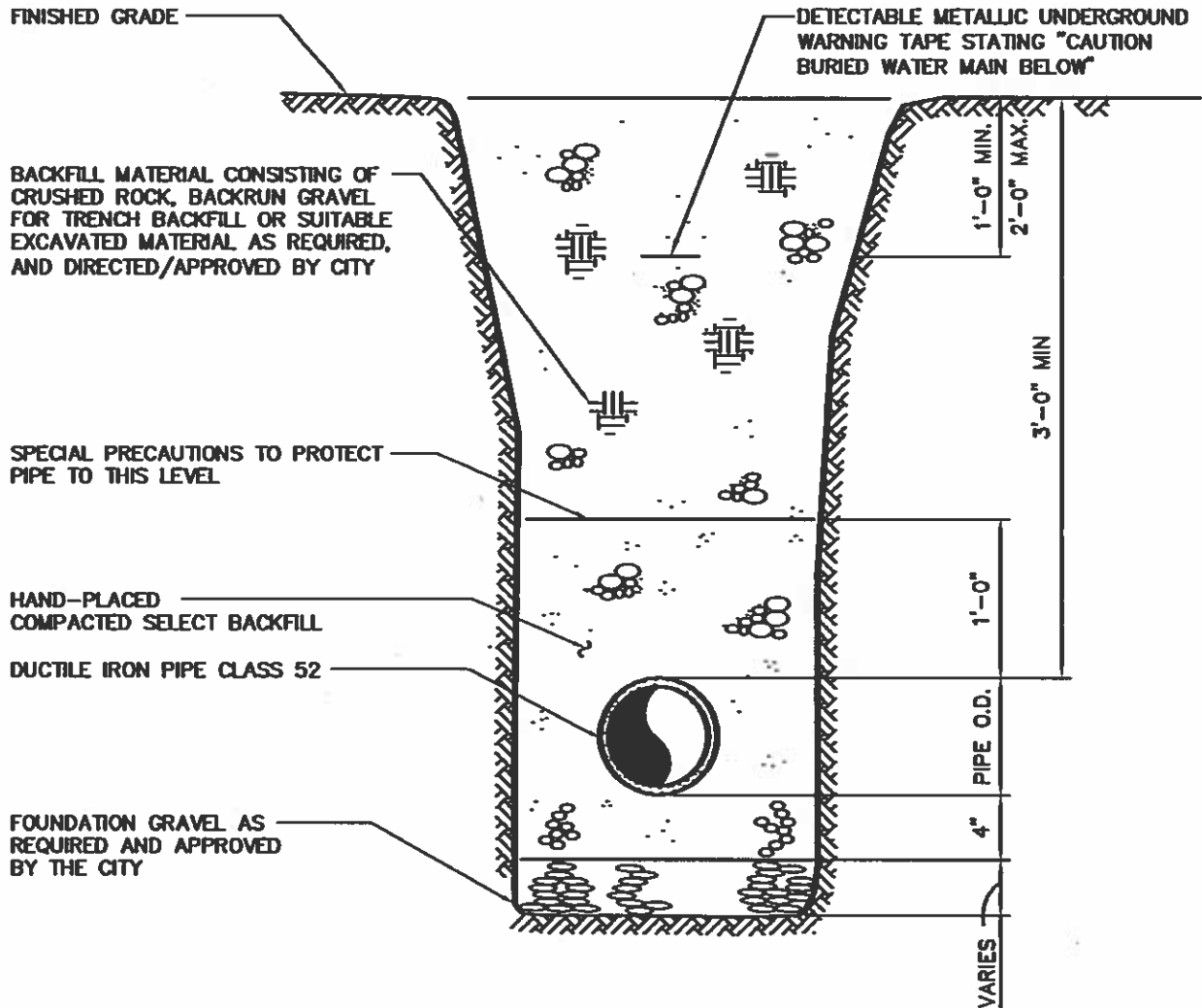


APPENDIX E
CONSTRUCTION STANDARDS



NOTE:

1. BACKFILL MATERIAL AND COMPACTION SHALL CONFORM TO WSDOT STANDARDS.
2. WIDTH SHALL BE 2'-6" FOR UP TO AND INCLUDING 12" PIPE. FOR PIPE LARGER THAN 12" DIAMETER TRENCH WIDTH SHALL BE THE PIPE DIAMETER PLUS 16".
3. KEEP TRENCH BOTTOM COMPACTED WITH UNIFORM GRADE. A BELL JOINT SHALL BE REQUIRED AT EACH JOINT FOR PROPER SUPPORT. NO TEMPORARY SUPPORTS, BLOCKS, WILL BE ALLOWED TO SUPPORT TRENCH BOTTOM SHALL BE TO GRADE PRIOR TO PIPE INSTALLATION.



CITY OF BINGEN
WATER MAIN
TRENCH SECTION

REVISION DATE:

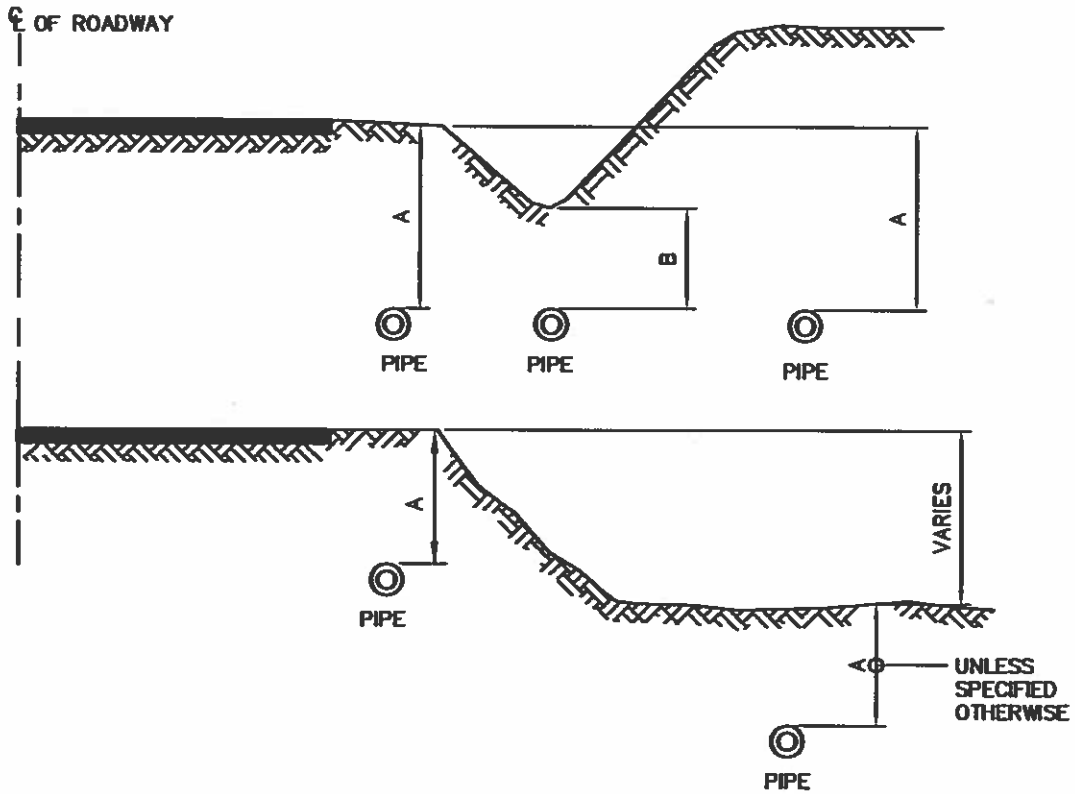
8/29/14

SCALE:

NONE

DWG. NO.

WT-1



PIPE SIZE	A	B
4"–10"	36"	24"
12"–18"	36"	30"
20" & OVER	42"	36"

NOTE:

ALL "TRANSMISSION MAINS" SHALL HAVE 42" COVER



**CITY OF BINGEN
WATER MAIN
DEPTH REQUIREMENTS**

REVISION DATE:

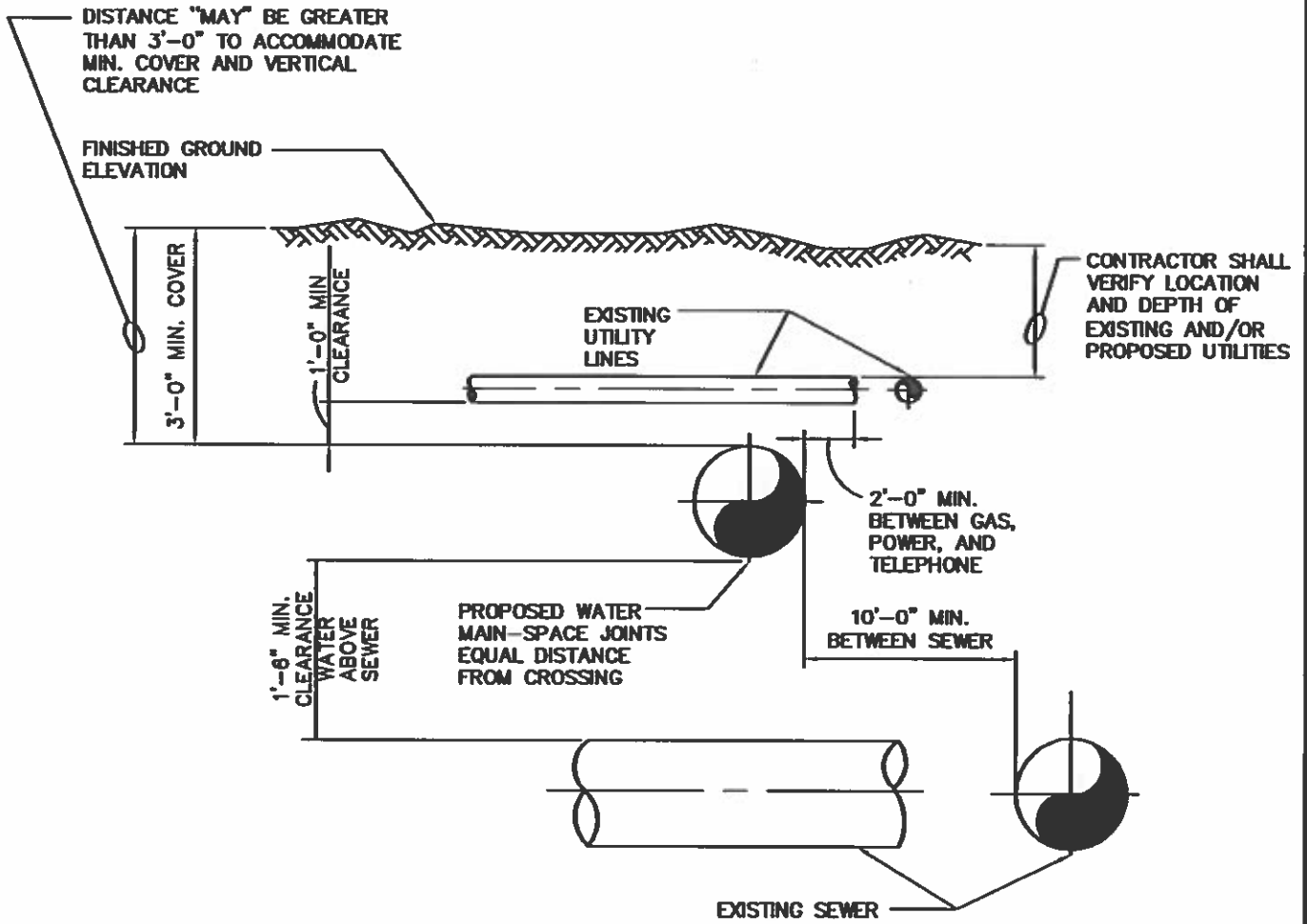
8/29/14

SCALE:

NONE

DWG. NO.

WT-2



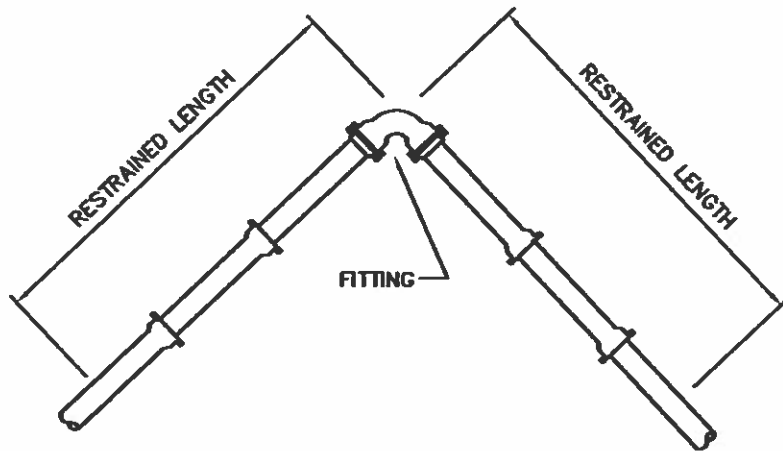
NOTES:

1. REGULATORY AGENCY REQUIREMENTS SHALL SUPERCEDE CITY STANDARDS IF MORE STRINGENT.



**CITY OF BINGEN
TYPICAL UTILITY
CROSSING**

REVISION DATE:	SCALE:	DWG. NO.
8/29/14	NONE	WT-3



PIPE SIZE	90° BEND	45° BEND	22 1/2° BEND	11 1/4° BEND	TEE OR DEAD END CAP
	RESTRAINED LENGTH IN FEET				
4"	40	20	8	5	30
6"	55	25	10	6	40
8"	75	35	15	8	55
10"	90	40	20	9	70
12"	105	45	25	10	85
16"	135	55	27	15	110
18"	145	60	30	20	125

NOTES:

1. RESTRAINED LENGTHS SHOWN ARE MINIMUM AND FOR LINEAL FEET REQUIRED ON EACH SIDE OF FITTING INDICATED.
2. FOOTAGES ARE BASED ON 250 PSI PRESSURE AND 36 INCHES COVER. IF PRESSURE IS GREATER OR COVER IS LESS, THE RESTRAINED LENGTH SHALL BE INCREASED.
3. THIS TABLE REPRESENTS THE "MINIMUM" CONSTRUCTION STANDARDS. THE DEVELOPER'S ENGINEER SHALL BE RESPONSIBLE FOR DETERMINING THE APPROPRIATE RESTRAINED LENGTHS.



