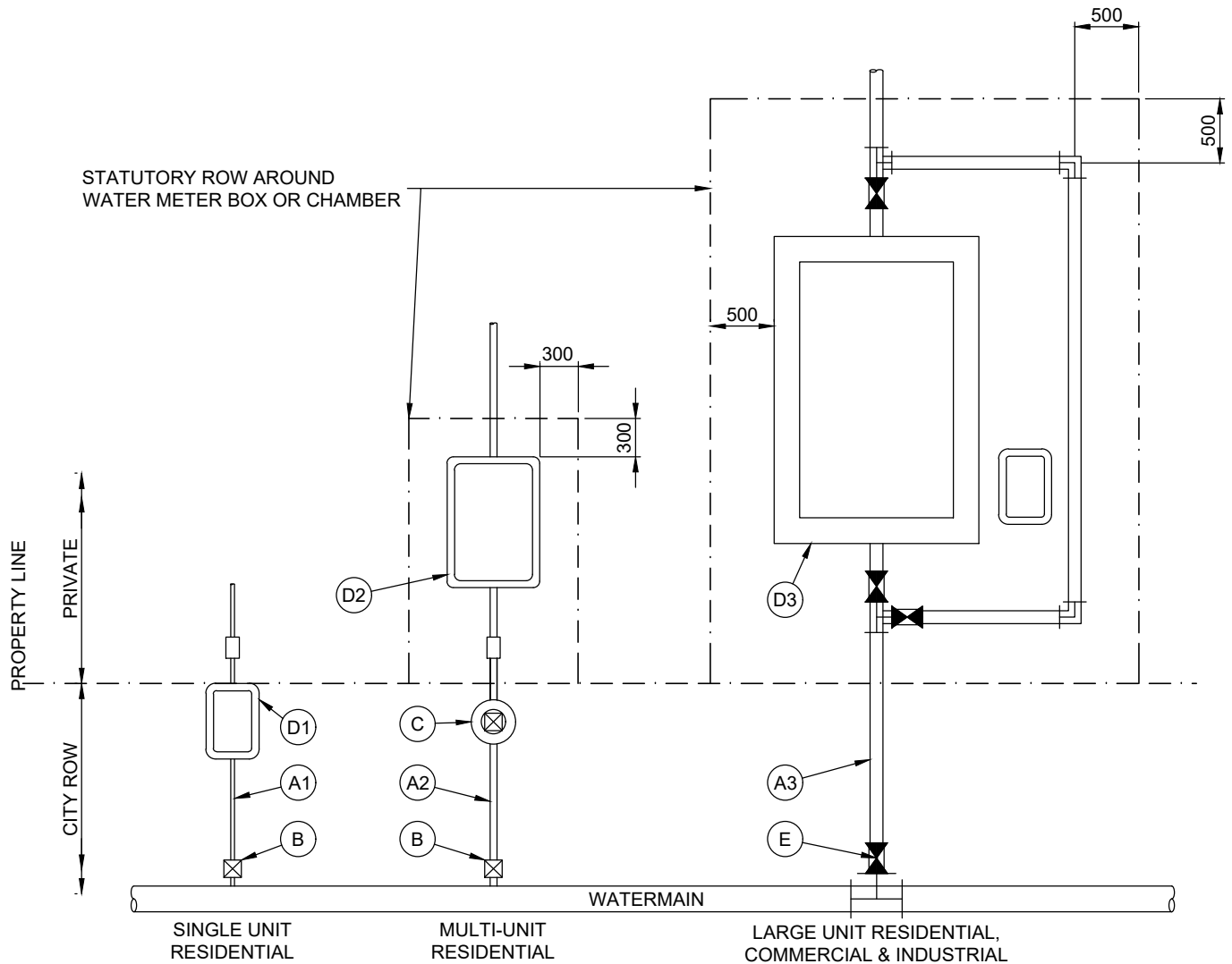
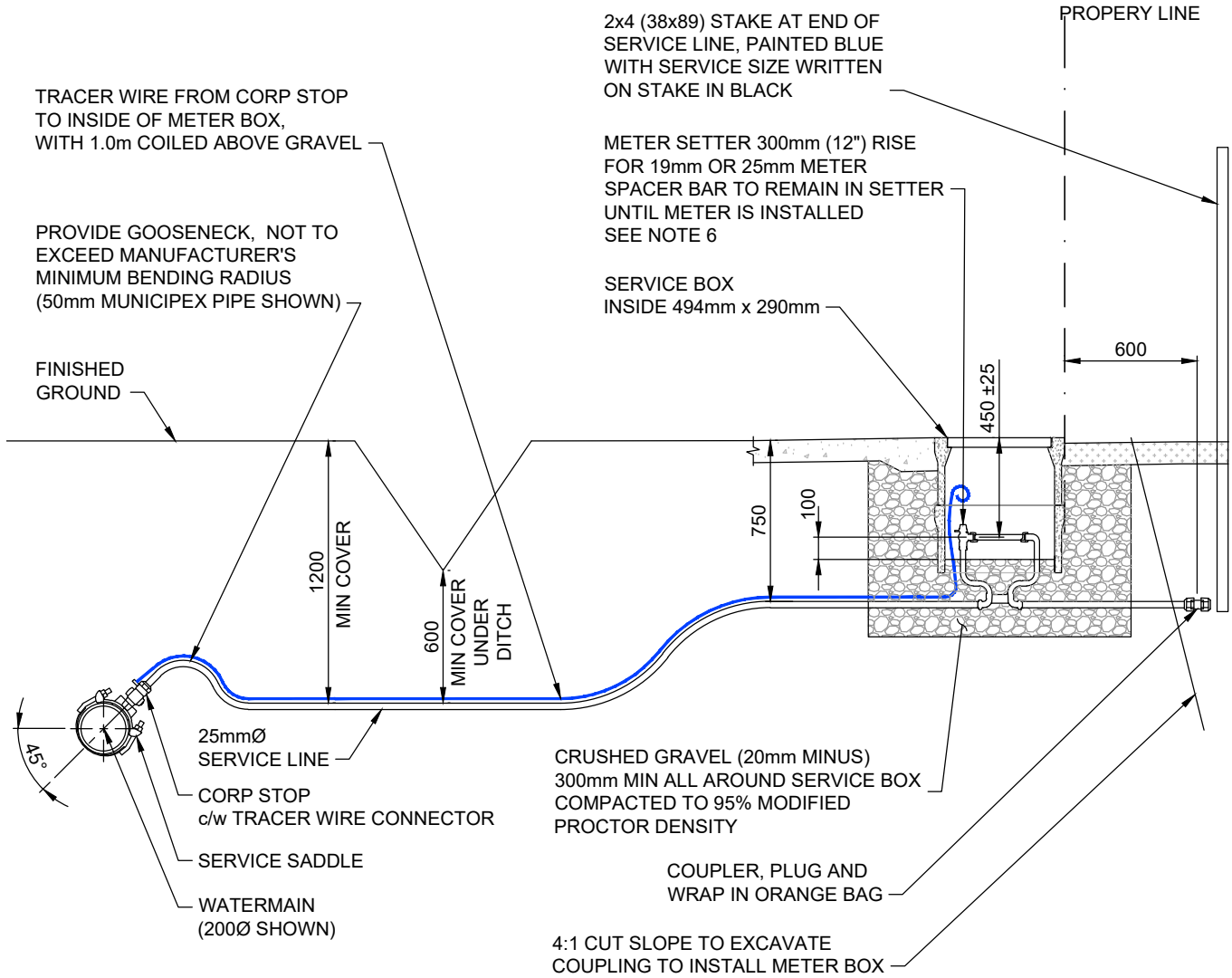




NOTE:
THIS DRAWING IS FOR WATER SERVICE LINES AND METERS ONLY.
NOT FOR FIRE LINE OR WATER SERVICES COMBINED WITH FIRE LINE

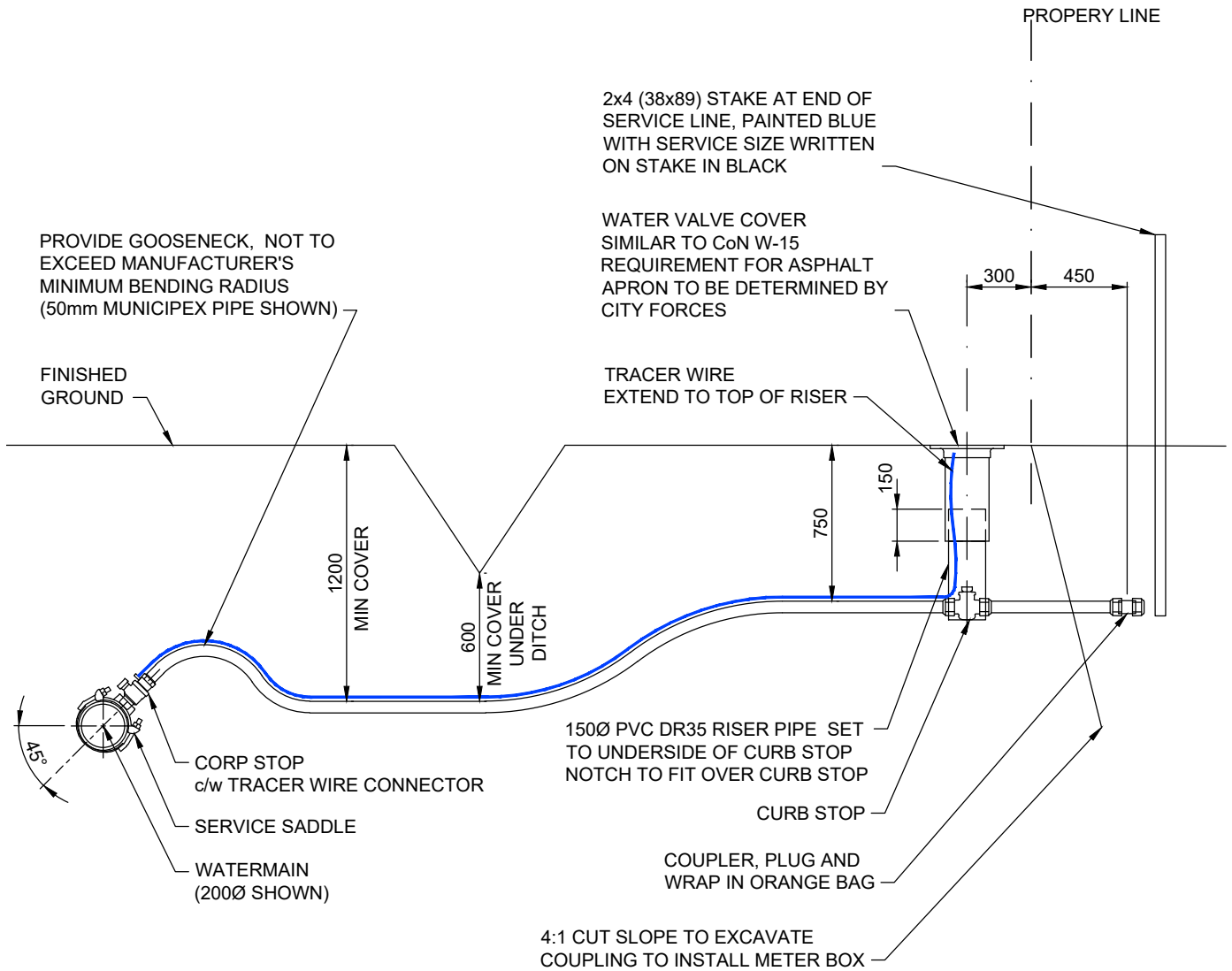
ITEM	DESCRIPTION	CLAUSES & STANDARD DRAWING
A1	25mm WATER SERVICE	SECTION 5.06; 5.13; 5.30; 5.56 DRAWING W-1
A2	38mm & 50mm WATER SERVICE	SECTION 5.06; 5.13; 5.30; 5.56 DRAWING W-1A
A3	75mm & GREATER WATER SERVICE	SECTION 5.06; 5.13; 5.30; 5.56
B	CORPORATION STOP & SERVICE SADDLE	SECTION 5.30.2 DRAWING W-1; W-1A
C	CURB STOP IN RISER PIPE	SECTION 5.30.3 DRAWING W-1A
D1	19mm & 25mm WATER METER IN BOX	SECTION 5.13; 5.56 5.57 DRAWING W-1
D2	38mm & 50mm WATER METER IN BOX	SECTION 5.13; 5.56 5.57 DRAWING W-1B
D3	75mm & GREATER METER IN CHAMBER	SECTION 5.13; 5.58 DRAWING W-13; W-15
E	GATE VALVE IN RISER PIPE	SECTION 5.13; 5.58 DRAWING W-16; W-16A

- NOTE:**
- THIS DRAWING SHALL BE USED IN ACCORDANCE WITH SECTION 5.0 OF THE MANUAL OF ENGINEERING STANDARDS AND SPECIFICATIONS, LATEST EDITION.
 - ONLY PRODUCTS LISTED IN THE CITY OF NANAIMO APPROVED PRODUCTS LIST WILL BE ACCEPTED FOR INSTALLATION.
 - ALL DIMENSIONS ARE MILLIMETERS UNLESS NOTED OTHERWISE.



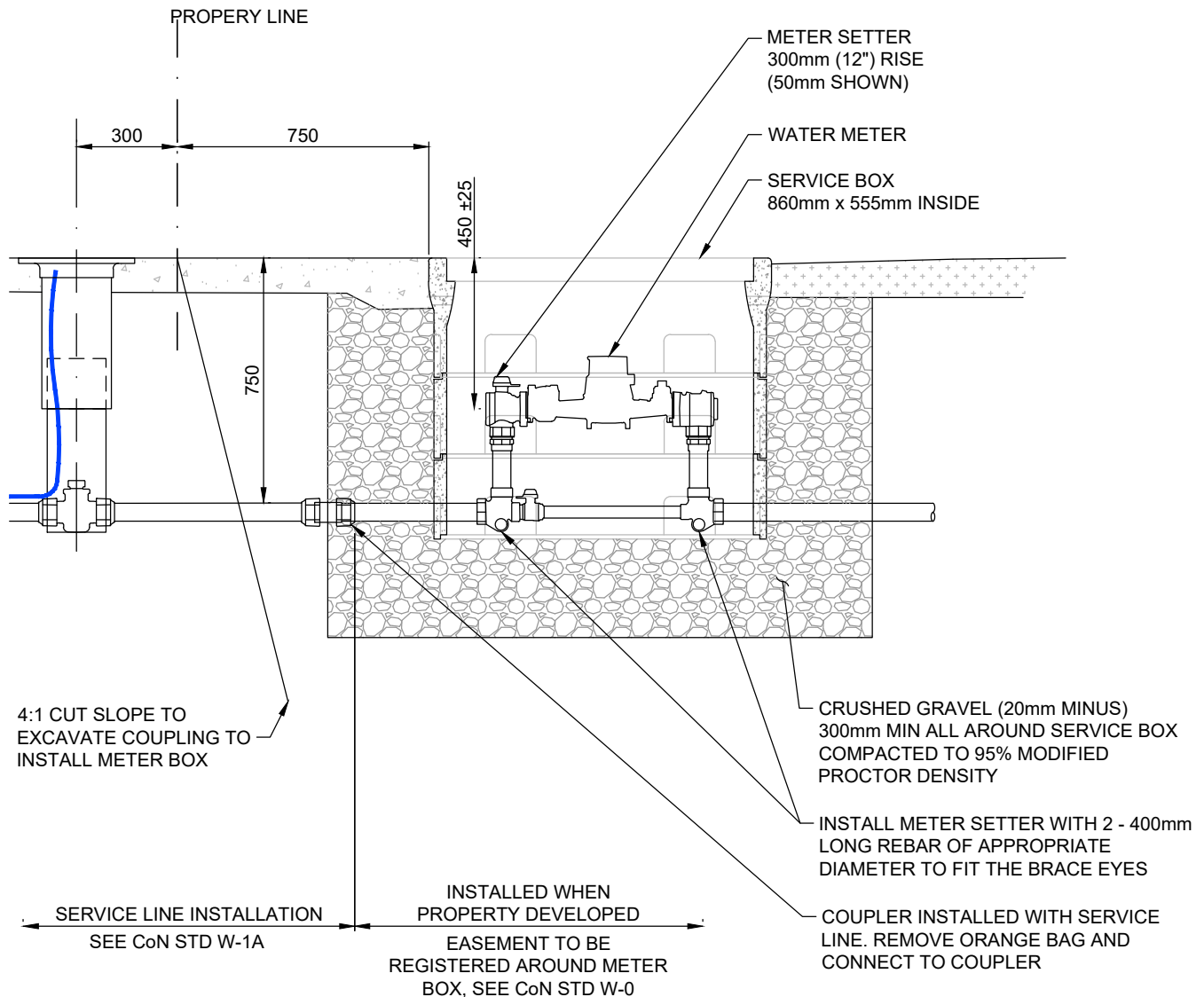
NOTES:

1. THIS DRAWING SHALL BE USED IN ACCORDANCE WITH SECTION 5.0 OF THE MANUAL OF ENGINEERING STANDARDS AND SPECIFICATIONS, LATEST EDITION.
2. ONLY PRODUCTS LISTED IN THE CITY OF NANAIMO APPROVED PRODUCTS LIST WILL BE ACCEPTED FOR INSTALLATION.
3. NOMINAL TRENCH WIDTH FOR SERVICE CONNECTION TO BE 600mm.
4. WHEN SERVICE BOX IS WITHIN A CONCRETE DRIVEWAY, CONCRETE ADJACENT TO THE SERVICE BOX MUST BE A MINIMUM OF 150mm THICK FOR A MINIMUM DISTANCE OF 150mm AROUND THE OUTSIDE EDGES OF THE SERVICE BOX.
5. WHEN SERVICE BOX IS INTALLED IN LANDSCAPE AREAS, BOX TO BE SET 25mm ABOVE FINISHED GRADE.
6. WATER METER TO BE INSTALLED BY CITY FORCES WHEN PROPERTY IS DEVELOPED.
7. TRACER WIRE AS PER SECTION 5.30.1
8. ALL DIMENSIONS ARE MILLIMETERS UNLESS NOTED OTHERWISE.



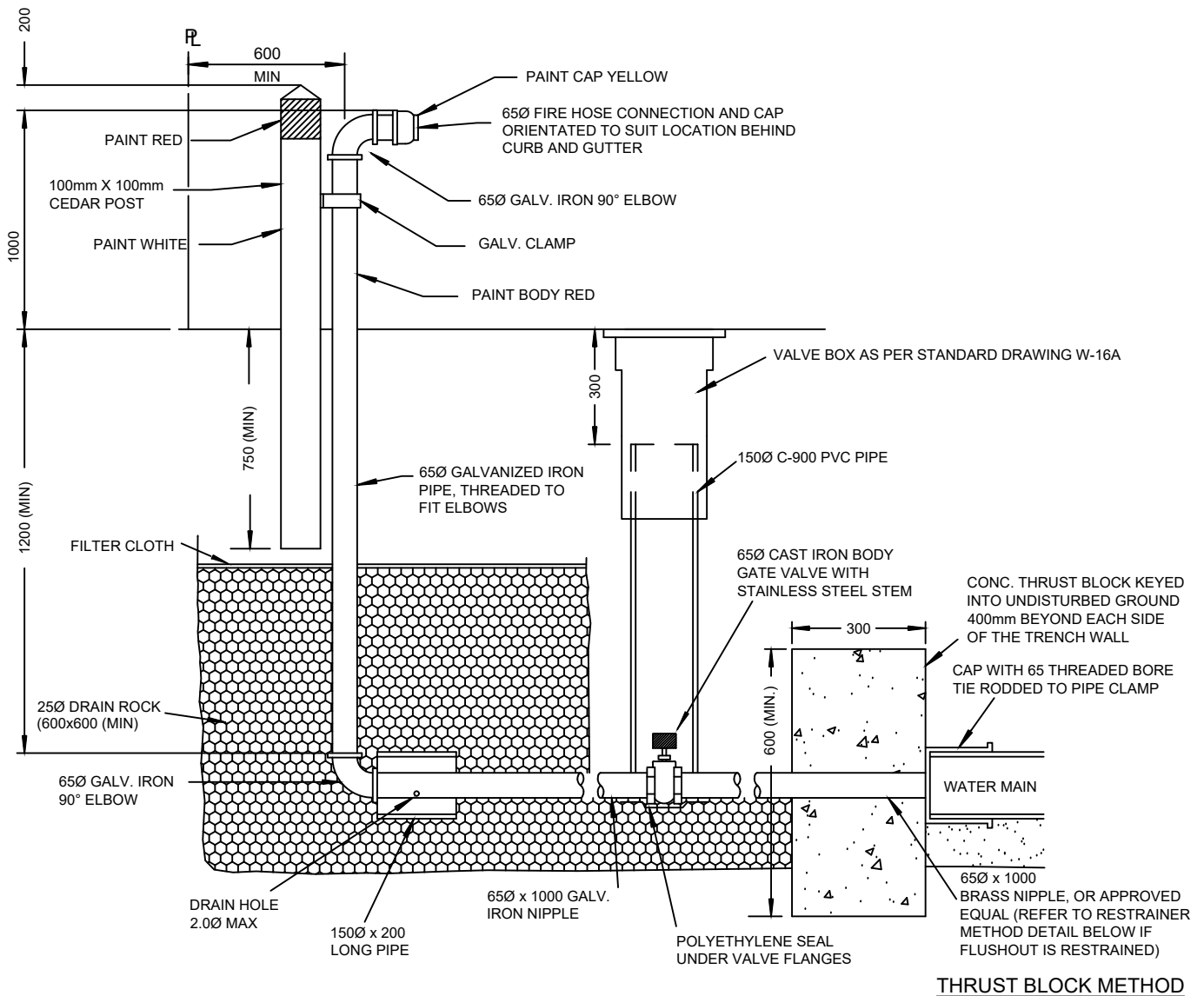
NOTES:

1. THIS DRAWING MUST BE IN ACCORDANCE WITH SECTION 5.0 OF THE MANUAL OF ENGINEERING STANDARDS AND SPECIFICATIONS, LATEST EDITION.
2. ONLY PRODUCTS LISTED IN THE CITY OF NANAIMO APPROVED PRODUCTS LIST WILL BE ACCEPTED FOR INSTALLATION.
3. NOMINAL TRENCH WIDTH FOR SERVICE CONNECTION TO BE 600mm.
4. TRACER WIRE AS PER SECTION 5.30.1
5. ALL DIMENSIONS ARE MILLIMETERS UNLESS NOTED OTHERWISE.



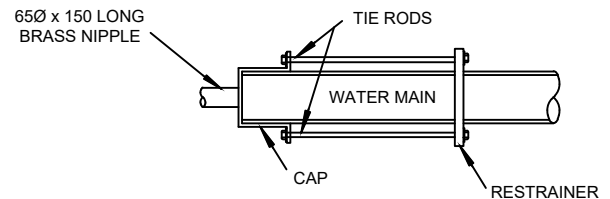
NOTES:

1. THIS DRAWING SHALL BE USED IN ACCORDANCE WITH SECTION 5.0 OF THE MANUAL OF ENGINEERING STANDARDS AND SPECIFICATIONS, LATEST EDITION.
2. ONLY PRODUCTS LISTED IN THE CITY OF NANAIMO APPROVED PRODUCTS LIST WILL BE ACCEPTED FOR INSTALLATION.
3. NOMINAL TRENCH WIDTH FOR SERVICE CONNECTION TO BE 600mm.
4. WHEN SERVICE BOX IS WITHIN A CONCRETE DRIVEWAY, CONCRETE ADJACENT TO THE SERVICE BOX MUST BE A MINIMUM OF 150mm THICK FOR A MINIMUM DISTANCE OF 150mm AROUND THE OUTSIDE EDGES OF THE SERVICE BOX.
5. WHEN SERVICE BOX IS INTALLED IN LANDSCAPE AREAS, BOX TO BE SET 25mm ABOVE FINISHED GRADE.
6. ALL DIMENSIONS ARE MILLIMETERS UNLESS NOTED OTHERWISE.



NOTES:

1. NOMINAL TRENCH WIDTH FOR FLUSHOUT IS 600mm VALVE BOX NOT TO CONFLICT WITH CURB AND GUTTER CURB AND GUTTER NOT SHOWN.
2. 150Ø x 200 PIPE TO BE PLACED AROUND PIPE AT DRAIN HOLE TO PREVENT EROSION.
3. ABOVE GROUND FLUSHOUT TO BE RESTRAINED AS PER THRUST BLOCK OR RESTRAINER METHOD AT THE DISCRETION OF THE ENGINEER.
4. WHEN RESTRAINER METHOD IS USED, RESTRAIN AS PER MANUFACTURER'S RECOMMENDATIONS.
5. ONLY PRODUCTS APPROVED BY CITY ENGINEER AND LISTED IN THE CITY OF NANAIMO APPROVED PRODUCTS LIST WILL BE ACCEPTED FOR INSTALLATION.
6. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE SHOWN.

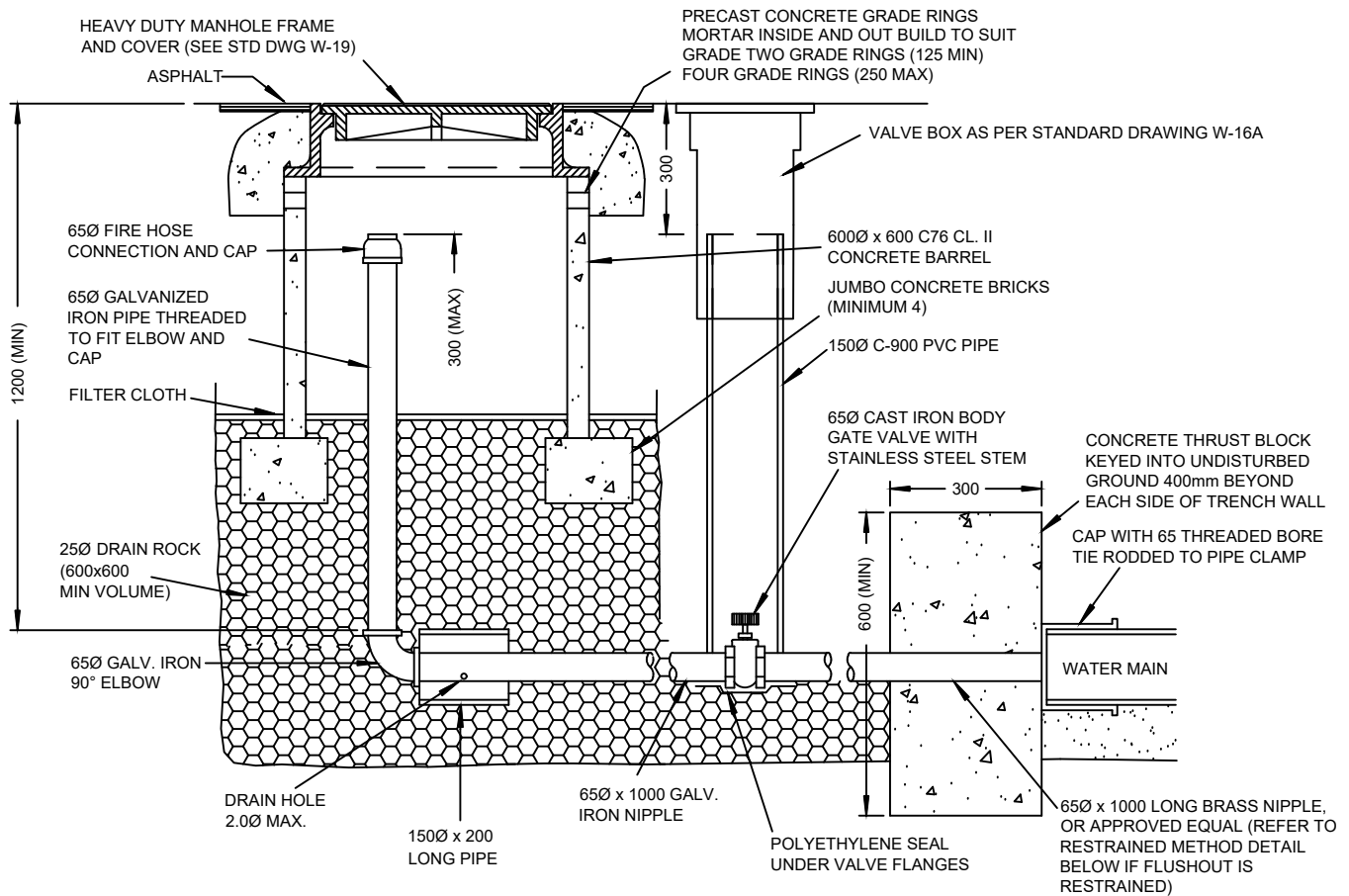


RESTRAINER METHOD

CITY OF NANAIMO
THE HARBOUR CITY

ABOVE GROUND FLUSHOUT C/W
THRUST BLOCK AND OPTIONAL
RETRAINED METHOD

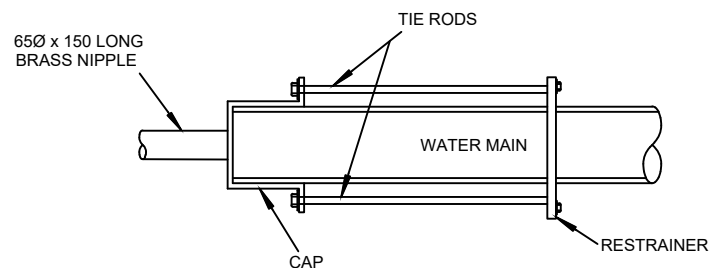
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Created: MAY 2013
Rev Date: JUNE 2026
Dwg No: W-2A



THRUST BLOCK METHOD

NOTES:

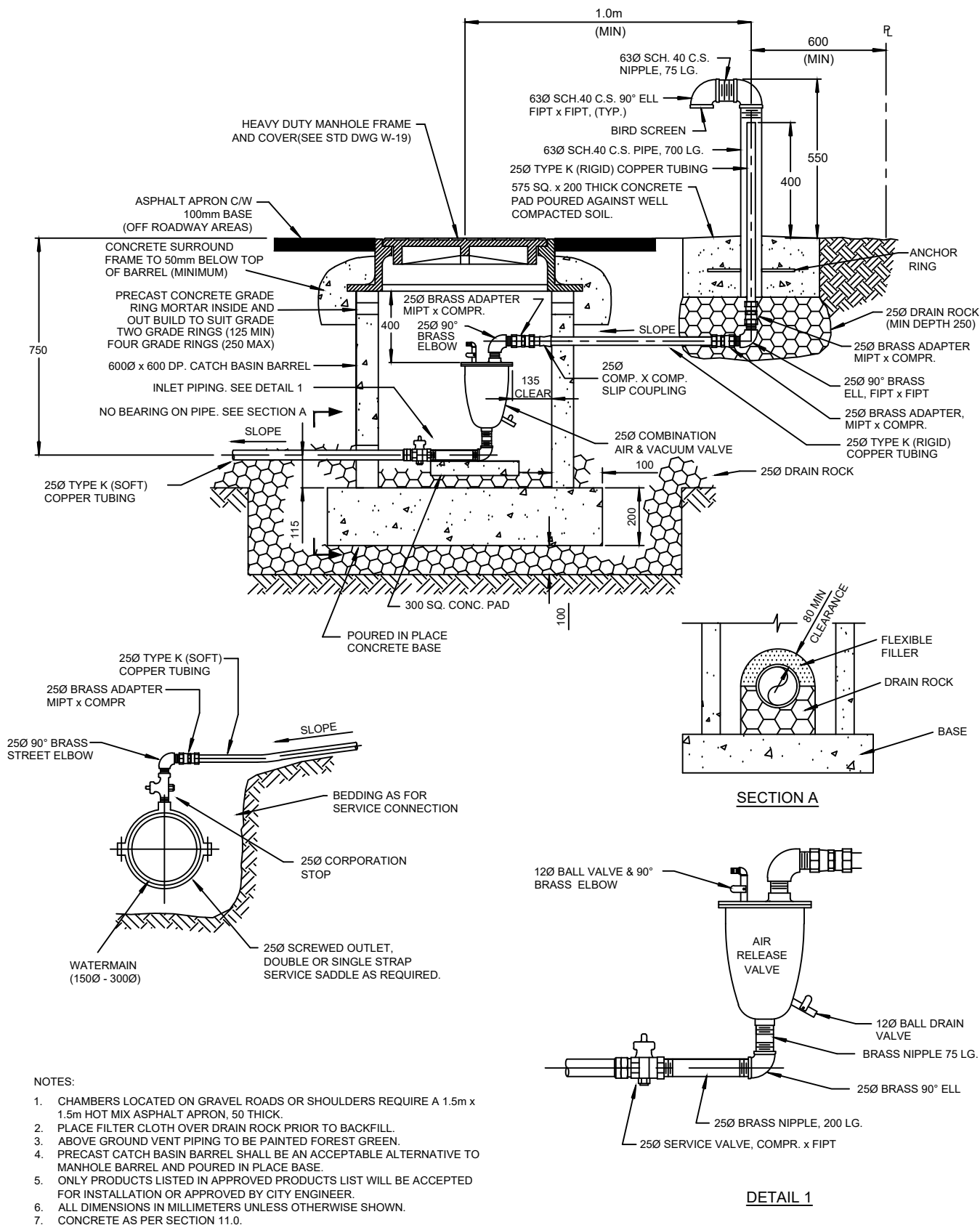
1. NOMINAL TRENCH WIDTH FOR FLUSHOUT IS 600mm VALVE BOX NOT CONFLICT WITH CURB AND GUTTER CURB AND GUTTER NOT SHOWN.
2. LETTERING ON MANHOLE COVER SHALL REFER TO "CITY OF NANAIMO WATERWORKS" LETTERING SHALL BE 25 FLATTENED FACE GOTHIC LETTERING WITH FACE OF LETTERS RAISED TO THE SAME ELEVATION AS THE TOP OF THE RIBS.
3. NOT TO BE USED IN AREAS WHERE WATER TABLE COULD BE ABOVE FIRE HOSE CONNECTION.
4. SURROUNDING GRADE TO DRAIN AWAY FROM COVER.
5. 1500 x 200 PIPE TO BE PLACED AROUND PIPE AT DRAIN HOLE TO PREVENT EROSION.
6. FLUSHOUTS LOCATED ON GRAVEL ROADS OR SHOULDERS REQUIRE A 1.5m X 1.5m HOT MIX ASPHALT APRON, 50mm THICK.
7. BELOW GRADE FLUSHOUT TO BE RESTRAINED AS PER THRUST BLOCK OR RESTRAINER AS DESIGNED BY PROFESSIONAL OF RECORD. CONCRETE AS PER SECTION 11.0.
8. WHEN RESTRAINER METHOD IS USED, RESTRAIN AS PER MANUFACTURER'S RECOMMENDATIONS.
9. ONLY PRODUCTS LISTED IN THE CITY OF NANAIMO APPROVED PRODUCTS LIST WILL BE ACCEPTED FOR INSTALLATION OR APPROVED BY CITY OF ENGINEER.
10. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE SHOWN.

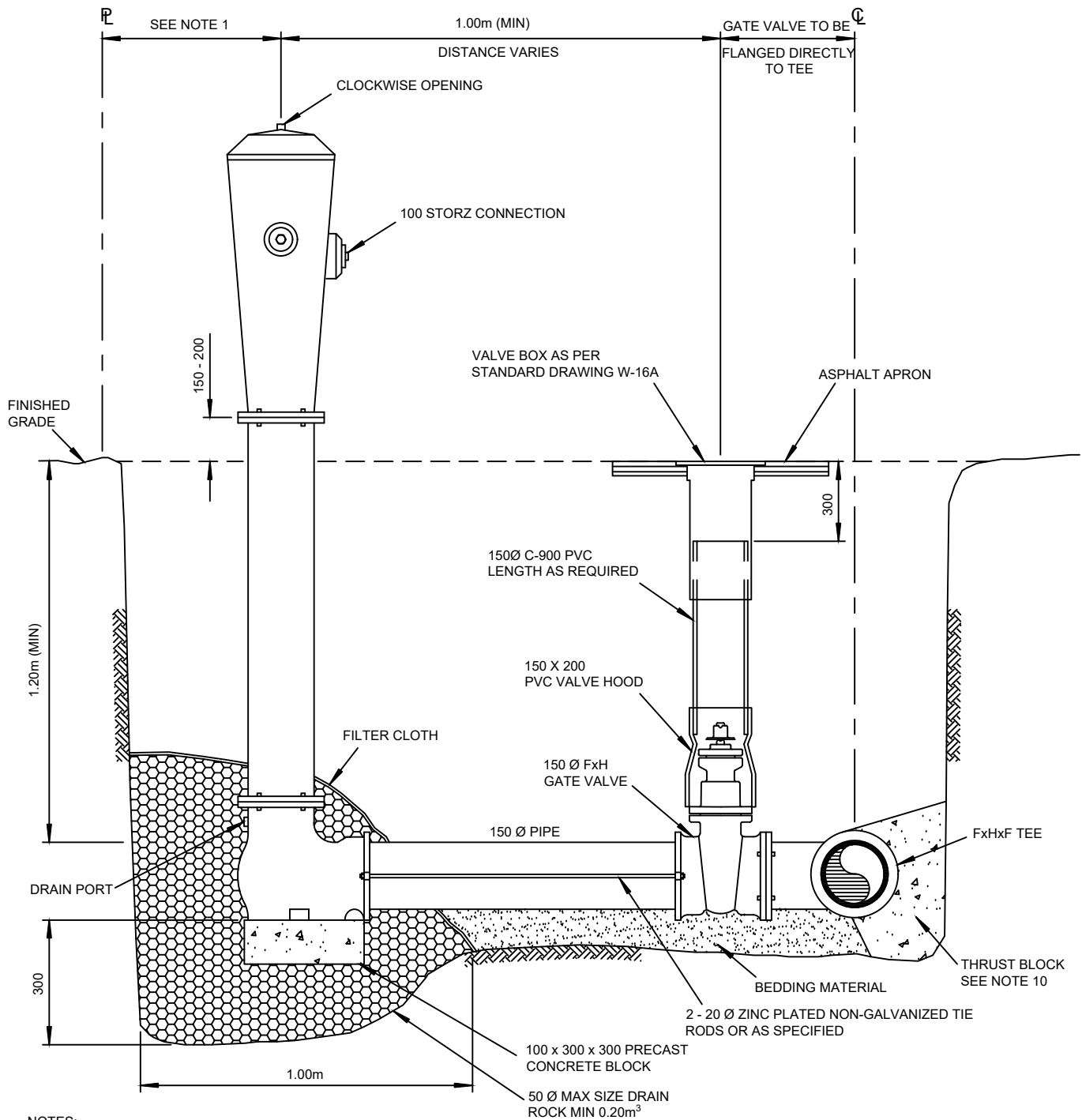


RESTRAINER METHOD

BELOW GROUND FLUSHOUT C/W
THRUST BLOCK AND OPTIONAL
RESTRAINER METHOD

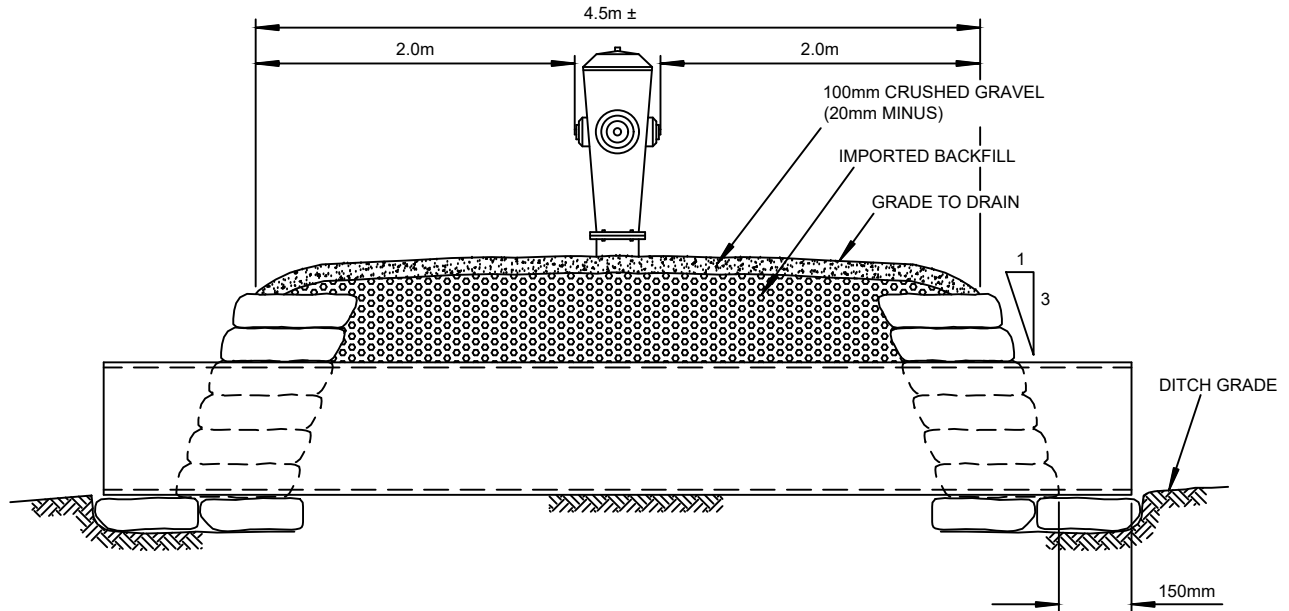
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Rev Date: JUNE 2026
Dwg No: W-2B



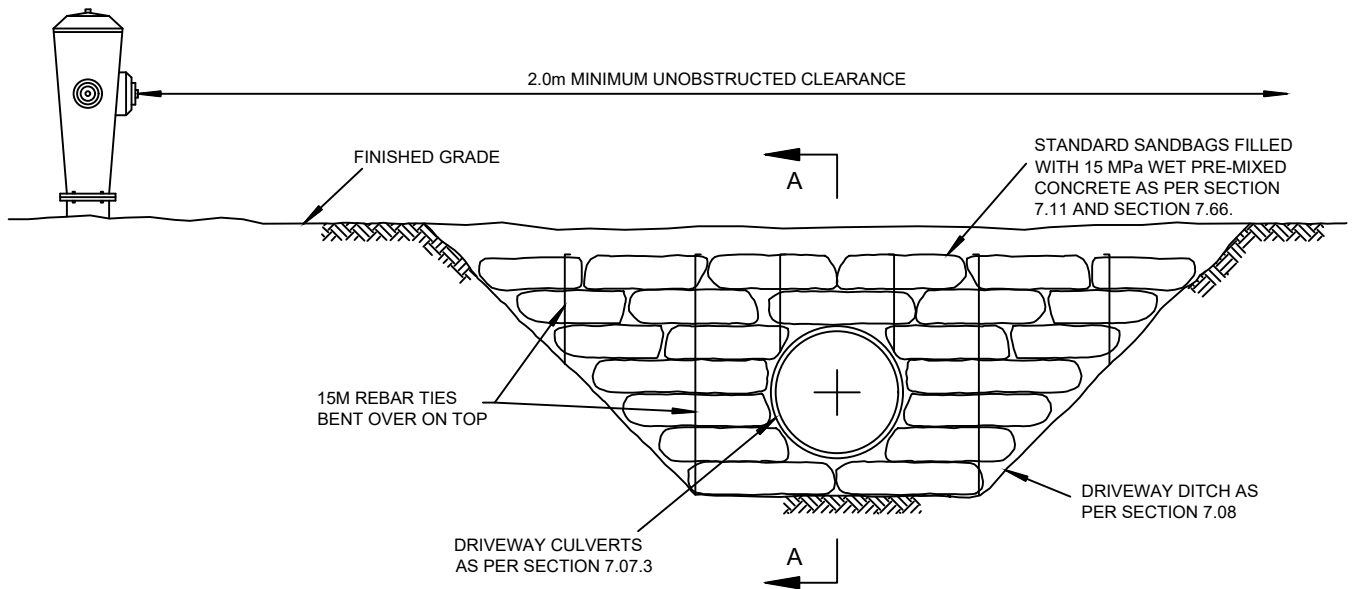


NOTES:

1. FOR HYDRANT LOCATIONS REFER TO DESIGN DRAWINGS. THE PROFESSIONAL OF RECORD MUST CONSIDER THE MINIMUM OFFSETS IN SECTION 5.07.6.
2. HOSE AND PUMPER NOZZLE MUST FACE FIRE TRUCK ACCESS.
3. HYDRANT FLANGES SHALL BE SET 150 - 200mm ABOVE A POINT 2% UP FROM THE TOP OF THE CURB OR FROM THE TOP OF THE EDGE OF THE ASPHALT WHERE THERE IS NO CURB UNLESS OTHERWISE DIRECTED BY THE CITY ENGINEER.
4. VALVE BOXES LOCATED OUTSIDE PAVED AREAS, AS PER STANDARD DRAWING W-9.
5. FOR VALVE NUT EXTENSION REQUIREMENTS REFER TO STANDARD DRAWING W-16.
6. ONLY PRODUCTS LISTED IN THE CITY CITY OF NANAIMO APPROVED PRODUCTS LIST WILL BE ACCEPTED FOR INSTALLATION OR APPROVED BY CITY ENGINEER.
7. OUT OF SERVICE HYDRANTS SHALL BE BAGGED AS PER SECTION 5.52.2(h).
8. ALL DIMENSIONS ARE MILLIMETERS UNLESS NOTED OTHERWISE.
9. CONCRETE AS PER SECTION 11.0.
10. FOR THRUST BLOCK ON WATERMAIN, REFER TO DESIGN CRITERIA IN SECTION 5.09 AND STANDARD DRAWING W-8.



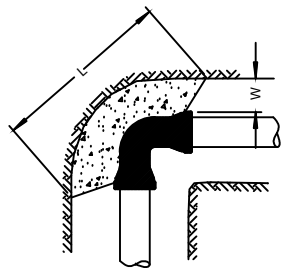
SECTION A-A



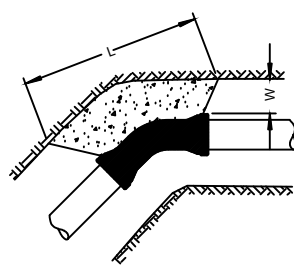
ELEVATION

NOTES:

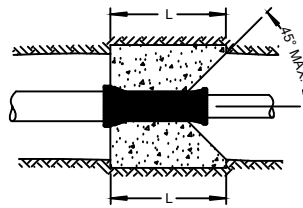
1. IF THE HORIZONTAL DIRECTION OF FLOW AT CULVERT INLETS AND OUTLETS EXCEEDS 30°, THE THE SANDBAG BULKHEADS REQUIRE CURVED WING WALLS TO FUNNEL THE FLOW.
2. ONLY PRODUCTS LISTED IN THE CITY OF NANAIMO APPROVED PRODUCTS LIST WILL BE ACCEPTED FOR INSTALLATION OR APPROVED BY CITY ENGINEER.



