25 m MAXIMUM.
- REFER TO SEQ-SEW-1301-8 AND SEQ-SEW-1301-9 FOR 'F' TYPE MH GENERAL ARRANGEMENT DRAWINGS.
- REFER SEQ-SEW-1101-4, SEQ-SEW-1101-5 & SEQ-SEW-1101-6 FOR NOTES.
- REFER SEQ-SEW-1301-26 FOR TOP SLAB REINFORCEMENT DETAILS.
- FOR QUU, HYDROTITE CJ-0725-3K (OR APPROVED EQUIVALENT) IS TO BE USED FOR HYDROPHILIC SEAL.



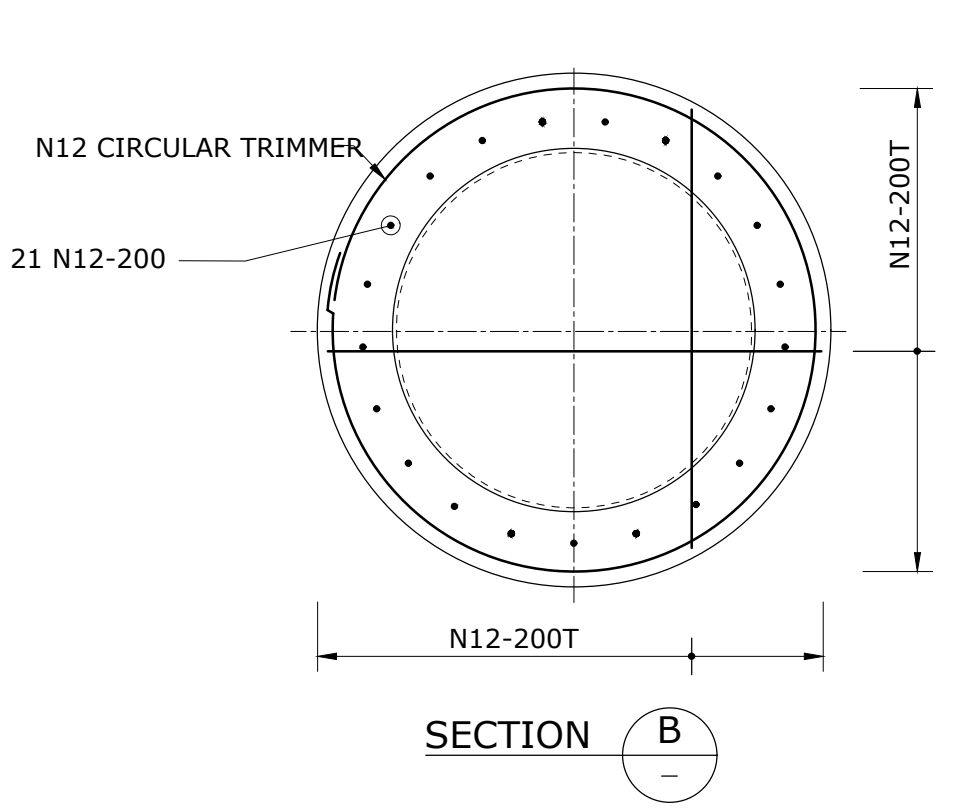
TYPICAL SECTION



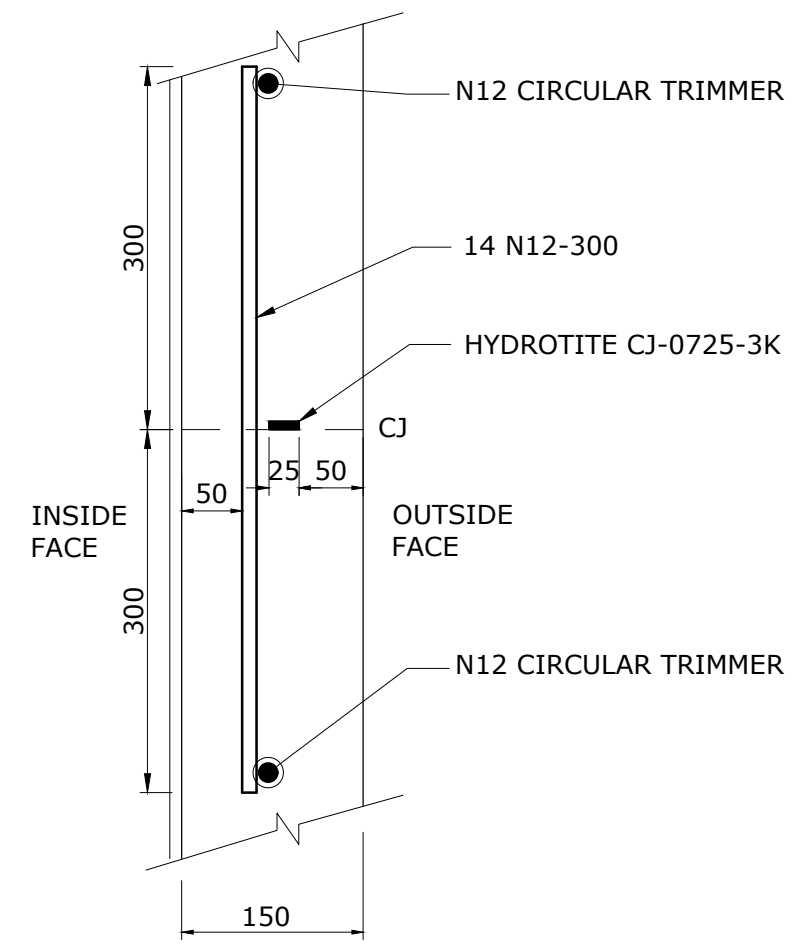
TYPICAL SECTION WITH PE LINER



SECTION A



SECTION B



TYPICAL CJ DETAIL

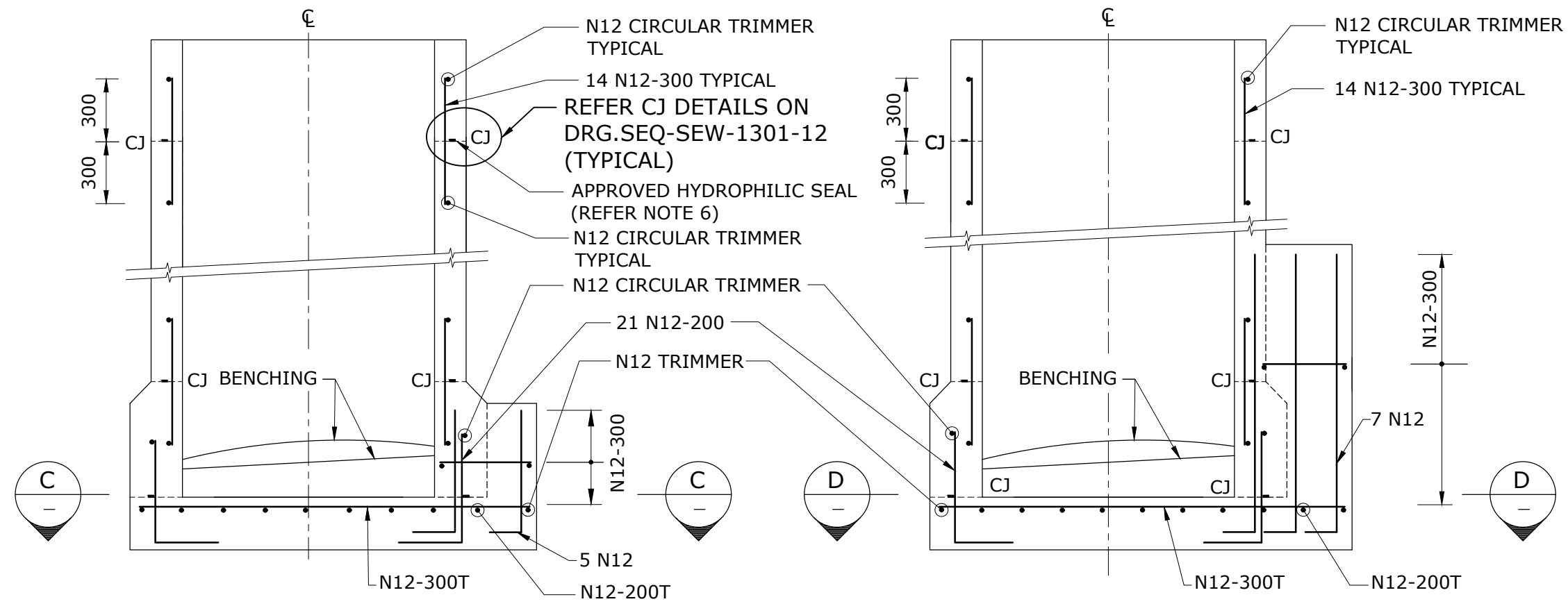
REV. No.	DATE	DESCRIPTION	AUTH.
C	18/06/19	UPDATED DWG TO SHOW 'F' TYPE MH REINFORCEMENT DETAILS	
B	20/07/15	AMENDED NOTES	

SEQ WATER SERVICE PROVIDERS

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

SEWERAGE STANDARD DRAWING
 'F' TYPE - PE NUSEWERS
 TYPICAL MAINTENANCE HOLE
 STRUCTURAL REINFORCEMENT DETAILS
 SHEET 1 OF 2

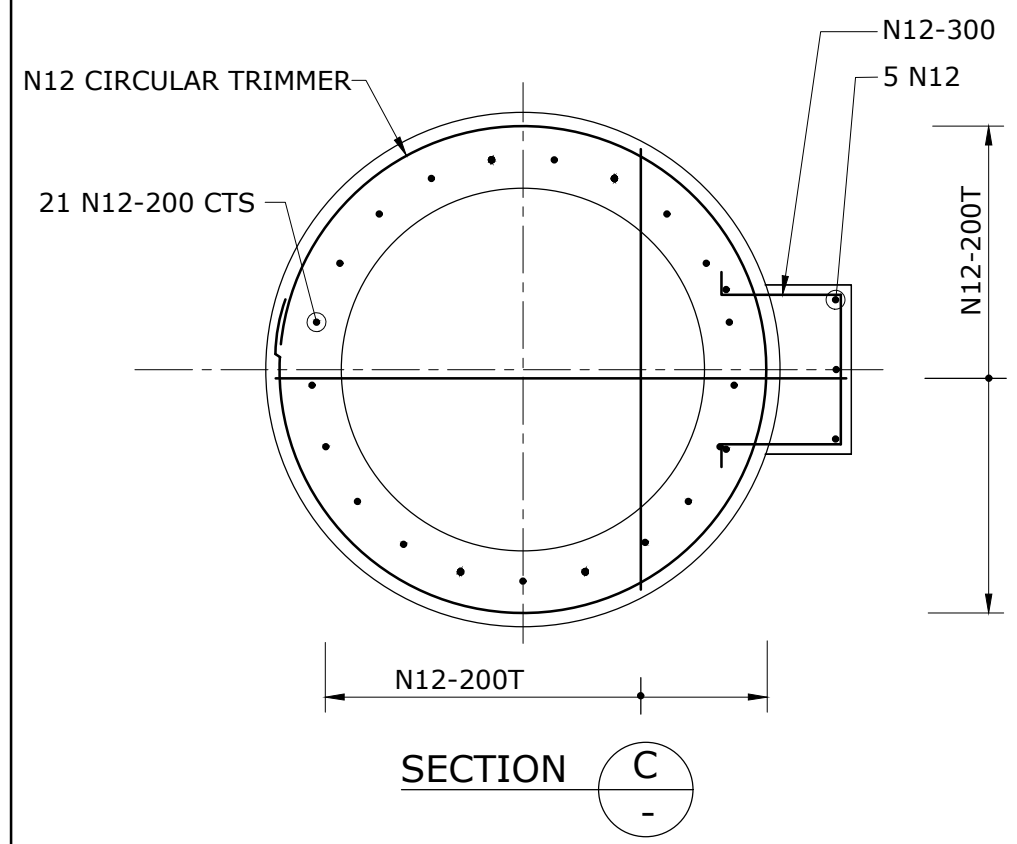
COC	LSC	RSC	QUU	UW
DRAWING No.			VERSION	
SEQ-SEW-1301-12			C	
NOT TO SCALE			ORG DATE: 1/1/2013	



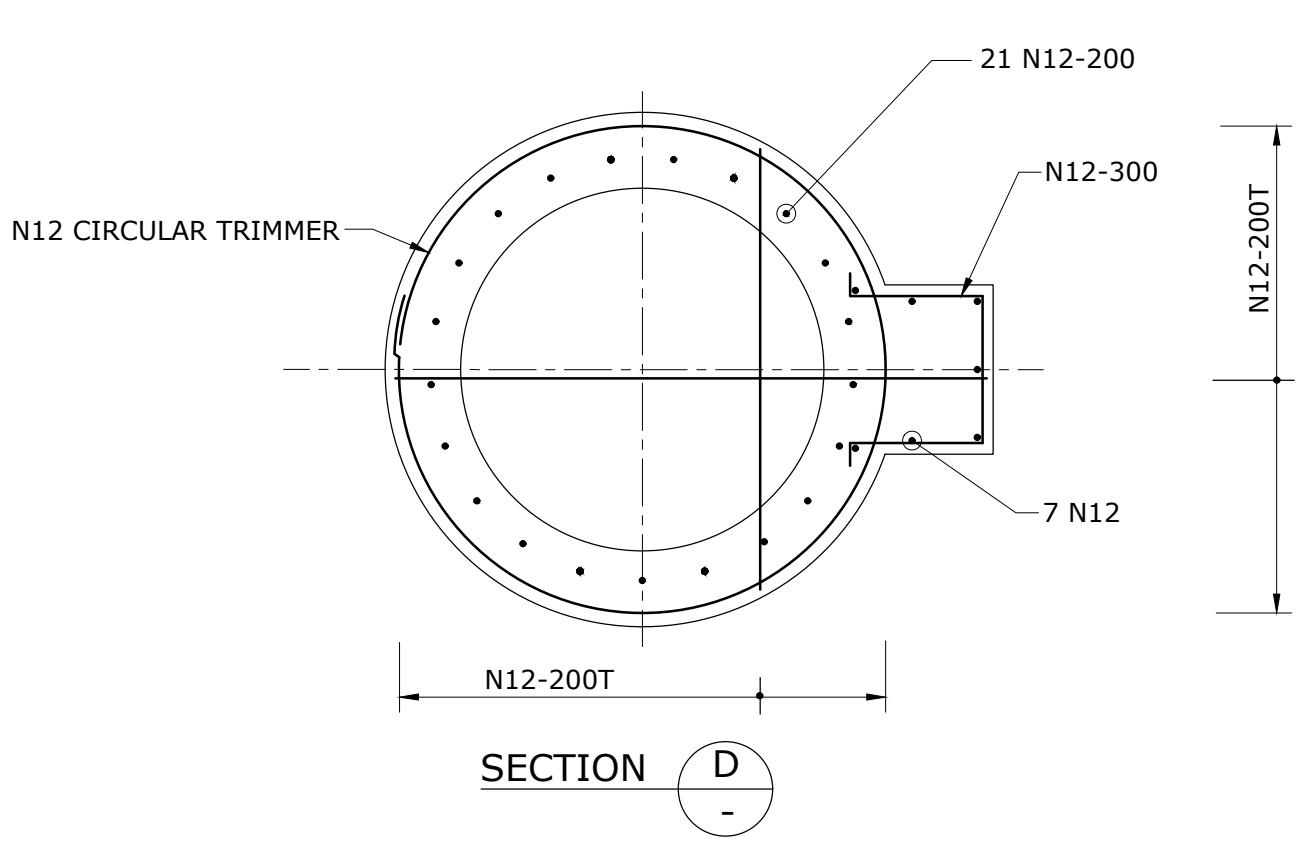
**TYPICAL SECTION
OBLIQUE BACKDROP
TYPE "C"**

**TYPICAL SECTION
EXTERNAL BACKDROP
TYPE "D"**

- NOTES**
- DESIGN TO CONSIDER TRAFFIC LOADS, STRUCTURAL STEEL DESIGN AND NATIVE SOIL CONDITIONS, AND BE CERTIFIED BY AN RPEQ.
 - CAST INSITU MAINTENANCE HOLE FOR ROADWAY, PRIVATE PROPERTY AND FOOTPATH LOCATIONS. DEPTHS TO 4.25 m MAXIMUM.
 - REFER TO SEQ-SEW-1301-8 AND SEQ-SEW-1301-9 FOR 'F' TYPE MH GENERAL ARRANGEMENT DRAWINGS.
 - REFER SEQ-SEW-1101-4, SEQ-SEW-1101-5 & SEQ-SEW-1101-6 FOR NOTES.
 - REFER SEQ-SEW-1301-26 FOR TOP SLAB REINFORCEMENT DETAILS.
 - FOR QUU, HYDROTITE CJ-0725-3K (OR APPROVED EQUIVALENT) IS TO BE USED FOR HYDROPHILIC SEAL.



SECTION C



SECTION D

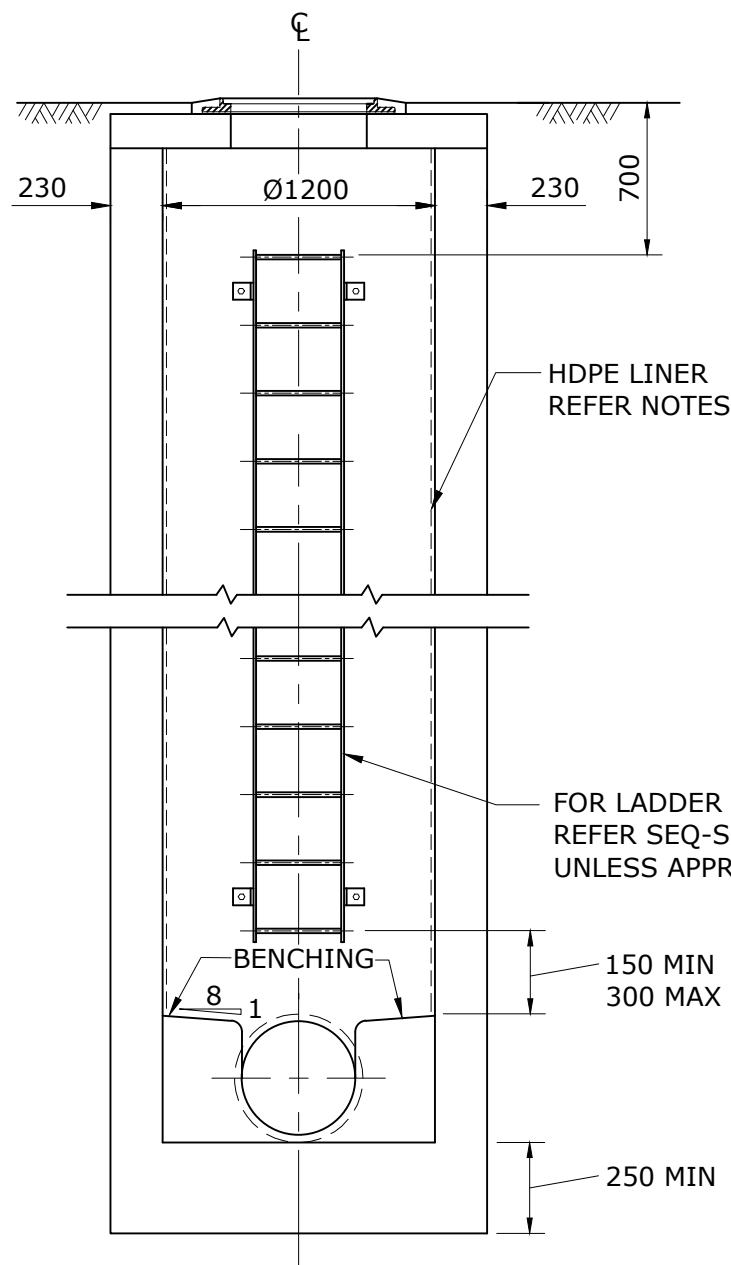
REV. No.	DATE	DESCRIPTION	AUTH.

**SEQ WATER
SERVICE PROVIDERS**

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

SEWERAGE STANDARD DRAWING
'F' TYPE - PE NUSEWERS
TYPICAL MAINTENANCE HOLE
STRUCTURAL REINFORCEMENT DETAILS
SHEET 2 OF 2

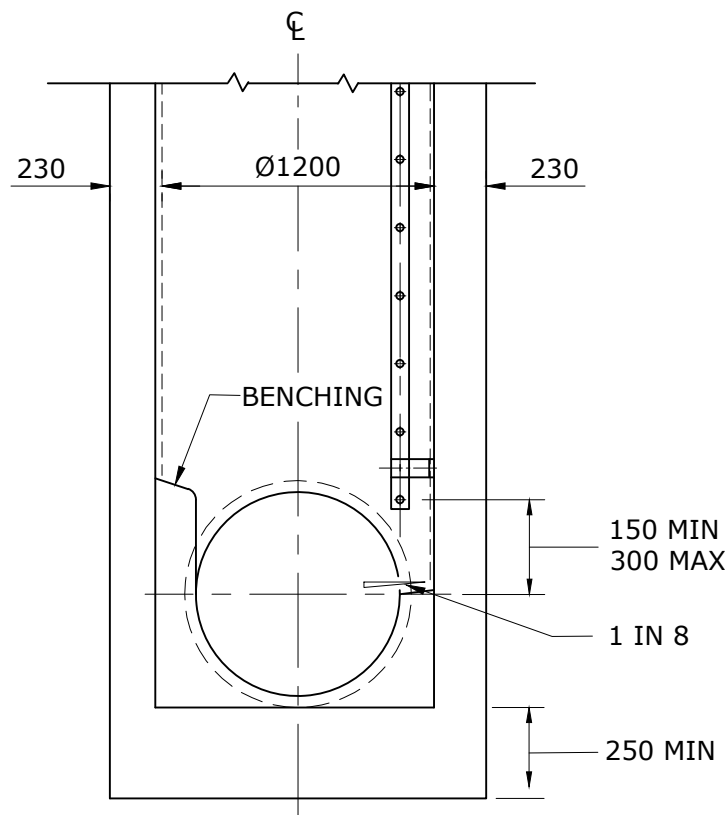
CoC	LCC	RCC	QUU	UW
DRAWING No.				VERSION
SEQ-SEW-1301-13				A
NOT TO SCALE				ORG DATE: 18/06/2019



**SECTIONAL ELEVATION
SEWERS 600 NB OR LESS**

NOTES

1. REFER SEQ-SEW-1101-4, SEQ-SEW-1101-5 AND SEQ-SEW-1101-6 FOR NOTES.
2. REFER SEQ-SEW-1301-26 FOR TOP SLAB REINFORCEMENT DETAILS.
3. HDPE INTERNAL LINER REQUIRED FOR MHs GREATER THAN 4.0 m DEEP.
4. LADDERS TO STANDARD DRAWING SEQ-SEW-1301-27 SHALL BE PLACED OVER THE DOWNSTREAM OUTLET OF MHs THAT ARE 600 NB OR LESS AND AT SIDE OF MH WITH SEWERS LARGER THAN 600 NB.
5. FOR SEWERS LARGER THAN 600 NB, STEP IRONS SHALL BE PLACED DIRECTLY UNDER THE LADDER FOR CONTINUATION TO FOOTHOLE.

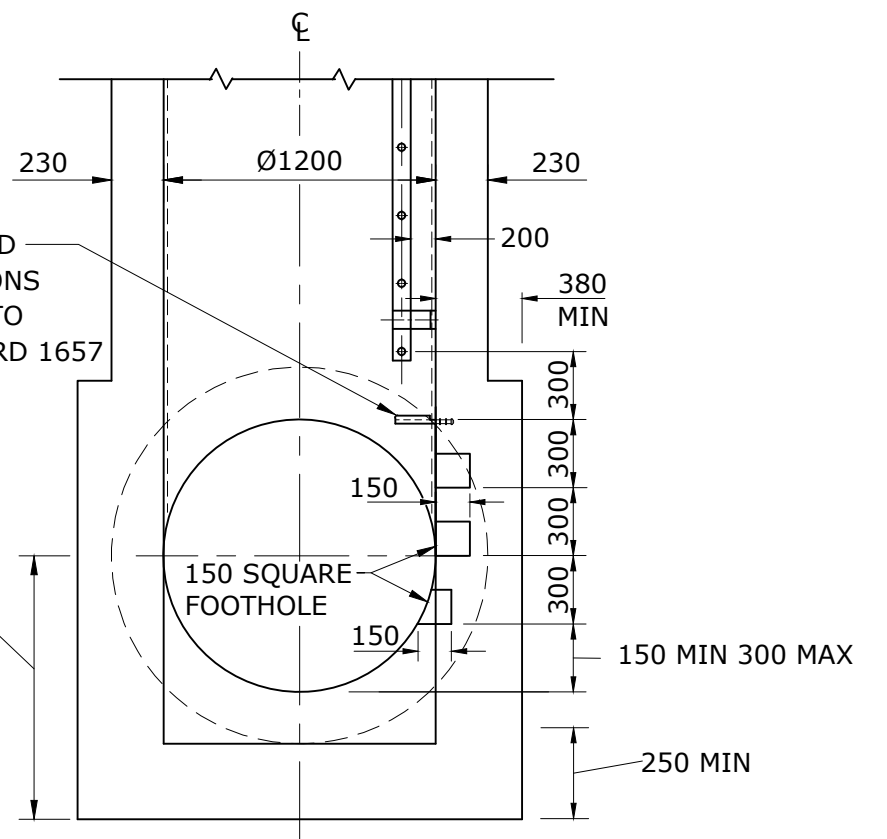


SEWERS OVER 600 NB TO 1050 NB

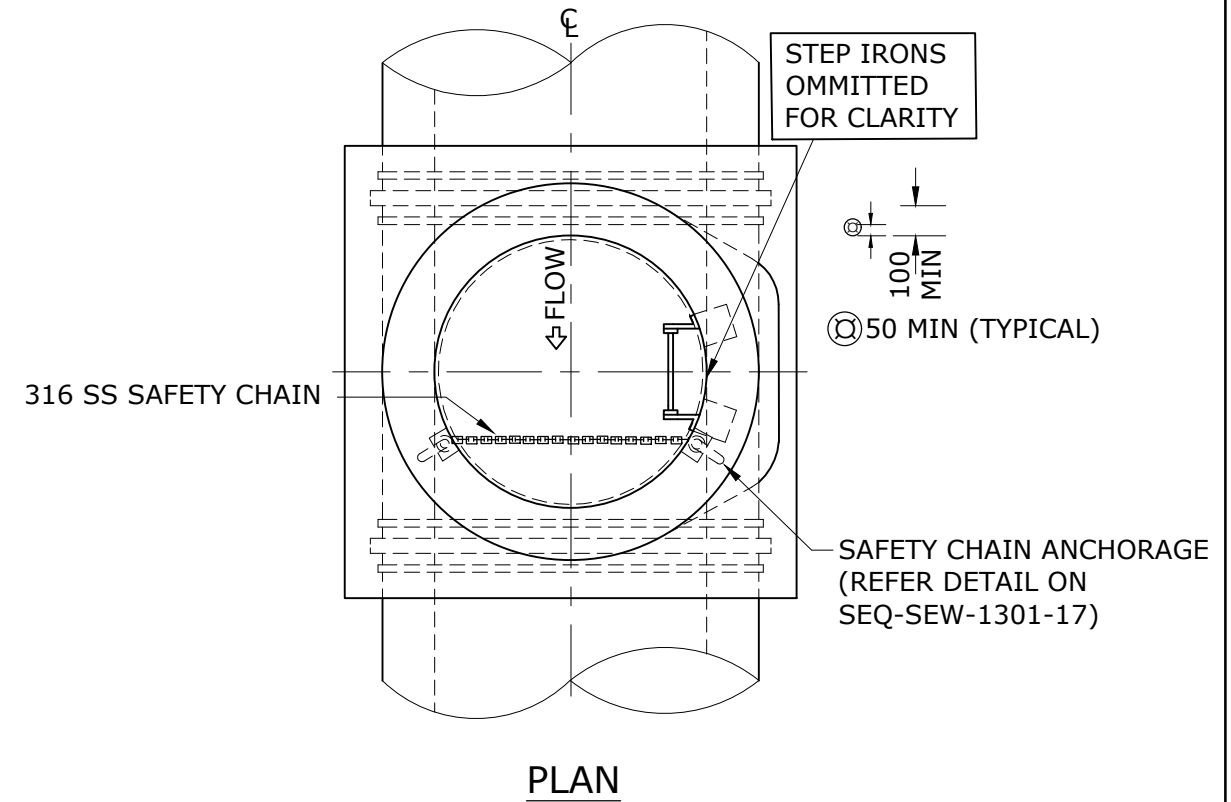
CAST INSITU MAINTENANCE HOLE FOR ROADWAY AND PRIVATE PROPERTY LOCATIONS. DEPTHS > 4.25m. NOT TO BE USED IN FOOTPATH LOCATIONS.

AYMROO OR APPROVED EQUIVALENT STEP IRONS (230 mm MIN WIDE) TO AUSTRALIAN STANDARD 1657

THICKNESS OF BASE HERE TO BE MADE EQUAL TO THAT OF SEWER PIPE IF MH WALL THICKNESS GREATER THAN 230



**SECTIONAL ELEVATION
1200 NB SEWER**



PLAN

REV. No.	DATE	DESCRIPTION	AUTH.

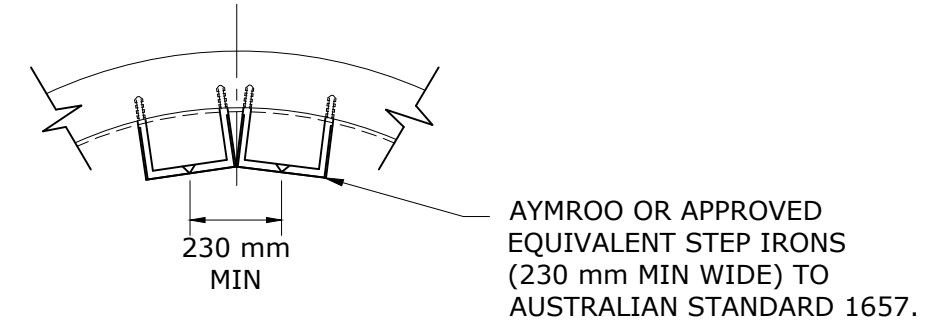
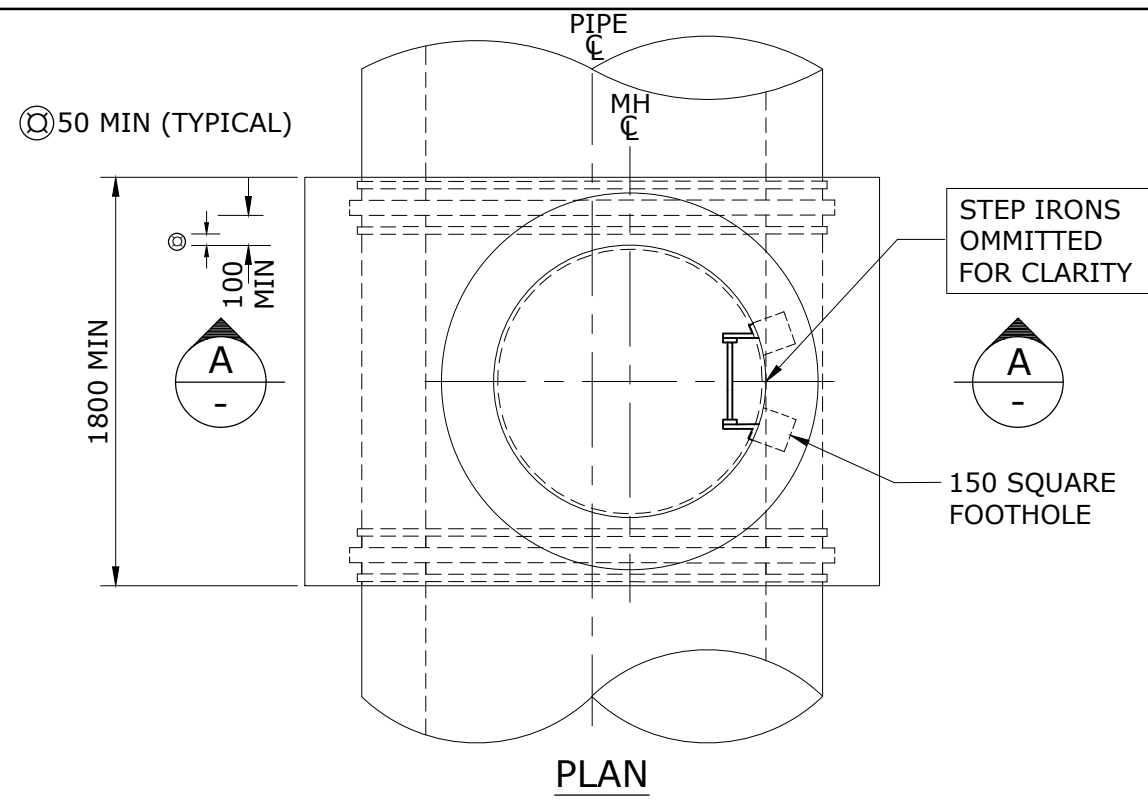
**SEQ WATER
SERVICE PROVIDERS**

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

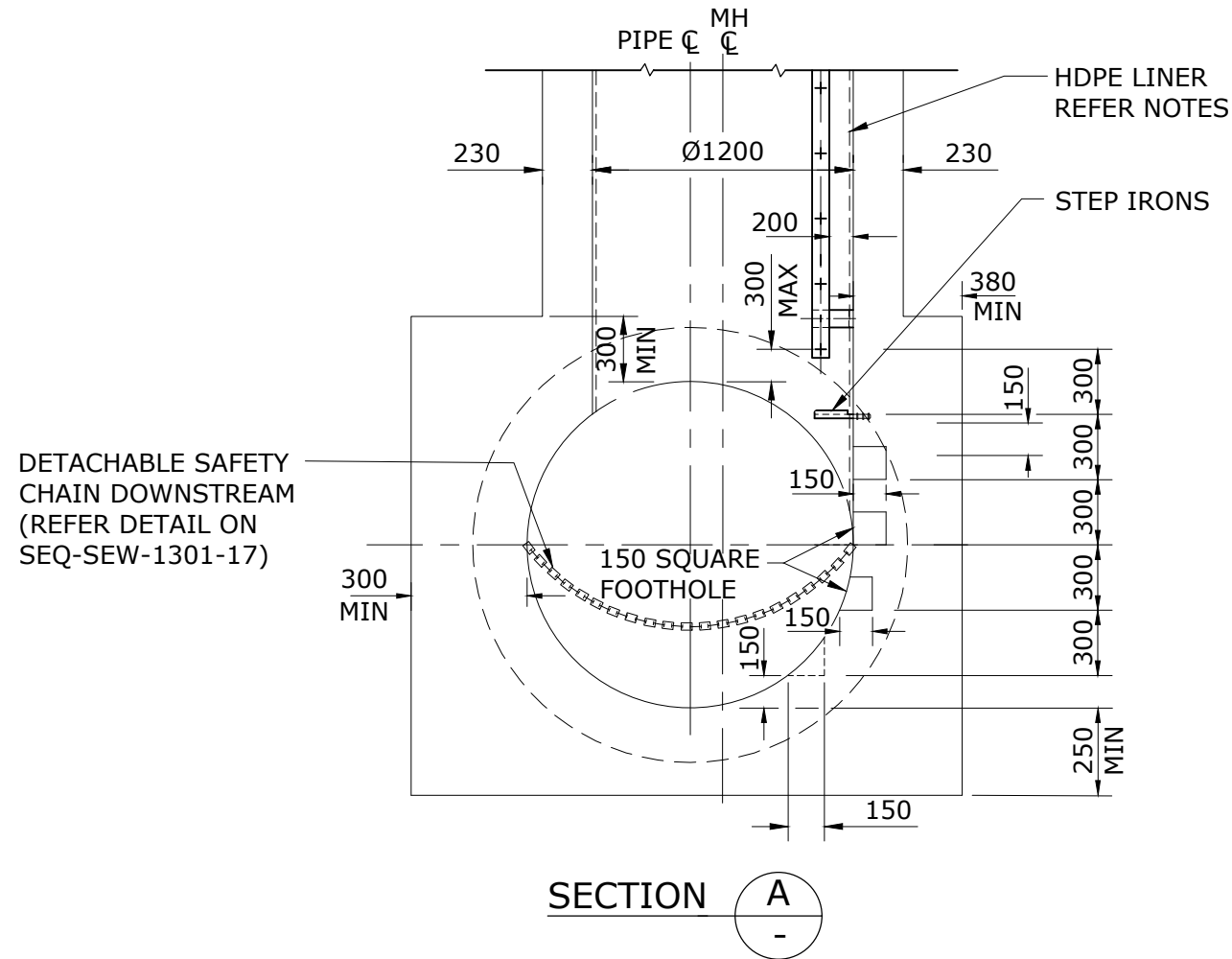
SEWERAGE STANDARD DRAWING

'X' TYPE DEEP MAINTENANCE HOLE
TYPICAL ARRANGEMENT AND
G.A. DETAILS
SEWERS 1200 NB OR LESS

CoGC	LGC	BGC	QUU	UW
DRAWING No.				VERSION
SEQ-SEW-1301-14				A
NOT TO SCALE				ORG DATE: 27/05/2019



STEP IRON ARRANGEMENT



CHAMBER FOR SEWER OVER 1200 NB

NOTES

1. REFER SEQ-SEW-1101-4, SEQ-SEW-1101-5 AND SEQ-SEW-1101-6 FOR NOTES.
2. REFER SEQ-SEW-1301-26 FOR TOP SLAB REINFORCEMENT DETAILS.
3. HDPE INTERNAL MH LINER REQUIRED FOR MHs GREATER THAN 4.0 m DEEP.

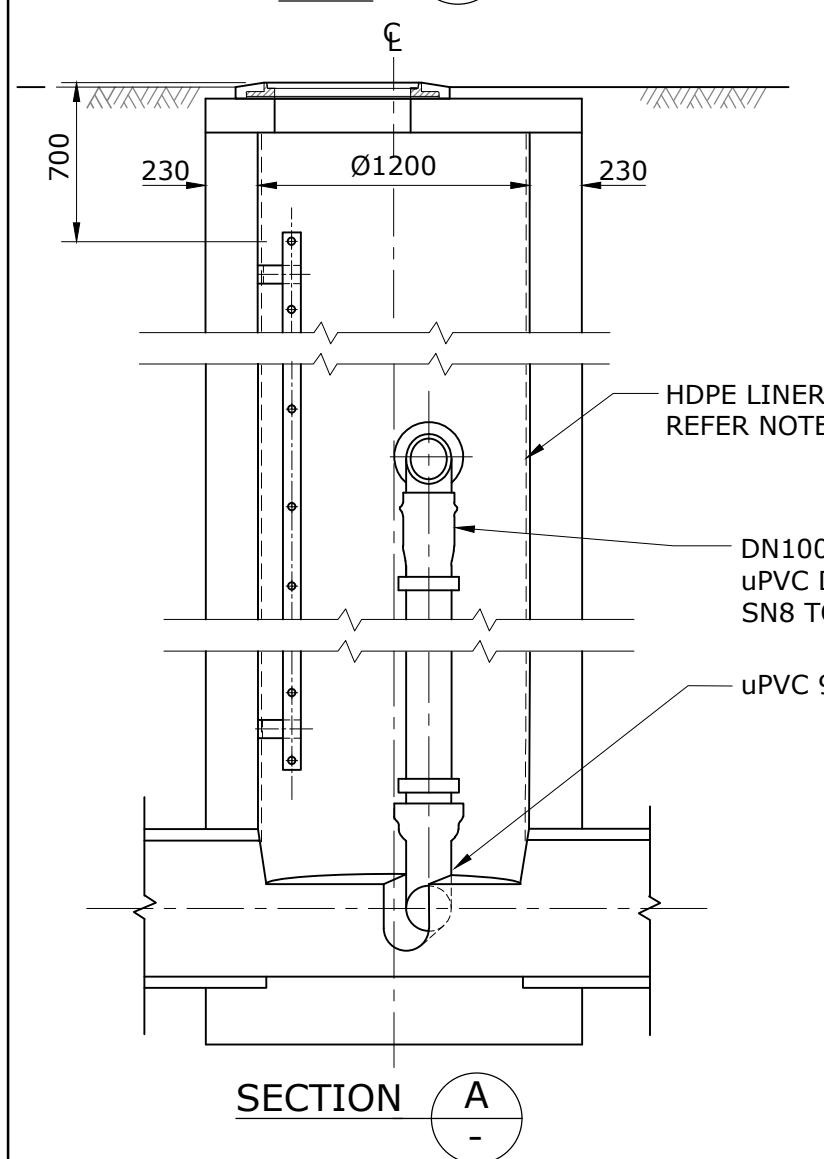
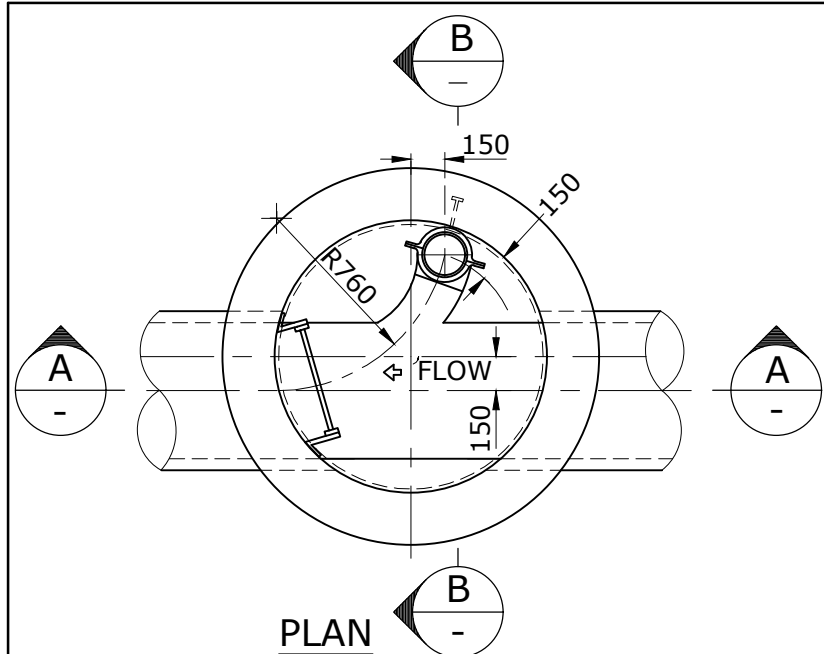
REV. No.	DATE	DESCRIPTION	AUTH.

SEQ WATER SERVICE PROVIDERS

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

SEWERAGE STANDARD DRAWING
 'X' TYPE DEEP MAINTENANCE HOLE
 TYPICAL ARRANGEMENT AND
 G.A. DETAILS
 SEWER > 1200 NB

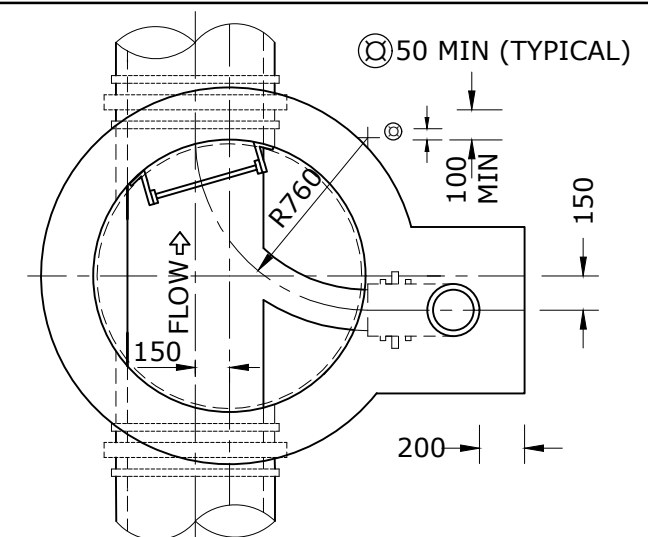
CoC	LCC	RCC	QUU	LW
DRAWING No.				VERSION
SEQ-SEW-1301-15				A
NOT TO SCALE				ORG DATE: 23/05/2019



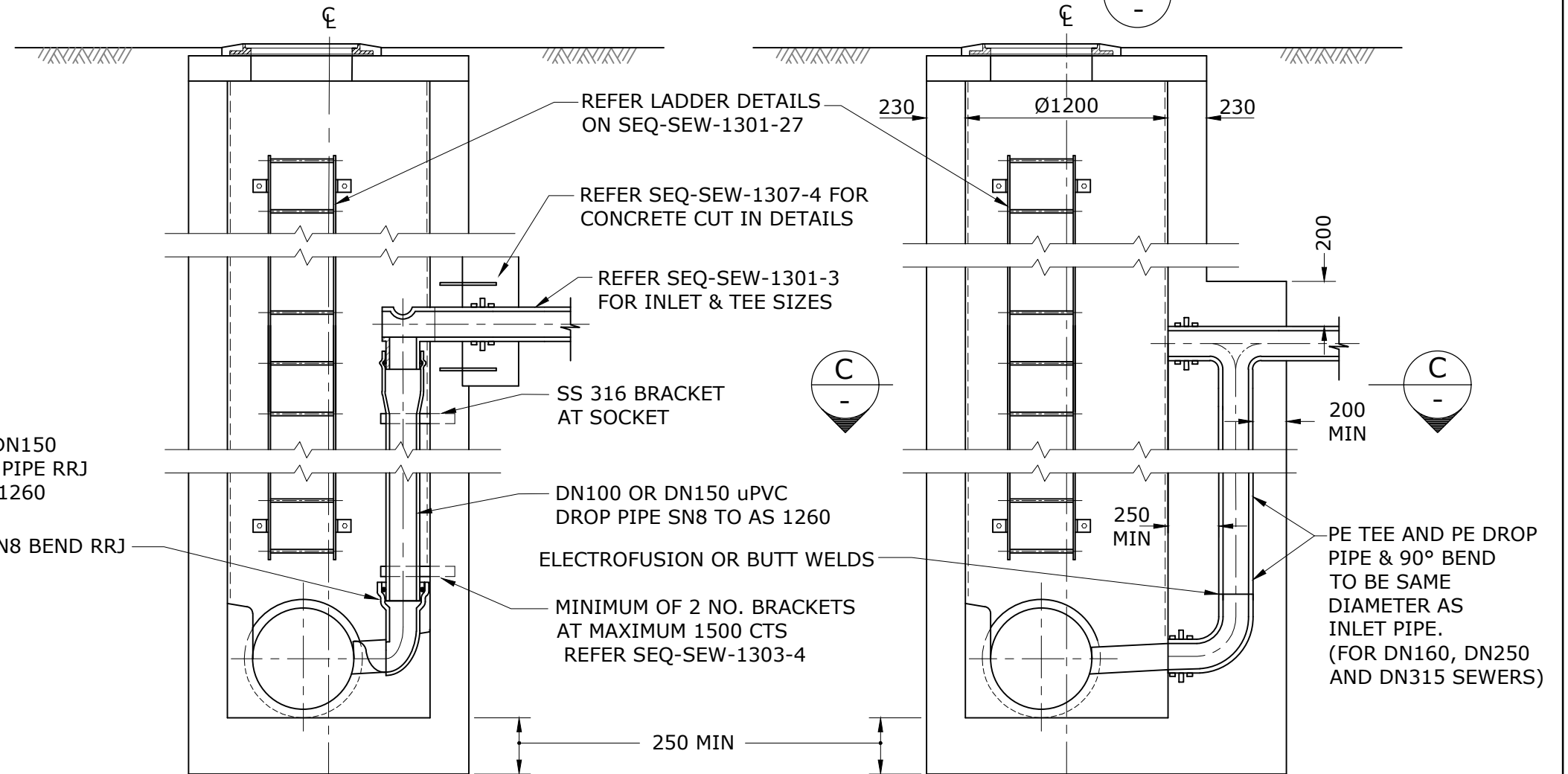
**INTERNAL DROP PIPE WITH EXISTING MH ONLY
MAIN SEWER 600 NB OR LESS**

SHORT PIPES REQUIRED AT MAINTENANCE HOLES

PIPE MATERIAL	PIPE	EFFECTIVE LENGTH (mm)
VITRIFIED CLAY	1st PIPE	300
	2nd PIPE	300 - 600
UPVC	1st PIPE	600
	2nd PIPE	600
DICL	1st PIPE	600
	2nd PIPE	UP TO FULL PIPE
PE	SHORT PIPES ARE NOT REQUIRED. PE SYSTEM SHALL BE FULLY WELDED.	



SECTION C



SECTION B

EXTERNAL BACKDROP

NOTES

1. REFER SEQ-SEW-1101-4, SEQ-SEW-1101-5 AND SEQ-SEW-1101-6 FOR NOTES.
2. REFER SEQ-SEW-1301-26 FOR TOP SLAB REINFORCEMENT DETAILS.
3. HDPE INTERNAL LINER REQUIRED FOR MHs GREATER THAN 4.0 m DEEP.

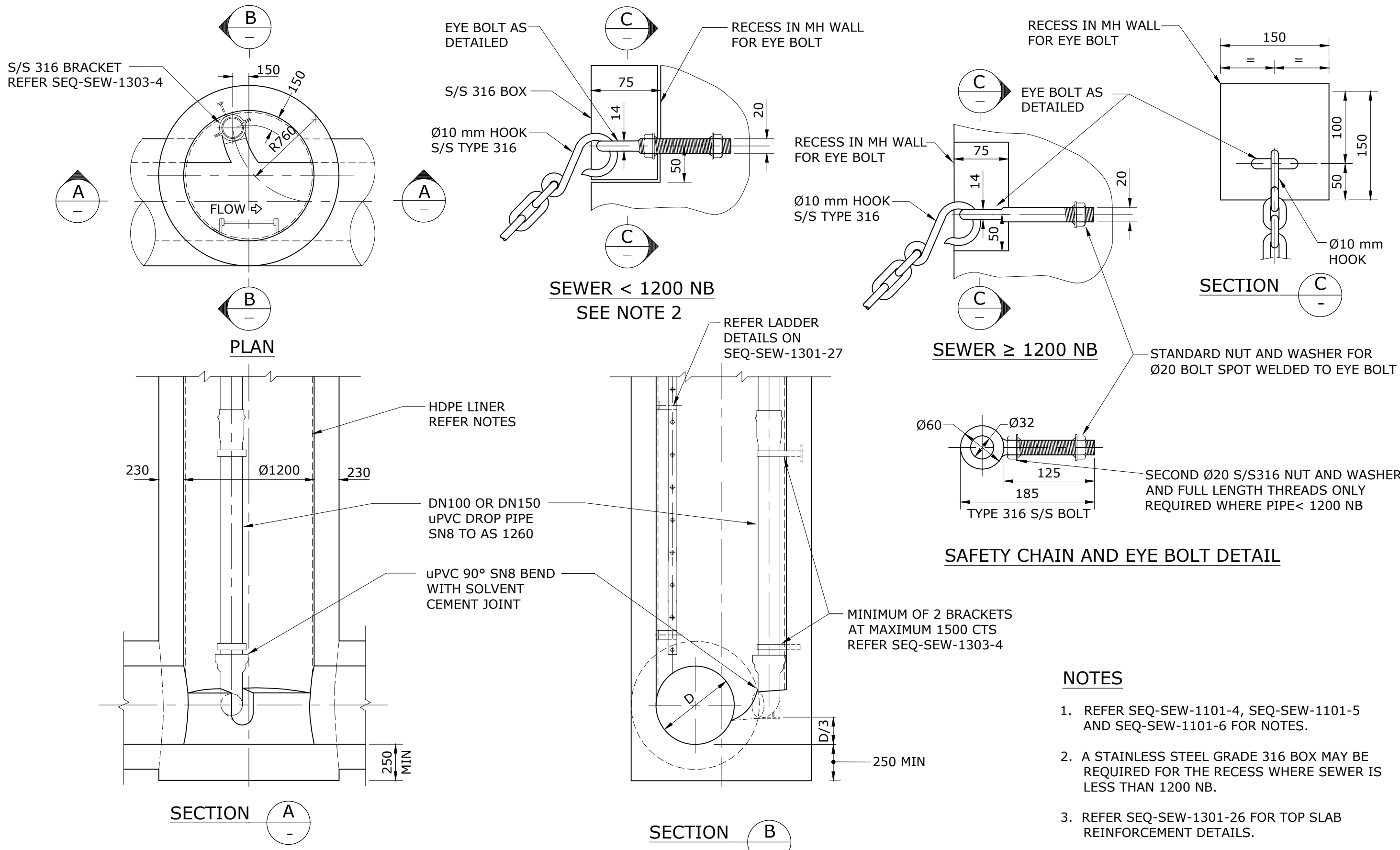
REV. No.	DATE	DESCRIPTION	AUTH.

SEQ WATER SERVICE PROVIDERS

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

SEWERAGE STANDARD DRAWING
'X' TYPE DEEP MAINTENANCE HOLE
TYPICAL ARRANGEMENT AND
G.A. DETAILS
SEWER 600 NB OR LESS WITH DROP PIPE

CoC	LCC	RCC	QUU	LW
DRAWING No.				VERSION
SEQ-SEW-1301-16				A
NOT TO SCALE				ORG DATE: 27/05/2019



**INTERNAL DROP PIPE WITH EXISTING MH ONLY
PIPES 675 NB TO 900 NB**

NOTES

1. REFER SEQ-SEW-1101-4, SEQ-SEW-1101-5 AND SEQ-SEW-1101-6 FOR NOTES.
2. A STAINLESS STEEL GRADE 316 BOX MAY BE REQUIRED FOR THE RECESS WHERE SEWER IS LESS THAN 1200 NB.
3. REFER SEQ-SEW-1301-26 FOR TOP SLAB REINFORCEMENT DETAILS.
4. HDPE INTERNAL LINER REQUIRED FOR MHS GREATER THAN 4.0 m DEEP.

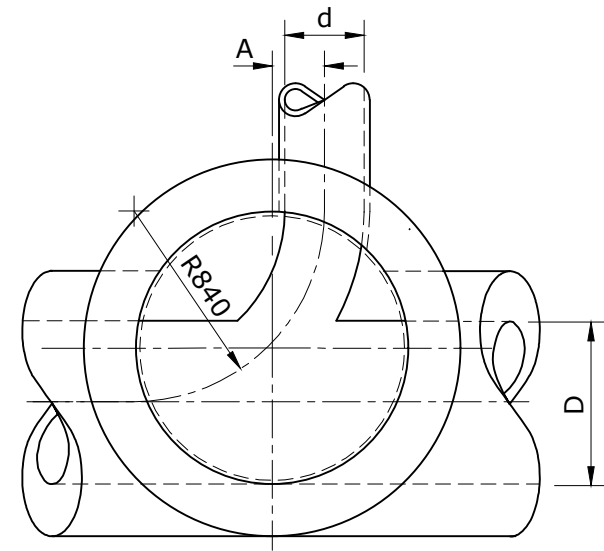
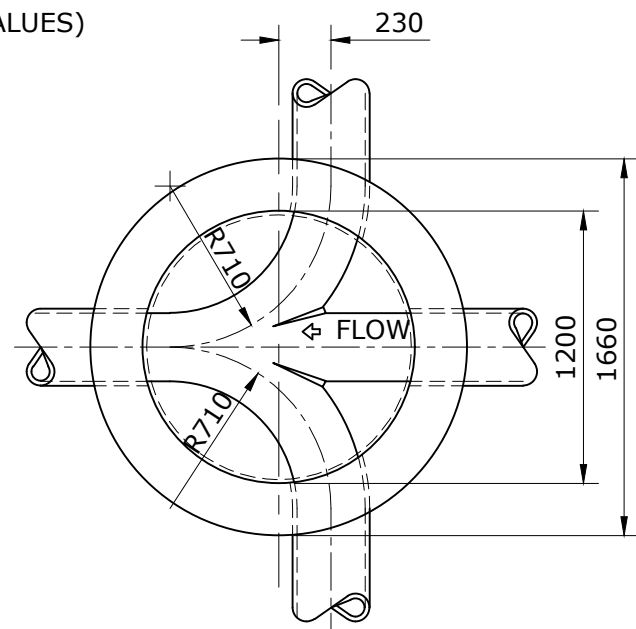
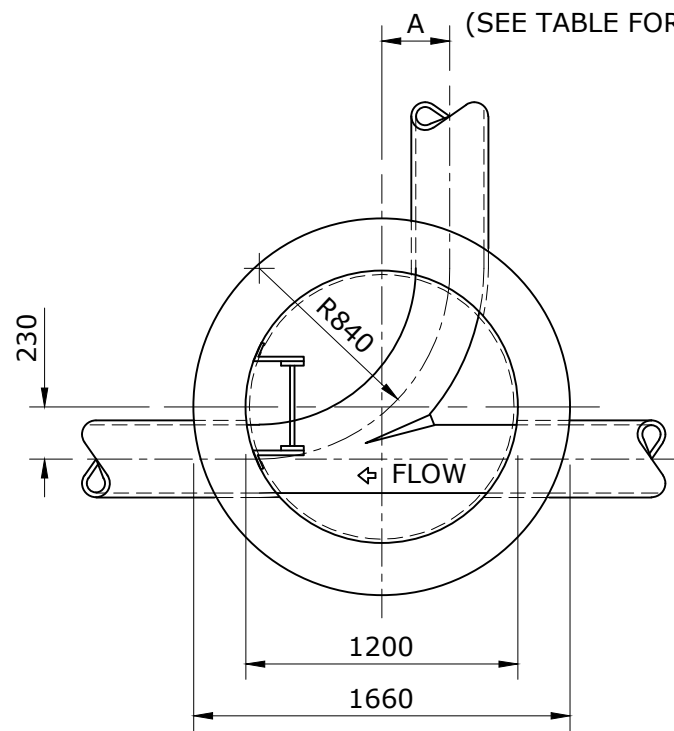
REV. No.	DATE	DESCRIPTION	AUTH.

SEQ WATER SERVICE PROVIDERS

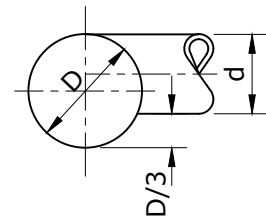
WORK PRACTICES MUST COMPLY WITH ALL APPLICABLE OCCUPATIONAL HEALTH & SAFETY LEGISLATION

SEWERAGE STANDARD DRAWING
'X' TYPE DEEP MAINTENANCE HOLE
TYPICAL ARRANGEMENT AND
G.A. DETAILS
SEWER 675 NB TO 900 NB WITH DROP PIPE
AND SAFETY CHAIN DETAIL

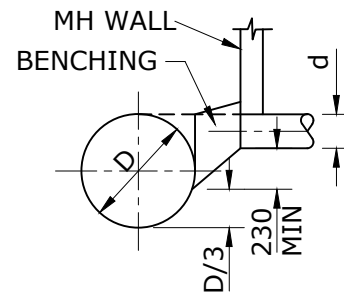
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DRAWING No.				VERSION
SEQ-SEW-1301-17				A
NOT TO SCALE				ORG DATE: 2705/2019



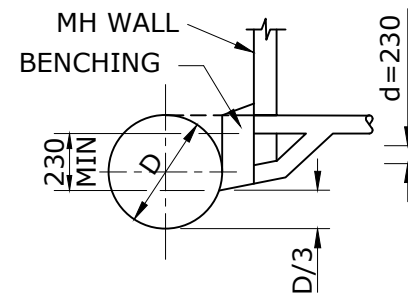
TYPICAL SECTION PLANS FOR JUNCTIONS



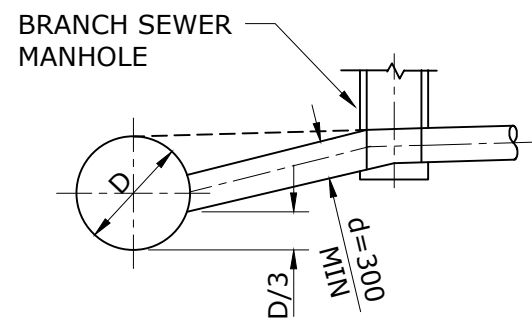
CASE 1



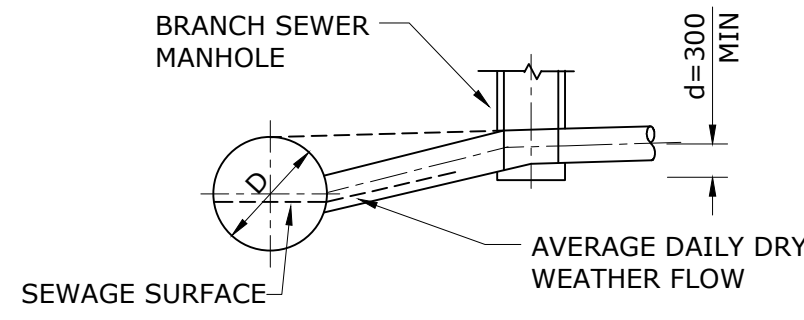
CASE 2



CASE 3



CASE 4(a)



CASE 4(b)

NOTES

1. REFER SEQ-SEW-1101-4, SEQ-SEW-1101-5 AND SEQ-SEW-1101-6 FOR NOTES.
2. REFER SEQ-SEW-1301-26 FOR TOP SLAB REINFORCEMENT DETAILS.
3. HDPE INTERNAL MH LINER REQUIRED FOR MHs GREATER THAN 4.0 m DEEP.

DIAMETER MAIN SEWER 'D'	MAX. DIAMETER BRANCH SEWER 'd'	'A'
1050	525	150
900	825	150

WHERE MAIN SEWER IS LESS THAN 800 DIAMETER, DIMENSION "A" FOR JUNCTIONS TO BE 230

DESIGN OF JUNCTIONS

ALL SEWERS OF VARYING DIAMETER SHALL BE GRADE OBVERT TO OBVERT WHEN THE SEWERS ARE IN LINE.

SIDE BRANCHES:

- CASE 1. WHEN $D-d$ IS EQUAL TO OR LESS THAN $D/3$ ie. ($D-d \leq D/3$) THEN THE OBVERT OF THE SIDE BRANCH SHALL BE GRADED TO THE OBVERT OF THE MAIN SEWER.
- CASE 2. WHEN $D-d$ IS EQUAL TO OR LESS THAN $D/3 + 230$, BUT GREATER THAN $D/3$ ie. ($D/3 + 230 \geq D-d > D/3$), THEN THE OBVERT OF THE SIDE BRANCH SHALL BE GRADED TO THE OBVERT OF THE MAIN SEWER UP TO THE MAINTENANCE HOLE WALL AND THEN THE CHANNEL THROUGH THE BENCHING SHALL BE GRADED TO $D/3$ OF THE MAIN SEWER.

SIDE BRANCH UP TO Ø230

- CASE 3. WHEN $(D-d) - D/3$ IS GREATER THAN 230, THE OBVERT OF THE SIDE BRANCH SHALL BE GRADED TO THE OBVERT OF THE MAIN SEWER AND A BACKDROP JUNCTION SHALL BE USED TO BRING THE SIDE BRANCH FLOW INTO THE MAIN SEWER AT $D/3$.

SIDE BRANCH GREATER THAN Ø230

- CASE 4. WHEN $(D-d) - D/3$ IS GREATER THAN 230, THE SIDE BRANCH SHALL FIRST BE GRADED TO MEET THE MAIN SEWER AT OBVERT LEVEL, THEN:
- (a) THAT SECTION OF THE INCOMING LINE FROM THE FIRST BRANCH SEWER MAINTENANCE HOLE TO THE MAIN SEWER SHALL BE REGRADED SO THAT THE SIDE BRANCH SEWER HAS AN ENTRANCE DEPTH OF $D/3$; OR
 - (b) THAT SECTION OF THE INCOMING LINE FROM THE FIRST BRANCH SEWER MAINTENANCE HOLE TO THE MAIN SEWER SHALL BE REGRADED SO THAT THE LEVEL OF THE SEWAGE SURFACE IN THE SIDE BRANCH IS EQUAL TO THE LEVEL OF THE SEWAGE SURFACE IN MAIN SEWER FOR AVERAGE DAILY DRY WEATHER FLOWS.

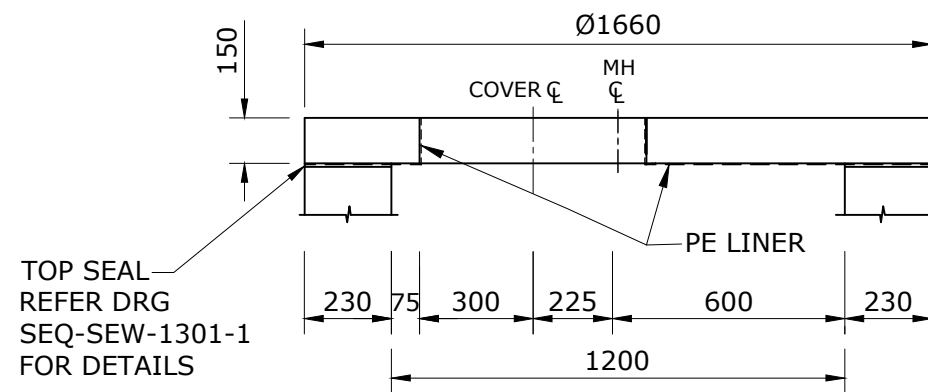
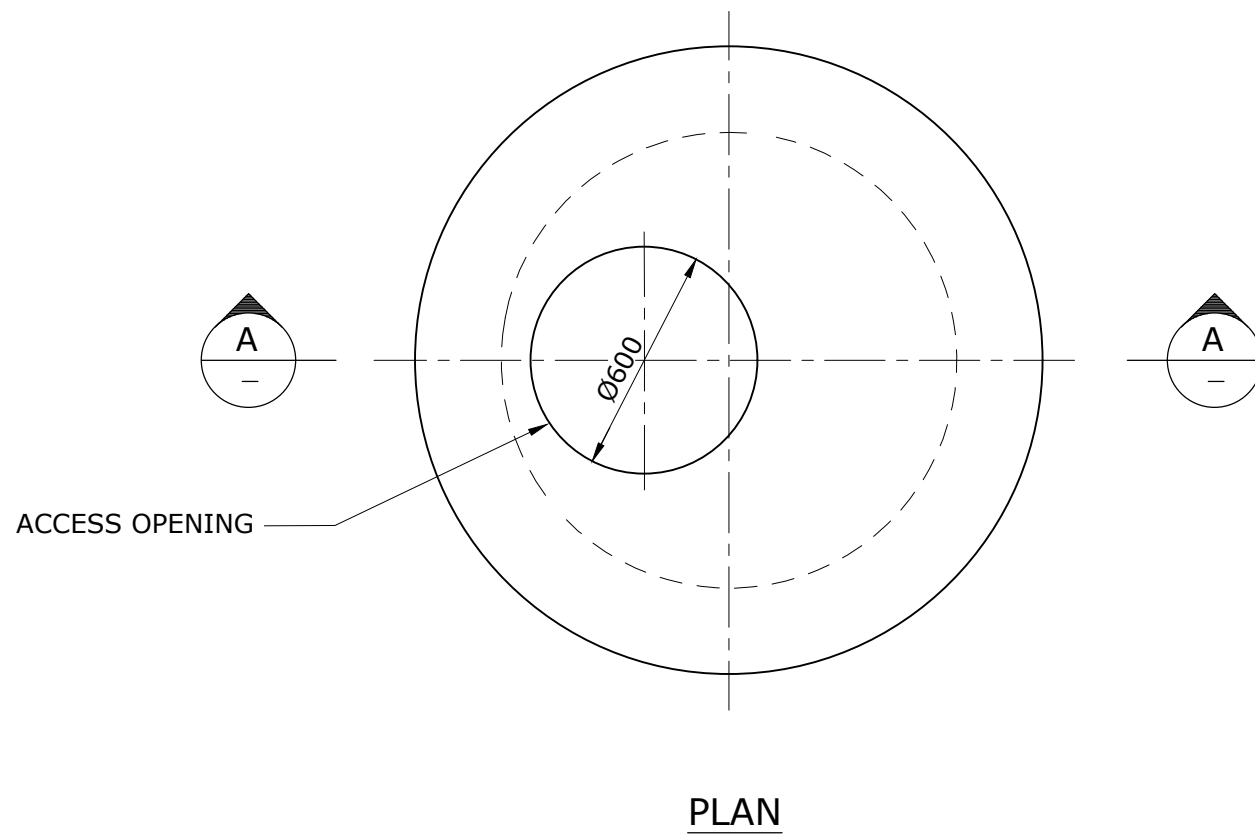
REV. No.	DATE	DESCRIPTION	AUTH.

SEQ WATER SERVICE PROVIDERS

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

SEWERAGE STANDARD DRAWING
'X' TYPE
DEEP MAINTENANCE HOLE
TYPICAL JUNCTION DETAILS

CoGC	LEC	RCC	QUU	UW
DRAWING No.				VERSION
SEQ-SEW-1301-18				A
NOT TO SCALE				ORG DATE: 27/05/2019



NOTES

1. REFER SEQ-SEW-1101-4, SEQ-SEW-1101-5 AND SEQ-SEW-1101-6 FOR NOTES.
2. REFER SEQ-SEW-1301-26 FOR REINFORCEMENT DETAILS.

REV. No.	DATE	DESCRIPTION	AUTH.

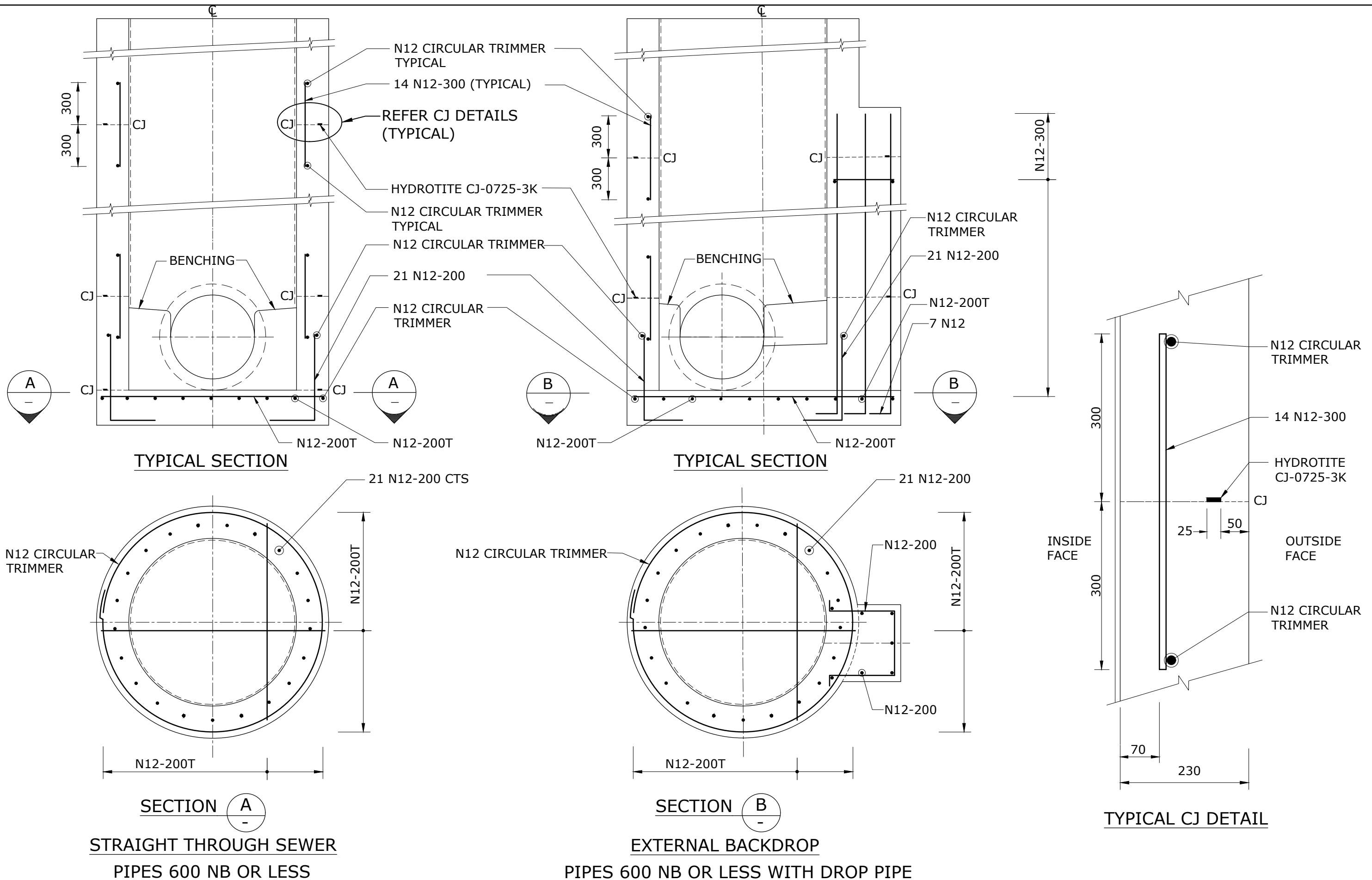
SEQ WATER SERVICE PROVIDERS

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

SEWERAGE STANDARD DRAWING

'X' TYPE
DEEP MAINTENANCE HOLE
TYPICAL TOP SLAB
G.A. DETAILS

CoGC	LCC	RCC	QUU	DW
DRAWING No.				VERSION
SEQ-SEW-1301-19				A
NOT TO SCALE			ORG DATE: 27/05/2019	



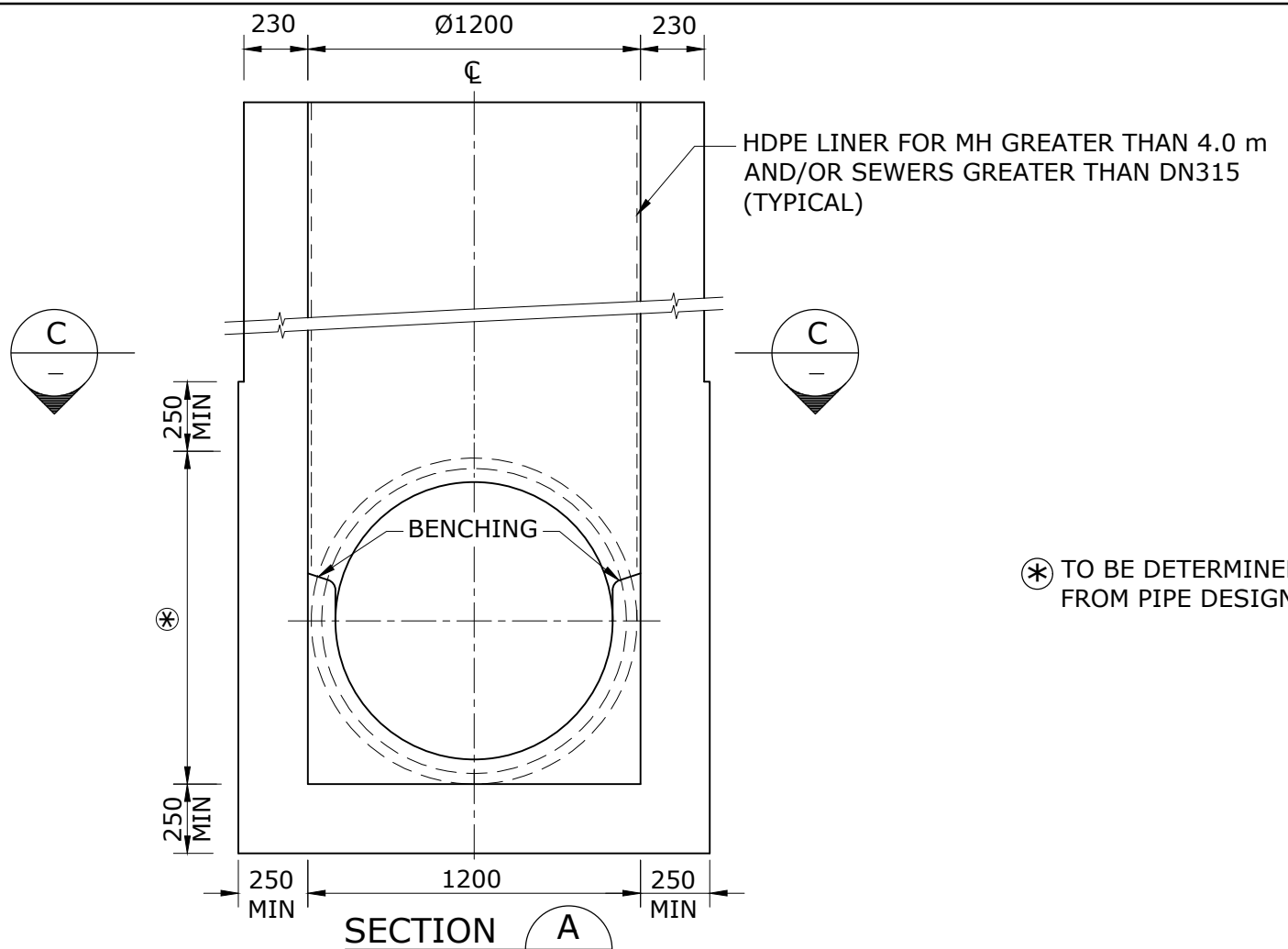
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SEQ WATER SERVICE PROVIDERS

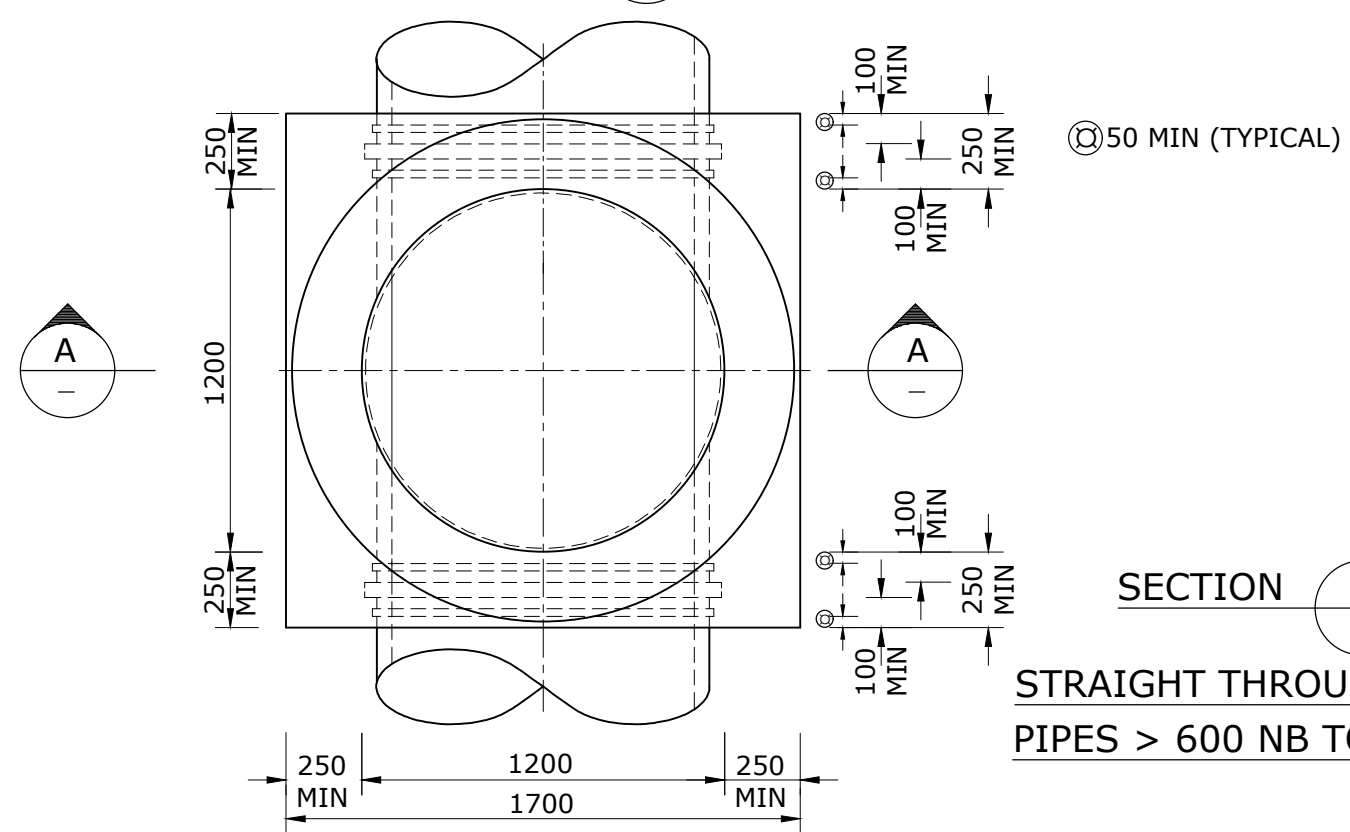
WORK PRACTICES MUST COMPLY WITH ALL APPLICABLE OCCUPATIONAL HEALTH & SAFETY LEGISLATION

SEWERAGE STANDARD DRAWING
 'X' TYPE
 TYPICAL MAINTENANCE HOLE
 STRUCTURAL REINFORCEMENT DETAILS
 SEWERS 600 NB OR LESS

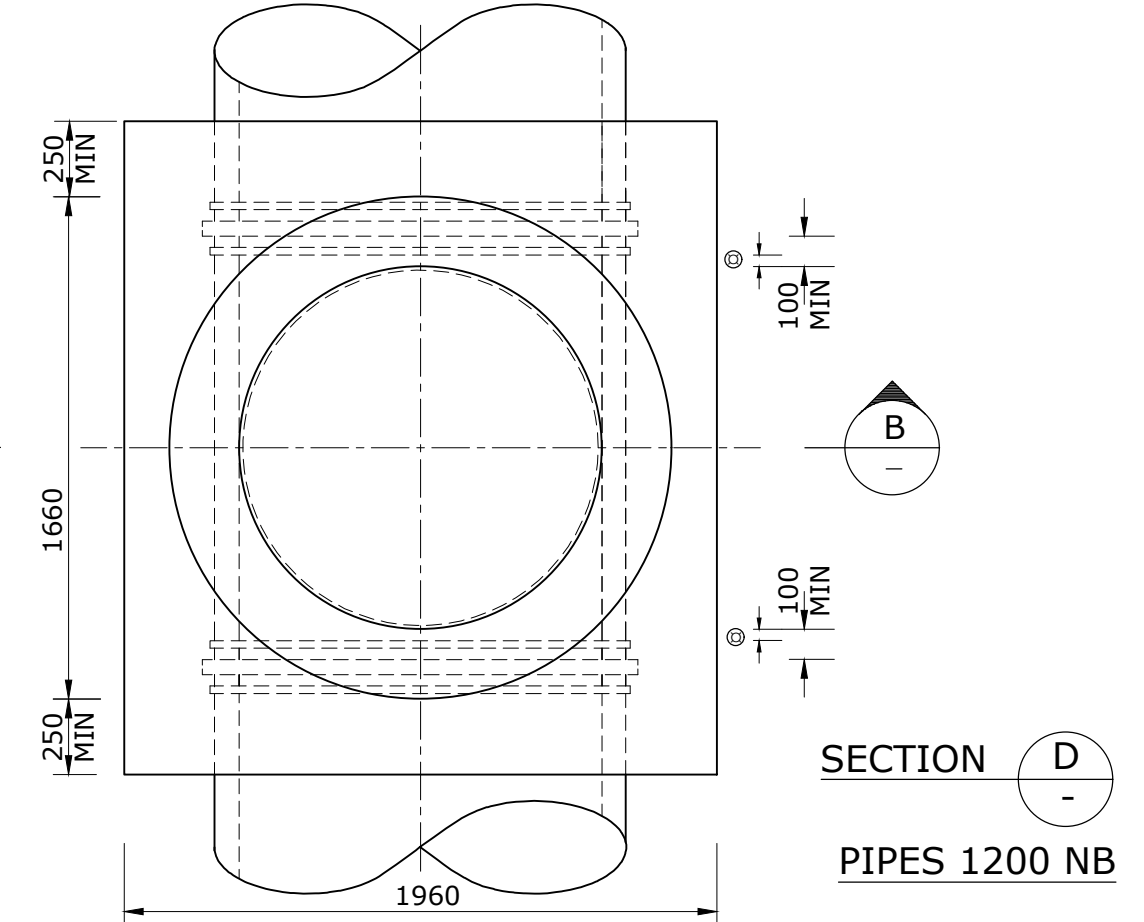
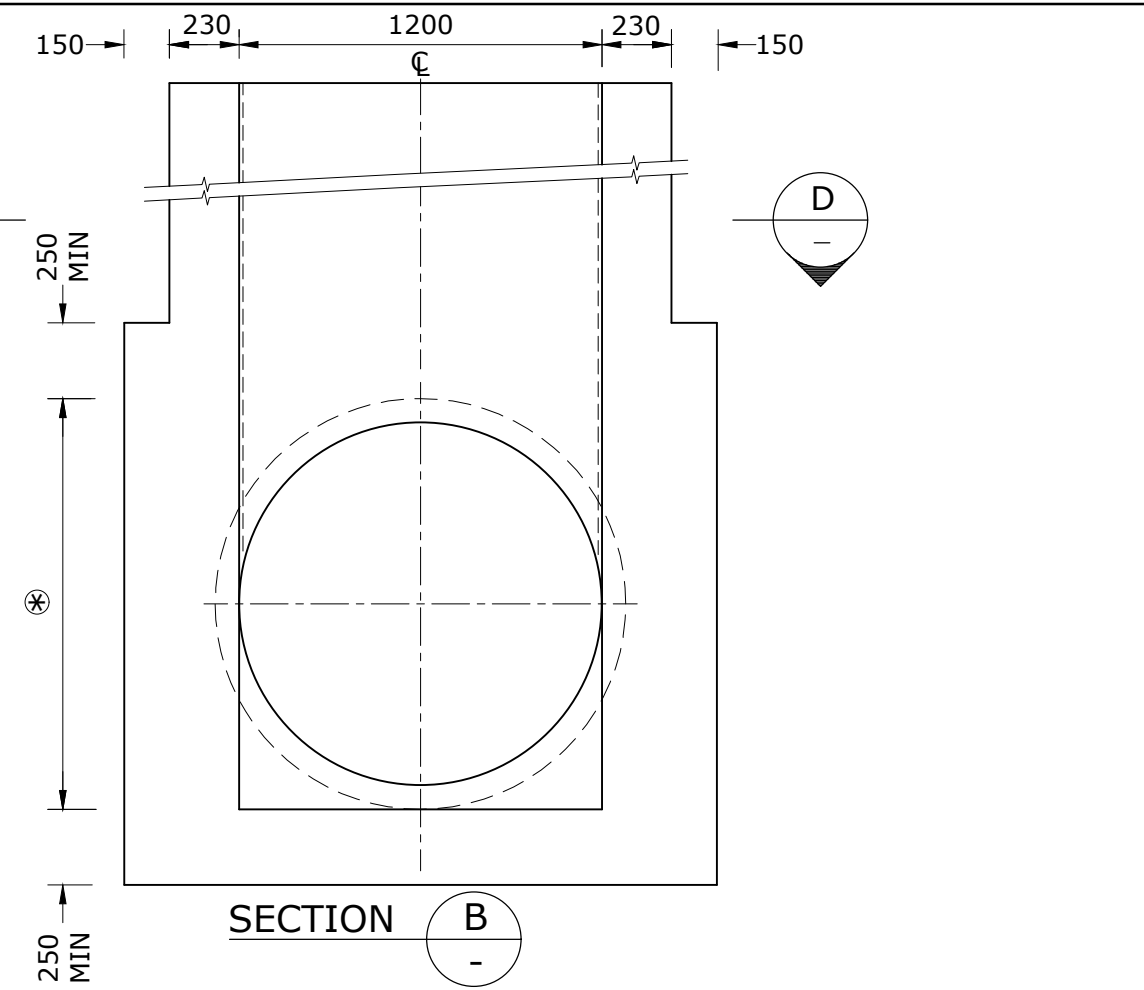
COC	LCC	RCC	QUU	LW
DRAWING No.				VERSION
SEQ-SEW-1301-21				A
NOT TO SCALE				ORG DATE: 23/05/2019



⊛ TO BE DETERMINED FROM PIPE DESIGN



STRAIGHT THROUGH SEWER
PIPES > 600 NB TO 1050 NB



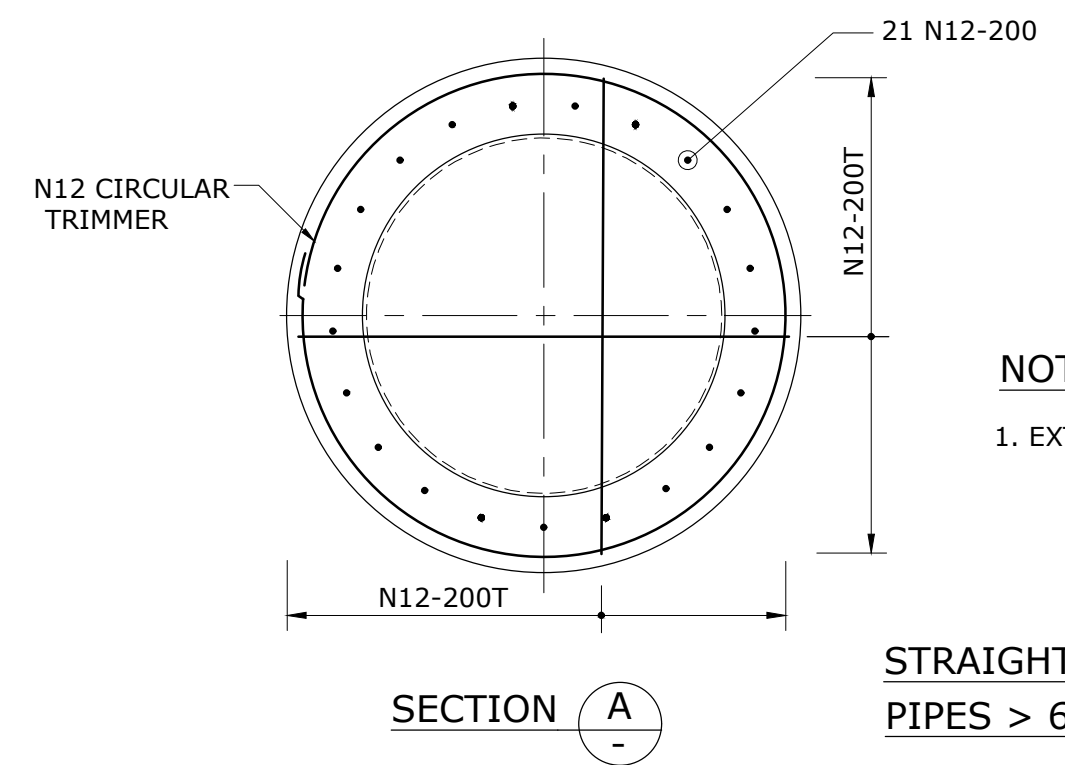
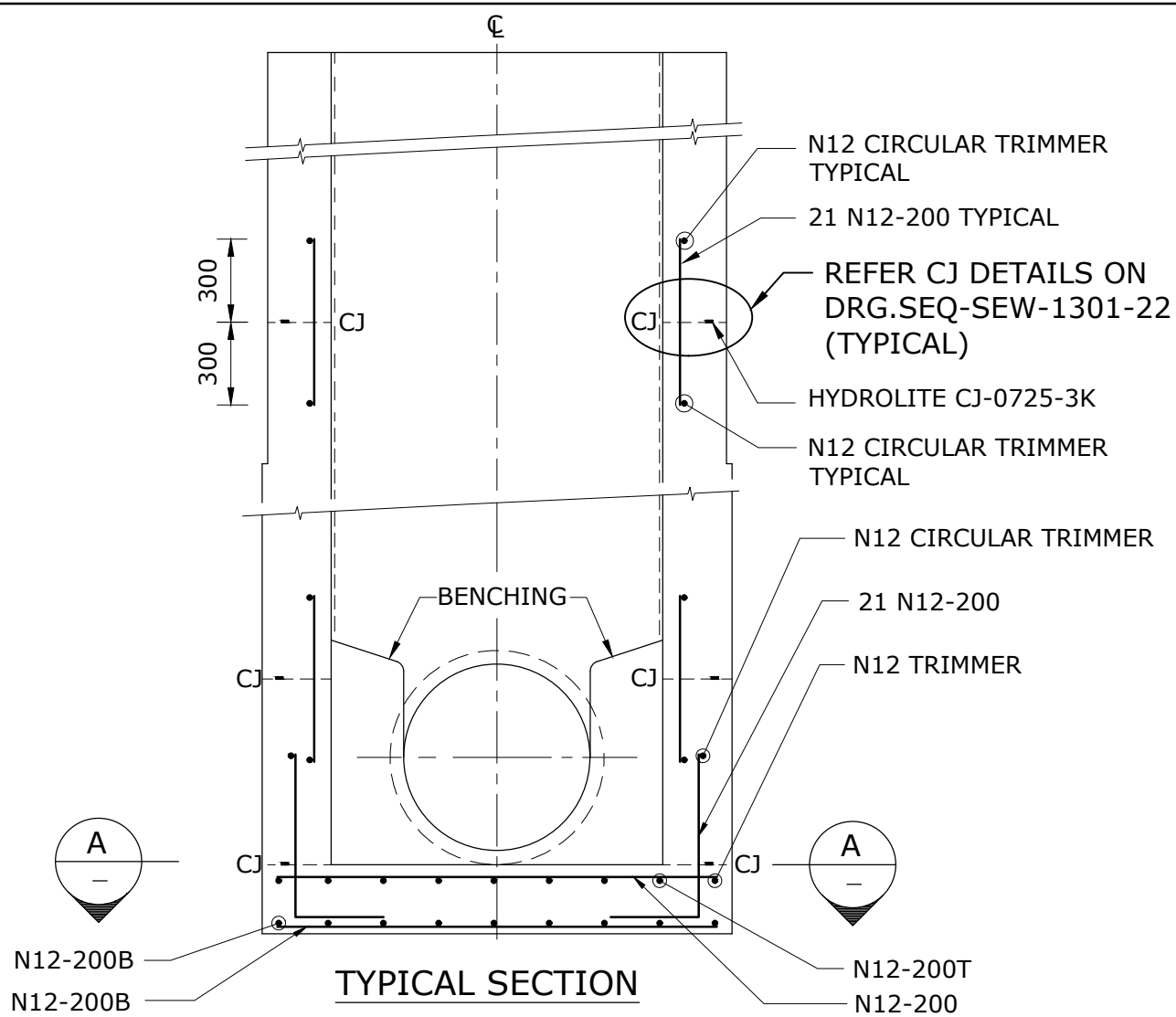
REV. No.	DATE	DESCRIPTION	AUTH.