**CITY OF BINGEN
THRUST RESTRAINT FOR
DUCTILE IRON PIPE**

REVISION DATE:

8/29/14

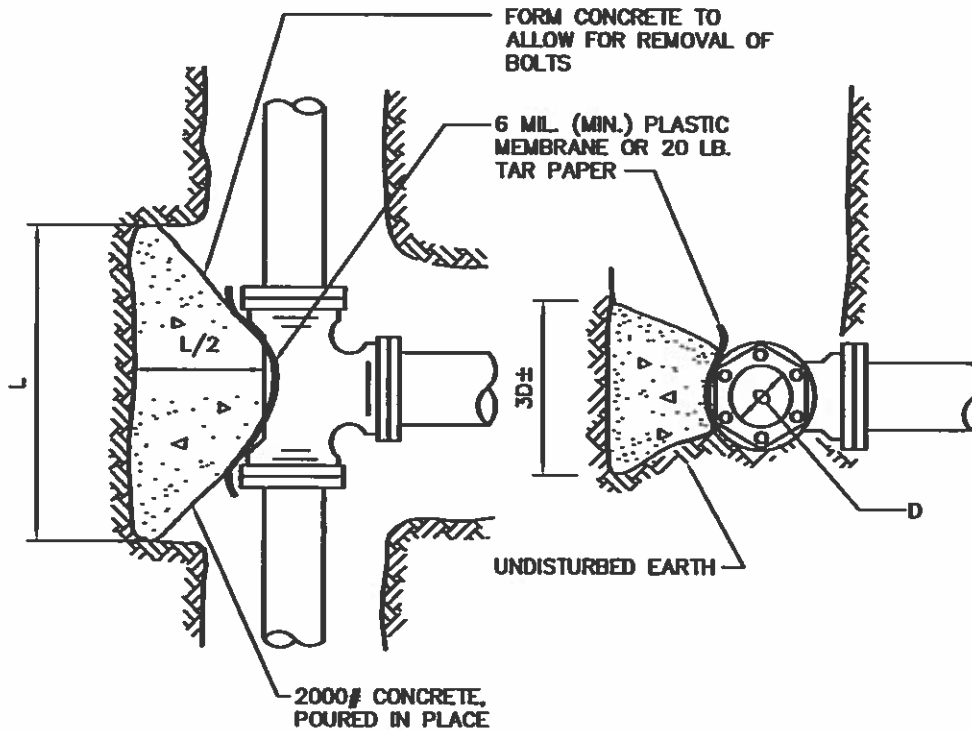
SCALE:

NONE

DWG. NO.

WT-4

MINIMUM BEARING AREA TABLE					
FITTING D	TEE	90°	45°	22 1/2°	11 1/4°
6"	4 SQ.FT.	6 SQ.FT.	3 SQ.FT.	2 SQ.FT.	2 SQ.FT.
8"	7 SQ.FT.	10 SQ.FT.	6 SQ.FT.	3 SQ.FT.	2 SQ.FT.
10"	10 SQ.FT.	15 SQ.FT.	9 SQ.FT.	5 SQ.FT.	3 SQ.FT.
12"	14 SQ.FT.	22 SQ.FT.	12 SQ.FT.	6 SQ.FT.	4 SQ.FT.
16"	25 SQ.FT.	38 SQ.FT.	21 SQ.FT.	11 SQ.FT.	7 SQ.FT.
18"	32 SQ.FT.	48 SQ.FT.	27 SQ.FT.	14 SQ.FT.	8 SQ.FT.



PLAN

ELEVATION

NOTES:

1. BEARING AREA TABLE BASED ON 250 PSI PRESSURE AND 2000 PSF SOIL BEARING. IF PRESSURE IS GREATER OR SOIL BEARING IS LESS, THE THRUST BLOCK SIZE SHALL BE INCREASED.
2. THIS TABLE REPRESENTS THE "MINIMUM" CONSTRUCTION STANDARDS. THE DEVELOPER'S ENGINEER SHALL BE RESPONSIBLE FOR DETERMINING THE APPROPRIATE SIZE OF ALL THRUST BLOCKS BASED ON EXISTING AND LOCAL CONDITIONS.



CITY OF BINGEN
THRUST BLOCKS

REVISION DATE:

8/29/14

SCALE:

NONE

DWG. NO.

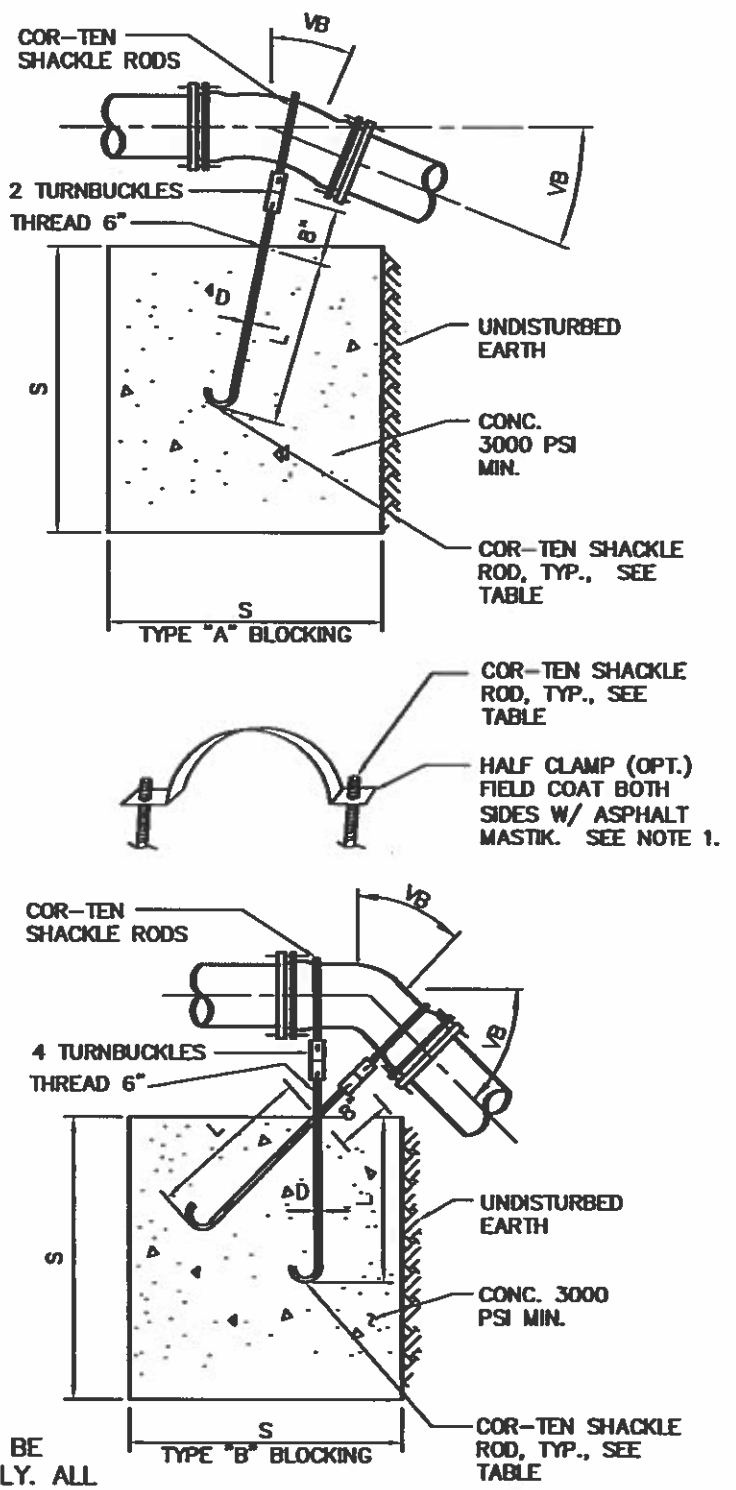
WT-5

TYPE "A" BLOCKING FOR 11 1/4°-22 1/2°-30° VERTICAL BENDS						
PIPE SIZE NOMINAL DIAMETER - INCHES	TEST PRESSURE PSI	VERTICAL BEND DEGREES	NO. OF CU. FT. OF CONC. BLOCKING	SIDE OF CUBE LIN. FT.	DIAM. OF SHACKLE RODS (2) INCHES	DEPTH OF RODS IN CONCRETE LIN. FT.
4"	300	11 1/4	8	2	5/8"	1.5
		22 1/2	11	2.2		2.0
		30	17	2.6		
6"	300	11 1/4	11	2.2	5/8"	2.0
		22 1/2	25	2.9		
		30	41	3.5		
8"	300	11 1/4	16	2.5	5/8"	2.0
		22 1/2	47	3.6		
		30	70	4.1		3/4"
12"	250	11 1/4	32	3.2	5/8"	2.0
		22 1/2	88	4.5	7/8"	3.0
		30	132	5.1		
16"	225	11 1/4	70	4.1	7/8"	3.0
		22 1/2	184	5.7	1 1/8"	4.0
		30	275	6.5	1 1/4"	
20"	200	11 1/4	91	4.5	7/8"	3.0
		22 1/2	225	6.1	1 1/4"	4.0
		30	330	6.9	1 3/8"	4.5
24"	200	11 1/4	128	5.0	1"	3.5
		22 1/2	320	6.8	1 3/8"	4.5
		30	480	7.9	1 7/8"	5.5

TYPE "B" BLOCKING FOR - 45° VERTICAL BENDS						
		VB		S	D	L
4"	300	45	30	3.1	5/8"	2.0
6"			68	4.1		
8"			123	5.0		
12"	250		232	6.1	3/4"	2.5
16"	225		478	7.8	1 1/8"	4.0
20"	200		560	8.2	1 1/4"	
24"			820	9.4	1 3/8"	4.5

NOTES:

1. HALF CLAMP, WASHERS AND NUTS MAY BE SUBSTITUTED FOR TURNBUCKLE ASSEMBLY. ALL OTHER SPECIFICATIONS THE SAME.



CITY OF BINGEN

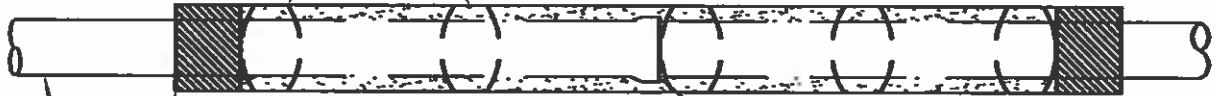
VERTICAL ANCHOR BLOCK

REVISION DATE:	SCALE:	DWG. NO.
8/29/14	NONE	WT-6

STEEL PIPE CASING (MILL PIPE)
OR DUCTILE IRON CLASS 50

PLACE END SPACER MAXIMUM
OF ONE (1) FOOT FROM END
OF CASING (TYP.)

MAXIMUM DISTANCE
BETWEEN SPACERS SHALL
BE SIX (6) FEET O.C.



ONE SPACER SHALL BE PLACED ON THE SPIGOT
END OF EACH SEGMENT AT THE LINE MARKING
THE LIMIT OF INSERTION INTO THE BELL. WHEN
THE JOINT IS COMPLETE, THE SPACER SHALL BE
IN CONTACT WITH THE BELL OF THE JOINT SO
THAT THE SPACER PUSHES THE JOINT AND RE-
LIEVES COMPRESSION WITHIN THE JOINT.

SEAL END OF CASING WITH MANUFACTURED
RUBBER END SEAL DEVICE

CARRIER PIPE (DI)

CASING SPACERS (SEE APPROVED MATERIALS LIST)

CARRIER PIPE DIAMETER	4"	6"	8"	10"	12"
MINIMUM CASING DIAMETER	10"	14"	16"	20"	24"
STEEL CASING THICKNESS	0.25"	0.25"	0.25"	0.25"	0.25"
SPACER BAND WIDTH	8"	8"	8"	8"	8"

ANTICORROSIVE COATING THICKNESS: CASING - 8 MILLS DFT

NOTES:

1. CASING SPACERS SHALL BE "CENTER POSITIONING" TYPE.
2. MINIMUM RUNNER WIDTH SHALL BE 2 INCHES.
3. RUNNER HEIGHT SHALL BE SIZED TO PROVIDE:
 - A. MINIMUM 0.75" BETWEEN CARRIER PIPE BELL AND CASING PIPE WALL AT ALL TIMES.
 - B. MINIMUM 1" CLEARANCE BETWEEN RUNNERS AND TOP OF CASING WALL TO PREVENT JAMMING DURING INSTALLATION.
4. STEEL CASING DIAMETERS ARE "OUTSIDE DIAMETER" FOR 16" AND LARGER.
5. SPACER BAND WIDTH SHALL BE 12" FOR CARRIER PIPES THAT ARE 36" DIAMETER OR GREATER
6. WATER MAIN IN CASING SHALL BE RESTRAINED JOINT (FIELD LOCK GASKETS) WITHIN CASING.



CITY OF BINGEN
CASING INSTALLATION

REVISION DATE:

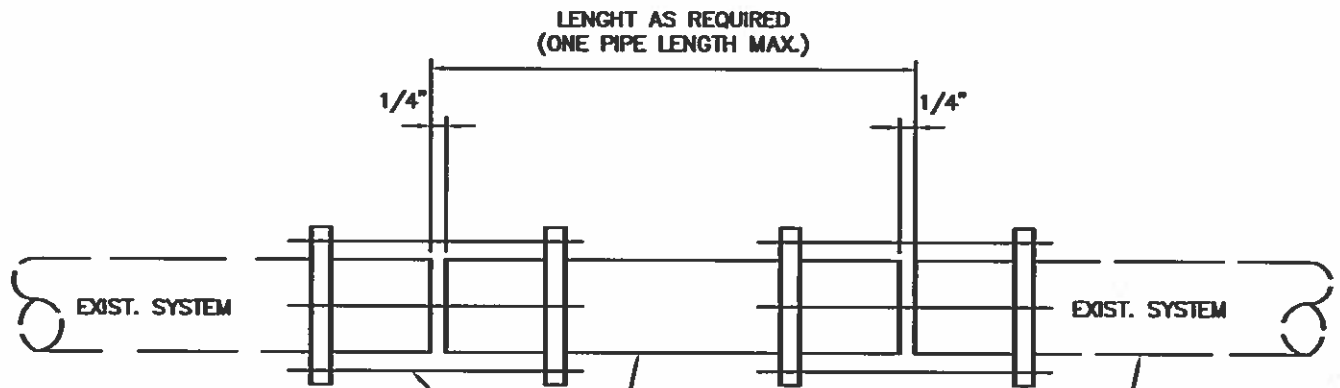
8/29/14

SCALE:

NONE

DWG. NO.

WT-7



NOTE:

1. NO DEFLECTION SHALL BE ALLOWED AT EITHER COUPLING
2. ADDITIONAL "IN-LINE" VALVES(S) MAY BE REQUIRED AT THE DIRECTION OF THE CITY.

STERILIZED PIPE SPOOL
ASSEMBLED WITH TEE OR CROSS
AS REQUIRED SEE NOTE 2.

DUCTILE IRON SOLID SLEEVE
(STERILIZED) TYP. (LONG
SLEEVE PATTERN) OR
TRANSITIONAL COUPLING AS
REQUIRED WITH MEGA-LUG OR
APPROVED EQUAL

DISCHARGE PRESSURE PRIOR TO
REMOVAL OF THRUST BLOCK
AND CONNECTION TO EXIST.
SYSTEM.