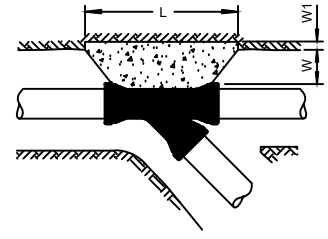
HORIZONTAL 90° BEND



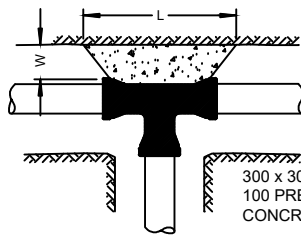
HORIZONTAL 45° BEND



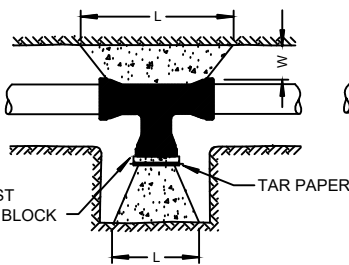
REDUCER



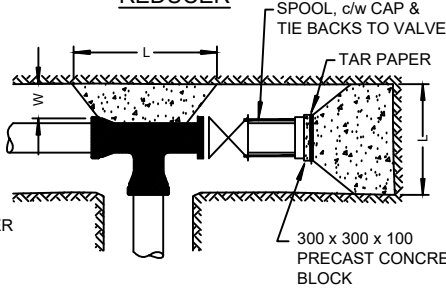
WYE



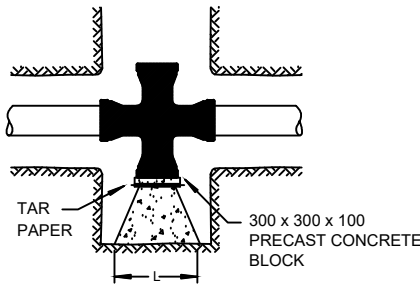
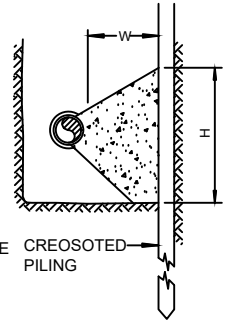
TEE



TEE WITH PLUG



TEE WITH VALVE

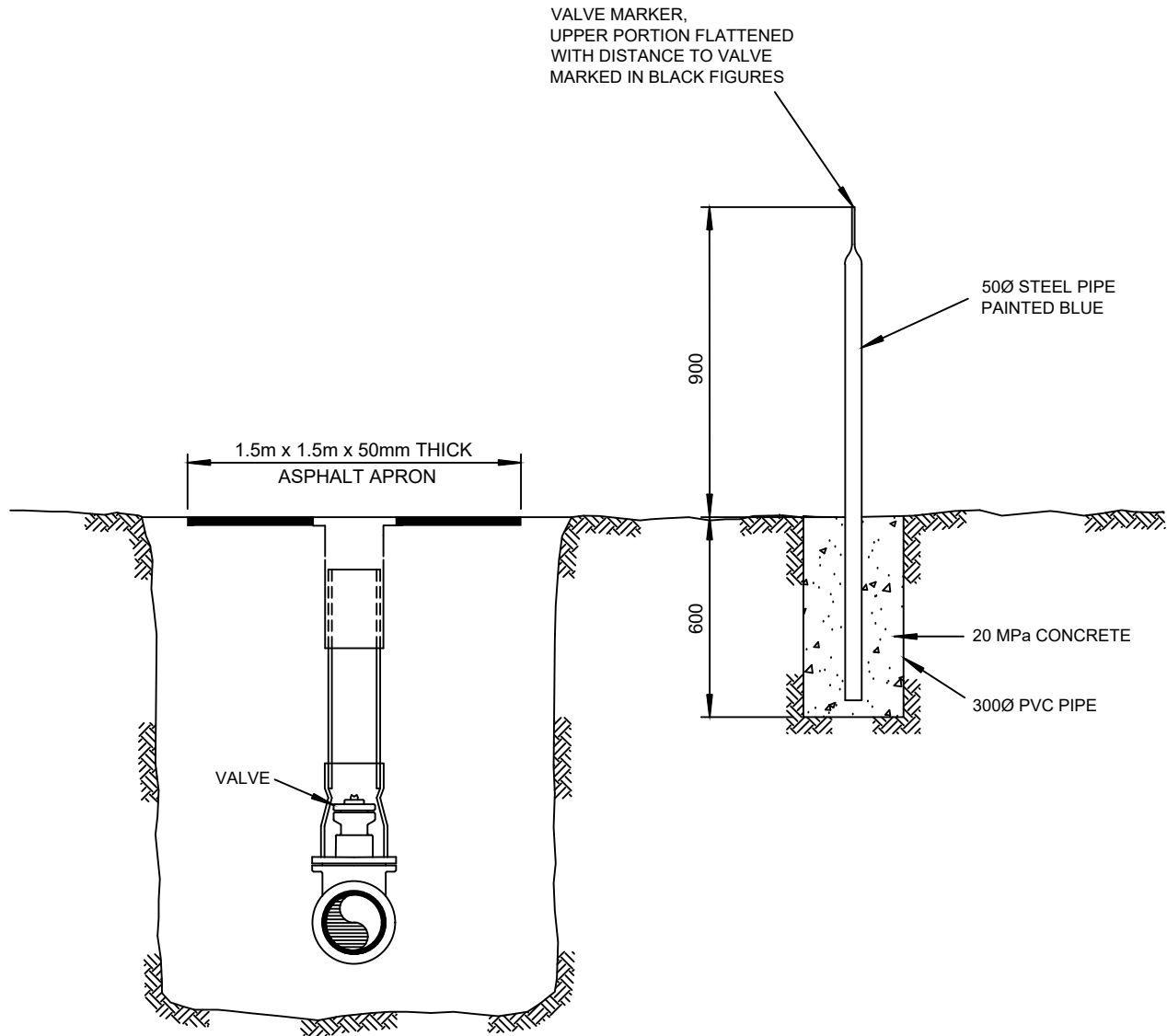


CROSS WITH PLUG

NOTES:

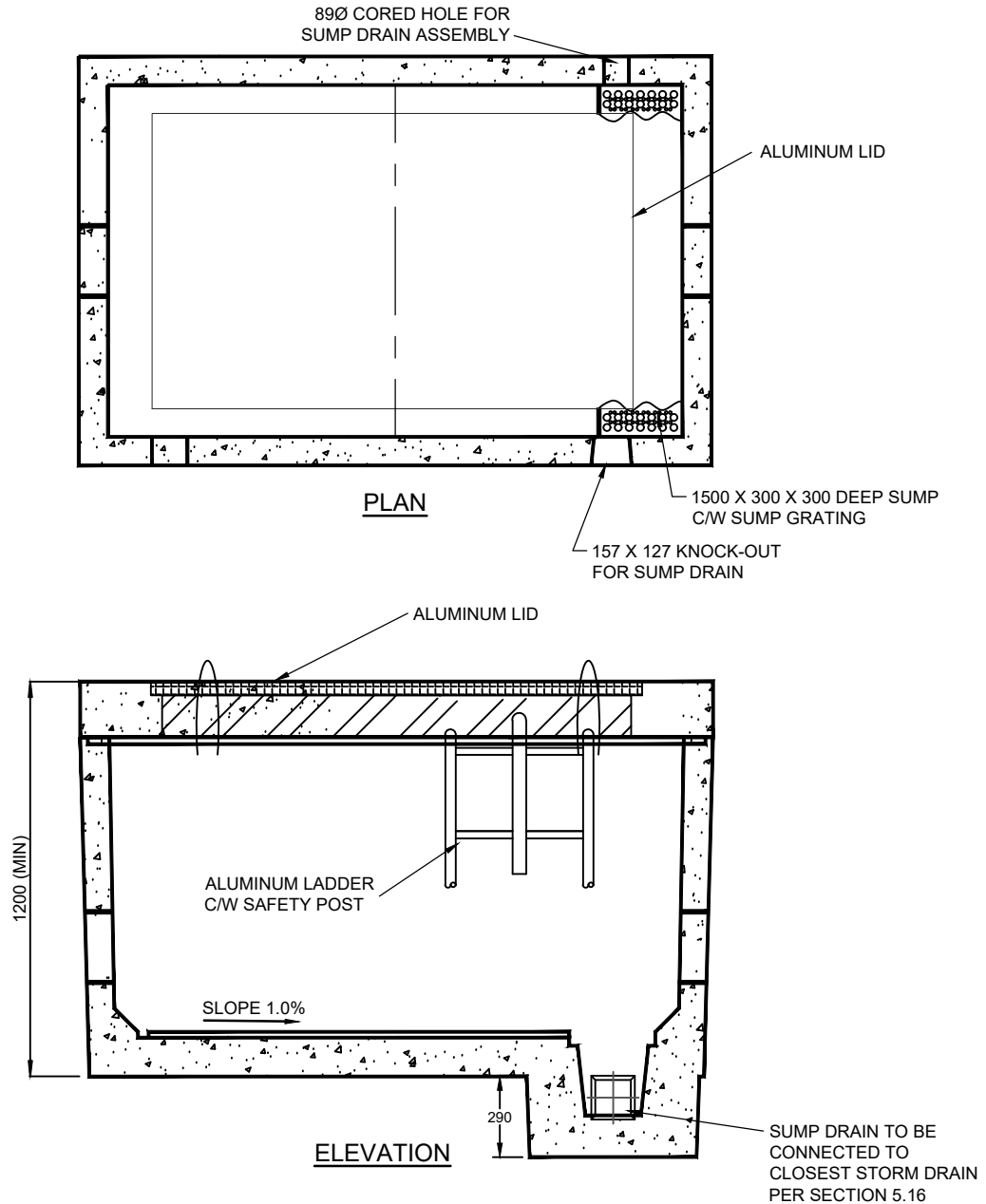
1. ALL DIMENSIONS ARE IN MILLIMETERS.
2. DIMENSIONS APPLY TO THE LARGER DIAMETER END OF THE FITTING.
3. CONCRETE AS PER SECTION 11.0.
4. CONCRETE MINIMUM COMPRESSIVE STRENGTH SHALL BE 20MPa @ 28DAYS.
5. WHERE GROUND CANNOT BE EXCAVATED TO FREE STANDING UNDISTURBED SOIL, SMALL PLANK SHEET PILING SHALL BE DRIVEN TO PROVIDE UNDISTURBED THRUST AREA. PILING TO BE DRIVEN PRIOR TO EXCAVATING FOR THRUST BLOCK. PILING SHOULD BE USED ONLY BELOW THE PERMANENT WATER TABLE.
6. REFER TO DESIGN CRITERIA IN SECTION 5.09.

MINIMUM THRUST AREAS FOR FITTINGS AT 1034 kPa PRESSURE AND FOR SOILS WITH MIN. BEARING OF 96kPa (NOT TO BE USED FOR SOFT CLAY, MUCK, PEAT, etc.)										
TYPE OF FITTING	FITTING SIZE	OUTSIDE OF FITTING TO BEARING FACE	LENGTH	HEIGHT	TYPE OF FITTING	FITTING SIZE	OUTSIDE OF FITTING TO BEARING FACE	RECESS IN TRENCH	LENGTH	HEIGHT
	D	W	L	H		D	W	W	L	H
90° BEND	150	300	900	450	CROSS	150	300		600	450
	200	350	1050	600		200	350		750	600
	250	375	1450	750		250	375		1000	750
	300	400	1650	900		300	400		1200	900
45° BEND	150	300	450	450	45° WYE	150	300	300	450	450
	200	350	600	600		200	350	400	600	600
	250	375	750	750		250	375	500	750	750
	300	400	900	900		300	400	600	900	900
11 1/4° BEND 22 1/2° BEND	150	300	450	225	* REDUCER	150	300	150	450	450
	200	350	600	300		200	350	200	600	600
	250	375	835	450		250	375	250	750	750
	300	400	900	450		300	400	300	900	900
TEE	150	300	600	450	CAPS AND PLUGS (IF NOT BOLTED)	150	300		450	450
	200	350	750	600		200	350		600	600
	250	375	1000	750		250	375		750	750
	300	400	1200	900		300	400		900	900



NOTES:

1. FOR USE ONLY WHERE VALVE BOXES ARE LOCATED OUTSIDE THE PORTION OF A STREET.
2. THE VALVE MARKER SHALL BE LOCATED ON SITE BY THE PROFESSIONAL OF RECORD, WITH THE FLATTENED END AND MARKED DISTANCE FACING THE VALVE BOX.
3. VALVE BOXES IN UNPAVED AREAS REQUIRE A 1.5m x 1.5m HOTMIX ASPHALT APRON, 50mm THICK.
4. FOR VALVE NUT EXTENSION REQUIREMENTS REFER TO STANDARD DRAWING NO. W-16.
5. ALL DIMENSIONS IN MILLIMETERS UNLESS OTHERWISE SHOWN.
6. CONCRETE AS PER SECTION 11.0.



