

DRAWING No.	DATE	DESCRIPTION
WM-200.01	May 2013	Bedding & Backfill for Concrete & PVC Watermains and Water Services
WM-200.02	November 2005	Bedding & Backfill for Ductile Iron Watermains and Water Services
WM-201.01	June 2017	1200mm Dia. Precast Valve Chamber for 300mm Dia. Watermains & Smaller
WM-201.02	June 2017	Tapping Valve Installation for D.I. Watermain 300mm Dia. and Smaller
WM-201.03	June 2017	Level Valve Chamber – 150mm Dia. to 300mm Dia. Watermains
WM-201.04	June 2019	Air Valve Snorkel
WM-201.05	February 2021	Check Valve and Chamber - 150mm Dia. to 300mm Dia. Watermains
WM-202	June 2017	Valve Box Installation For 100mm to 400mm Dia. Watermains
WM-203.01	November 2005	Hydrant Installation
WM-203.02	November 2005	Hydrant Installation using Anchor Tee
WM-203.03	November 2005	Relocation of Ditches at Hydrants
WM-203.04	January 2011	Operating Nut Adaptor for Use on Open Right (Clockwise) Valves
WM-204.01	January 2011	Concrete Anchor Blocks For 300mm Dia. Watermains And Smaller
WM-204.02	January 2011	11-1/4° & 22-1/2° Angle Anchor Block Details for 400mm to 600mm Dia. D.I. Watermains
WM-204.03	January 2011	45° Angle Anchor Block Details for 400mm to 600mm Dia. D.I. Watermains
WM-204.04	January 2011	45° Angle Anchor Block with Leg for 400mm to 600mm Dia. D.I. Watermains
WM-204.05	January 2011	90° Angle Anchor Block Details for 400mm to 600mm Dia. D.I. Watermains
WM-204.06	January 2011	90° Angle Anchor Block with Leg for 400mm to 600mm Dia. DI Watermains
WM-204.07	January 2011	Tee Anchor Block Details for 400mm to 600mm Dia. D.I. Watermain Branches

*24" x 36" size drawings are not bound in this document

DRAWING No.	DATE	DESCRIPTION
WM-204.08	January 2011	Tee Anchor Block with Leg for 400mm to 600mm Dia. D.I. Branch Watermains
WM-204.09	January 2011	Concrete Thrust Block for 400mm to 600mm Dia. D.I. Watermains
WM-204.10	January 2011	Concrete Anchor Blocks for 100mm to 300mm Dia. D.I. Watermains at 11 1/4° & 22 1/2° Vertical Bends
WM-204.11	January 2011	Concrete Anchor Blocks for 100mm to 300mm Dia. D.I. Watermains at 45° Vertical Bend
WM-204.12	January 2011	Vertical Bend Anchor Block 7 1/2° to 22 1/2° for 400mm Dia. D.I. Watermain
WM-204.13 (1 of 2)	November 2018	Concrete Anchor Block for 100mm to 300mm Dia. Watermain Lowering
WM-204.13 (2 of 2)	January 2011	Concrete Anchor Block for 100mm to 300mm Dia. Watermain Lowering
WM-204.14	November 2018	Vertical Bend Anchor Block 45° for 400mm Dia. D.I. Watermain
WM-205.01	March 2008	50mm Dia. Watermain Looping in Cul De Sacs (20.0 m R.O.W.)
WM-205.02	March 2008	50mm Dia. Watermain Looping in Cul De Sacs (18.0 m R.O.W.)
WM-206	November 2005	50mm Dia. Dead End Blow-Off
WM-207.01	November 2005	Piping Arrangement for 19-25mm Dia. Water Service Connection and Yard Service
WM-207.02	November 2005	Piping Arrangement for 19-25mm Dia. Water Service Connections in a Common Trench
WM-207.03	November 2005	Insulation Details for Water Services at Gooseneck
WM-207.04	January 2020	Piping for 100mm to 300mm Dia. Water Service Connection & Yard Service to Meter with Cut in Tee & Sleeve
WM-207.05	January 2020	Piping for 100mm to 300mm Dia. Water Service Connection & Yard Service to Meter using Tapping Sleeve & Valve
WM-207.06	January 2020	Piping Arrangement for 50mm Dia. Water Service Connection and Yard Service
WM-208	November 2005	Remote Receptacle Installation for Meter Chambers
WM-209.01	January 2020	Piping and Chamber for Residential 16mm to 50mm Dia. Meter Installation

*24" x 36" size drawings are not bound in this document

DRAWING No.	DATE	DESCRIPTION
WM-209.02	January 2020	Piping and Chamber for Multi-Unit Residential (3 Storeys and Above) or ICI Moderate Hazard 16mm to 50mm Dia. Meter Installation
WM-209.03	January 2020	Piping and Chamber for ICI High Hazard 16mm to 50mm Dia. Meter Installation
WM-210.01	June 2019	Piping for Multi-Unit Residential (3 Storeys and Above) or ICI Moderate Hazard 16mm to 50mm Dia. Meter for Internal Installation
WM-210.02	June 2019	Piping for Multi-Unit Residential (3 Storeys and Above) or ICI Moderate Hazard 100mm to 250mm Dia. Meters for Internal Meter Installation
WM-210.03	June 2019	Piping for ICI, High Hazard 16mm to 50mm Dia. Meter for Internal Installation
WM-210.04	June 2019	Piping for ICI, High Hazard 100mm to 250mm Dia. Meter for Internal Installation
WM-211.01	November 2005	Standard Remote Installation for 16-25mm Dia. Meters
WM-211.02	November 2005	Alterations of Existing 16-25mm Dia. Piping Prior to Meter Installation
WM-211.03	June 2019	Piping for Residential 16mm to 50mm Dia. Meter for Internal Installation
WM-211.04	November 2005	Meter Pipe Spacer Installation
WM-211.05	June 2019	Satellite Meter Installation for 16mm to 25mm Dia. Services
WM-212.03	November 2005	Valve Key Frame & Cover
WM-213	November 2005	Chamber End Plates for 100mm Dia. to 300mm Dia. Watermains
WM-214	November 2005	Removable Slab Lifting Hole Details & Lifting Hook Detail for Chambers
WM-215.01	November 2005	Valve Support
WM-215.02	November 2005	Pipe & Valve Support
WM-215.03	November 2018	Concrete Pipe Support Details for 750mm to 1200mm Dia. Watermains
WM-216	November 2005	Blow-Off Connection at Access Chamber

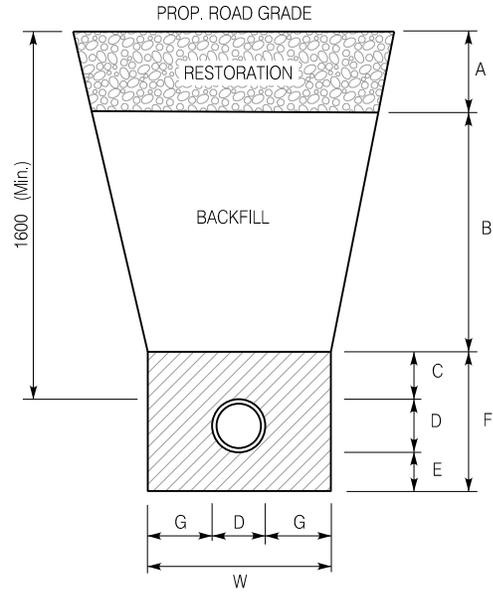
*24" x 36" size drawings are not bound in this document

DRAWING No.	DATE	DESCRIPTION
WM-217	November 2005	Pitometer Connection for Steel & Concrete Pipe
WM-230	June 2019	2400mm Precast Valve chamber for 400mm Dia. Concrete or Ductile Iron Pipe with 50mm Air Valve & 100mm Blow-Off. *(24" x 36")
WM-231	June 2019	Precast Valve Chamber for 450mm, 500mm and 600mm Dia. Concrete Pipe or Ductile Iron Pipe *(Size 24" x 36")
WM-232	June 2019	1800mm Precast Valve Chamber for 400mm to 500mm Dia. Concrete or Ductile Iron Pipe with 50mm Air Valve & 100mm Blow-Off *(Size 24" x 36")
WM-233	June 2019	1800mm x 3000mm Precast Valve Chamber for 400mm Dia. Concrete or Ductile Iron Pipe with 100mm to 300mm Dia. Branch *(Size 24" x 36")
WM-234.01	June 2019	Piping and Chamber for Multi-Unit Residential 100mm to 250mm Dia. Meter Installation (1800mm X 2400mm/3000mm/3500mm Precast Meter Chambers) *(Size 24" x 36")
WM-234.02	June 2019	Piping and Chamber for Multi-Unit Residential (3 Storeys and Above) or ICI Moderate Hazard 100mm to 250mm Dia. Meter Installation (1800 X 2400mm and 1800mm X 3000mm Precast Meter Chambers) *(Size 24" x 36")
WM-234.03	June 2019	Piping and Chamber for ICI, High Hazard 100mm to 250mm Dia. Meter Installation (1800mm X 2400mm and 1800mm X 3000mm Precast Meter Chambers) *(Size 24" x 36")
WM-235	November 2005	1800mm x 2400mm Precast Tapping Valve Chamber for 100mm to 300mm Dia. D.I. Pipe Tapping off 400mm to 600mm Dia. Watermain *(Size 24" x 36")
WM-236.01	June 2019	3400mm x 4700mm Precast Valve Chamber for 750mm and 900mm Dia. Concrete Pressure Pipe with Butterfly Valve, 100mm Dia. Air Release Valve and 150mm Dia. Blow Off Valves *(Size 24" x 36")
WM-236.02	June 2019	3400mm x 4700mm Precast Valve Chamber for 1050mm and 1200mm Dia. Concrete Pressure Pipe with Butterfly Valve, 100mm Dia. Air Release Valve and 150mm Dia. Blow Off Valves *(Size 24" x 36")

*24" x 36" size drawings are not bound in this document

CONCRETE & PVC WATERMAIN BEDDING & BACKFILL

REFER TO SPECIFICATIONS AND PLANS
FOR BEDDING AND BACKFILL MATERIALS

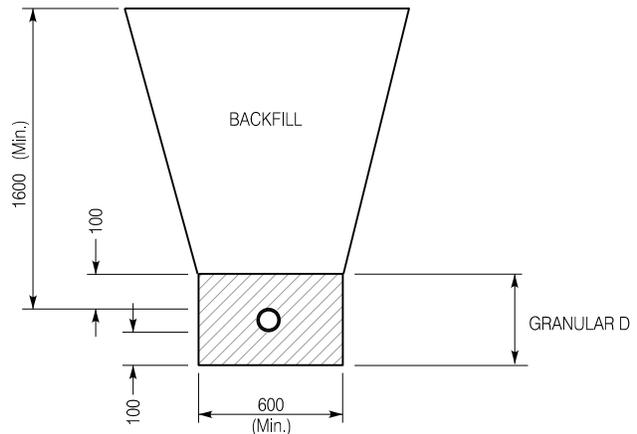


DIM	300mm DIA WATERMAINS AND SMALLER	350mm DIA WATERMAINS AND LARGER
A	FOR RESTORATION SEE RD-100.01 & RD-100.02	FOR RESTORATION SEE RD-100.01 & RD-100.02
B	750 (Min.)	600 MIN.
C	300 (Min.)	450 MIN.
D	O.D. OF PIPE	O.D. OF PIPE
E	150 (Min.)	225 MIN.
F	D + 450 (Min.)	D + 675 MIN.
G	225 (Min.)	225 MIN.
W	D + 450 (Min.)	D + 450 (Min.)

COPPER WATERMAIN & WATER SERVICE BEDDING & BACKFILL

NOTES:

1. WATER SERVICES WILL BE NORMALLY LOCATED 1000mm TO THE LEFT OF THE Q. OF THE LOT & MINIMUM 2500mm CLEARANCE FROM A SEWER SERVICE.
2. FINAL LOCATION TO BE DETERMINED BY THE PROJECT MANAGER.



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Public Works Department

BEDDING & BACKFILL FOR CONCRETE AND PVC WATERMAINS AND WATER SERVICES

DIMENSIONS SHOWN ARE IN MILLIMETRES
UNLESS OTHERWISE NOTED (N.T.S.)

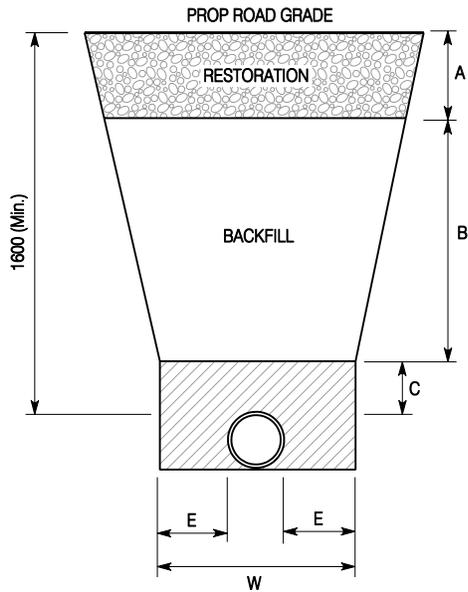
DATE
May 2013

REV No
1

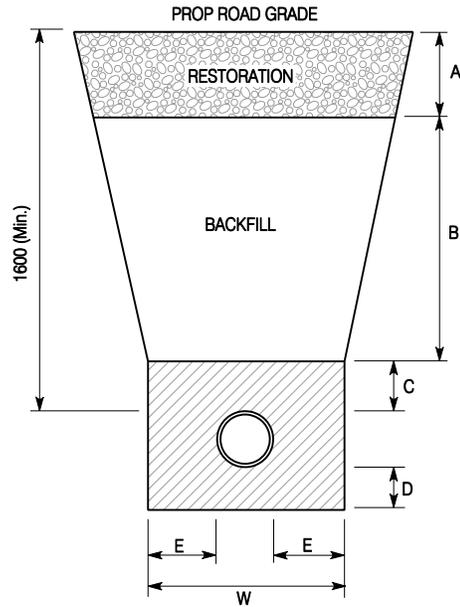
FORMERLY: RWS 500(1)

HAMILTON STD No

WM-200.01



INSTALLATION IN EARTH



INSTALLATION IN ROCK

NOTE: REFER TO SPECIFICATIONS AND PLANS FOR BEDDING AND BACKFILL MATERIALS.

DIM.	300mm DIA WATERMAINS AND SMALLER	350mm DIA WATERMAINS AND LARGER
A	FOR RESTORATION SEE RD-100.01 & RD-100.02	FOR RESTORATION SEE RD-100.01 & RD-100.02
B	750 (Min.)	600 (Min.)
C	300 (Min.)	450 (Min.)
D	150 (Min.)	225 (Min.)
E	225 (Min.)	225 (Min.)
W	O.D. PIPE + 450 (Min.)	O.D. PIPE + 450 (Min.)

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Public Works Department

BEDDING & BACKFILL FOR DUCTILE IRON WATERMAINS & WATER SERVICES

DIMENSIONS SHOWN ARE IN MILLIMETRES
UNLESS OTHERWISE NOTED (N.T.S.)

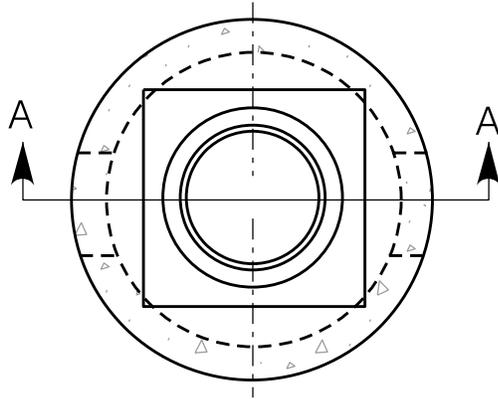
DATE
November 2005

REV No

FORMERLY: RWS 500(2)

HAMILTON STD No

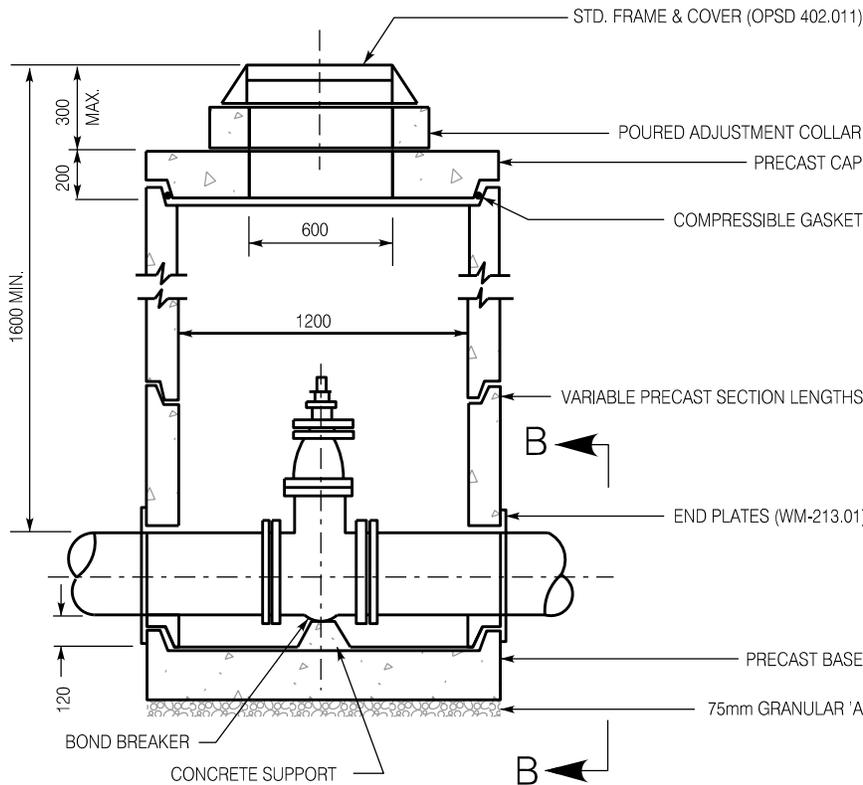
WM-200.02



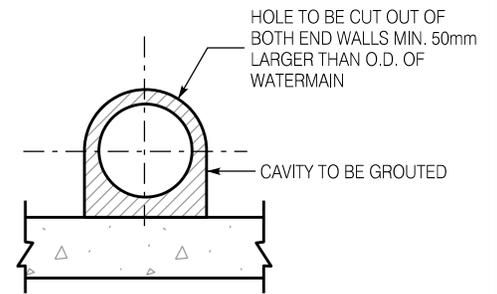
PLAN

NOTES:

1. PRECAST SECTIONS TO BE MANUFACTURED TO ASTM C-478 AND CSA SPECIFICATIONS.
2. FILL ALL JOINTS AND LIFTING HOLES (INSIDE & OUT) 15mm THICK WITH 1:3 NON-SHRINK MORTAR MIX.
3. ALL ADJUSTMENTS TO CHAMBER AND KEY COVERS SHALL BE MADE WITH POURED CONCRETE.
4. ALL CONCRETE TO BE 30 MPa., TYPE 50 CEMENT.
5. ALL REINFORCING TO BE HIGH BOND STRUCTURAL GRADE.
6. FASTEN INSULATION TO CEILING WITH 50mm Ø WASHERS (GALVANIZED) & 6mm Ø TAPCON CONCRETE ANCHORS @ 450mm CENTRES.
7. DOGHOUSE OPENING TO BE CUT OUT MIN. 50mm LARGER THAN O.D. OF WATERMAIN. PIPE TO BE WRAPPED WITH MIN. 50mm THICK OF PLAST MASTIC MATERIAL. REMAINING CAVITY TO BE GROUTED. (SEE DOGHOUSE DETAIL).
8. ALL METAL COMPONENTS INSIDE VALVE CHAMBER, INCLUDING STAINLESS STEEL NUTS AND BOLTS, SHALL HAVE A PROTECTIVE CORROSION TAPE COATING SYSTEM (PRIMER, MASTIC AND TAPE). PROTECTIVE CORROSION TAPE COATING (PRIMER, MASTIC AND TAPE) IS NOT REQUIRED ON VALVE BODIES.



SECTION A-A



SECTION B-B

City of Hamilton
Public Works Department

**1200mm DIA. PRECAST VALVE CHAMBER FOR
300mm DIA. WATERMANS AND SMALLER**

DIMENSIONS SHOWN ARE IN MILLIMETRES
UNLESS OTHERWISE NOTED (N.T.S.)

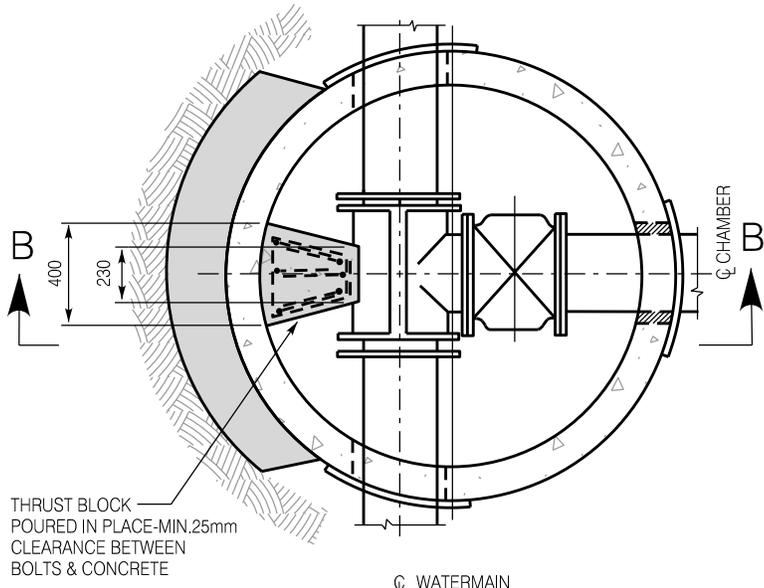
DATE
June 2017

REV No
1

FORMERLY: RWS-301

HAMILTON STD No

WM-201.01



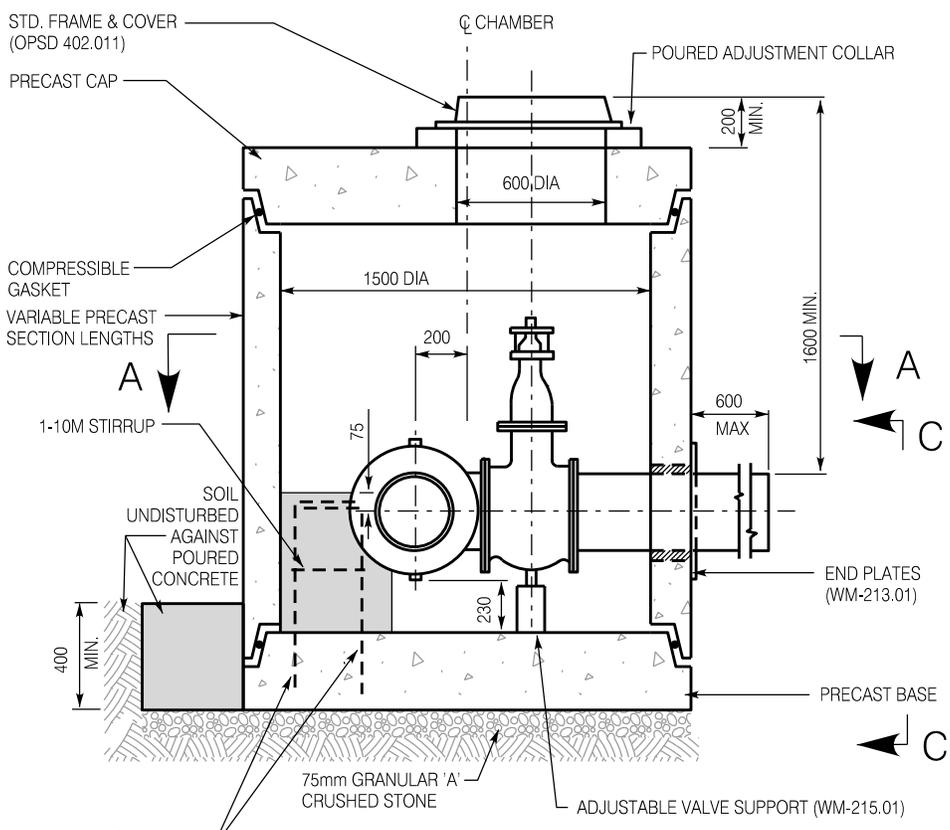
THRUST BLOCK
POURED IN PLACE-MIN.25mm
CLEARANCE BETWEEN
BOLTS & CONCRETE

∅ WATERMAIN

SECTION A-A

NOTES:

1. PRECAST SECTIONS TO BE MANUFACTURED TO ASTM C-478 AND CSA SPECIFICATIONS.
2. FILL ALL JOINTS AND LIFTING HOLES (INSIDE & OUT) 15mm THICK WITH 1:3 NON-SHRINK MORTAR MIX.
3. ALL ADJUSTMENTS TO CHAMBER AND KEY COVERS SHALL BE MADE WITH POURED CONCRETE.
4. ALL CONCRETE TO BE 30 MPa, TYPE 50 CEMENT.
5. ALL REINFORCING STEEL TO BE HIGH BOND STRUCTURAL GRADE MIN. 50mm OF CONCRETE COVER OVER REINFORCING.
6. DOGHOUSE OPENING TO BE CUT OUT MIN. 50mm LARGER THAN O.D. OF WATERMAIN. PIPE TO BE WRAPPED WITH MIN. 50mm THICK OF PLAST MASTIC MATERIAL. REMAINING CAVITY TO BE GROUTED. (SEE DOGHOUSE DETAIL).
7. ALL FLANGES TO BE IN ACCORDANCE WITH ANSI / AWWA.
8. ALL METAL COMPONENTS INSIDE VALVE CHAMBER, INCLUDING STAINLESS STEEL NUTS AND BOLTS, SHALL HAVE A PROTECTIVE CORROSION TAPE COATING SYSTEM (PRIMER, MASTIC AND TAPE). PROTECTIVE CORROSION TAPE COATING (PRIMER, MASTIC AND TAPE) IS NOT REQUIRED ON VALVE BODIES.
9. WALL THICKNESS FOR PRECAST CHAMBER SHALL BE 200mm MIN. CAP AND BASE TO BE 250mm MIN.



STD. FRAME & COVER
(OPSD 402.011)

PRECAST CAP

COMPRESSIBLE GASKET
VARIABLE PRECAST
SECTION LENGTHS

A

1-10M STIRRUP

SOIL UNDISTURBED
AGAINST
POURED
CONCRETE

400
MIN.

6-20M BARS DRILLED
& GROUTED IN BASE

75mm GRANULAR 'A'
CRUSHED STONE

ADJUSTABLE VALVE SUPPORT (WM-215.01)

END PLATES
(WM-213.01)

PRECAST BASE

∅ CHAMBER

600,DIA

1500 DIA

200

75

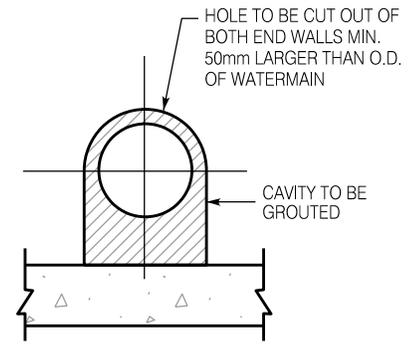
230

200
MIN.

1600
MIN.

A
C

C



HOLE TO BE CUT OUT OF
BOTH END WALLS MIN.
50mm LARGER THAN O.D.
OF WATERMAIN

CAVITY TO BE
GROUTED

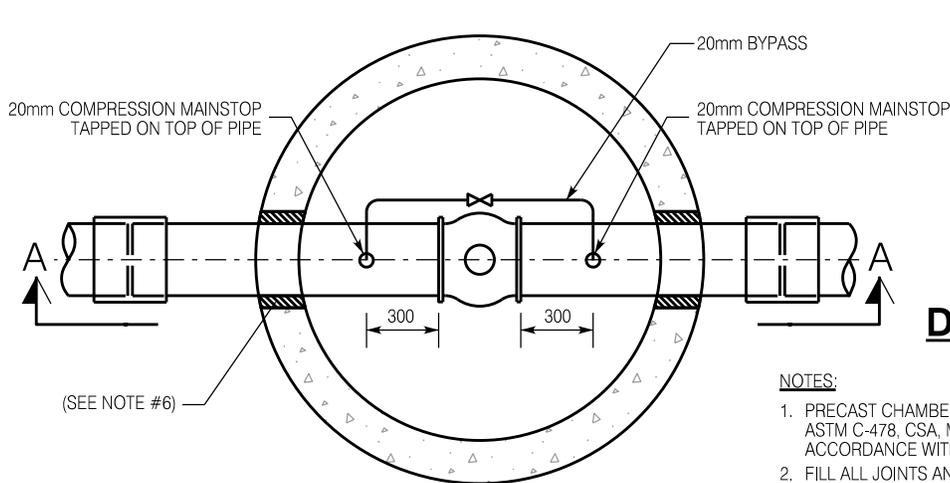
SECTION C-C

SECTION B-B

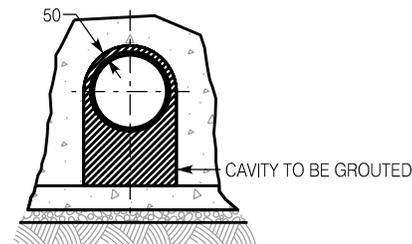
City of Hamilton
Public Works Department

**TAPPING VALVE INSTALLATION FOR
D.I. WATERMANS 300mm DIA. AND SMALLER**

DIMENSIONS SHOWN ARE IN MILLIMETRES UNLESS OTHERWISE NOTED (N.T.S.)	DATE June 2017	REV No 1	FORMERLY: RWS-392	HAMILTON STD No WM-201.02
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PIPING LAYOUT

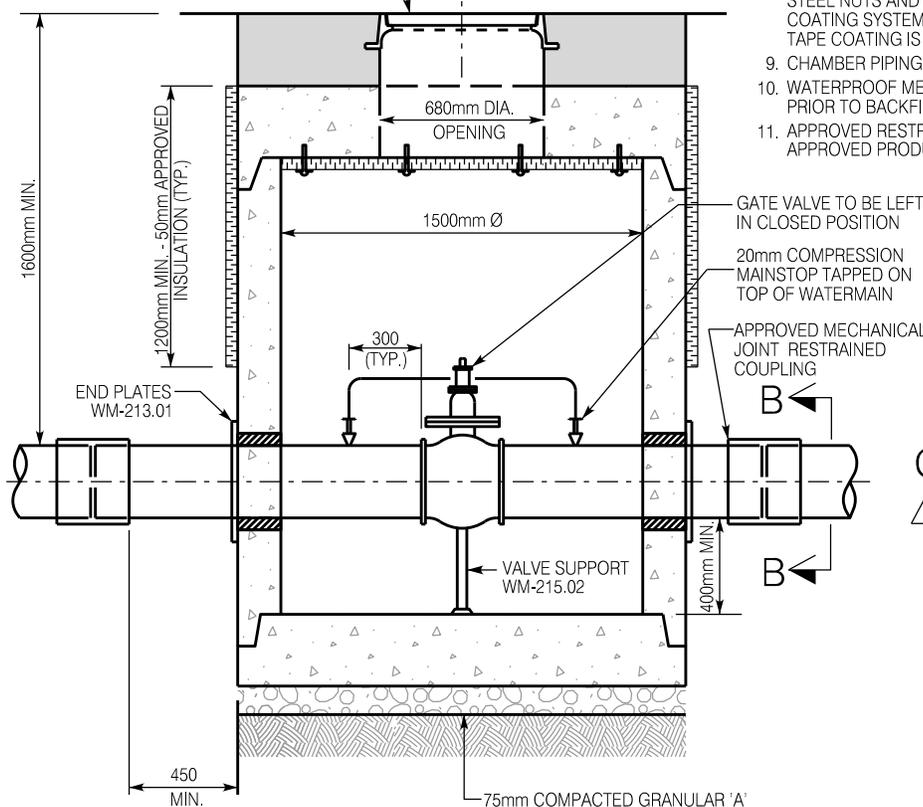


**SECTION B-B
DOGHOUSE DETAIL**

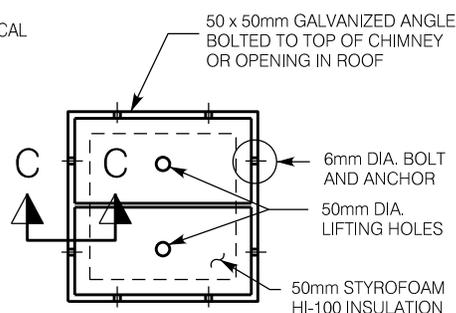
NOTES:

1. PRECAST CHAMBERS AND SECTIONS SHALL BE MANUFACTURED TO ASTM C-478, CSA, MEET H-20 S16 LOADING REQUIREMENTS AND IN ACCORDANCE WITH THE APPROVED PRODUCTS LIST.
2. FILL ALL JOINTS AND LIFTING HOLES (INSIDE & OUT) 15mm THICK WITH 1:3 NON-SHRINK MORTAR MIX.
3. ALL ADJUSTMENTS TO CHAMBER AND KEY COVERS SHALL BE MADE WITH POURED CONCRETE.
4. ALL CONCRETE TO BE 32 MPa, TYPE 50 CEMENT.
5. FASTEN INSULATION TO CEILING WITH 50mm DIA. WASHERS (GALVANIZED) & 6mm DIA. TAPCON CONCRETE ANCHORS @ 450mm CENTRES.
6. DOGHOUSE OPENING TO BE CUT OUT MIN. 50mm LARGER THAN O.D. OF PROPOSED WATERMAIN. PIPE TO BE WRAPPED WITH MIN. 50mm THICK OF PLAST MASTIC MATERIAL. REMAINING CAVITY TO BE GROUTED.
7. ALL FLANGES TO BE IN ACCORDANCE WITH ANSI / AWWA
8. ALL METAL COMPONENTS IN VALVE CHAMBERS, INCLUDING STAINLESS STEEL NUTS AND BOLTS, SHALL HAVE A PROTECTIVE CORROSION TAPE COATING SYSTEM (PRIMER, MASTIC AND TAPE). PROTECTIVE CORROSION TAPE COATING IS NOT REQUIRED ON VALVE BODIES.
9. CHAMBER PIPING SHALL BE DUCTILE IRON CLASS 54.
10. WATERPROOF MEMBRANE SHALL BE APPLIED TO ALL CHAMBER WALLS PRIOR TO BACKFILLING.
11. APPROVED RESTRAINED COUPLING SHALL BE IN ACCORDANCE WITH THE APPROVED PRODUCTS LIST.

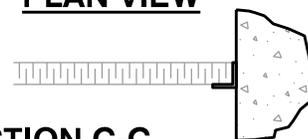
VALVE CHAMBER FRAME & COVER OPSPD 402.011
TO BE PLUMBED FROM VALVE SPINDLE



SECTION A-A



**CHAMBER COVER
INSULATION DETAIL
PLAN VIEW**



SECTION C-C

City of Hamilton
Public Works Department

**LEVEL VALVE CHAMBER
150mm DIA. TO 300mm DIA. WATERMANS**

DIMENSIONS SHOWN ARE IN MILLIMETRES
UNLESS OTHERWISE NOTED (N.T.S.)

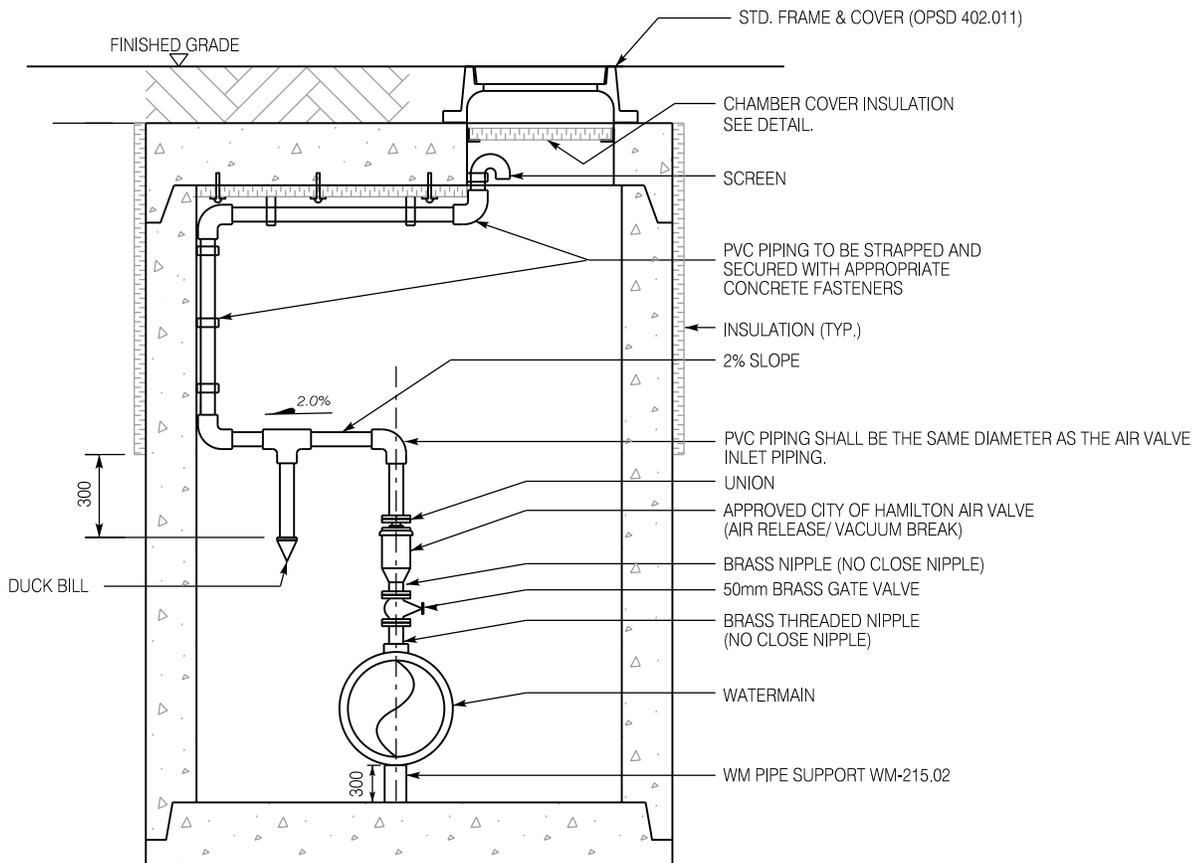
DATE
June 2017

REV No

FORMERLY:

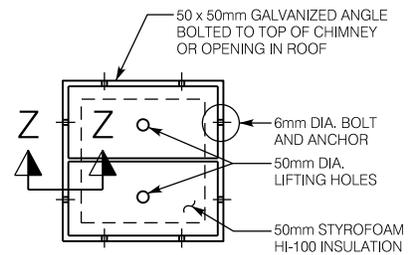
HAMILTON STD No

WM-201.03

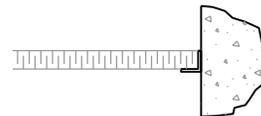


NOTES:

1. AIR VALVE SNORKEL SYSTEM REQUIRED ONLY WHEN A CHAMBER FLOOR DRAIN CANNOT BE INSTALLED.
2. AIR VALVE SNORKEL VENTING SYSTEM SHALL BE CONSTRUCTED WITH PVC WATER PIPE MATERIAL.
3. SNORKEL PVC PIPE, FITTINGS AND SOLVENT CEMENT SHALL BE CERTIFIED TO CAN/CSA-B137.3, "RIGID POLYVINYL CHLORIDE (PVC) PIPE FOR PRESSURE APPLICATIONS" OR CAN/CSA- B137.2, "POLYVINYL CHLORIDE (PVC) INJECTION-MOULDED GASKETED FITTINGS FOR PRESSURE APPLICATIONS", AND HAVE MINIMUM PRESSURE RATING OF 1100 KPA
4. FOR AIR VALVE SIZES GREATER THAN 50mm, ALL NIPPLES AND CONNECTIONS (EXCEPT VENT PIPING) TO BE FLANGE.
5. CHAMBER WALLS, ROOF, COVER (SEE DETAIL) AND CHAMBER ACCESS OPENING SHALL BE INSULATED WITH 50mm STYROFOAM HI-100 INSULATION TO A MINIMUM DEPTH OF 1200mm BELOW TOP OF CHAMBER.



CHAMBER COVER INSULATION DETAIL PLAN VIEW

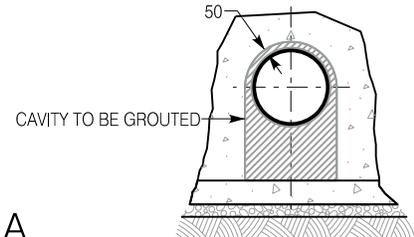
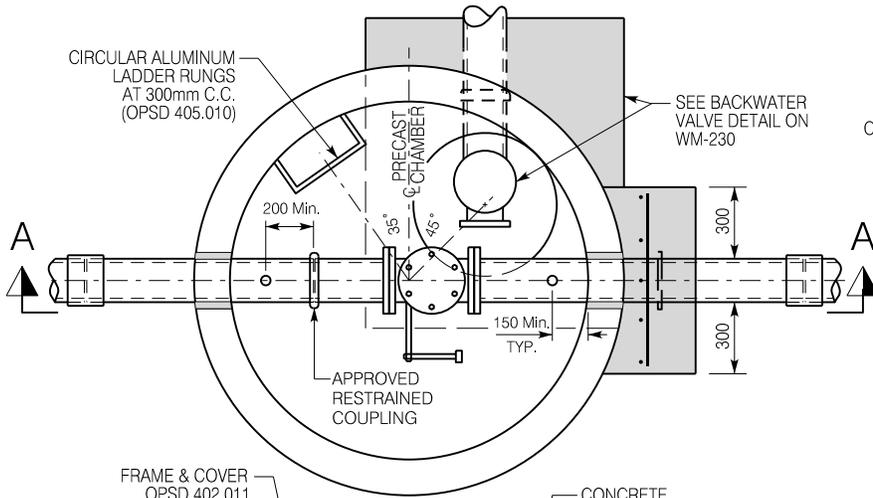


SECTION Z-Z

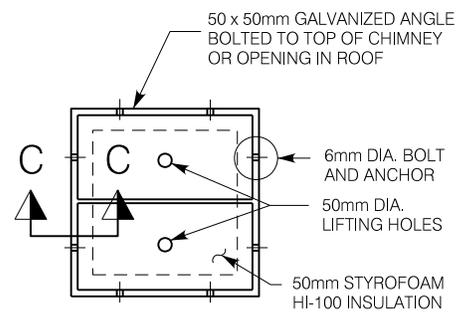
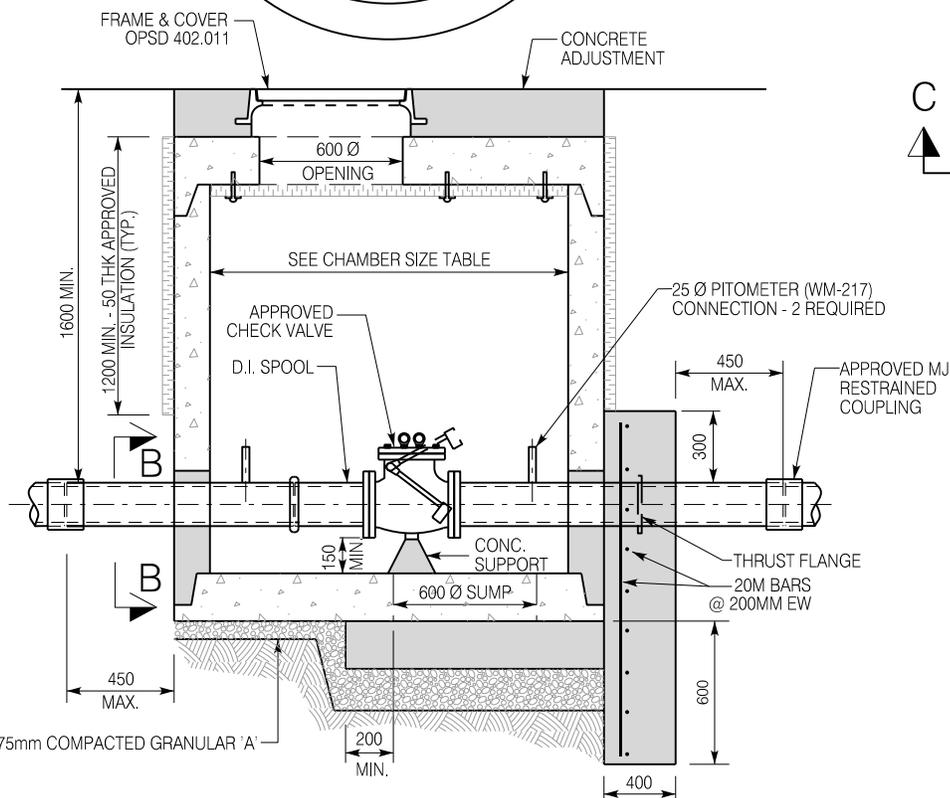
City of Hamilton
Public Works Department

AIR VALVE SNORKEL

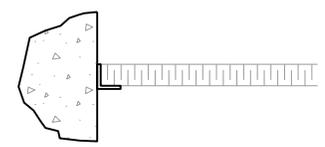
DIMENSIONS SHOWN ARE IN MILLIMETRES UNLESS OTHERWISE NOTED (N.T.S.)	DATE June 2019	REV No	WATER DISTRIBUTION SECTION USE ONLY	HAMILTON STD No (N/A)	WM-201.04
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**SECTION B-B
DOGHOUSE DETAIL**



**CHAMBER COVER
INSULATION DETAIL
PLAN VIEW**



SECTION C-C

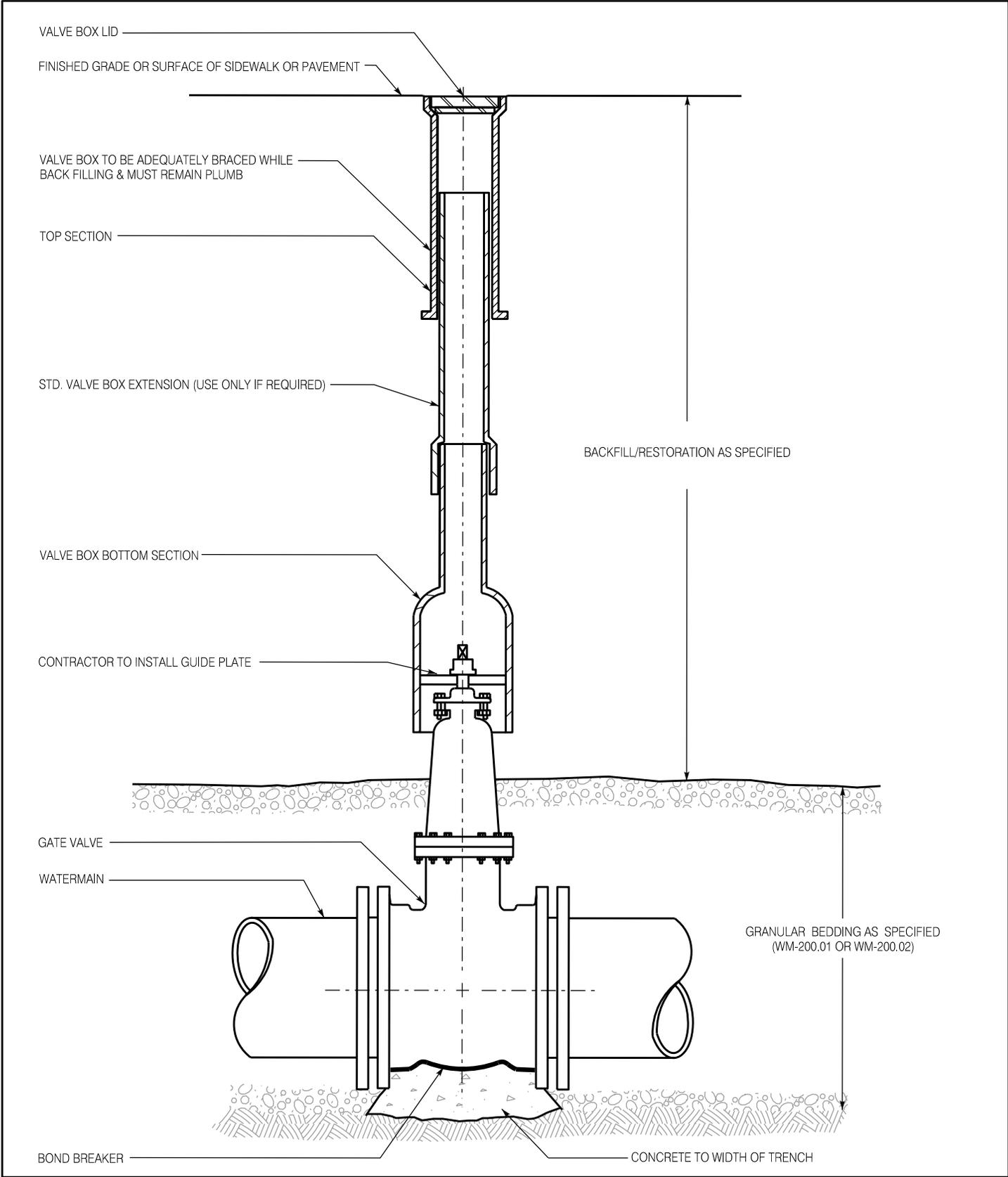
NOTES:

1. PRECAST CHAMBERS AND SECTIONS SHALL BE MANUFACTURED TO ASTM C-478, CSA, MEET H-20 S16 LOADING REQUIREMENTS AND IN ACCORDANCE WITH THE APPROVED PRODUCTS LIST.
2. FILL ALL JOINTS AND LIFTING HOLES (INSIDE & OUT) 15mm THICK WITH 1:3 NON-SHRINK MORTAR MIX.
3. ALL ADJUSTMENTS TO CHAMBER AND KEY COVERS SHALL BE MADE WITH POURED CONCRETE.
4. ALL CONCRETE TO BE 32 MPa., TYPE 50 CEMENT.
5. FASTEN INSULATION TO CEILING WITH 50mm DIA. WASHERS (GALVANIZED) & 6mm DIA. TAPCON CONCRETE ANCHORS @ 450mm CENTRES.
6. DOGHOUSE OPENING TO BE CUT OUT MIN. 50mm LARGER THAN O.D. OF PROPOSED WATERMAIN. PIPE TO BE WRAPPED WITH MIN. 50mm THICK OF PLAST MASTIC MATERIAL. REMAINING CAVITY TO BE GROUTED.
7. ALL FLANGES TO BE IN ACCORDANCE WITH ANSI / AWWA
8. ALL METAL COMPONENTS IN VALVE CHAMBERS, INCLUDING STAINLESS STEEL NUTS AND BOLTS, SHALL HAVE A PROTECTIVE CORROSION TAPE COATING SYSTEM (PRIMER, MASTIC AND TAPE). PROTECTIVE CORROSION TAPE COATING IS NOT REQUIRED ON VALVE BODIES.
9. CHAMBER PIPING SHALL BE DUCTILE IRON CLASS 54.
10. WATERPROOF MEMBRANE SHALL BE APPLIED TO ALL CHAMBER WALLS PRIOR TO BACKFILLING.
11. APPROVED RESTRAINED COUPLING SHALL BE IN ACCORDANCE WITH THE APPROVED PRODUCTS LIST.