SEQ WATER
SERVICE PROVIDERS

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

SEWERAGE STANDARD DRAWING
'X' TYPE
DEEP MAINTENANCE HOLE
STRUCTURAL G.A. DETAILS
SEWERS > 600 NB TO 1200 NB

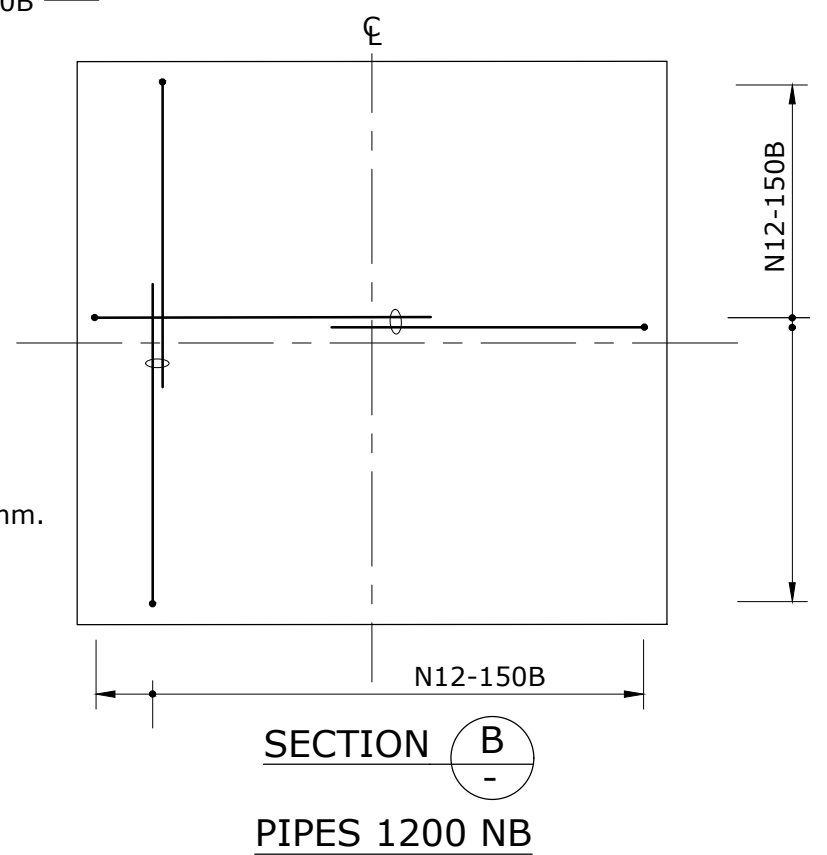
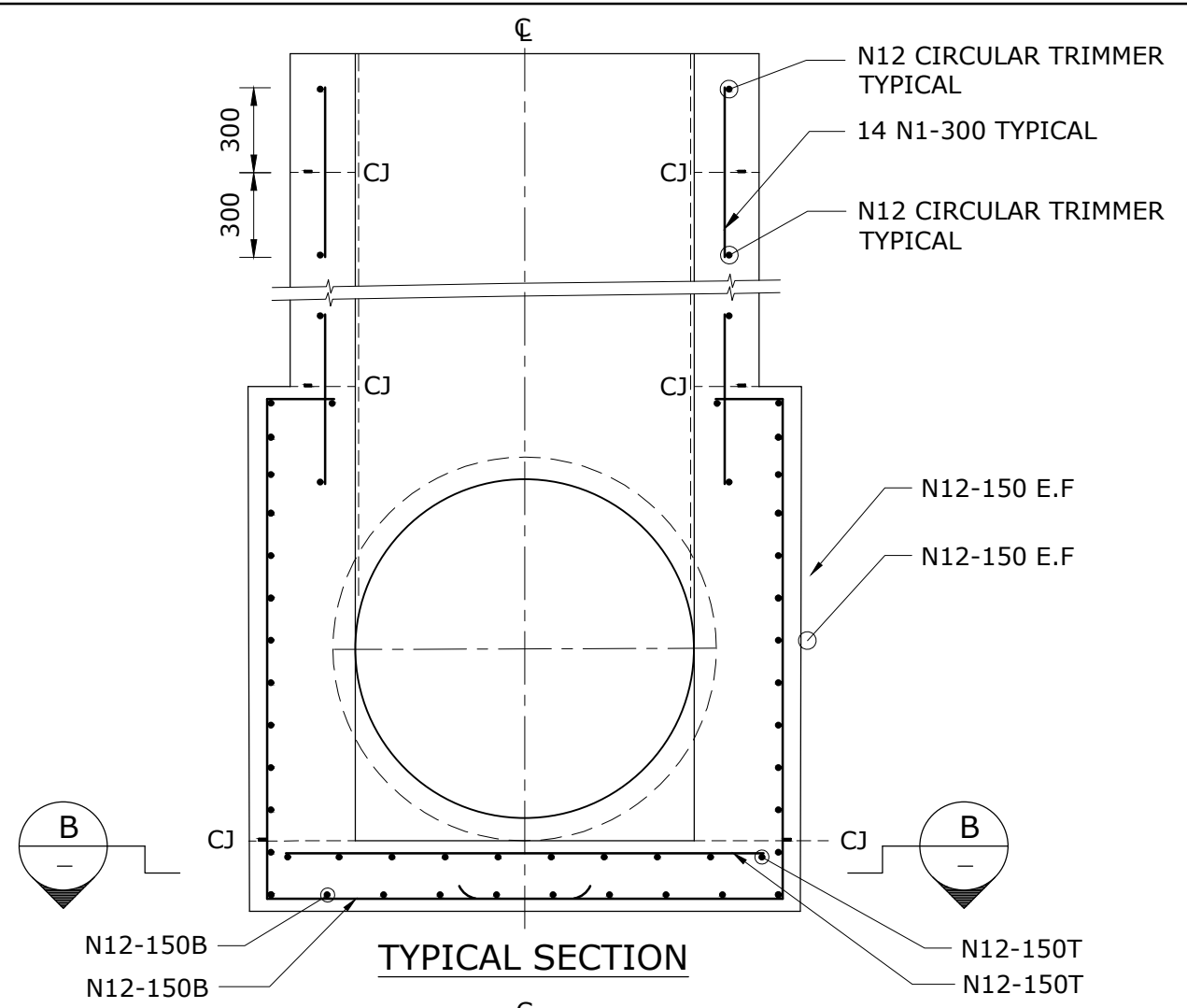
CoGC	LGC	BGC	QUU	UW
DRAWING No.				VERSION
SEQ-SEW-1301-22				A
NOT TO SCALE			ORG DATE: 23/05/2019	



NOTE

1. EXTERNAL COVER TO REINFORCEMENT IS 75 mm.

STRAIGHT THROUGH SEWER PIPES > 600 NB TO 1050 NB



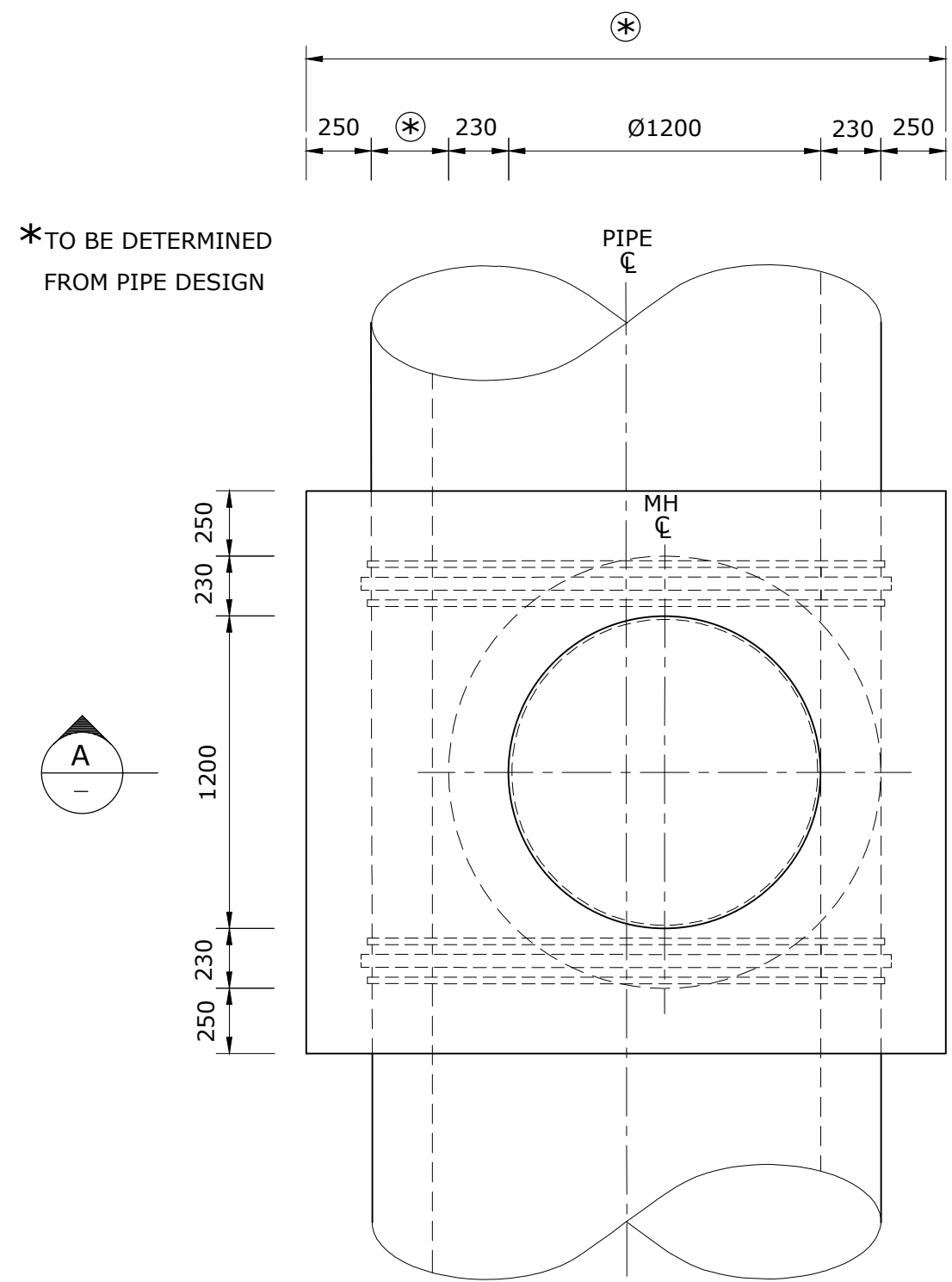
REV. No.	DATE	DESCRIPTION	AUTH.

SEQ WATER SERVICE PROVIDERS

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

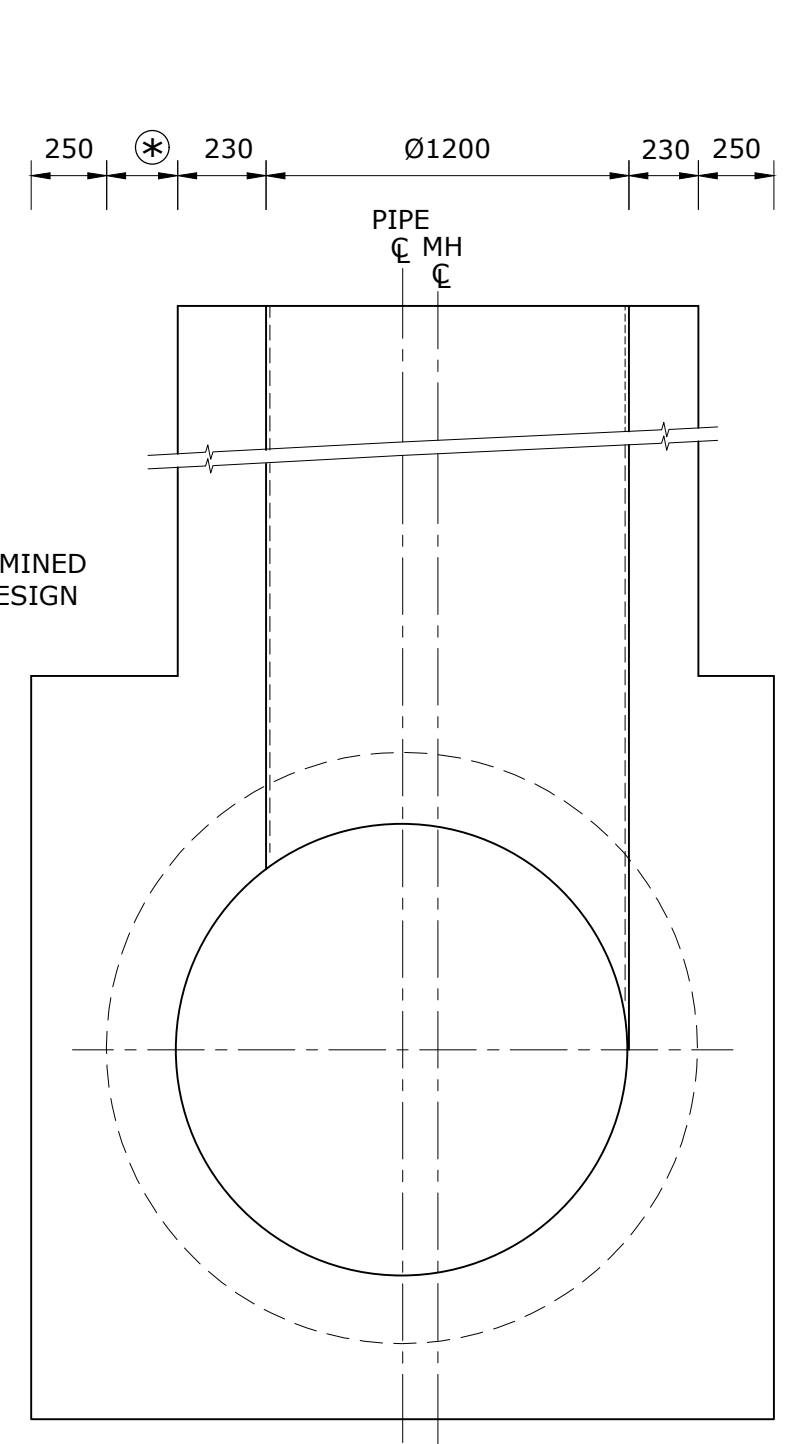
SEWERAGE STANDARD DRAWING
 'X' TYPE
 DEEP MAINTENANCE HOLE
 STRUCTURAL REINFORCEMENT DETAILS
 SEWERS > 600 NB TO 1200 NB

CoGC	LGC	BGC	QUU	UW
DRAWING No.				VERSION
SEQ-SEW-1301-23				A
NOT TO SCALE			ORG DATE: 27/05/2019	



*TO BE DETERMINED FROM PIPE DESIGN

PLAN
SEWERS > 1200 NB



* TO BE DETERMINED FROM PIPE DESIGN

SECTION A

NOTES

1. REFER SEQ-SEW-1101-4, SEQ-SEW-1101-5 AND SEQ-SEW-1101-6 FOR NOTES.
2. REFER SEQ-SEW-1301-26 FOR TOP SLAB REINFORCEMENT DETAILS.
3. HDPE INTERNAL MH LINER REQUIRED FOR MHs GREATER THAN 4.0 m DEEP.

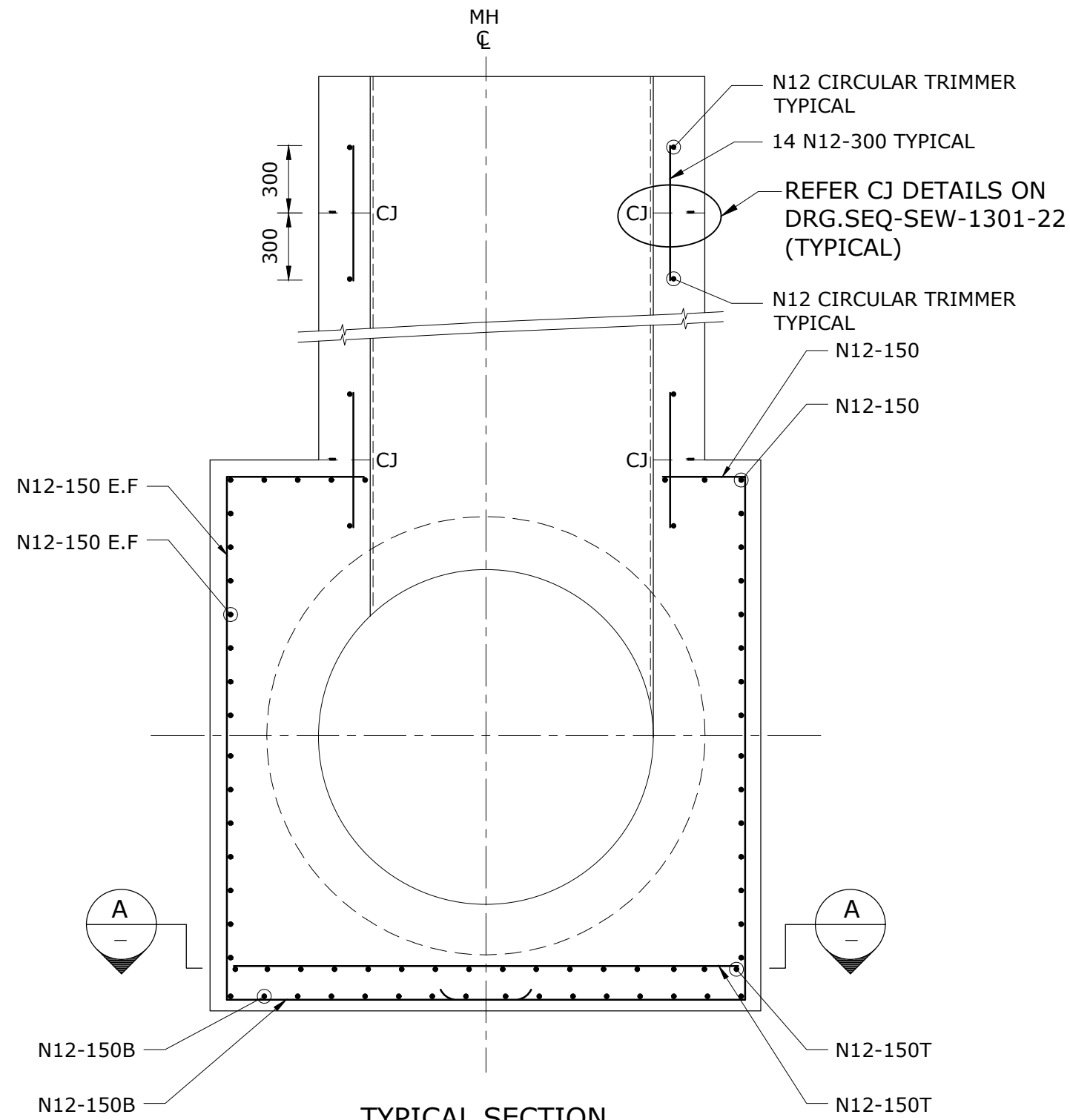
REV. No.	DATE	DESCRIPTION	AUTH.

SEQ WATER SERVICE PROVIDERS

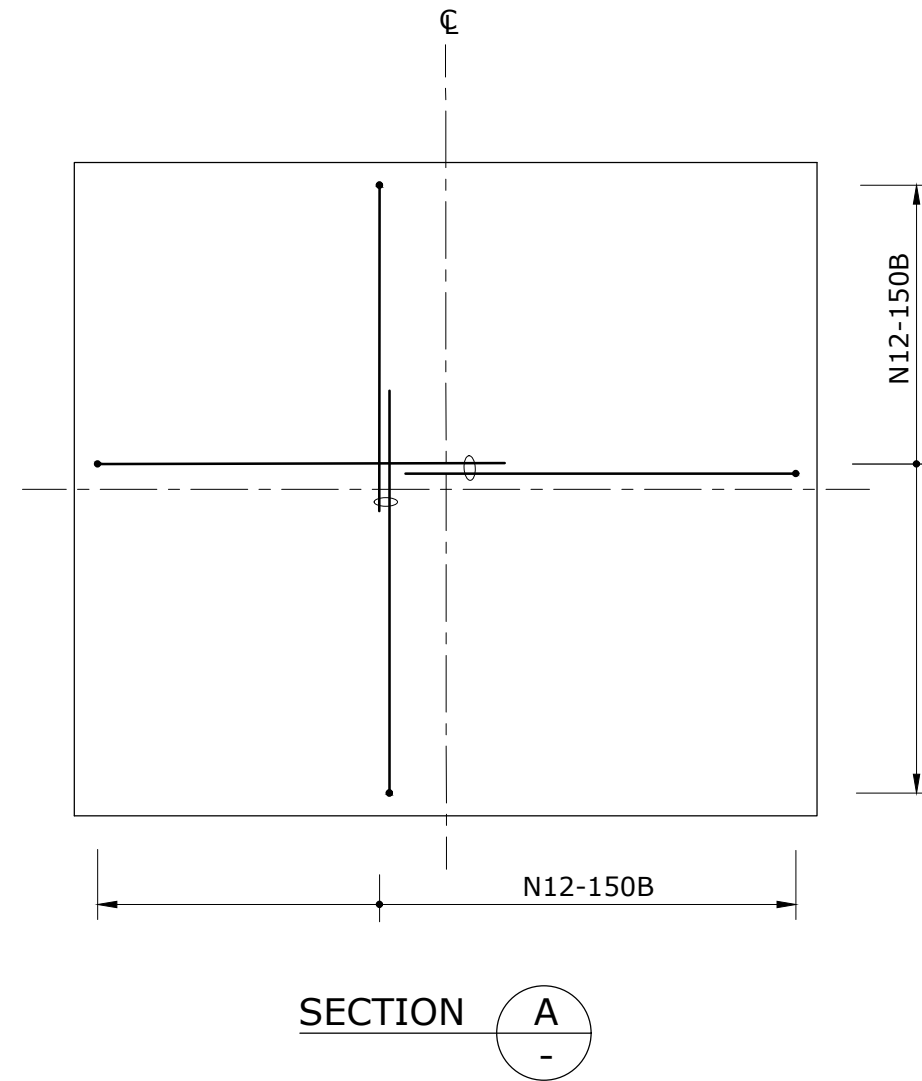
WORK PRACTICES MUST COMPLY WITH ALL APPLICABLE OCCUPATIONAL HEALTH & SAFETY LEGISLATION

SEWERAGE STANDARD DRAWING
'X' TYPE
DEEP MAINTENANCE HOLE
STRUCTURAL G.A. DETAILS
SEWERS > 1200 NB

C&C	L&C	R&C	QUU	LW
DRAWING No.				VERSION
SEQ-SEW-1301-24				A
NOT TO SCALE			ORG DATE: 27/05/2019	



TYPICAL SECTION
SEWERS GREATER THAN 1200 NB



SECTION A

NOTES

1. COVER TO REINFORCEMENT IS 75 mm.
2. REFER SEQ-SEW-1301-23 FOR REMAINING REINFORCEMENT DETAILS.

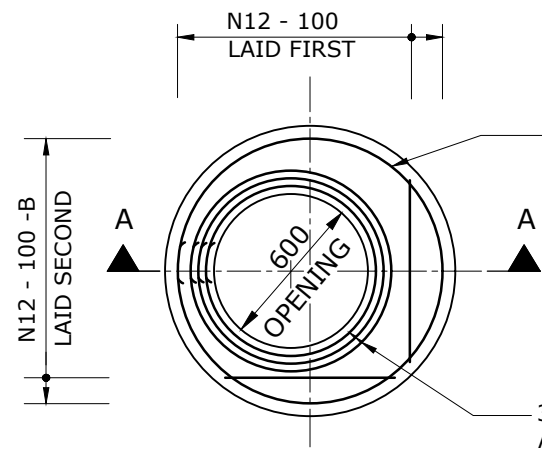
REV. No.	DATE	DESCRIPTION	AUTH.

**SEQ WATER
 SERVICE PROVIDERS**

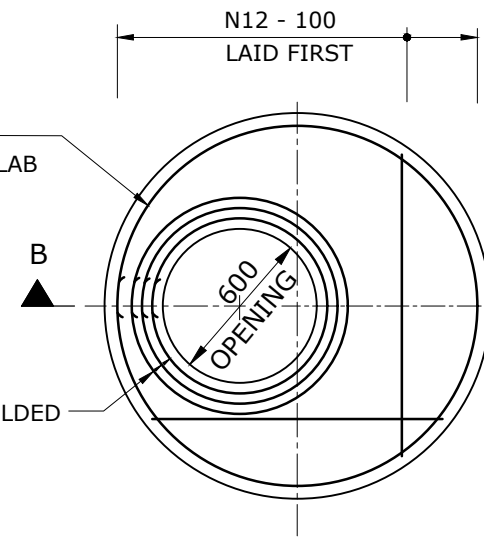
WORK PRACTICES MUST COMPLY WITH ALL APPLICABLE
 OCCUPATIONAL HEALTH & SAFETY LEGISLATION

SEWERAGE STANDARD DRAWING
 'X' TYPE
 DEEP MAINTENANCE HOLE
 STRUCTURAL REINFORCEMENT DETAILS
 SEWERS > 1200 NB

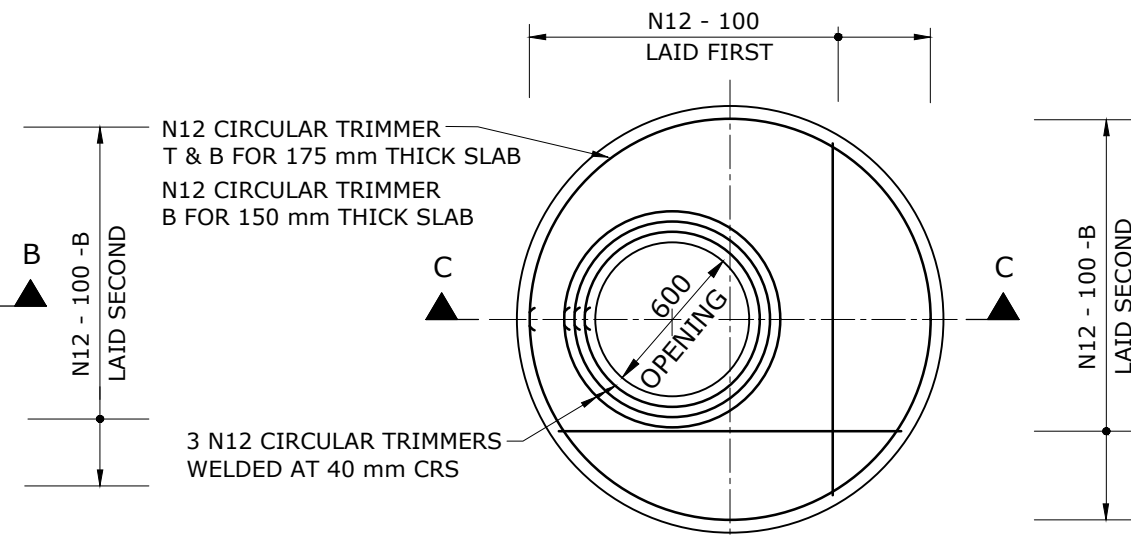
C&C	L&C	R&C	QUU	LW
DRAWING No.				VERSION
SEQ-SEW-1301-25				A
NOT TO SCALE			ORG DATE: 27/05/2019	



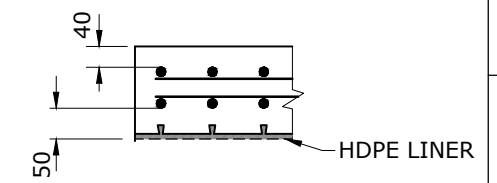
'G' TYPE TOP SLAB - 900 mm ID MH
BOTTOM REINFORCEMENT SHOWN



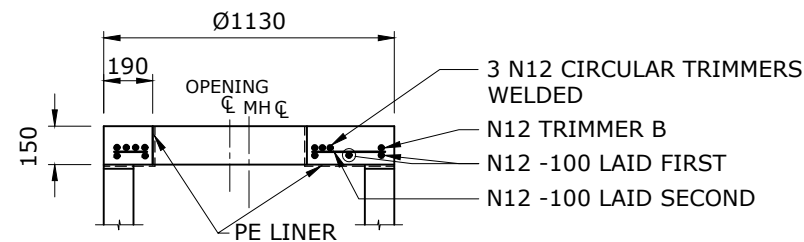
'F' TYPE TOP SLAB - 1200 mm ID MH
BOTTOM REINFORCEMENT SHOWN



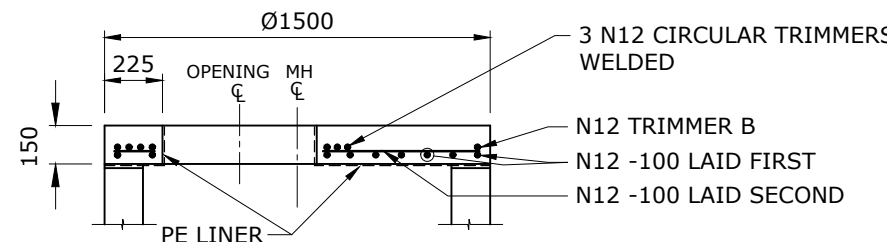
'X' TYPE TOP SLAB - 1200 mm ID MH
BOTTOM REINFORCEMENT SHOWN



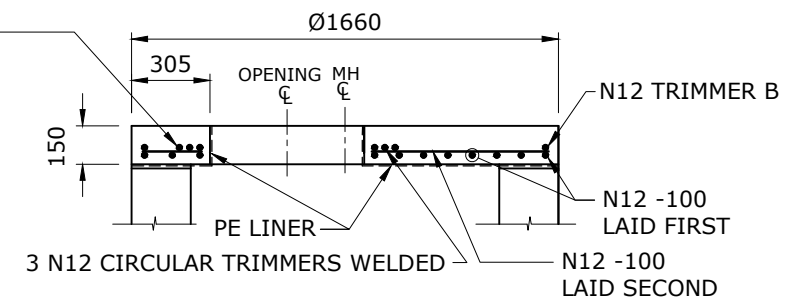
REINFORCEMENT COVER DETAILS



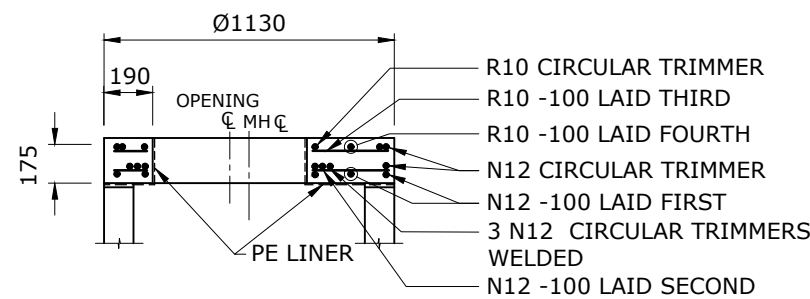
'G' TYPE TOP SLAB SECTIONAL ELEVATION A-A
CLASS RATING B REINFORCEMENT



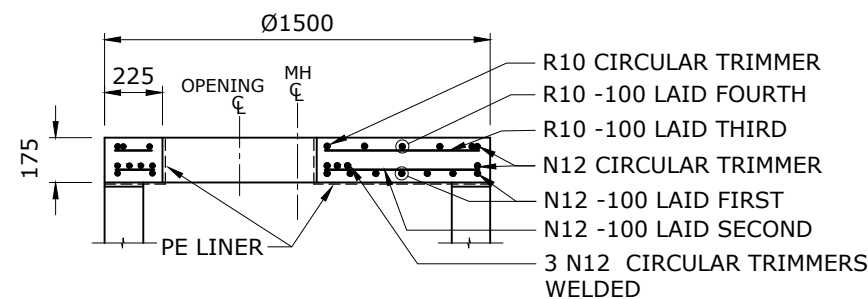
'F' TYPE TOP SLAB SECTIONAL ELEVATION B-B
CLASS RATING B REINFORCEMENT



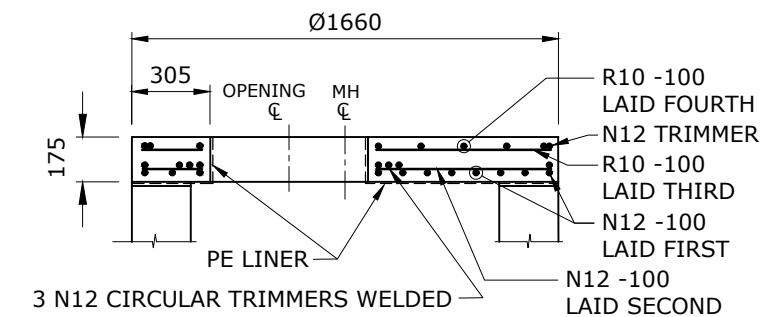
'X' TYPE TOP SLAB SECTIONAL ELEVATION C-C
CLASS RATING B REINFORCEMENT



'G' TYPE TOP SLAB SECTIONAL ELEVATION A-A
CLASS RATING D REINFORCEMENT



'F' TYPE TOP SLAB SECTIONAL ELEVATION B-B
CLASS RATING D REINFORCEMENT



'X' TYPE TOP SLAB SECTIONAL ELEVATION C-C
CLASS RATING D REINFORCEMENT

NOT TO SCALE

REV. No.	DATE	DESCRIPTION	AUTH.

SEQ WATER SERVICE PROVIDERS

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

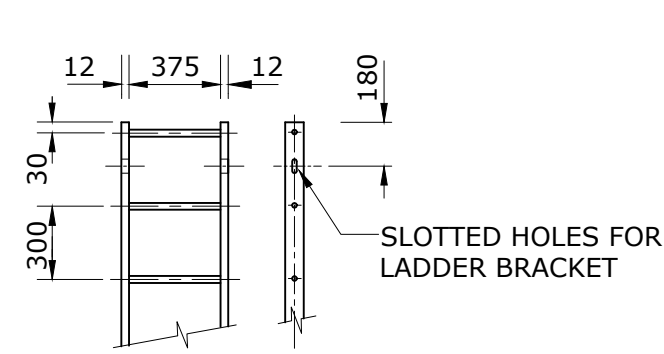
SEWERAGE STANDARD DRAWING

'G', 'F', 'X' TYPE MAINTENANCE HOLES
TOP SLABS
REINFORCEMENT DETAILS

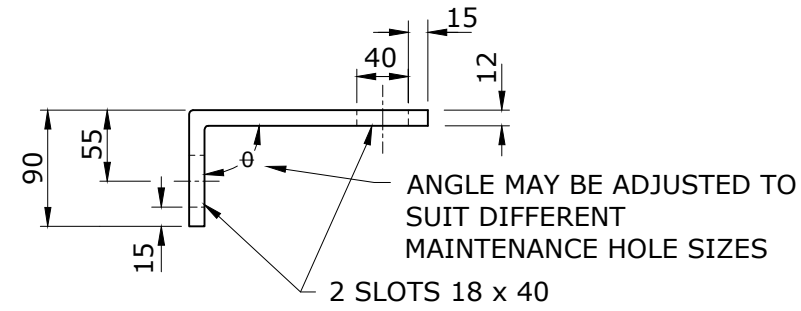
CoGC	LCC	BCC	QUU	UW
DRAWING No.				VERSION
SEQ-SEW-1301-26				A
NOT TO SCALE			ORG DATE: 24/05/2019	

NOTES

1. REFER SEQ-SEW-1101-4, SEQ-SEW-1101-5 AND SEQ-SEW-1101-6 FOR NOTES.

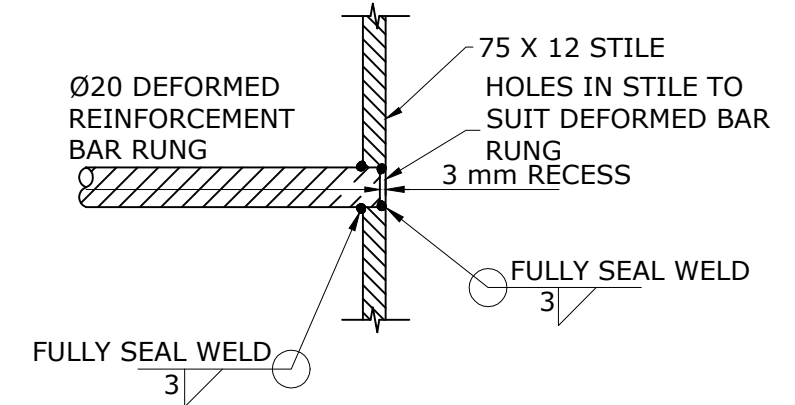


TOP OF LADDER DETAIL

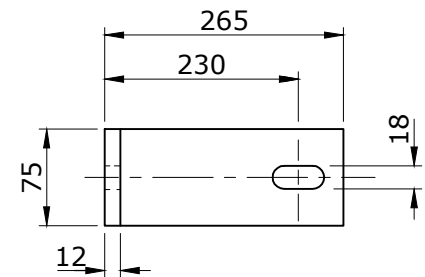


LADDER BRACKET PLAN

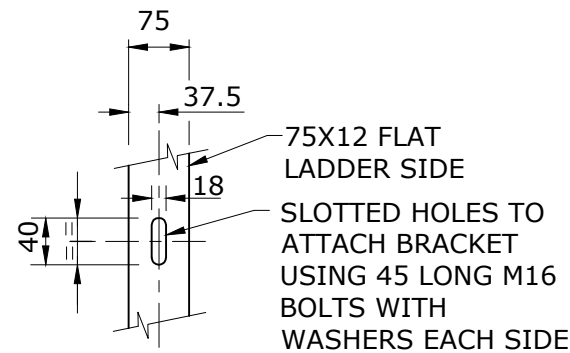
WHERE $\theta = 66.2^\circ - \text{Ø}1200 \text{ M.H.}$



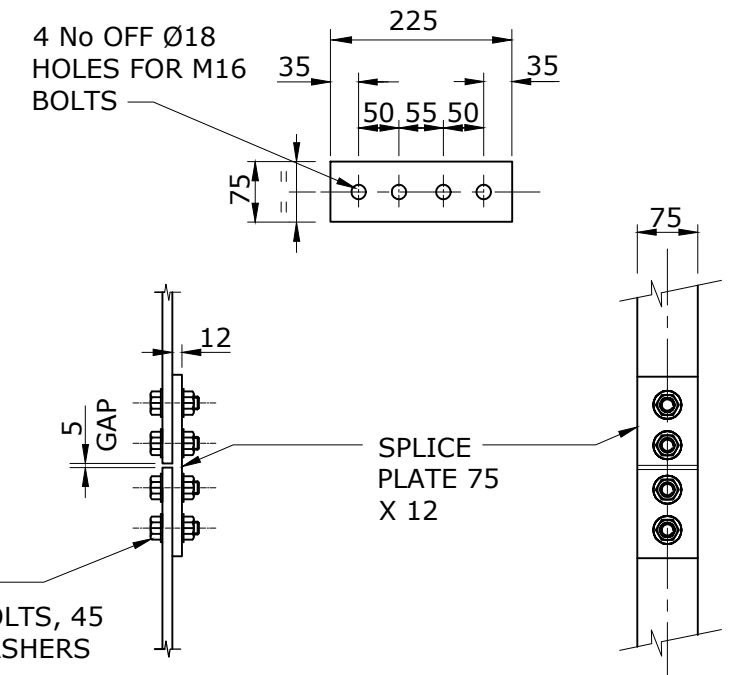
RUNG FIXING DETAIL



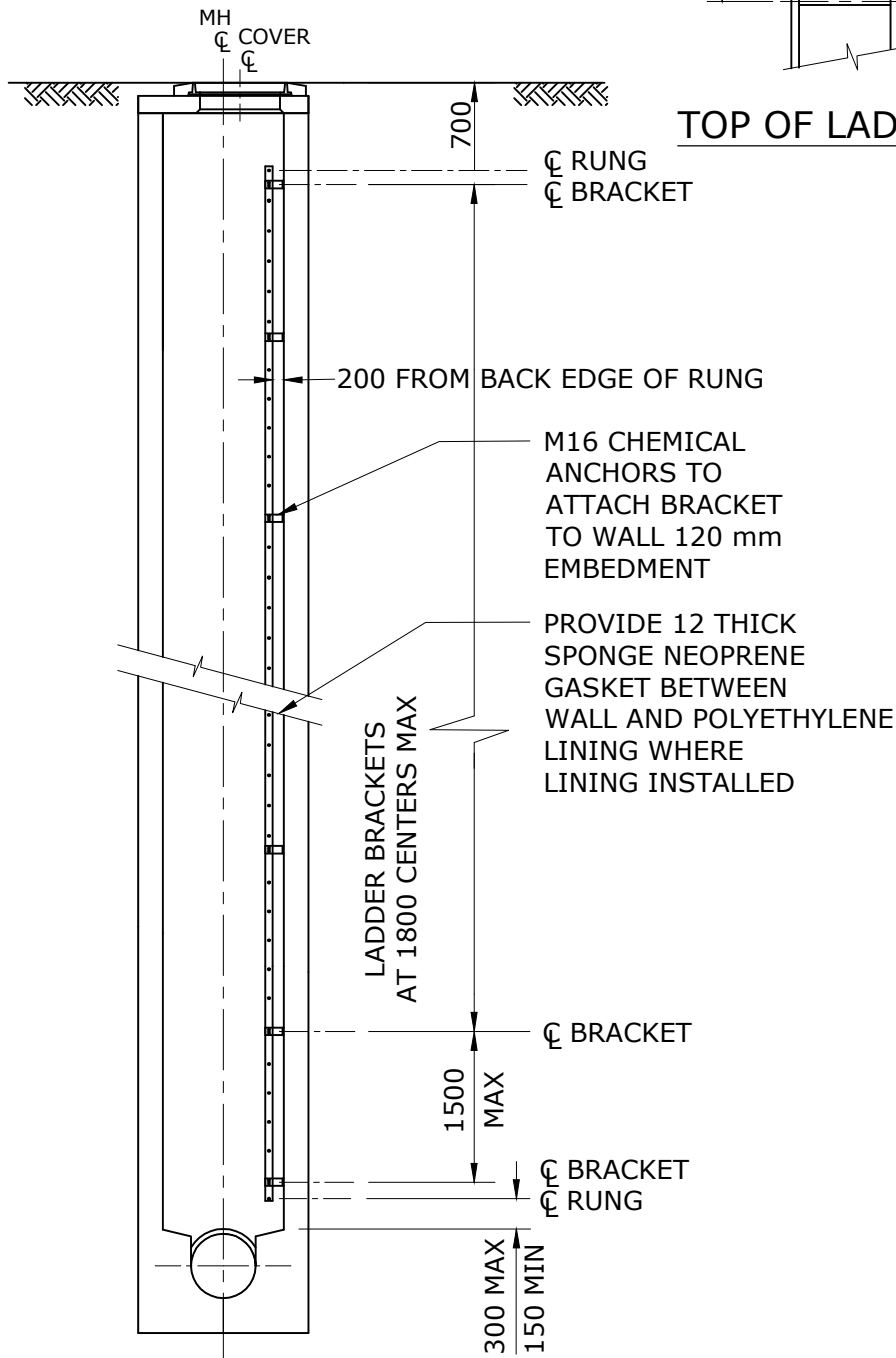
**ELEVATION
DETAILS OF LADDER BRACKET**



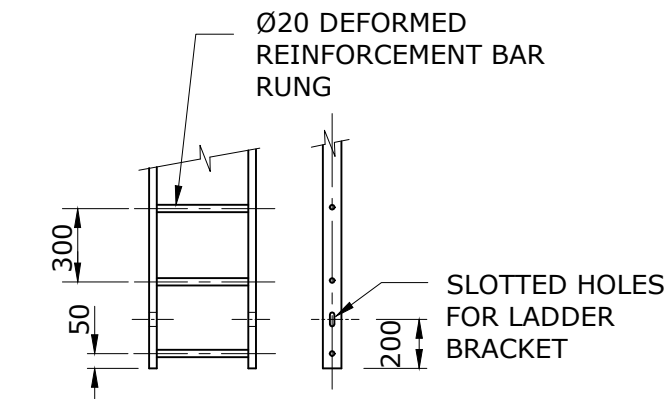
**DETAILS OF SLOTTED
HOLE IN LADDER STILE**



**DETAILS OF SPLICE PLATE AND CONNECTION
FOR LADDER STILES**



**TYPICAL LADDER ARRANGEMENT
FOR DEEP MAINTENANCE HOLES**



BOTTOM OF LADDER DETAIL

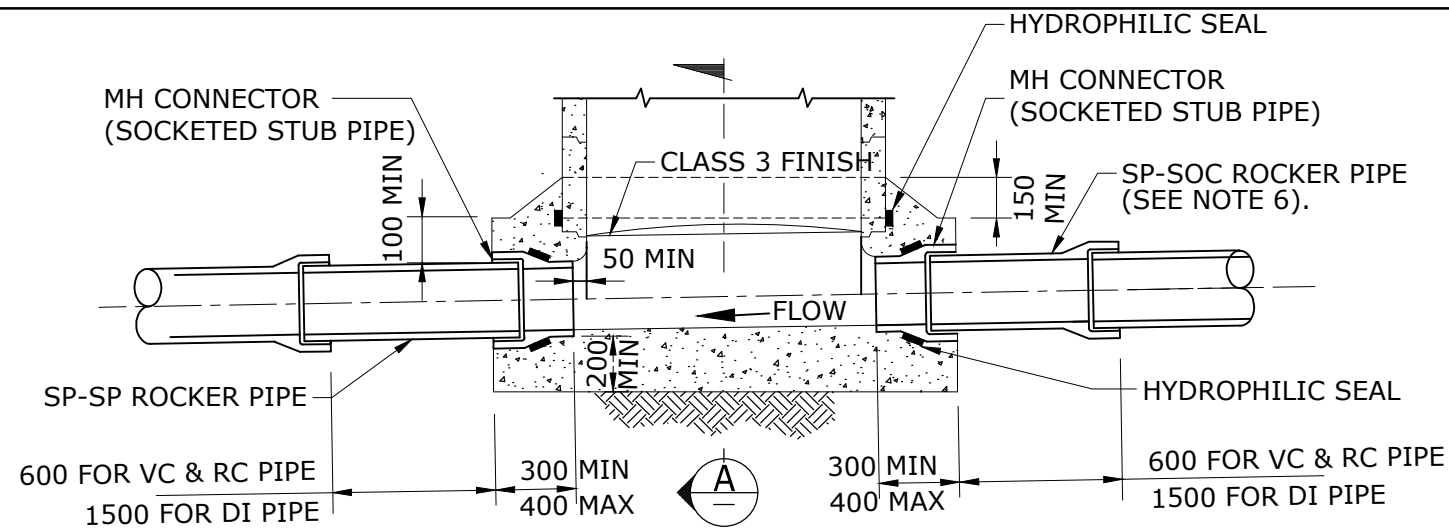
REV. No.	DATE	DESCRIPTION	AUTH.

**SEQ WATER
SERVICE PROVIDERS**

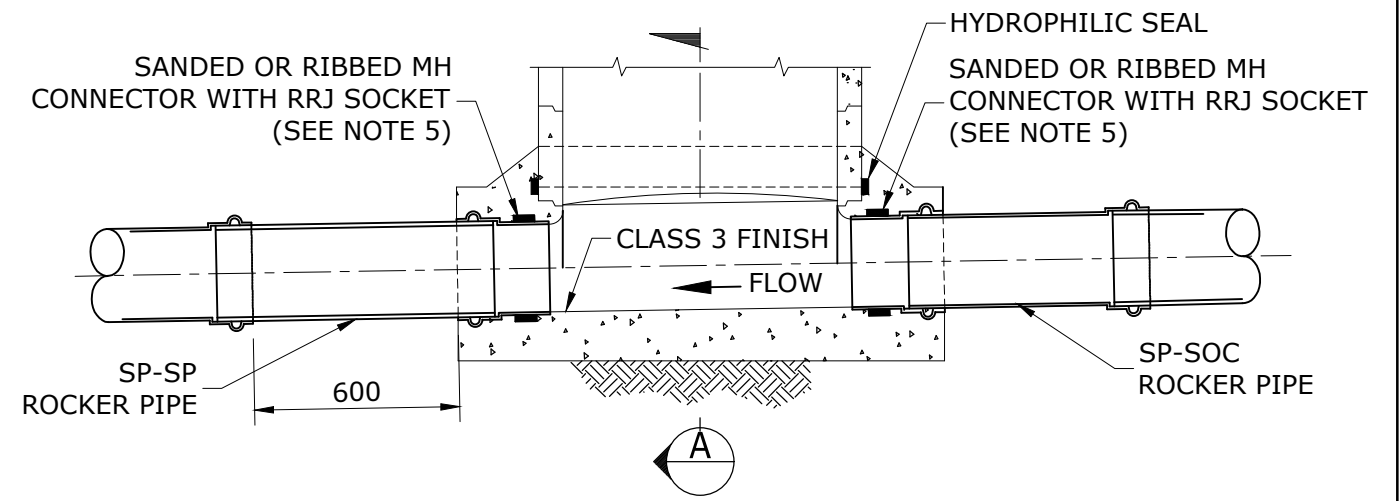
WORK PRACTICES MUST COMPLY WITH ALL APPLICABLE
OCCUPATIONAL HEALTH & SAFETY LEGISLATION

SEWERAGE STANDARD DRAWING
TYPICAL M.S. AND S.S.
LADDER AND ASSOCIATED FITTINGS

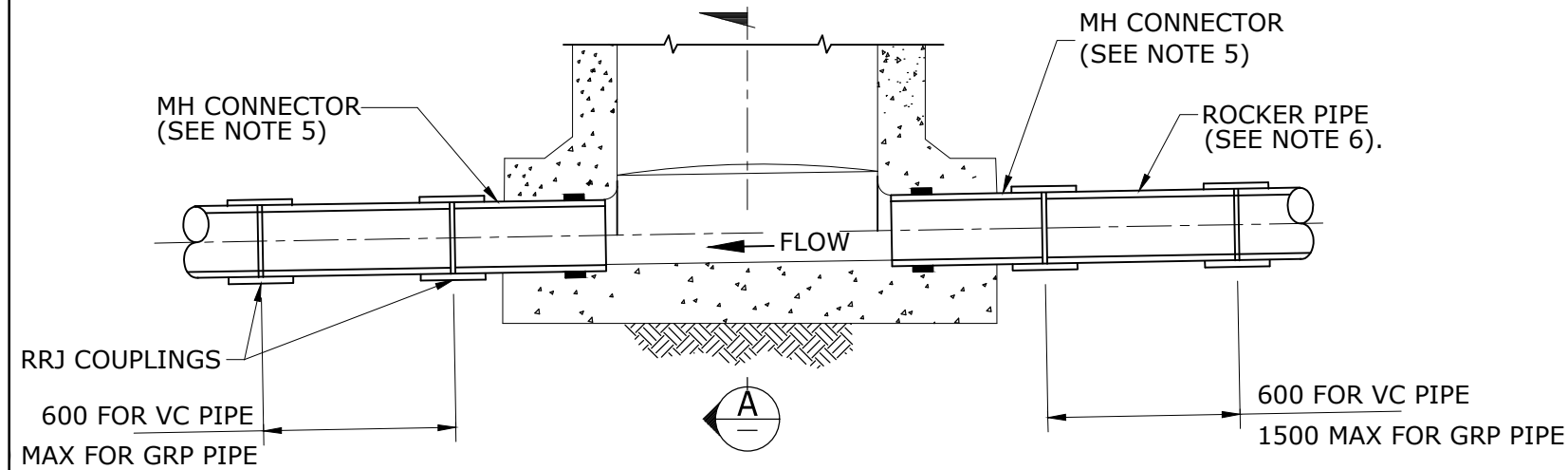
CoC	LCC	RCC	QUU	LW
DRAWING No.				VERSION
SEQ-SEW-1301-27				A
NOT TO SCALE				ORG DATE: 24/05/19



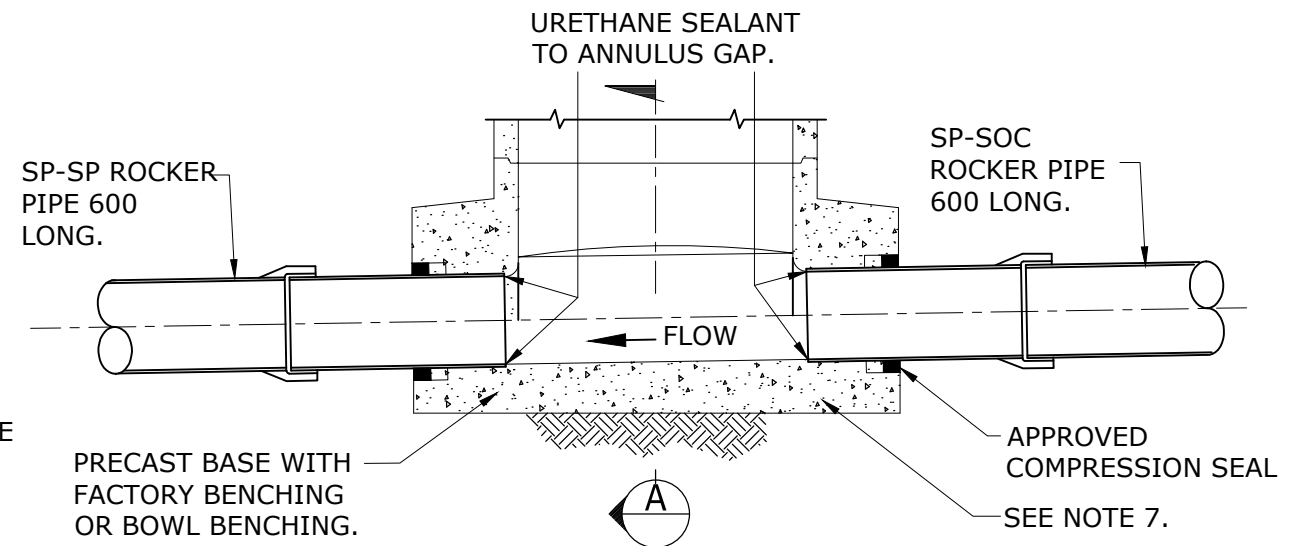
**TYPICAL PRECAST MAINTENANCE HOLE -
WITH BASE CAST IN-SITU
FOR VC, RC & DI SEWERS**



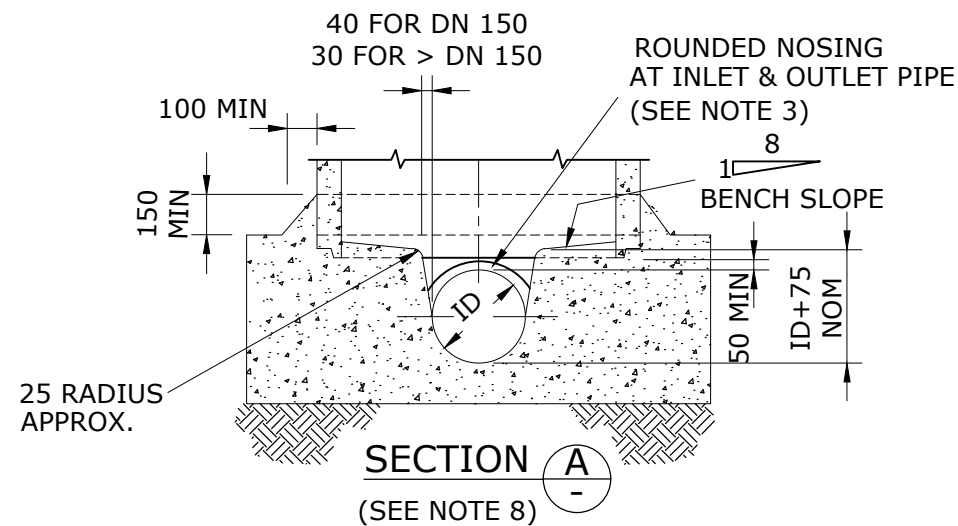
**TYPICAL PRECAST MAINTENANCE HOLE -
WITH BASE CAST IN-SITU -
FOR RUBBER RING JOINT PVC & ABS SEWERS**



**TYPICAL MAINTENANCE HOLE CAST IN-SITU
FOR VC & GRP SLEEVE COUPLED SEWERS**



**TYPICAL PRECAST MAINTENANCE HOLE
- PRECAST PREBENCHED BASE -
FOR PVC SEWERS**



NOTES

1. ALL DIMENSIONS IN MILLIMETRES.
2. PIPE CONNECTION DETAILS APPLY TO PRECAST AND CAST IN-SITU MH (SEE SEQ-SEW-1300-1 & SEQ-SEW-1303-1).
3. FORM ROUNDED NOSING ON INLET & OUTLET PIPES TO PREVENT DAMAGE TO JETTING EQUIPMENT, CCTV GUIDES & CABLES.
4. CAST IN-SITU MH CONNECTION DETAIL AND PE CONNECTION METHODS SHOWN ON SEQ-SEW-1313-1.

5. PVC, ABS & GRP MH CONNECTORS TO HAVE HYDROPHILIC SEAL AND TO BE SANDED. REFER DETAIL SEQ-SEW-1313-1.
6. USE RRJ ROCKER PIPES AS SHOWN.
7. THE USE OF PRECAST CONCRETE BASES INCLUDING CONNECTION DETAILS WILL BE IN ACCORDANCE WITH SERVICE PROVIDER APPROVALS.
8. BENCHING AND CHANNEL SHALL BE FINISHED WITH A 2:1 SAND-SULPHATE RESISTANT CEMENT MORTAR RENDER 15 THICK, CLASS 3 FINISH.

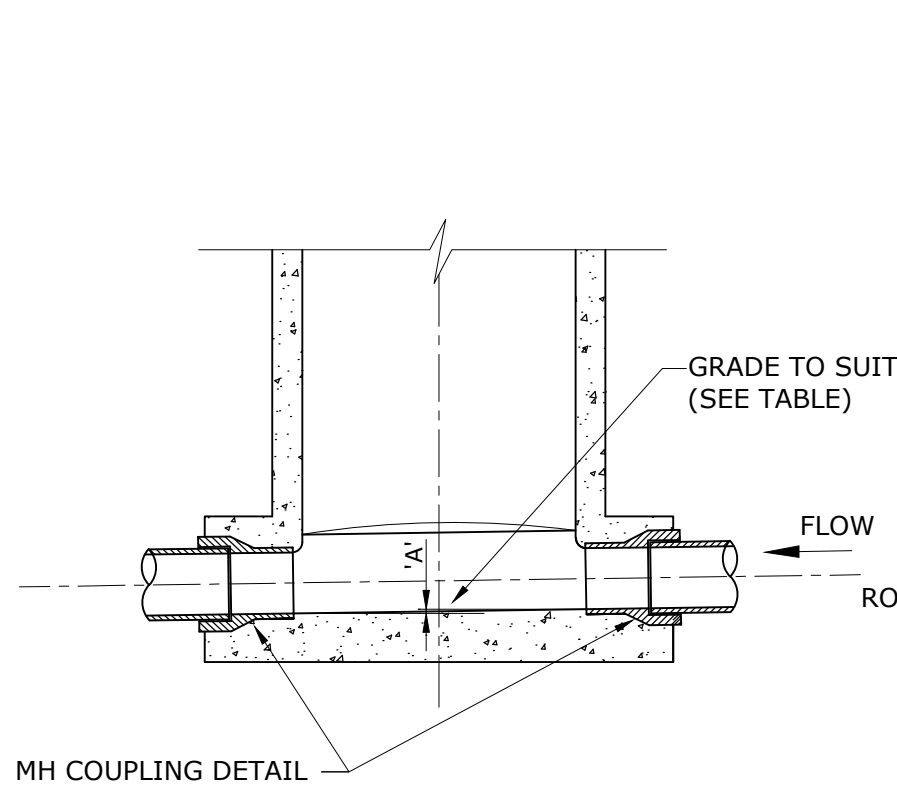
REV. No.	DATE	DESCRIPTION	AUTH.
B	16/05/19	Note 8 amended	

**SEQ WATER
SERVICE PROVIDERS**

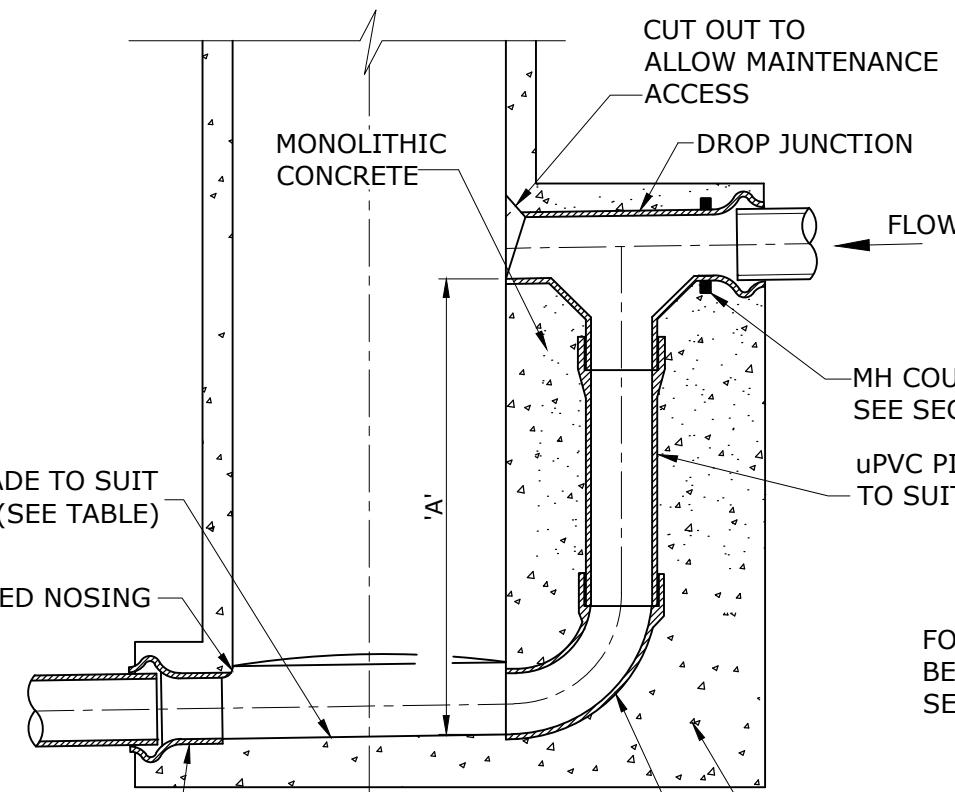
WORK PRACTICES MUST COMPLY WITH ALL APPLICABLE OCCUPATIONAL HEALTH & SAFETY LEGISLATION

SEWERAGE STANDARD DRAWING
MAINTENANCE HOLES
CAST IN-SITU AND PRECAST
TYPICAL PIPE CONNECTION DETAILS

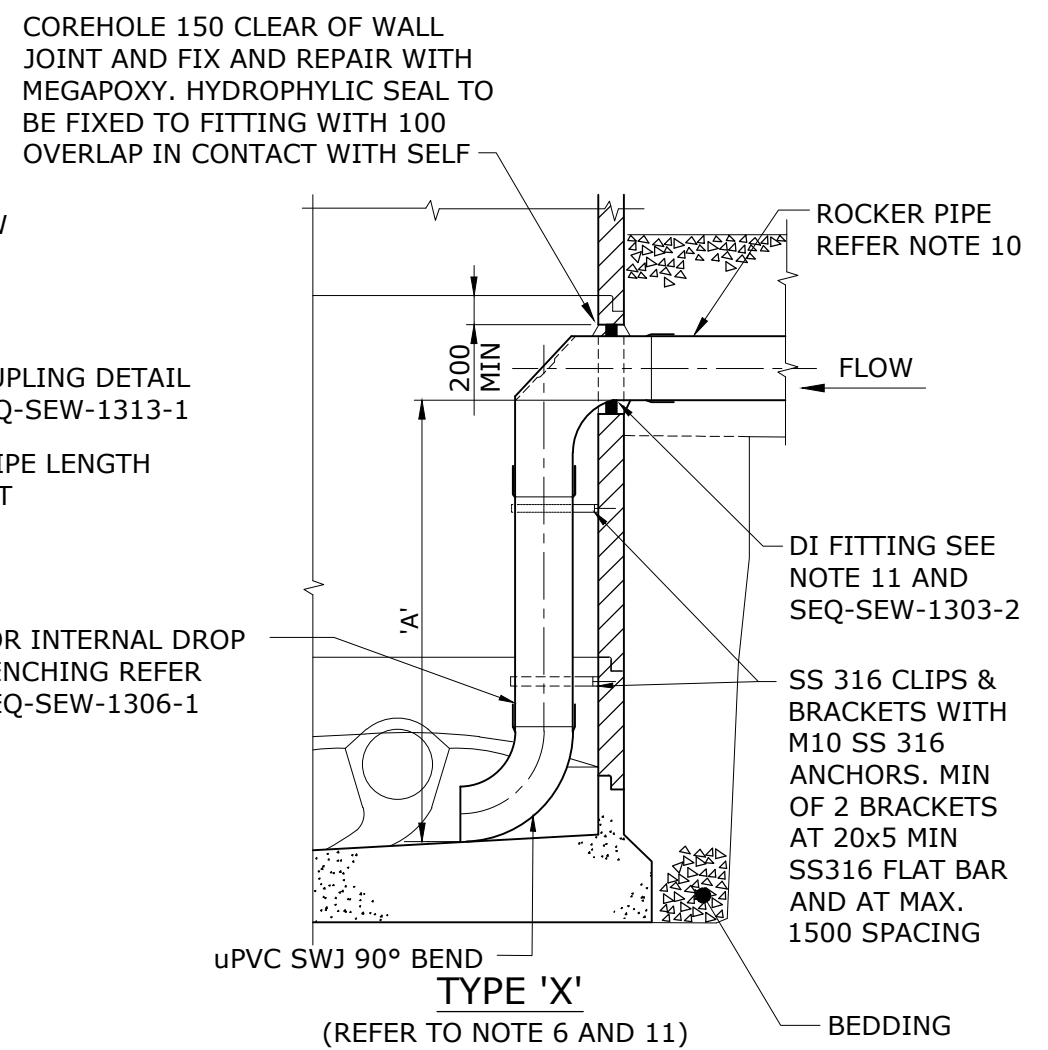
CoGC	LCC	RCC	QUU	UW
DRAWING No.				VERSION
SEQ-SEW-1302-1				B
NOT TO SCALE				ORG DATE: 1/1/2013



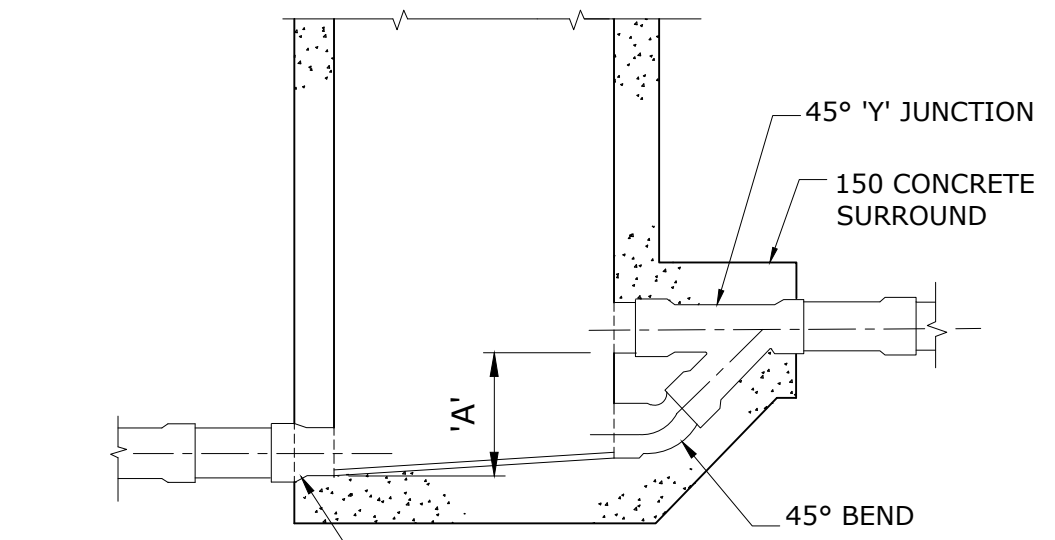
TYPE 'V'



TYPE 'Y'



TYPE 'X'



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 DIA	TYPE 'V'		TYPE 'W'		TYPE 'X'		TYPE 'Y'	
	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	330	-	-	-	-	-

* MINIMUM DROP THROUGH MAINTENANCE HOLE AS TABLED
 ** THESE 'A' SIZES MAY VARY DEPENDING ON AVAILABILITY OF FITTINGS

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 ABRABE FOR THE LENGTH OF WALL PENETRATION IN ADDITION TO HYDROPHYLIC SEAL.
5. ROCKER PIPE LENGTHS AND CONNECTION SYSTEMS TO BE AS SHOWN IN SEQ-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 'W', 'X' AND 'Y' SHALL ONLY BE USED FOR SEWERS FROM Ø100 TO Ø300.
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 UNITYWATER, DI FITTING SHALL BE REPLACED WITH uPVC FITTING RRJ. FOR LOGAN CITY COUNCIL THIS FITTING MAY BE DI OR UPVC
12. A TYPE W OR TYPE Y EXTERNAL DROP IS PREFERRED FOR A NEW CONCRETE MH. AN INTERNAL TYPE X DROP IS PERMITTED FOR AN EXISTING MH.

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

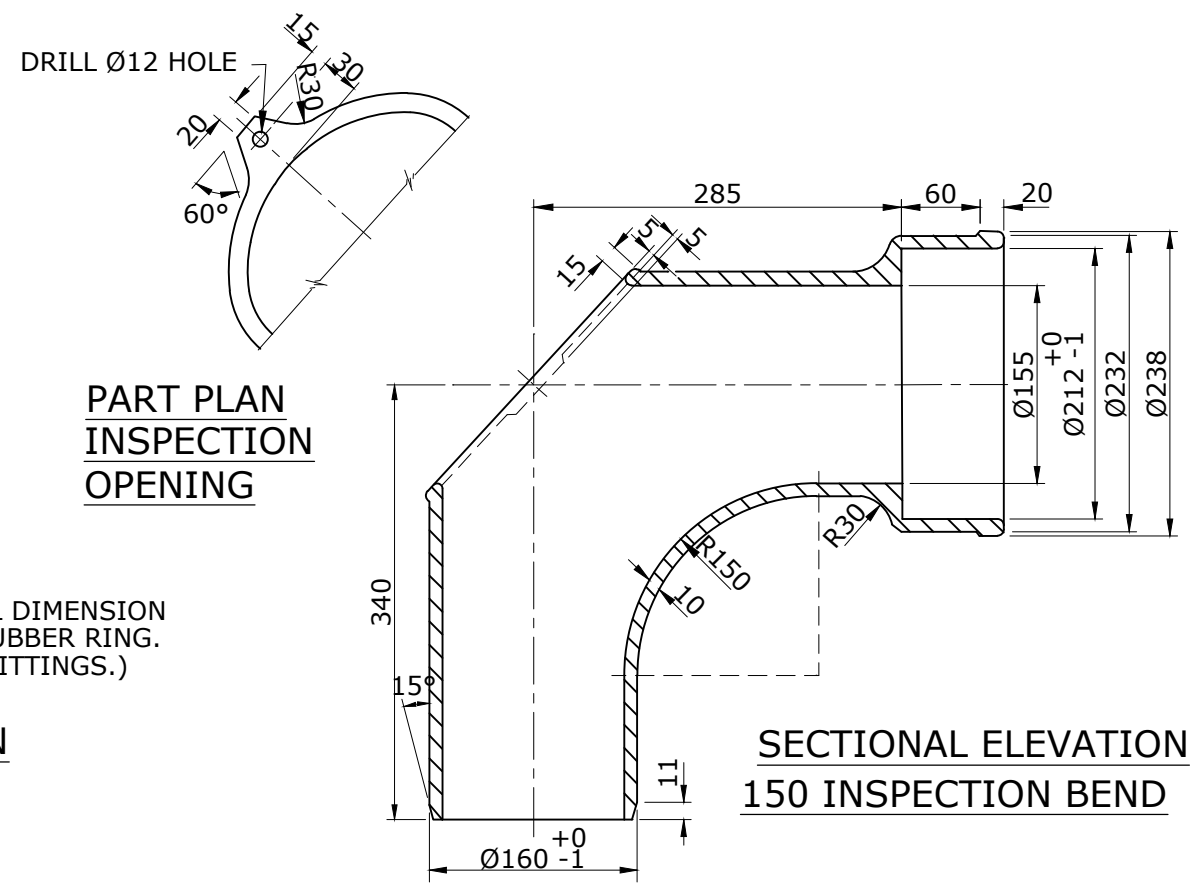
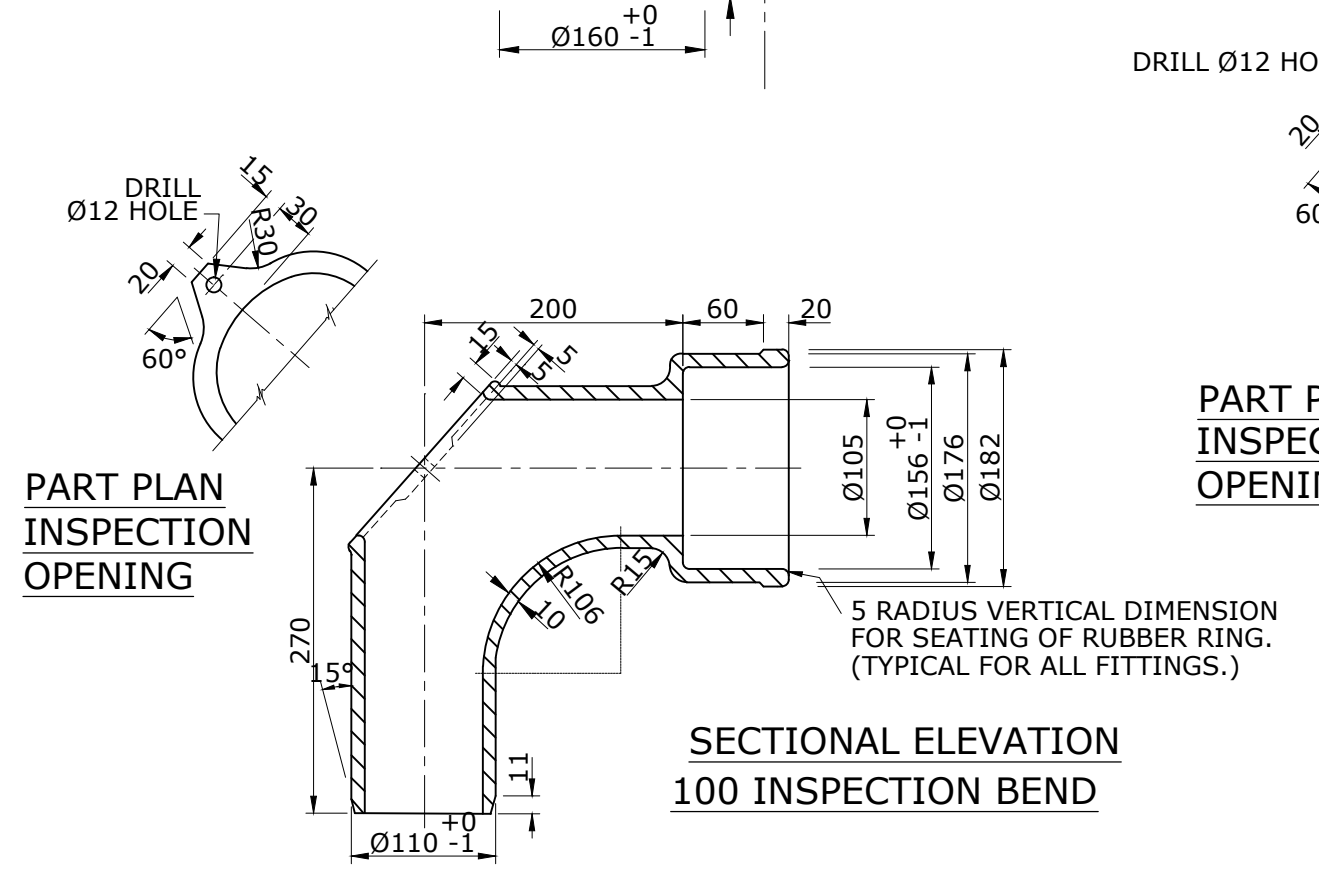
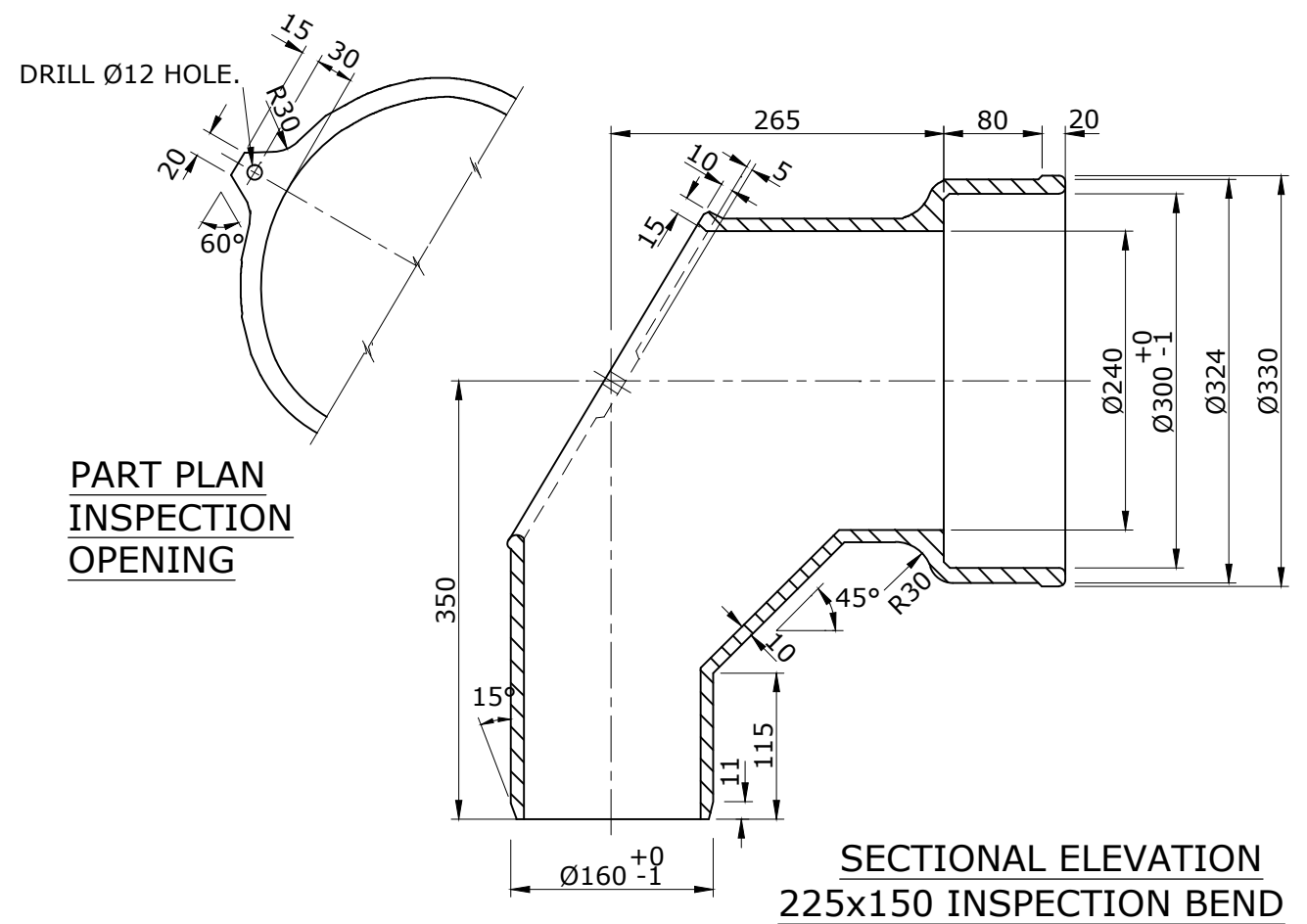
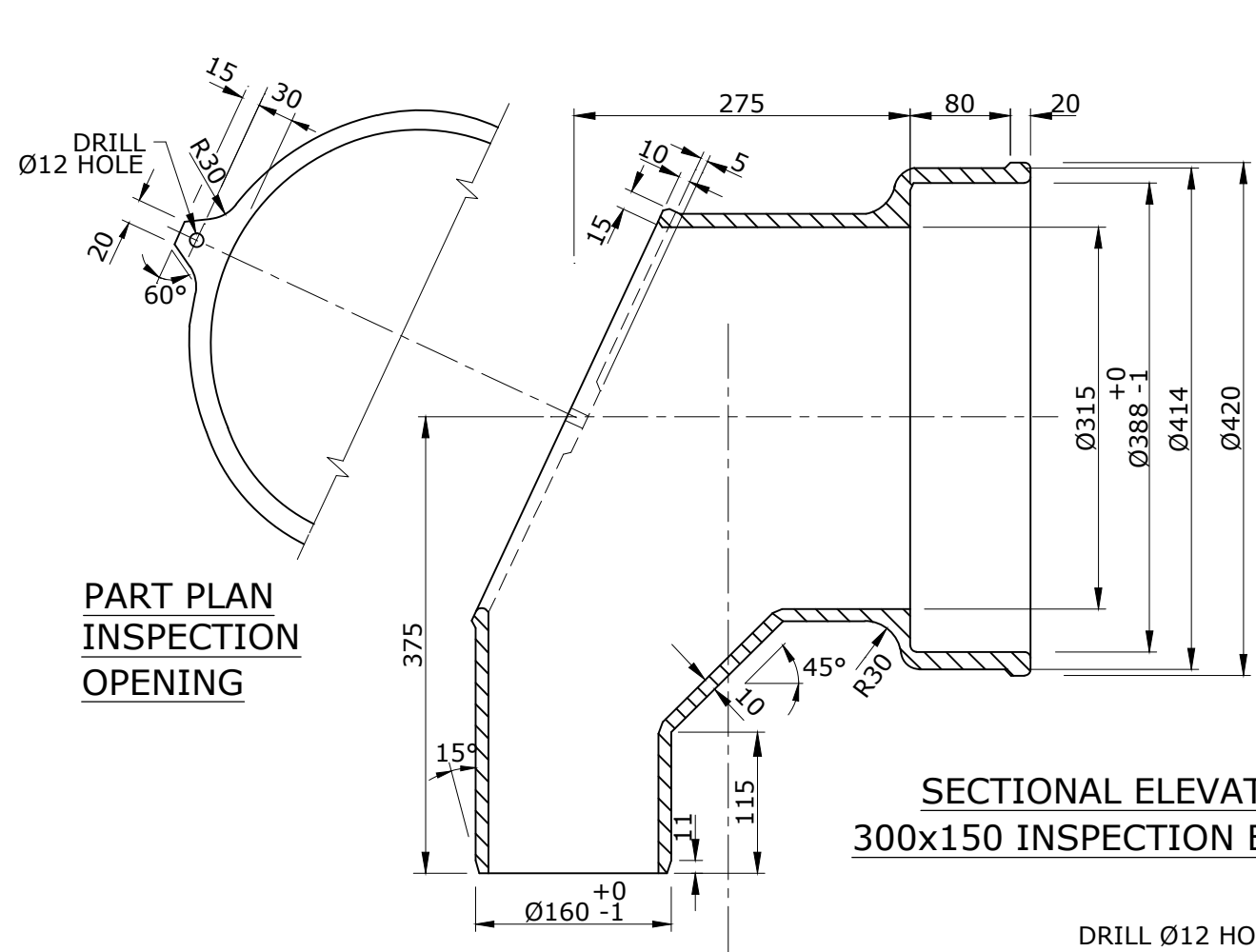
REV. No.	DATE	DESCRIPTION	AUTH.
C	28/12/18	AMENDED DIMENSION 'A' TABLE AND NOTE 8. ADDED NOTE 12	
B	21/08/15	AMENDED MAINTENANCE HOLE ANGLE TABLE	

SEQ 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

CoGC	LCC	RCC	QUU	UW
DRAWING No.				VERSION
SEQ-SEW-1303-1				C
NOT TO SCALE				ORG DATE: 1/1/2013



- NOTES**
1. DI SMALL RADII SHALL BE 5.
 2. DI FITTINGS FOR USE WITH u.P.V.C. SEWERS AND DROP PIPES SHALL BE RUBBER RING JOINTED.
 3. ALL FITTINGS SHALL BE CAST SPHEROIDAL GRAPHITE IRON GRADE 500/320/7 TO COMPLY WITH AS.1831.
 4. INSPECTION OPENING COVERS SHALL BE 3 THICK u.P.V.C SHEET WITH M10 NYLON NUTS & BOLTS TO SUIT.
 5. DIMENSIONS ARE IN MILLIMETRES UNLESS SHOWN OTHERWISE.

