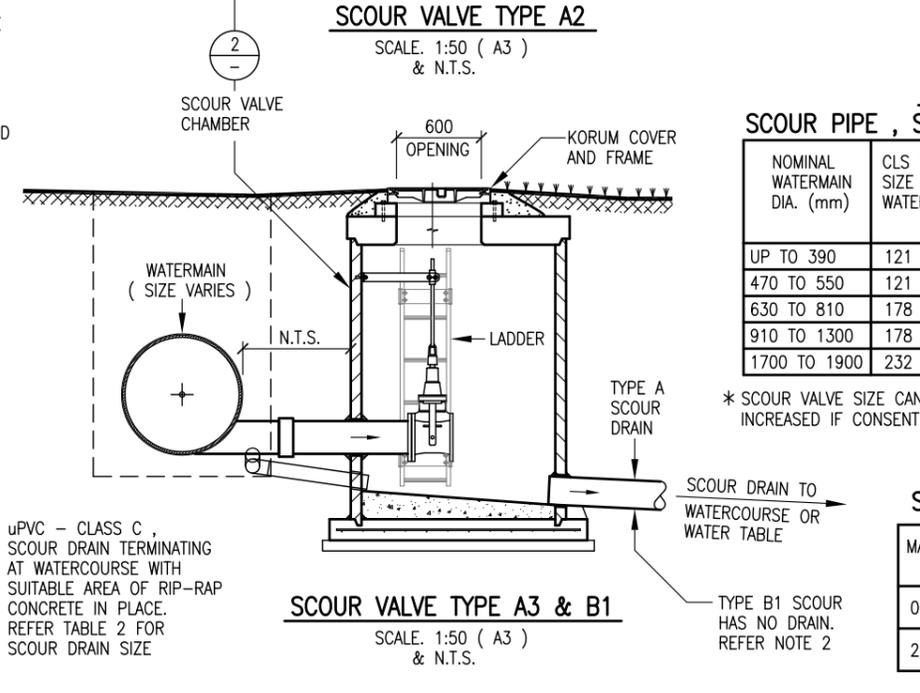
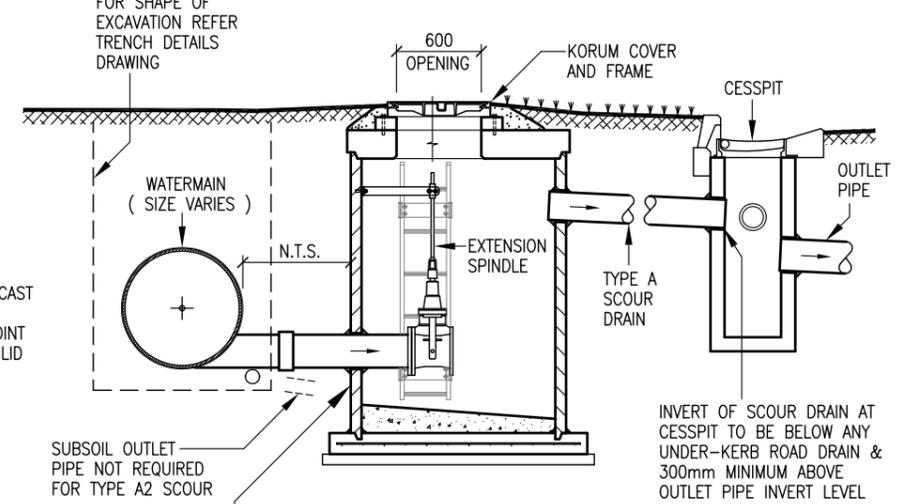
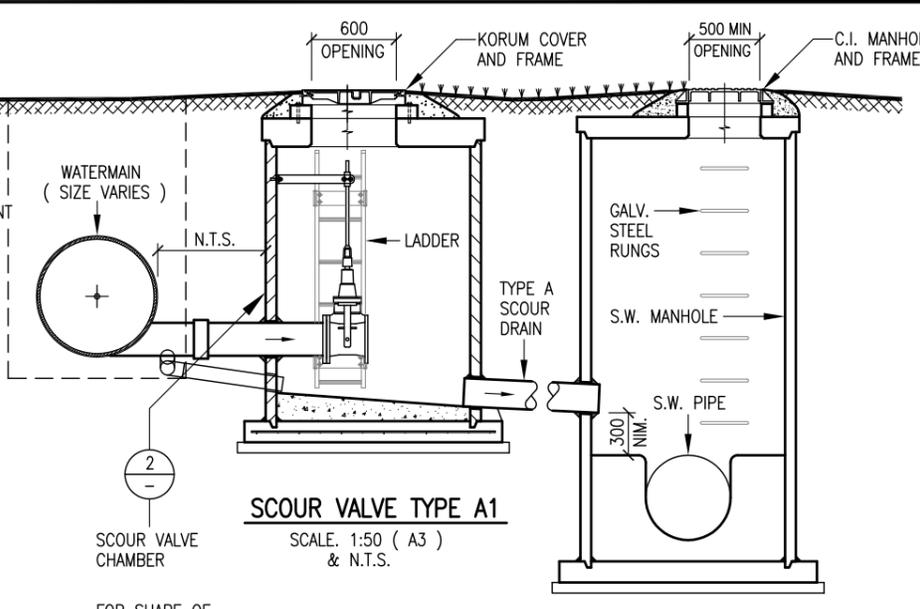
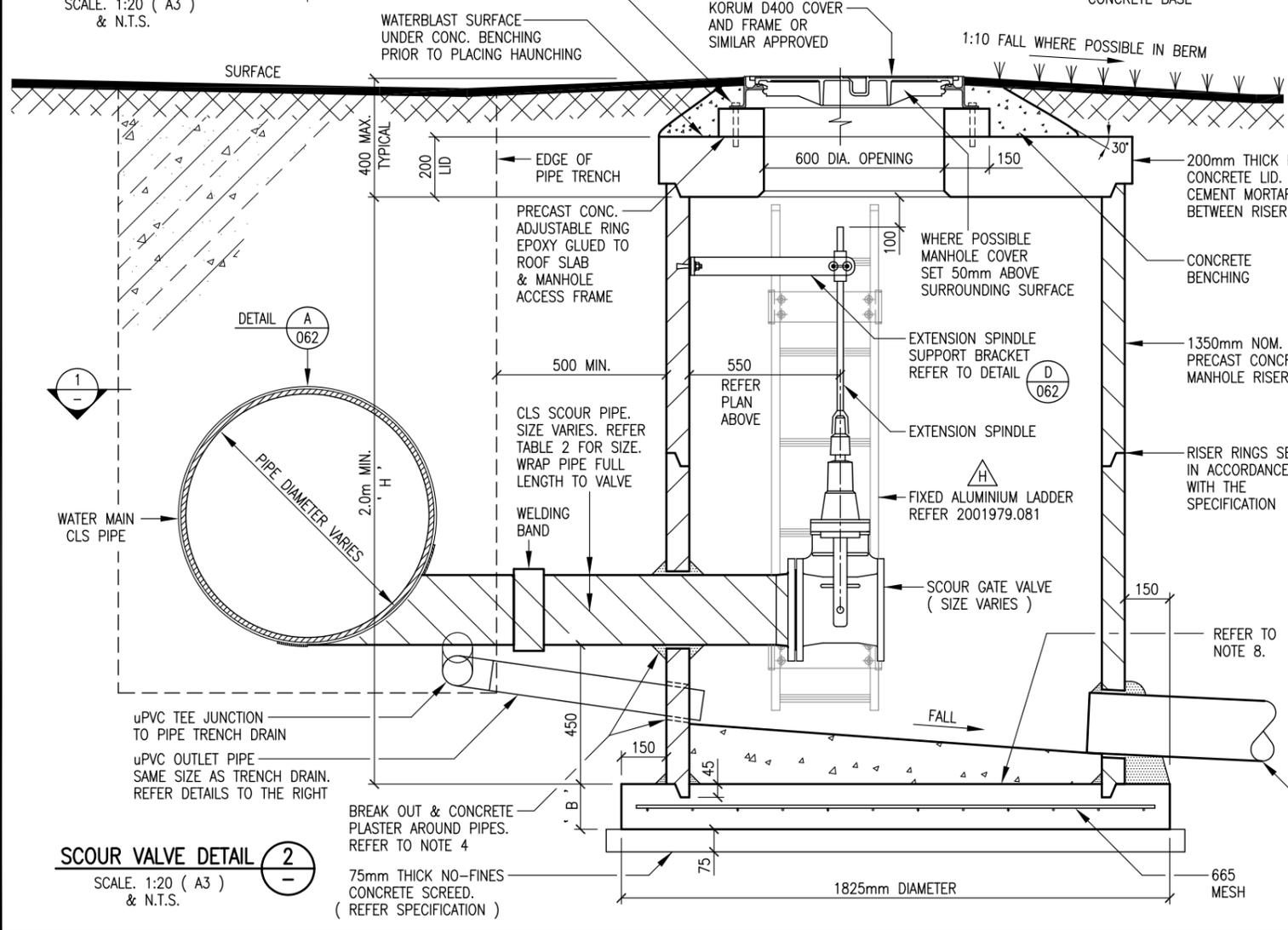
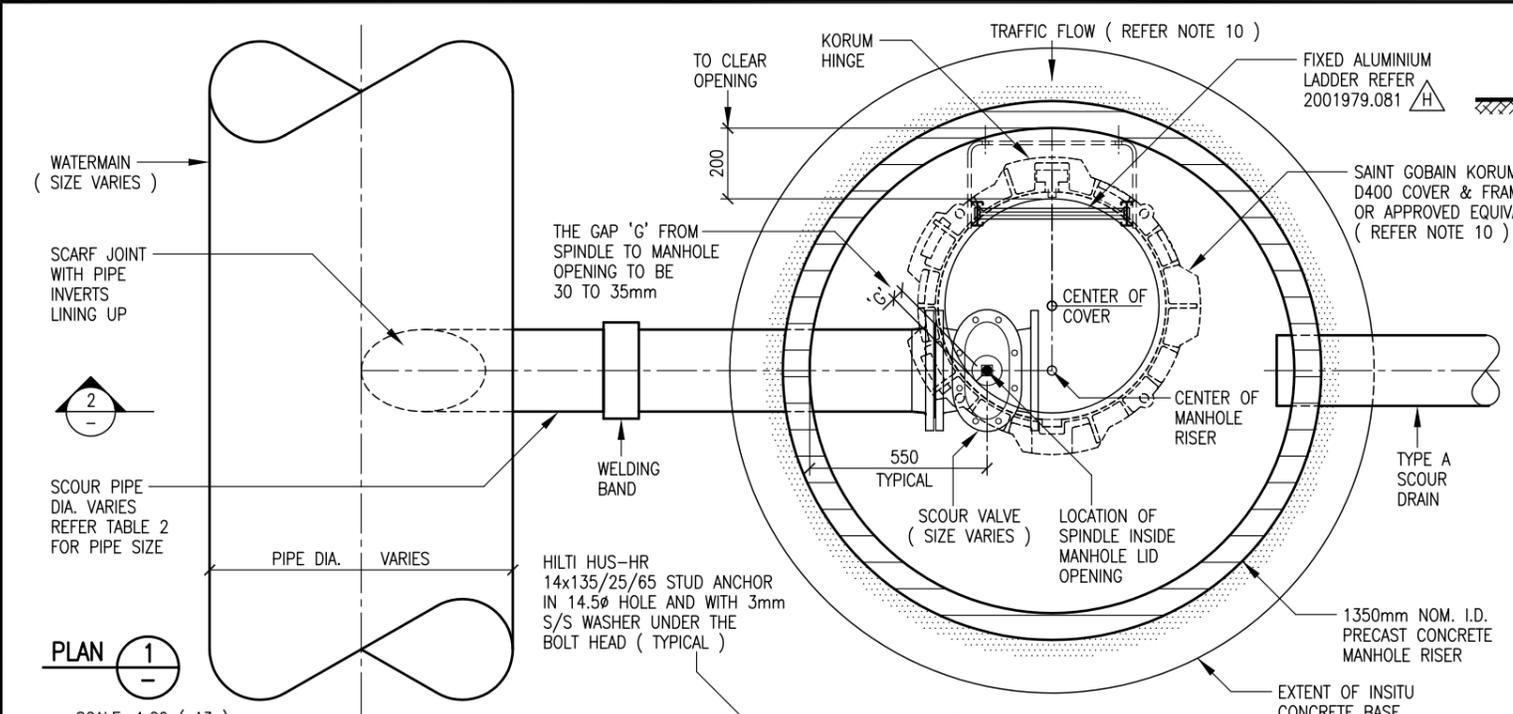


Drawing Index

Name	Doc.No	Document Description
2001979.061H.pdf	2001979.061	WATER RETICULATION STANDARD SCOUR VALVE CHAMBER WITH CIRCULAR COVER AND FRAME SHEET NO1 OF 2
2001979.062F.pdf	2001979.062	WATER RETICULATION STANDARD SCOUR VALVE CHAMBER WITH CIRCULAR COVER AND SCOUR PIPE COLLAR DETAILS SHEET NO2 OF 2
2001979.076.pdf	2001979.076	WATER RETICULATION STANDARD VENTILATION LOUVRE BOXES SINGLE AND DOUBLE DUCT SYSTEMS
2001979.086B.pdf	2001979.086	WATER RETICULATION STANDARD CHAMBER DESIGN GUIDELINES VALVES AND PIPEWORK CONFIGURATIONS AND DIMENSIONS FOR CONTROL VALVE CHAMBERS
2001979.088.pdf	2001979.088	WATER RETICULATION STANDARD MAGNETIC FLOW MARKER PLAQUE DETAIL
2001979.116C.pdf	2001979.116	WATER RETICULATION STANDARD AIR VALVE CHAMBER VENTILATION TYPE A FABRICATION DETAILS
2001979.134A.pdf	2001979.134	WATER RETICULATION STANDARD LINE VALVE CHAMBER AND PIPEWORK. GENERAL ARRANGEMENT DETAILS
2001979.137B.pdf	2001979.137	WATER RETICULATION STANDARD 80MM DIA AIR VALVE CHAMBER FOR PIPES UP TO 630 DIA NB WITH RECTANGULAR GALVANISED STEEL COVER AND FRAME WITH 80MM DIA ISOLATION GATE VALVE OPTION SETOUT DIMENSIONS AND REINFORCEMENT DETAILS

2001979.138B.pdf	2001979.138	WATER RETICULATION STANDARD 80MM DIA AIR VALVE CHAMBER FOR PIPES UP TO 630 DIA NB WITH RECTANGULAR GALVANISED STEEL COVER AND FRAME WITH 80MM DIA ISOLATION LUGGED BUTTERFLY VALVE SETOUT DIMENSIONS AND DETAILS
2001979.139B.pdf	2001979.139	WATER RETICULATION STANDARD 80MM DIA AIR VALVE CHAMBER FOR PIPES UP TO 630 DIA NB WITH RECTANGULAR GALVANISED STEEL COVER AND FRAME WITH CHAMBER LID DETAILS AND REINFORCEMENT
2001979.143B.pdf	2001979.143	WATER RETICULATION STANDARD 150MM AIR VALVE CHAMBER DOUBLE ACCESS FOR PIPES 700MM DIA TO 1070MM DIA DIMENSIONS AND DETAILS
2001979.144B.pdf	2001979.144	WATER RETICULATION STANDARD 150MM AIR VALVE CHAMBER DOUBLE ACCESS FOR PIPES 700MM TO 1070MM DIA CHAMBER LID REINFORCEMENT DETAILS
2001979.145A.pdf	2001979.145	WATER RETICULATION STANDARD 80MM AND 150MM AIR VALVE CHAMBER AIR VALVE REDUCER DETAILS



- NOTES**
- CAST-IN-SITU CONCRETE STRENGTH TO BE 20MPa. AT 28 DAYS
 - SCOUR TYPE :
 - (TYPE A SCOURS) A1, A2, & A3 ARE THOSE WHICH HAVE AN OUTLET SCOUR DRAIN WHICH IS LEAD TO A STORMWATER MANHOLE, CESSPIT, OR WATERCOURSE.
 - (TYPE B SCOURS) B1 ARE THOSE THAT DO NOT HAVE AN OUTLET SCOUR DRAIN FROM THE SCOUR VALVE CHAMBER
 - MANHOLE LID & SPINDLE TO BE LOCATED FOR EASY ACCESS
 - BREAK OUT HOLES THROUGH RISER WALLS FOR PIPES TO BE PLASTERED AFTER INSTALLATION TO ENGINEER'S SATISFACTION
 - ALL METALWORK TO BE HOT-DIP GALVANISED. STEEL PIPES & VALVES TO BE PAINTED IN ACCORDANCE WITH SPECIFICATION
 - THIS DRAWING HAS BEEN DEVELOPED USING AN 810mm NOM. DIA. CLS WATER MAIN & A 200mm NOM. DIA. CLS SCOUR PIPE TO SCALES SHOWN. FOR OTHER PIPE SIZES THIS DRAWING IS NOT TO SCALE.
 - FLANGES TO CLS SCOUR TO BE STANDARD W.S.L. FLANGES.
 - PRECAST FLANGED BASE MAY BE SUBSTITUTED FOR CAST INSITU BASE.
 - MANHOLES TO BE SEALED AGAINST THE INGRESS OF WATER. REFER SPECIFICATION.
 - WHEN MANHOLE LID IS INSTALLED IN THE ROAD THE HINGE IS TO FACE THE ONCOMING TRAFFIC FLOW

TABLE 2
SCOUR PIPE , SCOUR VALVE & DRAIN SIZES

NOMINAL WATERMAIN DIA. (mm)	CLS SCOUR PIPE SIZE FROM WATERMAIN	SCOUR VALVE SIZE *	uPVC CLASS C DRAIN PIPE FROM SCOUR CHAMBER
UP TO 390	121 OD x 4.76	100	150
470 TO 550	121 OD x 4.76	100	150
630 TO 810	178 OD x 4.76	150	200
910 TO 1300	178 OD x 4.76	150	200
1700 TO 1900	232 OD x 4.76	200	250

* SCOUR VALVE SIZE CAN BE INCREASED IF CONSENT ALLOWS

TABLE 1
SCOUR VALVE CHAMBER BASE

MANHOLE DEPTH 'H' (mm)	THICKNESS OF BASE 'B' (mm)
0 TO 2400	150
2410 TO 3600	200

ISSUE	DATE	AMENDMENT	BY	APPD.	BY	DATE
G	10:14	600 DIA. KORUM LID REPLACES 500 DIA.	L.C.	S.D.	DESIGNED	T.C.
F	05:11	TABLE 2 REVISED	L.C.	T.C.	DES. CHECKED	J.P.
E	01:11	LADDER BRACKET & DIMENSIONS ALTERED	L.C.	J.P.	DRAWN	L.C.
D	02:09	S.V. CHAMBER WITH C.I. CIRCULAR LID	L.C.	T.C.	DWG. CHECKED	I.M.
C	09:08	LID DEPTH INCREASED TO 200mm	I.M.	T.C.	PROJECT LEADER	S.D.
H	10:18	FIXED ALUMINIUM LADDER NOTE & NOTES 7 & 8 CHANGED	L.C.	D.M.	INFRASTR APP'D	A.S.

