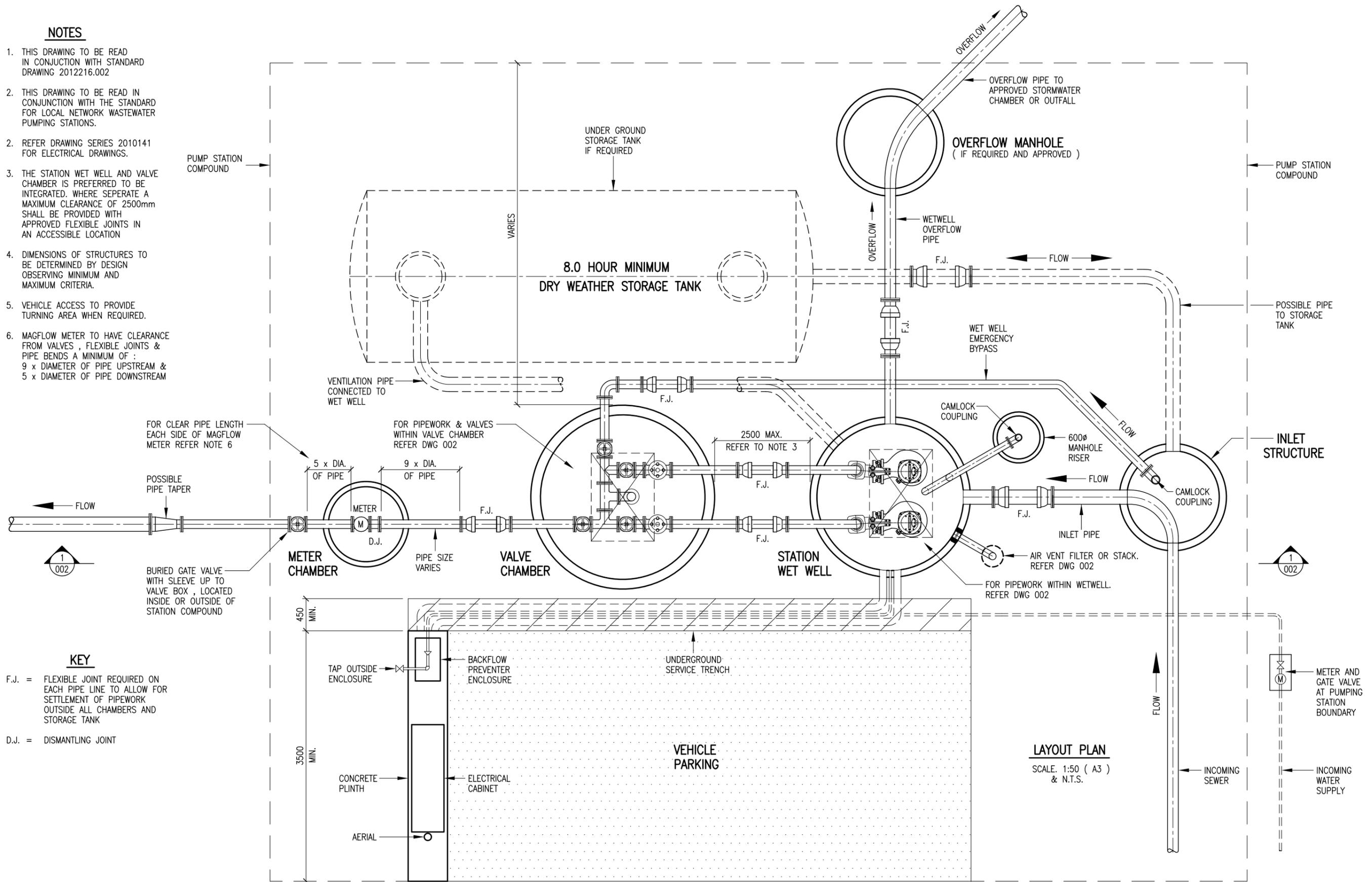


Drawing Index

Name	Doc.No	Document Description
2012216.001.pdf	2012216.001	PUMPING STATION AND VALVE CHAMBER TYPICAL LAYOUT PLAN
2012216.002.pdf	2012216.002	PUMPING STATION AND VALVE CHAMBER PLAN LONGITUDINAL SECTION
2012216.003.pdf	2012216.003	PUMPING STATION INLET AND STORAGE WET WELL LEVELS LONGITUDINAL SECTION
2012216.004.pdf	2012216.004	PUMPING STATION WET WELL CLEARANCES AND DIMENSIONS PLAN SECTION
2012216.005.pdf	2012216.005	PUMPING STATION WET WELL FLOAT SWITCH BRACKET CHAIN CABLE HOLDER BRACKET DETAILS
2012216.006.pdf	2012216.006	PUMPING STATION INLET STRUCTURE DETAILED PLAN SECTION OPTION A AND B
2012216.007.pdf	2012216.007	PUMPING STATION OVERFLOW MANHOLE AND WING WALL PLAN SECTION
2012216.008.pdf	2012216.008	PUMPING STATION RISING MAIN TYPICAL LAYOUT SECTION HEAD LOSS FORMULA
2012216.009.pdf	2012216.009	PUMPING STATION RISING MAIN DETAILS OF DISCHARGE MANHOLE AND VENTILATION OPTIONS
2012216.010.pdf	2012216.010	PUMPING STATION RISING MAIN PRESSURE AND GRAVITY SCOUR ARRANGEMENTS

NOTES

1. THIS DRAWING TO BE READ IN CONJUNCTION WITH STANDARD DRAWING 2012216.002
2. THIS DRAWING TO BE READ IN CONJUNCTION WITH THE STANDARD FOR LOCAL NETWORK WASTEWATER PUMPING STATIONS.
2. REFER DRAWING SERIES 2010141 FOR ELECTRICAL DRAWINGS.
3. THE STATION WET WELL AND VALVE CHAMBER IS PREFERRED TO BE INTEGRATED. WHERE SEPARATE A MAXIMUM CLEARANCE OF 2500mm SHALL BE PROVIDED WITH APPROVED FLEXIBLE JOINTS IN AN ACCESSIBLE LOCATION
4. DIMENSIONS OF STRUCTURES TO BE DETERMINED BY DESIGN OBSERVING MINIMUM AND MAXIMUM CRITERIA.
5. VEHICLE ACCESS TO PROVIDE TURNING AREA WHEN REQUIRED.
6. MAGFLOW METER TO HAVE CLEARANCE FROM VALVES, FLEXIBLE JOINTS & PIPE BENDS A MINIMUM OF :
9 x DIAMETER OF PIPE UPSTREAM & 5 x DIAMETER OF PIPE DOWNSTREAM



- KEY**
- F.J. = FLEXIBLE JOINT REQUIRED ON EACH PIPE LINE TO ALLOW FOR SETTLEMENT OF PIPEWORK OUTSIDE ALL CHAMBERS AND STORAGE TANK
 - D.J. = DISMANTLING JOINT

LAYOUT PLAN
SCALE: 1:50 (A3)
& N.T.S.

ISSUE	DATE	AMENDMENT	BY	APPD.	BY	DATE	INFRASTRUCTURE DELIVERY
-	05:16	CONSTRUCTION ISSUE	L.C.	J.D.			

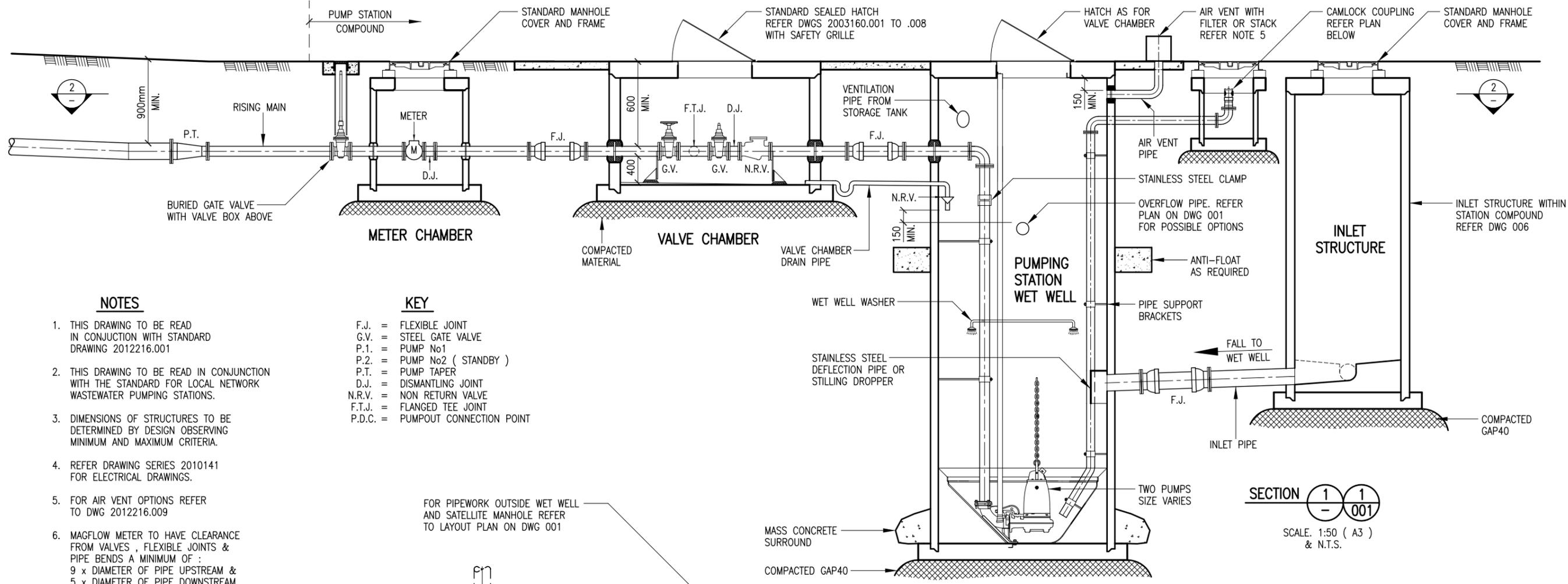
DESIGNED	J.D.	06-15
DES. CHECKED	S.D.	06-15
DRAWN	L.C.	06-15
DWG. CHECKED	I.M.	06-15
PROJECT LEADER	J.D.	06-15
INFRASTR APP'D	A.S.	06-15