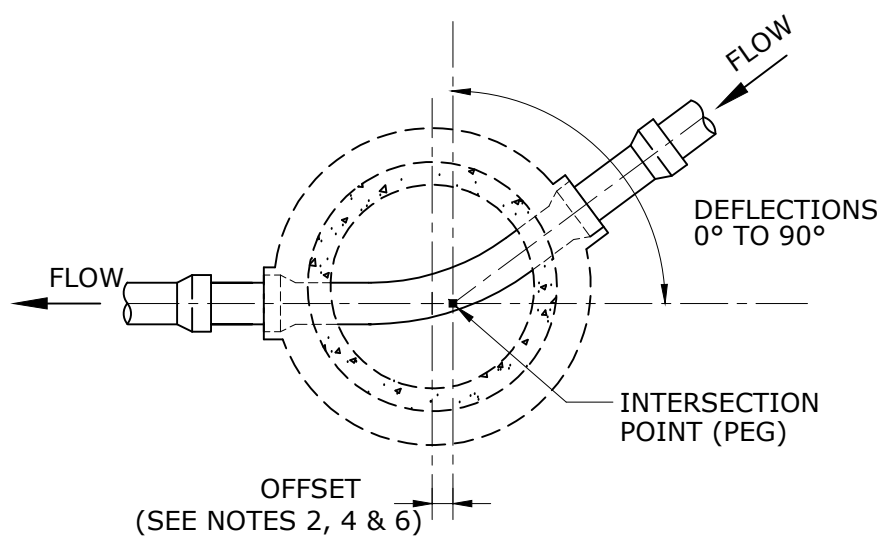
REV. No.	DATE	DESCRIPTION	AUTH.

SEQ WATER SERVICE PROVIDERS

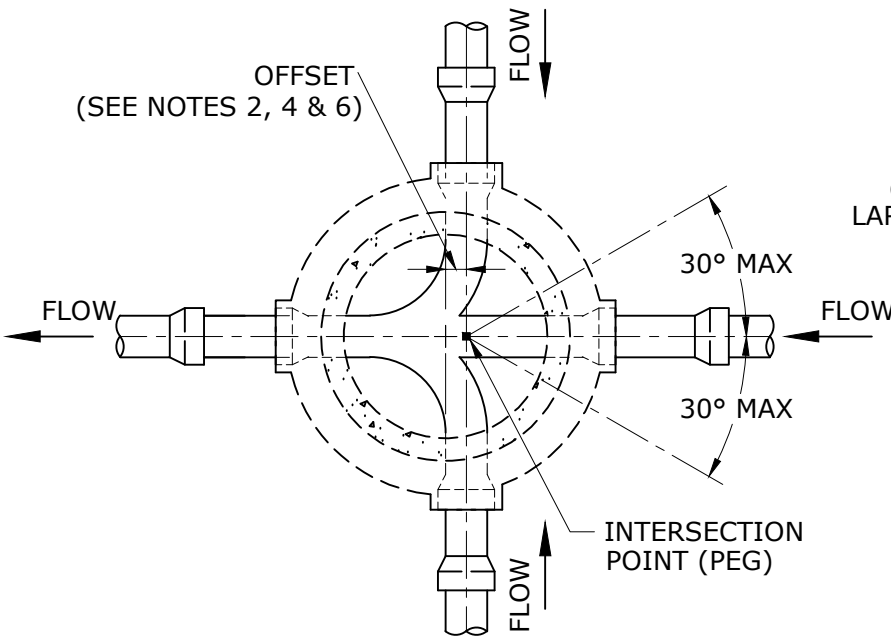
WORK PRACTICES MUST COMPLY WITH ALL APPLICABLE OCCUPATIONAL HEALTH & SAFETY LEGISLATION

SEWERAGE STANDARD DRAWING
IRON INSPECTION BENDS FOR
TYPICAL INTERNAL DROP PIPES
IN SEWERAGE MANHOLES

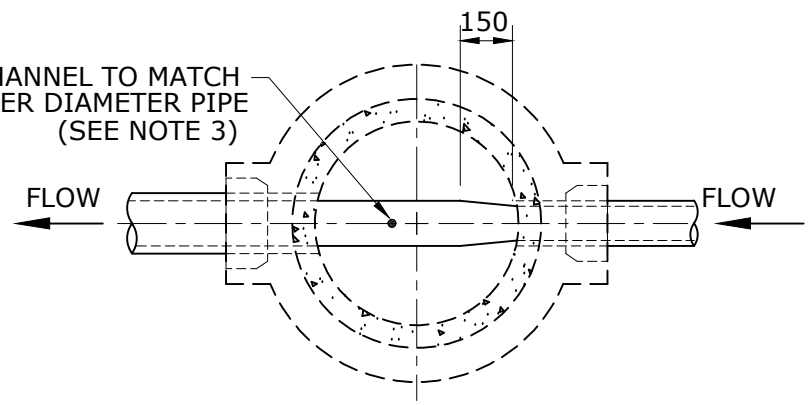
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DRAWING No.				VERSION
SEQ-SEW-1303-2				A
NOT TO SCALE				ORG DATE: 1/1/2013



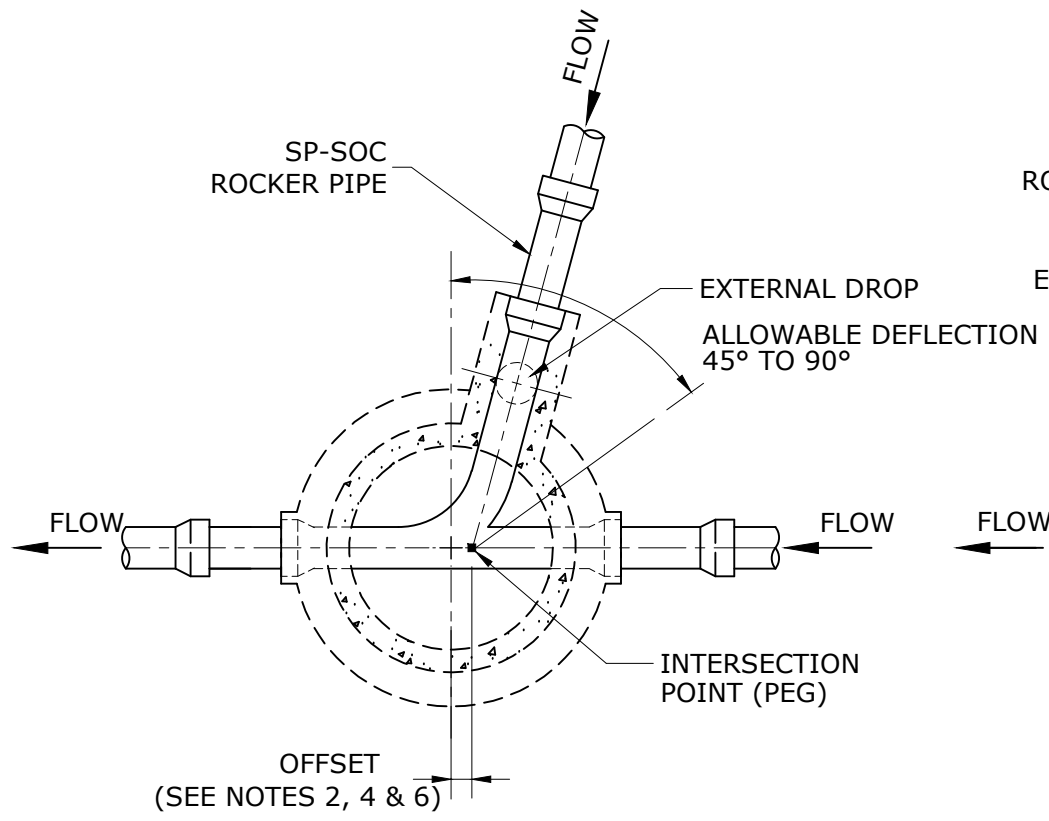
CHANGE IN DIRECTION OF SEWER



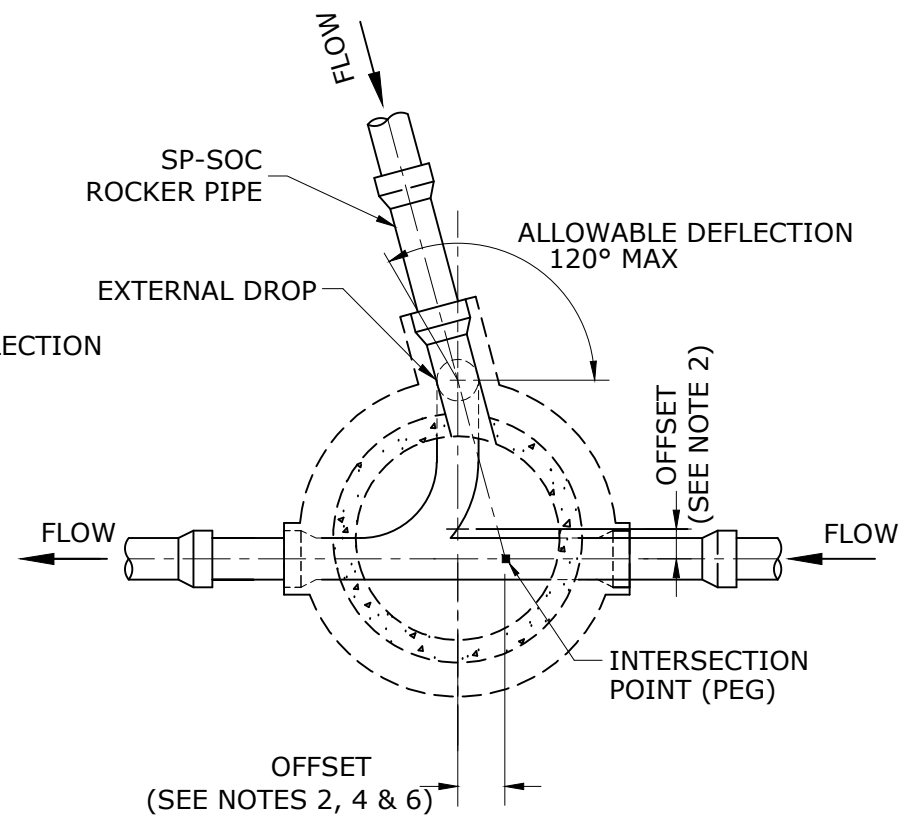
MULTIPLE INCOMING SEWERS



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 SEQ-SEW-1305-1.
5. FOR INLET - OUTLET CHANGES IN LEVEL REQUIREMENTS SEE SEQ-SEW-1301-2, SEQ-SEW-1301-8 AND SEQ-SEW-1303-1.
6. FOR SEWERS ON STEEP GRADES OR WHERE THE INTERSECTION ANGLE IS <45° USE DROP CHAMBER AS SHOWN ON SEQ-SEW-1306-1. **QUU DOES NOT PERMIT THE USE OF THIS DROP CHAMBER.**

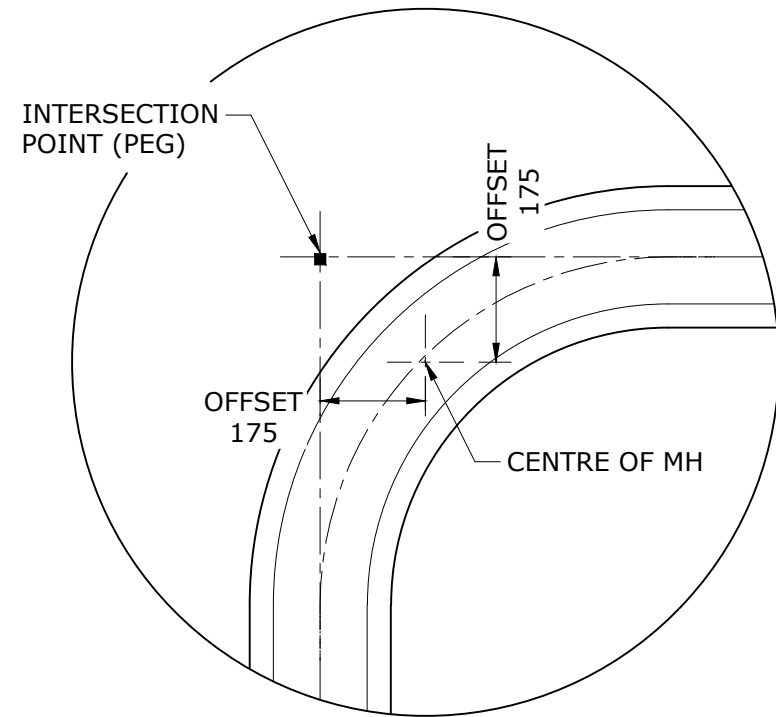
REV. No.	DATE	DESCRIPTION	AUTH.
B	7/06/19	AMENDED NOTE 5.	

SEQ WATER SERVICE PROVIDERS

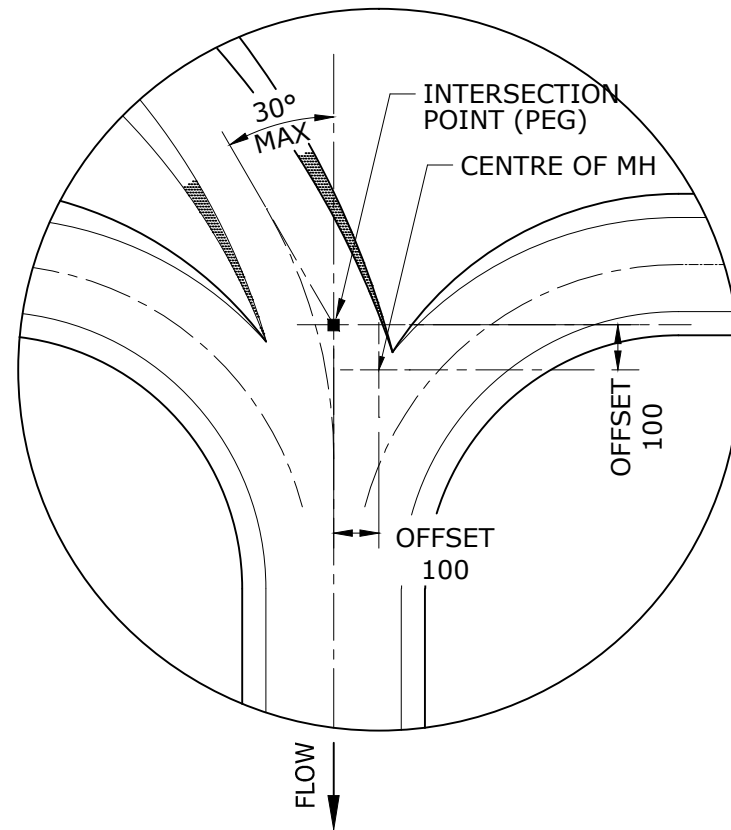
WORK PRACTICES MUST COMPLY WITH ALL APPLICABLE OCCUPATIONAL HEALTH & SAFETY LEGISLATION

SEWERAGE STANDARD DRAWING
 MAINTENANCE HOLES
 SEWERS ≤ DN300
 TYPICAL CHANNEL ARRANGEMENTS

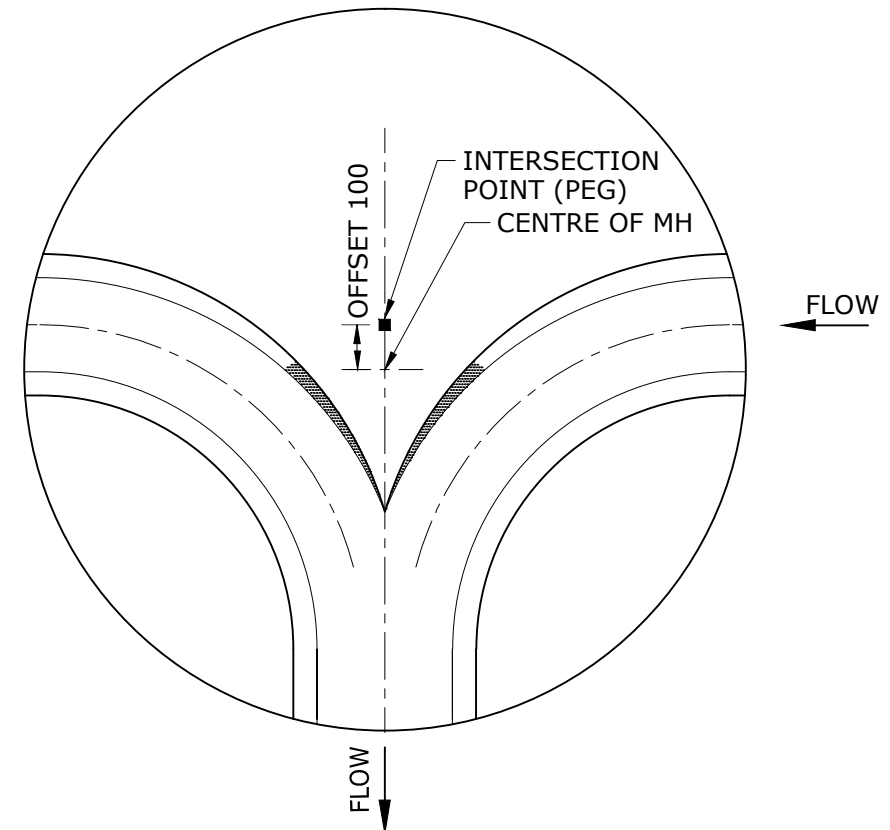
CoGC	LCC	RCC	QUU	UW
DRAWING No.				VERSION
SEQ-SEW-1304-1				B
NOT TO SCALE				ORG DATE: 1/1/2013



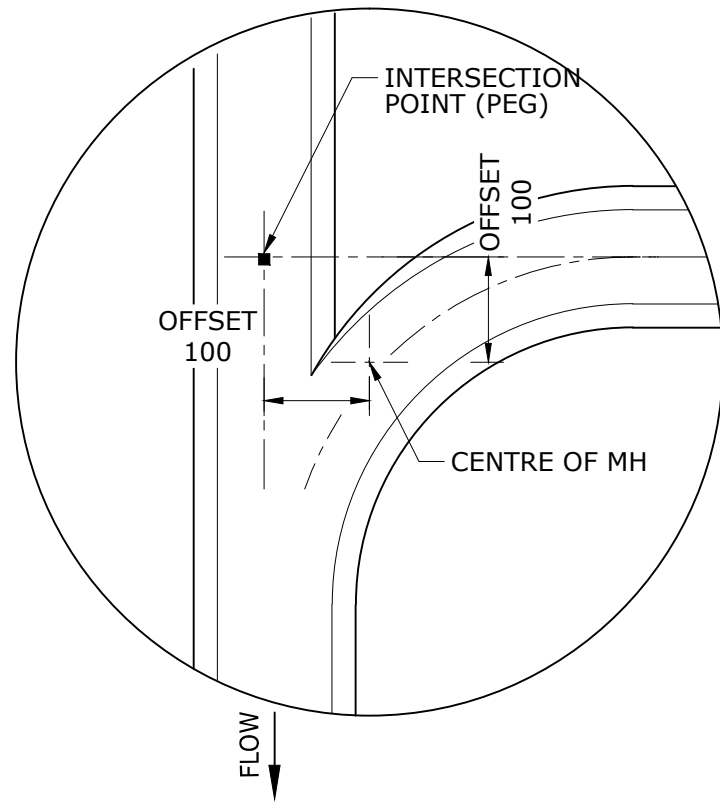
90° BEND



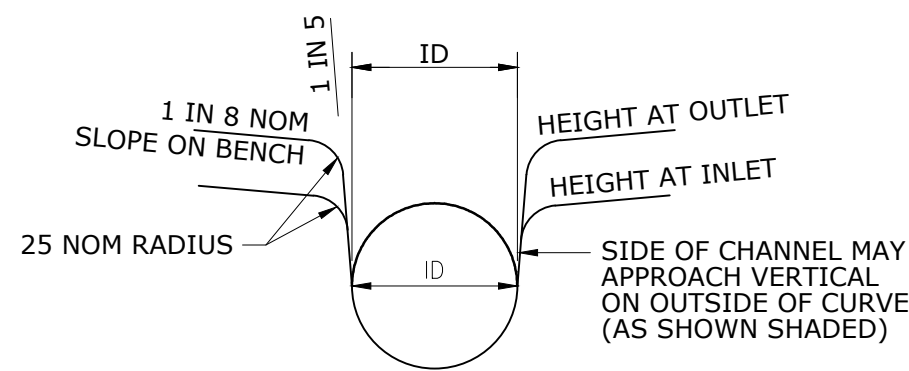
LARGER MAIN LINE WITH BEND & 2 x SMALLER 90° OPPOSING INLETS



**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 SEQ-SEW-1304-1 & SEQ-SEW-1306-1.
7. OFFSET DIMENSIONS SHOWN ARE MINIMUMS.

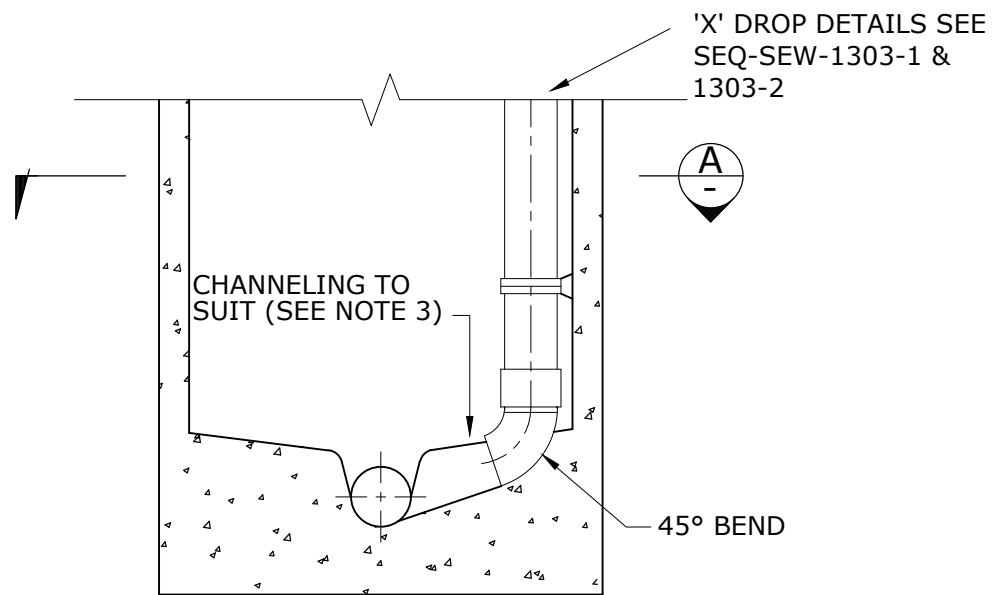
REV. No.	DATE	DESCRIPTION	AUTH.

SEQ WATER SERVICE PROVIDERS

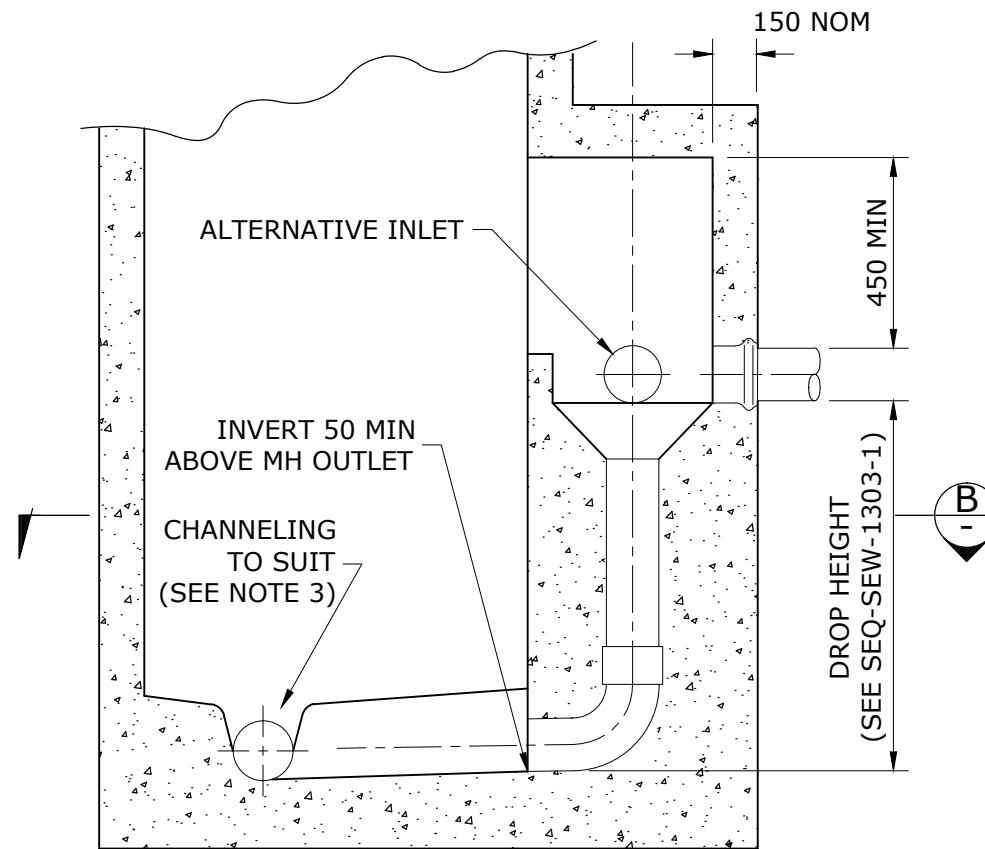
WORK PRACTICES MUST COMPLY WITH ALL APPLICABLE OCCUPATIONAL HEALTH & SAFETY LEGISLATION

SEWERAGE STANDARD DRAWING
MAINTENANCE HOLES
TYPICAL CHANNEL DETAILS

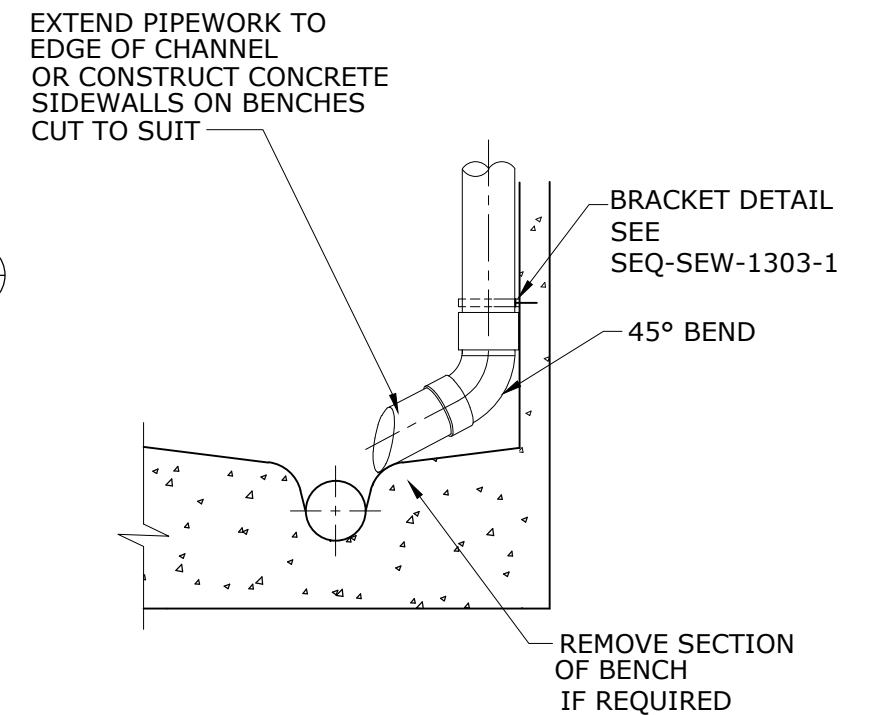
GCCC	LCC	RCC	QUU	UW
DRAWING No.				VERSION
SEQ-SEW-1305-1				A
NOT TO SCALE				ORG DATE: 1/1/2013



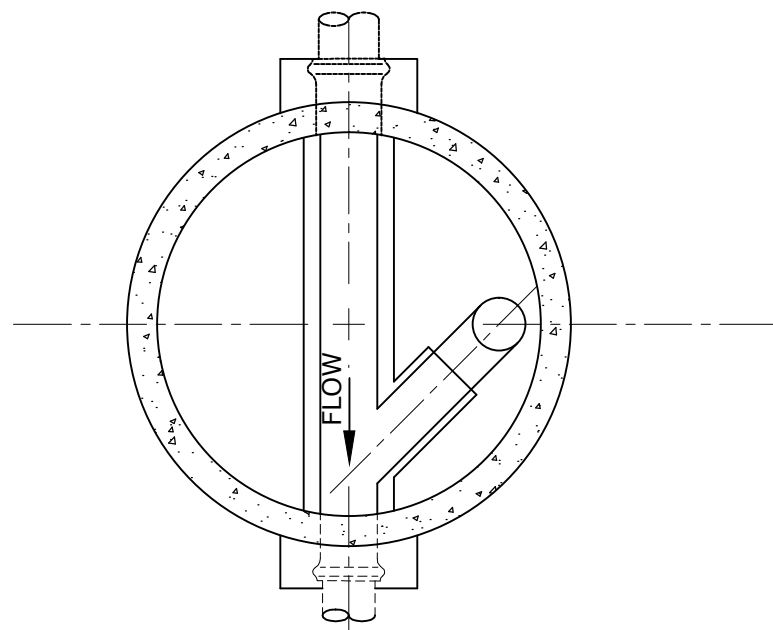
ELEVATION



ELEVATION

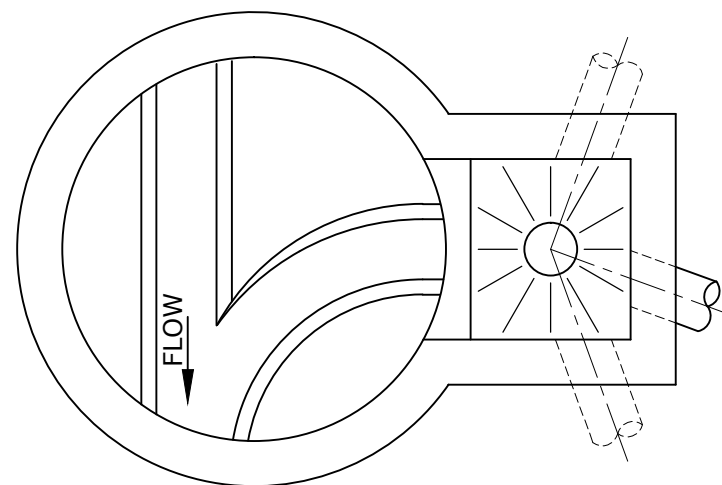


**EXISTING MANHOLE
INSTALLATION DETAIL**
(WHERE AUTHORISED)



SECTION **A**
(IN-SITU MH SHOWN)

TYPICAL INTERNAL DROP
SUITABLE FOR IN-SITU AND PRECAST MH



SECTION **B**
(IN-SITU MH ONLY)

TYPICAL DROP CHAMBER
(EXTERNAL DROP)

NOTES

1. ALL DIMENSIONS IN MILLIMETRES.
2. THIS DRAWING TO BE READ IN CONJUNCTION WITH SEQ-SEW-1300-1 & SEQ-SEW-1303-1.
3. DISCHARGE PIPE AND CHANNEL PLACEMENT TO DIRECT SEWAGE IN DIRECTION OF MAIN FLOW. SEE SEQ-SEW-1304-1 AND SEQ-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.

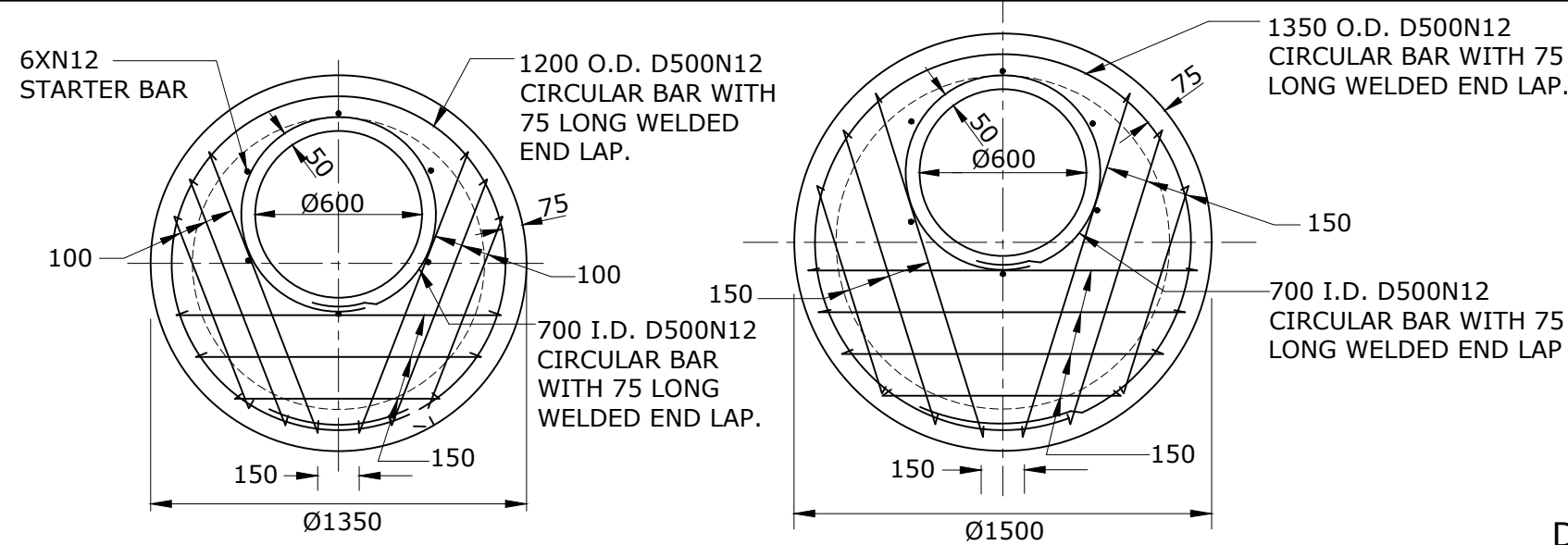
REV. No.	DATE	DESCRIPTION	AUTH.

**SEQ WATER
SERVICE PROVIDERS**

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

SEWERAGE STANDARD DRAWING
MAINTENANCE HOLES
TYPICAL ALTERNATIVE DROP CONNECTIONS

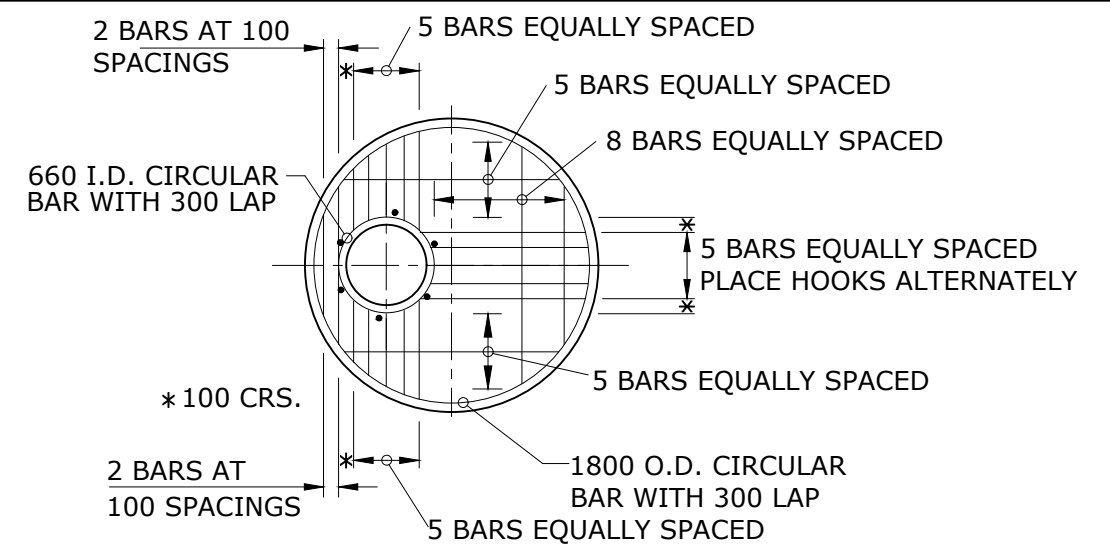
GCCC	LCC	RCC	QUU	UW
DRAWING No.				VERSION
SEQ-SEW-1306-1				A
NOT TO SCALE				ORG DATE: 1/1/2013



DN1050 - 175 THICK

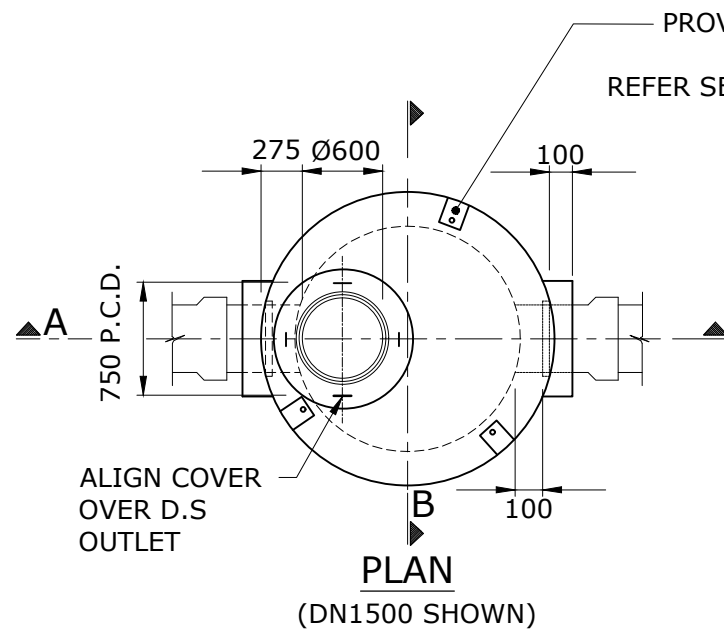
DN1200 - 200 THICK

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

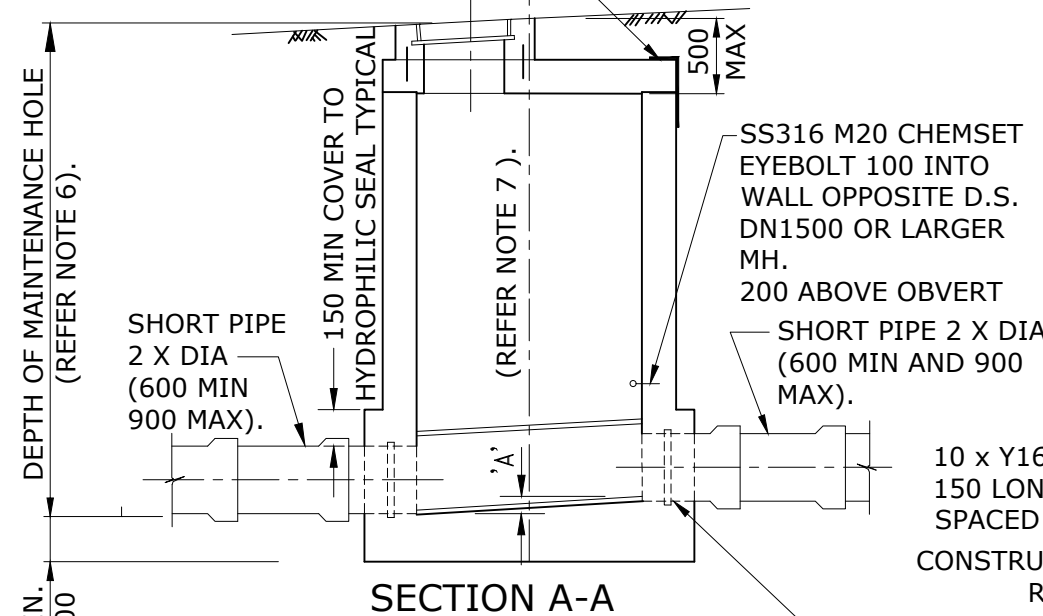


TYPICAL MAINTENANCE HOLE

NOTES:

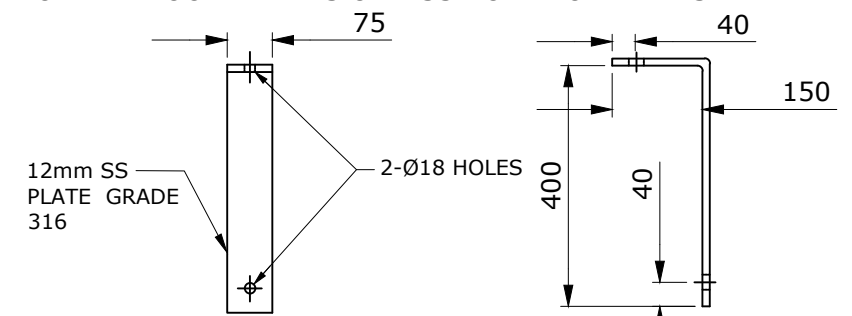
1. ALL DIMENSIONS ARE IN MILLIMETRES
2. ALL CAST IN-SITU CONCRETE SHALL BE GRADE SCC40 TO WSA114.
3. REINFORCING BARS TO BE TO AS/NZS 4671:2001 WITH 50 COVER BOTTOM FACE.
4. ROUND MAINTENANCE HOLES ONLY FOR ALL DEPTH.
5. DN300 TO DN600 SEWERS SHALL USE DN1500 MAINTENANCE HOLES.
6. MAINTENANCE HOLES OVER 6000 DEEP SHALL BE DESIGNED FOR THE SPECIFIC INSTALLATION DEPTH.
7. DIMENSION 'A', REFER TABLE ON SEQ-SEW-1303-1. ONLY 'V' DROPS OR APPROVED INTERNAL VORTEX DROPS PERMITTED FOR SEWERS LARGER THAN DN300. TYPE 'V' DROPS WITH PIPE DN CHANGES SHALL BE GRADED OBVERT TO OBVERT.

PROVIDE 3xSS316 ANCHOR BRACKETS TO ALL CAST IN-SITU MAINTENANCE HOLES. REFER SEQ-SEW-1301-1 FOR ANCHOR BRACKET DETAIL.

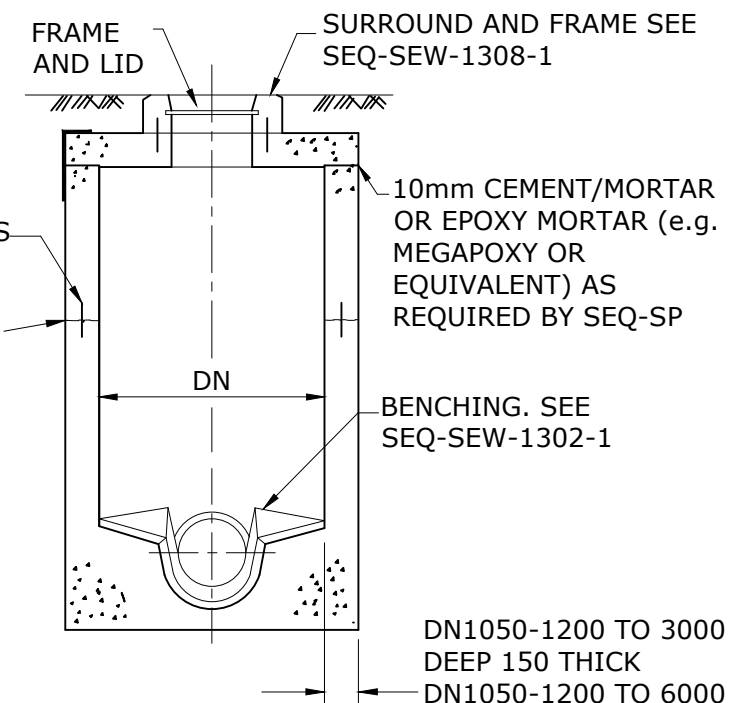


SECTION A-A

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.



TOP SLAB ANCHOR BRACKET



SECTION B-B
(SEE NOTE 6)

DN1050-1200 TO 3000 DEEP 150 THICK
DN1050-1200 TO 6000 DEEP 225 THICK
DN1500 225 THICK

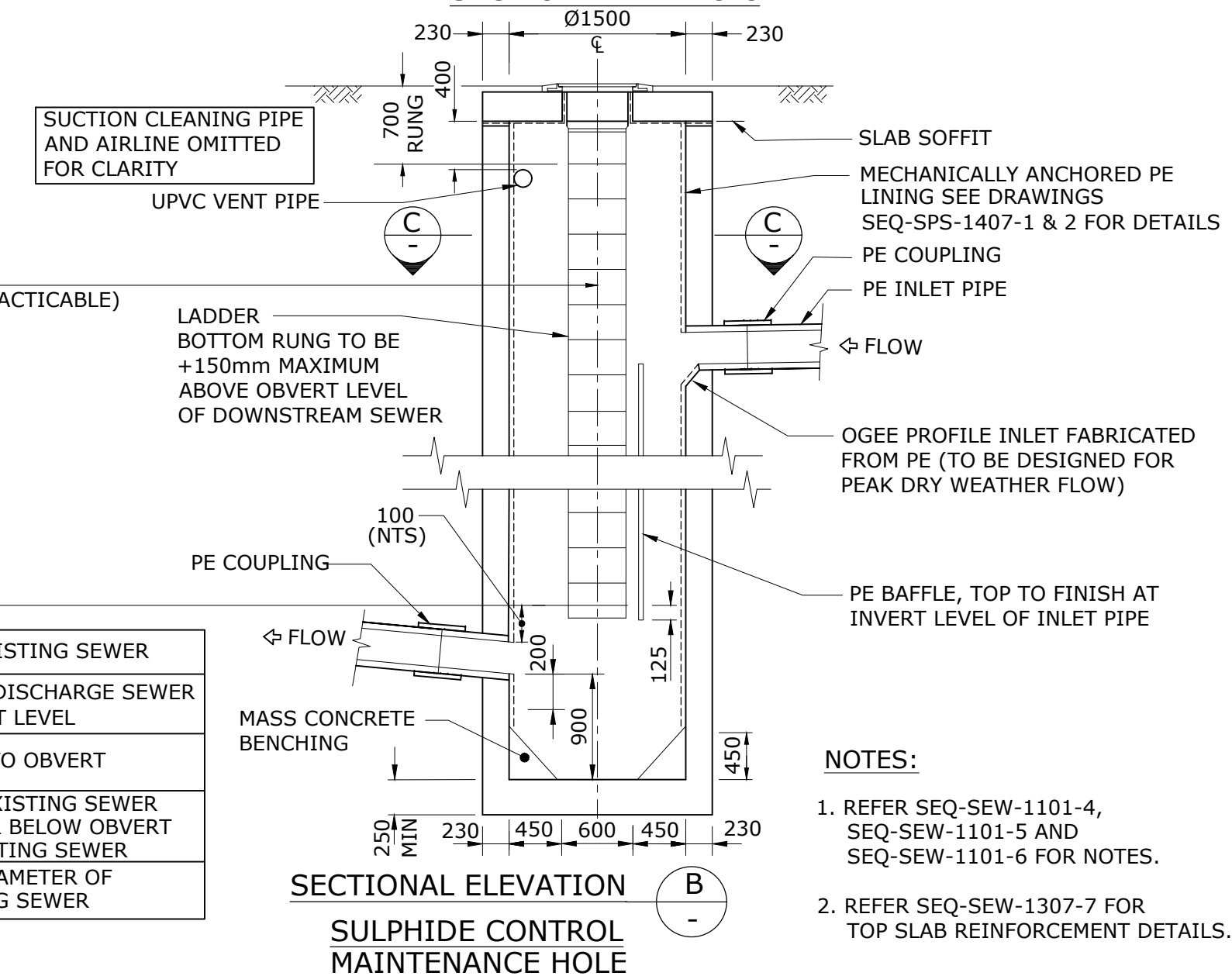
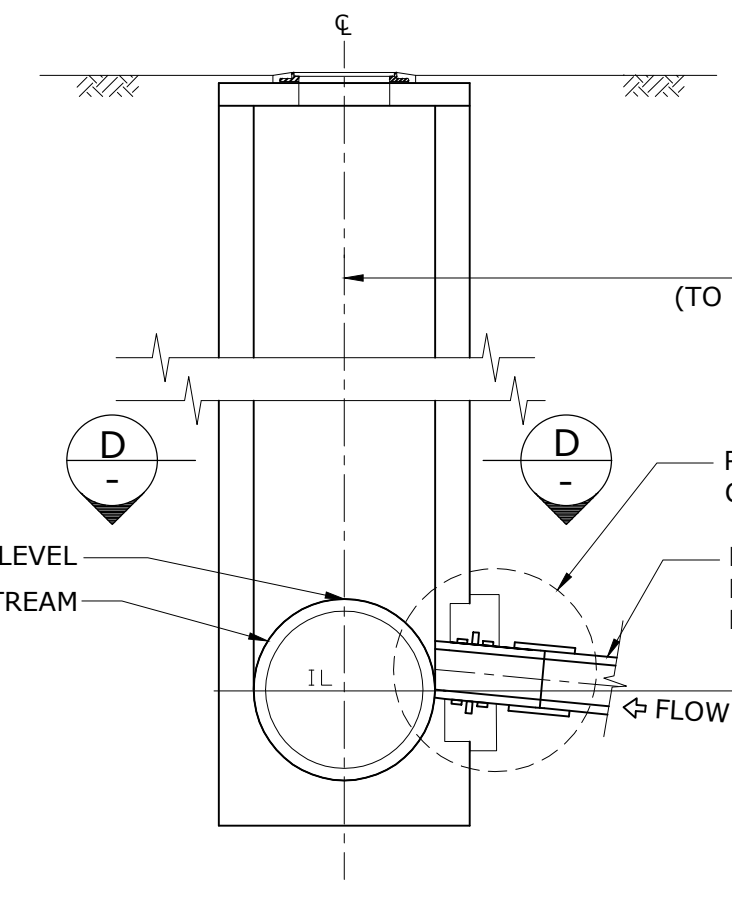
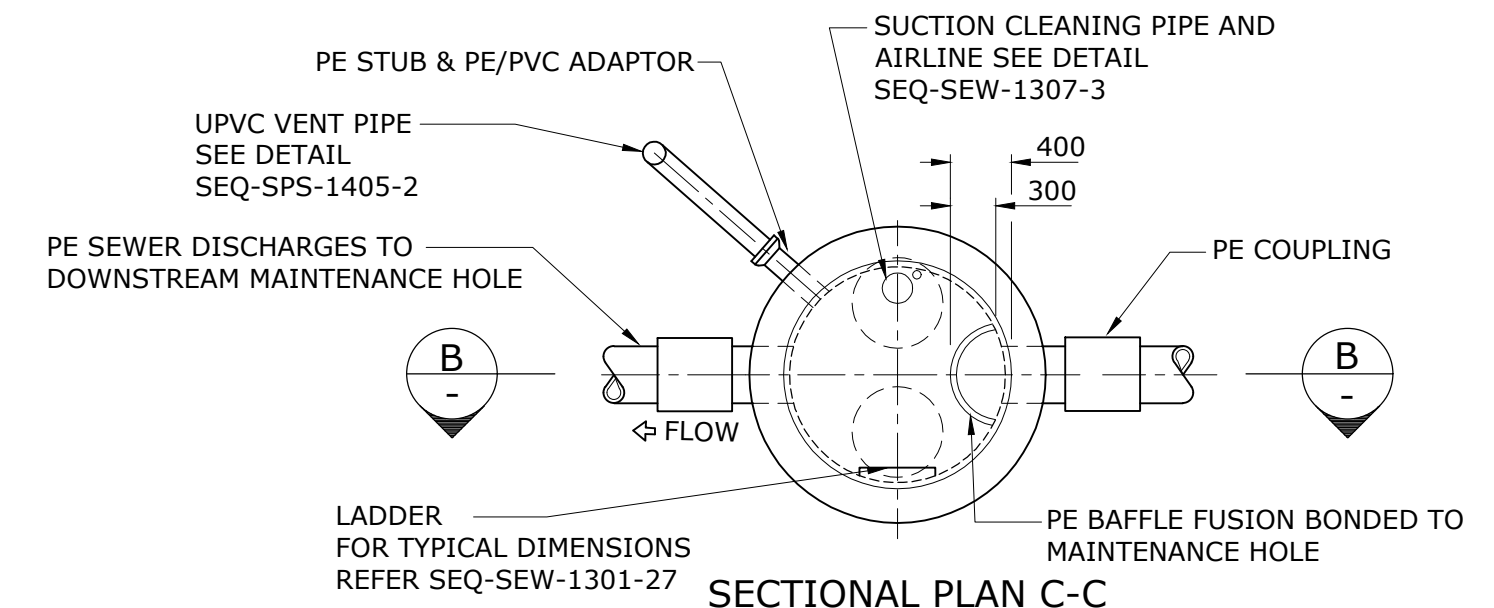
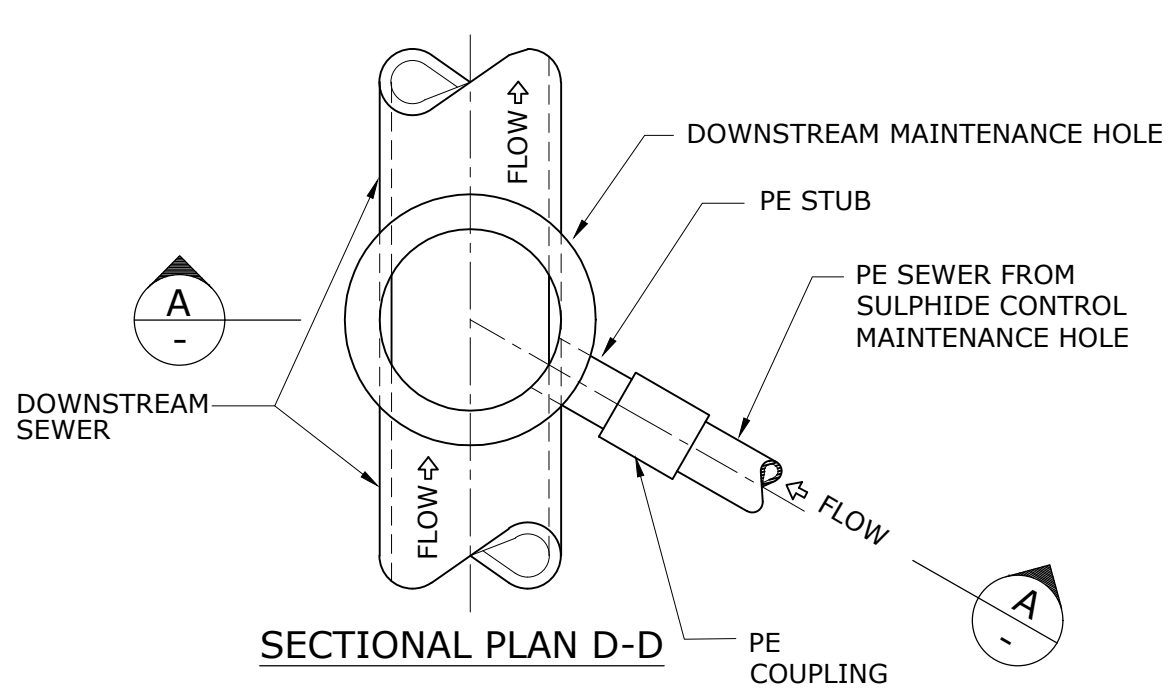
REV. No.	DATE	DESCRIPTION	AUTH.
B	30/11/18	ADDED STARTER BAR & BRACKET, AMENDED NOTES 2&4&7, MINOR CHANGES	

SEQ 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

CoGC	LCC	RCC	QUU	UW
DRAWING No.				VERSION
SEQ-SEW-1307-1				B
NOT TO SCALE				ORG DATE: 1/1/2013



DISCHARGE LEVEL INTO EXISTING SEWER	
EXISTING SEWER DIAMETER	PROPOSED DISCHARGE SEWER OBVERT LEVEL
≤600	OBVERT TO OBVERT
600-1200	1/3 OF EXISTING SEWER DIAMETER BELOW OBVERT OF EXISTING SEWER
1200-1350	AT 1/2 DIAMETER OF EXISTING SEWER

- NOTES:**
1. REFER SEQ-SEW-1101-4, SEQ-SEW-1101-5 AND SEQ-SEW-1101-6 FOR NOTES.
 2. REFER SEQ-SEW-1307-7 FOR TOP SLAB REINFORCEMENT DETAILS.

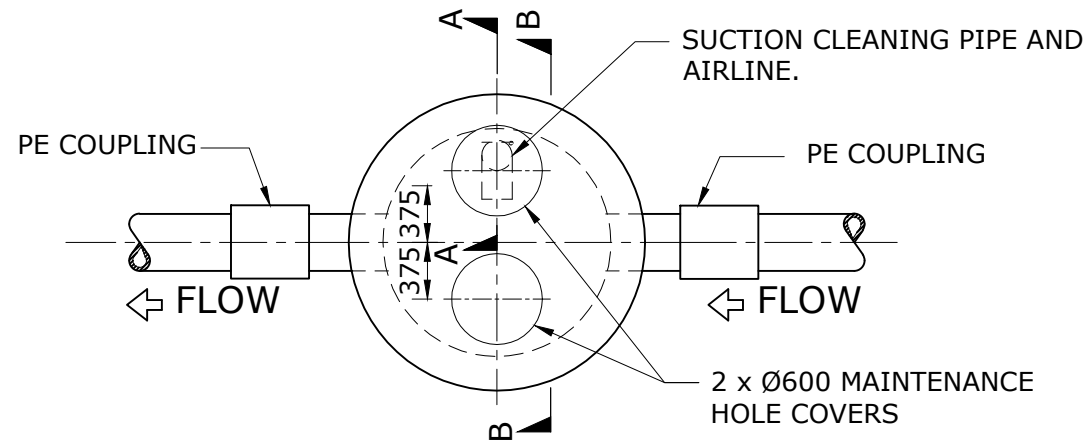
REV. No.	DATE	DESCRIPTION	AUTH.
B	24/05/19	GENERAL REVISION	

SEQ WATER SERVICE PROVIDERS

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

SEWERAGE STANDARD DRAWING
SULPHIDE CONTROL SEWER MAINTENANCE HOLE - PE LINED GENERAL ARRANGEMENT

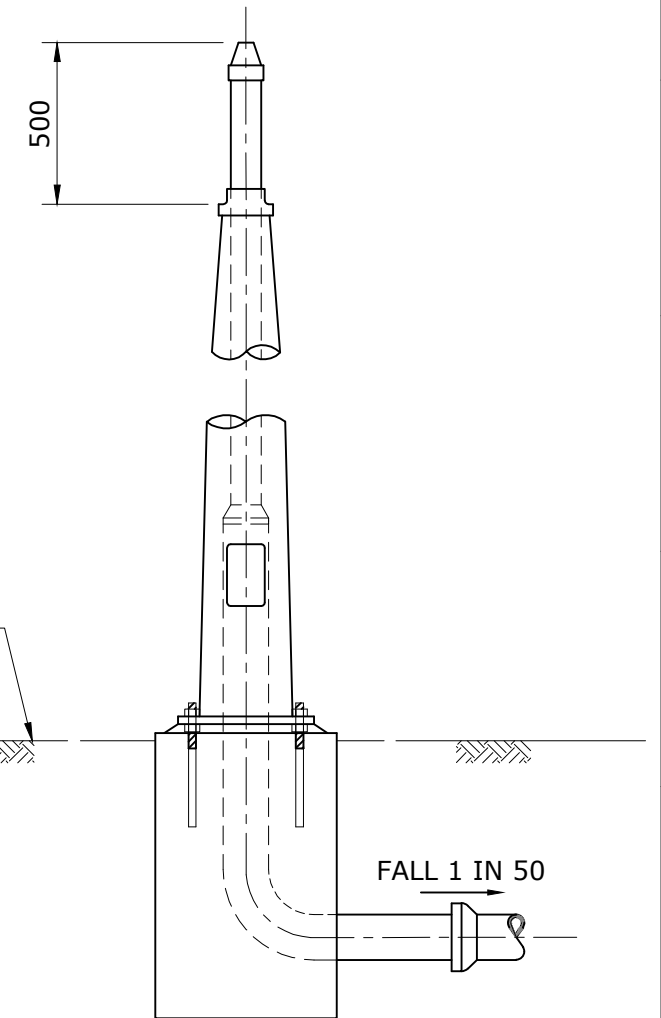
CoC	LCC	RCC	QUU	UW
DRAWING No.				VERSION
SEQ-SEW-1307-2				B
NOT TO SCALE				ORG DATE: 1/1/2013



**PLAN
MANHOLE COVER**

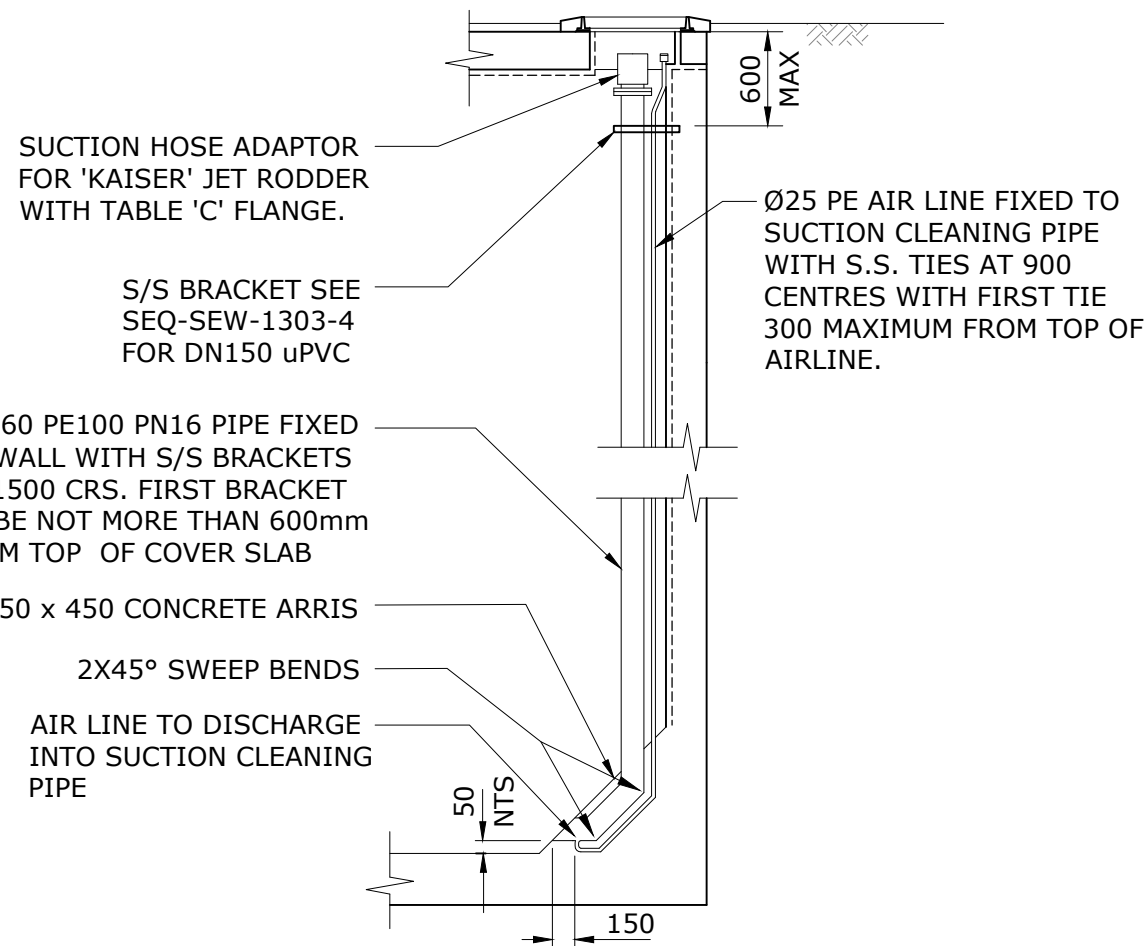
NOTES

1. REFER SEQ-SEW-1101-4, SEQ-SEW-1101-5 AND SEQ-SEW-1101-6 FOR NOTES.
2. REFER SEQ-SEW-1307-7 FOR TOP SLAB REINFORCEMENT DETAILS.
3. SUCTION HOSE CLAMP SHALL BE POSITIONED TO ALLOW OPERATION OF SUCTION HOSE CLAMP WITHIN TOP SLAB OPENING.
4. REFER SEQ-SPS-1405-2 FOR VENT POLE DETAILS.



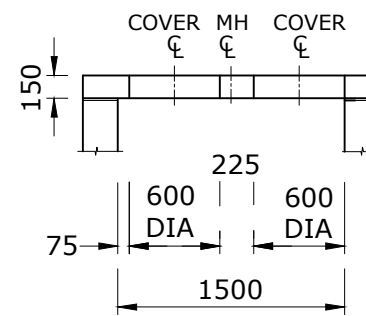
TYPICAL VENT POLE ELEVATION

RPEQ CERTIFIED DESIGN REQUIRED.



SECTION A

SUCTION CLEANING PIPE AND AIRLINE DETAIL



SECTION B

A SULPHIDE CONTROL MH SHALL BE USED WHERE:

- a. A TRUNK SEWER REQUIRES A DROP INTO A DOWNSTREAM SEWER, OR
- b. A RETICULATION SEWER REQUIRES A DROP INTO A DOWNSTREAM SEWER AND HAS A PUMP STATION WITHIN ITS UPSTREAM CATCHMENT, OR
- c. SULPHIDE CONTROL IS REQUIRED.

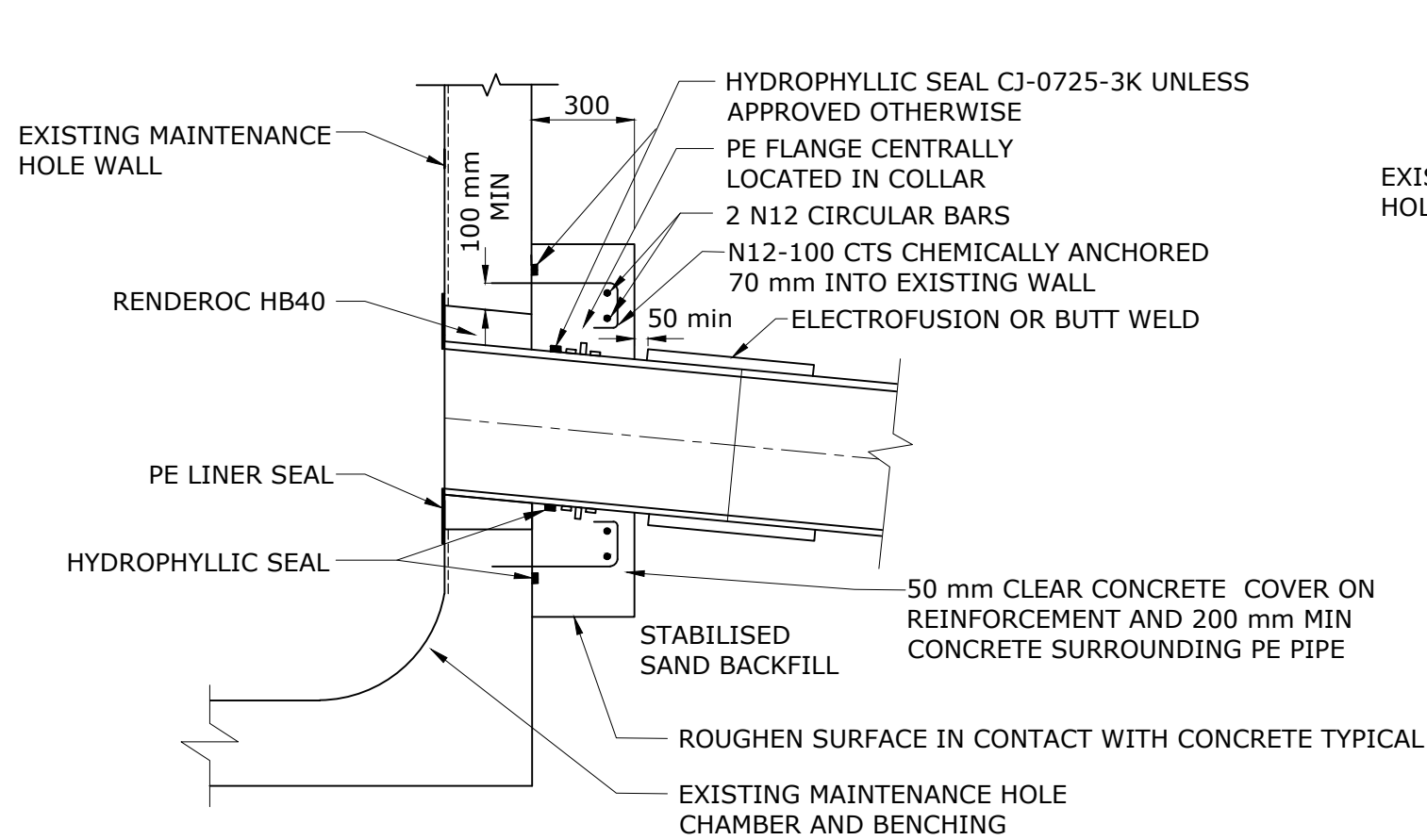
REV. No.	DATE	DESCRIPTION	AUTH.
B	24/05/19	NOTES ADDED. TYPICAL VENT POLE ELEVATION UPDATED.	

**SEQ WATER
SERVICE PROVIDERS**

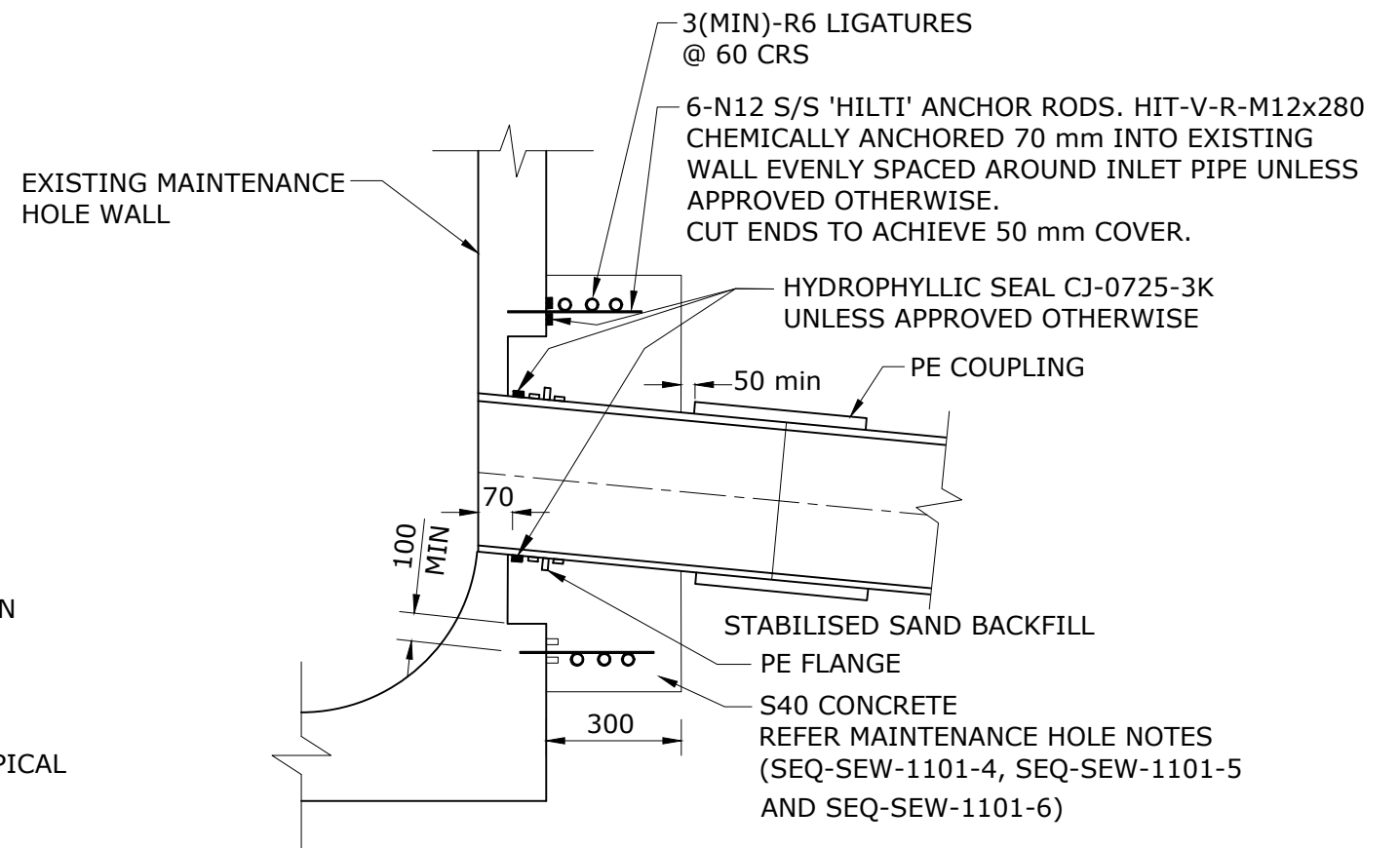
WORK PRACTICES MUST COMPLY WITH ALL APPLICABLE OCCUPATIONAL HEALTH & SAFETY LEGISLATION

SEWERAGE STANDARD DRAWING
SULPHIDE CONTROL
SEWER MAINTENANCE HOLE
PE LINED DETAILS
AND VENT POLE DETAILS

CoC	LCC	RCC	QUU	LW
DRAWING No.				VERSION
SEQ-SEW-1307-3				B
NOT TO SCALE				ORG DATE: 1/1/2013



PE PIPE PENETRATION DETAIL WITH PE LINER



PE PIPE PENETRATION DETAIL WITHOUT PE LINER

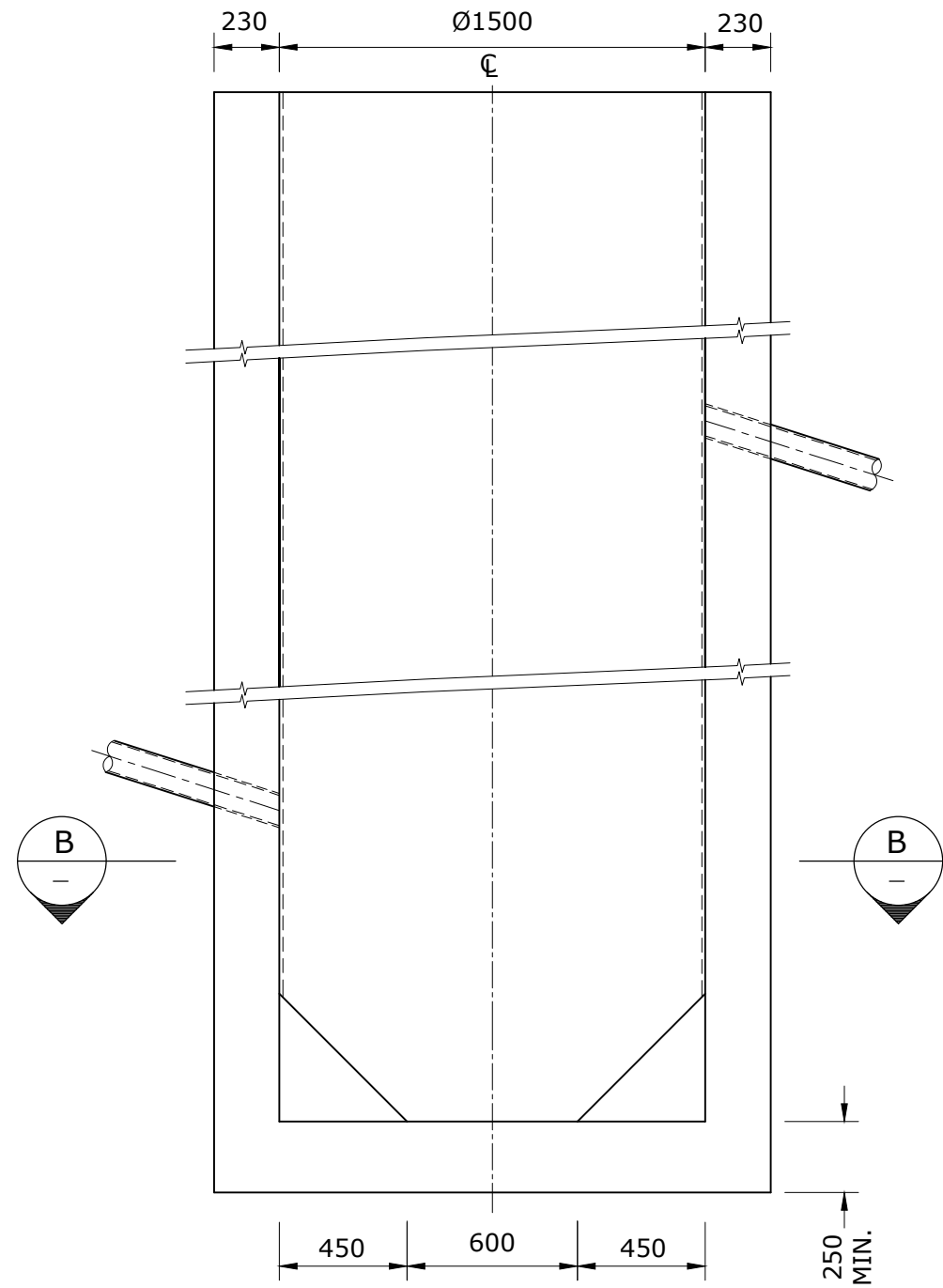
No	TYPICAL CUT-IN METHODOLOGY
1.	EXCAVATE ADJACENT TO EXISTING MAINTENANCE HOLE AND PROVIDE SAFE SHORING.
2.	DRILL PILOT HOLE FROM INSIDE EXISTING MAINTENANCE HOLE TO OVERT OF NEW SEWER.
3.	CONFIRM PILOT HOLE HAS PENETRATED INTO EXCAVATION.
4.	MEASURE THE MAINTENANCE HOLE WALL THICKNESS.
5.	PLUG PILOT HOLE.
6.	REMOVE CONCRETE FROM MAINTENANCE HOLE WALL TO LEAVE 70 mm THICK INTERNAL CONCRETE WHERE PE LINER IS NOT INSTALLED.
7.	DRILL EVENLY SPACED HOLES AROUND PROPOSED INLET TO TAKE N12 BARS. HOLES TO BE A MINIMUM OF 100 mm FROM EDGE OF EXISTING CONCRETE AROUND INLET OPENING.
8.	TIE REMAINING REINFORCEMENT AS SHOWN.
9.	LAY PE STUB WITH WEEP FLANGE ATTACHED, CAST INTO WALL AS SHOWN.
10.	FOLLOWING A SUCCESSFUL 'ON MAINTENANCE' INSPECTION, COMPLETE THE CONNECTION FROM INSIDE THE MAINTENANCE HOLE AND RE-BENCH AS NECESSARY.

NOTES:

1. REFER SEQ-SEW-1101-4, SEQ-SEW-1101-5 AND SEQ-SEW-1101-6 FOR NOTES.

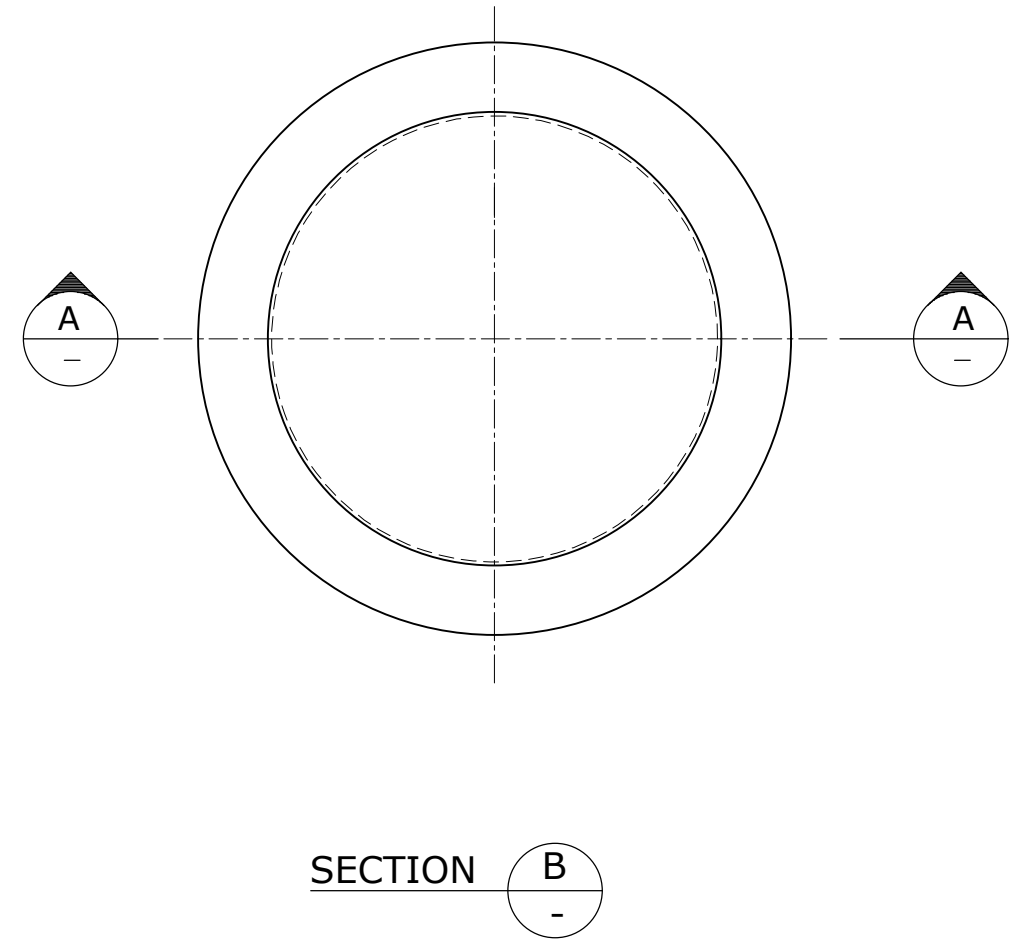
A QUU NETWORK ACCESS PERMIT MUST BE OBTAINED PRIOR TO COMMENCEMENT OF WORK ON SITE.

REV. No.	DATE	DESCRIPTION	AUTH.	SEQ WATER SERVICE PROVIDERS		SEWERAGE STANDARD DRAWING		CoGC	LEC	REC	QUU	DW
				WORK PRACTICES MUST COMPLY WITH ALL APPLICABLE OCCUPATIONAL HEALTH & SAFETY LEGISLATION		SULPHIDE CONTROL CUT-IN TO EXISTING SEWER MAINTENANCE HOLE DETAILS		DRAWING No.				VERSION
								SEQ-SEW-1307-4				B
B	7/06/19	GENERAL REVISION						NOT TO SCALE				ORG DATE: 1/1/2013



SECTION A
-

SULPHIDE CONTROL
MAINTENANCE HOLE



SECTION B
-

REV. No.	DATE	DESCRIPTION	AUTH.