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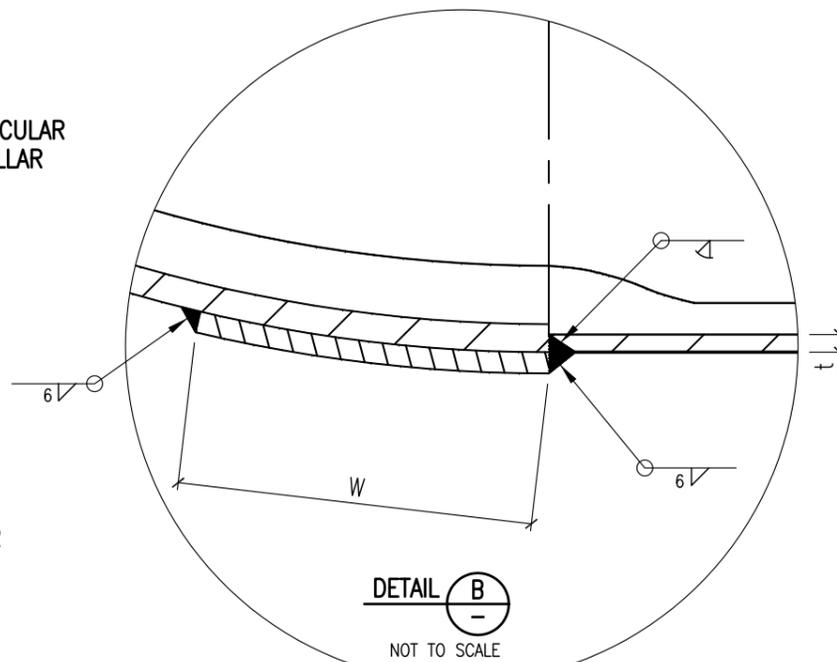
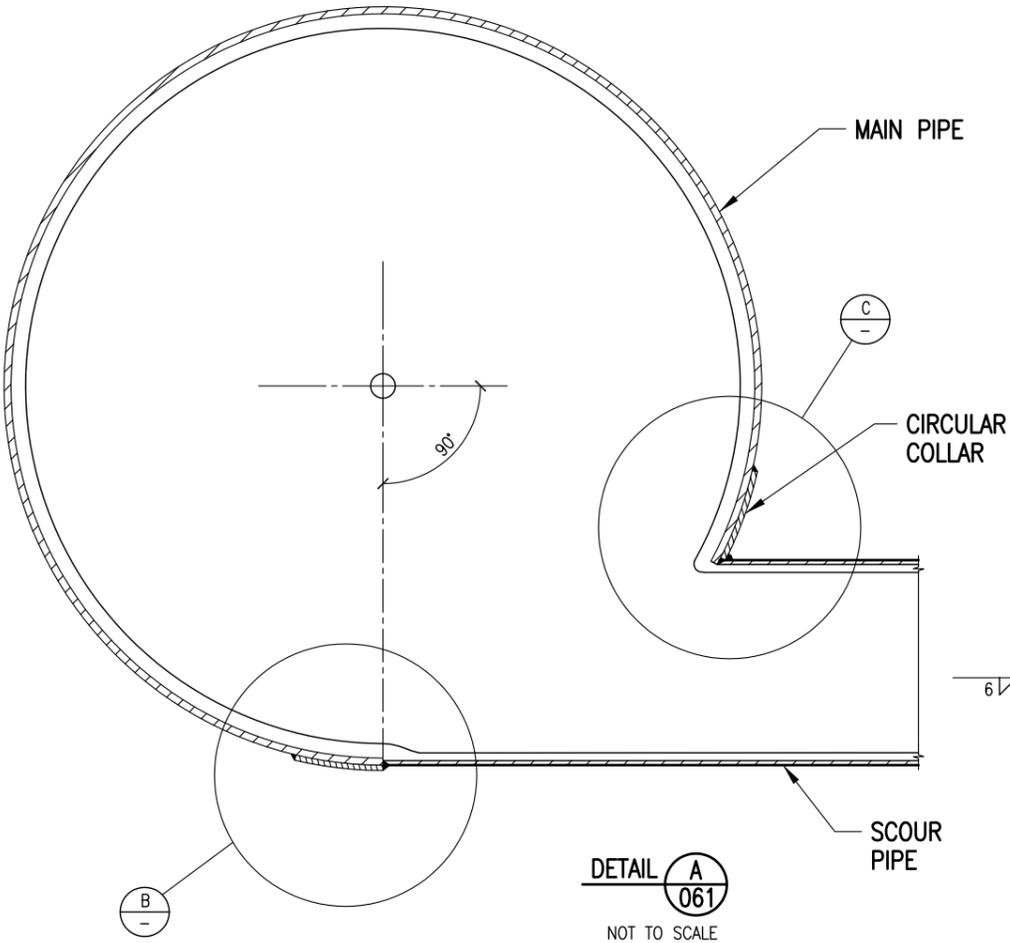
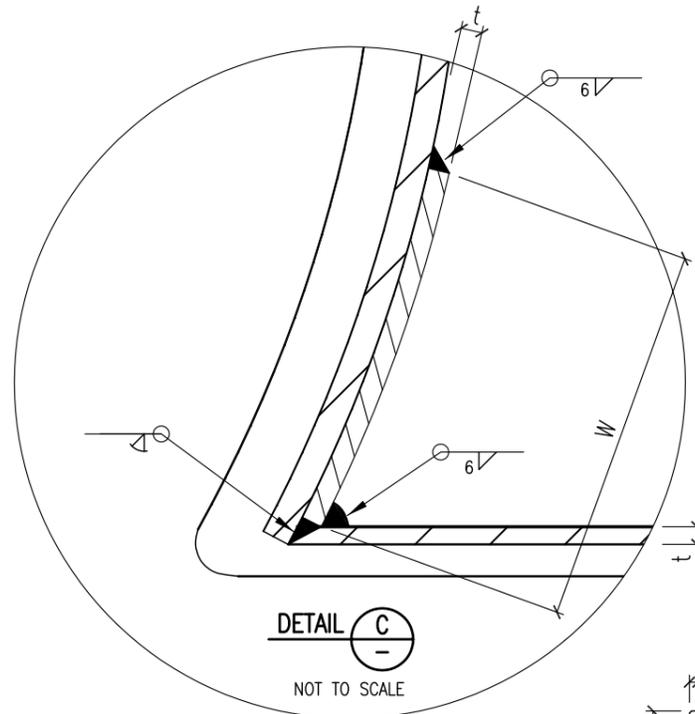
WATER RETICULATION STANDARD
SCOUR VALVE CHAMBER
 CIRCULAR COVER & FRAME - SHEET 1

CAD FILE	2001979.061H	DATE	19-10-18
ORIGINAL SCALE	A1 AS SHOWN	CONTRACT No.	-
REF. No.	-	ISSUE	-
DWG. No.	2001979 .061		H

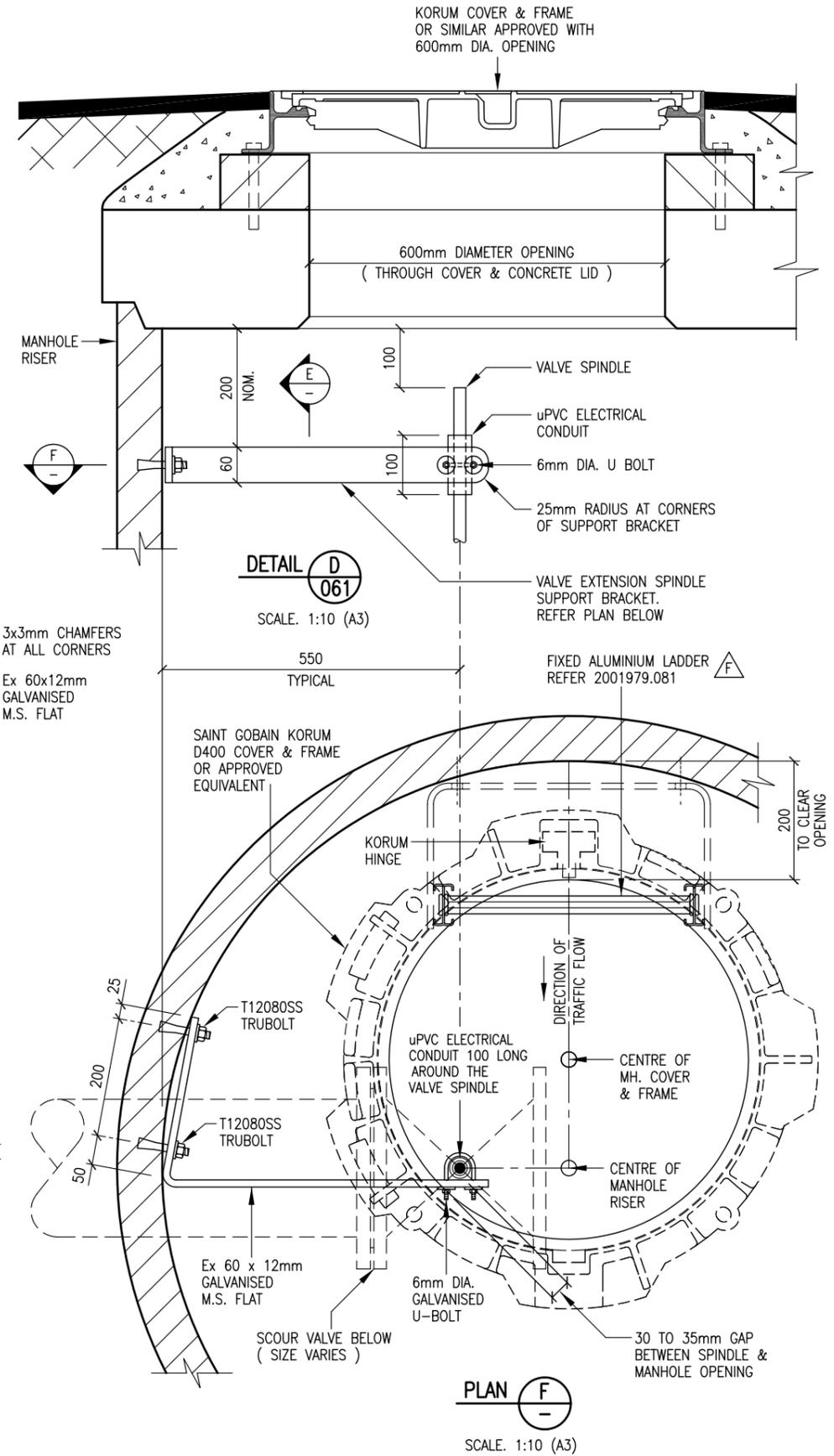
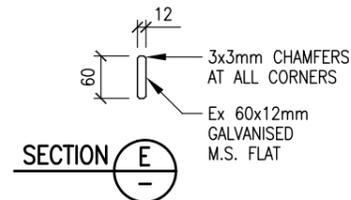
TABLE OF COLLAR SIZES

CLS SCOUR PIPE				MAIN PIPE		24 BAR COLLAR		20 BAR COLLAR		USE UNLESS OTHERWISE SPECIFIED
OD	t	OD	t	W	t	W	t	W	t	
mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	
121	4.76	178	4.76	nil		not required				
121	4.76	232	4.76	nil		not required				
121	4.76	286	4.76	75	6	not required				
121	4.76	345	4.76	75	6	60	6			
121	4.76	426	6.35	75	8	60	8			
178	4.76	507	6.35	100	8	100	8			
178	4.76	587	6.35	100	8	100	8			
286	4.76	667	6.35	150	8	150	8			
286	4.76	747	6.35	150	10	150	8			
286	4.76	775	7.94	150	10	150	10			
286	4.76	813	7.94	150	10	150	10			
286	4.76	857	7.94	150	10	150	10			
345	4.76	965	7.94	175	12	175	10			
345	4.76	1124	9.53	175	15	175	10			
345	4.76	1365	9.53	175	20	175	16			
345	4.76	1562	9.53	175	25	175	20			
345	4.76	1762	11.11	175	30	175	20			
345	4.76	1965	11.11	175	30	175	25			

O.D. = OVERALL DIA. t = STEEL THICKNESS W = COLLAR WIDTH



NOTE
THIS DRAWING TO BE READ IN CONJUNCTION WITH SHEET 061



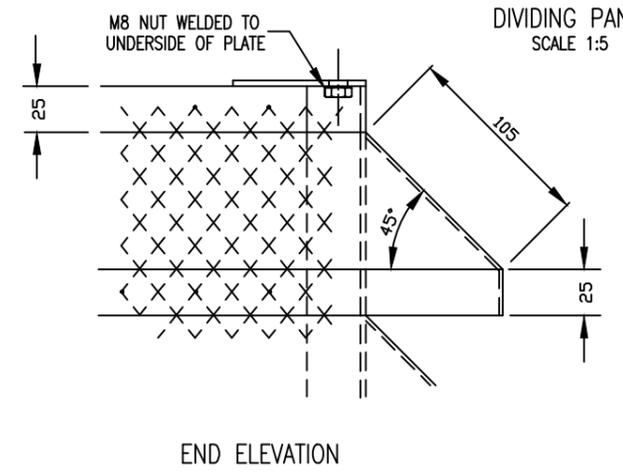
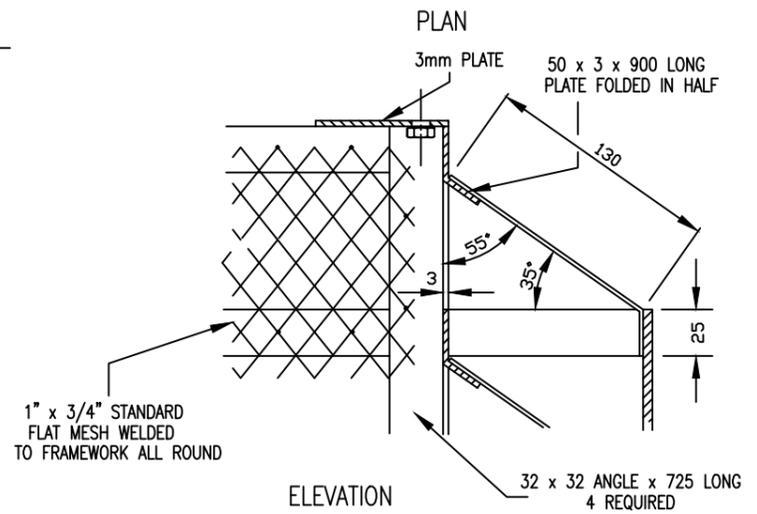
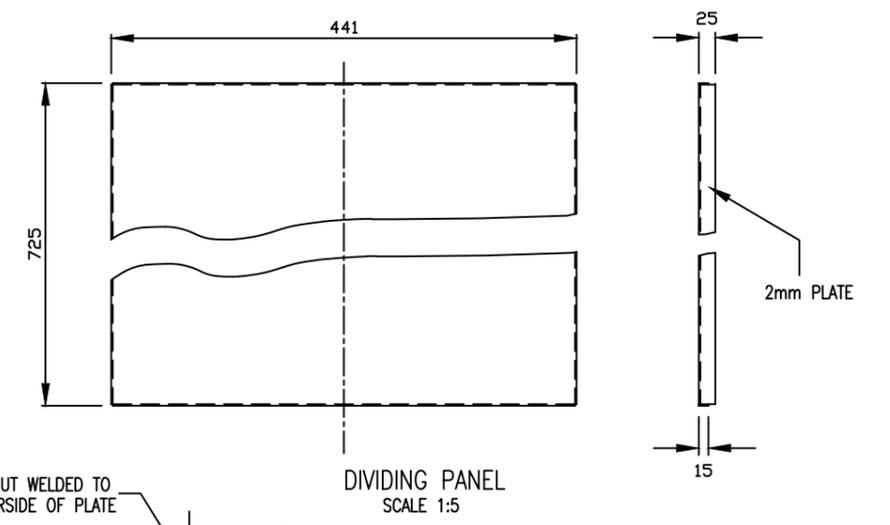
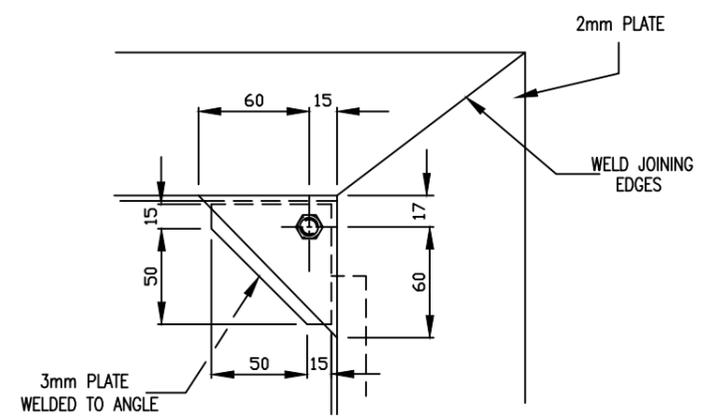
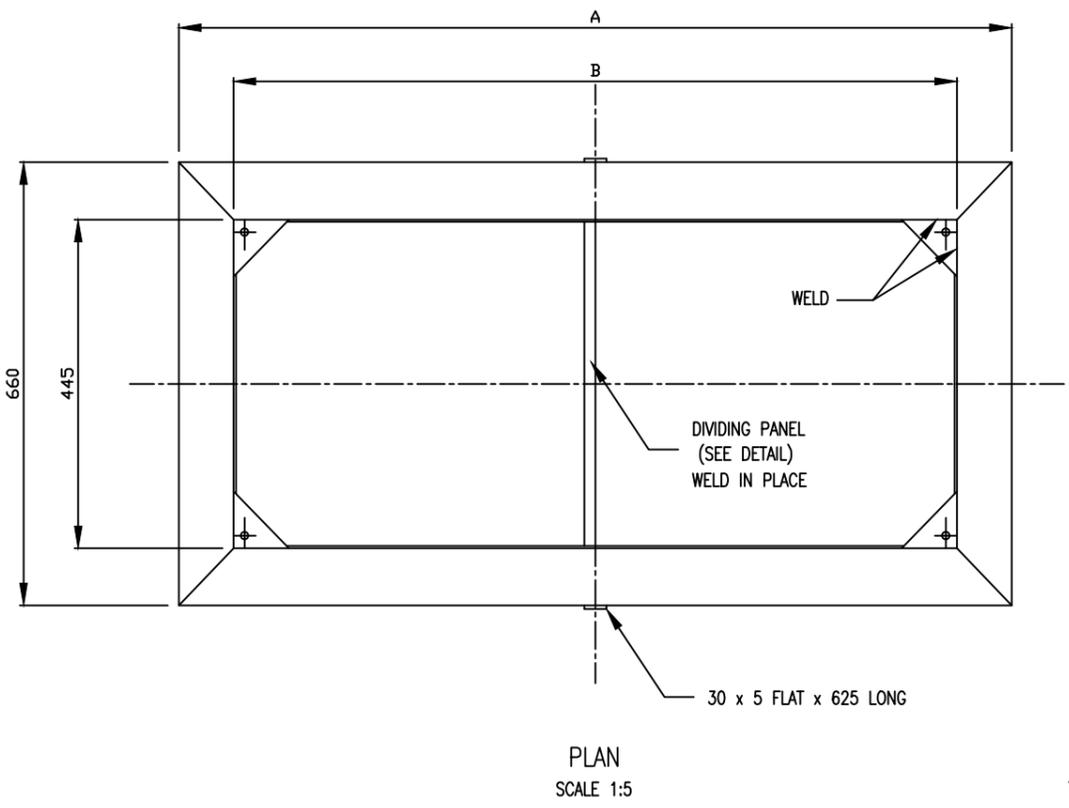
ISSUE	DATE	AMENDMENT	BY	APPD.	DATE
F	09:18	LADDER SUPPLIED BY WSL REFERENCE REMOVED	L.C.	D.M.	12-05
E	10:14	600 DIA. KORUM LID REPLACES 500 DIA.	L.C.	S.D.	12-05
D	01:11	LADDER & VALVE SPINDLE BRACKET AMENDED	L.C.	J.P.	10-14
C	02:09	S.V. CHAMBER WITH C.I. CIRCULAR LID	L.C.	T.C.	10-14
B	09:06	EXTENSION SPINDLE SUPPORT BRACKET ADDED	L.C.	J.P.	10-14
A	02:06	METAL THICKNESS TABLES AMENDED	I.M.	J.P.	10-14