CITY OF BINGEN

CUT IN CONNECTION

REVISION DATE:

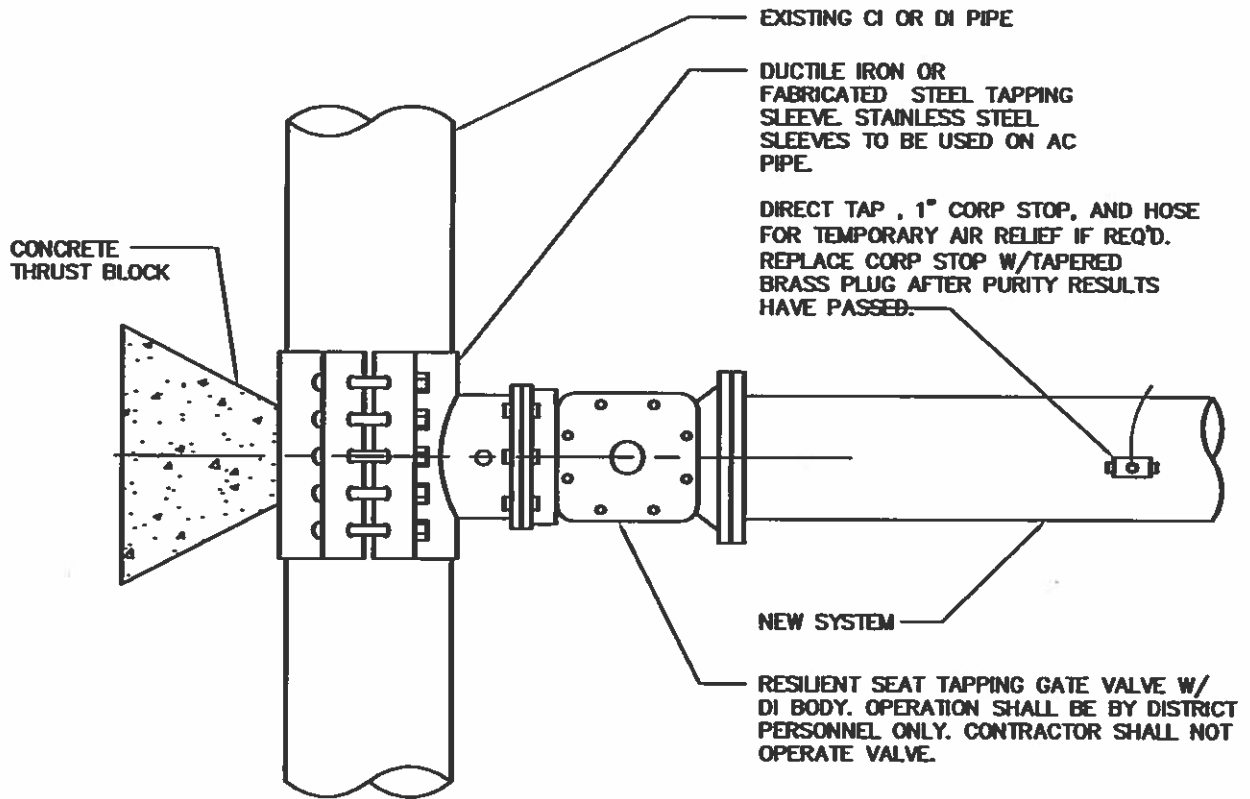
8/29/14

SCALE:

NONE

DWG. NO.

WT-8



NOTES:

1. SIZE-ON-SIZE TAPPING TEES SHALL BE DUCTILE IRON MECHANICAL SLEEVE.
2. TAPPING TEES SHALL BE PRESSURE TESTED TO 200 PSI
3. CONNECTIONS NOT ALLOWED ON FRIDAYS, HOLIDAYS, DAY BEFORE HOLIDAYS, OR WEEKENDS.



CITY OF BINGEN
WET TAP CONNECTION

REVISION DATE:

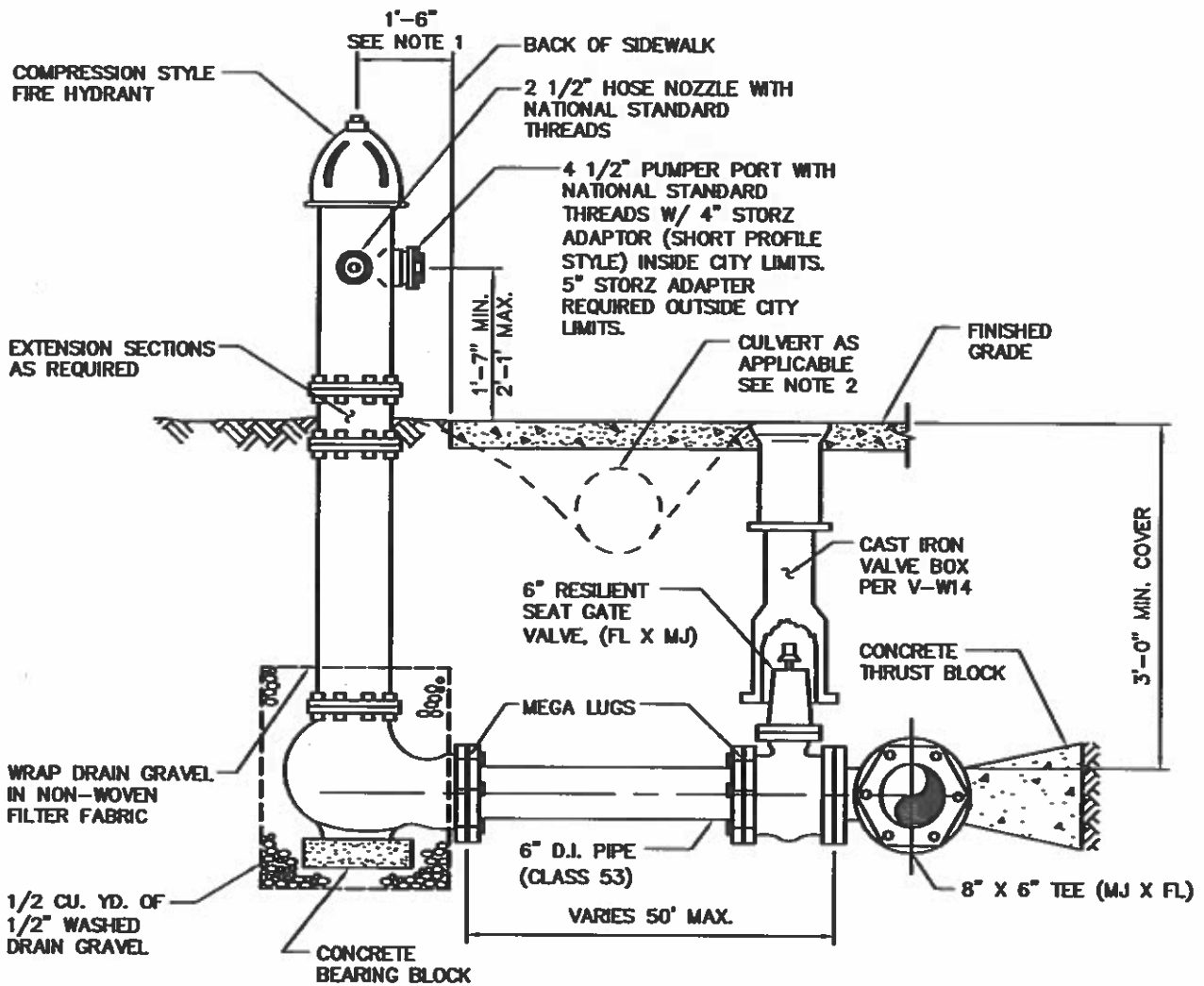
8/29/14

SCALE:

NONE

DWG. NO.

WT-9



NOTES:

1. OR 3' FROM BACK OF CURB
2. PROVIDE 8' OF CULVERT 12" MIN. DIA. OR EQUAL IN SIZE TO ADJACENT DITCH. PIPE TO COUNTY, STATE OR CITY STANDARDS AS APPLICABLE.
3. PROVIDE MIN. 3'-0" CLEARANCE AND LEVEL AREA AROUND HYDRANT
4. PAINT FIRE HYDRANT RED
5. STENCIL FOOTAGE TO VALVE ON HYDRANT UNDER PORT FACING GV
6. KEEP ALL CHAINS FOR FIRE HYDRANT CAPS
7. INSTALL GUARD POSTS AS REQUIRED BY CITY
8. ACCEPTABLE HYDRANTS: MUELLER CENTURION
9. INSTALL BLUE FIRE HYDRANT REFLECTOR. OFFSET 1 FOOT FROM ROAD CENTERLINE
10. 6" HYDRANT LATERAL SHALL BE A SINGLE CONTINUOUS PIPE SEGMENT. IF LENGTH REQUIRES A JOINT IN THE RUN ALL JOINTS SHALL BE MADE WITH GRIP RINGS.



**CITY OF BINGEN
FIRE HYDRANT
ASSEMBLY**

REVISION DATE:

8/29/14

SCALE:

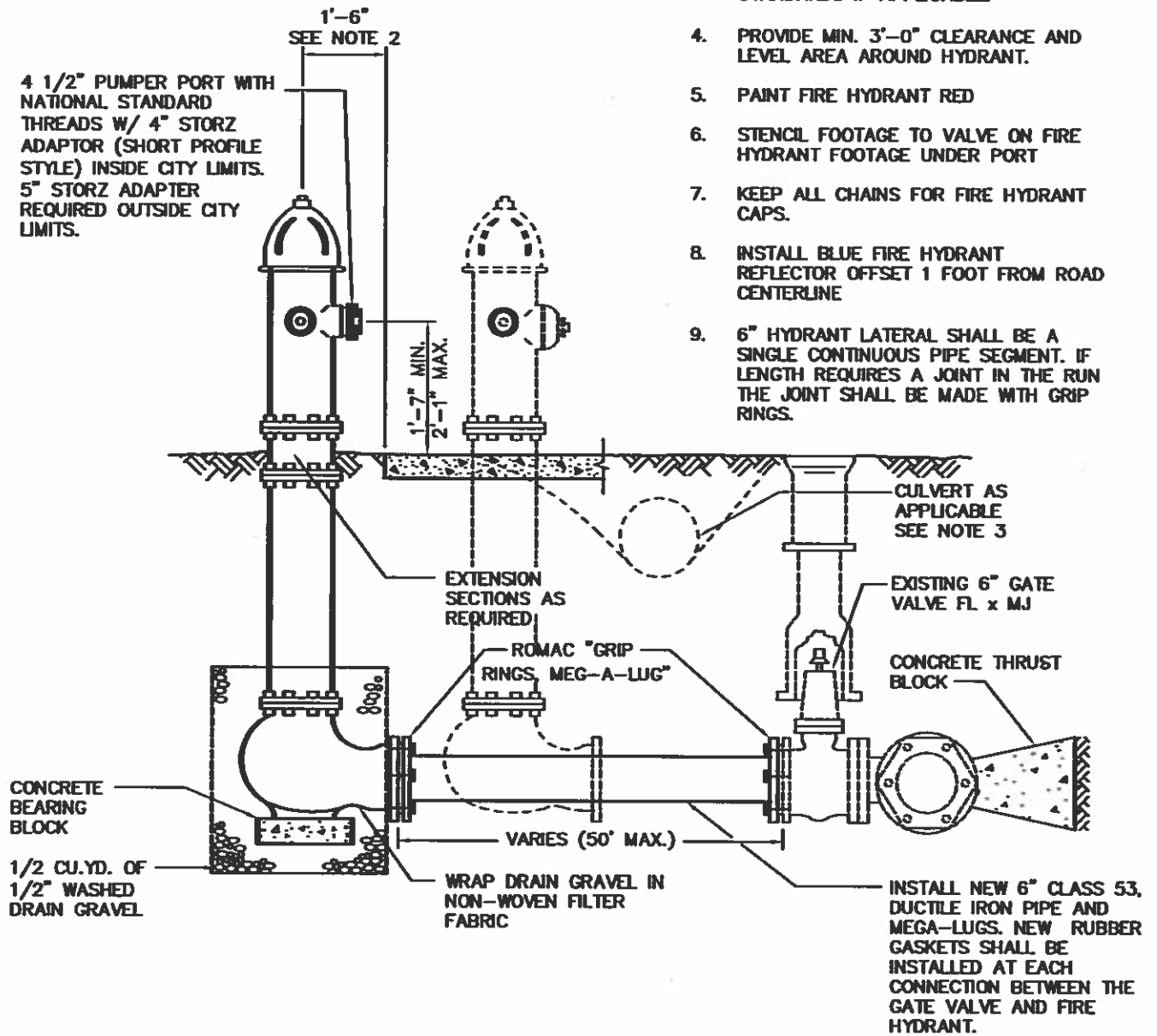
NONE

DWG. NO.

WT-10

NOTES:

1. FIRE HYDRANT MUST MEET CITY REQUIREMENTS OR REPLACE WITH NEW FIRE HYDRANTS.
2. OR 3' FROM BACK OF CURB.
3. PROVIDE 8" OF 12" MINIMUM OR EQUAL INSIZE TO ANY ADJACENT DITCH PIPE TO COUNTY, STATE OR CITY STANDARDS IF APPLICABLE.
4. PROVIDE MIN. 3'-0" CLEARANCE AND LEVEL AREA AROUND HYDRANT.
5. PAINT FIRE HYDRANT RED
6. STENCIL FOOTAGE TO VALVE ON FIRE HYDRANT FOOTAGE UNDER PORT
7. KEEP ALL CHAINS FOR FIRE HYDRANT CAPS.
8. INSTALL BLUE FIRE HYDRANT REFLECTOR OFFSET 1 FOOT FROM ROAD CENTERLINE
9. 6" HYDRANT LATERAL SHALL BE A SINGLE CONTINUOUS PIPE SEGMENT. IF LENGTH REQUIRES A JOINT IN THE RUN THE JOINT SHALL BE MADE WITH GRIP RINGS.



**CITY OF BINGEN
RELOCATE FIRE
HYDRANT ASSEMBLY**

REVISION DATE:

8/29/14

SCALE:

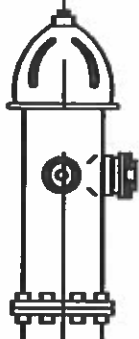
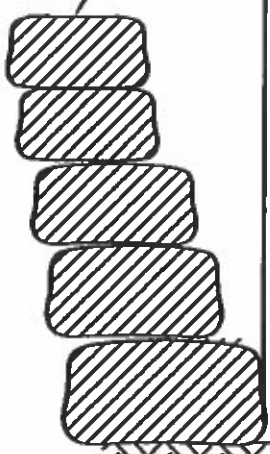
NONE

DWG. NO.

