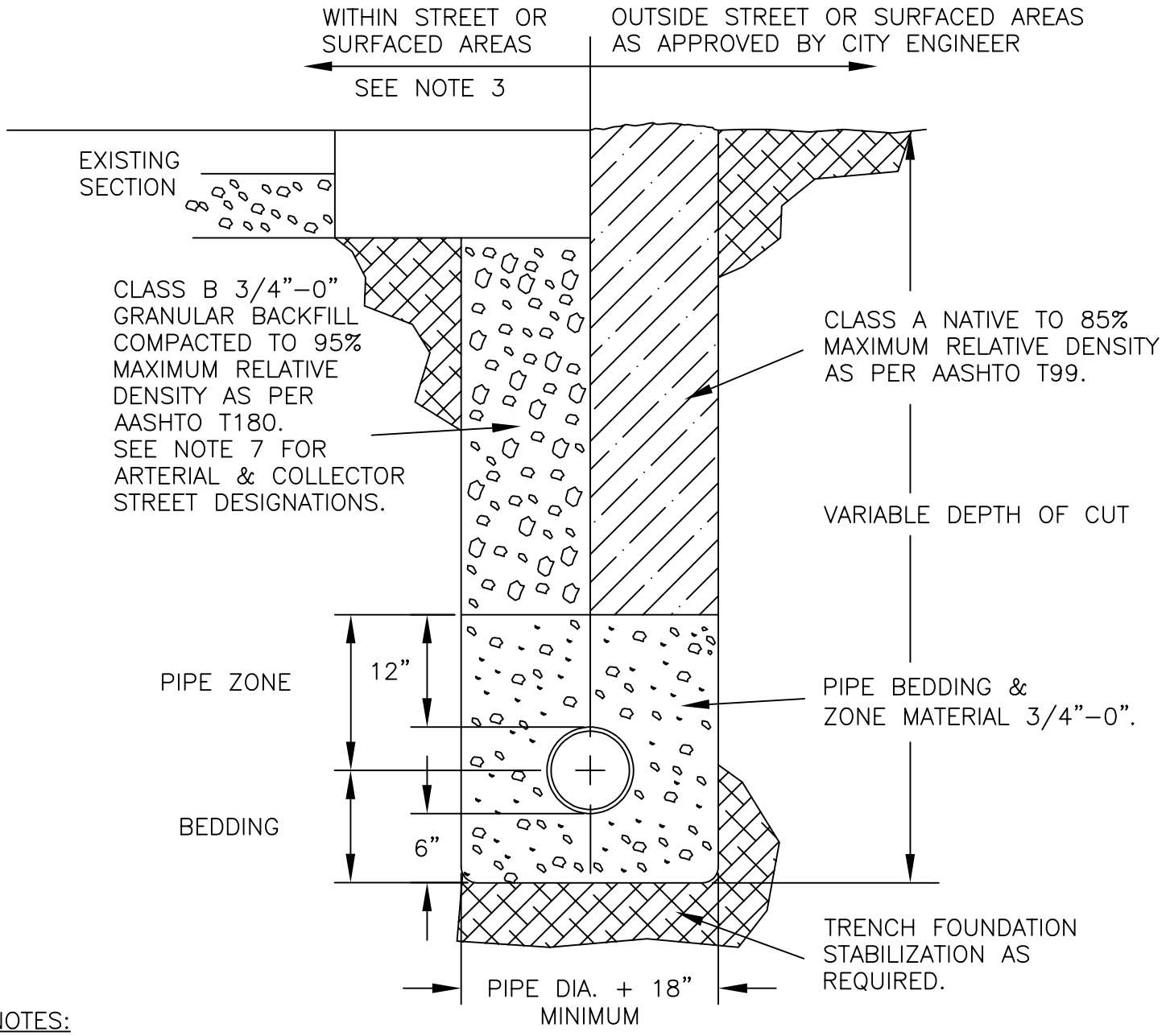
WATER DETAIL DRAWINGS

TABLE OF CONTENTS



NOTES:

1. ALL CUTS IN PAVEMENT SHALL BE SAW CUT.
2. ALL PAVEMENT PATCH JOINTS AND ALL CUT EDGES SHALL BE SAND SEALED PER ODOT SPECS AND OREGON CITY SPECIAL PROVISIONS SEC–00744.51.
3. REFER TO OREGON CITY PAVEMENT CUT STANDARDS AND STANDARD DETAIL DRAWINGS 532, 533 & 534.
4. THIS TRENCH BACKFILL REQUIREMENT APPLIES TO ALL UNDERGROUND CONDUITS.
5. CLASS "B" BACKFILL SHALL EXTEND 3 FEET BEYOND EDGE OF STREET OR SURFACED AREA.
6. BACKFILL SHALL BE PLACED AND COMPACTED IN A MAX. OF 24–INCH LIFTS. COMPACTION TESTING REQUIRED AT A FREQUENCY OF 1 TEST EVERY 100 FEET OF TRENCH MINIMUM.
7. EXISTING ARTERIAL & COLLECTOR STREET DESIGNATIONS REQUIRE CLSM (aka CDF) PER ODOT STANDARDS, SEC–00442 FOR ALL TRENCH TRANSVERSE OR PERPENDICULAR CROSSINGS OF VEHICLE TRAVEL LANES.

OREGON CITY

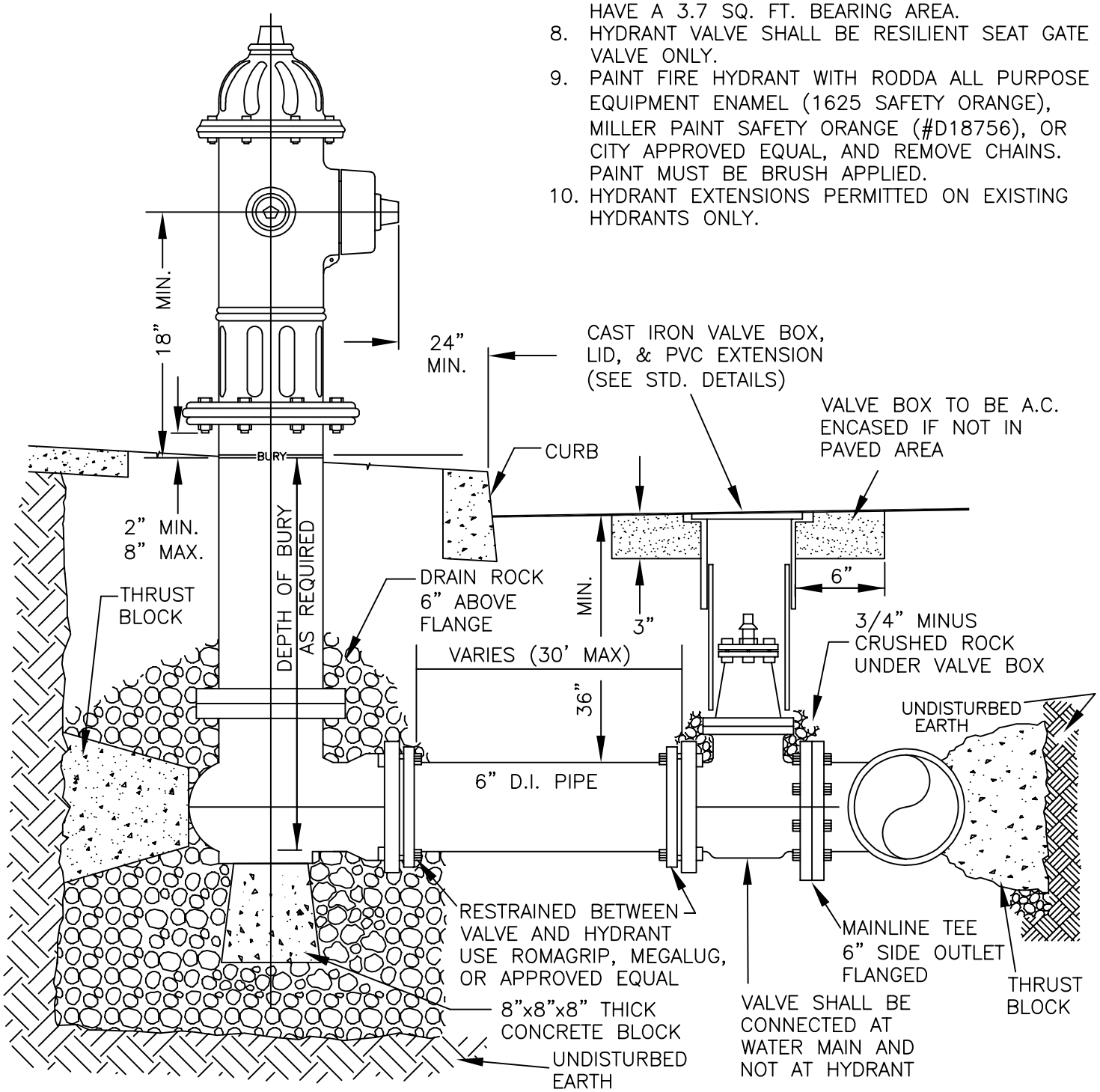
Public Works Standard Drawings

PIPE BEDDING AND TRENCH BACKFILL - STORM & SANITARY SEWER & WATER PIPE

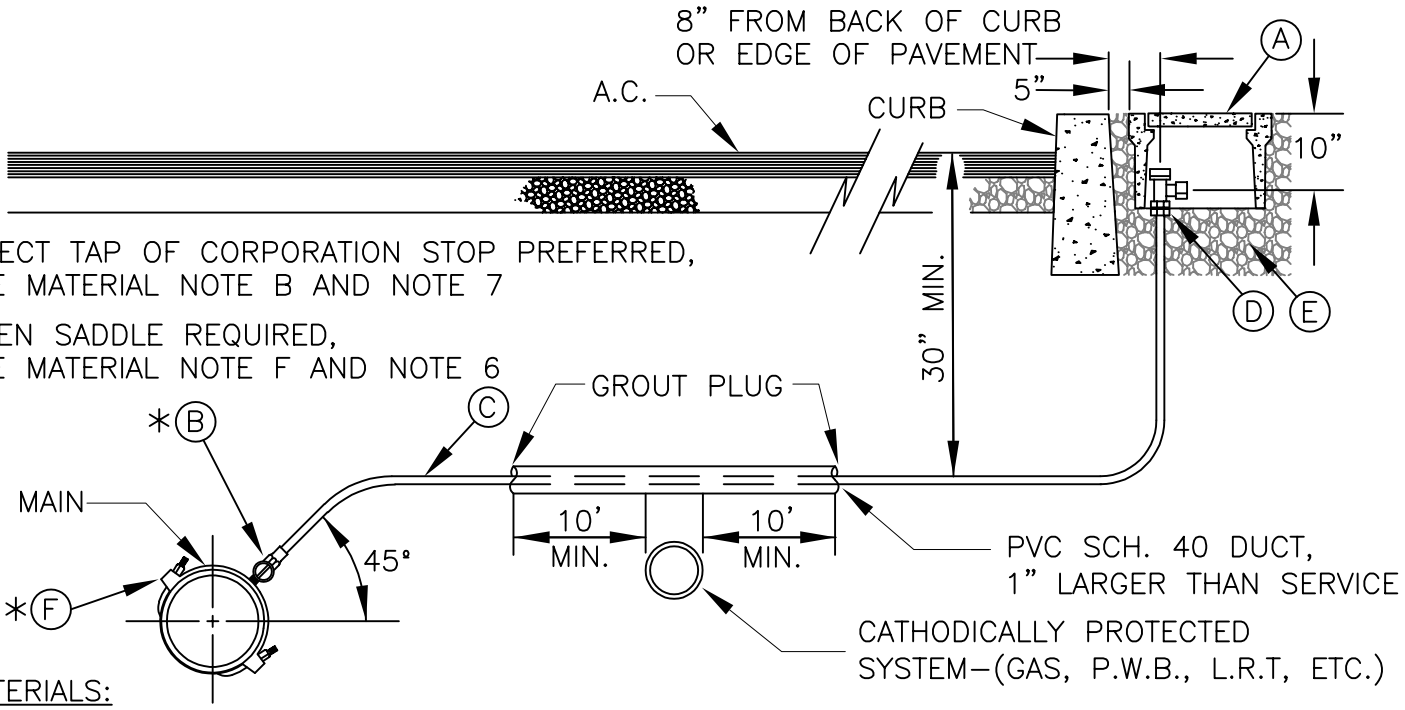
SCALE NTS	
DATE JAN '23	REV.
ENGR. DW	DRAWN KAE
DRAWING NO. 313	

NOTES:

1. SEE WATER CONSTRUCTION NOTES FOR ACCEPTABLE FIRE HYDRANT MAKES AND MODELS.
2. TWO 3/4" GALVANIZED TIE RODS OR A HYDRANT HOLDING SPOOL MAP BE USED IN PLACE OF THE MECHANICAL JOINT RETAINING GLANDS FOR INSTALLATIONS LESS THAN 18" LONG.
3. ALL FITTINGS IN CONTACT WITH CONCRETE SHALL BE WRAPPED IN 10 MIL. PLASTIC. HYDRANT DRAIN HOLES TO REMAIN OPEN TO DRAIN ROCK AND OPERATIONAL.
4. 1 1/2"–3/4" CLEAN DRAIN ROCK SHALL BE PLACED A MINIMUM OF 6" ABOVE DRAIN OUTLET. COVER TOP DRAIN ROCK WITH PLASTIC.
5. WHERE PLANTER STRIP EXISTS, HYDRANT SHALL BE PLACED SO FRONT PORT IS A MINIMUM OF 24" BEHIND FACE OF CURB.
6. WHERE INTEGRAL SIDEWALK AND CURB EXISTS, HYDRANT SHALL BE PLACED AT BACK OF SIDEWALK OR AS DIRECTED BY ENGINEER.
7. THRUST BLOCK AT FIRE HYDRANT TEE SHALL HAVE A 3.7 SQ. FT. BEARING AREA.
8. HYDRANT VALVE SHALL BE RESILIENT SEAT GATE VALVE ONLY.
9. PAINT FIRE HYDRANT WITH RODDA ALL PURPOSE EQUIPMENT ENAMEL (1625 SAFETY ORANGE), MILLER PAINT SAFETY ORANGE (#D18756), OR CITY APPROVED EQUAL, AND REMOVE CHAINS. PAINT MUST BE BRUSH APPLIED.
10. HYDRANT EXTENSIONS PERMITTED ON EXISTING HYDRANTS ONLY.



OREGON CITY	Public Works Standard Drawings	SCALE NTS
		DATE JAN '23 REV.
	STANDARD FIRE HYDRANT INSTALLATION	ENGR. DW DRAWN KAE
		DRAWING NO. 401



MATERIALS:

A. HUBBELL QUAZITE B03111812M BOX AND TRAFFIC RATED LID REQUIRED IN TRAFFIC AREAS. DFW486WBC4–12 BOX AND DFW486C–4C–NHK LID IN NON–TRAFFIC AREAS.

△ B. BALL CORPORATION STOP MUELLER B–25008N OR FORD FB1000–4–Q–NL. SET CORPORATION STOP WITH OPERATING NUT AT 3 OR 9 O'CLOCK. ALL CORPORATION STOPS SHOULD HAVE CC THREAD AND BE 1" IN SIZE.

C. 1" SOFT TEMPER, TYPE 'K' COPPER TUBING COMPLYING WITH ASTM B–88.

D. BALL ANGLE METER STOP MUELLER B–24258N OR FORD BA43444WQNL AND BE SIZED FOR A 1" METER.

E. 3/4"–0" GRANULAR MATERIAL

∗ F. TAPPING SADDLE – ROMAC STYLE 2025 OR APPROVED EQUAL. SADDLE BALL CORPORATION STOP FORD FB100–4–NL OR MUELLER B–25028N.