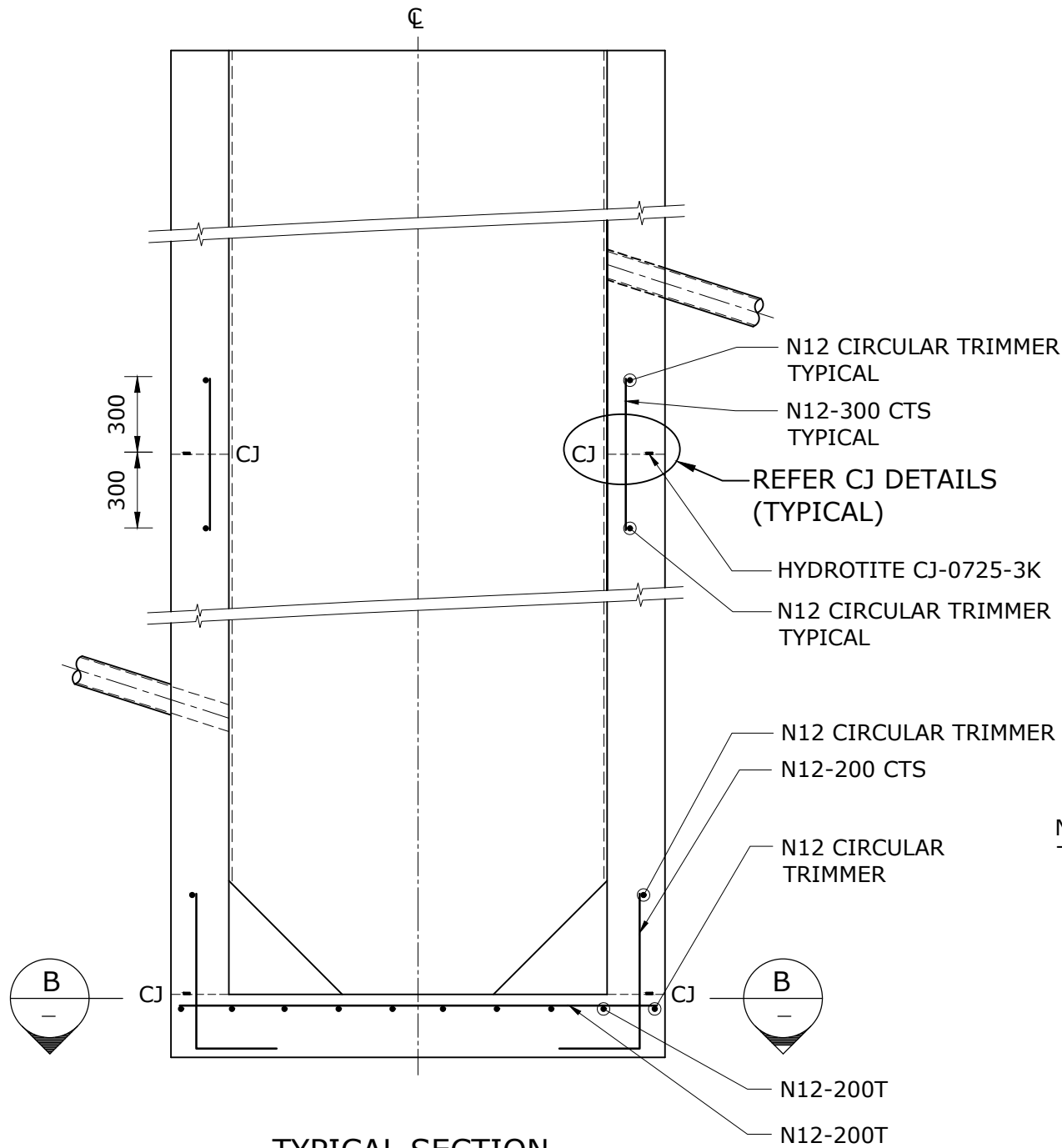
**SEQ WATER
SERVICE PROVIDERS**

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

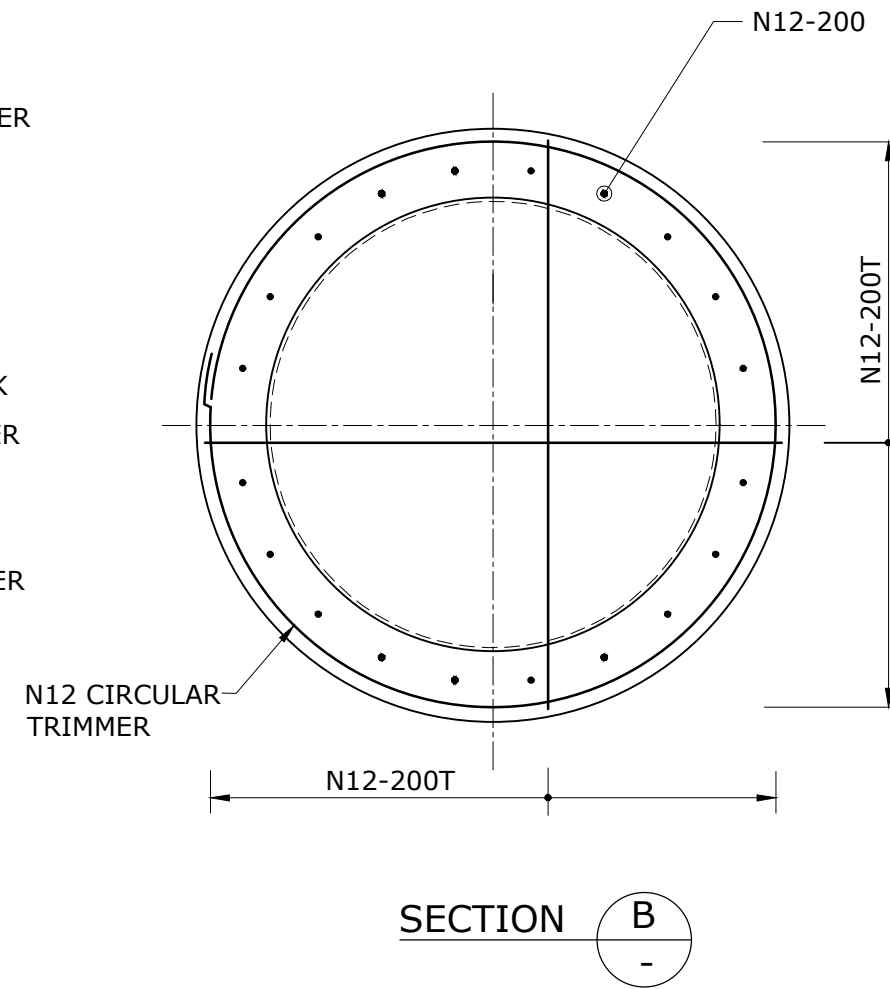
SEWERAGE STANDARD DRAWING

**SULPHIDE CONTROL
SEWER MAINTENANCE HOLE - PE LINED
STRUCTURAL G.A. DETAILS**

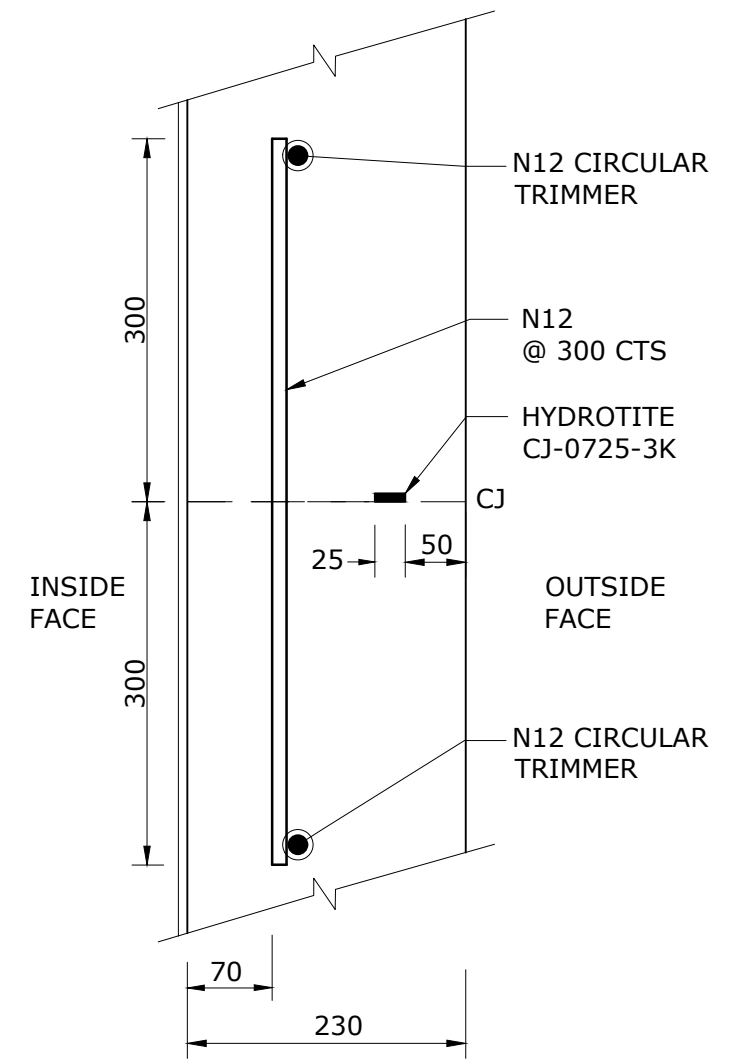
C&C	L&C	R&C	QUU	UW
DRAWING No.				VERSION
SEQ-SEW-1307-5				A
NOT TO SCALE			ORG DATE: 24/05/2019	



**TYPICAL SECTION
SULPHIDE CONTROL
MAINTENANCE HOLE**



SECTION B



TYPICAL CJ DETAIL

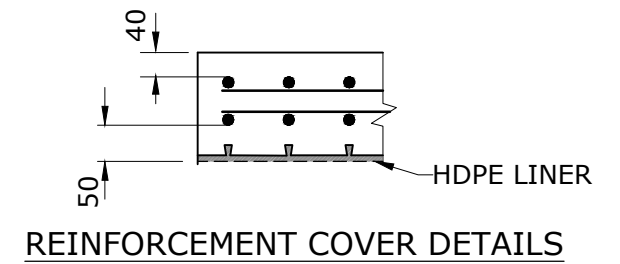
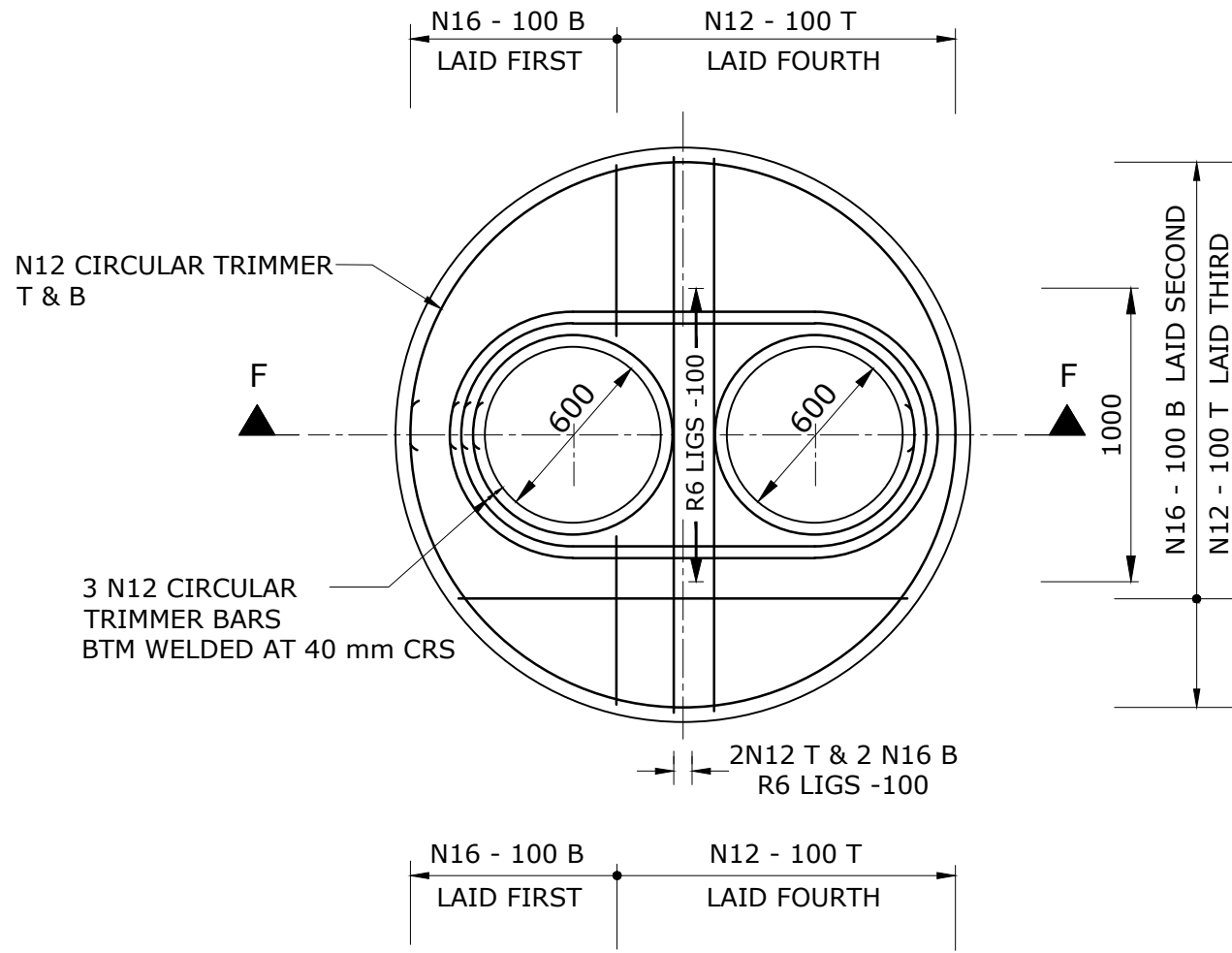
REV. No.	DATE	DESCRIPTION	AUTH.

**SEQ WATER
SERVICE PROVIDERS**

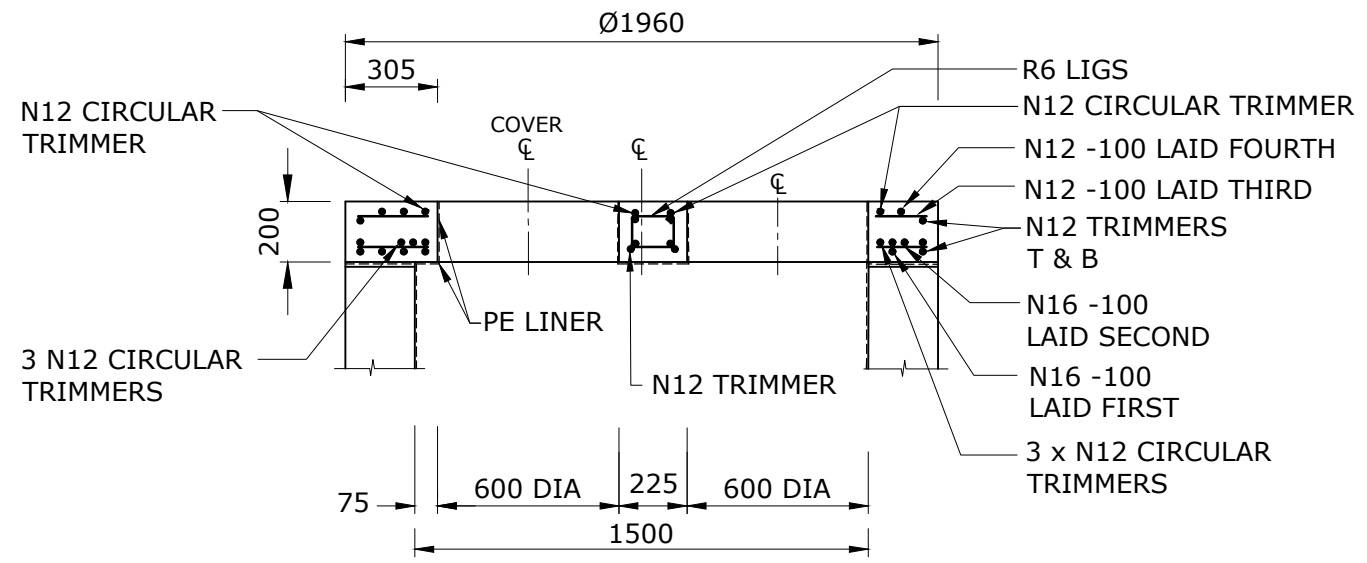
WORK PRACTICES MUST COMPLY WITH ALL APPLICABLE
OCCUPATIONAL HEALTH & SAFETY LEGISLATION

SEWERAGE STANDARD DRAWING
SULPHIDE CONTROL
SEWER MAINTENANCE HOLE - PE LINED
STRUCTURAL REINFORCEMENT DETAILS

CoGC	LCC	RCC	QUU	UW
DRAWING No.				VERSION
SEQ-SEW-1307-6				A
NOT TO SCALE				ORG DATE: 23/05/2019



**1500 mm ID MAINTENANCE HOLE TOP SLAB
BOTTOM REINFORCEMENT SHOWN**



**1500 mm ID TOP SLAB SECTION F-F
CLASS RATING B AND D REINFORCEMENT DETAILS**

NOT TO SCALE

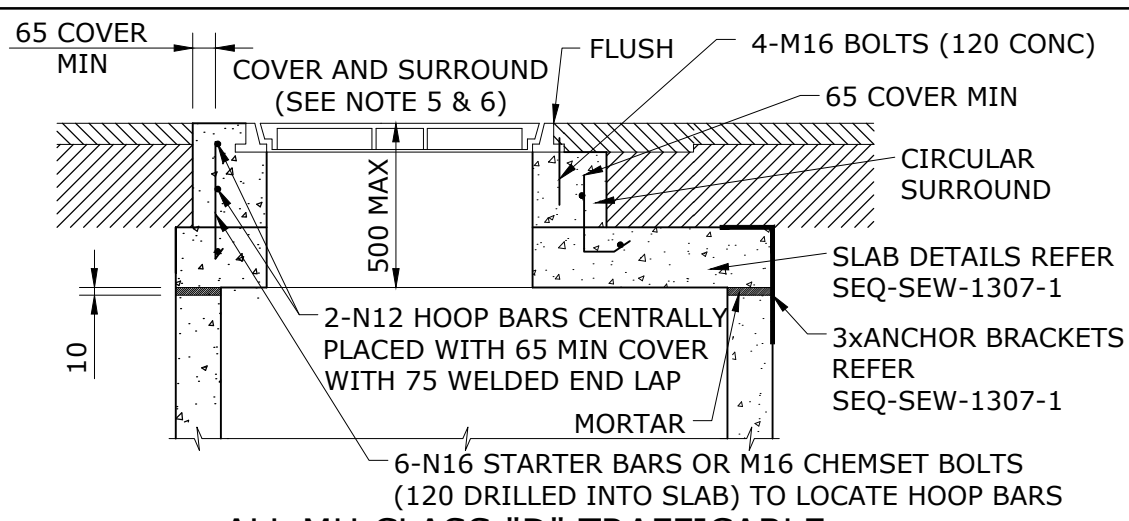
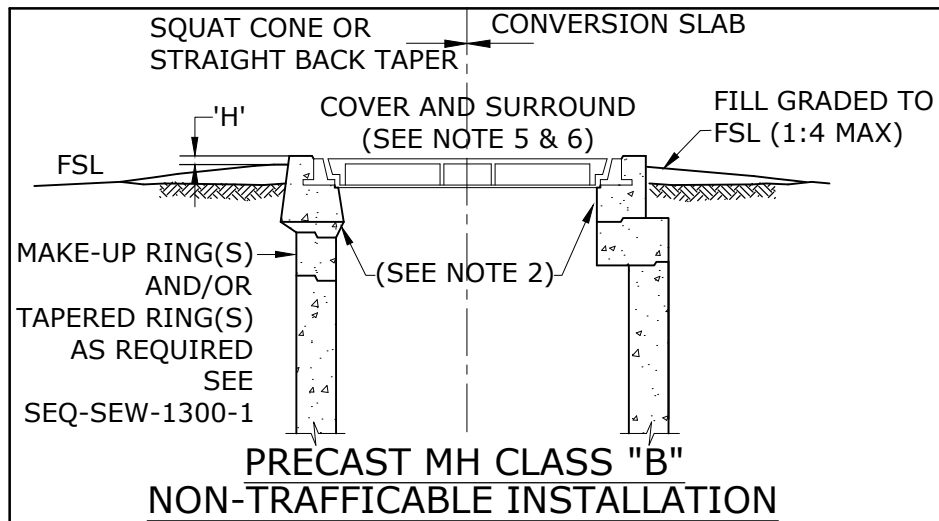
REV. No.	DATE	DESCRIPTION	AUTH.

**SEQ WATER
SERVICE PROVIDERS**

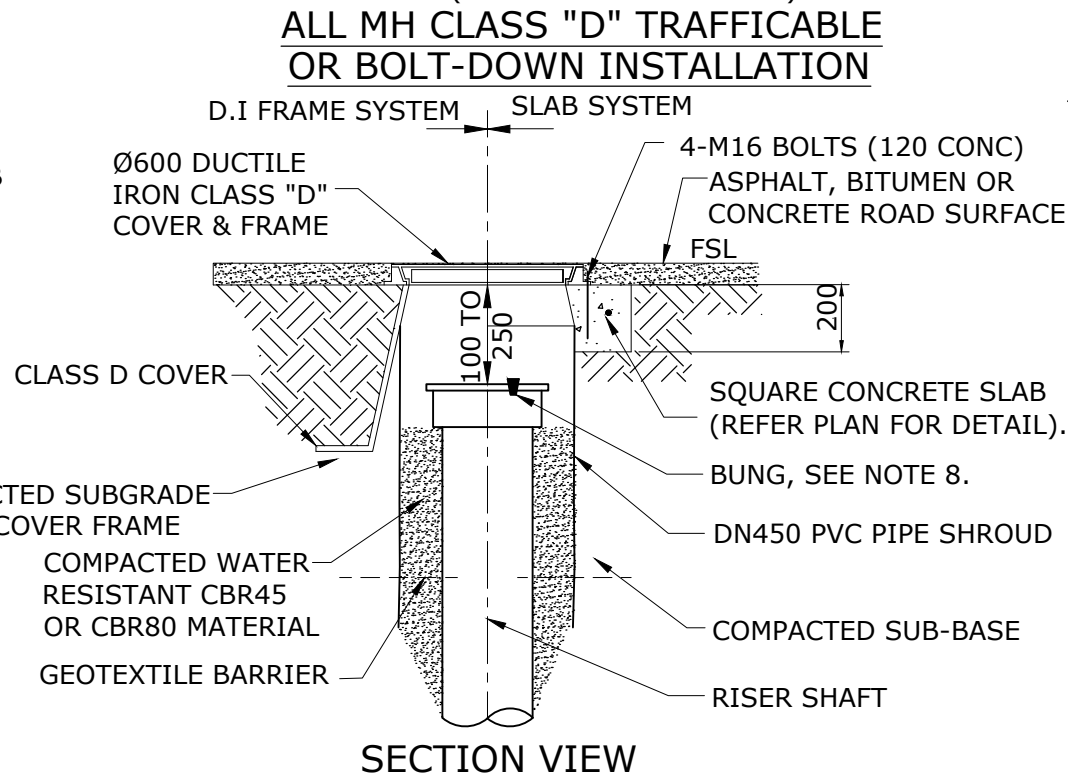
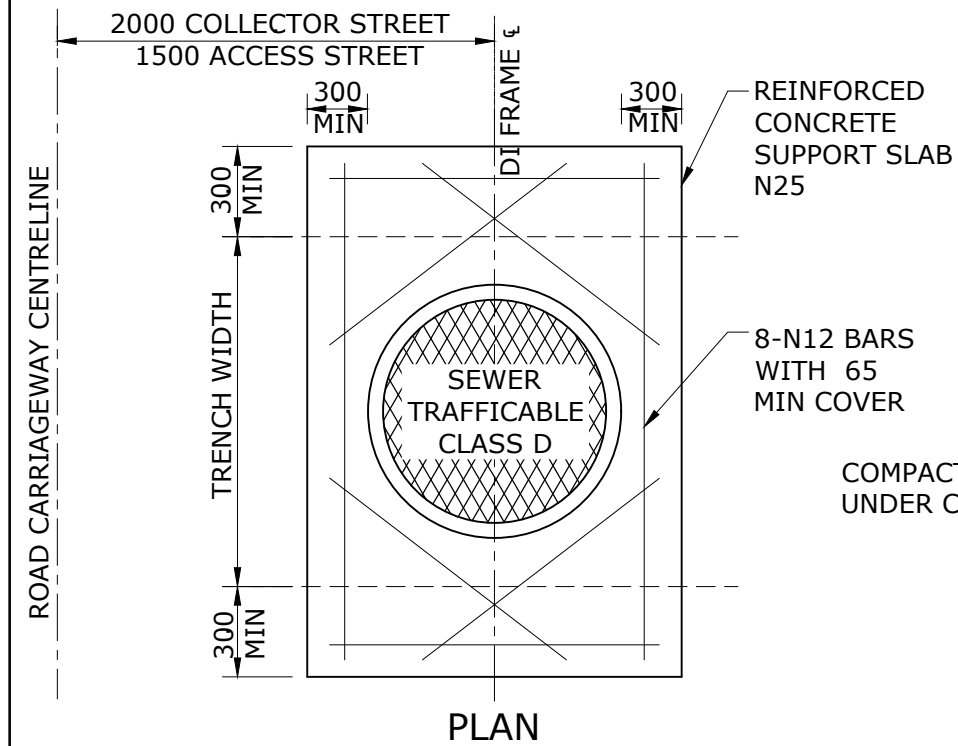
WORK PRACTICES MUST COMPLY WITH ALL APPLICABLE
OCCUPATIONAL HEALTH & SAFETY LEGISLATION

SEWERAGE STANDARD DRAWING
SULPHIDE CONTROL MAINTENANCE HOLE
TOP SLAB
REINFORCEMENT DETAILS

CoGC	LEC	RCC	QUU	UW
DRAWING No.				VERSION
SEQ-SEW-1307-7				A
NOT TO SCALE				ORG DATE: 27/05/2019



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

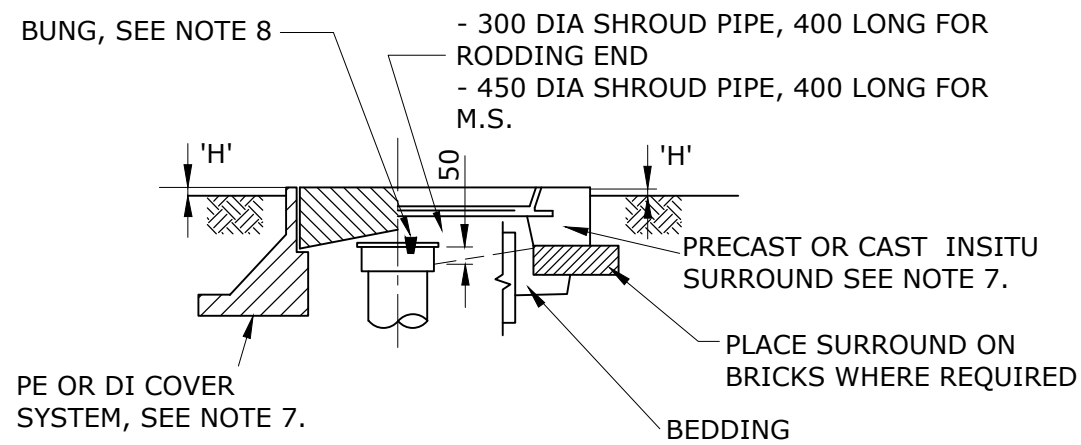


CLASS D TRAFFICABLE MAINTENANCE AND RODDING SHAFT SURROUND DETAILS

NOTES:

- ALL DIMENSIONS IN MILLIMETERS.
- SEALING METHODS FOR COVER-FRAME SURROUND TO WALLS
 - MAKE JOINTS BETWEEN SHAFT TOP/MAKE-UP RING AND COVER SUPPORT RING USING BUTYL-MASTIC OR RUBBER RING.
 - APPLY BUTYL-MASTIC OR RING IN ACCORDANCE WITH MANUFACTURERS SPECIFICATION.
 - FOLLOWING (b) ABOVE, APPLY EXTERNALLY 4X100 LONG SECTIONS OF 'MEGAPOXY P1' OR EQUAL TO PRECAST SURROUND/RING JOINT TO REINFORCE JOINT.
- IN AREAS WHERE BOLT-DOWN ARE REQUIRED AS PER CLAUSE 7.9.1 OF THE CODE INCLUDING Q100 FLOODING AND SURCHARGE AREAS, USE CAST IN-SITU MH WITH ANCHOR BRACKETS SO THAT SEPARATION DURING SURCHARGE IS PREVENTED. SEE SEQ-SEW-1307-1.
- MAXIMUM PERMISSIBLE SLOPE OF COVERS:
 - CLASS "B" 1 IN 4
- COVERS AND FRAMES, REFER CODE. FOR CoGC, NON-CORROSIVE MH COVERS AND FRAMES ARE REQUIRED FOR DISCHARGE MHS AND ALL MHS ON SEWERS DN300 AND LARGER.
- ALL COVERS AND FRAMES SHALL BE TYPE SEALED SOLID TOP IN ACCORDANCE WITH CLAUSE 1.5 (c) OF AS3996.
- STORMWATER PRECAST SURROUND, FRAME & LID MAY BE USED FOR ALL CLASS B NON-TRAFFICABLE LOCATIONS EXCEPT THAT THE DI COVER SHALL BE MARKED FOR SEWERAGE PURPOSES.
 - DUCTILE IRON COVERS SHALL BE EITHER 600 mm OR 430 mm DIAMETER AT CLASS "D" OR CLASS "B" FOR THE LOCATIONS AS TABLED.
- 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. UNLESS THE CAP IS FITTED WITH AN APPROVED PRESSURE RELEASE ARRANGEMENT, 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.

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 TABLE 7.5 OF THE CODE)	



CLASS B NON-TRAFFICABLE MAINTENANCE AND RODDING SHAFT SURROUND DETAILS

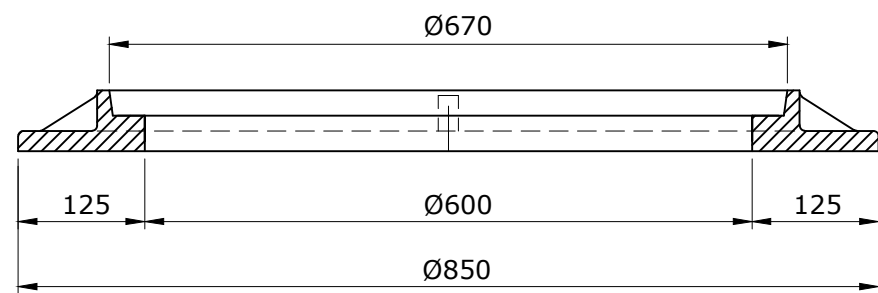
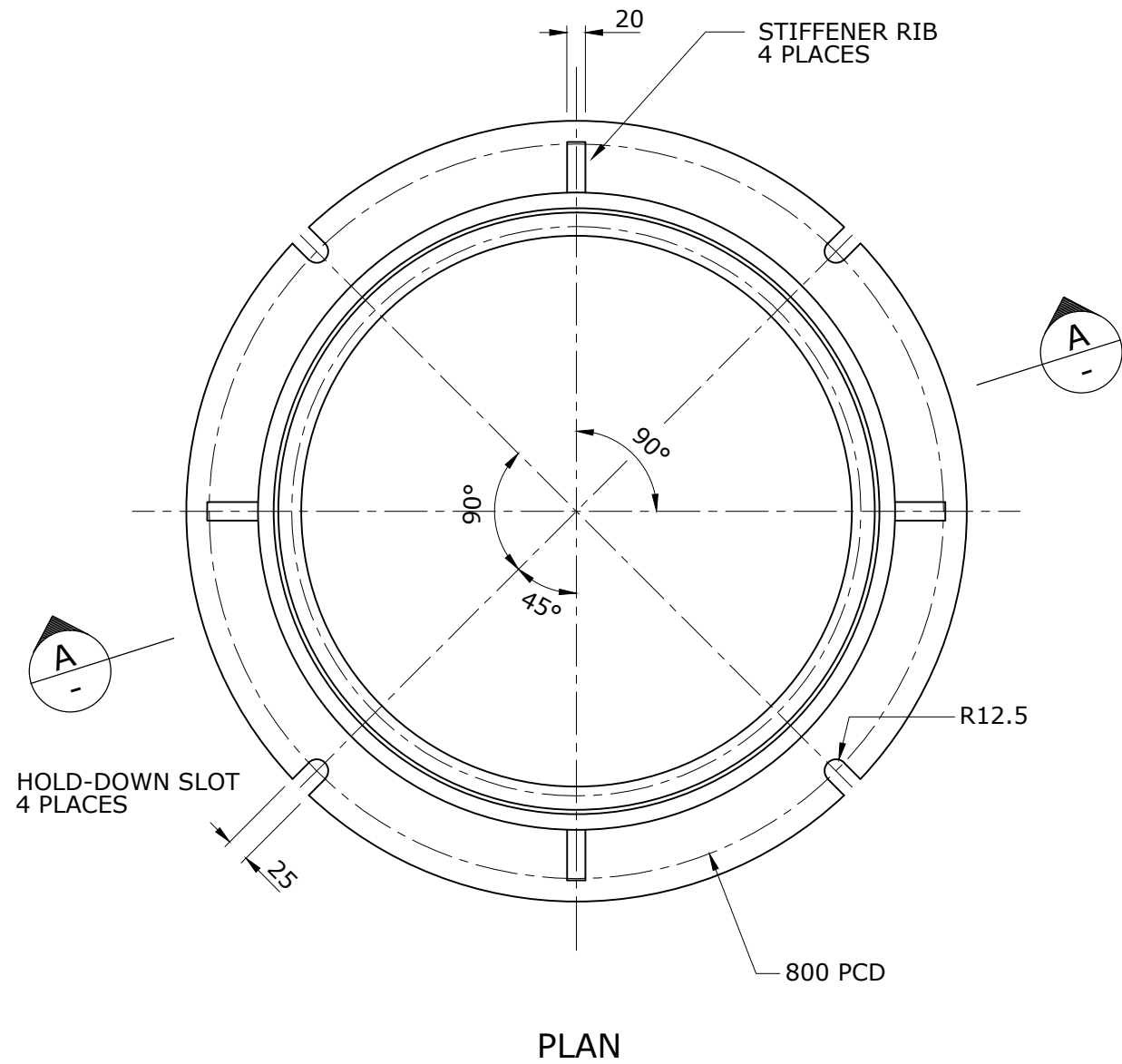
REV. No.	DATE	DESCRIPTION	AUTH.
C	24/04/19	AMENDED NOTES 3, 4, 5, 6, 7 & 8, SURROUND DETAILS. OTHER MINOR CHANGES	
B	24/07/15	AMENDED NOTE 8.	

SEQ WATER SERVICE PROVIDERS

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

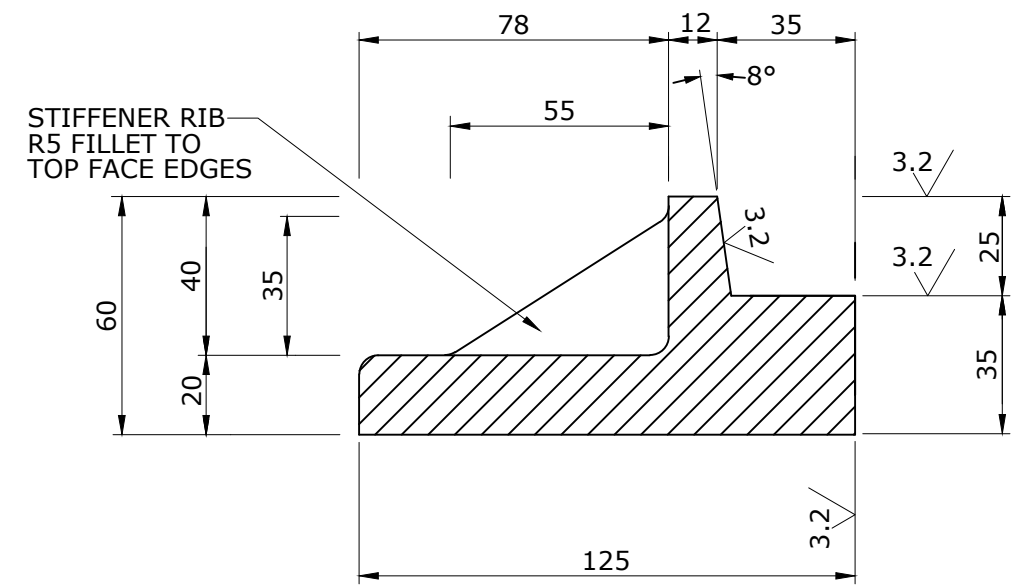
SEWERAGE STANDARD DRAWING
TYPICAL MAINTENANCE HOLE AND
SHAFT COVER AND SURROUND DETAIL

CoGC	LCC	RCC	QUU	UW
DRAWING No.				VERSION
SEQ-SEW-1308-1				C
NOT TO SCALE				ORG DATE: 1/1/2013



SECTIONAL ELEVATION **A**

MAINTENANCE HOLE FRAME
MASS: 59.5KG



TYPICAL SECTION

NOTES

- ALL EDGES TO BE SQUARE.
- ALL EDGES TO BE ARRISED UNLESS SHOWN OTHERWISE.
- ALL FILLETS TO BE 5mm RADIUS UNLESS SHOWN OTHERWISE.
- CASTING TO BE FREE OF BURRS AND PITS.
- MACHINE SURFACE SYMBOL 3.2
- MATERIAL: GREY CAST IRON (AS1830)
TENSILE STRENGTH: ISO 185/JL/225
HARDNESS: 145 - 215 (HB)
ULTIMATE DESIGN LOAD: 210 KN (AS3996)
- 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
- 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.
- ALL NON MACHINED SURFACES TO BE BITUMINOUS COATED IN ACCORDANCE WITH AS 3750-4.
- ALL WORK SHALL BE IN ACCORDANCE WITH CURRENT QUEENSLAND CODE, SPECIFICATIONS AND STANDARDS.
- COVERS AND FRAMES TO BE SUPPLIED ASSEMBLED.
- CERTIFICATION OF COMPLIANCE TO A.S. 3996 TO BE SUPPLIED FOR EACH CASTING.

FOR USE IN NON TRAFFICABLE LOCATIONS

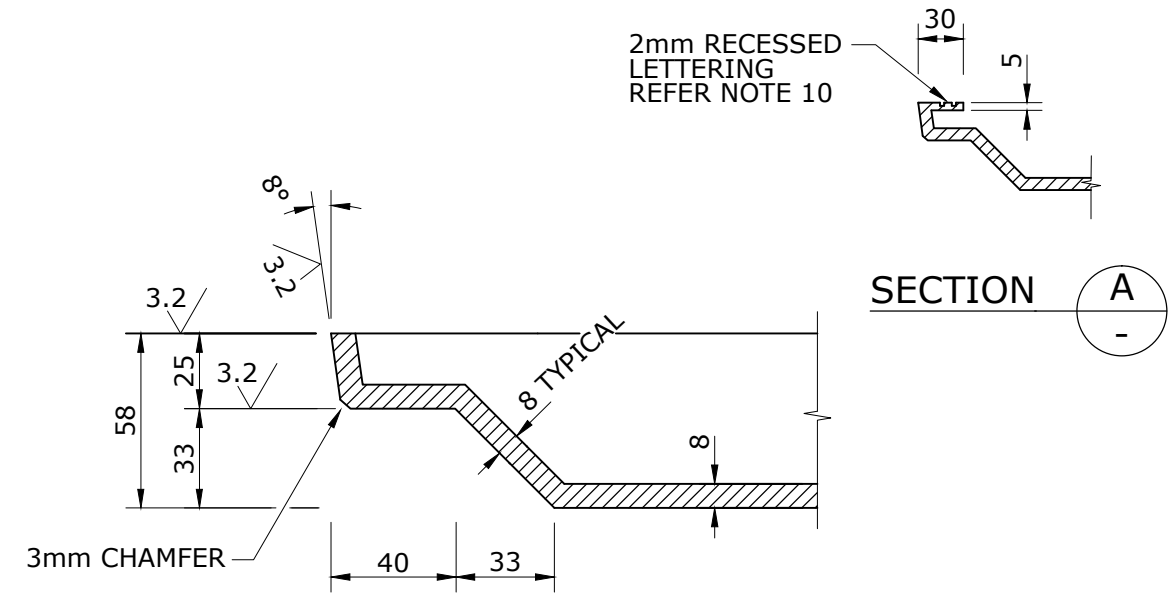
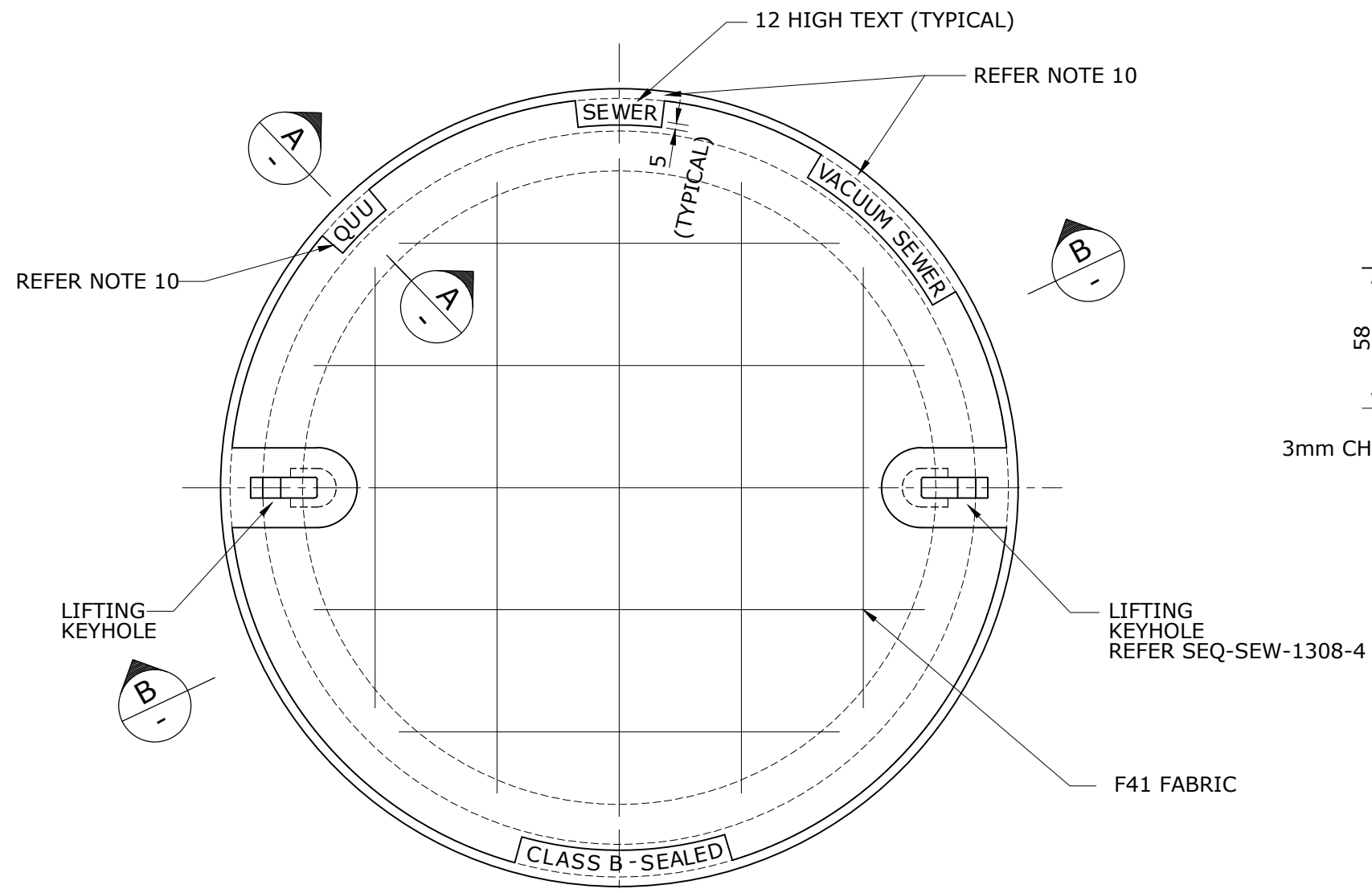
REV. No.	DATE	DESCRIPTION	AUTH.

**SEQ WATER
SERVICE PROVIDERS**

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

SEWERAGE STANDARD DRAWING
MAINTENANCE HOLE COVER
SEWER - CLASS B - CONCRETE INFILL
TYPICAL FRAME DETAILS

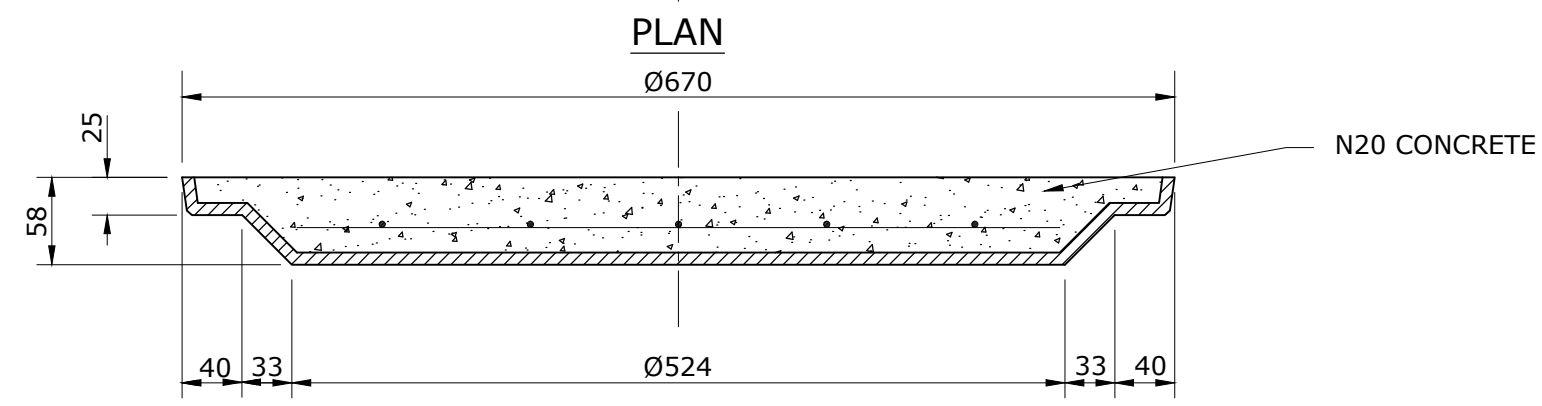
GECC	LCC	RCC	QUU	UW
DRAWING No.				VERSION
SEQ-SEW-1308-2				A
NOT TO SCALE				ORG DATE: 1/1/2013



TYPICAL EDGE DETAIL

NOTES

- ALL EDGES TO BE SQUARE.
- ALL EDGES TO BE ARRISED UNLESS SHOWN OTHERWISE.
- ALL FILLETS TO BE 5mm RADIUS.
- CASTING TO BE FREE OF BURRS AND PITS.
- MACHINE SURFACE SYMBOL 3.2
- MATERIAL: DUCTILE CAST IRON
TENSILE STRENGTH: ISO 1083/JS/600-3/S (AS1831) HARDNESS: 190 - 270 (HB)
ULTIMATE DESIGN LOAD: 80 KN (AS3996)
- 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
- 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.
- ALL NON MACHINED SURFACES TO BE BITUMINOUS COATED IN ACCORDANCE WITH AS 3750-4.
- IDENTIFICATION TAGS "SEWER" AND "VACUUM SEWER" TO BE REMOVED AS REQUIRED. SERVICE PROVIDER NAME WHERE REQUIRED.
- ALL WORK SHALL BE IN ACCORDANCE WITH CURRENT QUEENSLAND CODE, SPECIFICATIONS AND STANDARDS.
- COVERS AND FRAMES TO BE SUPPLIED ASSEMBLED.
- CERTIFICATION OF COMPLIANCE TO A.S. 3996 TO BE SUPPLIED FOR EACH CASTING.



SECTIONAL ELEVATION B

MAINTENANCE HOLE COVER
MASS: 25KG CASTING
58KG CASTING/CONCRETE INFILL

FOR USE IN NON TRAFFICABLE LOCATIONS

REV. No.	DATE	DESCRIPTION	AUTH.

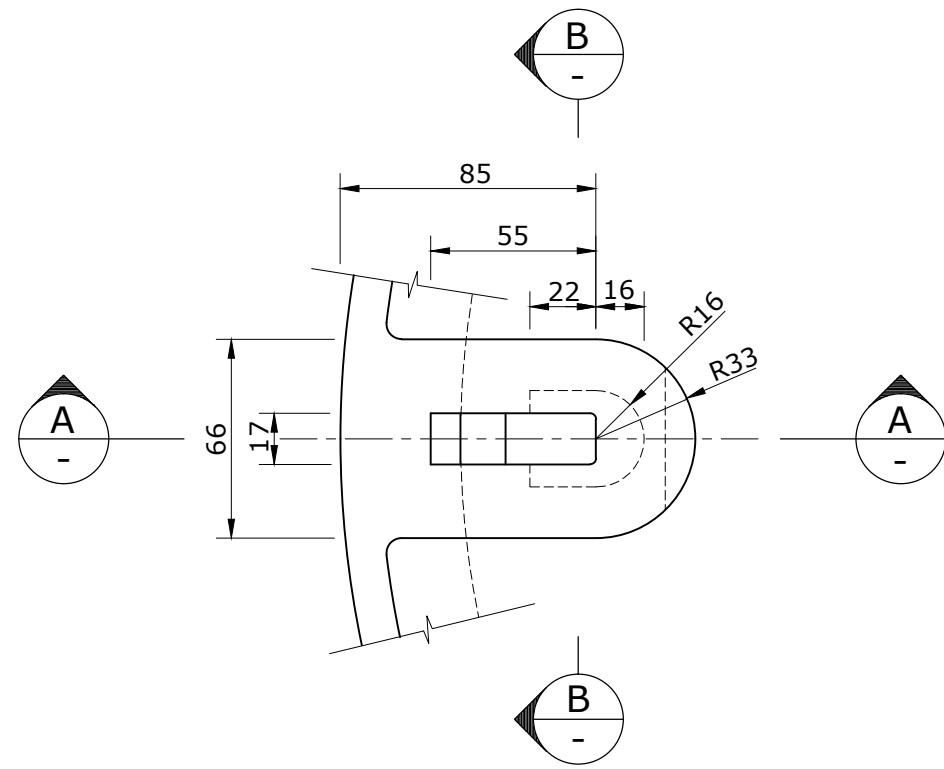
SEQ WATER SERVICE PROVIDERS

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

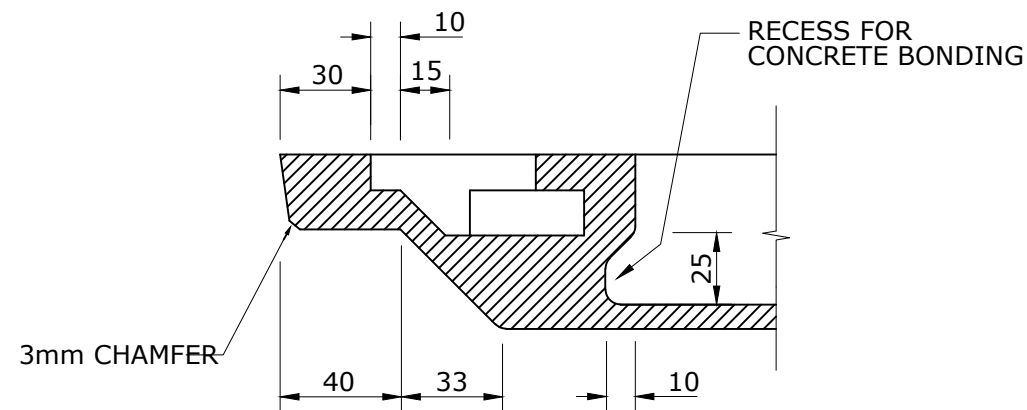
SEWERAGE STANDARD DRAWING

MAINTENANCE HOLE COVER
SEWER - CLASS B - CONCRETE INFILL
TYPICAL COVER DETAILS

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DRAWING No.				VERSION
SEQ-SEW-1308-3				A
NOT TO SCALE				ORG DATE: 1/1/2013

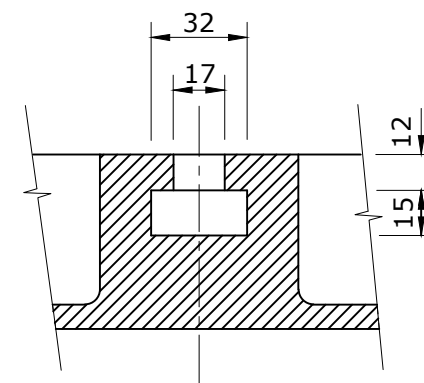


PLAN



SECTION A

KEYHOLE DETAIL



SECTION B

REFER SEQ-SEW-1308-3 FOR NOTES

FOR USE IN NON TRAFFICABLE LOCATIONS

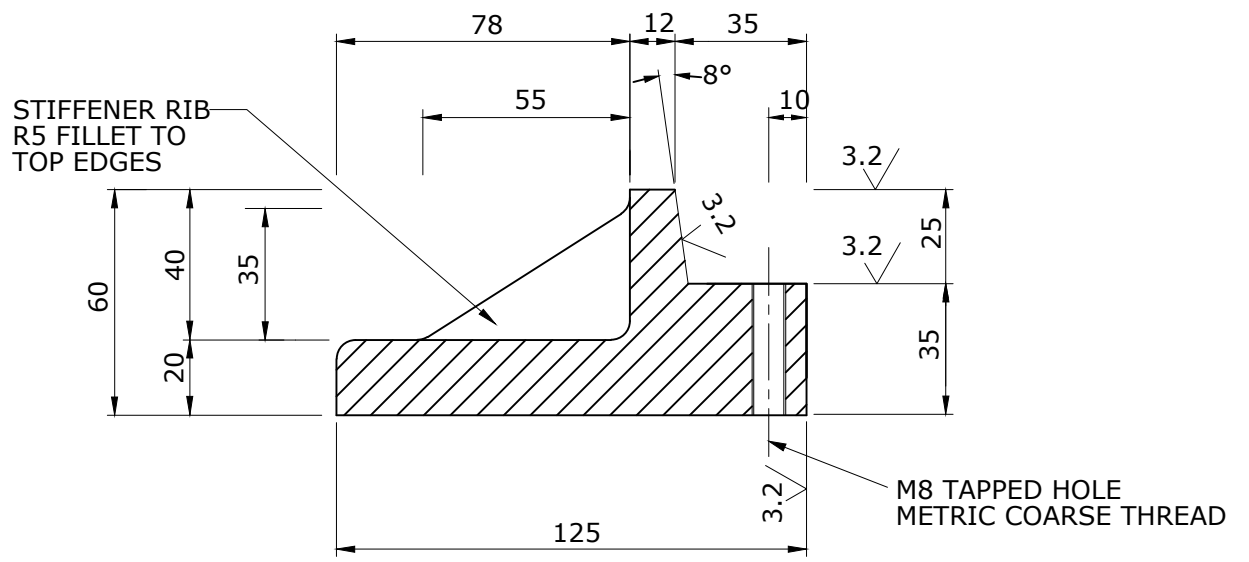
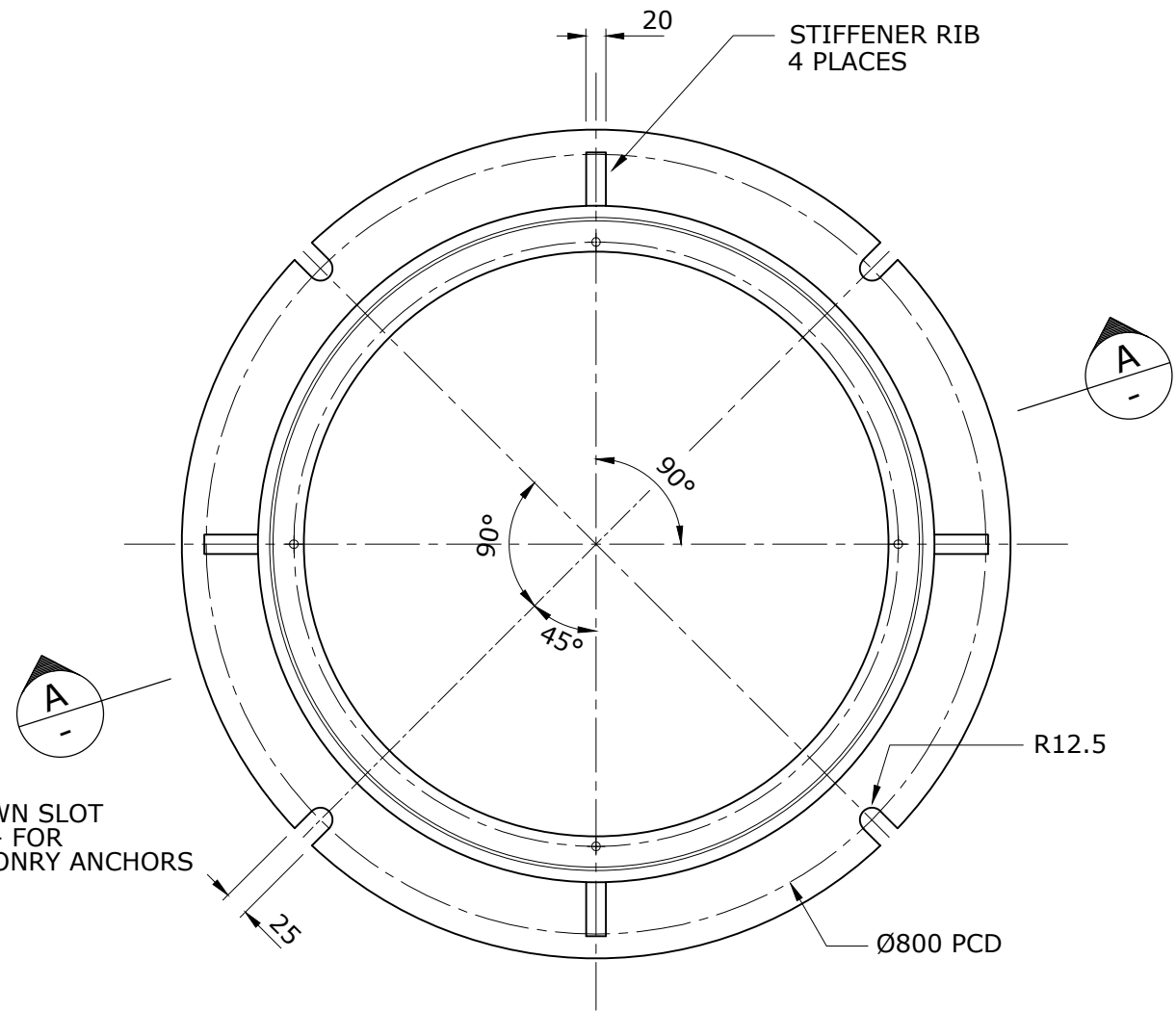
REV. No.	DATE	DESCRIPTION	AUTH.

SEQ WATER SERVICE PROVIDERS

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

SEWERAGE STANDARD DRAWING
 MAINTENANCE HOLE COVER
 SEWER - CLASS B - CONCRETE INFILL
 TYPICAL LIFTING HOLE DETAILS

GECC	LCC	RCC	QUU	UW
DRAWING No.				VERSION
SEQ-SEW-1308-4				A
NOT TO SCALE				ORG DATE: 1/1/2013



TYPICAL SECTION

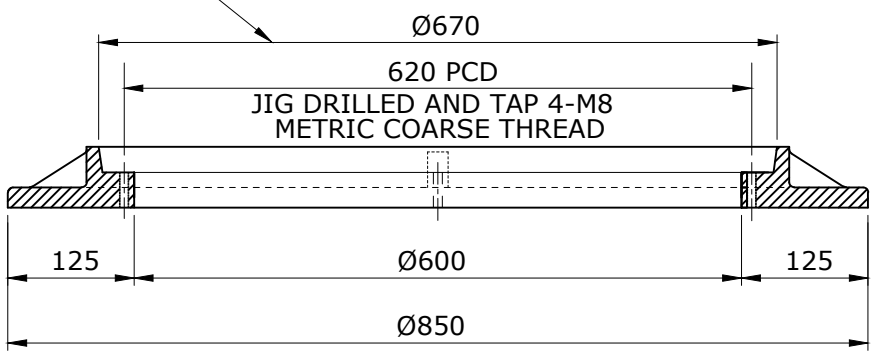
NOTES

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.

HOLD-DOWN SLOT
4 PLACES - FOR
M-16 MASONRY ANCHORS

PLAN

GAUGE SHALL BE USED TO CHECK
PCD AND CLEARANCE HOLE POSITION



SECTIONAL ELEVATION

MAINTENANCE HOLE FRAME

MASS: 59.5KG

UNITYWATER AND GCCC AND LOGAN WATER AND REDLAND WATER 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

REV. No.	DATE	DESCRIPTION	AUTH.

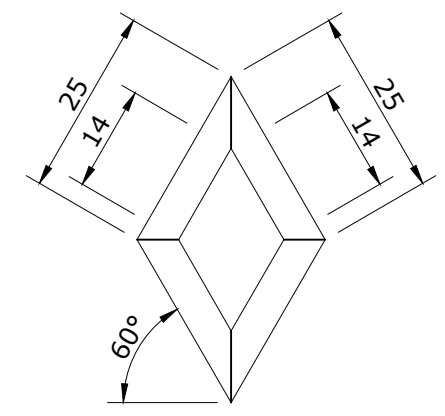
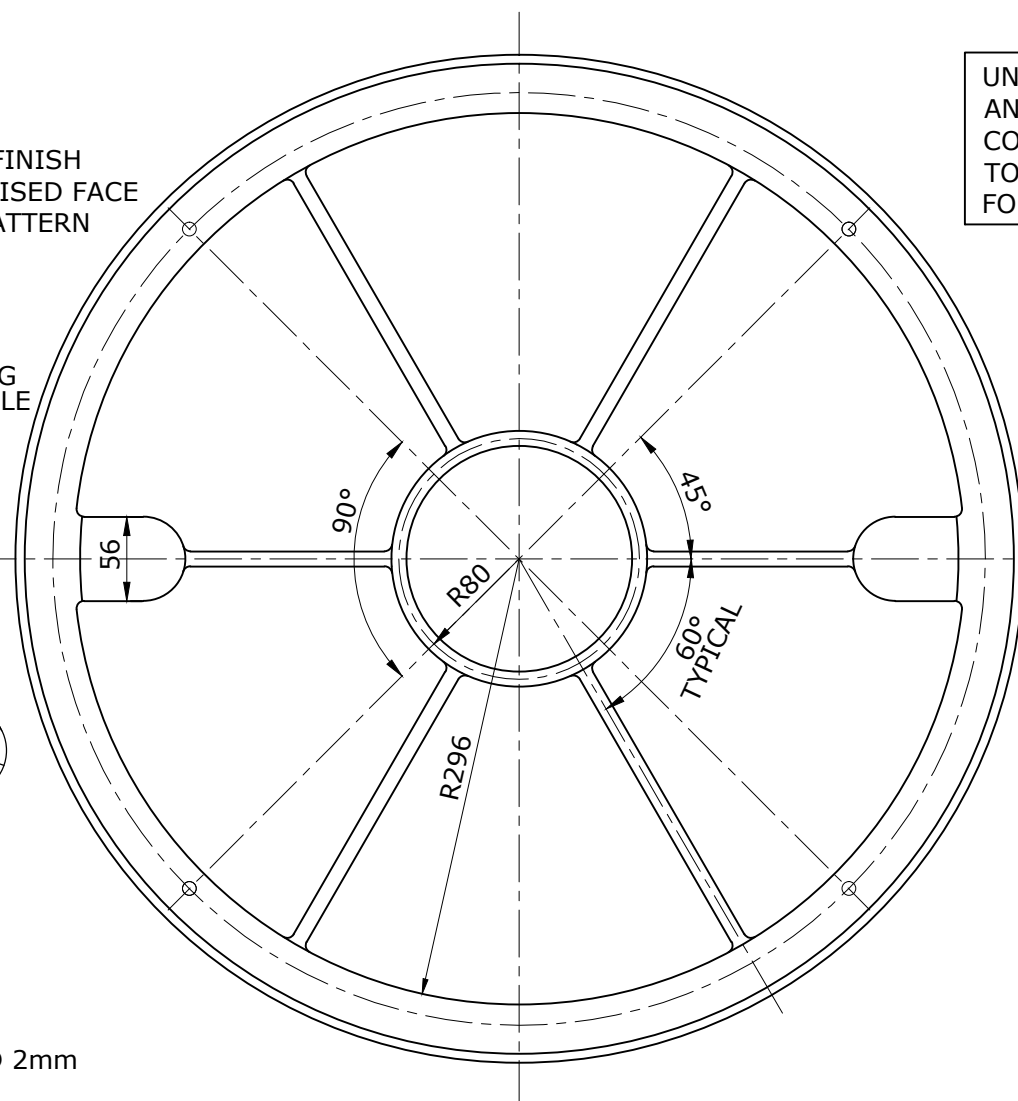
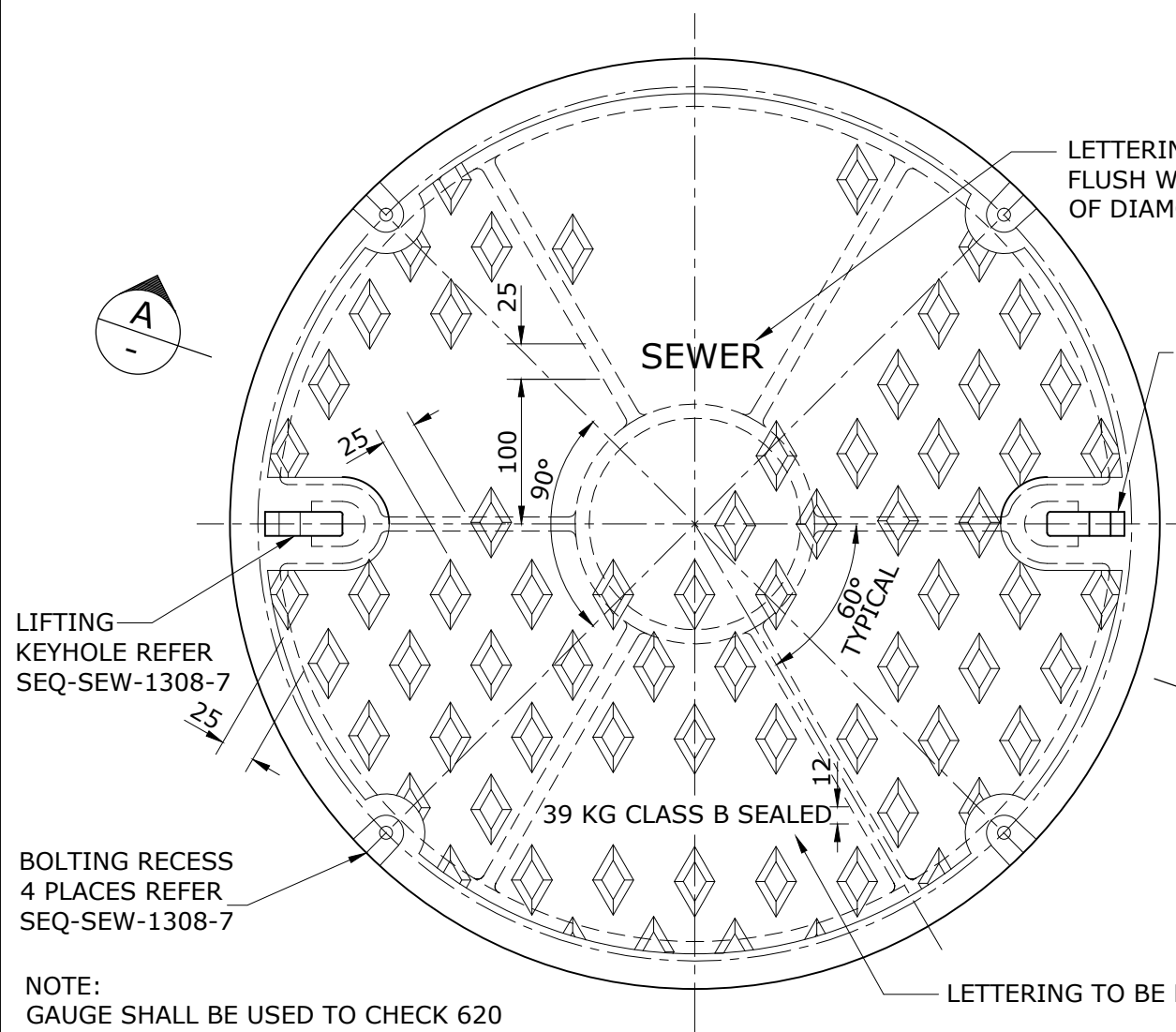
SEQ WATER SERVICE PROVIDERS

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

GCCC	LCC	RCC	QUU	UW
DRAWING No.				VERSION
SEQ-SEW-1308-5				A
NOT TO SCALE				ORG DATE: 1/1/2013

UNITYWATER AND GCCC AND LOGAN WATER AND REDLAND WATER ACCEPTS ALL CLASS B COVERS AND FRAMES WITH CERTIFICATION TO AS 3996 AS DETAILED IN CLAUSE 3.2 FOR SEALS AND REGISTERS.



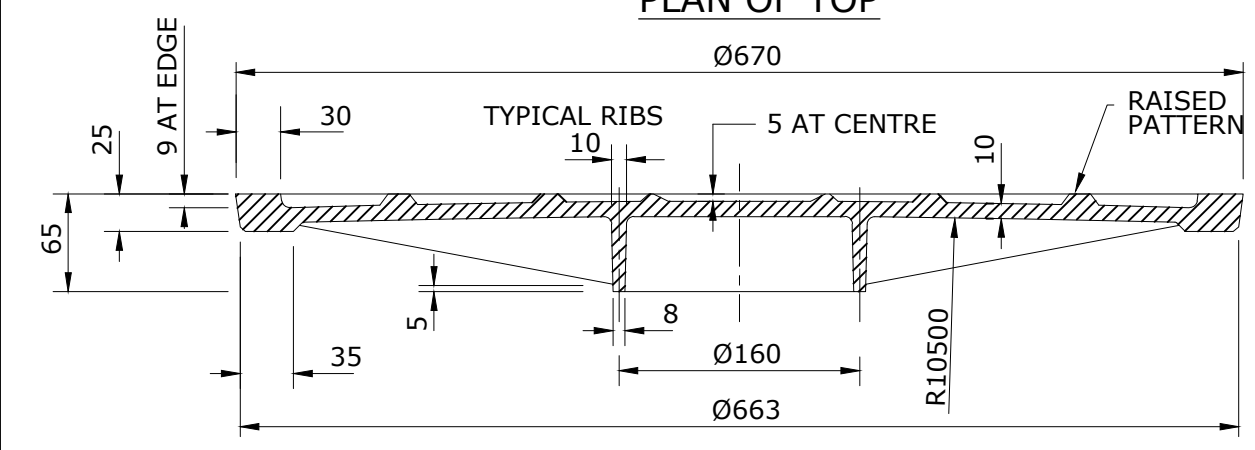
COVER PATTERN DETAIL

FOR USE IN NON TRAFFICABLE LOCATIONS

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

PLAN OF TOP

PLAN OF BOTTOM



SECTIONAL ELEVATION

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.

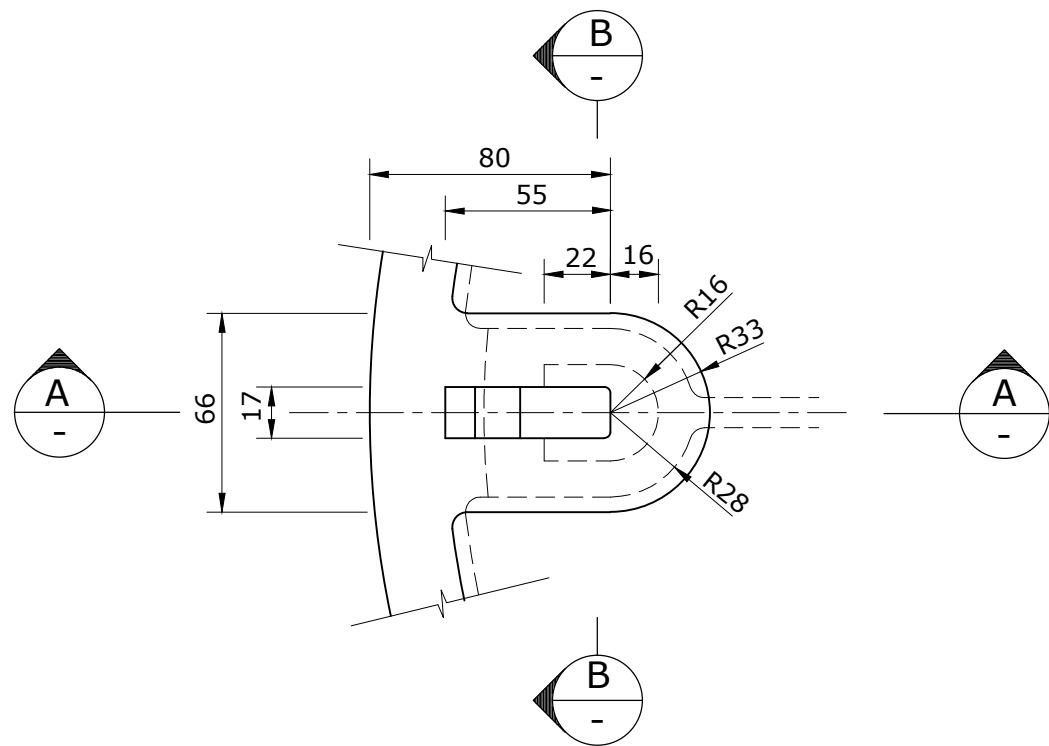
REV. No.	DATE	DESCRIPTION	AUTH.

SEQ WATER SERVICE PROVIDERS

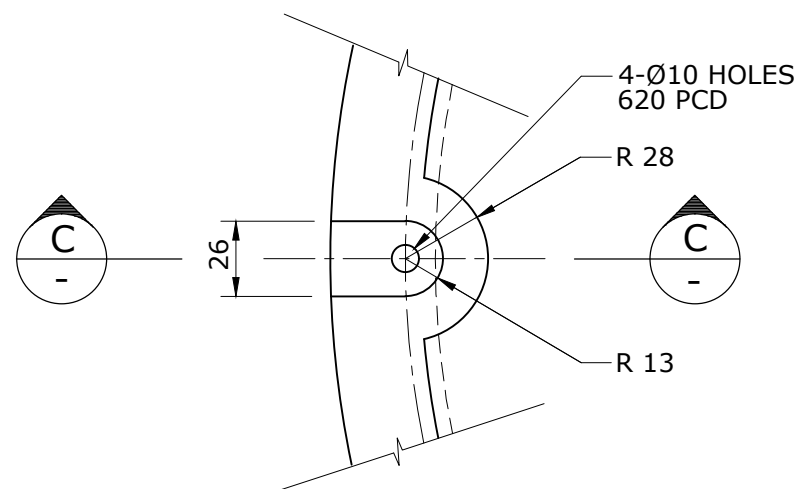
WORK PRACTICES MUST COMPLY WITH ALL APPLICABLE OCCUPATIONAL HEALTH & SAFETY LEGISLATION

SEWERAGE STANDARD DRAWING
MAINTENANCE HOLE COVER
SEWER - CLASS B - BOLT DOWN
TYPICAL COVER DETAILS

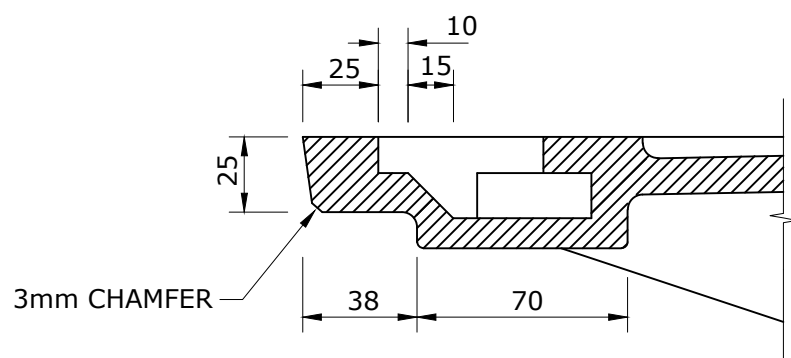
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DRAWING No.				VERSION
SEQ-SEW-1308-6				A
NOT TO SCALE				ORG DATE: 1/1/2013



PLAN

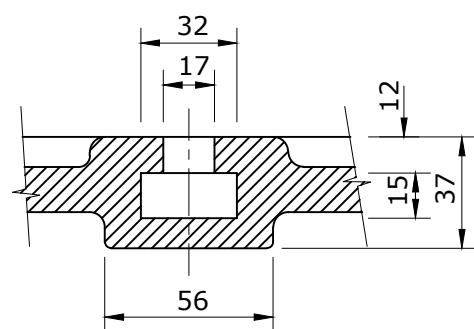


PLAN

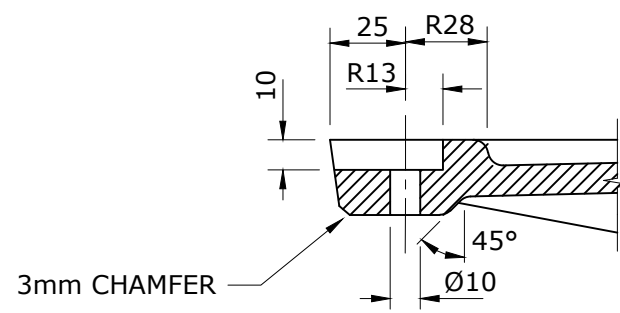


SECTION A

KEYHOLE DETAIL

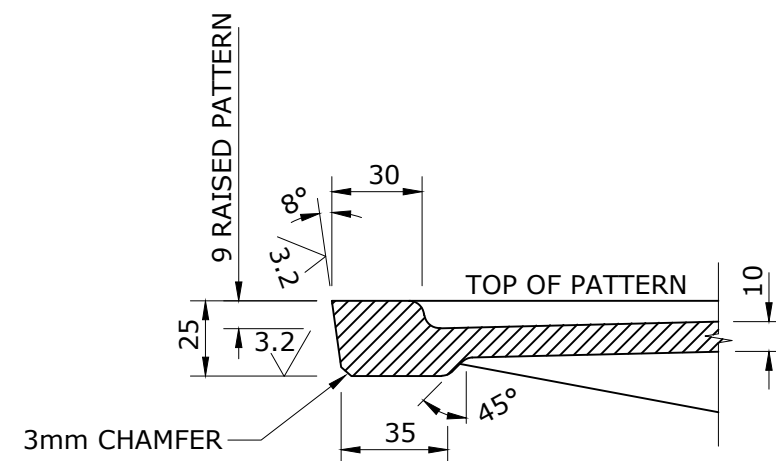


SECTION B



SECTION C

BOLT RECESS DETAIL



TYPICAL EDGE DETAIL

REFER SEQ-SEW-1308-6 FOR NOTES

FOR USE IN NON TRAFFICABLE LOCATIONS

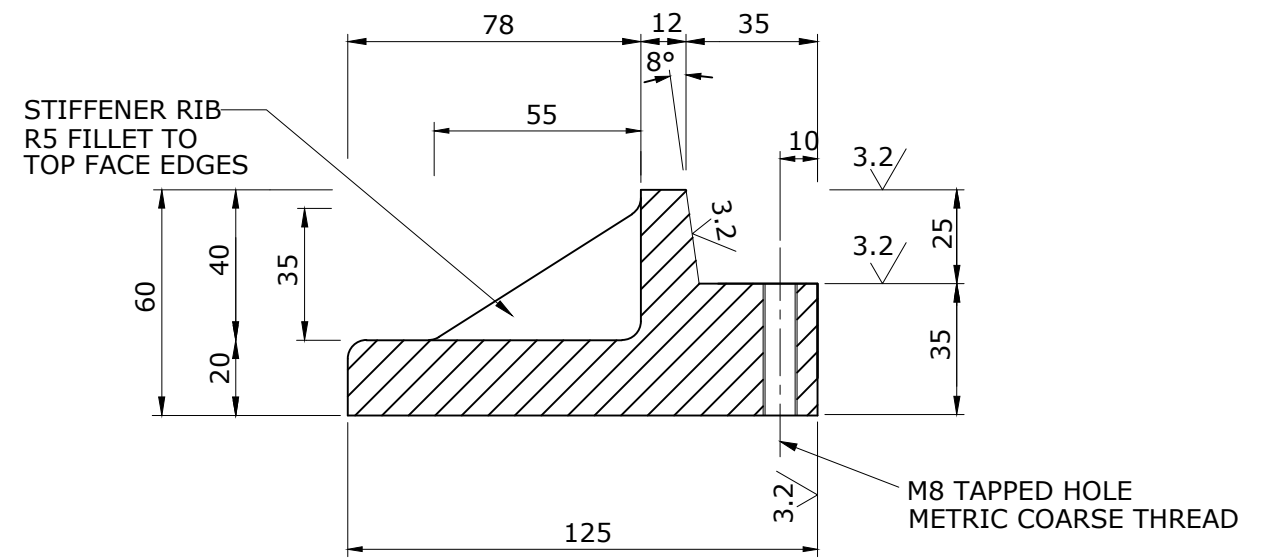
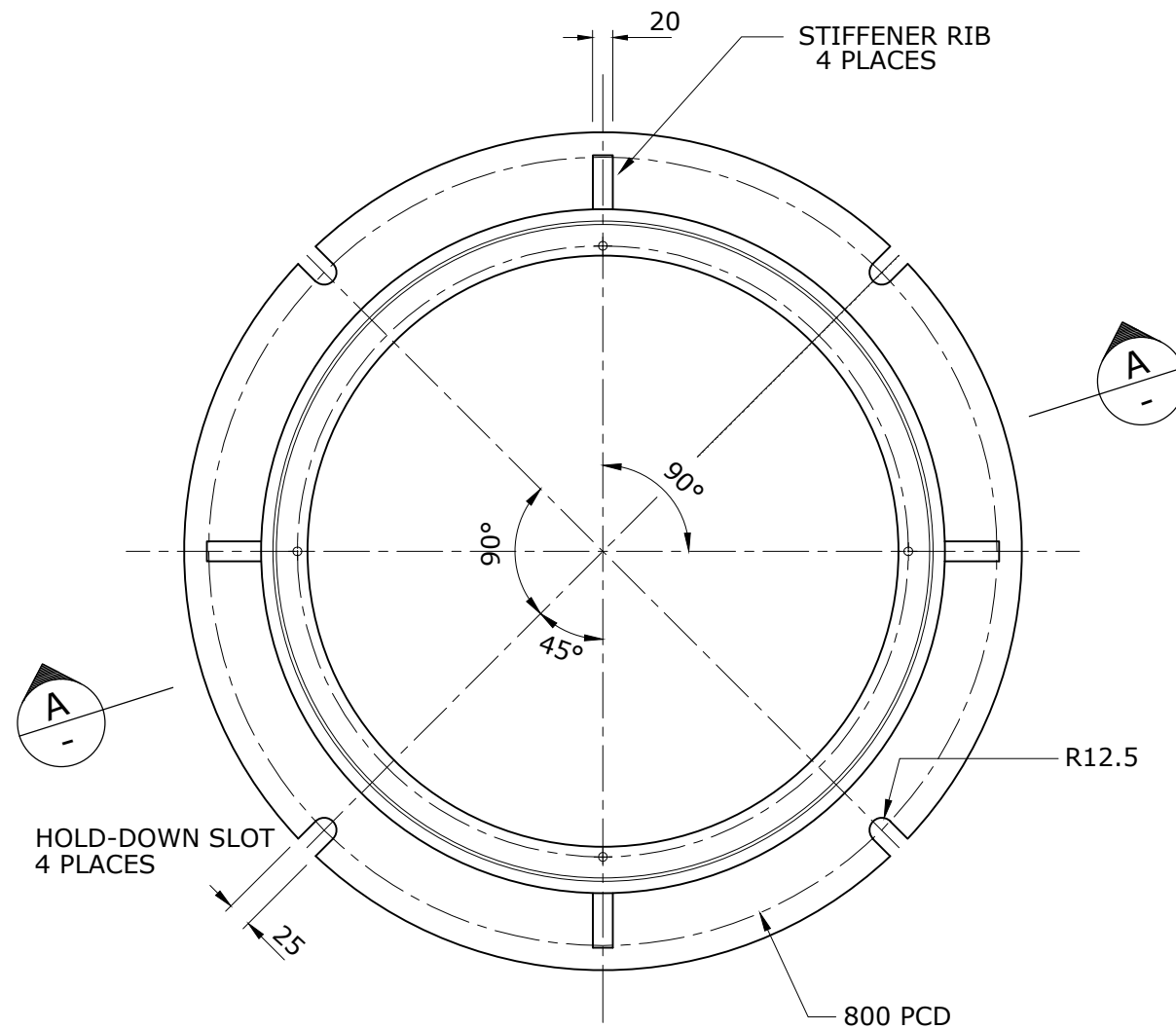
REV. No.	DATE	DESCRIPTION	AUTH.

SEQ 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

GCCC	LCC	RCC	QUU	UW
DRAWING No.				VERSION
SEQ-SEW-1308-7				A
NOT TO SCALE				ORG DATE: 1/1/2013



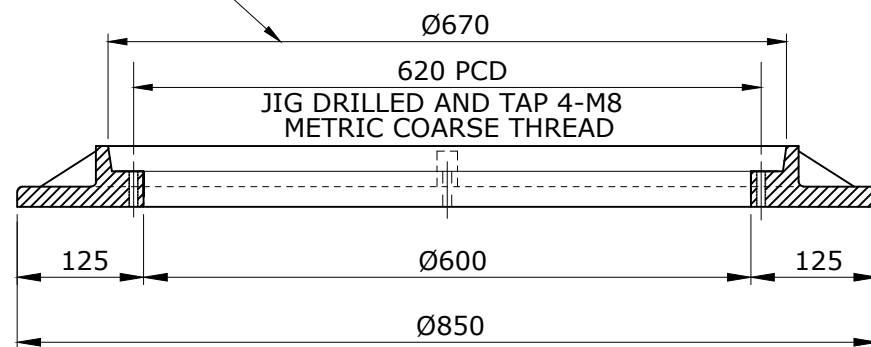
TYPICAL SECTION

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.

GAUGE SHALL BE USED TO CHECK PCD AND CLEARANCE HOLE POSITION

PLAN



SECTIONAL ELEVATION

MAINTENANCE HOLE BASE FRAME

MASS: 59.5KG

UNITYWATER AND GCCC AND LOGAN WATER AND REDLAND WATER 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 SEQ-SEW-1308-9.

REV. No.	DATE	DESCRIPTION	AUTH.

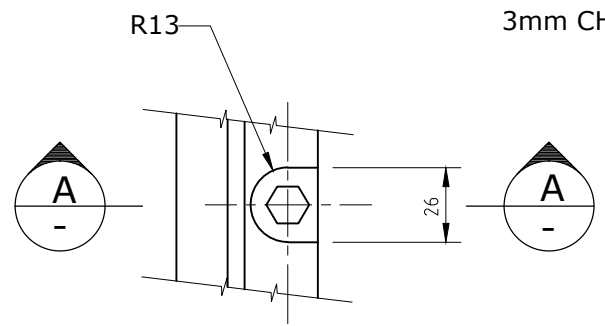
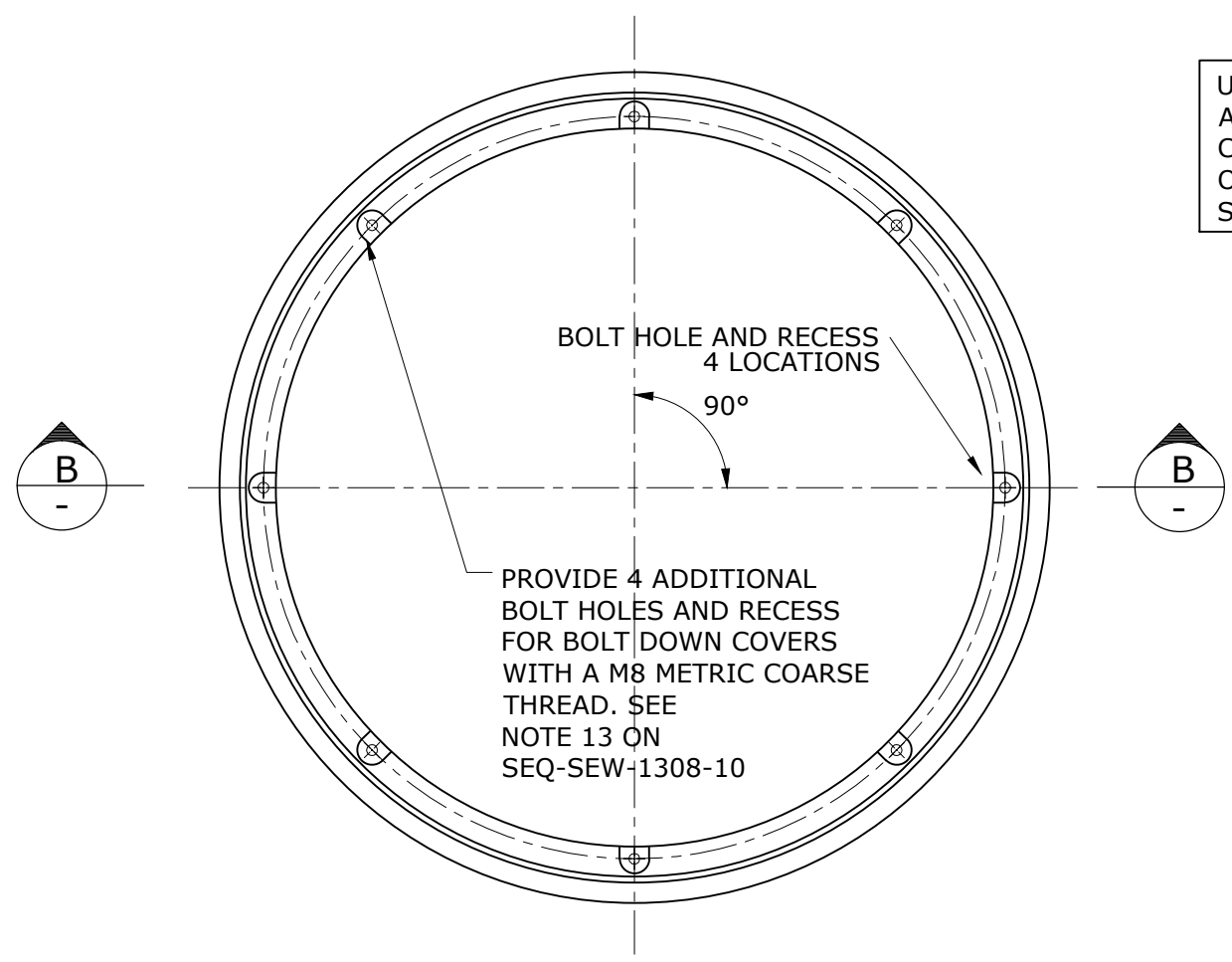
SEQ WATER SERVICE PROVIDERS

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

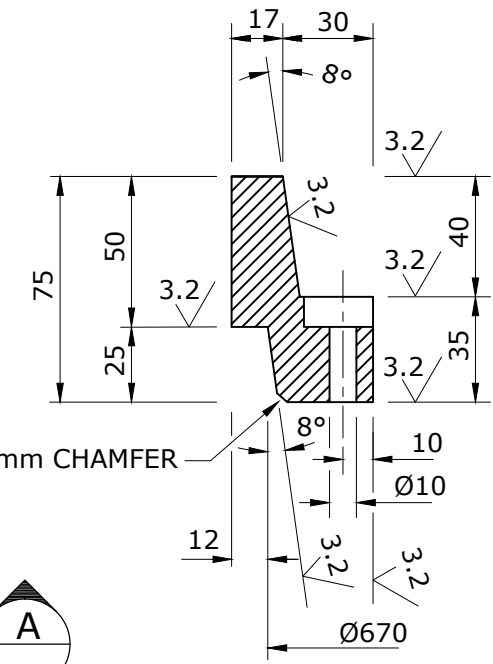
SEWERAGE STANDARD DRAWING
MAINTENANCE HOLE COVER
SEWER - CLASS D - BOLT DOWN
TYPICAL BASE FRAME DETAILS

GCCC	LCC	RCC	QUU	UW
DRAWING No.				VERSION
SEQ-SEW-1308-8				A
NOT TO SCALE				ORG DATE: 1/1/2013

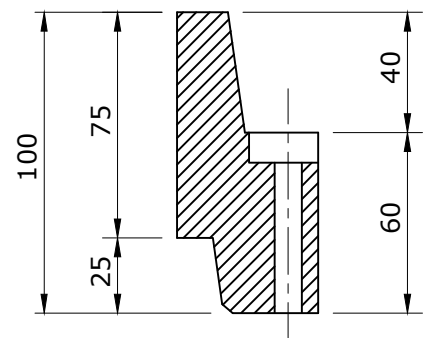
UNITYWATER AND GCCC AND LOGAN WATER AND REDLAND WATER ONLY ACCEPTS THIS CLASS D FRAME, RISER AND COVER SYSTEM OR EQUAL WITH CERTIFICATION TO AS 3996 SEE SEQ-SEW-1308-8



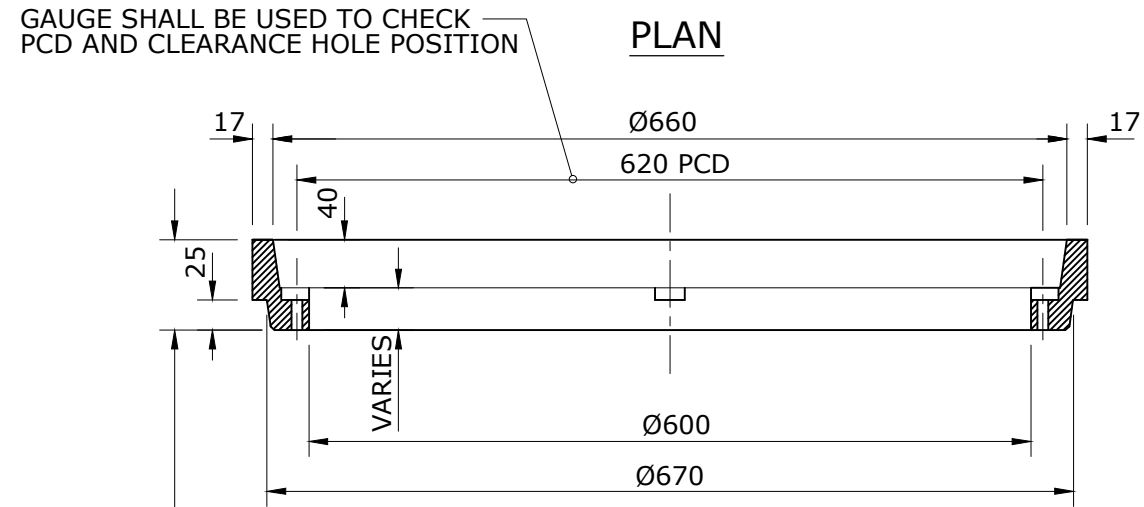
PLAN OF BOLT RECESS



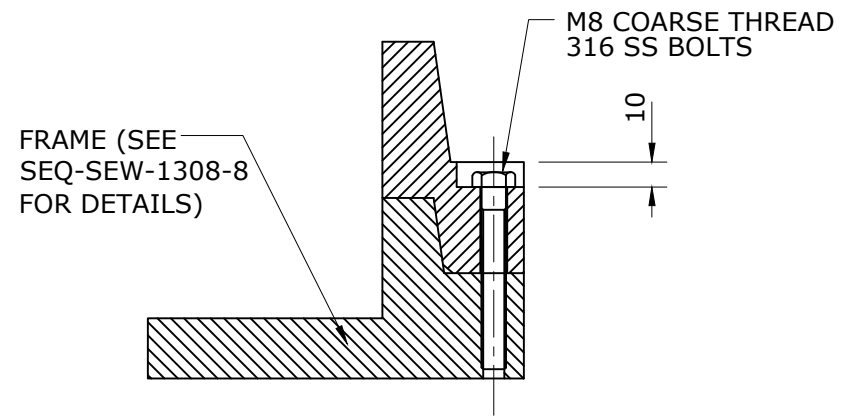
35mm RISER
MASS : 27.5KG



60mm RISER
MASS : 32KG



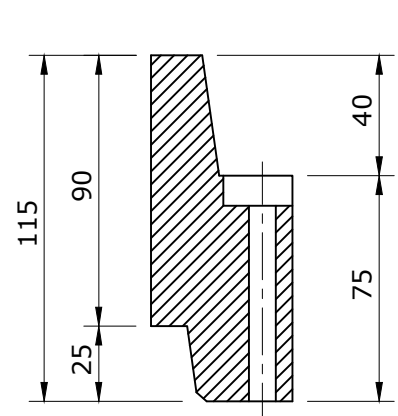
SECTION B
RISER RING



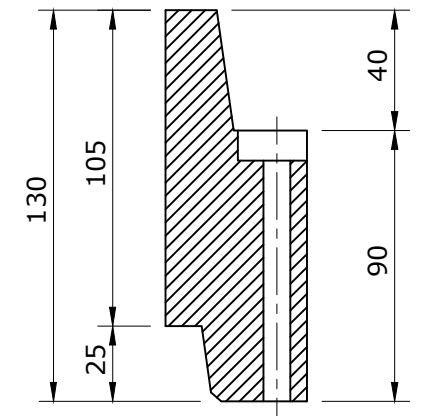
SECTION A
TYPICAL ASSEMBLY

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 SEQ-SEW-1308-10



75mm RISER
MASS : 38KG



90mm RISER
MASS : 44KG

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

REFER SEQ-SEW-1308-10 FOR NOTES

FOR USE IN TRAFFICABLE ROADWAY LOCATIONS.