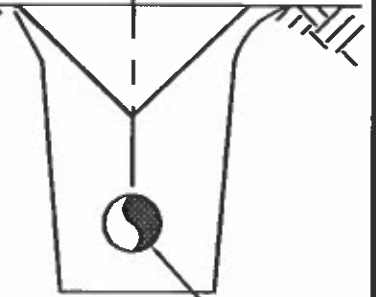
WT-11

ROCK RETAINING WALL

LEVEL ALL AROUND
MIN. 3' RADIUS

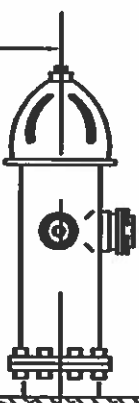


EXISTING DITCH



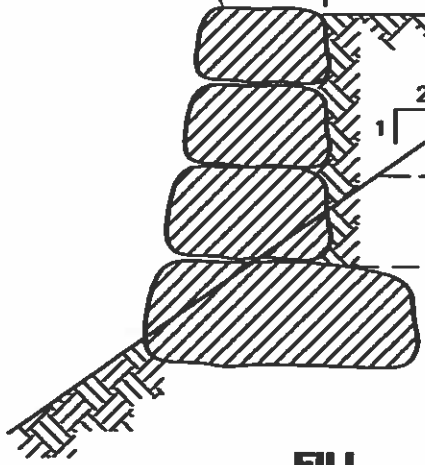
CUT

LEVEL ALL AROUND
MIN. 3' RADIUS



PROVIDE MINIMUM 12" CULVERT
(8' MINIMUM LENGTH) SIZE
MAYBE SIGNIFICANTLY GREATER
BASED ON LOCAL CONDITIONS
OR AS DIRECTED BY THE CITY

ROCK RETAINING WALL

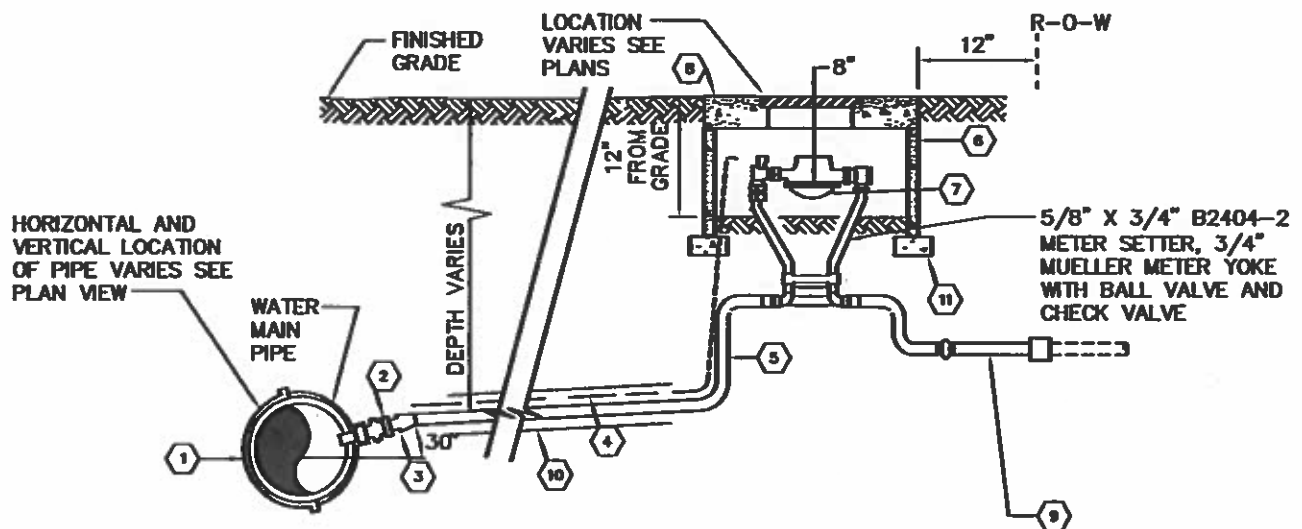


FILL



**CITY OF BINGEN
FIRE HYDRANT LOCATION
IN CUT OR FILL AREA**

REVISION DATE:	SCALE:	DWG. NO.
8/29/14	NONE	WT-12



NOTES:

- 1. SERVICE SADDLE
101S - SINGLE STAINLESS STRAP ON MAIN SIZES 8" AND UNDER - IP THREADS.
202S - DOUBLE STAINLESS STRAP ON MAIN SIZES 10" AND ABOVE - IP THREADS.
- 2. CORP STOP
1" BALL STYLE MIPxMIP.
MUELLER B-20013.
FORD F1101 MIPxMIP
- 3. INSTA-TITE ADAPT
1" FIPxIPS INSTA-TITE ADAPT.
MUELLER H-15456.

AND/OR

COMPRESSION TYPE ADAPT
1" FIPx110 COMPRESSION ADAPT WITH STAINLESS ACC
MUELLER H16454 + 505142 LINER

- 4. SERVICE PIPE
1" SIDR-7/IPS, 200 PSL
W/ 14 GA TRACER WIRE

NOTE:

OFF SIDE SERVICES SHALL BE INCASED IN 2" PVC SCH 40 PIPE.
WIRE MUST BE VISIBLE IN SERVICE METER BOX.
USE FORD 72 INSERT STIFFENER WHERE REQUIRED.

- 5. INSTA-TITE ADAPT
3/4"x1" MIPxIPS INSTA-TITE ADAPT
MUELLER H-15426

AND/OR

COMPRESSION TYPE ADAPT
3/4"x1" MIPxIPS/110 COMPRESSION ADAPT WITH STAINLESS LINER
MUELLER H15429 + 505192

- 6. METER SETTER
5/8"x3/4"x12" RISE B2404-2 BALL STYLE ANGLE
STOP ON INLET - ANGLE CHECK ON OUTLET WITH FIPxYOKE UNION ENDS
MUELLER B2404-2 (SETTER)
MUELLER H14222 (UNION ENDS)
FORD 74 SERIES VBH74-12W-11-44

- 7. METER SPACER
1"x7-1/2" SCH 80 PVC NIPPLE
KEEPS SPACE AND ALIGNMENT OF SETTER

- 8. METER BOX
CARSON METER BOX STANDARD OR AS DIRECTED
BY CITY
MID STATES OR RAVEL 1118
PLASTIC LID FOR REGULAR INSTALLATIONS
FULL DI LID FOR TRAFFIC/SIDEWALK INSTALLATIONS

- 9. 1" SIDR-7/IPS, 200PSL (6 FEET IN LENGTH)

- 10. ANY SERVICE CROSSING A PAVED SECTION
SHALL BE INSTALLED IN 2" (MIN) SCH. 40
PVC (WHITE)

- 11. CONCRETE SUPPORT BLOCKING MAY BE
REQUIRED BY THE CITY WHEN INSTALLED IN
TRAFFIC BEARING AREAS



CITY OF BINGEN

1" WATER SERVICE

REVISION DATE:

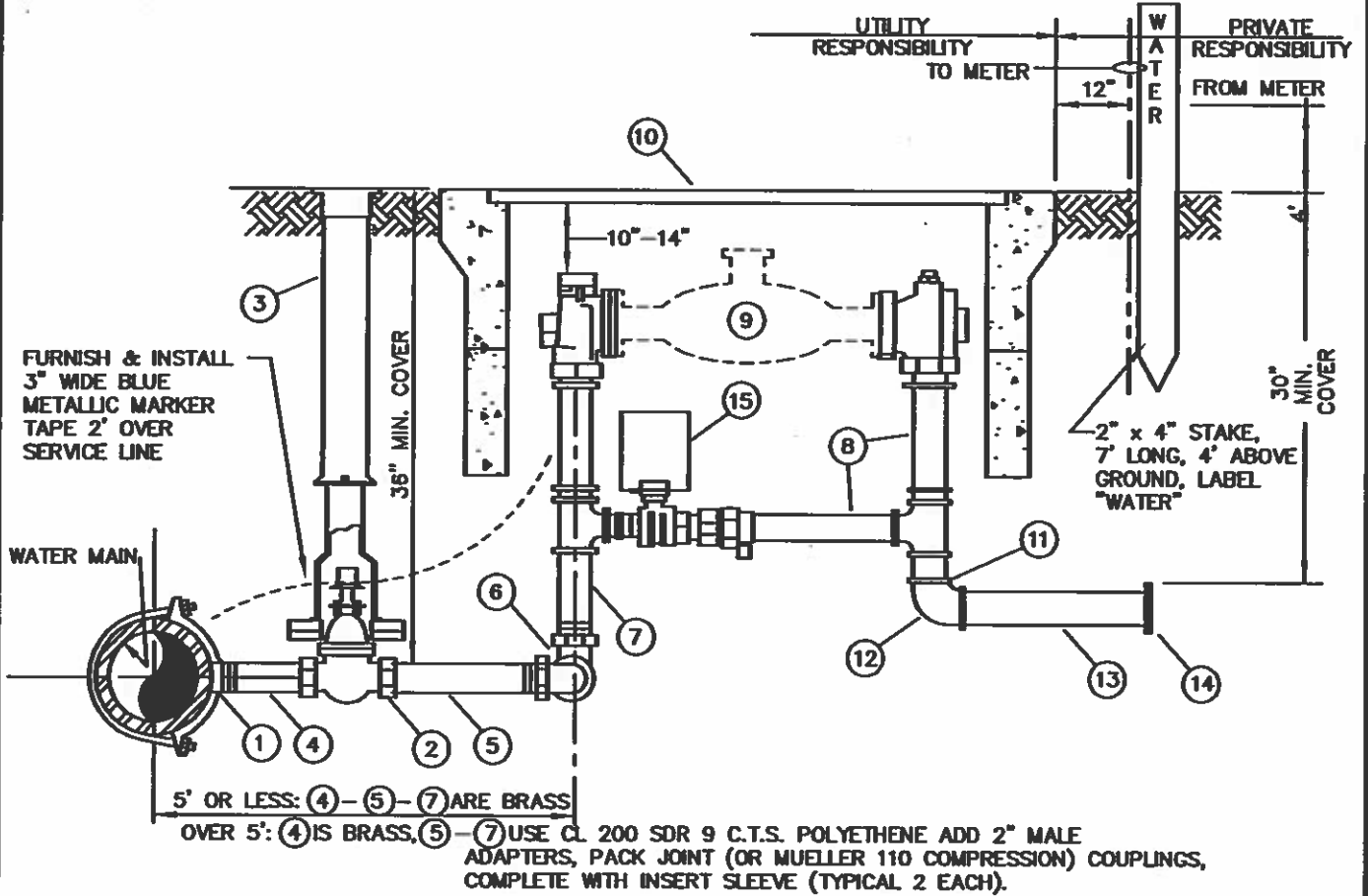
8/29/14

SCALE:

NONE

DWG. NO.

WT-13



NO.	ITEM
1	ROMAC STYLE 202S STAINLESS STEEL DOUBLE STRAP TYPE SADDLE
2	2" RESILIENT WEDGE GATE VALVE WITH 2" OPERATING NUT
3	STANDARD CAST-IRON VALVE BOX (RICH NO. 940)
4	BRASS NIPPLE (3" MIN., 6" MAX.)
5	NIPPLE (SEE NOTE ABOVE)
6	BRASS SWING JOINT
7	BRASS NIPPLE (SEE NOTE ABOVE)
8	METER SETTER, 2" FORD VBH66-12B OR MUELLER B2423-2.1512 WITH METER SPACER (LENGTH DETERMINED BY DISTRICT PRIOR TO INSTALLATION)
9	METER (FURNISHED BY CITY) 17 1/4" LONG
10	METER BOX, NO.2 FOG TITE OR BROOKS NO. 65, WITH STEEL TRAFFIC COVER (FURNISH 2 BOXES).
11	1-1/2" OR 2" (MATCH METER SIZE) BRASS NIPPLE
12	1-1/2" OR 2" (MATCH METER SIZE) BRASS 90° EL
13	1-1/2" OR 2" x 12" (MATCH METER SIZE) BRASS NIPPLE
14	1-1/2" OR 2" (MATCH METER SIZE) CAP
15	6" PVC PIPE OVER BY-PASS VALVE.



CITY OF BINGEN

1-1/2" & 2"
WATER SERVICE

REVISION DATE:

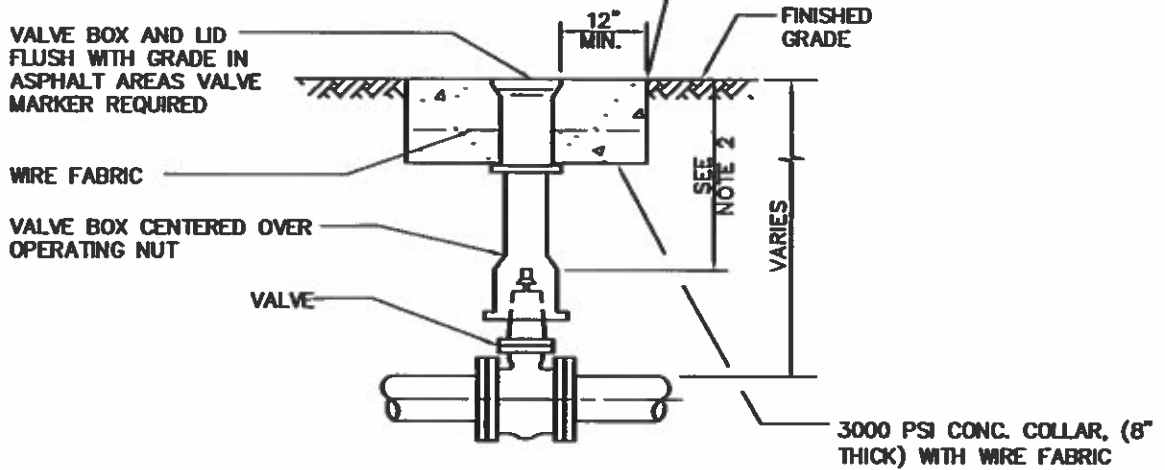
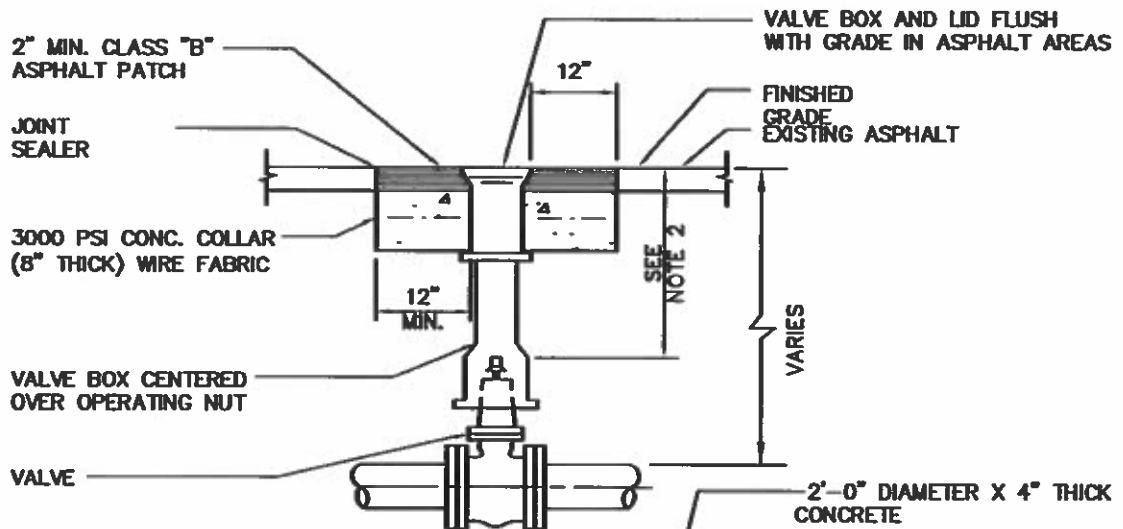
8/29/14

SCALE:

NONE

DWG. NO.