NOTES:

1. ALL PIPE, STRUCTURE ZONES AND APPURTENANCES SHALL BE BACKFILLED USING 3/4"–0" GRANULAR MATERIAL AND COMPACTED TO 95% MAX. DENS. AS DETERMINED BY AASHTO T–180.
2. WHEN AN ACTIVE CATHODIC PROTECTED SYSTEM IS ENCOUNTERED; SCH. 40 PVC SHALL BE INSTALLED AS SHOWN ABOVE WITH GROUT PLUG, OR DIRECT GROUNDING OF SERVICE LINE.
3. METER BOX SHALL BE CENTERED OVER THE COMPLETED METER ASSEMBLY.
4. NO METER SHALL BE INSTALLED ON PRIVATE PROPERTY WITHOUT EASEMENT.
5. PRESSURES GREATER THAN 70 PSI REQUIRE A PRESSURE REDUCING VALVE INSTALLED IN A SEPARATE BOX AFTER THE METER ON PRIVATE PROPERTY ADJACENT TO RIGHT OF WAY, SEE DRAWING 430.

∗ 6. WHEN SADDLE IS REQUIRED SEE MATERIAL NOTE F.

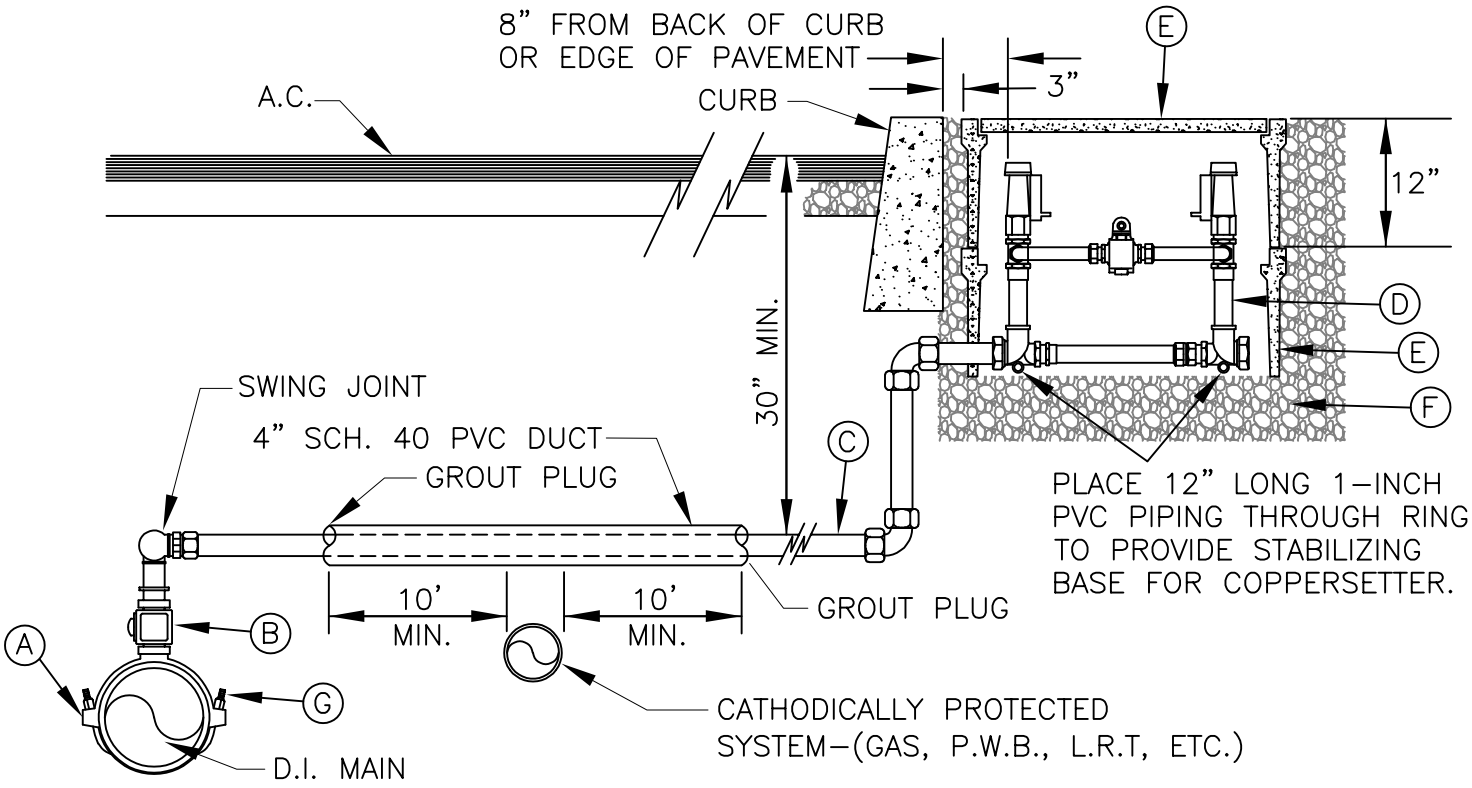
△ 7. ALL TAPS SHALL BE MADE USING MUELLER STYLE TAPPING MACHINE, OR APPROVED EQUAL.

OREGON CITY

Public Works Standard Drawings

STANDARD 1" WATER SERVICE

SCALE	NTS		
DATE	JAN '24	REV.	1
ENGR.	DW	DRAWN	KAE
DRAWING NO.	402		



MATERIALS:

A. SERVICE SADDLE – ROMAC STYLE 2025 OR APPROVED EQUAL.
B. MUELLER B25028N OR FORD FB500-7-NL CORP. STOP.
C. 2" ASTM B-88, TYPE "L" RIGID COPPER.
D. MUELLER COPPER METER YOKE, #B-2423-2-99000, OR FORD COPPER METER YOKE, #VBB77-12HB-11-77NL, 12" RISER SIZED TO EQUAL SERVICE LINE. IF THE HIGH BYPASS MODELS ARE NOT AVAILABLE USE FORD #VBB77-12B-11-77NL AS AN ALTERNATE.
E. HUBBELL QUAZITE B03173012M AND TRAFFIC RATED LID REQUIRED IN TRAFFIC AREAS. DFW 1730C4-12 BOX AND DFW1730C-4CA LID IN NON-TRAFFIC AREAS.
F. 3/4"-0" GRANULAR MATERIAL
G. IN NEW CONSTRUCTION, FACTORY TEE WITH 2" RESILIENT SEAT GATE VALVE REQUIRED.

NOTES:

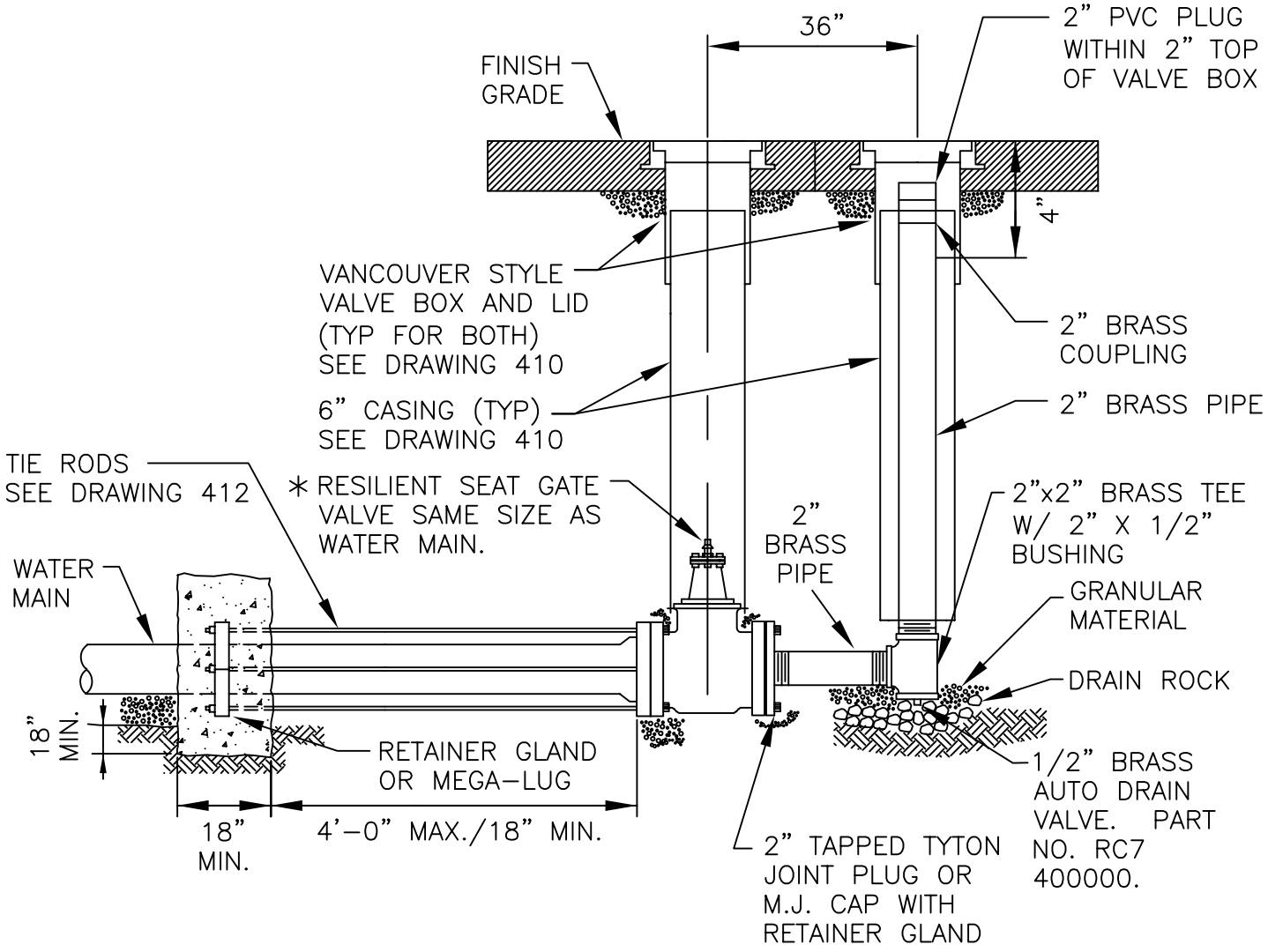
1. SUBSTITUTES FOR ANY MATERIALS SHOWN SHALL BE APPROVED BY THE CITY ENGINEER.
2. ALL PIPE, STRUCTURE ZONES AND APPURTENANCES SHALL BE BACKFILLED USING 3/4"-0" GRANULAR MATERIAL AND COMPACTED TO 95% MAX. DENSITY PER AASHTO T-180.
3. WHEN AN ACTIVE CATHODIC PROTECTED SYSTEM IS ENCOUNTERED, SCH. 40 PVC SHALL BE INSTALLED AS SHOWN WITH GROUT PLUG, OR DIRECT GROUNDING OF SERVICE LINE.
4. METER BOX SHALL BE CENTERED OVER THE COMPLETED METER ASSEMBLY.
5. TOP OF METER BOX TO TOP OF METER SHALL BE 6-8 INCHES.
6. PRESSURES GREATER THAN 70 PSI REQUIRE A PRESSURE REDUCING VALVE INSTALLED IN A SEPARATE BOX AFTER THE METER ON PRIVATE PROPERTY ADJACENT TO RIGHT OF WAY, SEE DRAWING 430.
7. BACKFLOW PROTECTION IS REQUIRED ON ALL SERVICES WITH METERS 1-1/2" OR GREATER.
8. FOR IRRIGATION SERVICES USE MUELLER #B2426-00N.

OREGON CITY

Public Works Standard Drawings

STANDARD 2" WATER SERVICE

SCALE NTS	
DATE MAY '24	REV. 3
ENGR. DW	DRAWN KAE
DRAWING NO. 404	



NOTES:

1. BLOWOFF NOT TO BE LOCATED IN GUTTER OR DITCH.
2. 2" FITTINGS AND PIPE SHALL BE BRASS.
3. RESILIENT SEAT GATE VALVE SAME SIZE AS WATER MAIN.
4. STRADDLE BLOCK REQUIRED AT ALL BLOWOFF LOCATIONS. SEE DRAWING 408 & 412.
5. ALL D.I. FITTINGS SHALL BE RESTRAINED WITH MEGA-LUG FOLLOWER, OR APPROVED EQUAL.

* WATER MAINS 12" DIAMETER AND LARGER REQUIRE A BUTTERFLY VALVE.

OREGON CITY	Public Works Standard Drawings	SCALE NTS
	STANDARD BLOWOFF DETAIL	DATE JAN '23 REV.
		ENGR. DW DRAWN KAE
		DRAWING NO. 405

(HORIZONTAL) BEARING AREA OF THRUST BLOCKS IN SQUARE FEET								
FITTING SIZE	TEE, WYE, DEAD END AND HYDRANT	STRADDLE BLOCK	90° BEND PLUGGED CROSS	TEE PLUGGED ON RUN		45° BEND	22-1/2° BEND	11-1/4° BEND
				A-1	A-2			
4	1.0	1.6	1.4	1.9	1.4	1.0	---	---
6	2.1	3.7	3.0	4.3	3.0	1.6	1.0	---
8	3.8	6.5	5.3	7.6	5.4	2.9	1.5	1.0
10	5.9	10.2	8.4	11.8	8.4	4.6	2.4	1.2
12	8.5	14.7	12.0	17.0	12.0	6.6	3.4	1.7
14	11.5	---	16.3	23.0	16.3	8.9	4.6	2.3
16	15.0	26.1	21.3	30.0	21.3	11.6	6.0	3.0
18	19.0	---	27.0	38.0	27.0	14.6	7.6	3.8
20	23.5	40.8	33.3	47.0	33.3	18.1	9.4	4.7
24	34.0	58.8	48.0	68.0	48.0	26.2	13.6	6.8

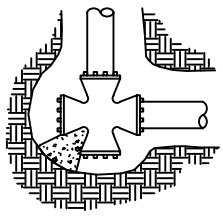
NOTES:

1. ABOVE BEARING AREAS BASED ON TEST PRESSURE OF 150 PSI AND AN ALLOWABLE SOIL BEARING STRESS OF 2000 POUNDS PER SQUARE FOOT. TO COMPUTE BEARING AREAS FOR DIFFERENT TEST PRESSURES AND SOIL BEARING STRESSES, USE THE FOLLOWING EQUATION:

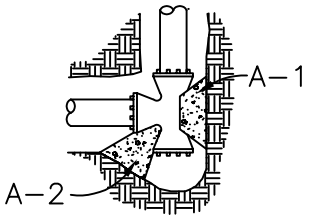
   BEARING AREA = (TEST PRESSURE / 150) x (2000 / SOIL BEARING STRESS) x (TABLE VALUE)

2. ABOVE VOLUMES BASED ON TEST PRESSURE OF 150 PSI AND THE WEIGHT OF CONCRETE = 4050 POUNDS PER CUBIC YARD. TO COMPUTE FOR DIFFERENT TEST PRESSURES, USE THE FOLLOWING EQUATION:

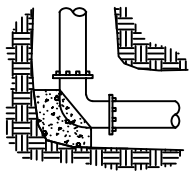
   VOLUME = (TEST PRESSURE / 150) x (TABLE VALUE)