**WASTEWATER RETICULATION STANDARD
PUMPING STATION AND VALVE CHAMBER
TYPICAL LAYOUT PLAN**

CAD FILE	2012216.001	DATE	05-05-16
ORIGINAL SCALE	A1 AS SHOWN	CONTRACT No.	-
REF. No.	-	ISSUE	-
DWG. No.	2012216 .001		

L:\---\EGCAD\2015\STANDARD WASTEWATER DRAWINGS\2012216.001.DWG



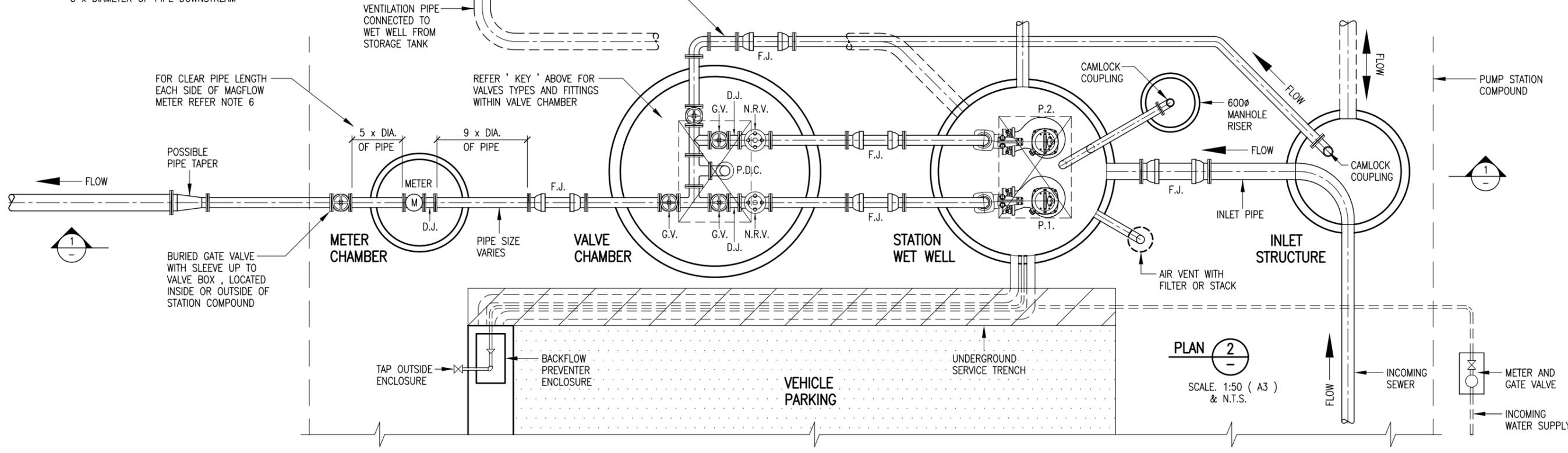
NOTES

1. THIS DRAWING TO BE READ IN CONJUNCTION WITH STANDARD DRAWING 2012216.001
2. THIS DRAWING TO BE READ IN CONJUNCTION WITH THE STANDARD FOR LOCAL NETWORK WASTEWATER PUMPING STATIONS.
3. DIMENSIONS OF STRUCTURES TO BE DETERMINED BY DESIGN OBSERVING MINIMUM AND MAXIMUM CRITERIA.
4. REFER DRAWING SERIES 2010141 FOR ELECTRICAL DRAWINGS.
5. FOR AIR VENT OPTIONS REFER TO DWG 2012216.009
6. MAGFLOW METER TO HAVE CLEARANCE FROM VALVES, FLEXIBLE JOINTS & PIPE BENDS A MINIMUM OF :
9 x DIAMETER OF PIPE UPSTREAM & 5 x DIAMETER OF PIPE DOWNSTREAM

KEY

- F.J. = FLEXIBLE JOINT
- G.V. = STEEL GATE VALVE
- P.1. = PUMP No1
- P.2. = PUMP No2 (STANDBY)
- P.T. = PUMP TAPER
- D.J. = DISMANTLING JOINT
- N.R.V. = NON RETURN VALVE
- F.T.J. = FLANGED TEE JOINT
- P.D.C. = PUMPOUT CONNECTION POINT

SECTION 1-1
SCALE: 1:50 (A3) & N.T.S.



PLAN 2
SCALE: 1:50 (A3) & N.T.S.

ISSUE	DATE	AMENDMENT	BY	APPD.	BY	DATE	
-	05:16	CONSTRUCTION ISSUE	L.C.	J.D.			

DESIGNED	J.D.	06-15	
DES. CHECKED	S.D.	06-15	
DRAWN	L.C.	06-15	SERVICE DELIVERY
DWG. CHECKED	I.M.	06-15	
PROJECT LEADER	J.D.	06-15	
INFRASTR APP'D	A.S.	06-15	INFRASTRUCTURE DELIVERY

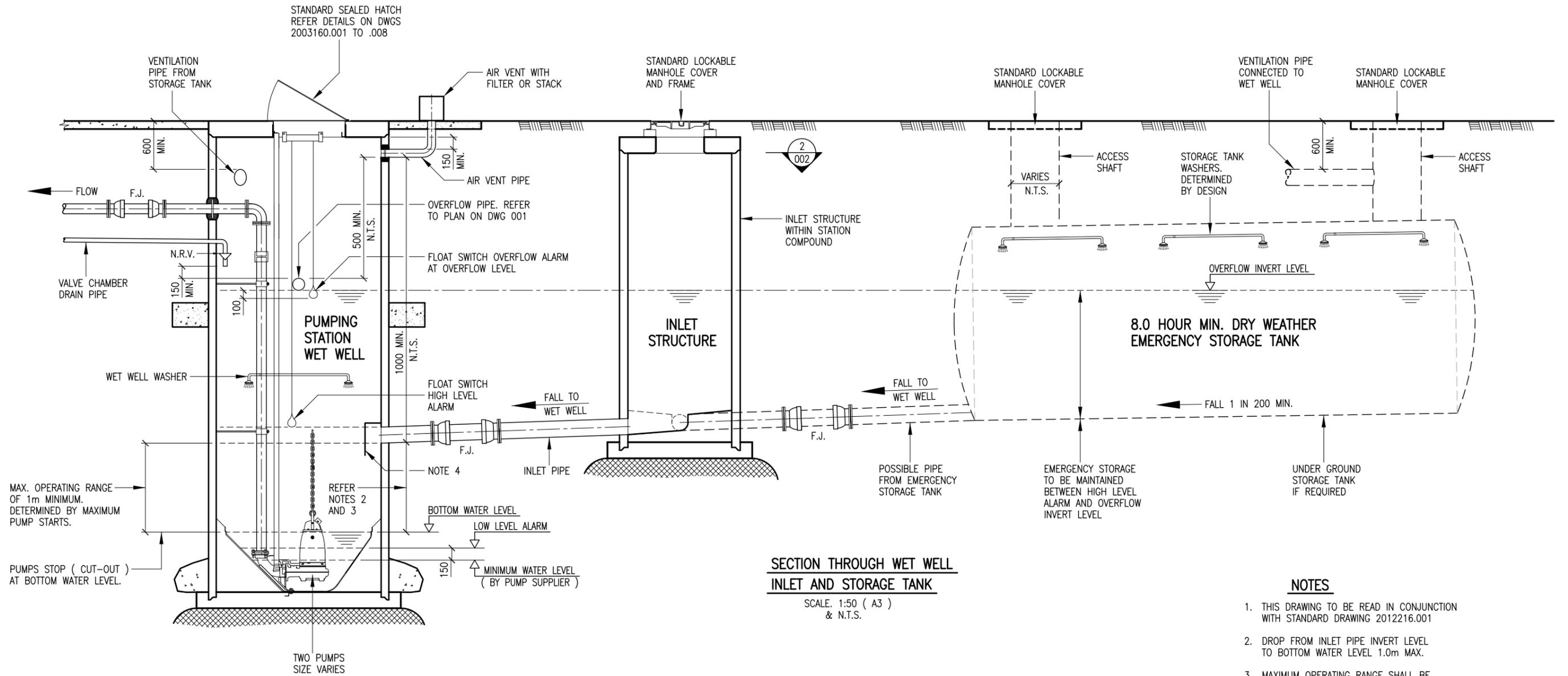
Watercare
COPYRIGHT - This drawing, the design concept, remain the exclusive property of Watercare Services Limited and may not be used without approval. Copyright reserved.

**WASTEWATER RETICULATION STANDARD
PUMPING STATION AND VALVE CHAMBER
PLAN AND LONGITUDINAL SECTION**

CAD FILE	2012216.002	DATE	05-05-16
ORIGINAL SCALE	A1 AS SHOWN	CONTRACT No.	-
REF. No.	-	ISSUE	-
DWG. No.	2012216 .002		

KEY

F.J. = FLEXIBLE JOINT
 N.R.V. = NON RETURN VALVE
 N.T.S. = NOT TO SCALE



**SECTION THROUGH WET WELL
 INLET AND STORAGE TANK**

SCALE: 1:50 (A3)
 & N.T.S.

NOTES

1. THIS DRAWING TO BE READ IN CONJUNCTION WITH STANDARD DRAWING 2012216.001
2. DROP FROM INLET PIPE INVERT LEVEL TO BOTTOM WATER LEVEL 1.0m MAX.
3. MAXIMUM OPERATING RANGE SHALL BE BELOW INLET PIPE INVERT LEVEL.
4. STAINLESS STEEL DEFLECTION PIPE OR STILLING DROPPER
5. DIMENSIONS OF STRUCTURES TO BE DETERMINED BY DESIGN OBSERVING MINIMUM AND MAXIMUM CRITERIA.

DESIGNED	J.D.	06-15		
DES. CHECKED	S.D.	06-15		
DRAWN	L.C.	06-15		
DWG. CHECKED	I.M.	06-15		
PROJECT LEADER	J.D.	06-15		
INFRASTR APP'D	A.S.	06-15		
ISSUE	DATE	AMENDMENT	BY	APPD.
-	05:16	CONSTRUCTION ISSUE	L.C.	J.D.

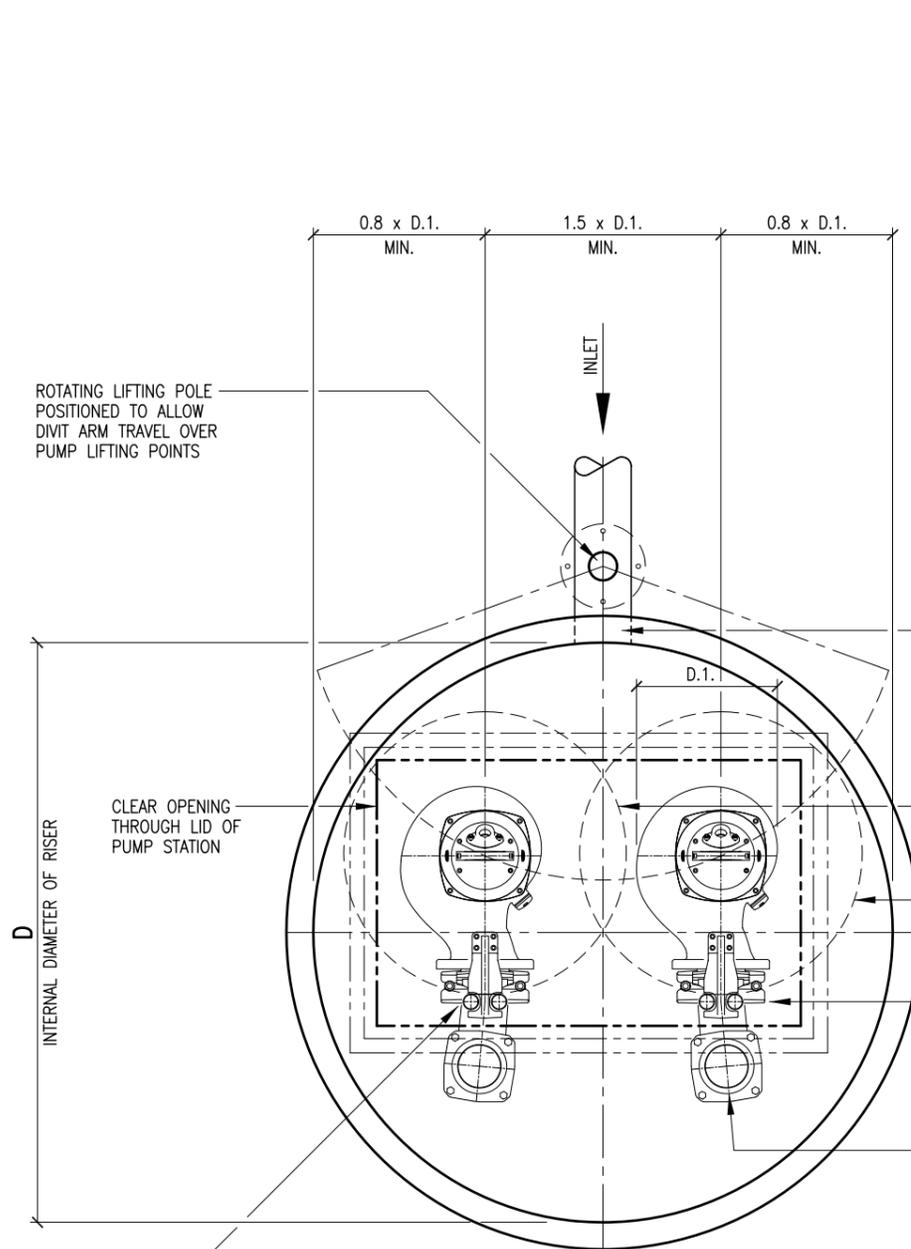
Watercare

COPYRIGHT - This drawing, the design concept, remain the exclusive property of Watercare Services Limited and may not be used without approval. Copyright reserved.