CHAMBER SIZE TABLE	
VALVE SIZE	CHAMBER SIZE
150mm	150mm Ø
200mm	150mm Ø
300mm	180mm Ø

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Public Works Department

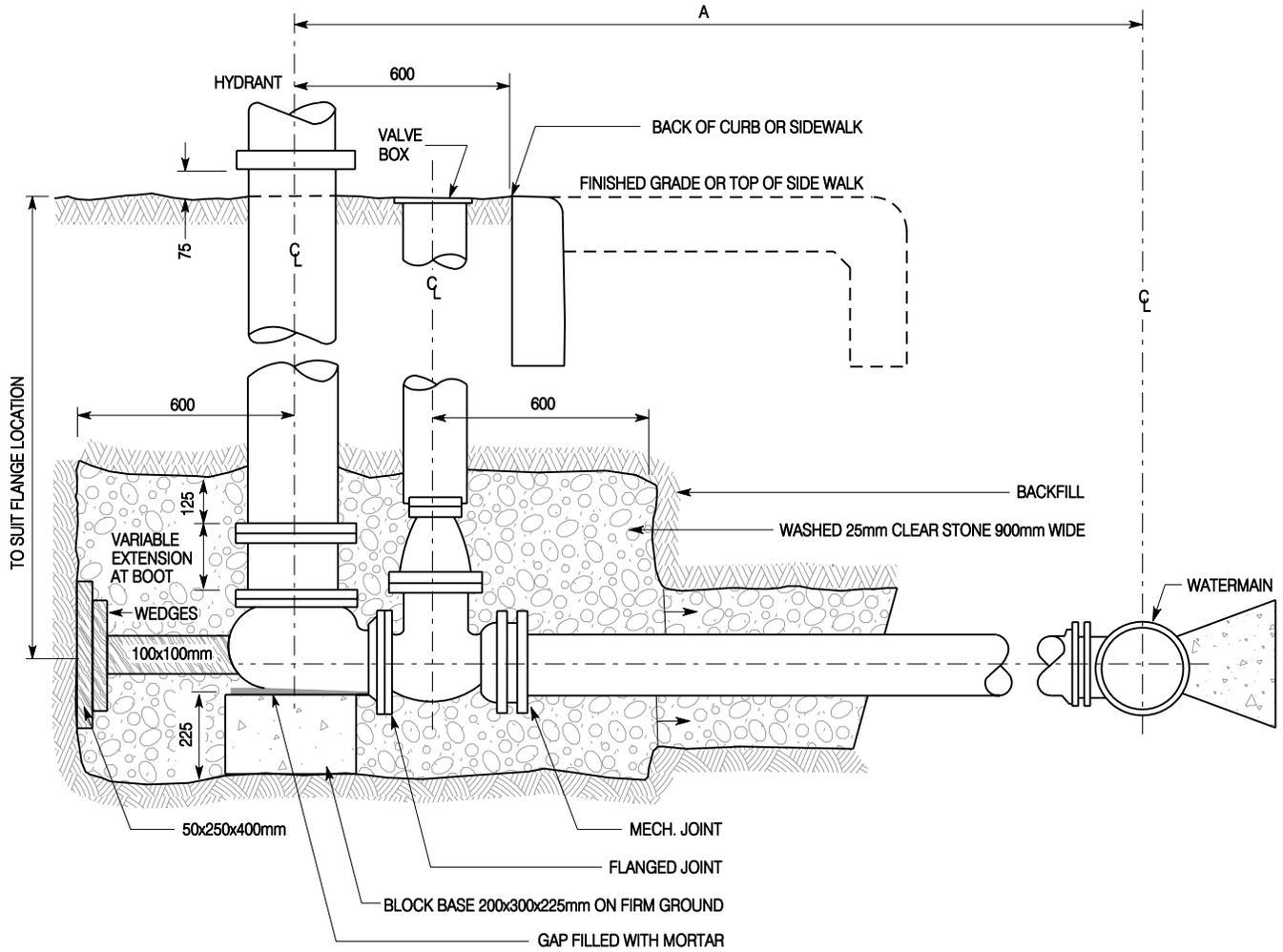
**CHECK VALVE AND CHAMBER
150mm DIA. TO 300mm DIA. WATERMANS**



City of Hamilton
Public Works Department

**VALVE BOX INSTALLATION FOR
100mm TO 400mm DIA. WATERMANS**

DIMENSIONS SHOWN ARE IN MILLIMETRES UNLESS OTHERWISE NOTED (N.T.S.)	DATE June 2017	REV No 1	FORMERLY: RWS-309	HAMILTON STD No WM-202
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NOTES:

1. HYDRANT TO BE INSTALLED WITH A MIN. 1200mm RADIUS LEVEL AREA TO MATCH HYDRANT "GROUND LINE".
2. BEDDING & BACKFILL FOR HYDRANT CONNECTIONS (WM-200.01 & WM-200.02)
3. COVER STONES WITH FILTER FABRIC TERRAFIX 270-R NON-WOVEN OR APPROVED EQUAL.
4. DENOTES UNDISTURBED GROUND.
5. DENOTES BACKFILL.

MAIN SIZE (mm)	MIN. DIM. A (mm)
150	1100
200	1100
250	1150
300	1200
400	1300

City of Hamilton
Public Works Department

HYDRANT INSTALLATION

DIMENSIONS SHOWN ARE IN MILLIMETRES
UNLESS OTHERWISE NOTED (N.T.S.)

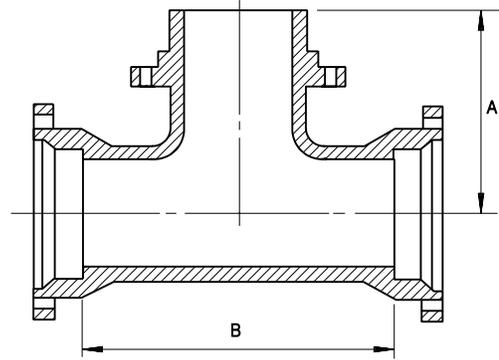
DATE
November 2005

REV No
FORMERLY: RWS 600

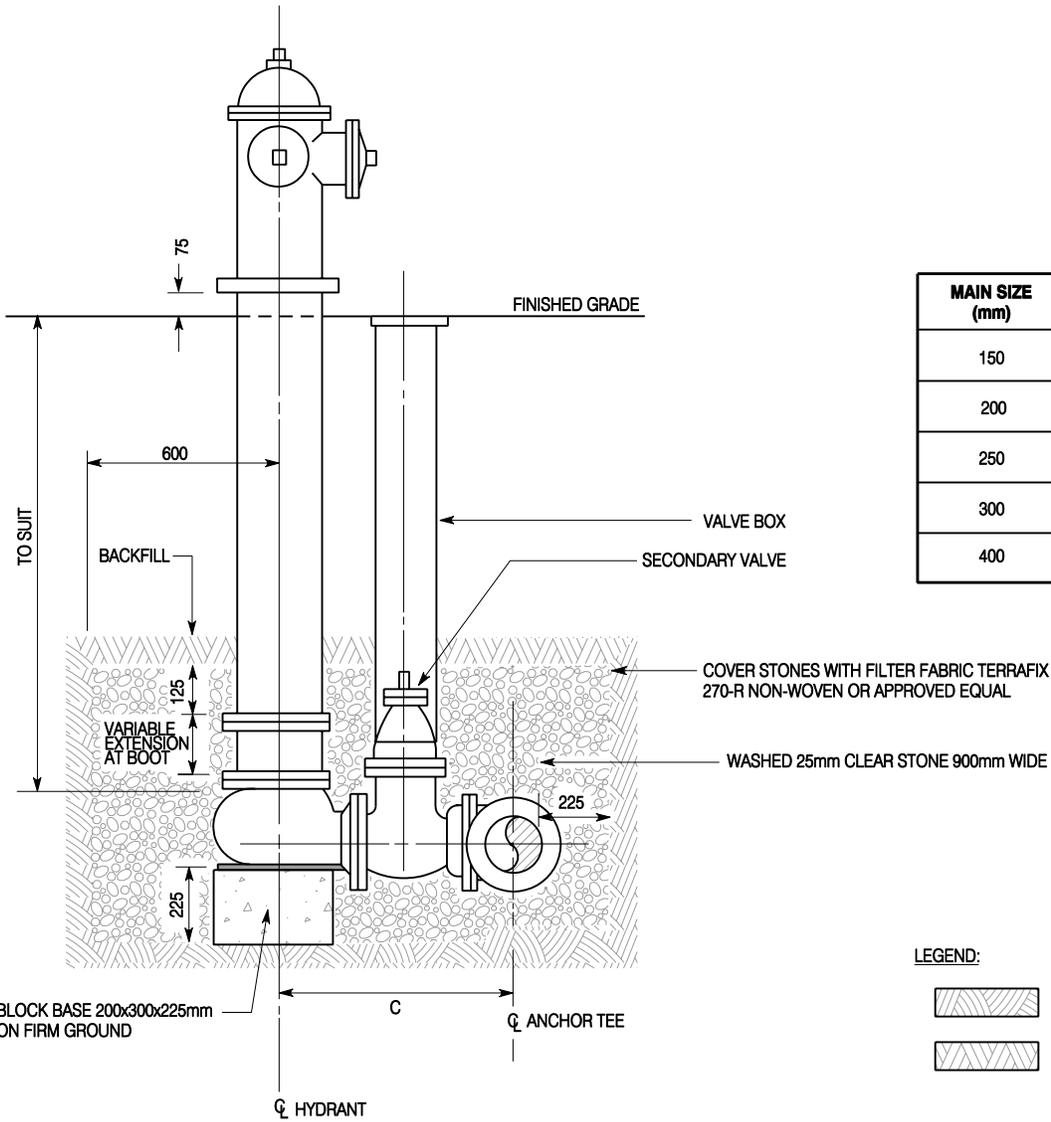
HAMILTON STD No

WM-203.01

TEE SIZE (mm)	A (mm)	B (mm)
150x150x150	273	533
200x200x150	298	584
250x250x150	349	686
300x300x150	375	736
400x400x150	425	762



MECHANICAL JOINT ANCHOR TEE



MAIN SIZE (mm)	DIMENSION C (mm)
150	746
200	772
250	822
300	848
400	898

LEGEND:

-  DENOTES UNDISTURBED GROUND
-  DENOTES BACKFILL

City of Hamilton
Public Works Department

HYDRANT INSTALLATION USING ANCHOR TEE

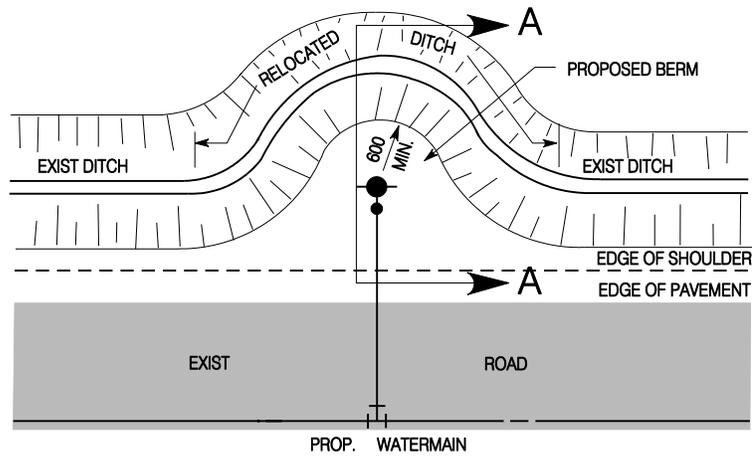
DIMENSIONS SHOWN ARE IN MILLIMETRES
UNLESS OTHERWISE NOTED (N.T.S.)

DATE
November 2005

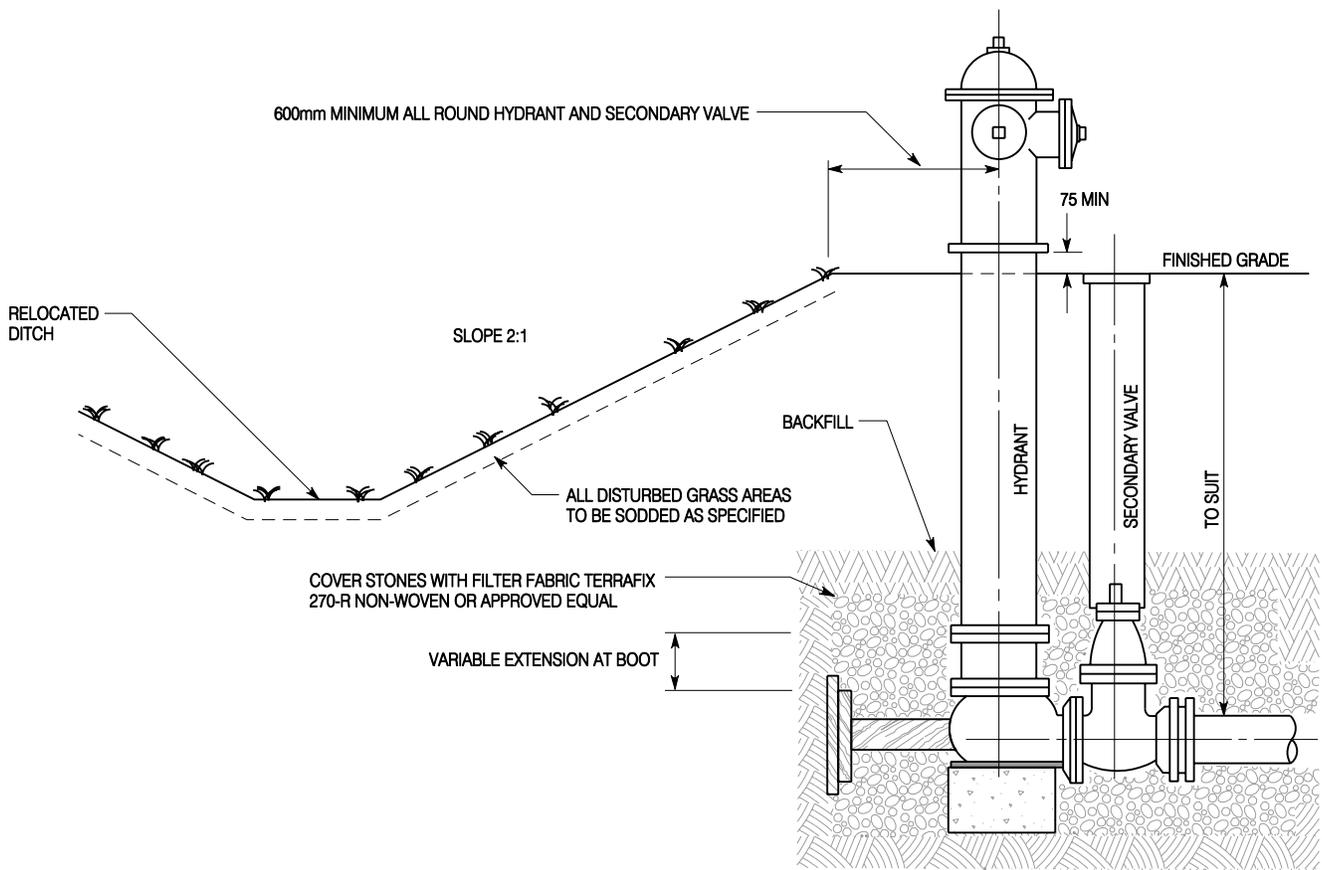
REV No
FORMERLY: RWS 604

HAMILTON STD No

WM-203.02



PLAN VIEW



SECTION A-A

HYDRANT INSTALLATION (WM-203.01)

LEGEND:

-  DENOTES UNDISTURBED GROUND.
-  DENOTES BACKFILL.

City of Hamilton
Public Works Department

RELOCATION OF DITCHES AT HYDRANTS

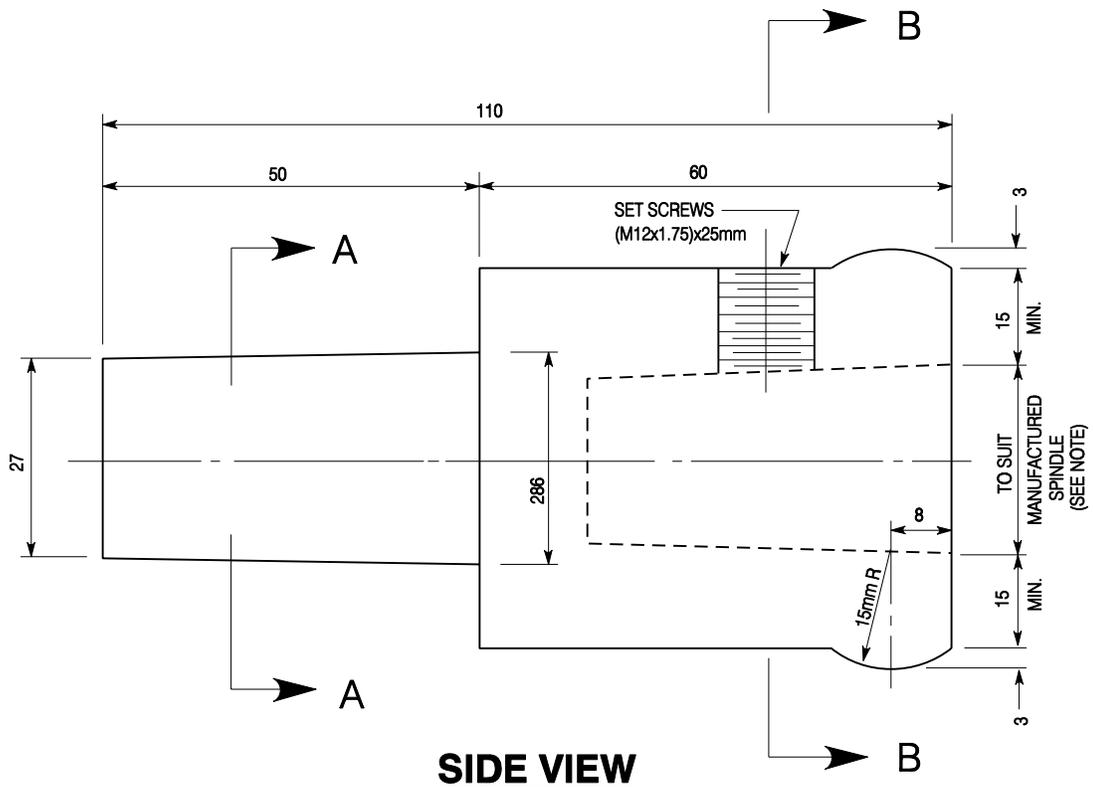
DIMENSIONS SHOWN ARE IN MILLIMETRES
UNLESS OTHERWISE NOTED (N.T.S.)

DATE
November 2005

REV No
FORMERLY: RWS 603

HAMILTON STD No

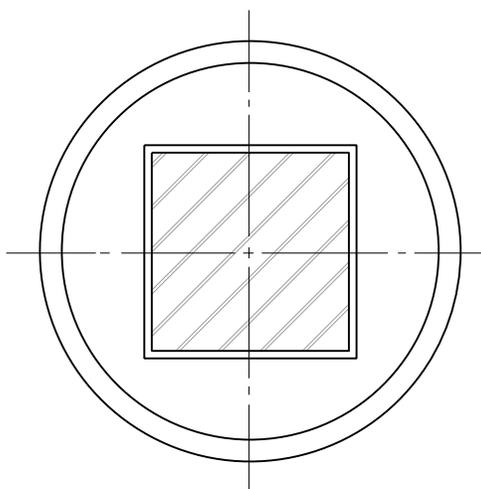
WM-203.03



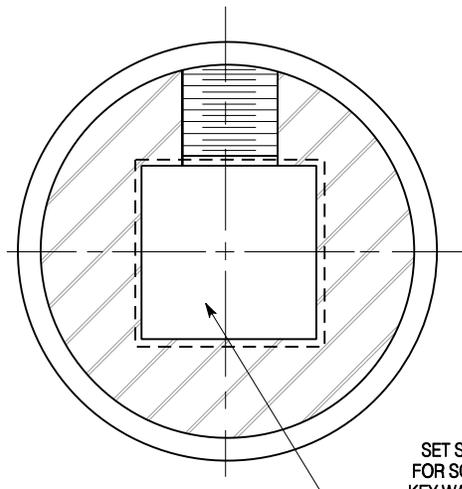
SIDE VIEW

NOTE:

INTERNAL SPINDLE DIMENSIONS
 a) 21.3mm x 21.23mm
 b) 24.6mm x 24.6mm
 c) 33.3mm x 33.3mm



SECTION A-A



SECTION B-B

SPINDLE RECESS
 SET SCREWS TO BE PROVIDED
 FOR SQUARE VALVE SPINDLES.
 KEYWAYS ARE TO BE PROVIDED
 FOR ROUND VALVE SPINDLES.

City of Hamilton
 Public Works Department

**OPERATING NUT ADAPTOR
 FOR USE ON OPEN CLOCKWISE (RIGHT) VALVES**

DIMENSIONS SHOWN ARE IN MILLIMETRES
 UNLESS OTHERWISE NOTED (N.T.S.)

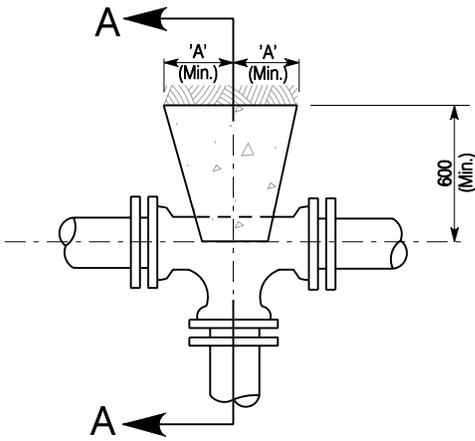
DATE
 January 2011

REV No
 1

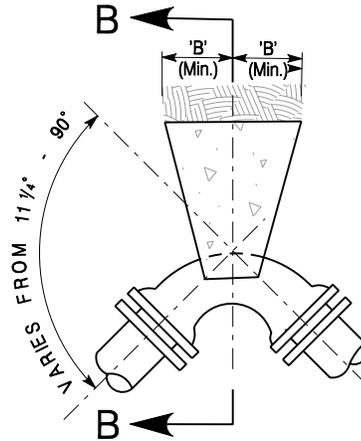
FORMERLY: RWS 601

HAMILTON STD No

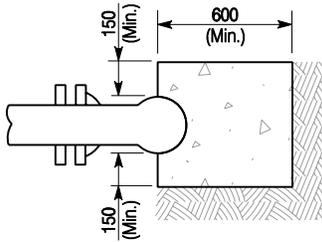
WM-203.04



PLAN VIEW

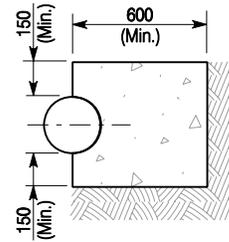


PLAN VIEW



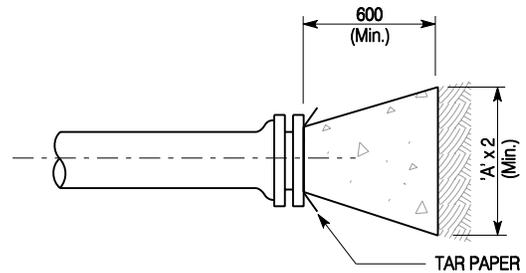
**TEES
SECTION A-A**

**11 1/4° - 22 1/2° - 45° & 90° BENDS
SECTION B-B**



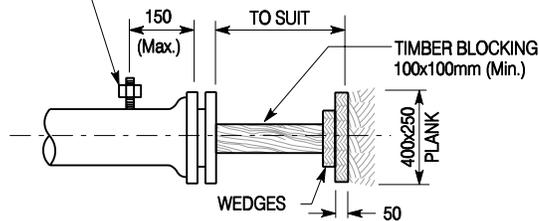
DIMENSION 'A'	
100 TO 200 DIA.	250 TO 300 DIA.
300	450

DIMENSION 'B'		
	100 - 200 DIA.	250 - 300 DIA.
90° & 45°	300	600
22 1/2° & 11 1/4°	300	300

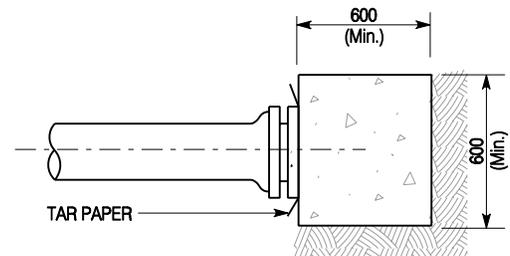


PLAN VIEW

INSTALL 20mm MAIN STOP WHERE SPECIFIED



**PLUGS - TEMPORARY
SIDE VIEW**



**PLUGS - PERMANENT
SIDE VIEW**

NOTES:

1. ABOVE ANCHOR BLOCKS TO BE USED ON MECHANICAL JOINT AND TYTON JOINT FITTINGS.
2.  DENOTES UNDISTURBED GROUND.
3. ALL CONCRETE TO BE 30 MPa.

City of Hamilton
Public Works Department

**CONCRETE ANCHOR BLOCKS FOR
300mm DIA. WATERMAINS AND SMALLER**

DIMENSIONS SHOWN ARE IN MILLIMETRES
UNLESS OTHERWISE NOTED (N.T.S.)

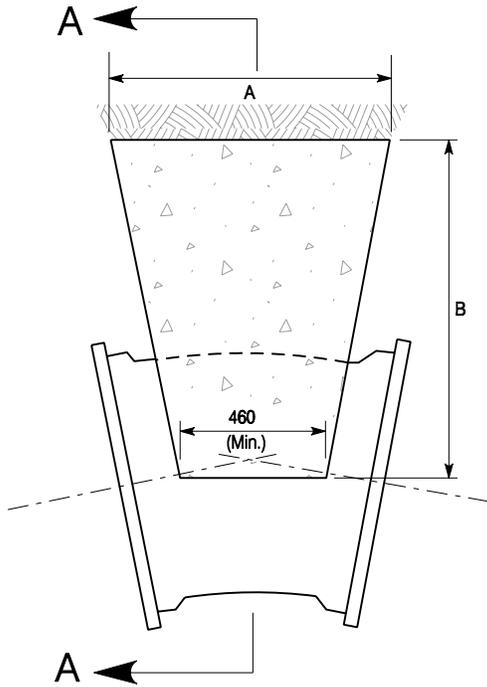
DATE
January 2011

REV No
1

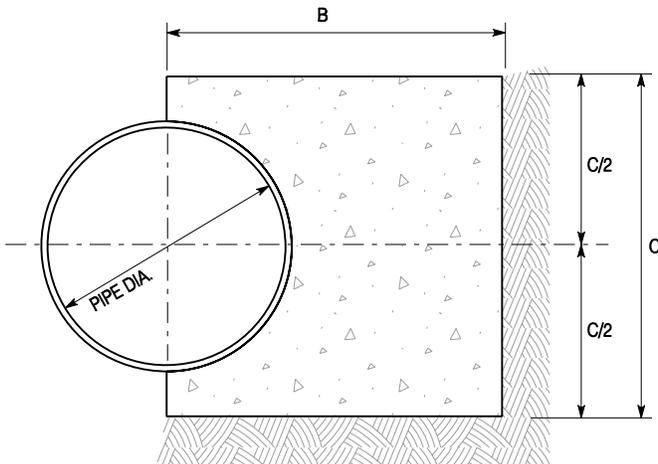
FORMERLY: RWS-400

HAMILTON STD No

WM-204.01



PLAN VIEW



SECTION A-A

NOTES:

- 1. DENOTES UNDISTURBED GROUND.
- 2. ALL CONCRETE TO BE 30 MPa.

		PIPE DIA. (mm)					
		400	450	500	600	750	900
MIN. DIMENSION (mm)	A	700	700	750	750	900	1200
	B	750	750	900	900	1050	1200
	C	750	750	900	900	1200	1200

City of Hamilton
Public Works Department

**11-¼° & 22-½° ANGLE ANCHOR BLOCK DETAILS
FOR 400mm TO 900mm DIA. D.I. WATERMAINS**

DIMENSIONS SHOWN ARE IN MILLIMETRES
UNLESS OTHERWISE NOTED (N.T.S.)

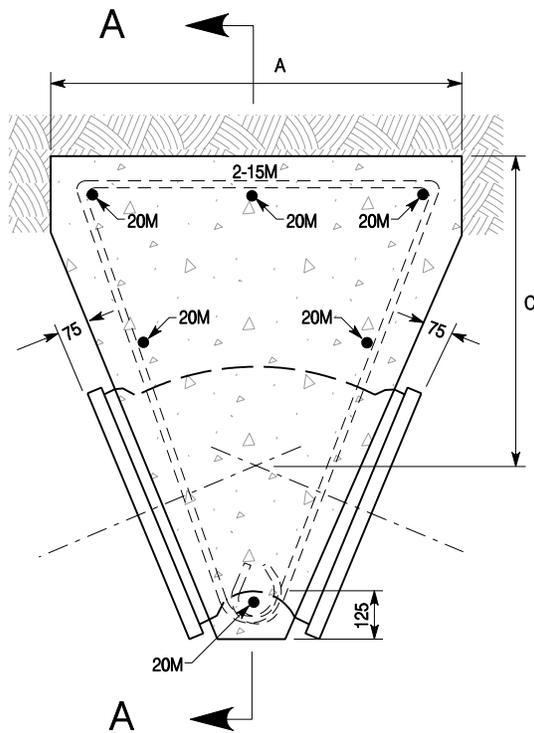
DATE
January 2011

REV No
1

FORMERLY: RWS-401

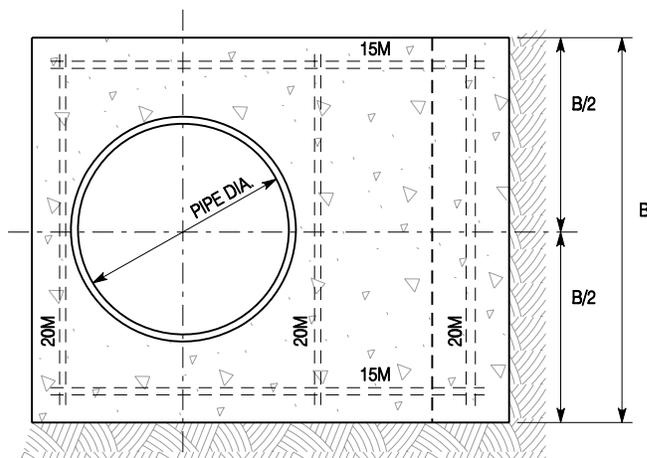
HAMILTON STD No

WM-204.02



PLAN VIEW

		PIPE DIA. (mm)					
		400	450	500	600	750	900
MIN. DIMENSION (mm)	A	900	1000	1150	1200	1700	2000
	B	700	750	840	1150	1200	1500
	C	725	750	750	900	1050	1200



SECTION A-A

NOTES:

1.  DENOTES UNDISTURBED GROUND.
2. ALL CONCRETE TO BE 30 MPa.
3. MINIMUM COVER OF CONCRETE OVER REINFORCING TO BE 75mm
4. ALL REINFORCING STEEL TO BE GRADE 400.
5. JOINT BOLTS TO BE PLACED PRIOR TO POURING CONCRETE.

City of Hamilton
Public Works Department

**45° ANGLE ANCHOR BLOCK DETAILS FOR
400mm TO 900mm DIA. D.I. WATERMAINS**

DIMENSIONS SHOWN ARE IN MILLIMETRES
UNLESS OTHERWISE NOTED (N.T.S.)

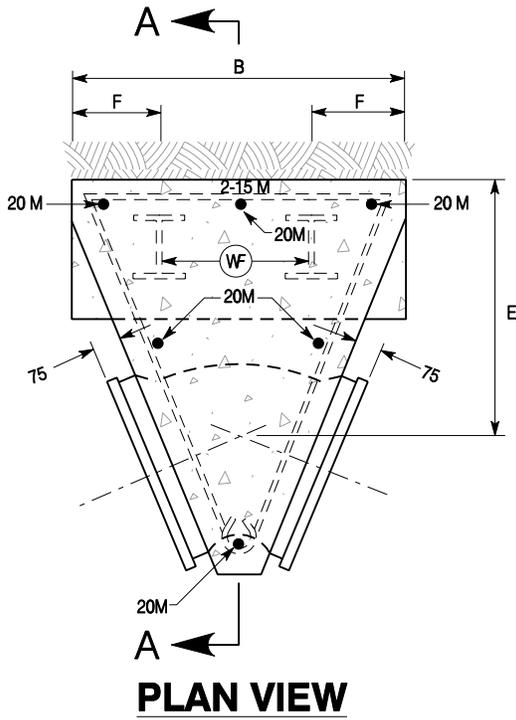
DATE
January 2011

REV No
1

FORMERLY: RWS-402

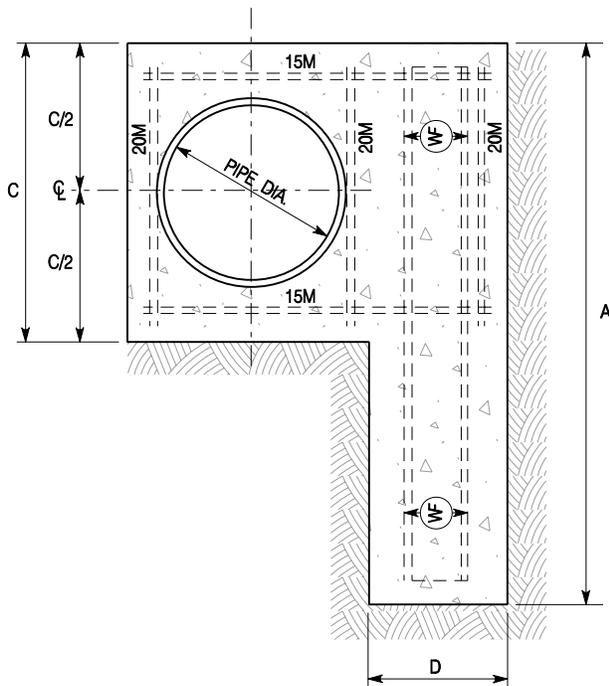
HAMILTON STD No

WM-204.03



PLAN VIEW

		PIPE DIA. (mm)					
		400	450	500	600	750	900
MIN. DIMENSION (mm)	A	1700	1750	1800	1800	2100	2100
	B	850	850	1050	1050	1200	1500
	C	750	900	900	900	1050	1200
	D	400	450	450	450	500	500
	E	650	700	750	850	1050	1200
	F	225	300	300	300	400	400
	WF		W 200x46	W 200x46	W 200x46	W 200x46	W 250x68



SECTION A-A

NOTES:

1.  DENOTES UNDISTURBED GROUND.
2. ALL CONCRETE TO BE 30 MPa.
3. MINIMUM COVER OF CONCRETE OVER REINFORCING TO BE 75mm
4. ALL REINFORCING STEEL TO BE GRADE 400.
5. JOINT BOLTS TO BE PLACED PRIOR TO POURING CONCRETE.

City of Hamilton
Public Works Department

**45° ANGLE ANCHOR BLOCK WITH LEG FOR
400mm TO 900mm DIA. D.I. WATERMAINS**

DIMENSIONS SHOWN ARE IN MILLIMETRES
UNLESS OTHERWISE NOTED (N.T.S.)

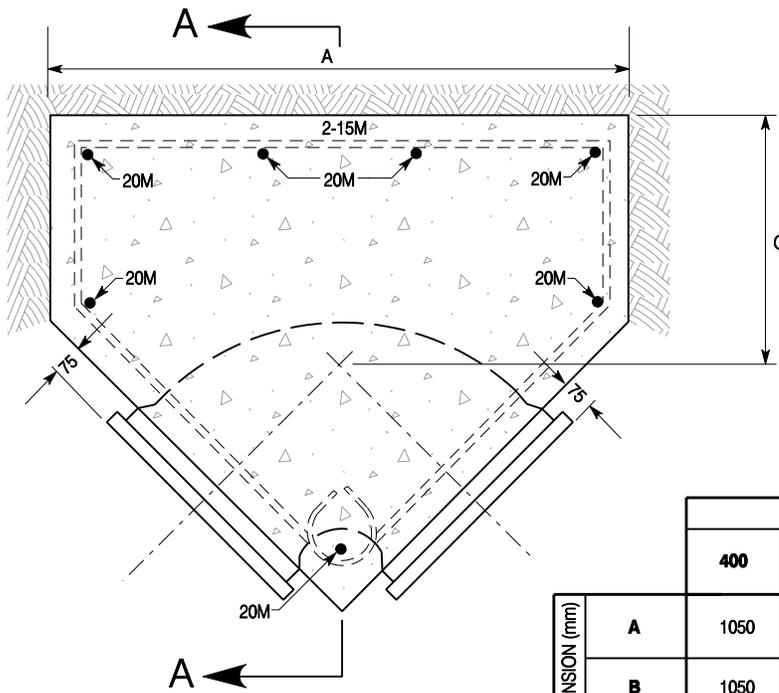
DATE
January 2011

REV No
1

FORMERLY: RWS-405

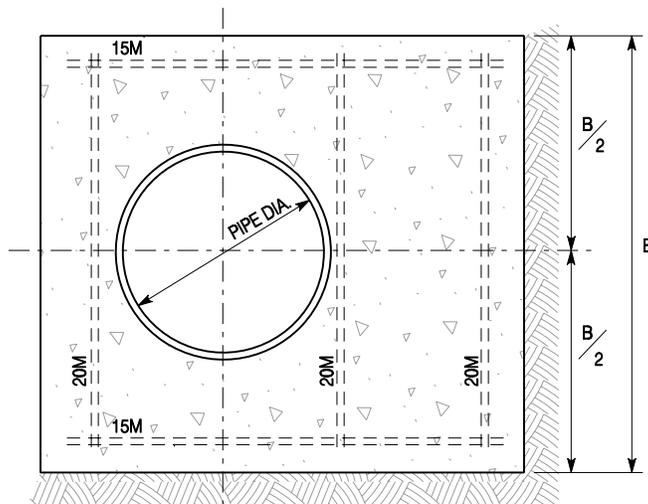
HAMILTON STD No

WM-204.04



PLAN VIEW

		PIPE DIA. (mm)					
		400	450	500	600	750	900
MIN. DIMENSION (mm)	A	1050	1200	1400	1800	2500	3000
	B	1050	1150	1300	1400	1500	1800
	C	600	650	700	750	900	1050



SECTION A-A

NOTES:

1.  DENOTES UNDISTURBED GROUND.
2. ALL CONCRETE TO BE 30 MPa.
3. MINIMUM COVER OF CONCRETE OVER REINFORCING TO BE 75mm.
4. ALL REINFORCING STEEL TO BE GRADE 400.
5. JOINT BOLTS TO BE PLACED PRIOR TO POURING CONCRETE.

City of Hamilton
Public Works Department

**90° ANGLE ANCHOR BLOCK DETAILS FOR
400mm TO 900mm DIA. D.I. WATERMAINS**

DIMENSIONS SHOWN ARE IN MILLIMETRES
UNLESS OTHERWISE NOTED (N.T.S.)

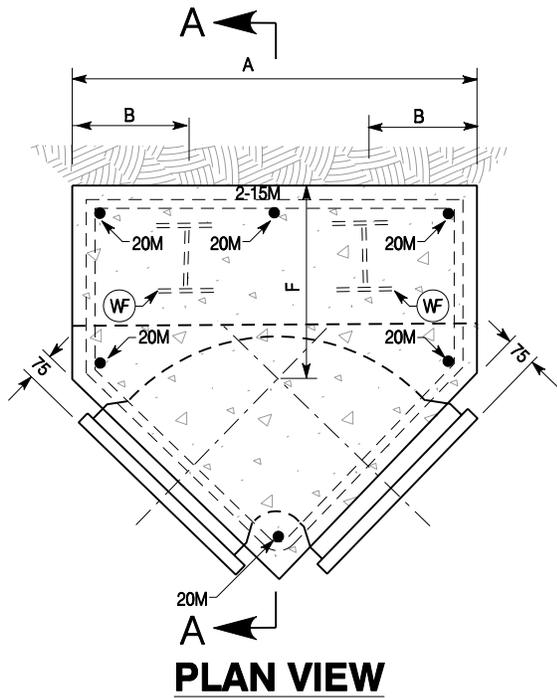
DATE
January 2011

REV No
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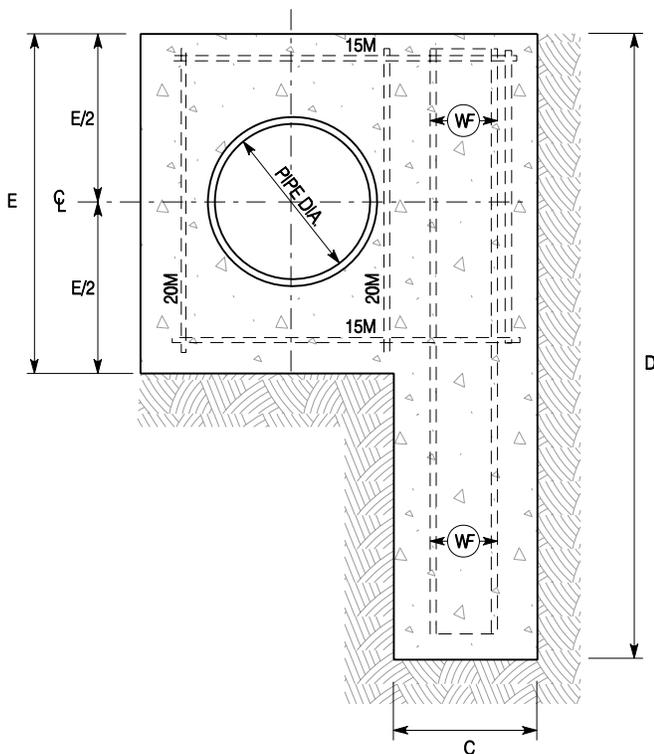
FORMERLY: RWS-403

HAMILTON STD No

WM-204.05



		PIPE DIA. (mm)					
		400	450	500	600	750	900
MIN. DIMENSION (mm)	A	1050	1200	1300	1300	1600	1900
	B	300	300	350	350	400	450
	C	400	400	450	450	500	600
	D	2000	2000	2300	2300	2400	3000
	E	900	1100	1400	1400	1500	1800
	F	600	650	700	750	900	1200
	WF	W200x46	W200x46	W200x46	W250x115	W250x115	W300x128



NOTES:

1.  DENOTES UNDISTURBED GROUND.
2. ALL CONCRETE TO BE 30 MPa.
3. MINIMUM COVER OF CONCRETE OVER REINFORCING TO BE 75mm
4. ALL REINFORCING STEEL TO BE GRADE 400.
5. JOINT BOLTS TO BE PLACED PRIOR TO POURING CONCRETE.

City of Hamilton
Public Works Department

**90° ANGLE ANCHOR BLOCK WITH LEG FOR
400mm TO 900mm DIA. D.I. WATERMAINS**

DIMENSIONS SHOWN ARE IN MILLIMETRES
UNLESS OTHERWISE NOTED (N.T.S.)

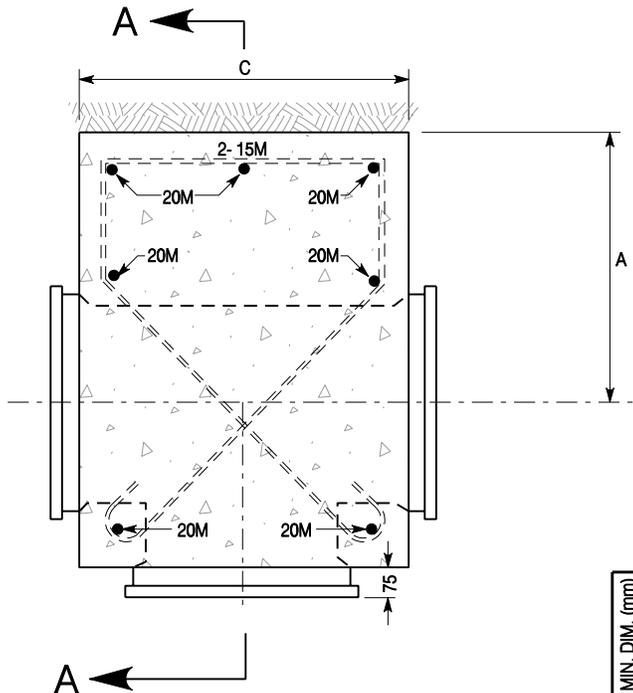
DATE
January 2011

REV No
1

FORMERLY: RWS-406

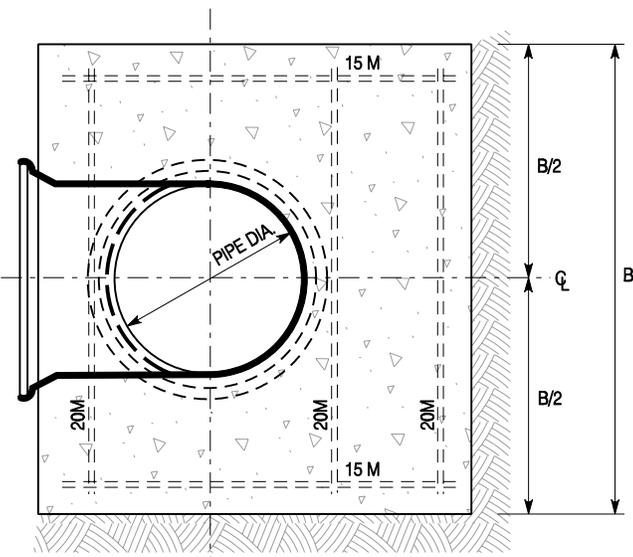
HAMILTON STD No

WM-204.06



PLAN VIEW

		BRANCH PIPE DIA. (mm)					
		400	450	500	600	750	900
MIN. DIM. (mm)	A	800	850	900	900	1050	1200
	B	1050	1200	1400	1600	2300	2800
	C	750	850	900	1100	1200	1400



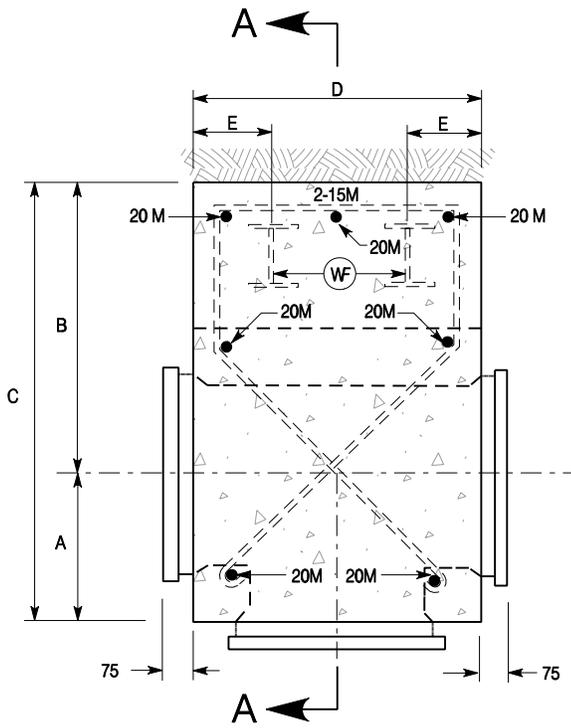
SECTION A-A

NOTES:

1.  DENOTES UNDISTURBED GROUND.
2. ALL CONCRETE TO BE 30 MPa.
3. MINIMUM COVER OF CONCRETE OVER REINFORCING TO BE 75mm.
4. ALL REINFORCING STEEL TO BE GRADE 400.
5. JOINT BOLTS TO BE PLACED PRIOR TO POURING CONCRETE.

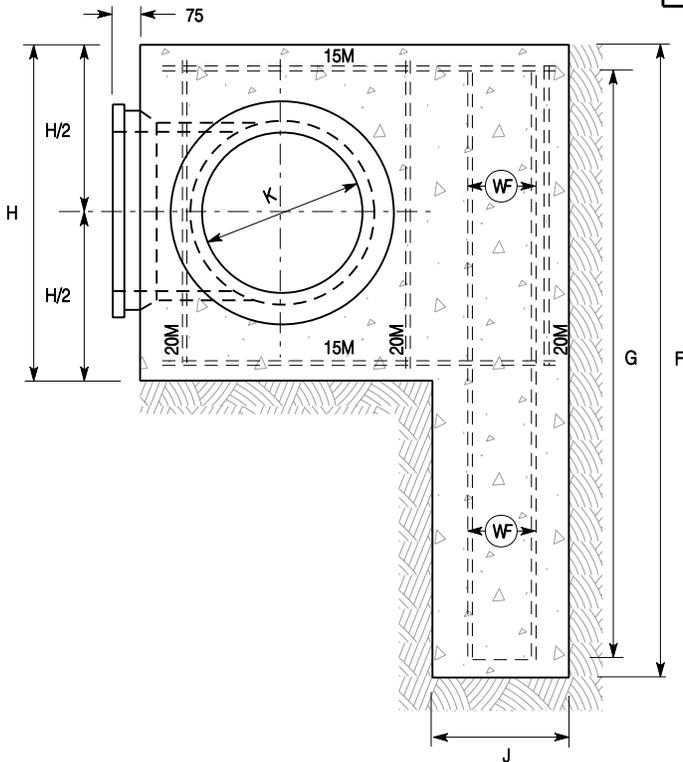
City of Hamilton
Public Works Department

**TEE ANCHOR BLOCK DETAILS FOR
400mm TO 900mm DIA D.I. WATERMAIN BRANCHES**



PLAN VIEW

		BRANCH PIPE DIA. (mm)					
		400	450	500	600	750	900
MIN. DIMENSION (mm)	A	380	430	460	560	600	650
	B	800	850	900	900	1000	1200
	C	1180	1280	1360	1460	1600	1850
	D	750	850	900	1100	1200	1400
	E	225	225	225	325	350	350
	F	2000	2000	2300	2300	2500	2700
	G	1850	1850	2150	2150	2350	2550
	H	900	950	1050	1200	1300	1500
	J	450	450	450	450	500	600
	K	400	450	500	600	750	900
	WF	W200x46	W200x46	W200x46	W250x115	W250x115	W300x128



SECTION A-A

NOTES:

1.  DENOTES UNDISTURBED GROUND.
2. ALL CONCRETE TO BE 30 MPa.
3. MINIMUM COVER OF CONCRETE OVER REINFORCING TO BE 75MM.
4. ALL REINFORCING STEEL TO BE GRADE 400.
5. JOINT BOLTS TO BE PLACED PRIOR TO POURING CONCRETE.