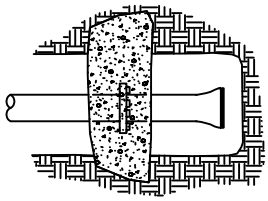
CROSS



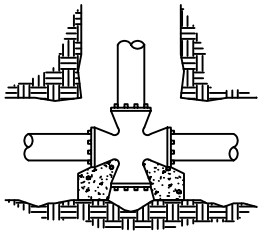
TEE



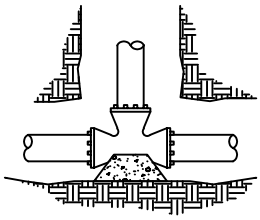
BEND



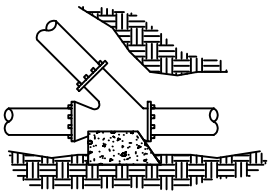
STRADDLE BLOCK
SEE DRAWING 408



CROSS



TEE



WYE

NOTES:

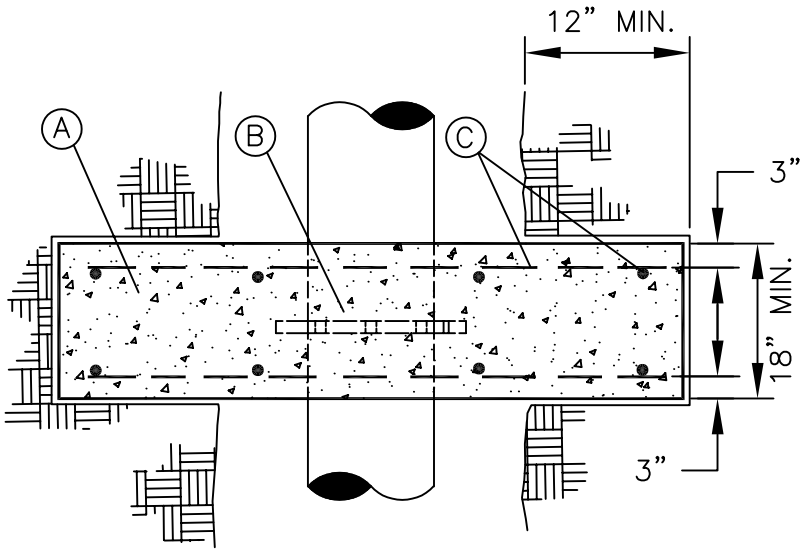
1. CONCRETE BLOCKING TO BE POURED AGAINST UNDISTURBED EARTH.
2. ALL CONCRETE TO BE 4000 PSI COMPRESSIVE STRENGTH MIN.
3. INSTALL 30 MIL PLASTIC BETWEEN PIPE AND/OR FITTINGS BEFORE POURING CONCRETE BLOCKING.
4. CONCRETE SHALL BE KEPT CLEAR OF ALL JOINTS AND ACCESSORIES.
5. REINFORCED #4 BAR, 40000 PSI TENSILE STRENGTH.

OREGON CITY

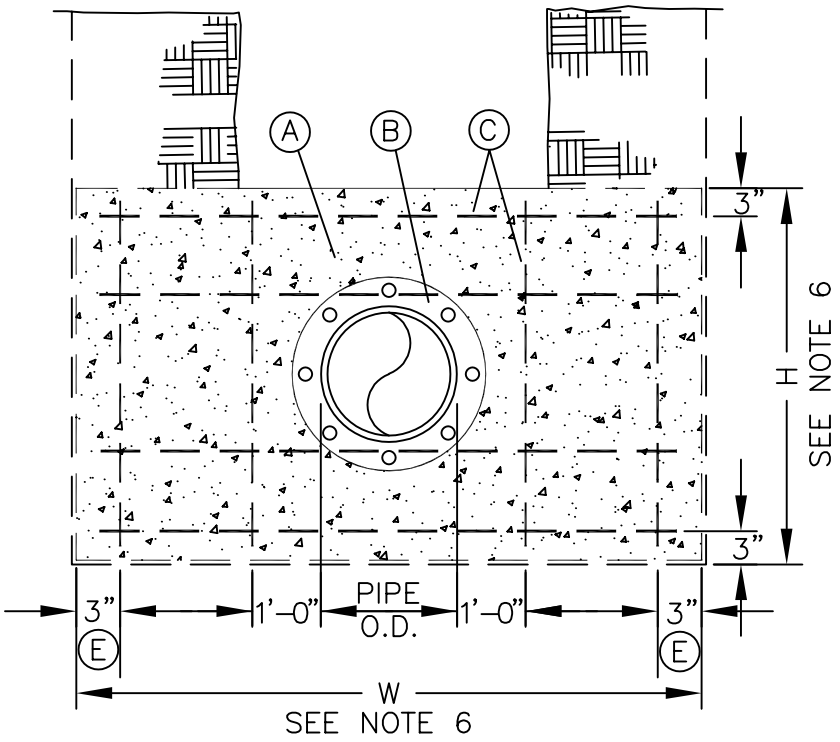
Public Works Standard Drawings

THRUST BLOCKING

SCALE	NTS		
DATE	JAN '23	REV.	
ENGR.	DW	DRAWN	KAE
DRAWING NO.	407		



TOP VIEW



FRONT VIEW

MATERIALS:

A. CONCRETE STRADDLE BLOCK.

B. MEG-A-LUG, ROMAGRIP, EBAA, OR CITY APPROVED EQUAL.

C. #4 REBAR EACH WAY, 12" O/C, NOMINAL.

D. SEE DRAWING 412 FOR ROD REQUIREMENTS.

E. ADDITIONAL LENGTH OF HORIZONTAL BARS AND ADDITIONAL VERTICAL BARS MAY BE NEEDED TO MEET 3" REQUIREMENT.

NOTES:

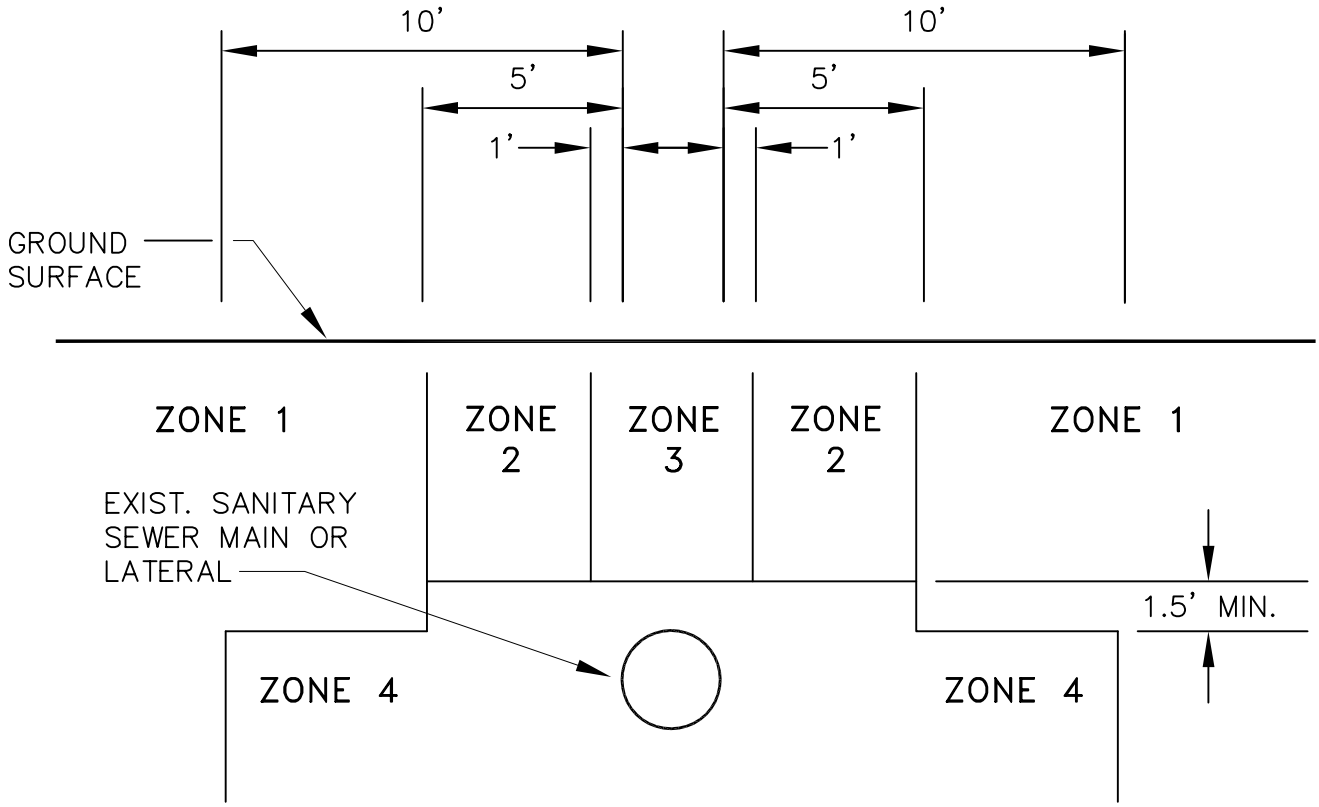
1. STRADDLE BLOCKS SHALL BE DESIGNED INDIVIDUALLY BY THE ENGINEER AND SHALL BE SUBMITTED FOR APPROVAL, BASED ON THE FOLLOWING:
   a.) 200 PSI WATER PRESSURE
   b.) SOIL BRG, CAPACITY, STEEL SIZE AND SPACING BY THE ENGINEER.
   c.) STATIC PRESSURE EXCEEDING 100 PSI
2. BEARING AREA OF BLOCK SHALL BE AGAINST UNDISTURBED SOIL.
3. STRADDLE BLOCK SHALL HAVE A MINIMUM OF 18" COVER.
4. CONCRETE SHALL HAVE A MINIMUM 28-DAY COMPRESSIVE STRENGTH OF 4000 PSI.
5. ALL FITTINGS WITHIN THE CONCRETE SHALL BE WRAPPED IN 30 MIL. PLASTIC.
6. STRADDLE BLOCK HEIGHT (H) & WIDTH (W) VARIES BY PIPE SIZE.

OREGON CITY

Public Works Standard Drawings

STANDARD STRADDLE BLOCK

SCALE NTS	
DATE JUL '23	REV. 1
ENGR. DW	DRAWN KAE
DRAWING NO. 408	



ZONE 1: ONLY CROSSING RESTRICTIONS APPLY
ZONE 2: CASE-BY-CASE DETERMINATION
ZONE 3: PARALLEL WATERLINE PROHIBITED
ZONE 4: PARALLEL WATERLINE PROHIBITED

NOTES:

1. WHERE THE PROPOSED WATERLINE WILL BE INSTALLED PARALLEL TO AN EXISTING GRAVITY SANITARY SEWER MAIN OR LATERAL LINE, THE SEPARATION BETWEEN THE TWO SHALL BE AS INDICATED ABOVE.

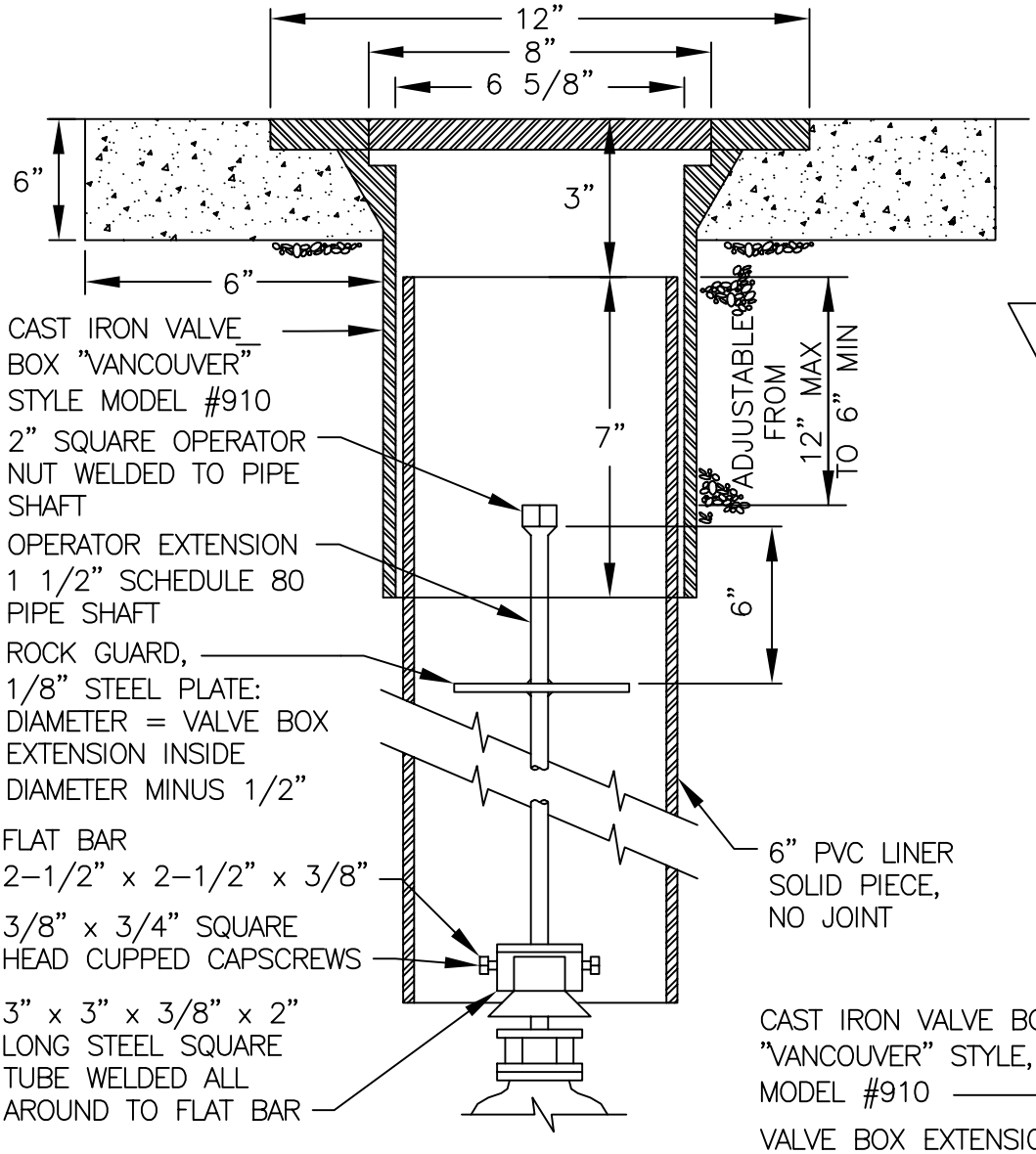
2. CROSSINGS:
   a. WHEREVER POSSIBLE, THE BOTTOM OF THE WATERLINE SHALL BE 1.5 FEET ABOVE THE TOP OF THE SEWER LINE, AND ONE FULL LENGTH OF WATERLINE SHALL BE CENTERED AT THE CROSSING.
   b. WHERE IT IS NOT POSSIBLE FOR THE WATER LINE TO BE 1.5 FEET ABOVE THE SEWER LINE, OR THE WATERLINE PASSES UNDER THE SEWER LINE, THE EXISTING SEWER LINE SHALL BE EXPOSED FOR A DISTANCE OF 10 FEET ON EACH SIDE OF THE CROSSING, AND SHALL BE REPLACED WITH C-900 PVC, DR-18, DR-25 OR CLASS 50 DUCTILE IRON PIPE AS APPROVED BY THE ENGINEER.