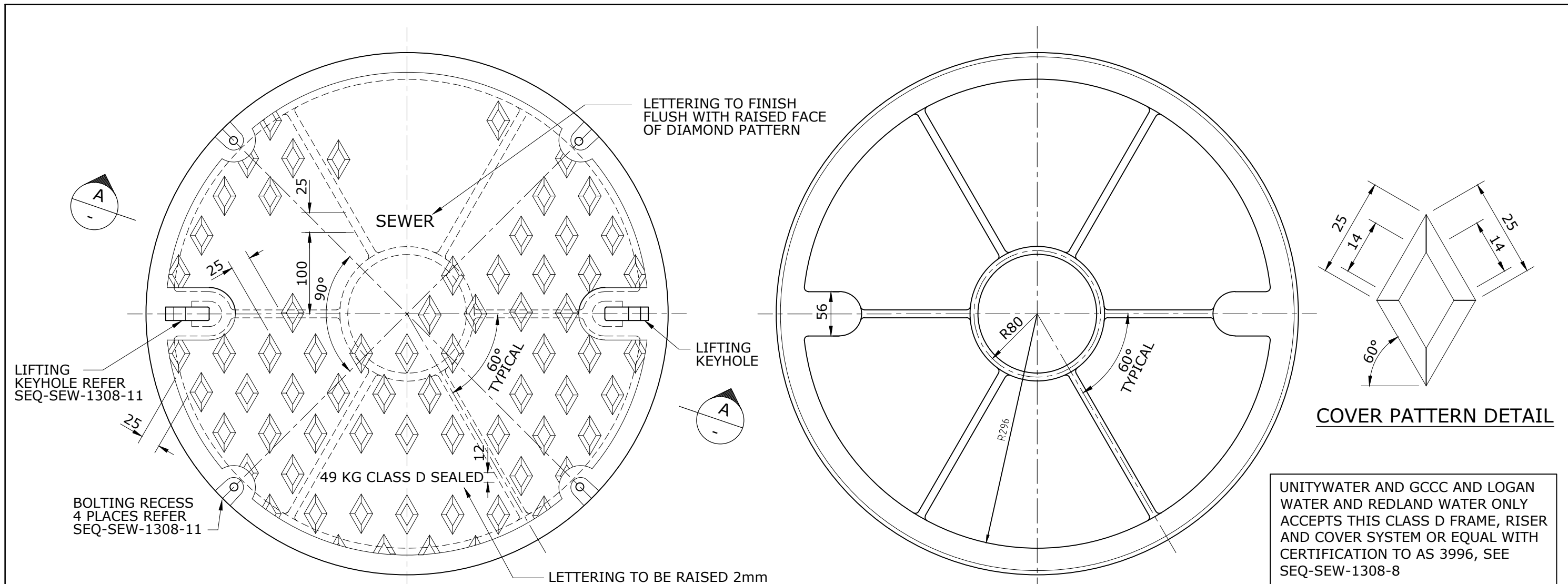
REV. No.	DATE	DESCRIPTION	AUTH.

SEQ 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

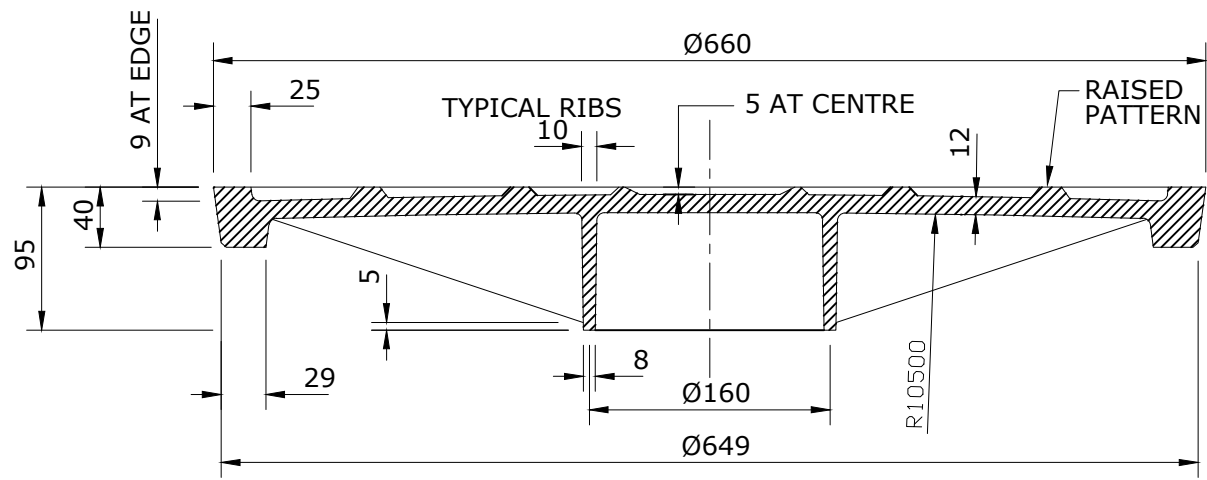
GCCC	LCC	RCC	QUU	UW
DRAWING No.				VERSION
SEQ-SEW-1308-9				A
NOT TO SCALE				ORG DATE: 1/1/2013



PLAN OF TOP

PLAN OF BOTTOM

FOR USE IN TRAFFICABLE ROADWAY LOCATIONS.



NOTES

- ALL EDGES TO BE SQUARE.
- ALL EDGES TO BE ARRISED UNLESS SHOWN OTHERWISE.
- ALL FILLETS TO BE 5mm RADIUS UNLESS SHOWN OTHERWISE.
- CASTING TO BE FREE OF BURRS AND PITS.
- MACHINE SURFACE SYMBOL 3.2
- MATERIAL: DUCTILE CAST IRON (AS1831)
TENSILE STRENGTH: ISO 1083/JS/600-3/S
HARDNESS: 190 - 270 (HB)
ULTIMATE DESIGN LOAD: 210 kN (AS3996)
- 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
- 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.
- ALL NON MACHINED SURFACES TO BE BITUMINOUS COATED IN ACCORDANCE WITH AS 3750-4.
- COVERS, FRAMES AND 60mm RISER RINGS TO BE SUPPLIED ASSEMBLED.
- ALL WORK SHALL BE IN ACCORDANCE WITH CURRENT QUEENSLAND CODE, SPECIFICATIONS AND STANDARD DRAWINGS.
- CERTIFICATION OF COMPLIANCE TO A.S. 3996 TO BE SUPPLIED FOR EACH CASTING.
- 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.

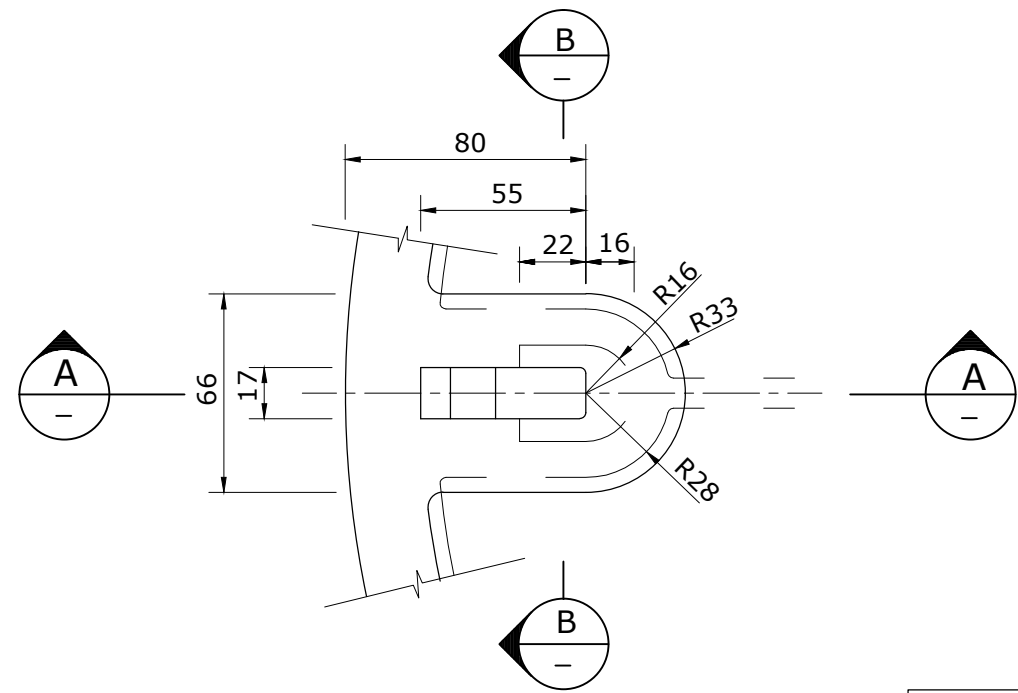
REV. No.	DATE	DESCRIPTION	AUTH.

SEQ WATER SERVICE PROVIDERS

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

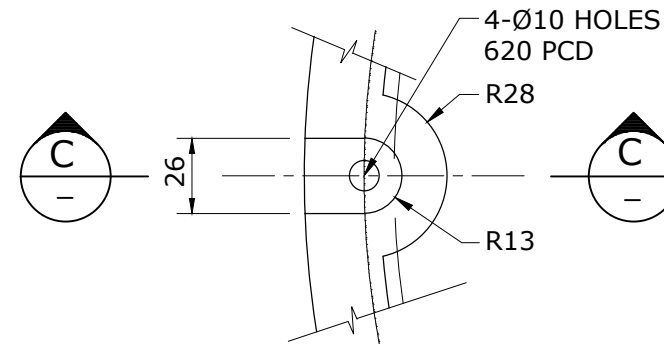
SEWERAGE STANDARD DRAWING
MAINTENANCE HOLE COVER
SEWER - CLASS D - BOLT DOWN
TYPICAL COVER DETAILS

GCCC	LCC	RCC	QUU	UW
DRAWING No.				VERSION
SEQ-SEW-1308-10				A
NOT TO SCALE				ORG DATE: 1/1/2013

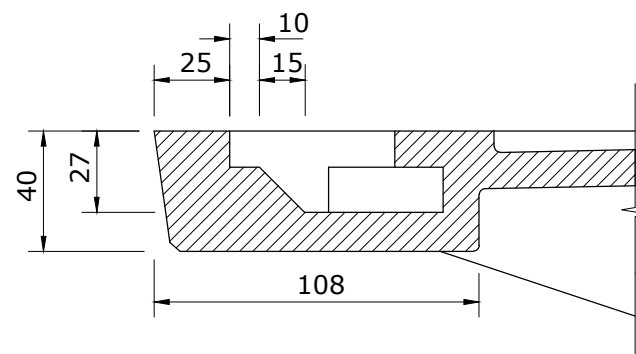


PLAN

UNITYWATER AND GCCC AND LOGAN WATER AND REDLAND WATER ONLY ACCEPTS THIS CLASS D FRAME, RISER AND COVER SYSTEM OR EQUAL WITH CERTIFICATION TO AS 3996 SEE SEQ-SEW-1308-8

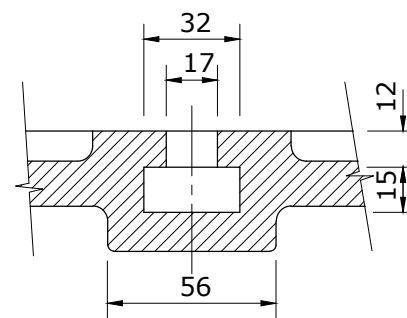


PLAN

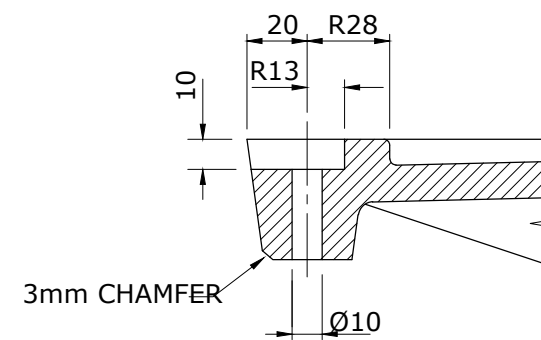


SECTION A

KEYHOLE DETAIL

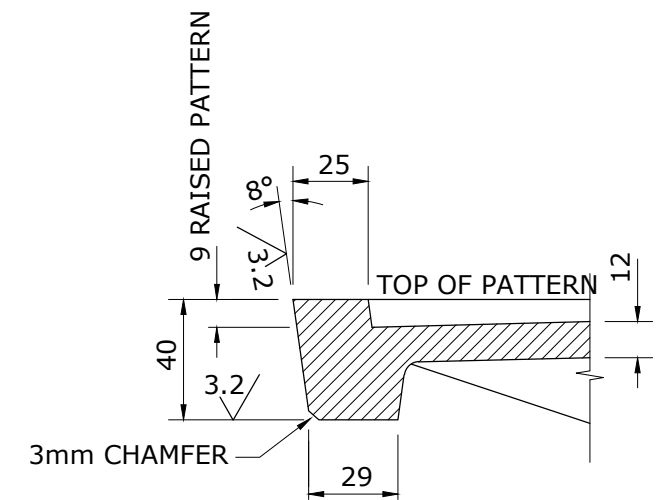


SECTION B



SECTION C

BOLT RECESS DETAIL



TYPICAL EDGE DETAIL

REFER SEQ-SEW-1308-10 FOR NOTES

FOR USE IN TRAFFICABLE ROADWAY LOCATIONS.

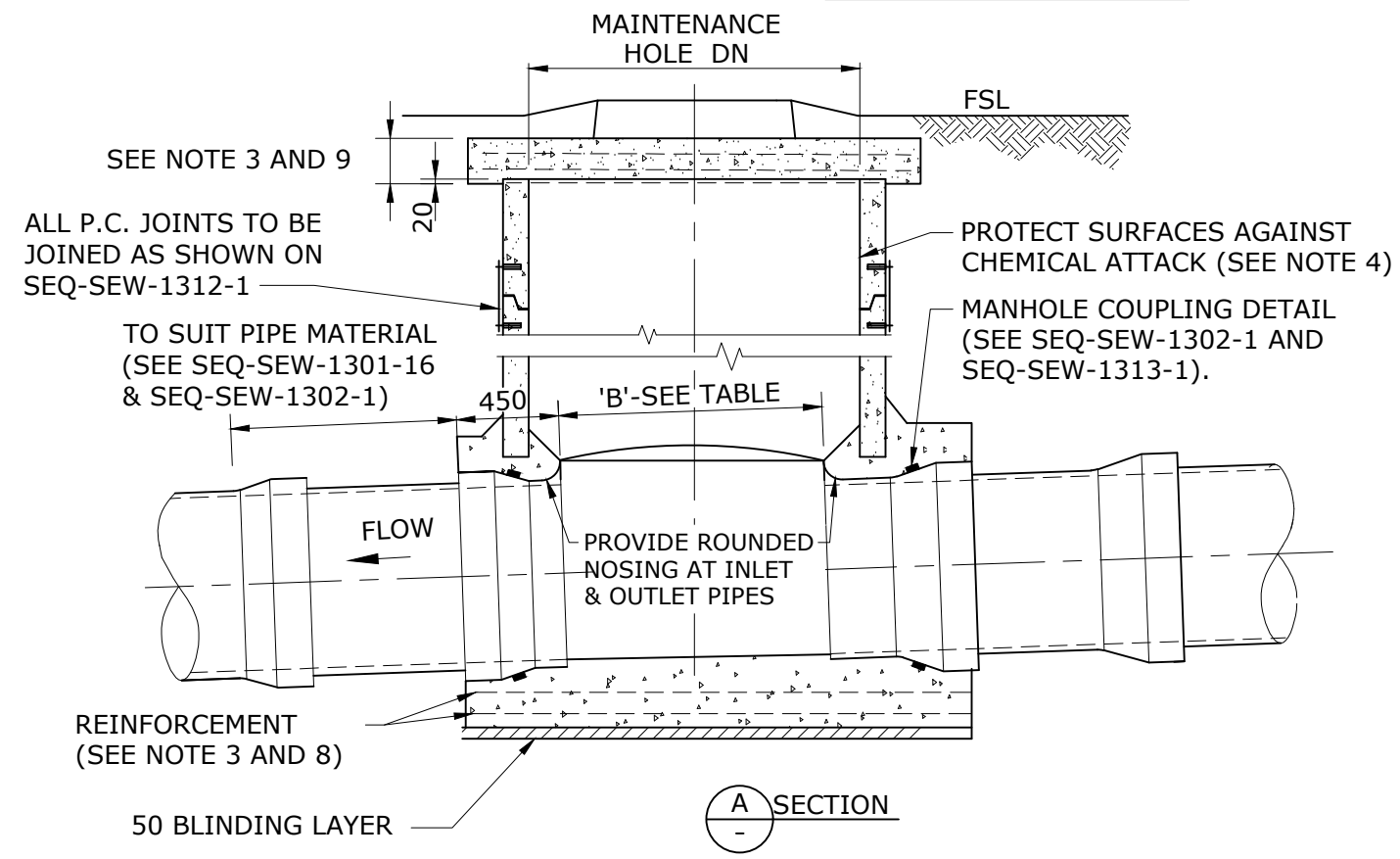
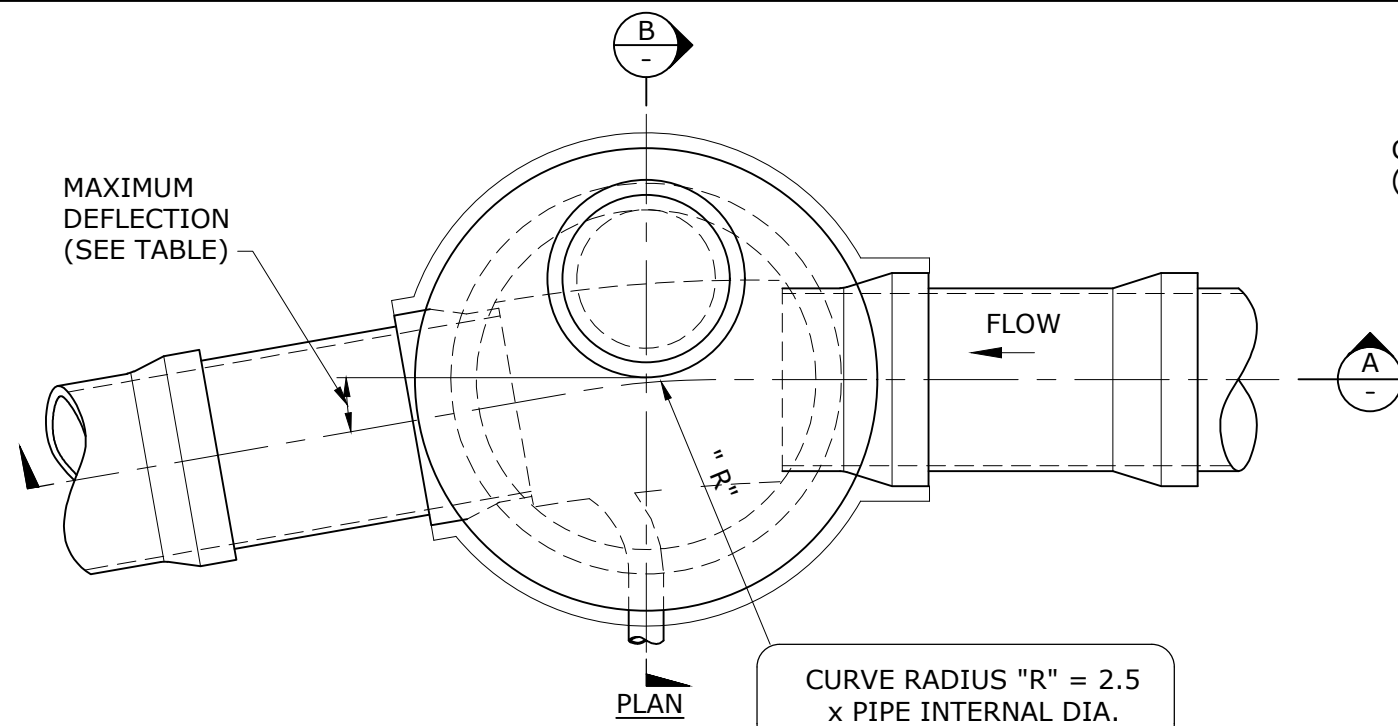
REV. No.	DATE	DESCRIPTION	AUTH.

SEQ WATER SERVICE PROVIDERS

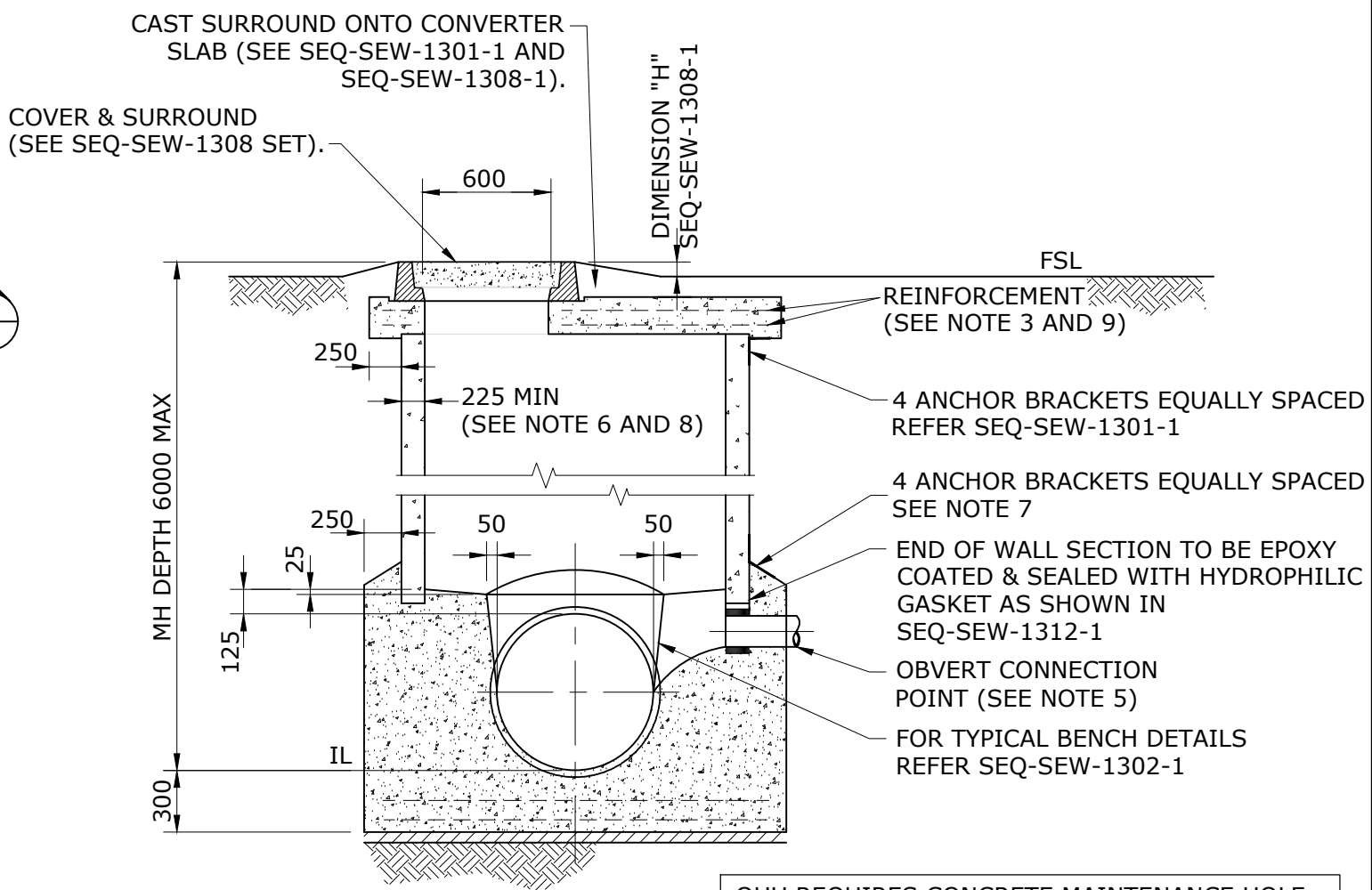
WORK PRACTICES MUST COMPLY WITH ALL APPLICABLE OCCUPATIONAL HEALTH & SAFETY LEGISLATION

SEWERAGE STANDARD DRAWING
 MAINTENANCE HOLE COVER
 SEWER - CLASS D - BOLT DOWN
 TYPICAL COVER DETAILS

GCCC	LCC	RCC	QUU	UW
DRAWING No.				VERSION
SEQ-SEW-1308-11				A
NOT TO SCALE				ORG DATE: 1/1/2013



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



QUU REQUIRES CONCRETE MAINTENANCE HOLE TO BE CAST IN-SITU. REFER SEQ-SEW-1101-4 TO SEQ-SEW-1101-6 AND SEQ-SEW-1301 SET

CoGC, LCC, RCC AND UW REQUIRE DESIGN INPUT BY RPEQ FOR TRAFFIC LOADS, STRUCTURAL DESIGN AND NATIVE SOIL CONDITIONS, REFER NOTES 3 AND 6.

- NOTES:**
- ALL DIMENSIONS IN MILLIMETRES.
 - CONCRETE TO BE SPECIAL CLASS SCC40 MIN.
 - SLAB AND BASE REINFORCEMENT AS PER STRUCTURAL DESIGN WITH 65 MINIMUM COVER.
 - 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 SEQ-SEW-1302-1.
 - ALTERNATIVELY INCORPORATE VERTICAL DROP FOR HIGH LEVEL SEWERS SEE SEQ-SEW-1306-1.
 - WALL THICKNESS TO BE 250 MIN WHERE LOCATED IN AGGRESSIVE SOILS, HIGH WATER TABLE AND SALINE ENVIRONMENTS. PROVIDE 0.2 THICK SOLVENT FREE EPOXY COATING TO OUTSIDE FACE OF WALLS.
 - BOTTOM ANCHOR BRACKET 12x75 SS316 PLATE 300 LONG WITH Ø18 BOLT HOLES 40 FROM ENDS AND FIXED AS SHOWN ON SEQ-SEW-1301-1 AND SEQ-SEW-1308-1. BRACKET ANGLE TO SUIT BUILT FORM OF PRECAST WALL AND CAST BASE JOINT.
 - FOR QUU AND UW, REFER TO SEQ-SEW-1309-2 AND SEQ-SEW-1309-3 FOR STRUCTURAL MH GENERAL ARRANGEMENT AND MH REINFORCEMENT DETAILS.
 - FOR QUU AND UW, REFER TO SEQ-SEW-1309-4 FOR TOP SLAB REINFORCEMENT REQUIREMENTS.

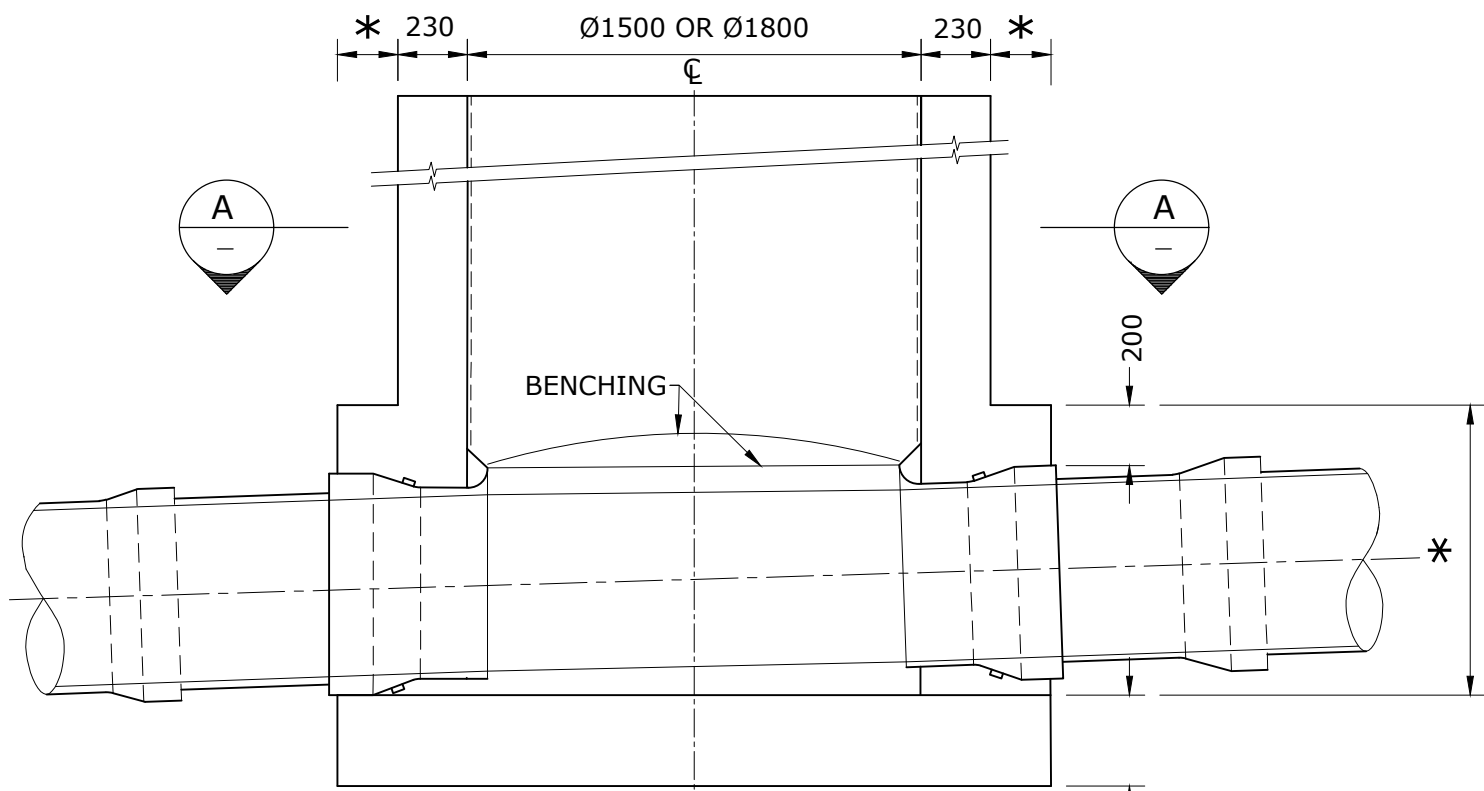
REV. No.	DATE	DESCRIPTION	AUTH.
C	27/05/19	AMENDED REINFORCEMENT REQUIREMENTS AND UPDATED NOTES	
B	20/08/15	AMENDED NOTES 2 AND 6, AMENDED MIN WALL THICKNESS IN SECTION B	

SEQ WATER SERVICE PROVIDERS

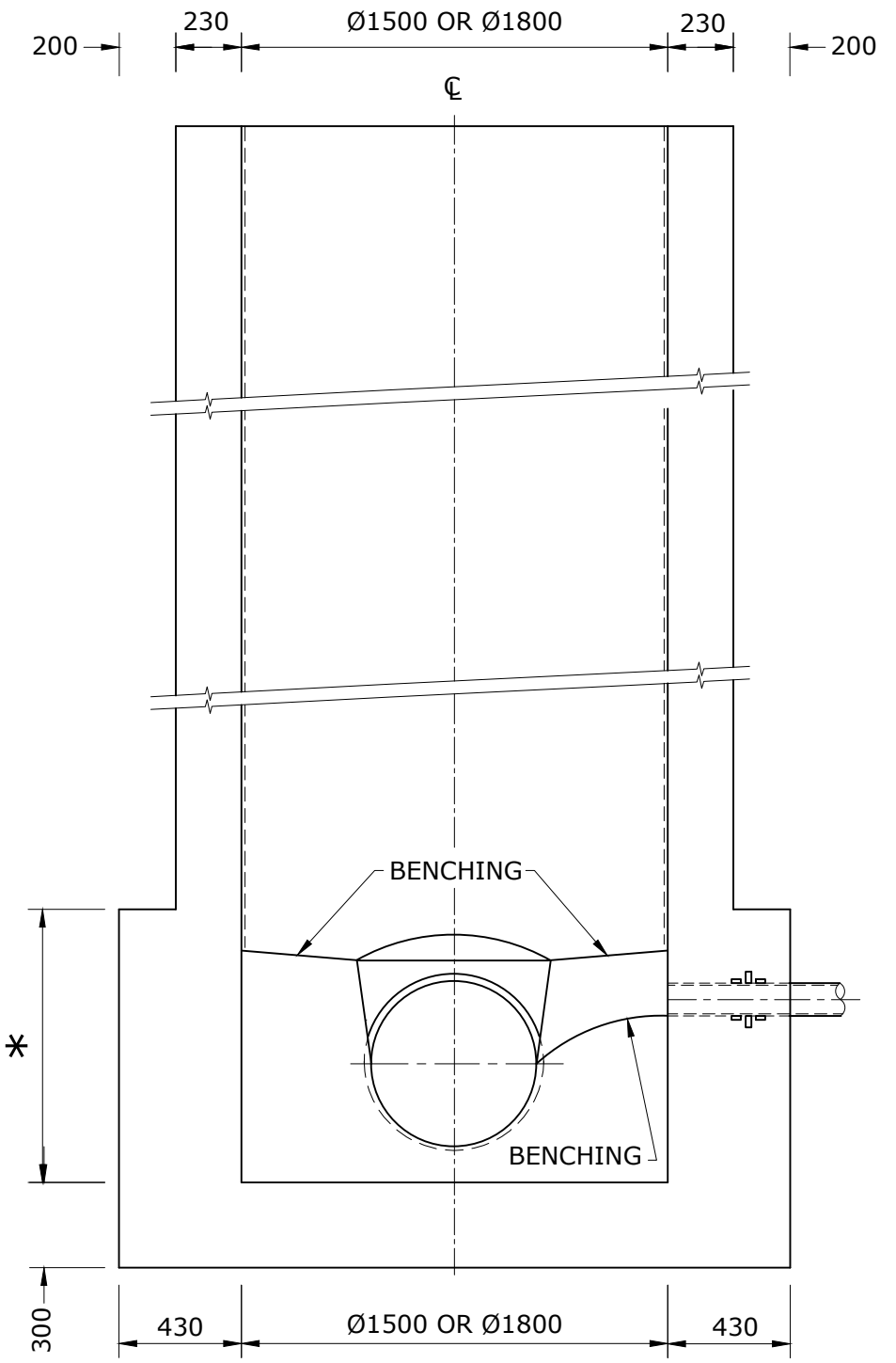
WORK PRACTICES MUST COMPLY WITH ALL APPLICABLE OCCUPATIONAL HEALTH & SAFETY LEGISLATION

SEWERAGE STANDARD DRAWING
"Y" TYPE MAINTENANCE HOLE
SEWERS DN600 AND DN750
TYPICAL ARRANGEMENT

CoGC	LCC	RCC	QUU	UW
DRAWING No.				VERSION
SEQ-SEW-1309-1				C
NOT TO SCALE				ORG DATE: 1/1/2013

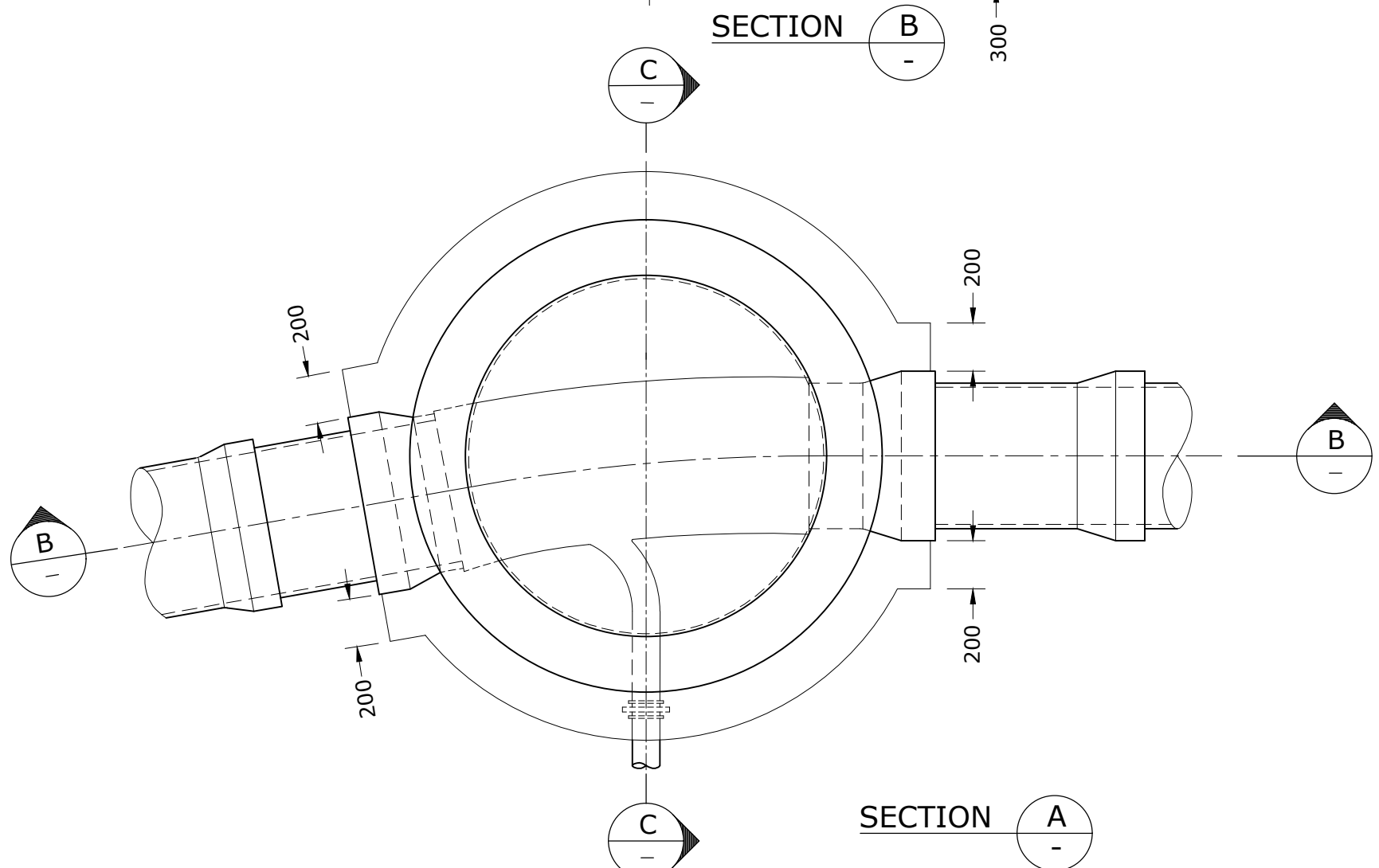


* TO BE DETERMINED FROM PIPE DESIGN



NOTE

- DESIGN TO CONSIDER TRAFFIC LOADS, STRUCTURAL STEEL DESIGN AND NATIVE SOIL CONDITIONS, AND BE CERTIFIED BY AN RPEQ.



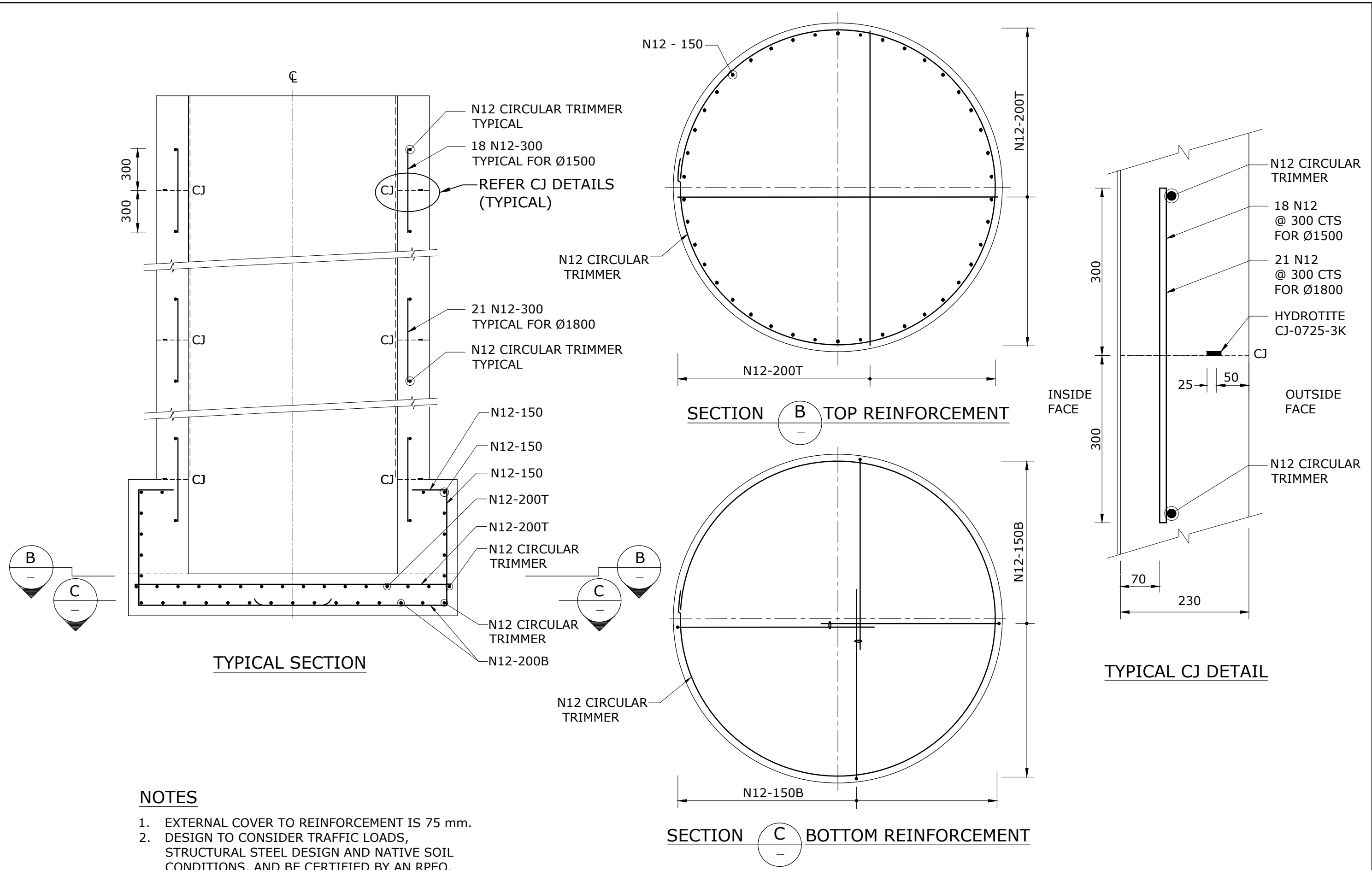
REV. No.	DATE	DESCRIPTION	AUTH.

SEQ WATER SERVICE PROVIDERS

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

SEWERAGE STANDARD DRAWING
 'Y' TYPE MAINTENANCE HOLE
 DN1500 AND DN1800
 STRUCTURAL G.A. DETAILS

CoC	LCC	RCC	QUU	UW
DRAWING No.				VERSION
SEQ-SEW-1309-2				A
NOT TO SCALE				ORG DATE: 18/06/2019



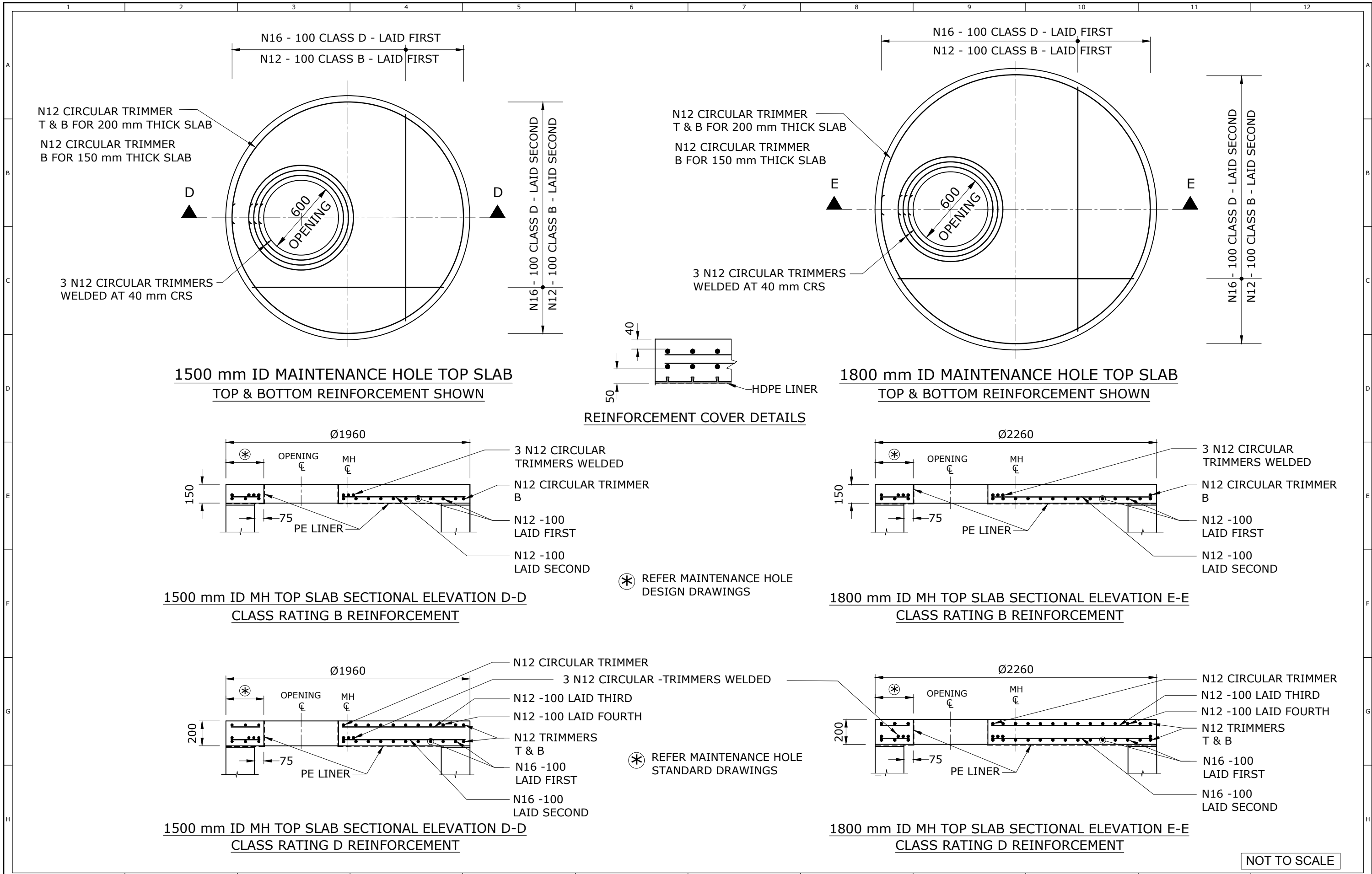
REV. No.	DATE	DESCRIPTION	AUTH.

SEQ WATER SERVICE PROVIDERS

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

SEWERAGE STANDARD DRAWING
 'Y' TYPE
 TYPICAL MAINTENANCE HOLE
 DN1500 AND DN1800
 STRUCTURAL REINFORCEMENT DETAILS

CoC	LCC	RCC	QUU	UW
DRAWING No.				VERSION
SEQ-SEW-1309-3				A
NOT TO SCALE				ORG DATE: 18/06/2019



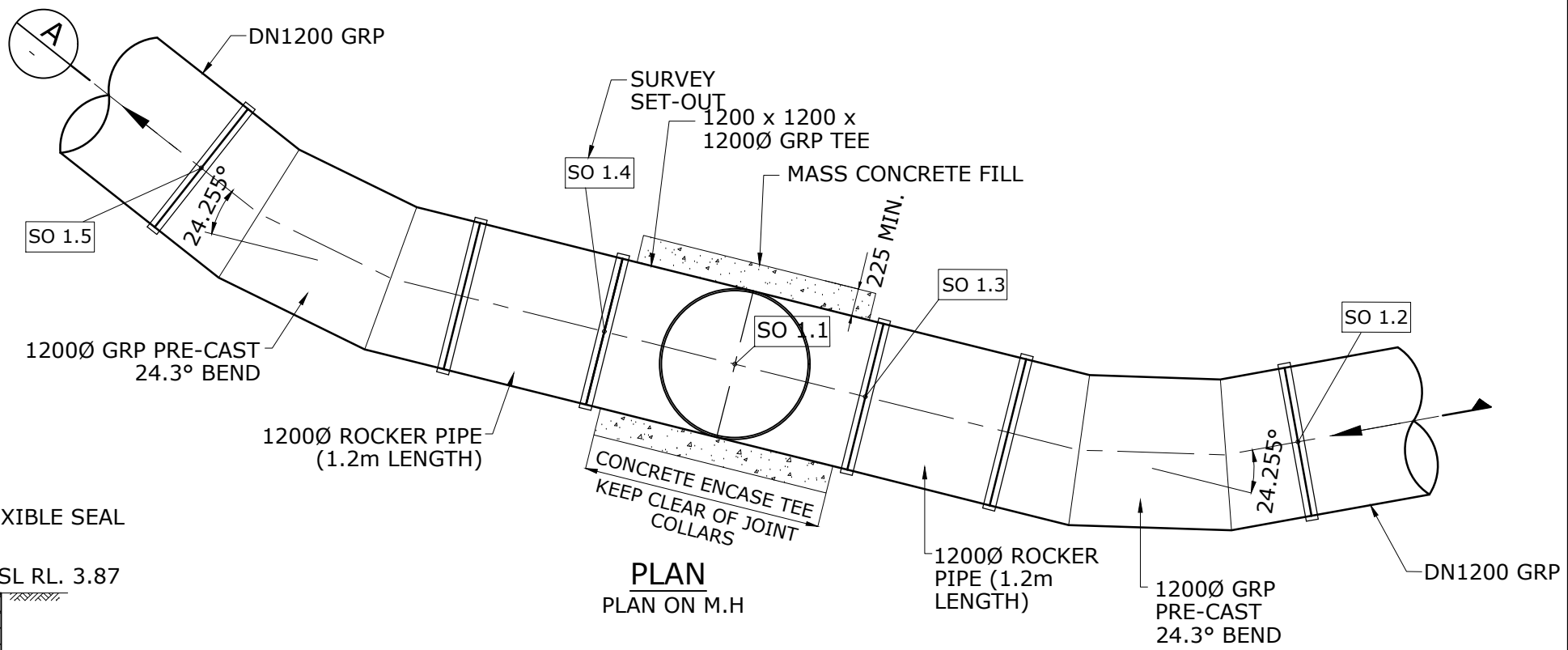
REV. No.	DATE	DESCRIPTION	AUTH.

SEQ WATER SERVICE PROVIDERS

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

SEWERAGE STANDARD DRAWING
 'Y' TYPE MAINTENANCE HOLE
 DN1500 AND DN1800
 TOP SLAB
 REINFORCEMENT DETAILS

CoGC	LEC	RCC	QUU	UW
DRAWING No.				VERSION
SEQ-SEW-1309-4				A
NOT TO SCALE				ORG DATE: 18/06/2019



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

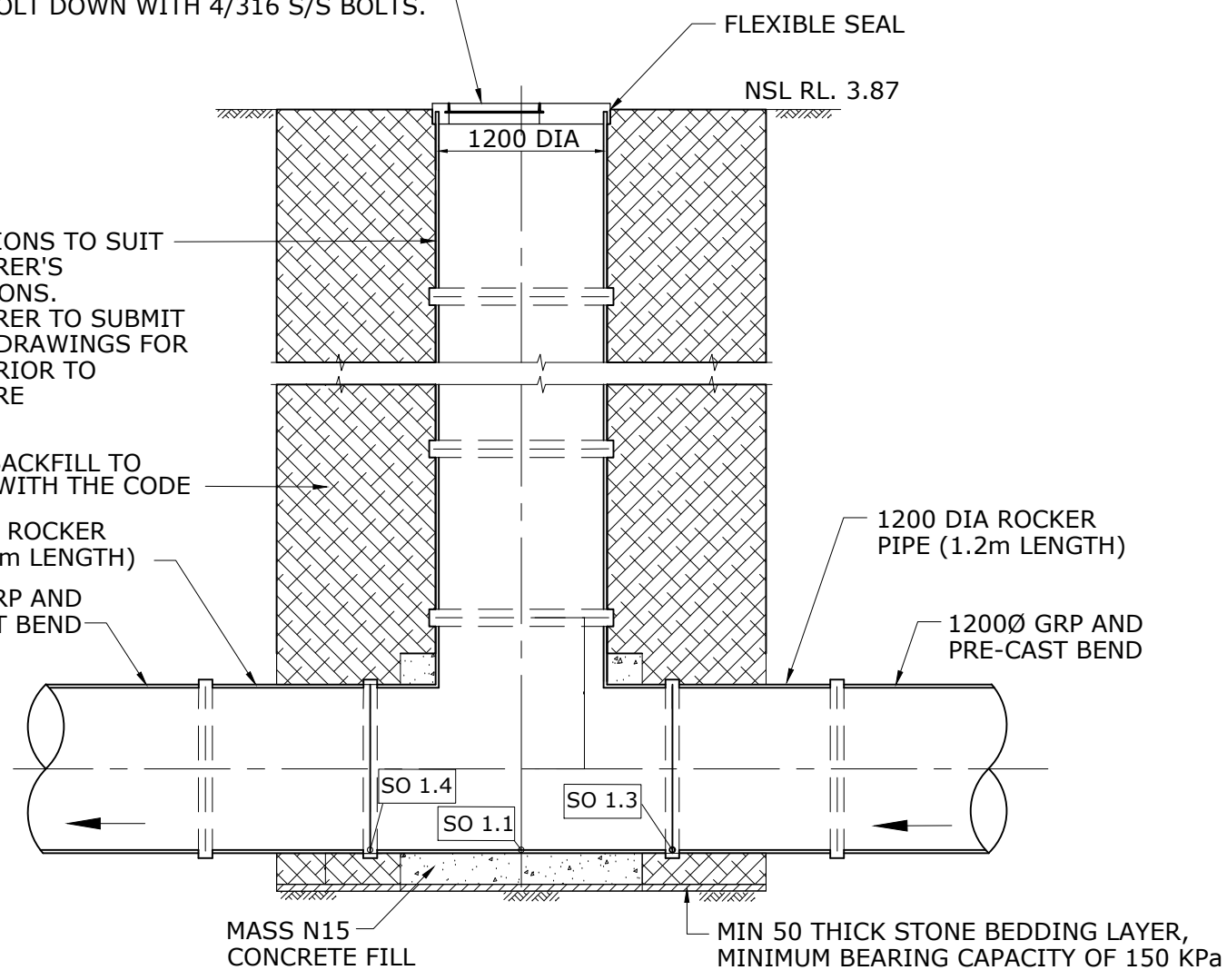
USE IN UNITYWATER AREAS SUBJECT TO SPECIFIC APPROVAL

PRE-CAST CONCRETE COVER SLAB WITH CLASS B NON-CORROSIVE BOLT DOWN LID. BOLT DOWN WITH 4/316 S/S BOLTS.

SHAFT SECTIONS TO SUIT MANUFACTURER'S SPECIFICATIONS. MANUFACTURER TO SUBMIT WORKSHOP DRAWINGS FOR APPROVAL PRIOR TO MANUFACTURE

SELECT BACKFILL TO COMPLY WITH THE CODE

1200 DIA ROCKER PIPE (1.2m LENGTH)
1200Ø GRP AND PRE-CAST BEND



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 SEQ-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.

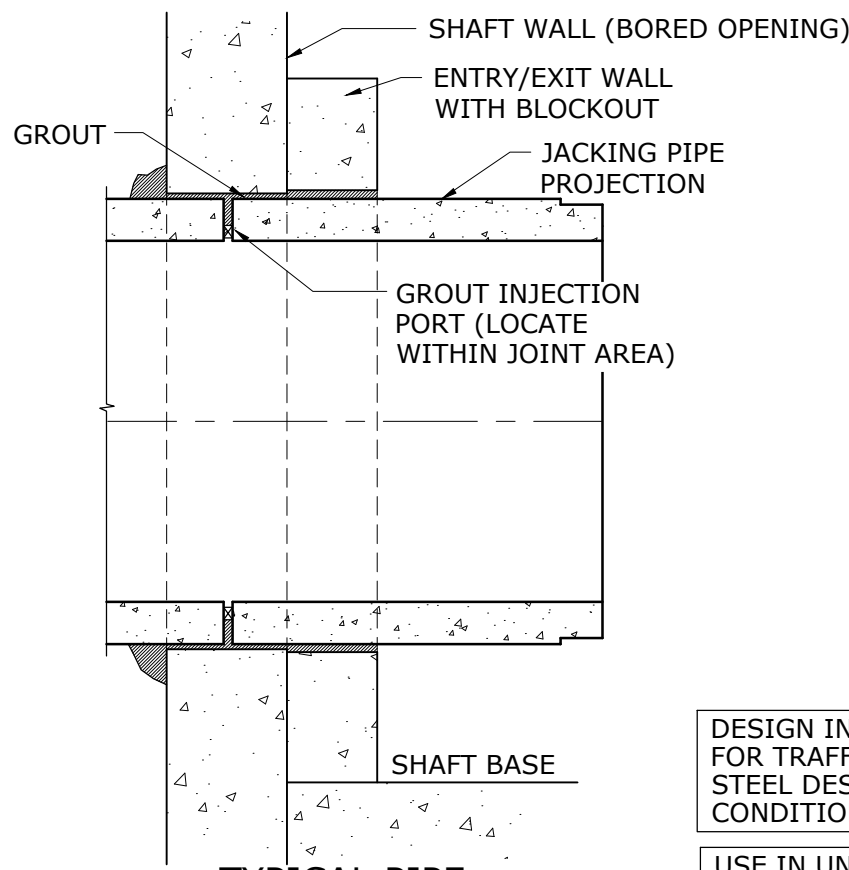
REV. No.	DATE	DESCRIPTION	AUTH.
B	7/06/19	SPECIFIED NON-CORROSIVE MH LIDS AND DWG NOT APPLICABLE TO QUU	

SEQ WATER SERVICE PROVIDERS

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

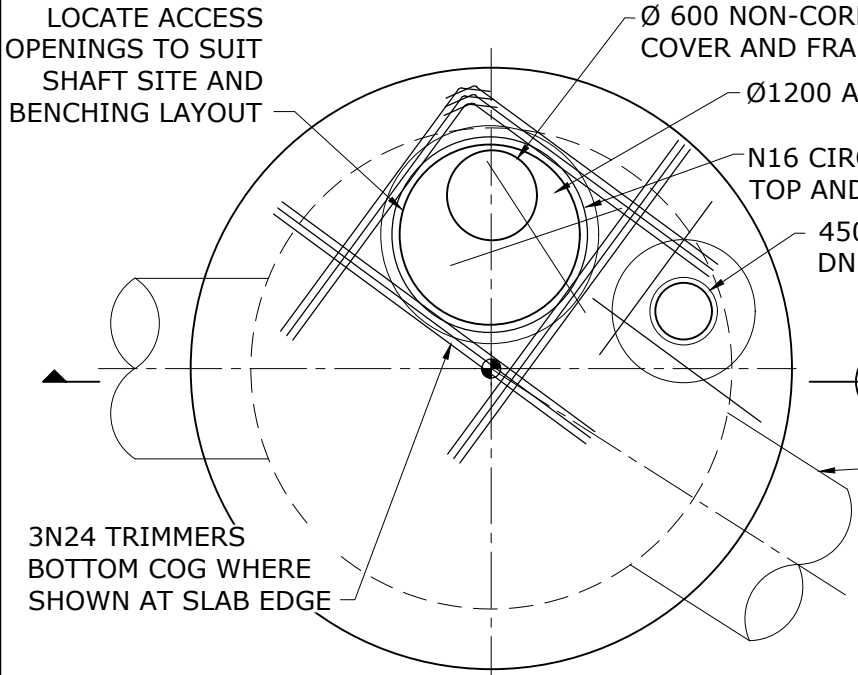
SEWERAGE STANDARD DRAWING
"Z1" TYPE NON-TRAFFICABLE
TYPICAL GRP MH OPTION DN1200
AND LARGER SEWERS

CoGC	LCC	RCC	QUU	UW
DRAWING No.				VERSION
SEQ-SEW-1310-1				B
NOT TO SCALE				ORG DATE: 1/1/2013



TYPICAL PIPE PENETRATION DETAIL

DESIGN INPUT BY RPEQ REQUIRED FOR TRAFFIC LOADS, STRUCTURAL STEEL DESIGN AND NATIVE SOIL CONDITIONS, REFER NOTES.
 USE IN UNITYWATER AREA SUBJECT TO SPECIFIC APPROVAL



PLAN - RECEPTION SHAFT ROOF SLAB
 MAIN REINFORCEMENT OMITTED FOR CLARITY

Ø1200 MANHOLE EXTENSION AND COVER, REFER EITHER SEQ-SEW-1300-1 OR SEQ-SEW-1308-1.

INCREASE DEPTH WHERE REQUIRED TO ENABLE REINSTATEMENT OF EXISTING SERVICES TO ORIGINAL LEVEL

3-N24 BTM.
 1-N24 RING BTM.
 3-N24 BTM.

N12-150 E.W. TOP

REFER NOTE 2.

REFER TO NOTE 4.

A SECTION
 - N.T.S

INVERT LEVEL OF TUNNEL BENCH AS REQUIRED AFTER TUNNELS COMPLETED

HYDROTITE STRIP (CJ1020-2K-AD) OR APPROVED EQUIVALENT

50x6 S/S CLAMP RING 2-M16 BOLTS
 Ø450 COVER AND CONC SURROUND FOR ATTACHMENT OF ODOUR CONTROL.
 COMPRESSIBLE PACKER AROUND PIPE

DN375 PVC VENT RISER 6m LONG
 TEMPORARY SHORING AS REQUIRED FOR CONSTRUCTION
 NITOSEAL OF SIMILAR IN 15 WIDE x 10 DEEP REBATE AROUND PIPE

GROUT FILL BLOCKOUT
 2 ADDITIONAL SETS OF WALL HORIZONTAL BARS TO PERIMETER IN ROOF SLAB TYPICAL
 N24-150 E.W. BTM.

S/S BRACKET

REFER NOTE 8

PROVIDE AREA OF GRP REINFORCING TO 300 CLEAR OF THE DESIGNATED PIPE OD AT NOMINATED DIVERSION SEWER ENTRY POINTS

250mm CENTREBULB WATERSTOP CONTINUOUS (WELDED JOINTS) TYPICAL

FOR WALL REINF. REFER TABLE TYPICAL

N12 'U' BARS, SPACING TO MATCH VERTICAL REINFORCEMENT SPACING TYPICAL U.N.O.

2 ADDITIONAL BARS CONTINUOUS TO PERIMETER IN BASE SLAB TYPICAL

N12-200 E.W. BTM. N20-150 E.W. TOP

WALL THICKNESS AND REINFORCING		
DEPTH TO INVERT	WALL THICKNESS	WALL REINFORCING
'D'	'T'	
<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 SPECIAL CLASS SCC40 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 VALVES ARE NOT REQUIRED. FOR INLET MANHOLE WITH LARGE SEWER LOCATED IMMEDIATELY UP STREAM OF PUMP STATION, SEE SEQ-SPs FOR REQUIREMENT.
5. SHAFT DETAILS ARE SUBJECT TO CONFIRMATION BY SUB-CONTRACTOR AND APPROVAL BY SERVICE PROVIDER PRIOR TO WORKS COMMENCING.
6. FOR BENCHING DETAILS REFER SEQ-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. DIMENSIONS ARE IN MILLIMETRES UNLESS SHOWN OTHERWISE.

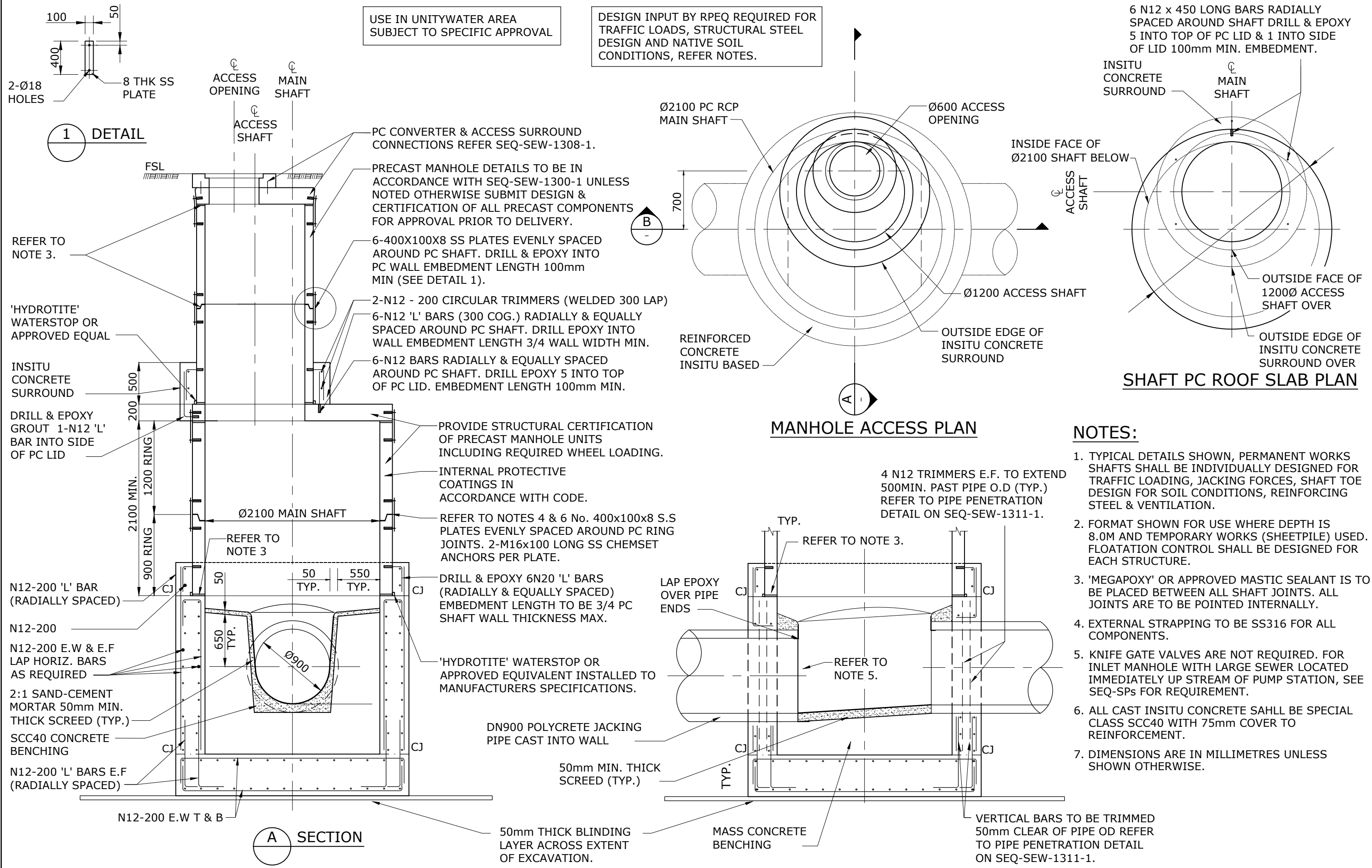
REV. No.	DATE	DESCRIPTION	AUTH.
B	24/04/19	NON-CORROSIVE LIDS; DN450 COVER; KNIFE GATE VALVE; NOTES 2, 4, 9	

SEQ 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

CoGC	LCC	RCC	QUU	UW
DRAWING No.				VERSION
SEQ-SEW-1311-1				B
NOT TO SCALE				ORG DATE: 1/1/2013



USE IN UNITYWATER AREA
SUBJECT TO SPECIFIC APPROVAL

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

6 N12 x 450 LONG BARS RADIALLY
SPACED AROUND SHAFT DRILL & EPOXY
5 INTO TOP OF PC LID & 1 INTO SIDE
OF LID 100mm MIN. EMBEDMENT.

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 VALVES ARE NOT REQUIRED. FOR INLET MANHOLE WITH LARGE SEWER LOCATED IMMEDIATELY UP STREAM OF PUMP STATION, SEE SEQ-SPs FOR REQUIREMENT.
6. ALL CAST INSITU CONCRETE SHALL BE SPECIAL CLASS SCC40 WITH 75mm COVER TO REINFORCEMENT.
7. DIMENSIONS ARE IN MILLIMETRES UNLESS SHOWN OTHERWISE.

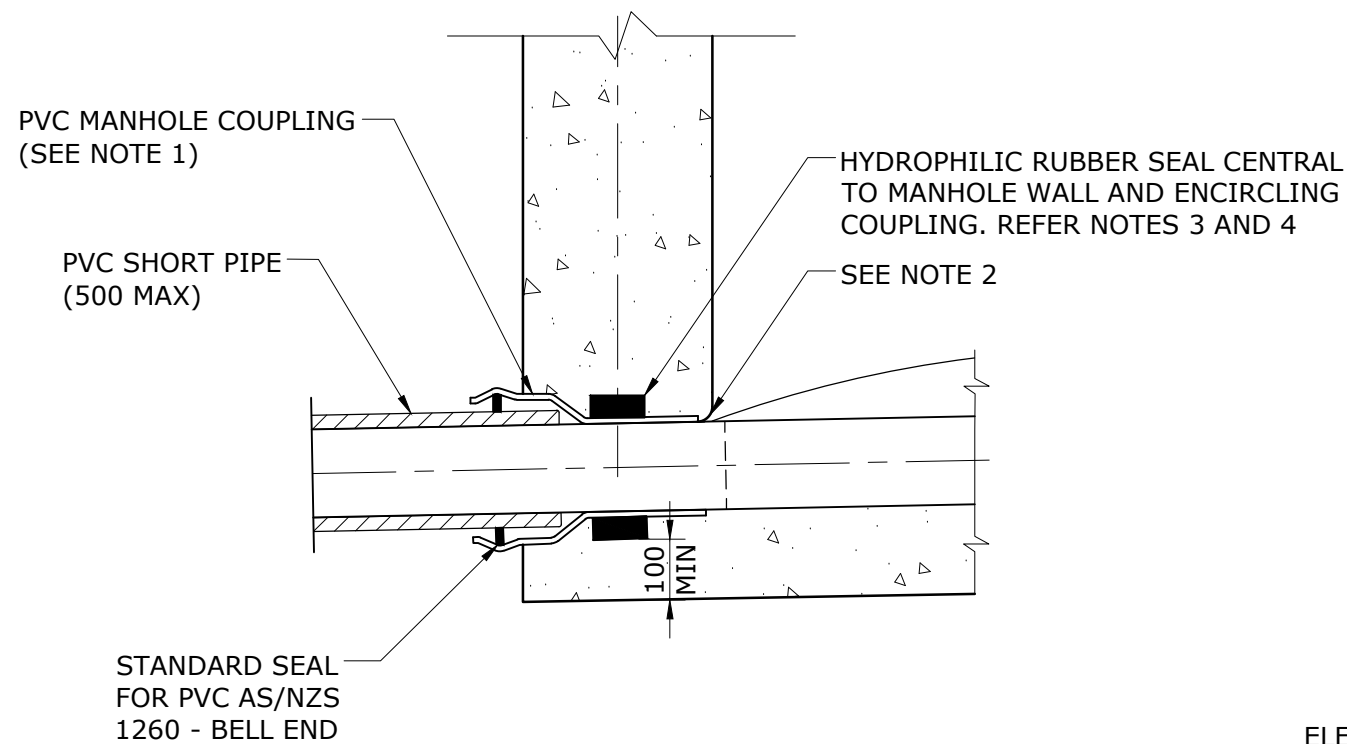
REV. No.	DATE	DESCRIPTION	AUTH.
B	24/4/19	CONCRETE SCC40; KNIFE GATE VALVE; NOTES 5 & 6	

**SEQ WATER
SERVICE PROVIDERS**

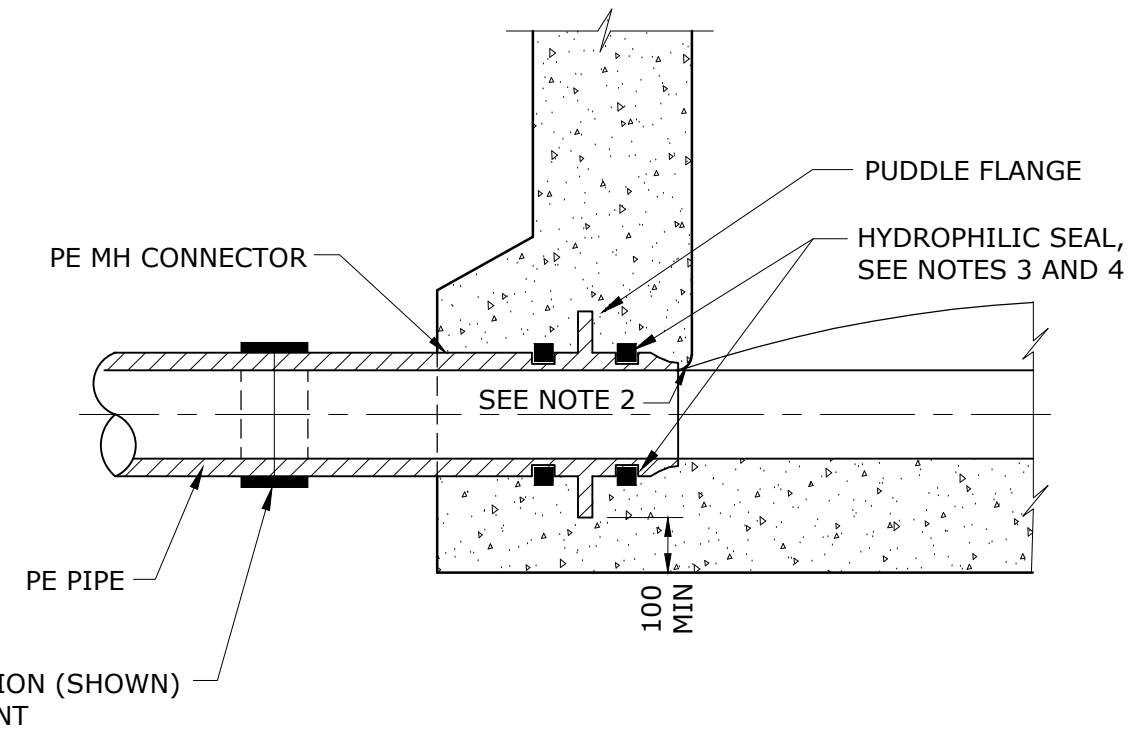
WORK PRACTICES MUST COMPLY WITH ALL APPLICABLE
OCCUPATIONAL HEALTH & SAFETY LEGISLATION

SEWERAGE STANDARD DRAWING
"Z3" TYPE TYPICAL TUNNEL
RECEIVAL SHAFT MANHOLE OPTION

CoGC	LCC	RCC	QUU	UW
DRAWING No.				VERSION
SEQ-SEW-1312-1				B
NOT TO SCALE				ORG DATE: 1/1/2013



CONNECTION PVC - PVC
(SEE NOTE 1)



CONNECTION PE - PE

NOTES:

1. FOR CONNECTIONS TO OTHER PIPE MATERIALS SEE SEQ-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.

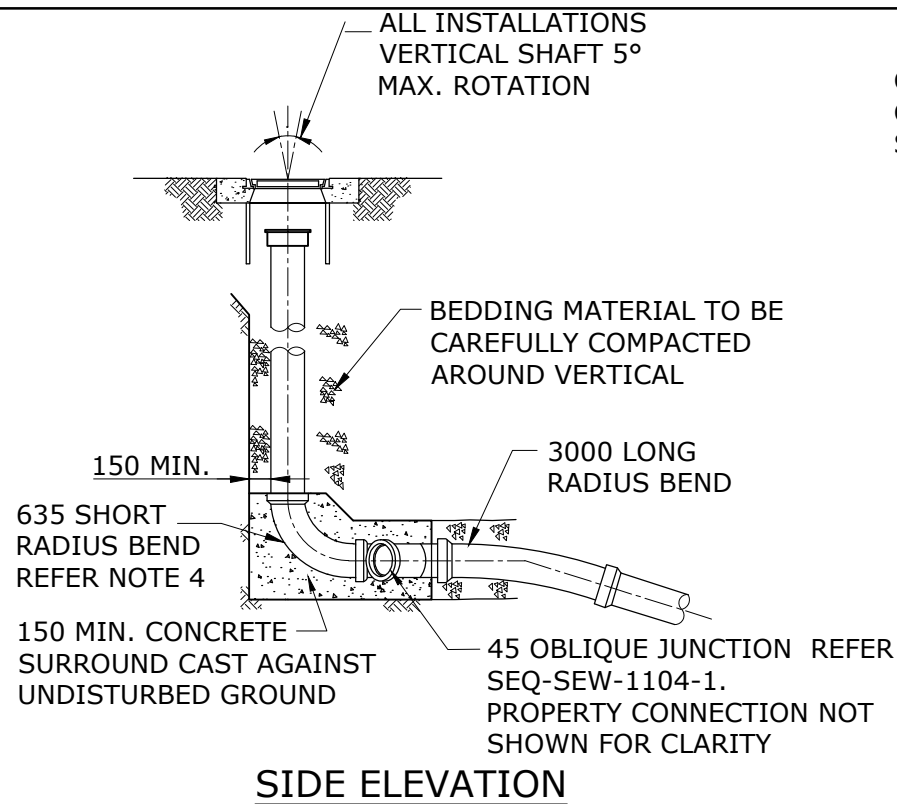
REV. No.	DATE	DESCRIPTION	AUTH.
B	20/07/15	AMENDED NOTE 3 AND 4	

**SEQ WATER
SERVICE PROVIDERS**

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

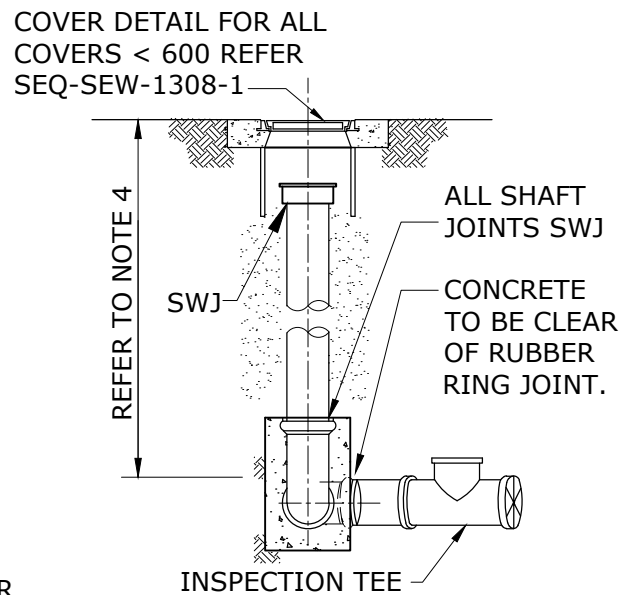
SEWERAGE STANDARD DRAWING
MAINTENANCE HOLE
SEWER CONNECTION DETAILS
ALL PIPE MATERIALS

GCCC	LCC	RCC	QUU	UW
DRAWING No.				VERSION
SEQ-SEW-1313-1				B
NOT TO SCALE				ORG DATE: 1/1/2013

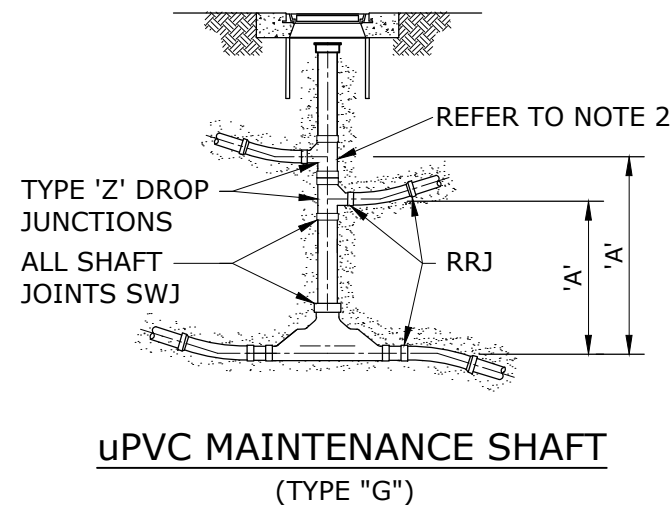


SIDE ELEVATION

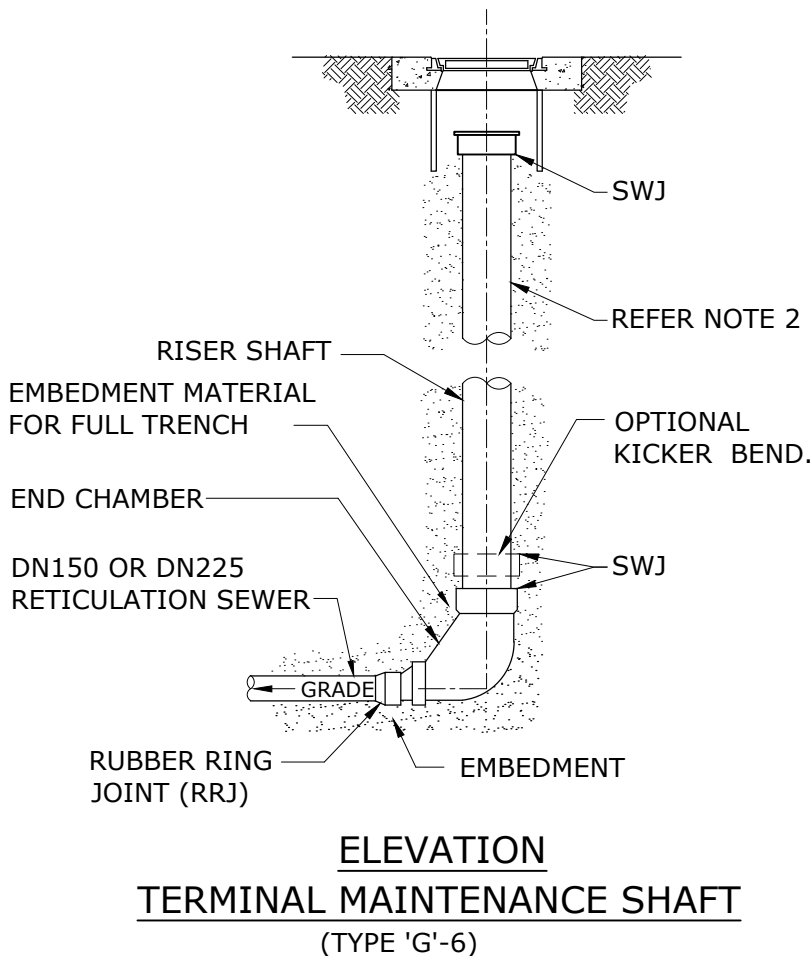
**RODDING END AT SEWER END
Ø150 ONLY**



END ELEVATION



**uPVC MAINTENANCE SHAFT
(TYPE "G")**



**ELEVATION
TERMINAL MAINTENANCE SHAFT
(TYPE 'G'-6)**

**MAINTENANCE SHAFT DROP TABLE
DIMENSION 'A'**

	TYPE 'K' & 'L'		TYPE 'G'		TYPE 'H'		TYPE 'J'	
	MIN.	MAX.	MIN.	MAX.	MIN.	MAX.	MIN.	MAX.
TYPE 'Z'	650	2000	700	2000	950	2000	750	2000
TYPE 'V'	REFER SEQ-SEW-1303-1		00	30	00	30	00	30

NOTES:

1. THIS DRAWING SHALL BE READ IN CONJUNCTION WITH STANDARD DRAWINGS SEQ-SEW-1308-1 AND SEQ-SEW-1314-2.
2. ALL MAINTENANCE SHAFT RISERS MAY UTILISE TYPE 'Z' DROP JUNCTIONS TO EFFECT HIGH LEVEL ENTRIES, REFER MAINTENANCE SHAFT DROP TABLE FOR DIMENSION 'A' MINIMUMS. RISERS MAY HAVE TWO SEPERATE DROP JUNCTION FITTINGS AS SHOWN OR A SINGLE TWIN FABRICATED FITTING WITH A MINIMUM OF 80° HORIZONTAL CENTRELINE OF SEWER SEPERATION.
3. REFER STD DWG SEQ-SEW-1200 SET FOR EMBEDMENT DETAILS AND SEQ-SEW-1207-1 FOR TRENCH DRAINAGE.
4. DN150 RODDING END SHOWN FOR DEPTHS BETWEEN 800 AND 2000. DEPTHS OF 600 TO 800 USE MOULDED 88° BEND WITH RRJ SP-SOC FORMAT WITH AN ACCESS COUPLING WITH SCREW ON CAP.