City of Hamilton
Public Works Department

**TEE ANCHOR BLOCK WITH LEG FOR
400mm TO 900mm DIA. D.I. BRANCH WATERMAINS**

DIMENSIONS SHOWN ARE IN MILLIMETRES
UNLESS OTHERWISE NOTED (N.T.S.)

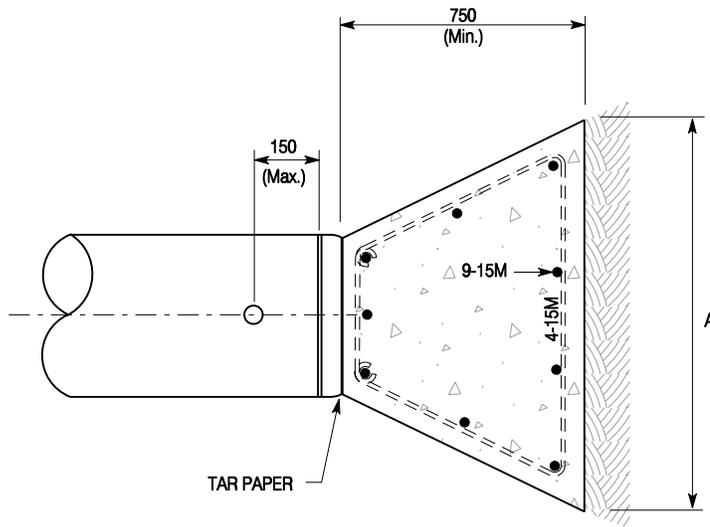
DATE
January 2011

REV No
1

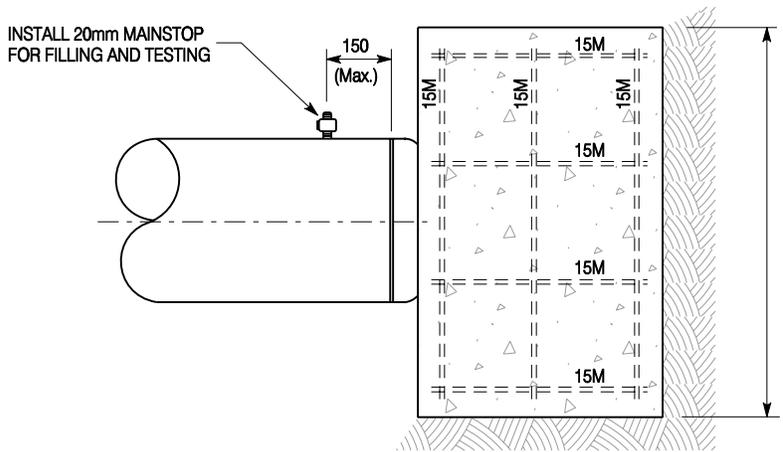
FORMERLY: RWS-407

HAMILTON STD No

WM-204.08



PLAN VIEW



SIDE ELEVATION

NOTES:

1.  DENOTES UNDISTURBED GROUND.
2. ALL CONCRETE TO BE 30 MPa.
3. MINIMUM COVER OF CONCRETE OVER REINFORCING TO BE 75mm.
4. ALL REINFORCING STEEL TO BE GRADE 400.

		PIPE DIA. (mm)					
		400	450	500	600	750	900
MIN. DIM. (mm)	A	900	1000	1150	1400	1650	2000

City of Hamilton
Public Works Department

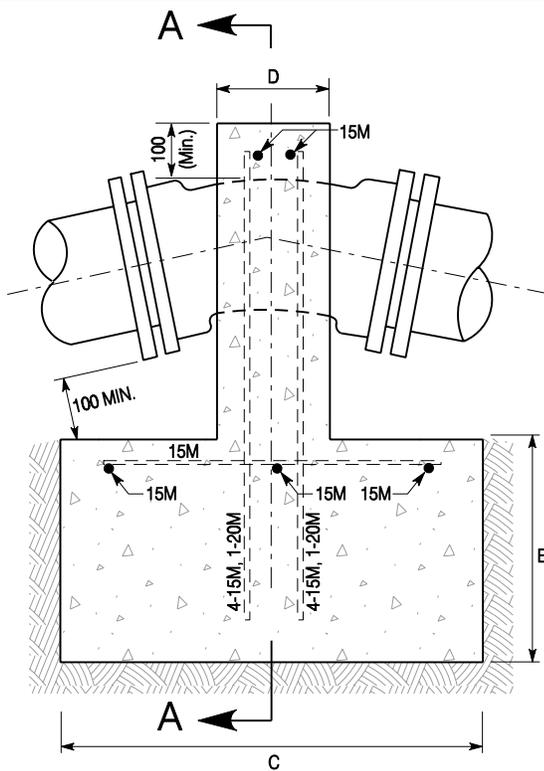
**CONCRETE THRUST BLOCK
FOR 400mm TO 900mm DIA. D.I. WATERMAINS**

DIMENSIONS SHOWN ARE IN MILLIMETRES
UNLESS OTHERWISE NOTED (N.T.S.)

DATE
January 2011

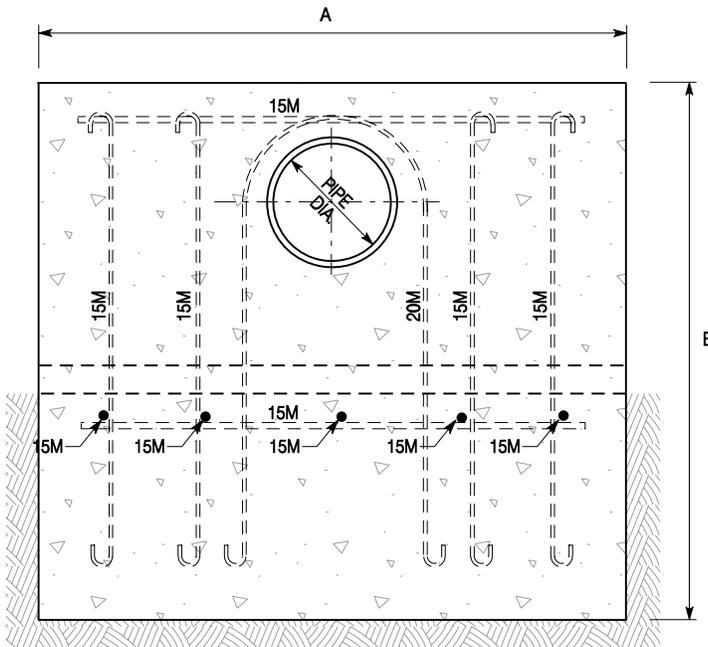
REV No
1
FORMERLY: RWS-411

HAMILTON STD No
WM-204.09



SIDE ELEVATION

		PIPE DIA. (mm)				
		100	150	200	250	300
MIN. DIMENSION (mm)	A	900	900	1050	1200	1450
	B	800	850	1000	1200	1350
	C	550	600	750	750	1050
	D	150	150	200	200	300
	E	300	300	400	550	600



SECTION A-A

NOTES:

1.  DENOTES UNDISTURBED GROUND.
2. ALL CONCRETE TO BE 30 MPa.
3. MINIMUM COVER OF CONCRETE OVER REINFORCING TO BE 75mm.
4. ALL REINFORCING STEEL TO BE GRADE 400.
5. FLANGE BOLTS TO BE PLACED PRIOR TO POURING CONCRETE.

City of Hamilton
Public Works Department

**CONCRETE ANCHOR BLOCK FOR
100mm TO 300mm DIA. D.I. WATERMAIN @ 11-¼° & 22-½° VERTICAL BENDS**

DIMENSIONS SHOWN ARE IN MILLIMETRES
UNLESS OTHERWISE NOTED (N.T.S.)

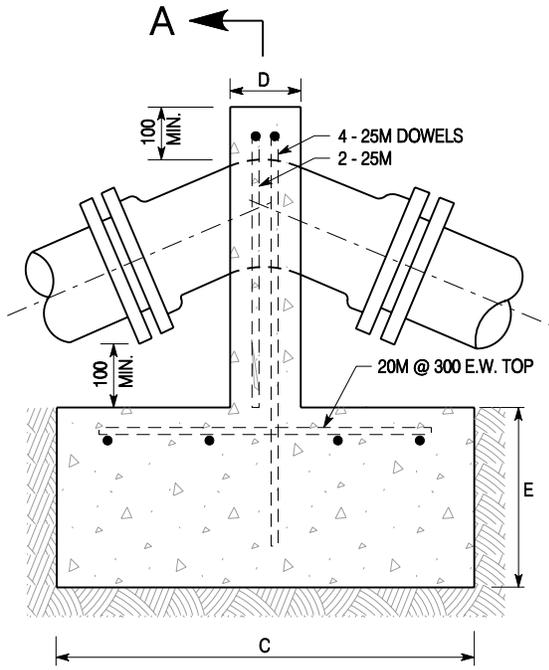
DATE
January 2011

REV No
1

FORMERLY: RWS-408

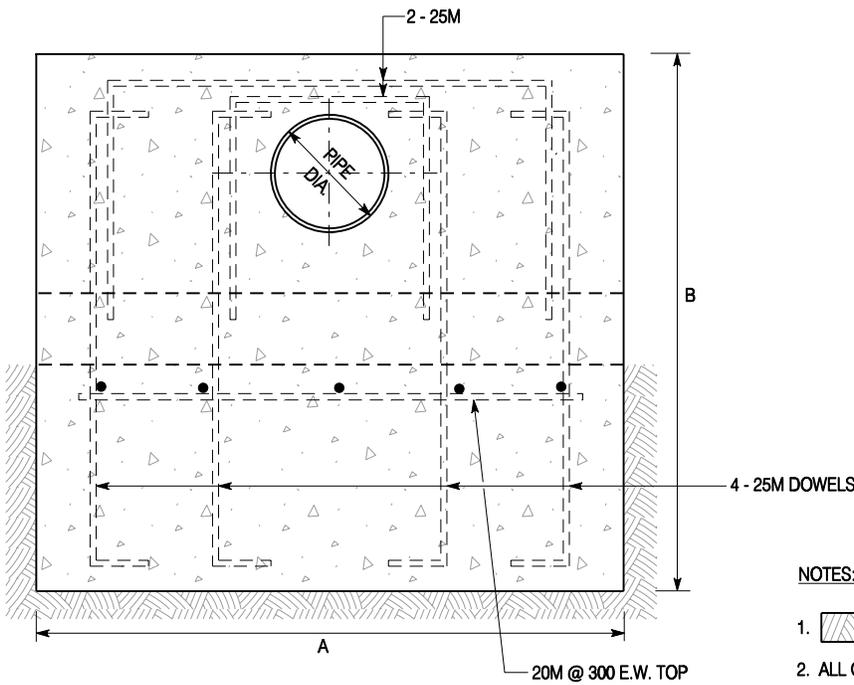
HAMILTON STD No

WM-204.10



		PIPE DIA. (mm)				
		100	150	200	250	300
MIN. DIMENSION (mm)	A	1000	1050	1200	1500	1500
	B	900	1000	1150	1450	1550
	C	700	750	1050	1500	1500
	D	150	150	200	200	250
	E	350	400	400	550	600

SIDE ELEVATION



SECTION A-A

NOTES:

1.  DENOTES UNDISTURBED GROUND.
2. ALL CONCRETE TO BE 30 MPa.
3. MINIMUM COVER OF CONCRETE OVER REINFORCING TO BE 75mm.
4. ALL REINFORCING STEEL TO BE GRADE 400.
5. FLANGE BOLTS TO BE PLACED PRIOR TO POURING CONCRETE.

City of Hamilton
Public Works Department

**CONCRETE ANCHOR BLOCK FOR
100mm TO 300mm DIA. D.I. WATERMAIN @ 45° VERTICAL BEND**

DIMENSIONS SHOWN ARE IN MILLIMETRES
UNLESS OTHERWISE NOTED (N.T.S.)

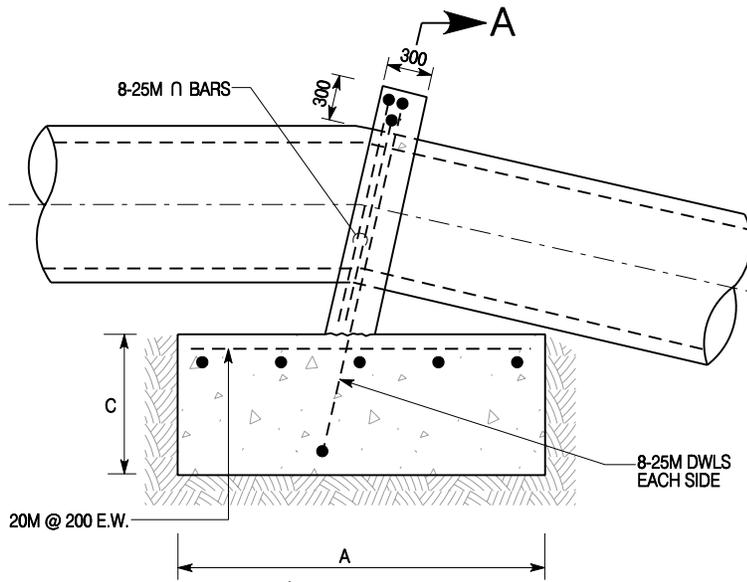
DATE
January 2011

REV No
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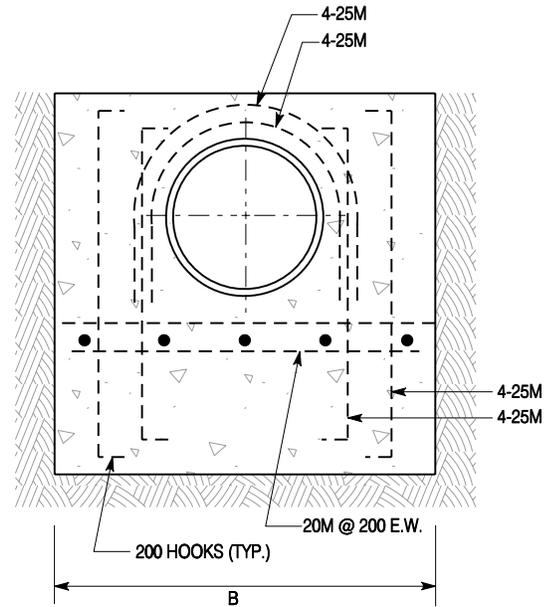
FORMERLY: RWS-409

HAMILTON STD No

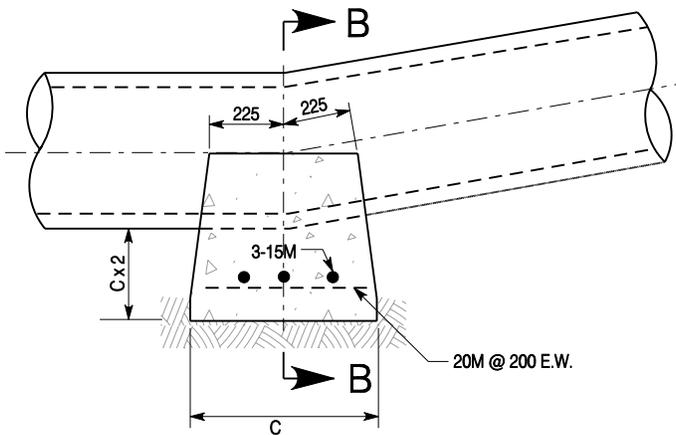
WM-204.11



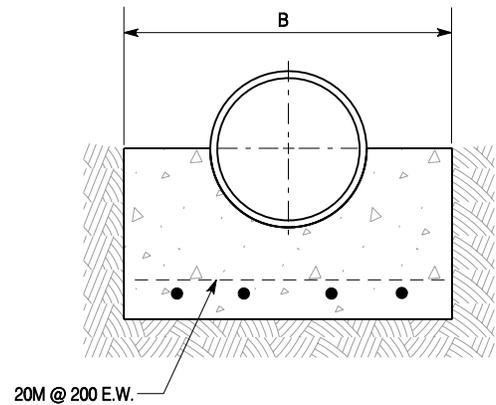
FOR UPWARD THRUST



SECTION A-A



FOR DOWNWARD THRUST



SECTION B-B

NOTES:

1. DENOTES UNDISTURBED GROUND.
2. ALL CONCRETE TO BE 30 MPa.
3. MINIMUM COVER OF CONCRETE OVER REINFORCING TO BE 75mm.
4. ALL REINFORCING STEEL TO BE GRADE 400.

		PIPE DIA. (mm)				
		400	500	600	750	900
7 ½° to 10°	A	1200	1500	1800	1800	2000
	B	1200	1500	1500	1800	2100
	C	450	600	600	750	900
11 ¼° to 22 ½°	A	1500	1800	1800	2400	2700
	B	1200	1500	1800	2100	2400
	C	750	750	750	900	1050

City of Hamilton
Public Works Department

**VERTICAL BEND ANCHOR BLOCK
7-½° TO 22-½° FOR 400mm TO 900mm DIA D.I. WATERMAIN**

DIMENSIONS SHOWN ARE IN MILLIMETRES
UNLESS OTHERWISE NOTED (N.T.S.)

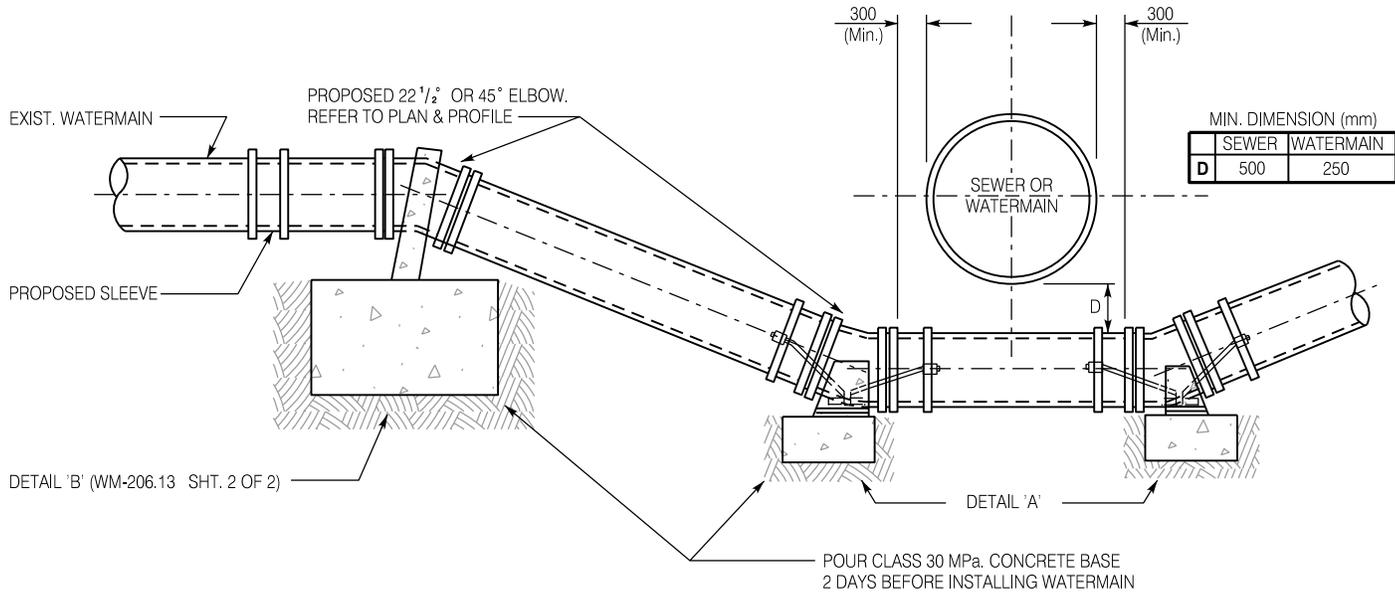
DATE
January 2011

REV No
1

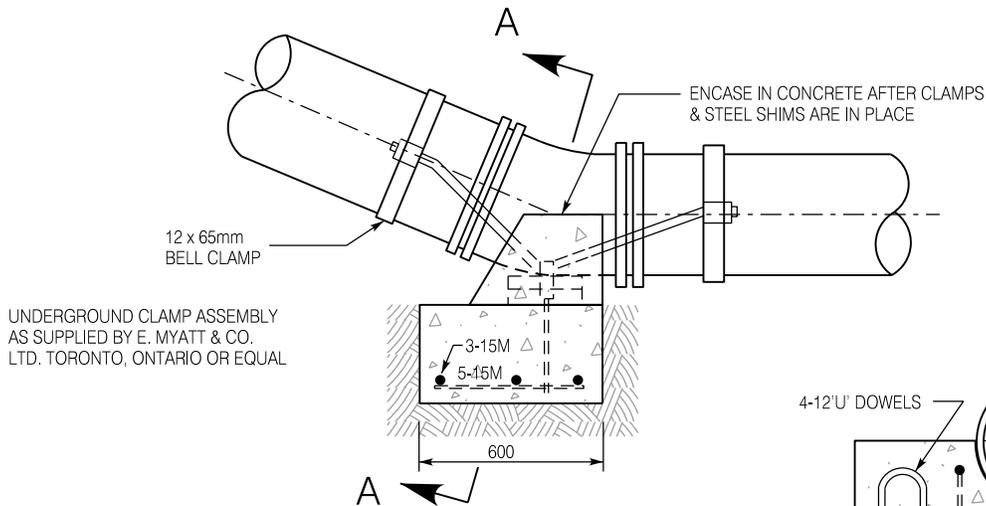
FORMERLY: RWS-412

HAMILTON STD No

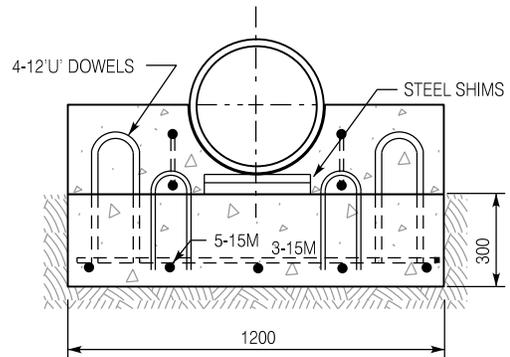
WM-204.12



SIDE VIEW



DETAIL A



SECTION A-A

DENOTES UNDISTURBED GROUND.

City of Hamilton
Public Works Department

**CONCRETE ANCHOR BLOCK FOR
100mm TO 300mm DIA. WATERMAIN LOWERING**

DIMENSIONS SHOWN ARE IN MILLIMETRES
UNLESS OTHERWISE NOTED (N.T.S.)

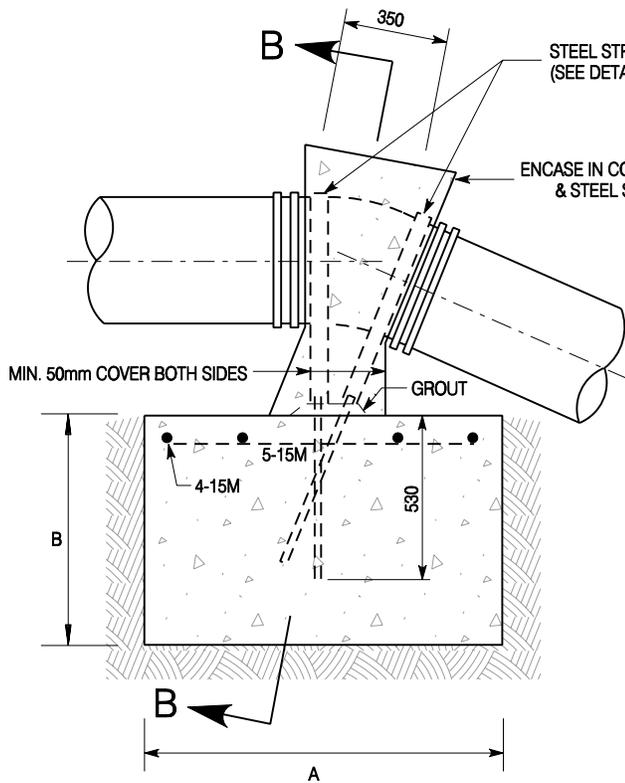
DATE
November 2018

REV No
1

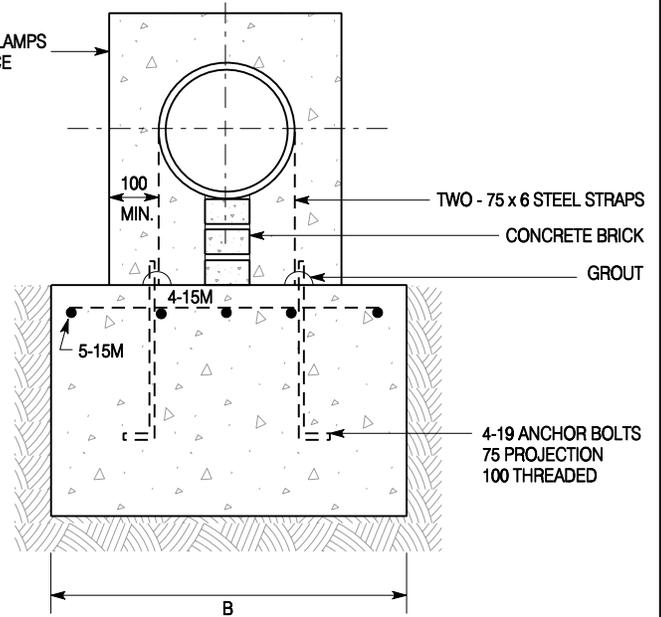
FORMERLY: RWS-413(1)

HAMILTON STD No
1 OF 2

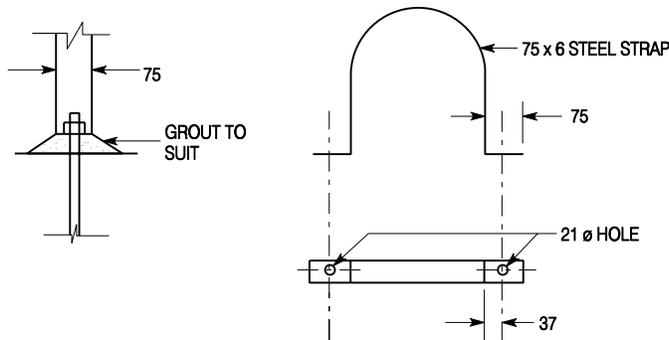
WM-204.13



**SIDE ELEVATION
(DETAIL A)**



SECTION B-B



**STEEL STRAPPING
DETAILS**

NOTES:

1. DENOTES UNDISTURBED GROUND.
2. ALL CONCRETE TO BE 30 MPa.
3. MINIMUM COVER OF CONCRETE OVER REINFORCING TO BE 75mm.
4. ALL REINFORCING STEEL TO BE GRADE 400.

		MIN. DIMENSION (mm)			
		22 ½° BEND		45° BEND	
		A	B	A	B
PIPE DIA. (mm)	150	900	450	1100	700
	200	1000	550	1350	800
	250	1100	650	1500	900
	300	1200	750	1650	1000

City of Hamilton
Public Works Department

**CONCRETE ANCHOR BLOCK FOR
100mm TO 300mm DIA. WATERMAIN LOWERING**

DIMENSIONS SHOWN ARE IN MILLIMETRES
UNLESS OTHERWISE NOTED (N.T.S.)

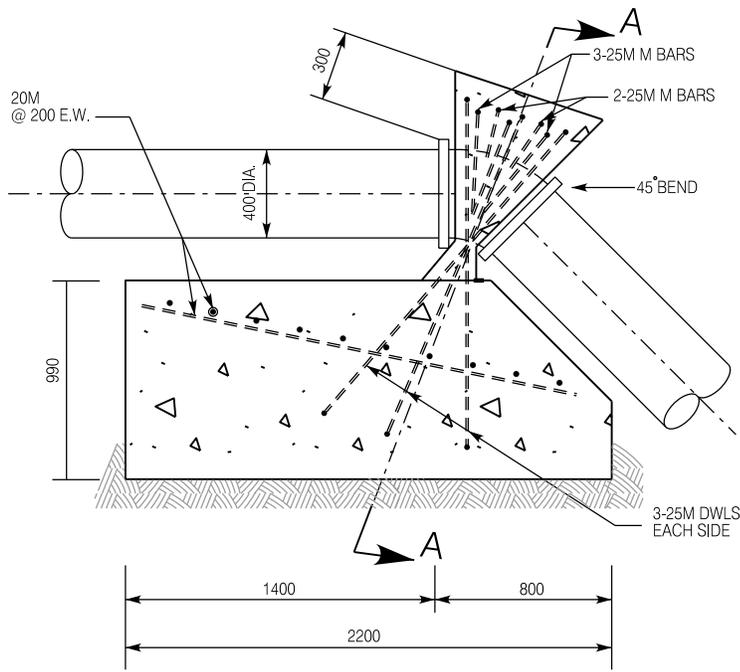
DATE
January 2011

REV No
1

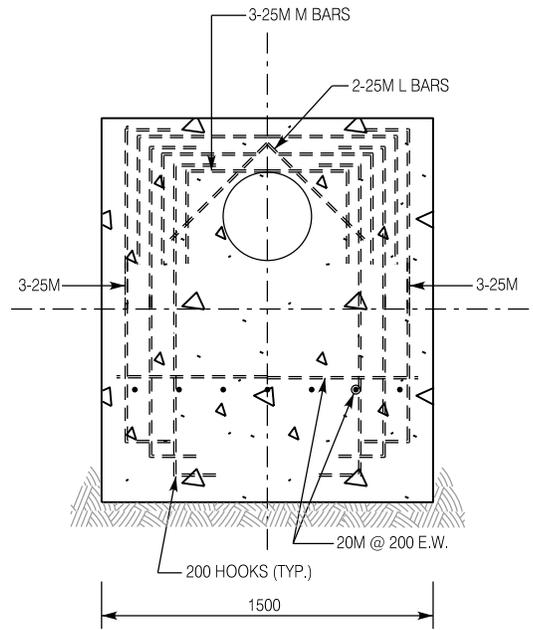
FORMERLY: RWS-413(2)

HAMILTON STD No
2 OF 2

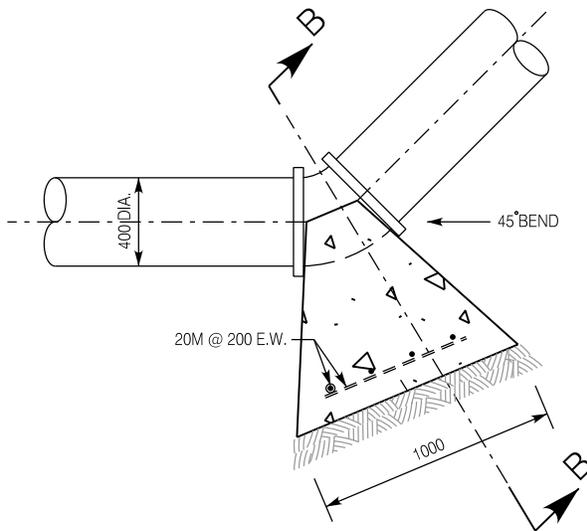
WM-204.13



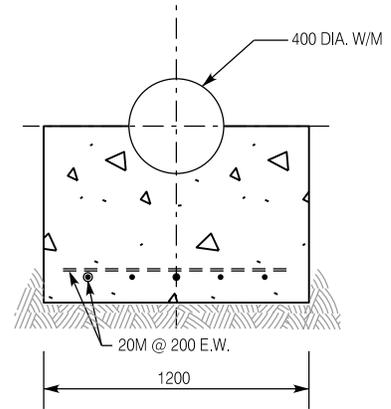
FOR UPWARD THRUST



SECTION A-A



FOR DOWNWARD THRUST



SECTION B-B

NOTES:

1. DENOTES UNDISTURBED GROUND.
2. ALL CONCRETE TO BE 40 MPa.
3. MINIMUM COVER OF CONCRETE OVER REINFORCING TO BE 75mm.
4. ALL REINFORCING STEEL TO BE GRADE 400.

City of Hamilton
Public Works Department

**VERTICAL BEND ANCHOR BLOCK
45° FOR 400mm DIA WATERMAIN**

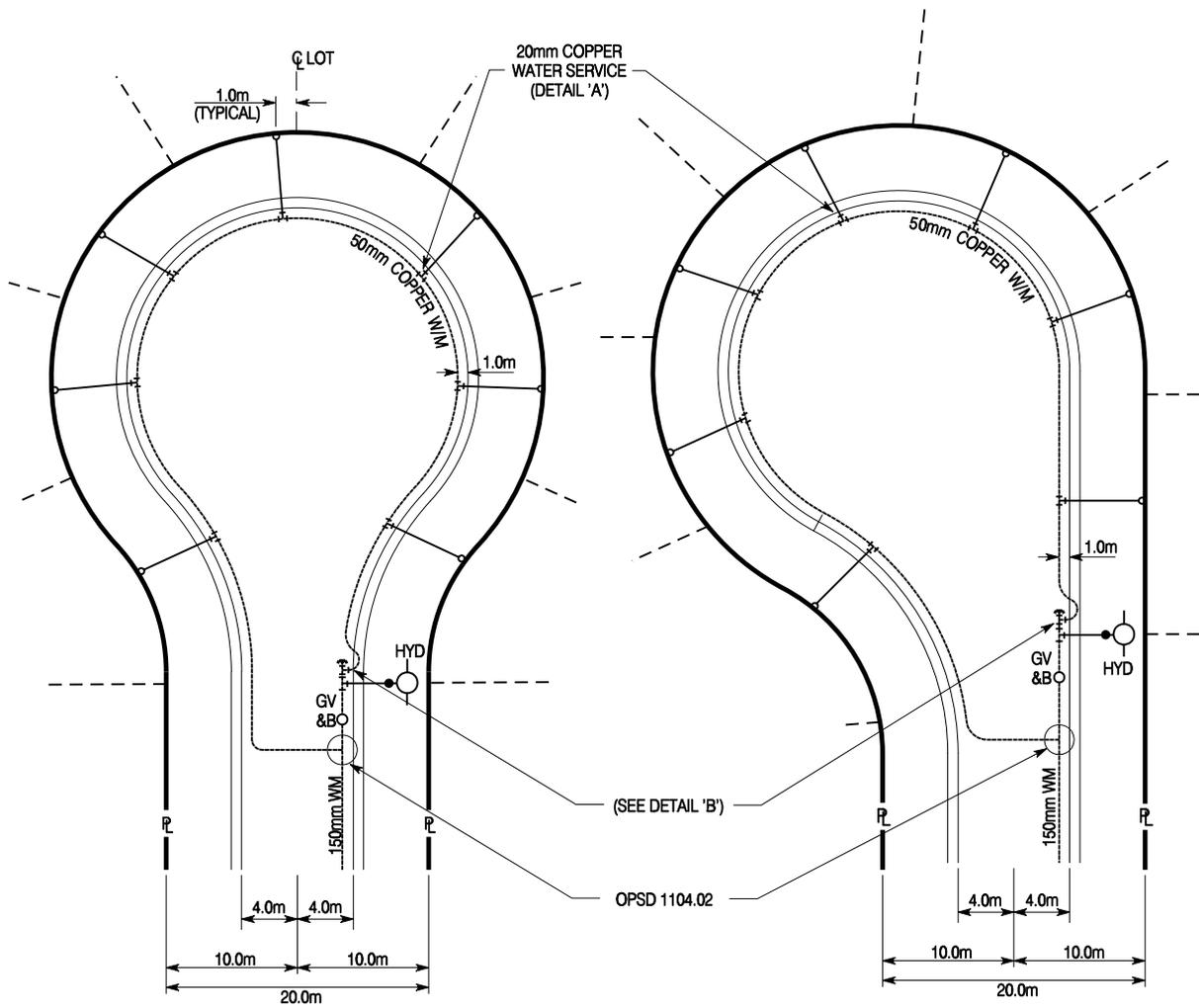
DIMENSIONS SHOWN ARE IN MILLIMETRES
UNLESS OTHERWISE NOTED

DATE: DRAFT
NOVEMBER 2018

REV No

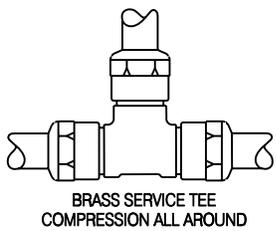
HAMILTON STD No

WM-204.14

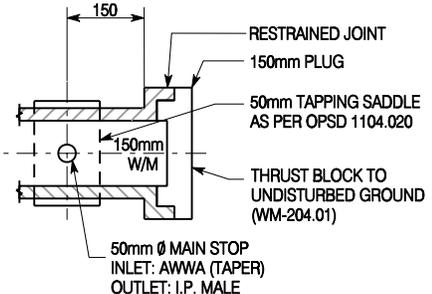


**20.0m R.O.W.
SYMMETRICAL**

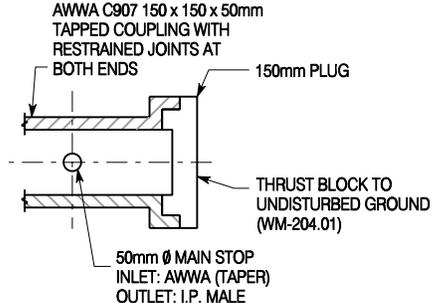
**20.0m R.O.W.
OFFSET LEFT**



DETAIL 'A'



DETAIL 'B'
DUCTILE IRON INSTALLATION

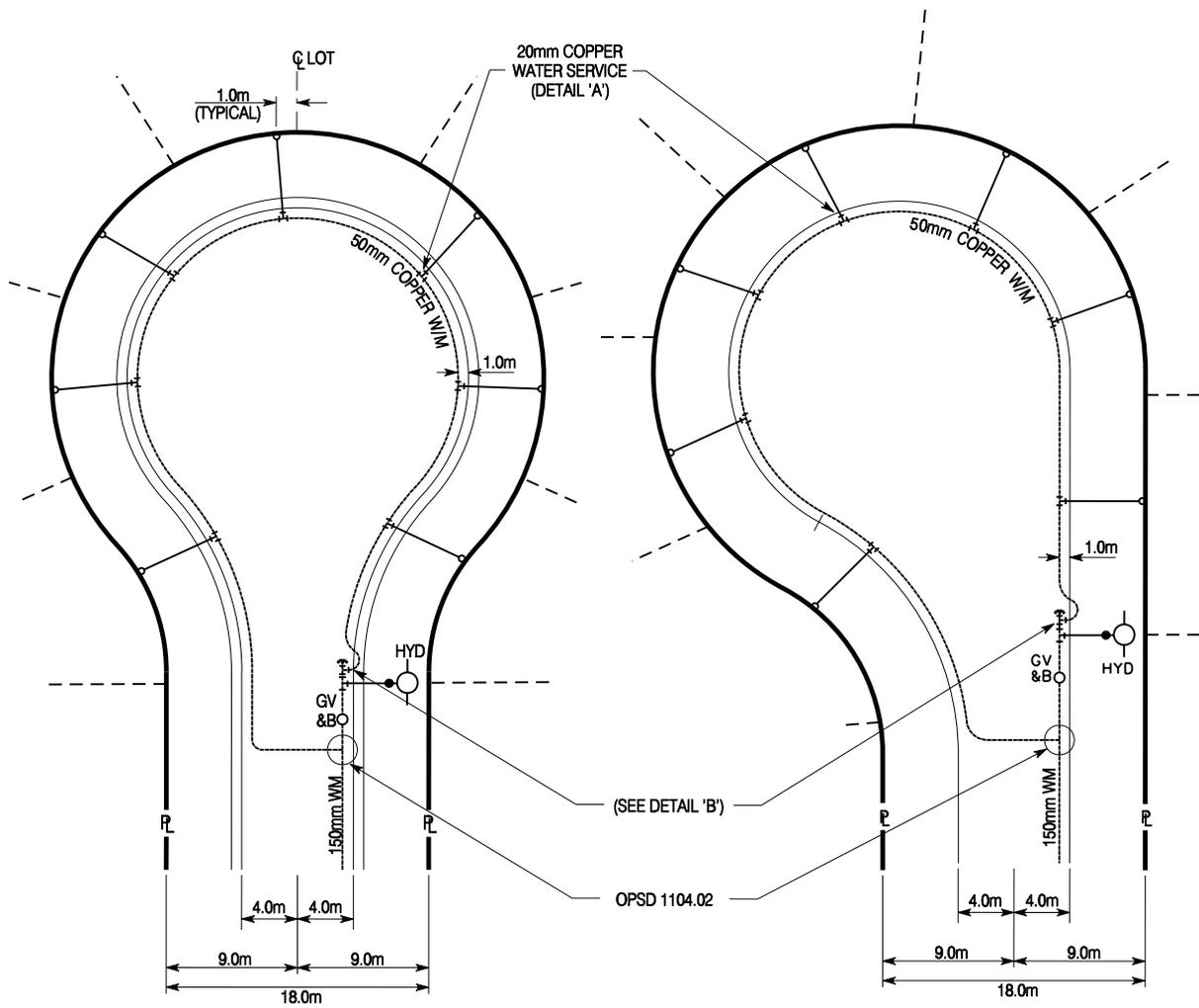


DETAIL 'B'
PVC INSTALLATION

City of Hamilton
Public Works Department

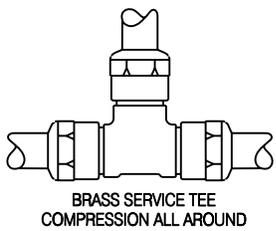
**50mm WATERMAIN LOOPING IN CUL-DE-SACS
(20m R.O.W.)**

DIMENSIONS SHOWN ARE IN MILLIMETRES UNLESS OTHERWISE NOTED (N.T.S.)	DATE March 2008	REV No 1	HAMILTON STD No WM-205.01
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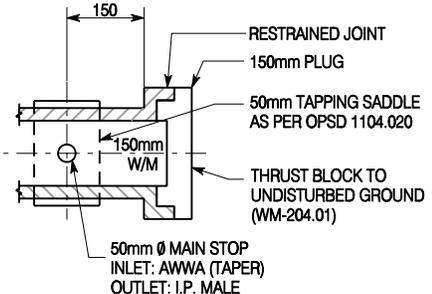


**18.0m R.O.W.
SYMMETRICAL**

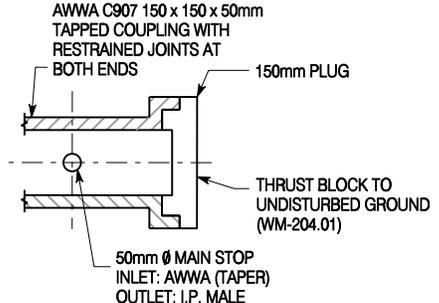
**18.0m R.O.W.
OFFSET LEFT**



DETAIL 'A'



DETAIL 'B'
DUCTILE IRON INSTALLATION

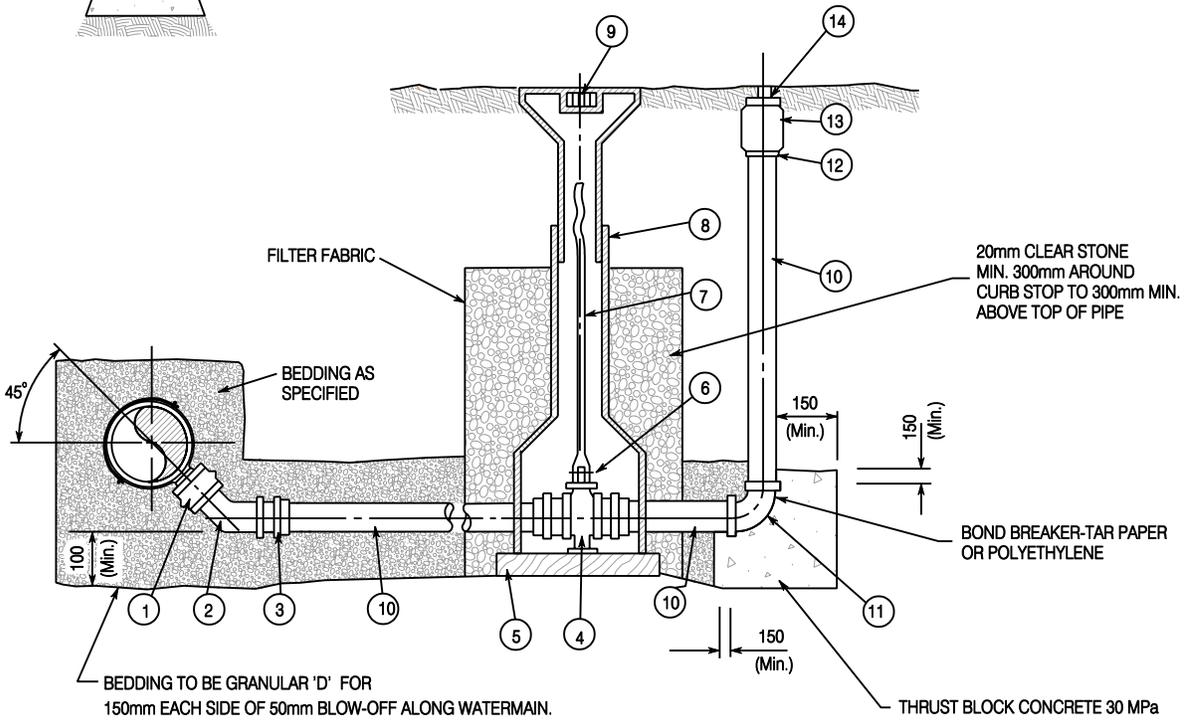
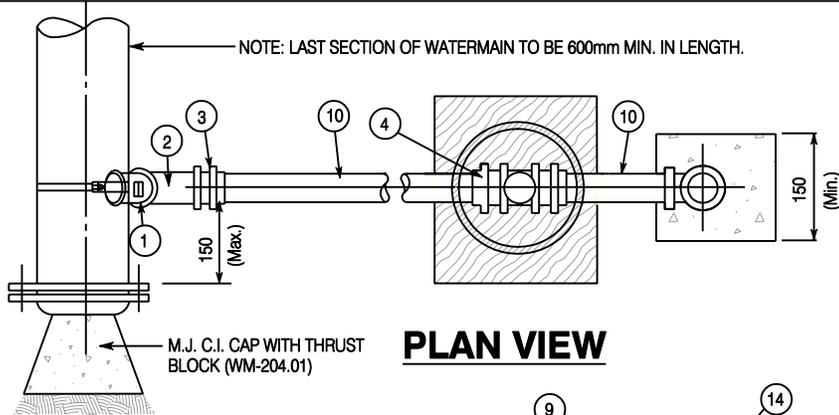


DETAIL 'B'
PVC INSTALLATION

City of Hamilton
Public Works Department

**50mm WATERMAIN LOOPING IN CUL-DE-SACS
(18m R.O.W.)**

DIMENSIONS SHOWN ARE IN MILLIMETRES UNLESS OTHERWISE NOTED (N.T.S.)	DATE March 2008	REV No 1	HAMILTON STD No WM-205.02
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- ① MAIN STOP A.W.A. TAPER THREAD TO M.I.P.
- ② BRASS 45° ELBOW - F.I.P. BOTH ENDS
- ③ COUPLING - M.I.P.
- ④ CURB STOP & DRAIN, "ORISEAL" MUELLER No. 15219 STOP & DRAIN COMPRESSION ENDS OR EMCO No. 17042 CENTURY BALL VALVE.
- ⑤ BOTTOM BOARD - 50 x 250 x 250mm HARDWOOD
- ⑥ STAINLESS STEEL PIN
- ⑦ STAINLESS STEEL ROD
- ⑧ EXTENSION BARREL - 2 PIECES
- ⑨ BRONZE PLUG
- ⑩ PIPE TYPE 'K' SOFT COPPER
- ⑪ CORPORATION SERVICE ELBOW - BRASS COMMON ELBOW - F.I.P. BOTH ENDS - C/W2 - M.I.P. TO C.F. COUPLINGS
- ⑫ COUPLING - C.F. TO M.I.P.
- ⑬ COUPLING - F.I.P. BOTH ENDS.
- ⑭ PLUG - SOLID BRASS

NOTES:

- 1. ALL FITTINGS TO CONFORM TO CITY STANDARDS.
- 2. BEDDING FOR 50mm BLOW-OFF (WM-200.01)
- 3. APPROVED PIPE JOINT COMPOUND TO BE USED ON ALL THREADED JOINTS.
- 4. COVER STONES WITH FILTER FABRIC FILTER TERAFOX 270R, NON-WOVEN OR EQUIVALENT

City of Hamilton
Public Works Department

50mm DIA. DEAD END BLOW-OFF

DIMENSIONS SHOWN ARE IN MILLIMETRES
UNLESS OTHERWISE NOTED (N.T.S.)