OREGON CITY

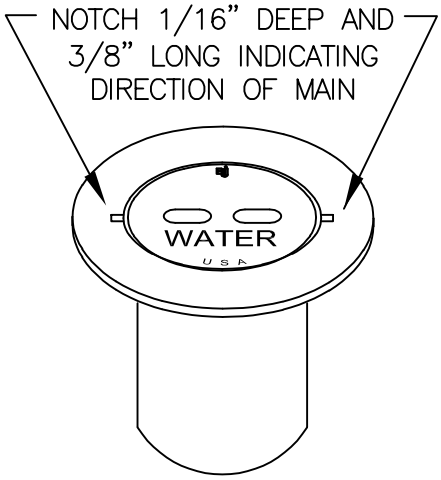
Public Works Standard Drawings

STANDARD SANITARY SEWER CROSSING

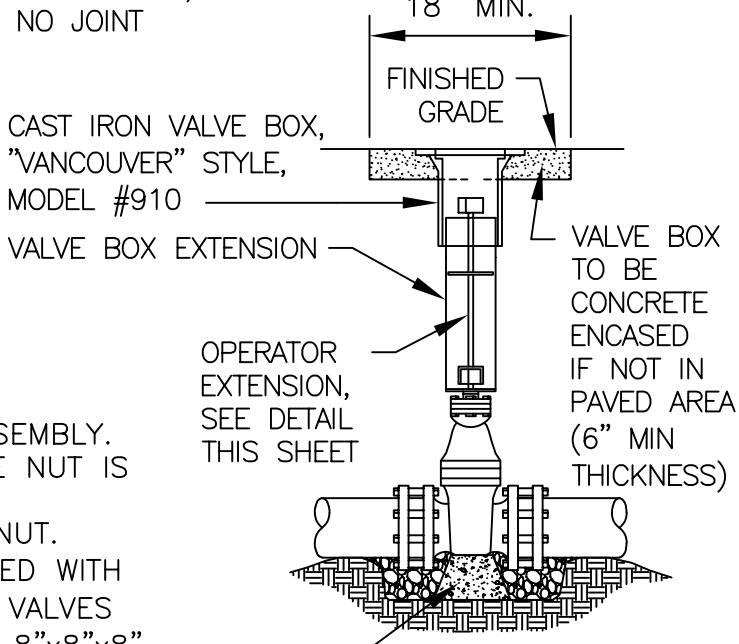
SCALE	NTS
DATE JAN '23	REV.
ENGR. DW	DRAWN KAE
DRAWING NO.	409



SECTION
VALVE BOX EXTENSION



"VANCOUVER"
VALVE BOX



VALVE BOX
ASSEMBLY DETAIL

NOTES:

1. VALVE BOX NOT TO REST ON OPERATING ASSEMBLY.
2. OPERATOR EXTENSION REQUIRED WHEN VALVE NUT IS DEEPER THAN 3 FEET FROM FINISH GRADE.
3. CENTER VALVE BOX ON AXIS OF OPERATOR NUT.
4. VALVES 12" AND SMALLER SHALL BE PROVIDED WITH CLASS "B" BASE ON UNDISTURBED GROUND. VALVES GREATER THAN 12" SHALL BE INSTALLED ON 8"x8"x8" PRECAST CONCRETE PIER BLOCK.
5. VALVE BOX LINER SHALL BE 6" PVC (ASTM D 3034).
6. VALVE BOX SHALL BE ADJUSTED TO BE FLUSH WITH FINISHED SUBGRADE.
7. OPERATOR NUT DEPTH 3' MAX, 2' MIN.

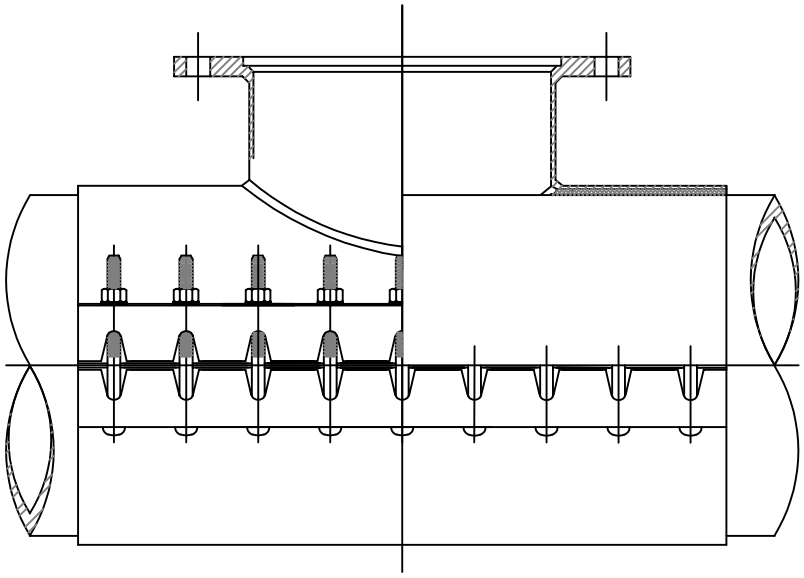
OREGON CITY

Public Works Standard Drawings

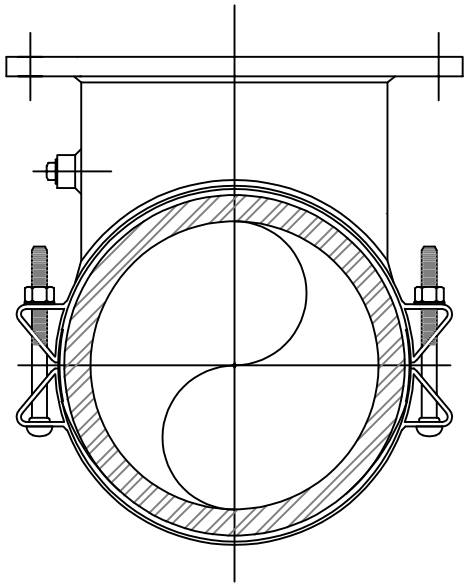
STANDARD VALVE BOX DETAIL

SCALE	NTS		
DATE	JUL '23	REV.	1
ENGR.	DW	DRAWN	KAE
DRAWING NO.	410		

JCM 432 TAPPING SLEEVE
OR CITY APPROVED EQUAL



SECTION



END VIEW

NOTES:

1. WATER MAIN SHALL BE CLEANED BEFORE ATTACHING SLEEVE.
2. SLEEVE AND VALVE SHALL BE PRESSURE TESTED BEFORE MAKING TAP.
3. PRESSURE TEST AND TAP SHALL BE MADE IN THE PRESENCE OF OREGON CITY WATER DIVISION PERSONNEL.
4. PROPER TAPPING MACHINE SHALL BE USED TO MAKE TAP.
5. 3/4"–0" GRANULAR MATERIAL SHALL BE PLACED AND COMPACTED TO 95% OF MAX. DENSITY AS DETERMINED BY AASHTO T–180.
6. THRUST BLOCKING REQUIREMENTS SHALL BE PER DRAWING 407.
7. TAP SHALL BE MADE NO CLOSER THAN 18 INCHES FROM THE NEAREST MAINLINE JOINT OR SERVICE CONNECTION.
8. WHEN STATIC LINE PRESSURE OF EXISTING MAIN EXCEEDS 100 P.S.I. A HIGH PRESSURE SLEEVE, RATED AT 250 P.S.I., IS REQUIRED.
9. SIZE ON SIZE WET TAP OF CAST IRON WATER MAINS IS PROHIBITED.

OREGON CITY

Public Works Standard Drawings

STANDARD WET TAP DETAIL

SCALE NTS	
DATE JAN '23	REV.
ENGR. DW	DRAWN KAE
DRAWING NO. 411	

DESIGN FOR 150 PSI WITH 1.5 SAFETY FACTOR = 225 PSI

5/8" RODS – THRU BOLT HOLES, DUCTILE IRON LUGS, STARR TIE BOLTS, STEEL PLATES.
3/4" RODS – THRU BOLT HOLES, STARR TIE BOLTS, STEEL PLATES.
1" RODS – CONNECT TO STEEL PLATE, STRAPS OR "EARS".

NOTE: TIE RODS SHALL BE SINGLE SPAN BETWEEN THE STRADDLE BLOCK AND THE OBJECT TO BE TIED. NO JOINING OF TIE RODS.

PIPE SIZE	AREA, SQ. IN.	THRUST AT:		NO. OF FULL DIA. BARS WELDED TO PLATES			NO. OF THREADED BARS		
		150 PSI	225 PSI	5/8 IN.	3/4 IN.	1 IN.	5/8 IN.	3/4 IN.	1 IN.
2	3.1416	300	450	2	WARNING: DUC–LUGS WILLL NOT HOLD.		2	WARNING: NO DUC–LUGS	
4	12.566	1,885	2,827	2			2		
6	28.274	4,241	6,362	2			3	2	2
8	50.265	7,540	11,310	3	2	2	4	3	2
10	78.540	11,781	17,672	5	3	2	6	4	2
12	113.10	16,965	25,448	6	5	3	8	6	3
14	153.94	23,091	34,636	9	6	4	11	8	4
16	201.06	30,159	45,238	11	8	5	15	10	6
18	254.47	38,170	57,256	14	10	6	19	13	7
20	314.16	47,124	70,686	17	12	7	23	16	9
24	452.39	67,858	101,788	24	17	10	33	22	12
30	706.86	106,029	159,044	38	26	15	51	34	19
36	1017.9	152,685	229,028	54	38	21	73	49	27

A307 BOLT STOCK
@14,000 PSI

FULL DIAMETER BARS

SIZE	AREA	STRENGTH
5/8	.3068	4,295 LBS.
3/4	.4414	6,185 LBS.
1	.7854	10,996 LBS.

THREADED BARS

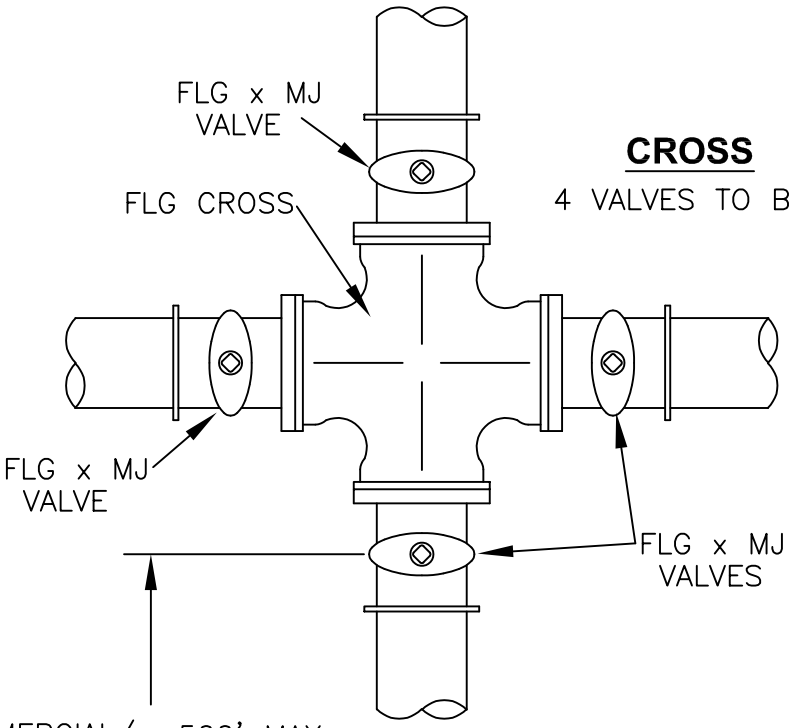
SIZE	TENSILE AREA	STRENGTH
5/8	.2256	3,158 LBS.
3/4	.3340	4,676 LBS.
1	.6051	8,471 LBS.

OREGON CITY

Public Works Standard Drawings

TIE ROD REQUIREMENTS

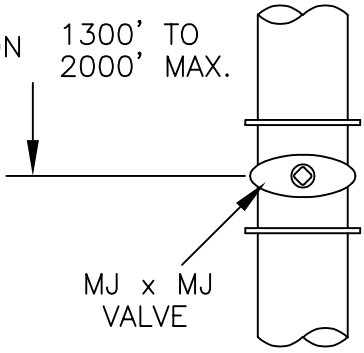
SCALE NTS	
DATE JAN '23	REV.
ENGR. DW	DRAWN KAE
DRAWING NO. 412	



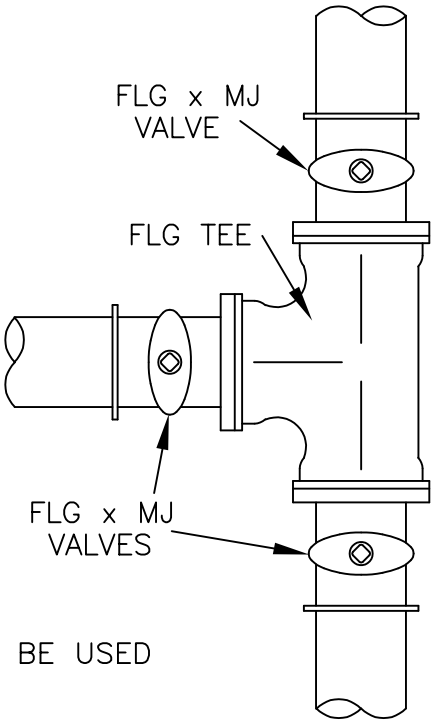
CROSS

4 VALVES TO BE USED

COMMERCIAL/ INDUSTRIAL	500' MAX.
RESIDENTIAL	800' MAX.
TRANSMISSION	1300' TO 2000' MAX.