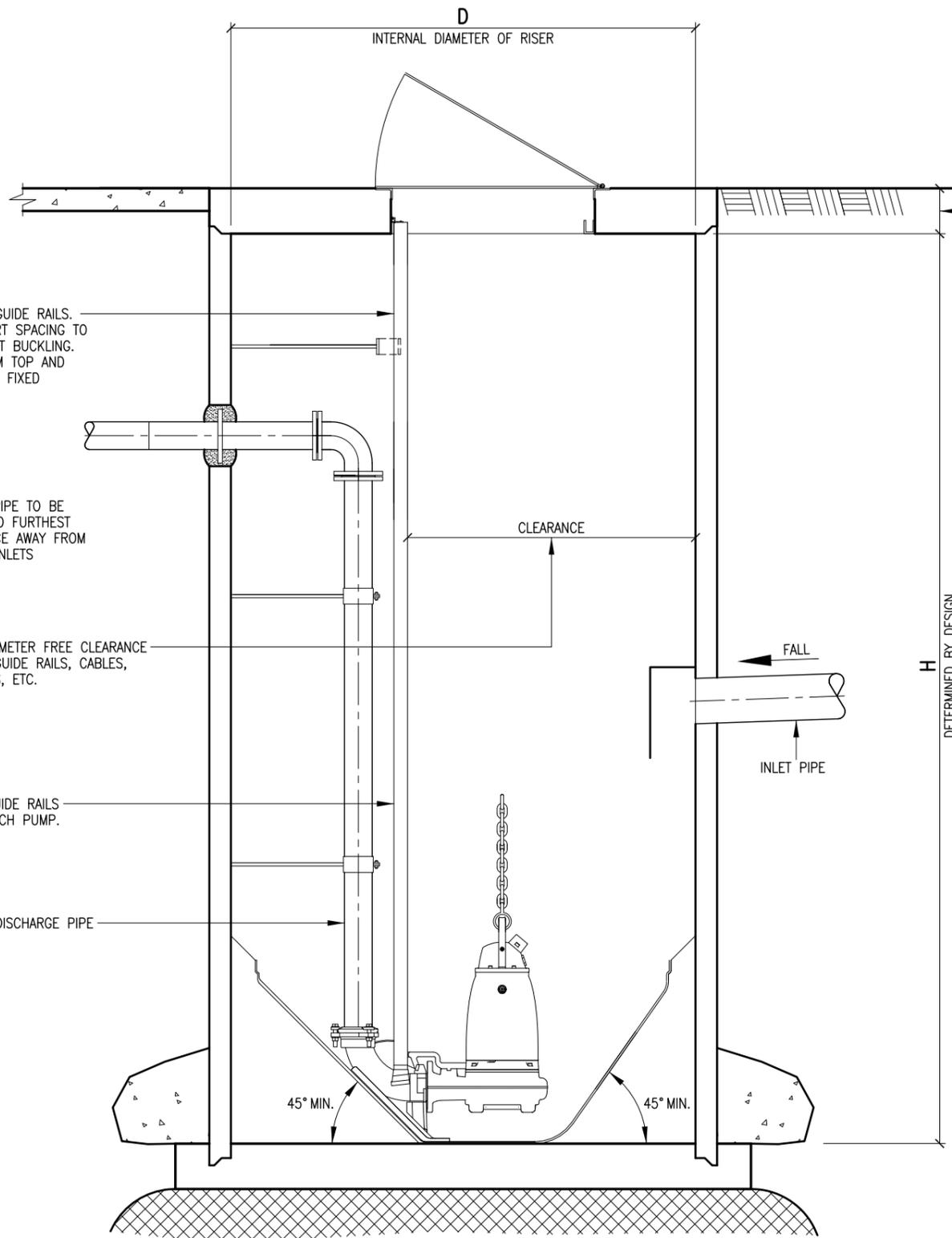
**WASTEWATER RETICULATION STANDARD
 PUMPING STATION INLET AND STORAGE
 WET WELL LEVELS**

CAD FILE	2012216.003	DATE	05-05-16
ORIGINAL SCALE	A1 AS SHOWN	CONTRACT No.	-
REF. No.	-	ISSUE	-
DWG. No.	2012216 .003		

L:\---\EGCAD\2015\STANDARD WASTEWATER DRAWINGS\2012216.003 .DWG



PLAN AT WET WELL
SCALE: 1:25 (A3)
& N.T.S.



SECTION THROUGH WET WELL
SCALE: 1:25 (A3)
& N.T.S.

KEY

- D = INTERNAL DIA. OF MANHOLE RISER
- H = HEIGHT FROM UNDERSIDE OF LID TO BOTTOM OF WET WELL
- D.1. = OVERALL MAX. DIAMETER OF PUMP
- N.T.S. = NOT TO SCALE
- MIN. = MINIMUM

NOTES

1. H & D TO BE DETERMINED BY DESIGN
2. THIS DRAWING TO BE READ IN CONJUNCTION WITH DRAWING 2012216.003 AND 005
3. PIPE CLEARANCES STATED ARE THE MINIMUM OR AS OTHERWISE SPECIFIED BY THE PUMP SUPPLIER, WHICH EVER IS GREATER.

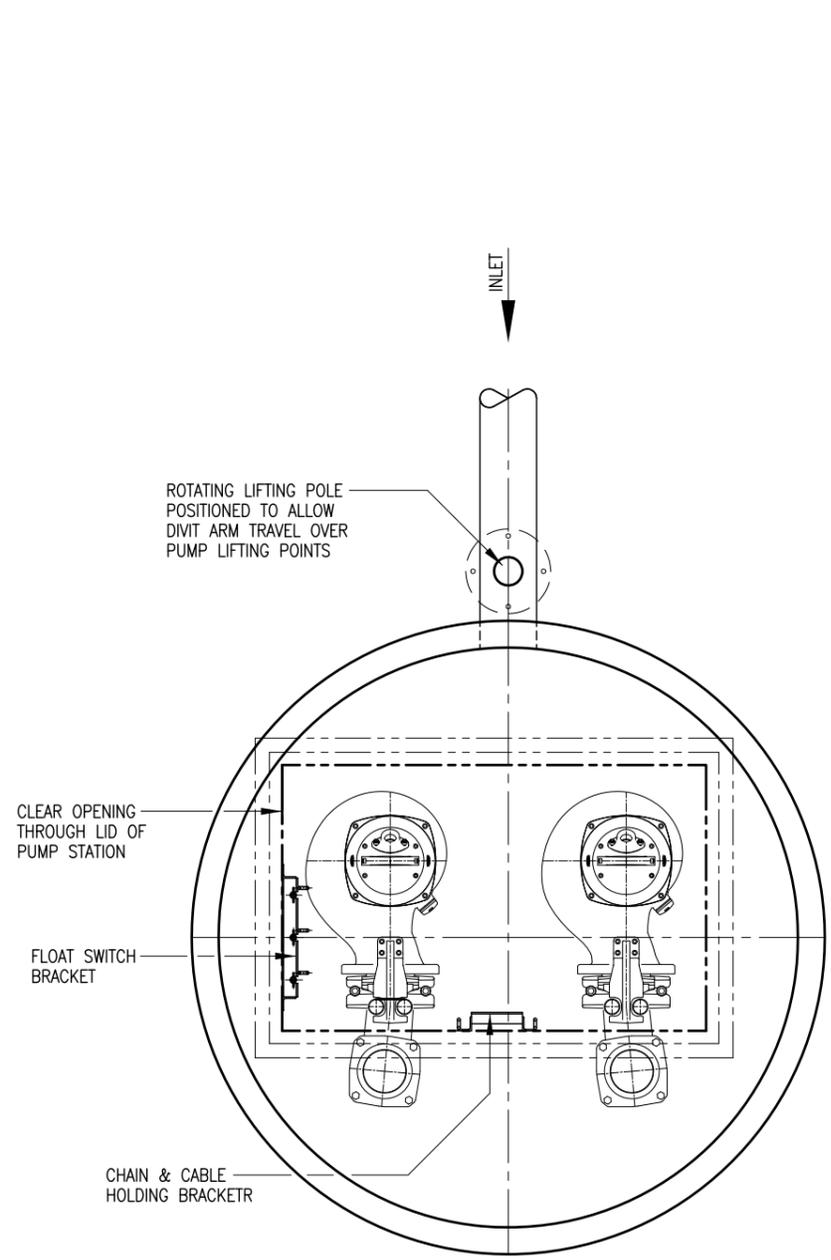
L:\---\EGCAD\FI\2015\STANDARD WASTEWATER DRAWINGS\2012216.004 .DWG

				DESIGNED	J.D.	06-15		
				DES. CHECKED	S.D.	06-15		
				DRAWN	L.C.	06-15	SERVICE DELIVERY	
				DWG. CHECKED	I.M.	06-15		
				PROJECT LEADER	J.D.	06-15		
				INFRASTR APP'D	A.S.	06-15	INFRASTRUCTURE DELIVERY	
05:16	CONSTRUCTION ISSUE		L.C.	J.D.				
ISSUE	DATE	AMENDMENT	BY	APPD.	BY	DATE		

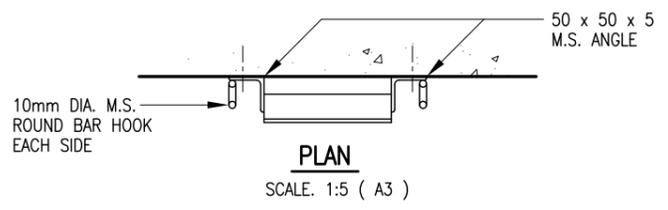
Watercare
COPYRIGHT - This drawing, the design concept, remain the exclusive property of Watercare Services Limited and may not be used without approval. Copyright reserved.

**WASTEWATER RETICULATION STANDARD
PUMPING STATION WET WELL
WET WELL CLEARANCES AND DIMENSIONS**

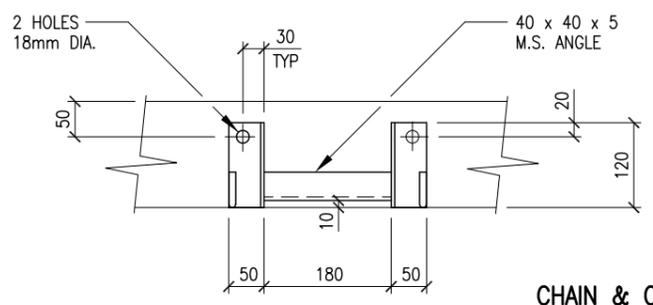
CAD FILE	2012216.004	DATE	05-05-16
ORIGINAL SCALE	A1 AS SHOWN	CONTRACT No.	-
REF. No.	-	ISSUE	-
DWG. No.	2012216 .004		



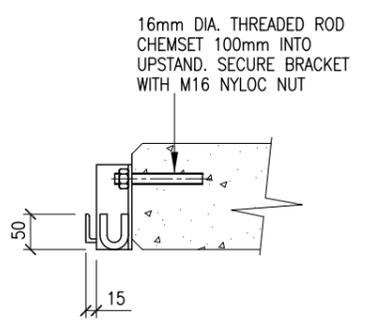
PLAN AT WET WELL
SCALE: 1:25 (A3)
& N.T.S.