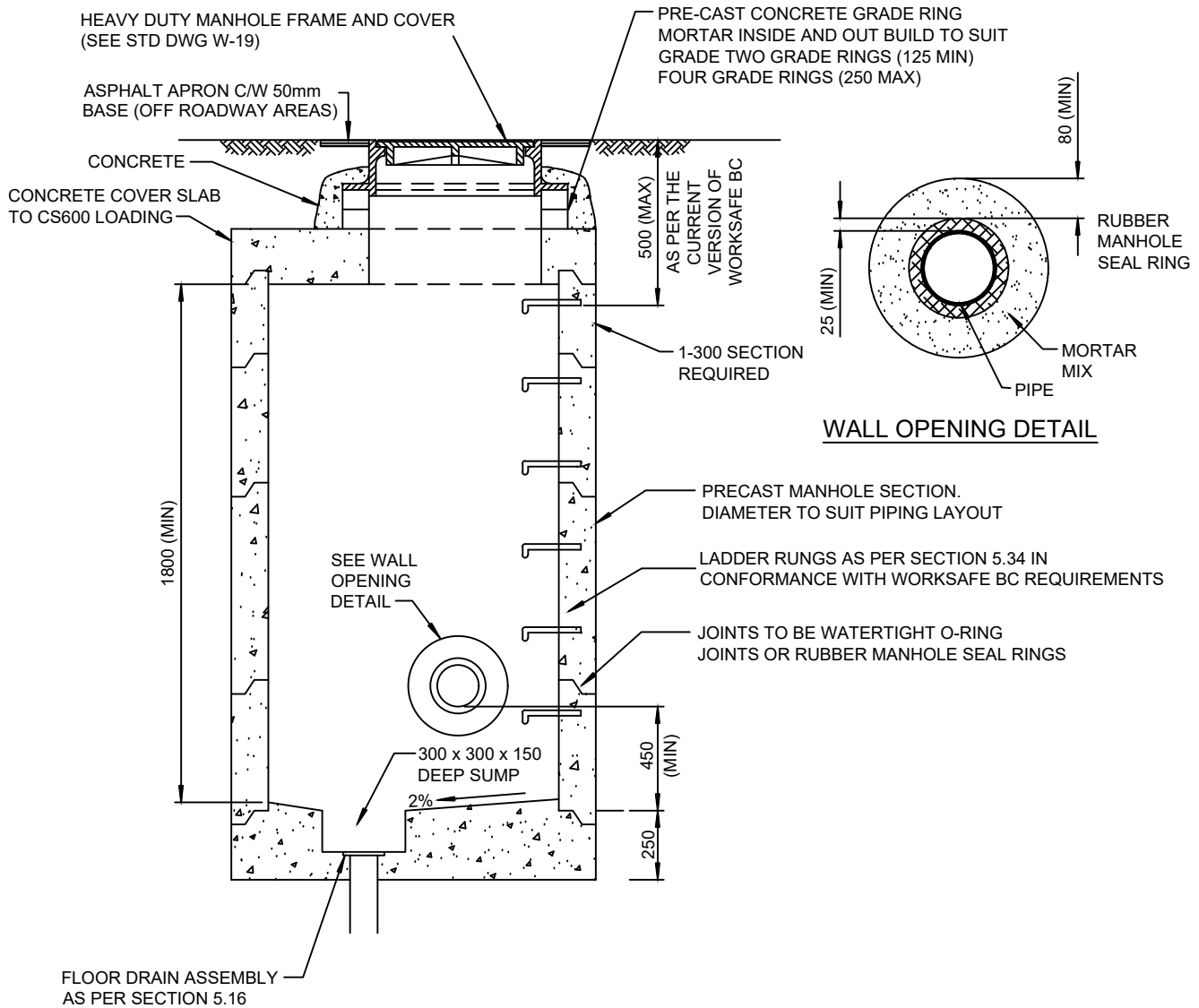
NOTES:

1. THE DESIGN IS DONE BY A PROFESSIONAL OF RECORD WHO CAN USE THIS STANDARD DRAWING ONLY AS A GUIDE. DETAIL DESIGN SHALL CONSIDER EXISTING SITE AND SOIL CONDITIONS AND INCLUDE STEEL REINFORCEMENT.
2. CONCRETE AND REINFORCING STEEL AS PER SECTION 11.0.
3. DESIGN VAULT TO WITHSTAND CS600 STATIC LOADING.
4. SIZE VAULT TO PROVIDE MINIMUM CLEARANCES AS PER SECTION 5.13.
5. CHAMBERS LOCATED ON GRAVEL ROADS OR SHOULDERS REQUIRE A 1.5m X 1.5m HOT MIX ASPHALT PERIMETER APRON, 50mm THICK, AS PER SECTION 5.58.
6. ONLY PRODUCTS LISTED IN THE CITY OF NANAIMO APPROVED PRODUCTS LIST WILL BE ACCEPTED FOR INSTALLATION OR APPROVED BY CITY ENGINEER.
7. ALL DIMENSIONS IN MILLIMETERS UNLESS OTHERWISE SHOWN.
8. MINIMUM 200mm CLEAR DISTANCE FROM FLANGE OR BOLTED CONNECTION TO THE INSIDE WALL.
9. A DOUBLE CHECK VALVE ASSEMBLY (DCVA) BACKFLOW PREVENTION ASSEMBLY SHALL BE A SPECIAL CASE. THE PRECAST VAULT SHALL BE A MINIMUM OF 2000mm L X 1200mm W. DEPENDENT UPON THE DCVA MANUFACTURED CLEARANCE AND ORIENTATION A LARGER VAULT MAY BE REQUIRED.
10. SUBJECT TO APPROVAL BY THE CITY ENGINEER A METER AND BACKFLOW PREVENTION ASSEMBLY MAY BE INSTALLED IN A MECHANICAL ROOM.
11. ALUMINUM ACCESS LADDER MUST MEET THE WORKSAFE BC REQUIREMENTS FOR FIXED LADDERS.

MINIMUM INTERNAL DIMENSION FOR THE PRECAST VAULT METER CHAMBER

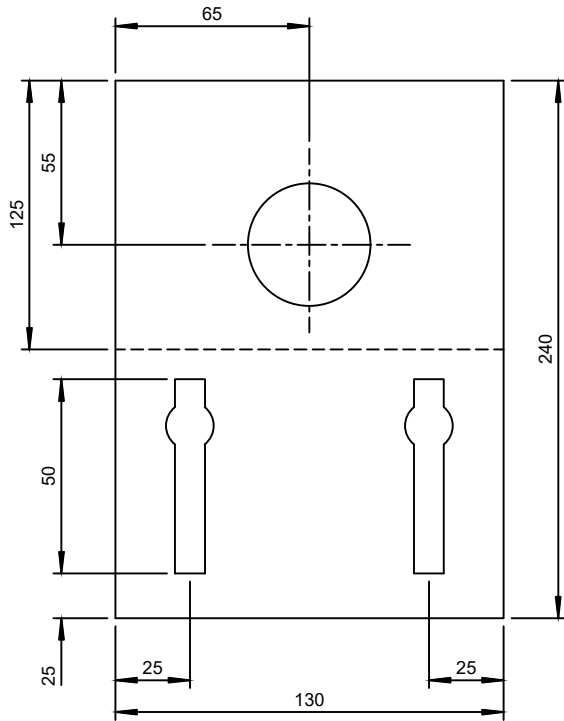
DOMESTIC/ FIRE METER	LENGTH	WIDTH
100-150Ø	2000	1200
150-250Ø	2600	1200
DCVA	SEE NOTE 9	

*FIRE RATED METERS TYPICALLY REQUIRE LARGER CHAMBERS.

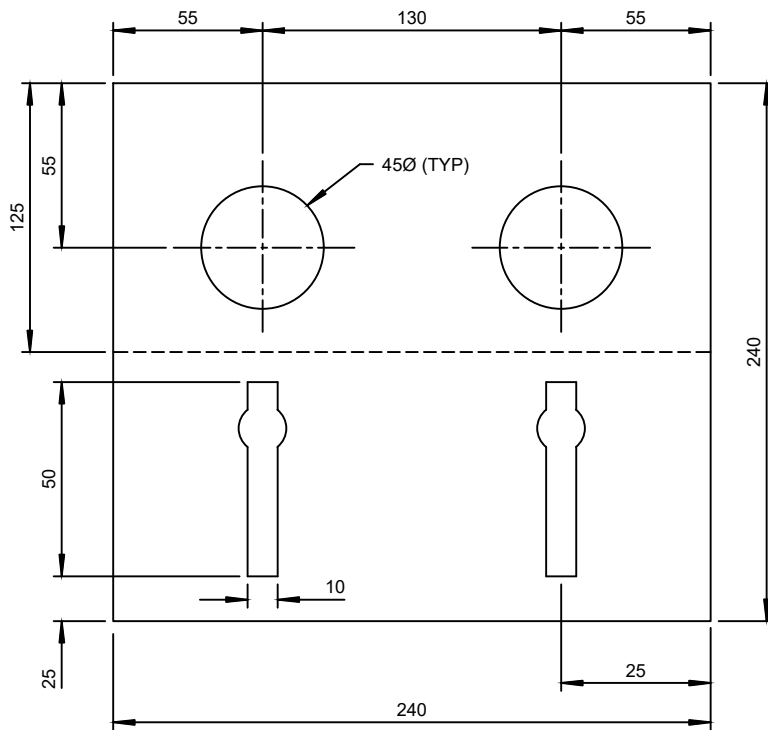
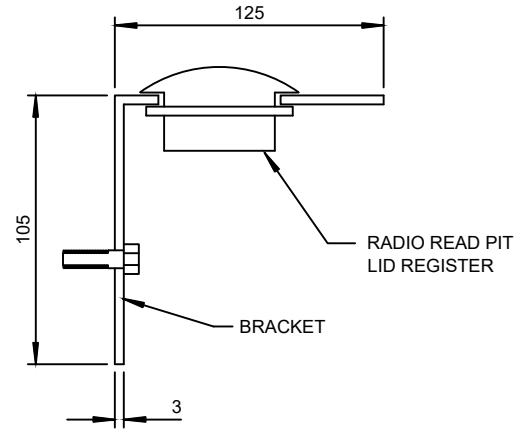


NOTES:

1. CHAMBERS LOCATED IN UNPAVED AREAS REQUIRE 1.5m X 1.5m GRAVEL OR PAVED SURFACE AROUND COVER. PROJECT COVER 0mm IN PAVEMENT OR 25mm IN UNPAVED AREAS.
2. CHAMBER MANHOLES LOCATED IN UNPAVED AREAS REQUIRE A 1.5m X 1.5m, 50mm THICK HOT MIX ASPHALT APRON.
3. ONLY PRODUCTS LISTED IN THE CITY OF NANAIMO APPROVED PRODUCTS LIST WILL BE ACCEPTED FOR INSTALLATION OR APPROVED BY CITY ENGINEER.
4. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE SHOWN.
5. MINIMUM 200mm CLEAR DISTANCE FROM FLANGE OR BOLTED CONNECTION TO THE INSIDE WALL.
6. WATERTIGHT MANHOLE FRAME AND COVER WHEN SPECIFICALLY APPROVED BY THE PROFESSIONAL OF RECORD.
7. CONCRETE AS PER SECTION 11.0.



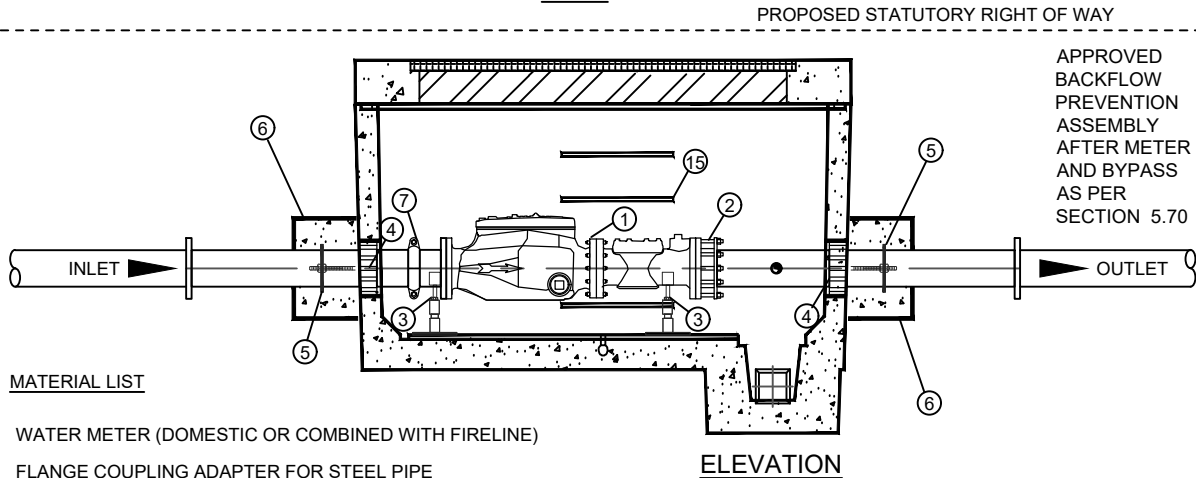
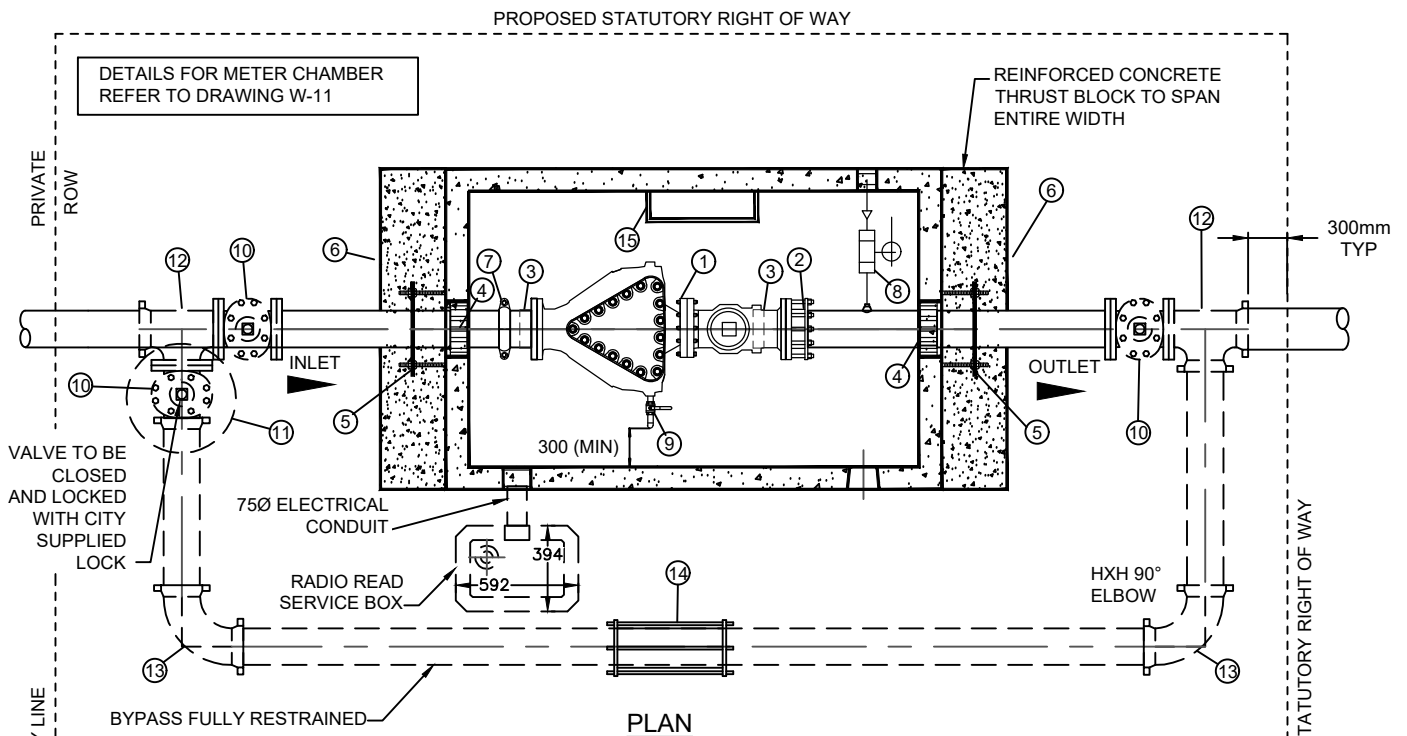
SINGLE METER BRACKET



DOUBLE METER BRACKET

NOTES:

1. BRACKETS TO BE CONSTRUCTED OUT OF 3mm ALUMINUM PLATE.
2. BRACKETS TO BE MOUNTED WITH TWO 6mm STAINLESS STEEL BOLTS WITH LEAD ANCHORS.
3. IN PRECAST MANHOLE METER CHAMBERS THE BRACKET SHALL BE MOUNTED BETWEEN THE FIRST AND SECOND LADDER RUNG.
4. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE SHOWN.
5. ONLY PRODUCTS LISTED IN THE CITY OF NANAIMO APPROVED PRODUCTS LIST WILL BE ACCEPTED FOR INSTALLATION.