WT-14



NOTES:

1. EACH VALVE SHALL BE PROVIDED WITH AN ADJUSTABLE CAST IRON VALVE BOX OF 5 INCHES (5") INSIDE DIAMETER. VALVE BOXES SHALL HAVE A TOP SECTION WITH AN EIGHTEEN INCH (18") MIN. LENGTH. THE VALVE BOX SHALL BE RICH No. 940 OR APPROVED EQUAL. VALVE BOX EARS SHALL BE PLACED IN LINE WITH PIPE IT SERVES.
2. 15" MINIMUM, 36" MAXIMUM FOR OPERATOR NUT. EXTENSION MAY BE REQUIRED.



CITY OF BINGEN

VALVE BOX

REVISION DATE:

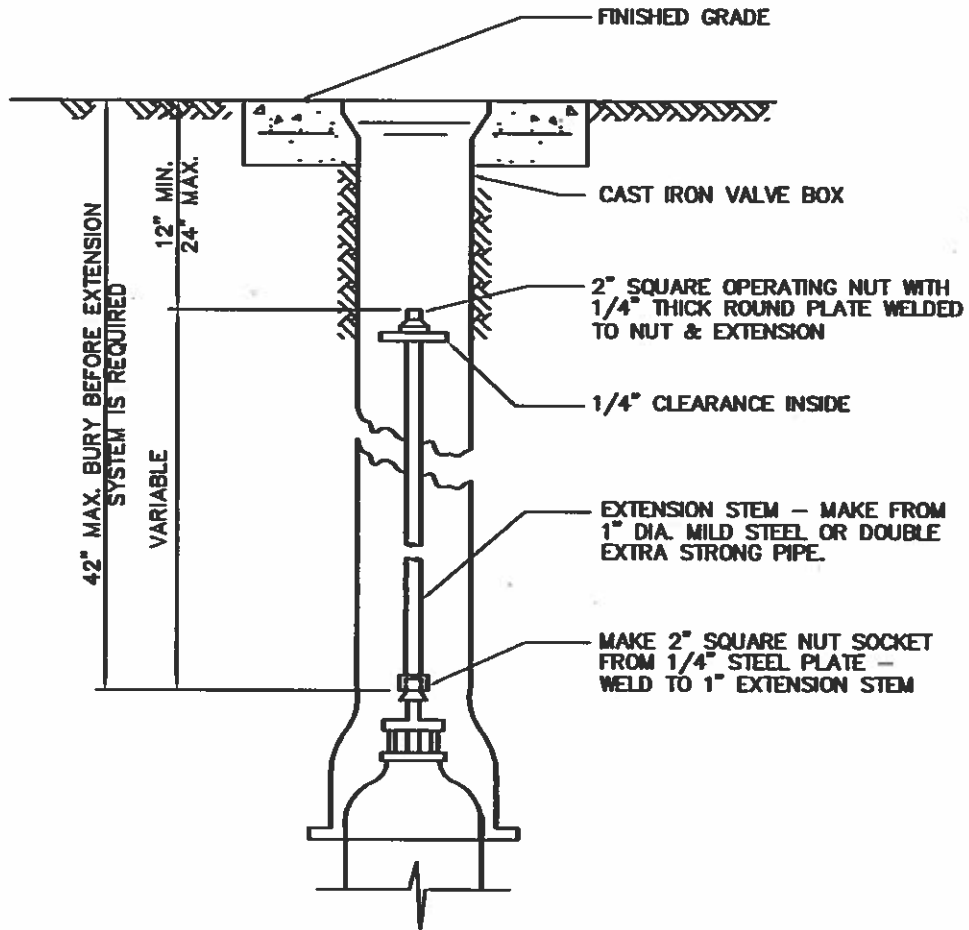
8/29/14

SCALE:

NONE

DWG. NO.

WT-15



CITY OF BINGEN
VALVE EXTENSION STEM

REVISION DATE:

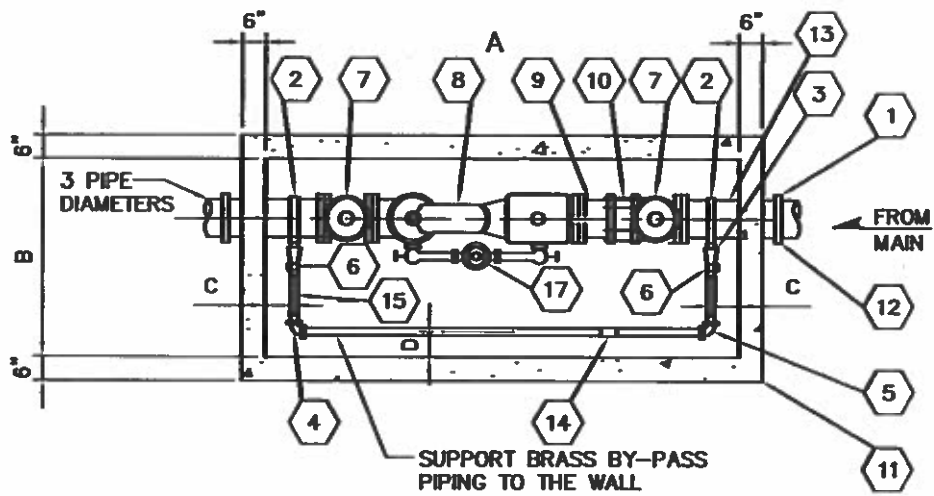
8/29/14

SCALE:

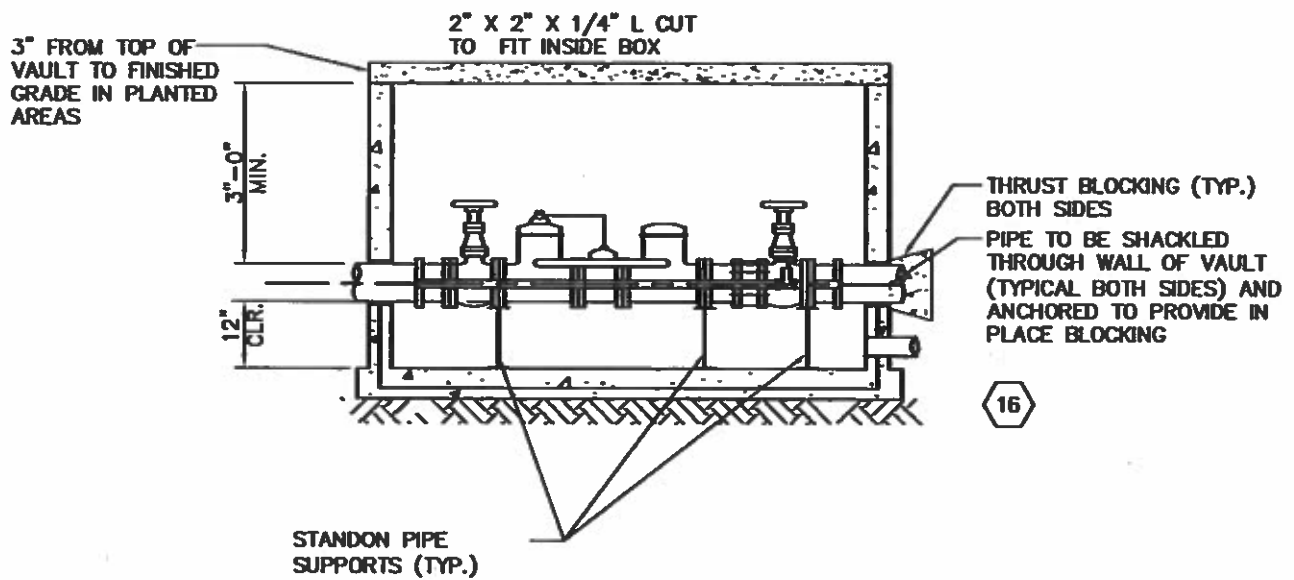
NONE

DWG. NO.

WT-16



PLAN



ELEVATION

NOTES:

1. BRASS DOES NOT REQUIRE PAINTING. ALL PIPING SHALL BE PAINTED (TWO COATS) WITH PARKER PAINT MARINE EPOXY, MARATHON 1065, TAHOE BLUE.
2. SEE WT-18 FOR CALL-OUTS AND NOTES.



CITY OF BINGEN
METER AND METER VAULT
ASSEMBLY 3" THROUGH 10"

REVISION DATE:

8/29/14

SCALE:

NONE

DWG. NO.

WT-17

MATERIAL LIST

- | | |
|--|---|
| <p>1 2-FLEX CPLG TO FIT ROCKWELL 441 (4" X 3") REDUCER, M.I. FOR 3" METER.</p> <p>2 2-DOUBLE STRAP SERVICE CLAMPS, ROMAC 202 WITH IPS TAP, OR EQUAL.</p> <p>3 3-STRAIGHT CPLG. BRASS TO OUTSIDE I.P. THREAD MUELLER H-15425,H-15428 110 COMP., OR EQUAL.</p> <p>4 1 1/4" BEND CPLG BRASS TO BRASS MUELLER H-15525.</p> <p>5 1 1/4" BEND CPLG, BRASS TO OUTSIDE I.P. THREAD MUELLER H-15530, OR EQUAL.</p> <p>6 1 BALL VALVE WITH PADLOCK WING OR LOCK CAP, FORD B21-444W OR B21-666 WITH LOCK CAP OR B21-777 WITH LOCK CAP.</p> <p>7 RESILIENT SEAT GATE VALVE, FL X FL, (RISING STEM).</p> <p>8 3" TO 10" COMPOUND METER WITH SENSUS RED LABEL - CU/FT AMR MXU - READ IN CUBIC FEET- SIZE TO BE AS SPECIFIED BY CITY AND FURNISHED BY CONTRACTOR/DEVELOPER.</p> | <p>9 1 C.I. ADPT. FL X PE (LENGTH TO FIT).</p> <p>10 1-CPLG. ADAPT., FL ROCKWELL 912, OR OWNER APPROVED EQUAL.</p> <p>11 PRECAST CONCRETE VAULT WITH (H2O) BILCO LOCKING ACCESS HATCH LW PRODUCTS OR EQUAL SEE TABLE FOR MINIMUM SIZE REQUIREMENTS.</p> <p>12 WELDED FL RESTRAINT OR SHAKLE TO THRUST BLOCK TO PREVENT MOVEMENT IF METER IS REMOVED.</p> <p>13 MEGA-LUG FOLLOWER INSTALLED ON INFLOW SIDE OF VAULT WITH CONCRETE THRUST BLOCK.</p> <p>14 UNION</p> <p>15 ALUMINUM LADDER SCURE TO VAULT LIP AND FLOOR.</p> <p>16 PROVIDE 4" DRAIN PIPE TO DAYLIGHT (MIN. SLOPE = 2%) OR CITY APPROVED SUMP PUMP SYSTEM AS REQUIRED.</p> <p>17 5/8" - 3/4" MASTER METER DIALOG 3G (RADIO READ)</p> |
|--|---|

METER SIZE	MAIN-LINE	BYPASS	A	B	C	D	MIN. HATCH OPENING
3"	4" DI.	1 1/2" BRASS	7'-6"	3'-8"	9"	4"	3'-6"
4"	4" DI.	1 1/2" BRASS	7'-6"	3'-8"	9"	4"	3'-6"
6"	6" DI.	2" BRASS	9'-6"	3'-8"	9"	4"	3'-8"
8"	8" DI.	4" DI.	11'-0"	4'-6"	14"	6"	3'-8"
10"	10" DI.	4" DI.	13'-0"	5'-0"	16"	6"	3'-8"



CITY OF BINGEN METER AND METER VAULT ASSEMBLY MATERIALS LIST

REVISION DATE:

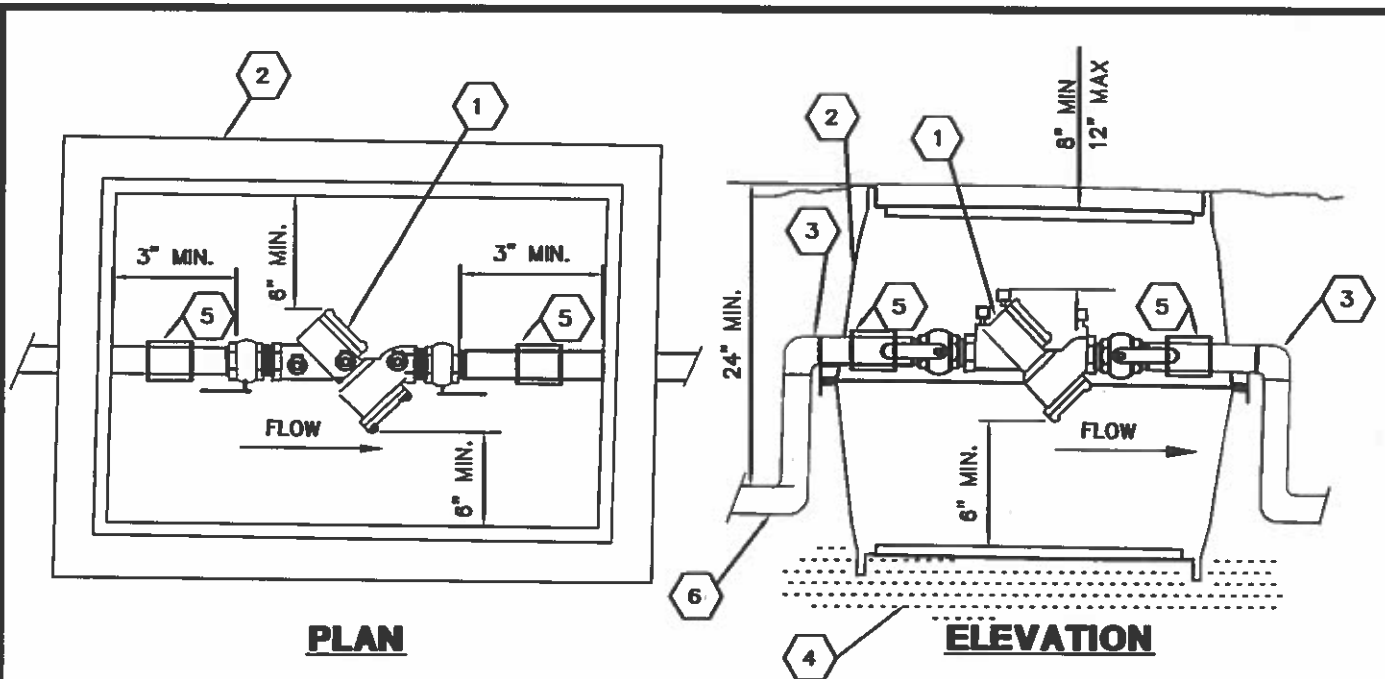
8/29/14

SCALE:

NONE

DWG. NO.