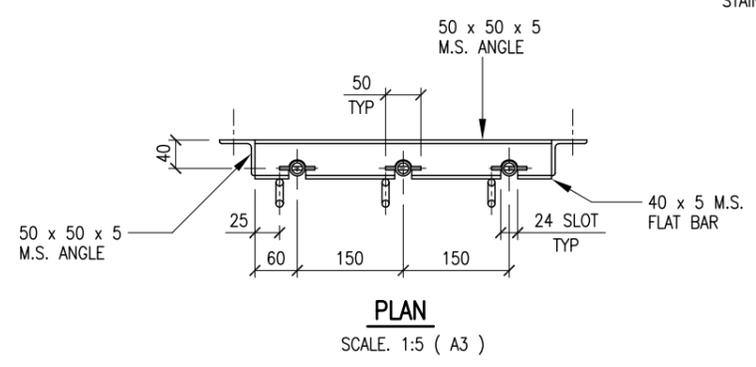
PLAN
SCALE: 1:5 (A3)



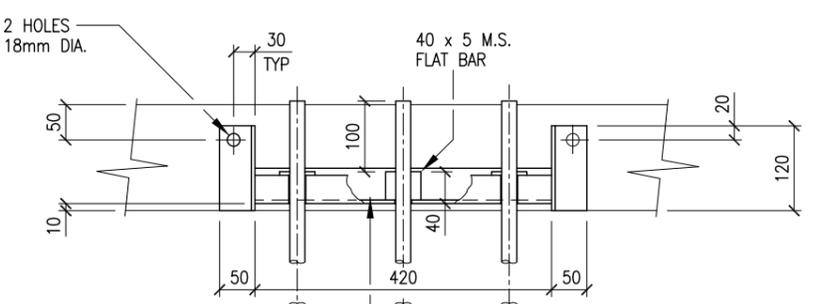
CHAIN & CABLE HOLDER BRACKET
SCALE: 1:10 (A3)



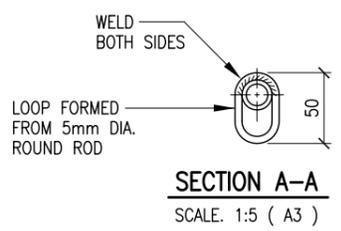
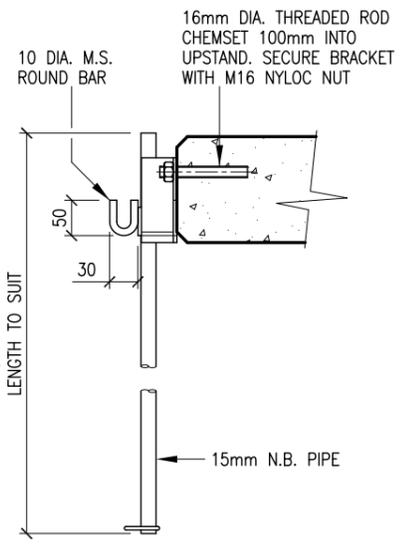
NOTE
THIS DRAWING TO BE READ
IN CONJUNCTION WITH STANDARD
DRAWING 2012216.004



PLAN
SCALE: 1:5 (A3)



FLOAT SWITCH BRACKET
SCALE: 1:10 (A3)



SECTION A-A
SCALE: 1:5 (A3)

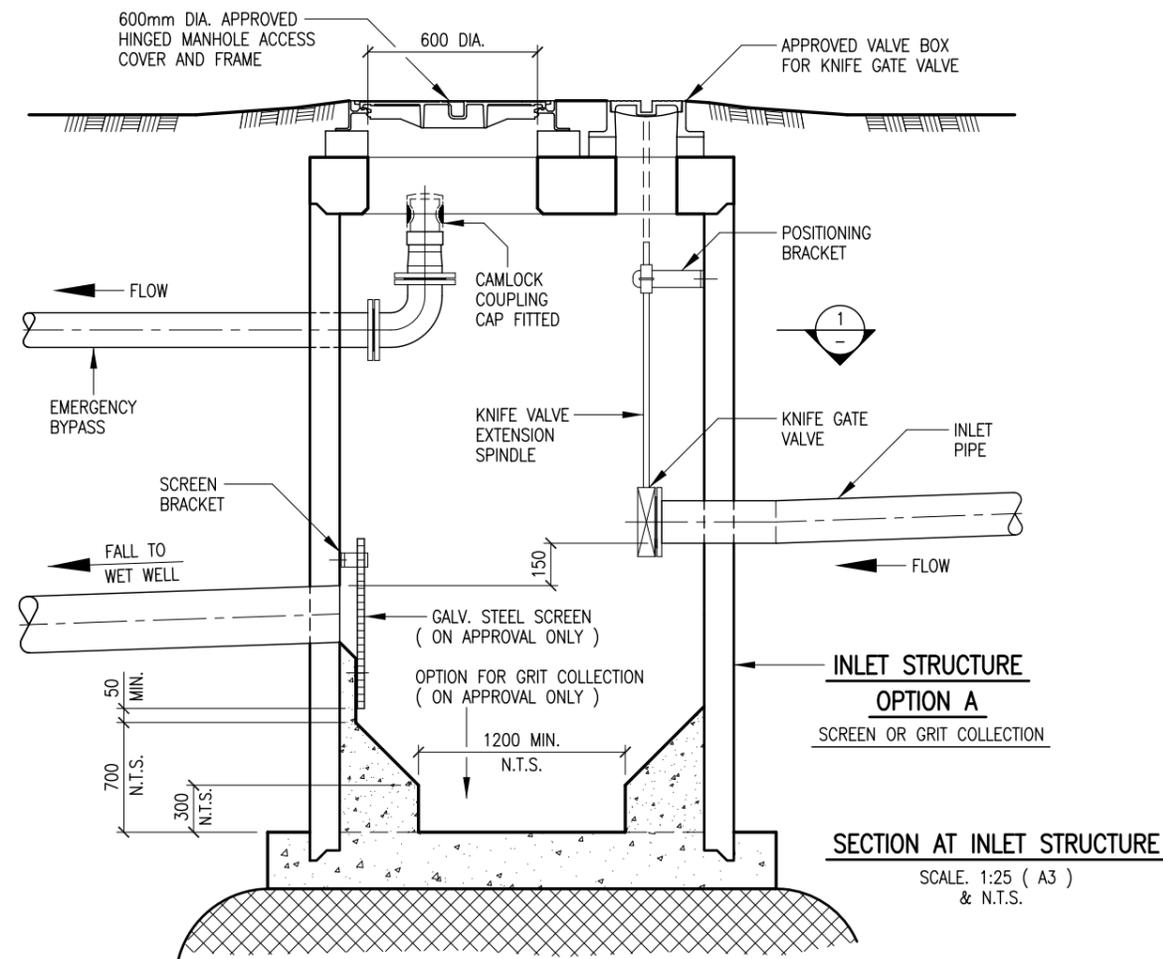
NOTE : ALL FITTINGS TO BE TYPE 316
STAINLESS STEEL

DESIGNED	J.D.	06-15		
DES. CHECKED	S.D.	06-15		
DRAWN	L.C.	06-15		
DWG. CHECKED	I.M.	06-15		
PROJECT LEADER	J.D.	06-15		
INFRASTR APP'D	A.S.	06-15		
ISSUE	DATE	AMENDMENT	BY	APPD.
-	05:16	CONSTRUCTION ISSUE	L.C.	J.D.

Watercare
COPYRIGHT - This drawing, the design concept, remain the exclusive property of Watercare Services Limited and may not be used without approval. Copyright reserved.

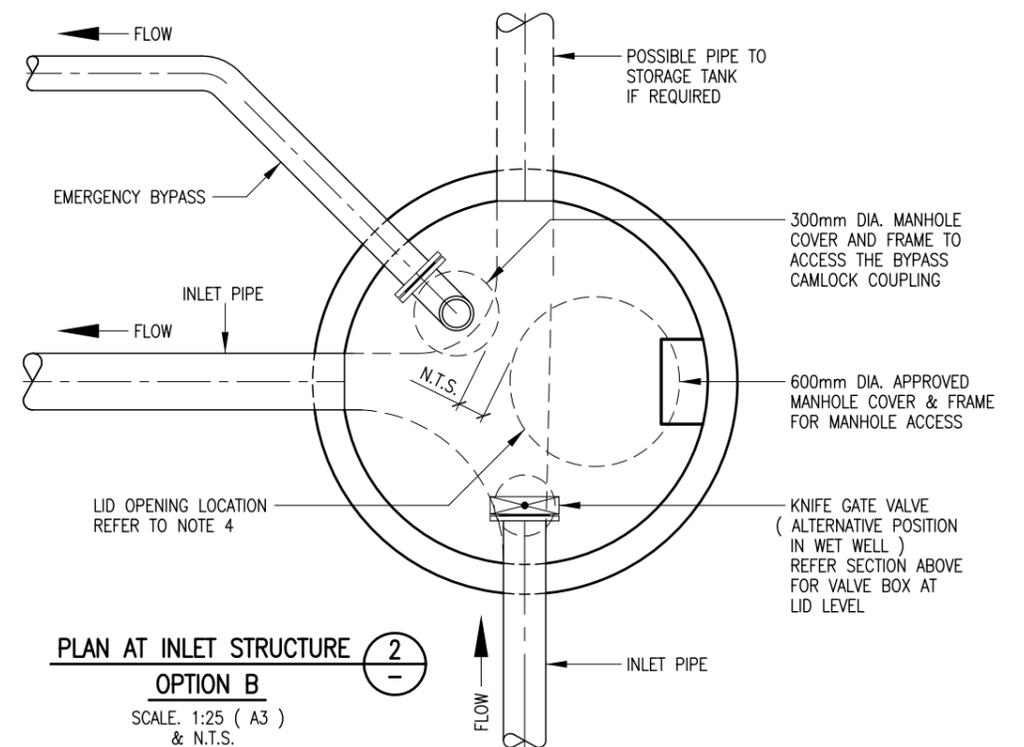
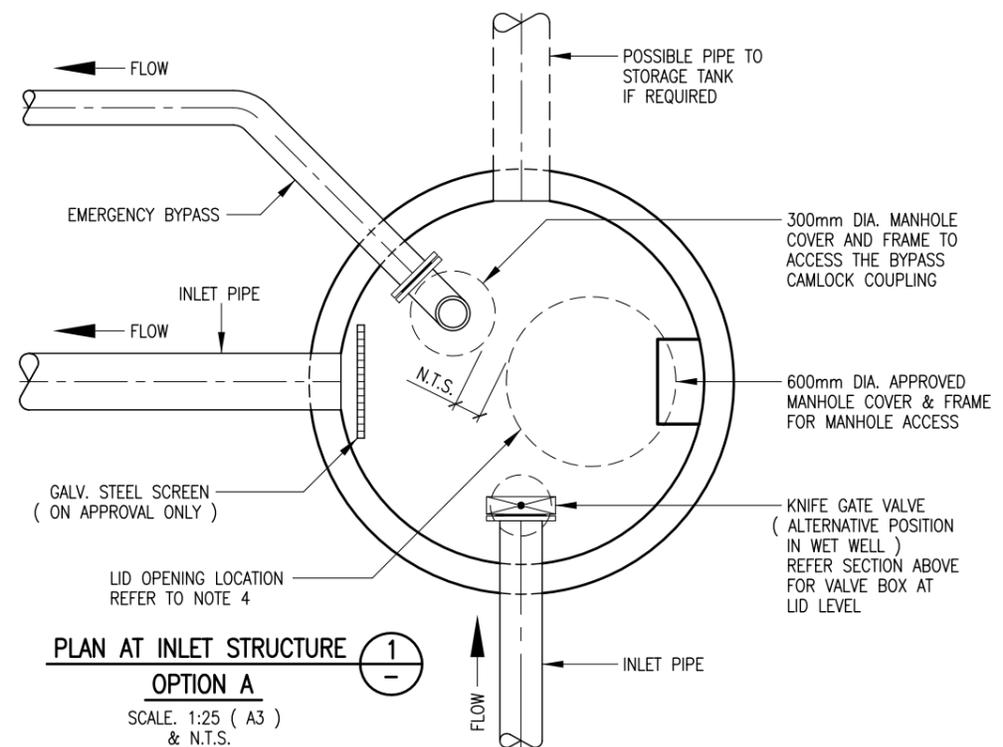
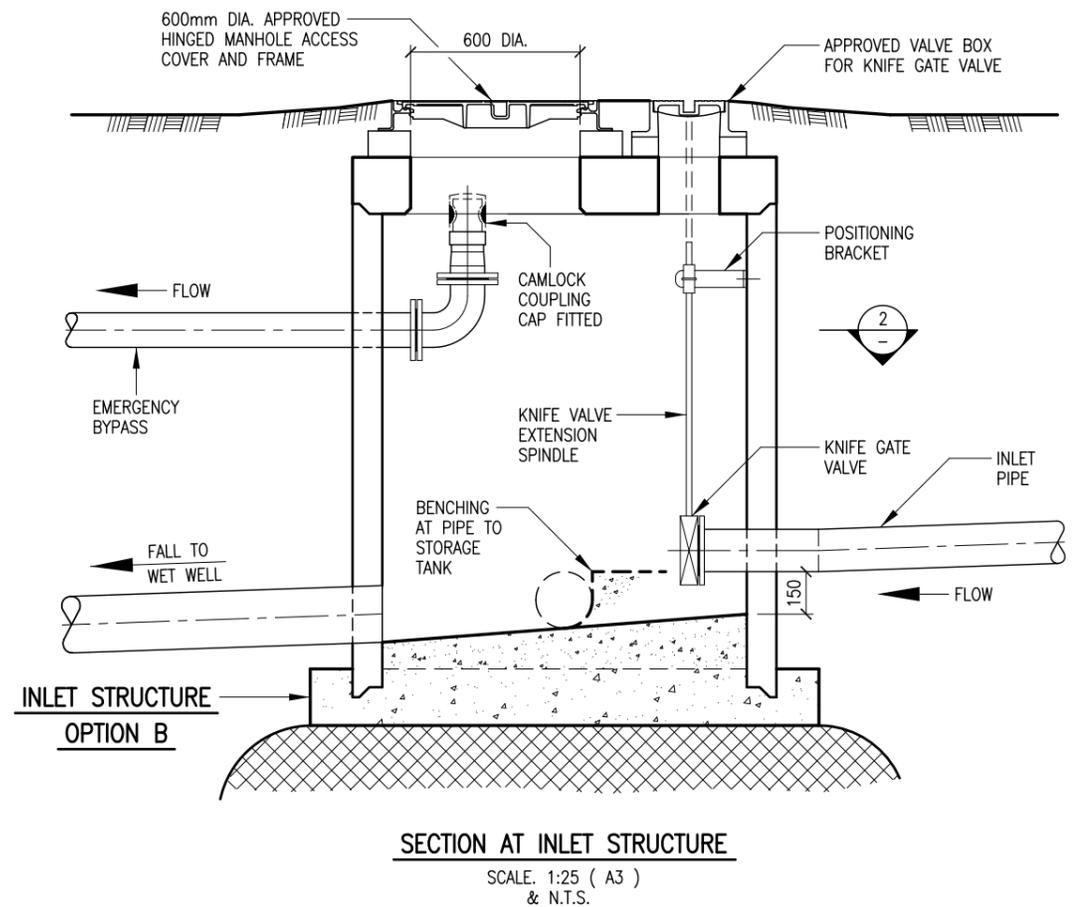
**WASTEWATER RETICULATION STANDARD
PUMPING STATION WET WELL
WET WELL BRACKETS**