DATE
November 2005

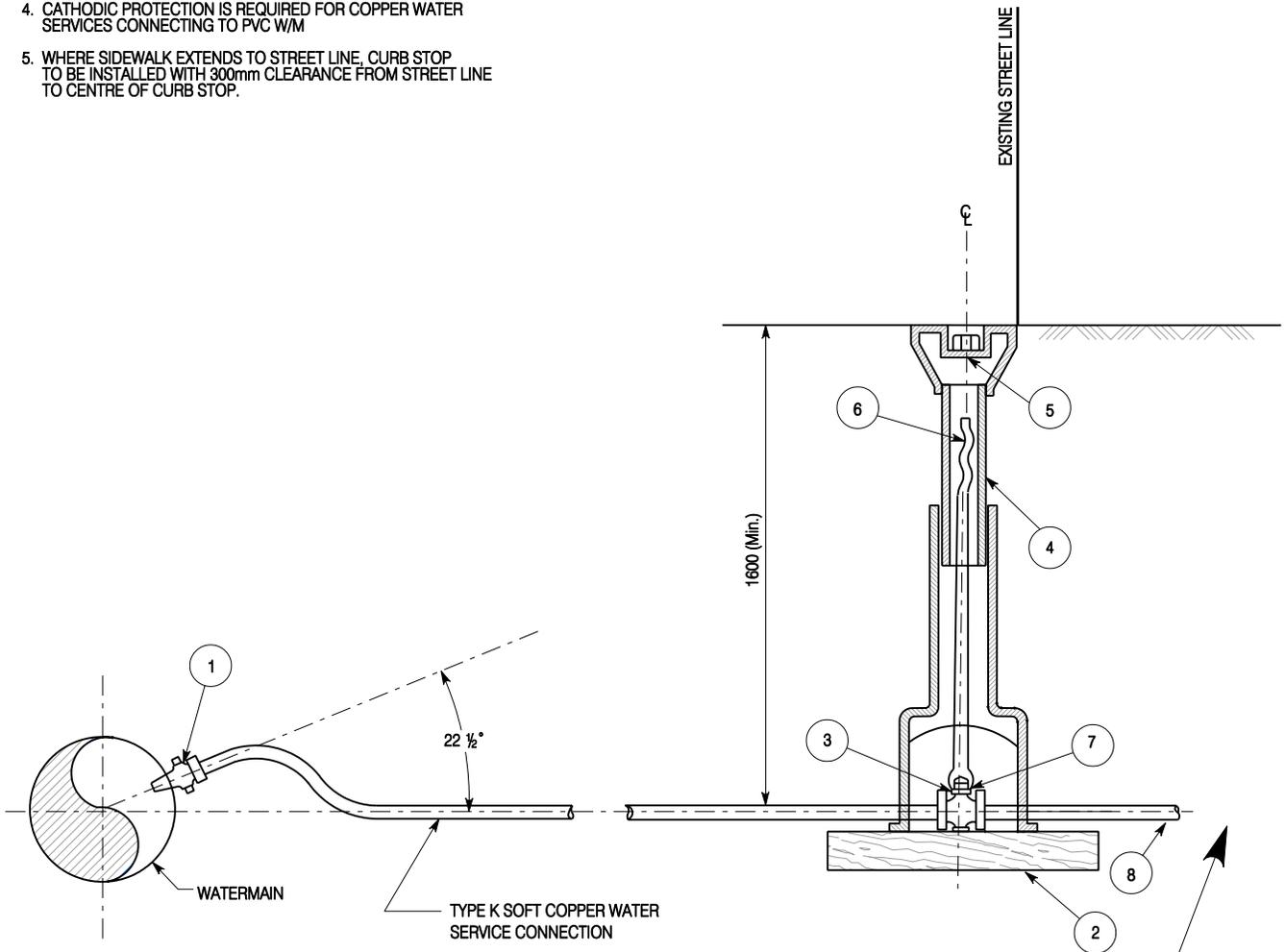
REV No
FORMERLY: RWS 711

HAMILTON STD No

WM-206

NOTES :

1. BEDDING DETAILS (WM-200.01 & WM-200.02)
2. INSTALLATION DETAILS (WM-207.02)
3. ALL FITTINGS TO CONFORM TO CITY STANDARDS
4. CATHODIC PROTECTION IS REQUIRED FOR COPPER WATER SERVICES CONNECTING TO PVC W/M
5. WHERE SIDEWALK EXTENDS TO STREET LINE, CURB STOP TO BE INSTALLED WITH 300mm CLEARANCE FROM STREET LINE TO CENTRE OF CURB STOP.



- 1 MAIN STOP - A.W.W.A. TAPER THREAD TO C.F.
- 2 BOTTOM BOARD - 50 x 250 x 250mm HARDWOOD
- 3 CURB STOP - INVERTED KEY TYPE - C.F. BOTH ENDS (TO BE CLOSED)
- 4 EXTENSION BARREL - 2 PIECES
- 5 BRONZE PLUG
- 6 STAINLESS STEEL ROD
- 7 STAINLESS STEEL PIN
- 8 END TO BE CRIMPED CLOSED (FOR STUB ONLY)
- 9 METER LOCATION

City of Hamilton
Public Works Department

**PIPING ARRANGEMENT FOR 19mm TO 25mm DIA. WATER SERVICE
CONNECTION AND YARD SERVICE**

DIMENSIONS SHOWN ARE IN MILLIMETRES
UNLESS OTHERWISE NOTED (N.T.S.)

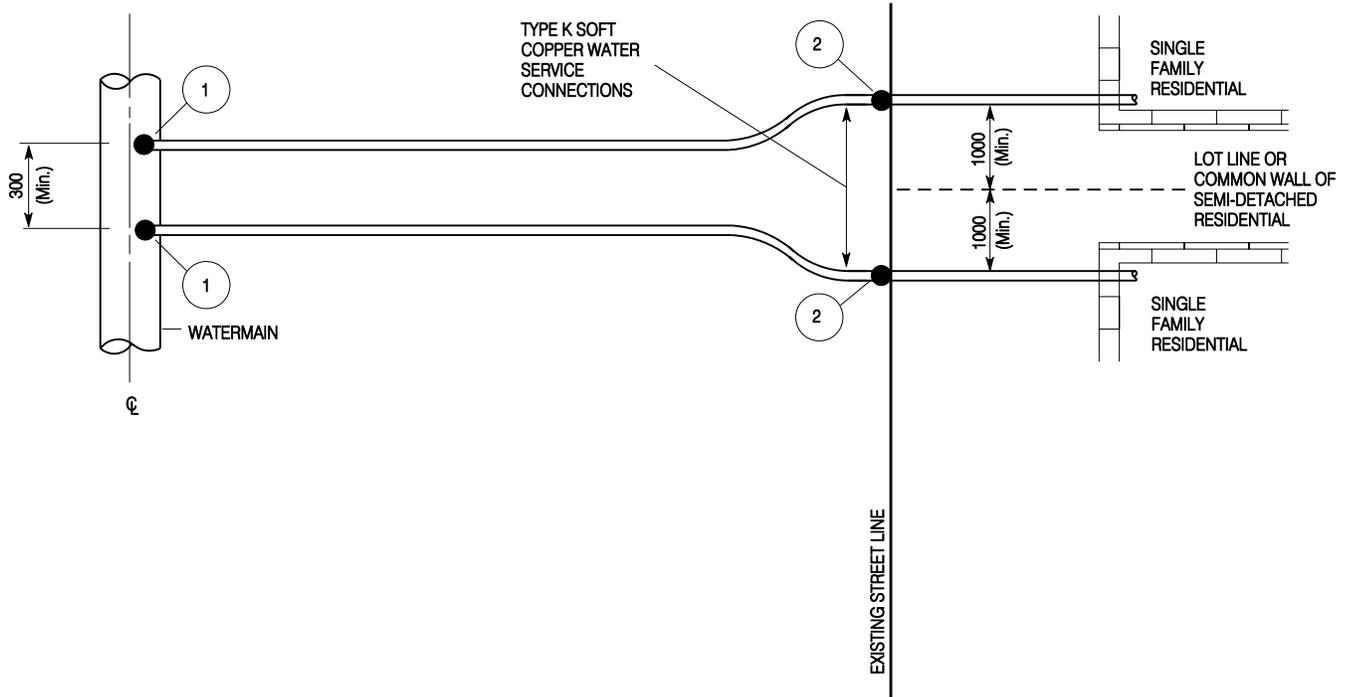
DATE
November 2005

REV No

FORMERLY: RWS 700 (Sheet 1 & 2)

HAMILTON STD No

WM-207.01



NOTES :

- 1. MINIMUM DEPTH OF BURY 1600mm.
- 2. BEDDING DETAILS (WM-200.01 & WM-200.02)
- 3. INSTALLATION DETAILS (WM-207.01)

- 1 MAIN STOP
- 2 CURB STOP

City of Hamilton
Public Works Department

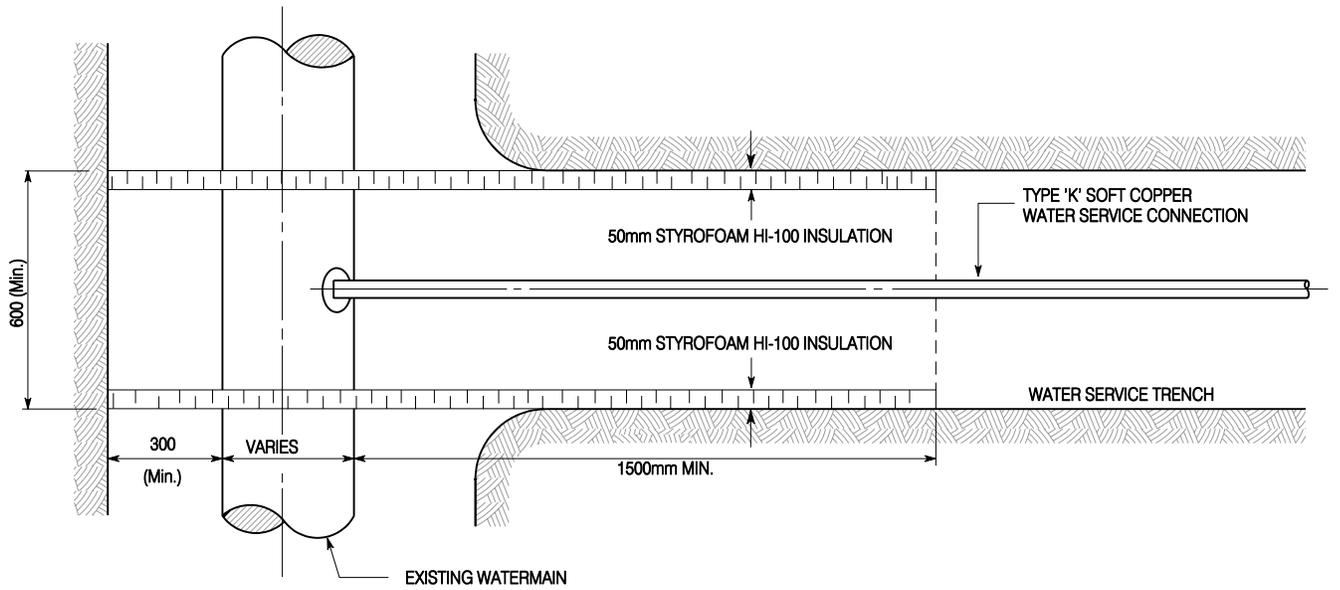
PIPING ARRANGEMENT FOR 19mm OR 25mm DIA. WATER SERVICE CONNECTIONS IN A COMMON TRENCH

DIMENSIONS SHOWN ARE IN MILLIMETRES
UNLESS OTHERWISE NOTED (N.T.S.)

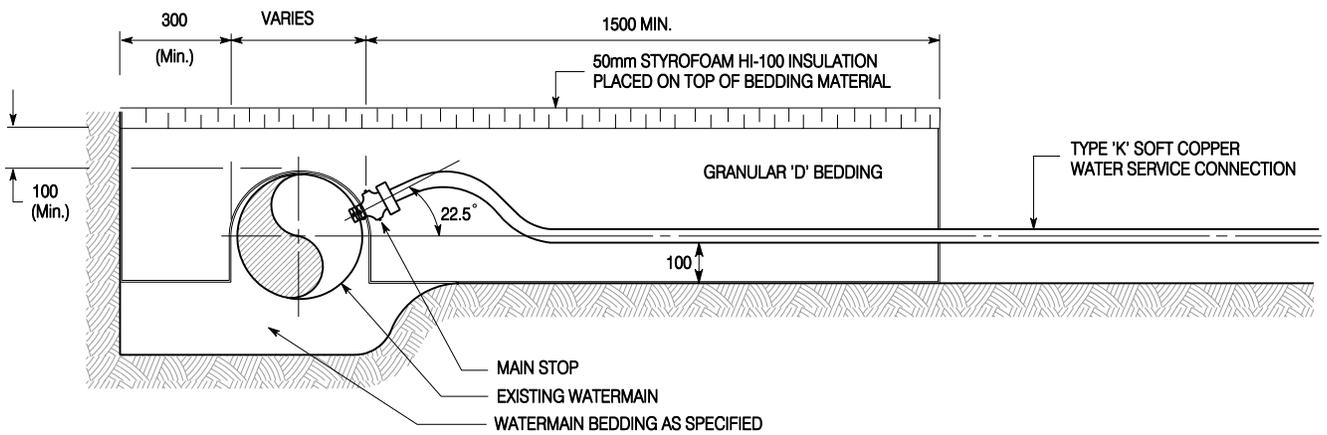
DATE
November 2005

REV No
FORMERLY: RWS 702

HAMILTON STD No
WM-207.02



PLAN VIEW



SIDE VIEW

NOTE:

INSULATE UNTIL WATER SERVICE HAS A MINIMUM OF 1600mm COVER OR AS DIRECTED

City of Hamilton
Public Works Department

**INSULATION DETAILS FOR
WATER SERVICES AT GOOSENECK**

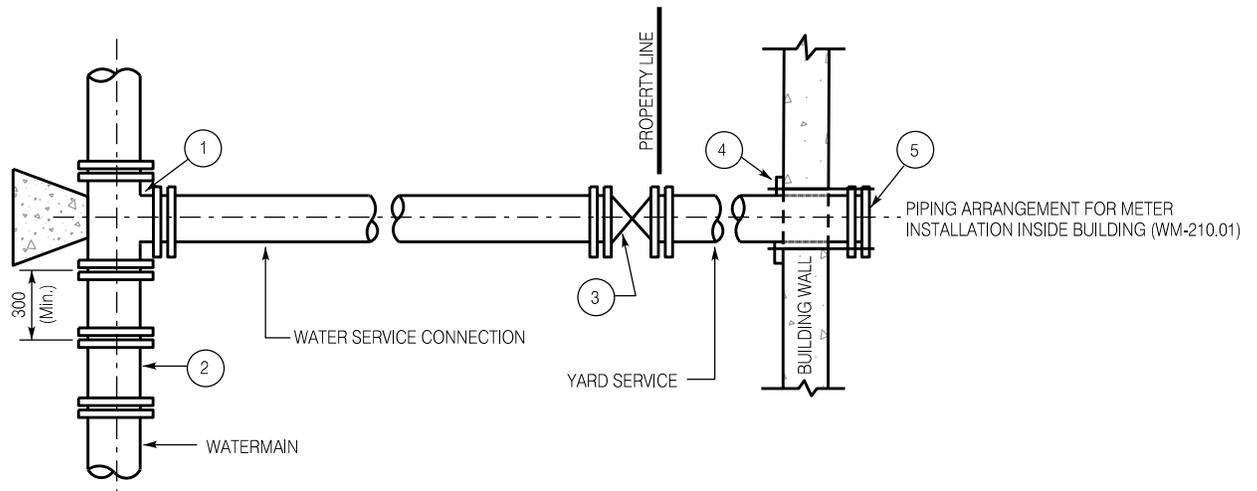
DIMENSIONS SHOWN ARE IN MILLIMETRES
UNLESS OTHERWISE NOTED (N.T.S.)

DATE
November 2005

REV No
FORMERLY: RWS 712

HAMILTON STD No

WM-207.03



- ① MECHANICAL JOINT TEE
- ② MECHANICAL JOINT SLEEVE
- ③ GATE VALVE - MECHANICAL JOINT COMPLETE WITH VALVE BOX (WM-202)
- ④ 4-20mm DIA. GALVANIZED OR STAINLESS STEEL TIE RODS WITH NUTS, WASHERS AND PLATES
- ⑤ FLANGED END (ABOVE FLOORS ONLY)

NOTES:

1. PIPE TO BE DUCTILE IRON CEMENT LINED, WITH CAST IRON CEMENT LINED FITTINGS OR PVC IN ACCORDANCE WITH CITY STANDARDS.
2. BEDDING AND BACKFILL REQUIREMENTS (WM-200.01 OR WM-200.02).
3. ANNULAR SPACE AROUND PIPING THROUGH WALL TO BE FILLED WITH APPROVED WATERPROOF SEALANT.
4. PIPING ENTERING VERTICALLY THROUGH FLOORS TO BE SECURED WITH VERTICAL TIE RODS AND CONCRETE ANCHOR BLOCK.

City of Hamilton
Public Works Department

**PIPING FOR 100mm TO 300mm DIA. WATER SERVICE CONNECTION
& YARD SERVICE TO METER WITH CUT-IN TEE & SLEEVE**

DIMENSIONS SHOWN ARE IN MILLIMETRES
UNLESS OTHERWISE NOTED (N.T.S.)

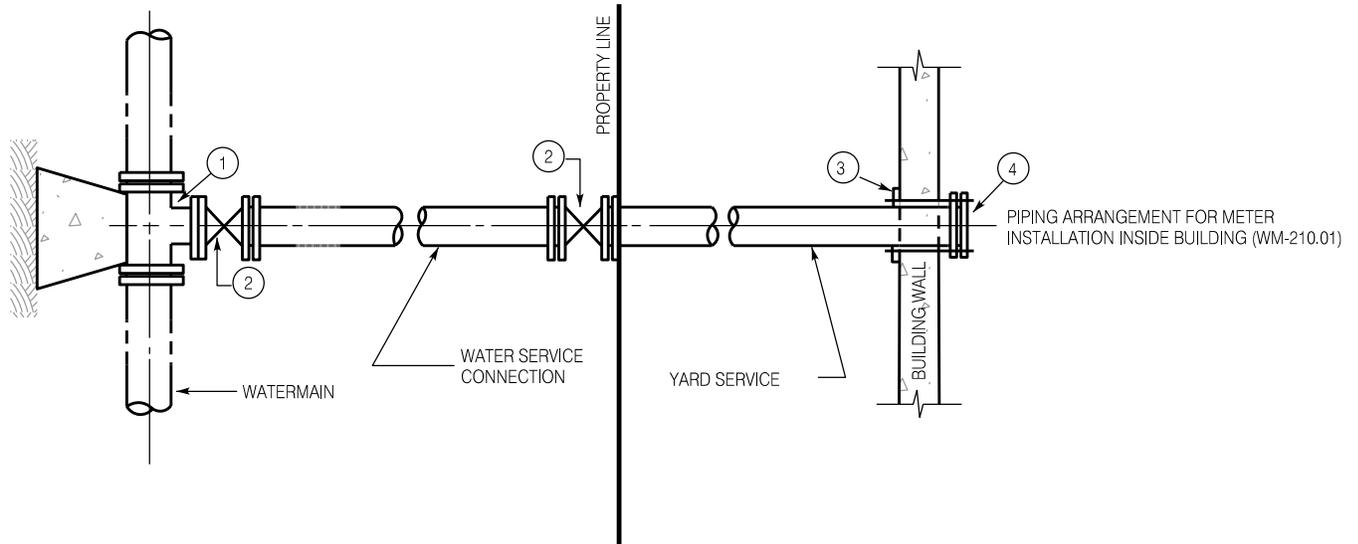
DATE
January 2020

REV No
1

FORMERLY: RWS 705

HAMILTON STD No

WM-207.04



- ① TAPPING SLEEVE - MECHANICAL JOINT
- ② GATE VALVE - MECHANICAL JOINT COMPLETE WITH VALVE BOX (WM-202)
- ③ 4-20mm DIA GALVANIZED OR STAINLESS STEEL TIE RODS WITH NUTS, WASHERS AND PLATES
- ④ FLANGED END (ABOVE FLOORS ONLY)

NOTES:

1. PIPE TO BE DUCTILE IRON CEMENT LINED, WITH CAST IRON CEMENT LINED FITTINGS OR PVC IN ACCORDANCE WITH CITY STANDARDS
2. BEDDING AND BACKFILL REQUIREMENTS (WM-200.01 OR WM-200.02).
3. ANNULAR SPACE AROUND PIPING THROUGH WALL TO BE FILLED WITH AN APPROVED WATERPROOF SEALANT.
4. PIPING ENTERING VERTICALLY THROUGH FLOORS TO BE SECURED WITH VERTICAL TIE RODS AND CONCRETE ANCHOR BLOCK.

City of Hamilton
Public Works Department

**PIPING FOR 100mm TO 300mm DIA. WATER SERVICE CONNECTION
& YARD SERVICE TO METER USING TAPPING SLEEVE & VALVE**

DIMENSIONS SHOWN ARE IN MILLIMETRES
UNLESS OTHERWISE NOTED (N.T.S.)

DATE
January 2020

REV No
1

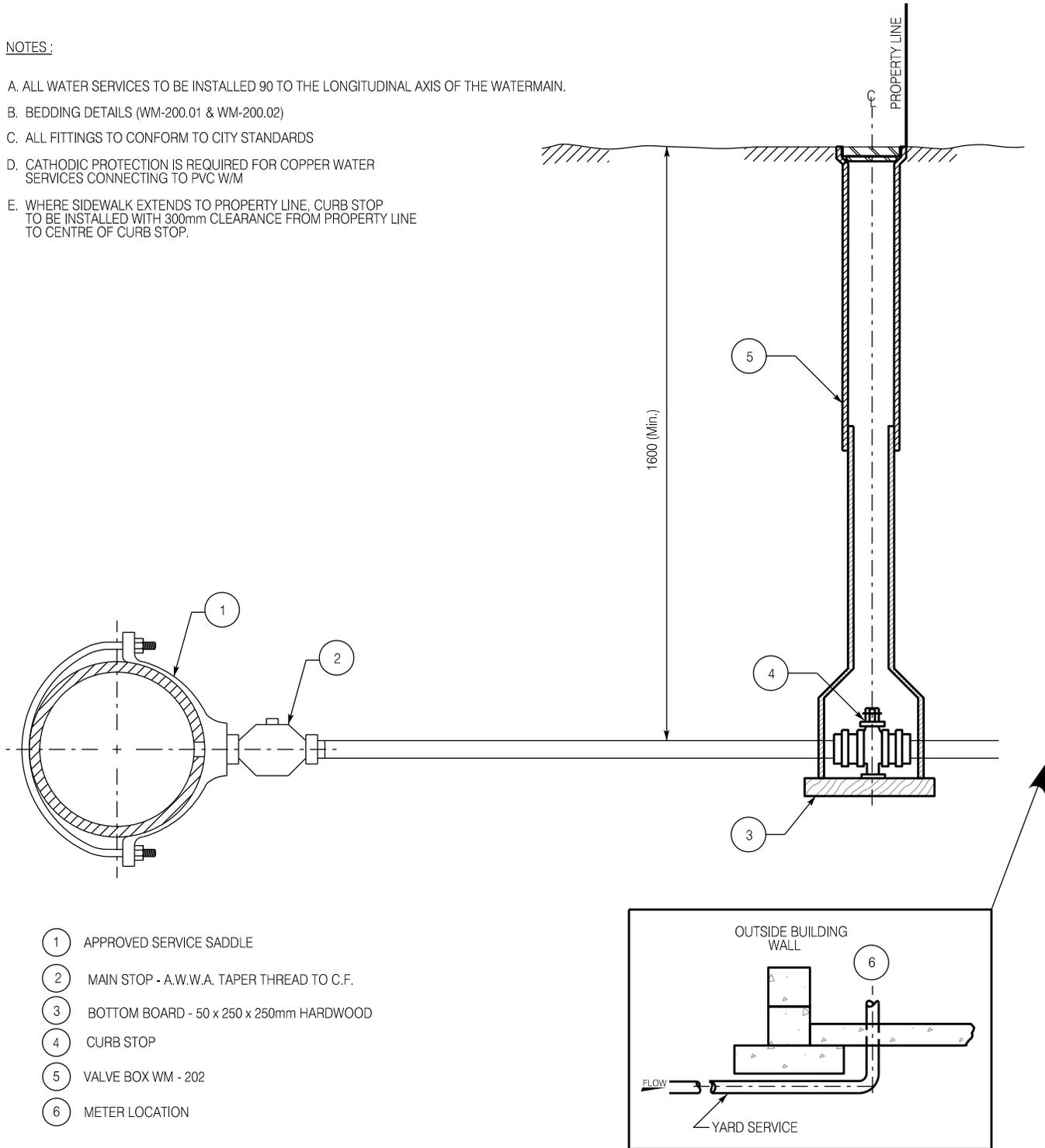
FORMERLY: RWS 706

HAMILTON STD No

WM-207.05

NOTES:

- A. ALL WATER SERVICES TO BE INSTALLED 90 TO THE LONGITUDINAL AXIS OF THE WATERMAIN.
- B. BEDDING DETAILS (WM-200.01 & WM-200.02)
- C. ALL FITTINGS TO CONFORM TO CITY STANDARDS
- D. CATHODIC PROTECTION IS REQUIRED FOR COPPER WATER SERVICES CONNECTING TO PVC W/M
- E. WHERE SIDEWALK EXTENDS TO PROPERTY LINE, CURB STOP TO BE INSTALLED WITH 300mm CLEARANCE FROM PROPERTY LINE TO CENTRE OF CURB STOP.



- ① APPROVED SERVICE SADDLE
- ② MAIN STOP - A.W.W.A. TAPER THREAD TO C.F.
- ③ BOTTOM BOARD - 50 x 250 x 250mm HARDWOOD
- ④ CURB STOP
- ⑤ VALVE BOX WM - 202
- ⑥ METER LOCATION

City of Hamilton
Public Works Department

**PIPING ARRANGEMENT FOR 50mm DIA. WATER SERVICE
CONNECTION AND YARD SERVICE**

DIMENSIONS SHOWN ARE IN MILLIMETRES
UNLESS OTHERWISE NOTED (N.T.S.)

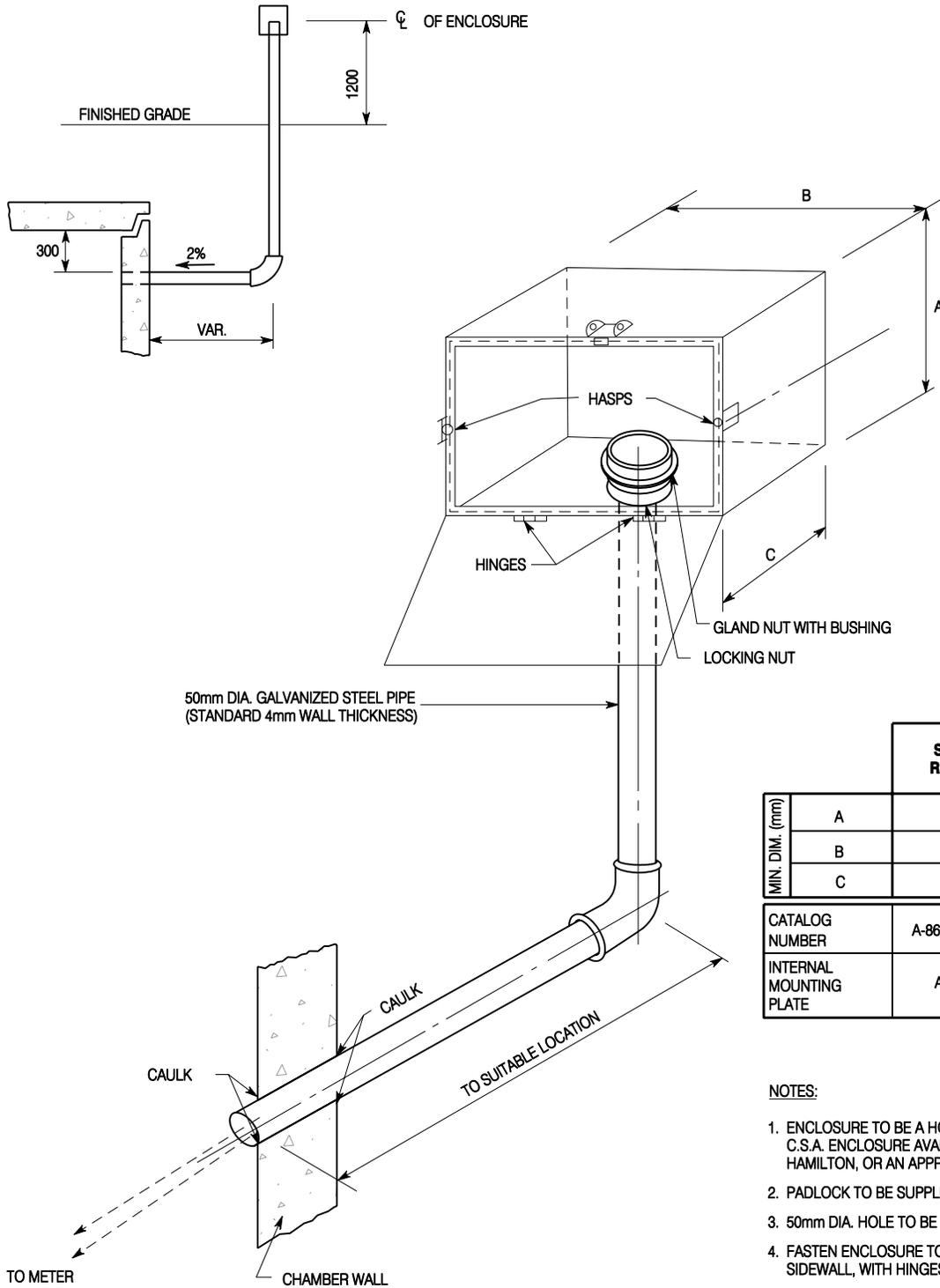
DATE
January 2020

REV No

FORMERLY:

HAMILTON STD No

WM-207.06



NOTES:

- ENCLOSURE TO BE A HOFFMAN NEMA 4X FIBRE GLASS C.S.A. ENCLOSURE AVAILABLE AT NEDCO, 515 WILSON ST. HAMILTON, OR AN APPROVED EQUIVALENT.
- PADLOCK TO BE SUPPLIED BY CITY.
- 50mm DIA. HOLE TO BE DRILLED, CENTERED IN SIDEWALL.
- FASTEN ENCLOSURE TO CONDUIT THROUGH SIDEWALL, WITH HINGES AT FRONT & BOTTOM.
- FASTEN REMOTE TO METAL PLATE INSIDE ENCLOSURE. WITH SELF TAPPING SCREWS CLEAR OF EXTERIOR SHELL.

City of Hamilton
Public Works Department

**REMOTE RECEPTACLE INSTALLATION
FOR METER CHAMBERS**

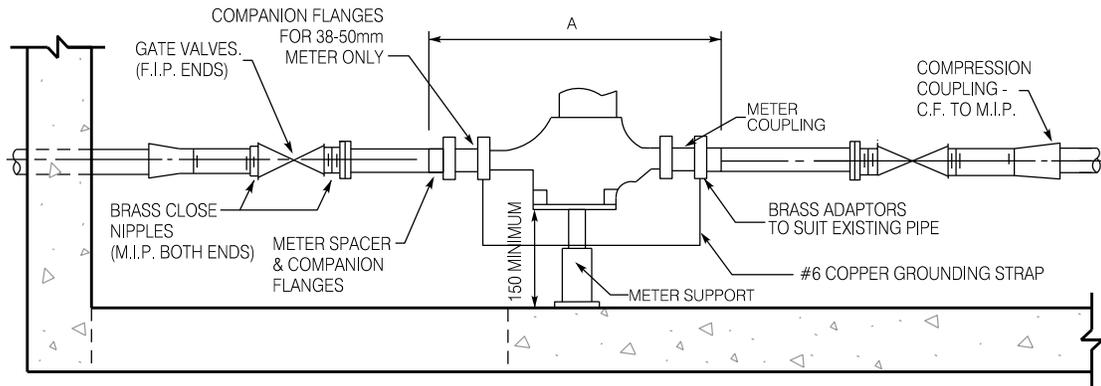
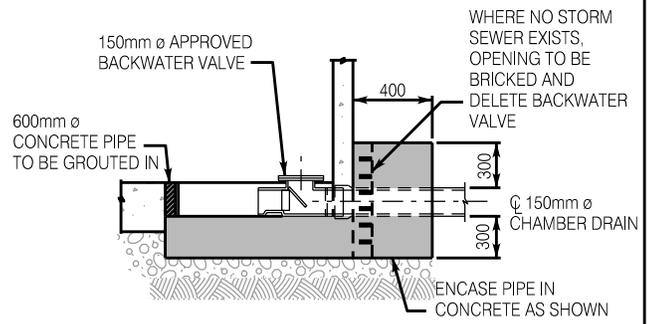
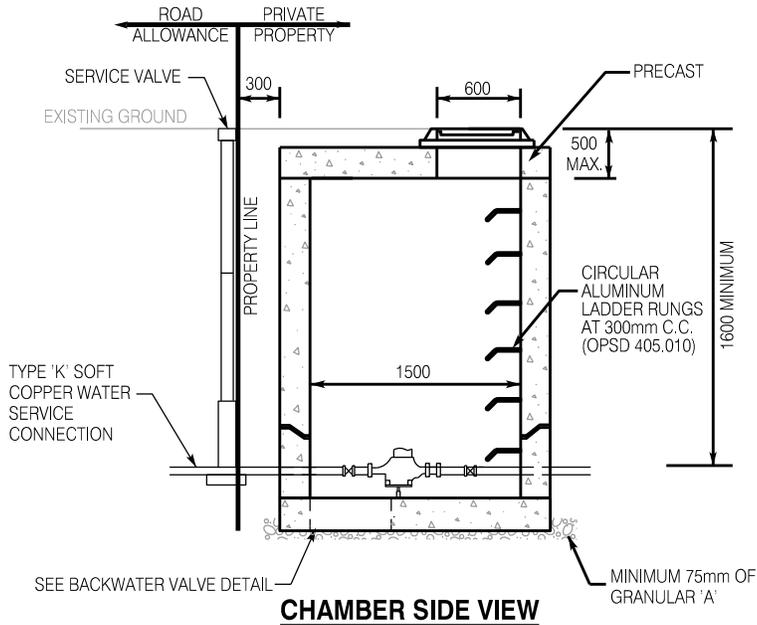
DIMENSIONS SHOWN ARE IN MILLIMETRES
UNLESS OTHERWISE NOTED (N.T.S.)

DATE
November 2005

REV No
FORMERLY: RWS 713

HAMILTON STD No

WM-208



NOTES:

1. CHAMBER DIA. TO BE 1500mm.
2. CHAMBER FRAME AND COVER (OPSD 402.010)
3. PRECAST CONCRETE SECTIONS TO CONFORM TO A.S.T.M. C-478.
4. ALL CONCRETE TO BE 30 MPa., 28 DAY STRENGTH, TYPE 50 CEMENT.
5. ALL ADJUSTMENTS TO CHAMBER COVERS SHALL BE MADE WITH POURED CONCRETE.
6. STEPS TO BE ALUMINUM PLACED AT 300mm C.C. AS PER OPSD 405.010.
7. METER SUPPLIED AND INSTALLED BY CITY.
8. CHAMBER TO BE LOCATED ON PRIVATE PROPERTY AT THE PROPERTY LINE AS NOTED
9. METER TO BE PLACED MIN 150mm FROM CHAMBER FLOOR.
10. ALL VALVES TO BE GATE VALVES.
11. METER COUPLINGS TO BE F.I.P TO C.F.
12. COMPANION FLANGES FOR 38-50mm METER ONLY.

		MIN. DIMENSION A (mm)	
		THREADED FITTINGS	SOLDERED FITTINGS
METER SIZE (mm)	16	500	450
	20	575	475
	25	600	525
	38 - 50	750	750

City of Hamilton
Public Works Department

**PIPING AND CHAMBER FOR RESIDENTIAL
16mm TO 50mm DIA. METER INSTALLATION**

DIMENSIONS SHOWN ARE IN MILLIMETRES
UNLESS OTHERWISE NOTED (N.T.S.)

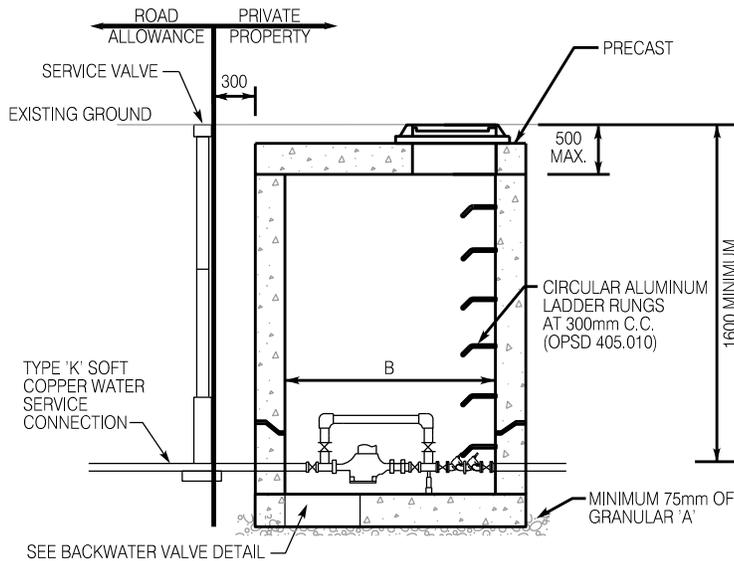
DATE
January 2020

REV No
1

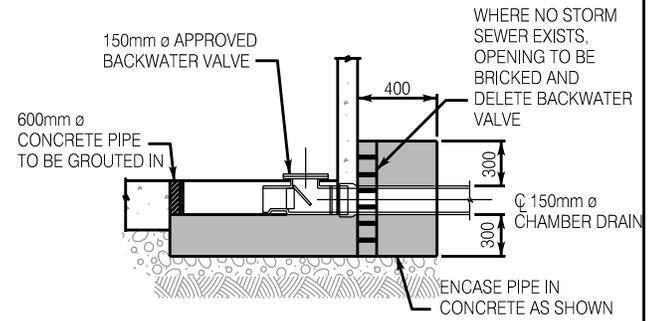
FORMERLY: WM-209

HAMILTON STD No

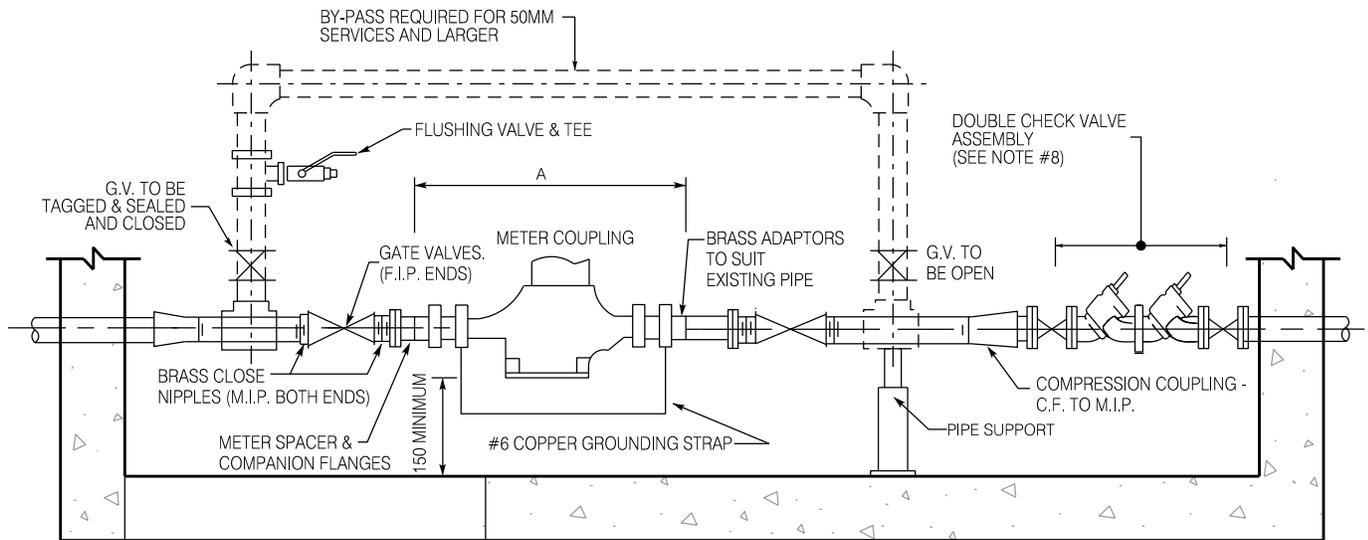
WM-209.01



CHAMBER SIDE VIEW



BACKWATER VALVE DETAIL



METER SIDE VIEW

NOTES:

1. CHAMBER FRAME AND COVER (OPSD 402.010).
2. PRECAST CONCRETE SECTIONS TO CONFORM TO A.S.T.M. C-478.
3. ALL CONCRETE TO BE 30 MPa., 28 DAY STRENGTH, TYPE 50 CEMENT.
4. ALL ADJUSTMENTS TO CHAMBER COVERS SHALL BE MADE WITH POURED CONCRETE.
5. METER SUPPLIED AND INSTALLED BY CITY.
6. METER TO BE PLACED MIN 150mm FROM CHAMBER FLOOR.
7. CHAMBER TO BE LOCATED ON PRIVATE PROPERTY AT THE PROPERTY LINE.
8. APPLICABLE BACKFLOW PREVENTION ASSEMBLY TO BE PLACED NO MORE THAN 3.0m DOWNSTREAM OF THE METER/BY-PASS ASSEMBLY.
9. WHERE UNABLE TO CONNECT TO STORM SEWER PLACE DOUBLE CHECK VALVE IN INSULATED ENCLOSURE AS PER WM-209.03.
10. ALL VALVES TO BE GATE VALVES.
11. METER COUPLINGS TO BE F.I.P TO C.F.
12. COMPANION FLANGES FOR 38-50mm METER ONLY.

PD - POSITIVE DISPLACEMENT METER
CMP - COMPOUND METER

METER SIZE	CHAMBER DIAMETER 'B' (mm)
16-25	1500
38 - 50	1800

		MIN. DIMENSIONS (mm)		
		A		
METER TYPE		METER SIZE	THREADED FITTINGS	SOLDERED FITTINGS
		PD	16	500
20	575		475	
25	600		525	
38 - 50	750		750	
CMP	50	850	850	

City of Hamilton
Public Works Department

**PIPING AND CHAMBER FOR MULTI-UNIT RESIDENTIAL
(3 STOREYS AND ABOVE) OR ICI MODERATE HAZARD
16mm TO 50mm DIA. METER INSTALLATION**

DIMENSIONS SHOWN ARE IN MILLIMETRES
UNLESS OTHERWISE NOTED (N.T.S.)

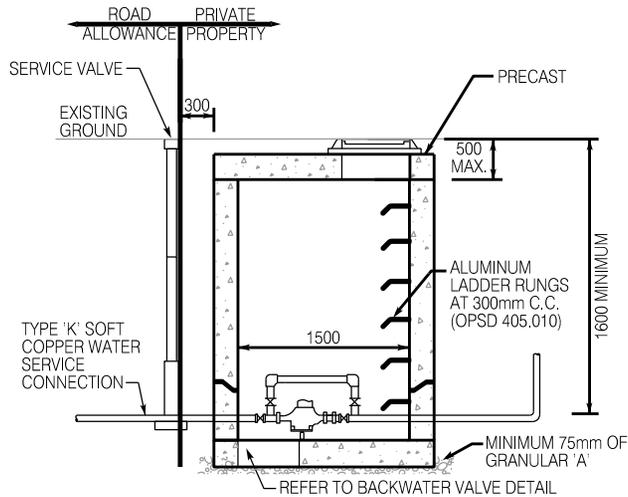
DATE
JANUARY 2020

REV No
1

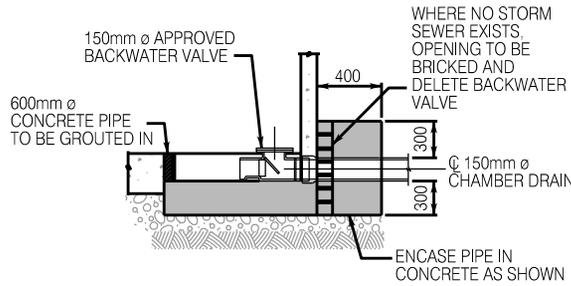
FORMERLY: WM209

HAMILTON STD No

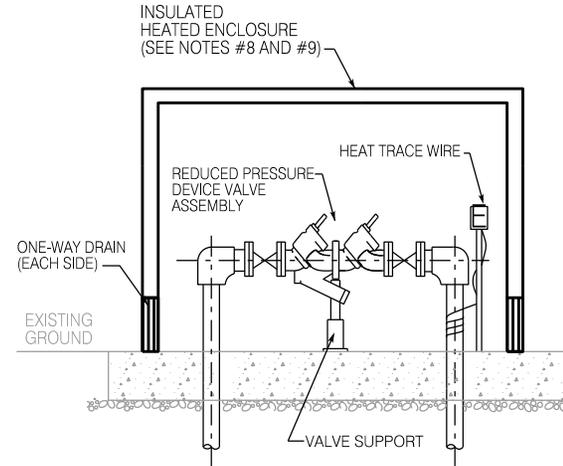
WM-209.02



CHAMBER SIDE VIEW



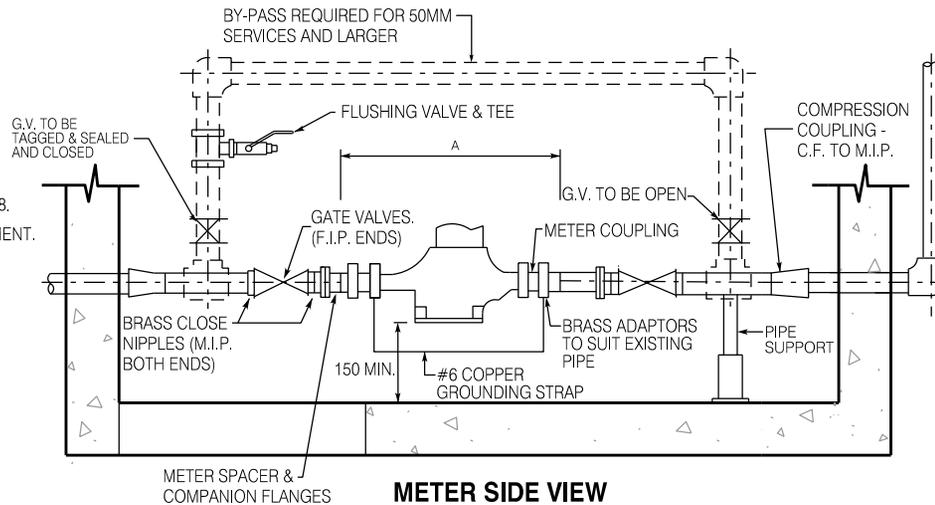
BACKWATER VALVE DETAIL



INSULATED ENCLOSURE

NOTES:

1. CHAMBER DIA. TO BE 1500mm.
2. CHAMBER FRAME AND COVER (OPSD 402.010).
3. PRECAST CONCRETE SECTIONS TO CONFORM TO A.S.T.M. C-478.
4. ALL CONCRETE TO BE 30 MPa., 28 DAY STRENGTH, TYPE 50 CEMENT.
5. ALL ADJUSTMENTS TO CHAMBER COVERS SHALL BE MADE WITH POURED CONCRETE.
6. METER SUPPLIED AND INSTALLED BY CITY.
7. METER TO BE PLACED MIN 150mm FROM CHAMBER FLOOR.
8. APPLICABLE BACKFLOW PREVENTION ASSEMBLY TO BE PLACED NO MORE THAN 3.0m DOWNSTREAM OF THE METER/BY-PASS ASSEMBLY.
9. FOR INSULATED ENCLOSURE INSTALLATION REFER TO BY LAW B64.10-11.
10. ALL VALVES TO BE GATE VALVES.
11. METER COUPLINGS TO BE F.I.P TO C.F.
12. COMPANION FLANGES FOR 38-50mm METER ONLY.



METER SIDE VIEW

		MIN. DIMENSIONS (mm)	
		A	
METER TYPE	METER SIZE	THREADED FITTINGS	SOLDERED FITTINGS
	PD	16	500
20		575	475
25		600	525
38 - 50		750	750
CMP	50	850	850

PD - POSITIVE DISPLACEMENT METER
CMP - COMPOUND METER

City of Hamilton
Public Works Department

**PIPING AND CHAMBER FOR
ICI HIGH HAZARD
16mm TO 50mm DIA. METER INSTALLATION**

DIMENSIONS SHOWN ARE IN MILLIMETRES
UNLESS OTHERWISE NOTED (N.T.S.)