IN-LINE



TEE

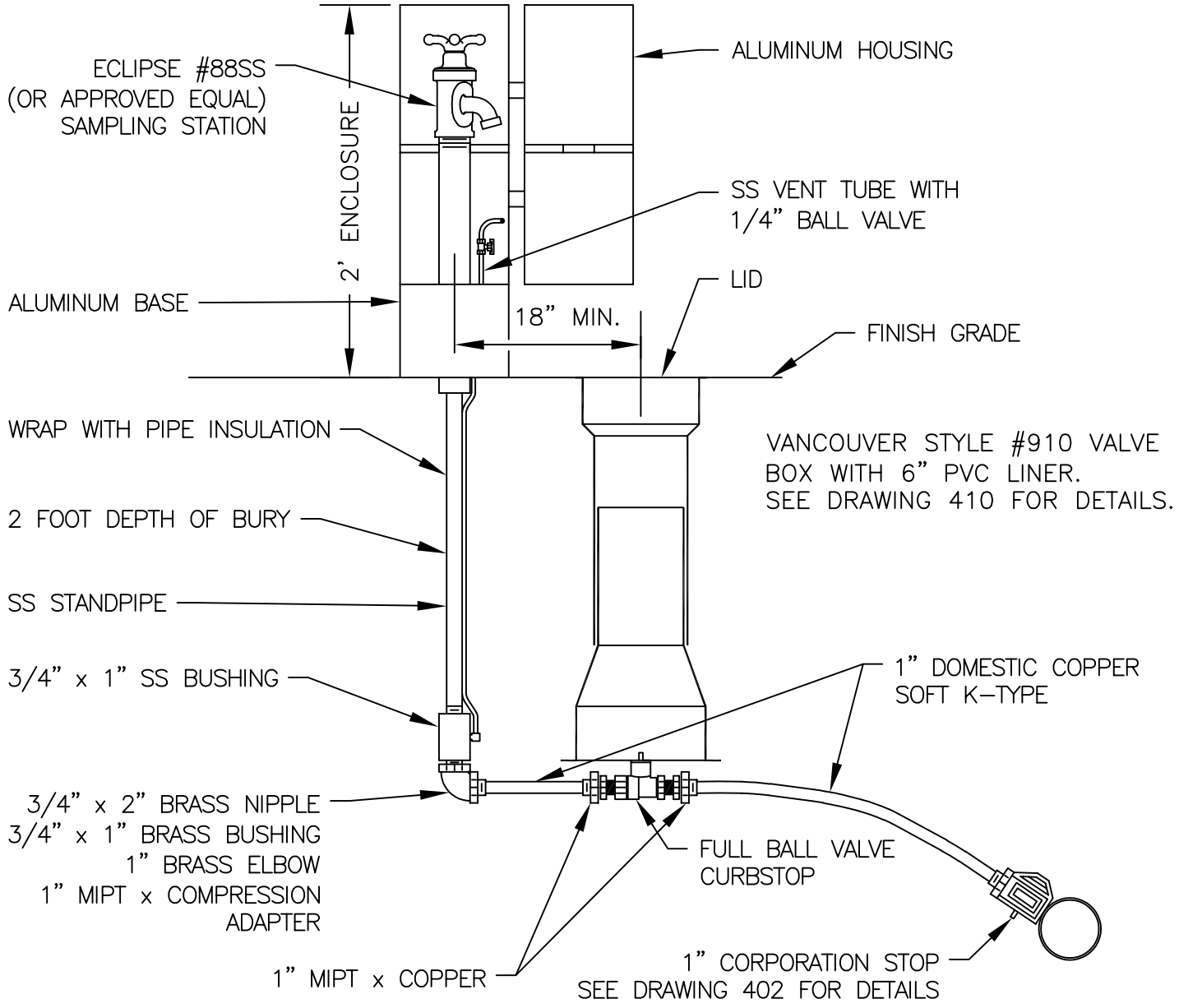
3 VALVES TO BE USED

OREGON CITY

Public Works Standard Drawings

STANDARD VALVE LOCATION & JOINT REQUIREMENTS

SCALE	NTS		
DATE	JAN '23	REV.	
ENGR.	DW	DRAWN	KAE
DRAWING NO.	413		



NOTES:

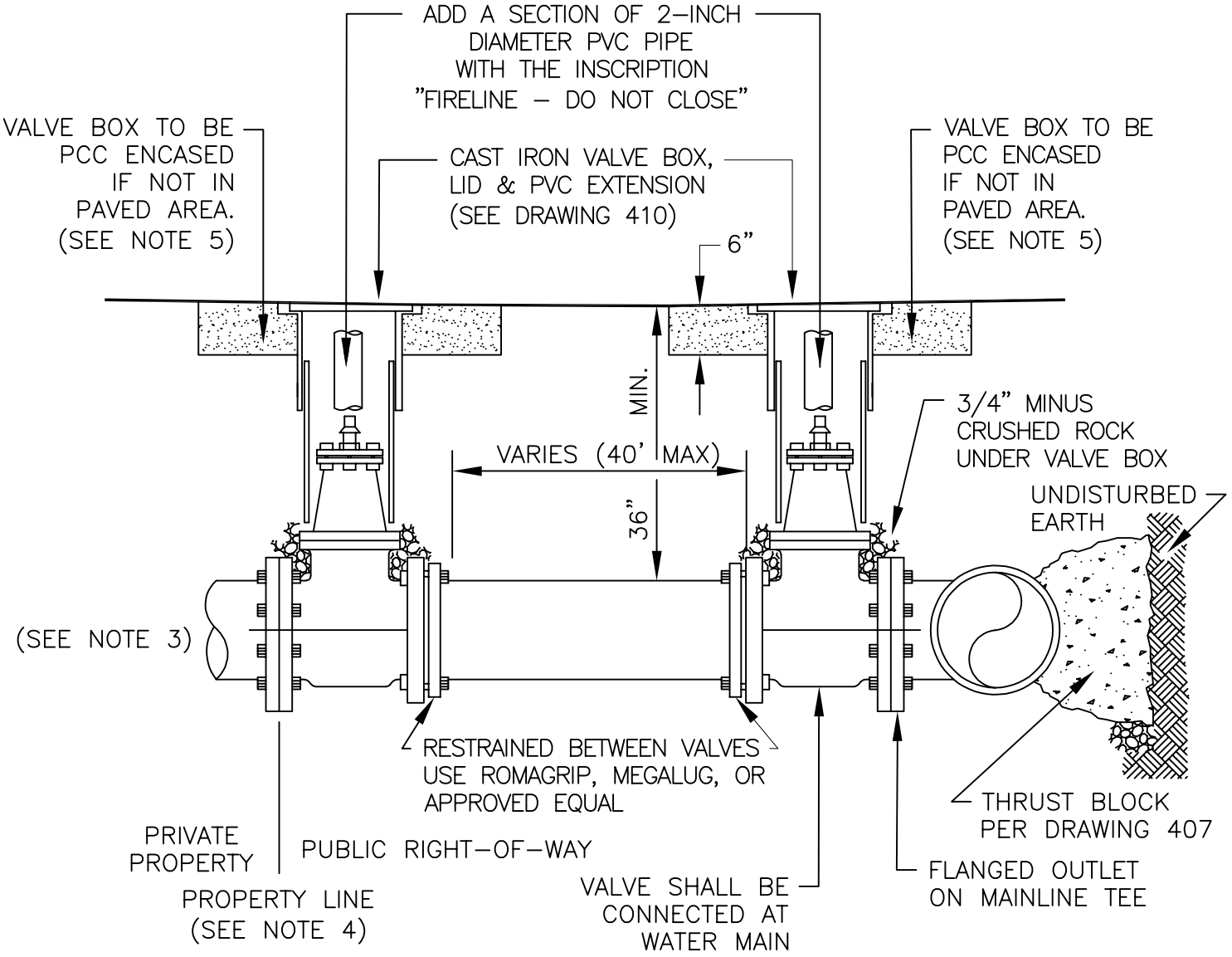
1. SAMPLING STATIONS SHALL BE 2 FOOT BURY, WITH A 3/4" FIP INLET, AND A 7/16" UNTHREADED BLOW OFF AND SAMPLING BIBB.
2. BACKFILL IN THE DITCH AROUND THE SAMPLE STATION SHALL BE 3/4"–0" COMPACTED GRANULAR MATERIAL.
3. ALL STATIONS SHALL BE ENCLOSED IN A LOCKABLE, NONREMOVABLE, ALUMINUM–CAST HOUSING. HOUSING COLOR SHALL BE FACTORY GREEN.
4. WHEN OPENED, THE STATION SHALL REQUIRE NO KEY FOR OPERATION.
5. ALL WORKING PARTS SHALL BE REMOVABLE FROM ABOVE GROUND WITH NO DIGGING.
6. EXTERIOR PIPING SHALL BE SS PIPE. WRAP PIPE INSULATION FROM BASE OF SAMPLE STATION TO 1 FOOT DEPTH AND ON ALL EXPOSED PIPE.
7. A SS VENT TUBE WILL ENABLE EACH STATION TO BE PUMPED FREE OF STANDING WATER TO PREVENT FREEZING AND TO MINIMIZE BACTERIA GROWTH.
8. ECLIPSE NO. 88SS SAMPLING STATION SHALL BE MANUFACTURED BY KUPFERLE FOUNDRY, ST. LOUIS, MO 63102. ALL OTHER BRANDS OF SAMPLE STATIONS MUST BE APPROVED BY THE CITY ENGINEER BEFORE INSTALLATION.

OREGON CITY

Public Works Standard Drawings

SAMPLING STATION

SCALE	NTS		
DATE	JAN '23	REV.	
ENGR.	DW	DRAWN	KAE
DRAWING NO.	415		



NOTES:

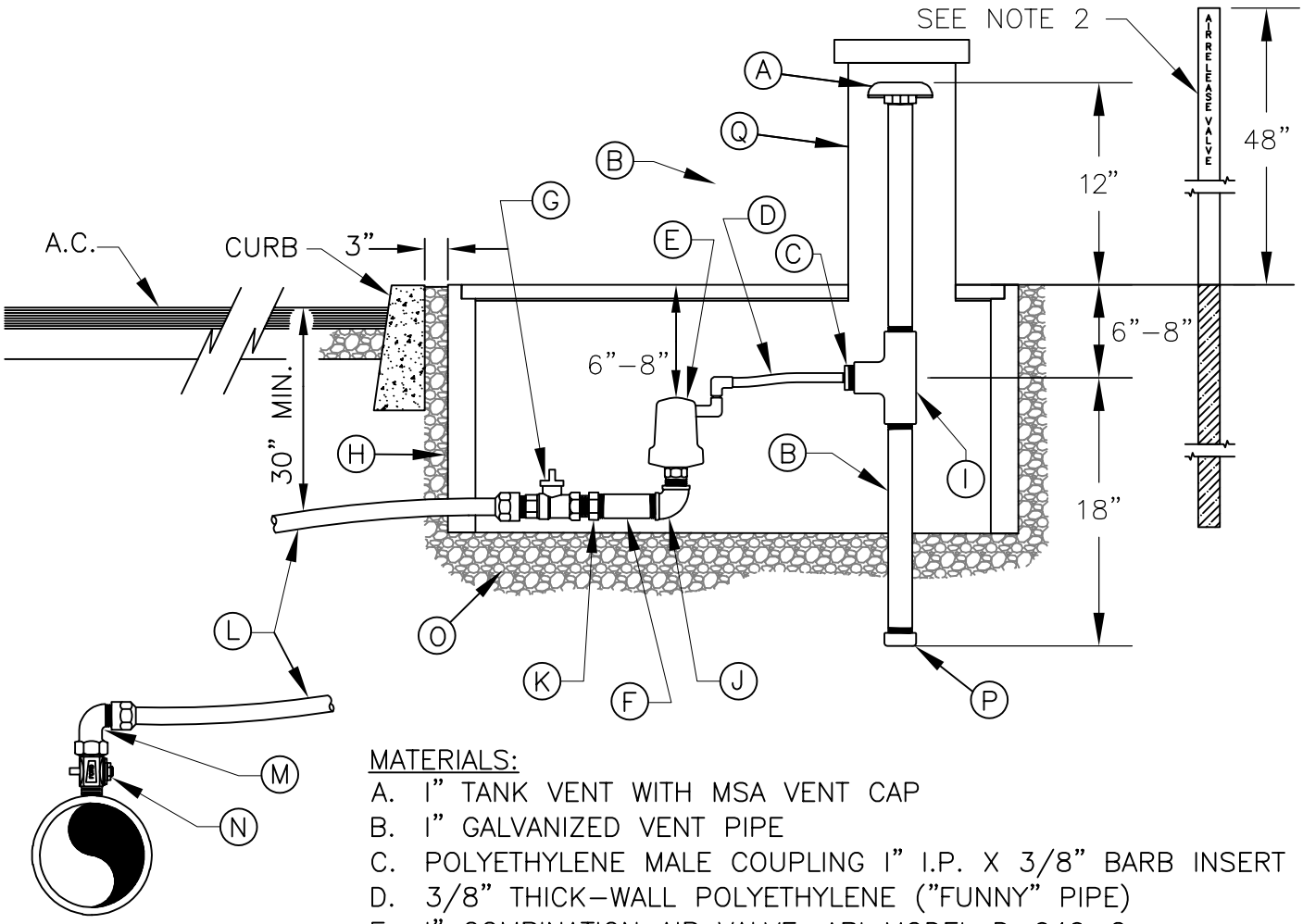
1. ALL VALVES 8" AND UNDER SHALL BE RESILIENT SEAT GATE VALVE ONLY.
2. USE CLASS 52 DUCTILE IRON FOR PIPES 4–INCH AND GREATER IN DIAMETER. USE COPPER PIPE FOR DIAMETERS 2–INCH AND SMALLER.
3. BACKFLOW PREVENTER SHALL BE LOCATED INSIDE A BUILDING OR UNDERGROUND VAULT, AS DETERMINED BY OREGON CITY WATER QUALITY STAFF.
4. IF VALVE CANNOT BE BUILT IN PUBLIC RIGHT–OF–WAY, AND EASEMENT SHALL BE PROVIDED BY THE PROPERTY OWNER.
5. CONCRETE PAD SHALL BE 24"x24" WITH A DEPTH OF 6" OVER 4" 3/4"–0" BASE ROCK. CONCRETE SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 4000 PSI AT 28 DAYS. TOP OF PAD SHALL BE FLUSH WITH THE EXISTING GROUND LEVEL.

OREGON CITY

Public Works Standard Drawings

STANDARD FIRELINE INSTALLATION

SCALE	NTS
DATE JAN '23	REV.
ENGR. DW	DRAWN KAE
DRAWING NO.	416



MATERIALS:

A. 1" TANK VENT WITH MSA VENT CAP
B. 1" GALVANIZED VENT PIPE
C. POLYETHYLENE MALE COUPLING 1" I.P. X 3/8" BARB INSERT
D. 3/8" THICK–WALL POLYETHYLENE ("FUNNY" PIPE)
E. 1" COMBINATION AIR VALVE, ARI MODEL D–040–C
F. 1" X 6" BRASS NIPPLE
G. 1" INLINE BRASS FULL BALL VALVE
H. HUBBELL QUAZITE B03173012M OR DFW 1730C4–12 BOX. PROVIDE ARV COVER PW/3618 (F36) DROP LID.
I. 1" GALVANIZED TEE
J. 1" BRASS 90° ELL
K. 1" BRASS COUPLING
L. 1" DOMESTIC COPPER SOFT K–TYPE SLOPED AT 1% MINIMUM UP FROM MAIN
M. 1" OFF CORP. BRASS 90° ELL
N. 1" BALL CORP. STOP MUELLER B–25008 OR FORD FB1000Q1.
O. 3/4"–0" GRANULAR MATERIAL
P. 1" GALVANIZED CAP
Q. AIR VENT TUBE PW/AV18–MS

NOTES:

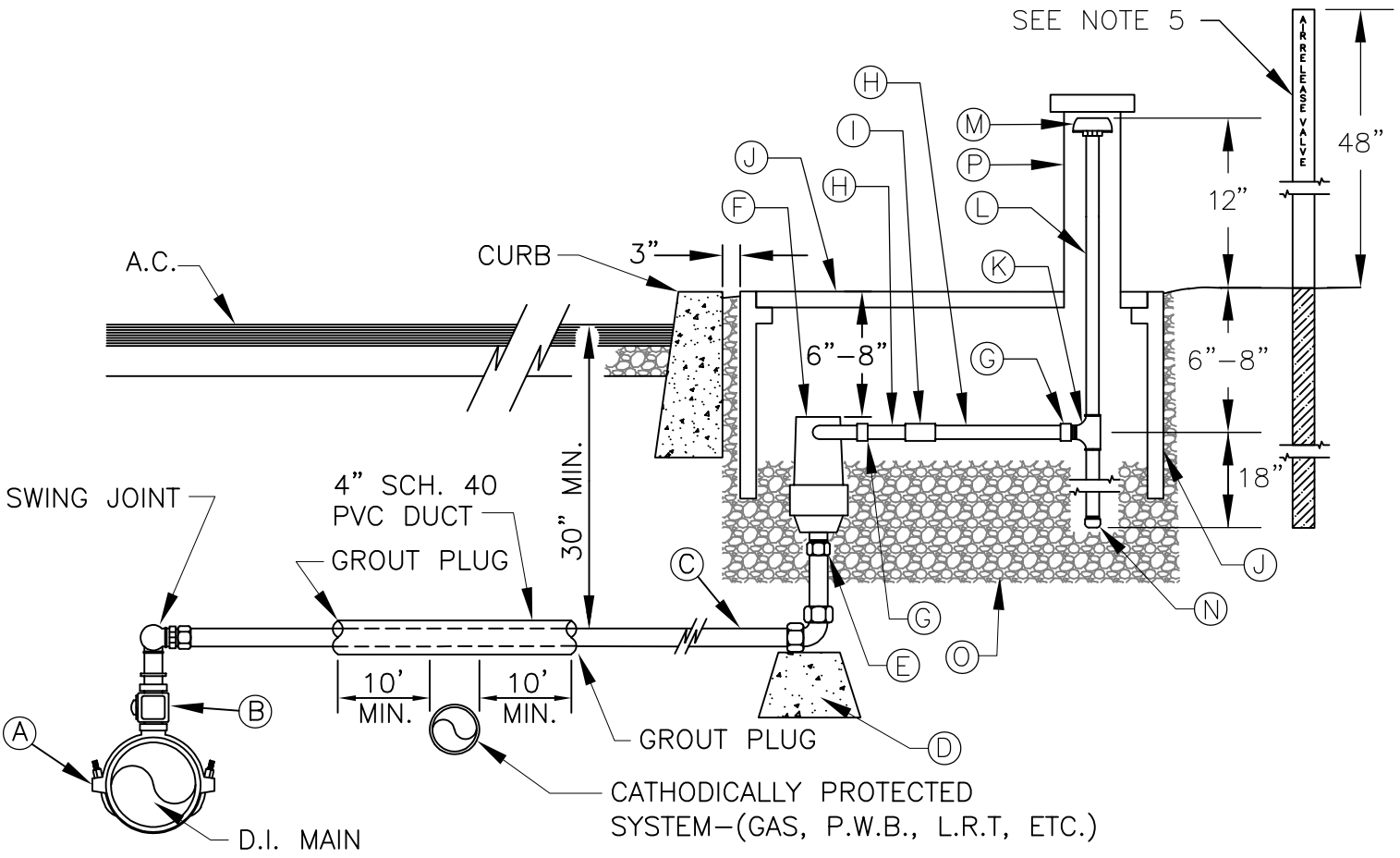
1. ALL PIPE, STRUCTURE ZONES AND APPERTENANCES SHALL BE BACKFILLED USING 3/4"–0" GRANULAR MATERIAL AND COMPACTED TO 95% MAX. DENS. AS DETERMINED BY ASHTO T–180.
2. (UNDEVELOPED) INSTALL BLUE–COLORED CARSONITE STAKE WITH "AIR RELEASE VALVE" IN ONE–INCH BLACK LETTERS ON BOTH SIDES. LOCATE POST WITHIN 3 FEET OF THE AIR RELEASE METER BOX.

OREGON CITY

Public Works Standard Drawings

1" COMBINATION AIR RELEASE & VACUUM VALVE DETAIL

SCALE	NTS		
DATE	MAY '24	REV.	1
ENGR.	DW	DRAWN	KAE
DRAWING NO.	417		



MATERIALS:

A. SERVICE SADDLE.
B. MUELLER B25028N OR FORD FB500–7–NL CORP. STOP.
C. 2" ASTM B–88, RIGID COPPER.
D. 8"x8"x8" CONCRETE PIER BLOCK
E. 2" CTS x FIPT COUPLING
F. 2" COMBINATION AIR VALVE (CARV) A.R.I. MODEL D–040–P
G. 1–1/2" PVC SCH 40 MIP x SLIP (GLUE)
H. 1–1/2" PVC SCH 40 PIPE
I. 1–1/2" PVC COMPRESSION COUPLING
J. HUBBELL QUAZITE B03173012M OR DFW 1730C4–12 BOX. PROVIDE ARV COVER PW/3618 (F36) LID.
K. 1–1/2" GALV. OUTLET TEE
L. 1–1/2" GALV. PIPE
M. 1–1/2" SCREENED TANK VENT
N. 1–1/2" GALV. PIPE CAP
O. 3/4"–0" GRANULAR MATERIAL
P. AIR VENT TUBE PW/AV18–MS

NOTES:

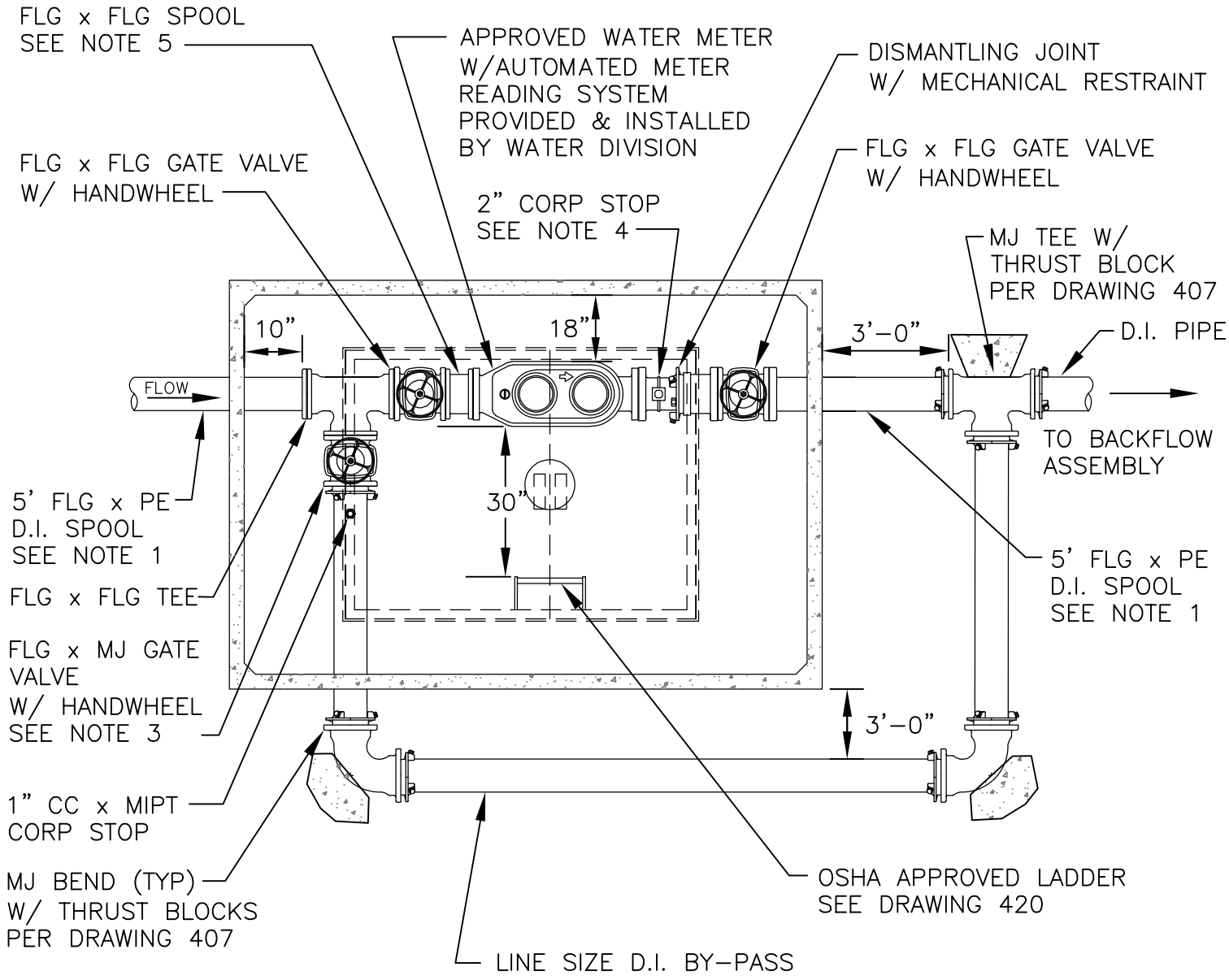
1. SUBSTITUTES FOR ANY MATERIALS SHOWN SHALL BE APPROVED BY THE CITY ENGINEER.
2. ALL PIPE, STRUCTURE ZONES AND APPERTENANCES SHALL BE BACKFILLED USING 3/4"–0" GRANULAR MATERIAL AND COMPACTED TO 95% MAX. DENS. AS DETERMINED BY ASHTO T–180.
3. WHEN AN ACTIVE CATHODIC PROTECTED SYSTEM IS ENCOUNTERED, SCH. 40 PVC SHALL BE INSTALLED AS SHOWN WITH GROUT PLUG, OR DIRECT GROUNDING OF SERVICE LINE.
4. TOP OF METER BOX TO TOP OF CARV SHALL BE 6–8 INCHES.
5. (UNDEVELOPED) INSTALL BLUE–COLORED CARSONITE STAKE WITH "AIR RELEASE VALVE" IN ONE–INCH BLACK LETTERS ON BOTH SIDES. LOCATE POST WITHIN 3 FEET OF THE AIR RELEASE METER BOX.
6. A MINIMUM 1% UPWARD SLOPE SHALL BE MAINTAINED ON THE COPPER PIPE FROM THE WATER MAIN TO THE CARV.

OREGON CITY

Public Works Standard Drawings

2" COMBINATION AIR RELEASE & VACUUM VALVE (CARV)

SCALE	NTS		
DATE	MAY '24	REV.	1
ENGR.	DW	DRAWN	KAE
DRAWING NO.	418		



NOTES:

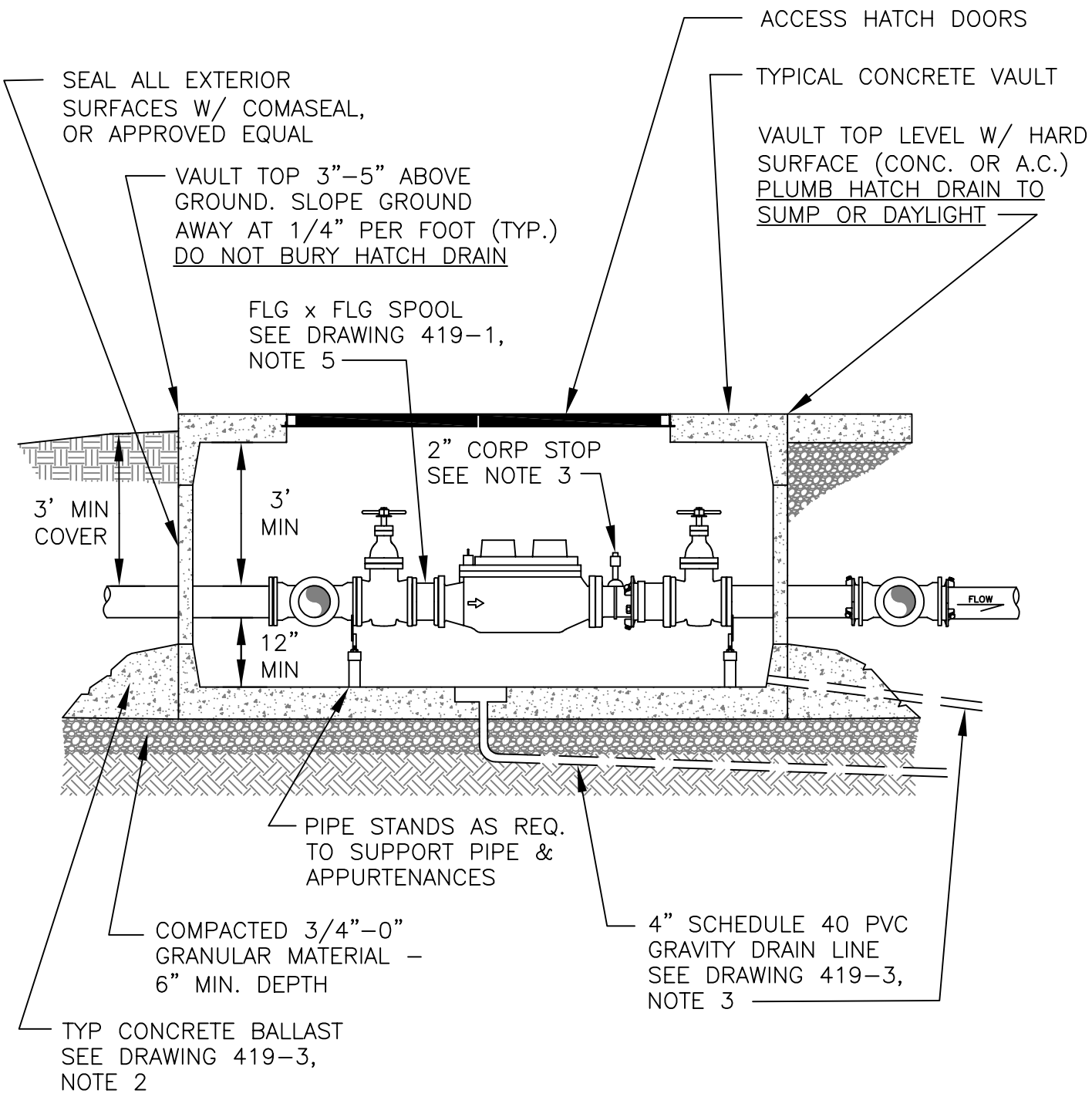
1. ALL PIPE AND FITTINGS SHALL MATCH METER SIZE UNLESS OTHERWISE SPECIFIED. ALL PIPE AND FITTINGS SHALL BE RESTRAINED JOINT.
2. SEE DRAWING 419-3 DETAIL NOTES AND DRAWING 419-2 PROFILE VIEW FOR ADDITIONAL REQUIREMENTS.
3. CONTRACTOR TO PROVIDE HANDWHEEL LOCK. MASTER LOCK GATE VALVE LOCKOUT OR APPROVED EQUAL.
4. INSTALL 2" CORP STOP FOR SAMPLING. SEE DRAWING 404 FOR MATERIALS.
5. SPOOL TO BE 2x PIPE DIAMETER IN LENGTH, PLACE BETWEEN GATE VALVE & METER.

OREGON CITY

Public Works Standard Drawings

4" & LARGER WATER METER VAULT (PLAN)

SCALE	NTS		
DATE	JUL '23	REV.	1
ENGR.	DW	DRAWN	KAE
DRAWING NO.	419-1		



NOTES:

1. SEE DRAWING 419–3 DETAIL NOTES AND DRAWING 419–1 PLAN VIEW FOR ADDITIONAL REQUIREMENTS.
2. OSHA APPROVED LADDER NOT SHOWN; SEE DRAWING 420.
3. INSTALL 2" CORP STOP FOR SAMPLING. SEE DRAWING 404 FOR MATERIALS.