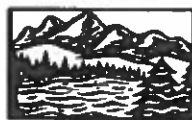
WT-18



- 1 STATE APPROVED DOUBLE CHECK VALVE ASSEMBLY (DCVA).
- 2 METER BOX. MID STATES, RAVEN OR CARSON.
- 3 BENDS MAY BE LOCATED INSIDE OR OUTSIDE OF BOX SO LONG AS SUFFICIENT ROOM IS ALLOWED AT EACH END FOR VALVE OPERATOR AND DCVA REPAIR OR MAINTENANCE.
- 4 PROVIDE FREE DRAINING BACKFILL BELOW BOX.
- 5 UNION
- 6 COPPER PIPE BETWEEN METER AND ASSEMBLY

NOTES:

1. ALL TEST COCKS SHALL HAVE BRASS PLUGS.
2. TEST COCKS SHALL FACE UP OR SIDWAYS, WHICHEVER IS MORE ACCESSIBLE.
3. COMPLETE ALL WORK IN ACCORDANCE WITH STATE, CITY AND SUPPLIER STANDARDS.
4. SYSTEM SHALL NOT BE PUT INTO SERVICE UNTIL DCVA IS APPROVED BY THE CITY AND TESTED/CERTIFIED BY A WASHINGTON STATE LICENSED BACKFLOW ASSEMBLY TESTER.
5. DCVA IS CONSIDERED PART OF A PRIVATE SYSTEM AND SHALL BE MAINTAINED BY THE PROPERTY OWNER WITH ANNUAL CERTIFICATION REQUIRED.
6. PRESSURE TEST AND DISINFECT PER A.W.W.A. STANDARDS.



**CITY OF BINGEN
DOUBLE CHECK VALVE
ASSEMBLY 2" & SMALLER**

REVISION DATE:

8/29/14

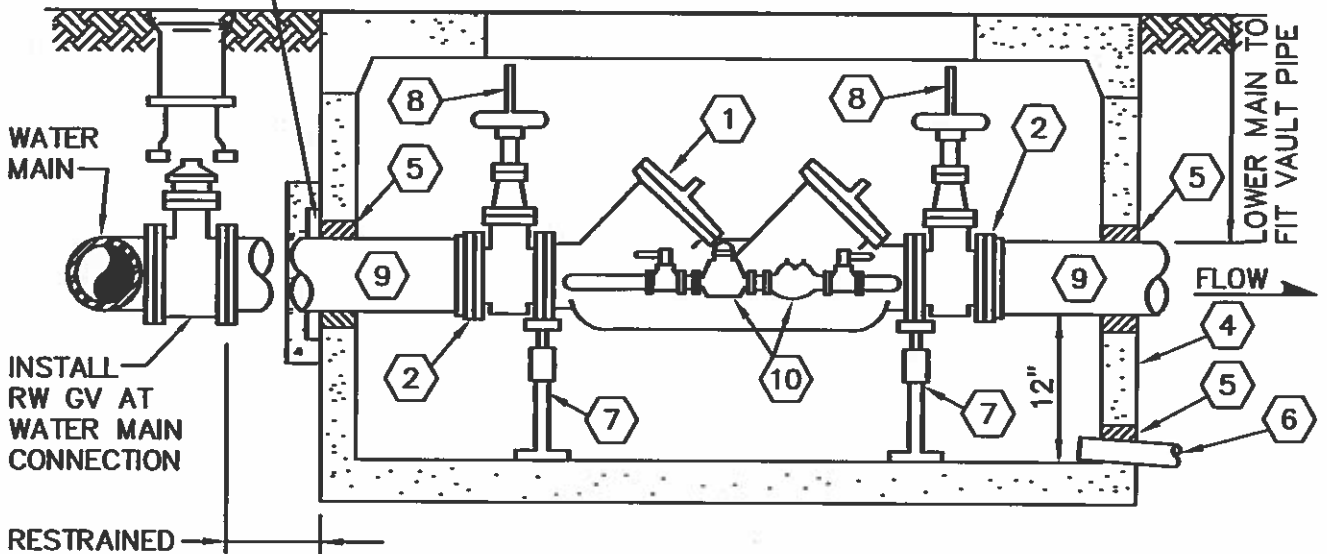
SCALE:

NONE

DWG. NO.

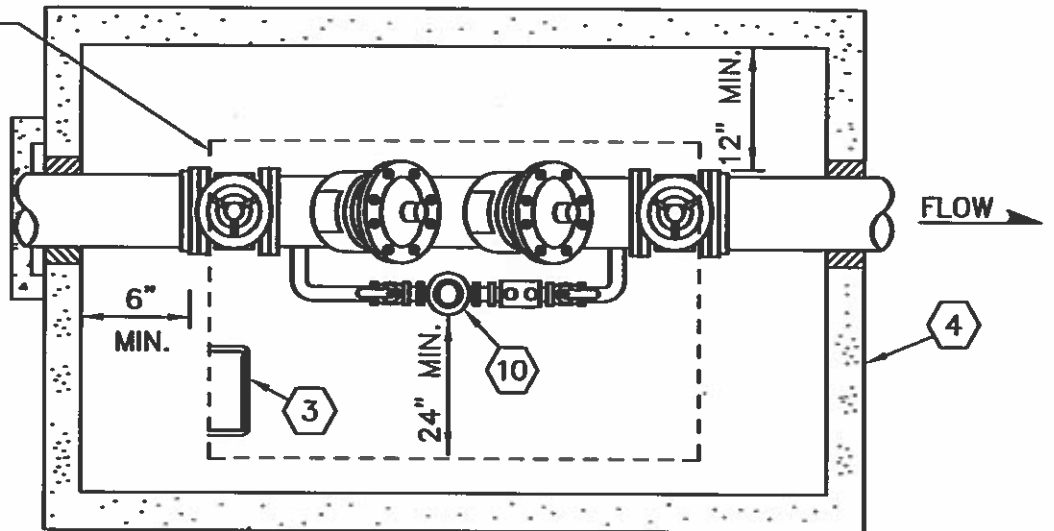
WT-19

MEGALUG FOLLOWER INSTALLED ON
INFLOW SIDE OF VAULT WITH CONCRETE
THRUST BLOCK



ELEVATION

LOCATE HATCHES
TO ALLOW VALVE
STEMS TO
PENETRATE INTO
OPENING, IF
REQUIRED



PLAN

SEE WT-21 FOR CALL OUTS AND NOTES



CITY OF BINGEN
DOUBLE-CHECK DETECTOR
VALVE ASSY. 4" & LARGER

REVISION DATE:

8/29/14

SCALE:

NONE

DWG. NO.

WT-20

SEE WT-20. FOR ELEVATION AND PLAN

- ① STATE APPROVED DOUBLE CHECK DETECTOR ASSEMBLY (DCDA) FOR BACKFLOW PREVENTION, WITH OS&Y D.I. RESILIENT SEAT GATE VALVE EA. END AND LOW FLOW BYPASS METER ASS'Y.
- ② UNI-FLANGE WITH SET SCREWS.
- ③ ALUMINUM LADDER, WITH BILCO LADDER UP AND SAFETY POST SECURED TO VAULT LID AND FLOOR, SAME SIDE AS BYPASS METER.
- ④ VAULT:
UTILITY VAULT CO, OR EQUAL
3'x3', LW PRODUCTS OR EQUAL, H-20 LOAD RATED ACCESS HATCH. DRAIN HATCH TO VAULT FLOOR.

DCDA SIZE	UTILITY VAULT #	INSIDE DIMENSIONS			No. OF HATCHES
		WIDTH	LENGTH	HEIGHT	
4"	575-LA	4'-2"	6'-6"	4'-0"	2
6"	5106-LA	5'-0"	10'-6"	6'-6"	2
8"	5106-LA	5'-0"	10'-6"	6'-6"	2
10"	5106-LA	5'-0"	10'-6"	6'-6"	3

- ⑤ WATER-TIGHT GROUT (TYP.)
- ⑥ 4" PVC DRAIN TO NEAREST CATCH BASIN. MINIMUM SLOPE 1% UNLESS OTHERWISE APPROVED. WHERE GRAVITY DRAIN IS NOT FEASIBLE, PROVIDE SUMP AND ELECTRIC PUMP WITH DISCHARGE TO SURFACE DRAIN. PUMP SHALL BE 1/2 HP ZOELLER M-93, WITH CHECK VALVE ON DISCHARGE LINE. POWER FROM SERVED FACILITY WITH GFI OUTLET IN VAULT, LOCATED ABOVE METER.
- ⑦ ADJUSTABLE PIPE STANCHION, STANDON MODEL S-89 OR EQUAL, BOLT TO VALVE FLANGE.
- ⑧ VALVE ASSEMBLY TO BE CENTERED IN VAULT TO ALLOW STEMS TO EXTEND INTO ACCESS OPENING.
- ⑨ CL. 52 D.I., MJ WITH MEGALUGS.
- ⑩ LOW FLOW BYPASS METER, INCLUDING 5/8" x 3/4" MASTER METER DIALOG 3g (RADIO READ), STATE APPROVED DOUBLE CHECK VALVE ASSEMBLY (DCVA) WITH 2 BRONZE BODY ISOLATION BALL VALVES, BRASS OR TYPE K COPPER PIPING. ALL TEST PORTS TO BE CAPPED (WATERTIGHT).

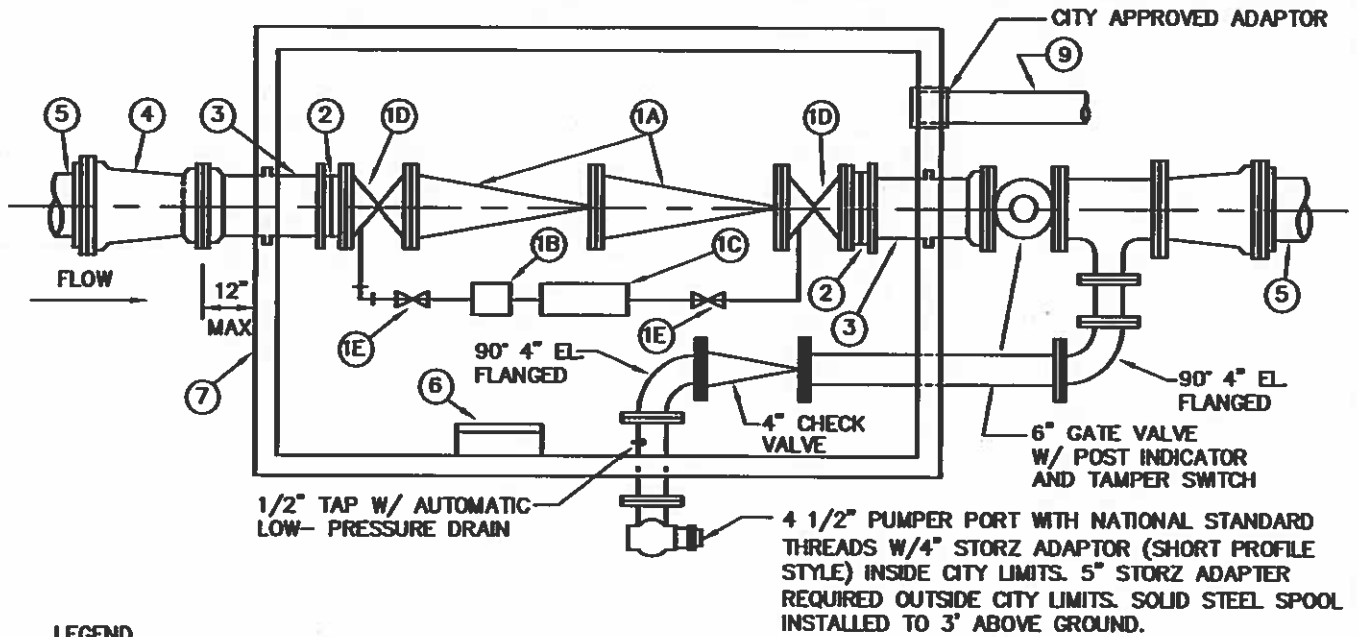
NOTES:

1. VAULT SHALL BE LOCATED OUTDOORS AND ACCESSIBLE TO CITY 24 HRS/DAY.
2. LINE SHALL NOT BE PUT INTO SERVICE UNTIL THE BACKFLOW PREVENTION DEVICE IS APPROVED BY THE CITY AND TESTED/CERTIFIED BY A WASHINGTON STATE LICENSED BACKFLOW ASSEMBLY TESTER.
3. DCDA IS CONSIDERED PART OF THE PRIVATE SYSTEM AND SHALL BE MAINTAINED BY THE PROPERTY OWNER WITH ANNUAL CERTIFICATION REQUIRED.
4. COMPLETE ALL WORK IN ACCORDANCE WITH STATE, CITY AND SUPPLIER STANDARDS.
5. PRESSURE TEST AND DISINFECT PER A.W.W.A. STANDARDS.
6. VERIFY METER FUNCTION WHEN DCDA IS TESTED.



CITY OF BINGEN
DOUBLE-CHECK DETECTOR
BACKFLOW PREVENTION ASSY.

REVISION DATE:	SCALE:	DWG. NO.
8/29/14	NONE	WT-21



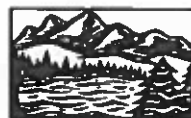
LEGEND

- ① DOUBLE-CHECK DETECTOR VALVE ASSEMBLY CAPABLE OF METERING WATER USAGE UNDER LOW FLOW CONDITIONS. 10.0 P.S.I. HEAD LOSS AT 1600 GPM FOR 8" SIZE. ASSEMBLY TO BE STATE DOH APPROVED. SIZE AS APPROVED BY CITY. (RADIO READ)
 - 1A. 2 - CHECK VALVES, (FL)
 - 1B. 1 - BY-PASS METER 5/8" X 3/4" SENSUS (C.F. READING) METER TOUCH READ WITH MXU RED LABEL (952 MHZ) - COMPLETE WITH SPUD NUT.
 - 1C. 1 - DOUBLE CHECK VALVE ASSEMBLY, (DOH APPROVED.) 3/4" FOR - 8" D.D.C.V.
 - 1D. 2 - GATE VALVES, (FL) W/HAND WHEEL; RISING STEM, RESILIENT - SEATED AS PER CITY REQUIREMENTS.
 - 1E. 2 - GATE VALVES, (FL) W/ HAND WHEEL; RISING STEM, RESILIENT - SEATED WITH TAMPER SWITCH AS PER CITY REQUIREMENTS.
- ② 2 - FLANGED COUPLING ADAPTER, SIZE AS SPECIFIED ON PLANS. (LOCATE MINIMUM 6" FROM INNER WALL)
- ③ 2 - PIPE SPOOLS, PLAIN END.
- ④ 1- REDUCER (MJ X MJ), IF REQUIRED.
- ⑤ RESTRAINED JOINT WATER MAIN CL52.
- ⑥ ALUMINUM LADDER WITH BILCO LADDER UP AND SAFETY POST. LOCATE AS DIRECTED BY CITY. USE STAINLESS STEEL FASTNERS AT 3' MAX. SPACING SECURE TO VAULT LID AND FLOOR.
- ⑦ UTILITY VAULT CO. VAULTS SHALL BE CITY STD. OF QUALITY; SUBMIT ALTERNATIVES FOR APPROVAL. HINGED AND SPRING LOCKED STEEL DIAMOND P/L COVER 2-332P, (DOUBLE HATCH COVER.) 4" C.I. FLOOR DRAIN INTO 4" PVC DRAIN LINE. DAYLIGHT OR STORM SYSTEM. CHECK VAULT SIZE REQUIRED FOR ENCLOSING COMPLETE ASSEMBLIES.
- ⑧ PROVIDE STANCHION, STANDON MODEL S-89 OR EQUAL PIPE SUPPORTS. TO INCLUDE STEEL YOKE, BOLT TO VAULT FLOOR USING RECOMMENDED CONNECTION AND SIZES.
- ⑨ 4" PVC DRAIN TO NEAREST CATCH BASIN. MINIMUM SLOPE 1% UNLESS OTHERWISE APPROVED. WHERE GRAVITY DRAIN IS NOT FEASIBLE, PROVIDE SUMP AND ELECTRIC PUMP WITH DISCHARGE TO SURFACE DRAIN. PUMP SHALL BE 1/2 HP ZOELLER M-93, WITH CHECK VALVE ON DISCHARGE LINE. POWER FROM SERVED FACILITY WITH GFI OUTLET IN VAULT, LOCATED ABOVE METER.