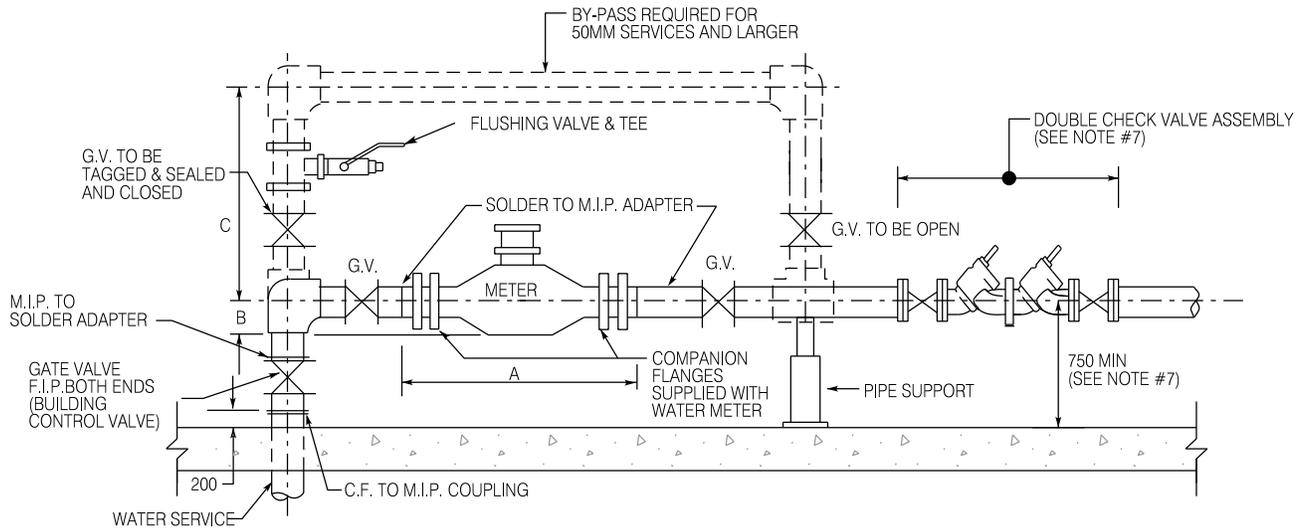
DATE
January 2020

REV No
1

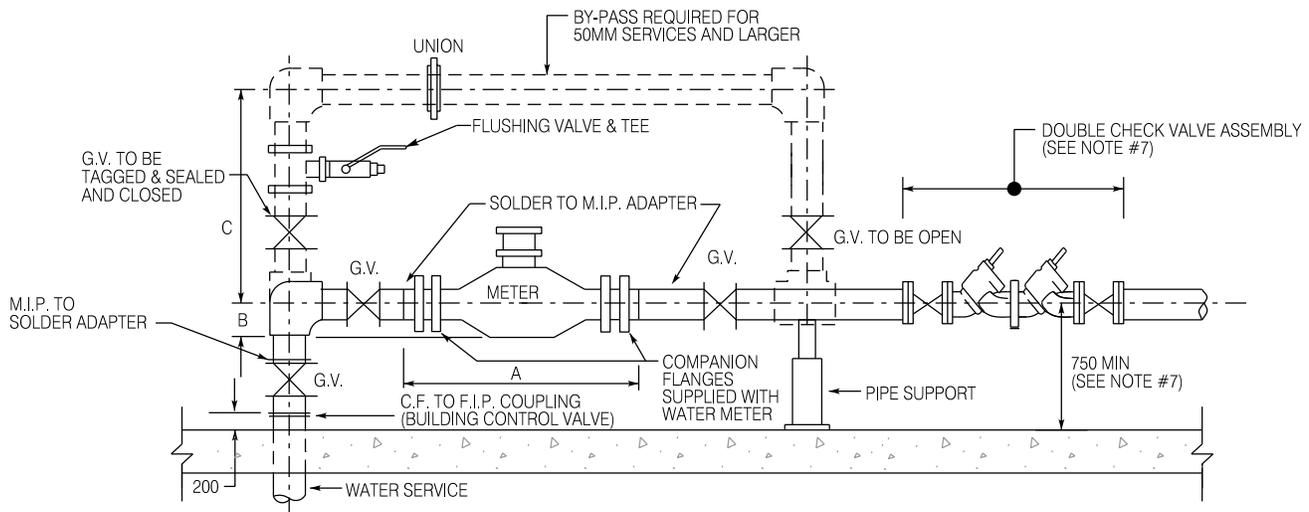
FORMERLY: WM 209

HAMILTON STD No

WM-209.03



PIPING FOR 16mm DIA. TO 50mm DIA. METER WITH BY-PASS USING RIGID COPPER PIPE (SOLDERED FITTINGS & GATE VALVES)



PIPING WITH 16mm DIA. TO 50mm DIA. METER WITH BY-PASS USING BRASS PIPE (F.I.P. THREADED FITTINGS & GATE VALVES)

NOTES:

1. G.V. - GATE VALVE
2. ALL GATE VALVES TO BE INSTALLED WITH VALVE STEM IN HORIZONTAL POSITION
3. METER SUPPLIED AND INSTALLED BY CITY
4. APPROVED PIPE JOINT COMPOUND TO BE USED ON ALL THREADED JOINTS
5. BY-PASS PIPING NOT REQUIRED FOR SINGLE FAMILY DWELLING
6. MIN. 4-13mm DIA S.S. ANCHOR RODS, S.S. NUTS & S.S. WASHERS, OR, UNI FLANGE ADAPTER OR APPROVED EQUAL
7. APPLICABLE BACKFLOW PREVENTION ASSEMBLY TO BE PLACED NO MORE THAN 3.0m DOWNSTREAM OF THE METER/BY-PASS ASSEMBLY AND KEPT A MINIMUM OF 750mm FROM FLOOR.

		MIN. DIMENSIONS (mm)				
		METER SIZE	A		B	C
	THREADED FITTINGS		SOLDERED FITTINGS			
METER TYPE	PD	16	500	450	44	750
		20	575	475	44	750
		25	600	525	50	750
		38 - 50	750	750	59	750
	CMP	50	850	850	81	750

PD - POSITIVE DISPLACEMENT METER

CMP - COMPOUND METER

City of Hamilton
Public Works Department

**PIPING FOR MULTI-UNIT RESIDENTIAL (3 STOREYS AND ABOVE)
OR ICI MODERATE HAZARD 16mm TO 50mm DIA. METER
FOR INTERNAL INSTALLATION**

DIMENSIONS SHOWN ARE IN MILLIMETRES UNLESS OTHERWISE NOTED (N.T.S.)

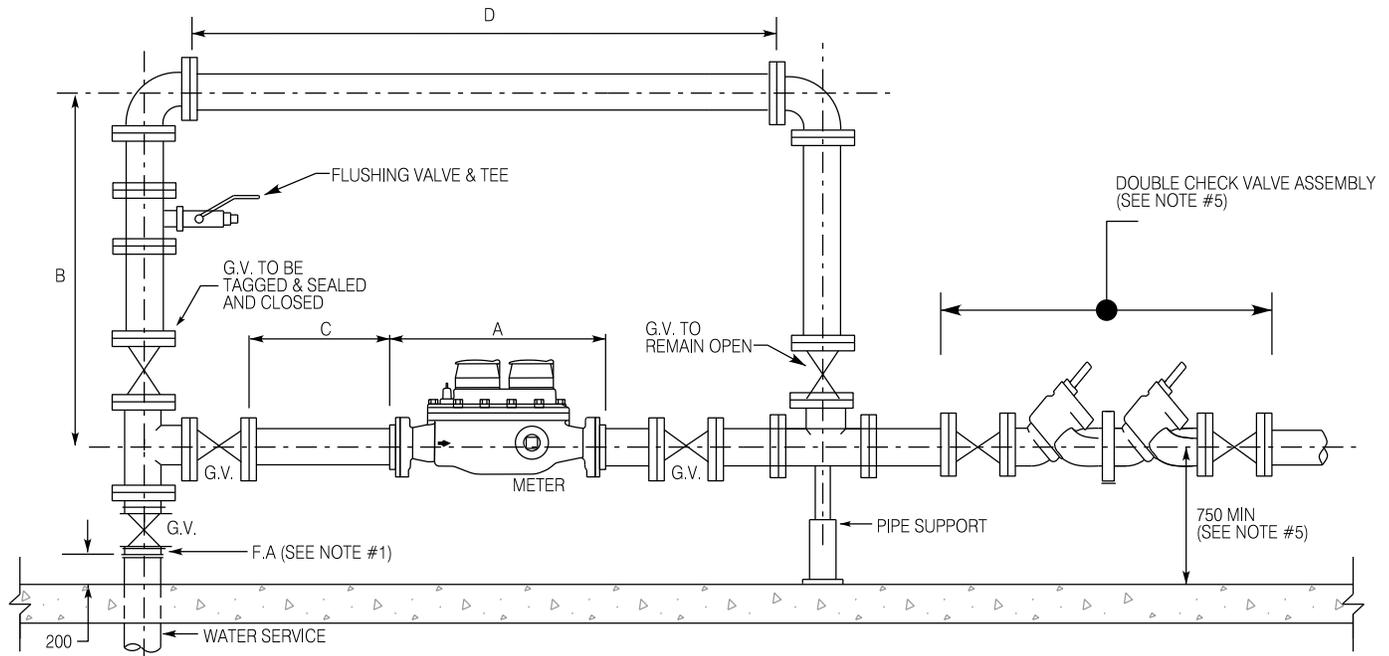
DATE: DRAFT
JUNE 2019

REV No

FORMERLY: WM-210

HAMILTON STD No

WM-210.01



**PIPING FOR 100mm DIA. TO 250mm DIA. METER WITH BY-PASS
USING DUCTILE IRON PIPE WITH 125 LB. FLANGES**

NOTES:

1. F.A. - STYLE 912 FLANGED ADAPTER ROCKWELL OR UNI FLANGE ADAPTER (ANCHOR RODS NOT REQ'D WITH UNI FLANGE ADAPTERS)
2. ALL GATE VALVES TO BE INSTALLED WITH VALVE STEM IN HORIZONTAL POSITION
3. METER SUPPLIED AND INSTALLED BY CITY
4. DOUBLE CHECK VALVE BACKFLOW PREVENTER TO BE INSTALLED WHEN REQUIRED (SEE BACKFLOW BYLAW 10-103)
5. APPLICABLE BACKFLOW PREVENTION ASSEMBLY TO BE PLACED NO MORE THAN 3.0m DOWNSTREAM OF THE METER/BY-PASS ASSEMBLY AND KEPT A MINIMUM OF 750mm FROM FLOOR.

METER SIZE (mm)	MIN DIMENSION (mm)				
	A		B	C	D
	CMP METERS	FSC METER			
100	750	850	850	460	1862
150	950	1150	875	615	2210
200	1700	1400	950	920	2778
250	N/A	1800	900	1054	3184

CMP - COMPOUND METER
FSC - FIRE SERVICE COMPOUND METER

City of Hamilton
Public Works Department

**PIPING FOR MULTI-UNIT RESIDENTIAL (3 STOREYS AND ABOVE)
OR ICI MODERATE HAZARD 100mm TO 250mm DIA. METERS
FOR INTERNAL METER INSTALLATION**

DIMENSIONS SHOWN ARE IN MILLIMETRES
UNLESS OTHERWISE NOTED (N.T.S.)

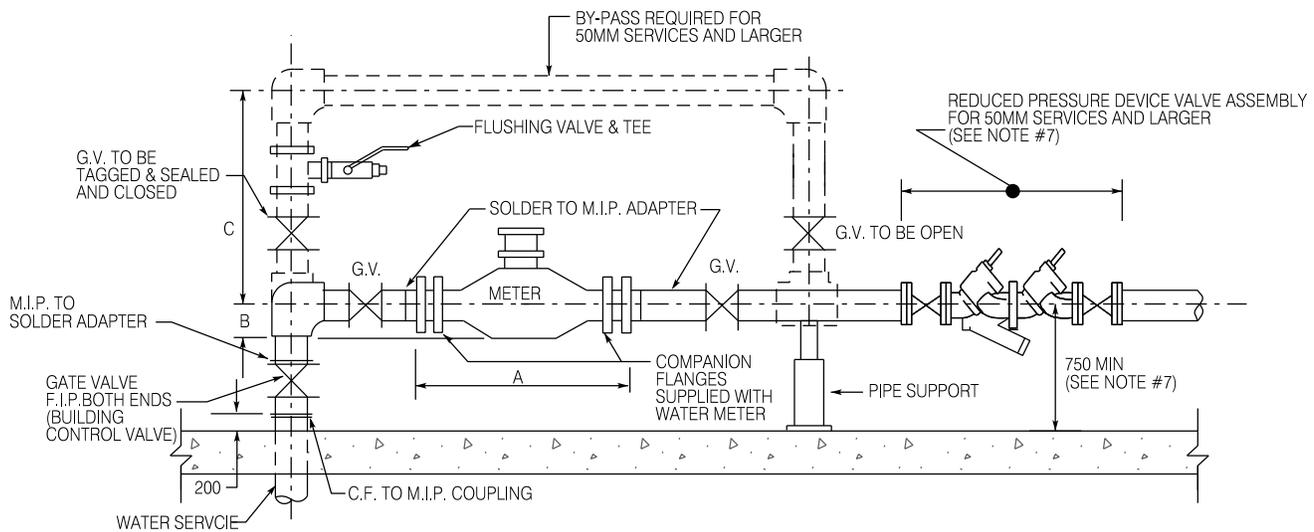
DATE: DRAFT
JUNE 2019

REV No

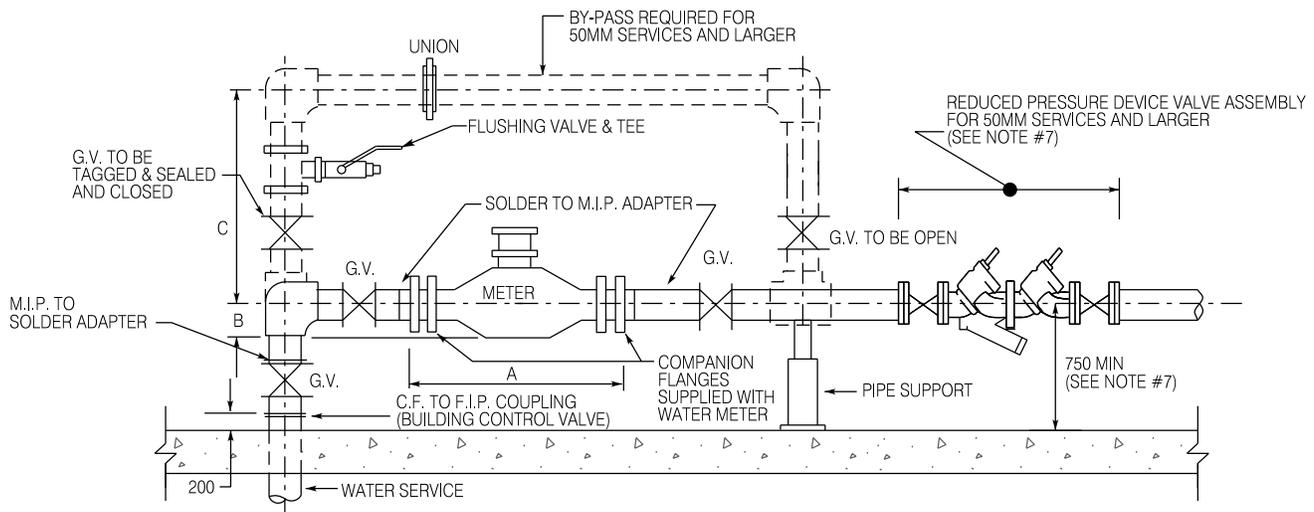
FORMERLY: WM-210

HAMILTON STD No

WM-210.02



PIPING FOR 16mm DIA. TO 50mm DIA. METER WITH BY-PASS USING RIGID COPPER PIPE (SOLDERED FITTINGS & GATE VALVES)



PIPING WITH 16mm DIA. TO 50mm DIA. METER WITH BY-PASS USING BRASS PIPE (F.I.P. THREADED FITTINGS & GATE VALVES)

NOTES:

1. G.V. - GATE VALVE
2. ALL GATE VALVES TO BE INSTALLED WITH VALVE STEM IN HORIZONTAL POSITION
3. METER SUPPLIED AND INSTALLED BY CITY
4. APPROVED PIPE JOINT COMPOUND TO BE USED ON ALL THREADED JOINTS
5. BY-PASS PIPING NOT REQUIRED FOR SINGLE FAMILY DWELLING
6. MIN. 4-13mm DIA S.S. ANCHOR RODS, S.S. NUTS & S.S. WASHERS, OR, UNI FLANGE ADAPTER OR APPROVED EQUAL
7. APPLICABLE BACKFLOW PREVENTION ASSEMBLY TO BE PLACED NO MORE THAN 3.0m DOWNSTREAM OF THE METER/BY-PASS ASSEMBLY, AND KEPT A MINIMUM OF 750mm FROM FLOOR.

		MIN. DIMENSIONS (mm)				
		METER SIZE	A		B	C
METER TYPE	PD		THREADED FITTINGS	SOLDERED FITTINGS		
			PD	16	500	450
20	575			475	44	750
25	600			525	50	750
38 - 50	750			750	59	750
CMP	50		850	850	81	750

PD - POSITIVE DISPLACEMENT METER

CMP - COMPOUND METER

City of Hamilton
Public Works Department

**PIPING FOR ICI, HIGH HAZARD
16mm TO 50mm DIA. METER
FOR INTERNAL INSTALLATION**

DIMENSIONS SHOWN ARE IN MILLIMETRES UNLESS OTHERWISE NOTED (N.T.S.)

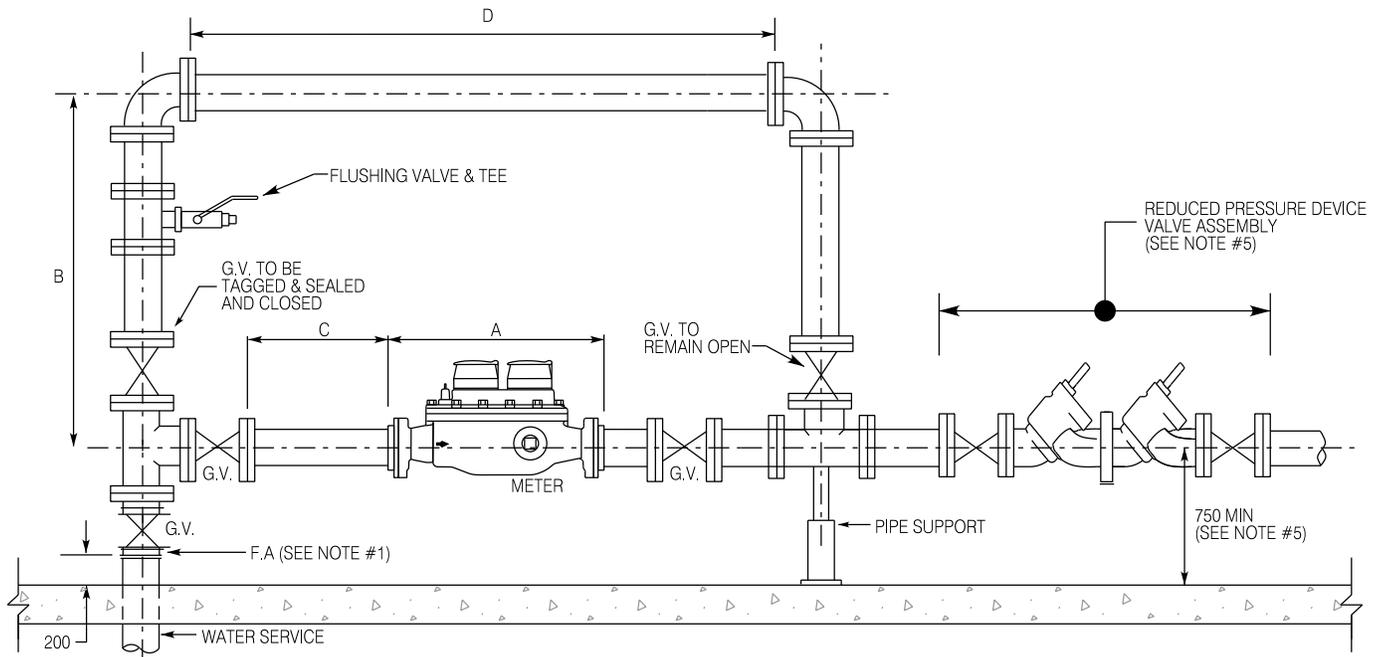
DATE: DRAFT
JUNE 2019

REV No

FORMERLY: WM-210

HAMILTON STD No

WM-210.03



**PIPING FOR 100mm DIA. TO 250mm DIA. METER WITH BY-PASS
USING DUCTILE IRON PIPE WITH 125 LB. FLANGES**

NOTES:

1. F.A. - STYLE 912 FLANGED ADAPTER ROCKWELL OR UNI FLANGE ADAPTER (ANCHOR RODS NOT REQ'D WITH UNI FLANGE ADAPTERS)
2. ALL GATE VALVES TO BE INSTALLED WITH VALVE STEM IN HORIZONTAL POSITION
3. METER SUPPLIED AND INSTALLED BY CITY
4. DOUBLE CHECK VALVE BACKFLOW PREVENTER TO BE INSTALLED WHEN REQUIRED (SEE BACKFLOW BYLAW 10-103)
5. APPLICABLE BACKFLOW PREVENTION ASSEMBLY TO BE PLACED NO MORE THAN 3.0m DOWNSTREAM OF THE METER/BY-PASS ASSEMBLY AND KEPT A MINIMUM OF 750mm FROM FLOOR.

METER SIZE (mm)	MIN DIMENSION (mm)				
	A		B	C	D
	CMP METERS	FSC METER			
100	750	850	850	460	1862
150	950	1150	875	615	2210
200	1700	1400	950	920	2778
250	N/A	1800	900	1054	3184

CMP - COMPOUND METER
FSC - FIRE SERVICE COMPOUND METER

City of Hamilton
Public Works Department

**PIPING FOR ICI, HIGH HAZARD
100mm TO 250mm DIA. METER
FOR INTERNAL INSTALLATION**

DIMENSIONS SHOWN ARE IN MILLIMETRES
UNLESS OTHERWISE NOTED (N.T.S.)

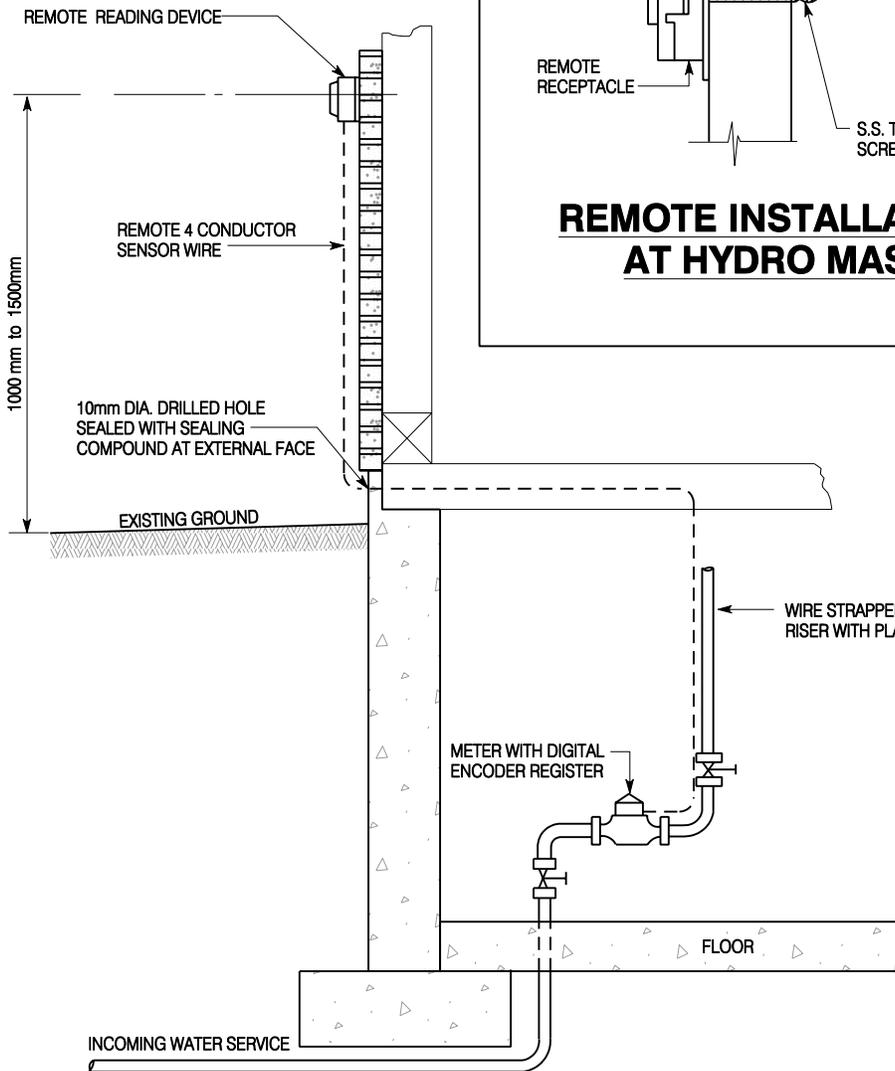
DATE: DRAFT
JUNE 2019

REV No

FORMERLY: WM-210

HAMILTON STD No

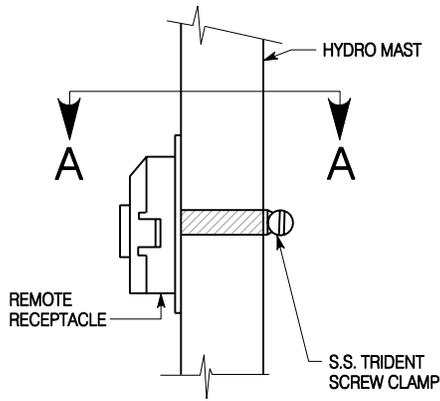
WM-210.04



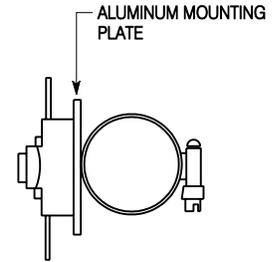
**REMOTE INSTALLATION
ON BUILDING**

NOTES:

1. LOCATION OF REMOTE READING DEVICE SHALL BE TO THE SATISFACTION OF THE CITY.
2. REMOTE WIRE TO BE FASTENED EVERY 300mm ON EXTERIOR WALLS AND EVERY 1000mm ON INTERIOR WALLS.
3. REMOTE READING DEVICE INSTALLATION TO BE ON HYDRO MAST WHERE POSSIBLE.



**REMOTE INSTALLATION
AT HYDRO MAST**



SECTION A-A

City of Hamilton
Public Works Department

**STANDARD REMOTE INSTALLATIONS FOR
16mm TO 25mm DIA. METERS**

DIMENSIONS SHOWN ARE IN MILLIMETRES
UNLESS OTHERWISE NOTED (N.T.S.)

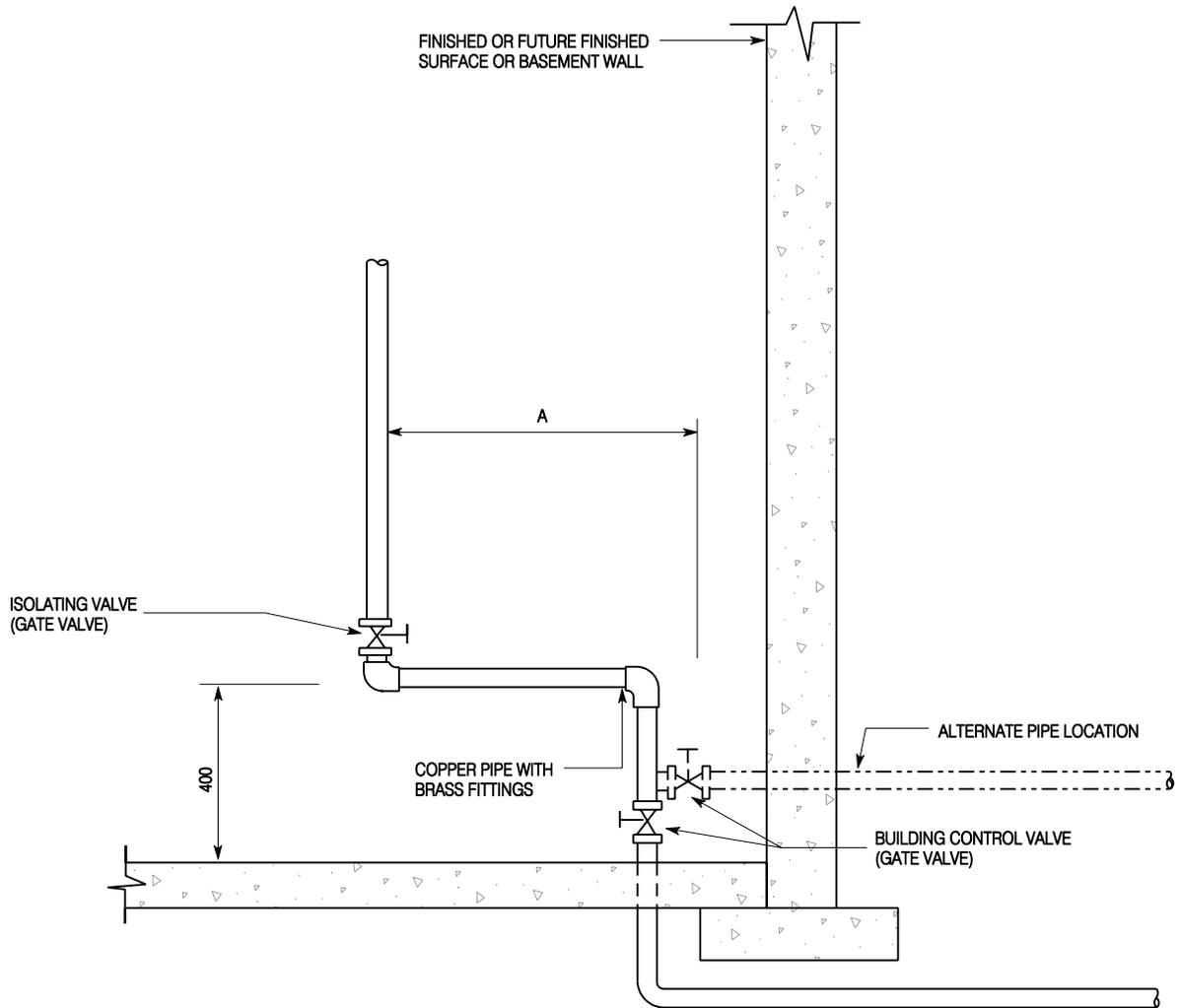
DATE
November 2005

REV No

FORMERLY: RWS 714

HAMILTON STD No

WM-211.01



NOTES:

1. \varnothing METER TO FINISHED WALL MIN. 200mm
2. \varnothing METER TO UNFINISHED WALL MIN 300mm

		MIN. DIMENSION A (mm)	
		THREADED FITTINGS	COMPRESSION FITTINGS
METER SIZE	16	500	450
	19	575	475
	25	600	525

City of Hamilton
Public Works Department

**ALTERATIONS OF EXISTING 16mm TO 25mm DIA. PIPING
PRIOR TO METER INSTALLATION**

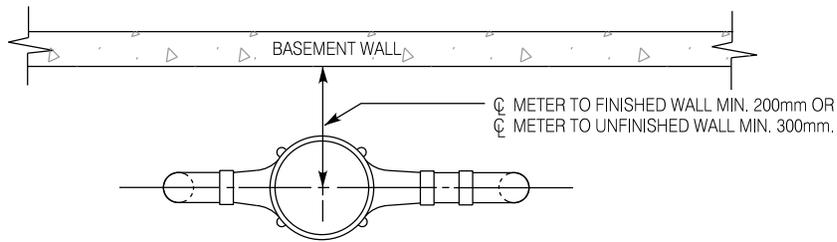
DIMENSIONS SHOWN ARE IN MILLIMETRES
UNLESS OTHERWISE NOTED (N.T.S.)

DATE
November 2005

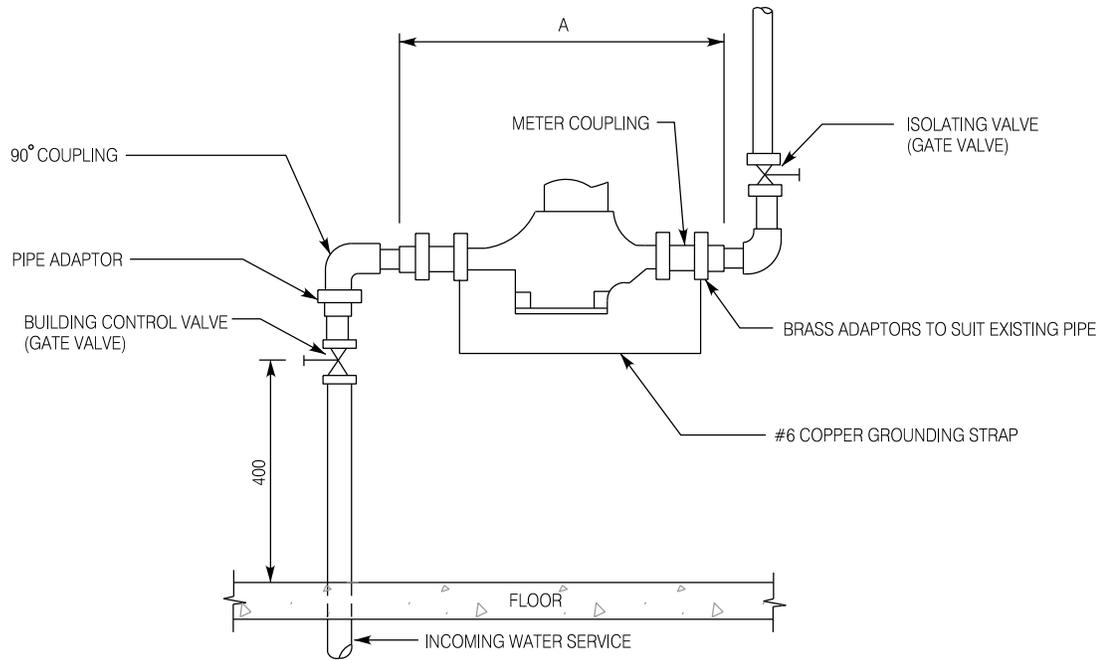
REV No
FORMERLY: RWS 717

HAMILTON STD No

WM-211.02



PLAN VIEW - METER



SIDE VIEW

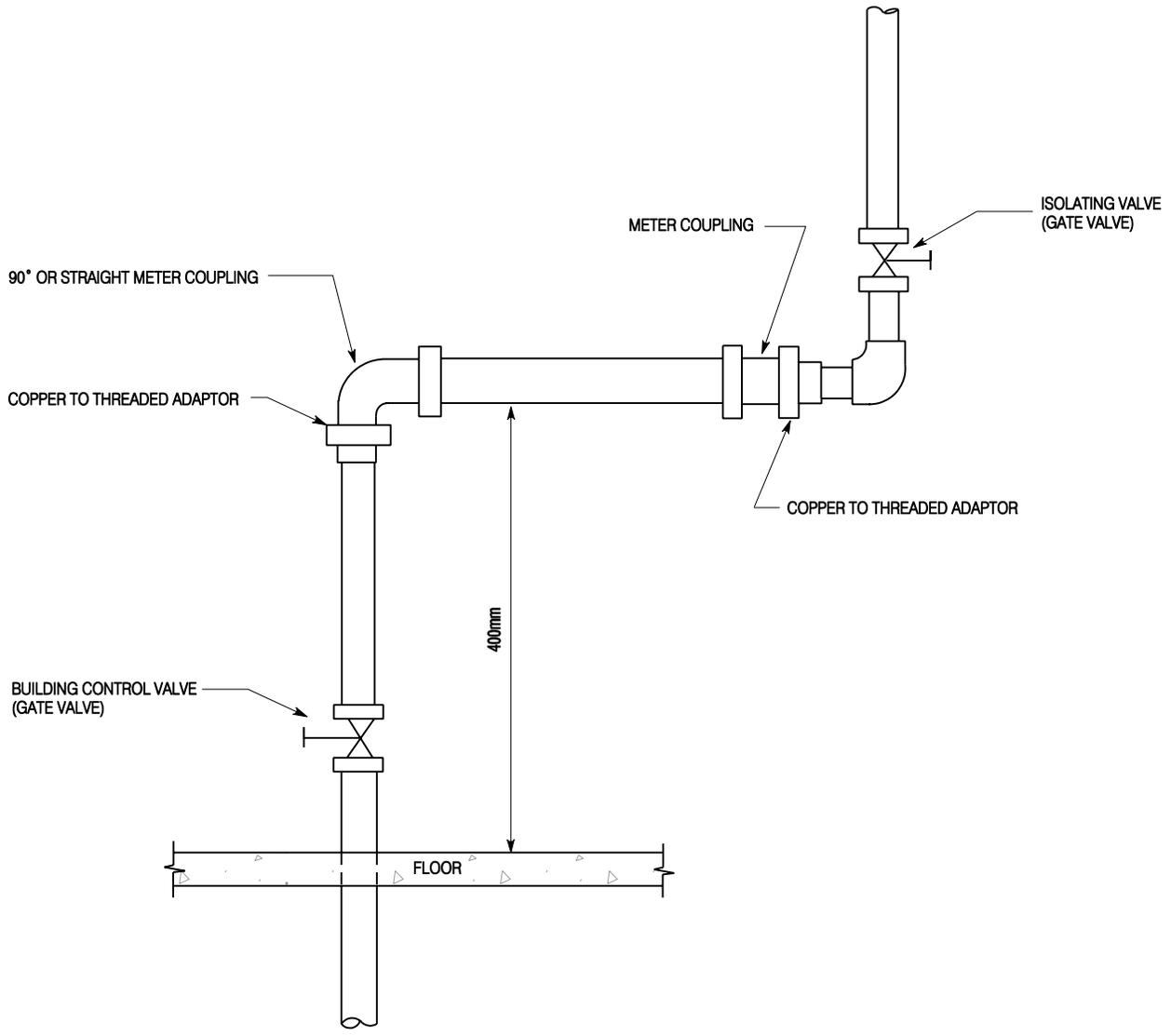
NOTES:

1. METER IS TO BE INSTALLED IN AN AREA SUITABLY HEATED TO PREVENT FREEZE-UPS.
2. THE PROPERTY OWNER SHALL PROVIDE CLEAR ACCESS TO METER AT ALL TIMES.
3. METER SUPPLIED AND INSTALLED BY CITY.
4. SPACER TO BE TEMPORARILY INSTALLED AND METER TO BE INSTALLED BY THE CITY AT A LATER TIME.

		MIN. DIMENSION A (mm)	
		THREADED FITTINGS	SOLDERED FITTINGS
METER SIZE	16	500	450
	20	575	475
	25	600	525
	38 - 50	750	750

City of Hamilton
Public Works Department

PIPING FOR RESIDENTIAL 16mm TO 50mm DIA. METER FOR INTERNAL INSTALLATION

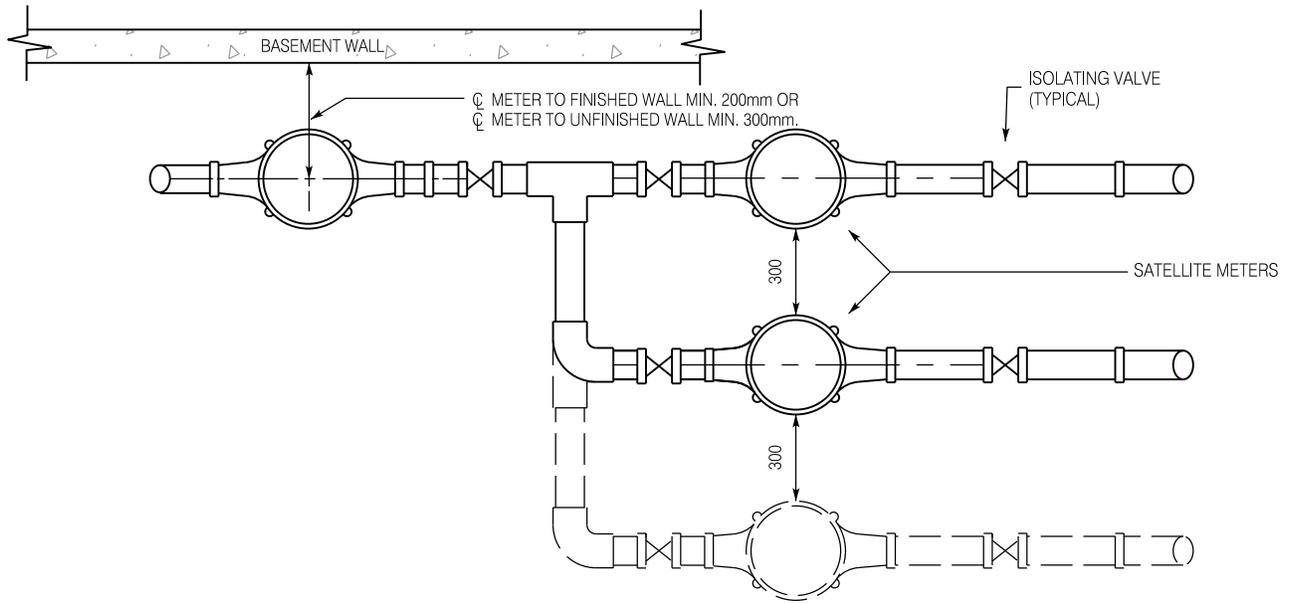


NOTE:
METER PIPE SPACER AND METER COUPLINGS SUPPLIED BY CITY.

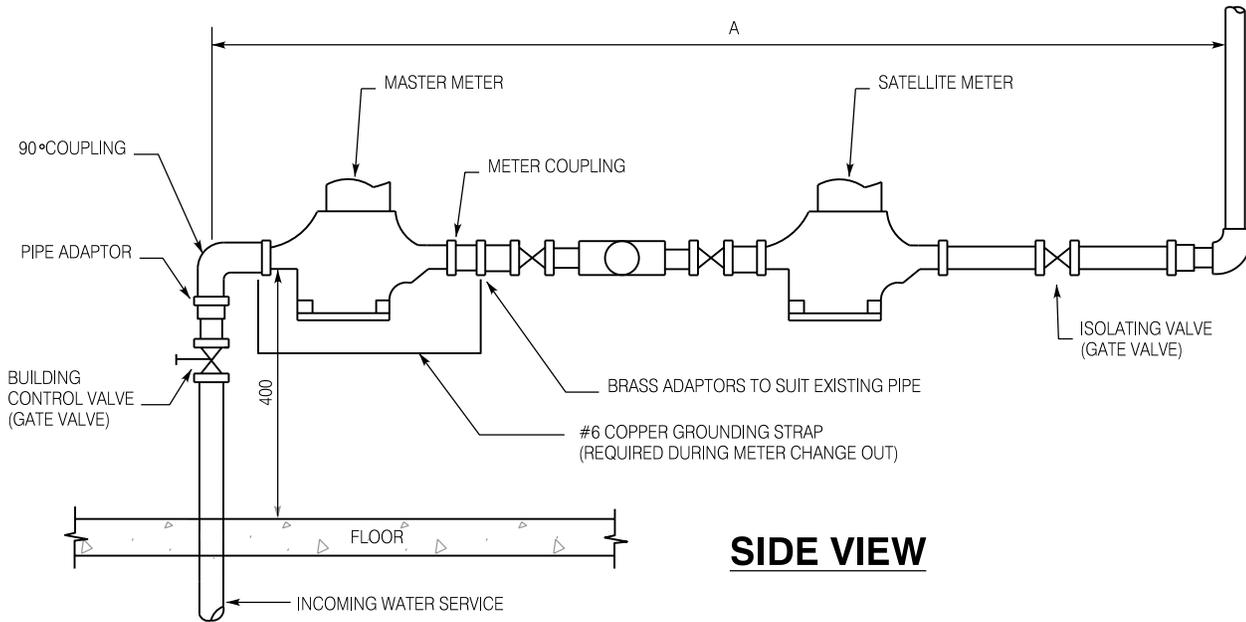
City of Hamilton
Public Works Department

METER PIPE SPACER INSTALLATION

DIMENSIONS SHOWN ARE IN MILLIMETRES UNLESS OTHERWISE NOTED (N.T.S.)	DATE November 2005	REV No	FORMERLY: RWS 716	HAMILTON STD No WM-211.04
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PLAN VIEW - METER



SIDE VIEW

NOTES:

1. METER IS TO BE INSTALLED IN AN AREA SUITABLY HEATED TO PREVENT FREEZING.
2. METERS ARE NOT TO BE INSTALLED IN CEILING SPACES.
3. THE PROPERTY OWNER SHALL PROVIDE CLEAR ACCESS TO METER AT ALL TIMES.
4. METER TO BE INSTALLED IN HORIZONTAL POSITION.
5. REMOTE WIRING PER 211.01 TO BE INSTALLED BY THE CONTRACTOR.

		MIN. DIMENSION A (mm)	
		THREADED FITTINGS	SOLDER FITTINGS
METER SIZE	16	500	450
	19	575	475
	25	600	525

City of Hamilton
Public Works Department

**SATELLITE WATER METER INSTALLATION FOR
16mm TO 25mm DIA. SERVICES**

DIMENSIONS SHOWN ARE IN MILLIMETRES
UNLESS OTHERWISE NOTED (N.T.S.)

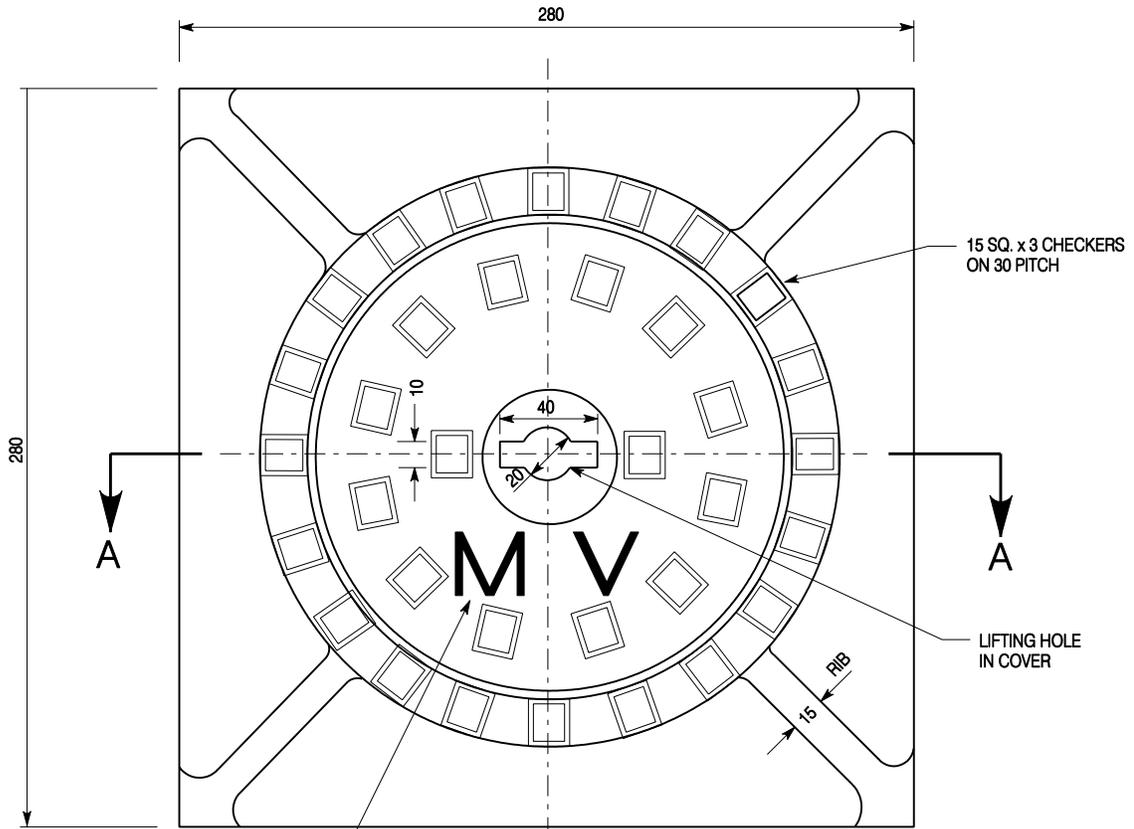
DATE June 2019

REV No

FORMERLY:

HAMILTON STD No

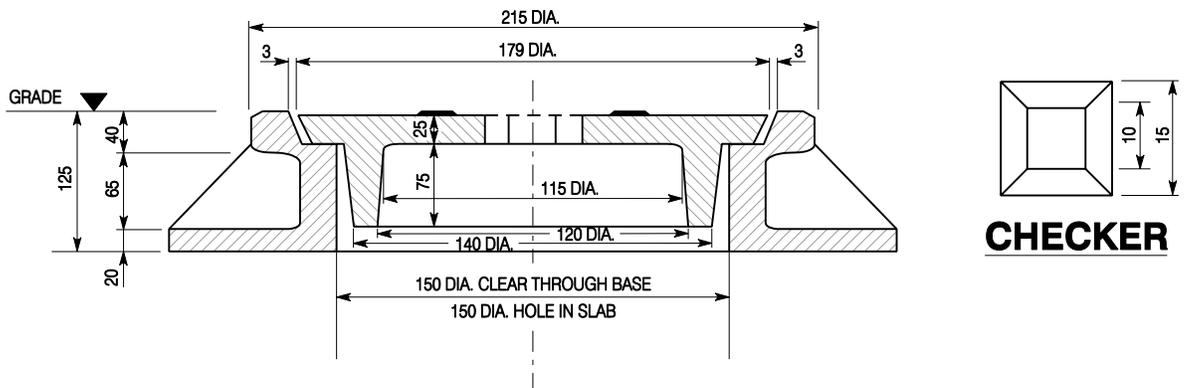
WM-211.05



THESE LETTERS TO INDICATE TYPE OF VALVE KEY COVER

M.V. - MAIN VALVE	B.P. - BY PASS
B.O. - BLOW OFF	A.V. - AIR VALVE

PLAN



SECTION A - A

City of Hamilton
Public Works Department

VALVE KEY FRAME & COVER

DIMENSIONS SHOWN ARE IN MILLIMETRES
UNLESS OTHERWISE NOTED (N.T.S.)

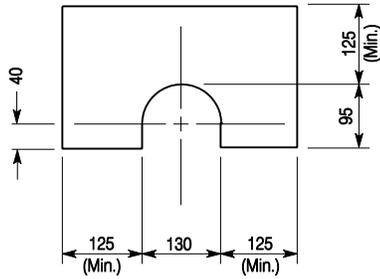
DATE
November 2005

REV No

FORMERLY: RWS-102

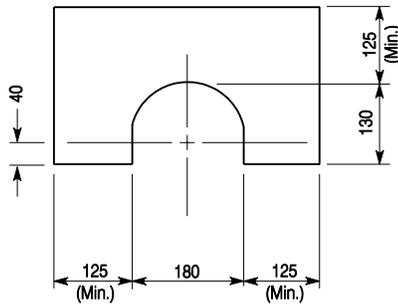
HAMILTON STD No

WM-212.03



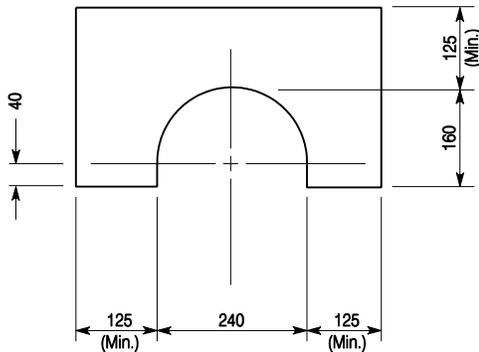
100 DIA PIPE

14 ga. GALV. STEEL PLATE



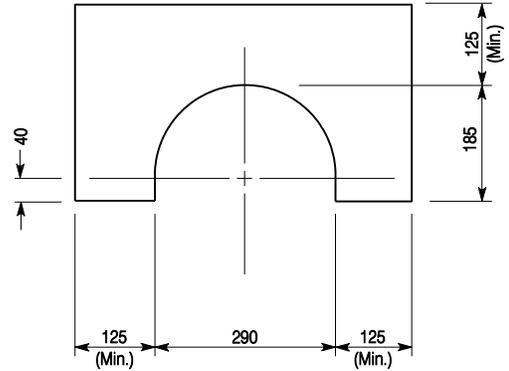
150 DIA PIPE

14 ga. GALV. STEEL PLATE



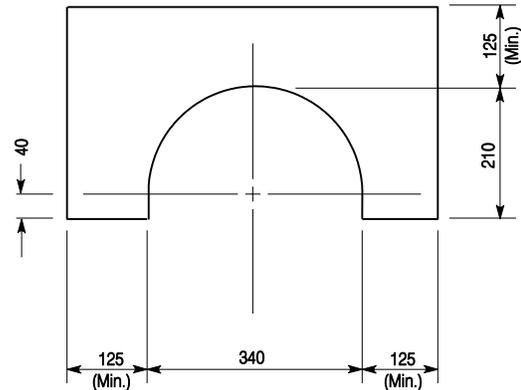
200 DIA PIPE

14 ga. GALV. STEEL PLATE



250 DIA PIPE

14 ga. GALV. STEEL PLATE



300 DIA PIPE

14 ga. GALV. STEEL PLATE

NOTE: 4 ENDPLATES REQUIRED PER CHAMBER

City of Hamilton
Public Works Department

**CHAMBER END PLATES FOR
100mm TO 300mm DIA. WATERMAINS**

DIMENSIONS SHOWN ARE IN MILLIMETRES
UNLESS OTHERWISE NOTED (N.T.S.)