SIGNATORY 1	OPERATIONS
SIGNATORY 2	INFRASTRUCTURE

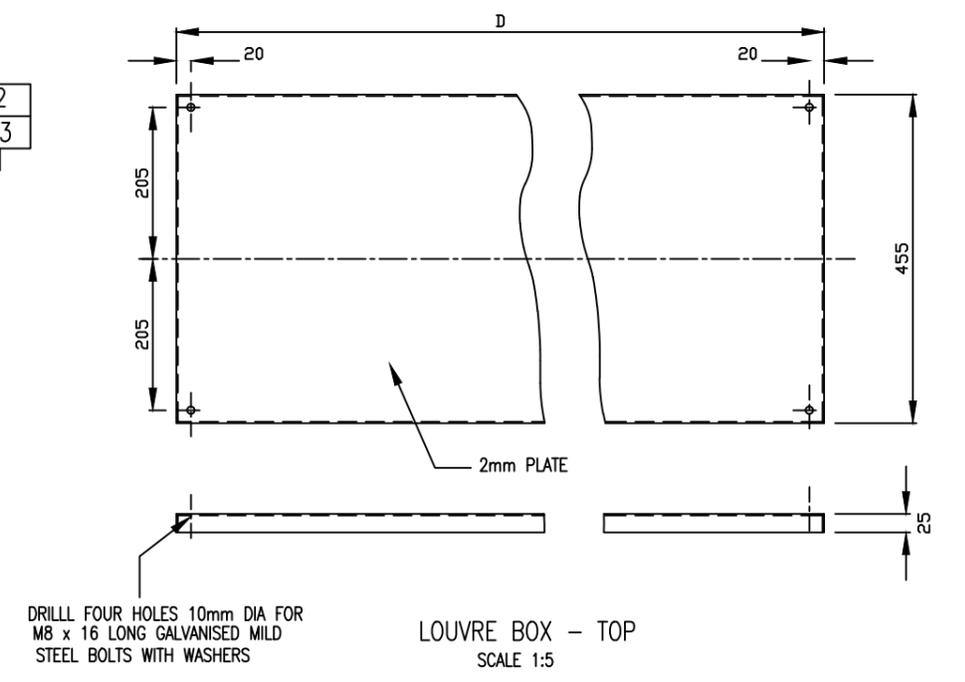
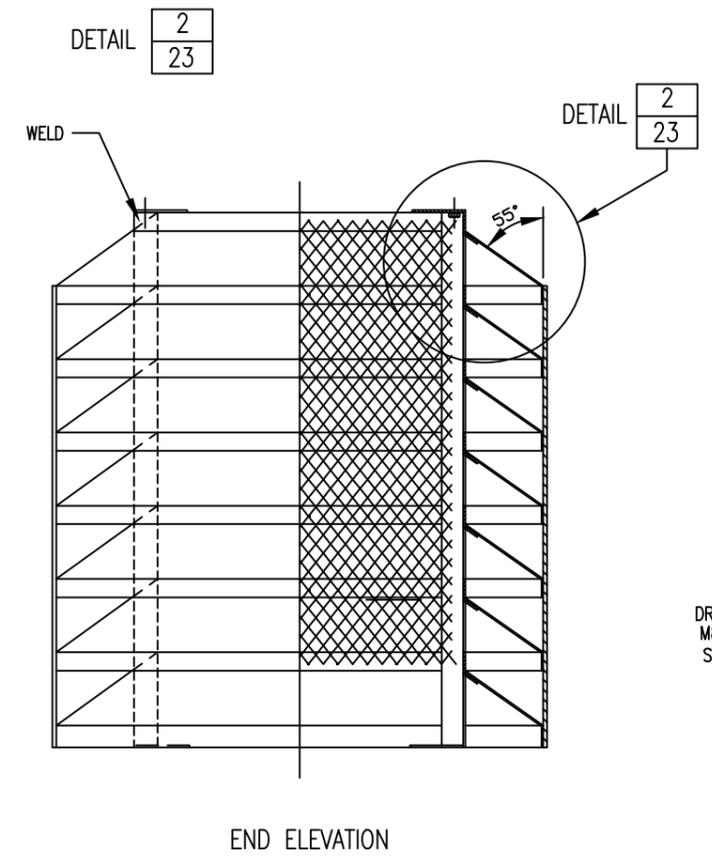
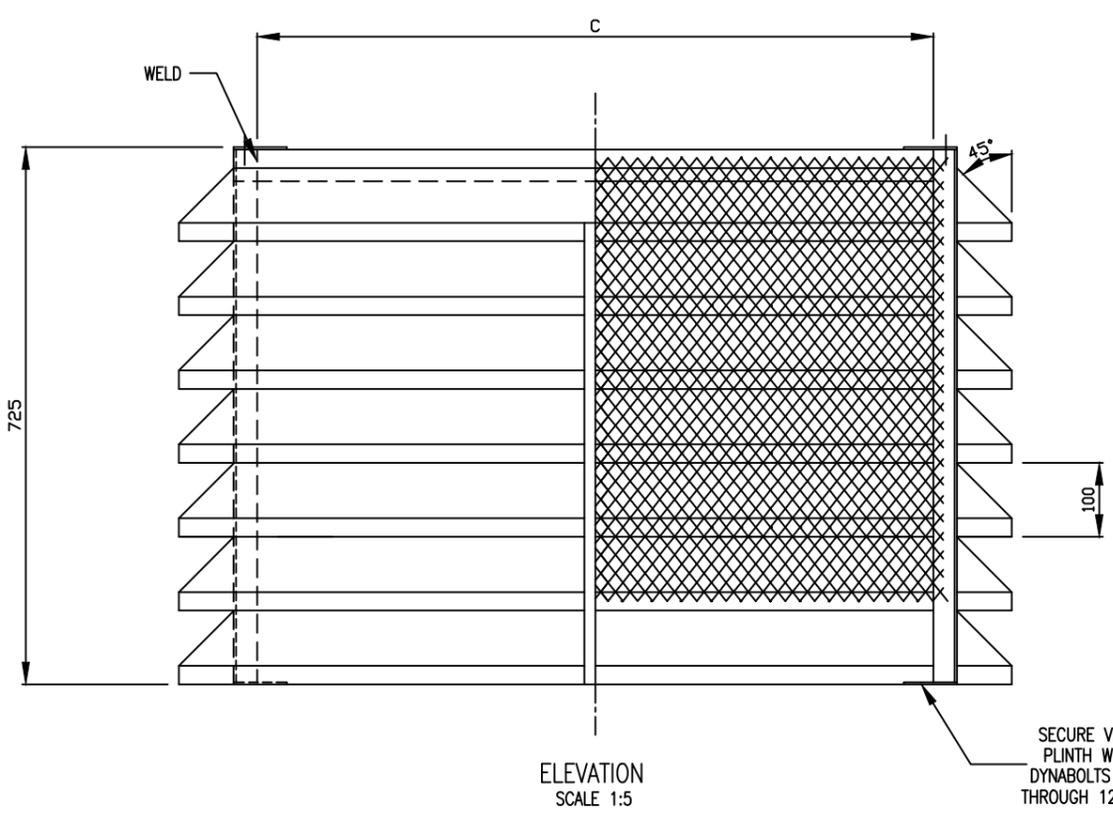
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WATER RETICULATION STANDARD
SCOUR VALVE CHAMBER
 CIRCULAR COVER & FRAME - SHEET 2

CAD FILE	2001979.062F	DATE	27-09-18
ORIGINAL SCALE	A1	CONTRACT No.	-
AS SHOWN			
REF. No.	-	ISSUE	-
DWG. No.	2001979 .062		F



	SINGLE DUCT LOUVRE BOX	DOUBLE DUCT LOUVRE BOX
A	555	1110
B	415	970
C	349	900
D	425	980



- NOTES
- ALL MATERIAL MILD STEEL
 - LOUVRE BOX TO BE HOT DIP GALVANISED AFTER FABRICATION
 - FILLET WELDS 3mm

ISSUE	DATE	AMENDMENT	BY	APPD.	BY	DATE

DESIGNED	DES. CHECKED	DRAWN	DWG. CHECKED	PROJECT LEADER
		K.PROSEE		

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OPERATIONS MANAGER WATER

PLANNING MANAGER WATER

WATERCARE SERVICES WATER RETICULATION
STANDARD VENTILATION LOUVRE BOXES
SINGLE AND DOUBLE DUCT SYSTEMS

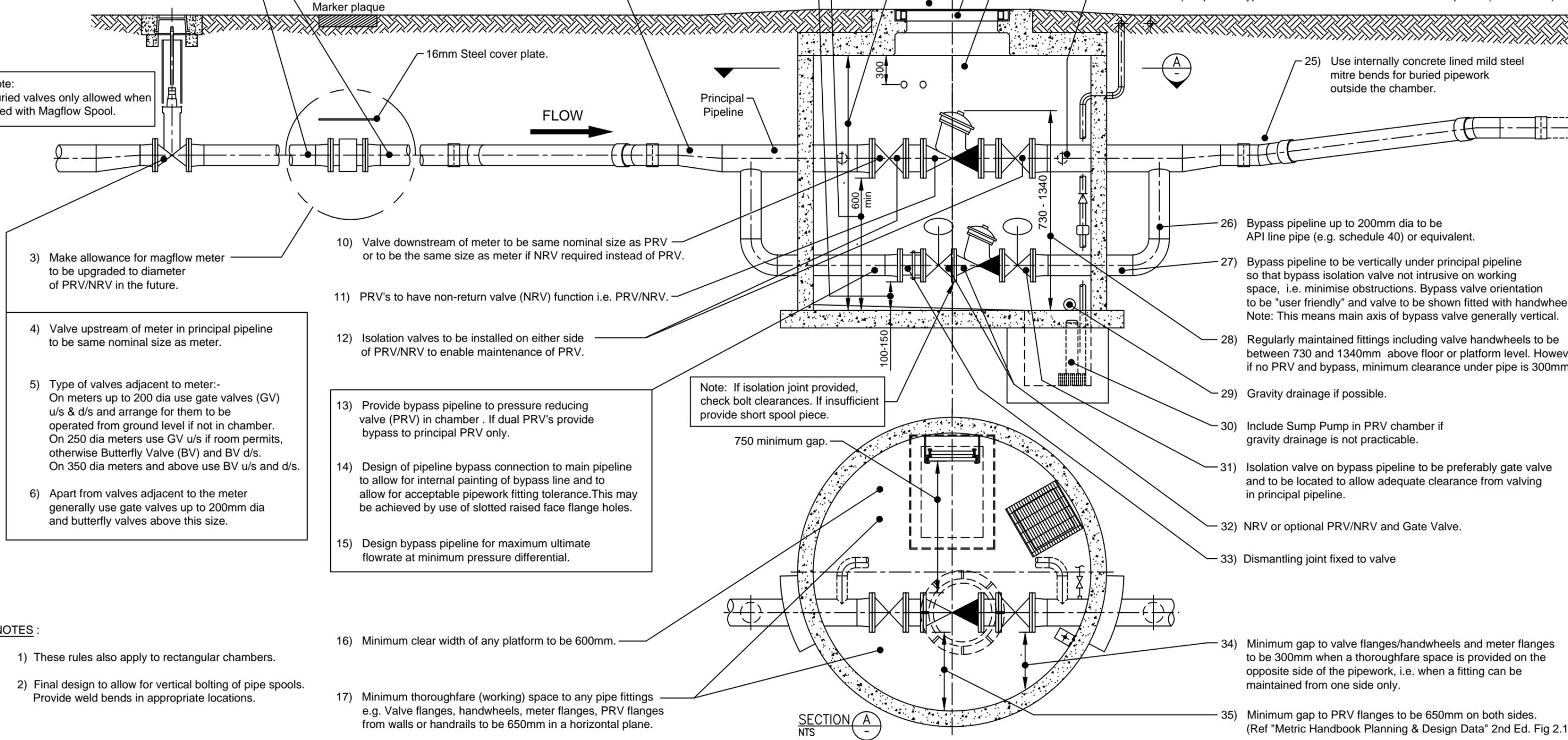
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CAD FILE 2001979.076	DATE 07-09-06
ORIGINAL SCALE A1	CONTRACT No.
1:5	
DRAWING No.	ISSUE
2001979 .076	-

- 1) Diameter of upstream and downstream pipes with respect to magflow meters to be +/-2mm.
- 2) Provide 10 Dias of straight pipe upstream of the meter and 5 Dias of straight pipe downstream. May be reduced to 5 Dias & 2 Dias when subject to special design.

- 7) Minimum clearance under principal pipe 600mm, or max height to top of principal pipe above floor 700mm provided that the OSH manual handling requirements are met. See note 29
- 8) Minimum vertical clearance from bypass pipe flange to be 100mm for 100mm dia pipework and 150mm for 150 & 200 dia pipework. Horizontal clearances to be 300mm from chamber walls.

- 18) Internal height of chambers to be min 2150mm as per AS1657.
- 19) Design chamber roof as removable reinforced concrete slab(s) designed to support HN-HO-72 loading.
- 20) In large rectangular chambers, provide two access hatches in each chamber, one for person access and the other for equipment access. Two hatches are required to allow for reasonable lighting and ventilation of the chamber space.
- 21) Provide equipment access lid. (either Std 500mm dia non-rock lid & frame or Std rectangular cover & frame depending on required clearance to fitting) preferably directly above principal PRV, (if more than one) through which the "internals" of this PRV can be removed.
- 22) Sometimes this lid and frame has to be Std WSL rectangular. Type of lid and frame depends on size of PRV.

Note:
Buried valves only allowed when used with Magflow Spool.



- 9) Tapers may be located outside the chambers.

- 23) Lighting to be provided in chambers with different floor levels, Intensity of lighting to be in accordance with current edition of standard, NZS 6703.
- 24) Optional bypass with PRV and isolation valves if required. (See also 27)

- 3) Make allowance for magflow meter to be upgraded to diameter of PRV/NRV in the future.

- 10) Valve downstream of meter to be same nominal size as PRV or to be the same size as meter if NRV required instead of PRV.
- 11) PRV's to have non-return valve (NRV) function i.e. PRV/NRV.

- 25) Use internally concrete lined mild steel mitre bends for buried pipework outside the chamber.

- 4) Valve upstream of meter in principal pipeline to be same nominal size as meter.

- 12) Isolation valves to be installed on either side of PRV/NRV to enable maintenance of PRV.

- 26) Bypass pipeline up to 200mm dia to be API line pipe (e.g. schedule 40) or equivalent.
- 27) Bypass pipeline to be vertically under principal on pipeline so that bypass isolation valve not intrusive on working space, i.e. minimise obstructions. Bypass valve orientation to be "user friendly" and valve to be shown fitted with handwheel. Note: This means main axis of bypass valve generally vertical.
- 28) Regularly maintained fittings including valve handwheels to be between 730 and 1340mm above floor or platform level. However, if no PRV and bypass, minimum clearance under pipe is 300mm.

- 5) Type of valves adjacent to meter:-
On meters up to 200 dia use gate valves (GV) u/s & d/s and arrange for them to be operated from ground level if not in chamber. On 250 dia meters use GV u/s if room permits, otherwise Butterfly Valve (BV) and BV d/s. On 350 dia meters and above use BV u/s and d/s.
- 6) Apart from valves adjacent to the meter generally use gate valves up to 200mm dia and butterfly valves above this size.

- 13) Provide bypass pipeline to pressure reducing valve (PRV) in chamber. If dual PRV's provide bypass to principal PRV only.
- 14) Design of pipeline bypass connection to main pipeline to allow for internal painting of bypass line and to allow for acceptable pipework fitting tolerance. This may be achieved by use of slotted raised face flange holes.
- 15) Design bypass pipeline for maximum ultimate flowrate at minimum pressure differential.

Note: If isolation joint provided, check bolt clearances. If insufficient provide short spool piece.

- 29) Gravity drainage if possible.
- 30) Include Sump Pump in PRV chamber if gravity drainage is not practicable.
- 31) Isolation valve on bypass pipeline to be preferably gate valve and to be located to allow adequate clearance from valving in principal pipeline.
- 32) NRV or optional PRV/NRV and Gate Valve.
- 33) Dismantling joint fixed to valve

- NOTES :**
- 1) These rules also apply to rectangular chambers.
 - 2) Final design to allow for vertical bolting of pipe spools. Provide weld bends in appropriate locations.

- 16) Minimum clear width of any platform to be 600mm.

- 34) Minimum gap to valve flanges/handwheels and meter flanges to be 300mm when a thoroughfare space is provided on the opposite side of the pipework, i.e. when a fitting can be maintained from one side only.

- 17) Minimum thoroughfare (working) space to any pipe fittings e.g. Valve flanges, handwheels, meter flanges, PRV flanges from walls or handrails to be 650mm in a horizontal plane.