CAD FILE	2012216.005	DATE	05-05-16
ORIGINAL SCALE	A1 AS SHOWN	CONTRACT No.	-
REF. No.	-	ISSUE	-
DWG. No.	2012216 .005		



KEY
 N.T.S. = NOT TO SCALE
 MIN. = MINIMUM

- NOTES**
1. THIS DRAWING TO BE READ IN CONJUNCTION WITH STANDARD DRAWINGS 2012216.001 TO .003
 2. DETAILS ON THIS DRAWING SHEET ARE DIAGRAMMATIC. PIPE SIZES AND INVERT LEVELS VARY.
 3. THE TYPICAL DETAIL SHALL BE OPTION B. OPTION A REQUIRES SPECIFIC APPROVAL FROM WATERCARE.
 4. LID OPENING LOCATION BY DESIGN. ALL LIDS TO BE DESIGNED TO HN-HO-72



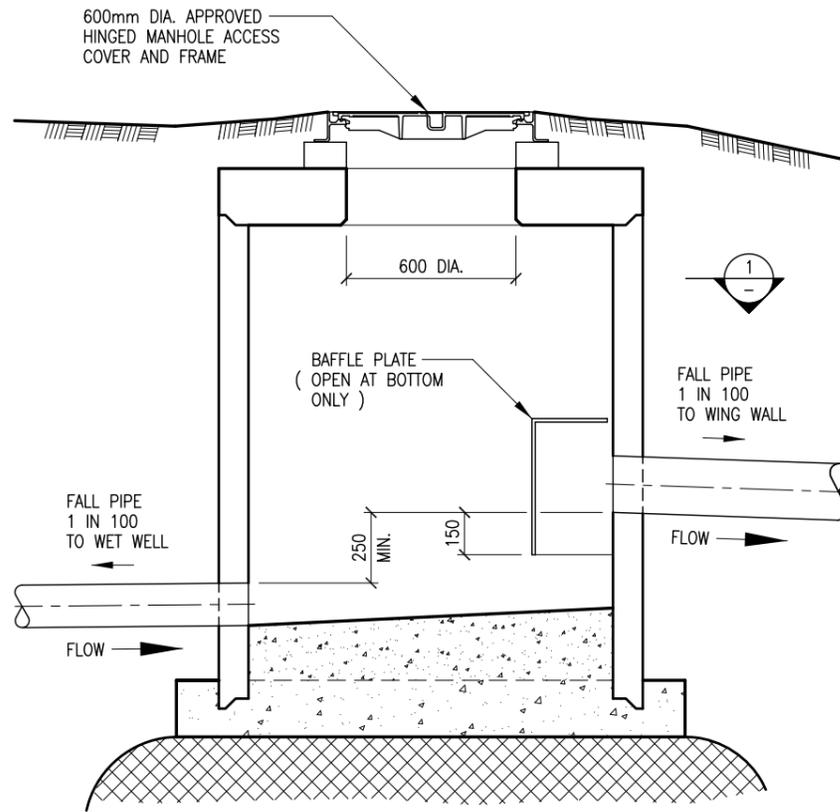
ISSUE	DATE	AMENDMENT	BY	APPD.	DATE	DESCRIPTION
-	05:16	CONSTRUCTION ISSUE	L.C.	J.D.	06-15	INFRASTRUCTURE DELIVERY

DESIGNED	J.D.	06-15
DES. CHECKED	S.D.	06-15
DRAWN	L.C.	06-15
DWG. CHECKED	I.M.	06-15
PROJECT LEADER	J.D.	06-15
INFRAS'TR APP'D	A.S.	06-15

Watercare
 COPYRIGHT - This drawing, the design concept, remain the exclusive property of Watercare Services Limited and may not be used without approval. Copyright reserved.

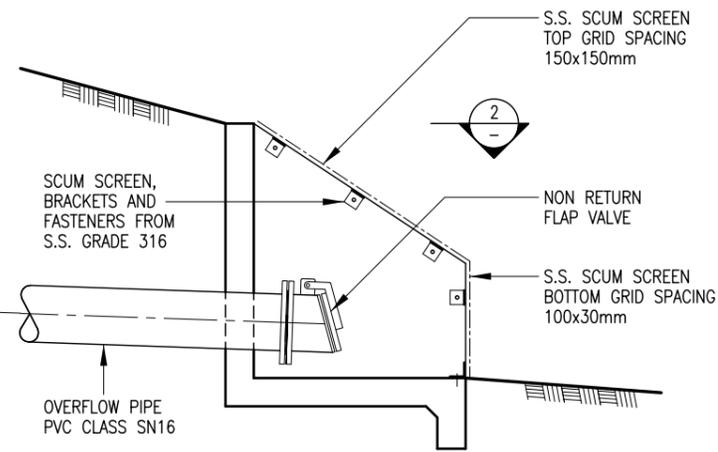
**WASTEWATER RETICULATION STANDARD
 PUMPING STATION INLET STRUCTURE
 DETAILED PLAN AND SECTION - OPTIONS A & B**

CAD FILE	2012216.006	DATE	05-05-16
ORIGINAL SCALE	A1 AS SHOWN	CONTRACT No.	-
REF. No.	-	ISSUE	-
DWG. No.	2012216 .006		



SECTION AT OVERFLOW M.H.

SCALE: 1:25 (A3)
& N.T.S.



SECTION AT OVERFLOW WING WALL

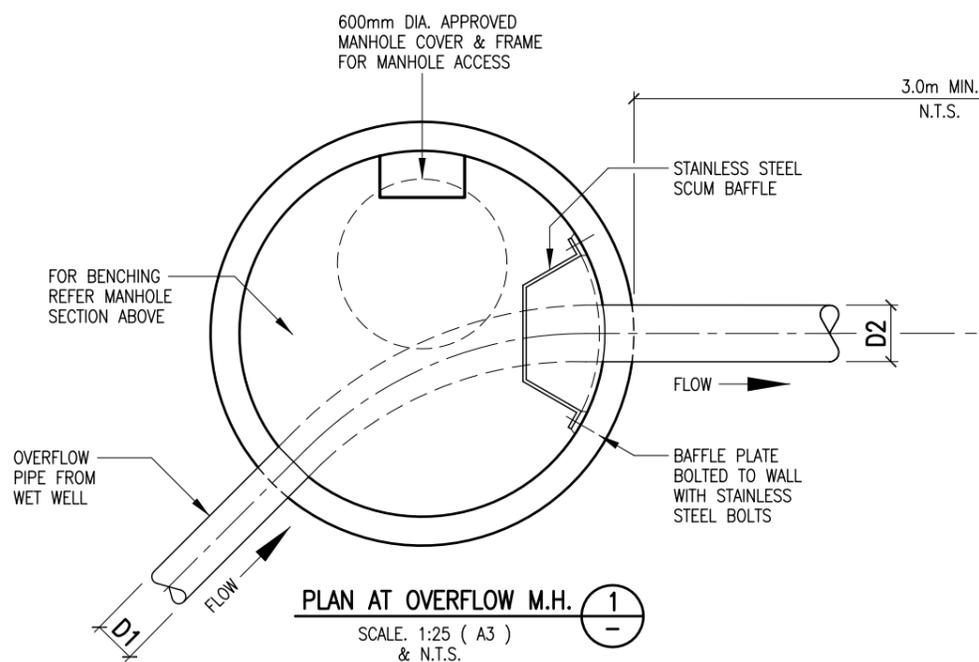
SCALE: 1:25 (A3)
& N.T.S.

KEY

- S.S. = STAINLESS STEEL
- N.T.S. = NOT TO SCALE
- MIN. = MINIMUM

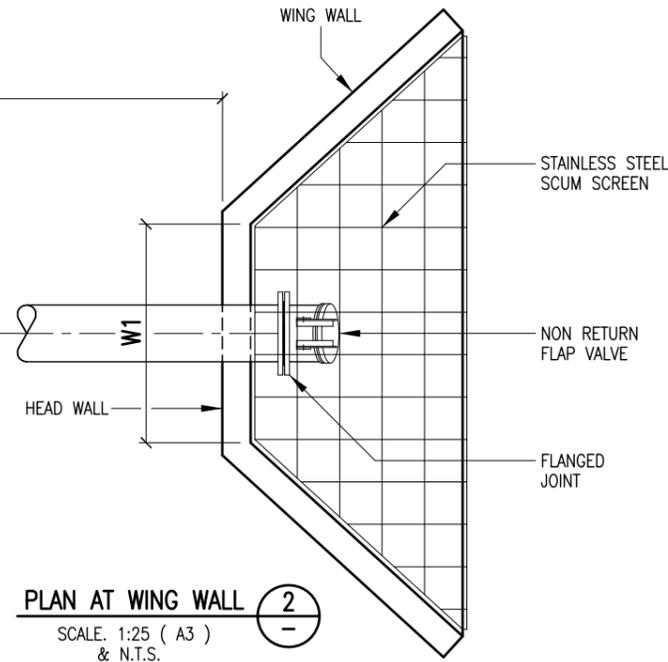
NOTES

1. THIS DRAWING TO BE READ IN CONJUNCTION WITH STANDARD DRAWING 2012216.001
2. DETAILS ON THIS DRAWING SHEET ARE DIAGRAMMATIC. PIPE SIZES AND LEVELS VARIES.