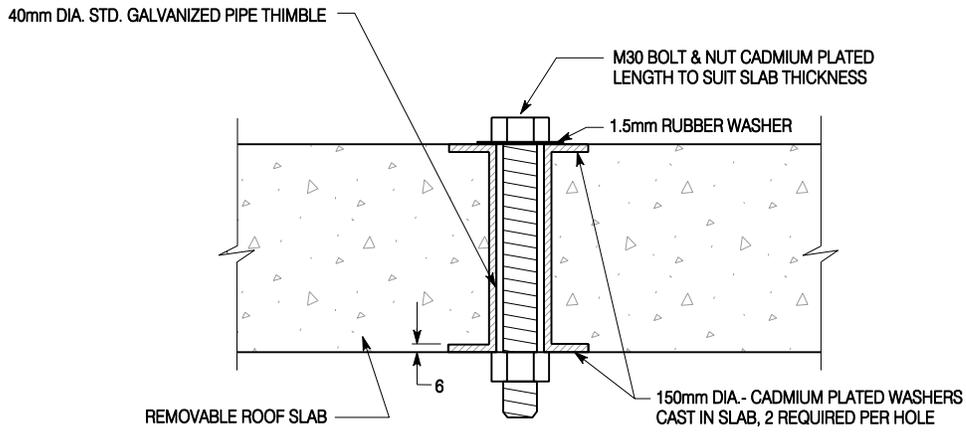
DATE
November 2005

REV No

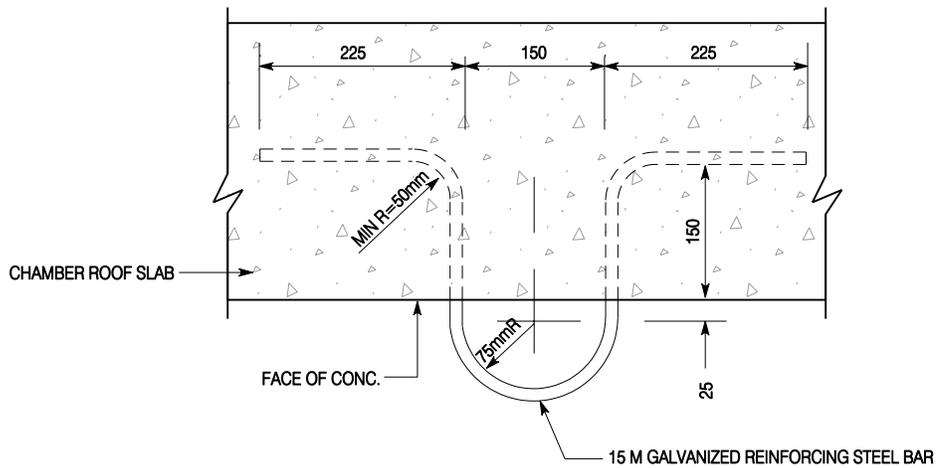
FORMERLY: RWS-202

HAMILTON STD No

WM-213



REFER TO VALVE CHAMBER DRAWING FOR LOCATION & QUANTITY



LIFTING HOOK TO BE LOCATED DIRECTLY ABOVE VALVES, ACCESS
MANHOLES, ETC. AS INDICATED ON VALVE CHAMBER DRAWINGS

City of Hamilton
Public Works Department

**REMOVABLE SLAB LIFTING HOLE DETAILS &
LIFTING HOOK DETAIL FOR CHAMBERS**

DIMENSIONS SHOWN ARE IN MILLIMETRES
UNLESS OTHERWISE NOTED (N.T.S.)

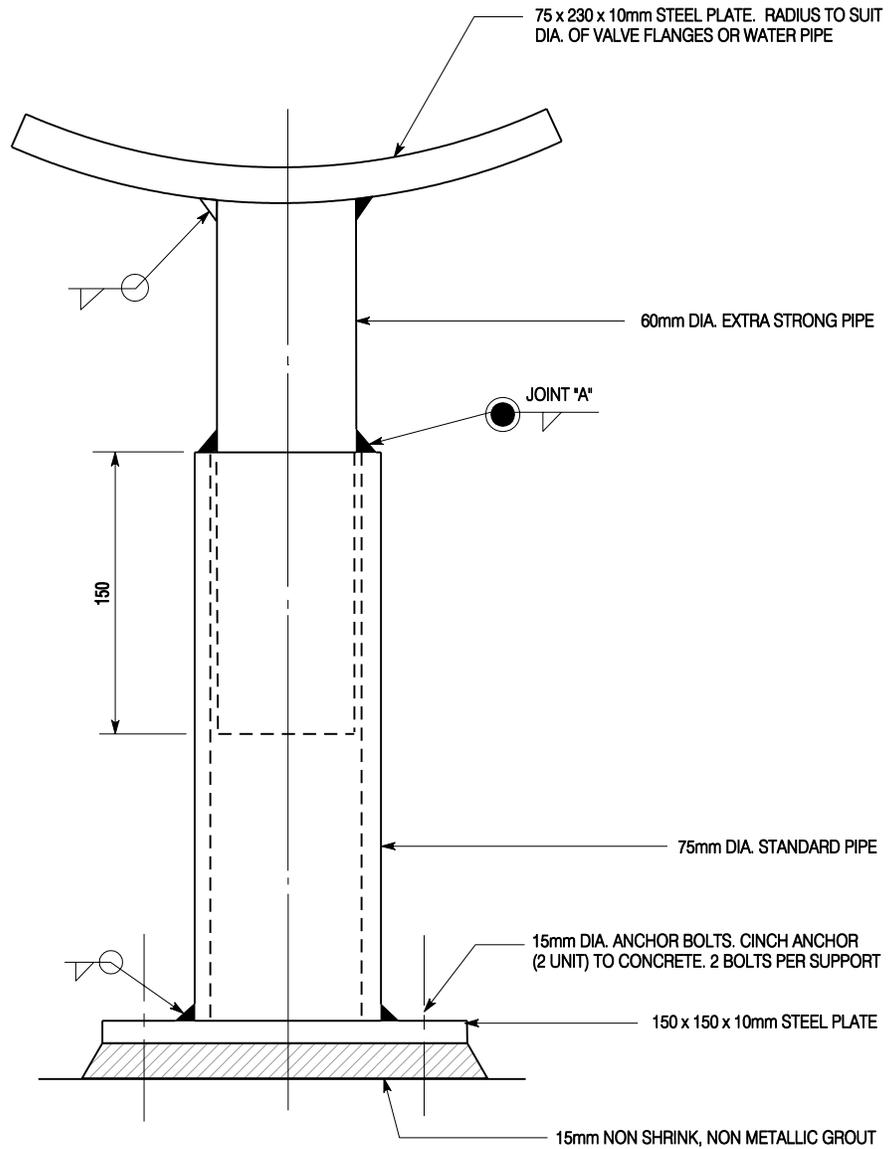
DATE
November 2005

REV No

FORMERLY: RWS-206

HAMILTON STD No

WM-214



NOTE:

CONTRACTOR SHALL ADJUST HEIGHT OF PIPE SUPPORT & WELD AT JOINT *A* TIED SO THAT SUPPORT IS FIRMLY AGAINST VALVE OR WATER PIPE.

City of Hamilton
Public Works Department

VALVE SUPPORT

DIMENSIONS SHOWN ARE IN MILLIMETRES
UNLESS OTHERWISE NOTED (N.T.S.)

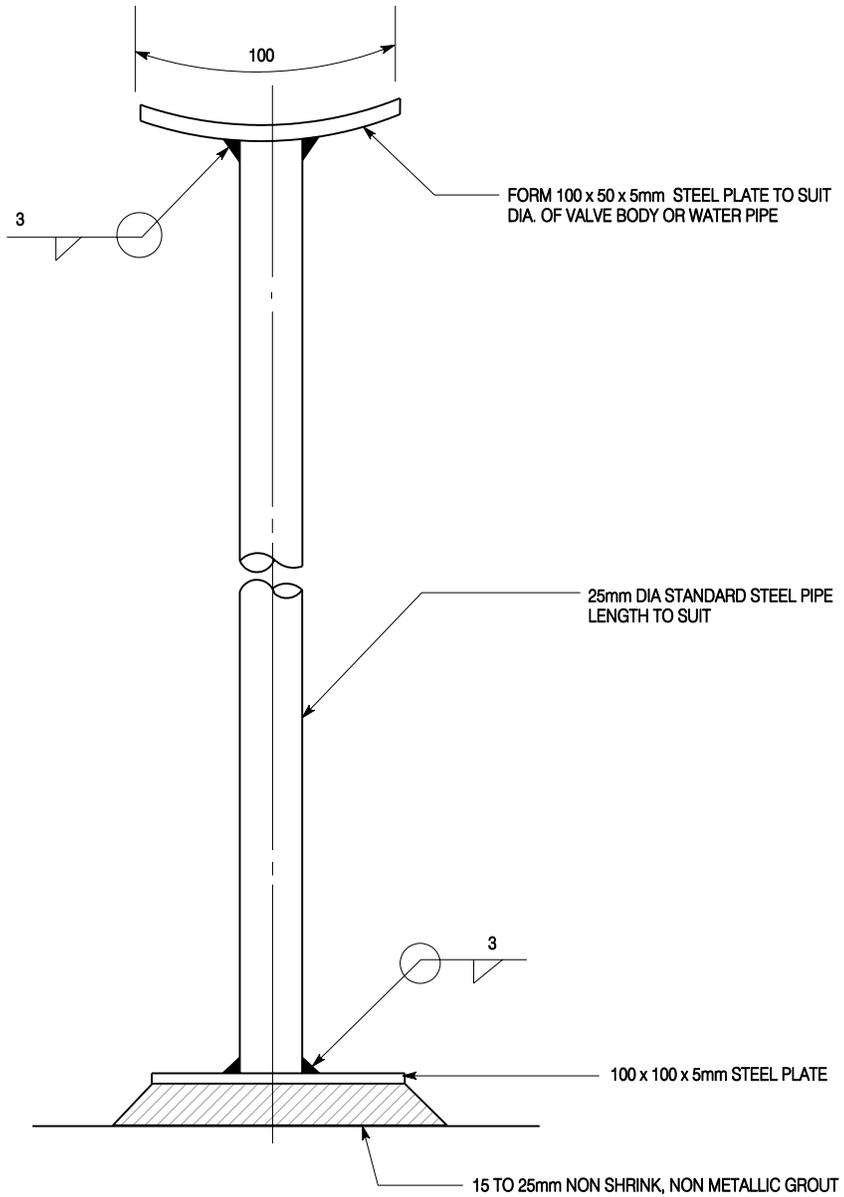
DATE
November 2005

REV No

FORMERLY: RWS-205

HAMILTON STD No

WM-215.01



City of Hamilton
Public Works Department

PIPE & VALVE SUPPORT

DIMENSIONS SHOWN ARE IN MILLIMETRES
UNLESS OTHERWISE NOTED (N.T.S.)

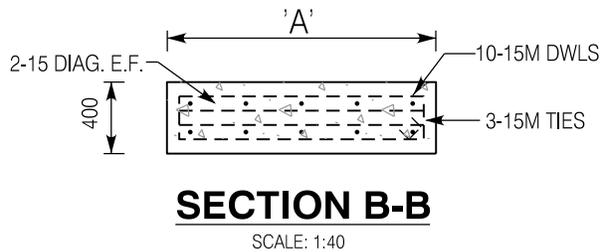
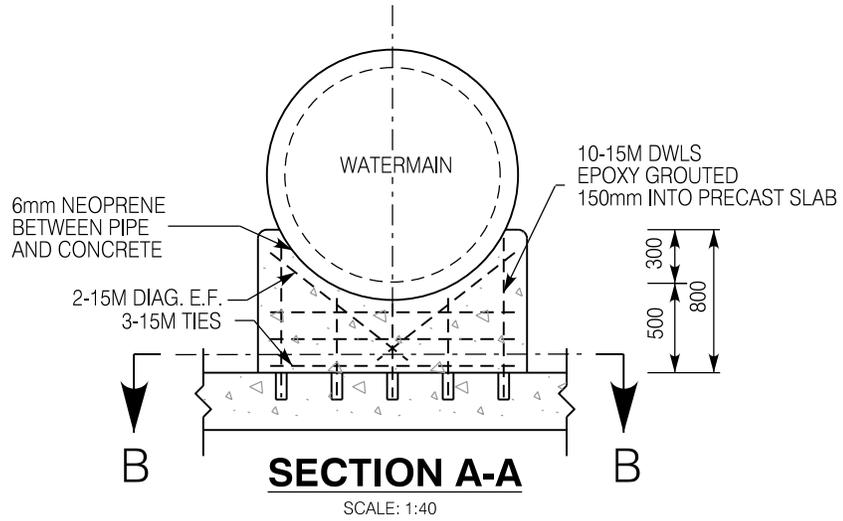
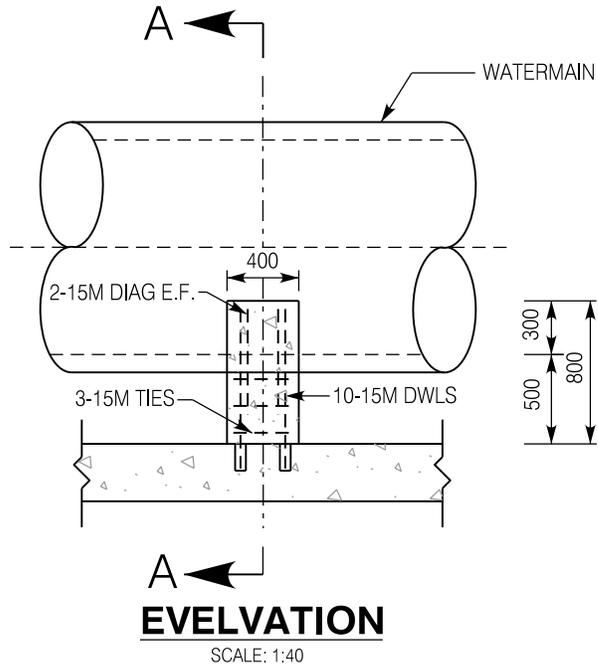
DATE
November 2005

REV No

FORMERLY: RWS-208

HAMILTON STD No

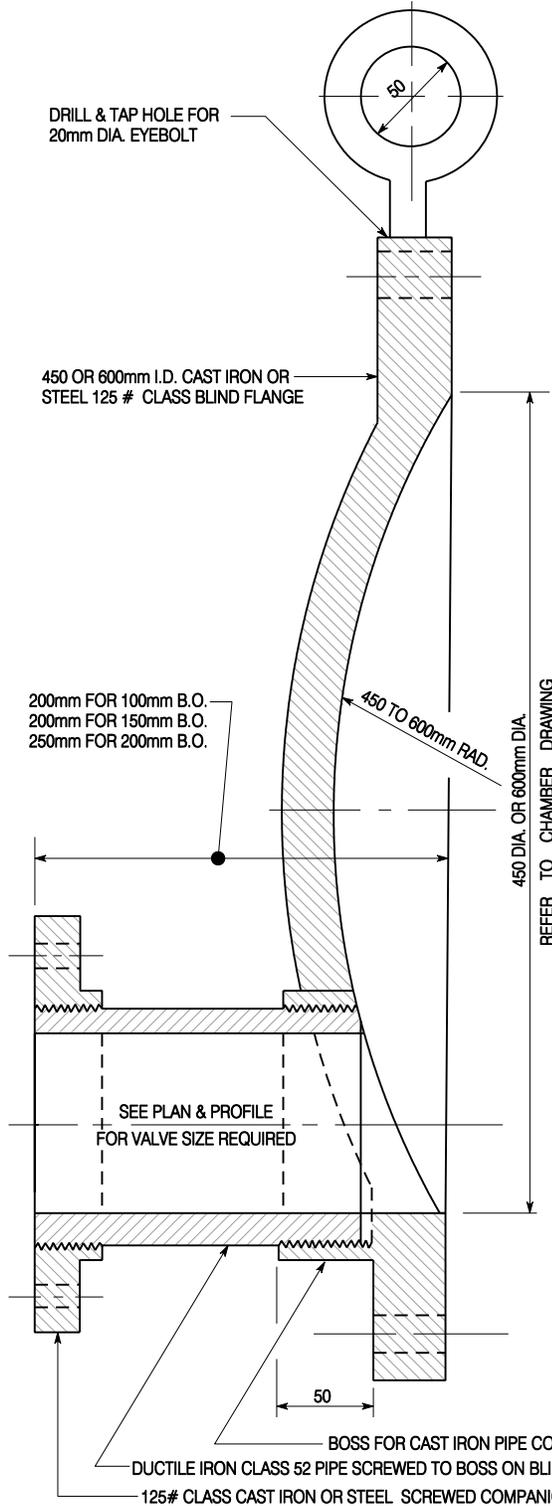
WM-215.02



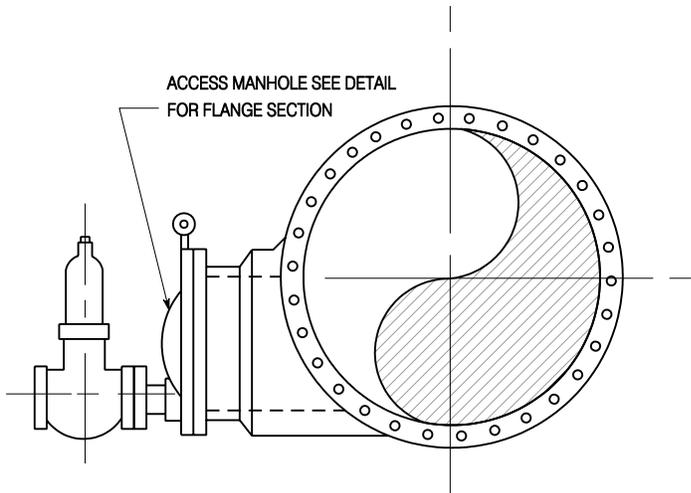
	WATERMAIN DIAMETER	
		750mm & 900mm
DIM 'A'	1300mm	1600mm

City of Hamilton
Public Works Department

Concrete Pipe Support Details for 750mm to 1200mm Dia. Watermains



TYPICAL FLANGE SECTION

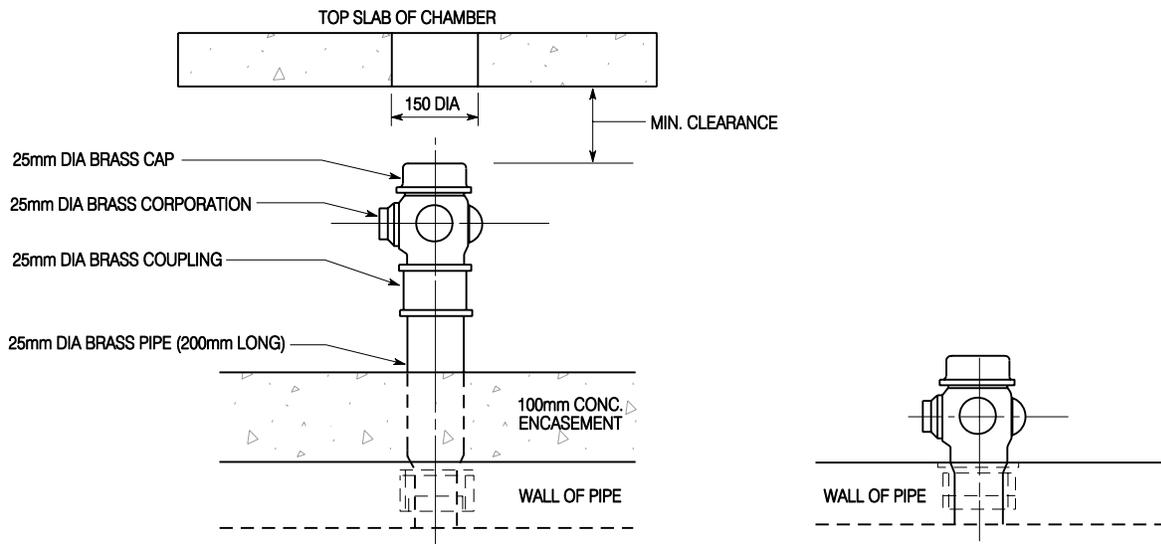


TYPICAL BLOW-OFF AT ACCESS MANHOLE

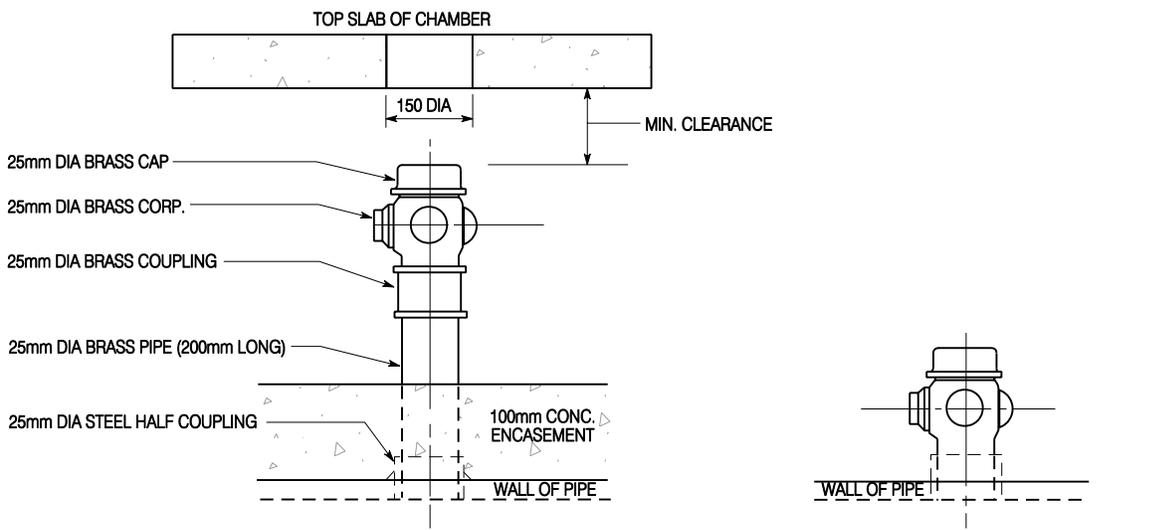
City of Hamilton
Public Works Department

BLOW-OFF CONNECTION AT ACCESS CHAMBER

DIMENSIONS SHOWN ARE IN MILLIMETRES UNLESS OTHERWISE NOTED (N.T.S.)	DATE November 2005	REV No	FORMERLY: RWS 802	HAMILTON STD No	WM-216
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TYPE 1 **TYPE 2**
PITOMETER FOR CONCRETE PRESSURE PIPE



TYPE 1 **TYPE 2**
PITOMETER FOR STEEL PIPE

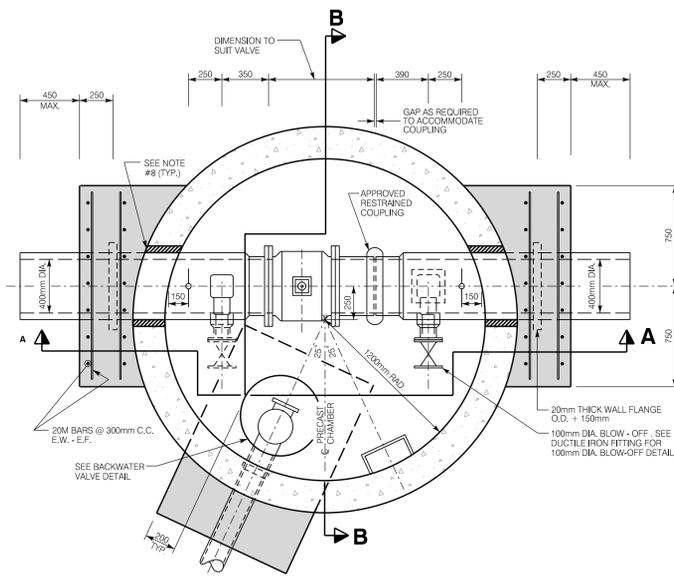
NOTE:
 IRON PIPE THREAD REQUIRED FOR PITOMETER CONNECTION

City of Hamilton
 Public Works Department

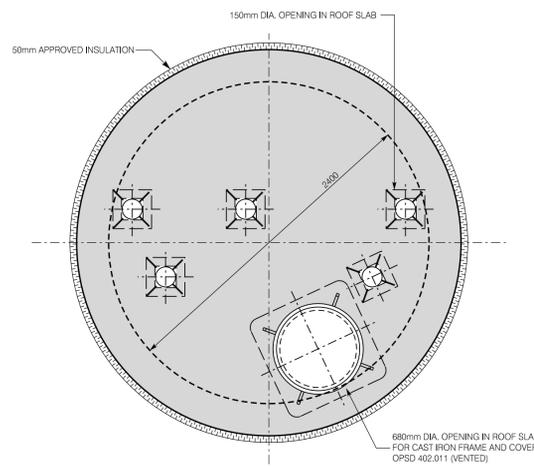
PITOMETER CONNECTION FOR STEEL AND CONCRETE PIPE

DIMENSIONS SHOWN ARE IN MILLIMETRES UNLESS OTHERWISE NOTED (N.T.S.)	DATE November 2005	REV No	FORMERLY: RWS 801	HAMILTON STD No WM-217
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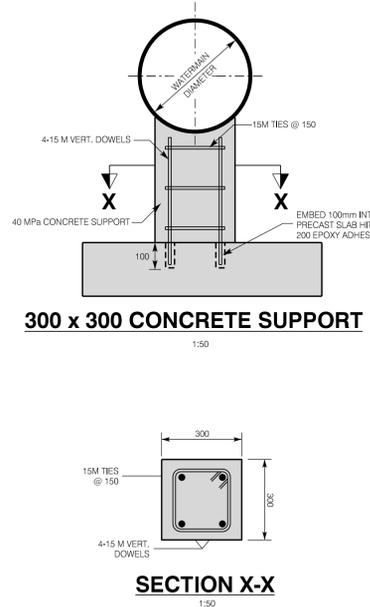
2400mm PRECAST VALVE CHAMBER FOR 400mm DIA. CONCRETE OR DUCTILE IRON PIPE WITH 50mm AIR VALVE & 100mm BLOW-OFF



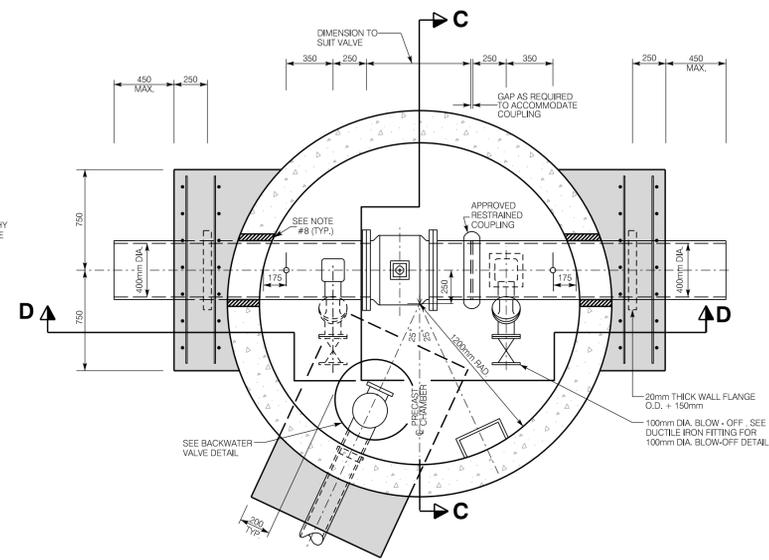
CONCRETE PIPE - PIPING LAYOUT



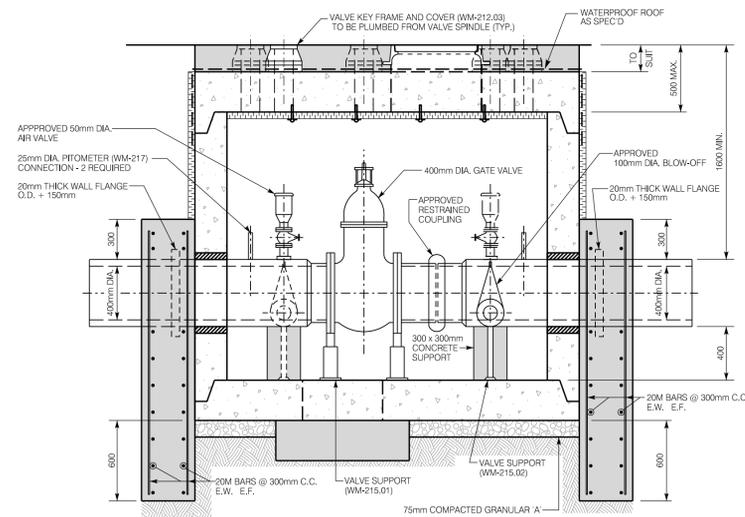
ROOF PLAN - TYPICAL



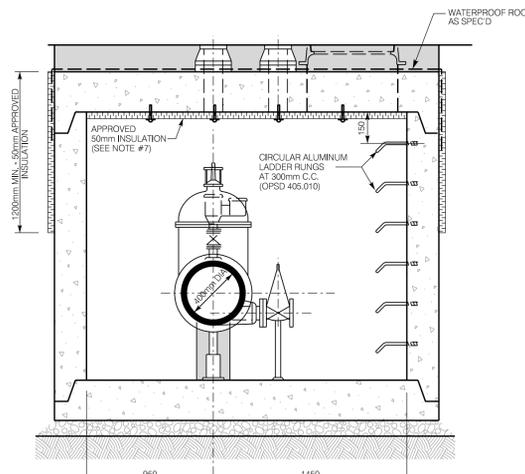
SECTION X-X



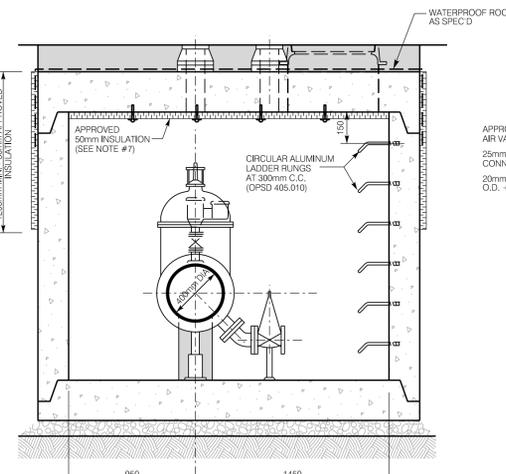
DUCTILE IRON PIPE (CL 54) - PIPING LAYOUT



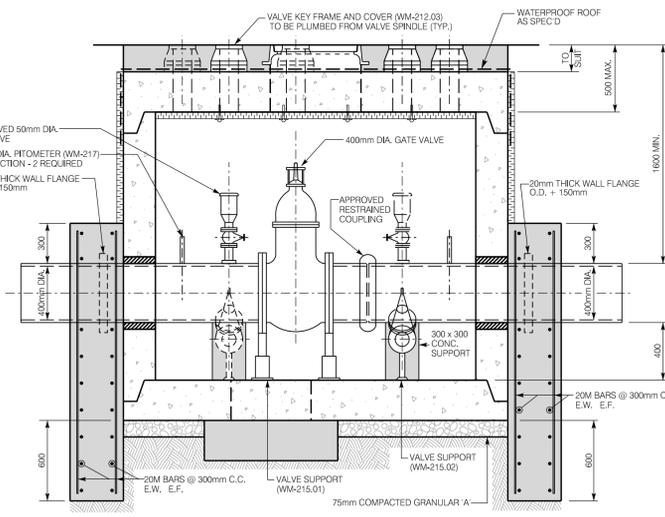
CONCRETE PIPE SECTION A-A



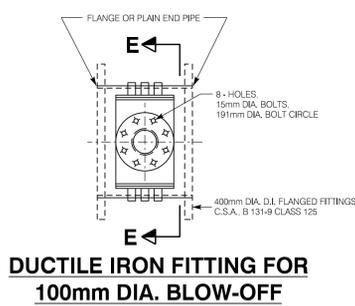
CONCRETE PIPE SECTION B-B



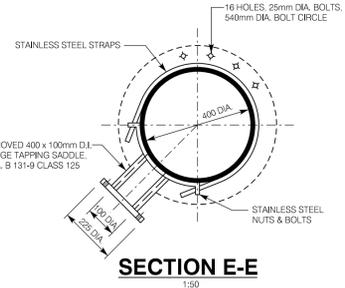
DUCTILE IRON PIPE (CL 54) SECTION C-C



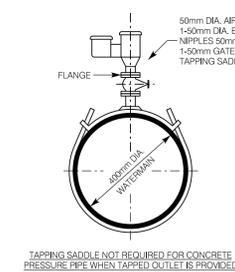
DUCTILE IRON PIPE (CL 54) SECTION D-D



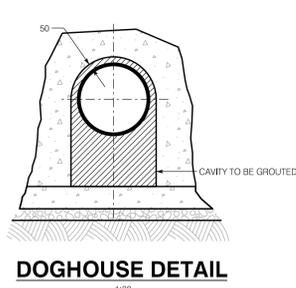
DUCTILE IRON FITTING FOR 100mm DIA. BLOW-OFF



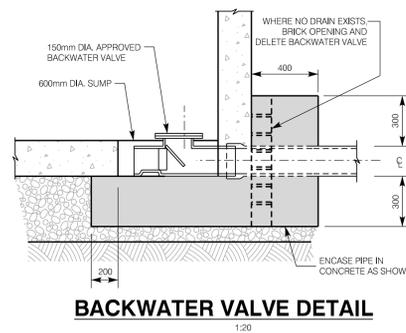
SECTION E-E



AIR VALVE INSTALLATION FOR DUCTILE IRON PIPE



DOGHOUSE DETAIL



BACKWATER VALVE DETAIL

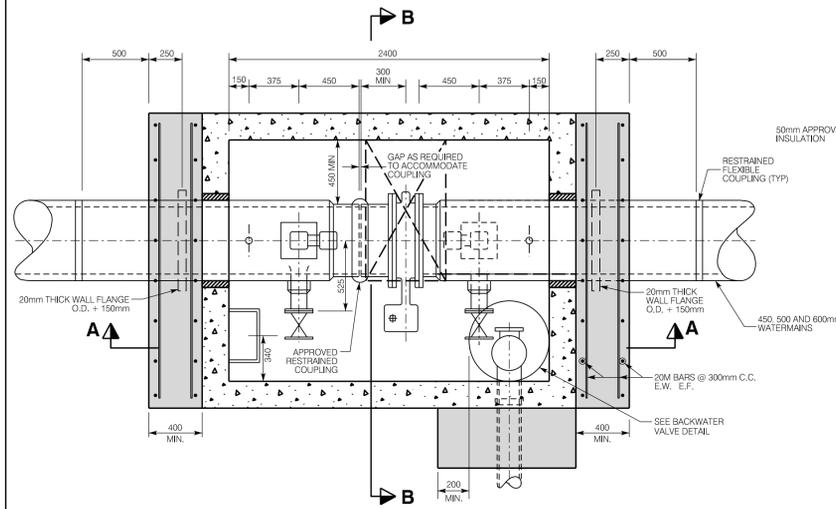
NOTES

1. PRECAST CHAMBERS AND SECTIONS SHALL BE MANUFACTURED TO ASTM C-478, CSA, MEET H-20 S16 LOADING REQUIREMENTS AND IN ACCORDANCE WITH THE APPROVED WATERMAIN PRODUCTS LIST.
2. FILL ALL JOINTS AND LIFTING HOLES (INSIDE & OUT) 15mm THICK WITH 1:3 NON-SHRINK MORTAR MIX.
3. ALL ADJUSTMENTS TO CHAMBER AND KEY COVERS SHALL BE MADE WITH POURED CONCRETE.
4. ALL CONCRETE TO BE 40 MPa, TYPE 50 CEMENT.
5. ALL REINFORCING TO BE HIGH BOND STRUCTURAL GRADE.
6. WHEN AIR VALVE SPECIFIED, THE CHAMBER WALLS, ROOF COVER (SEE DETAIL) AND CHIMNEY SHALL BE INSULATED WITH 50mm APPROVED INSULATION TO A MINIMUM DEPTH OF 1200mm BELOW TOP OF CHAMBER.
7. FASTEN INSULATION TO CEILING WITH 50mm DIA. WASHERS (GALVANIZED) & 6mm DIA. TAPCON CONCRETE ANCHORS @ 450mm CENTRES.
8. DOGHOUSE OPENING TO BE CUT OUT MIN. 50mm LARGER THAN O.D. OF PROPOSED WATERMAIN. PIPE TO BE WRAPPED WITH MIN. 50mm THICK OF DENSIO PLAST MASTIC, REMAINING CAVITY TO BE GROUTED. (SEE DOGHOUSE DETAIL).
9. ALL FLANGES TO BE IN ACCORDANCE WITH ANSI / AWWA.
10. ALL METAL COMPONENTS INSIDE VALVE CHAMBER INCLUDING STAINLESS STEEL NUTS AND BOLTS SHALL HAVE A PROTECTIVE CORROSION TAPE COATING SYSTEM (PRIMER, MASTIC AND TAPE). PROTECTIVE CORROSION TAPE COATING (PRIMER, MASTIC AND TAPE) IS NOT REQUIRED ON VALVE BODIES.
11. SEE CONTRACT DRAWINGS FOR LOCATION / ORIENTATION OF 50mm AIR VALVE OR 100mm BLOW-OFF IN CHAMBER.
12. CHAMBER PIPING SHALL BE CONCRETE OR DUCTILE IRON CLASS 54.
13. WATERPROOF MEMBRANE SHALL BE APPLIED TO ROOF AND ALL CHAMBER WALLS PRIOR TO BACKFILLING.
14. APPROVED RESTRAINED COUPLING SHALL BE IN ACCORDANCE WITH THE APPROVED WATERMAIN PRODUCTS LIST.

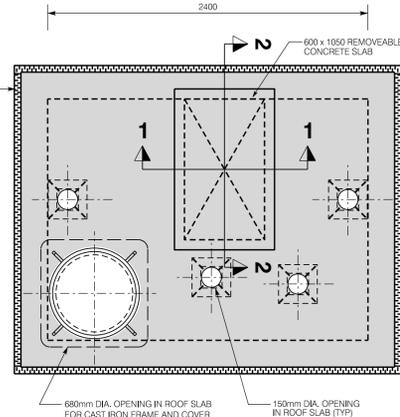


City of Hamilton Public Works Department				
2400mm PRECAST VALVE CHAMBER FOR 400mm DIA. CONCRETE OR DUCTILE IRON PIPE WITH 50mm AIR VALVE & 100mm BLOW-OFF				
DIMENSIONS SHOWN ARE IN MILLIMETRES UNLESS OTHERWISE NOTED	DATE JUNE 2019	REV No 3	FORMERLY RWS-323	HAMILTON STD No. WM-230

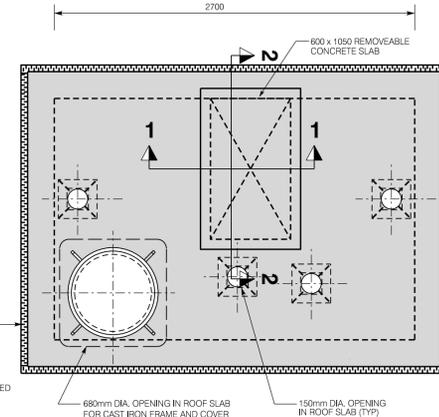
PRECAST VALVE CHAMBER FOR 450mm, 500mm AND 600mm DIA. CONCRETE PIPE OR DUCTILE IRON PIPE



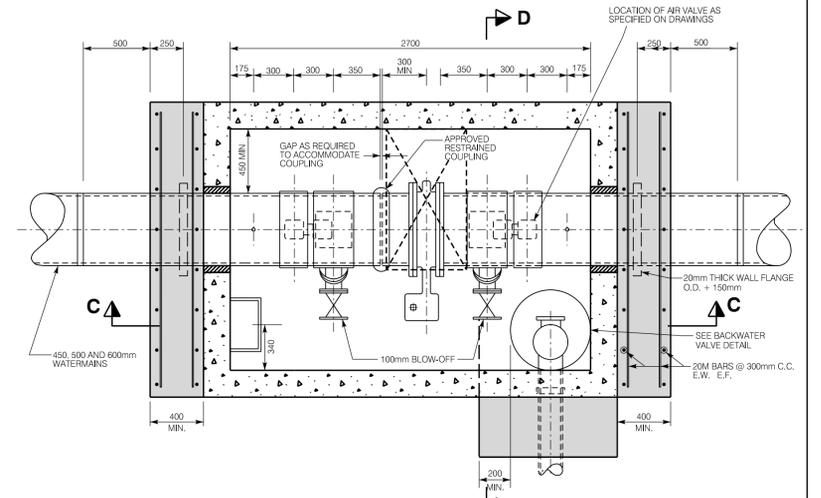
PIPING LAYOUT CONCRETE PIPE



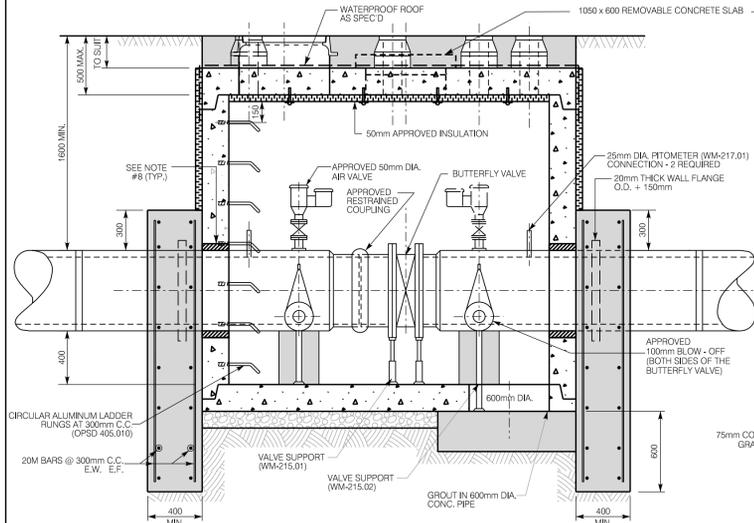
ROOF PLAN CONCRETE PIPE



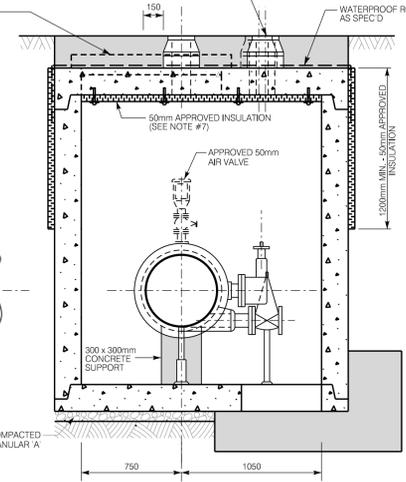
ROOF PLAN DUCTILE IRON PIPE



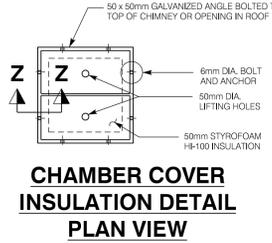
PIPING LAYOUT DUCTILE IRON PIPE - (CL54)



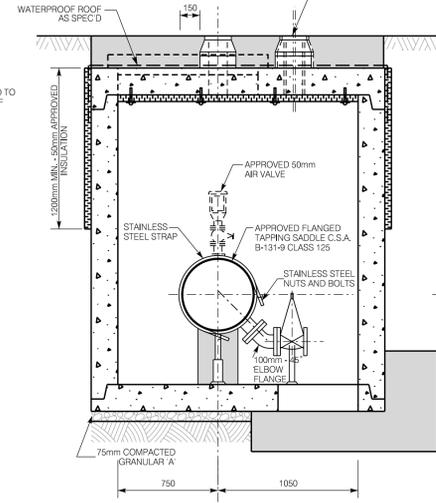
SECTION A-A CONCRETE PIPE



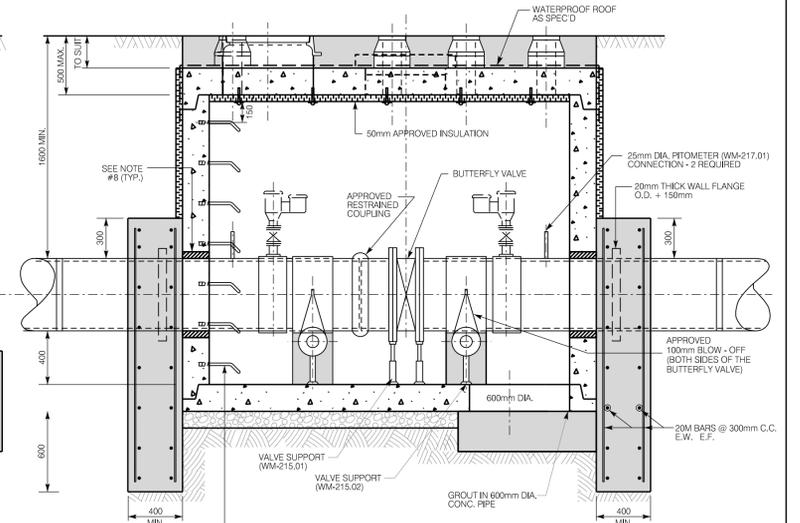
SECTION B-B CONCRETE PIPE



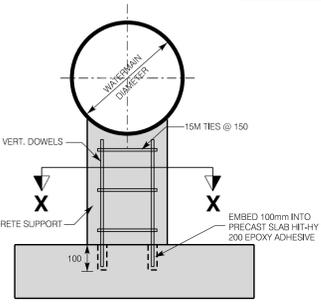
SECTION Z-Z



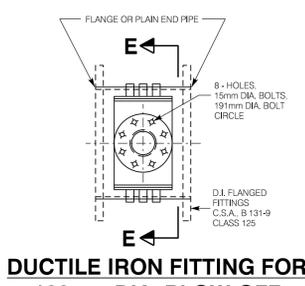
SECTION D-D DUCTILE IRON PIPE - (CL 54)



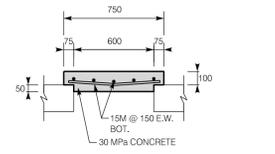
SECTION C-C DUCTILE IRON PIPE - (CL54)



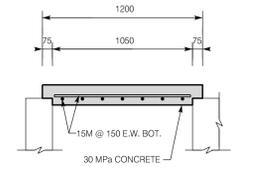
300 x 300 CONCRETE SUPPORT



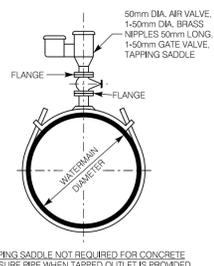
DUCTILE IRON FITTING FOR 100mm DIA. BLOW-OFF



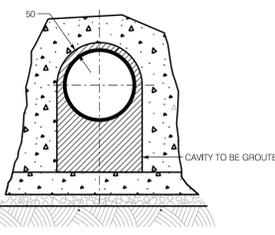
SECTION 1-1 REMOVEABLE CONCRETE SLAB



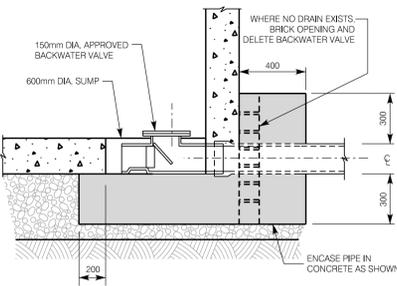
SECTION 2-2 REMOVEABLE CONCRETE SLAB



AIR VALVE INSTALLATION FOR DUCTILE IRON PIPE



DOGHOUSE DETAIL



BACKWATER VALVE DETAIL

NOTES:

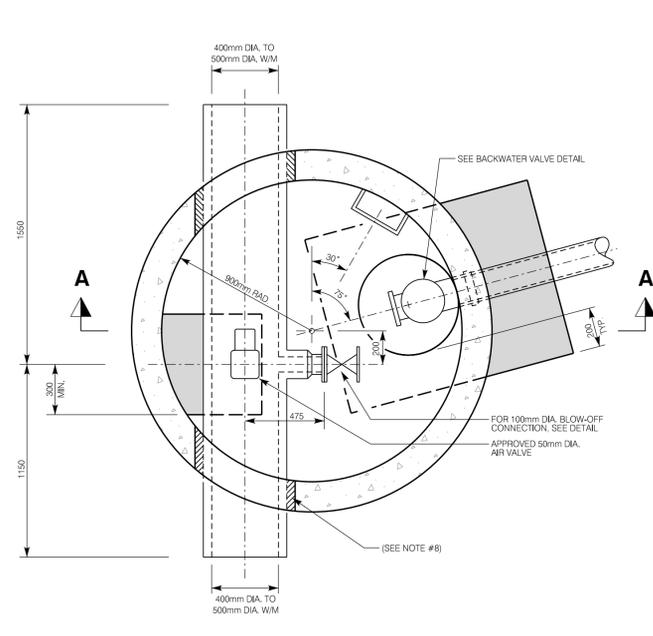
1. PRECAST CHAMBERS AND SECTIONS SHALL BE MANUFACTURED TO ASTM C-478, C54, MEET H-20 S16 LOADING REQUIREMENTS AND IN ACCORDANCE WITH THE APPROVED WATERMAIN PRODUCTS LIST.
2. FILL ALL JOINTS AND LIFTING HOLES (INSIDE & OUT) 15mm THICK WITH 1:3 NON-SHRINK MORTAR MIX.
3. ALL ADJUSTMENTS TO CHAMBER AND KEY COVERS SHALL BE MADE WITH POURED CONCRETE.
4. ALL CONCRETE TO BE 40 MPa, TYPE 50 CEMENT.
5. ALL REINFORCING TO BE HIGH BOND STRUCTURAL GRADE.
6. WHEN AIR VALVE SPECIFIED, THE CHAMBER WALLS, ROOF COVER (SEE DETAIL) AND CHIMNEY SHALL BE INSULATED WITH 50mm APPROVED INSULATION TO A MINIMUM DEPTH OF 150mm BELOW TOP OF CHAMBER.
7. FASTEN INSULATION TO CEILING WITH 50mm DIA. WASHERS (GALVANIZED) & 6mm DIA. TAPCON CONCRETE ANCHORS @ 450mm CENTRES.
8. DOGHOUSE OPENING TO BE CUT OUT MIN. 50mm LARGER THAN O.D. OF PROPOSED WATERMAIN. PIPE TO BE WRAPPED WITH MIN. 50mm THICK OF PLAST MASTIC MATERIAL REMAINING CAVITY TO BE GROUTED. (SEE DOGHOUSE DETAIL).
9. ALL FLANGES TO BE IN ACCORDANCE WITH ANSI/AWWA.
10. ALL METAL COMPONENTS INSIDE VALVE CHAMBER INCLUDING STAINLESS STEEL NUTS AND BOLTS, SHALL HAVE A PROTECTIVE CORROSION TAPE COATING SYSTEM (PRIMER, MASTIC AND TAPE). PROTECTIVE CORROSION TAPE COATING (PRIMER, MASTIC AND TAPE) IS NOT REQUIRED ON VALVE BODIES.
11. SEE CONTRACT DRAWINGS FOR LOCATION / ORIENTATION OF 50mm AIR VALVE AND 100mm BLOW-OFF ON BOTH SIDES OF THE VALVE.
12. CHAMBER PIPING SHALL BE CONCRETE OR DUCTILE IRON CLASS S4.
13. WATERPROOF MEMBRANE SHALL BE APPLIED TO ROOF AND ALL CHAMBER WALLS PRIOR TO BACKFILLING.
14. APPROVED RESTRAINED COUPLING SHALL BE IN ACCORDANCE WITH THE APPROVED WATERMAIN PRODUCTS LIST.
15. ALL FLANGES TO BE STAINLESS STEEL.
16. ALL THREADED PIPE AND FITTINGS MUST BE STAINLESS STEEL 316L.
17. ALL VALVES TO BE RESILIENT SEAT TO AWWA C509 FUSION BOUNDED EPOXY (FBE ANSIST 61 APPROVED) SHOP COAT FINISH ON INTERIOR AND EXTERIOR OF VALVE TO AWWA C550.
18. EXTERIOR AND INTERIOR OF ALL STEEL (NOT STAINLESS STEEL) PIPE SHALL BE LIQUID EPOXY COATED TO AWWA C210.