- 35) Minimum gap to PRV flanges to be 650mm on both sides. (Ref "Metric Handbook Planning & Design Data" 2nd Ed. Fig 2.12)

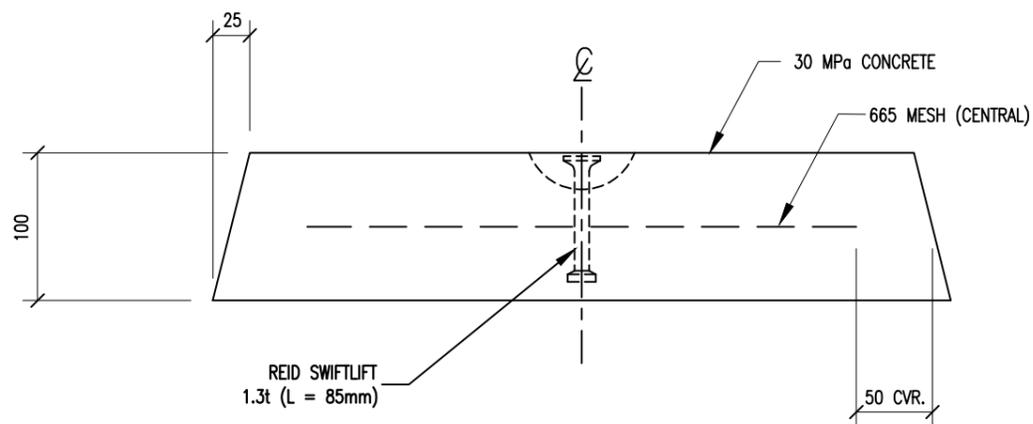
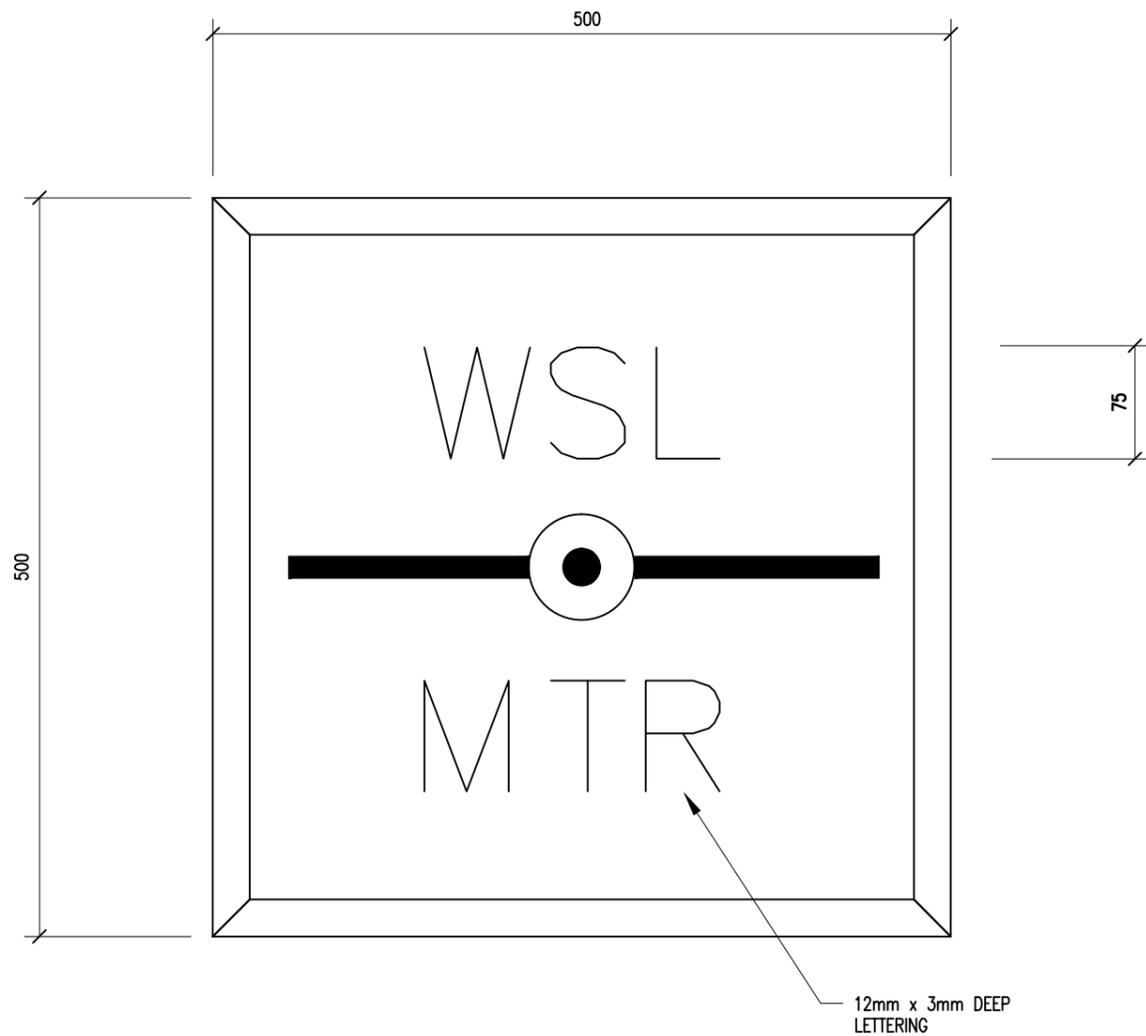
ISSUE	DATE	AMENDMENT	BY	APPD.	DESIGNED	DATE	OPERATIONS	ASSET MANAGEMENT
B	12/08	NOTES ADDED	G.B.	J.P.	J.P.	03-07		
A	6/08	DISMANTLING JOINT ADDED TO BYPASS	L.C.	J.P.	T.C.	04-07		
					G.B.	04-07		
					I.M.	04-07		
					J.P.	04-07		
					D.B.	04-07		

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WATER RETICULATION DESIGN GUIDELINES
CHAMBERS, VALVES & PIPEWORK
CONFIGURATIONS & DIMENSIONS

CAD FILE 2001979.086B	DATE 5-12-08
ORIGINAL SCALE A3	CONTRACT No.
AS SHOWN	-
DRAWING No.	ISSUE
2001979 .086	B



ISSUE	DATE	AMENDMENT	BY	APPD.	BY	DATE

DESIGNED	J.P.	04/07
DES. CHECKED		
DRAWN	J.M.	04/07
DWG. CHECKED	I.M.	04/07
PROJECT LEADER	J.P.	04/07
A.M. APPROVED	A.S.	04/07

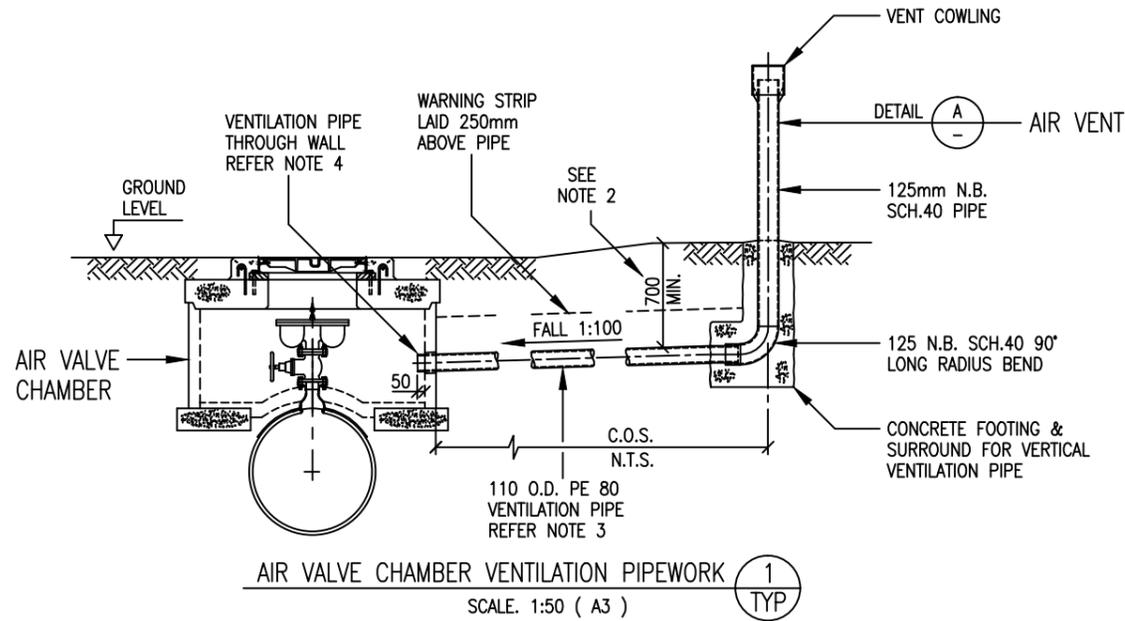
M. BOURNE
OPERATIONS

A. SPITTAL
ASSET MANAGEMENT

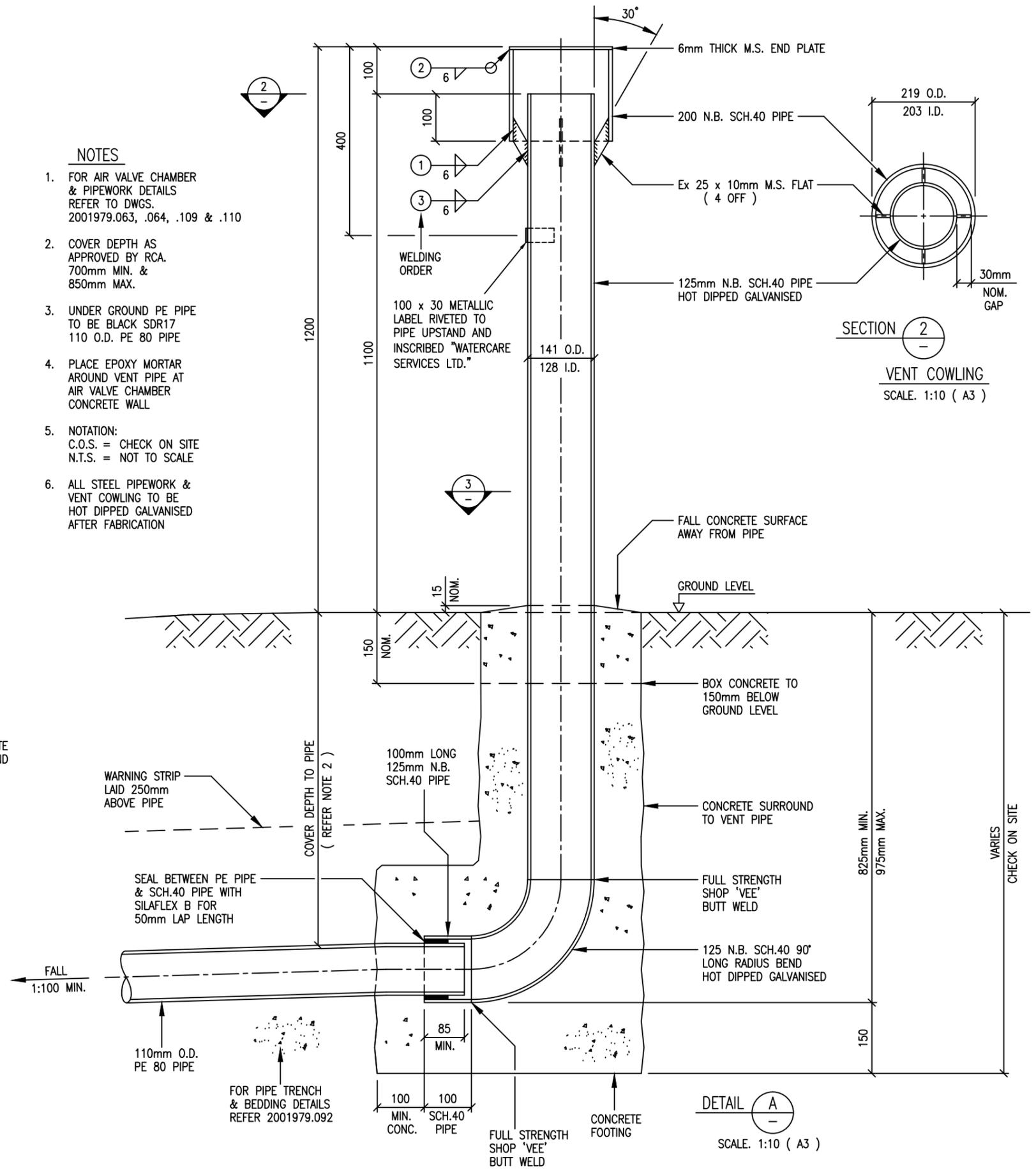
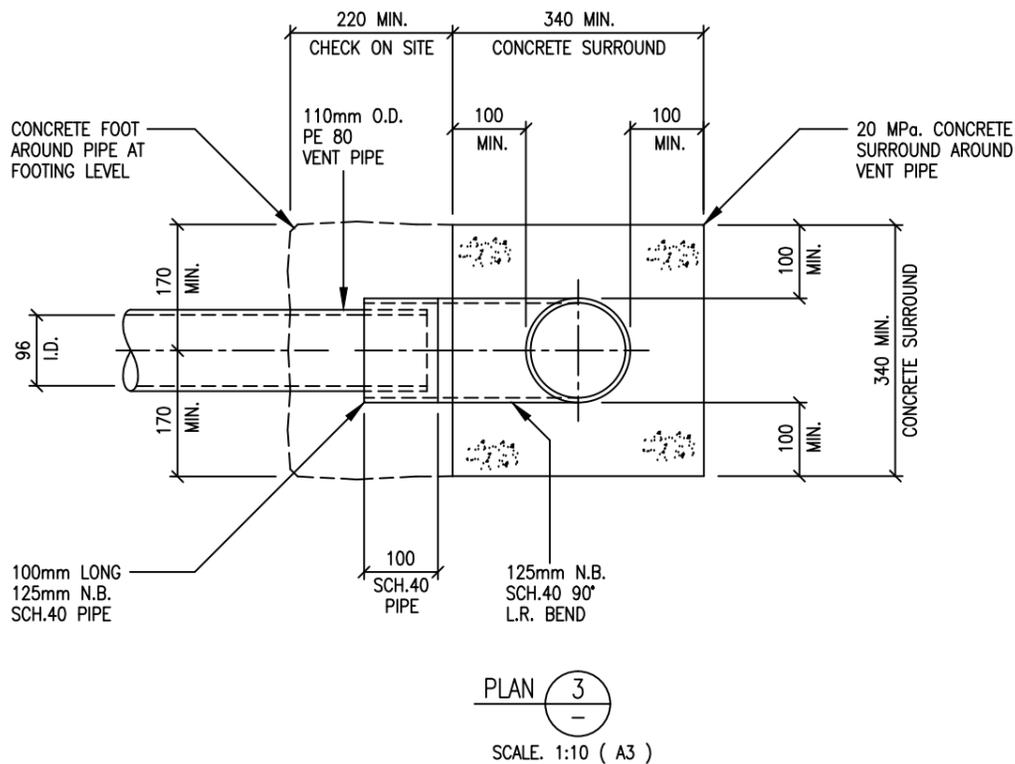
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RETICULATION STANDARD
MAGFLOW MARKER
PLAQUE

CAD FILE 2001979.088		DATE 27/4/2007
ORIGINAL SCALE A3		CONTRACT No.
1 : 5		
DRAWING No.	ISSUE	
2001979	.088	



- NOTES**
- FOR AIR VALVE CHAMBER & PIPEWORK DETAILS REFER TO DWGS. 2001979.063, .064, .109 & .110
 - COVER DEPTH AS APPROVED BY RCA. 700mm MIN. & 850mm MAX.
 - UNDER GROUND PE PIPE TO BE BLACK SDR17 110 O.D. PE 80 PIPE
 - PLACE EPOXY MORTAR AROUND VENT PIPE AT AIR VALVE CHAMBER CONCRETE WALL
 - NOTATION:
C.O.S. = CHECK ON SITE
N.T.S. = NOT TO SCALE
 - ALL STEEL PIPEWORK & VENT COWLING TO BE HOT DIPPED GALVANISED AFTER FABRICATION



L:\---\EGCAD\2009\STANDARD DWGS\2001979.116C.DWG

ISSUE	DATE	AMENDMENT	BY	APPD.	DESIGNED	T.C. / J.P.	10:09
C	08:11	GATE VALVE ADDED TO A.V. LABEL ADDED	I.M.	T.C.	DES. CHECKED	J.P.	10:09
B	11:09	STEEL COWLING ADDED AT TOP OF VENT PIPE	L.C.	T.C.	DRAWN	L.C.	10:09
A	11:09	VERTICAL PART OF VENTILATION PIPE CHANGED TO HOT DIPPED GALVANISED SCH.40 PIPE	L.C.	T.C.	DWG. CHECKED	I.M.	10:09
"	"	"	"	"	PROJECT LEADER	T.C.	10:09
"	"	"	"	"	A.M. APPROVED	"	"

T. HAWKE
OPERATIONS

A. STEWART
INFRASTRUCTURE



WATERCARE RETICULATION STANDARD
AIR VALVE CHAMBER VENTILATION - TYPE A
FABRICATION DETAILS

CAD FILE 2001979.116C	DATE 10-08-11
ORIGINAL SCALE A1	CONTRACT No.
AS SHOWN	
DRAWING No. 2001979	ISSUE C
.116	

R.C. CAST INSITU BASE SLAB. THE BASE SLAB TO BE CIRCULAR IN PLAN. DIAMETER SPECIFIC DESIGN AGAINST FLOTATION OF THE CHAMBER. BASE SLAB, MINIMUM DIAMETER DIMENSION TO BE THE OUTSIDE DIAMETER OF THE RISER PLUS 300 ALL ROUND.

REFER TO 'TABLE 1' FOR STANDARD CHAMBER DIAMETERS 'X'

PRINCIPAL C.L.S. WATERMAIN WITH EXTERNAL TAPE WRAPPING SYSTEM TO BE BROUGHT THROUGH 200 INSIDE OF CHAMBER WALL

M.S. WELDING BAND (W.B.) JOINTING PRINCIPAL C.L.S. WATERMAIN LOCATED INSIDE THE CHAMBER (REFER W.S.L. DRAWING. 2001979.019)

DRAINAGE SUMP WITH OPTIONAL PERMANENT SUBMERSIBLE PUMP INSTALLED. SUMP ORIENTATION AND CHECK VALVE WITHIN CHAMBER TO SUIT SIDE OF STORMWATER DRAINAGE CONNECTION POINT

OPTIONAL 100 N.B. uP.V.C. SN16 MINIMUM SIZE GRAVITY DRAIN FROM CHAMBER PUMP TO CONNECTION WITH NEAREST STORMWATER DRAIN. REFER NOTE 10.

GALVANISED WEBFORCE GRATING TO NZ STANDARDS FOR PLATFORMS.