PLAN AT OVERFLOW M.H. 1

SCALE: 1:25 (A3)
& N.T.S.



PLAN AT WING WALL 2

SCALE: 1:25 (A3)
& N.T.S.

WING WALL SIZING TABLE IN RELATION TO PIPE SIZE			
D1	D2	W1	NOTE
150	225	300	OTHER WING WALL PARAMETERS TO SPECIFIC DESIGN
225	300	450	
300	375	800	

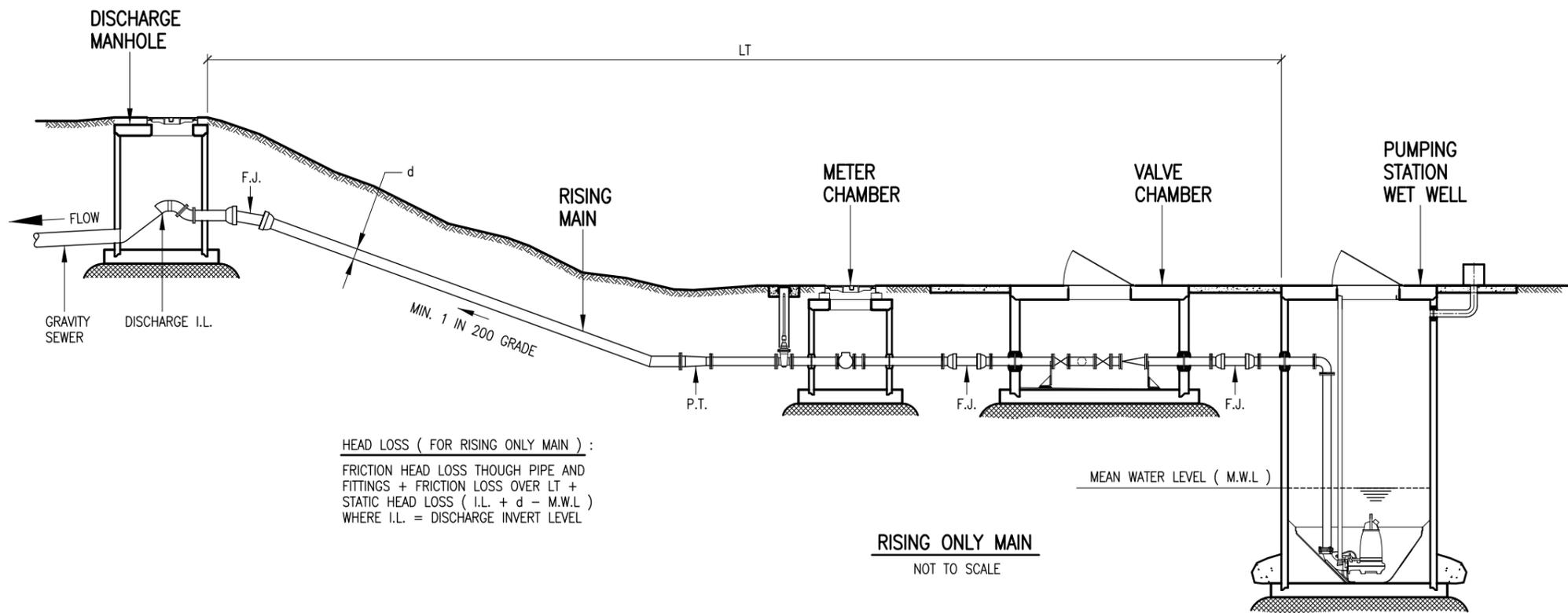
ISSUE	DATE	AMENDMENT	BY	APPD.	DATE	INFRASTRUCTURE DELIVERY
-	05:16	CONSTRUCTION ISSUE	L.C.	J.D.	06-15	SERVICE DELIVERY
						INFRASTRUCTURE DELIVERY

Watercare

COPYRIGHT - This drawing, the design concept, remain the exclusive property of Watercare Services Limited and may not be used without approval. Copyright reserved.

**WASTEWATER RETICULATION STANDARD
PUMPING STATION OVERFLOW MANHOLE & WING WALL
DETAILED PLAN AND SECTION**

CAD FILE 2012216.007	DATE 05-05-16
ORIGINAL SCALE A1 AS SHOWN	CONTRACT No. -
REF. No. -	ISSUE -
DWG. No. 2012216 .007	-

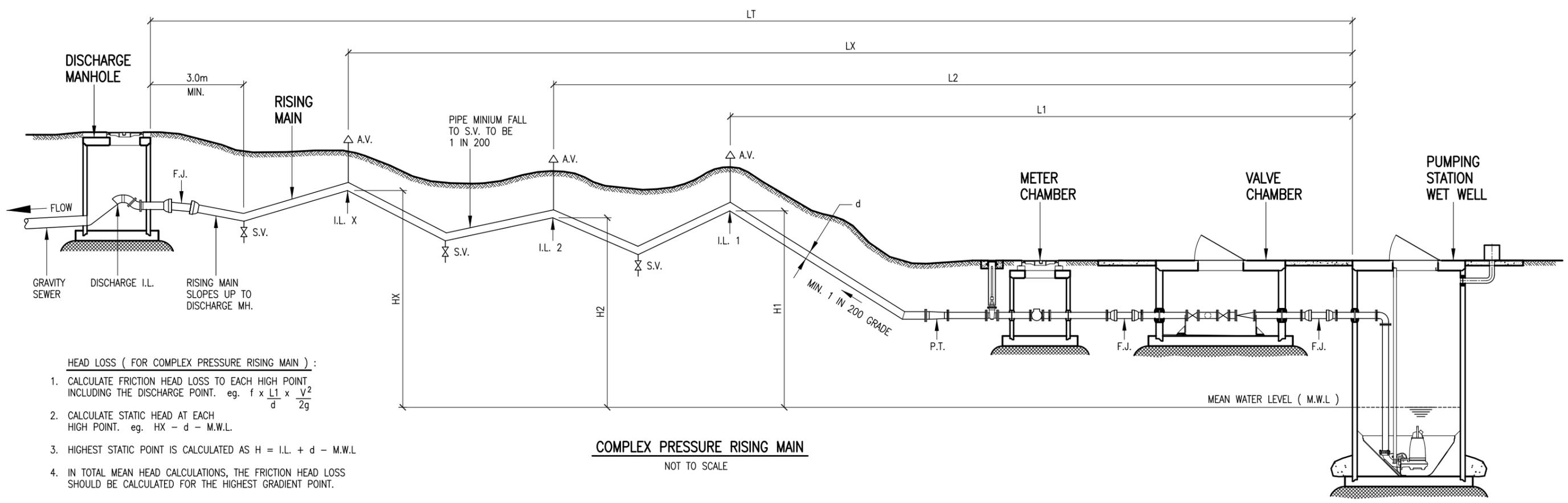


HEAD LOSS (FOR RISING ONLY MAIN) :
 FRICTION HEAD LOSS THROUGH PIPE AND FITTINGS + FRICTION LOSS OVER LT +
 STATIC HEAD LOSS (I.L. + d - M.W.L)
 WHERE I.L. = DISCHARGE INVERT LEVEL

RISING ONLY MAIN
 NOT TO SCALE

- NOTES**
1. THIS DRAWING TO BE READ IN CONJUNCTION WITH STANDARD DRAWINGS 2012216.001 & 002
 2. DETAILS ON THIS DRAWING SHEET ARE DIAGRAMMATIC. PIPE SIZES AND INVERT LEVELS VARY.

- KEY**
- M.W.L. = MEAN WATER LEVEL
 - A.V. = AIR RELEASE VALVE
 - S.V. = SCOUR VALVE
 - F.J. = FLEXIBLE JOINT
 - I.L. = INVERT LEVEL
 - MH. = MANHOLE
 - MIN. = MINIMUM
 - P.T. = POSSIBLE PIPE TAPER
 - f = COEFFICIENT OF FRICTION
 - d = INTERNAL DIA. OF PIPE
 - g = GRAVITY (9.81m/sec.)



- HEAD LOSS (FOR COMPLEX PRESSURE RISING MAIN) :**
1. CALCULATE FRICTION HEAD LOSS TO EACH HIGH POINT INCLUDING THE DISCHARGE POINT. eg. $f \times \frac{L1}{d} \times \frac{V^2}{2g}$
 2. CALCULATE STATIC HEAD AT EACH HIGH POINT. eg. $HX - d - M.W.L.$
 3. HIGHEST STATIC POINT IS CALCULATED AS $H = I.L. + d - M.W.L.$
 4. IN TOTAL MEAN HEAD CALCULATIONS, THE FRICTION HEAD LOSS SHOULD BE CALCULATED FOR THE HIGHEST GRADIENT POINT.

COMPLEX PRESSURE RISING MAIN
 NOT TO SCALE

L:\---\EGCAD\FI\2015\STANDARD WASTEWATER DRAWINGS\2012216.008 .DWG

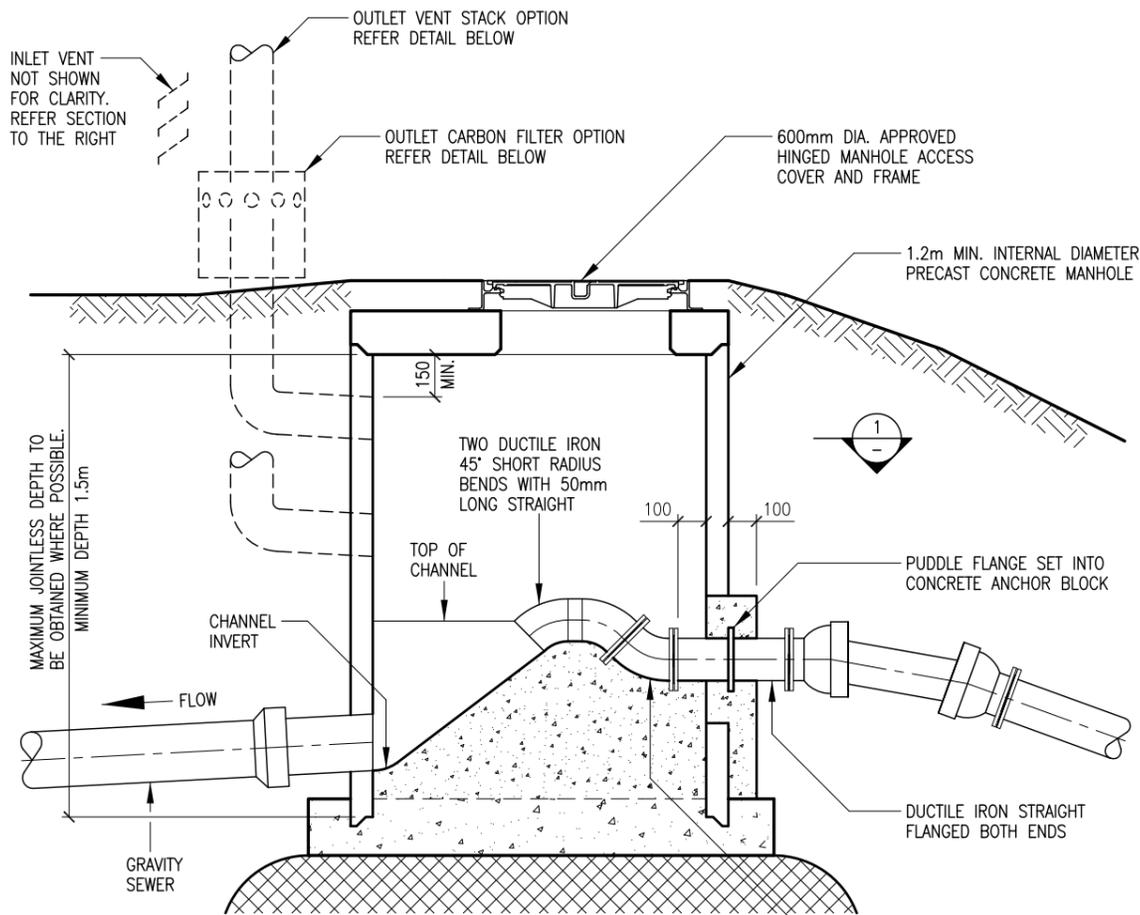
DESIGNED	J.D.	06-15		
DES. CHECKED	S.D.	06-15		
DRAWN	L.C.	06-15	SERVICE DELIVERY	
DWG. CHECKED	I.M.	06-15		
PROJECT LEADER	J.D.	06-15		
INFRASTR APP'D	A.S.	06-15	INFRASTRUCTURE DELIVERY	
ISSUE	DATE	AMENDMENT	BY	APPD.
-	05:16	CONSTRUCTION ISSUE	L.C.	J.D.