OREGON CITY

Public Works Standard Drawings

4" & LARGER TYPICAL WATER METER VAULT (PROFILE)

SCALE	NTS
DATE JUL '23	REV. 1
ENGR. DW	DRAWN KAE
DRAWING NO.	419-2

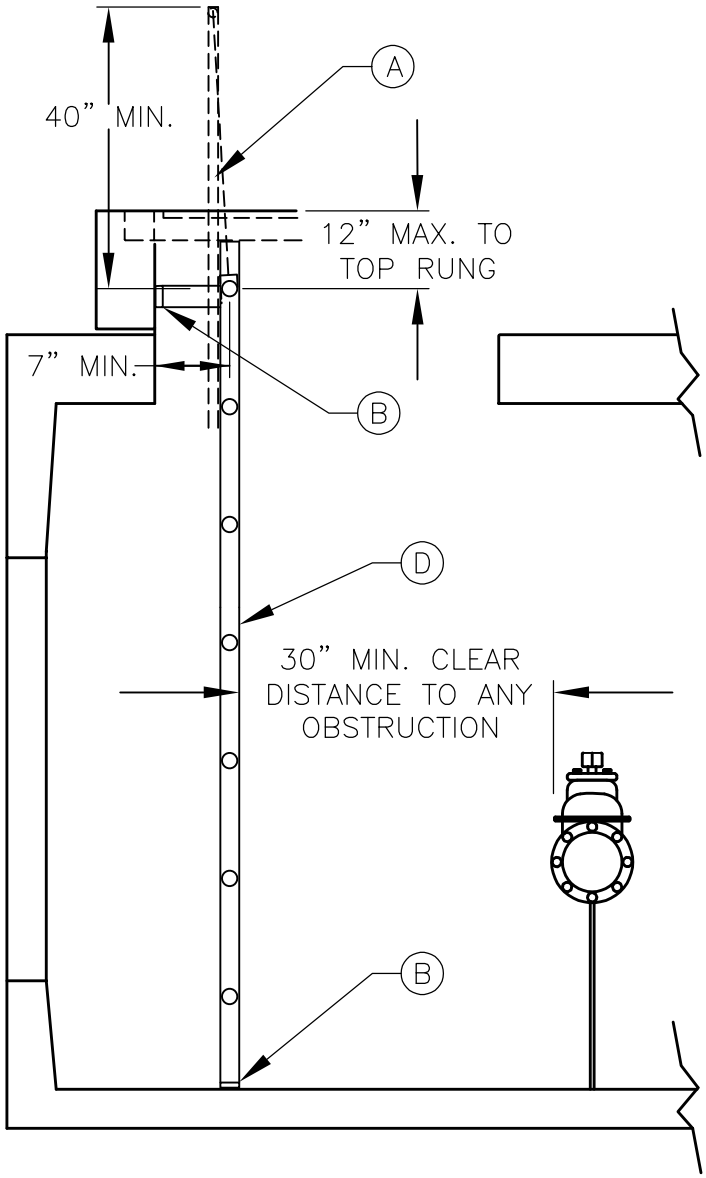
SPECIFICATIONS

METER SIZE (IN)	4" METER	6" METER	8" METER	10" METER
INCOMING LINE SIZE	4"	6"	8"	10"
BY-PASS LINE SIZE**	4"	6"	8"	10"
OLDCASTLE VAULT NO. (OR APPROVED EQUAL)	687-WA (55" I.D.)*	687-WA (55" I.D.)*	810-WA (63" I.D.)*	810-WA (63" I.D.)*

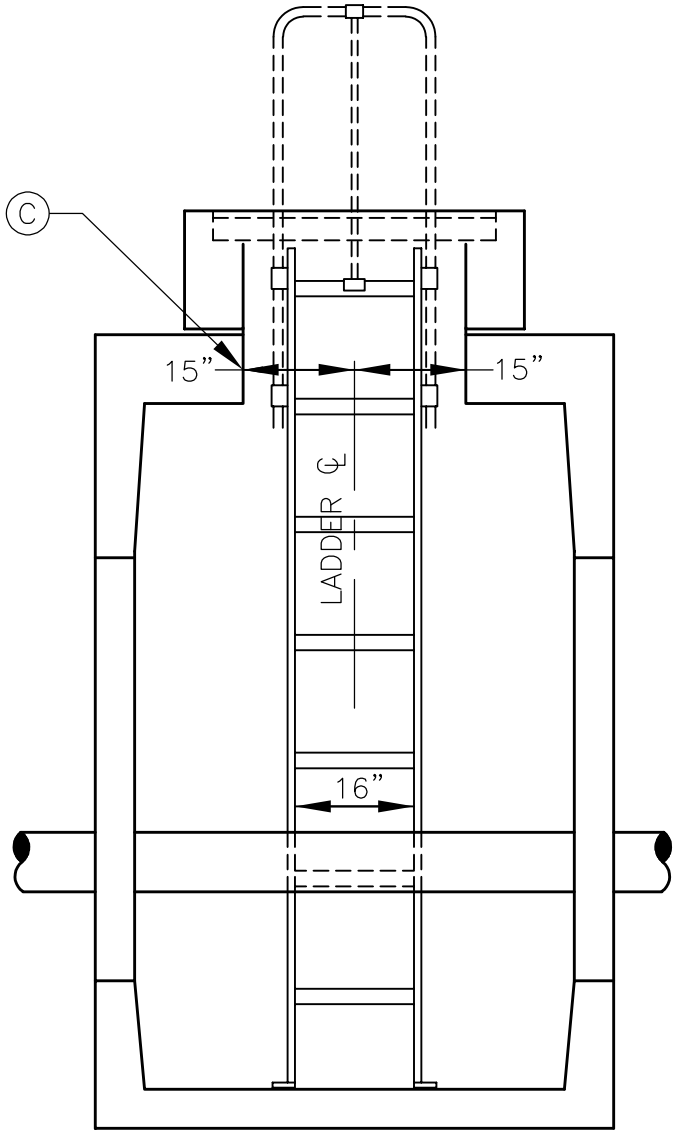
** SMALLER BY-PASS LINE SIZE MAY BE APPROVED UPON REQUEST TO WATER DIVISION.

NOTES:

1. TOP OF VAULT SHALL BE A MINIMUM OF 3" AND A MAXIMUM OF 5" ABOVE FINISH GRADE. SLOPE GROUND AWAY AT 1/4" PER FOOT TYPICAL. DO NOT BURY HATCH DRAIN.
2. CONCRETE BALLAST (3 CUBIC YARDS MINIMUM) IS A MINIMUM FIGURE ONLY - ENGINEER IS RESPONSIBLE TO ENSURE THAT ADEQUATE BALLAST IS PROVIDED TO PREVENT FLOATING OF VAULT.
3. INSTALL 4" DRAIN FROM BOTTOM OF VAULT FLOOR TO DAYLIGHT, TO AN APPROVED STORM SEWER SYSTEM OR PIPED OVER TO THE ACCOMPANYING BACKFLOW VAULT SUMP FOR SUMP PUMP DISCHARGE.
4. ALL VAULT WALL OPENINGS SHALL BE CORE DRILLED AND SEALED WITH NON-SHRINK GROUT.
5. SERVICE LINES SHALL BE MECHANICALLY RESTRAINED FROM MAINLINE THROUGH BACKFLOW ASSEMBLY.
6. ALL PIPING AND FITTINGS THROUGH VAULT SHALL BE LEVEL, A MINIMUM OF 12" ABOVE THE FLOOR OF VAULT. ALL PIPING AND FITTINGS THROUGH VAULT SHALL BE A MINIMUM OF 3' FROM TOP OF PIPE TO VAULT CEILING.
7. BURIED PIPING SHALL BE BACKFILLED AS DESCRIBED AND SHOWN IN DRAWING 313.
8. VAULT SHALL BE EQUIPPED WITH OSHA-APPROVED ALUMINUM EXTENSION LADDER. SEE DRAWING 420.
9. SEE DRAWING 419-2 PROFILE VIEW AND DRAWING 419-1 PLAN VIEW FOR ADDITIONAL REQUIREMENTS.
10. TRAFFIC RATED HATCH REQUIRED, WITH SPRING LOADED LIFT ASSIST.
11. *REDUCED INTERIOR DEPTH (I.D.)



SIDE VIEW

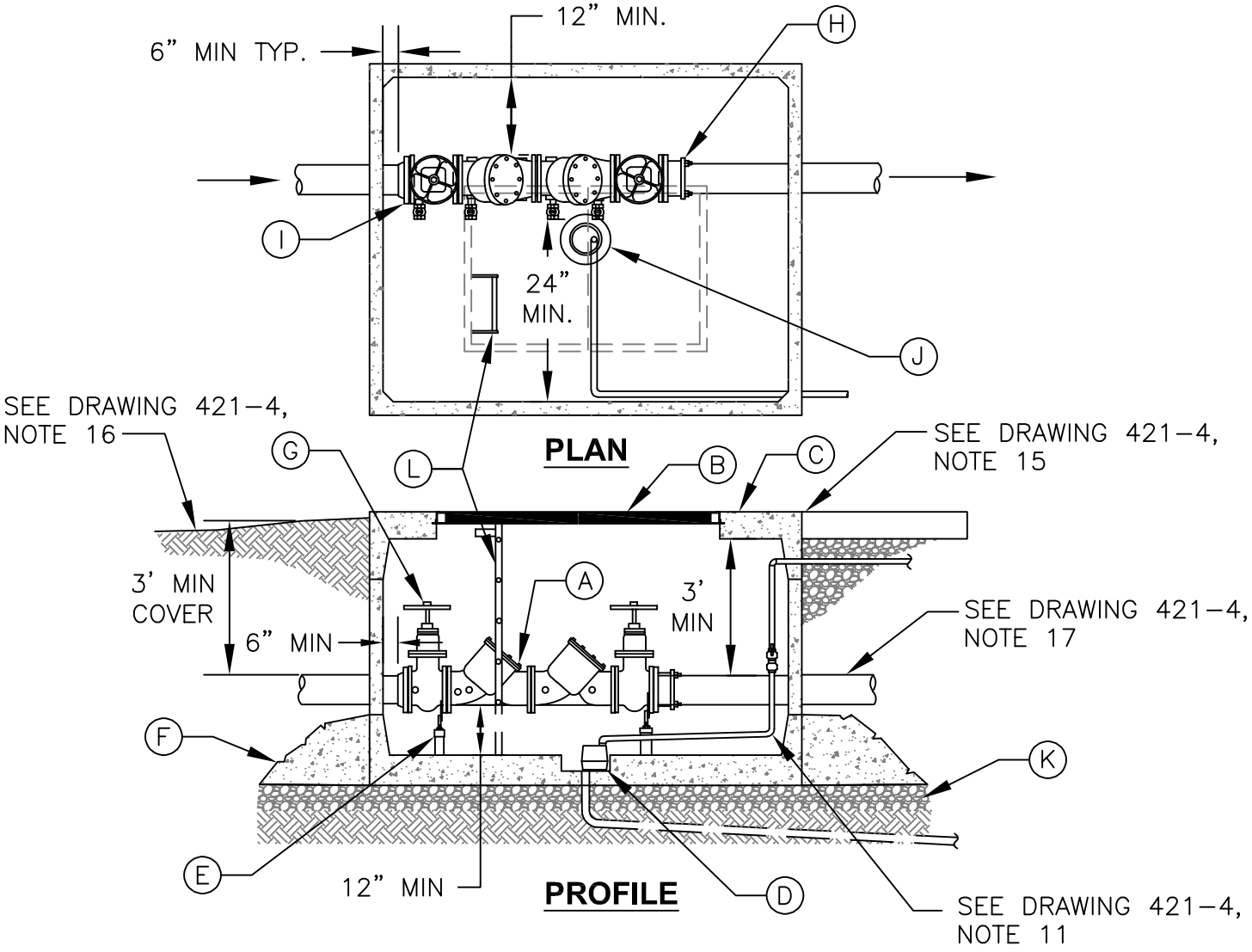


FRONT VIEW

MATERIALS:

A. LADDER EXTENSION SHALL BE ALUMINUM AND EXTEND 40" ABOVE THE TOP RUNG OF THE LADDER. EXTENSION SHALL BE BOLTED UP BEHIND LADDER RUNGS.
B. ATTACH LADDER SUPPORT TO INSIDE FACE OF VAULT OPENING AND FLOOR OF VAULT WITH STAINLESS STEEL HARDWARE AS SHOWN. ℄ OF RUNG MUST BE SET 7" FROM FACE OF SURFACE BEHIND RUNG.
C. PROVIDE 15" MINIMUM LATERAL CLEARANCE ON EACH SIDE OF LADDER ℄.
D. LADDER SHALL MEET THE REQUIREMENTS OF OSHA AND SHALL BE HOT-DIPPED GALVANIZED AFTER FABRICATION.

OREGON CITY	Public Works Standard Drawings	SCALE NTS
		DATE JAN '23 REV.
	WATER VAULT LADDER INSTALLATION	ENGR. DW DRAWN KAE
		DRAWING NO. 420



MATERIALS:

A. APPROVED DOUBLE CHECK (DC) ASSEMBLY PER STANDARDS
B. ACCESS HATCH DOORS
C. TYPICAL CONCRETE VAULT
D. SUMP PUMP INCLUDING 1-1/2" PVC DISCHARGE PIPING WITH CHECK VALVE, OR 4" PVC GRAVITY DRAIN WITH BACKWATER VALVE TO STORM SEWER
E. TYPICAL PIPE SUPPORTS PER DRAWING 421-4, NOTE 14
F. TYPICAL CONCRETE BALLAST, SEE DRAWING 421-4, NOTE 12
G. TYPICAL NON-RISING STEM (N.R.S.) GATE VALVES
H. FLANGE COUPLING ADAPTER
I. ADAPTER FLANGE
J. 12" DIA SUMP WITH PUMP OR GRAVITY DRAIN
K. 3/4"-0" GRANULAR MATERIAL - 6" MINIMUM
L. OSHA-APPROVED LADDER, SEE DRAWING 420

NOTE:

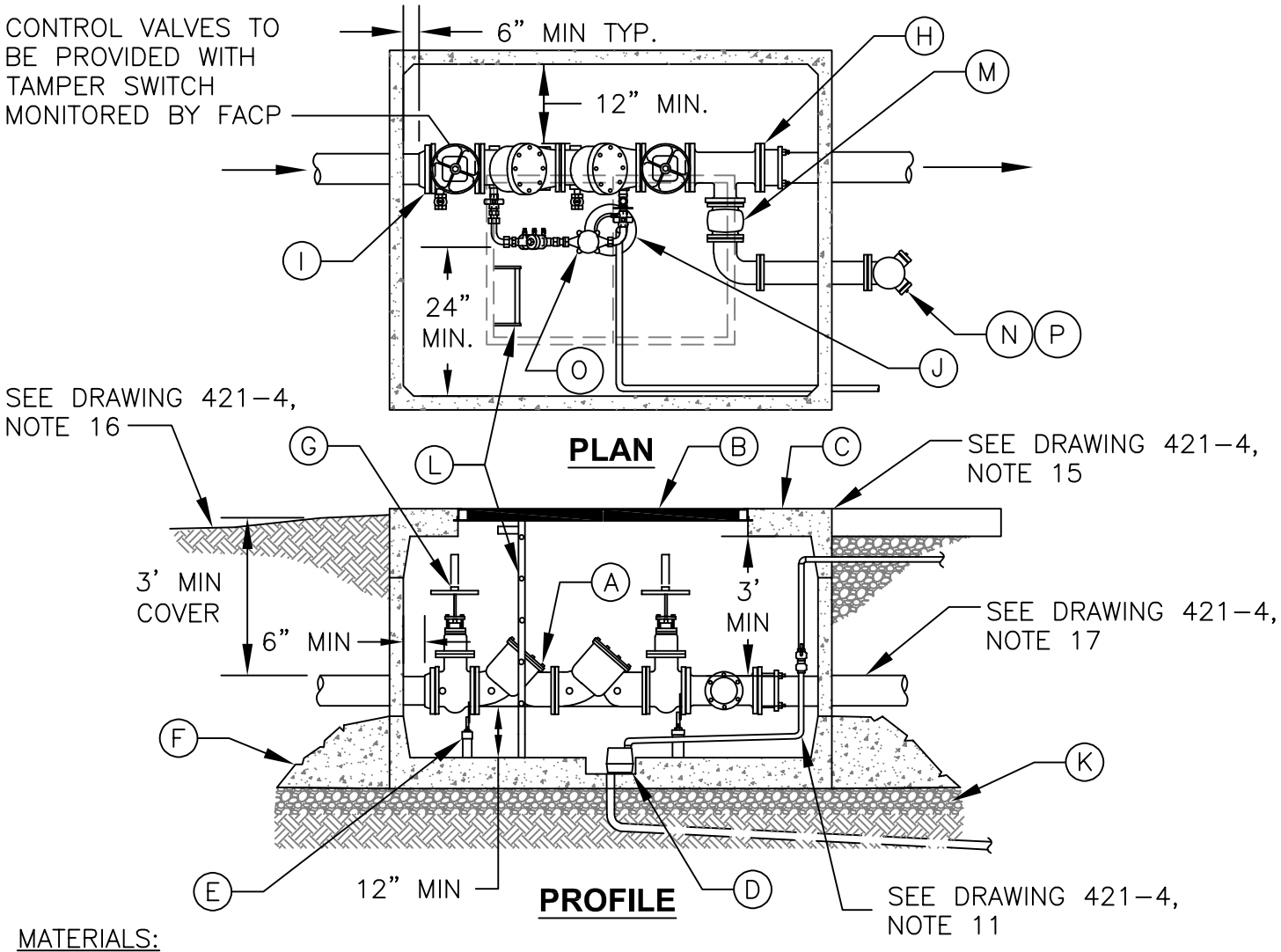
REFER TO DRAWING 421-4 FOR NOTES AND ADDITIONAL REQUIREMENTS.