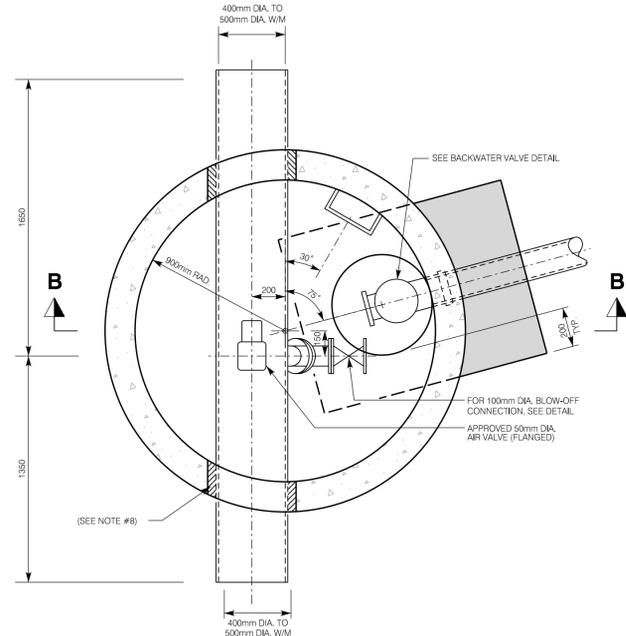
City of Hamilton Public Works Department				
PRECAST VALVE CHAMBER FOR 450mm, 500mm AND 600mm DIA. CONCRETE PIPE OR DUCTILE IRON PIPE				
DIMENSIONS SHOWN ARE IN MILLIMETERS UNLESS OTHERWISE NOTED	DATE JUNE 2019	REV No. 4	FORMERLY RWS-324	HAMILTON STD No. WM-231

**1800mm PRECAST VALVE CHAMBER FOR
400mm TO 500mm DIA. CONCRETE OR DUCTILE IRON PIPE
WITH 50mm AIR VALVE & 100mm BLOW-OFF**

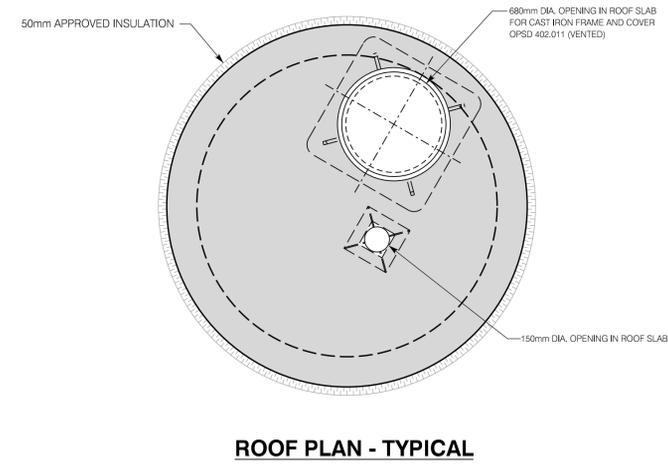
WM-232



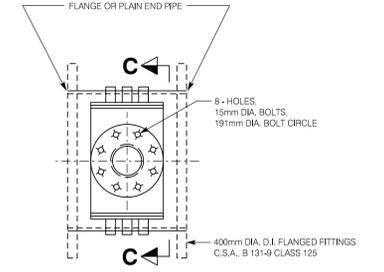
**PIPING LAYOUT
CONCRETE PIPE**



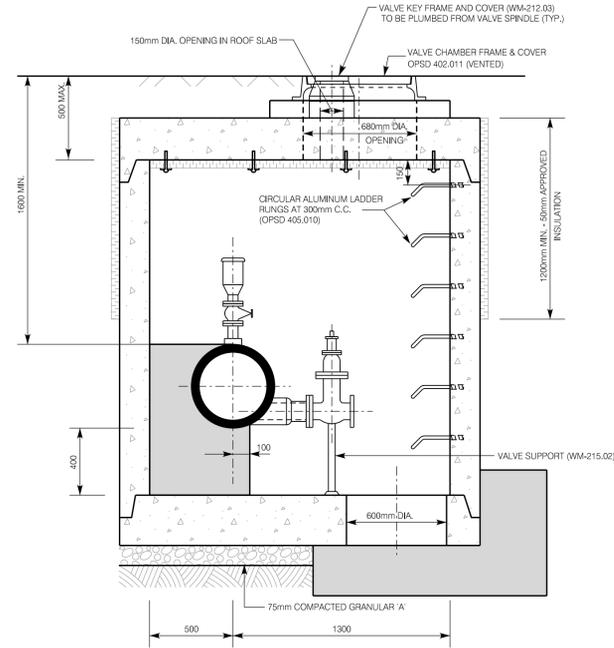
**PIPING LAYOUT
DUCTILE IRON PIPE**



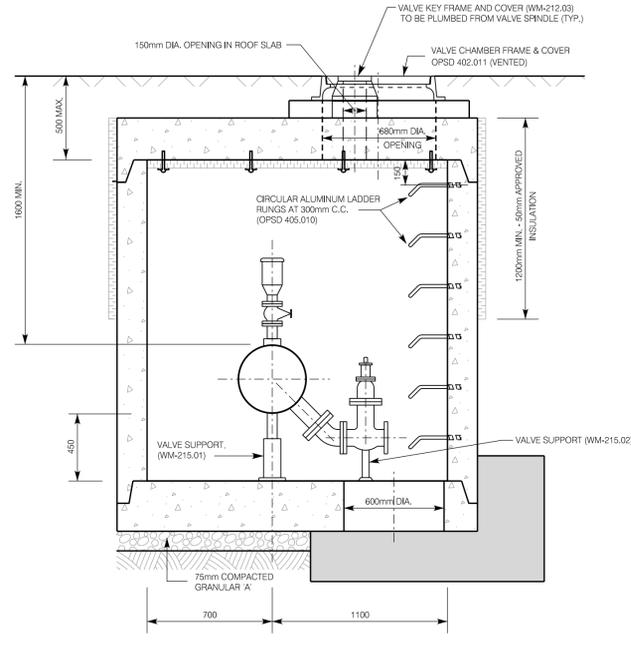
ROOF PLAN - TYPICAL



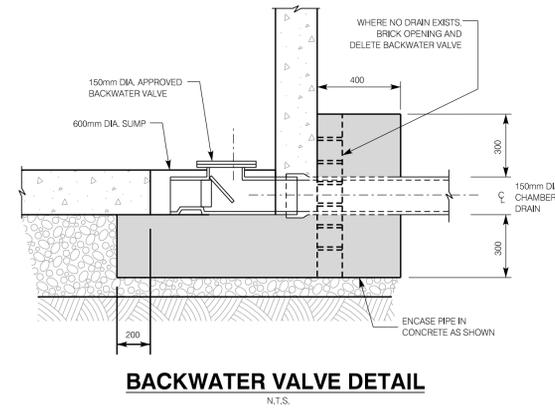
**DUCTILE IRON FITTING FOR
100mm DIA. BLOW-OFF**
N.T.S.



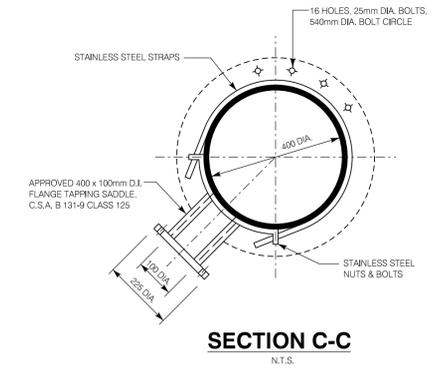
**SECTION A-A
CONCRETE PIPE**



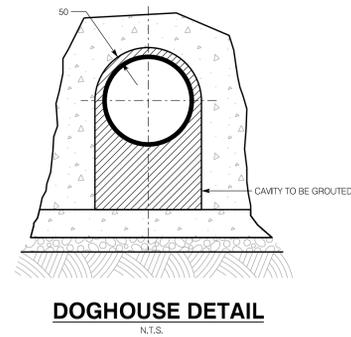
**SECTION B-B
DUCTILE IRON PIPE**



BACKWATER VALVE DETAIL
N.T.S.



SECTION C-C
N.T.S.

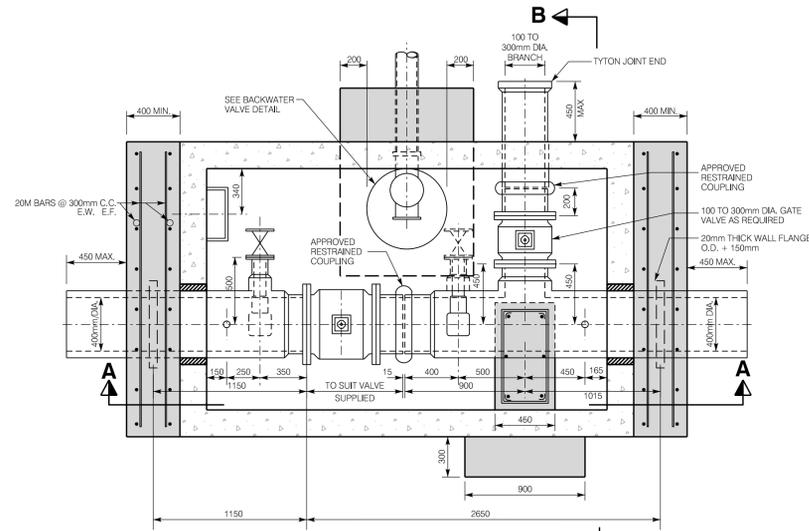


DOGHOUSE DETAIL
N.T.S.

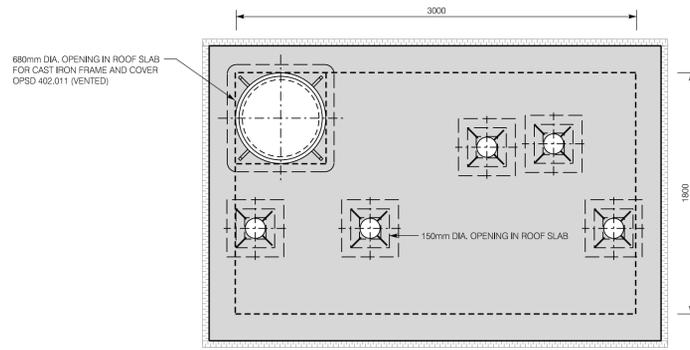
- NOTES:**
1. PRECAST CHAMBERS AND SECTIONS SHALL BE MANUFACTURED TO ASTM C-478, CSA, MEET H-20 S16 LOADING REQUIREMENTS AND IN ACCORDANCE WITH THE APPROVED WATERMAIN PRODUCTS LIST.
 2. FILL ALL JOINTS AND LIFTING HOLES (INSIDE & OUT) 15mm THICK WITH 1:3 NON-SHRINK MORTAR MIX.
 3. ALL ADJUSTMENTS TO CHAMBER AND KEY COVERS SHALL BE MADE WITH POURED CONCRETE.
 4. ALL CONCRETE TO BE 30 MPa, TYPE 50 CEMENT.
 5. ALL REINFORCING TO BE HIGH BOND STRUCTURAL GRADE.
 6. WHEN AIR VALVE SPECIFIED, THE CHAMBER WALLS, ROOF COVER (SEE DETAIL) AND CHIMNEY SHALL BE INSULATED WITH 50mm APPROVED INSULATION TO A MINIMUM DEPTH OF 1200mm BELOW TOP OF CHAMBER.
 7. FASTEN INSULATION TO CEILING WITH 50mm DIA. WASHERS (GALVANIZED) & 6mm DIA. TAPCON CONCRETE ANCHORS @ 450mm CENTRES.
 8. DOGHOUSE OPENING TO BE CUT OUT MIN. 50mm LARGER THAN O.D. OF PROPOSED WATERMAIN. PIPE TO BE WRAPPED WITH MIN. 50mm THICK OF DENSU PLAST MASTIC, REMAINING CAVITY TO BE GROUTED. (SEE DOGHOUSE DETAIL).
 9. ALL FLANGES TO BE IN ACCORDANCE WITH ANSI / AWWA.
 10. ALL METAL COMPONENTS INSIDE VALVE CHAMBER INCLUDING STAINLESS STEEL NUTS AND BOLTS SHALL HAVE A PROTECTIVE CORROSION TAPE COATING SYSTEM (PRIMER, MASTIC AND TAPE).
 11. PROTECTIVE CORROSION TAPE COATING SYSTEM (PRIMER, MASTIC AND TAPE) IS NOT REQUIRED ON VALVE BODIES.
 12. SEE CONTRACT DRAWINGS FOR LOCATION / ORIENTATION OF 50mm AIR VALVE OR 100mm BLOW-OFF IN CHAMBER.
 13. CHAMBER PIPING SHALL BE CONCRETE OR DUCTILE IRON CLASS 54.
 14. WATERPROOF MEMBRANE SHALL BE APPLIED TO ALL CHAMBER WALLS PRIOR TO BACKFILLING.
 15. APPROVED RESTRAINED COUPLING SHALL BE IN ACCORDANCE WITH THE APPROVED WATERMAIN PRODUCTS LIST.



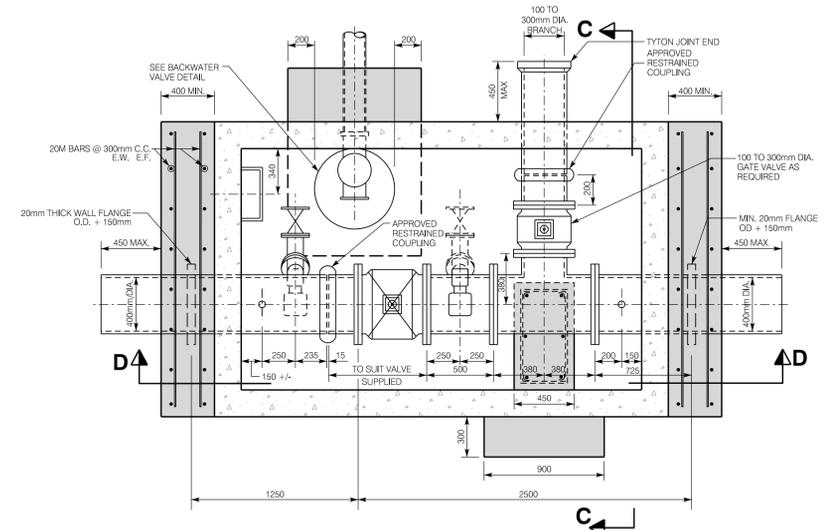
City of Hamilton Public Works Department				
1800mm PRECAST VALVE CHAMBER FOR 400mm TO 500mm DIA. CONCRETE OR DUCTILE IRON PIPE WITH 50mm AIR VALVE & 100mm BLOW-OFF				
DIMENSIONS SHOWN ARE IN MILLIMETRES UNLESS OTHERWISE NOTED	DATE JUNE 2019	REV No 2	FORMERLY RWS-343	HAMILTON STD No. WM-232



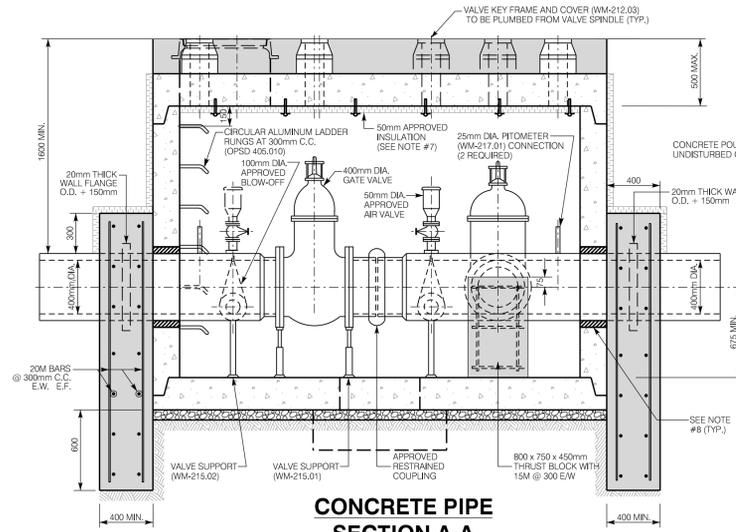
CONCRETE PIPE PIPING LAYOUT



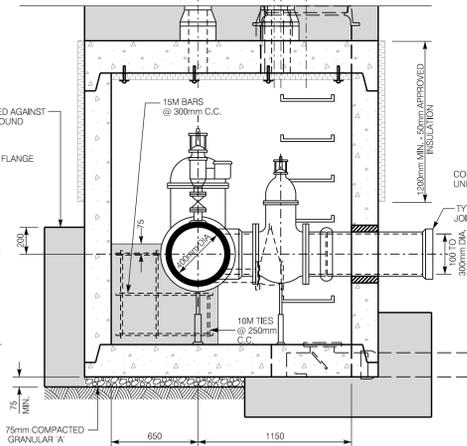
ROOF PLAN - TYPICAL



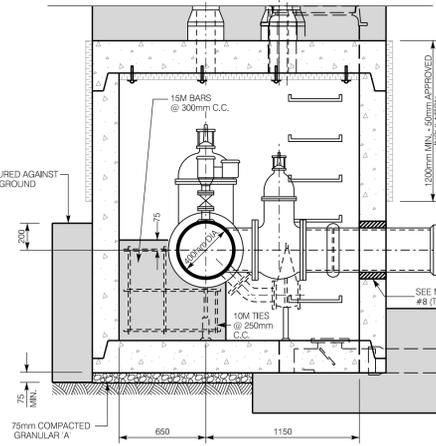
DUCTILE IRON PIPE - (CL 54) PIPING LAYOUT



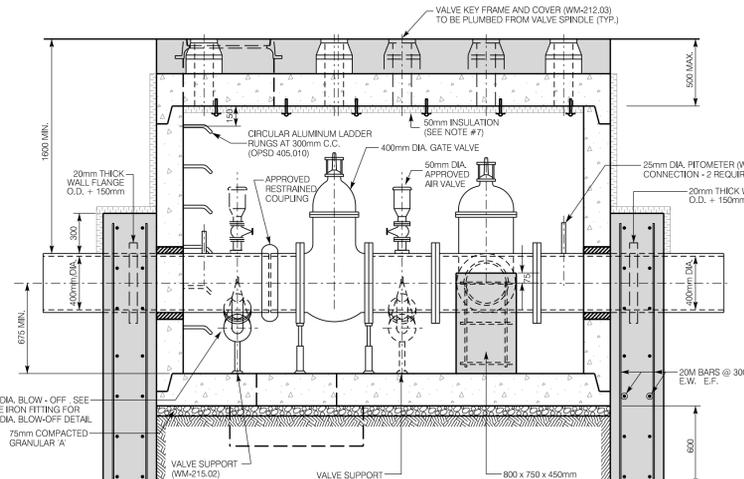
CONCRETE PIPE SECTION A-A



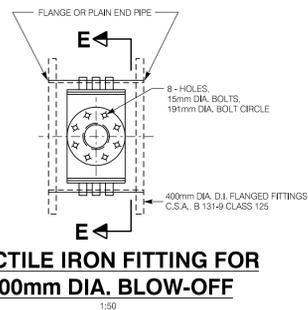
CONCRETE PIPE SECTION B-B



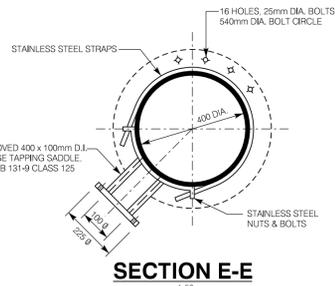
DUCTILE IRON PIPE - (CL 54) SECTION C-C



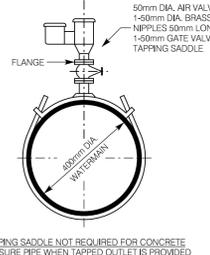
DUCTILE IRON PIPE - (CL 54) SECTION D-D



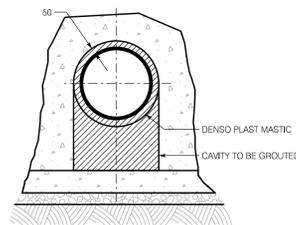
DUCTILE IRON FITTING FOR 100mm DIA. BLOW-OFF



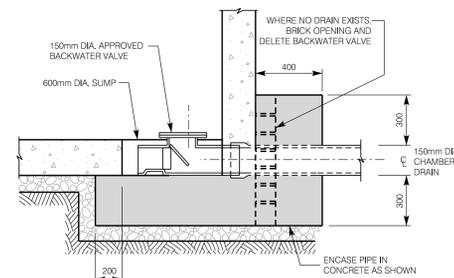
SECTION E-E



AIR VALVE INSTALLATION FOR DUCTILE IRON PIPE



DOGHOUSE DETAIL



BACKWATER VALVE DETAIL

NOTES:

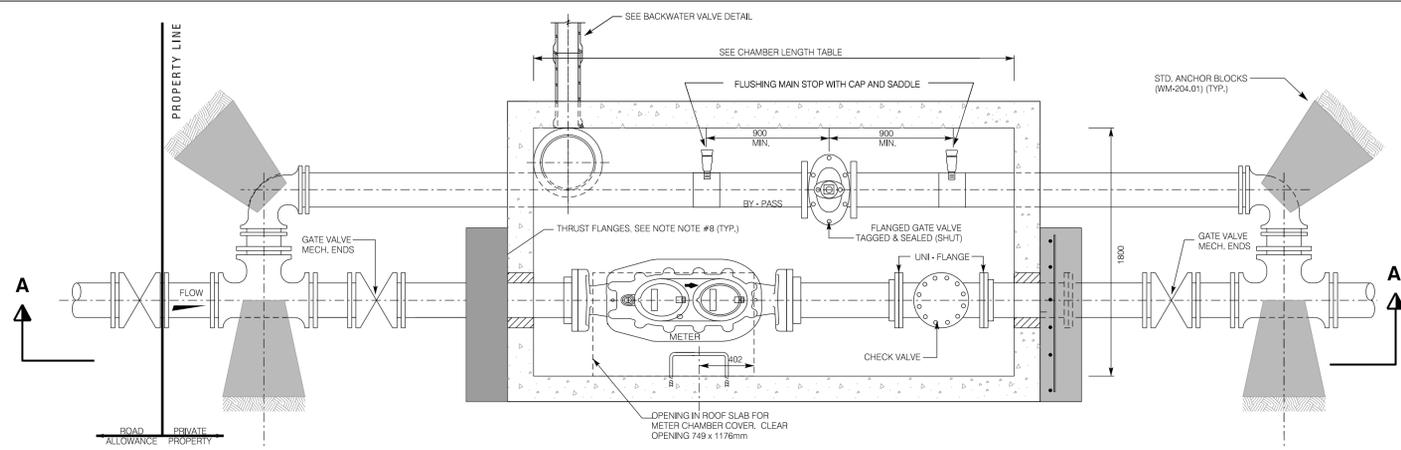
1. PRECAST CHAMBERS AND SECTIONS SHALL BE MANUFACTURED TO ASTM C-478, CSA MEET H-20 S16 LOADING REQUIREMENTS AND IN ACCORDANCE WITH THE APPROVED WATERMAIN PRODUCTS LIST.
2. FILL ALL JOINTS AND LIFTING HOLES (INSIDE & OUT) 15mm THICK WITH 1:3 NON-SHRINK MORTAR MIX.
3. ALL ADJUSTMENTS TO CHAMBER AND KEY COVERS SHALL BE MADE WITH POURED CONCRETE.
4. ALL CONCRETE TO BE 30 MPa, TYPE 50 CEMENT.
5. ALL REINFORCING TO BE HIGH BOND STRUCTURAL GRADE.
6. WHEN AIR VALVE SPECIFIED, THE CHAMBER WALLS, ROOF, COVER (SEE DETAIL) AND CHIMNEY SHALL BE INSULATED WITH 50mm APPROVED INSULATION TO A MINIMUM DEPTH OF 100mm BELOW TOP OF CHAMBER.
7. FASTEN INSULATION TO CEILING WITH 50mm DIA. WASHERS (GALVANIZED) & 6mm DIA. TAPCON CONCRETE ANCHORS @ 450mm CENTRES.
8. DOGHOUSE OPENING TO BE CUT OUT MIN. 50mm LARGER THAN O.D. OF PROPOSED WATERMAIN. PIPE TO BE WRAPPED WITH MIN. 50mm THICK OF DENSO PLAST MASTIC. REMAINING CAVITY TO BE GROUTED. (SEE DOGHOUSE DETAIL).
9. ALL FLANGES TO BE IN ACCORDANCE WITH ANSI/AWWA.
10. ALL METAL COMPONENTS INSIDE VALVE CHAMBER INCLUDING STAINLESS STEEL NUTS AND BOLTS, SHALL HAVE A PROTECTIVE CORROSION TAPE COATING SYSTEM (PRIMER, MASTIC AND TAPE).
11. PROTECTIVE CORROSION TAPE COATING (PRIMER, MASTIC AND TAPE) IS NOT REQUIRED ON VALVE BODIES.
12. SEE CONTRACT DRAWINGS FOR LOCATION / ORIENTATION OF 50mm AIR VALVE OR 100mm BLOW-OFF IN CHAMBER.
13. CHAMBER PIPING SHALL BE CONCRETE OR DUCTILE IRON CLASS 54.
14. WATERPROOF MEMBRANE SHALL BE APPLIED TO ALL CHAMBER WALLS PRIOR TO BACKFILLING.
15. APPROVED RESTRAINED COUPLING SHALL BE IN ACCORDANCE WITH THE APPROVED WATERMAIN PRODUCTS LIST.



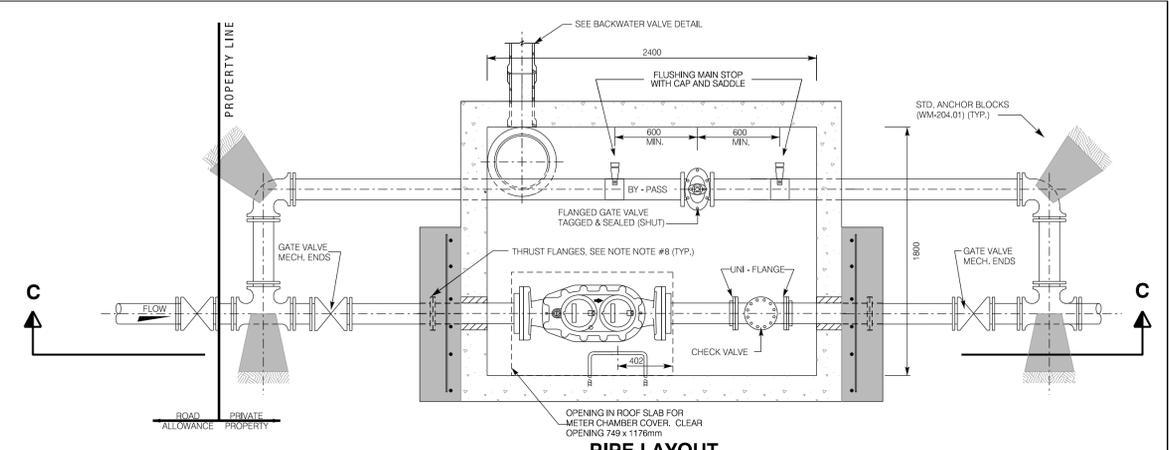
City of Hamilton Public Works Department				
1800mm x 3000mm PRECAST VALVE CHAMBER FOR 400mm DIA. CONCRETE OR DUCTILE IRON PIPE WITH 100mm DIA. TO 300mm DIA. BRANCH				
DIMENSIONS SHOWN ARE IN MILLIMETRES UNLESS OTHERWISE NOTED	DATE JUNE 2019	REV No 2	FORMERLY RWS-344	HAMILTON STD No. WM-233

**PIPING AND CHAMBER FOR MULTI-UNIT RESIDENTIAL
100mm TO 250mm DIA. METER INSTALLATION
(1800mm x 2400mm/3000mm/3500mm PRECAST METER CHAMBERS)**

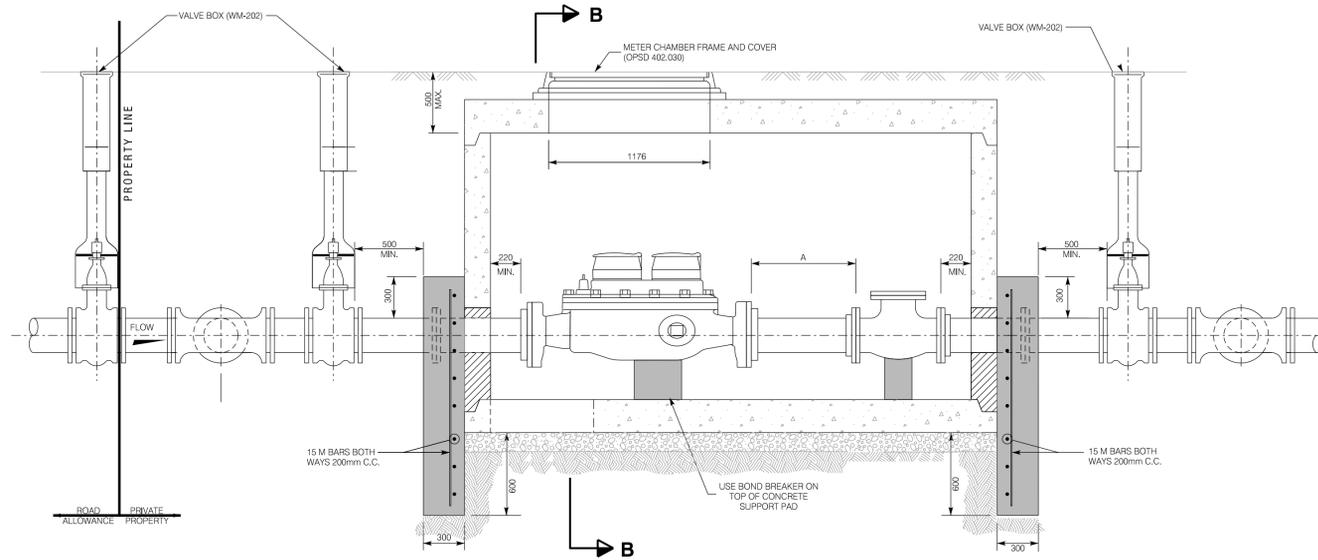
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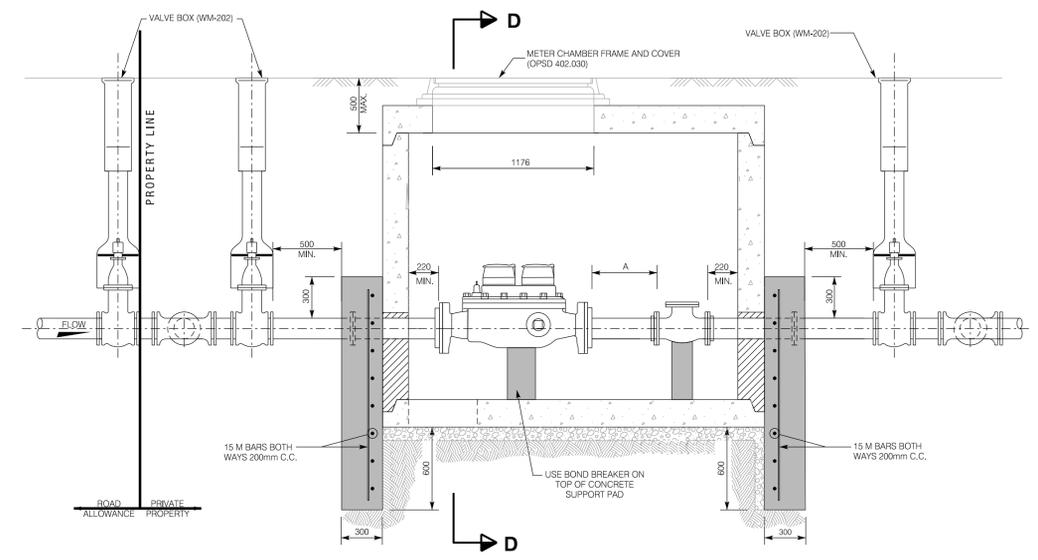
**PIPE LAYOUT
METER CHAMBER FOR 200mm & 250mm DIA. WATER METER**



**PIPE LAYOUT
METER CHAMBER FOR 100mm & 150mm DIA. WATER METER**



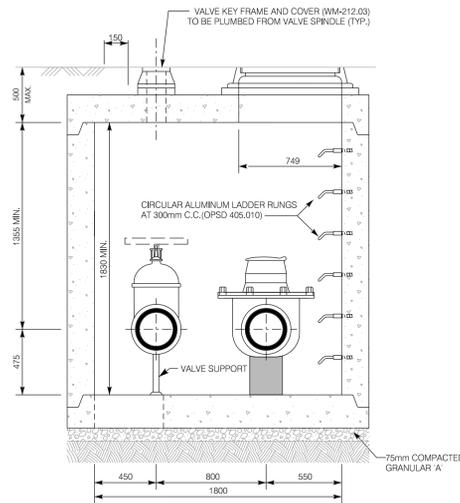
**SECTION A-A
200mm & 250mm DIA. WATER METER**



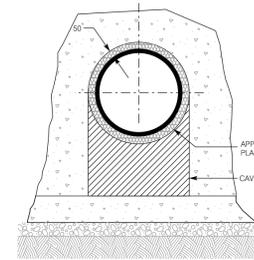
**SECTION C-C
100mm & 150mm DIA. WATER METER**

METER DIA. (mm)	'A' MIN. (mm)	MINIMUM BY-PASS DIA.
250	700	200
200	600	150
150	450	100
100	300	100

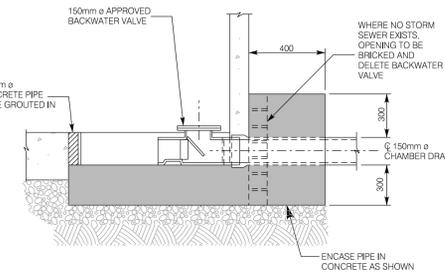
METER SIZE	CHAMBER LENGTH (mm)
200mm METER	3000
250mm METER	3500



**SECTION B-B
200mm & 250mm DIA. WATER METER**

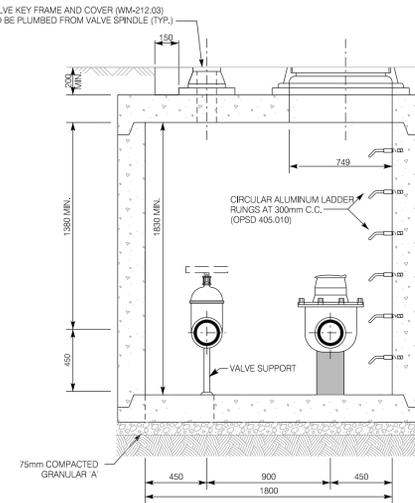


DOGHOUSE DETAIL



BACKWATER VALVE DETAIL

- NOTES:**
1. PRECAST SECTIONS TO BE MANUFACTURED TO ASTM C-478 AND CSA SPECIFICATIONS.
 2. FILL ALL JOINTS AND LIFTING HOLES (INSIDE & OUT) 15mm THICK WITH 1:3 NON-SHRINK MORTAR MIX.
 3. ALL ADJUSTMENTS TO CHAMBER AND KEY BOX COVERS SHALL BE MADE WITH POURED CONCRETE.
 4. ALL CONCRETE TO BE 40 MPa, STRENGTH, TYPE 50 CEMENT.
 5. ALL REINFORCING TO BE HIGH BOND STRUCTURAL GRADE.
 6. DOGHOUSE OPENING TO BE MIN. 50mm LARGER THAN O.D. OF PROPOSED WATERMAIN. PIPE TO BE WRAPPED WITH MIN. 50mm THICK OF APPROVED PLAST MASTIC MATERIAL. REMAINING CAVITY TO BE GROUTED. (SEE DOGHOUSE DETAIL).
 7. ALL FLANGES SHALL BE IN ACCORDANCE WITH ANSI / AWWA C 115 / A 21.15 DRILLED TO USAS STANDARD B 16.1, CLASS 125.
 8. ALL METAL COMPONENTS INSIDE CHAMBERS, INCLUDING STAINLESS STEEL NUTS AND BOLTS, SHALL HAVE A PROTECTIVE CORROSION TAPE COATING SYSTEM (PRIMER, MASTIC AND TAPE). PROTECTIVE CORROSION TAPE COATING (PRIMER, MASTIC AND TAPE) IS NOT REQUIRED ON VALVE OR HYDRANT BODIES.
 9. WALL THICKNESS FOR PRECAST CHAMBER SHALL BE 200mm MIN. CAP & BASE TO BE 250mm MIN.

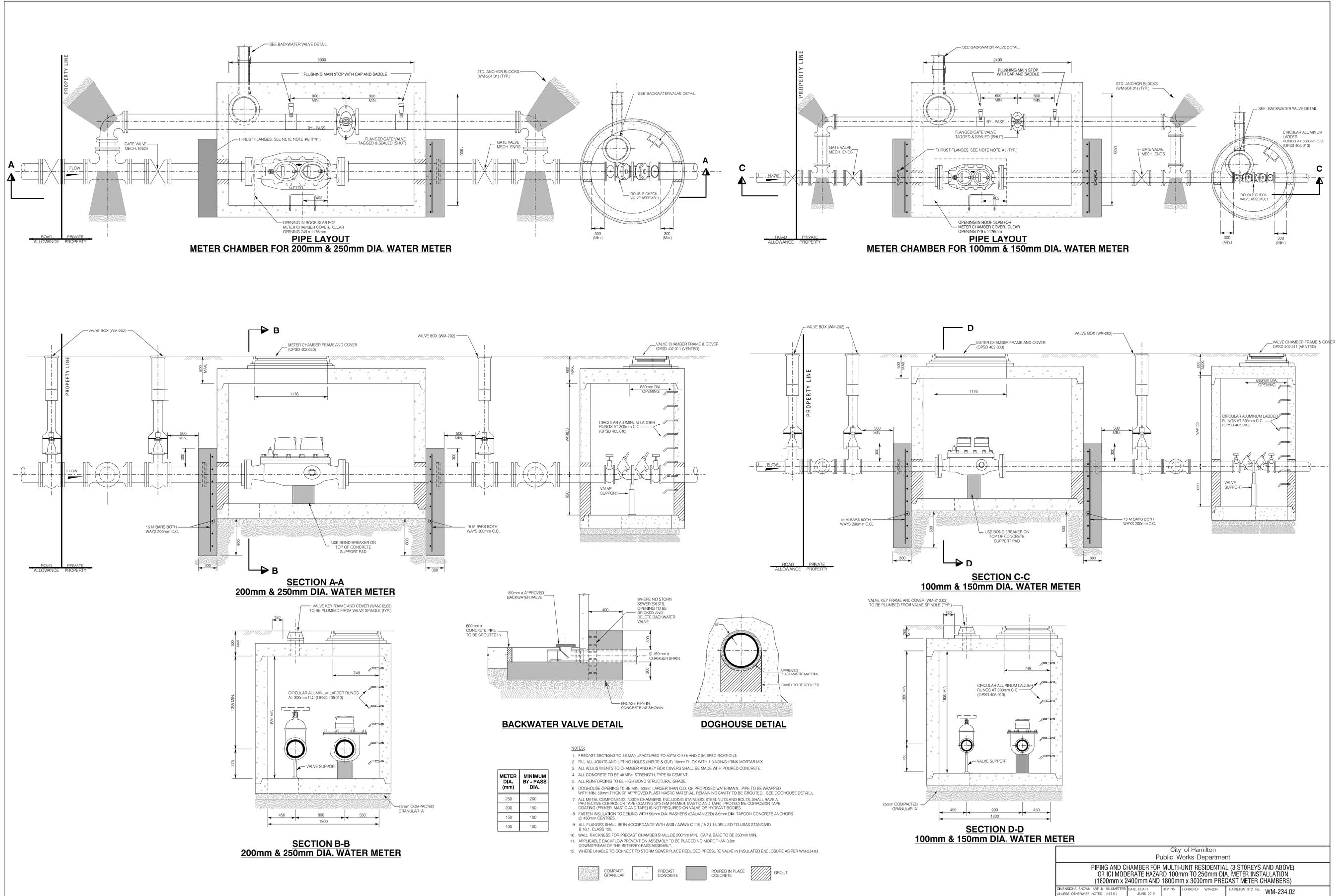


**SECTION D-D
100mm & 150mm DIA. WATER METER**

City of Hamilton Public Works Department			
PIPING AND CHAMBER FOR MULTI-UNIT RESIDENTIAL 100mm TO 250mm DIA. METER INSTALLATION (1800mm x 2400mm/3000mm/3500mm PRECAST METER CHAMBERS)			
DIMENSIONS SHOWN ARE IN MILLIMETERS UNLESS OTHERWISE NOTED (N.T.S.)	DATE DRAFT JUNE 2019	REV NO. 01	FORMERLY WM-234
HAMILTON STD. NO.		WM-234.01	

**PIPING AND CHAMBER FOR MULTI-UNIT RESIDENTIAL (3 STOREYS AND ABOVE)
OR ICI MODERATE HAZARD 100mm TO 250mm DIA. METER INSTALLATION
(1800mm x 2400mm AND 1800mm x 3000mm PRECAST METER CHAMBERS)**

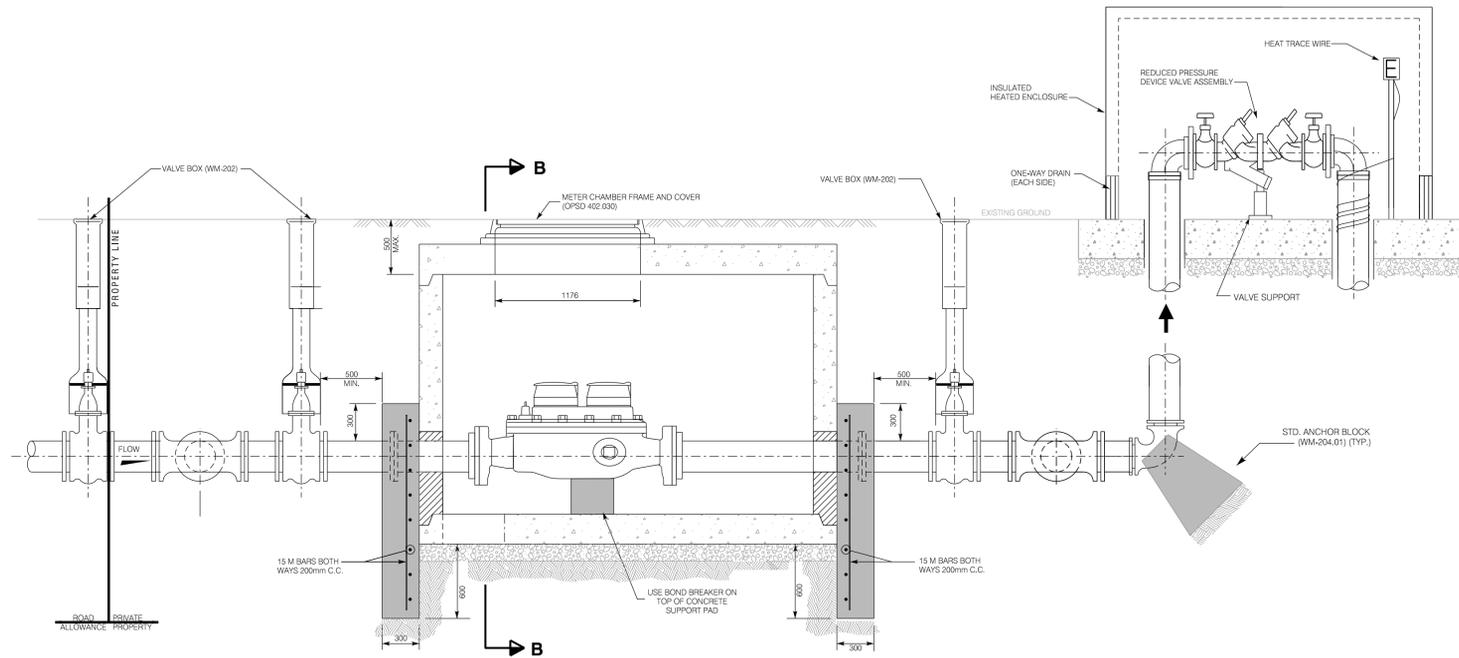
WM-234.02



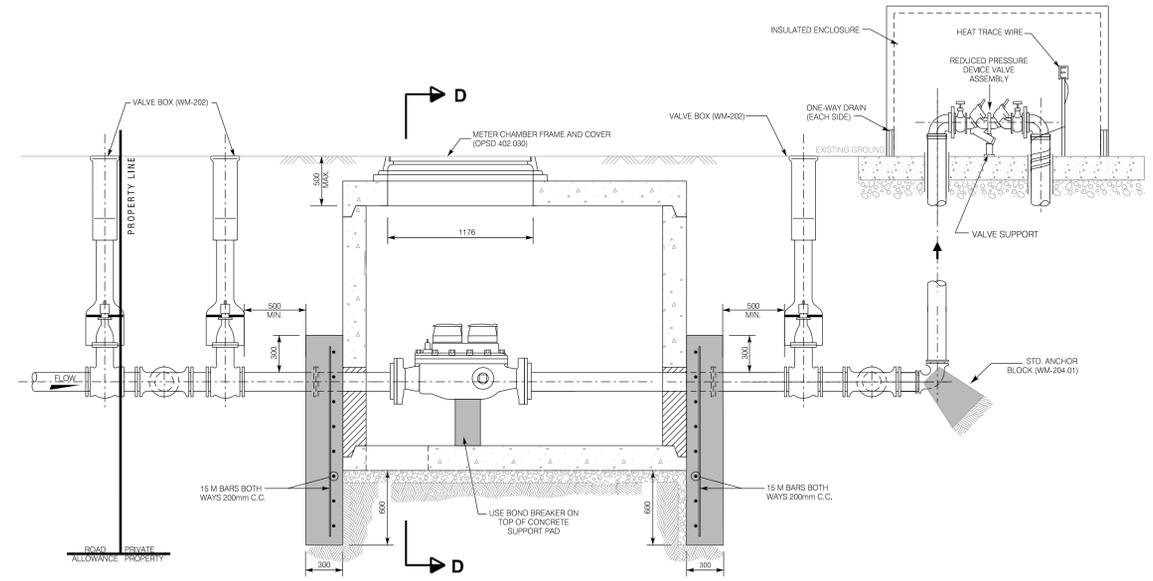
City of Hamilton
Public Works Department

**PIPING AND CHAMBER FOR MULTI-UNIT RESIDENTIAL (3 STOREYS AND ABOVE)
OR ICI MODERATE HAZARD 100mm TO 250mm DIA. METER INSTALLATION
(1800mm x 2400mm AND 1800mm x 3000mm PRECAST METER CHAMBERS)**