Watercare

COPYRIGHT - This drawing, the design concept, remain the exclusive property of Watercare Services Limited and may not be used without approval. Copyright reserved.

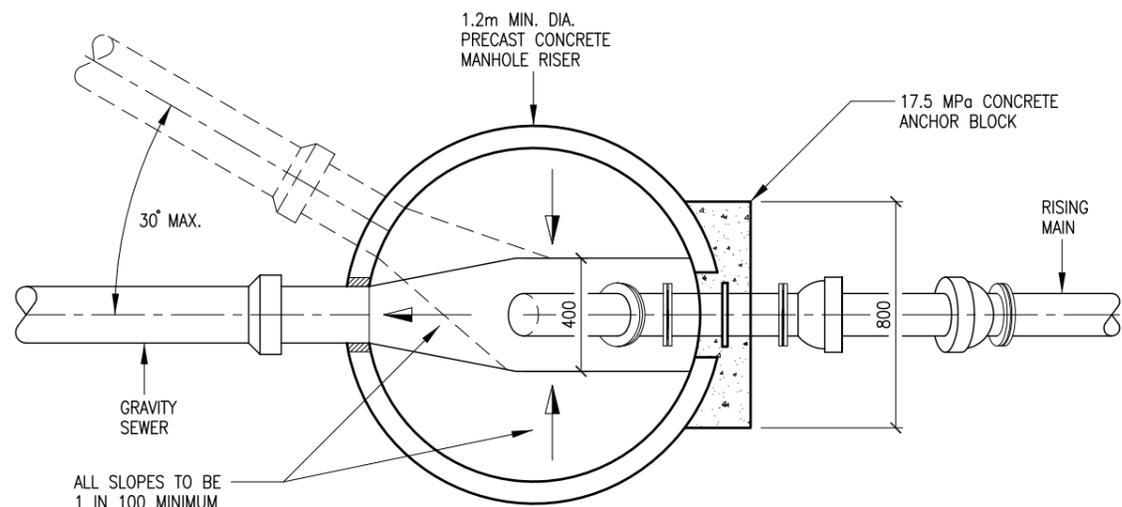
**WASTEWATER RETICULATION STANDARD
 PUMPING STATION RISING MAIN
 TYPICAL LAYOUT SECTIONS**

CAD FILE	2012216.008	DATE	05-05-16
ORIGINAL SCALE	A1	CONTRACT No.	-
AS SHOWN			
REF. No.	-	ISSUE	-
DWG. No.	2012216 .008		



SECTION AT DISCHARGE M.H.

SCALE: 1:25 (A3)
& N.T.S.



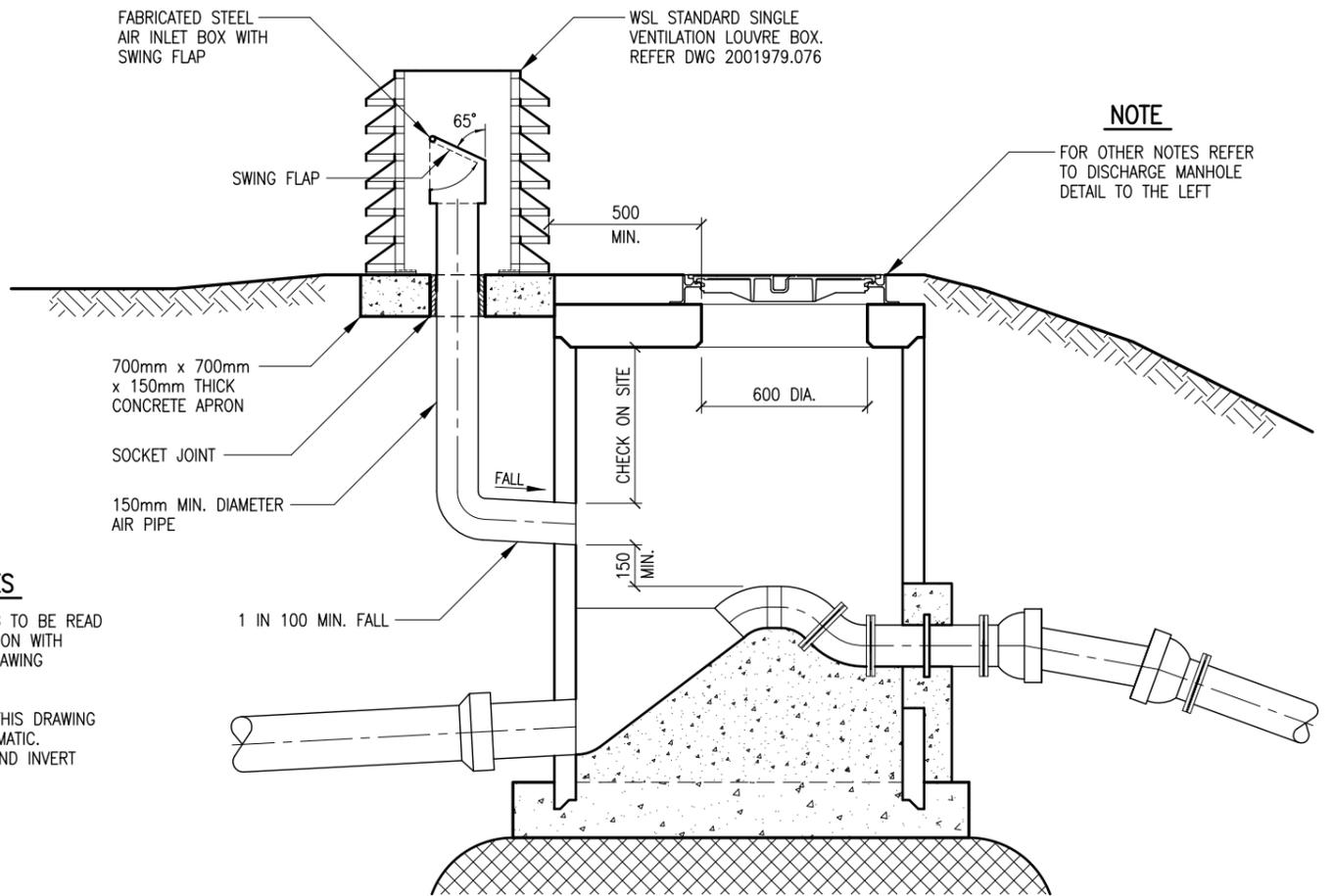
PLAN AT DISCHARGE M.H.

SCALE: 1:25 (A3)
& N.T.S.

KEY
N.T.S. = NOT TO SCALE
MIN. = MINIMUM

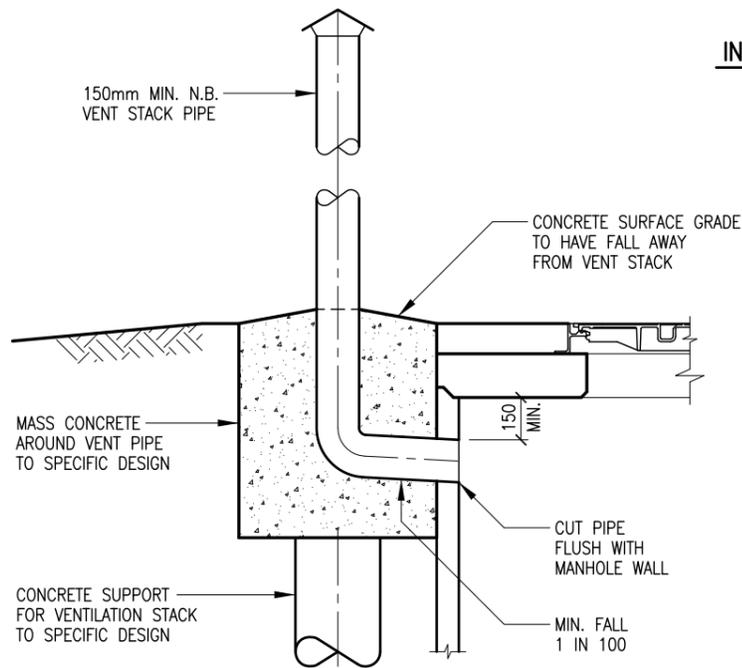
NOTES

1. THIS DRAWING TO BE READ IN CONJUNCTION WITH STANDARD DRAWING 2012216.008
2. DETAILS ON THIS DRAWING ARE DIAGRAMMATIC. PIPE SIZES AND INVERT LEVELS VARY.



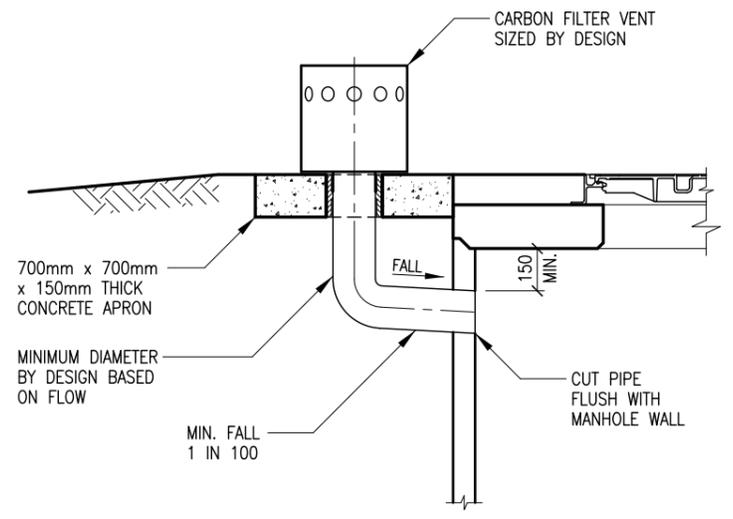
INLET VENT AT DISCHARGE M.H.

SCALE: 1:25 (A3)
& N.T.S.



OUTLET VENT STACK OPTION

SCALE: 1:25 (A3)
& N.T.S.



OUTLET CARBON FILTER VENT OPTION

SCALE: 1:25 (A3)
& N.T.S.

ISSUE	DATE	AMENDMENT	BY	APPD.	BY	DATE	
-	05:16	CONSTRUCTION ISSUE	L.C.	J.D.			