**MC, MS AND TMS TYPES
AND APPROVED ITEM
(MIN DN300 RISER)**

uPVC	45° TEE L.H. OR R.H. -TYPE 'G'-1	
	SWEEP JUNCTION 90° -TYPE 'G'-2 L.H. OR R.H.	
	STRAIGHT THROUGH -TYPE 'G'-3	
	15° TO 60° BEND -TYPE 'G'-4	
	90° BEND -TYPE 'G'-5	
	END - TERMINAL MS -TYPE 'G'-6	
	90° TEE -TYPE 'G'-7	
POLY-PROPYLENE	STRAIGHT THROUGH -TYPE 'H'-1 = DN300 -TYPE 'H'-5 = DN600 -TYPE 'H'-7 = DN425	
	45° TEE (+ BENDS TO 90°) WITH STRAIGHT THROUGH -TYPE 'H'-2 = DN300	
	90° TEE WITH STRAIGHT THROUGH -TYPE 'H'-3 = DN600 -TYPE 'H'-8 = DN425	
	15° TO 90° BENDS -TYPE 'H'-5 = DN375 WITH 225 PVC BENDS #B1, B2, B3 -TYPE 'H'-10 = DN600 AT 30°/ 60° / 90° -TYPE 'H'-11 = DN425 AT 30°/ 60° / 90°	
	90° TEE -TYPE 'H'-6 = DN600 -TYPE 'H'-9 = DN425	
CONCRETE	60° TO 300° PRECAST BASE M.S. -TYPE 'M'-1 = DN600 BOTH 500 AND 900 HIGH CONICAL BASES - 2 INLETS PERMITTED IN BASE - 1 INLET PERMITTED IN SHAFT	
	60° TO 300° PRECAST BASE M.S. -TYPE 'M'-2 = DN600 BOWL 650 HIGH BASE - 2 INLETS PERMITTED SHAFT - 1 INLET PERMITTED	
POLY-ETHYLENE	45° TO 315° TYPE 'J' -1 = DN600 POOPIT TYPE 'K' -1 = DN1050 SMARTPIT TYPE 'L' -1 = DN600 MINI MH	
DROP JN'S ALL	TYPE 'Z' DROP JUNCTION FOR TYPE 'G', 'H' & 'J' MAINTENANCE SHAFTS RISER JUNCTION - AYMROO DWG No. # AYM 1260-9 WITH CERTIFIED FABRICATOR EQUALS ACCEPTABLE	

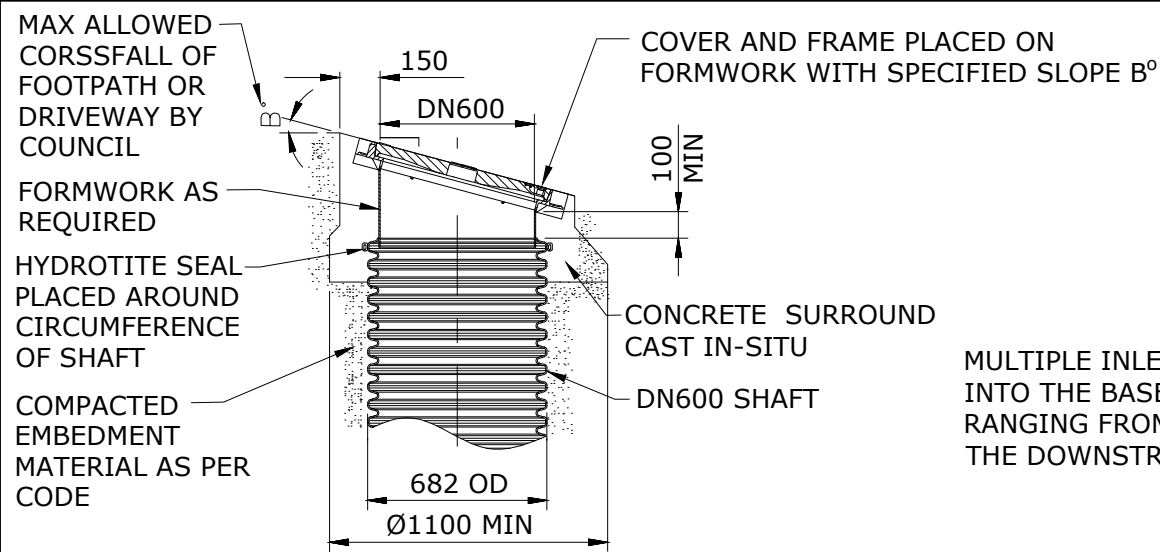
REV. No.	DATE	DESCRIPTION	AUTH.
C	23/04/19	DEPTH TABLE REMOVED; DIMENSION 'A' & MS TYPES AMENDED; DN300 RISER.	
B	19/06/15	DROP JUNCTION ADDED, CONCRETE SURROUND REMOVED, NOTES AMENDED	

**SEQ WATER
SERVICE PROVIDERS**

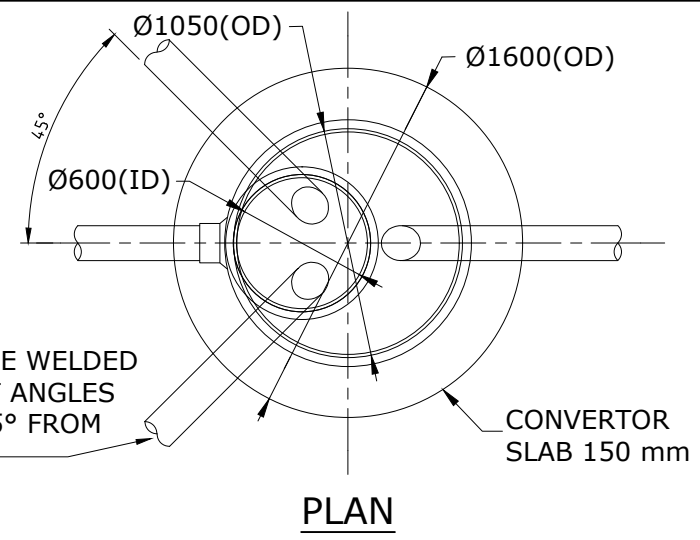
WORK PRACTICES MUST COMPLY WITH ALL APPLICABLE
OCCUPATIONAL HEALTH & SAFETY LEGISLATION

SEWERAGE STANDARD DRAWING
MC, MS AND TMS TYPES FOR
DN225 AND SMALLER RIGSS
TYPICAL ARRANGEMENT DETAILS

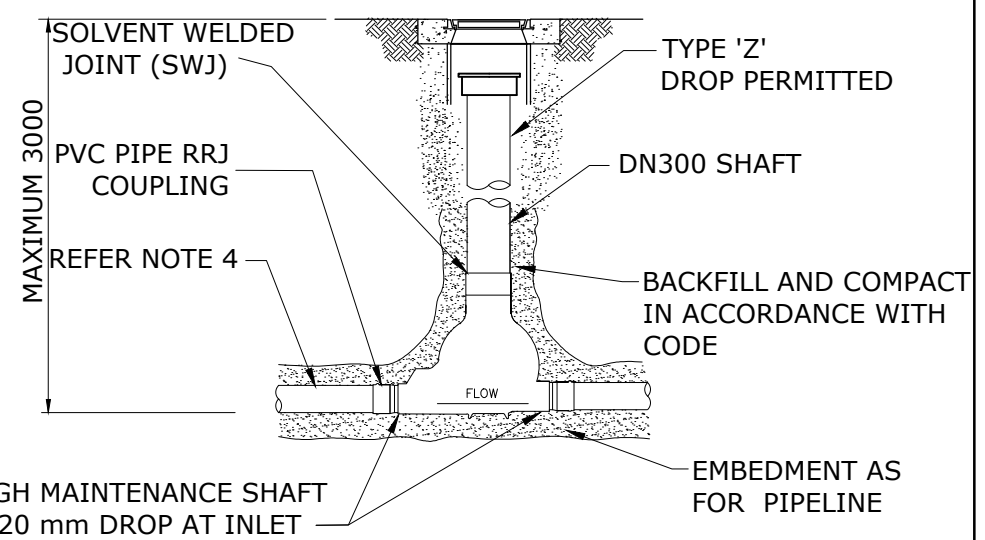
CoGC	LCC	RCC	QUU	UW
DRAWING No.				VERSION
SEQ-SEW-1314-1				C
NOT TO SCALE				ORG DATE: 1/1/2013



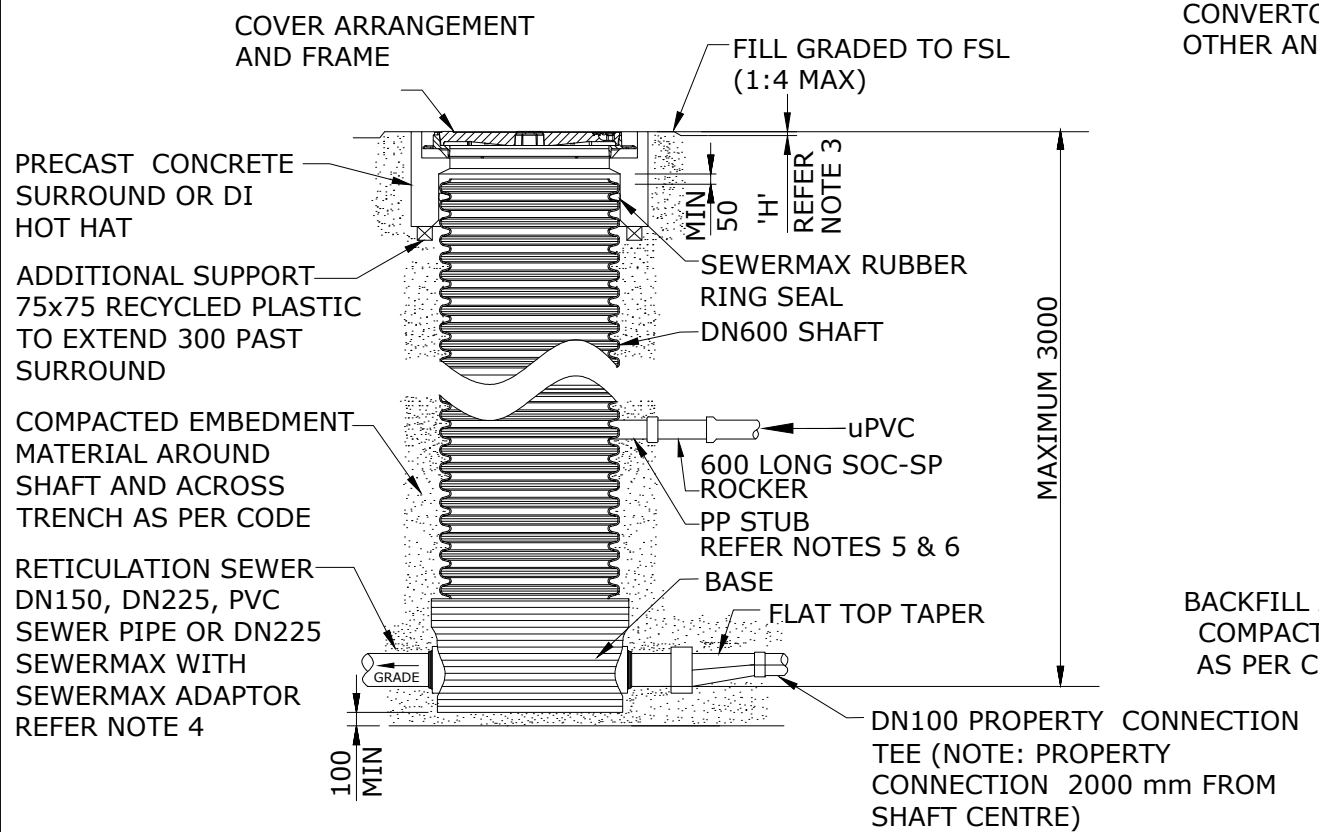
COVER AND FRAME FOR SLOPED LOCATIONS
(TYPE 'H'3 SHOWN)



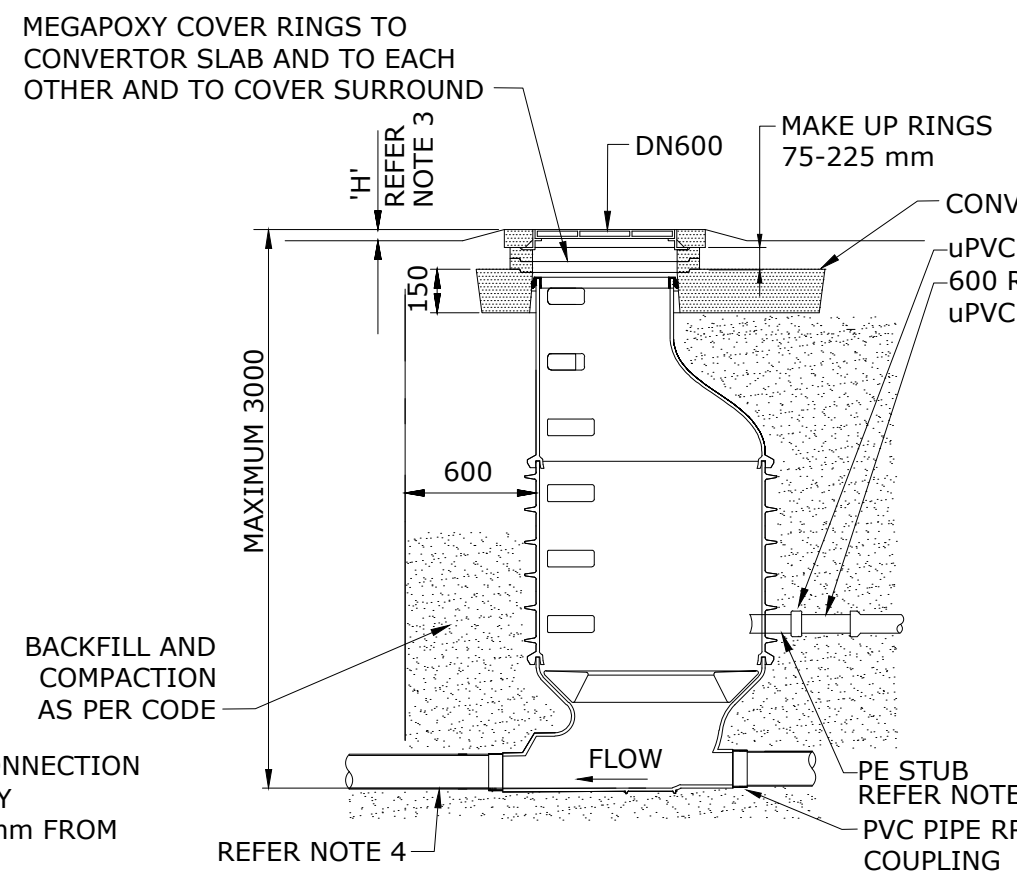
PLAN



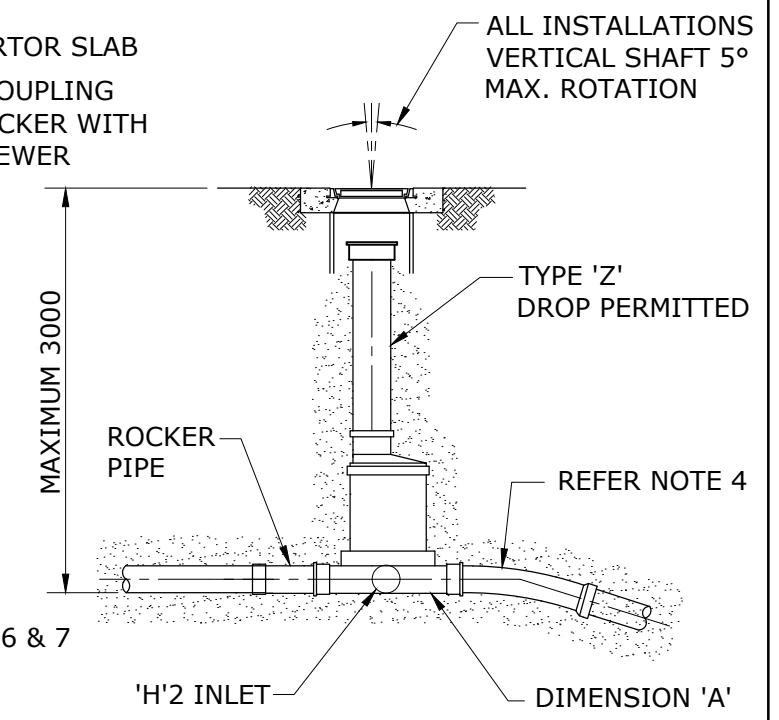
TYPE 'J'1 MAINTENANCE SHAFT



MAINTENANCE SHAFT / CHAMBER
(TYPE 'H'3 SHOWN)



TYPE 'K'1 DN1050 PE SMART PIT
TYPE 'L'1 DN600 PE MINI PIT SIMILAR
(TYPE 'K'1 SHOWN)



TYPE 'H'1 AND 'H'2 MAINTENANCE SHAFT

NOTES :

1. THIS DRAWING SHALL BE READ IN CONJUNCTION WITH STANDARD DRAWINGS SEQ-SEW-1308-1 AND SEQ-SEW-1314-1.
2. DIMENSION 'A' GRADE THROUGH MAINTENANCE SHAFT SHOWN ON SEQ-SEW-1314-1.
3. DIMENSION 'H' SHOWN ON SEQ-SEW-1308-1.
4. ALL MAINTENANCE SHAFTS SHALL HAVE 600 LONG ROCKER PIPES PROVIDED UPSTREAM AND DOWNSTREAM. LONG RADIUS BEND USE NEGATES THIS REQUIREMENT.

5. POLYPROPYLENE (PP) SDR26 DN160 STUB WELDED BOTH SIDES AT SUPPLIERS FACTORY.
6. STUB FACE ON INSIDE OF STUB SHALL BE AT 15° ANGLE WITH 60 MINIMUM PROTRUDING INTERNALLY AND 150 MINIMUM EXTERNALLY.
7. POLYETHYLENE (PE) SDR17 STUB WELDED BOTH SIDES AT SUPPLIERS FACTORY. STUB FACTORY FITTED WITH uPVC DWV COUPLING.
8. ALL MAINTENANCE SHAFTS SHALL HAVE A MAXIMUM DEPTH OF 3000 FSL TO INVERT OF PIPE.

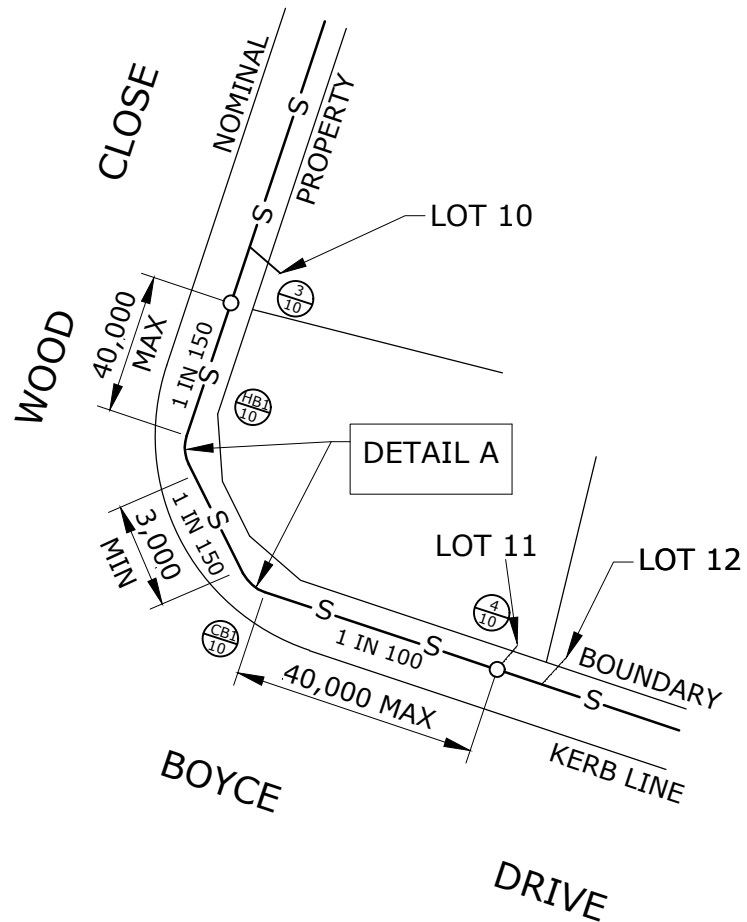
REV. No.	DATE	DESCRIPTION	AUTH.
C	24/04/19	DWG TITLE, MAX DEPTH, NOTE 2 & 8 AMENDED; DN300 RISER; MINOR CHANGES.	
B	19/06/15	INLET DETAILS ADDED, NOTES 5, 6 & 7 ADDED.	

SEQ WATER SERVICE PROVIDERS

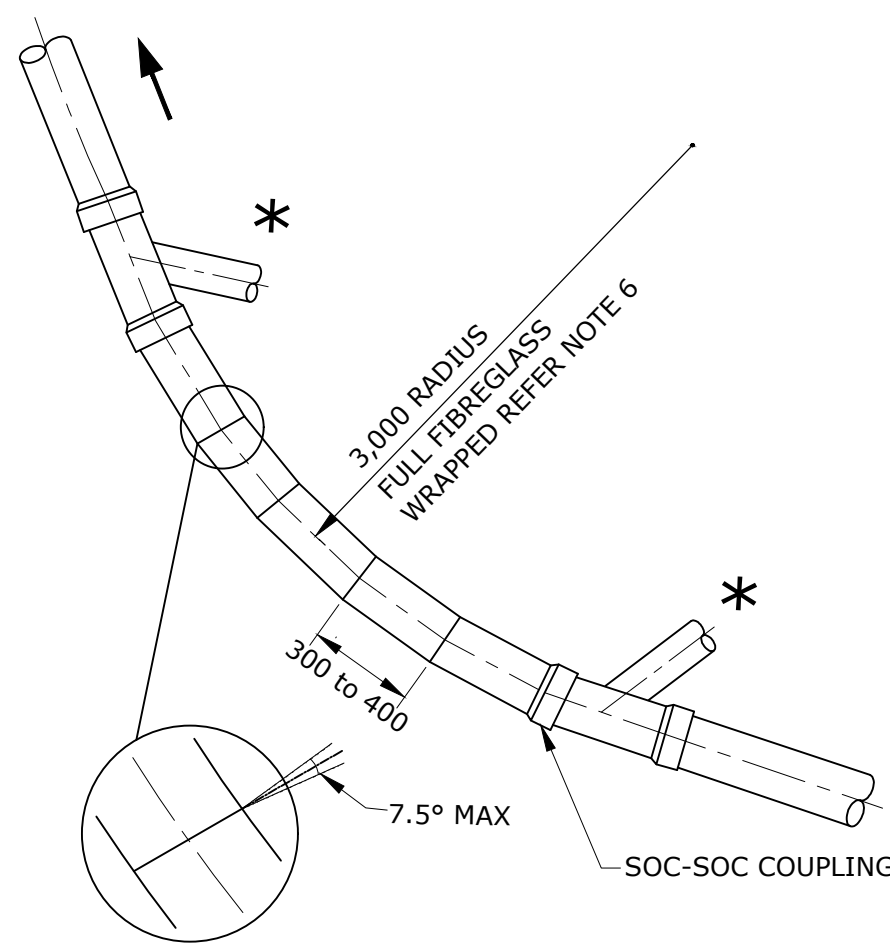
WORK PRACTICES MUST COMPLY WITH ALL APPLICABLE OCCUPATIONAL HEALTH & SAFETY LEGISLATION

SEWERAGE STANDARD DRAWING
MC, MS, TMS AND
VARIABLE BEND FOR RIGSS
TYPICAL ARRANGEMENT DETAILS

CoGC	LCC	RCC	QUU	UW
DRAWING No.				VERSION
SEQ-SEW-1314-2				C
NOT TO SCALE				ORG DATE: 1/1/2013

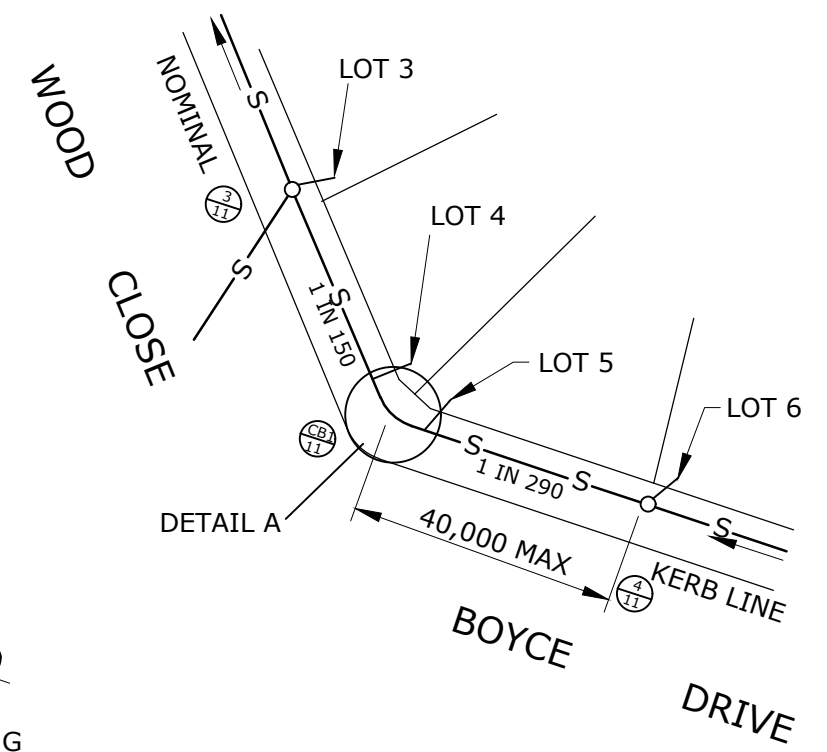


TWO BENDS SHOWN



DETAIL A - CUT AND WELDED BENDS

* JUNCTIONS WHEN REQUIRED SEE NOTE 7



ONE BEND SHOWN

NOTES:

1. IN-LINE, LONG RADIUS FORMED BENDS IN SN8 uPVC AT 3,000 RADIUS ARE ONLY PERMITTED FOR DN150 AND DN225 SEWERS. ALL FORMING AND FABRICATION OF BENDS TO BE DURABLY MARKED AND CERTIFIED TO AS/NZS 1260.
2. FORMED BENDS ARE MADE FROM CONTINUOUS PIPE THAT HAS BEEN HEATED AND MANDREL FORMED TO THE BEND RADIUS. MOULDED uPVC BENDS ARE NOT PERMITTED.
3. TWO IN- LINE BENDS ARE PERMITTED BETWEEN MAINTENANCE STRUCTURES TO EFFECT A CHANGE IN GRADE AND DIRECTION. VERGE ALLOCATION SHOWN WITH SIMILAR CONCEPTS APPLIED WITHIN ALLOTMENTS WITH 300 CENTRELINE OFFSET PERMITTED.

A STRAIGHT PIPE OF MINIMUM 3,000 SHALL BE INSTALLED BETWEEN ANY TWO BENDS AS SHOWN.

4. A MAX OF 40,000 IS PERMITTED BETWEEN THE MIDDLE OF BENDS AND THE CENTRE OF EITHER DOWNSTREAM OR UPSTREAM MAINTENANCE STRUCTURES.

MAINTENANCE STRUCTURES PROVIDING ACCESS TO IN-LINE BENDS SHALL BE MHS, MCS OR MSS AND THE SEWER PIPE FROM THE BEND TO THE MAINTENANCE STRUCTURE SHALL NOT ENTER THE MAINTENANCE STRUCTURE BY A DROP ARRANGEMENT.

5. THE GRADE OF THE SEWER THROUGH BEND SHALL BE EITHER MAINTAINED OR PREFERABLY INCREASED IN GRADE THROUGH THE BEND.
6. FABRICATED uPVC BENDS MAY BE PERMITTED UP TO 45°. THE MAXIMUM CUT ANGLE SHALL BE 7.5°. EACH SEGMENT SHALL HAVE A LENGTH OF 300 TO 400 WITH THE COMPLETE BEND FIBREGLASS WRAPPED TO THE DETAILS IN SEQ-SEW-1105-1. FINISH WRAPPING 200 BEFORE SPIGOT. FOR COMPLIANCE TEST USE PVC SIZED ROUND BALL.
7. SEWER CONNECTION JUNCTIONS SHALL NOT BE PERMITTED ON CURVED SECTIONS OF SEWER.
8. DIMENSIONS ARE IN MILLIMETRES UNLESS SHOWN OTHERWISE.

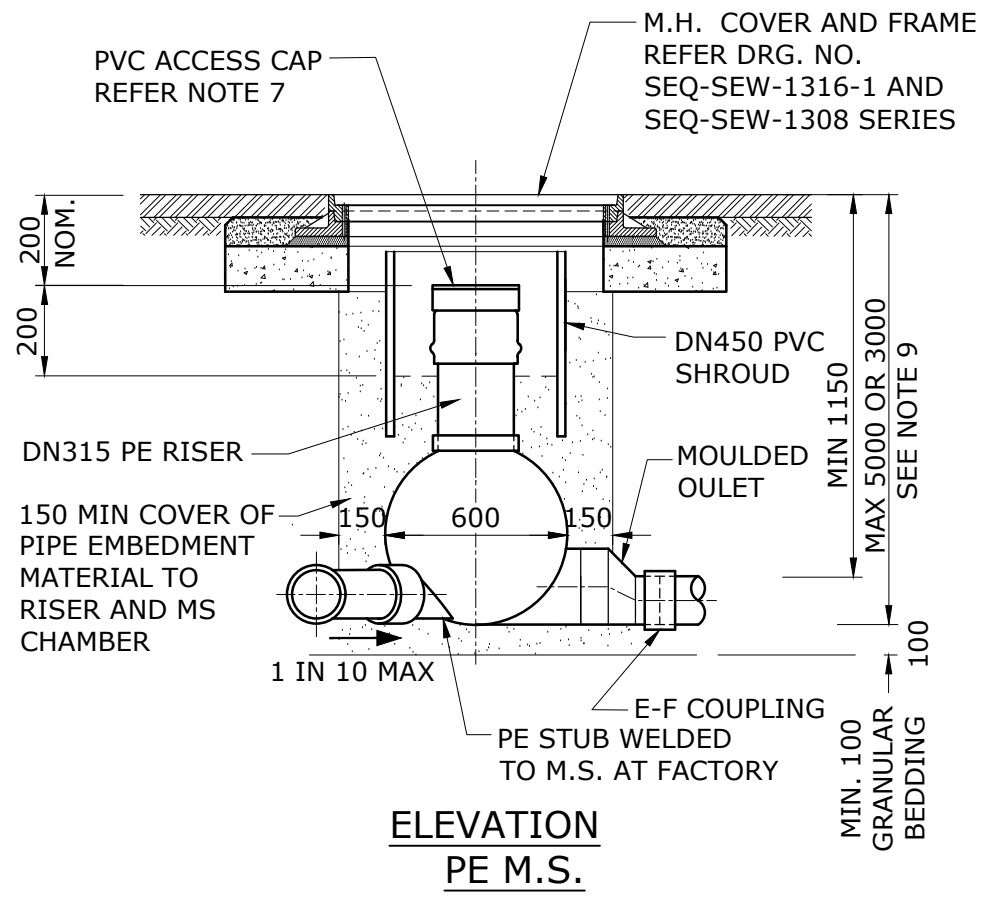
REV. No.	DATE	DESCRIPTION	AUTH.
C	17/04/19	REMOVED LONG SECTION, CHANGED BEND CONFIGURATION, NOTES 3 & 4.	
B	19/06/15	BEND DETAILS, NOTES AND LONG SECTION AMENDED.	

SEQ WATER SERVICE PROVIDERS

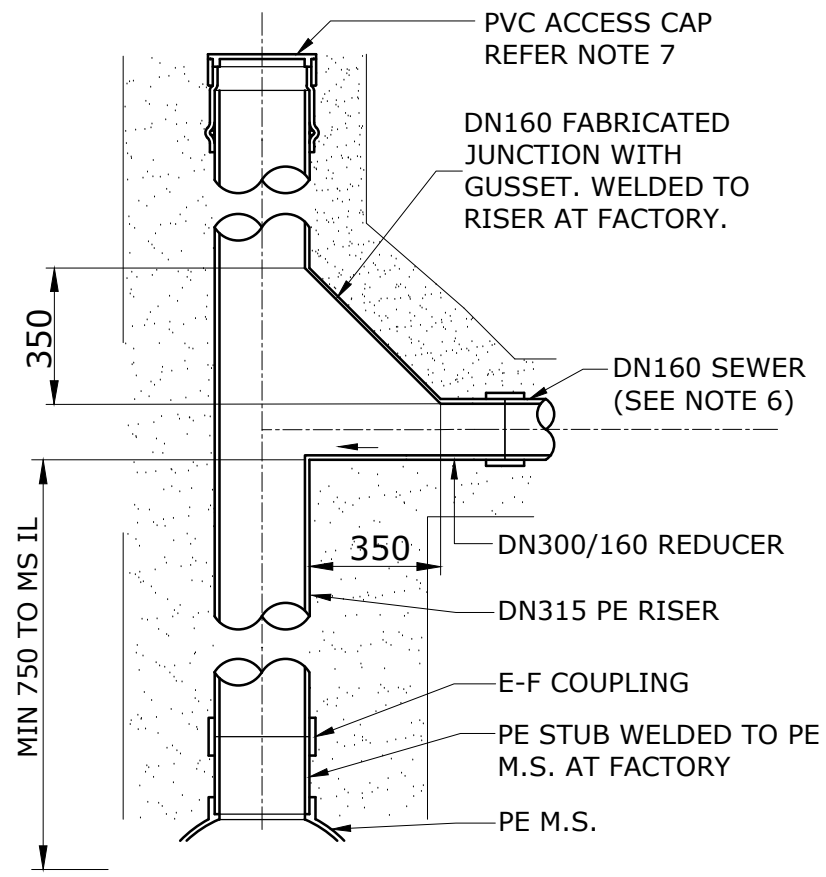
WORK PRACTICES MUST COMPLY WITH ALL APPLICABLE OCCUPATIONAL HEALTH & SAFETY LEGISLATION

SEWERAGE STANDARD DRAWING
GRAVITY SEWERS RIGSS
TYPICAL IN-LINE BEND DETAILS

CoGC	LCC	RCC	QUU	UW
DRAWING No.				VERSION
SEQ-SEW-1314-3				C
NOT TO SCALE				ORG DATE: 1/1/2013

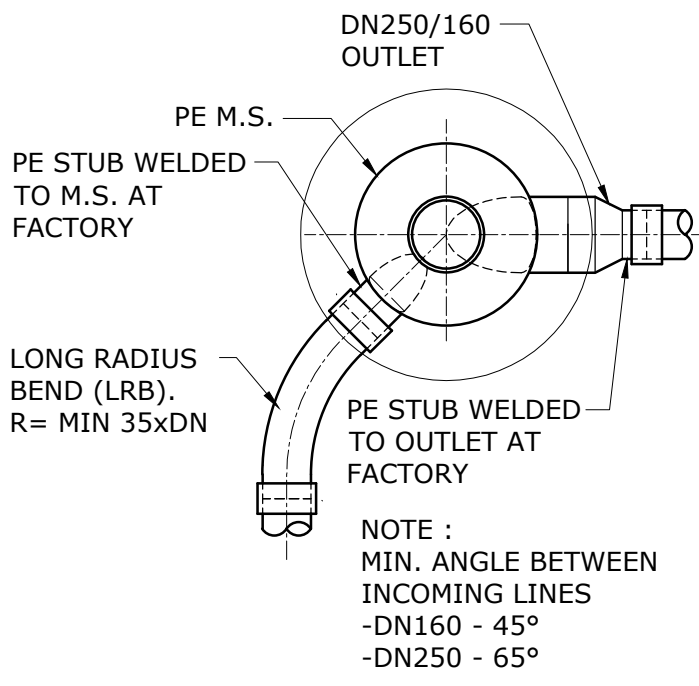


**ELEVATION
PE M.S.**

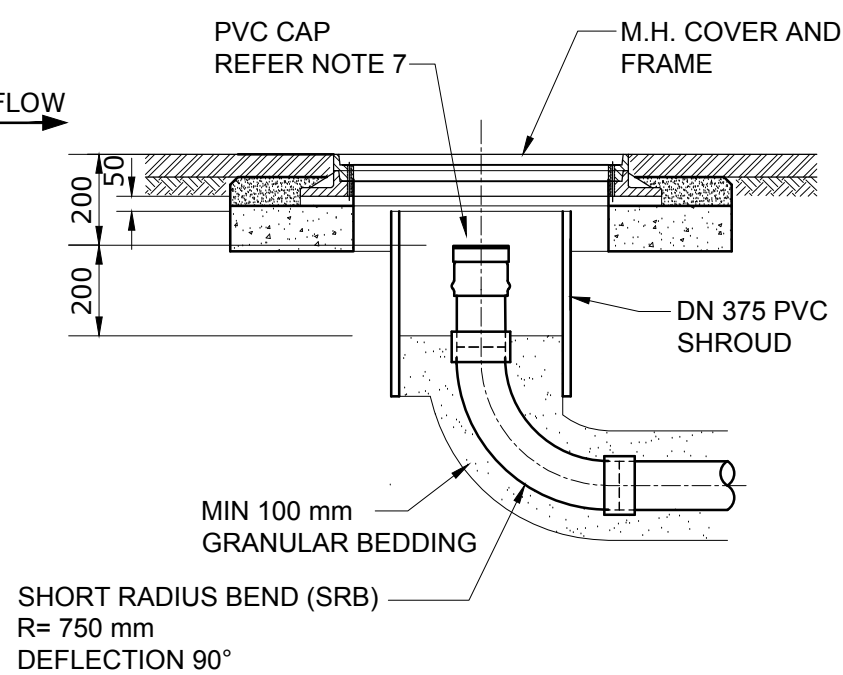


**ELEVATION
PE SHAFT RISER DETAILS**

- NOTES:**
1. THE DRAWING INDICATES A PARTICULAR MANUFACTURERS MS PRODUCT. ALTERNATIVE PE MS's MAY BE SUBMITTED FOR APPROVAL.
 2. MS's SHALL BE MANUFACTURED FROM PE WITH A MATERIAL GRADE SUITABLE TO BE WELDED TO PE SEWER PIPE.
 3. NUSEWERS PE PIPE SHALL BE MANUFACTURED FROM PE100 MATERIAL WITH A MIN. SDR OF 21 AND A WHITE INTERNAL SURFACE.
 4. ALL PE/PE CONNECTIONS SHALL BE WELDED. PE PIPES SHALL BE JOINED BY BUTT WELDING OR APPROVED E-F COUPLINGS.
 5. THE INVERT OF INLET CONNECTION TO THE MS SHALL BE 20 mm ABOVE THE BASE OF THE MS. WHERE THE OUTLET SEWER IS LARGER THAN THE INLET CONNECTION, THE OBVERT LEVELS SHALL BE COMMON.
 6. MS MAY HAVE A MAXIMUM OF 3 INLET CONNECTIONS (INCLUDING SEWERS AND PROPERTY CONNECTIONS) CONNECTING INTO THE BASE. ONLY ONE DN160 INLET CONNECTION OR MAX 2 DN110 INLET CONNECTIONS TO THE RISER AT DIFFERENT LEVELS ARE PERMITTED, IN THIS CASE, MAX 2 INLET CONNECTIONS MAY CONNECT INTO THE BASE.
 7. FOR QUU, THE RISER CAP SHALL COMPRISE A PVC BAYONET CAP WITH A RRJ SEAL AND A PVC PIPE RRJ SOCKET. FOR UW, PE OR PVC RISERS TO HAVE WELDED QUICK RELEASE END CAPS SHALL BE SWJ FIXED TO THE RISER AND SHALL BE RUBBER RING SEALED BETWEEN THE CAP AND ITS FRAME AND OPEN WITH LESS THAN 15 DEGREE TURN. (SCREW DOWN CAPS ARE NOT PERMITTED)
 8. THE CONCRETE BASE SLAB TO MH FRAME SHALL BE PLACED ON 250 mm COMPACTED ROAD BASE MATERIAL.
 9. MAXIMUM DEPTH TO INVERT FOR A MS SHALL BE 5.0 m FOR QUU AND 3.0m FOR UNITYWATER.
 10. MH COVERS, FRAMES & SUPPORTS SHALL COMPLY WITH DRG. No. SEQ-SEW-1316-1.



**PLAN
PE M.S.
SEWER ENTRY 45°**



**ELEVATION
TERMINAL ENTRY POINT**

TYPICAL INLET CONFIGURATIONS

INLET CONNECTION TO RISER	ALLOWABLE DEFLECTION 120° MAX				
	SINGLE INLET			MULTIPLE INLET	
	FLOW ≤ 12L/s	FLOW > 12L/s		ALLOWABLE ANGLE BETWEEN ANY TWO ADJACENT INLET: DN160/160 a ≥ 45°; DN250/DN250 OR DN250/DN160 a ≥ 65°	
	0 ≤ b ≤ 90°	0 ≤ b ≤ 60°	60 < b ≤ 90°	0 ≤ b ≤ 60°	60 < b ≤ 90°
INLET CONNECTION TO BASE					

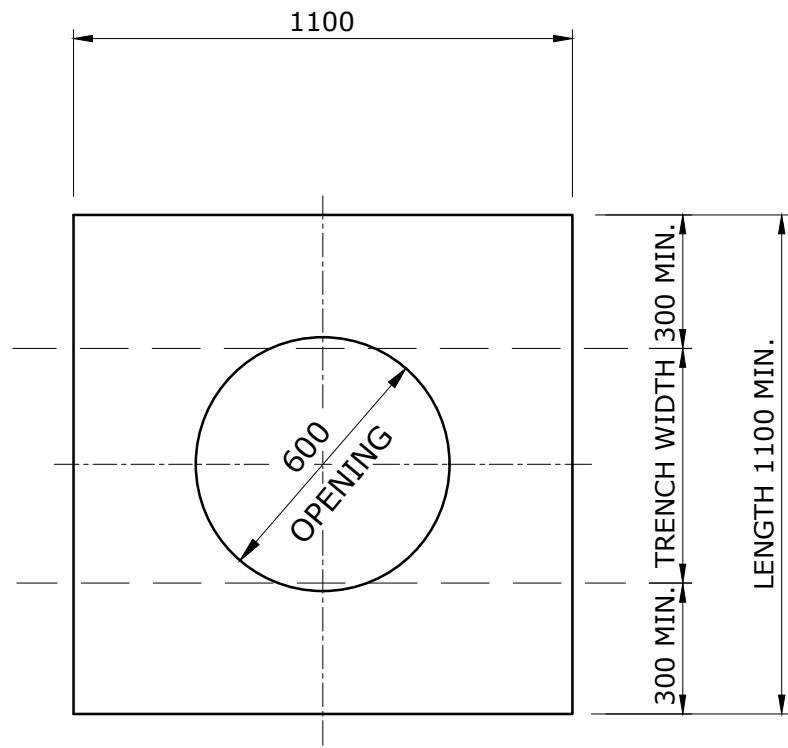
REV. No.	DATE	DESCRIPTION	AUTH.
C	15/02/19	AMENDED NOTES AND PE M.S. DIAMETER, DEPTH AND BEND REQUIREMENTS	
B	5/08/15	RISER JUNCTION DETAIL AMENDED	

SEQ WATER SERVICE PROVIDERS

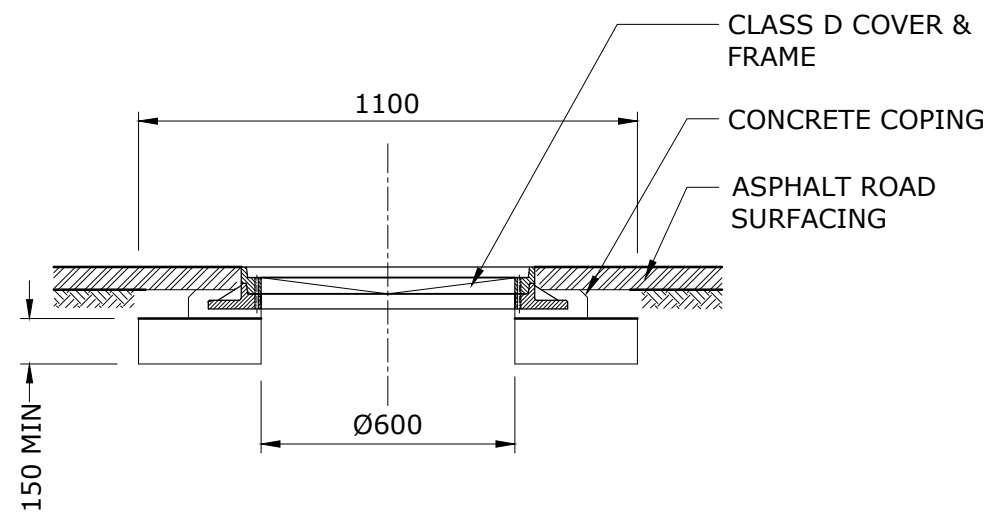
WORK PRACTICES MUST COMPLY WITH ALL APPLICABLE OCCUPATIONAL HEALTH & SAFETY LEGISLATION

SEWERAGE STANDARD DRAWING
PE NUSEWERS
TYPICAL MAINTENANCE SHAFT AND
TERMINAL ENTRY POINT

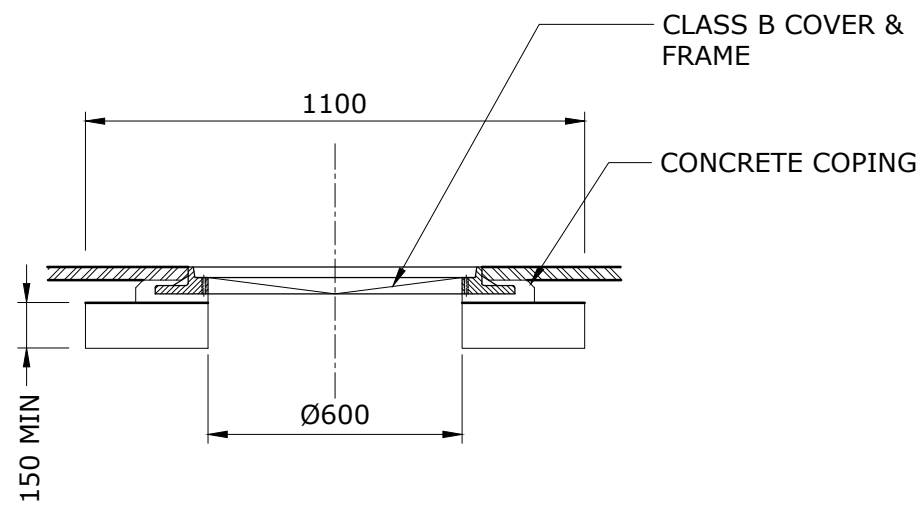
CGC	LCC	RCC	QUU	UW
DRAWING No. SEQ-SEW-1315-1				VERSION C
NOT TO SCALE				ORG DATE: 1/1/2013



PLAN CONCRETE SLAB



CLASS "D"
TRAFFICABLE COVER DETAIL



CLASS "B"
NON-TRAFFICABLE COVER DETAIL

NOTES

1. RPEQ CERTIFIED DESIGN REQUIRED.
2. REFER SEQ-SEW-1101-4, SEQ-SEW-1101-5 AND SEQ-SEW-1101-6 FOR NOTES.
3. UW REQUIRES FRAMES IN ROADWAYS (TRAFFIC) TO BE BOLTED DOWN.
4. REFER TO SEQ-SEW-1308 STANDARD DRAWING SET FOR DETAILS OF MAINTENANCE STRUCTURE COVERS AND FRAMES.

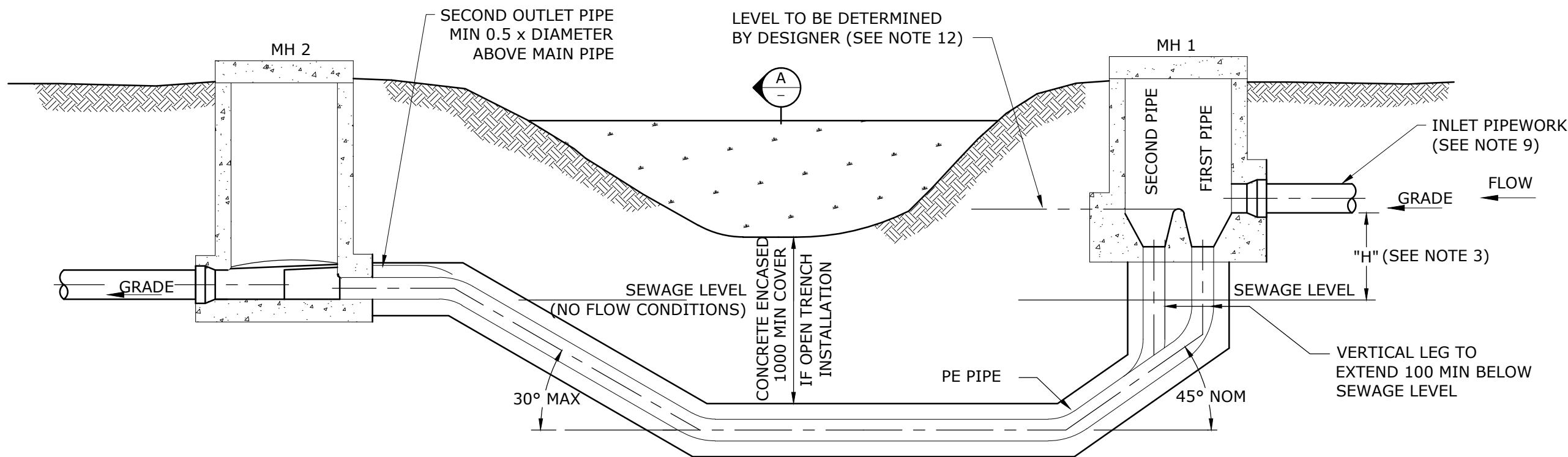
REV. No.	DATE	DESCRIPTION	AUTH.
B	18/06/19	AMENDED DETAILS AND NOTES	

**SEQ WATER
SERVICE PROVIDERS**

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

SEWERAGE STANDARD DRAWING
PE NUSEWERS
TYPICAL MAINTENANCE STRUCTURE
COVER FRAME AND SUPPORT DETAILS

C&C	L&C	R&C	QUU	UW
DRAWING No.				VERSION
SEQ-SEW-1316-1				B
NOT TO SCALE				ORG DATE: 1/1/2013

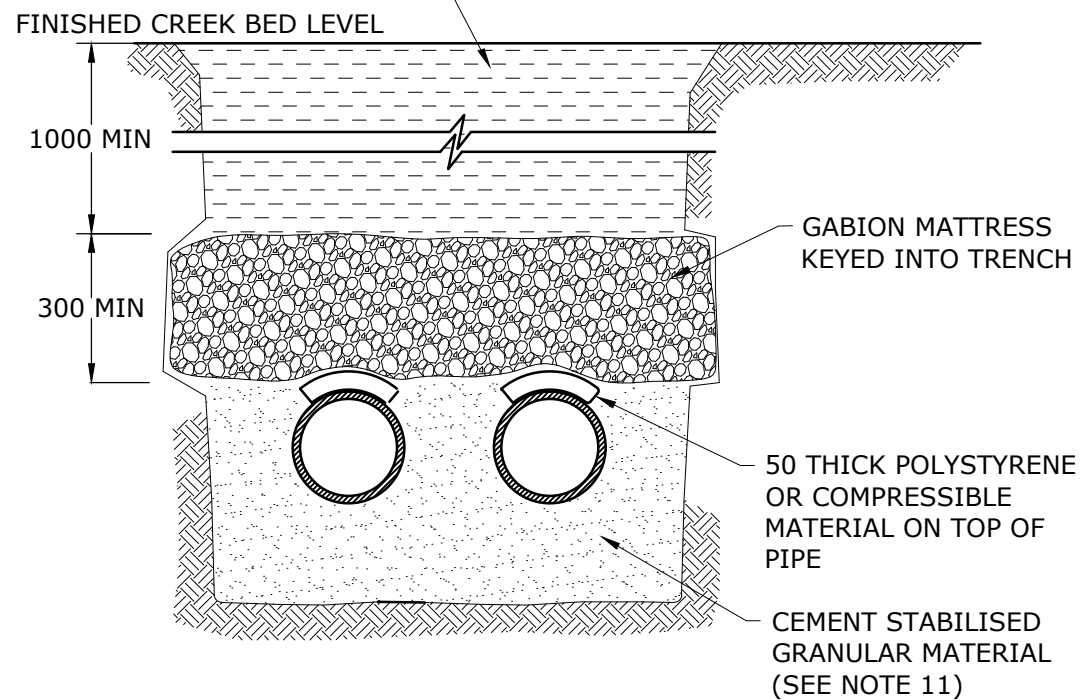


TYPICAL SIPHON CREEK CROSSING

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 SEQ-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 SEQ-SP APPROVAL REQUIRED FOR USE OF SIPHON ARRANGEMENT

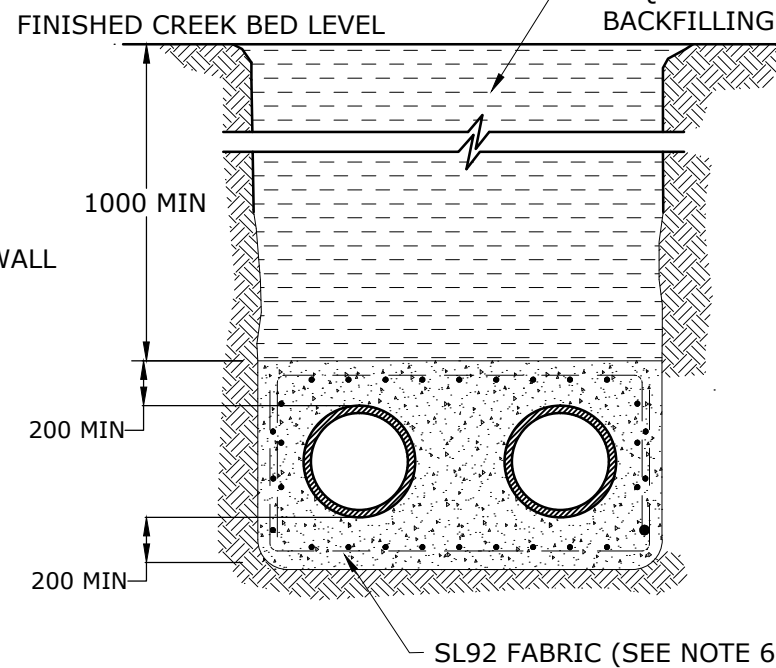
REFER TO SEQ-SEW-1200-2 FOR BACKFILLING DETAILS



NOT CONCRETE ENCASED PIPE - SECTION A

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

REFER TO SEQ-SEW-1200-2 FOR BACKFILLING DETAILS



CONCRETE ENCASED PIPE - SECTION A

(SEE NOTES 7 & 8)

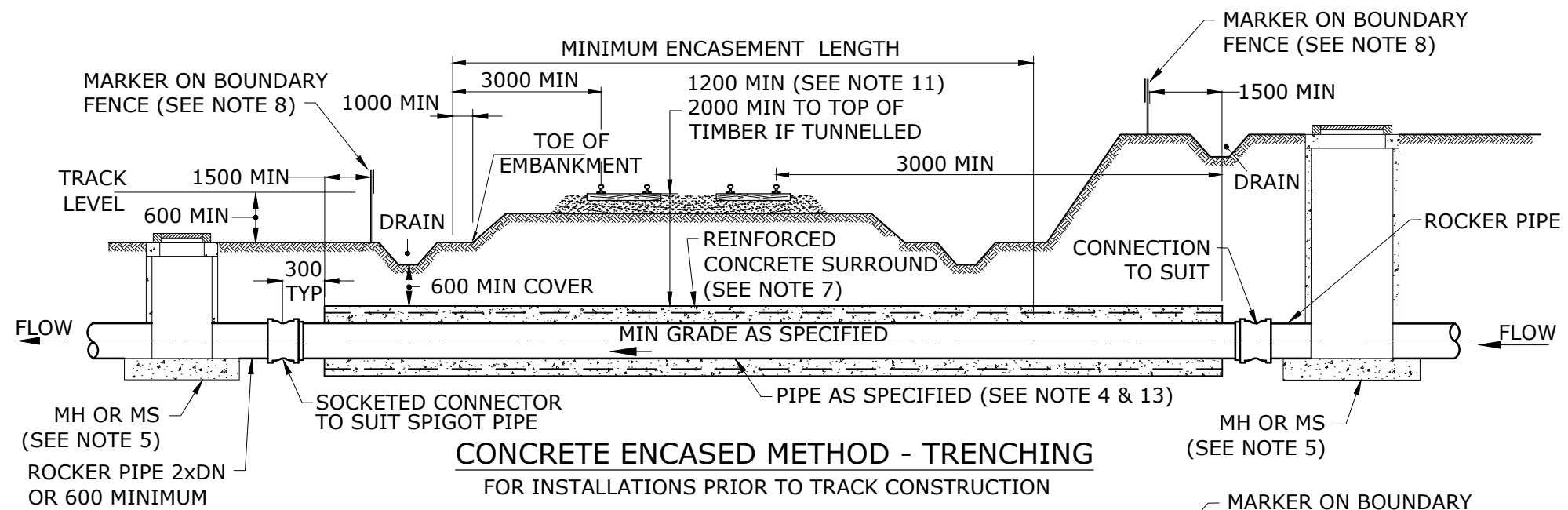
REV. No.	DATE	DESCRIPTION	AUTH.

SEQ WATER SERVICE PROVIDERS

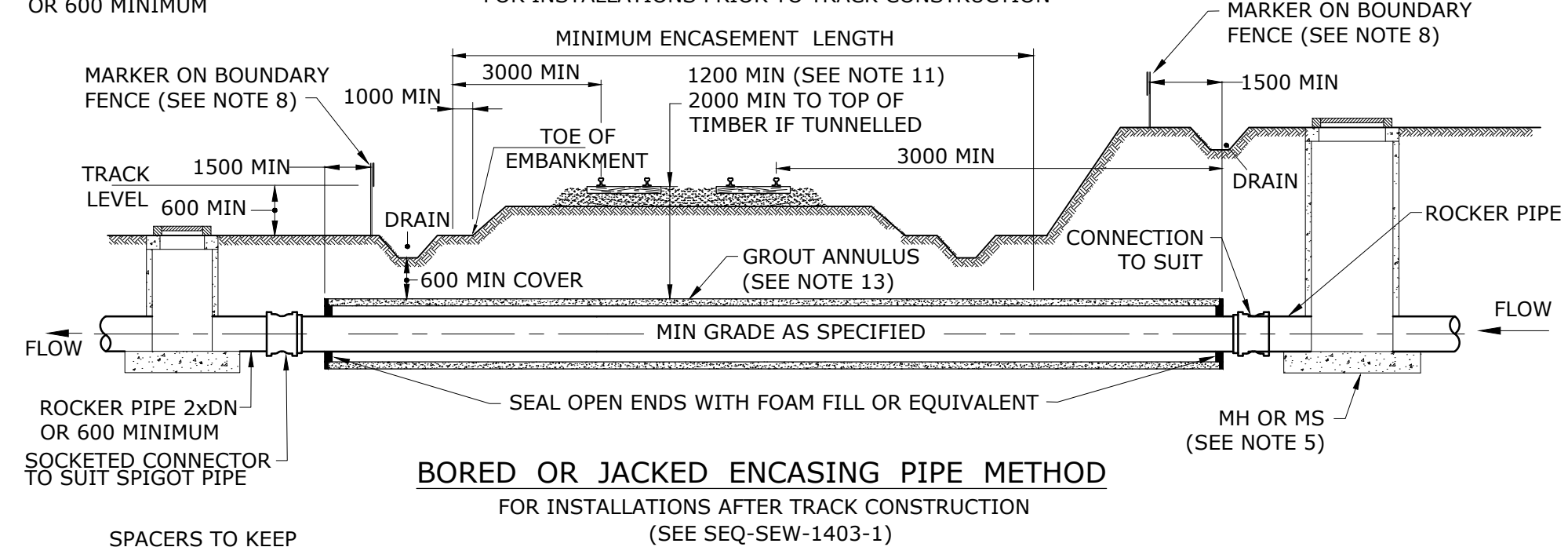
WORK PRACTICES MUST COMPLY WITH ALL APPLICABLE OCCUPATIONAL HEALTH & SAFETY LEGISLATION

SEWERAGE STANDARD DRAWING
BURIED CROSSINGS
TYPICAL SIPHON ARRANGEMENT

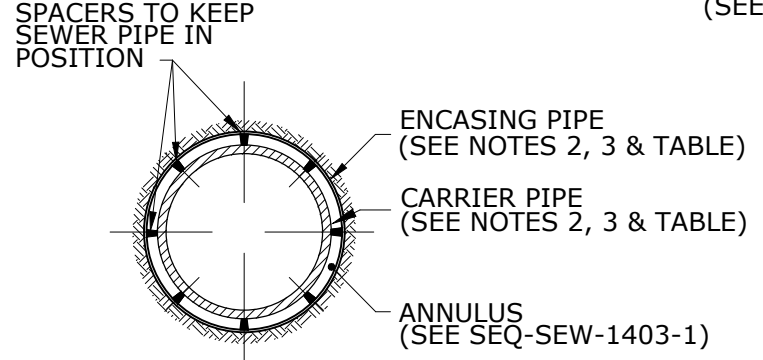
GCCC	LCC	RCC	QUU	UW
DRAWING No.				VERSION
SEQ-SEW-1400-1				A
NOT TO SCALE				ORG DATE: 1/1/2013



CONCRETE ENCASED METHOD - TRENCHING
FOR INSTALLATIONS PRIOR TO TRACK CONSTRUCTION



BORED OR JACKED ENCASED PIPE METHOD
FOR INSTALLATIONS AFTER TRACK CONSTRUCTION
(SEE SEQ-SEW-1403-1)



TYPICAL SECTION ENCASED PIPE & SEWER ARRANGEMENTS

BORED & JACKED ENCASED/SEWER PIPE SIZES										
SEWER PIPE (DN)	100	150	225	300	375	400	500	550	650	800
BORED ENCASED PIPE MIN (DN)	300	375	425	500	575	600	700	750	850	1000
JACKED ENCASED PIPE (DN)	N/A					1200 MIN.				

NOTES:

- ALL DIMENSIONS IN MILLIMETRES.
- HORIZONTAL BORING ENCASED 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.
- JACKING ENCASED 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.
- 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 SEQ-SEW-1204-1
- MH OR MS TO BE LOCATED AT LEAST 6000 FROM THE TOE OF EMBANKMENT OR TOP OF CUT AND AT OUTSIDE OF RAIL LAND.
- FOR DI MAINS, ALL FITTINGS TO BE FUSION BONDED.
- SEWER PIPE <DN 150 CAN BE DIRECTIONALLY BORED USING PE PIPE.
- PLACE MARKERS ABOVE PIPELINE AT THE POINTS WHERE IT ENTERS AND LEAVES THE PROPERTY.
- PROVIDE CATHODIC PROTECTION AS DIRECTED BY RAILWAY AUTHORITY FOR IRON BASED PIPES. PROVIDE ELECTRICAL CONTINUITY AND INSULATION AS SPECIFIED IN DESIGN DRAWINGS.
- DESIGN TO BE IN ACCORDANCE WITH AS 4799 - RAILWAY REQUIREMENTS.
- MINIMUM COVER FOR ALL PIPELINES BELOW RAILWAY LINES:
 - NOT LESS THAN 1200 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.
- FOR ELECTRIFIED RAILWAY SYSTEMS PREFERENCE SHOULD BE GIVEN TO USE OF NON-METALLIC PIPES.
- THE ANNULUS SHALL BE GROUTED AS SHOWN IN SEQ-SEW-1403-1. PLASTIC PIPE MATERIALS SHALL BE CONTROLLED FOR FLOATION AND THERMAL REVERSION.

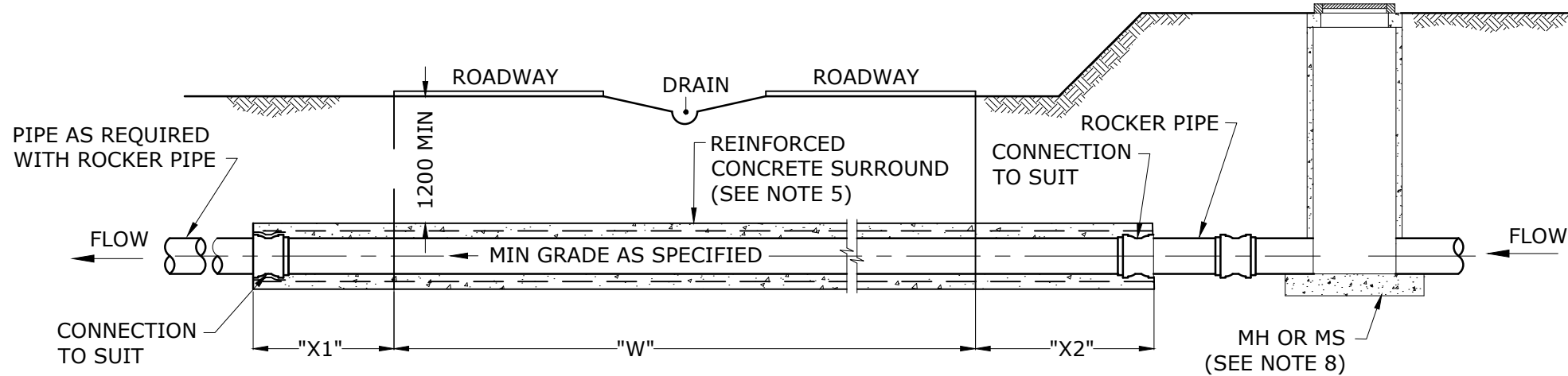
REV. No.	DATE	DESCRIPTION	AUTH.
B	22/05/19	MINOR CHANGES	

SEQ WATER SERVICE PROVIDERS

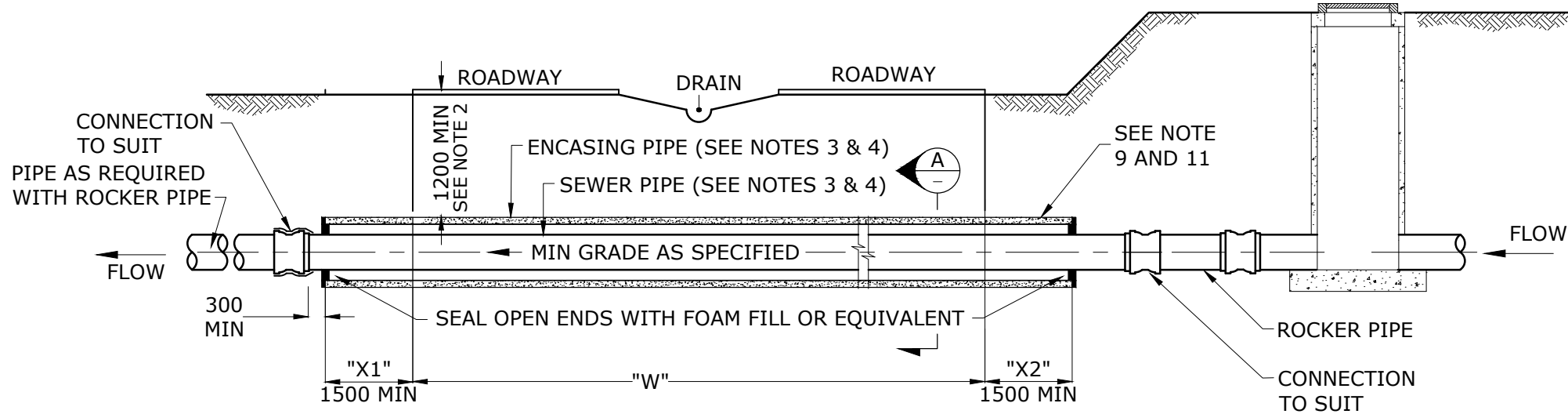
WORK PRACTICES MUST COMPLY WITH ALL APPLICABLE OCCUPATIONAL HEALTH & SAFETY LEGISLATION

SEWERAGE STANDARD DRAWING
TYPICAL BURIED CROSSINGS
RAILWAYS

CoGC	LCC	RCC	QUU	UW
DRAWING No.				VERSION
SEQ-SEW-1401-1				B
NOT TO SCALE				ORG DATE: 1/1/2013

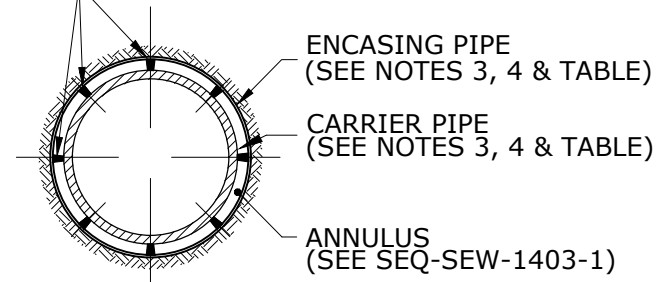


CONCRETE ENCASED METHOD - TRENCHING
FOR INSTALLATIONS PRIOR TO ROAD CONSTRUCTION
(SEE NOTE 6)



BORED OR JACKED ENCASING PIPE METHOD
FOR INSTALLATIONS AFTER ROAD CONSTRUCTION
(SEE SEQ-SEW-1403-1)

SPACERS TO KEEP SEWER PIPE IN POSITION



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)	N/A					1200 MIN.				

NOTES:

- ALL DIMENSIONS IN MILLIMETRES.
- METHODS OF INSTALLATION TO BE AS SHOWN IN DESIGN DRAWINGS OR AS DIRECTED BY THE WATER AGENCY OR ROAD OWNER. DIFFICULT CONDITIONS MAY REQUIRE SPECIAL ARRANGEMENTS.
- 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.
- 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.
- 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 SEQ-SEW-1203-1 FOR TYPE 9
 - NO EXTERNAL COATING REQUIRED ON CONCRETE ENCASED WELDED STEEL PIPELINE.
- MH OR MS TO BE LOCATED AT LEAST 6000 FROM ENDS OF ENCASEMENT.
- CONSTRUCTION TO BE IN ACCORDANCE WITH DESIGN DRAWINGS.
- DIMENSIONS "X1" AND "X2" AND LOCATION OF BULKHEADS AND REINFORCING TO BE SHOWN IN DESIGN DRAWINGS.
- FILL VOID BETWEEN BORED HOLE AND CASING PIPE WITH GROUT AS SHOWN ON SEQ-SEW-1403-1.
- DIRECTIONAL BORING TO INSTALL PE PIPE IS ALSO ACCEPTABLE. GRADE TO BE INCREASED TO ENSURE A POSITIVE GRADE THROUGHOUT PIPE SECTION.
- DURING GROUT PLACEMENT, PLASTIC PIPE MATERIALS SHALL BE CONTROLLED FOR FLOATATION AND THERMAL REVERSION.

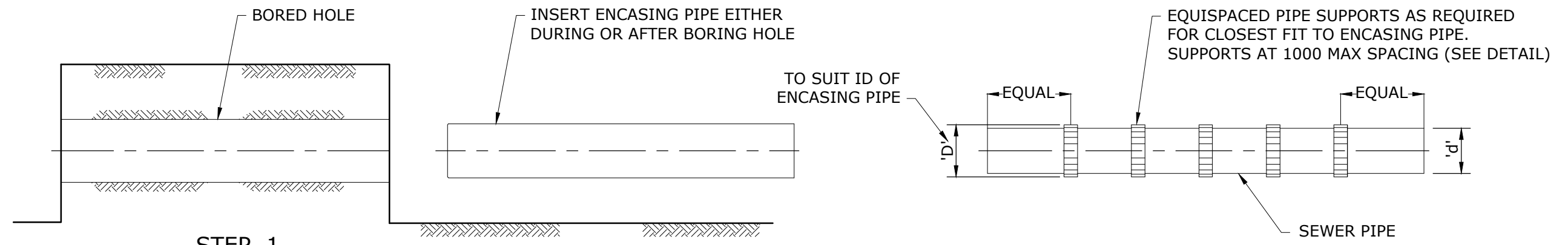
REV. No.	DATE	DESCRIPTION	AUTH.
B	22/05/19	MINOR CHANGES	

SEQ WATER SERVICE PROVIDERS

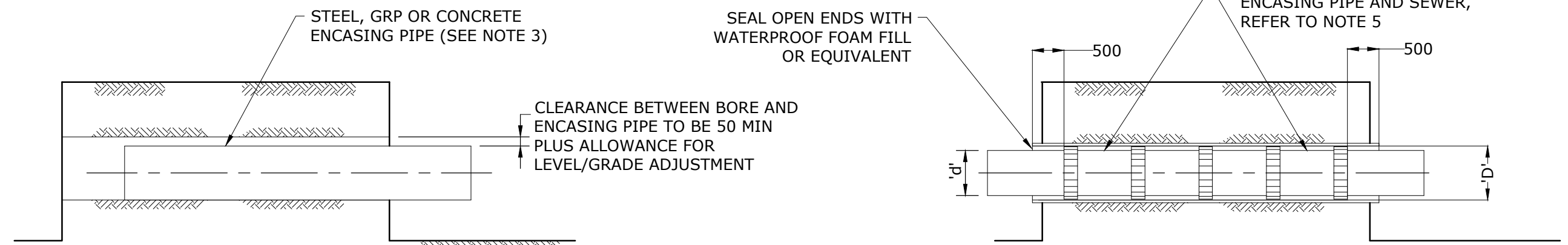
WORK PRACTICES MUST COMPLY WITH ALL APPLICABLE OCCUPATIONAL HEALTH & SAFETY LEGISLATION

SEWERAGE STANDARD DRAWING
TYPICAL BURIED CROSSINGS
MAJOR ROADWAYS

CoGC	LCC	RCC	QUU	UW
DRAWING No.				VERSION
SEQ-SEW-1402-1				B
NOT TO SCALE				ORG DATE: 1/1/2013

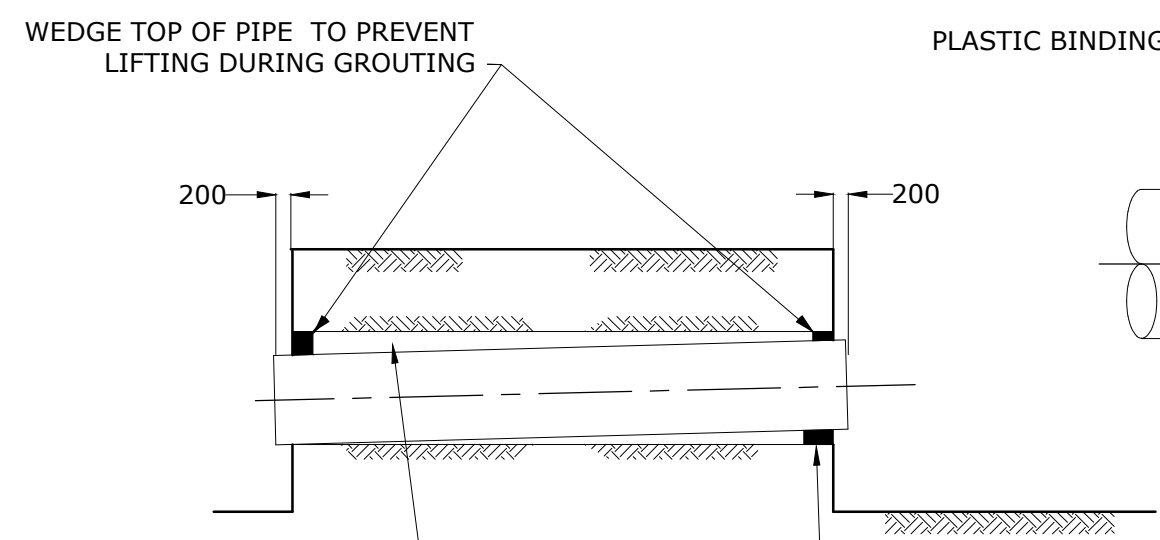


STEP 1



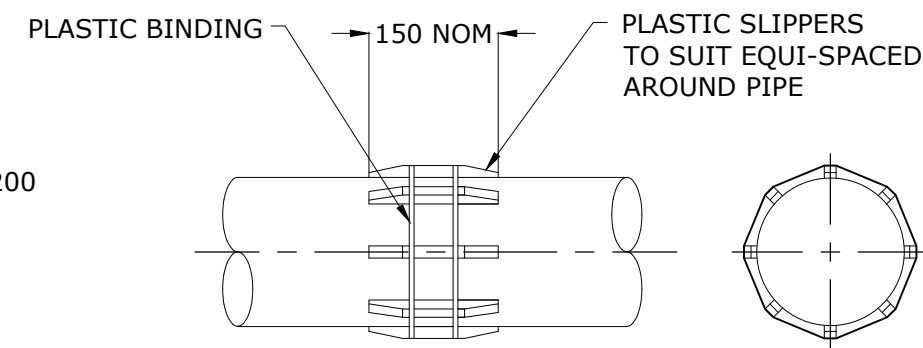
STEP 2

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 SEQ-SP APPROVED PLASTICISERS MAY BE USED.
5. ENCASING PIPE TO SEWER PIPE GROUT MIX IS A FLOWABLE 1 MPa MINIMUM GROUT WITH A LOW HEAT OF HYDRATION WITH AGGREGATE BEING A FINE WELL ROUNDED SAND AND PLASTICISERS MAY BE USED. THE MIX DESIGN SHALL BE APPROPRIATE FOR THE SPECIFIC PIPE MATERIALS AND SITE CONDITIONS AND SHALL BE APPROVED BY THE SUPERINTENDENT. FOR CoGC, CONSIDERING THE IMPACT OF FUTURE WATER MAIN MAINTENANCE OR REPLACEMENT, THE ANNULUS GROUTING MAY NOT BE ALWAYS REQUIRED. SEE CoGC FOR GROUTING REQUIREMENT.

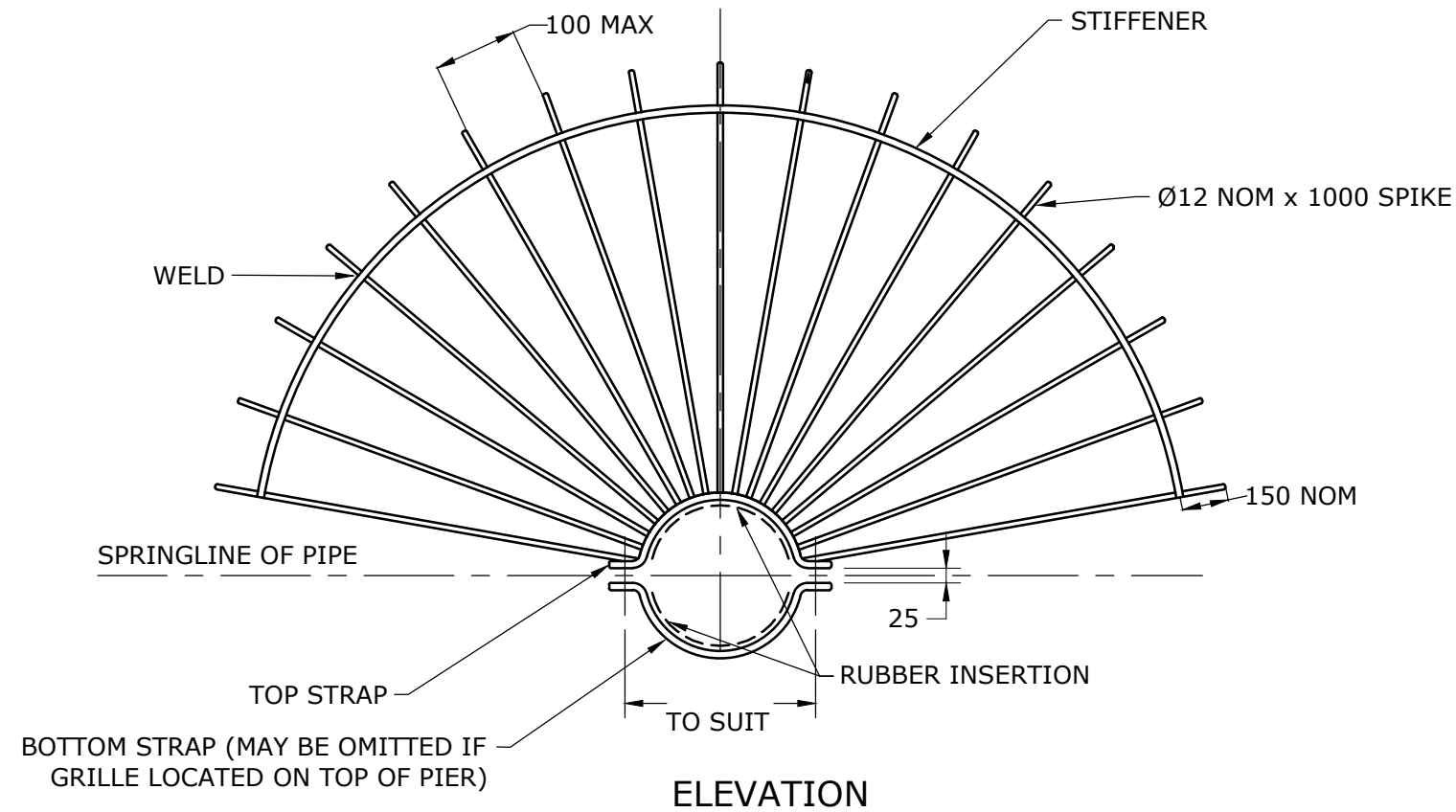
REV. No.	DATE	DESCRIPTION	AUTH.
C	22/05/19	NOTE 5 AMENDED	
B	19/06/15	NOTE 3 AMENDED.	

SEQ WATER SERVICE PROVIDERS

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

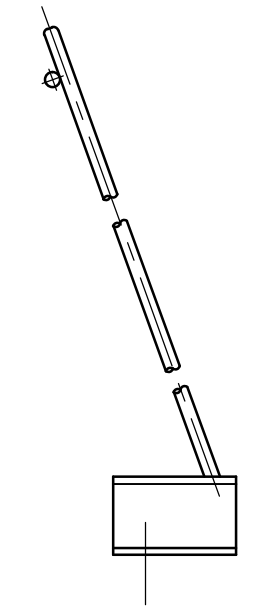
SEWERAGE STANDARD DRAWING
TYPICAL BURIED CROSSINGS
BORED AND JACKED
ENCASING PIPE DETAILS

CoGC	LCC	RCC	QUU	UW
DRAWING No.				VERSION
SEQ-SEW-1403-1				C
NOT TO SCALE				ORG DATE: 1/1/2013

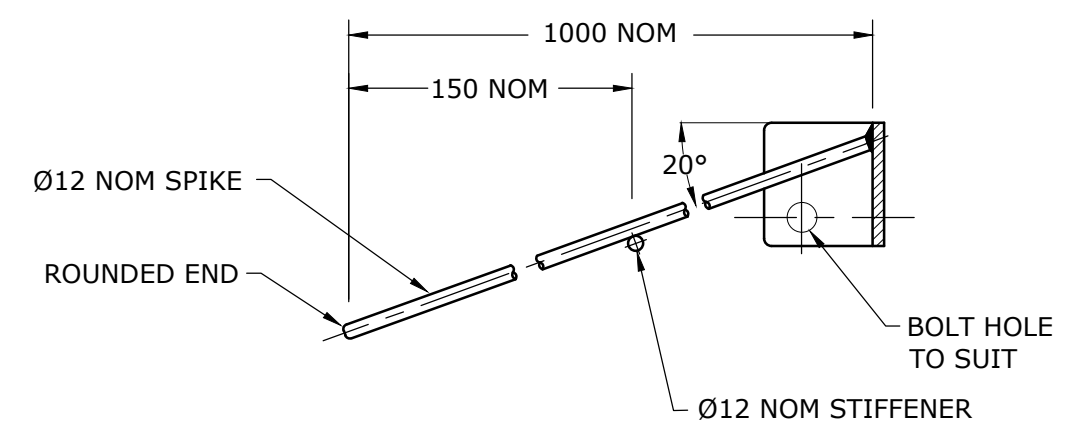


ELEVATION
STEEL PROTECTION GRILLE

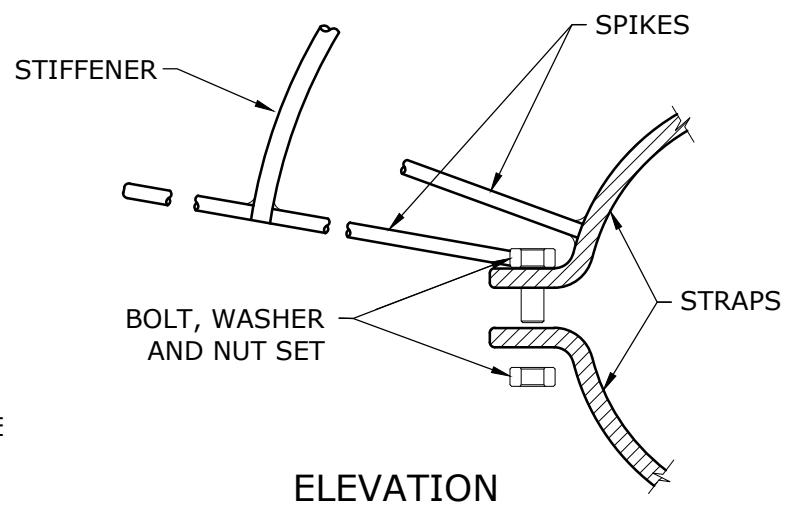
DIRECTION OF APPROACH →



END ELEVATION



PART PLAN



ELEVATION

COMPONENT & FABRICATION DETAILS

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.

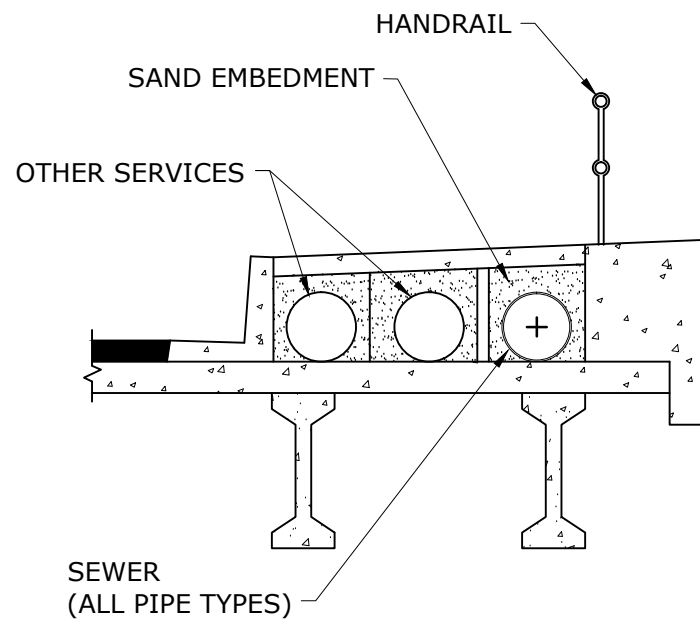
REV. No.	DATE	DESCRIPTION	AUTH.
B	20/07/15	REMOVED CROSS FROM QUU	

SEQ WATER SERVICE PROVIDERS

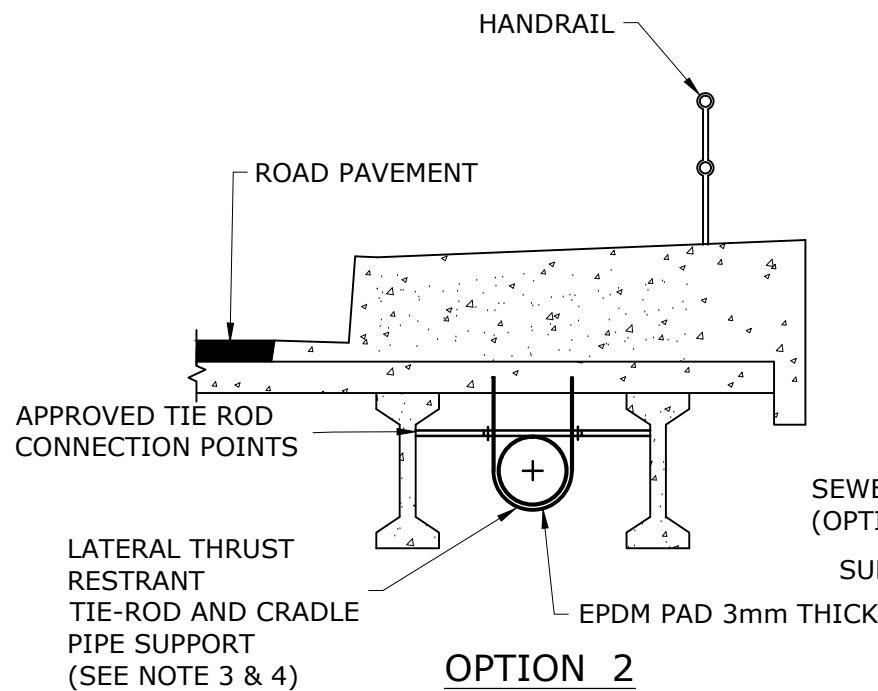
WORK PRACTICES MUST COMPLY WITH ALL APPLICABLE OCCUPATIONAL HEALTH & SAFETY LEGISLATION

SEWERAGE STANDARD DRAWING
TYPICAL AERIAL CROSSINGS
AQUEDUCT PROTECTION GRILLE

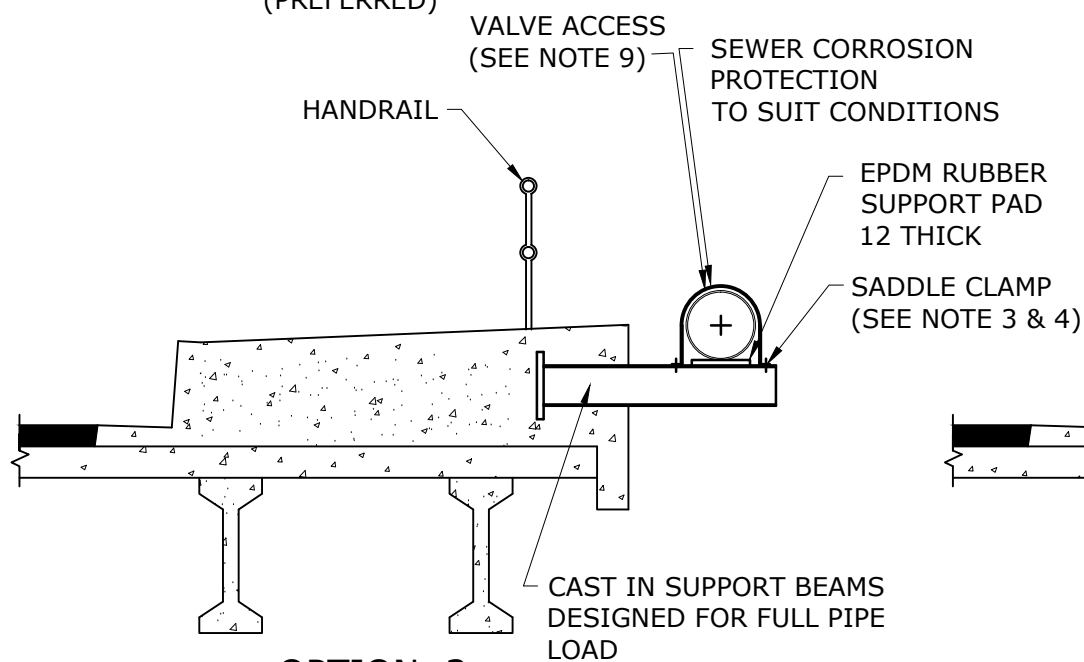
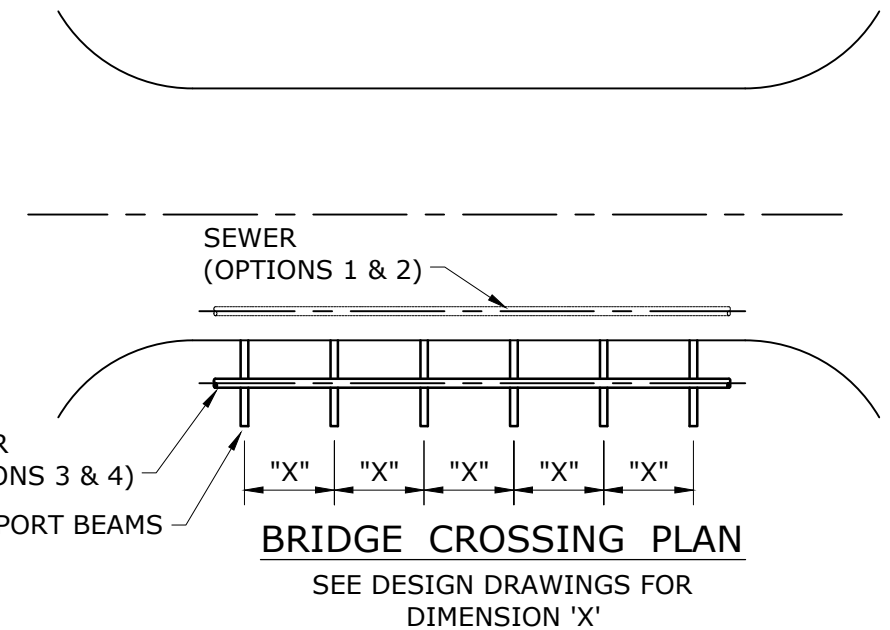
GCCC	LCC	RCC	QUU	UW
DRAWING No.				VERSION
SEQ-SEW-1405-1				B
NOT TO SCALE				ORG DATE: 1/1/2013



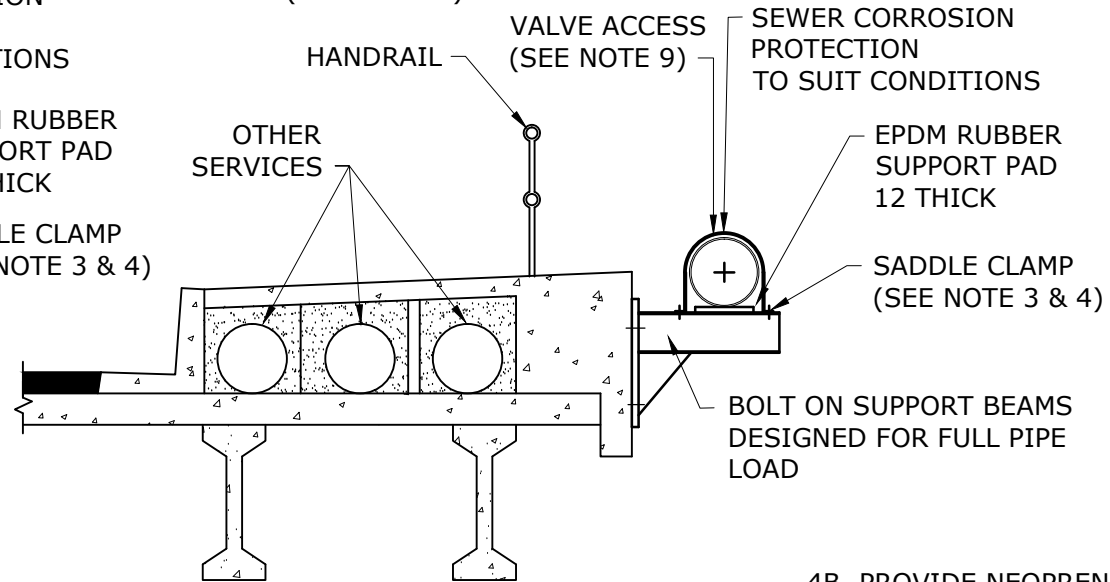
OPTION 1
NEW BRIDGE
(PREFERRED)



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



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 STEEL 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.