MATERIAL LIST

- ① WATER METER (DOMESTIC OR COMBINED WITH FIRELINE)
- ② FLANGE COUPLING ADAPTER FOR STEEL PIPE
- ③ GALVANIZED STEEL ADJUSTABLE PIPE SUPPORT
- ④ PIPE SEAL ASSEMBLY
- ⑤ THRUST-SEAL PLATE C/W BOLTS
- ⑥ REINFORCED CONCRETE THRUST BLOCK TO SPAN ENTIRE WIDTH
- ⑦ COUPLING
- ⑧ SUMP JET (OPTIONAL)
- ⑨ STRAINER DRAIN ASSEMBLY
- ⑩ GATE VALVE
- ⑪ VALVE BOX C/W LOCKING LID
- ⑫ TEE
- ⑬ 90° ELBOW
- ⑭ COUPLING
- ⑮ LADDER

NOTES:

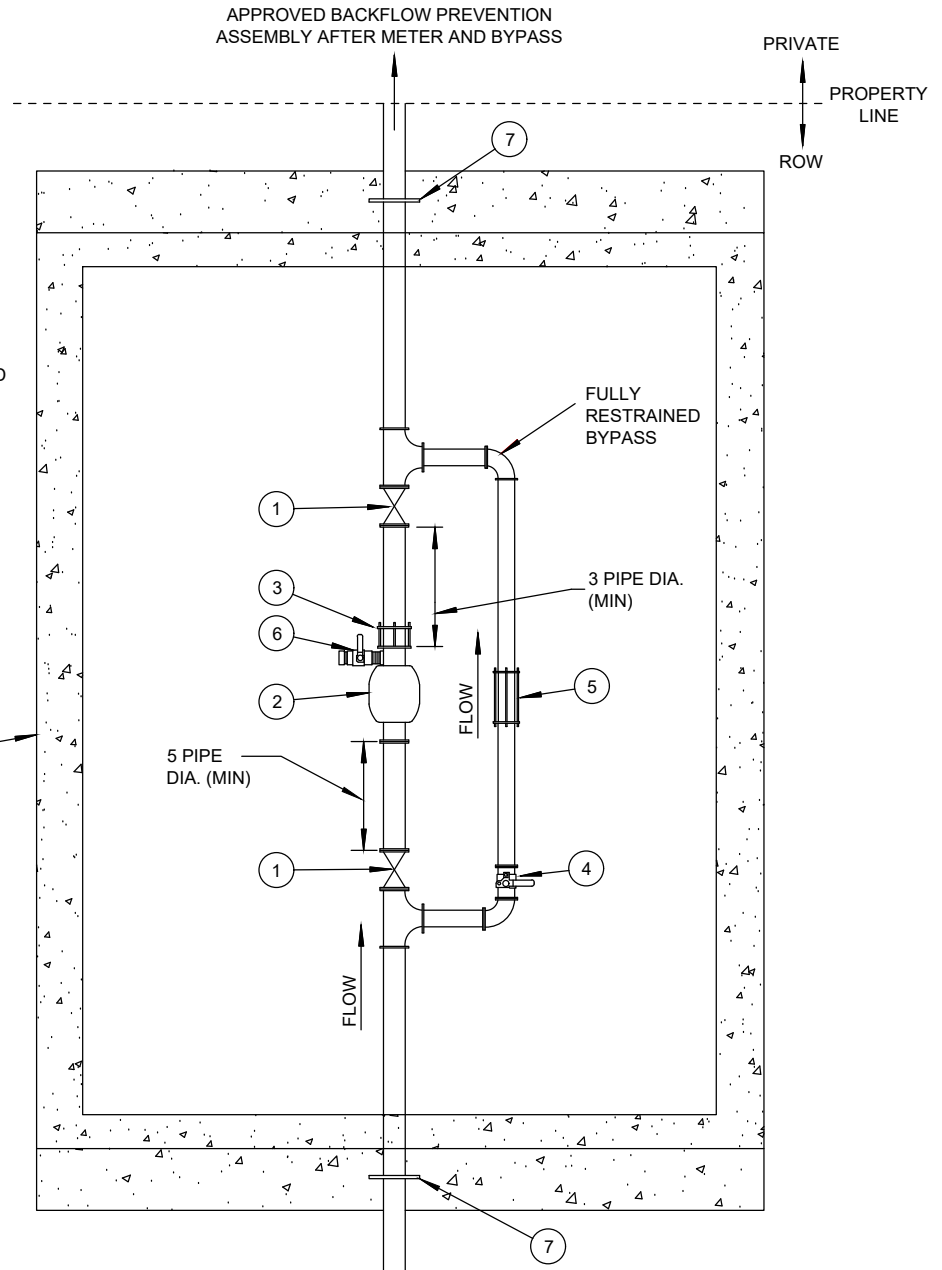
1. THRUST BLOCKING TO BE INSTALLED AS REQUIRED.
2. METER ASSEMBLY TO BE SUPPORTED BY STEEL PIPE SUPPORTS AS REQUIRED.
3. FABRICATED STEEL PIPE AND FITTING TO BE SCHEDULE 40 SANDBLASTED, EPOXY LINED, AND COATED TO AWWA C-210 & ANSI/NSF-61 SPECIFICATION.
4. ONLY PRODUCTS LISTED IN THE CITY OF NANAIMO APPROVED PRODUCTS LIST WILL BE ACCEPTED FOR INSTALLATION OR APPROVED BY CITY ENGINEER. ONLY UL LISTED/FM APPROVED PRODUCTS SHALL BE APPROVED FOR FIRELINE SERVICE.
5. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE SHOWN.
6. PROVIDE APPROVED BACKFLOW PREVENTION ASSEMBLY AFTER THE METER AND BYPASS ACCORDING TO CITY OF NANAIMO CROSS CONNECTION CONTROL BYLAW AND AS PER SECTION 5.70.
7. CONCRETE AS PER SECTION 11.0.

MATERIAL LIST

- 1 GATE VALVE
- 2 WATER METER
- 3 FLANGED COUPLING ADAPTOR
- 4 LOCKING BALL VALVE
- 5 COUPLING
- 6 TEST PORT WITH VALVE (FOR 100Ø METERS OR LARGER)
- 7 THRUST RINGS, c/w REINFORCED CONCRETE THRUST BLOCK TO SPAN ENTIRE WIDTH

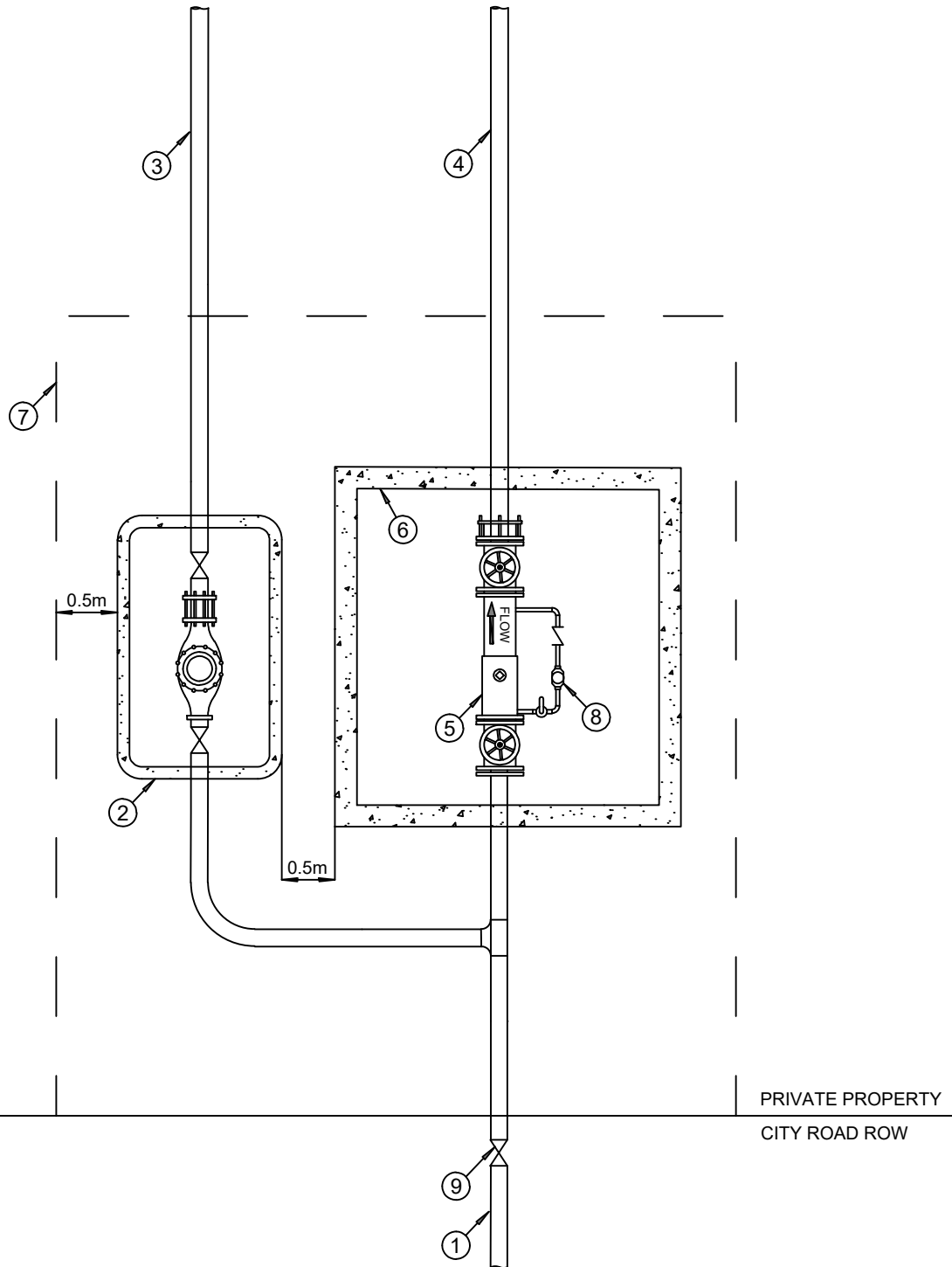
PRECAST VAULT
METER CHAMBER

SEE DRAWING W-11
FOR METER CHAMBER
DETAILS



NOTES:

1. METER ASSEMBLY TO BE SUPPORTED BY STEEL PIPE SUPPORTS AS REQUIRED.
2. THRUST BLOCKING TO BE INSTALLED AS REQUIRED.
3. METER BY-PASS MAY BE INSTALLED OUTSIDE THE CHAMBER. VALVES OUTSIDE THE CHAMBER SHALL BE D.I. GATE VALVES AS PER SECTION 5.24.
4. ONLY PRODUCTS APPROVED BY THE CITY ENGINEER AND LISTED IN THE CITY OF NANAIMO APPROVED PRODUCT LIST WILL BE ACCEPTED FOR INSTALLATION.
5. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE SHOWN.
6. PROVIDE APPROVED BACKFLOW PREVENTION ASSEMBLY AFTER THE METER AND BYPASS ACCORDING TO CITY OF NANAIMO CROSS CONNECTION CONTROL BYLAW.

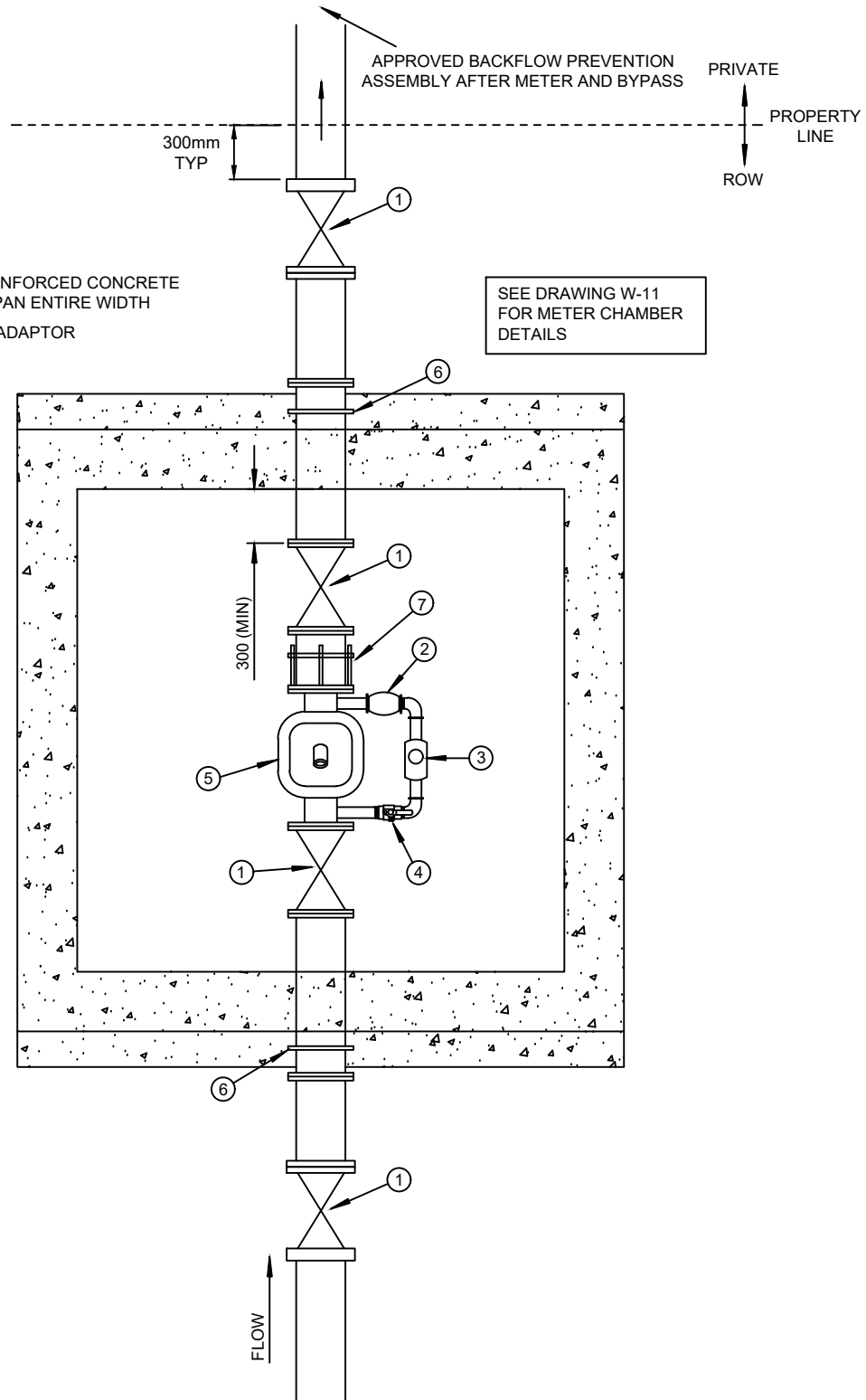


NOTES:

1. WATER SERVICE.
2. WATER METER, SEE DWG W-1 or W-1B.
3. DOMESTIC WATER SERVICE.
4. FIRE WATER SERVICE.
5. DOUBLE CHECK DETECTOR ASSEMBLY.
6. DOUBLE CHECK DETECTOR ASSEMBLY CHAMBER.
7. STATUTORY RIGHT-OF-WAY.
8. RADIO READ WATER METER.
9. CURB STOP, c/w RISER.