ROAD SURFACE AND BASECOURSE RESTORATION TO BE IN ACCORDANCE WITH 'CODE OF PRACTICE FOR WORKING IN ROAD' AS A MINIMUM

50 N.B. uP.V.C. CABLE DUCT TO POWER POINT BOX

OPTIONAL POWER CABLE FROM SUMP PUMP TO POWER POINT BOX. REFER NOTE 10

PRINCIPAL C.L.S. WATERMAIN REFER 'TABLE 1' FOR SIZING

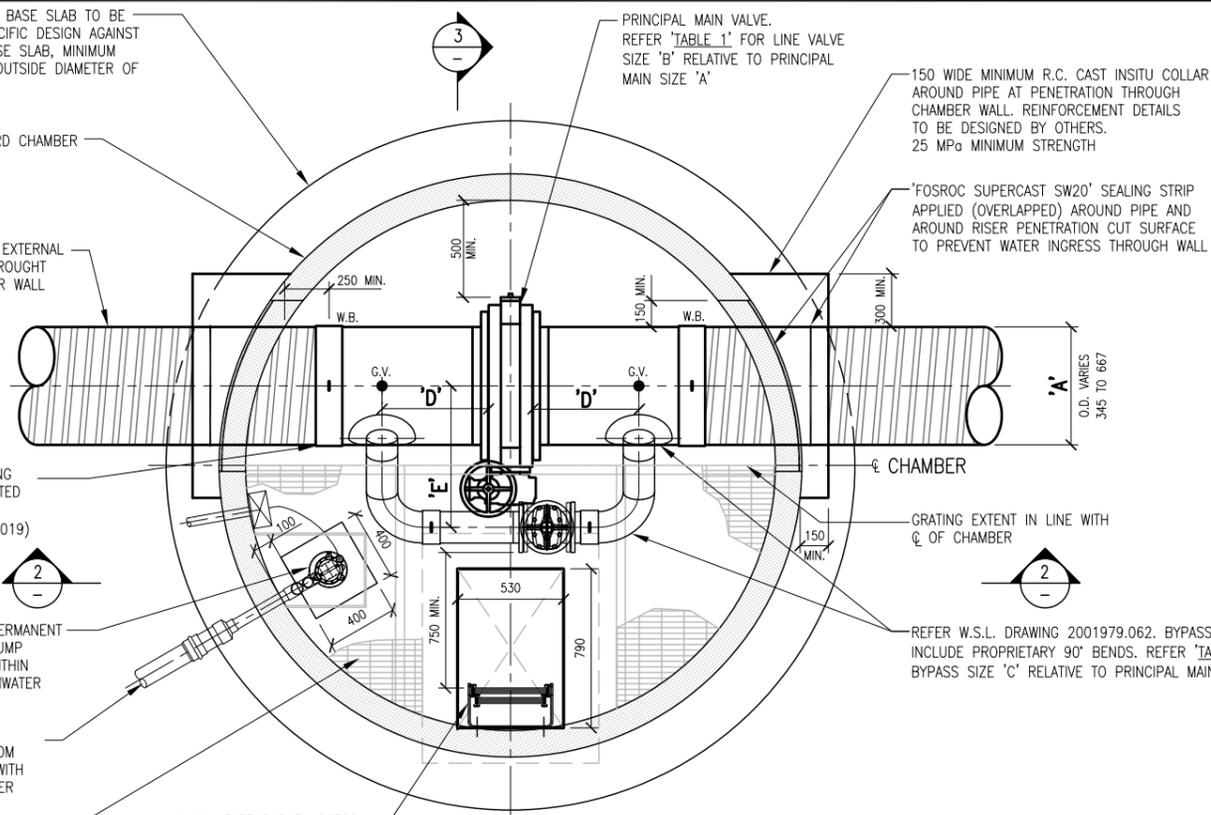
50 N.B. CHECK VALVE ON PUMP DISCHARGE PIPEWORK

50 N.B. 'CAMLOK' COUPLING

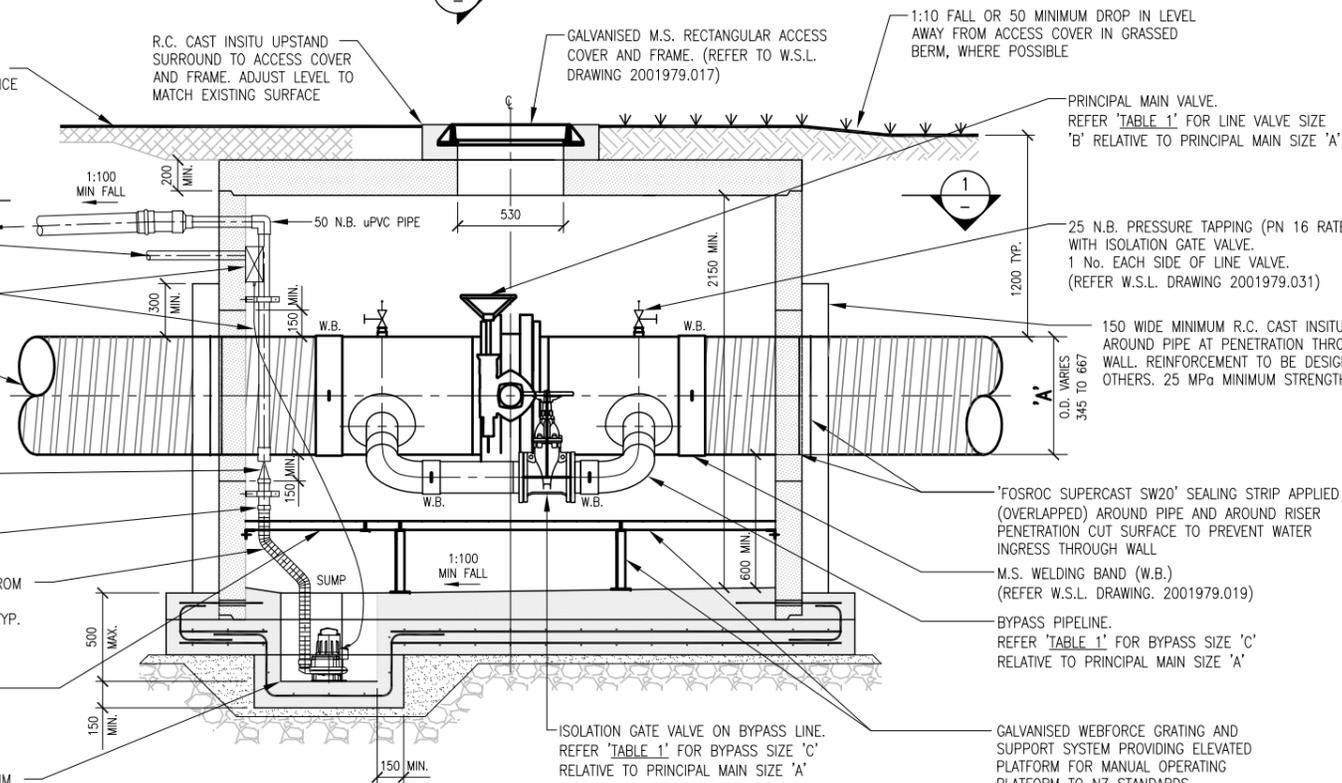
50 N.B. uP.V.C. FLEXIBLE PIPE FROM PUMP DISCHARGE TO ALLOW FOR PUMP REMOVAL. 900 mm LONG TYP.

LIFT OUT PANEL IN PLATFORM GRATING ABOVE PUMP

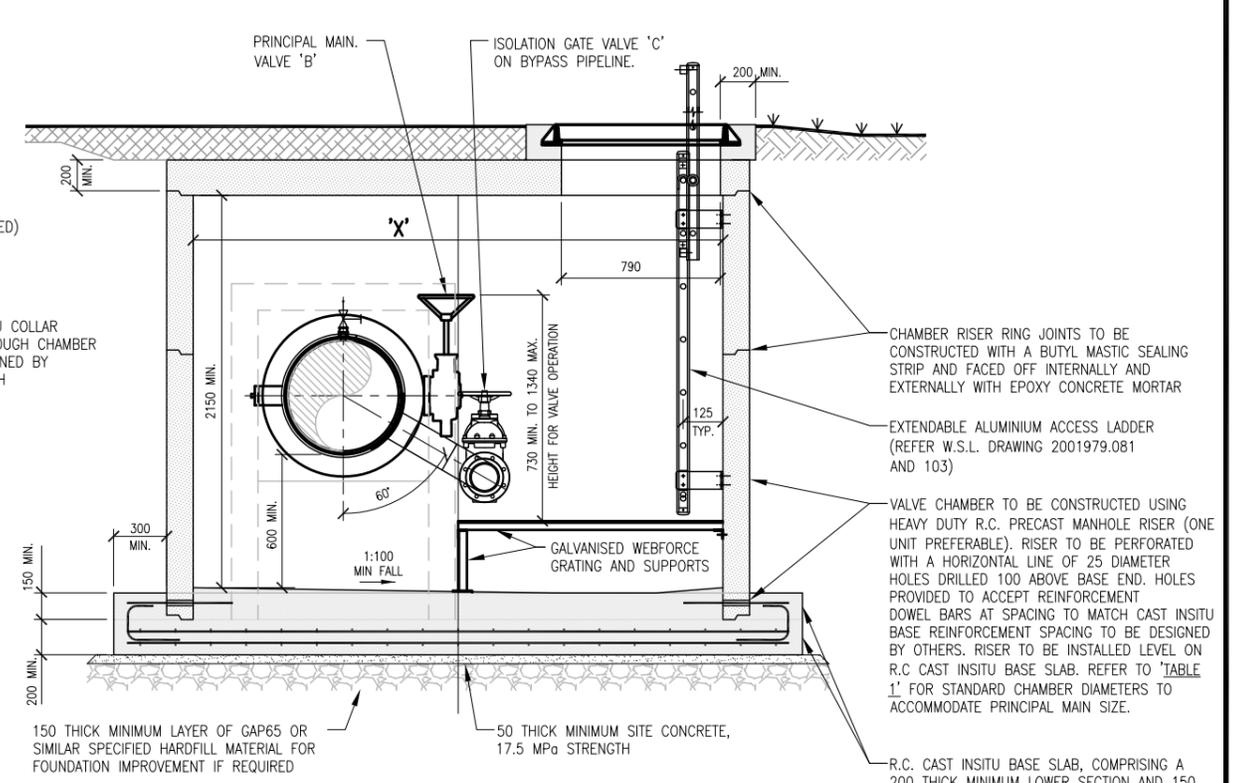
400 SQUARE x 500 DEEP MAXIMUM SIZE SUMP FORMED IN BASE SLAB



SECTIONAL PLAN 1
SCALE: 1:20



SECTION 2
SCALE: 1:20



SECTION 3
SCALE: 1:20

PRINCIPAL PIPELINE SIZE 'A' OUTSIDE DIAMETER (mm)		345	426	507	587	667
PRINCIPAL PIPELINE SIZE NOMINAL BORE (mm)		310	390	470	550	630
PRINCIPAL PIPELINE LINE VALVE SIZE 'B' DIAMETER NOMINAL (mm)	MIN	250	300	350	450	450
	MAX	300	400	450	500	600
BYPASS PIPELINE-VALVE SIZE 'C' DIAMETER NOMINAL (mm)		50	80	100	100	150
PIPEWORK DIMENSION 'D' (mm)		400	450	500	550	600
PIPEWORK DIMENSION 'E' (mm)		500	500	500	500	500
VALVE CHAMBER SIZE 'X' DIAMETER NOMINAL (mm)	MIN	2300	2300	2550	2550	3000
	MAX	2550	2550	3000	3000	3200

STRUCTURAL DESIGN NOTE:-

THE CHAMBER SHALL BE DESIGNED AGAINST FLOTATION FOR CONSTRUCTION IN AREAS WHERE A HIGH GROUND WATER LEVEL MAY BE PRESENT. THE COMBINED CHAMBER AND PIPEWORK WEIGHT SHALL COUNTERACT CALCULATED UPLIFT PRESSURES. THE OVERALL CHAMBER DEPTH AND MASS OF CONCRETE BASE SLAB WILL BE ADJUSTED TO SUIT PARTICULAR CHAMBER REQUIREMENTS. SPECIFIC STRUCTURAL DESIGN SHALL BE COMPLETED BY OTHERS.

NOTES:-

- THIS DRAWING TO BE READ IN CONJUNCTION WITH WATERCARE CONSTRUCTION STANDARD.
- THIS SCALED DRAWING SHOWS TYPICAL GENERAL ARRANGEMENT DETAILS FOR A RANGE OF PRINCIPAL MAIN, LINE VALVE AND CHAMBER SIZES. HOWEVER THE SCALED DRAWING DETAILS A 630 mm N.B. PRINCIPAL MAIN WITH A D.N. 600 mm LINE VALVE AND A 3000 mm DIAMETER R.C. CHAMBER. ALL OTHER PIPELINE, VALVE AND CHAMBER SIZING SHOWN IN 'TABLE 1' IS NOT SHOWN TO SCALE ON THIS DRAWING.
- ALL DIMENSIONS ARE IN MILLIMETRES UNLESS STATED OTHERWISE. DIMENSIONS SHALL NOT BE OBTAINED BY SCALING FROM DRAWING.
- MATERIAL REFERENCES AND ABBREVIATIONS:
W.S.L. = WATERCARE SERVICES LTD.
GALV M.S. = GALVANISED MILD STEEL.
C.L.S. = CONCRETE LINED STEEL.
E.C.S. = EPOXY COATED STEEL.
uP.V.C. = UNPLASTICISED POLY VINYL CHLORIDE.
D.N. = DIAMETER NOMINAL.
N.B. = NOMINAL BORE.
O.D. = OUTSIDE DIAMETER.
G.V. = GATE VALVE.
D.J. = DISMANTLING JOINT.
W.B. = WELDING BAND.
- ALL CONCRETE LINED STEEL PIPE AND FITTINGS TO WATERCARE STANDARDS.
- ALL MILD STEEL PIPEWORK OF 200 mm DIAMETER AND LESS SHALL BE API SCHEDULE 40 WITH INTERNAL AND EXTERNAL EPOXY COATING UNLESS SPECIFIED OTHERWISE.
- THE CHAMBER R.C. CAST INSITU BASE SLAB, PRECAST RISER AND ROOF SLAB SHALL BE SUITABLE FOR HO-HN-72 LOADING REQUIREMENTS IN ACCORDANCE WITH 'TRANSIT NEW ZEALAND BRIDGE DESIGN CODE'.
- CONCRETE STRENGTHS SPECIFIED ARE MINIMUM STRENGTHS AT 28 DAYS.
- THIS STANDARD LINE VALVE CHAMBER DESIGN DOES NOT ALLOW FOR A SCOUR VALVE ARRANGEMENT. WHERE A LINE VALVE IS INSTALLED AT A LOW POINT OR ON A SLOPE THE SCOUR ARRANGEMENT SHALL BE INSTALLED IN A SEPARATE CHAMBER.
- SUMP PUMP POWER AND DRAIN LINE IS OPTIONAL - FOLLOW ENGINEERS INSTRUCTION ON WHETHER INSTALLATION REQUIRED.
- ALL VALVES MUST BE FITTED WITH HANDWHEELS. GEARBOXES SHALL BE INSTALLED WHERE TURNING EFFORT EXCEEDS THE WATERCARE MINIMUM STANDARD.

ISSUE	DATE	AMENDMENT	BY	APPD.	BY	DATE
A	07-16	NOTES AMENDED	L.C.	J.D.		
-	09-12	APPROVED FOR ISSUE	I.M.	J.R.		

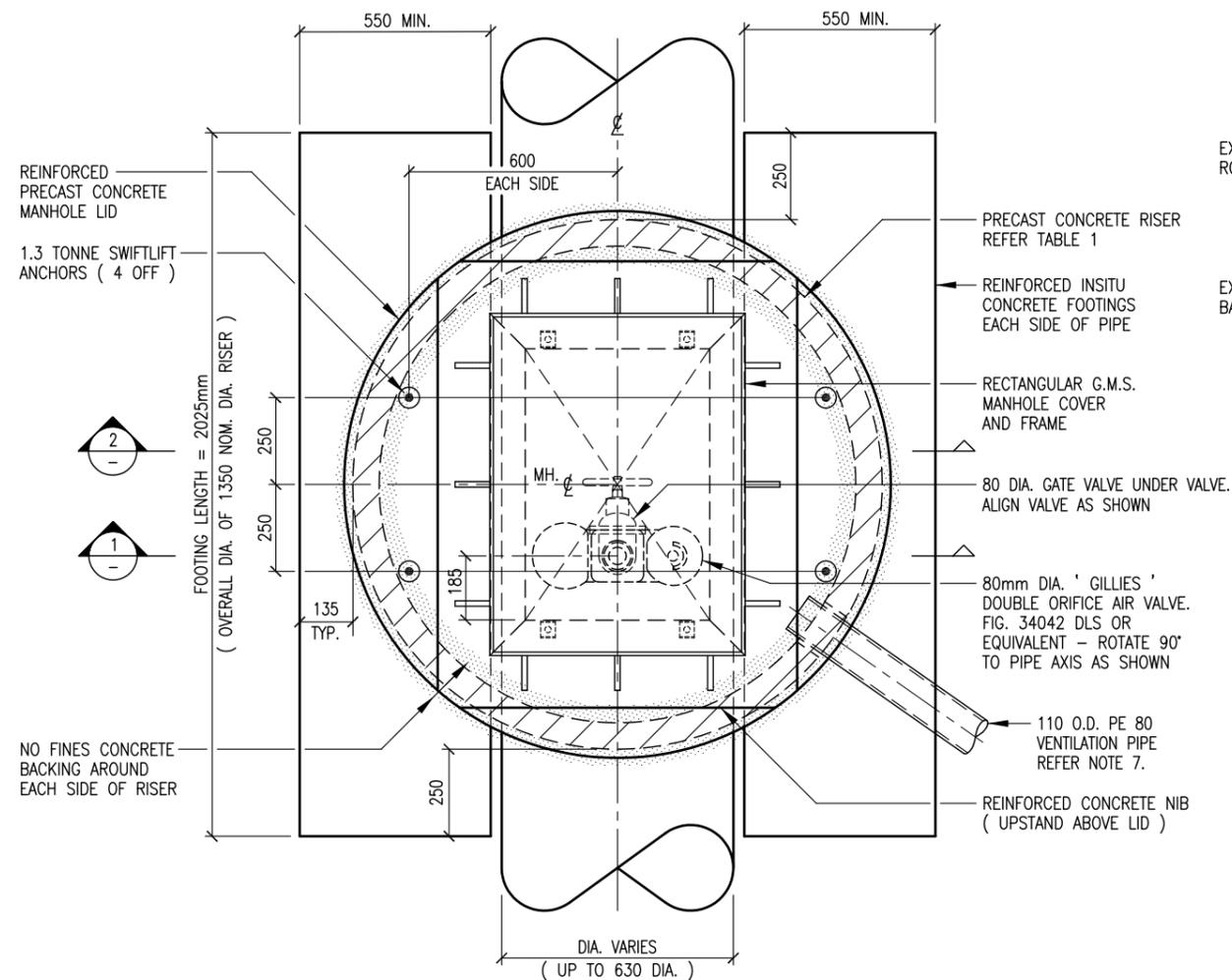
DESIGNED J.R. 08-12
 DES. CHECKED
 DRAWN I.M. 08-12
 DWG. CHECKED
 PROJECT LEADER
 INFRAS'R APP'D

Watercare
services limited

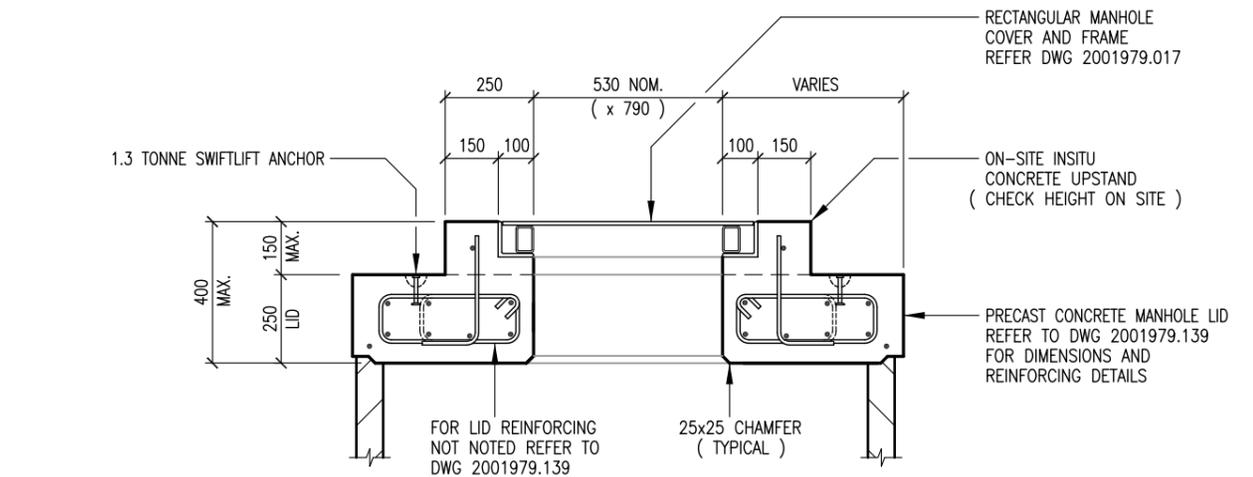
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WATER RETICULATION STANDARD
STANDARD LINE VALVE CHAMBER AND PIPEWORK
 GENERAL ARRANGEMENT DETAILS