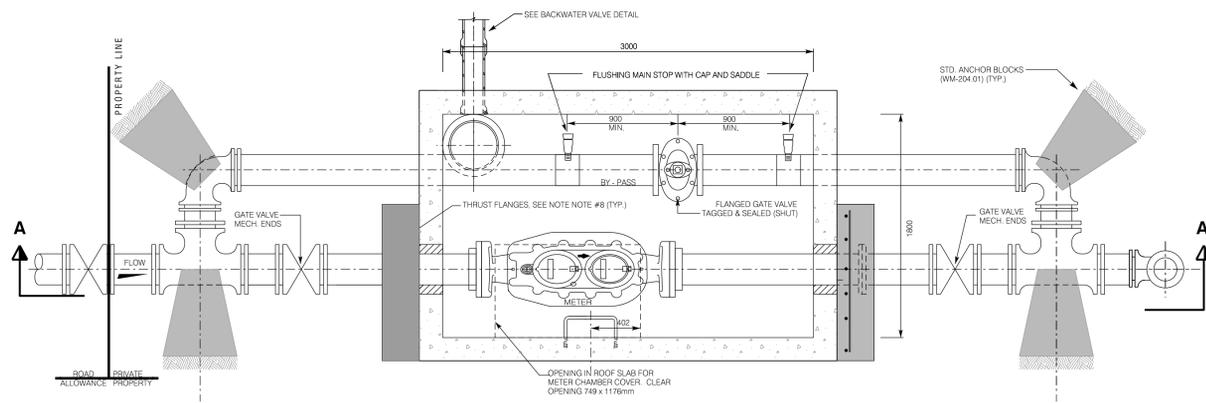
DIMENSIONS SHOWN ARE IN MILLIMETERS UNLESS OTHERWISE NOTED (N.T.S.)
 DATE DRAFT: JUNE 2019
 REV NO.:
 FORMERLY: WM-234
 HAMILTON STD. NO.: WM-234.02



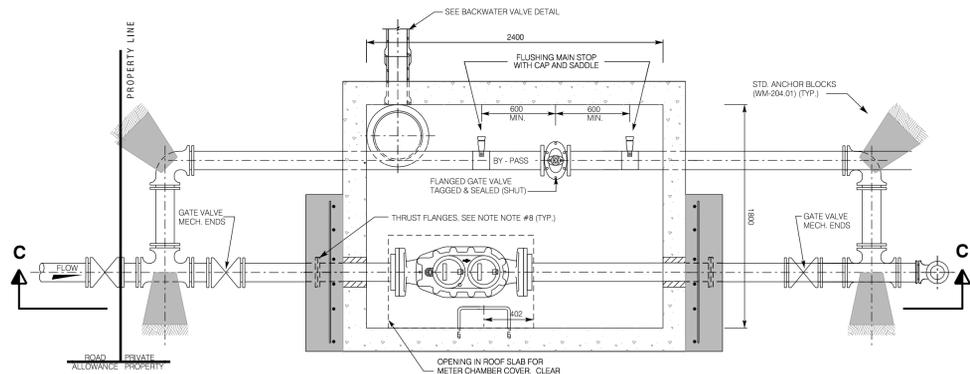
SECTION A-A
200mm & 250mm DIA. WATER METER



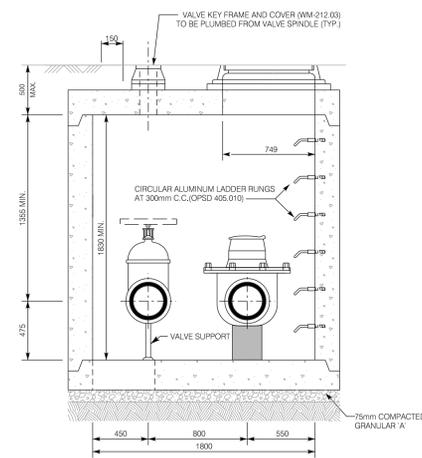
SECTION C-C
100mm & 150mm DIA. WATER METER



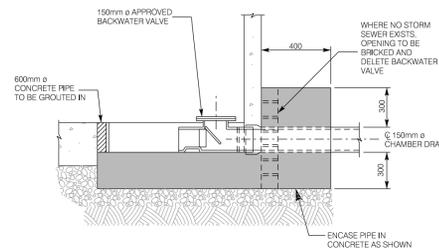
PIPE LAYOUT
METER CHAMBER FOR 200mm & 250mm DIA. WATER METER



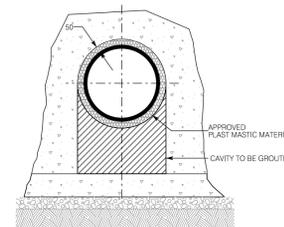
PIPE LAYOUT
METER CHAMBER FOR 100mm & 150mm DIA. WATER METER



SECTION B-B
200mm & 250mm DIA. WATER METER



BACKWATER VALVE DETAIL

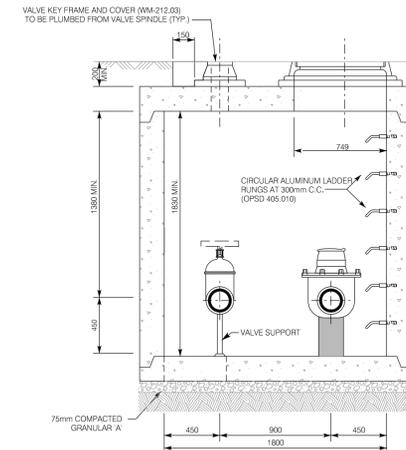


DOGHOUSE DETAIL

NOTES:

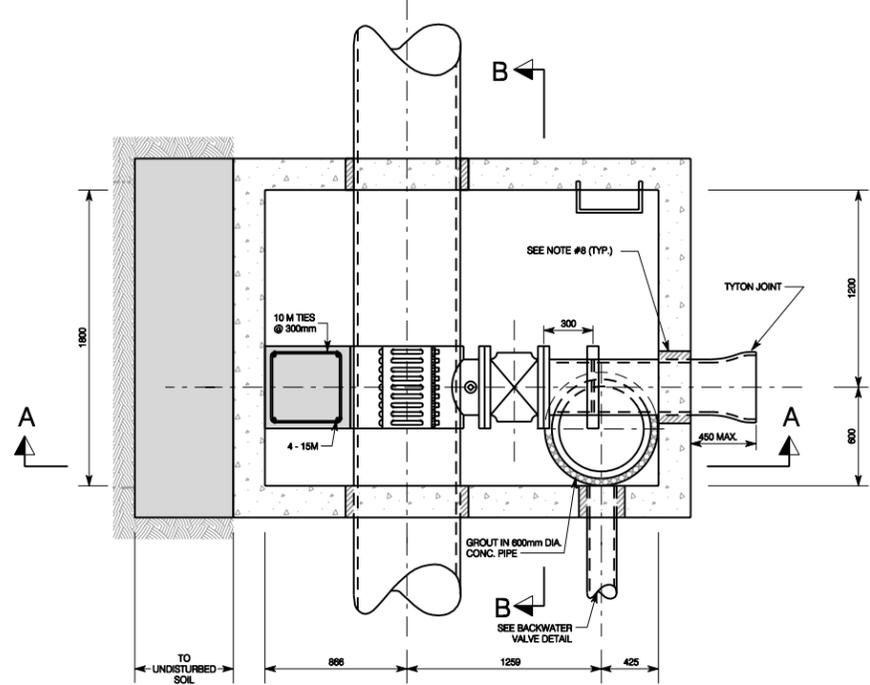
1. PRECAST SECTIONS TO BE MANUFACTURED TO ASTM C-478 AND CSA SPECIFICATIONS.
2. FILL ALL JOINTS AND LIFTING HOLES (INSIDE & OUT) 15mm THICK WITH 1:3 NON-SHRINK MORTAR MIX.
3. ALL ADJUSTMENTS TO CHAMBER AND KEY BOX COVERS SHALL BE MADE WITH POURED CONCRETE.
4. ALL CONCRETE TO BE 40 MPa STRENGTH, TYPE 50 CEMENT.
5. ALL REINFORCING TO BE HIGH-BOND STRUCTURAL GRADE.
6. DOGHOUSE OPENING TO BE MIN. 50mm LARGER THAN O.D. OF PROPOSED WATERMAIN. PIPE TO BE WRAPPED WITH MIN. 50mm THICK OF APPROVED PLAST MASTIC MATERIAL. REMAINING CAVITY TO BE GROUTED. (SEE DOGHOUSE DETAIL).
7. ALL METAL COMPONENTS INSIDE CHAMBERS, INCLUDING STAINLESS STEEL NUTS AND BOLTS, SHALL HAVE A PROTECTIVE CORROSION TAPE COATING SYSTEM (PRIMER, MASTIC AND TAPE). PROTECTIVE CORROSION TAPE COATING (PRIMER, MASTIC AND TAPE) IS NOT REQUIRED ON VALVE OR HYDRANT BODIES.
8. FASTEN INSULATION TO CEILING WITH 50mm DIA. WASHERS (GALVANIZED) & 6mm DIA. TAPCON CONCRETE ANCHORS @ 450mm CENTRES.
9. WALL THICKNESS FOR PRECAST CHAMBER SHALL BE 200mm MIN. CAP & BASE TO BE 250mm MIN.
10. APPLICABLE BACKFLOW PREVENTION ASSEMBLY TO BE PLACED NO MORE THAN 3.0m DOWNSTREAM OF THE METER/BY-PASS ASSEMBLY.
11. FOR HEATING INCLOSURE INSTALLATION REFER TO BY LAW B64 10-11.

METER DIA. (mm)	MINIMUM BY-PASS DIA.
250	200
200	150
150	100
100	100

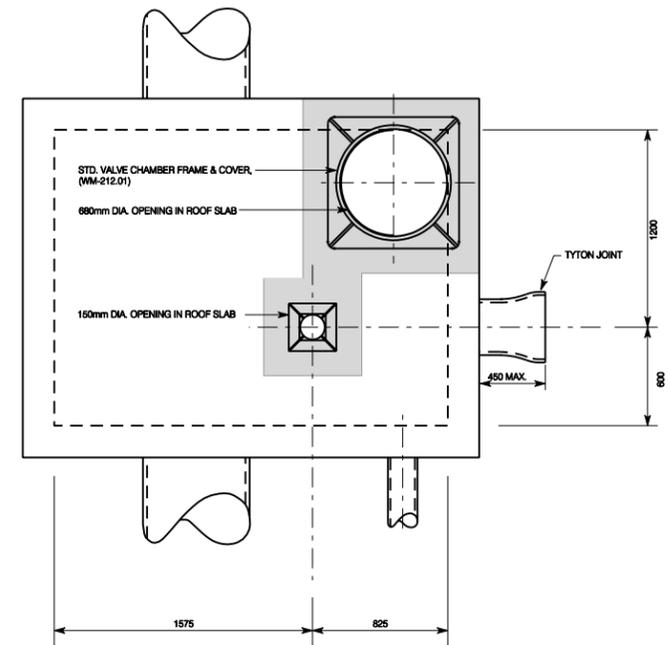


SECTION D-D
100mm & 150mm DIA. WATER METER

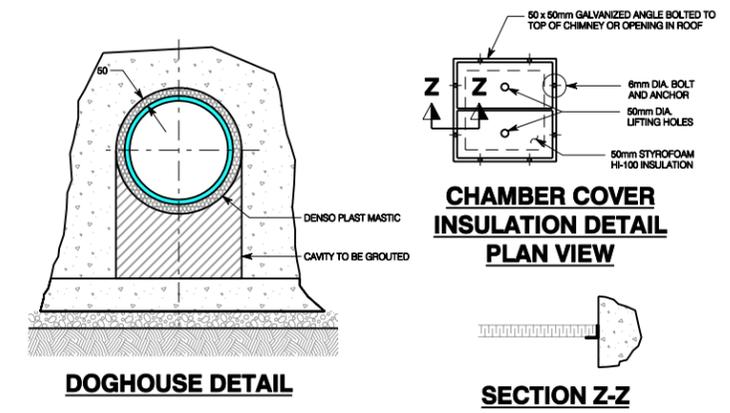
1800 x 2400mm PRECAST TAPPING VALVE CHAMBER FOR 100mm TO 300mm DIA. D.I. TAPPING OFF 400mm TO 600mm DIA. WATERMAIN



PIPE LAYOUT



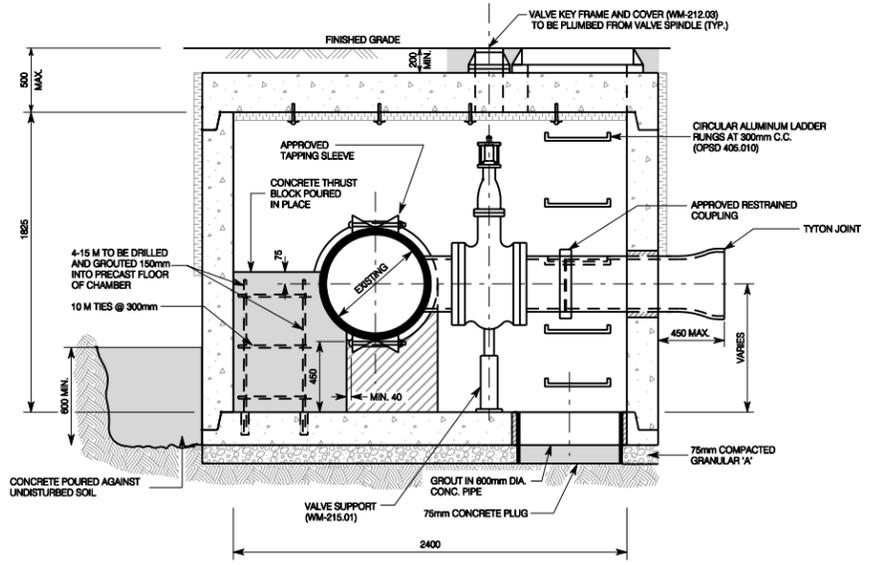
ROOF PLAN



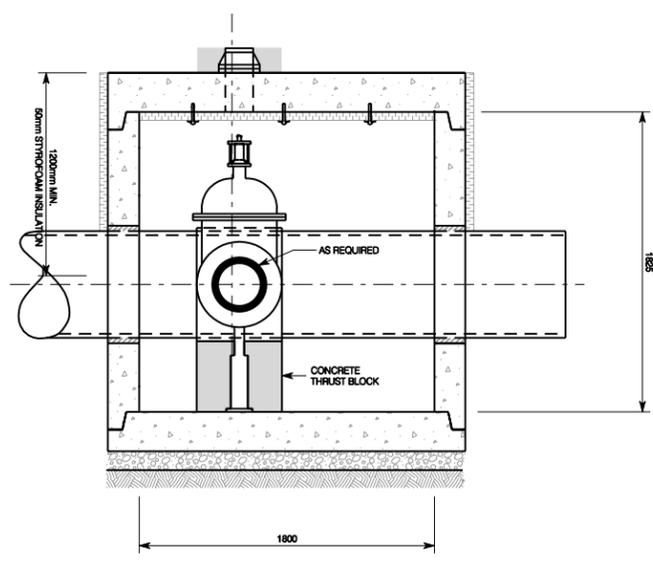
DOGHOUSE DETAIL

CHAMBER COVER INSULATION DETAIL PLAN VIEW

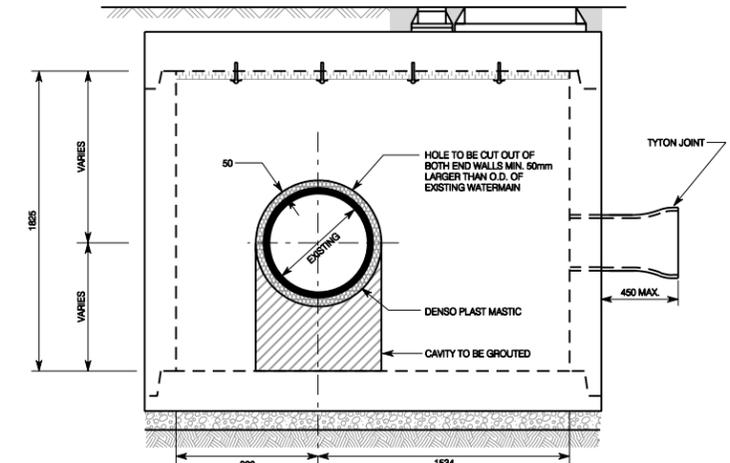
SECTION Z-Z



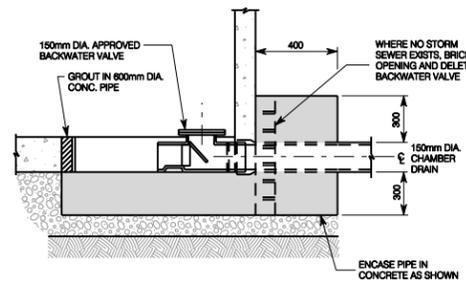
SECTION A-A



SECTION B-B



WALL ELEVATION



BACKWATER VALVE DETAIL

- NOTES:**
1. PRECAST SECTIONS TO BE MANUFACTURED TO ASTM C-478 AND CSA SPECIFICATIONS.
 2. FILL ALL JOINTS AND LIFTING HOLES (INSIDE & OUT) 15mm THICK WITH 1:3 NON-SHRINK MORTAR MIX.
 3. ALL ADJUSTMENTS TO CHAMBER AND KEY COVERS SHALL BE MADE WITH POURED CONCRETE.
 4. ALL CONCRETE TO BE 30 MPa, TYPE 50 CEMENT.
 5. ALL REINFORCING TO BE HIGH BOND STRUCTURAL GRADE.
 6. FASTEN INSULATION TO CEILING WITH 50mm DIA. WASHERS (GALVANIZED) & 6mm DIA. TAPCON CONCRETE ANCHORS @ 450mm CENTRES.
 7. DOGHOUSE OPENING TO BE CUT OUT MIN. 50mm LARGER THAN O.D. OF PROPOSED WATERMAIN. PIPE TO BE WRAPPED WITH MIN. 50mm THICK OF DENSO PLAST MASTIC. REMAINING CAVITY TO BE GROUTED. (SEE DOGHOUSE DETAIL).
 8. ALL FLANGES TO BE IN ACCORDANCE WITH ANSI / AWWA.
 9. SUPPLY AND APPLY DENSO CORROSION PROTECTION AS SPECIFIED, TO ALL STEEL, CAST OR DUCTILE IRON SURFACES, SADDLES, (INCLUDING SALES) VALVES, FLANGES, NUTS AND BOLTS, ETC.
 10. CHAMBER PIPING TO BE CLASS 54 FOR DUCTILE IRON.
 11. WALL THICKNESS FOR PRECAST CHAMBER SHALL BE 200mm MIN. CAP & BASE TO BE 250mm MIN.



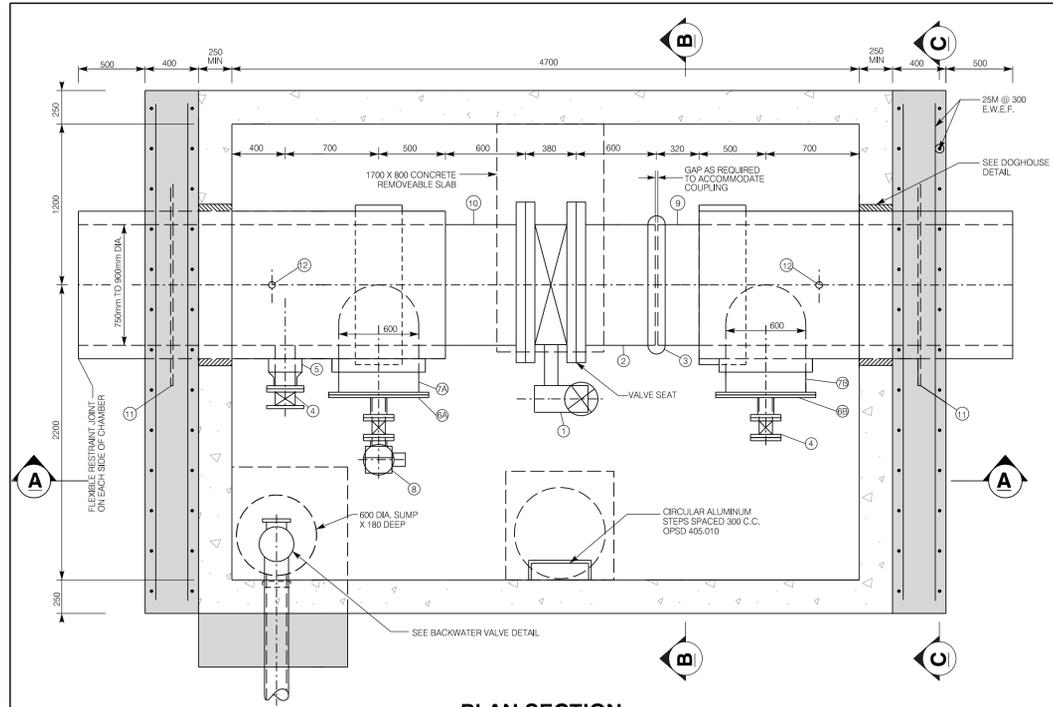
City of Hamilton
Public Works Department

1800 x 2400mm PRECAST TAPPING VALVE CHAMBER FOR 100mm TO 300mm DIA. D.I. TAPPING OFF 400mm TO 600mm DIA. WATERMAIN

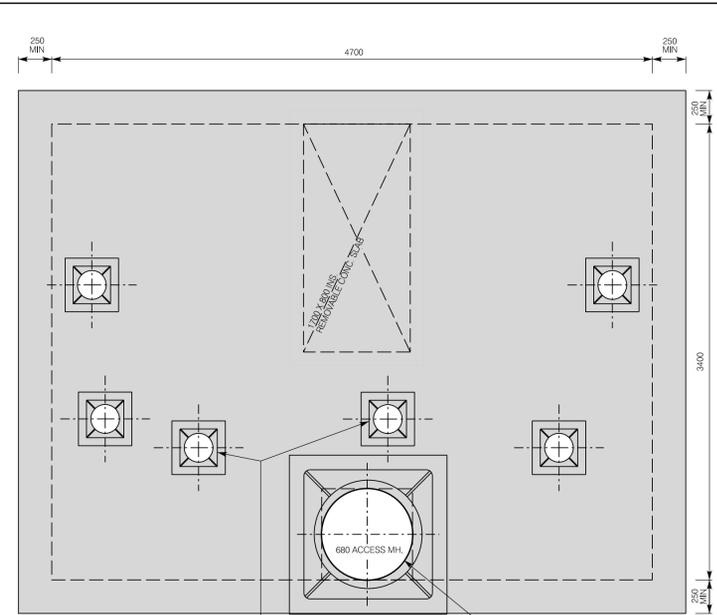
DIMENSIONS SHOWN ARE IN MILLIMETRES UNLESS OTHERWISE NOTED (N.T.S.)	DATE November 2022	REV No	FORMERLY RWS-363	HAMILTON STD No WM-235
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WM-235

WM-236.01 3400mm X 4700mm PRECAST VALVE CHAMBER FOR 750mm AND 900mm DIA. AIR RELEASE VALVE AND 150mm DIA. BLOW OFF VALVES

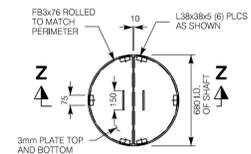


PLAN SECTION
SCALE: 1:25

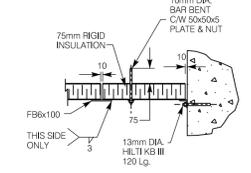


TOP SLAB VIEW
SCALE: 1:25

NOTES:
ALL ALUMINIUM 6061-T6 MILL FINISH & PAINTING (2 COATS BITUMENOUS PAINT WHERE IN CONTACT WITH CONCRETE. ALL HARDWARE STAINLESS STEEL. COVERS ARE NON LOAD BEARING)

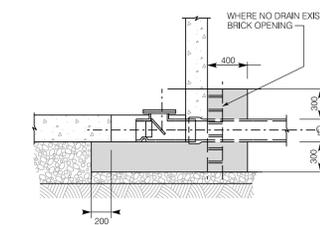


PLAN VIEW

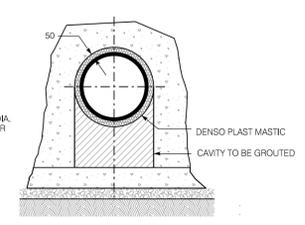


**SECTION Z-Z
CHAMBER COVER
INSULATION DETAIL**
NOT TO SCALE

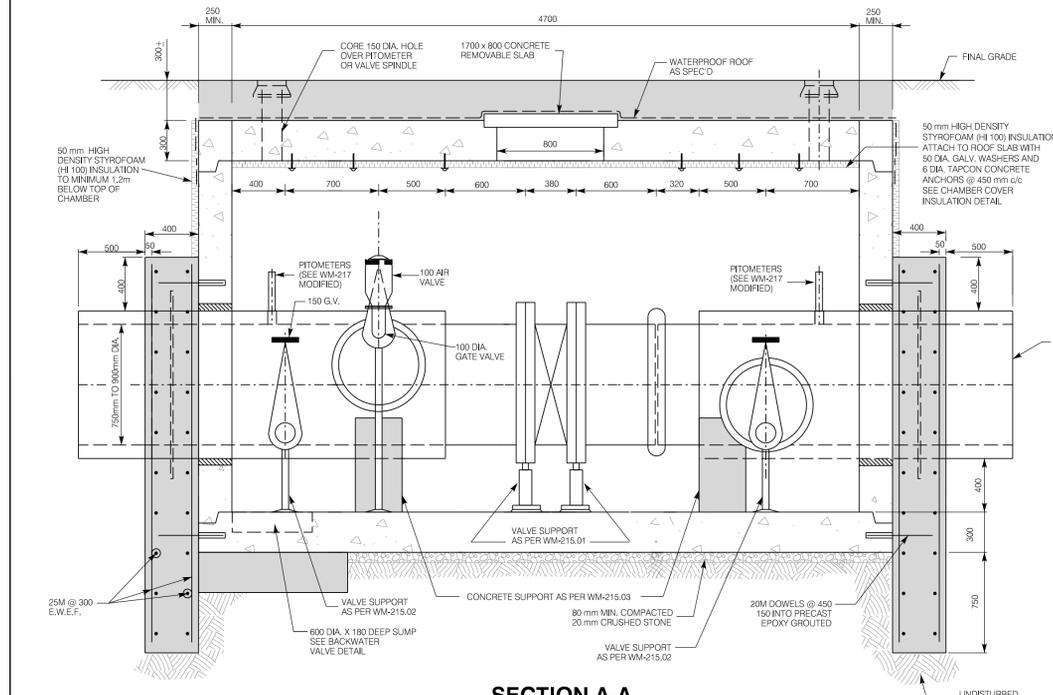
PIPE MATERIAL	
MARK	DESCRIPTION
①	FLANGED BUTTERFLY VALVE c/w GEAR BOX DESIGNED FOR SUBMERGED CONDITIONS
②	ADAPTER - 600 mm LONG GROOVED STEEL END - FLANGED TO VALVE
③	RESTRAINED COUPLING, VICTALIC STYLE AGS W77 (OR APPROVED EQUAL)
④	BLOW-OFF - 150 mm GATE VALVE c/w BLIND FLANGE
⑤	150 mm TANGENT FLANGED BRANCH OUTLET BOTTOM
⑥	600 mm REDUCING FLANGE TO 100 mm NPT (ECCENTRIC) TOP
⑦	600 mm TANGENT FLANGED BRANCH OUTLET, TOP
⑧	600 mm REDUCING FLANGE TO 150 mm NPT (ECCENTRIC) BOTTOM
⑨	600 mm TANGENT FLANGED BRANCH OUTLET, BOTTOM
⑩	100 mm DIAMETER AIR VALVE, FLANGED APPROVED, 1-100 mm GATE VALVE (FLANGED), 1-100 mm NIPPLE x 150 mm LONG (FLANGED ONE END, NPT ONE END) AND 1-100 mm ELBOW (FLANGED)
⑪	CPP WITH FLANGED END
⑫	CPP WITH FLANGED END
⑬	19 mm THICK WALL FLANGE (O.D. PLUS 150 mm)
⑭	50 mm PITOMETER CONNECTION AS PER WM-217 (MODIFIED)



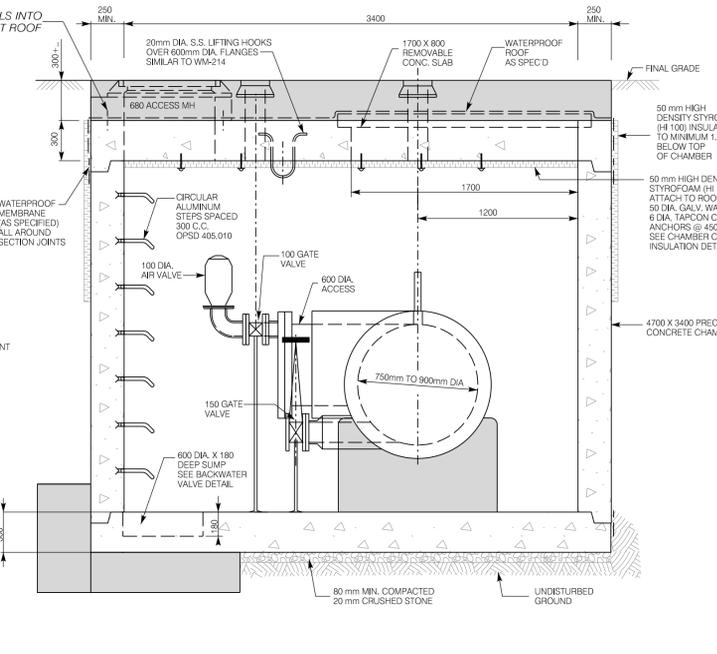
BACKWATER VALVE DETAIL
NOT TO SCALE



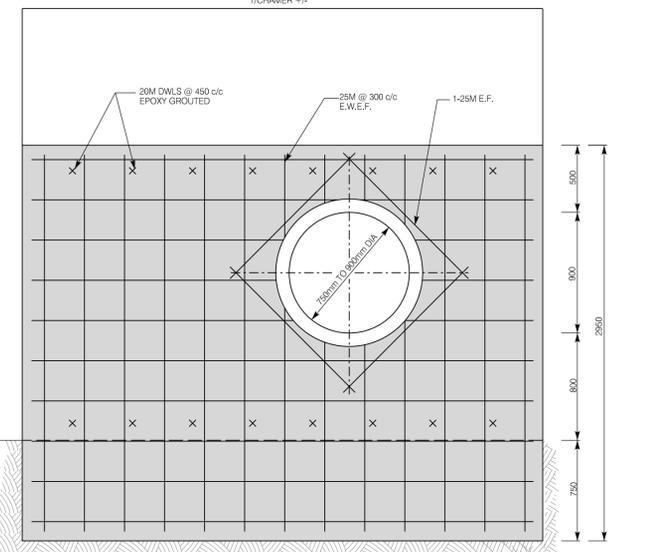
DOGHOUSE DETAIL
NOT TO SCALE



SECTION A-A
SCALE: 1:25



SECTION B-B
SCALE: 1:25



**CHAMBER ANCHOR
SECTION C-C**
SCALE: 1:25

- NOTES:**
1. PRECAST CHAMBER AND SECTIONS TO BE MANUFACTURED TO ASTM C-478 CSA MEET H-20 S16 LOADING REQUIREMENTS AND IN ACCORDANCE WITH THE APPROVED WATERMAIN PRODUCT LIST.
 2. FILL ALL JOINTS AND LIFTING HOLES (INSIDE & OUT) 15 mm THICK WITH 1:3 NON-SHRINK GROUT.
 3. ALL ADJUSTMENTS TO CHAMBER ACCESS AND KEY COVERS SHALL BE MADE WITH POURED CONCRETE.
 4. UNLESS OTHERWISE INDICATED, OUTSIDE FORMWORK TO BE USED ON ALL CAST IN PLACE CONCRETE STRUCTURES.
 5. ALL FLANGES TO BE IN ACCORDANCE WITH ANSI / AWWA.
 6. ALL METAL COMPONENTS INSIDE VALVE CHAMBER, INCLUDING STAINLESS STEEL NUTS AND BOLTS, SHALL HAVE A PROTECTIVE CORROSION TAPE COATING SYSTEM (PRIMER, MASTIC AND TAPE). PROTECTIVE CORROSION TAPE COATING (PRIMER, MASTIC AND TAPE) IS NOT REQUIRED ON VALVE BODIES.
 7. SEE CONTRACT DRAWINGS FOR LOCATION OF AIR RELIEF VALVE.
 8. ALL CHAMBERS WILL HAVE 150 DIA BLOW-OFF AND 600 ACCESS ON BOTH SIDES OF THE VALVE.
 9. WATERPROOF MEMBRANE SHALL BE APPLIED TO ROOF AND ALL CHAMBER WALLS PRIOR TO BACKFILLING.
 10. APPROVED RESTRAINED COUPLING SHALL BE IN ACCORDANCE WITH THE APPROVED WATERMAIN PRODUCT LIST.
 11. DOGHOUSE OPENING TO BE CUT OUT MIN. 50 mm LARGER THAN O.D. OF PROPOSED WATERMAIN. PIPE TO BE WRAPPED WITH MIN. 50 mm THICK OF DENSO PLAST MASTIC. REMAINING CAVITY TO BE GROUTED (SEE DOGHOUSE DETAIL).
 12. ALL FLANGE BOLTS TO BE STAINLESS STEEL.

- STANDARD REINFORCED CONCRETE NOTES:**
- MINIMUM STRENGTH OF CONCRETE TO BE 40 MPa IN 28 DAYS, TYPE 50 CEMENT
 - ALL REINFORCING TO BE HIGH BOND STRUCTURAL GRADE
 - MINIMUM LAP FOR REINFORCING TO BE 24 BAR DIAMETERS
- CONCRETE COVER OVER REINFORCING**
- FOR CONCRETE POURED AGAINST SOLID GROUND - 75 mm
 - FOR CONCRETE IN FORMS AGAINST EARTH - 50 mm
 - OR AS SHOWN ON THE DRAWINGS

- DENOTES CAST IN PLACE CONCRETE
- DENOTES PRE-CAST CONCRETE
- DENOTES GROUT

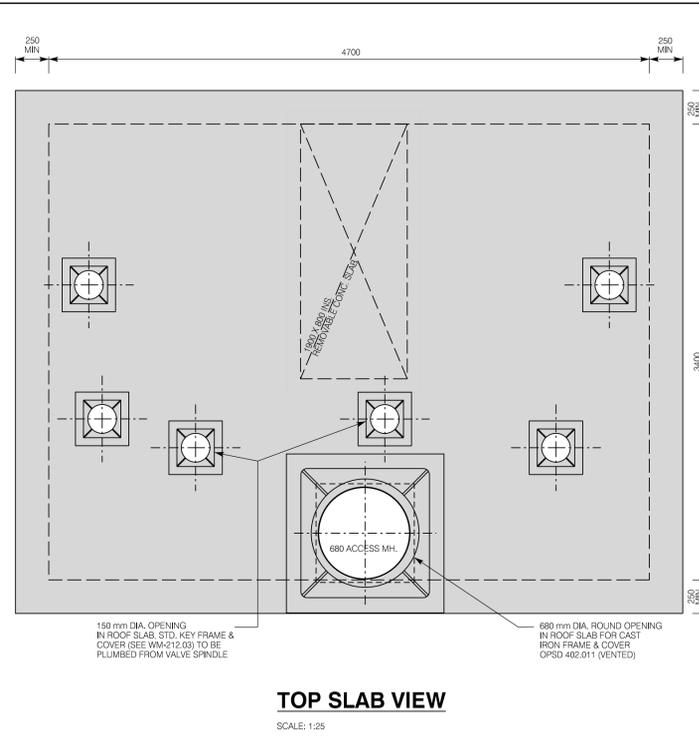
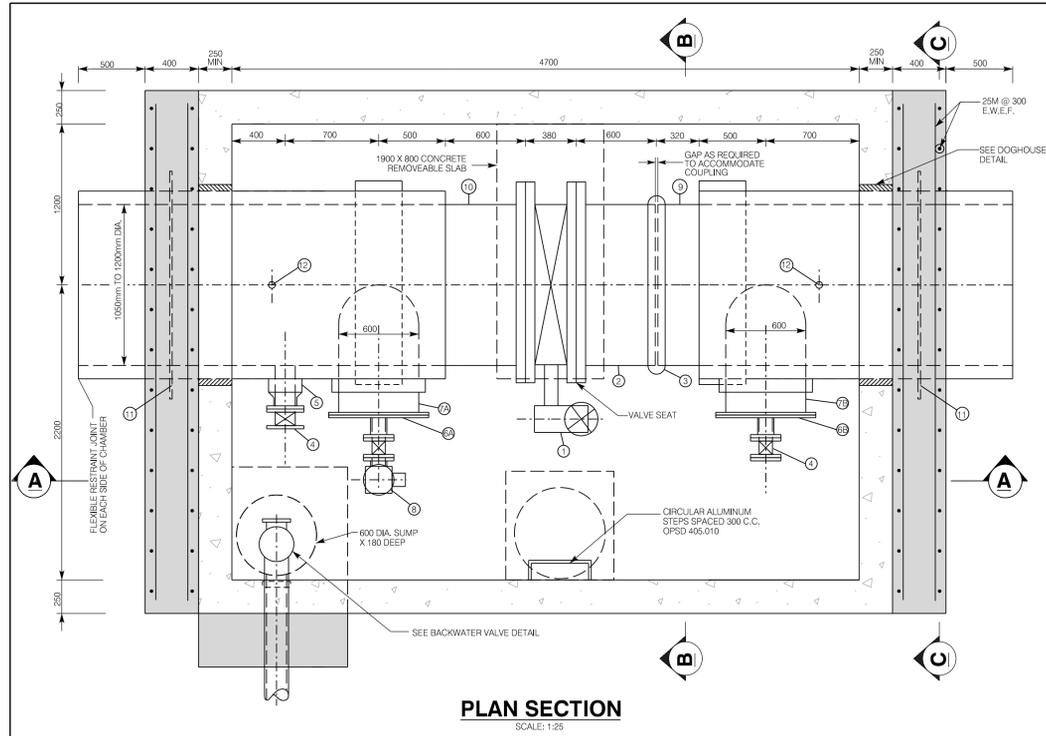
City of Hamilton
Public Works Department

3400mm X 4700mm PRECAST VALVE CHAMBER FOR 750mm AND 900mm DIA. CONCRETE PRESSURE PIPE WITH BUTTERFLY VALVE, 100mm DIA. AIR RELEASE VALVE AND 150mm DIA. BLOW OFF VALVES

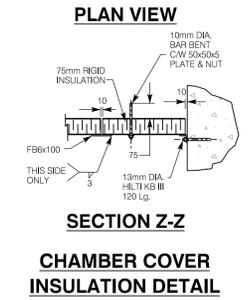
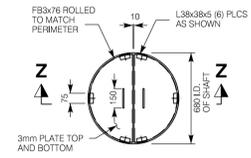
DIMENSIONS SHOWN ARE IN MILLIMETERS UNLESS OTHERWISE NOTED	DATE JUNE 2019	REV No 1	FORMERLY	HAMILTON STD No. WM-236.01
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3400mm X 4700mm PRECAST VALVE CHAMBER FOR 1050mm AND 1200mm DIA. CONCRETE PRESSURE PIPE WITH BUTTERFLY VALVE, 100mm DIA. AIR RELEASE VALVE AND 150mm DIA. BLOW OFF VALVES

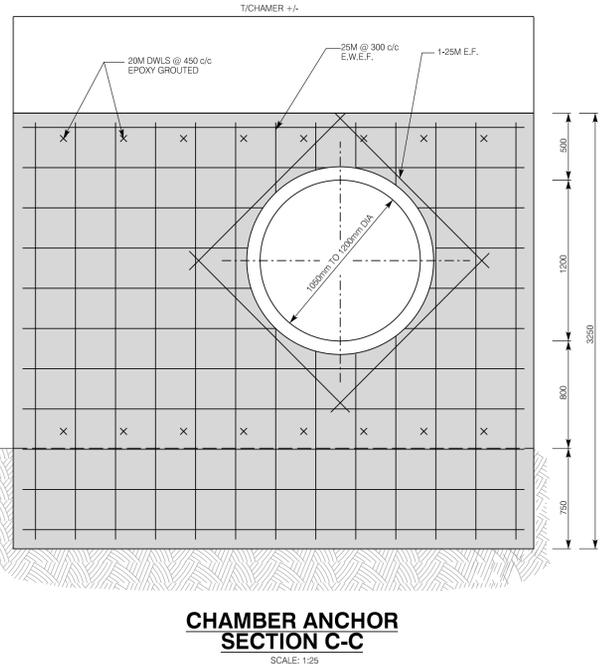
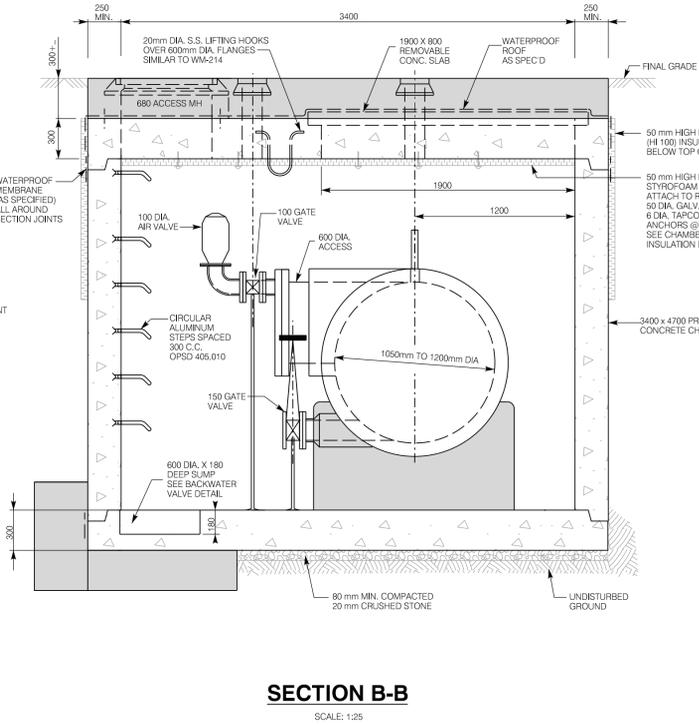
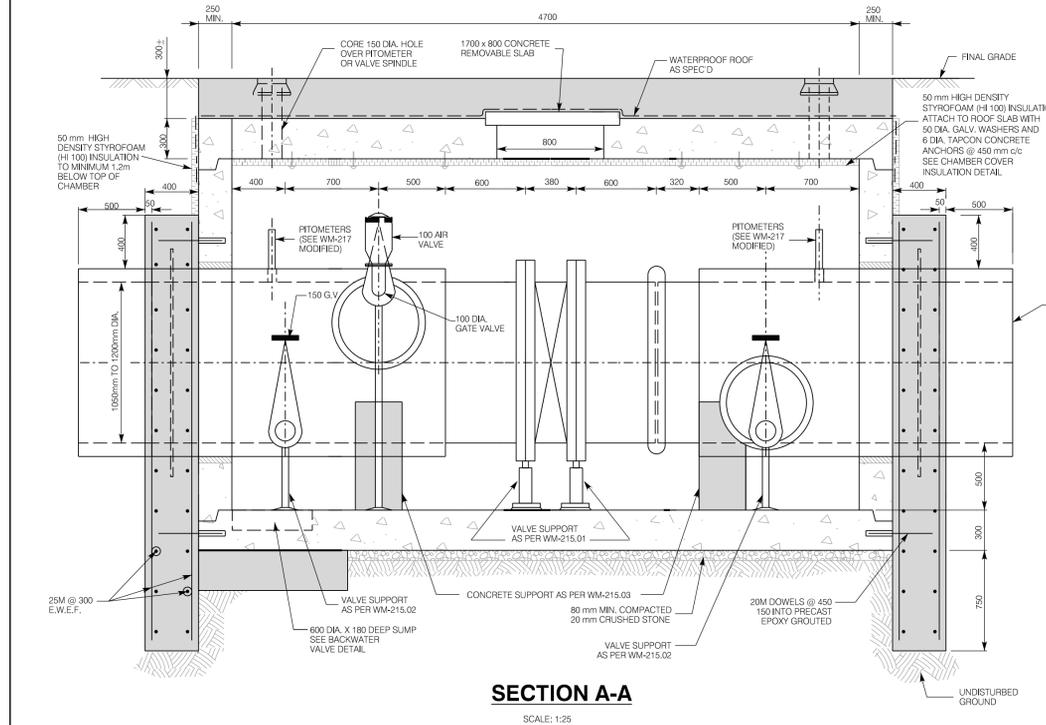
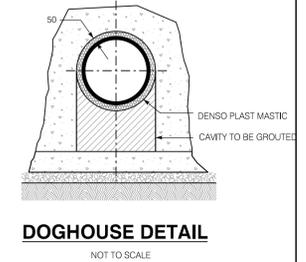
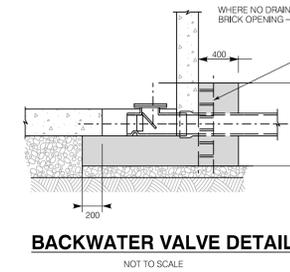
WM-236.02



NOTES:
ALL ALUMINUM 6061-T6 MILL FINISH & PAINTING (2) COATS BUTYLENOUS PAINT WHERE IN CONTACT WITH CONCRETE. ALL HARDWARE STAINLESS STEEL. COVERS ARE NON LOAD BEARING.



PIPE MATERIAL	
MARK	DESCRIPTION
①	FLANGED BUTTERFLY VALVE c/w GEAR BOX DESIGNED FOR SUBMERGED CONDITIONS
②	ADAPTER - 600mm LONG GROOVED STEEL END - FLANGED TO VALVE
③	RESTRAINED COUPLING, VERTICAL STYLE AGS W/77 (OR APPROVED EQUAL)
④	BLOW-OFF - 150 mm GATE VALVE c/w BLIND FLANGE
⑤	150 mm TANGENT FLANGED BRANCH OUTLET BOTTOM
⑥	600 mm REDUCING FLANGE TO 100 mm NPT (ECCENTRIC) TOP
⑦	600 mm TANGENT FLANGED BRANCH OUTLET, TOP
⑧	600 mm REDUCING FLANGE TO 150 mm NPT (ECCENTRIC) BOTTOM
⑨	600 mm TANGENT FLANGED BRANCH OUTLET, BOTTOM
⑩	100 mm DIAMETER AIR VALVE, FLANGED APPROVED, 1-100 mm GATE VALVE (FLANGED), 1-100 mm NIPPLE x 150 mm LONG (FLANGED ONE END, NPT ONE END) AND 1-100 mm ELBOW (FLANGED)
⑪	CPP WITH FLANGED END
⑫	CPP WITH FLANGED END
⑬	19 mm THICK WALL FLANGE (O.D. PLUS 150 mm)
⑭	50 mm PITOMETER CONNECTION AS PER WM-217 (MODIFIED)



NOTES:

1. PRECAST CHAMBER AND SECTIONS TO BE MANUFACTURED TO ASTM C-478 CSA. MEET H-20 S16 LOADING REQUIREMENTS AND IN ACCORDANCE WITH THE APPROVED WATERMAIN PRODUCT LIST.
2. FILL ALL JOINTS AND LIFTING HOLES (INSIDE & OUT) 15 mm THICK WITH 1:3 NON-SHRINK GROUT.
3. ALL ADJUSTMENTS TO CHAMBER ACCESS AND KEY COVERS SHALL BE MADE WITH POURED CONCRETE.
4. UNLESS OTHERWISE INDICATED, OUTSIDE FORMWORK TO BE USED ON ALL CAST IN PLACE CONCRETE STRUCTURES.
5. ALL FLANGES TO BE IN ACCORDANCE WITH ANSI J1 AWWA.
6. ALL METAL COMPONENTS INSIDE VALVE CHAMBER, INCLUDING STAINLESS STEEL NUTS AND BOLTS, SHALL HAVE A PROTECTIVE CORROSION TAPE COATING SYSTEM (PRIMER, MASTIC AND TAPE). PROTECTIVE CORROSION TAPE COATING (PRIMER, MASTIC AND TAPE) IS NOT REQUIRED ON VALVE BODIES.
7. SEE CONTRACT DRAWINGS FOR LOCATION OF AIR RELIEF VALVE.
8. ALL CHAMBERS WILL HAVE 150 DIA BLOW-OFF AND 600 ACCESS ON BOTH SIDES OF THE VALVE.
9. WATERPROOF MEMBRANE SHALL BE APPLIED TO ROOF AND ALL CHAMBER WALLS PRIOR TO BACKFILLING.
10. APPROVED RESTRAINED COUPLING SHALL BE IN ACCORDANCE WITH THE APPROVED WATERMAIN PRODUCT LIST.
11. DOGHOUSE OPENING TO BE CUT OUT MIN. 50 mm LARGER THAN O.D. OF PROPOSED WATERMAIN, PIPE TO BE WRAPPED WITH MIN. 50 mm THICK OF DENSO PLAST MASTIC. REMAINING CAVITY TO BE GROUTED (SEE DOGHOUSE DETAIL).
12. ALL FLANGE BOLTS TO BE STAINLESS STEEL.

STANDARD REINFORCED CONCRETE NOTES:

- MINIMUM STRENGTH OF CONCRETE TO BE 40 MPa IN 28 DAYS, TYPE 50 CEMENT
 - ALL REINFORCING TO BE HIGH BOND STRUCTURAL GRADE
 - MINIMUM LAP FOR REINFORCING TO BE 24 BAR DIAMETERS
- CONCRETE COVER OVER REINFORCING**
- FOR CONCRETE POURED AGAINST SOLID GROUND -75 mm
 - FOR CONCRETE IN FORMS AGAINST EARTH -50 mm
 - OR AS SHOWN ON THE DRAWINGS

- DENOTES CAST IN PLACE CONCRETE
- DENOTES PRE-CAST CONCRETE
- DENOTES GROUT

City of Hamilton Public Works Department				
3400mm X 4700mm PRECAST VALVE CHAMBER FOR 1050mm AND 1200mm DIA. CONCRETE PRESSURE PIPE WITH BUTTERFLY VALVE, 100mm DIA. AIR RELEASE VALVE AND 150mm DIA. BLOW OFF VALVES				
DIMENSIONS SHOWN ARE IN MILLIMETERS UNLESS OTHERWISE NOTED	DATE JUNE 2019	REV No 1	FORMERLY	HAMILTON STD. No. WM-236.02