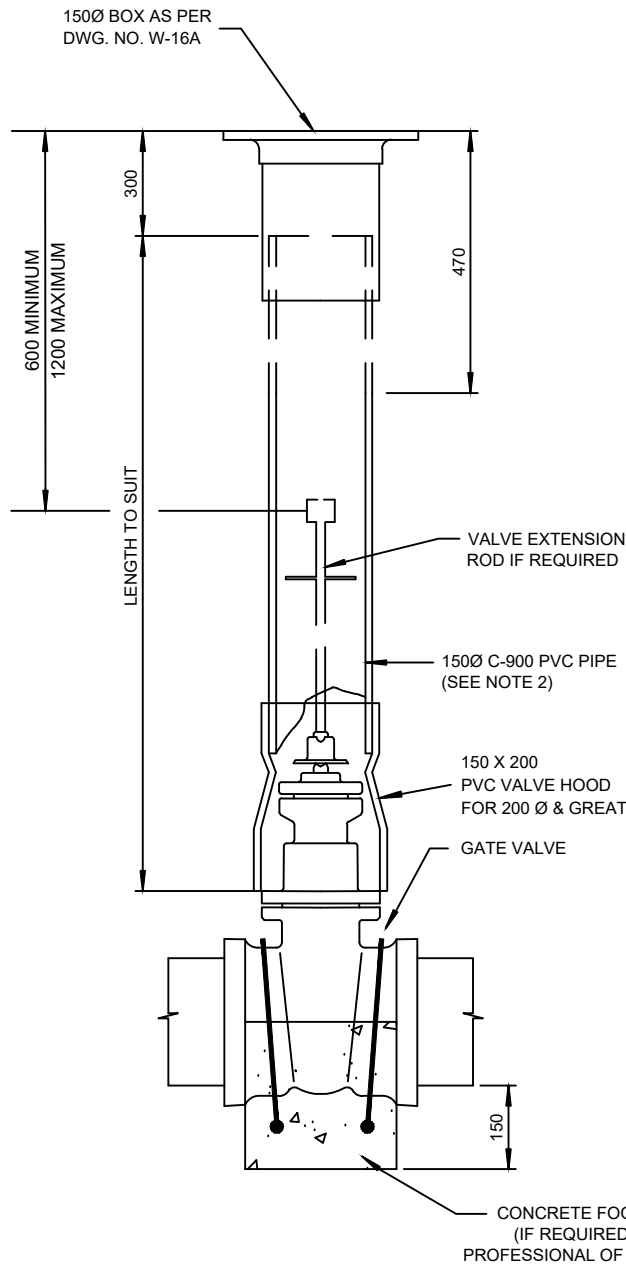
MATERIAL LIST

- ① GATE VALVE (OS&Y)
- ② CHECK VALVE
- ③ BY-PASS METER
- ④ LOCKING BALL VALVE
- ⑤ DETECTOR CHECK
- ⑥ THRUST RING, c/w REINFORCED CONCRETE THRUST BLOCK TO SPAN ENTIRE WIDTH
- ⑦ FLANGED COUPLING ADAPTOR

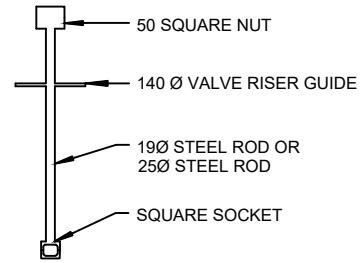


NOTES:

1. METER ASSEMBLY TO BE SUPPORTED BY STEEL PIPE SUPPORTS AS REQUIRED.
2. THRUST BLOCKING TO BE INSTALLED AS REQUIRED. REFER TO DESIGN CRITERIA IN SECTION 5.09 AND STANDARD DRAWING W-8.
3. ONLY PRODUCTS LISTED IN THE CITY OF NANAIMO APPROVED PRODUCT LIST WILL BE ACCEPTED FOR INSTALLATION OR APPROVED BY CITY ENGINEER. ONLY UL/FM LISTED PRODUCTS SHALL BE APPROVED FOR FIRE LINE SERVICE.
4. PROVIDE APPROVED BACKFLOW PREVENTION ASSEMBLY AFTER THE METER AND BYPASS ACCORDING TO CITY OF NANAIMO CROSS CONNECTION CONTROL BYLAW.
5. SUBJECT TO APPROVAL BY THE CITY ENGINEER A METER AND BACKFLOW PREVENTION ASSEMBLY MAY BE INSTALLED IN A MECHANICAL ROOM.

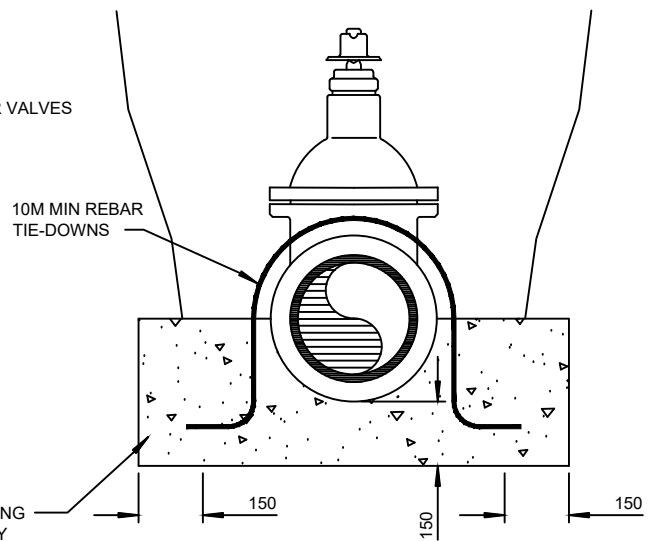


ASSEMBLY WITH CONCRETE FOOTING



VALVE EXTENSION ROD

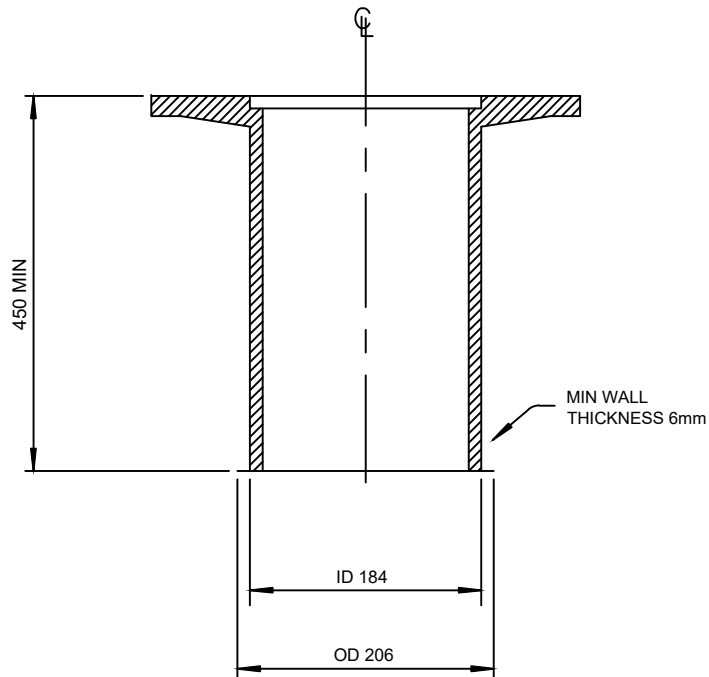
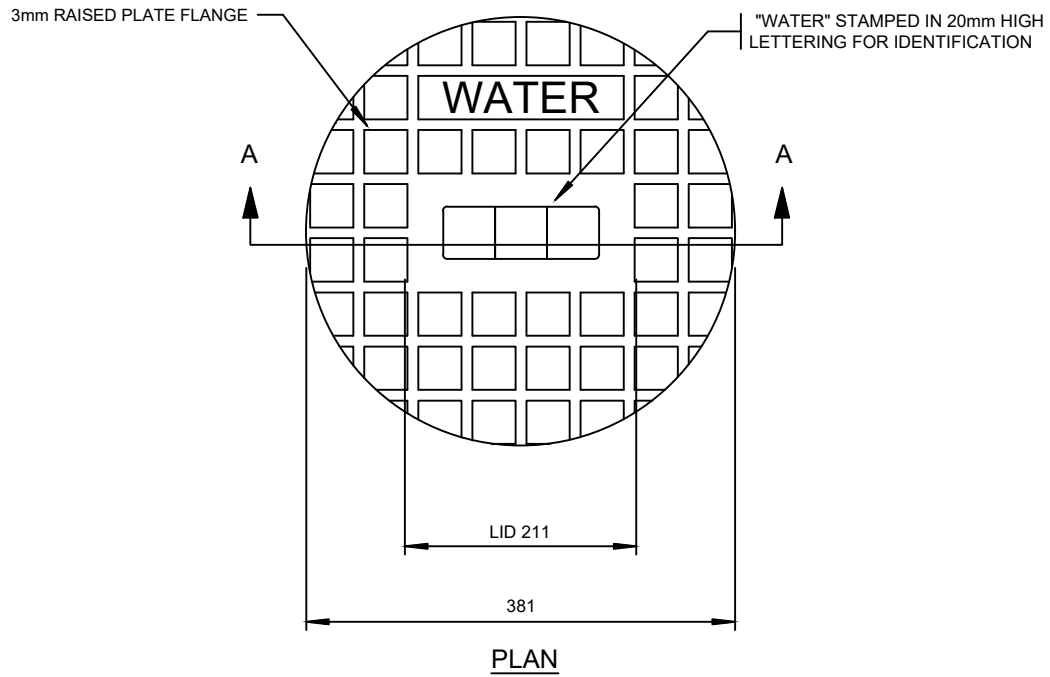
EXTENSION RODS REQUIRED WHEN BURY DEPTH EXCEEDS 1200 FROM TOP OF VALVE TO GROUND LEVEL. TOP OF EXTENSION ROD NUT SHALL BE 600 MINIMUM AND 1200 MAXIMUM TO GROUND LEVEL.



SECTION OF CONCRETE FOOTING

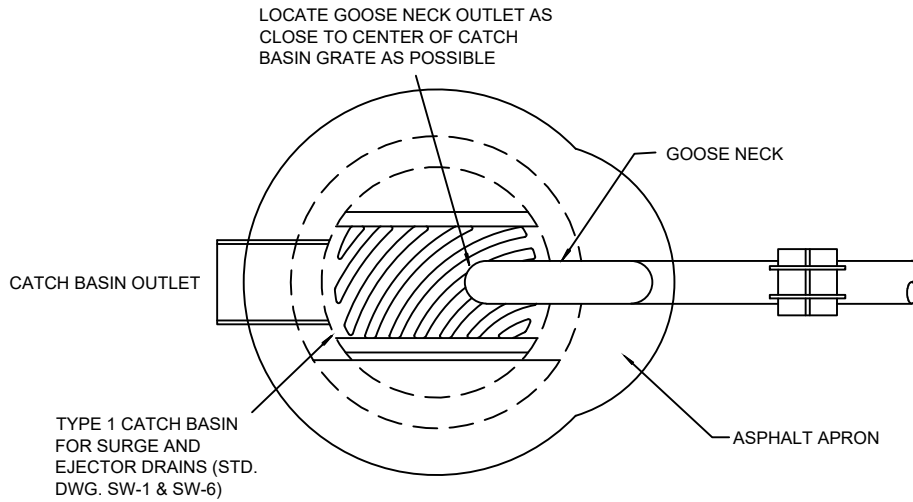
NOTES:

1. VALVE RISER PIPE IN TRAVELED AREAS SHALL BE 150Ø DR-18 PVC AND IN UNTRAVELED AREAS SHALL BE 150Ø DR-35 PVC AT THE DISCRETION OF THE ENGINEER.
2. VALVE BOX AS PER STANDARD DRAWING NO. W-16A.
3. ONLY PRODUCTS LISTED IN THE CITY OF NANAIMO APPROVED PRODUCTS LIST WILL BE ACCEPTED FOR INSTALLATION OR APPROVED BY CITY ENGINEER.
4. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS OTHERWISE SHOWN.
5. NO TIE-DOWNS REQUIRED IF VALVE FLANGED TO RESTRAINED TEE.
6. CONCRETE AS PER SECTION 11.0.

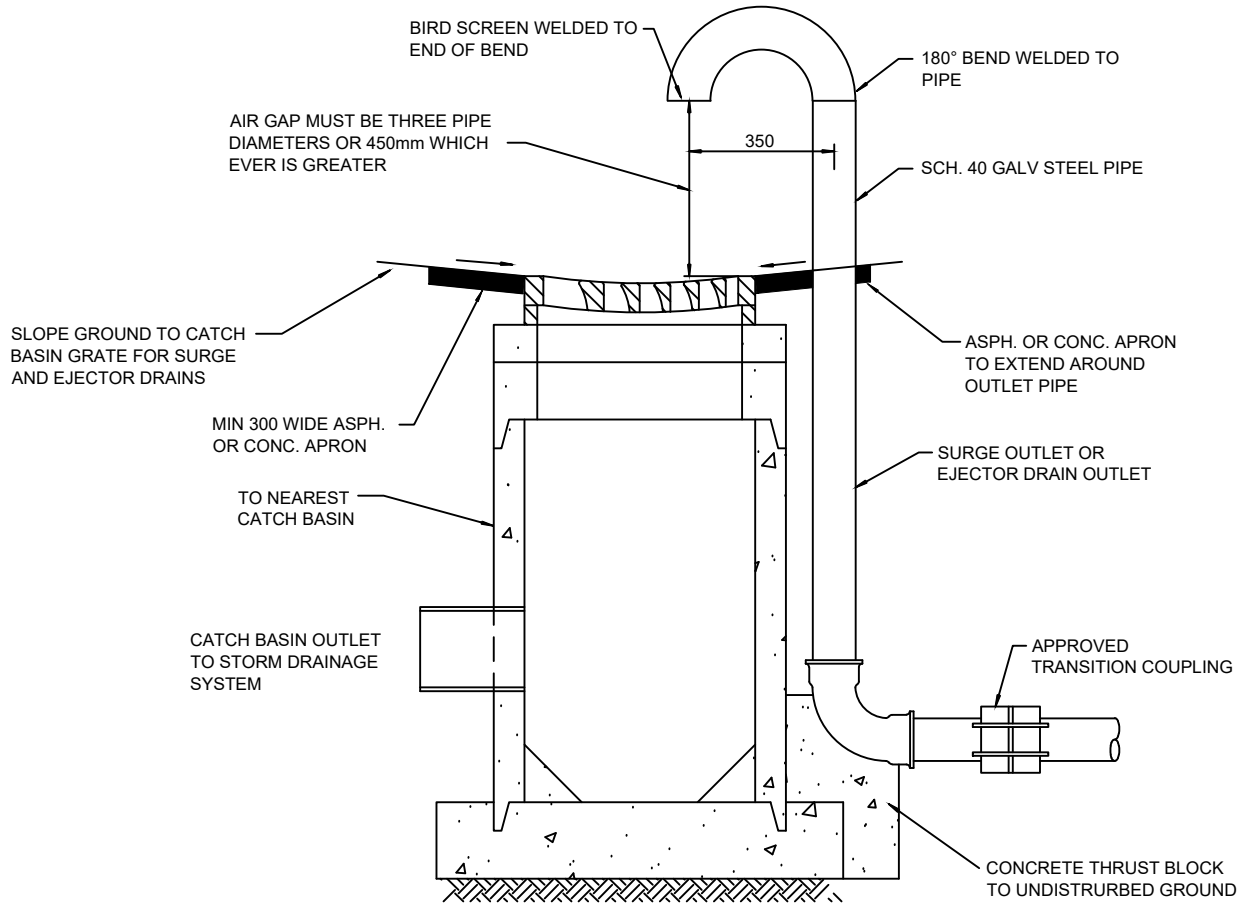


NOTES:

1. FINISH COATING TO BE BITUMINOUS DIP.
2. ONLY PRODUCTS LISTED IN THE CITY OF NANAIMO APPROVED PRODUCT LIST WILL BE ACCEPTED FOR INSTALLATION OR APPROVED BY CITY ENGINEER.
3. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE SHOWN.