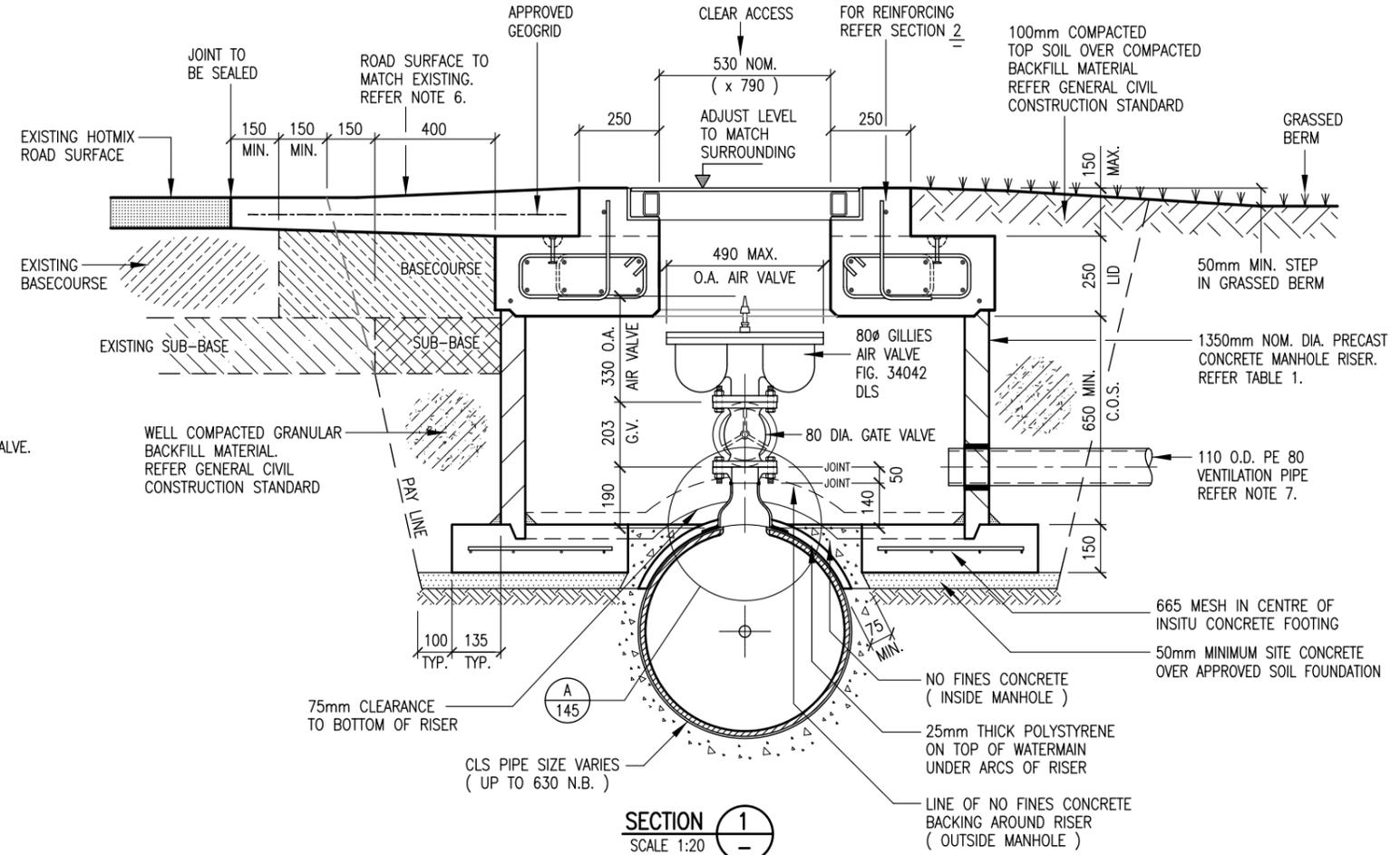
CAD FILE	2001979.134A	DATE	27-07-16
ORIGINAL SCALE	A1 AS SHOWN	CONTRACT No.	-
REF. No.	-	ISSUE	-
DWG. No.	2001979 .134		A



PLAN
SCALE 1:20



SECTION 2
SCALE 1:20



SECTION 1
SCALE 1:20

NOTES

- ALL DIMENSIONS TO BE CHECKED ON SITE
- FOOTING TO BE FOUNDED ON COMPACTED MATERIAL TO ENGINEERS SPECIFICATION
- FOR CONCRETE AND REINFORCING NOTES AND MANHOLE LID REINFORCING DETAILS REFER TO DRAWING 2001979.139
- BACKFILL FOR CHAMBERS :
 - IN BERM TO BE HARDFILL TO WITHIN 100mm OF SURFACE - 100mm TOPSOIL & GRASSED
 - IN PAVEMENTS BACKFILL AS TRENCH BACKFILL DETAIL
- ALL AIR VALVES SHALL BE GILLIES BRAND DOUBLE AIR RELIEF VALVES FOR WATER PIPELINE APPLICATIONS OR APPROVED ALTERNATIVE THIS DRAWING TO BE READ IN CONJUNCTION WITH DWG 2001979.145 FOR AIR VALVE OFFTAKE CONCENTRIC REDUCER & COLLAR DETAILS
- ROAD SURFACE RESTORATION TO BE IN ACCORDANCE WITH THE SPECIFICATION OR AS AGREED WITH ROAD CONTROLLING AUTHORITY
- REFER TO DWG. 2001979.116 FOR DETAILS OF 110 O.D. PE80 SDR17 VENTILATION PIPE. THE DEPTH & DIRECTION TO VERTICAL SUPPORT POST TO BE DETERMINED ON SITE.
- REFER TO STD. SPEC. FOR FABRICATION & INSTALLATION OF STEEL PIPEWORK ASSEMBLIES - SEE GENERAL MECHANICAL CONSTRUCTION STANDARD
- ISOLATION GATE VALVE TO BE IN ACCORDANCE WITH MATERIAL SUPPLY STANDARD
- REFER TO DRAWING 2001979.017 FOR STANDARD G.M.S. COVER & FRAME DETAILS
- THIS DRAWING REPLACES THE 80mm DIA. AIR VALVE DETAILS SHOWN ON DRAWING 2001979.063

TABLE 1 - MANHOLE RISER & AIR VALVE SIZE
USE CLASS 'X' FLUSH JOINTS CONCRETE RISER

NOM. CLS PIPE DIA. (mm)	NOM. SIZE OF RISER (mm)	AIR VALVE SIZE (mm)
UP TO 630	1350	80

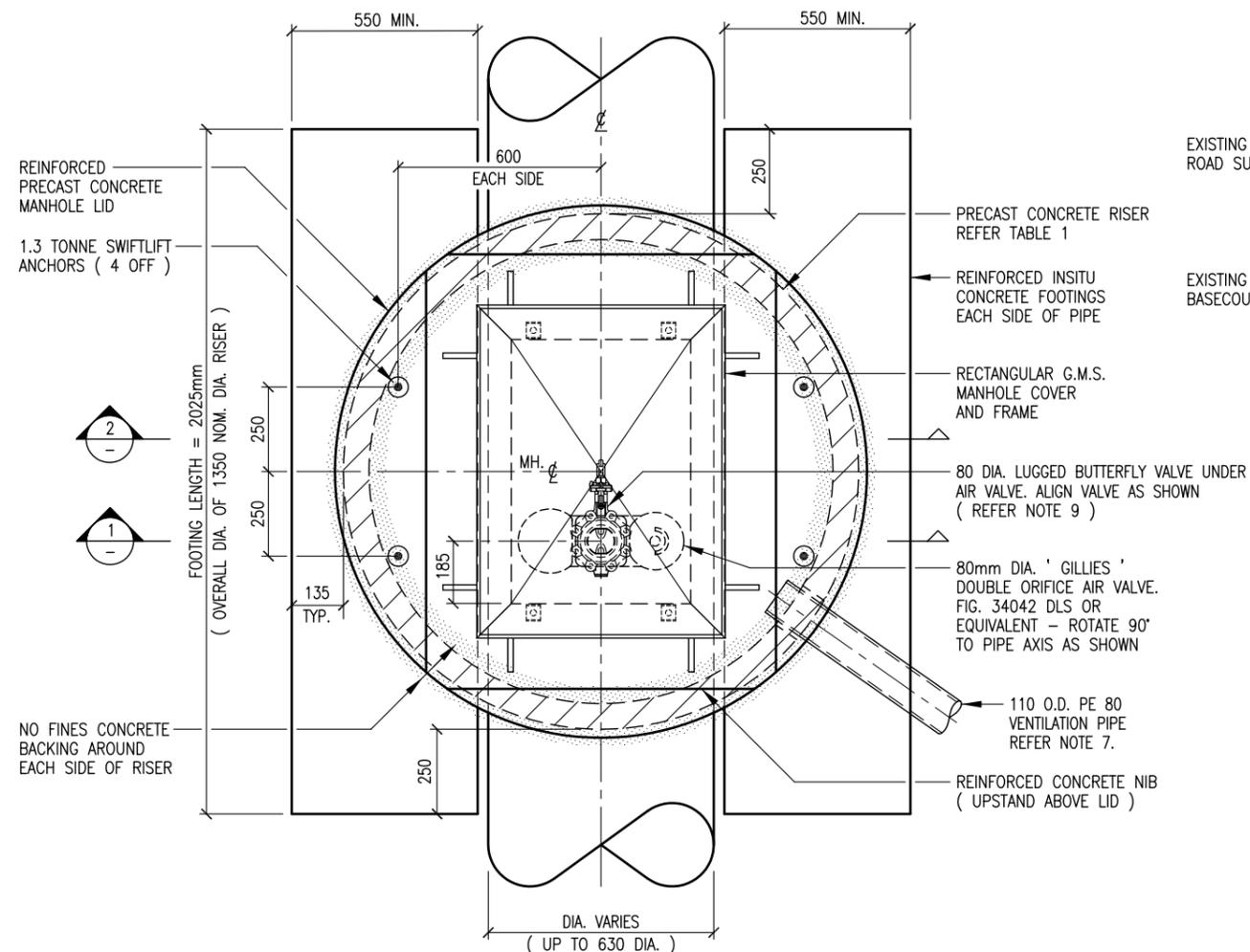
ISSUE	DATE	AMENDMENT	BY	APPD.
B	09-18	MATERIAL SUPPLY REFERENCE REMOVED	L.C.	D.M.
A	10-14	GALV. STEEL COVER & FRAME REPLACES SIKA COVER & FRAME	L.C.	S.D.
-	05-13	PLAN APPROVED FOR ISSUE	I.M.	T.C.

DESIGNED	DES. CHECKED	DRAWN	DWG. CHECKED	PROJECT LEADER	INFRASTR APP'D
HYNDS & T.C.		L.C. & I.M.		T.C.	

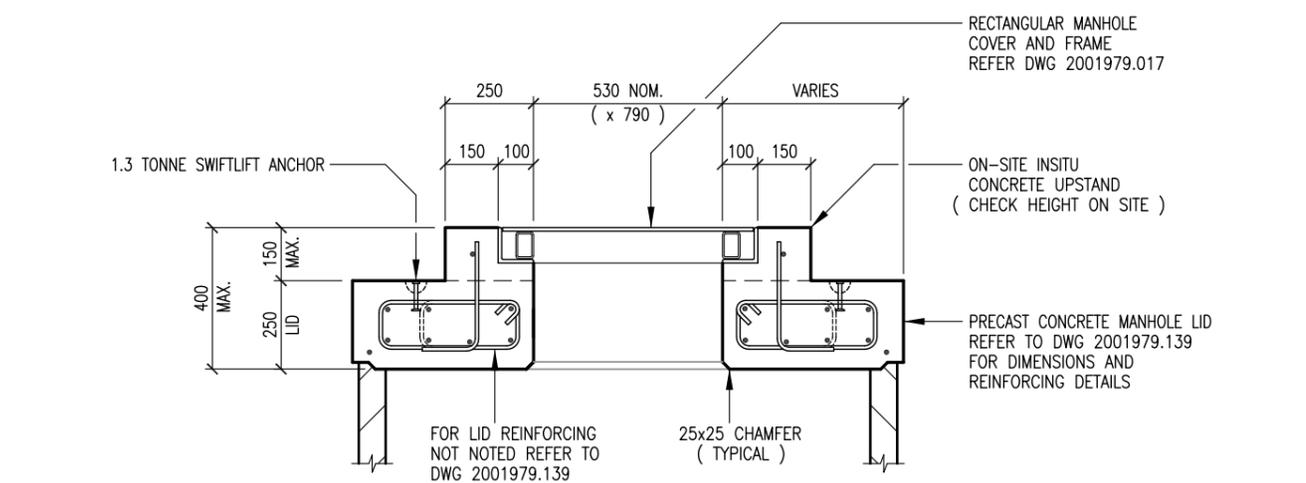
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WATER RETICULATION STANDARD
80mm DIA. AIR VALVE CHAMBER WITH GALV. STEEL COVER
 FOR PIPES UP TO 630 Ø N.B. - GATE VALVE ISOLATION VALVE OPTION

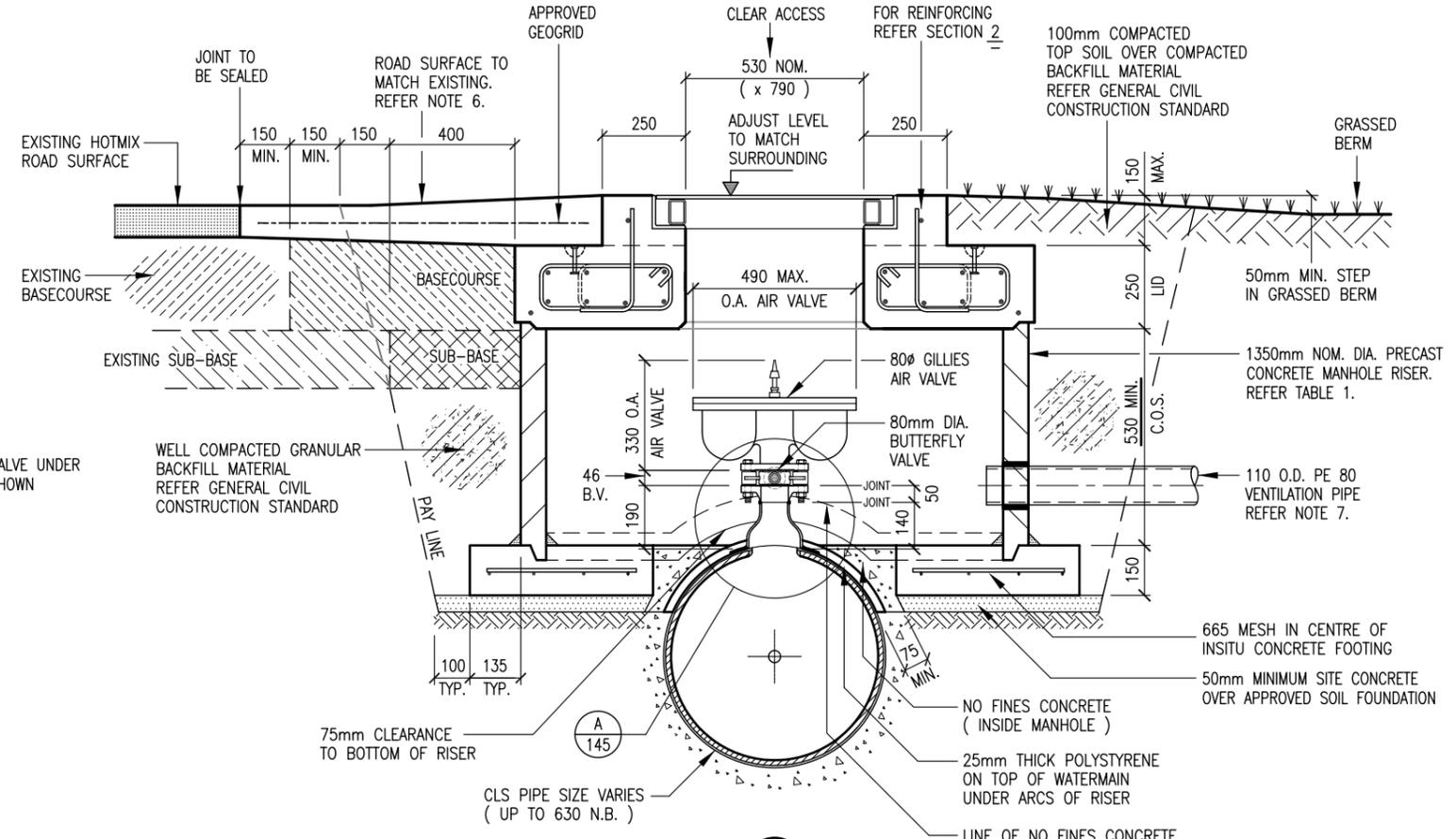
CAD FILE	DATE	ORIGINAL SCALE	CONTRACT No.
2001979.137B	27-09-18	A3 AS SHOWN	-
REF No.	ISSUE	DWG No.	
-	-	2001979.137	B



PLAN
SCALE 1:20



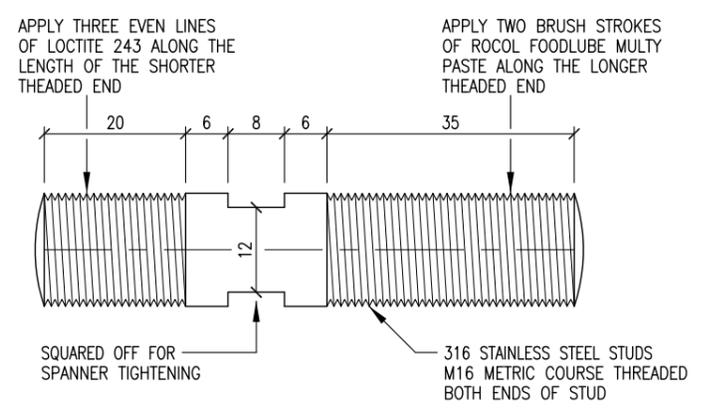
SECTION 2
SCALE 1:20



SECTION 1
SCALE 1:20

NOTES

- ALL DIMENSIONS TO BE CHECKED ON SITE
- FOOTING TO BE FOUNDED ON COMPACTED MATERIAL TO ENGINEERS SPECIFICATION
- FOR CONCRETE AND REINFORCING NOTES AND MANHOLE LID REINFORCING DETAILS REFER TO DRAWING 2001979.139
- BACKFILL FOR CHAMBERS :
 - IN BERM TO BE HARDFILL TO WITHIN 100mm OF SURFACE - 100mm TOPSOIL & GRASSED
 - IN PAVEMENTS BACKFILL AS TRENCH BACKFILL DETAIL
- ALL AIR VALVES SHALL BE GILLIES BRAND DOUBLE AIR RELIEF VALVES FOR WATER PIPELINE APPLICATIONS OR APPROVED ALTERNATIVE THIS DRAWING TO BE READ IN CONJUNCTION WITH DWG 2001979.145 FOR AIR VALVE OFFTAKE CONCENTRIC REDUCER & COLLAR DETAILS
- ROAD SURFACE RESTORATION TO BE IN ACCORDANCE WITH THE SPECIFICATION OR AS AGREED WITH ROAD CONTROLLING AUTHORITY
- REFER TO DWG. 2001979.116 FOR DETAILS OF 110 O.D. PE80 SDR17 VENTILATION PIPE. THE DEPTH & DIRECTION TO VERTICAL SUPPORT POST TO BE DETERMINED ON SITE.
- REFER TO STD. SPEC. FOR FABRICATION & INSTALLATION OF STEEL PIPEWORK ASSEMBLIES - SEE GENERAL MECHANICAL CONSTRUCTION STANDARD
- ISOLATION LUGGED WAFER BUTTERFLY VALVE TO BE EBRO Z014-A LUGGED TO PN16 WITH 316 S.S. HANDLE OR APPROVED EQUIVALENT WITH 16 S.S. STUDS SUPPLIED
- REFER TO DRAWING 2001979.017 FOR STANDARD G.M.S. COVER & FRAME DETAILS
- THIS DRAWING ONLY TO BE USED WHEN REDUCED COVER REQUIRES THAT WORKS ARE NOT ABLE TO BE CONSTRUCTED TO DRAWING 2001979.137 (TO BE APPROVED BY ENGINEER)