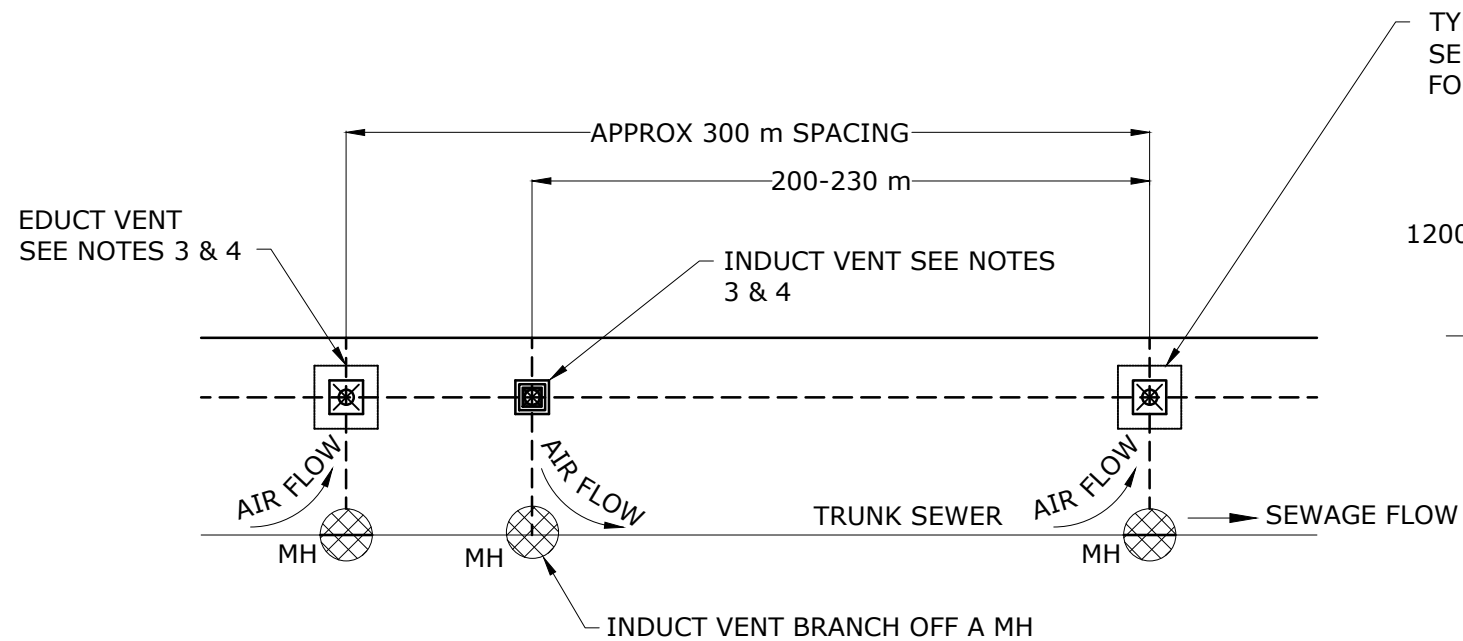
REV. No.	DATE	DESCRIPTION	AUTH.
B	20/07/15	AMENDING NOTES	

**SEQ WATER
SERVICE PROVIDERS**

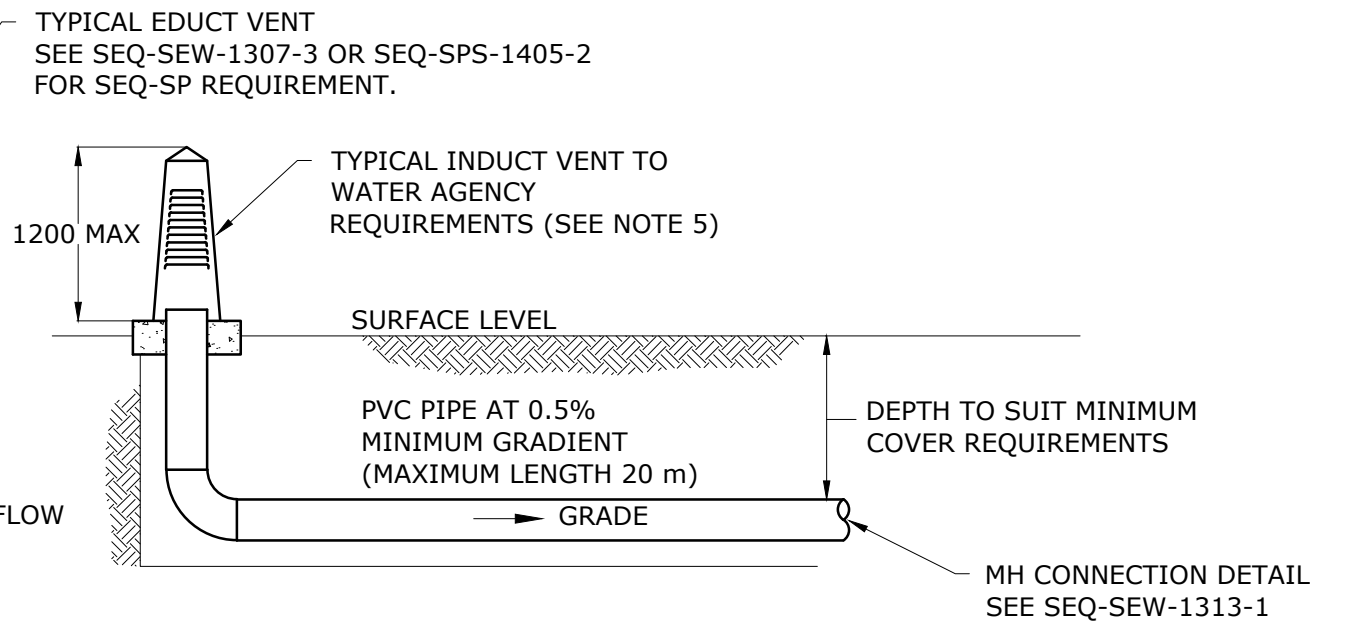
WORK PRACTICES MUST COMPLY WITH ALL APPLICABLE
OCCUPATIONAL HEALTH & SAFETY LEGISLATION

SEWERAGE STANDARD DRAWING
AERIAL CROSSINGS
TYPICAL BRIDGE CROSSING CONCEPTS

GCCC	LCC	RCC	QUU	UW
DRAWING No.				VERSION
SEQ-SEW-1406-1				B
NOT TO SCALE				ORG DATE: 1/1/2013



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 SEQ-SEW-1307-3 OR SEQ-SPS-1405-2 FOR TYPICAL EDUCT.
5. STUDOR AIR ADMITTANCE VALVE/S WITHIN BEIGE COLOURED MODIFIED ELECTRICAL PILLAR WITH VENT LOUVERS FITTED..

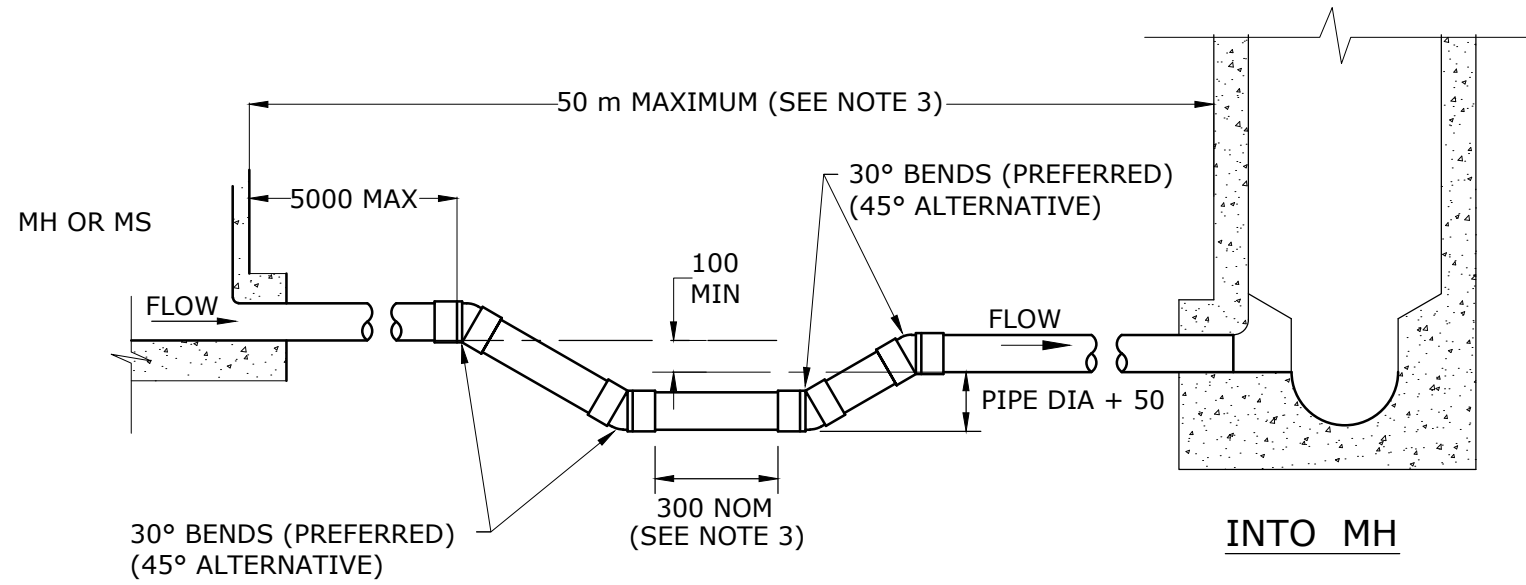
REV. No.	DATE	DESCRIPTION	AUTH.

SEQ WATER SERVICE PROVIDERS

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

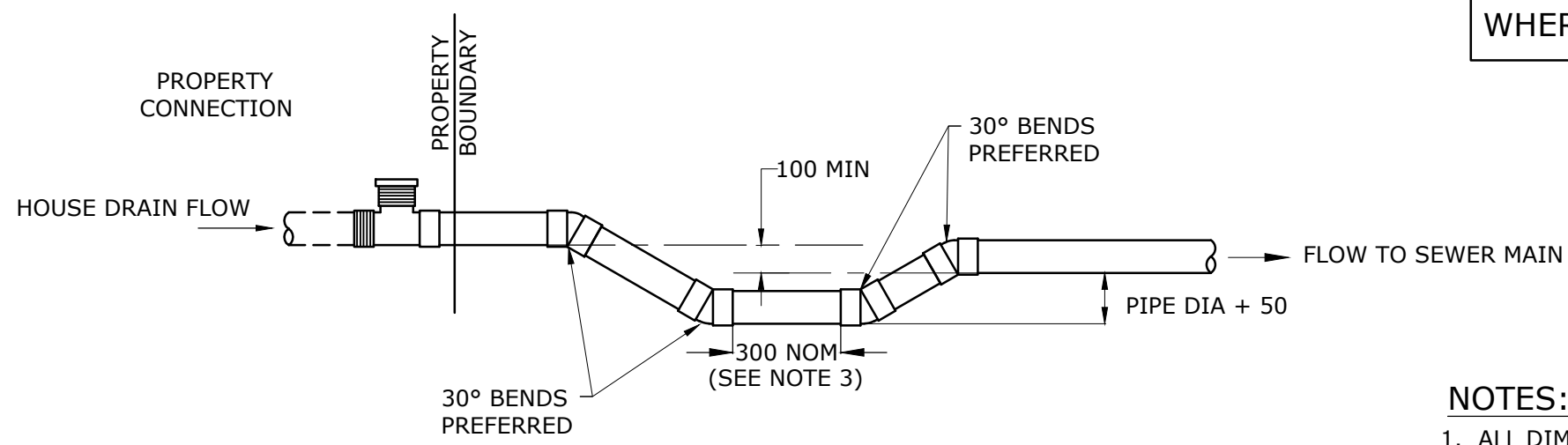
SEWERAGE STANDARD DRAWING
TYPICAL VENTILATION SYSTEMS
INDUCT VENT

GCCC	LCC	RCC	QUU	UW
DRAWING No.				VERSION
SEQ-SEW-1407-1				A
NOT TO SCALE				ORG DATE: 1/1/2013



WATER SEAL ON INLET SEWER

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



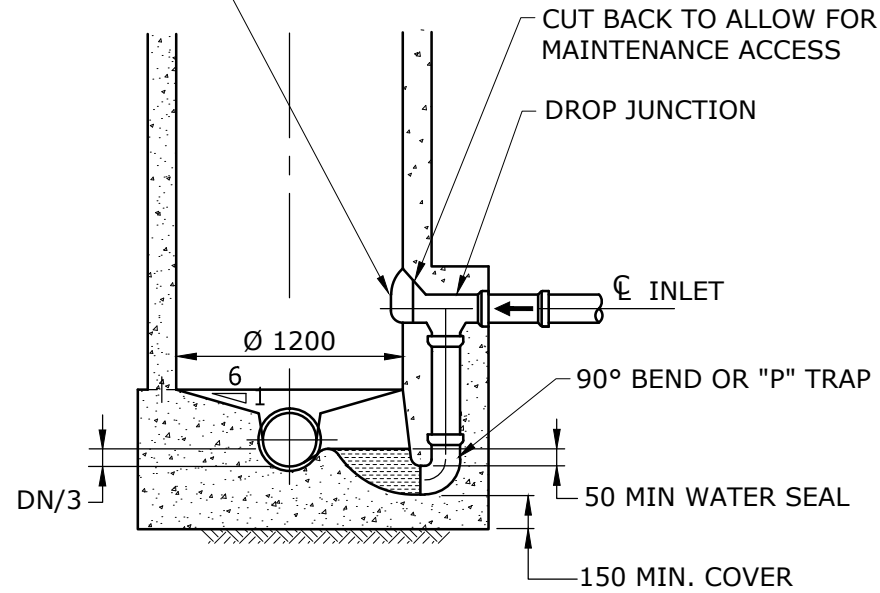
WATER SEAL ON PROPERTY CONNECTION SEWER

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.

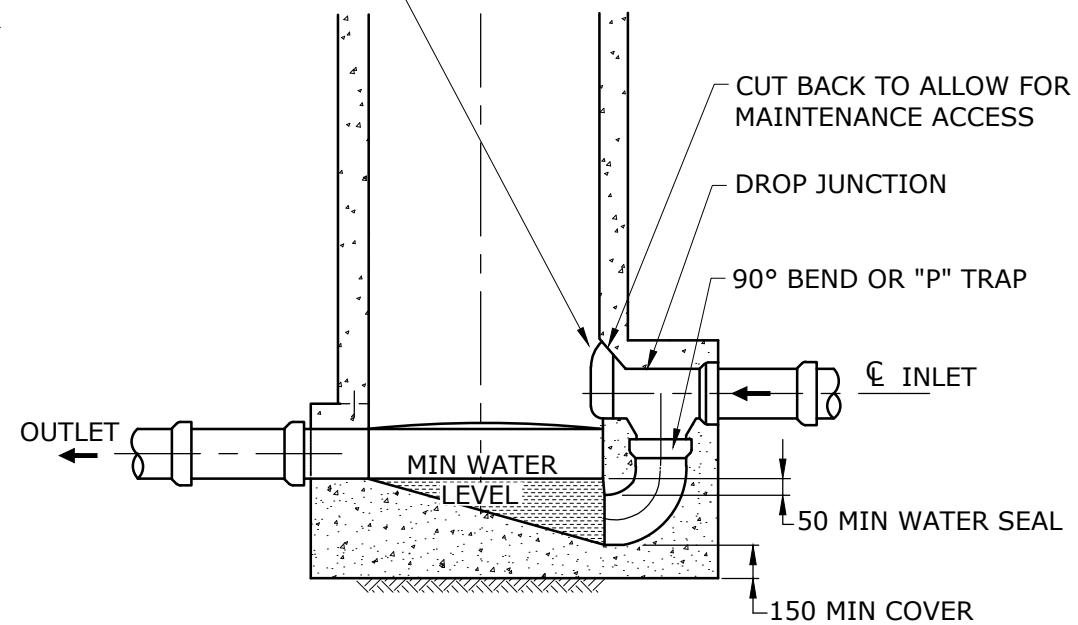
REV. No.	DATE	DESCRIPTION	AUTH.	SEQ WATER SERVICE PROVIDERS		SEWERAGE STANDARD DRAWING		GCCC	LCC	RCC	QUU	DW
				WORK PRACTICES MUST COMPLY WITH ALL APPLICABLE OCCUPATIONAL HEALTH & SAFETY LEGISLATION		WATER SEAL ARRANGEMENTS TYPICAL MAINS TYPE		DRAWING No. SEQ-SEW-1408-1				VERSION
			NOT TO SCALE					A				
								ORG DATE: 1/1/2013				

SEAL OPENING WITH EASILY REMOVED MORTAR PLUG OR SIMILAR



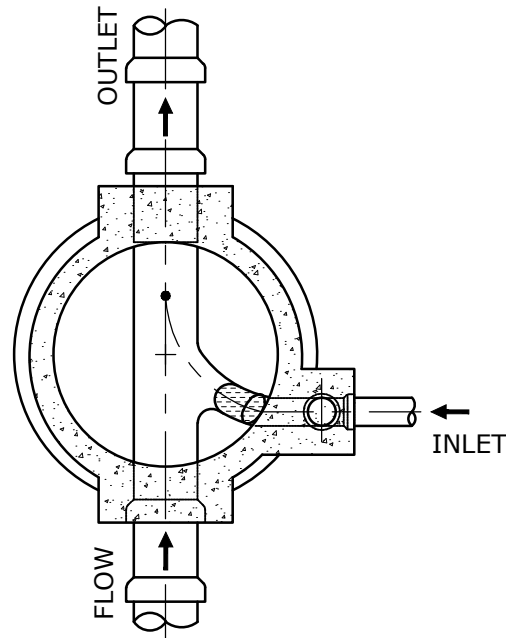
END ELEVATION

SEAL OPENING WITH EASILY REMOVED MORTAR PLUG OR SIMILAR



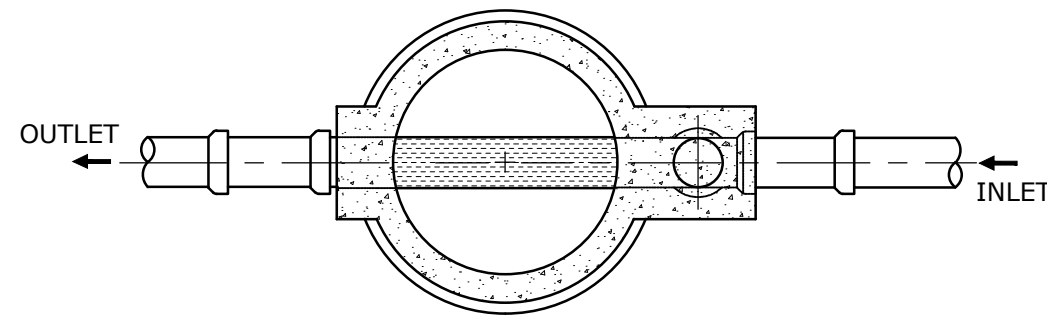
ELEVATION

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



PLAN

WATER SEALED MAINTENANCE HOLE WITH EXTERNAL DROP



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 SEQ-SEW-1304-1 AND 1305-1.

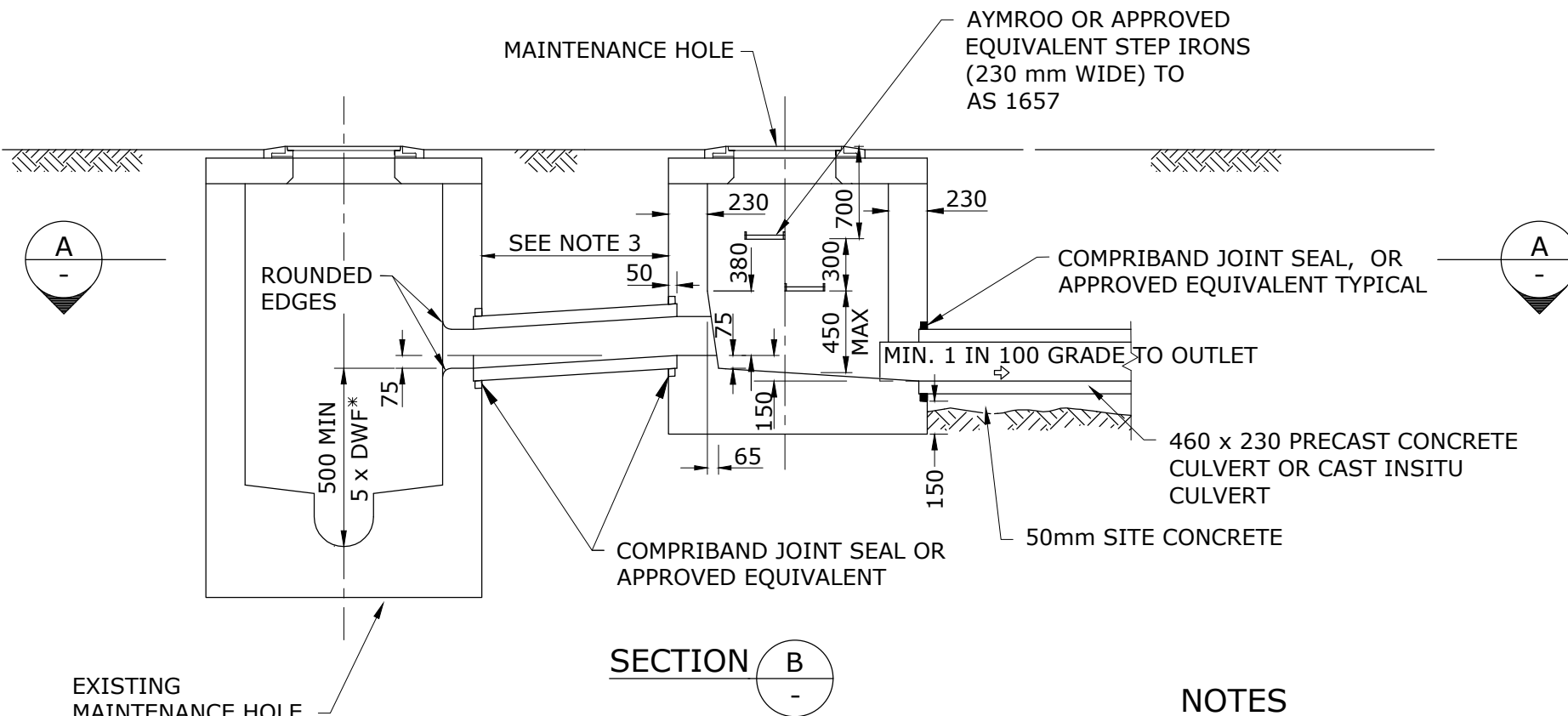
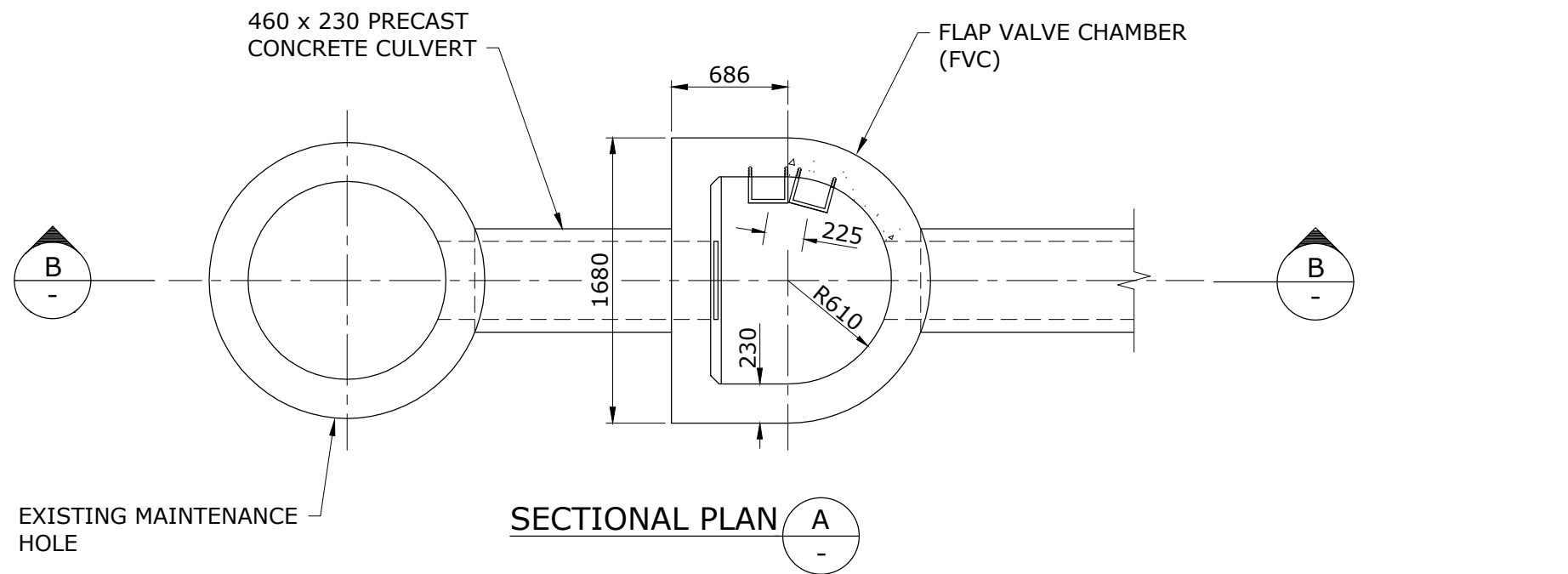
REV. No.	DATE	DESCRIPTION	AUTH.

SEQ WATER SERVICE PROVIDERS

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

SEWERAGE STANDARD DRAWING
WATER SEAL ARRANGEMENTS
TYPICAL MAINTENANCE HOLE SYSTEM

GCCC	LCC	RCC	QUU	DW
DRAWING No.				VERSION
SEQ-SEW-1408-2				A
NOT TO SCALE				ORG DATE: 1/1/2013



* DWF = DRY WEATHER FLOW = FLOW VOLUME

NOTES

1. ALL FLAP VALVE CHAMBERS SHALL BE FITTED WITH MAINTENANCE HOLE FRAME, COVER AND COPING TO SUIT APPLICATION. REFER STANDARD DRAWINGS SEQ-SEW-1301-1 AND SEQ-SEW-1308-2 TO SEQ-SEW-1308-11 FOR DETAILS.
2. A 375mm DIAMETER PIPE (MIN) MAY BE USED INSTEAD OF 460 x 230 BOX CULVERT FOR THE OUTLET PIPE, AS LONG AS FLOW VOLUME AND CONTROL LEVELS AT THE MAINTENANCE HOLE CAN BE MAINTAINED. THIS ALTERNATIVE IS ONLY APPLICABLE TO THE CONDUIT DOWNSTREAM OF THE OVERFLOW STRUCTURE CONTAINING THE FLAP VALVE.
3. IF THE LENGTH FOR A BOX CULVERT BETWEEN M.H. AND F.V.C. IS GREATER THAN 1200mm (LENGTH OF ONE UNIT) THE JOINTS OF THE UNITS SHALL BE CONCRETE SURROUNDED. CONCRETE SURROUND SHALL BE 150 mm THICK WITH SL82 MESH PLACED CENTRALLY.
4. THE OVERFLOW DRAWING SHALL SPECIFY:
 - a) OVERFLOW SIZE BETWEEN M.H. AND F.V.C.
 - b) OVERFLOW SIZE LEAVING F.V.C.
 - c) FLAP VALVE TYPE.
 - d) I.L. OF O.F. AT MANHOLE.
 - e) I.L. OF O.F. AT F.V.C. IN.
 - f) I.L. OF O.F. AT F.V.C. OUT.
 - g) S.L. OF F.V.C.
 - h) I.L. OF O.F. AT DISCHARGE POINT.
 - i) LENGTH BETWEEN M.H. AND F.V.C.
 - j) LENGTH BETWEEN F.V.C. AND OUTLET.
 - k) TYPE OF SCREEN IF NECESSARY.
 - l) CONCRETE BULKHEAD LOCATION ON OUTLET PIPE.
5. FLAP VALVE OMITTED FOR CLARITY REFER SEQ-SEW-1409-2 FOR DETAILS.

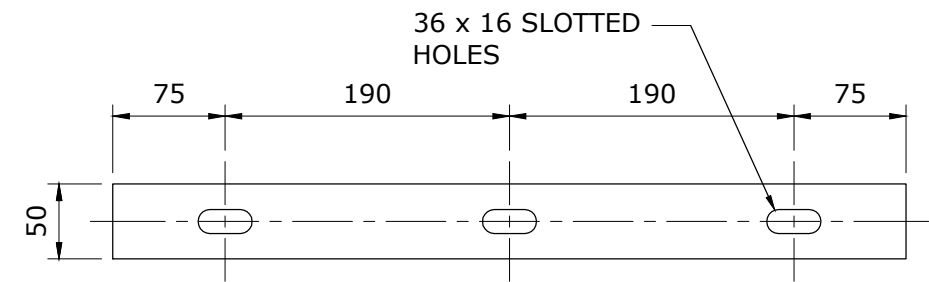
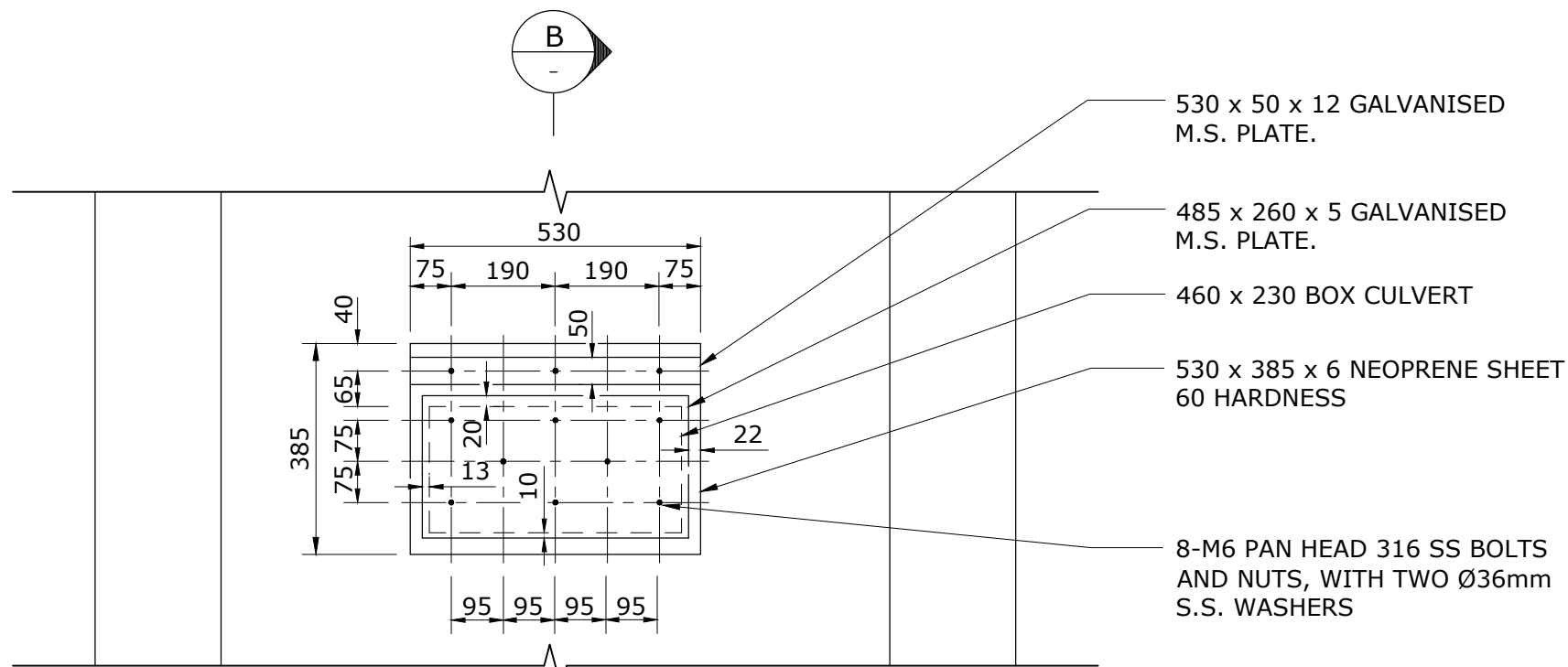
ABBREVIATIONS

- M.H - MAINTENANCE HOLE
- F.V.C - FLAP VALVE CHAMBER
- I.L - INVERT LEVEL
- O.F - OVERFLOW
- S.L - SURFACE LEVEL

NOTES

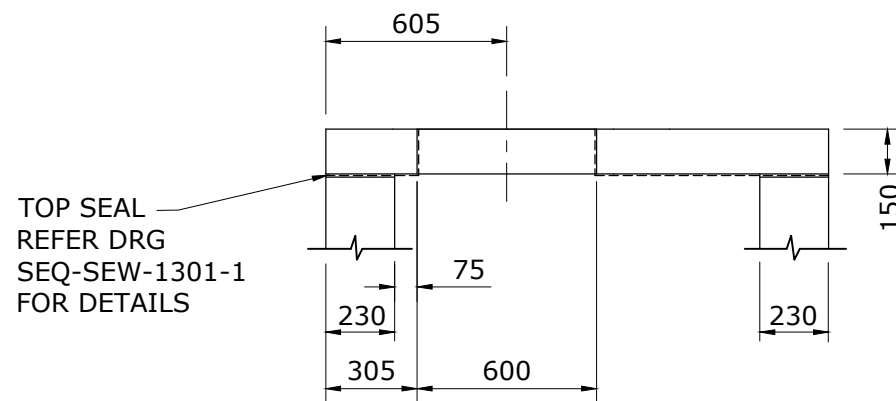
1. REFER SEQ-SEW-1101-4, SEQ-SEW-1101-5 AND SEQ-SEW-1101-6 FOR NOTES.
2. REFER SEQ-SEW-1411-3, SEQ-SEW-1411-4 AND SEQ-SEW-1411-5 FOR STRUCTURAL GENERAL ARRANGEMENTS AND REINFORCEMENT DETAILS.

REV. No.	DATE	DESCRIPTION	AUTH.	SEWERAGE STANDARD DRAWING				CoGC	LCC	BCC	QUU	DW
				SEQ WATER SERVICE PROVIDERS <small>WORK PRACTICES MUST COMPLY WITH ALL APPLICABLE OCCUPATIONAL HEALTH & SAFETY LEGISLATION</small>				DRAWING No.				VERSION
								STANDARD OVERFLOW FLAP VALVE CHAMBER - TYPE 1 TYPICAL CHAMBER DETAILS				SEQ-SEW-1409-1
B	24/05/19	NOTES UPDATED AND REINFORCEMENT REMOVED.						NOT TO SCALE				ORG DATE: 1/1/2013

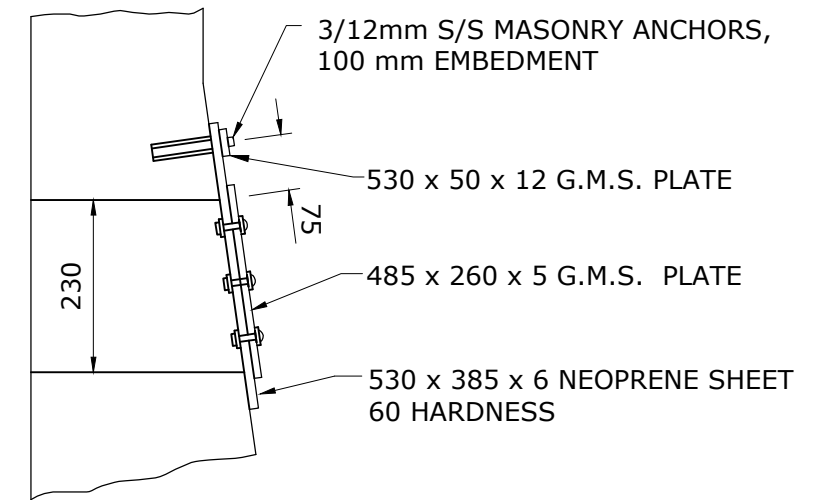


DETAIL OF M.S. PLATE

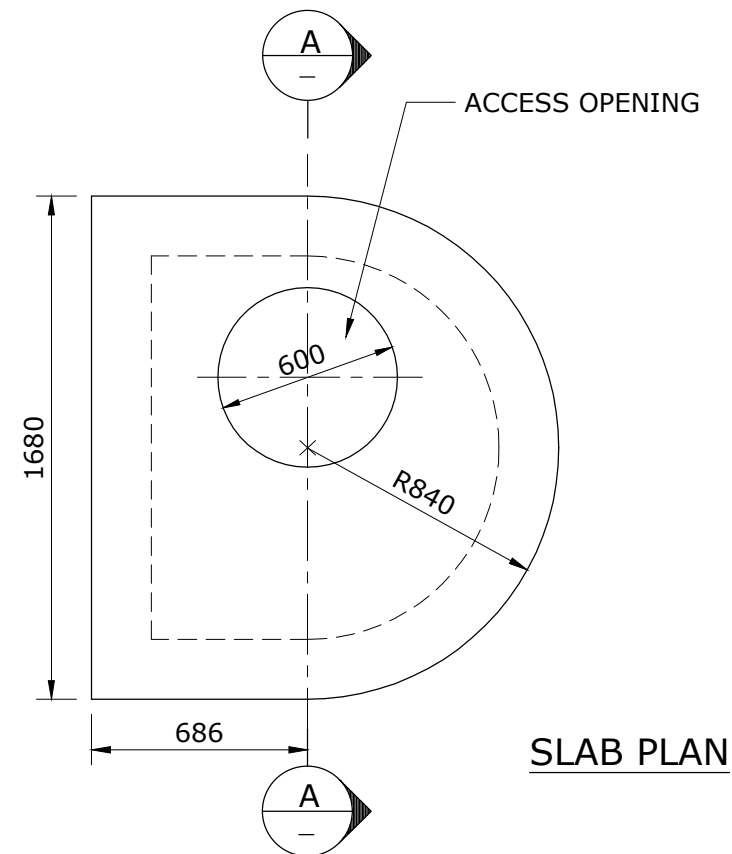
FLAP DETAILS



SECTION A



SECTION B



SLAB PLAN

NOTES

1. REFER SEQ-SEW-1101-4, SEQ-SEW-1101-5 AND SEQ-SEW-1101-6 FOR NOTES.
2. REFER SEQ-SEW-1411-3, SEQ-SEW-1411-4 AND SEQ-SEW-1411-5 FOR STRUCTURAL GENERAL ARRANGEMENTS AND REINFORCEMENT DETAILS.

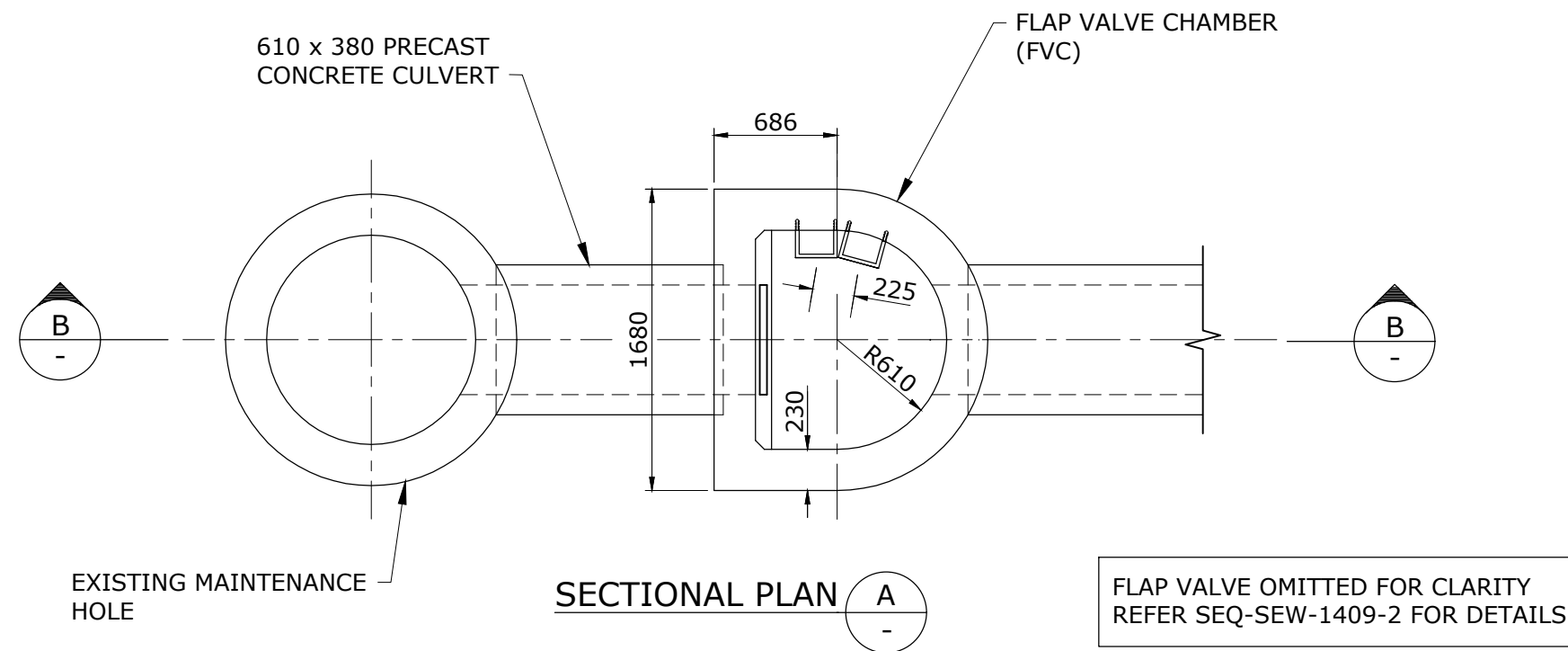
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B	24/05/19	REINFORCEMENT REMOVED	

SEQ WATER SERVICE PROVIDERS

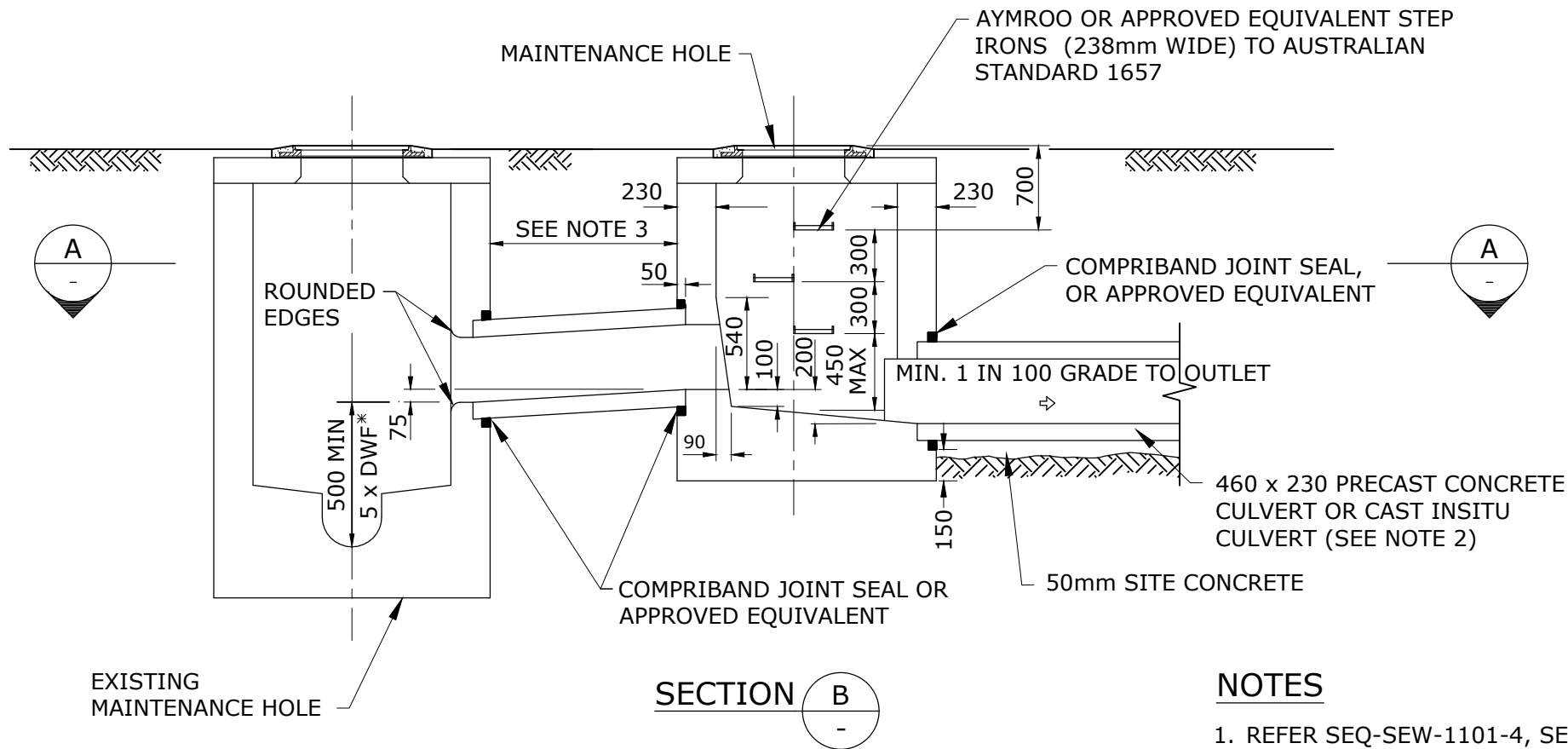
WORK PRACTICES MUST COMPLY WITH ALL APPLICABLE OCCUPATIONAL HEALTH & SAFETY LEGISLATION

SEWERAGE STANDARD DRAWING
STANDARD OVERFLOW FLAP VALVE CHAMBER - TYPE 1
TYPICAL TOP SLAB AND FLAP DETAILS

C/C	L/C	R/C	QUU	UW
DRAWING No.				VERSION
SEQ-SEW-1409-2				B
NOT TO SCALE				ORG DATE: 1/1/2013



FLAP VALVE OMITTED FOR CLARITY
REFER SEQ-SEW-1409-2 FOR DETAILS



* DWF = DRY WEATHER FLOW = FLOW VOLUME

NOTES

1. ALL FLAP VALVE CHAMBERS SHALL BE FITTED WITH MAINTENANCE HOLE FRAME, COVER AND COPING TO SUIT APPLICATION. REFER STANDARD DRAWINGS SEQ-SEW-1411-5 FOR DETAILS.
2. A 375mm DIAMETER PIPE (MIN) MAY BE USED INSTEAD OF 460 x 230 BOX CULVERT FOR THE OUTLET PIPE, AS LONG AS FLOW VOLUME AND CONTROL LEVELS AT THE MAINTENANCE HOLE CAN BE MAINTAINED. THIS ALTERNATIVE IS ONLY APPLICABLE TO THE CONDUIT DOWNSTREAM OF THE OVERFLOW STRUCTURE CONTAINING THE FLAP VALVE.
3. IF THE LENGTH FOR A BOX CULVERT BETWEEN M.H. AND F.V.C. IS GREATER THAN 1200mm (LENGTH OF ONE UNIT) THE JOINTS OF THE UNITS SHALL BE CONCRETE SURROUNDED. CONCRETE SURROUND SHALL BE 150 mm THICK WITH SL82 MESH PLACED CENTRALLY.
4. THE OVERFLOW DRAWING SHALL SPECIFY:
 - a) OVERFLOW SIZE BETWEEN M.H. AND F.V.C.
 - b) OVERFLOW SIZE LEAVING F.V.C.
 - c) FLAP VALVE TYPE.
 - d) I.L. OF O.F. AT MANHOLE.
 - e) I.L. OF O.F. AT F.V.C. IN.
 - f) I.L. OF O.F. AT F.V.C. OUT.
 - g) S.L. OF F.V.C.
 - h) I.L. OF O.F. AT DISCHARGE POINT.
 - i) LENGTH BETWEEN M.H. AND F.V.C.
 - j) LENGTH BETWEEN F.V.C. AND OUTLET.
 - k) TYPE OF SCREEN IF NECESSARY.
 - l) CONCRETE BULKHEAD LOCATION ON OUTLET PIPE.
5. FLAP VALVE OMITTED FOR CLARITY REFER SEQ-SEW-1409-2 FOR DETAILS.

ABBREVIATIONS

- M.H - MAINTENANCE HOLE
- F.V.C - FLAP VALVE CHAMBER
- I.L - INVERT LEVEL
- O.F - OVERFLOW
- S.L - SURFACE LEVEL

NOTES

1. REFER SEQ-SEW-1101-4, SEQ-SEW-1101-5 AND SEQ-SEW-1101-6 FOR NOTES.
2. REFER SEQ-SEW-1411-3, SEQ-SEW-1411-4 AND SEQ-SEW-1411-5 FOR STRUCTURAL GENERAL ARRANGEMENTS AND REINFORCEMENT DETAILS.

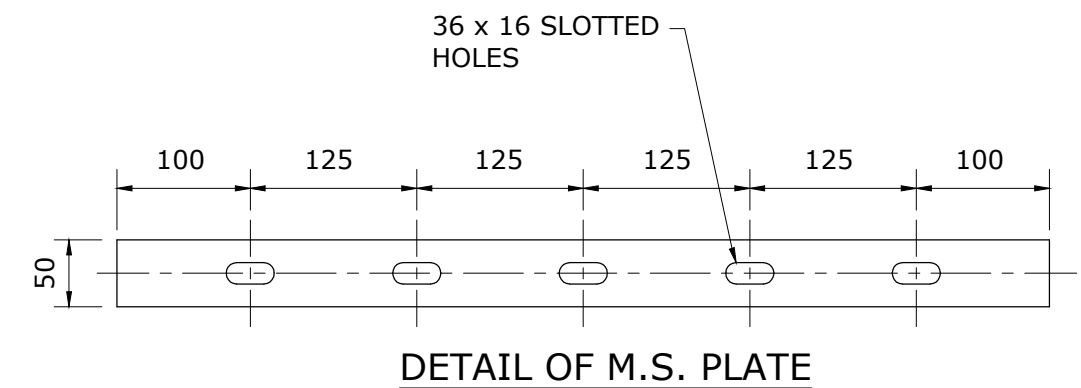
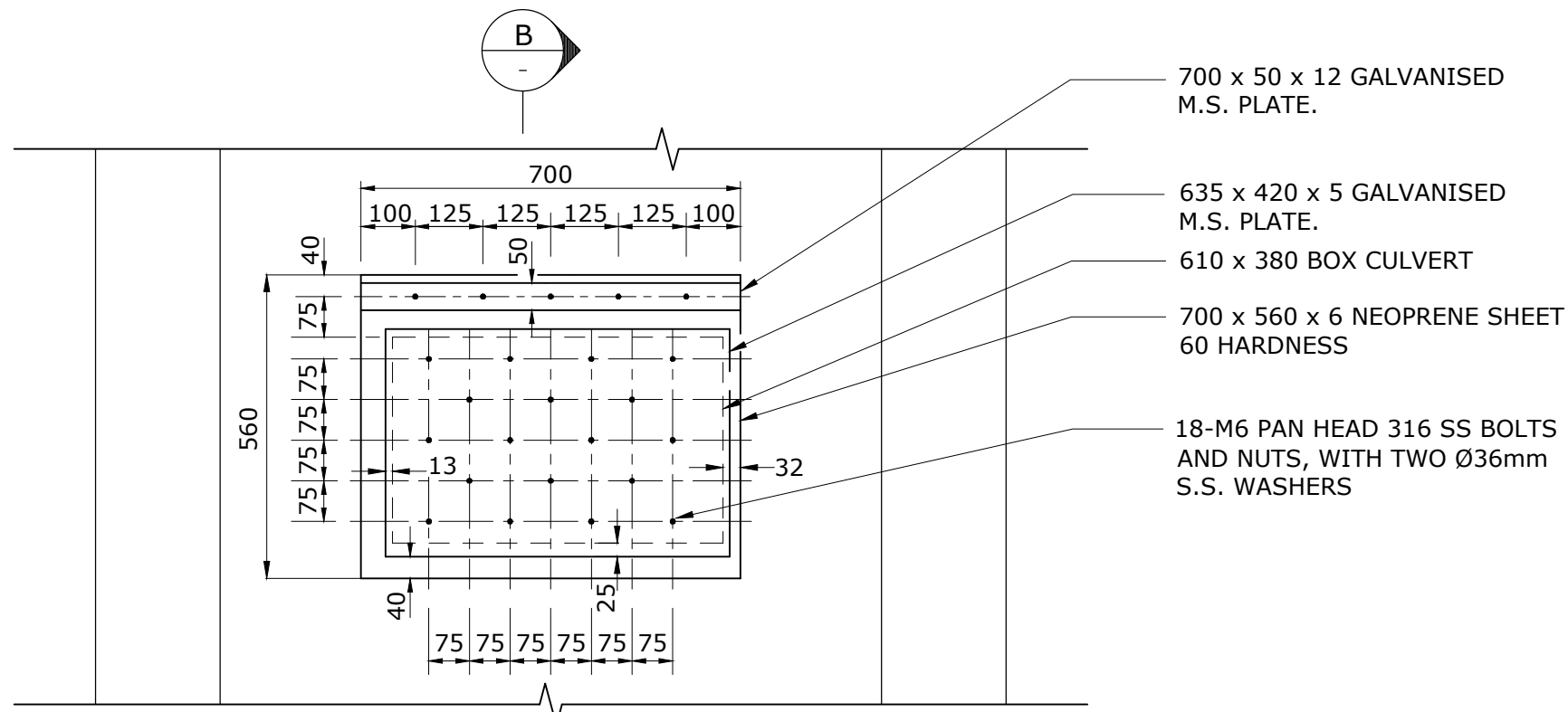
REV. No.	DATE	DESCRIPTION	AUTH.
B	24/05/19	NOTES UPDATED AND REINFORCEMENT REMOVED	

SEQ WATER SERVICE PROVIDERS

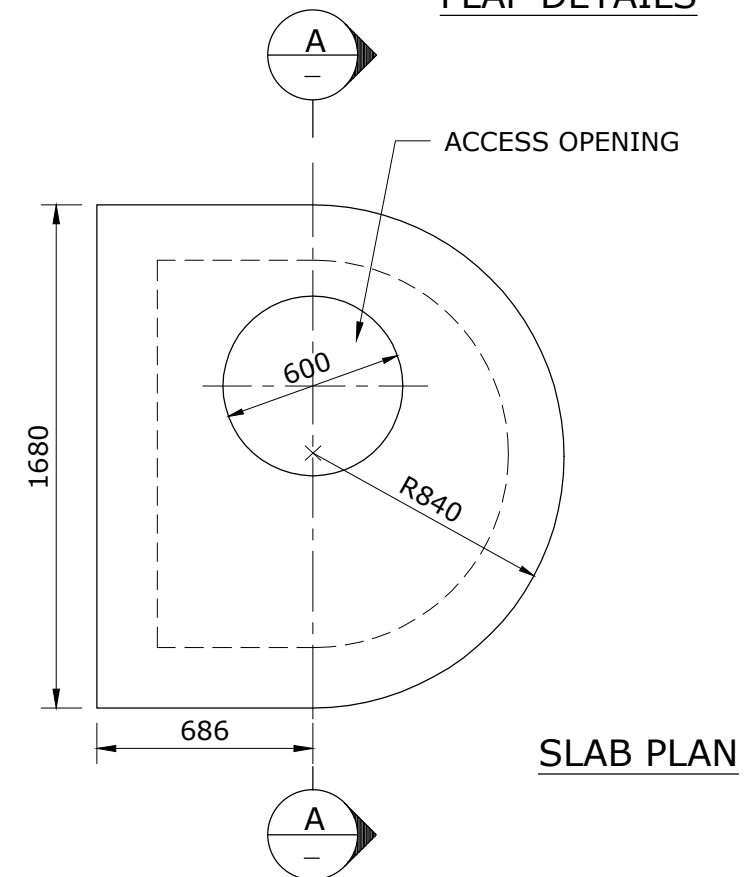
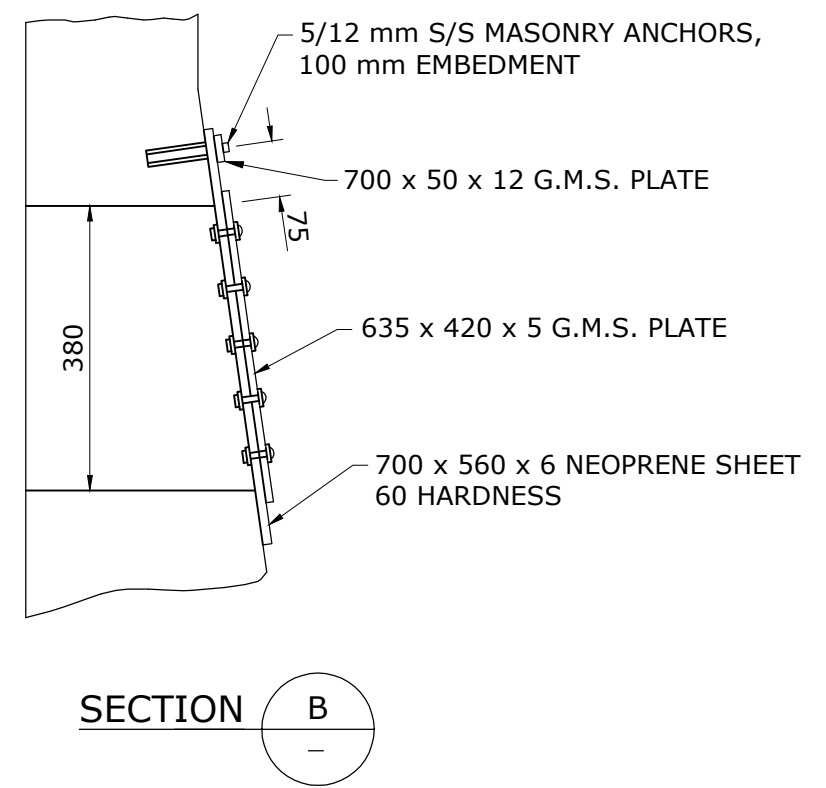
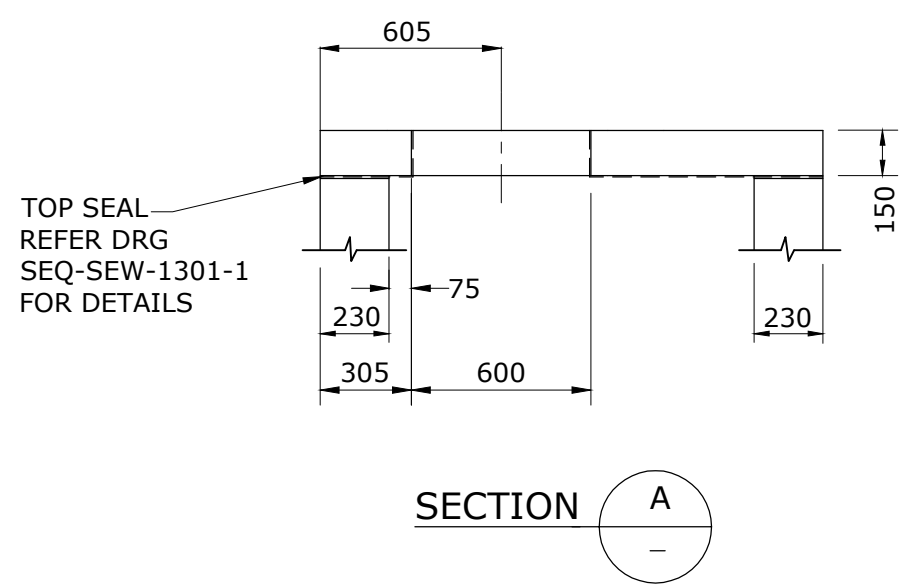
WORK PRACTICES MUST COMPLY WITH ALL APPLICABLE OCCUPATIONAL HEALTH & SAFETY LEGISLATION

SEWERAGE STANDARD DRAWING
STANDARD OVERFLOW FLAP VALVE CHAMBER - TYPE 2
TYPICAL CHAMBER DETAILS

CoC	L&C	R&C	QUU	UW
DRAWING No.				VERSION
SEQ-SEW-1410-1				B
NOT TO SCALE				ORG DATE: 1/1/2013



FLAP DETAILS



NOTES

1. REFER SEQ-SEW-1101-4, SEQ-SEW-1101-5 AND SEQ-SEW-1101-6 FOR NOTES.
2. REFER SEQ-SEW-1411-3, SEQ-SEW-1411-4 AND SEQ-SEW-1411-5 FOR STRUCTURAL GENERAL ARRANGEMENTS AND REINFORCEMENT DETAILS.

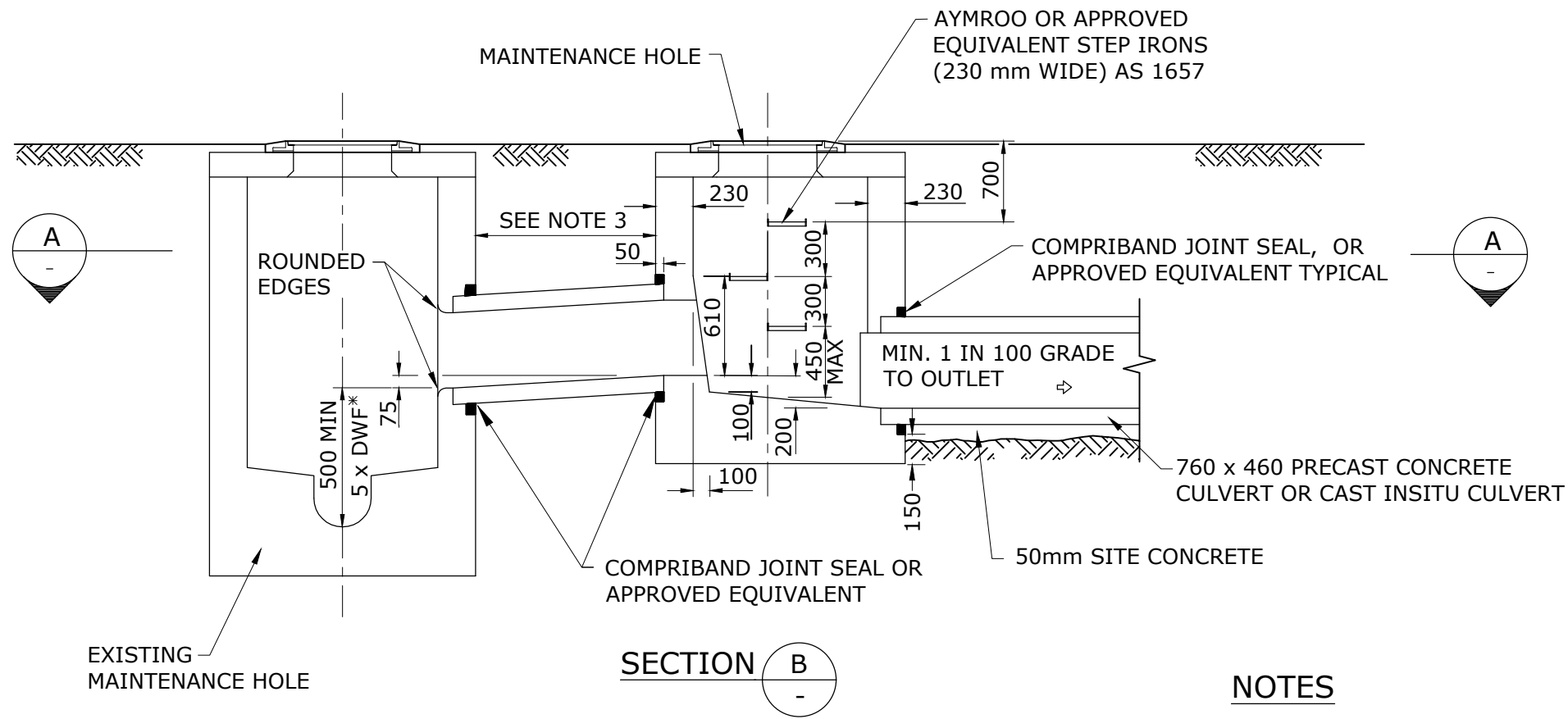
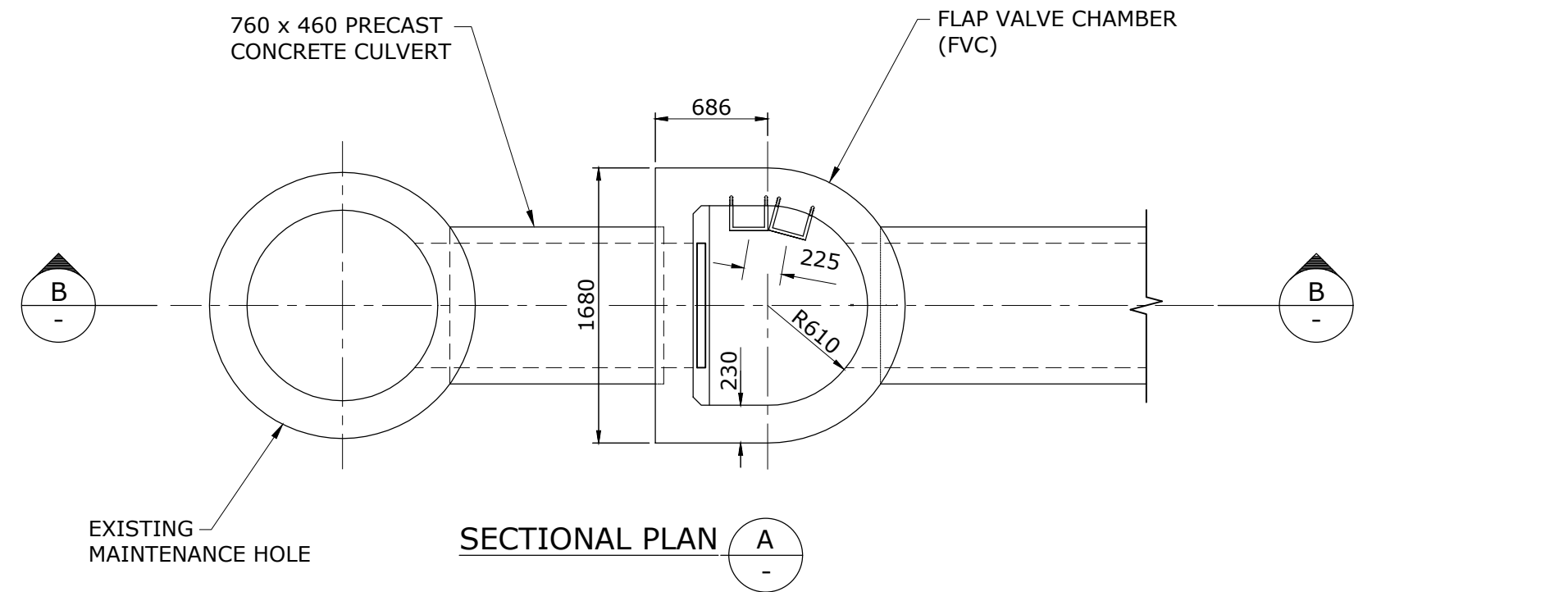
REV. No.	DATE	DESCRIPTION	AUTH.
B	24/05/19	REINFORCEMENT REMOVED	

SEQ WATER SERVICE PROVIDERS

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

SEWERAGE STANDARD DRAWING
 STANDARD OVERFLOW FLAP VALVE CHAMBER - TYPE 2
 TYPICAL TOP SLAB AND FLAP DETAILS

CoC	L&C	R&C	QUU	LW
DRAWING No.				VERSION
SEQ-SEW-1410-2				B
NOT TO SCALE				ORG DATE: 1/1/2013



* DWF = DRY WEATHER FLOW = FLOW VOLUME

NOTES

1. ALL FLAP VALVE CHAMBERS SHALL BE FITTED WITH MAINTENANCE HOLE FRAME, COVER AND COPING TO SUIT APPLICATION. REFER STANDARD DRAWINGS SEQ-SEW-1301-1 AND SEQ-SEW-1308-2 FOR DETAILS.
2. A 675 mm DIAMETER PIPE (MIN) MAY BE USED INSTEAD OF 760 x 460 BOX CULVERT FOR THE OUTLET PIPE, AS LONG AS FLOW VOLUME AND CONTROL LEVELS AT THE MAINTENANCE HOLE CAN BE MAINTAINED. THIS ALTERNATIVE IS ONLY APPLICABLE TO THE CONDUIT DOWNSTREAM OF THE OVERFLOW STRUCTURE CONTAINING THE FLAP VALVE.
3. IF THE LENGTH FOR A BOX CULVERT BETWEEN M.H. AND F.V.C. IS GREATER THAN 1200mm (LENGTH OF ONE UNIT) THE JOINTS OF THE UNITS SHALL BE CONCRETE SURROUNDED. CONCRETE SURROUND SHALL BE 150 mm THICK WITH SL82 MESH PLACED CENTRALLY.
4. THE OVERFLOW DRAWING SHALL SPECIFY:
 - a) OVERFLOW SIZE BETWEEN M.H. AND F.V.C.
 - b) OVERFLOW SIZE LEAVING F.V.C.
 - c) FLAP VALVE TYPE.
 - d) I.L. OF O.F. AT MANHOLE.
 - e) I.L. OF O.F. AT F.V.C. IN.
 - f) I.L. OF O.F. AT F.V.C. OUT.
 - g) S.L. OF F.V.C.
 - h) I.L. OF O.F. AT DISCHARGE POINT.
 - i) LENGTH BETWEEN M.H. AND F.V.C.
 - j) LENGTH BETWEEN F.V.C. AND OUTLET.
 - k) TYPE OF SCREEN IF NECESSARY.
 - l) CONCRETE BULKHEAD LOCATION ON OUTLET PIPE.
5. FLAP VALVE OMITTED FOR CLARITY REFER SEQ-SEW-1409-2 FOR DETAILS.

ABBREVIATIONS

- M.H - MAINTENANCE HOLE
- F.V.C - FLAP VALVE CHAMBER
- I.L - INVERT LEVEL
- O.F - OVERFLOW
- S.L - SURFACE LEVEL

NOTES

1. REFER SEQ-SEW-1101-4, SEQ-SEW-1101-5 AND SEQ-SEW-1101-6 FOR NOTES.
2. REFER SEQ-SEW-1411-3, SEQ-SEW-1411-4 AND SEQ-SEW-1411-5 FOR STRUCTURAL GENERAL ARRANGEMENTS AND REINFORCEMENT DETAILS.

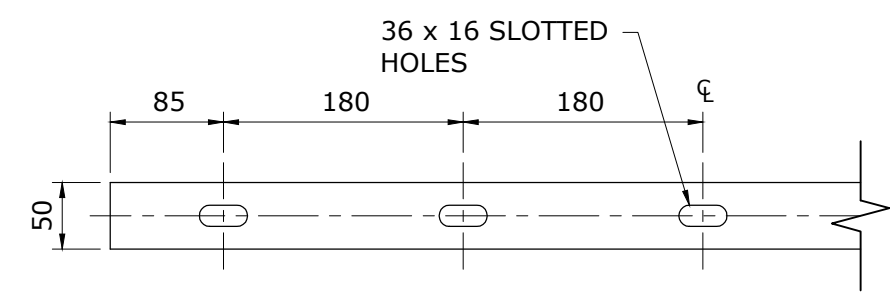
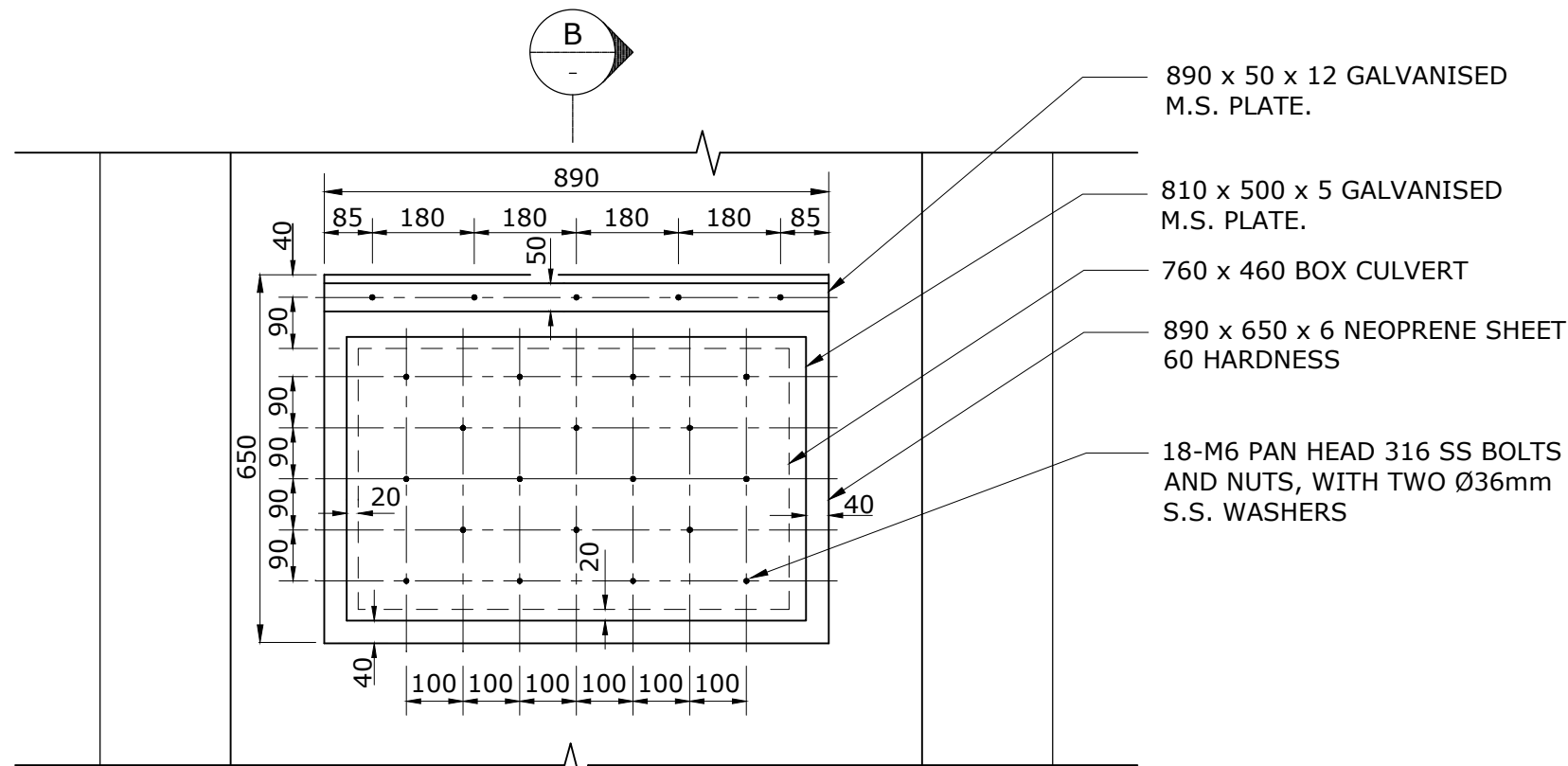
REV. No.	DATE	DESCRIPTION	AUTH.
B	24/05/19	NOTES UPDATED AND REINFORCEMENT REMOVED	

SEQ WATER SERVICE PROVIDERS

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

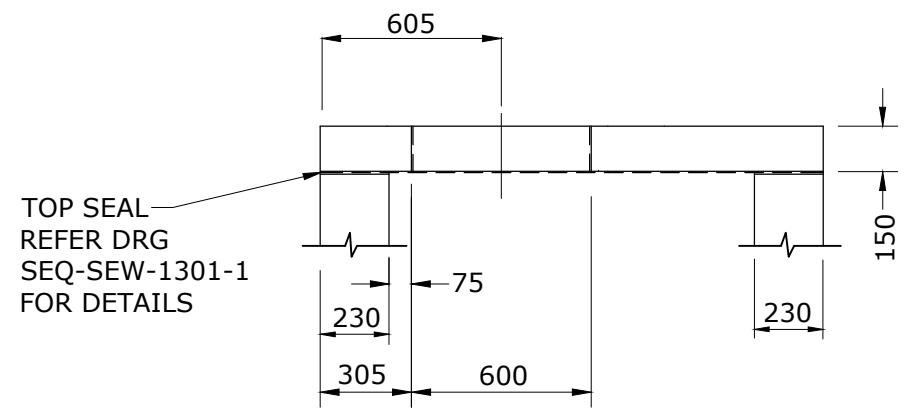
SEWERAGE STANDARD DRAWING
 STANDARD OVERFLOW FLAP VALVE CHAMBER - TYPE 3
 TYPICAL CHAMBER DETAILS

C&C	L&C	R&C	QUU	UW
DRAWING No.				VERSION
SEQ-SEW-1411-1				B
NOT TO SCALE				ORG DATE: 1/1/2013

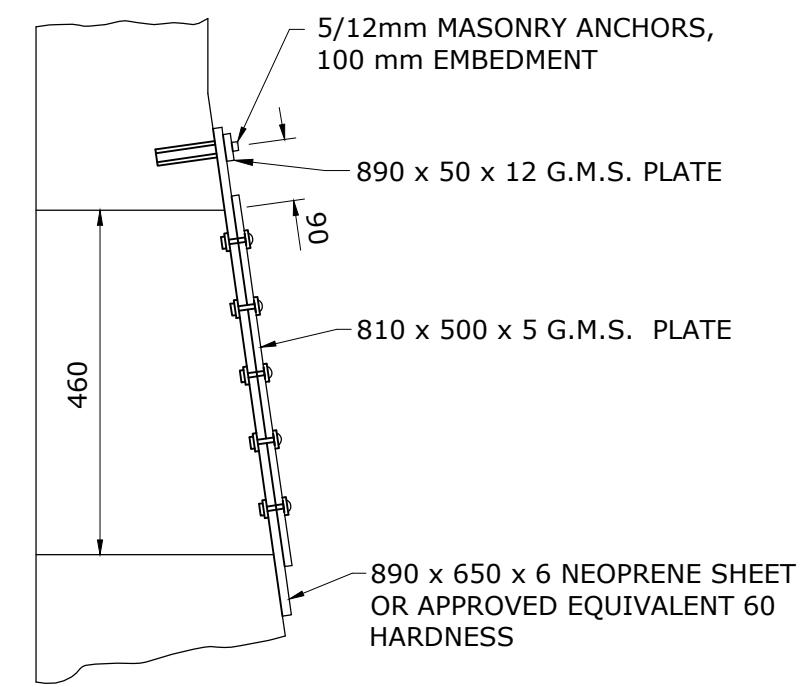


DETAIL OF M.S. PLATE

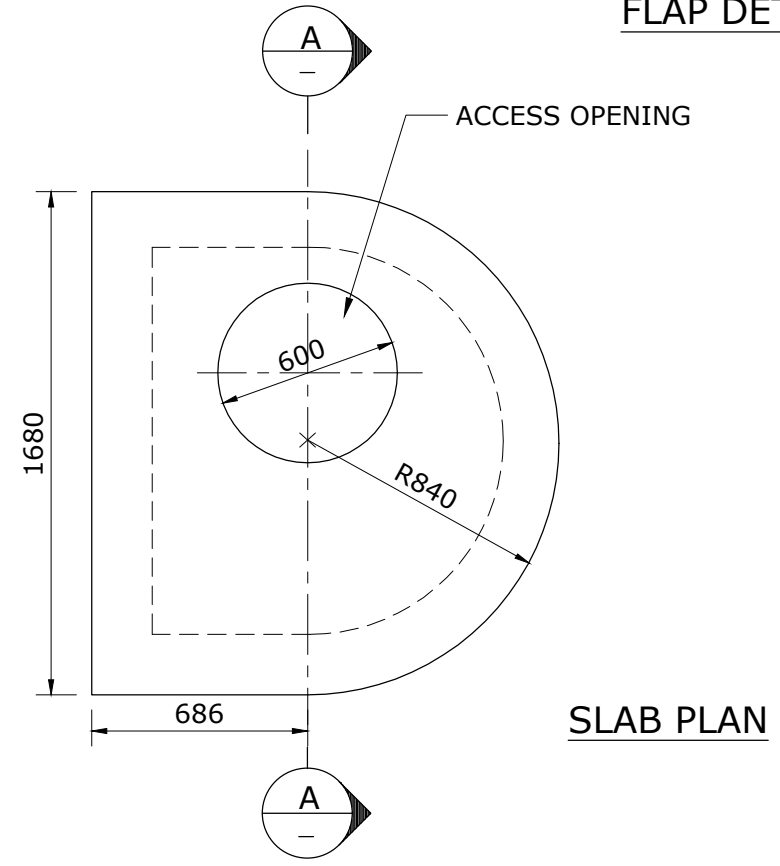
FLAP DETAILS



SECTION A



SECTION B



SLAB PLAN

NOTES

1. REFER SEQ-SEW-1101-4, SEQ-SEW-1101-5 AND SEQ-SEW-1101-6 FOR NOTES.
2. REFER SEQ-SEW-1411-3, SEQ-SEW-1411-4 AND SEQ-SEW-1411-5 FOR STRUCTURAL GENERAL ARRANGEMENTS AND REINFORCEMENT DETAILS.