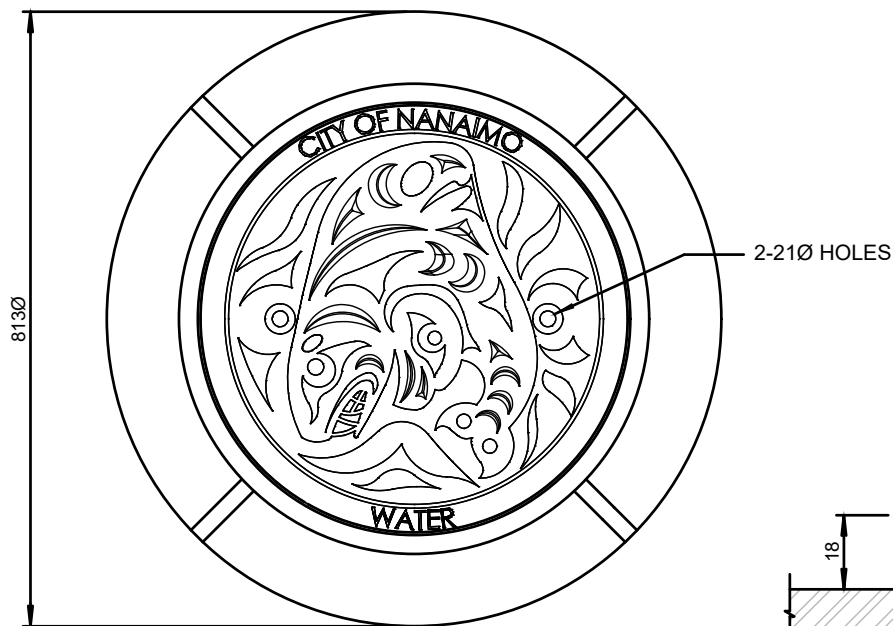
PLAN VIEW



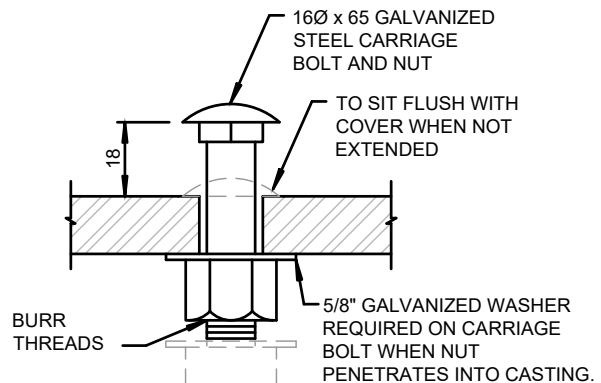
SIDE VIEW

NOTES:

1. CONCRETE NO POST BARRIER PROTECTION REQUIRED FOR VENTS WITHIN 4.0m OF ROADWAY.
2. ONLY PRODUCTS LISTED IN THE CITY OF NANAIMO APPROVED PRODUCTS LIST WILL BE ACCEPTED FOR INSTALLATION OR APPROVED BY CITY ENGINEER.
3. ALL DIMENSION IN MILLIMETERS UNLESS OTHERWISE SHOWN.
4. CONCRETE AS PER SECTION 11.0.

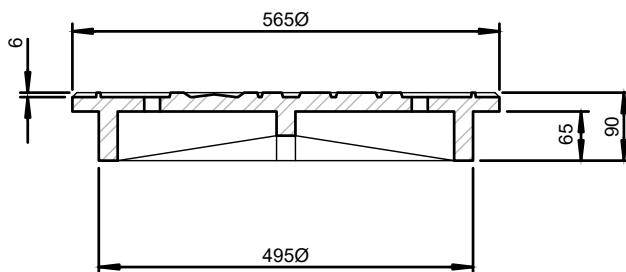


PLAN

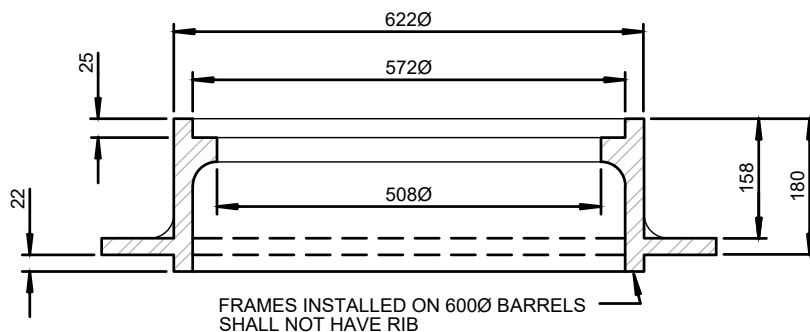


IMPORTANT:
CARRIAGE BOLT TO EXTEND
EXACTLY 18mm ABOVE CASTING.

CARRIAGE BOLT DETAIL



COVER

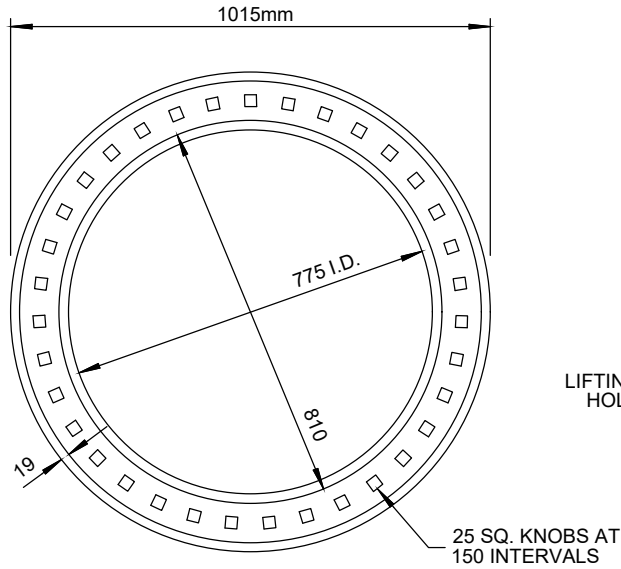


FRAMES INSTALLED ON 600Ø BARRELS
SHALL NOT HAVE RIB

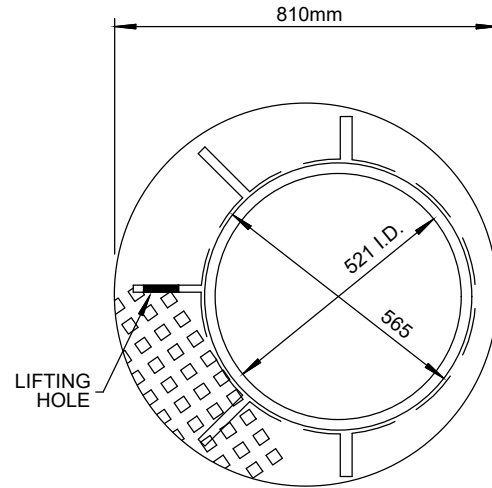
FRAME

NOTES:

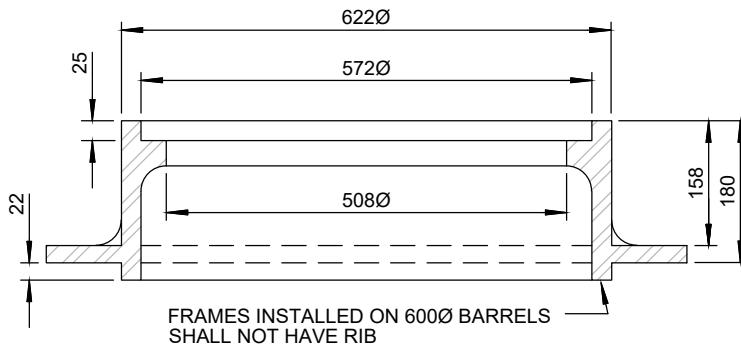
1. THIS DRAWING SHALL BE USED IN ACCORDANCE WITH SECTION 5.0 OF THE MANUAL OF ENGINEERING STANDARDS AND SPECIFICATIONS, LATEST EDITION.
2. CASTINGS SHALL BE CERTIFIED TO MEET CS-600 LOADING.
3. ALL BEARING SURFACES BETWEEN FRAME, COVER AND RISER RINGS SHALL BE MACHINED FOR NON-ROCKING FIT IN ALL POSITIONS. ALLOW 1.5mm RAISED FACE IN CASTINGS FOR MACHINING.
4. ONLY PRODUCTS LISTED IN THE CITY OF NANAIMO APPROVED PRODUCTS LIST WILL BE ACCEPTED FOR INSTALLATION.
5. ALL DIMENSIONS ARE MILLIMETRES UNLESS NOTED OTHERWISE.
6. REFERRING TO "CITY OF NANAIMO WATER" LETTERING SHALL BE 25 FLATTENED FACE GOTHIC WITH FACE OF LETTERS RAISED TO THE SAME LEVELS AS THE TOP OF THE RIBS.



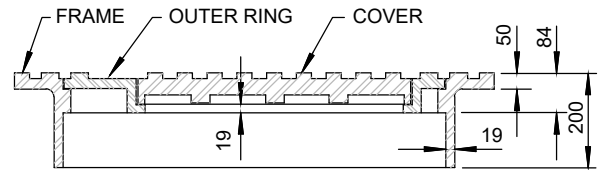
PLAN OF FRAME



PLAN OF OUTER RING



FRAME

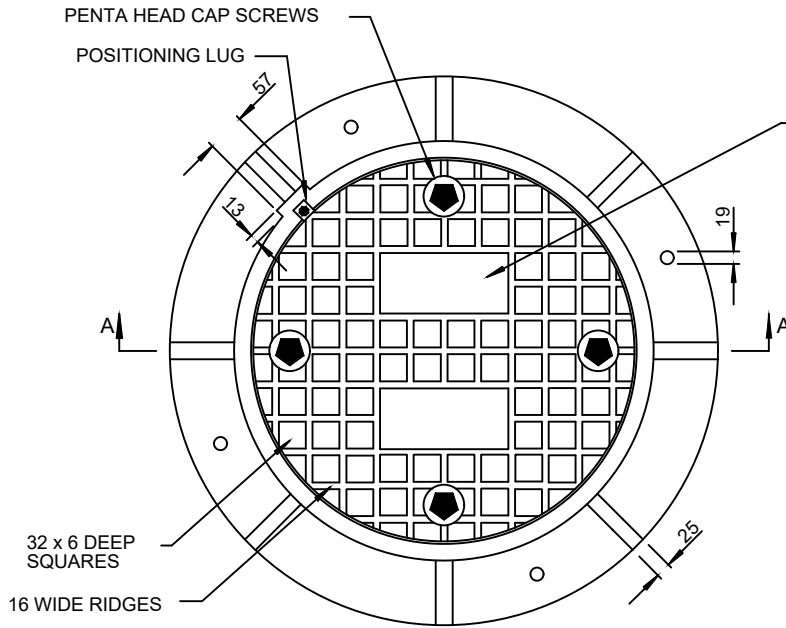


SECTION OF FRAME, RING AND COVER

NOTES:

1. THIS DRAWING SHALL BE USED IN ACCORDANCE WITH SECTION 5.0 OF THE MANUAL OF ENGINEERING STANDARDS AND SPECIFICATIONS, LATEST EDITION.
2. CASTINGS SHALL BE CERTIFIED TO MEET CS-600 LOADING.
3. THIS MANHOLE FRAME AND COVER IS TO BE USED FOR ACCESS TO UNDERGROUND UTILITY CHAMBERS, INCLUDING PUMPS STATIONS AND PRVs, WHERE A LARGER ACCESS DIAMETER IS REQUIRED.
4. FOR COVER LETTERING AND BOLTING REQUIREMENTS REFER TO STD. DWG. W-19 OR W-21.
5. ONLY PRODUCTS LISTED IN THE CITY OF NANAIMO APPROVED PRODUCTS LIST WILL BE ACCEPTED FOR INSTALLATION.
6. ALL DIMENSIONS ARE MILLIMETERS UNLESS NOTED OTHERWISE.

APPLICATION: UNITS ARE FOR USE IN AREAS WHERE FLOODING OR HIGH TIDES ARE POSSIBLE. THIS UNIT SHALL HAVE A POSITIONING LUG IN COVER FOR EASY REPLACEMENT OF CAP SCREWS AND SHALL BE EQUIPPED WITH FOUR ONLY 19Ø HOLES IN FRAME FOR ANCHOR BOLTS AS SHOWN.



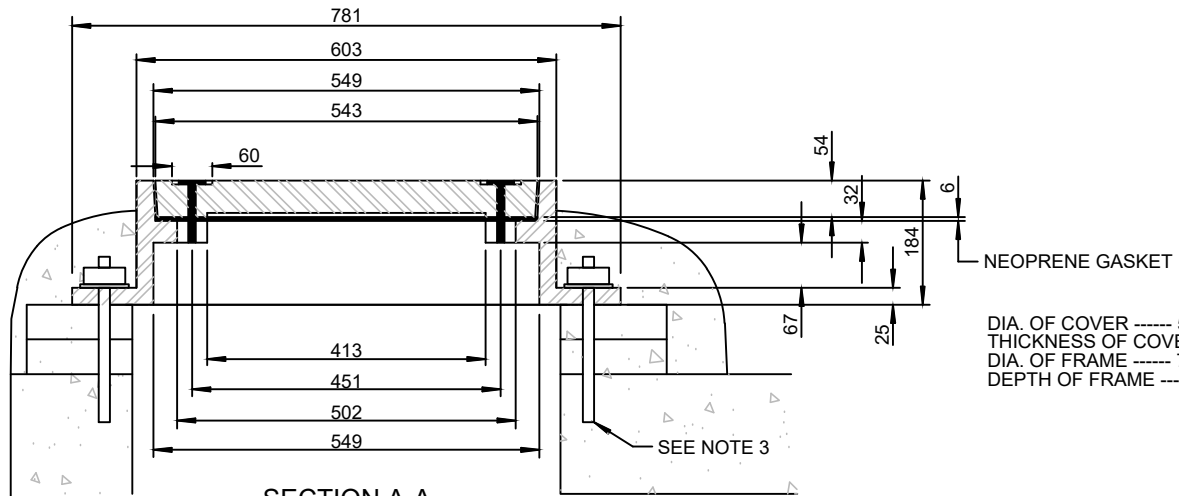
REFERRING TO "CITY OF NANAIMO WATER", LETTERING SHALL BE 25 FLATTENED FACE, GOTHIC WITH FACE OF LETTERS RAISED TO THE SAME LEVELS AS THE TOP OF THE RIBS (IN STATUTORY RIGHTS-OF-WAY INCLUDE THE WORDING "DO NOT COVER" ON THE MANHOLE LID)

WEIGHT OF UNIT SHOWN IS
FRAME = 113.4 kg
COVER = 56.7 kg

FURNISHED WITH:

- FOUR 13x57 PENTA HEAD STAINLESS STEEL CAP SCREWS TO DISCOURAGE VANDALISM.
- A 6mm THICK NEOPRENE GASKET FULLY ENCOMPASSING BOLT HOLES.
- METAL SURFACES BETWEEN FRAME AND COVER MACHINED TO ENSURE NON ROCKING FIT IN ALL POSITIONS. ALLOW 1.5 RAISED FACE IN CASTING FOR MACHINING.
- MANUFACTURE BOLT HOLES TO PERMIT INTERCHANGING OF COVERS BETWEEN FRAME UNITS.

PLAN



DIA. OF COVER ----- 543
THICKNESS OF COVER -- 54
DIA. OF FRAME ----- 781
DEPTH OF FRAME ----- 184

SECTION A-A

NOTES:

- THIS DRAWING SHALL BE USED IN ACCORDANCE WITH SECTION 5.0 OF THE MANUAL OF ENGINEERING STANDARDS AND SPECIFICATIONS, LATEST EDITION.
- CASTINGS SHALL BE CERTIFIED TO MEET CS-600 LOADING.
- FRAME SHALL BE SET IN MORTAR AND BOLTED TO THE MANHOLE SLAB WITH 19Ø STAINLESS STEEL BOLTS, WASHERS AND NUTS.
- THIS DRAWING TO BE READ IN ACCORDANCE WITH DRAWING W-11A.
- ONLY PRODUCTS LISTED IN THE CITY OF NANAIMO APPROVED PRODUCTS LIST WILL BE ACCEPTED FOR INSTALLATION.
- ALL DIMENSIONS ARE MILLIMETERS UNLESS NOTED OTHERWISE.