DCDA SIZE	UTILITY VAULT #	INSIDE DIMENSIONS			No. OF HATCHES
		WIDTH	LENGTH	HEIGHT	
4"	575-LA	4'-2"	6'-6"	4'-0"	2
6"	5106-LA	5'-0"	10'-6"	6'-6"	2
8"	5106-LA	5'-0"	10'-6"	6'-6"	2
10"	5106-LA	5'-0"	10'-6"	6'-6"	3

NOTE:

- 1. PAINT ALL PIPING WITH PARKER PAINT MARINE ENAMEL, MARATHON 1065 TAHOE BLUE.
- 2. ALL PIPE SHALL BE PRIMERED BY SUPPLIER.



**CITY OF BINGEN
DOUBLE-CHECK DETECTOR
WITH FIRE CONNECTION**

REVISION DATE:

8/29/14

SCALE:

NONE

DWG. NO.

WT-22

- ① 6" CLA-VAL 92G-01BCSY PRESSURE REDUCING VALVE WITH X101 POSITION INDICATOR DI BODY, S.S. TRIM, #150 FL
- ② 2" CLA-VAL 90G-01BC PRESSURE REDUCING VALVE WITH X101 POSITION INDICATOR DI BODY, BRONZE TRIM - THREADED
- ③ 6" D.I. RW NRS GATE VALVE WITH HANDWHEEL, #150 FL
- ④ 2" MUELLER A2360-6W41 W55 RW NRS GATE VALVE WITH HANDWHEEL, THD.
- ⑤ 6" VICTAULIC #07 RIGID COUPLING
- ⑥ 4" 0-300 PSI PRESSURE GAUGE WITH SNUBBER AND GAUGE COCK; TOP OF PIPE
- ⑦ PRECAST CONCRETE VAULT, UTILITY VAULT CO. 5106-LA OR EQUAL WITH 2 EACH 3' X 3' LW PRODUCTS OR EQUAL, H-20 RATED. DRAIN TO VAULT FLOOR.
- ⑧ 48" X 96" DOUBLE DOOR ALUMINUM HATCH, LW PRODUCTS OR EQUAL. H-20 LOAD RATED. DRAIN HATCH TO VAULT FLOOR
- ⑨ ADJUSTABLE PIPE SUPPORTS
- ⑩ 3/4" HOSE BIB ASSEMBLY
- ⑪ 2" VICTAULIC #77 STANDARD FLEXIBLE COUPLING
- ⑫ SMITH BLAIR ST X DI TRANSITION COUPLING
- ⑬ 4" PVC DRAIN TO NEAREST CATCH BASIN. MINIMUM SLOPE 1% UNLESS OTHERWISE APPROVED. WHERE GRAVITY DRAIN IS NOT FEASIBLE, PROVIDE SUMP AND ELECTRIC PUMP WITH DISCHARGE TO SURFACE DRAIN. PUMP SHALL BE 1/2 HP ZOELLER M-93, WITH CHECK VALVE ON DISCHARGE LINE. POWER FROM SERVED FACILITY WITH GFI OUTLET IN VAULT, LOCATED ABOVE METER.

NOTES:

1. 6" x 2" PRV ASSEMBLY SHOWN. SIZES TO BE DETERMINED BY THE CITY BASED ON DOWNSTREAM DEMANDS.
2. FABRICATED STEEL PIPE AND FITTINGS TO BE SCHEDULE NO. 40 STEEL PIPE.
3. ALL 3" AND LARGER PIPE, INSIDE WETTED SURFACES TO BE SANDBLASTED, EPOXY LINED AND COATED TO AWWA C210 AND NSF-61 SPECIFICATION. FINISH COATING SHALL BE BLUE EPOXY.
4. ALL PIPE 2" AND SMALLER TO BE BRASS.



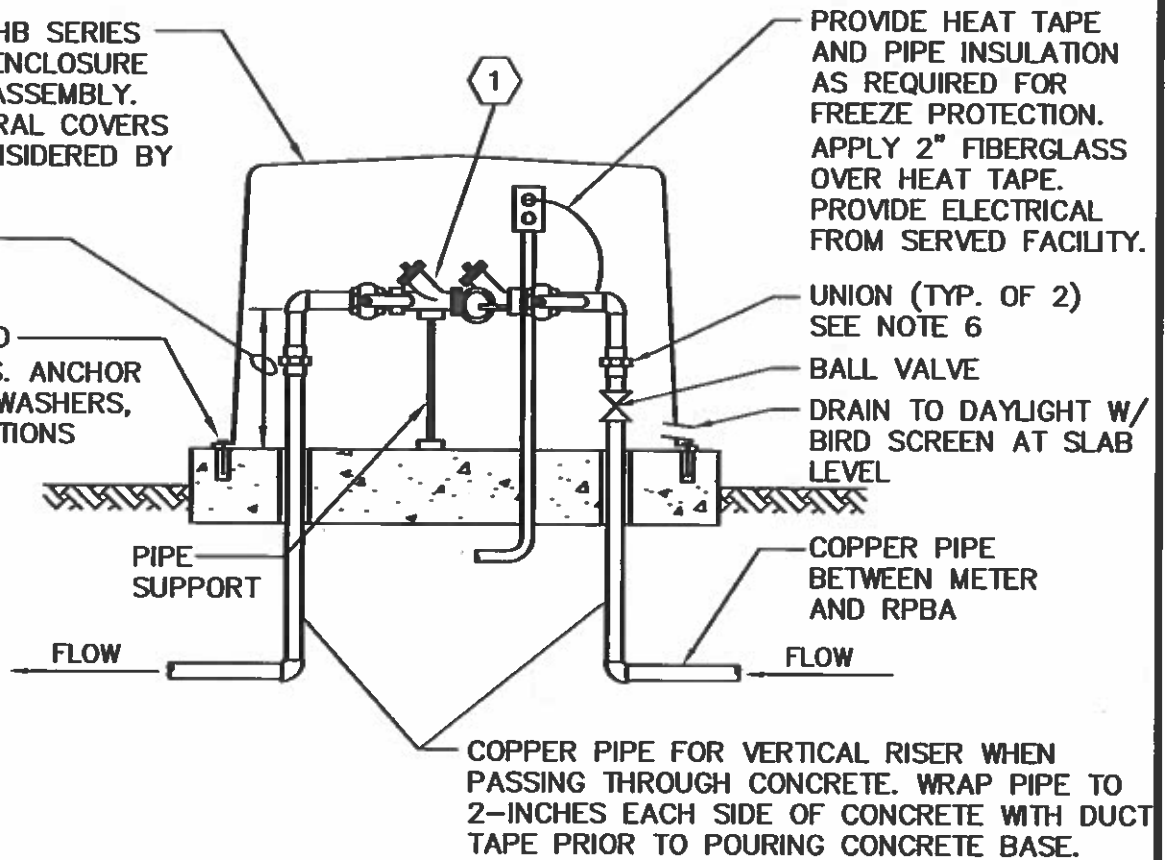
**CITY OF BINGEN
PRESSURE REDUCING
VAULT**

REVISION DATE:	SCALE:	DWG. NO.
8/29/14	NONE	WT-24

"HOT BOX" HB SERIES INSULATED ENCLOSURE SIZED FOR ASSEMBLY. ARCHITECTURAL COVERS WILL BE CONSIDERED BY CITY.

12" MIN.

BOLT TO PAD W/ 3/8" S.S. ANCHOR BOLTS AND WASHERS, MIN. 4 LOCATIONS



PROVIDE HEAT TAPE AND PIPE INSULATION AS REQUIRED FOR FREEZE PROTECTION. APPLY 2" FIBERGLASS OVER HEAT TAPE. PROVIDE ELECTRICAL FROM SERVED FACILITY.

UNION (TYP. OF 2) SEE NOTE 6

BALL VALVE

DRAIN TO DAYLIGHT W/ BIRD SCREEN AT SLAB LEVEL

COPPER PIPE BETWEEN METER AND RPBA

COPPER PIPE FOR VERTICAL RISER WHEN PASSING THROUGH CONCRETE. WRAP PIPE TO 2-INCHES EACH SIDE OF CONCRETE WITH DUCT TAPE PRIOR TO POURING CONCRETE BASE.

① WASHINGTON STATE APPROVED REDUCED PRESSURE BACKFLOW ASSEMBLY (RPBA) WITH TEST COCK PROTECTION AND BRONZE BODY BALL VALVE AT EACH END.

NOTES:

1. CONCRETE TO BE 2500 PSI MIX WITH AIR ENTRAINMENT.
2. COMPLETE ALL WORK IN ACCORDANCE WITH STATE, DISTRICT AND MANUFACTURER STANDARDS.
3. SYSTEM SHALL NOT BE PUT INTO SERVICE UNTIL RPBA IS APPROVED BY THE CITY AND TESTED/CERTIFIED BY A WASHINGTON STATE LICENSED BACKFLOW ASSEMBLY TESTER.
4. RPBA IS CONSIDERED PART OF THE PRIVATE SYSTEM AND SHALL BE MAINTAINED BY THE PROPERTY OWNER WITH ANNUAL CERTIFICATION REQUIRED.
5. DIELECTRIC UNIONS SHALL BE USED TO SEPARATE DISSIMILAR MATERIALS.
6. NO BRANCH CONNECTIONS ALLOWED BETWEEN METER AND RPBA.



CITY OF BINGEN

REDUCED PRESSURE BACKFLOW ASSEMBLY 3/4" TO 2"

REVISION DATE:

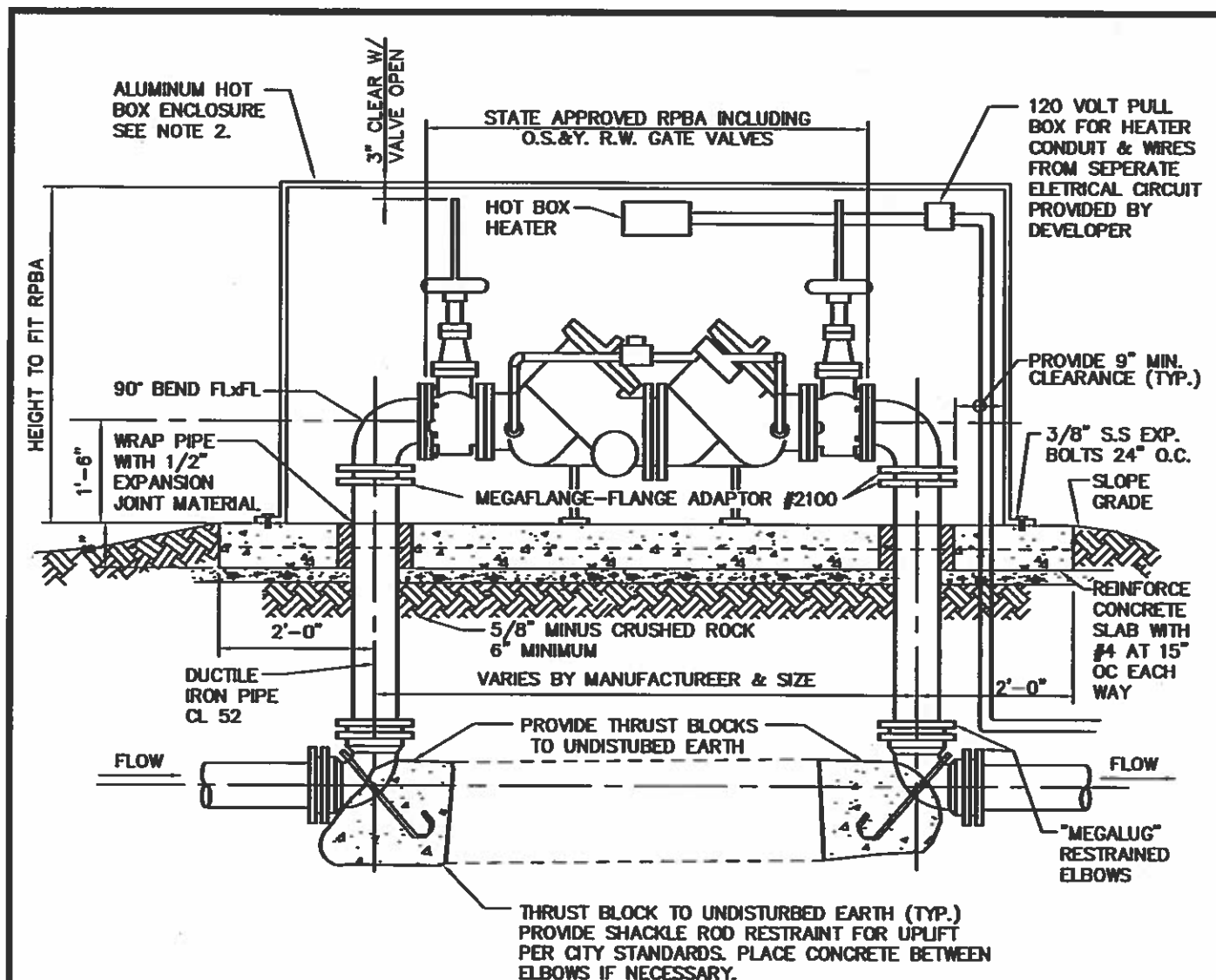
8/29/14

SCALE:

NONE


DWG. NO.