LUGGED BUTTERFLY VALVE FIXING STUDS
SCALE: 1:1

TABLE 1 - MANHOLE RISER & AIR VALVE SIZE
USE CLASS 'X' FLUSH JOINTS CONCRETE RISER

NOM. CLS PIPE DIA. (mm)	NOM. SIZE OF RISER (mm)	AIR VALVE SIZE (mm)
UP TO 630	1350	80

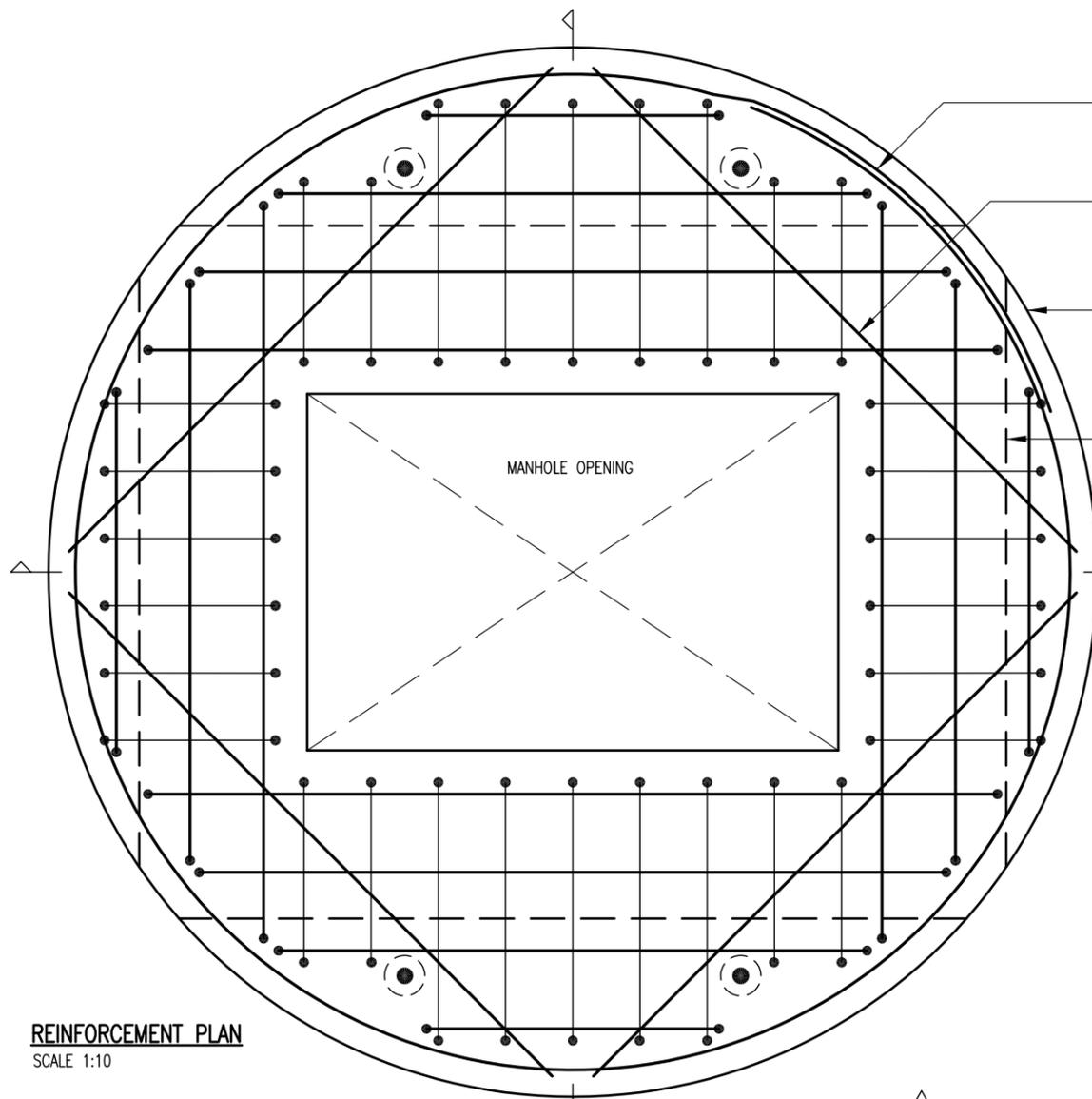
ISSUE	DATE	AMENDMENT	BY	APPD.
B	09-18	MATERIAL SUPPLY REFERENCE REMOVED	L.C.	D.M.
A	10-14	GALV. STEEL COVER & FRAME REPLACES SIKA COVER & FRAME	L.C.	S.D.
-	05-13	PLAN APPROVED FOR ISSUE	I.M.	T.C.

DESIGNED	HYNS & T.C.	04-13	SIGNATORY 1
DES. CHECKED			OPERATIONS
DRAWN	L.C. & I.M.	04-13	
DWG. CHECKED			SIGNATORY 2
PROJECT LEADER	T.C.	04-13	INFRASTRUCTURE
INFRASTR APP'D			

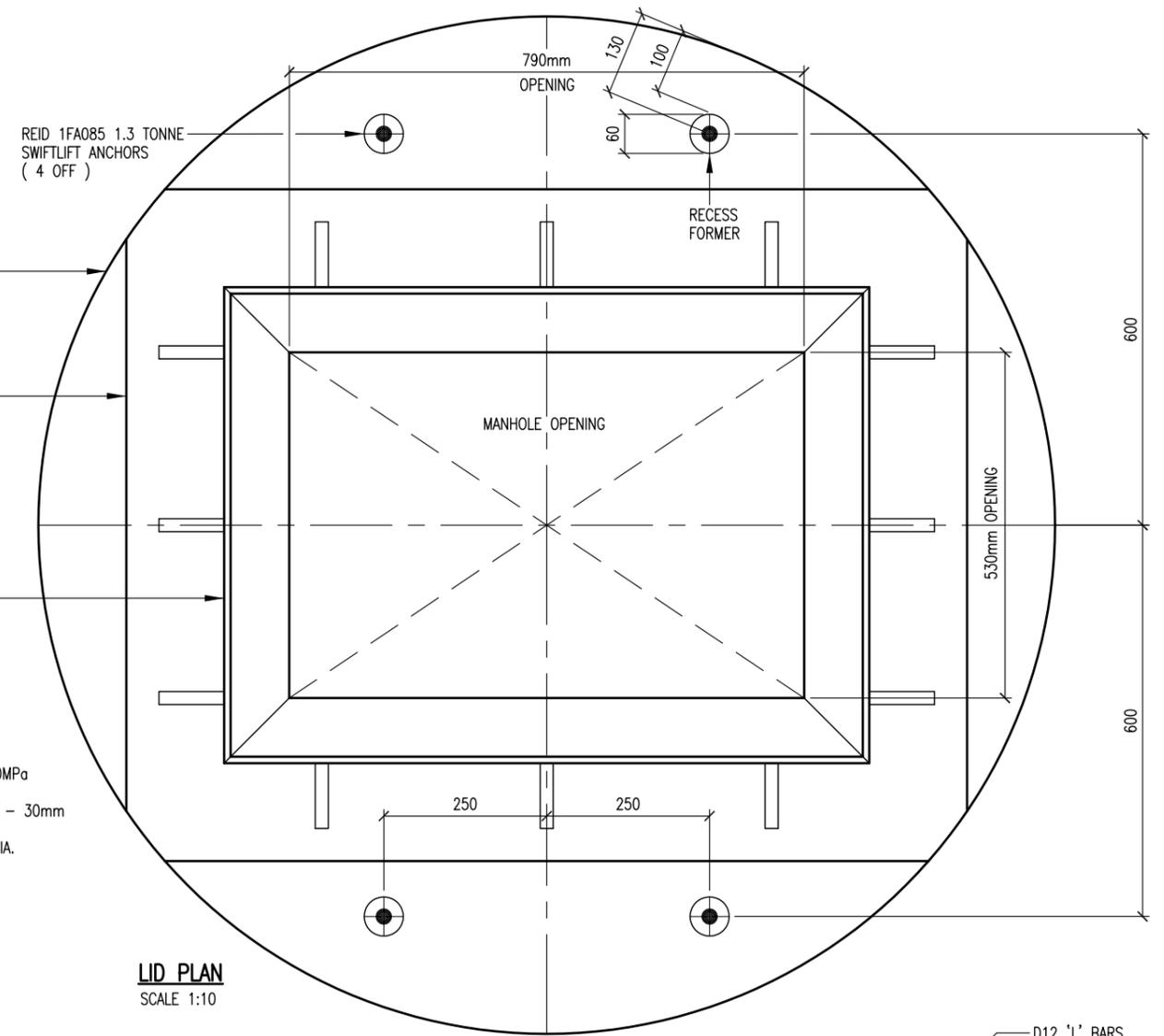
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WATER RETICULATION STANDARD
80mm DIA. AIR VALVE CHAMBER WITH GALV. STEEL COVER
 FOR PIPES UP TO 630 Ø N.B. - LUGGED BUTTERFLY ISOLATION VALVE OPTION

CAD FILE	2001979.138B	DATE	27-09-18
ORIGINAL SCALE	A3 AS SHOWN	CONTRACT No.	-
REF No.	-	ISSUE	-
DWG No.	2001979.138		B



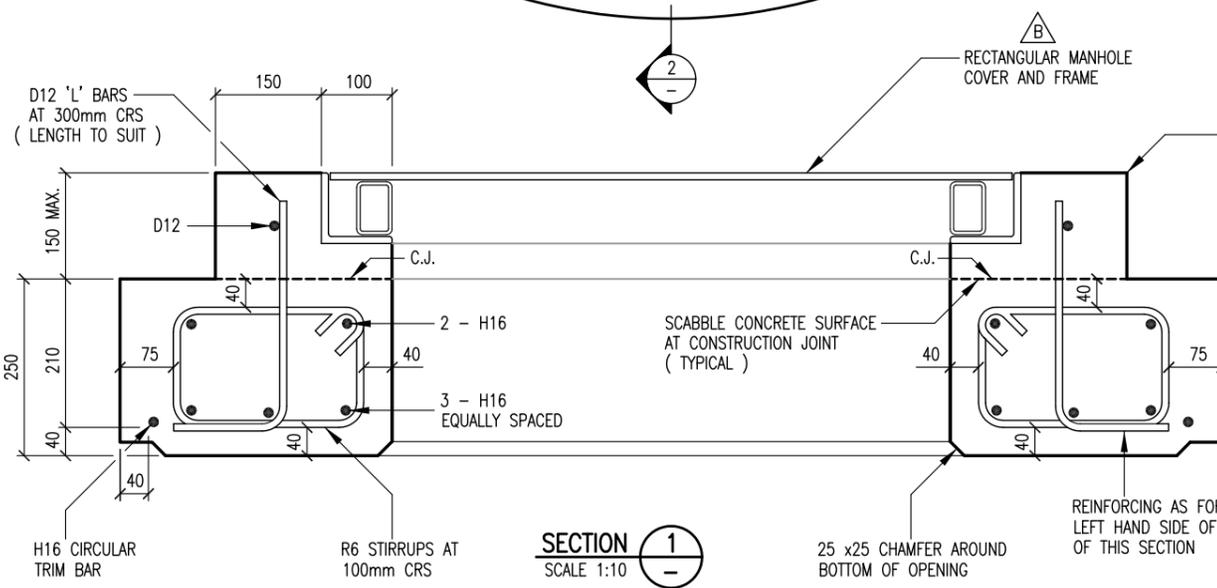
REINFORCEMENT PLAN
SCALE 1:10



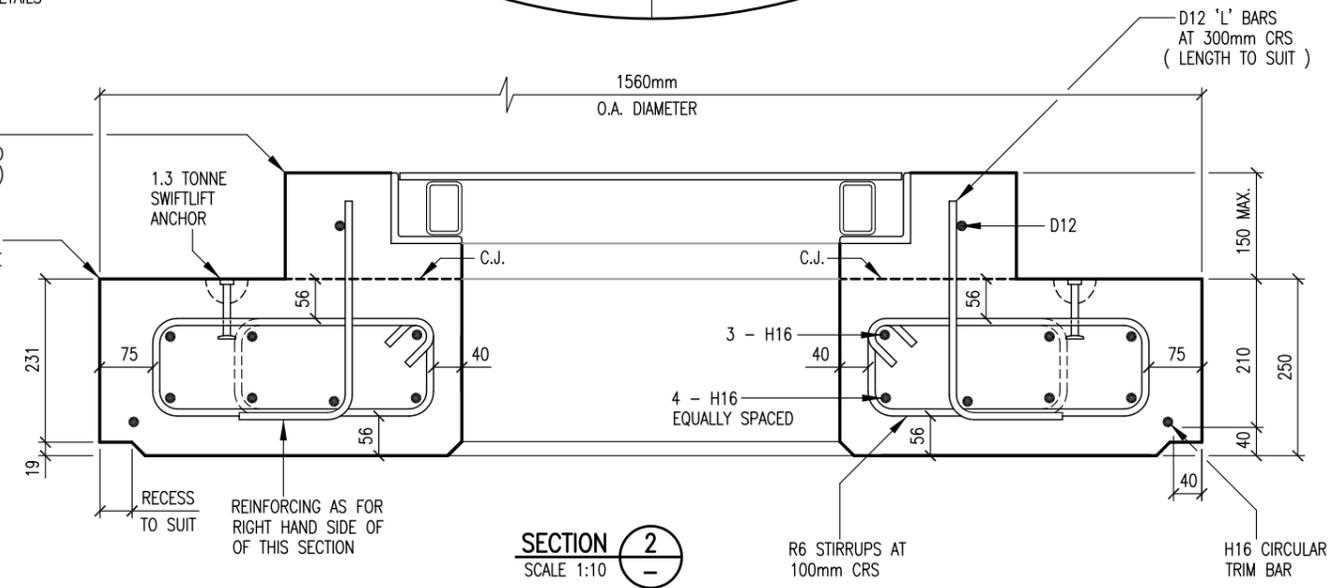
LID PLAN
SCALE 1:10

NOTES

1. MIN. CONCRETE STRENGTH - 40MPa
2. MIN. COVER TO REINFORCEMENT - 30mm
3. MIN. LAP LENGTH - 40x BAR DIA.
4. C.J. = CONSTRUCTION JOINT
5. REINFORCEMENT - GRADE 500E
6. DETAILS REFER TO DRAWINGS 2001979.137 & 138
7. THIS DWG. BASED ON DETAILS FROM HYNDS T4500-6



SECTION 1
SCALE 1:10



SECTION 2
SCALE 1:10

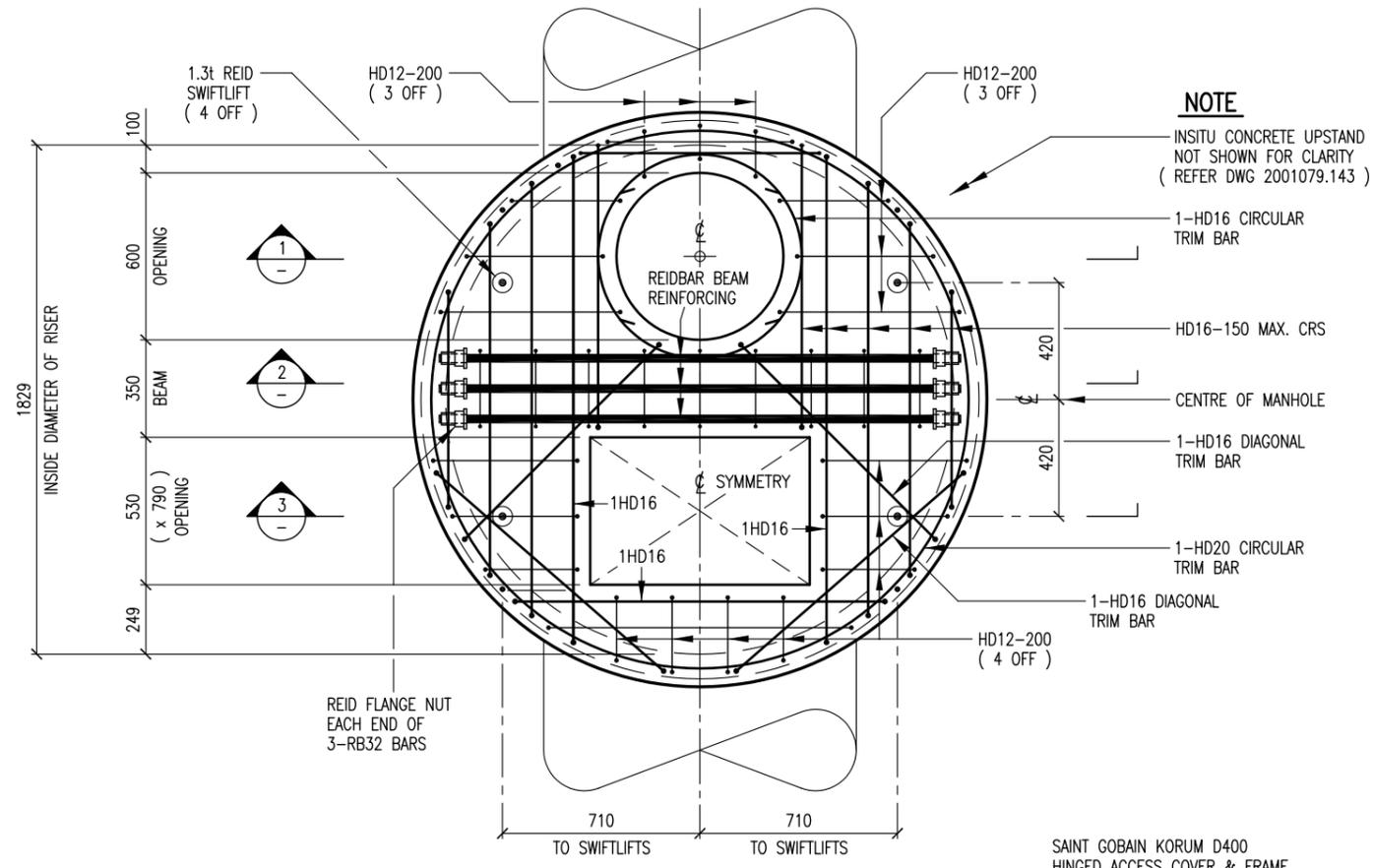
ISSUE	DATE	AMENDMENT	BY	APPD.
B	09-18	MATERIAL SUPPLY REFERENCE REMOVED	L.C.	D.M.
A	10-14	GALV. STEEL COVER & FRAME REPLACES SIKA COVER & FRAME	L.C.	S.D.
-	05-13	PLAN APPROVED FOR ISSUE	I.M.	T.C.
1	02-13	PRELIMINARY - FOR ENGINEERS APPROVAL	I.M.	T.C.