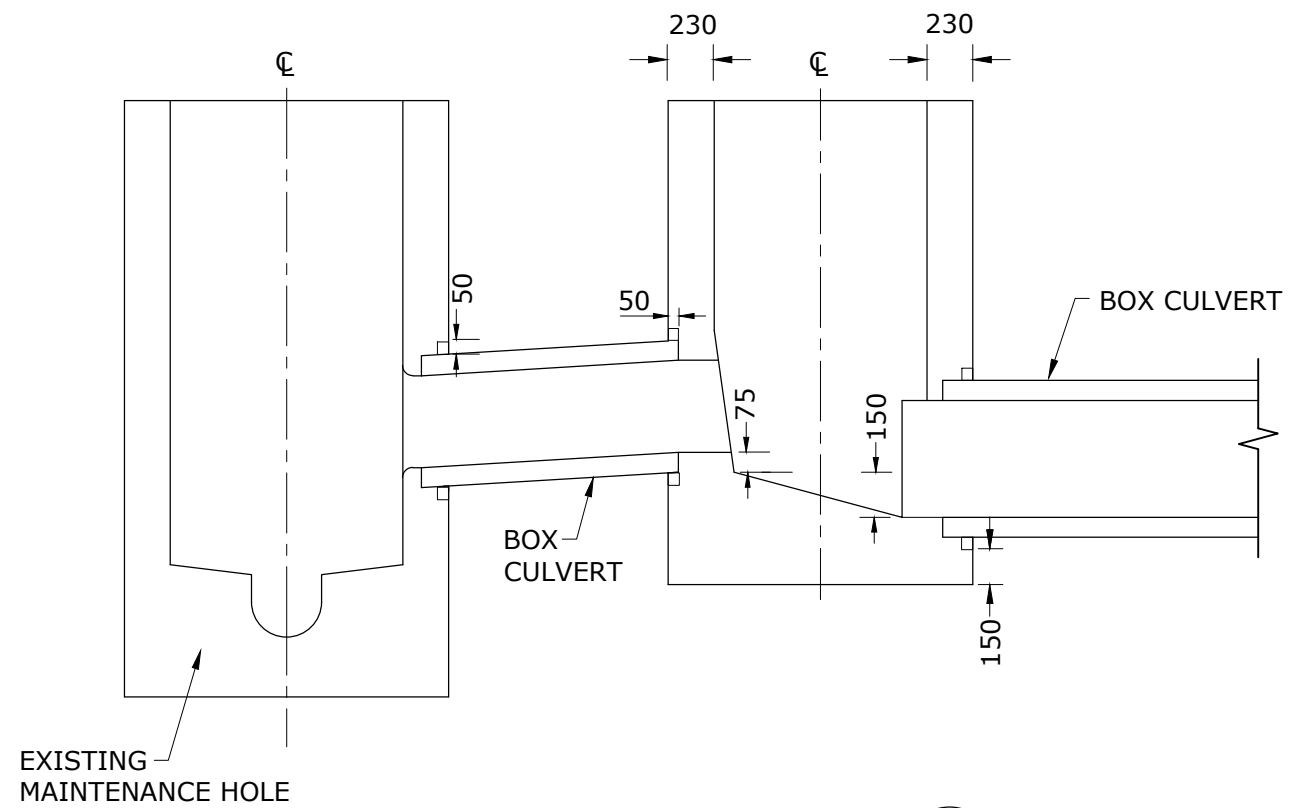
REV. No.	DATE	DESCRIPTION	AUTH.
B	24/05/19	REINFORCEMENT REMOVED	

SEQ WATER SERVICE PROVIDERS

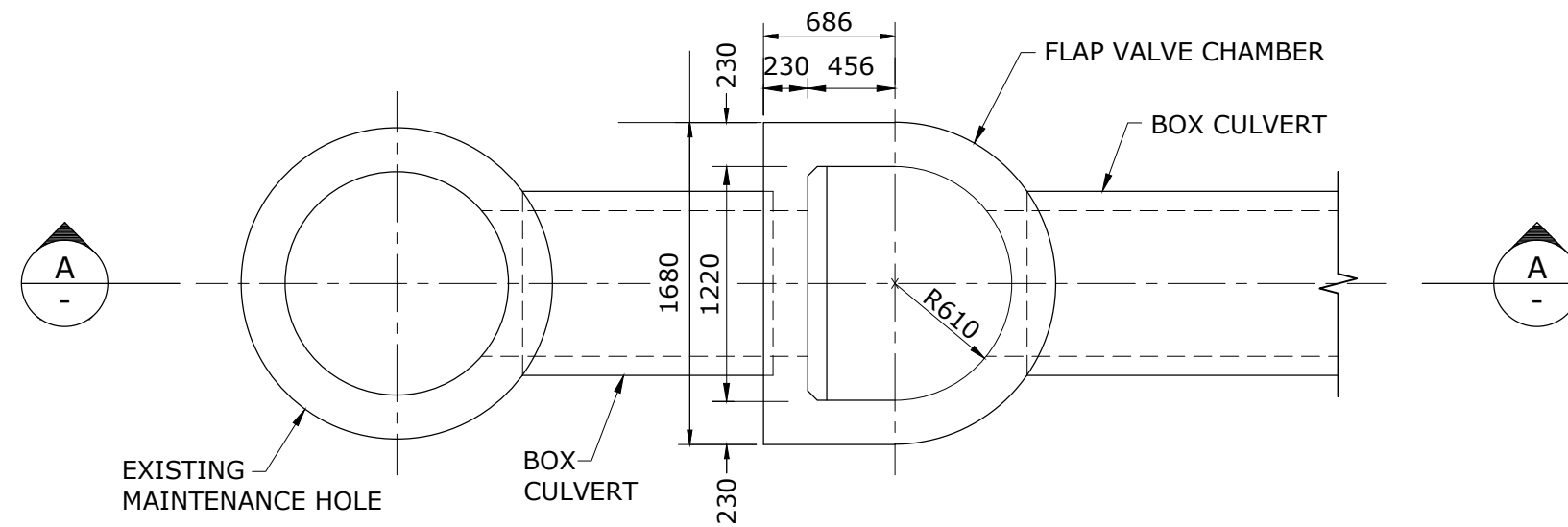
WORK PRACTICES MUST COMPLY WITH ALL APPLICABLE OCCUPATIONAL HEALTH & SAFETY LEGISLATION

SEWERAGE STANDARD DRAWING
STANDARD OVERFLOW FLAP VALVE CHAMBER - TYPE 3
TYPICAL TOP SLAB AND FLAP DETAILS

C&C	L&C	R&C	QUU	LW
DRAWING No.				VERSION
SEQ-SEW-1411-2				B
NOT TO SCALE			ORG DATE: 1/1/2013	



SECTIONAL ELEVATION A



PLAN

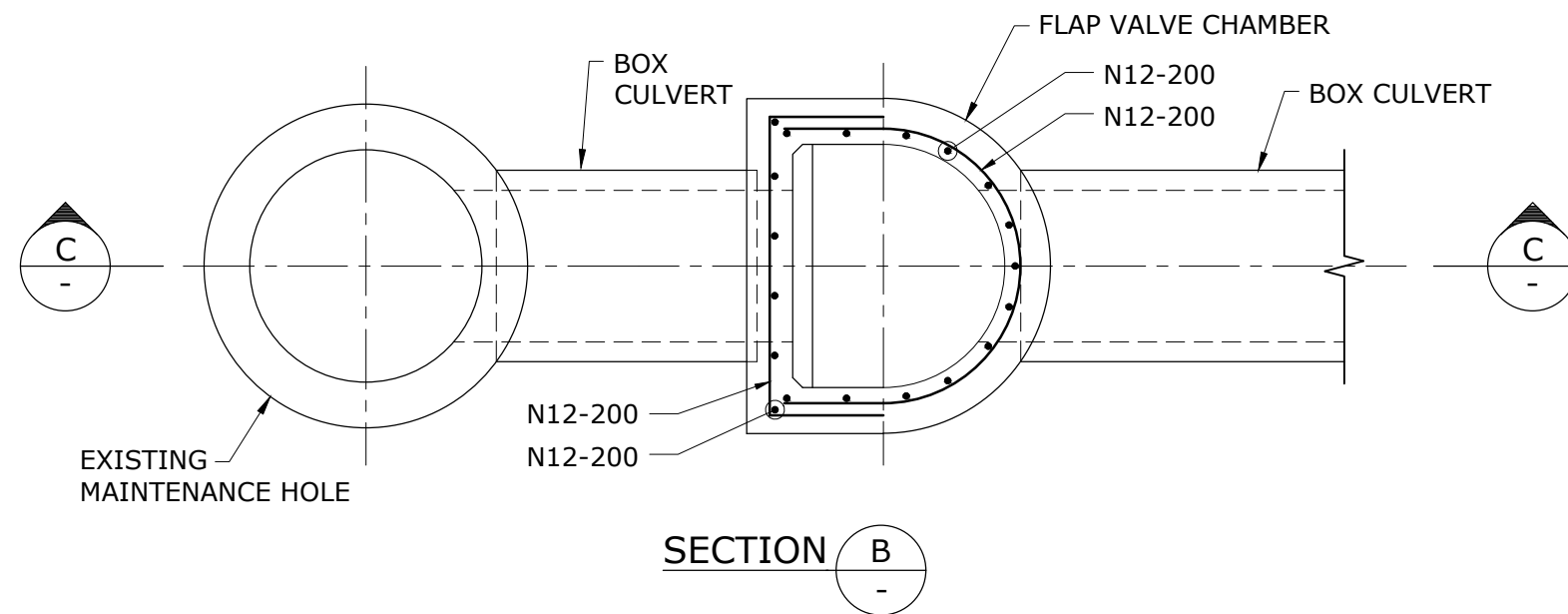
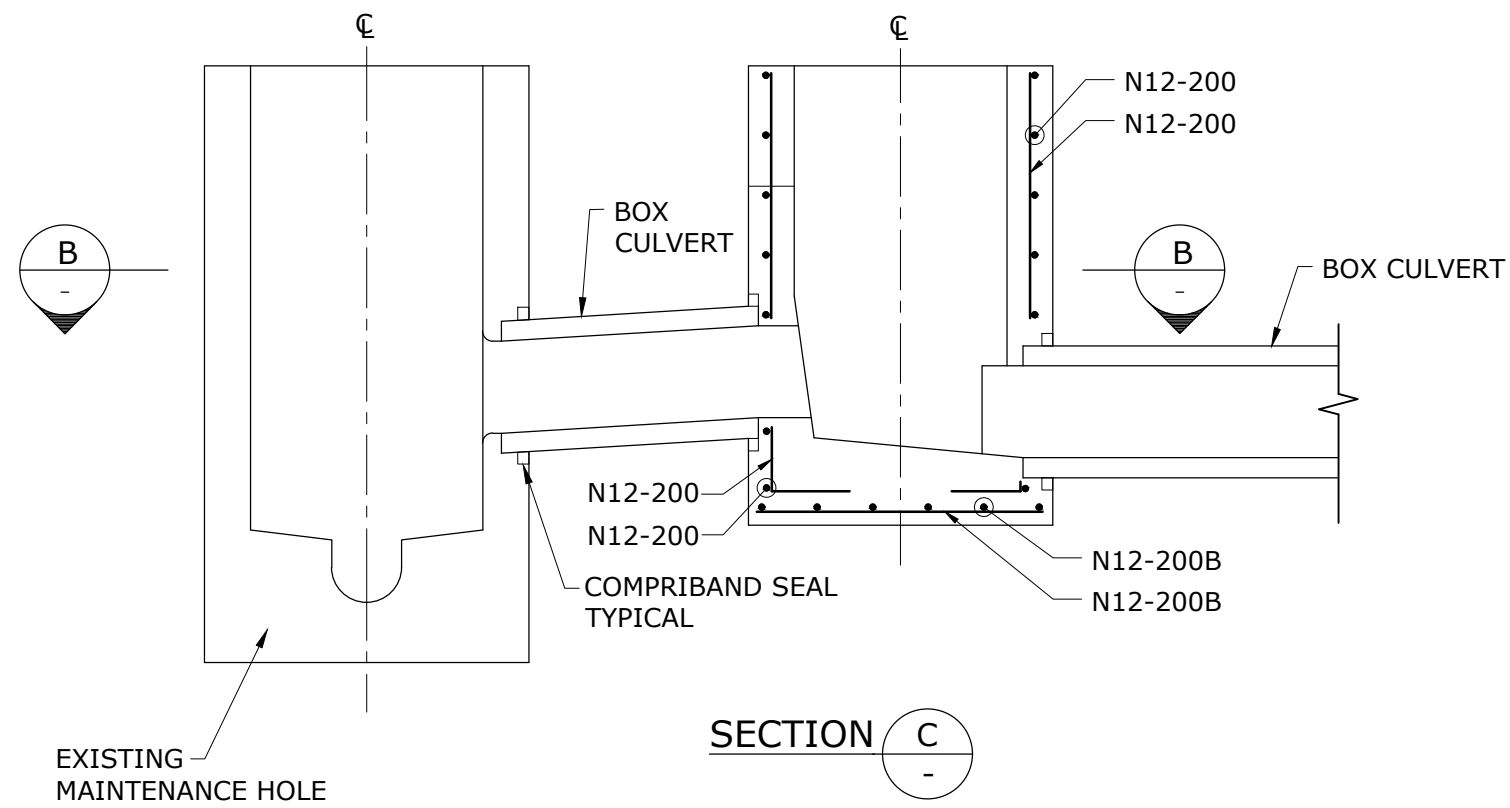
REV. No.	DATE	DESCRIPTION	AUTH.

**SEQ WATER
SERVICE PROVIDERS**

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

SEWERAGE STANDARD DRAWING
STANDARD OVERFLOW FLAP VALVE
CHAMBER - TYPES 1, 2 & 3
STRUCTURAL G.A. DETAILS

C&C	L&C	R&C	QUU	LW
DRAWING No.				VERSION
SEQ-SEW-1411-3				A
NOT TO SCALE				ORG DATE: 24/05/2019



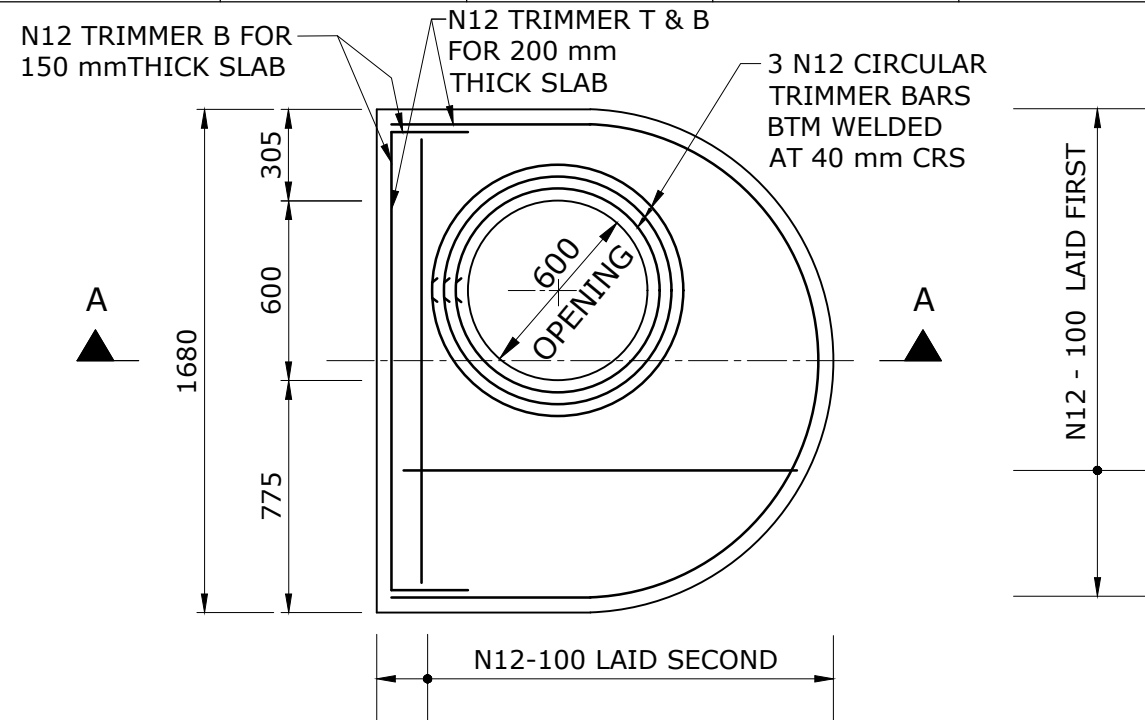
REV. No.	DATE	DESCRIPTION	AUTH.

SEQ WATER SERVICE PROVIDERS

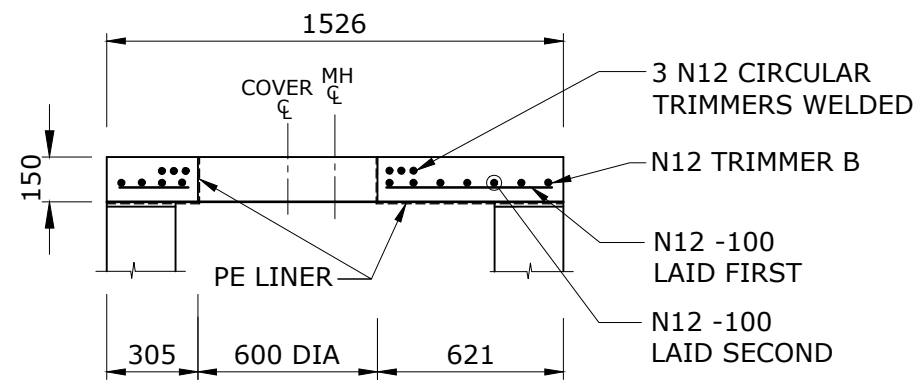
WORK PRACTICES MUST COMPLY WITH ALL APPLICABLE OCCUPATIONAL HEALTH & SAFETY LEGISLATION

SEWERAGE STANDARD DRAWING
 STANDARD OVERFLOW FLAP VALVE CHAMBER - TYPES 1, 2 & 3
 TYPICAL REINFORCEMENT DETAILS

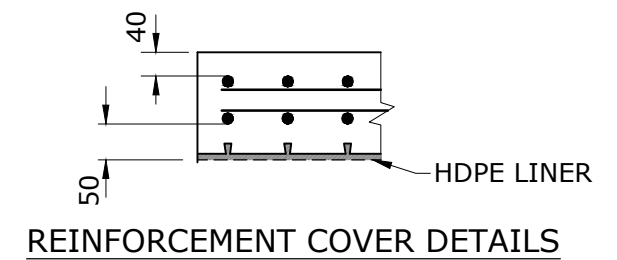
CoC	LCC	RCC	QUU	LW
DRAWING No.				VERSION
SEQ-SEW-1411-4				A
NOT TO SCALE			ORG DATE: 24/05/2019	



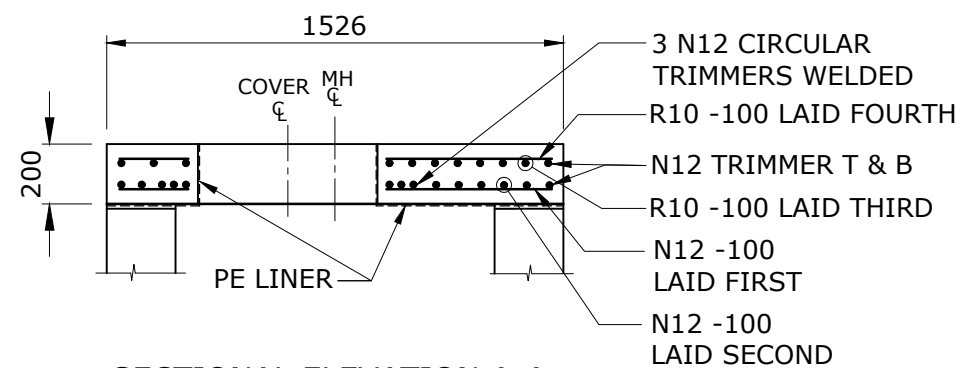
**OVERFLOW FLAP VALVE TOP SLAB
BOTTOM REINFORCEMENT SHOWN**



**SECTIONAL ELEVATION A-A
CLASS B REINFORCEMENT**



REINFORCEMENT COVER DETAILS



**SECTIONAL ELEVATION A-A
CLASS D REINFORCEMENT**

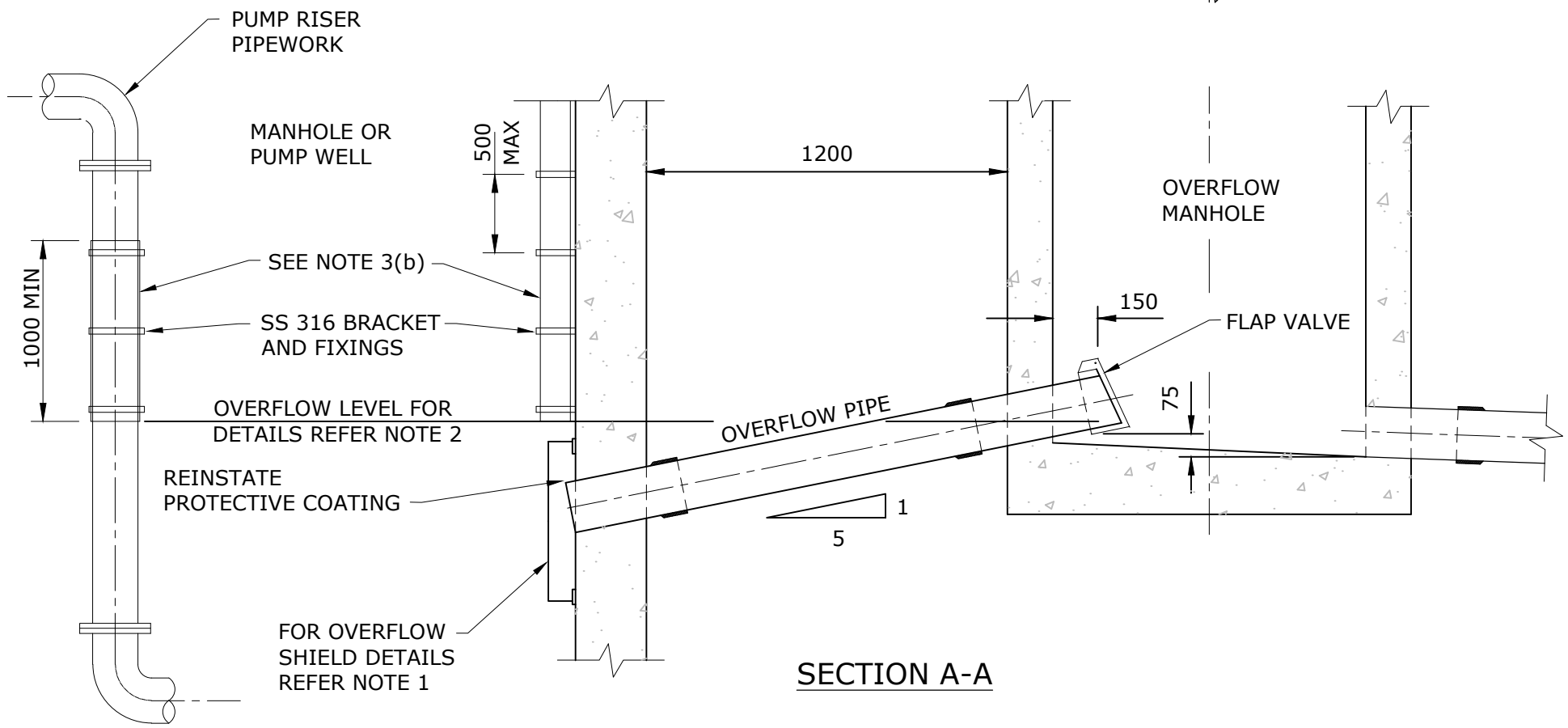
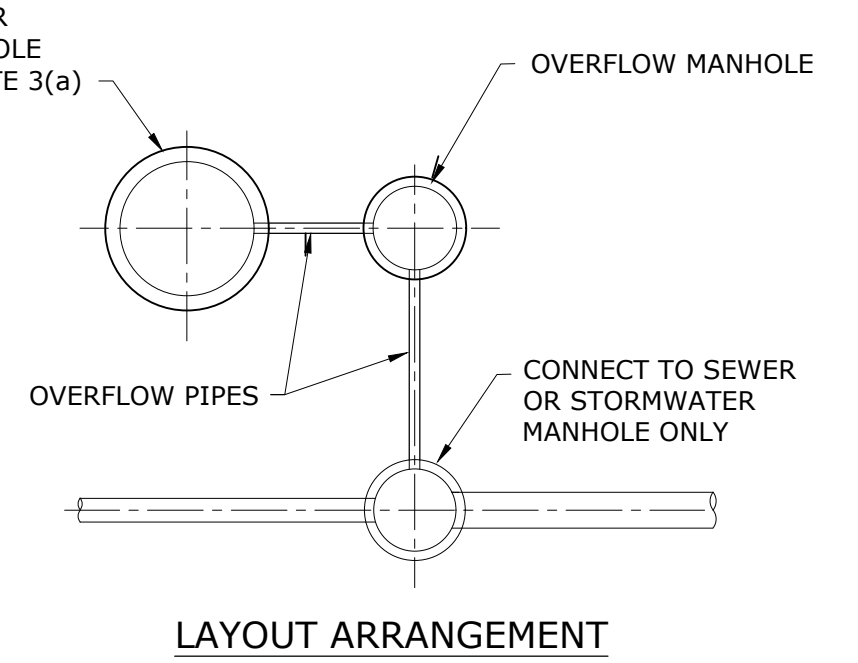
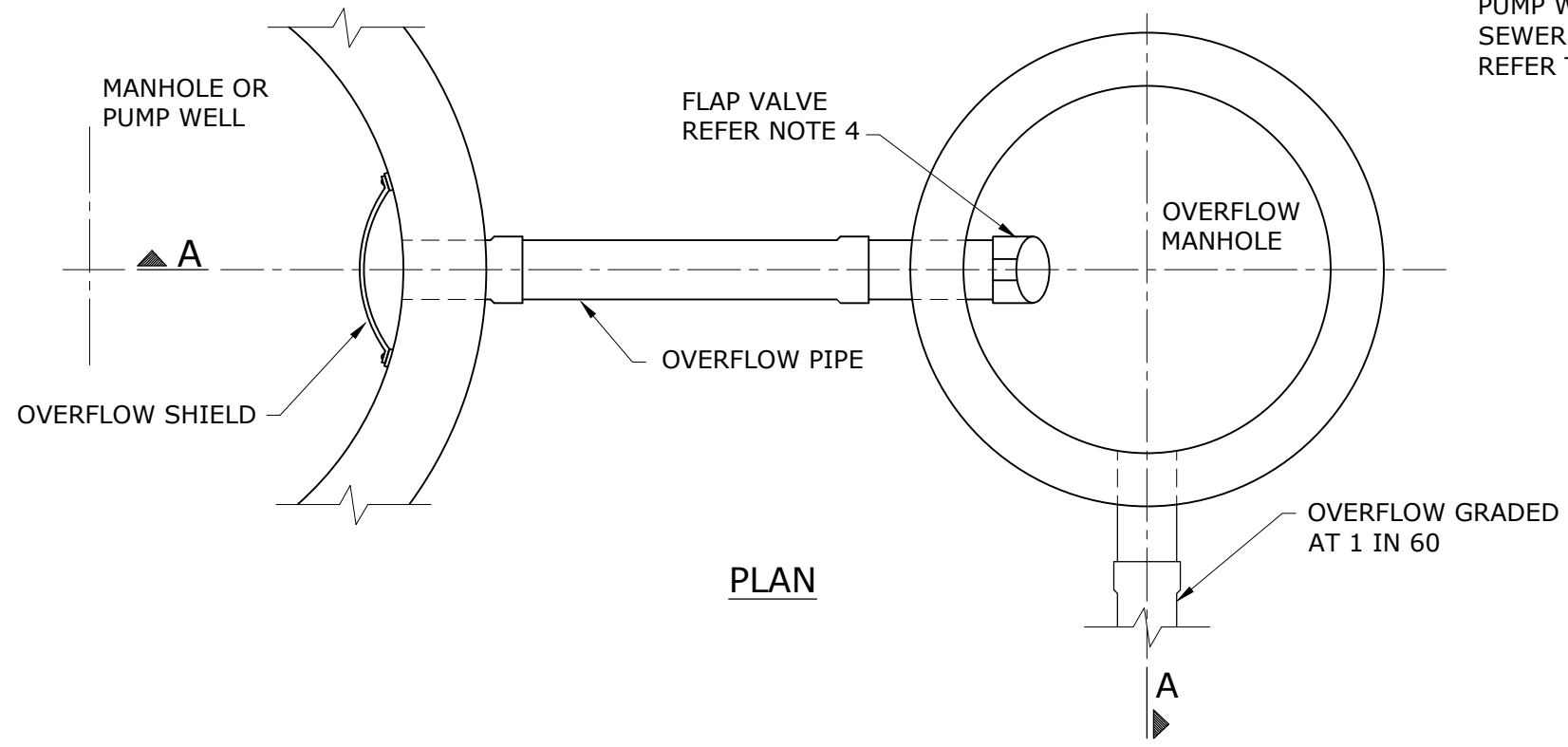
REV. No.	DATE	DESCRIPTION	AUTH.

**SEQ WATER
SERVICE PROVIDERS**

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

SEWERAGE STANDARD DRAWING
**OVERFLOW FLAP VALVE
TOP SLAB
REINFORCEMENT DETAILS**

CoGC	LEC	R&C	QUU	UW
DRAWING No.				VERSION
SEQ-SEW-1411-5				A
NOT TO SCALE				ORG DATE: 18/06/2019



NOTES:

1. FOR OVERFLOW SHIELD DETAILS REFER SEQ-SEW-1412-2.
2. THE OVERFLOW LEVEL SHALL BE THE LOWEST OF THE FOLLOWING CONDITIONS:
 - (a) 300 BELOW THE UNDERSIDE OF THE PUMP WELL TOP SLAB.
 - (b) 100 BELOW THE UNDERSIDE OF THE TOP SLAB OF THE LOWEST MANHOLE IN THE UPSTREAM SYSTEM.
 - (c) 100 BELOW THE LOWEST FLOOR SLAB OR RELIEF GULLY TRAP IN ANY UPSTREAM PROPERTY.
3. THE OVERFLOW LEVEL SHALL BE MARKED AT THE PUMP STATION AS FOLLOWING:
 - (a) A BRASS PLATE ATTACHED TO THE TOP SIDE OF THE PUMP WELL ROOF SLAB ENGRAVED WITH THE DEPTH TO OVERFLOW AND
 - (b) EITHER A DN100 ORANGE-COLOURED PLASTIC CONDUIT ATTACHED TO THE WET WELL WALL OR ORANGE-COLOURED CONDUIT OF DIAMETER LARGE ENOUGH TO SURROUND THE PUMP RISER, SPLIT AND ATTACHED TO THE RISER BY GRADE 316 SS CLAMPS AT THE CENTRES NOT EXCEEDING 500, SUCH THAT WITH EITHER OPTION THE BOTTOM OF THE CONDUIT IS COINCIDENT WITH THE OVERFLOW LEVEL.
4. FLAP VALVE SHALL BE ALUMINIUM ALLOY 6061-T6 OR FIBREGLASS OR OTHER APPROVED NON-CORROSIVE MATERIALS.
5. DIMENSIONS ARE IN MILLIMETRES UNLESS SHOWN OTHERWISE.

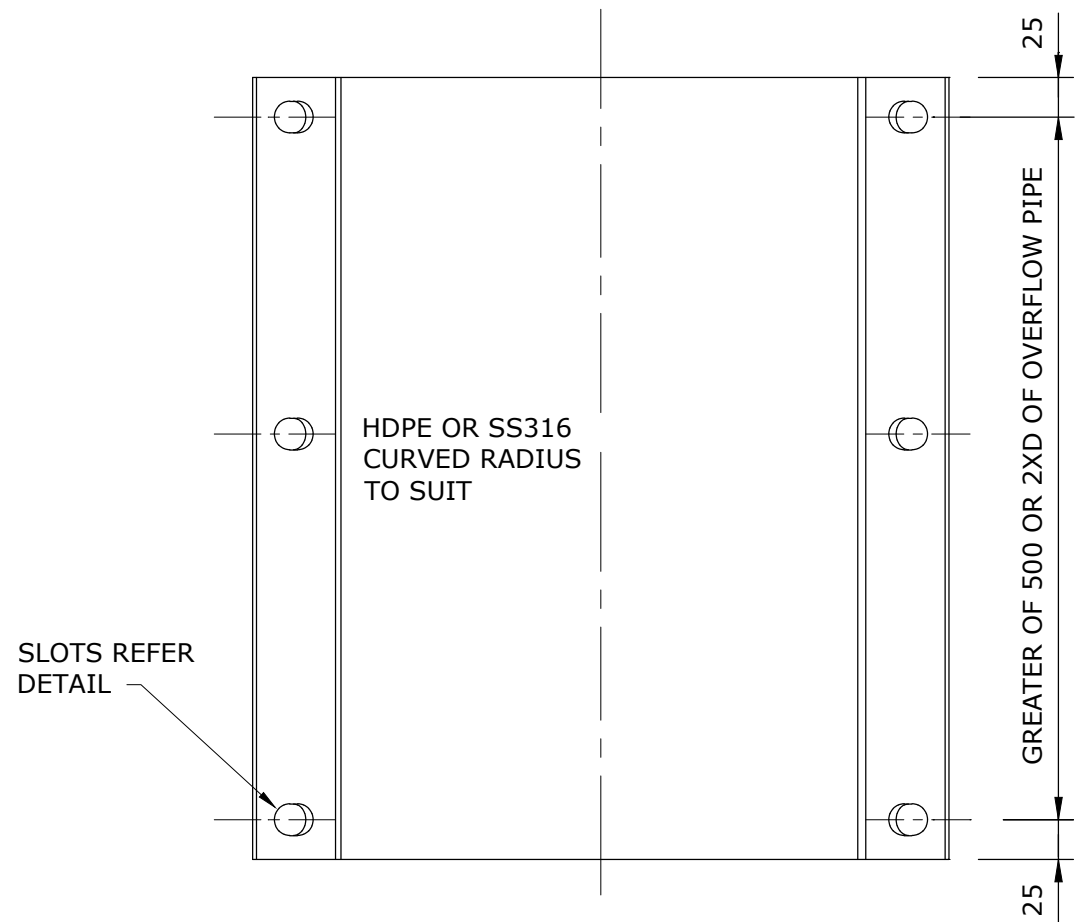
REV. No.	DATE	DESCRIPTION	AUTH.
B	02/01/19	AMENDED NOTES 2 and 3	

SEQ WATER SERVICE PROVIDERS

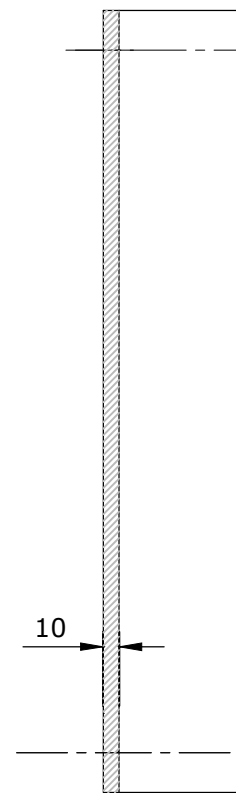
WORK PRACTICES MUST COMPLY WITH ALL APPLICABLE OCCUPATIONAL HEALTH & SAFETY LEGISLATION

SEWERAGE STANDARD DRAWING
TYPICAL OVERFLOW DETAILS FROM
PUMP WELL OR MANHOLE
SHIELDED OUTLET

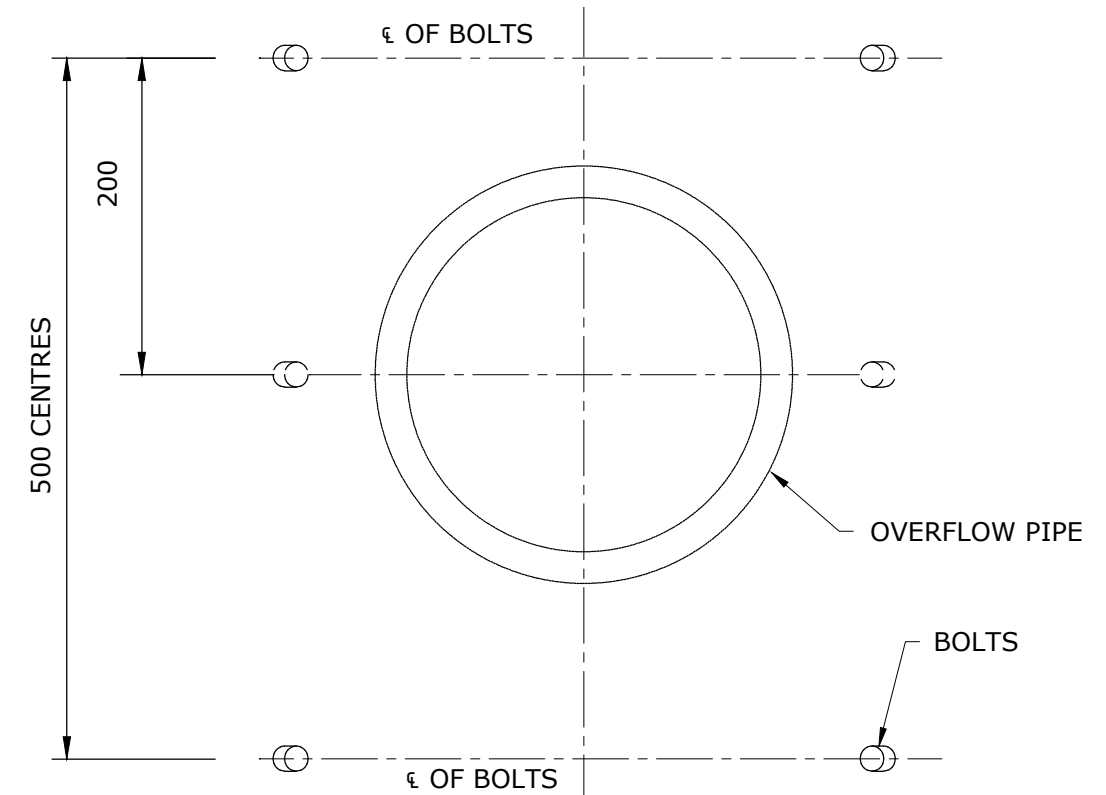
CoGC	LCC	RCC	QUU	LW
DRAWING No.				VERSION
SEQ-SEW-1412-1				B
NOT TO SCALE				ORG DATE: 1/1/2013



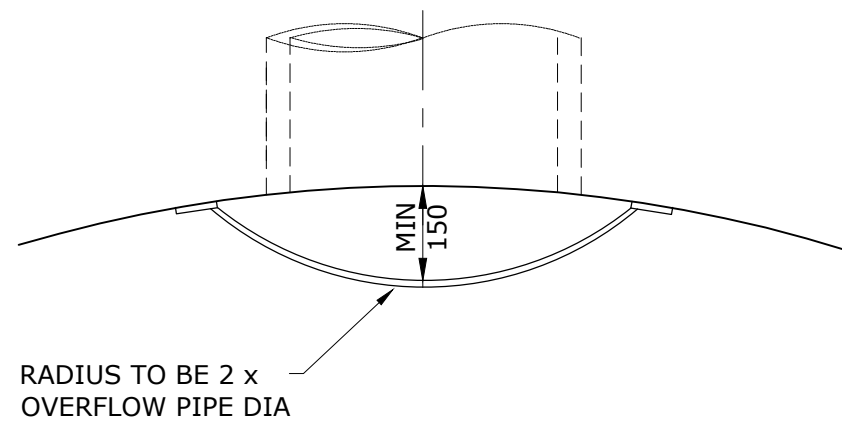
ELEVATION



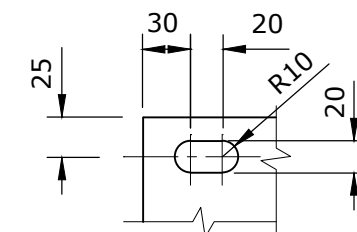
SECTION



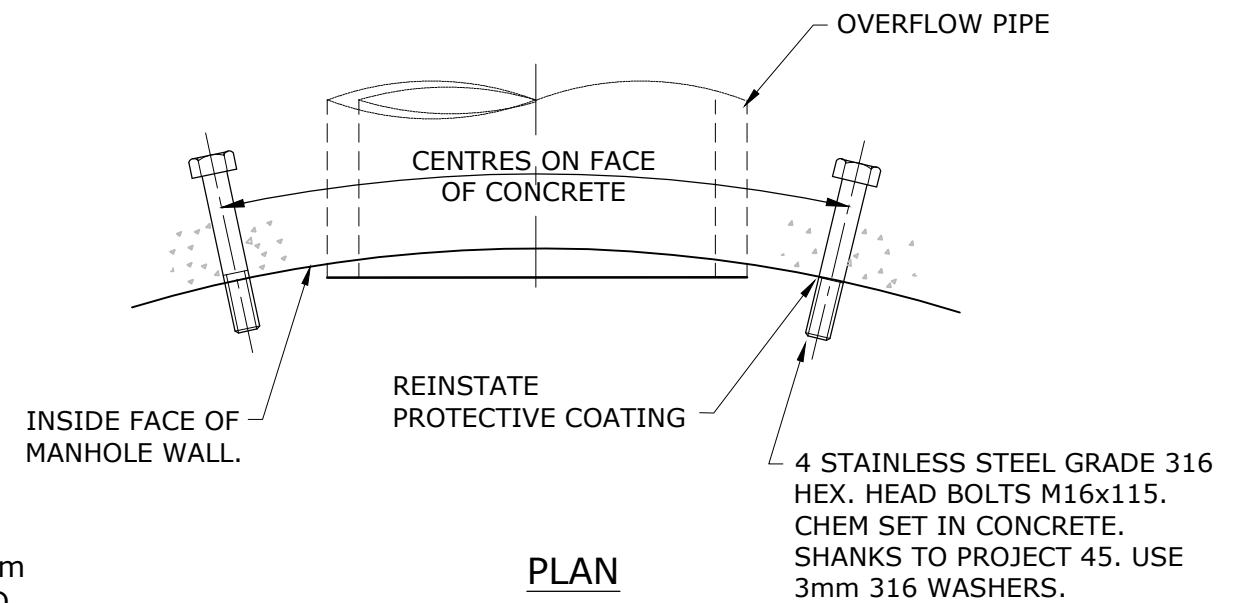
ELEVATION



**PLAN
OVERFLOW SHIELD**



DETAIL OF SLOTS



**PLAN
POSITION OF SET-IN BOLTS**

NOTES:

1. OVERFLOW SHIELD SHALL BE 10mm HDPE OR 3mm SS316 FABRICATED.
2. DIMENSIONS ARE IN MILLIMETRES UNLESS SHOWN OTHERWISE.

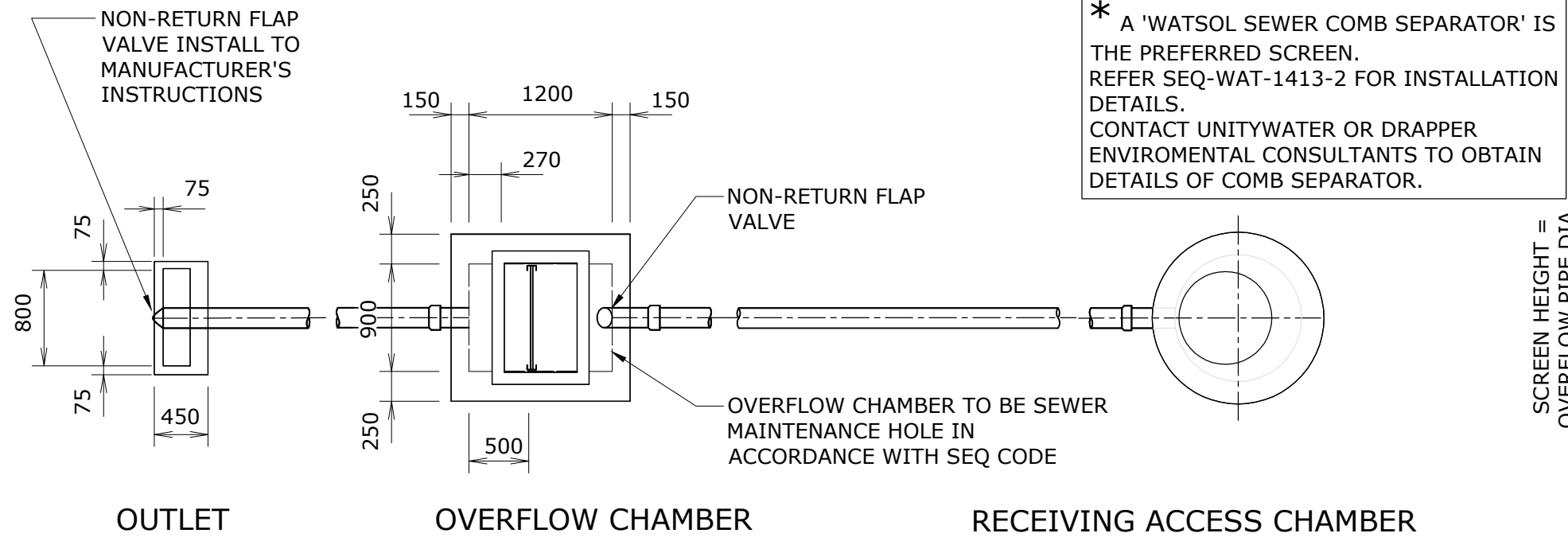
REV. No.	DATE	DESCRIPTION	AUTH.
B	03/01/19	ADDED SS316 SHIELD, MIN 150 DISTANCE WALL TO SHIELD, MINOR CHANGES	

**SEQ WATER
SERVICE PROVIDERS**

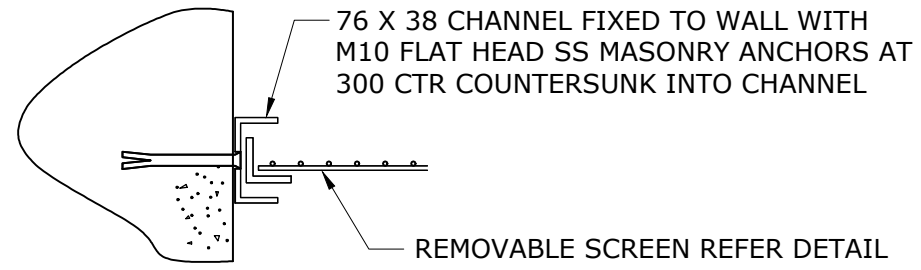
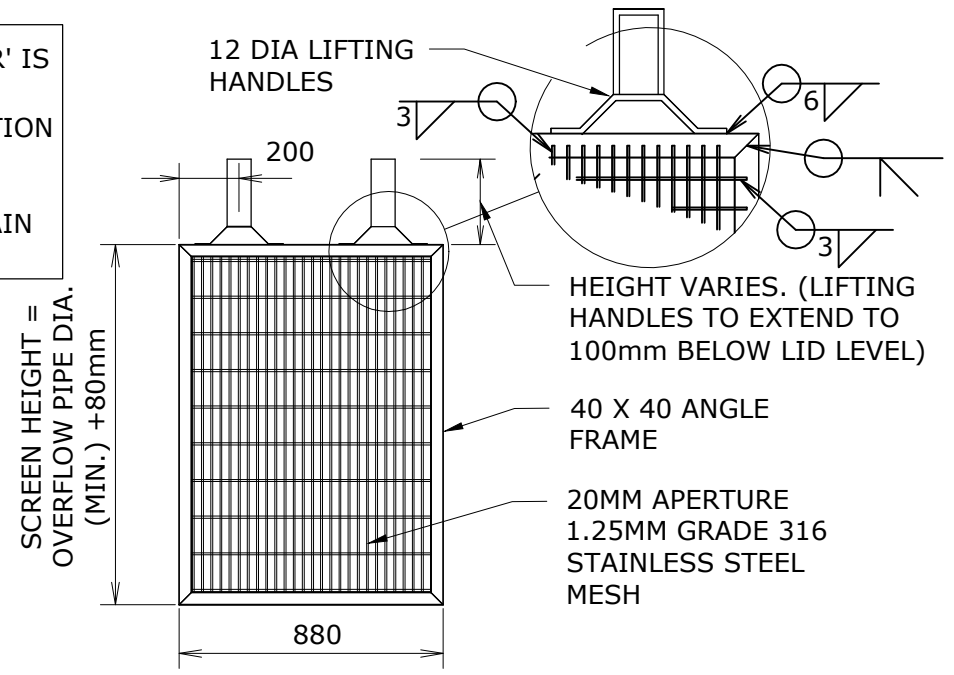
WORK PRACTICES MUST COMPLY WITH ALL APPLICABLE OCCUPATIONAL HEALTH & SAFETY LEGISLATION

SEWERAGE STANDARD DRAWING
TYPICAL OVERFLOW SHIELD
SHIELDED OUTLET

CoGC	LCC	RCC	QUU	UW
DRAWING No.				VERSION
SEQ-SEW-1412-2				B
NOT TO SCALE				ORG DATE: 1/1/2013



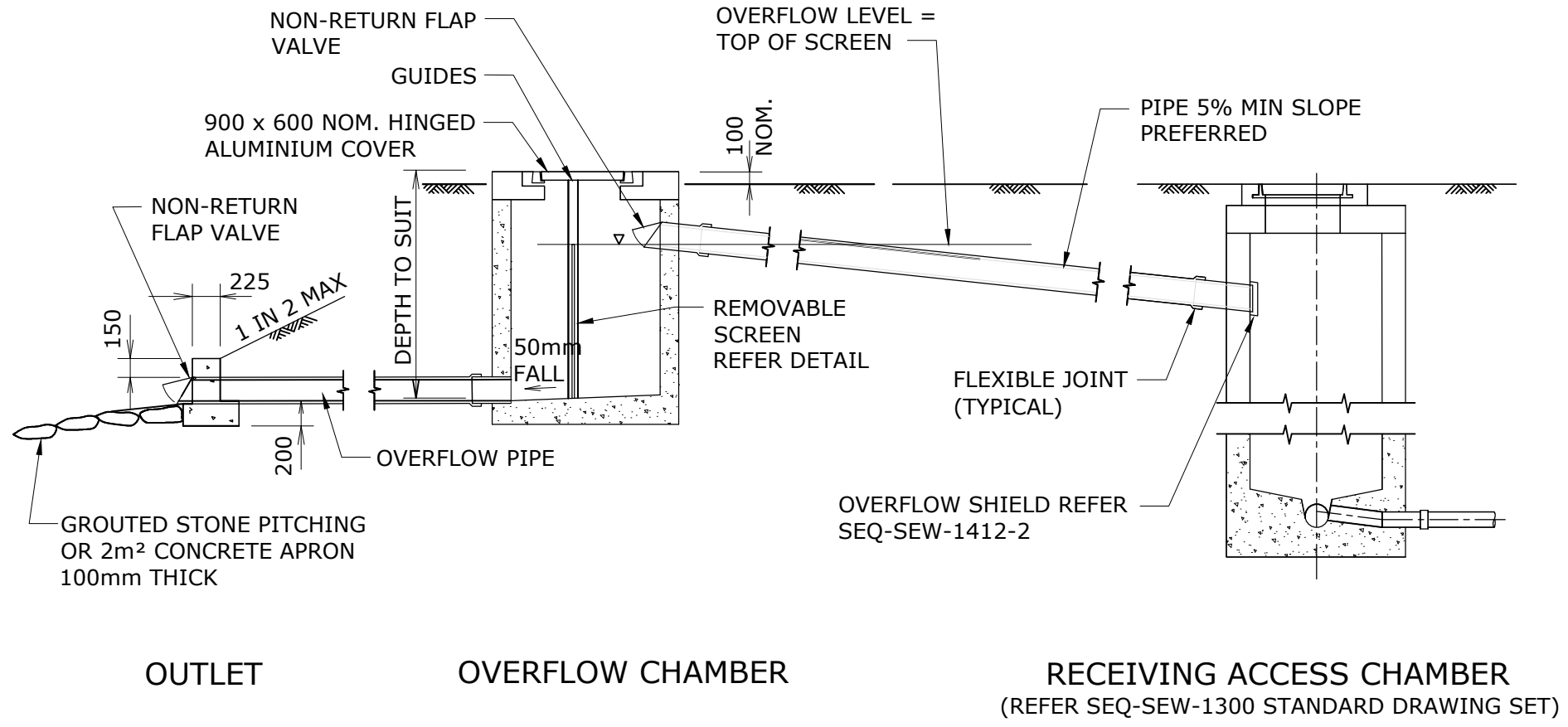
* A 'WATSOL SEWER COMB SEPARATOR' IS THE PREFERRED SCREEN. REFER SEQ-WAT-1413-2 FOR INSTALLATION DETAILS. CONTACT UNITYWATER OR DRAPPER ENVIROMENTAL CONSULTANTS TO OBTAIN DETAILS OF COMB SEPARATOR.



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.



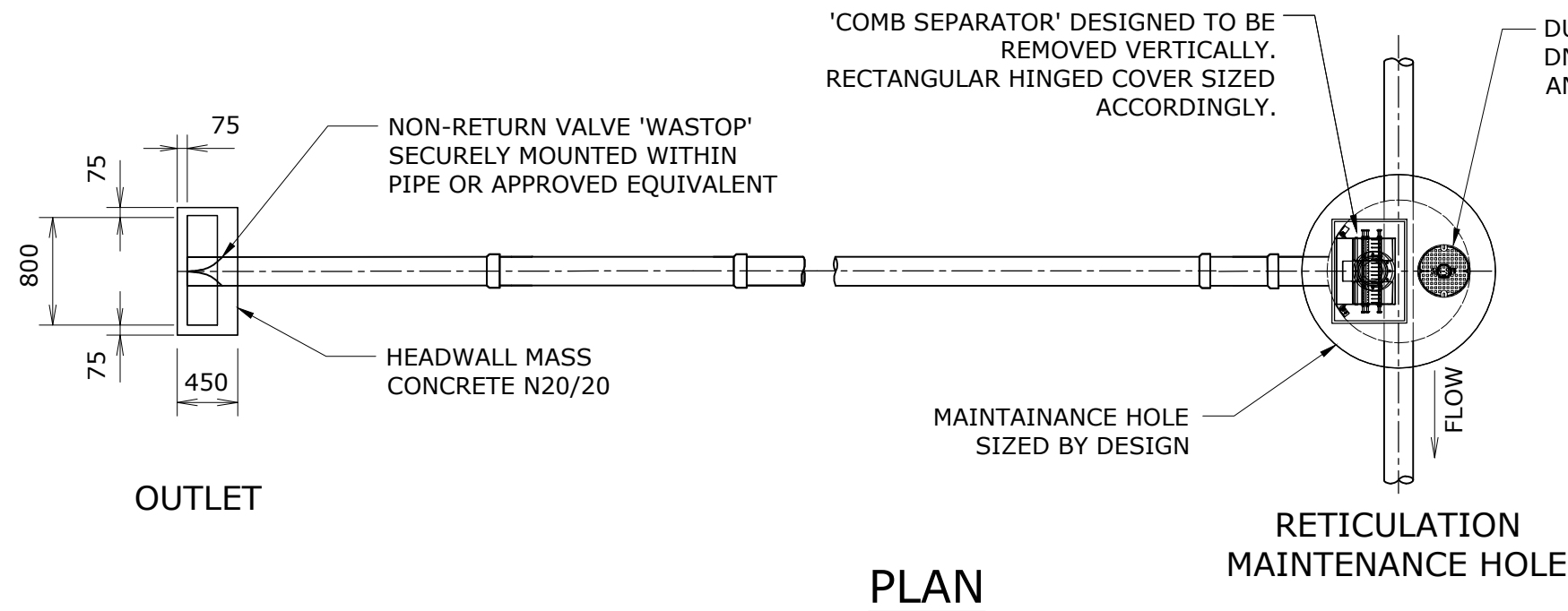
REV. No.	DATE	DESCRIPTION	AUTH.
C	19/07/18	SCREEN DETAIL UPDATED, NOTE ADDED FOR OVERFLOW CHAMBER	
B	29/07/15	'COMB SEPARATOR' DETAILS ADDED & SCREEN HEIGHT AMENDED	DF

SEQ WATER SERVICE PROVIDERS

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

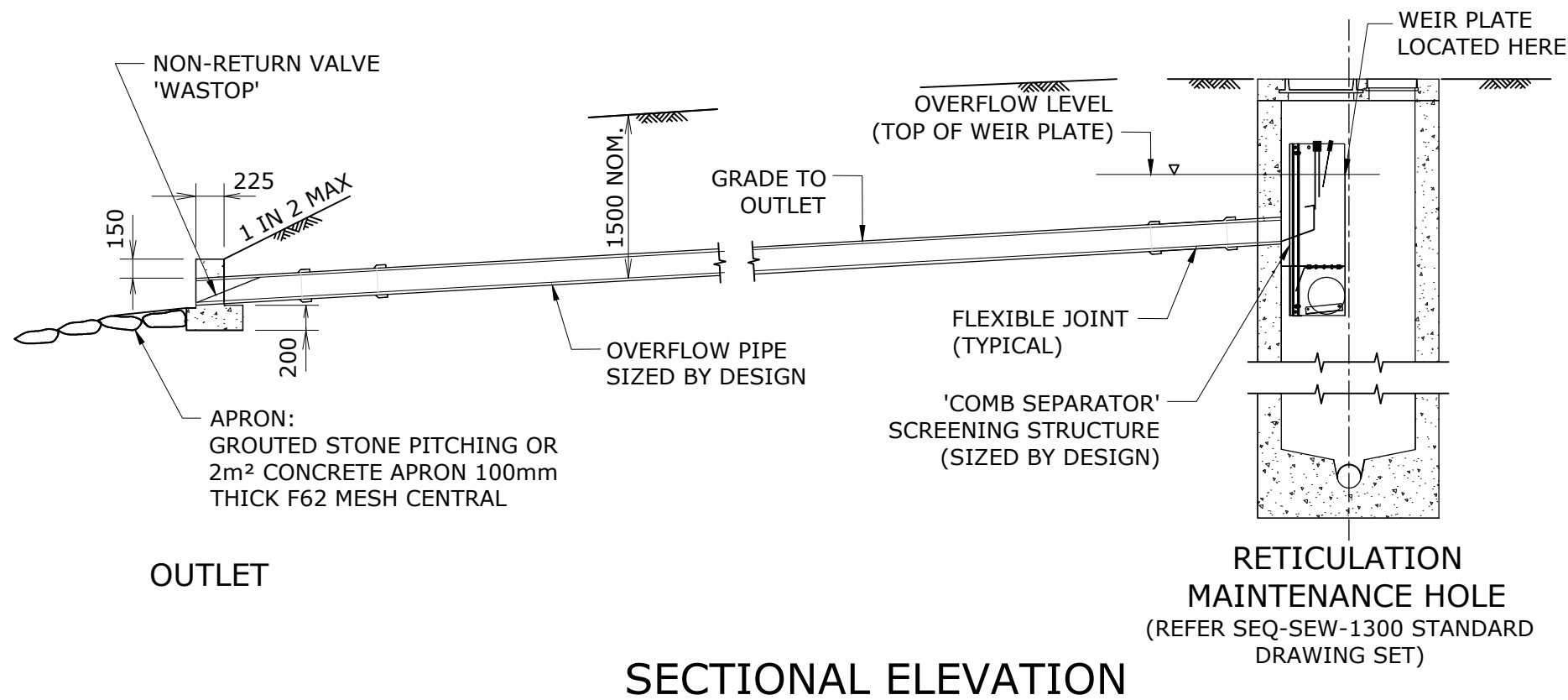
SEWERAGE STANDARD DRAWING
SEWAGE OVERFLOW ARRANGEMENT
TYPICAL OVERFLOW WITH
SCREENED OUTLET

CoGC	LEC	RCC	QUU	UW
DRAWING No.				VERSION
SEQ-SEW-1413-1				C
NOT TO SCALE				ORG DATE: 1/1/2013



NOTES:

1. THE 'COMB SEPARATOR' MUST BE INSTALLED WITHIN A RETICULATION MAINTENANCE HOLE TO ENSURE SCREENED MATERIAL CAN FLUSH BACK INTO THE SEWER FLOW AFTER THE OVERFLOW EVENT. INSTALLATION WITHIN A SPS COLLECTOR MH OR WITHIN AN OFFSTREAM OVERFLOW MH IS NOT ACCEPTABLE. (CONTACT 'DRAPPER ENVIRONMENTAL CONSULTANTS' TO OBTAIN DETAILS OF WATSOL SEWER COMB SEPARATOR)
2. PIPES SHOWN ARE DIAGRAMMATIC ONLY, REFER PROJECT DRAWINGS FOR LAYOUT, LEVELS, AND PIPE SIZES.
3. CONCRETE S32 IN ACCORDANCE WITH AS 1379 AND AS 3600 UNO.
4. ALL METALWORK TO BE EITHER ALUMINIUM OR STAINLESS STEEL.
5. ALL BOLTS, NUTS AND WASHERS SHALL BE GRADE AS 2837/316 STAINLESS STEEL WITH APPROVED ANTI-GALLING COMPOUND.
6. ALL WELDS TO AS 1554. ALL WELDING SYMBOLS TO COMPLY WITH AS 1101.3.
7. ALL COVERS SHALL BE GAS TIGHT.
8. 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.
9. THE HINGED RECTANGULAR ALUMINIUM LID ABOVE 'COMB SEPARATOR' TO INCLUDE HINGED SAFETY GRILL UNDER AND 'RAILSAFE' POST INSERTS (REFER SEQ-SPS-1304 DRAWING SERIES)
10. IF COVERS ARE SUBJECT TO VEHICULAR LOADING, USE APPROPRIATELY LOAD RATED COVERS.
11. ALL DIMENSIONS IN MILLIMETRES UNO.



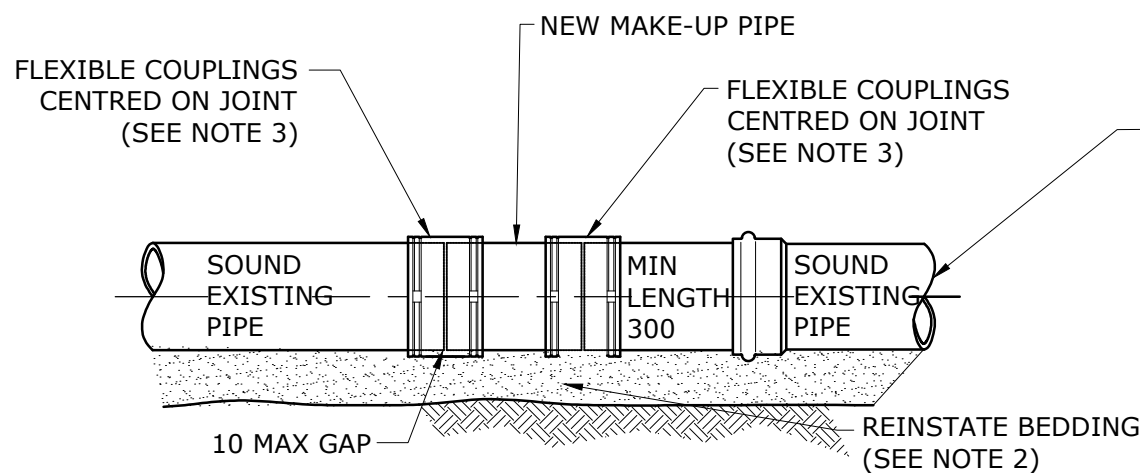
REV. No.	DATE	DESCRIPTION	AUTH.
A	14/02/19	ORIGINAL ISSUE	UW

SEQ WATER SERVICE PROVIDERS

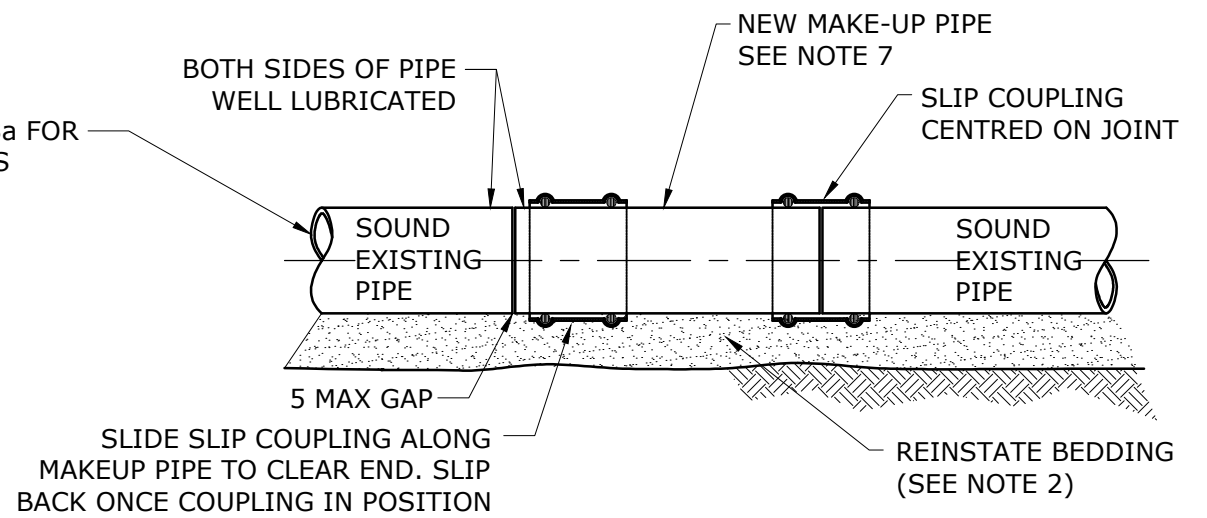
WORK PRACTICES MUST COMPLY WITH ALL APPLICABLE OCCUPATIONAL HEALTH & SAFETY LEGISLATION

SEWERAGE STANDARD DRAWING
 SEWAGE OVERFLOW ARRANGEMENT
 TYPICAL OVERFLOW 'COMB SEPARATOR'
 SCREENED OUTLET

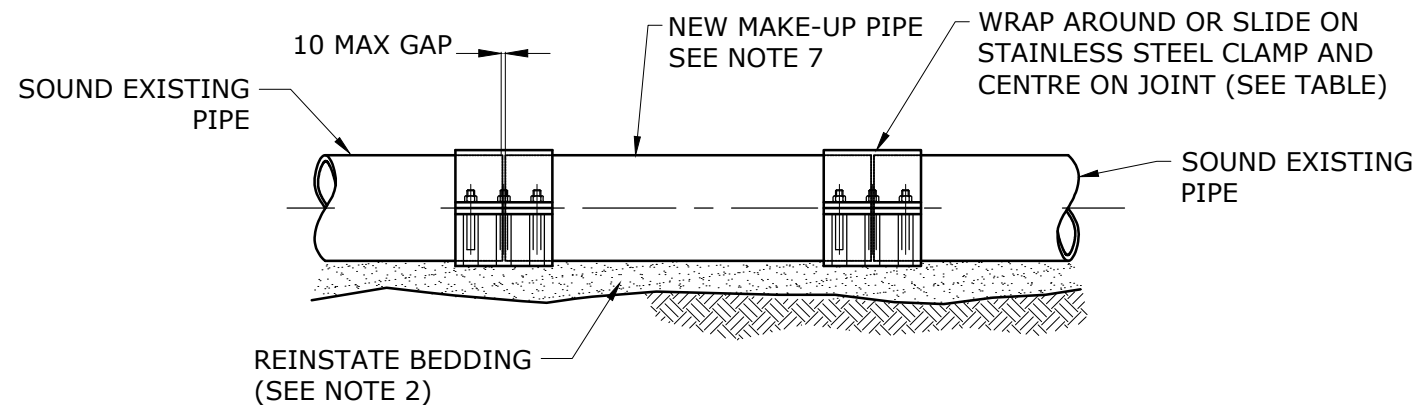
GC	LEC	RCC	QU	UW
DRAWING No.				VERSION
SEQ-SEW-1413-2				A
NOT TO SCALE				ORG DATE: 14/02/2019



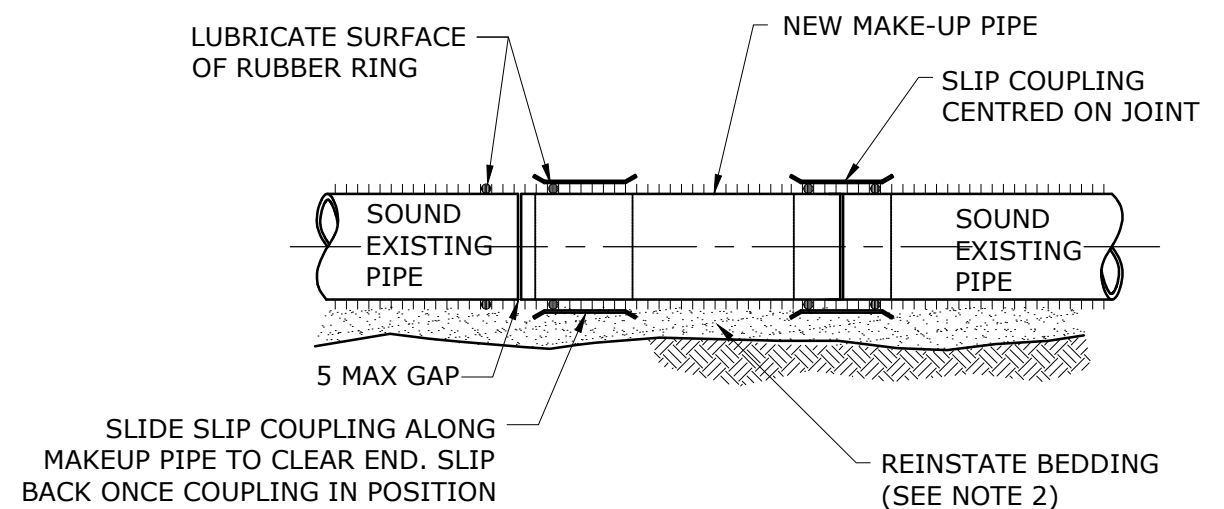
FLEXIBLE COUPLING METHOD



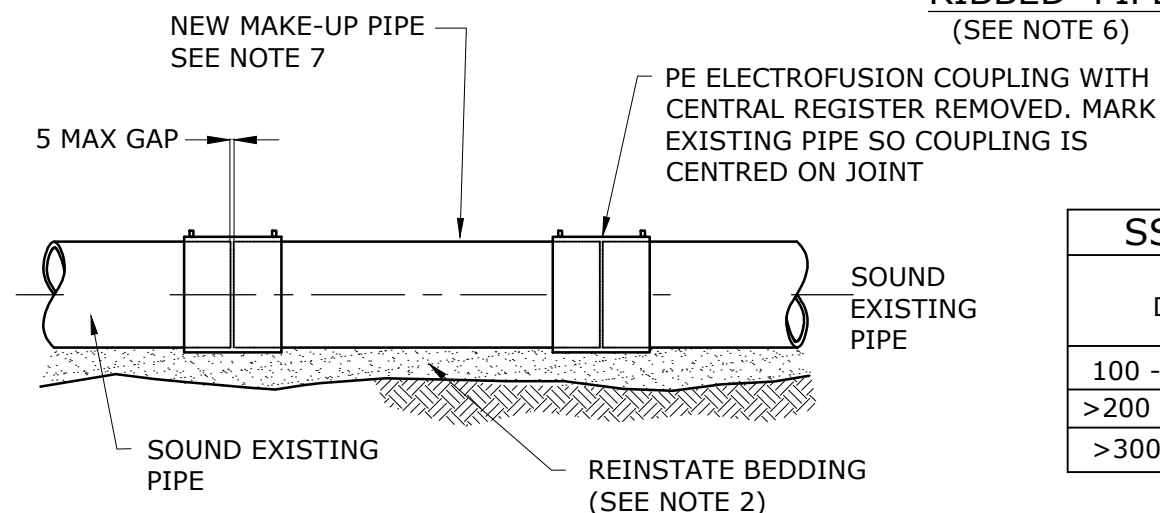
**SLIP COUPLING METHOD
PLAIN PIPE**



**STAINLESS STEEL REPAIR CLAMP METHOD
(SEE NOTE 5)**



**SLIP COUPLING METHOD
RIBBED PIPE
(SEE NOTE 6)**



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

NOTES

- FOR SEQ WATER SERVICE PROVIDER USE ONLY.
- PLACE EMBEDMENT UNDER AND AROUND ALL INSTALLED PIPE SECTIONS AND SPACERS AND COMPACT TO MAINTAIN GRADE AND MINIMISE SETTLEMENT.
- FLEXIBLE COUPLINGS TO HAVE GRADE 316 SS CLAMPS & SHEAR BANDS AND BE IN ACCORDANCE WITH AS 4327.
- SLIP COUPLINGS TO BE AS SPECIFIED BY PIPE MANUFACTURER OR WATER AGENCY.
- 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.
- FLEXIBLE COUPLINGS AND STAINLESS REPAIR CLAMPS ARE NOT APPLICABLE TO RIBBED PIPE.
- USE THESE METHODS FOR JUNCTION INSERTION OR MAINTENANCE STRUCTURE CUT-IN, SEE SEQ-SEW-1501-1 AND SEQ-SEW-1502-1.
- THOROUGHLY CLEAN SURFACE OF EXISTING PIPE BEFORE INSTALLING CLAMPS OR COUPLINGS.
- WHERE THE EXISTING SEWER IS A RE-LINED PIPE, PROPERLY SEAL ALL THE ENDS AS WELL AS GAPS BETWEEN THE LINER AND THE HOST PIPE. INJECTION / GROUTING MAY BE REQUIRED FOR A GOOD SEAL. THE EPOXY MORTAR SHALL BE COMPATIBLE WITH THE MATERIALS OF THE EXISTING LINER AND THE HOST PIPE.
- ALL DIMENSIONS IN MILLIMETRES.

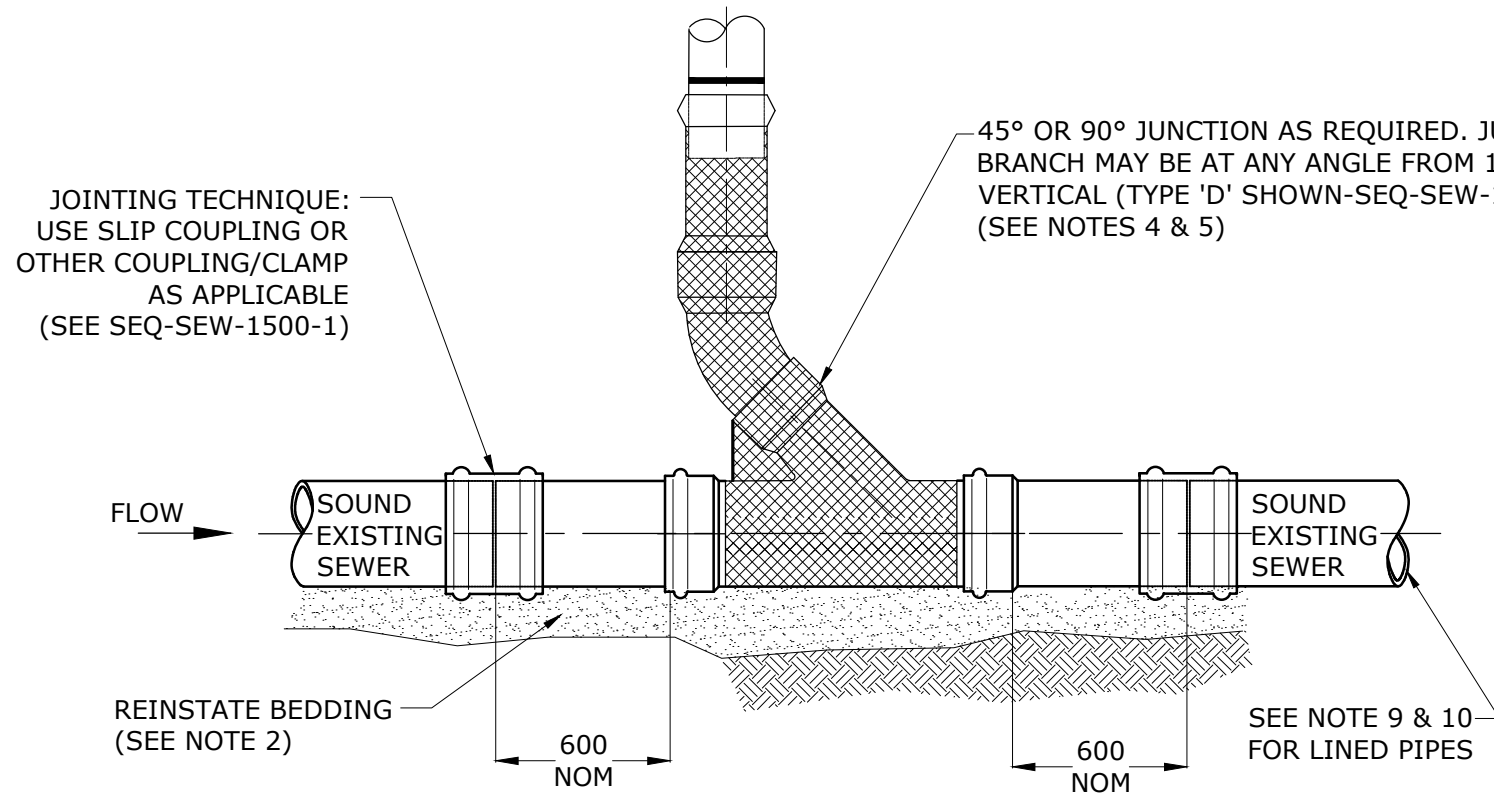
REV. No.	DATE	DESCRIPTION	AUTH.
B	05/02/18	ADDED NOTE 8a. OTHER MINIOR CHANGES.	

**SEQ WATER
SERVICE PROVIDERS**

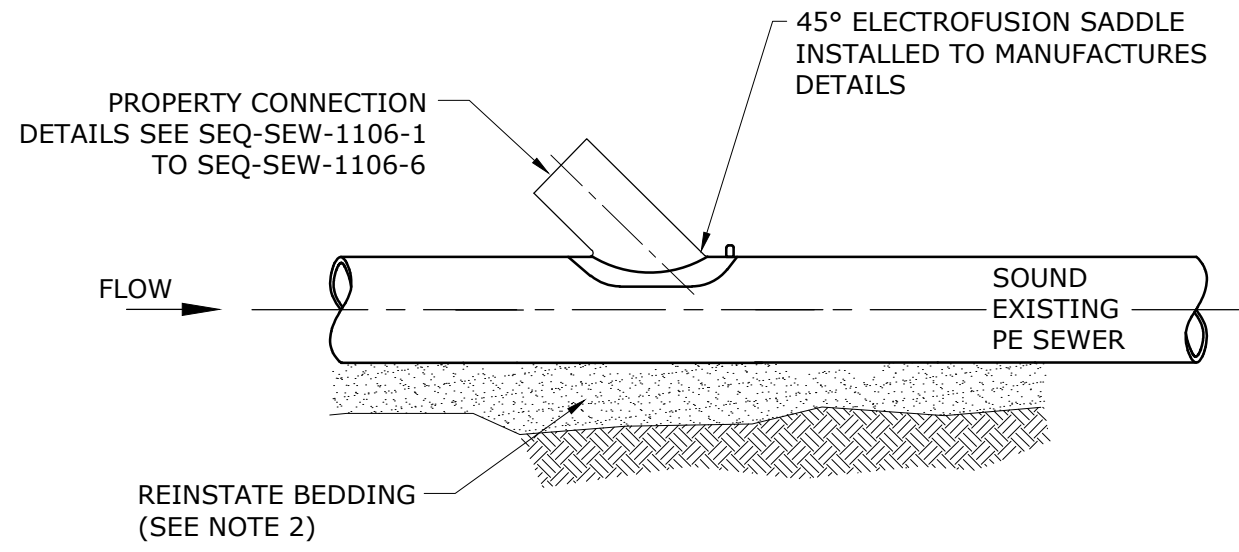
WORK PRACTICES MUST COMPLY WITH ALL APPLICABLE OCCUPATIONAL HEALTH & SAFETY LEGISLATION

**SEWERAGE STANDARD DRAWING
INSERTIONS AND REPAIR SYSTEMS
TYPICAL PIPE CUT-IN METHODS**

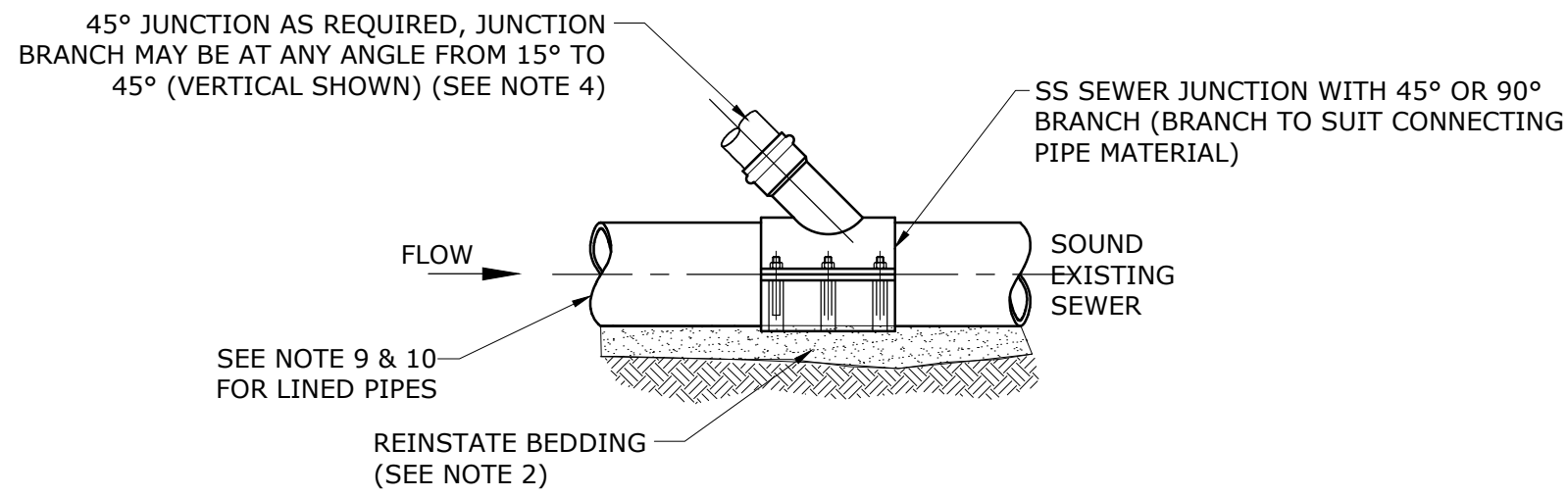
CoGC	LCC	RCC	QUU	UW
DRAWING No.				VERSION
SEQ-SEW-1500-1				B
NOT TO SCALE				ORG DATE: 1/1/2013



INSERTION OF JUNCTION INTO EXISTING SEWER
(DEEP JUNCTION FORMAT SHOWN)



ELECTROFUSION JUNCTION ONTO EXISTING PE SEWER

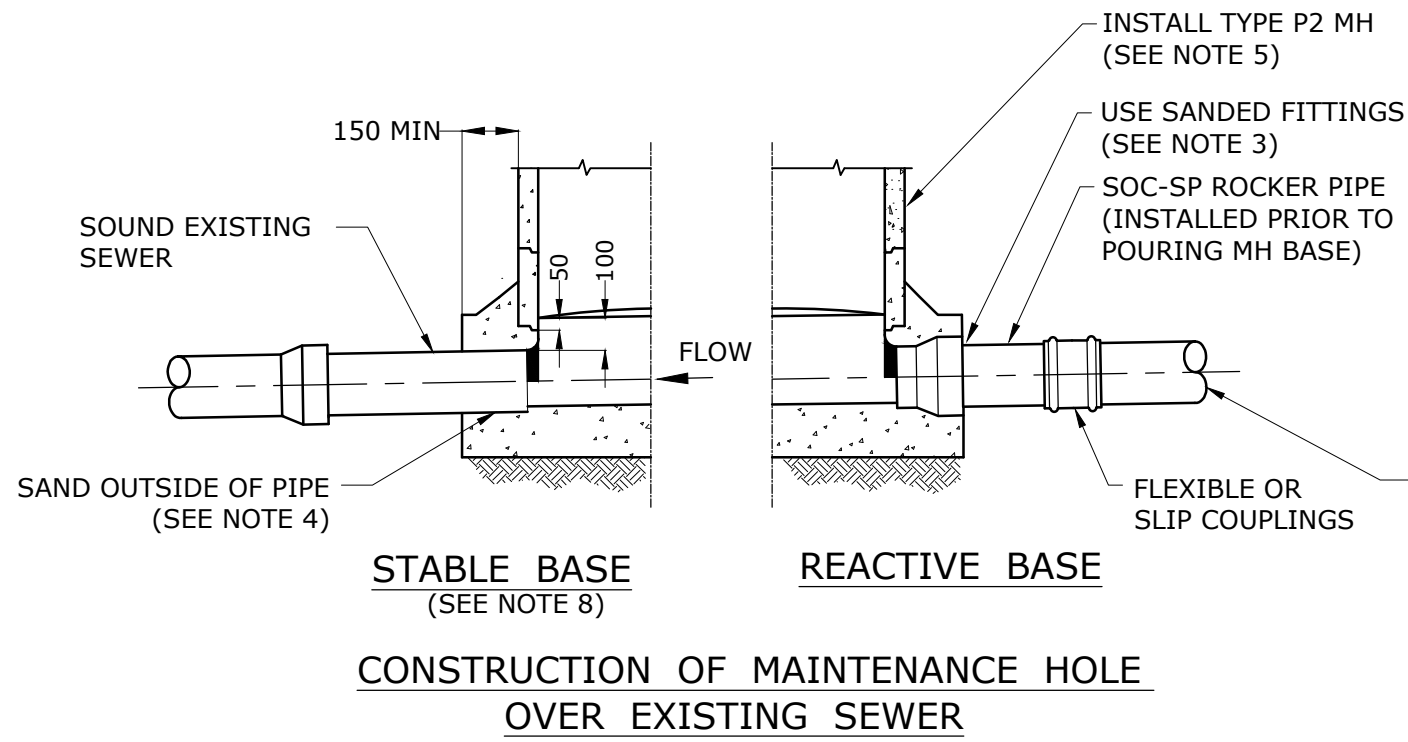


CONNECTION OF SS SEWER JUNCTION TO EXISTING SEWER
PLAIN WALL
(SEE NOTES 6 TO 8)

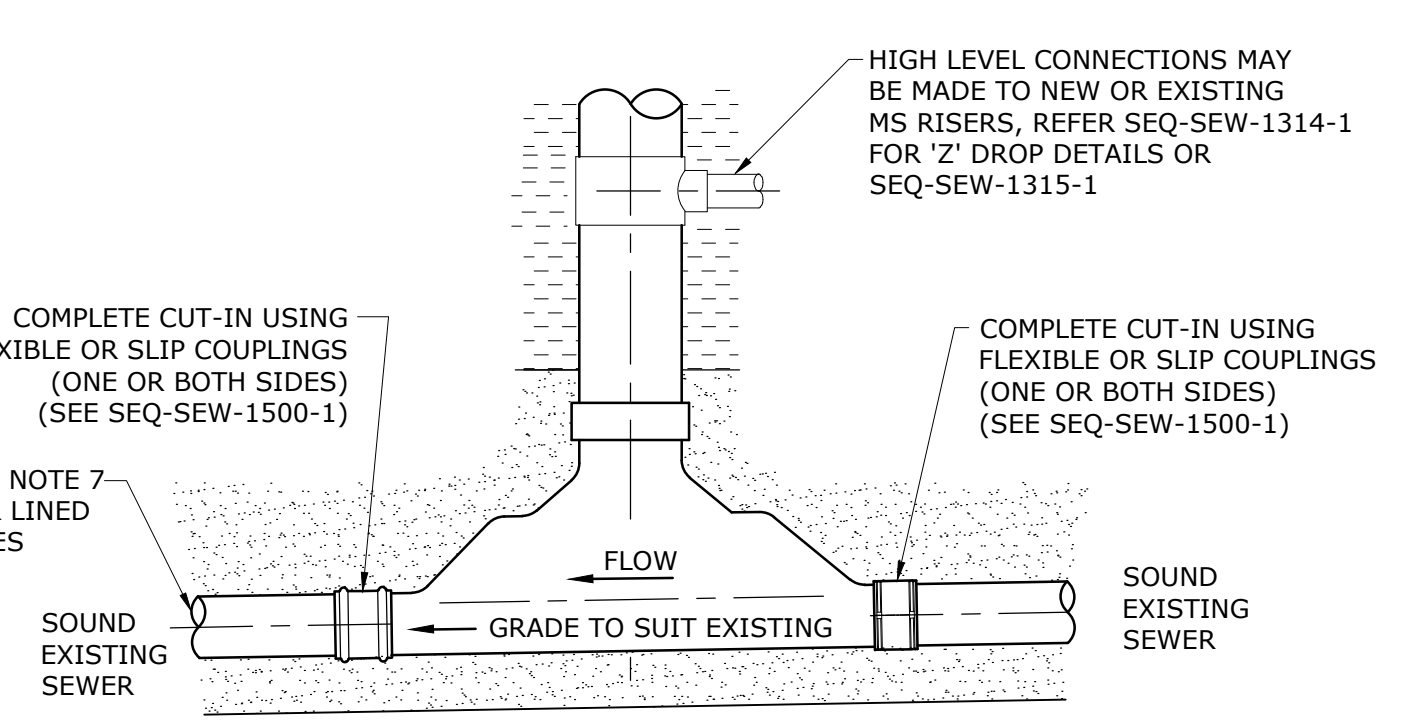
NOTES:

1. ALL DIMENSIONS IN MILLIMETRES.
2. PLACE EMBEDMENT 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 SEQ-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 SEQ-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.
9. WHERE THE EXISTING SEWER IS A RE-LINED PIPE, PROPERLY SEAL ALL THE ENDS AS WELL AS GAPS BETWEEN THE LINER AND THE HOST PIPE. INJECTION / GROUTING MAY BE REQUIRED FOR A GOOD SEAL. THE EPOXY MORTAR SHALL BE COMPATIBLE WITH THE MATERIALS OF THE EXISTING LINER AND THE HOST PIPE.
10. WHERE THE EXISTING SEWER IS A RE-LINED PIPE, SEQ-SPs PREFER JUNCTION INSERTION METHOD AND CUT THE EXISTING SEWER UNTIL THE POINT WITH SOUND CONDITIONS. DEPENDING ON SITE AND LINED SEWER CONDITIONS, OTHER METHODS MAY BE USED WITH THE SEQ-SP'S PRIOR APPROVAL.

REV. No.	DATE	DESCRIPTION	AUTH.	SEWERAGE STANDARD DRAWING				CoGC	LCC	RCC	QUU	UW
				SEQ WATER SERVICE PROVIDERS				DRAWING No.				VERSION
								INSERTIONS AND REPAIR SYSTEMS TYPICAL INSERTION OF JUNCTIONS				SEQ-SEW-1501-1
B	16/02/18	ADDED NOTES 9 & 10. OTHER MINOR CHANGES		WORK PRACTICES MUST COMPLY WITH ALL APPLICABLE OCCUPATIONAL HEALTH & SAFETY LEGISLATION				NOT TO SCALE				ORG DATE: 1/1/2013



CONSTRUCTION OF MAINTENANCE HOLE OVER EXISTING SEWER



ELEVATION
INSERTING MAINTENANCE SHAFTS INTO EXISTING SEWERS
(SEE SEQ-SEW-1300 SERIES FOR STRUCTURE OPTIONS)

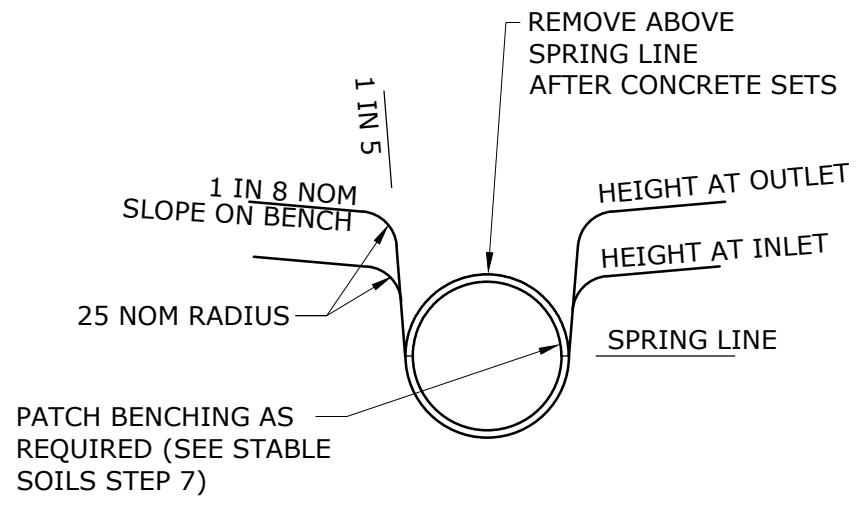
INSTALLATION PROCEDURE FOR MANHOLE

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 ABRASE 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 SEQ-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 SEQ-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 SEQ-SEW-1500-1 AND SEQ-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 SEQ-SEW-1302-1.
3. COMPLETE INSTALLATION OF MH IN ACCORDANCE WITH STEPS 2 TO 9 ABOVE.



CHANNEL DETAILS
(SEE NOTE 8)

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 SEQ-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 ABRASED TO ENSURE BONDING AND APPLY HYDROPHILIC SEAL.
6. FOR INTERNAL DROP SYSTEM SEE SEQ-SEW-1300 SERIES.
7. WHERE THE EXISTING SEWER IS A LINED PIPE, PROPERLY SEAL ALL THE ENDS AS WELL AS GAPS BETWEEN THE LINER AND THE HOST PIPE. INJECTION / GROUTING MAY BE REQUIRED FOR A GOOD SEALING. THE EPOXY MORTAR SHALL BE COMPATIBLE WITH THE MATERIALS OF THE EXISTING LINER AND THE HOST PIPE.
8. FOR UW, USE OF THE STABLE BASE FORMAT AND CHANNEL DETAILS IS SUBJECT TO ACCEPTANCE OF UNITYWATER AND RPEQ CERTIFICATION AND FOR AN EXISTING AC SEWER REMOVE ONE FULL LENGTH OF THE AC PIPE AND REPLACE WITH APPROVED PIPE PRODUCT AND FOLLOW INSTALLATION PROCEDURE FOR "IN REACTIVE SOILS".

REV. No.	DATE	DESCRIPTION	AUTH.
B	05/02/19	ADDED NOTES 7 & 8. OTHER MINOR CHANGES	

SEQ WATER SERVICE PROVIDERS

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

SEWERAGE STANDARD DRAWING
INSERTIONS AND REPAIR SYSTEMS
TYPICAL MAINTENANCE STRUCTURES

CoGC	LCC	RCC	QUU	UW
DRAWING No.				VERSION
SEQ-SEW-1502-1				B
NOT TO SCALE				ORG DATE: 1/1/2013