WT-25

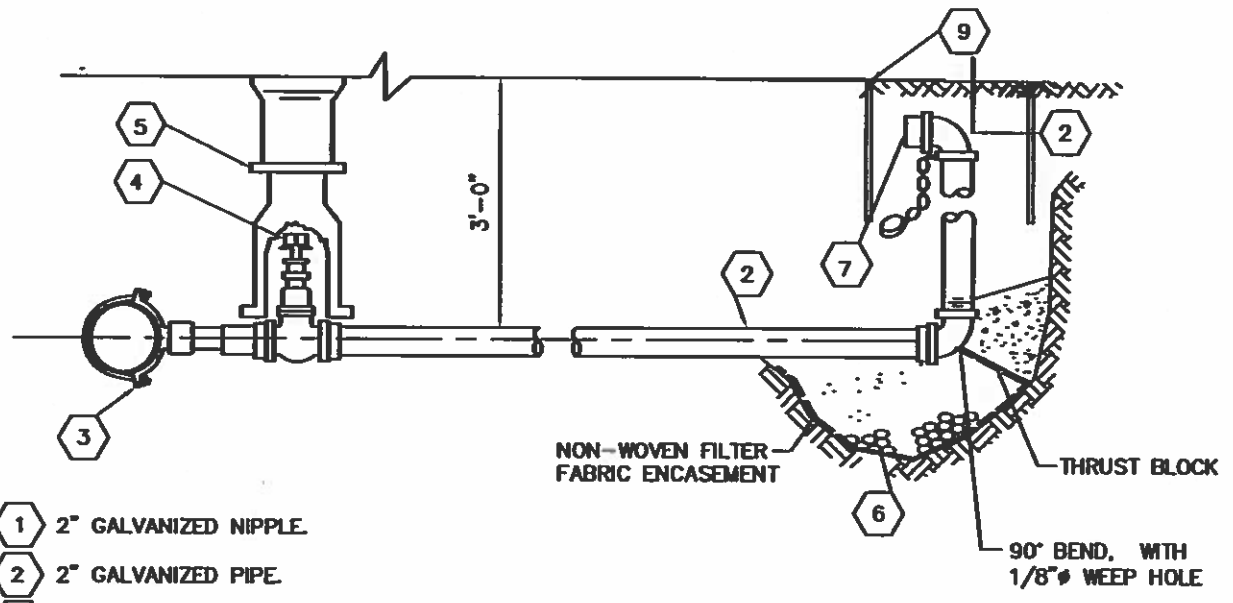
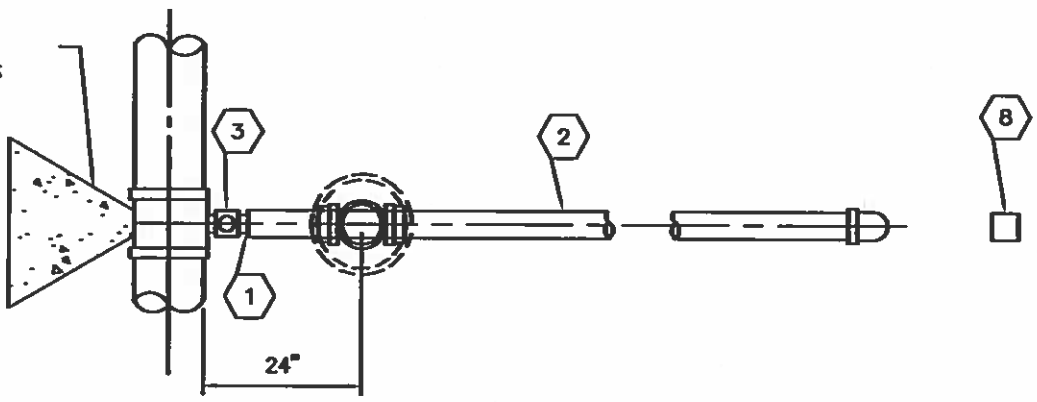


NOTES:

1. BACKFLOW ASSEMBLY SHALL BE SELECTED FROM WASHINGTON STATE DEPARTMENT OF HEALTH CURRENT APPROVED LIST.
2. ALUMINUM "HOT BOX" MODELS 4 THROUGH 10 FOR RESPECTIVE SIZE RPBA SHALL BE MODIFIED TO FIT ABOVE HEIGHT REQUIREMENTS. VALVE STEM SHALL NOT BE ALLOWED TO EXTEND OUTSIDE OF BOX.
3. HEATERS SHALL BE 2,000 WATT FOR 8" AND UNDER AND 3,000 WATT FOR 10" AND LARGER.
4. CONCRETE TO BE 2500 PSI MIX WITH AIR ENTRAINMENT.
5. COMPLETE ALL WORK IN ACCORDANCE WITH STATE, CITY AND AND SUPPLIER STANDARDS.
6. SYSTEM SHALL NOT BE PUT INTO SERVICE UNTIL RPBA IS APPROVED BY THE CITY AND TESTED/CERTIFIED BY A WASHINGTON STATE LICENSED BACKFLOW ASSEMBLY TESTER.
7. RPBA IS CONSIDERED PART OF THE PRIVATE SYSTEM AND SHALL BE MAINTAINED BY THE PROPERTY OWNER WITH ANNUAL CERTIFICATION REQUIRED.
8. PRESSURE TEST AND DISINFECT PER A.W.W.A. STANDARDS.

	<p>CITY OF BINGEN REDUCED PRESSURE BACKFLOW ASSEMBLY 3" AND LARGER</p>	
<p>REVISION DATE: 8/29/14</p>	<p>SCALE: NONE</p>	<p>DWG. NO. WT-26</p>

THRUST BLOCK AS REQUIRED



- 1 2" GALVANIZED NIPPLE.
- 2 2" GALVANIZED PIPE.
- 3 DOUBLE STRAP SADDLE TO FIT 2".
- 4 AWWA RESILIENT SEAT GATE VALVE THD X THD, WITH OPERATING NUT.
- 5 CAST IRON VALVE BOX.
- 6 1/4 CUBIC YARD WASHED GRAVEL POCKET.
- 7 2" x 2-1/2" HOSE THREADS BRASS INSERT WITH CAP AND CHAIN.
- 8 VALVE MARKER POST.
- 9 17 X 28 CONC. METER BOX WITH 3/8" STRUC DIAMOND PLATE COVER FOG-TITE METER SEAL CO. NO.2.

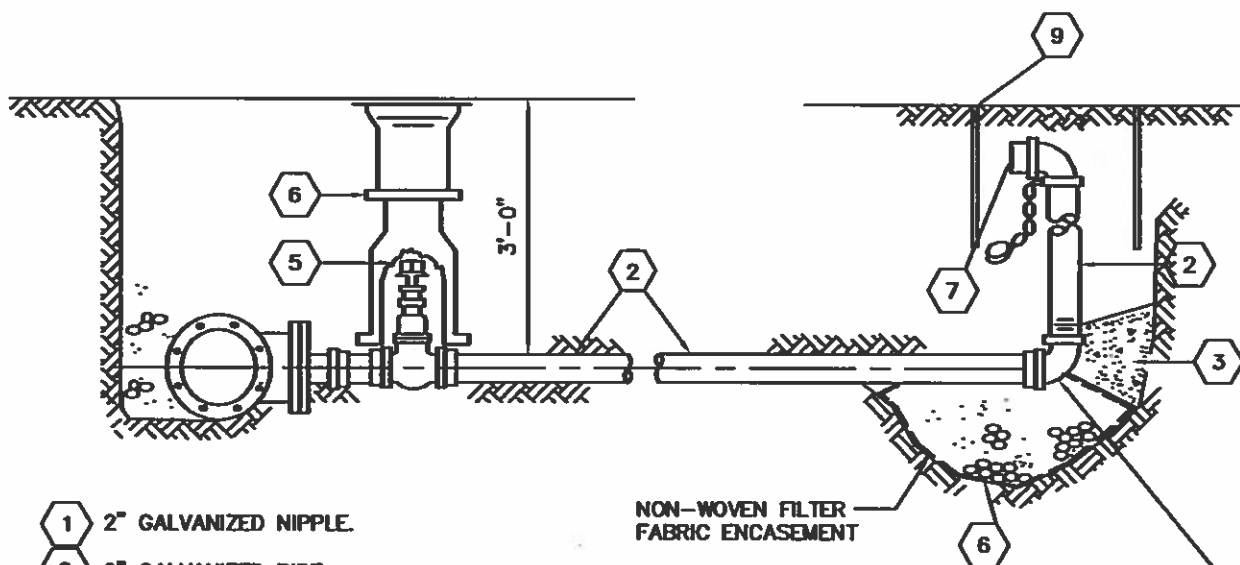
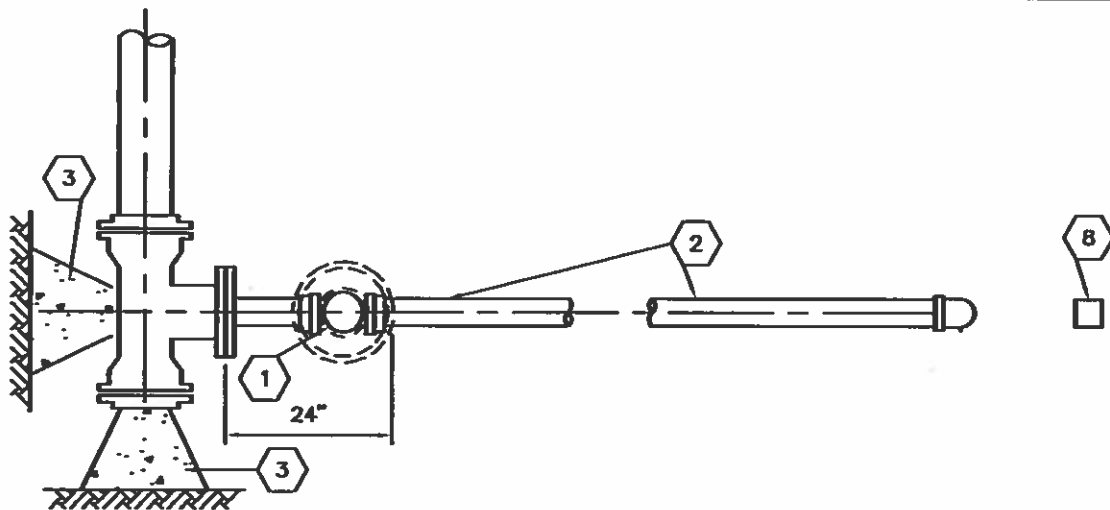
NOTES:

- 1. TURN NOZZLE TOWARDS ROADSIDE DITCH.
- 2. TEMPORARY BLOWOFFS INSTALLED FOR FLUSHING WATERMAIN SHALL BE SIZED TO PROVIDE 2.5 fps VELOCITY IN MAIN LINE.



**CITY OF BINGEN
PERMANENT IN-LINE
BLOW OFF ASSEMBLY**

REVISION DATE: 8/29/14	SCALE: NONE	DWG. NO. WT-28
---------------------------	----------------	-------------------



- 1 2" GALVANIZED NIPPLE.
- 2 2" GALVANIZED PIPE.
- 3 THRUST BLOCK
- 4 AWWA RESILIENT SEAT GATE VALVE THD X THD, WITH OPERATING NUT.
- 5 CAST IRON VALVE BOX.
- 6 1/4 CUBIC YARD WASHED GRAVEL POCKET.
- 7 2" x 2-1/2" HOSE THREADS BRASS INSERT WITH CAP AND CHAIN.
- 8 VALVE MARKER POST.
- 9 17 X 28 CONC. METER BOX WITH 3/8" STRUC DIAMOND PLATE COVER FOG-TITE METER SEAL CO. NO.2.

NOTES:

1. TURN NOZZLE TOWARDS ROADSIDE DITCH.
2. TEMPORARY BLOWOFFS INSTALLED FOR FLUSHING WATERMAIN SHALL BE SIZED TO PROVIDE 2.5 fps VELOCITY IN MAIN LINE.



**CITY OF BINGEN
PERMANENT END-LINE
BLOW OFF ASSEMBLY**

REVISION DATE:

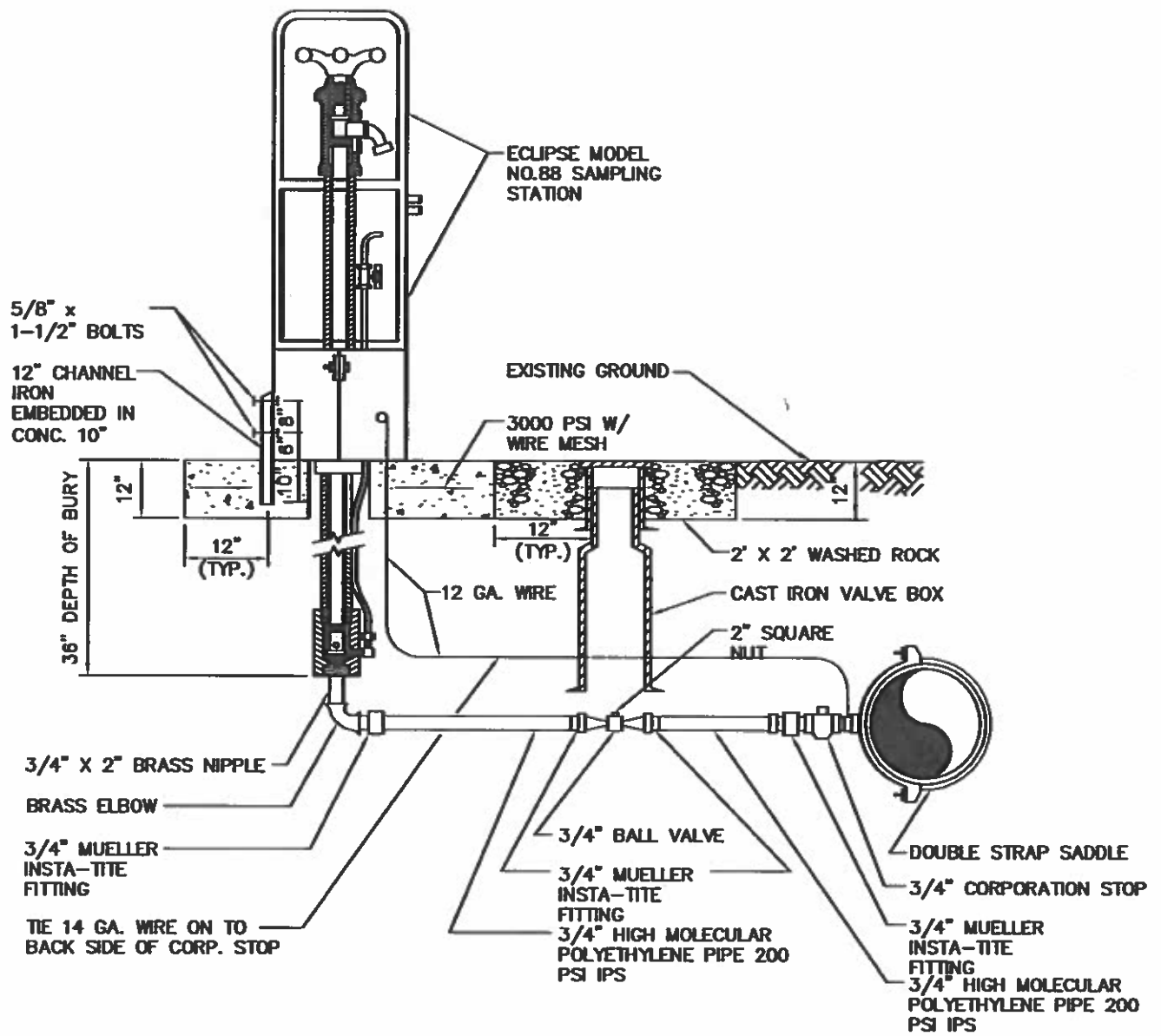
8/29/14

SCALE:

NONE

DWG. NO.

WT-29



CITY OF BINGEN
WATER SAMPLING
STATION

REVISION DATE:

8/29/14

SCALE:

NONE

DWG. NO.

WT-30