DESIGNED	HYNDS & T.C.	02-13
DES. CHECKED		
DRAWN	L.C. & I.M.	02-13
DWG. CHECKED	T.C.	02-13
PROJECT LEADER		
INFRASTR' APP'D		

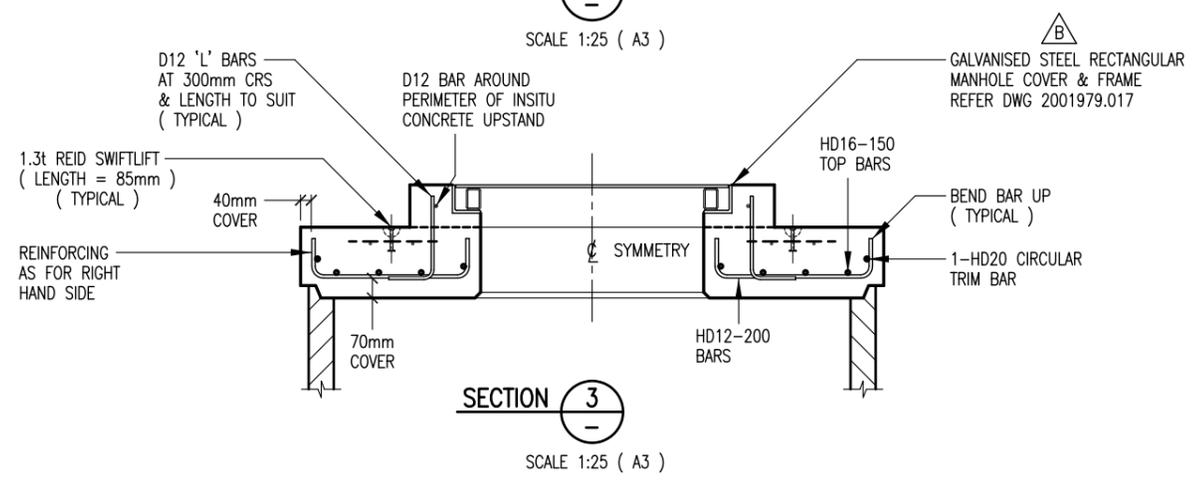
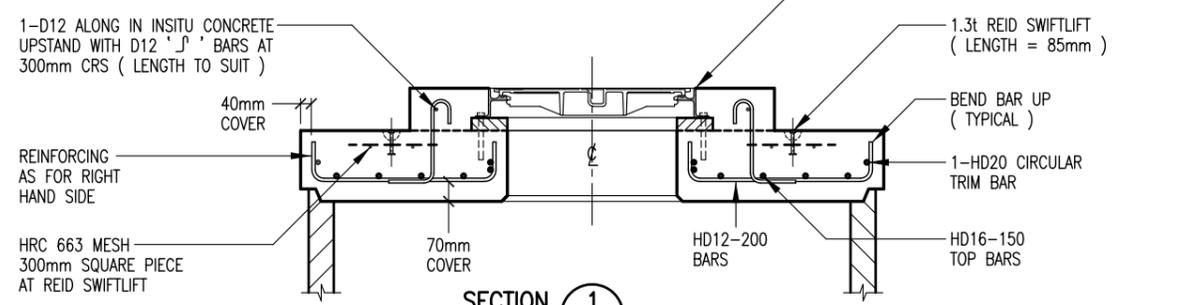
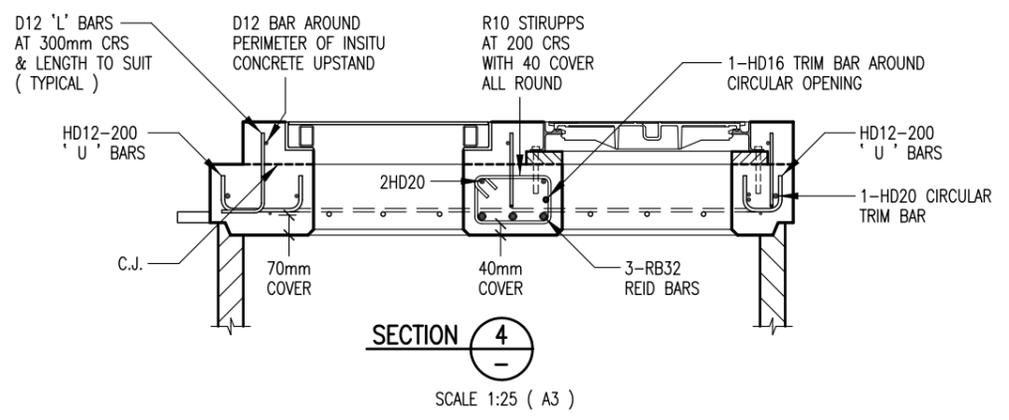
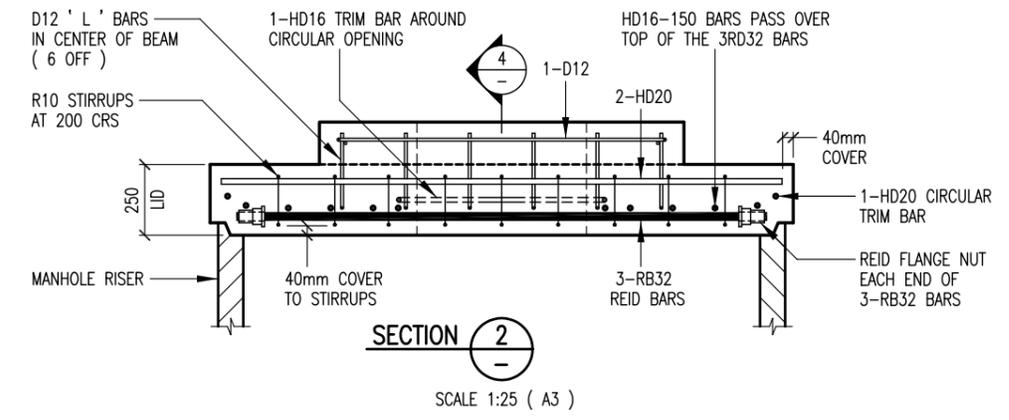
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WATER RETICULATION STANDARD
80mm DIA. AIR VALVE CHAMBER WITH GALV. STEEL COVER
FOR PIPES UP TO 630 Ø N.B. - CHAMBER LID DETAILS AND REINFORCEMENT

CAD FILE	2001979.139B	DATE	27-09-18
ORIGINAL SCALE	A3	CONTRACT No.	-
AS SHOWN			
REF No.	-	ISSUE	-
DWG No.	2001979.139		B



PLAN
SCALE 1:25 (A3)



NOTES :

1. MIN. CONCRETE STRENGTH - 40MPa
2. MIN. COVER TO REINFORCEMENT - 30mm
3. MIN. LAP LENGTH - 40x BAR DIA.
4. C.J. = CONSTRUCTION JOINT
5. REINFORCEMENT - GRADE 500E
6. KORUM FRAME TO BE BOLTED INTO MANHOLE LID WITH HILTI HUS-HR 14 x 135/25/65 STUD ANCHORS IN 14.5Ø HOLES (TYPICAL)
7. REFER TO DWG 2001979.143 FOR AIR VALVE CHAMBER DIMENSIONED PLAN & SECTIONS

ISSUE	DATE	AMENDMENT	BY	APPD.
B	09:18	MATERIAL SUPPLY REFERENCE REMOVED	L.C.	D.M.
A	11:14	GALV. STEEL COVER & FRAME REPLACES SIKA COVER & FRAME	L.C.	S.D.
-	05:13	APPROVED FOR CONSTRUCTION	I.M.	T.C.
-	05:13	CONSTRUCTION ISSUE - FOR 1070mm N.B. PIPE	L.C.	T.C.

DESIGNED	T.C.	05:13
DES. CHECKED	C.B. (BECA)	05:13
DRAWN	L.C.	05:13
DWG. CHECKED	I.M.	05:13
PROJECT LEADER	T.C.	05:13
INFRASTR APP'D		

SIGNATORY 1	OPERATIONS
SIGNATORY 2	INFRASTRUCTURE

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WATER RETICULATION STANDARD
150mm DIA. AIR VALVE CHAMBER - DOUBLE ACCESS
FOR PIPES 700 DIA. TO 1070 DIA. - LID AND UPSTAND REINFORCING DETAILS

CAD FILE	2001979.144B	DATE	27-09-18
ORIGINAL SCALE	A3	CONTRACT No.	-
1:25			
REF No.	-	ISSUE	-
DWG No.	2001979.144		B

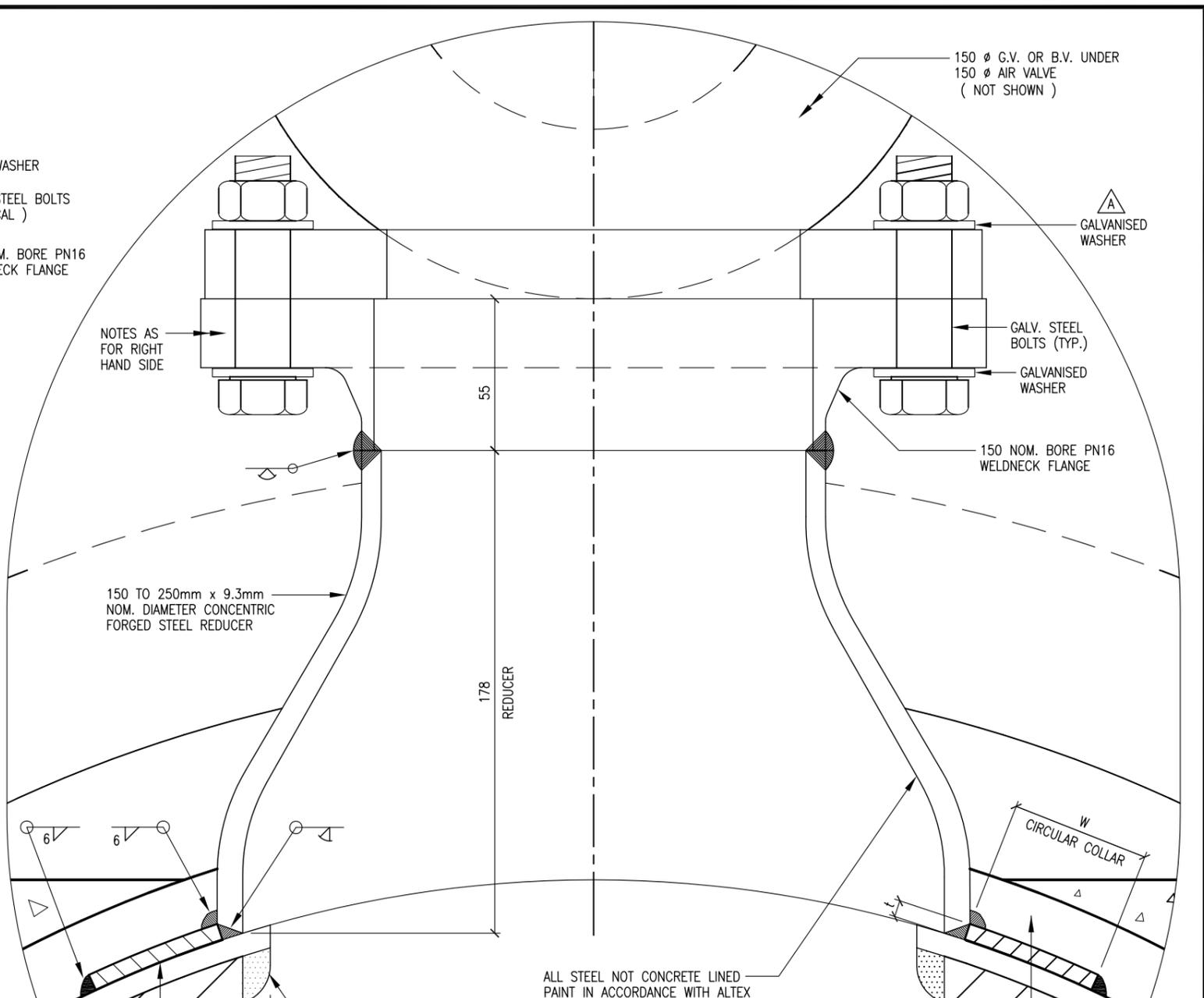
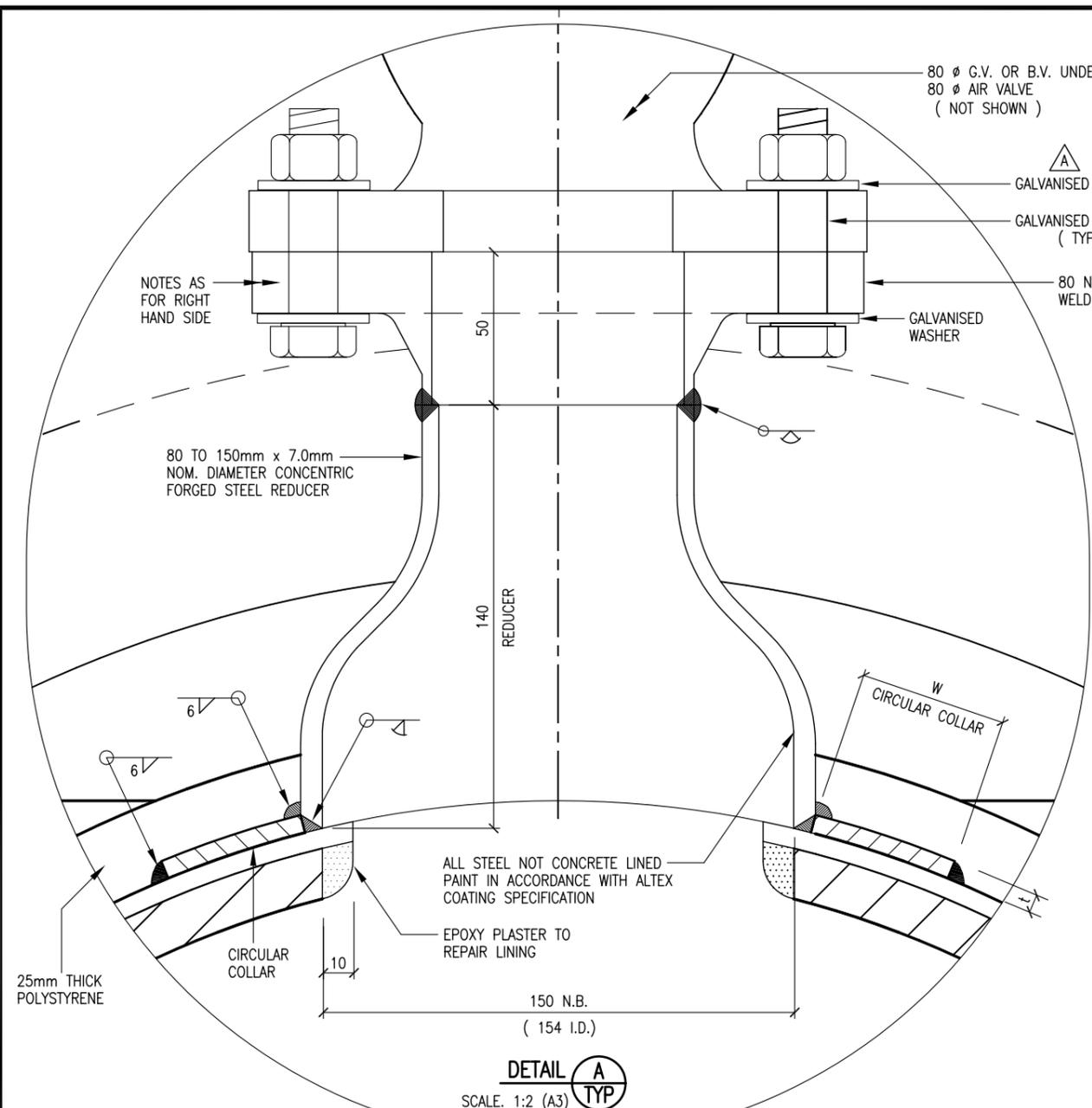


TABLE OF COLLAR SIZES

AIR VALVE CONCENTRIC REDUCER	MAIN PIPE		24 BAR COLLAR		20 BAR COLLAR		USE UNLESS OTHERWISE SPECIFIED	
	N.B.	t	OD	t	W	t	W	t
	mm	mm	mm	mm	mm	mm	mm	mm
80 ϕ A.V.	150	7	178	4.76	not required		not required	
	150	7	232	4.76	not required		not required	
	150	7	286	4.76	not required		not required	
	150	7	345	4.76	50	6	not required	
	150	7	426	6.35	50	6	not required	
	150	7	507	6.35	50	6	50	5
	150	7	587	6.35	60	6	50	5
150 ϕ A.V.	150	7	667	6.35	100	6	100	5
	250	9.3	747	6.35	130	8	130	5
	250	9.3	775	7.94	130	8	130	5
	250	9.3	813	7.94	130	8	130	5
	250	9.3	857	7.94	130	10	130	6
	250	9.3	965	7.94	130	12	130	8
	250	9.3	1124	9.53	130	12	130	10
	250	9.3	1365	9.53	130	20	130	16
	250	9.3	1562	9.53	130	25	130	16
	250	9.3	1762	11.11	130	25	130	20
	250	9.3	1965	11.11	130	30	130	25

DETAIL A
SCALE: 1:2 (A3)
TYP

NOTE :
ALL AIR VALVES SHALL BE
GILLIES BRAND DOUBLE ACTING
AIR RELIEF VALVES FOR WATER
PIPELINE APPLICATIONS OR
APPROVED ALTERNATIVE

DETAIL B
SCALE: 1:2 (A3)
TYP

ISSUE	DATE	AMENDMENT	BY	APPD.	DESIGNED	J.P.	12:05	DES. CHECKED	T.C.	12:05	DRAWN	I.M.	12:05	DWG. CHECKED	A.B.	12:05	PROJECT LEADER	T.C.	12:05	INFRASTR APP'D	A.S.	12:05	
A	10-18	SECOND WASHER ADDED	L.C.	D.M.																			
-	05-13	APPROVED FOR CONSTRUCTION	I.M.	T.C.																			
1	04-13	PRELIMINARY - TABLE OF COLLAR SIZES AMENDED	L.C.	T.C.																			

DESIGNED J.P. 12:05
DES. CHECKED T.C. 12:05
DRAWN I.M. 12:05
DWG. CHECKED A.B. 12:05
PROJECT LEADER T.C. 12:05
INFRASTR APP'D A.S. 12:05

T. HAWKE
OPERATIONS
A. STEWART
INFRASTRUCTURE

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WATER RETICULATION STANDARD
80 & 150mm AIR VALVE CHAMBER
AIR VALVE REDUCER DETAILS

CAD FILE 2001979.145A	DATE 19-10-18
ORIGINAL SCALE A1 AS SHOWN	CONTRACT No. -
REF. No. -	ISSUE -
DWG. No. 2001979 .145	A