DESIGNED	J.D.	06-15
DES. CHECKED	S.D.	06-15
DRAWN	L.C.	06-15
DWG. CHECKED	I.M.	06-15
PROJECT LEADER	J.D.	06-15
INFRAS'T'R APP'D	A.S.	06-15

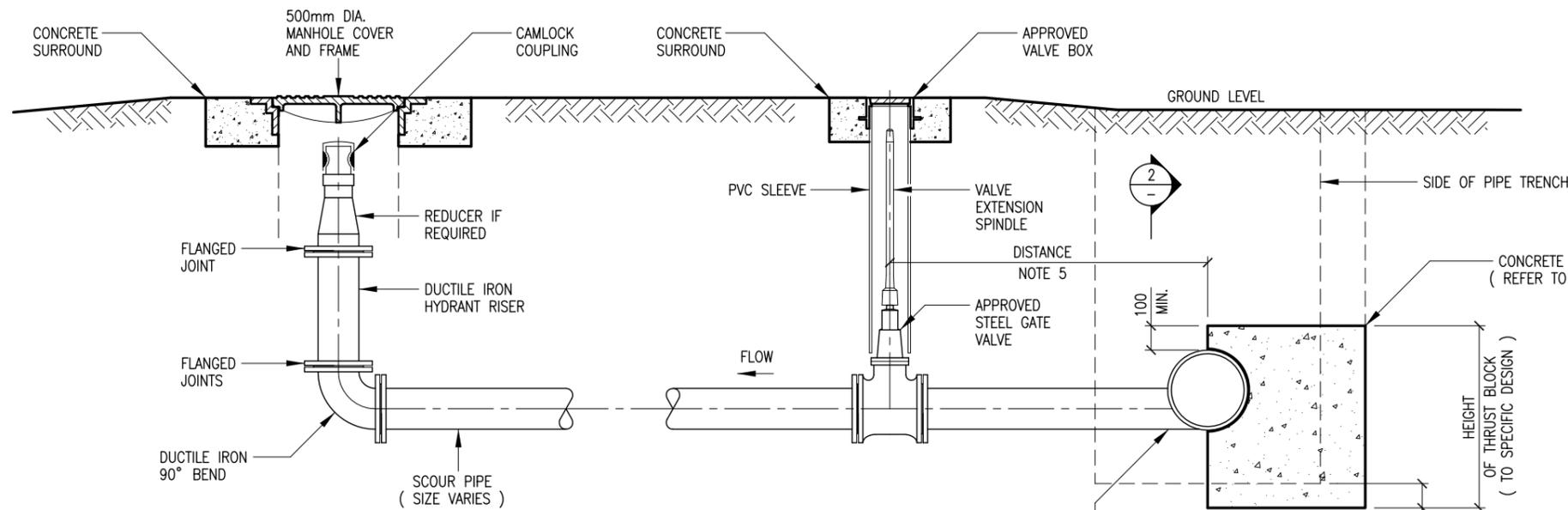


**WASTEWATER RETICULATION STANDARD
PUMPING STATION RISING MAIN**
DETAILS OF DISCHARGE MANHOLE AND VENTILATION OPTIONS

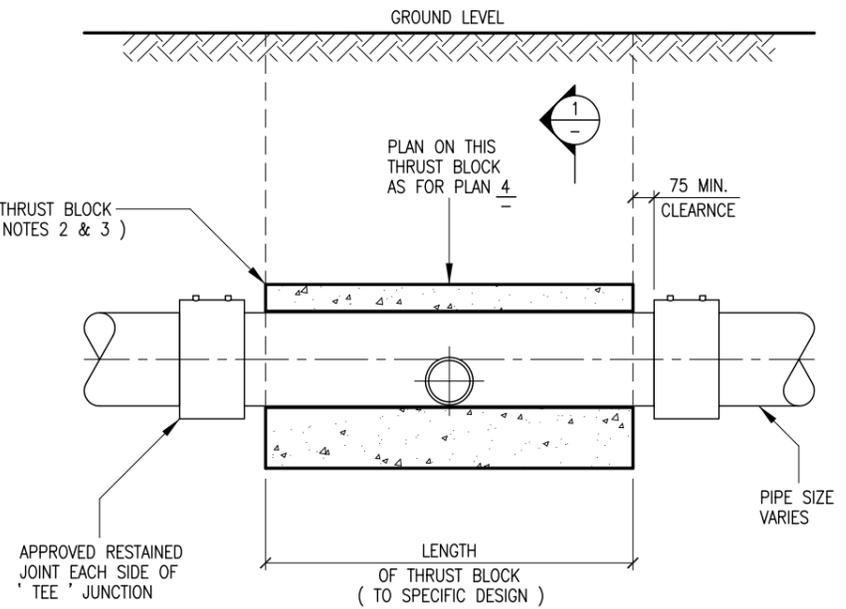
CAD FILE	2012216.009	DATE	05-05-16
ORIGINAL SCALE	A1 AS SHOWN	CONTRACT No.	-
REF. No.	-	ISSUE	-
DWG. No.	2012216 .009		-

L:\---\EGCAD\FI\2015\STANDARD WASTEWATER DRAWINGS\2012216.009.DWG

COPYRIGHT - This drawing, the design concept, remain the exclusive property of Watercare Services Limited and may not be used without approval. Copyright reserved.



ELEVATION AT PRESSURE SCOUR
' TEE ' JUNCTION
 SCALE: 1:25 (A3)
 & N.T.S.

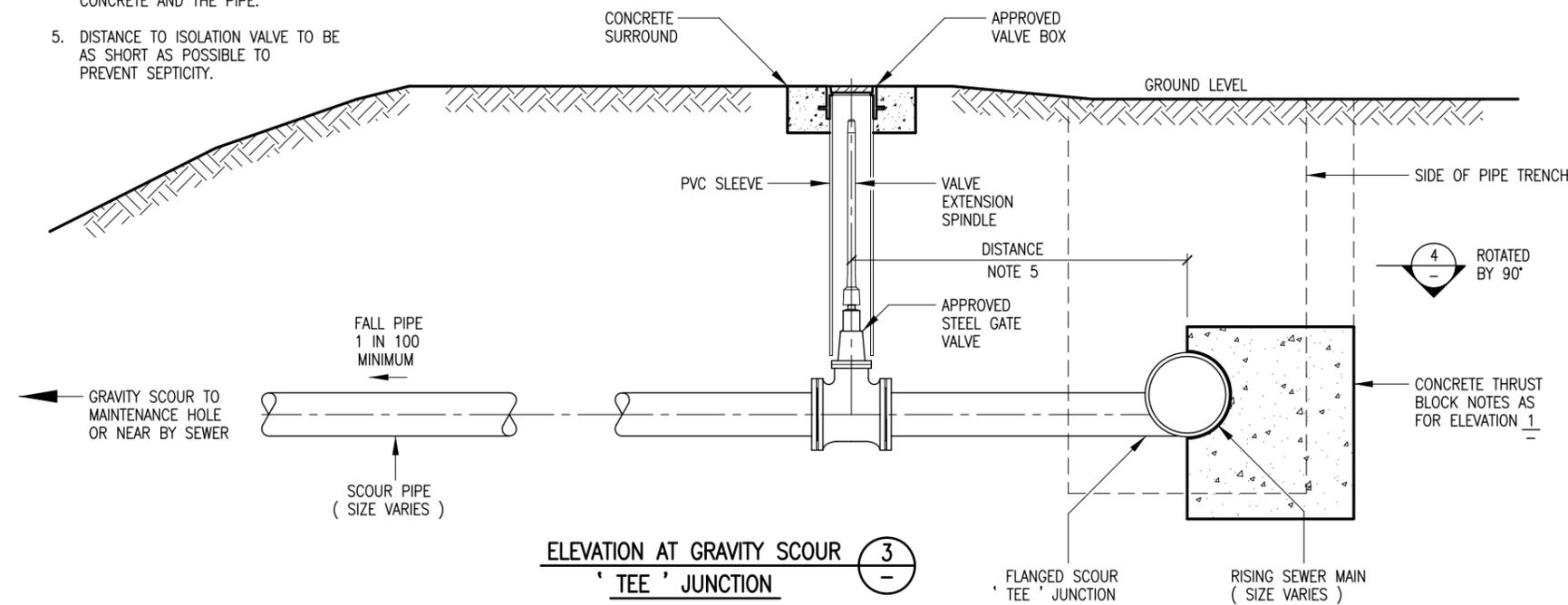


SECTION AT PRESSURE SCOUR
' TEE ' JUNCTION
 SCALE: 1:25 (A3)
 & N.T.S.

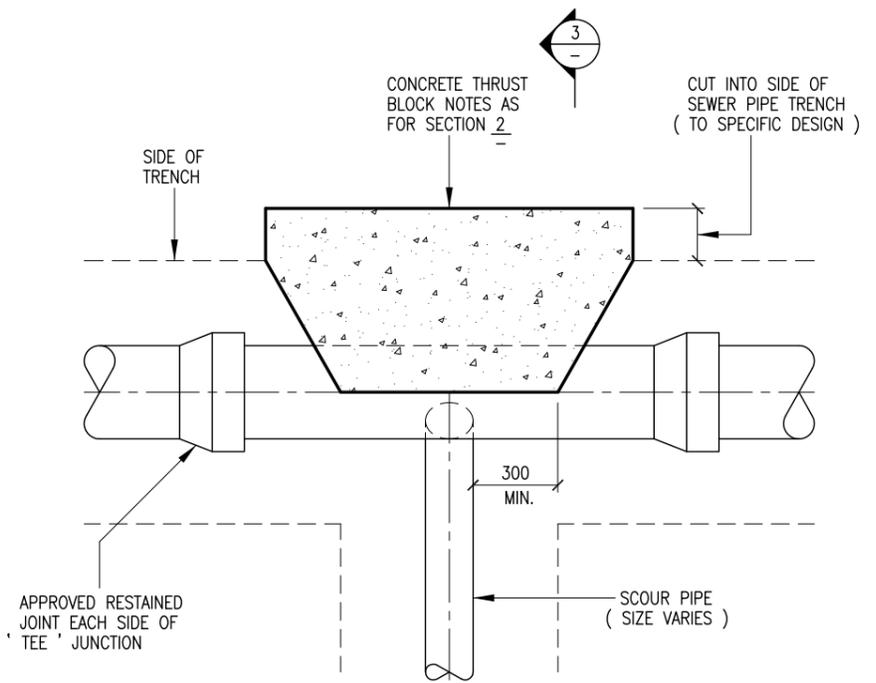
NOTES

1. DETAILS ON THIS DRAWING ARE DIAGRAMMATIC. PIPE SIZES AND PIPE DEPTHS VARY.
2. THRUST BLOCKS SHALL BE SIZED FOR THE SPECIFIC SOIL BEARING CAPACITY TAKING INTO ACCOUNT THE MAXIMUM PUMPING PRESSURE AND FLOW VELOCITY.
3. THRUST BLOCKS SHALL BE CAST AGAINST THE UNDISTURBED CUT FACE OF THE EXCAVATION.
4. WHERE THE PIPE COMES IN CONTACT WITH THE THRUST BLOCK THE PIPE SHALL BE WRAPPED IN A PROTECTIVE MEMBRANE TO PREVENT ABRASION BETWEEN THE CONCRETE AND THE PIPE.
5. DISTANCE TO ISOLATION VALVE TO BE AS SHORT AS POSSIBLE TO PREVENT SEPTICITY.

KEY
 N.T.S. = NOT TO SCALE
 MIN. = MINIMUM



ELEVATION AT GRAVITY SCOUR
' TEE ' JUNCTION
 SCALE: 1:25 (A3)
 & N.T.S.



PLAN AT GRAVITY SCOUR
' TEE ' JUNCTION
 SCALE: 1:25 (A3)
 & N.T.S.

ISSUE	DATE	AMENDMENT	BY	APPD.	BY	DATE	
-	05:16	CONSTRUCTION ISSUE	L.C.	J.D.			

DESIGNED	J.D.	06-15	
DES. CHECKED	S.D.	06-15	
DRAWN	L.C.	06-15	SERVICE DELIVERY
DWG. CHECKED	I.M.	06-15	
PROJECT LEADER	J.D.	06-15	
INFRAS'R APP'D	A.S.	06-15	INFRASTRUCTURE DELIVERY

Watercare
 COPYRIGHT - This drawing, the design concept, remain the exclusive property of Watercare Services Limited and may not be used without approval. Copyright reserved.

**WASTEWATER RETICULATION STANDARD
 PUMPING STATION RISING MAIN
 PRESSURE & GRAVITY SCOUR ARRANGEMENTS**

CAD FILE	2012216.010	DATE	05-05-16
ORIGINAL SCALE	A1 AS SHOWN	CONTRACT No.	-
REF. No.	-	ISSUE	-
DWG. No.	2012216 .010		