OREGON CITY

Public Works Standard Drawings

4" & LARGER TYPICAL DOUBLE CHECK VALVE ASSEMBLY (DC)

SCALE	NTS		
DATE	JAN '23	REV.	
ENGR.	DW	DRAWN	KAE
DRAWING NO.	421-1		



MATERIALS:

A. APPROVED DOUBLE CHECK DETECTOR ASSEMBLY (DCDA) PER STANDARDS
B. ACCESS HATCH DOORS
C. TYPICAL CONCRETE VAULT
D. SUMP PUMP INCLUDING 1-1/2" PVC DISCHARGE PIPING WITH CHECK VALVE, OR 4" PVC GRAVITY DRAIN WITH BACKWATER VALVE TO STORM SEWER
E. TYPICAL PIPE SUPPORTS PER DRAWING 421-4, NOTE 14
F. TYPICAL CONCRETE BALLAST, SEE DRAWING 421-4, NOTE 12
G. TYPICAL OS&Y GATE VALVES FOR DCDA, 3" MINIMUM CLEARANCE IN OPEN POSITION
H. FLANGE COUPLING ADAPTER
I. ADAPTER FLANGE
J. 12" DIA SUMP WITH PUMP OR GRAVITY DRAIN
K. 3/4"-0" GRANULAR MATERIAL - 6" MINIMUM
L. OSHA-APPROVED LADDER, SEE DRAWING 420
M. CHECK VALVE WITH BALL DRIP VALVE PER NFPA 13 AND NFPA 24 STANDARDS
N. F.D.C. PER OREGON FIRE CODE, OREGON STRUCTURAL SPECIALTY CODE, NFPA 13, 13R, 14 & 24 STANDARDS. LOCATION AS APPROVED BY THE FIRE CODE OFFICIAL.
O. DETECTOR METER, SEE DRAWING 421-4, NOTE 5
P. F.D.C. SHALL BE PROVIDED WITH LOCKING FDC PLUGS.

NOTE:

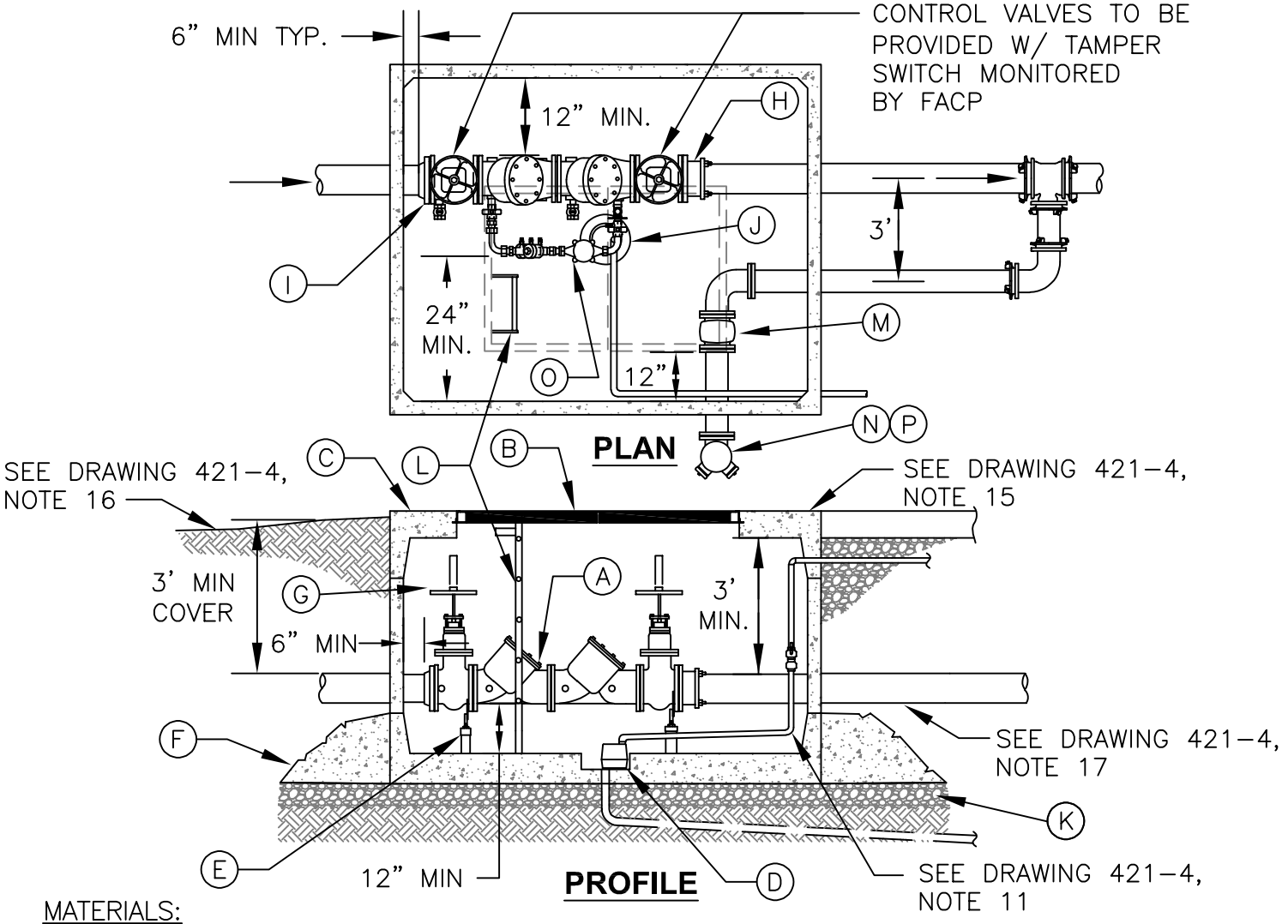
REFER TO DRAWING 421-4 FOR NOTES AND ADDITIONAL REQUIREMENTS.

OREGON CITY

Public Works Standard Drawings

4" & LARGER DOUBLE CHECK DETECTOR ASSEMBLY (SIDE)

SCALE	NTS		
DATE	JAN '23	REV.	
ENGR.	DW	DRAWN	KAE
DRAWING NO.	421-2		



MATERIALS:

A. APPROVED DOUBLE CHECK DETECTOR ASSEMBLY (DCDA) PER STANDARDS
B. ACCESS HATCH DOORS
C. TYPICAL CONCRETE VAULT
D. SUMP PUMP INCLUDING 1-1/2" PVC DISCHARGE PIPING WITH CHECK VALVE, OR 4" PVC GRAVITY DRAIN WITH BACKWATER VALVE TO STORM SEWER
E. TYPICAL PIPE SUPPORTS PER DRAWING 421-4, NOTE 14
F. TYPICAL CONCRETE BALLAST, SEE DRAWING 421-4, NOTE 12
G. TYPICAL OS&Y GATE VALVES FOR DCDA, 3" MINIMUM CLEARANCE IN OPEN POSITION
H. FLANGE COUPLING ADAPTER
I. ADAPTER FLANGE
J. 12" DIA SUMP WITH PUMP OR GRAVITY DRAIN
K. 3/4"-0" GRANULAR MATERIAL - 6" MINIMUM
L. OSHA-APPROVED LADDER, SEE DRAWING 420
M. CHECK VALVE WITH BALL DRIP VALVE PER NFPA 13 AND NFPA 24 STANDARDS
N. F.D.C. PER OREGON FIRE CODE, OREGON STRUCTURAL SPECIALTY CODE, NFPA 13, 13R, 14 & 24 STANDARDS. LOCATION AS APPROVED BY THE FIRE CODE OFFICIAL
O. DETECTOR METER, SEE DRAWING 421-4, NOTE 5
P. F.D.C. SHALL BE PROVIDED WITH LOCKING FDC PLUGS

NOTE:

REFER TO DRAWING 421-4 FOR NOTES AND ADDITIONAL REQUIREMENTS.

OREGON CITY

Public Works Standard Drawings

4" & LARGER DOUBLE CHECK DETECTOR ASSEMBLY (FRONT)

SCALE	NTS		
DATE	JAN '23	REV.	
ENGR.	DW	DRAWN	KAE
DRAWING NO.	421-3		

DC VAULT INFORMATION		
DCVA SIZE	OLDCASTLE VAULT NO.	DOOR MODEL NO.
4"	577–LA	57–T–2–332P
6"	676–WA	676–T–2–332P
8"	687–WA	687–T–2–332P
10"	5106–WA	5106–3–T–2–332P
OR APPROVED EQUAL		

DCDA VAULT INFORMATION		
DCVA SIZE	OLDCASTLE VAULT NO.	DOOR MODEL NO.
4"	676–WA	676–T–2–332P
6"	687–WA	687–T–2–332P
8"	5106–WA	5106–3–T–2–332P
10"	5106–WA	5106–3–T–2–332P
OR APPROVED EQUAL		

DC VAULT NOTES:

1. PLACE DC ASSEMBLY WITHIN PROPERTY LINE AS CLOSE TO METER AS POSSIBLE WITH NO CONNECTIONS OR TEES BETWEEN METER AND DC.
2. CONSULT WITH BUILDING DIVISION FOR PROPER SIZING OF DC AND VAULT.
3. SEE DRAWING 421–1 FOR PLAN AND PROFILE VIEWS.

DCDA VAULT NOTES:

4. CONSULT WITH FIRE DEPARTMENT FOR SIZING OF DCDA.
5. DETECTOR METER SHALL BE CITY APPROVED METER FOR DCDA VAULT.
6. SEE DRAWINGS 421–2 & 421–3 FOR PLAN AND PROFILE VIEWS. TYPICAL LAYOUT SHOWN, MAY BE INSTALLED IN OPPOSITE CONFIGURATION TO CONFORM TO SITE CONDITION REQUIREMENTS.

NOTES:

7. THIS IS TO BE A PRIVATE FACILITY, GOVERNED BY OPSC, NFPA, OREGON HEALTH AUTHORITY, AND CLACKAMAS FIRE MARSHAL, AS APPLICABLE.
8. ALL MJ JOINTS SHALL HAVE MECHANICAL JOINT RESTRAINTS.
9. CONTRACTOR TO SEAL ALL OPENINGS IN VAULT WITH NON–SHRINK GROUT OR "LINK–SEAL."
10. PROVIDE POWER SOURCE AS REQUIRED FOR SUMP PUMP. SECURE POWER CORD TO DISCHARGE PIPING WITH NYLON CABLE TIES.
11. PLUMB PUMP DISCHARGE TO APPROVED LOCATION PER PLUMBING INSPECTOR.
12. IN AREAS PRONE TO HIGH GROUNDWATER POUR CONCRETE BALLAST (3 CUBIC YARDS MINIMUM); ENGINEER IS RESPONSIBLE TO ENSURE ADEQUATE BALLAST IS PROVIDED TO PREVENT FLOATING OF VAULT.
13. VAULT DOOR MECHANISMS SHALL NOT PROTRUDE BELOW THE CEILING OF THE VAULT INTERIOR.
14. ASSEMBLY IS TO BE SUPPORTED BY A SUBSTANTIAL RUST–RESISTANT PRODUCT SUCH AS "STANDON" OR APPROVED EQUAL TO PREVENT UNDUE STRESS OR STRAIN ON THE ASSEMBLY AND PIPING.
15. VAULT TOP SHALL BE SET LEVEL WITH ADJACENT HARD SURFACE (CONCRETE OR AC PAVEMENT).
16. FOR INSTALLATION IN LANDSCAPE AREA, PLACE VAULT TOP A MINIMUM OF 3" AND A MAXIMUM OF 5" ABOVE GROUND SURFACE AND SLOPE GROUND AWAY AT 1/4" PER FOOT TYPICAL. DO NOT BURY HATCH DRAIN.
17. EXTEND DUCTILE IRON PIPE 5' MINIMUM OUT OF VAULT TO PROTECT FROM BREAKING DUE TO VAULT SETTLEMENT.
18. WHEN LOCATED IN PEDESTRIAN WALKWAY A NON–SLIP LID AND GROUTED PICK HOLES ARE REQUIRED.

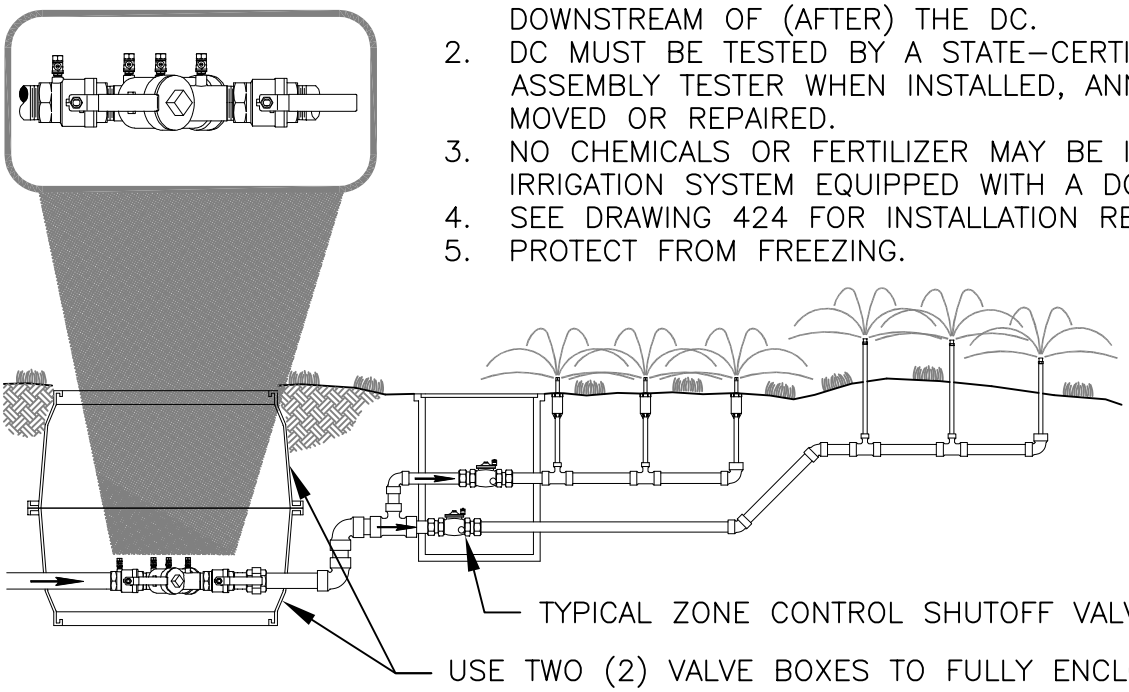
OREGON CITY

Public Works Standard Drawings

4" & LARGER DC & DCDA ASSEMBLY (DETAIL NOTES)

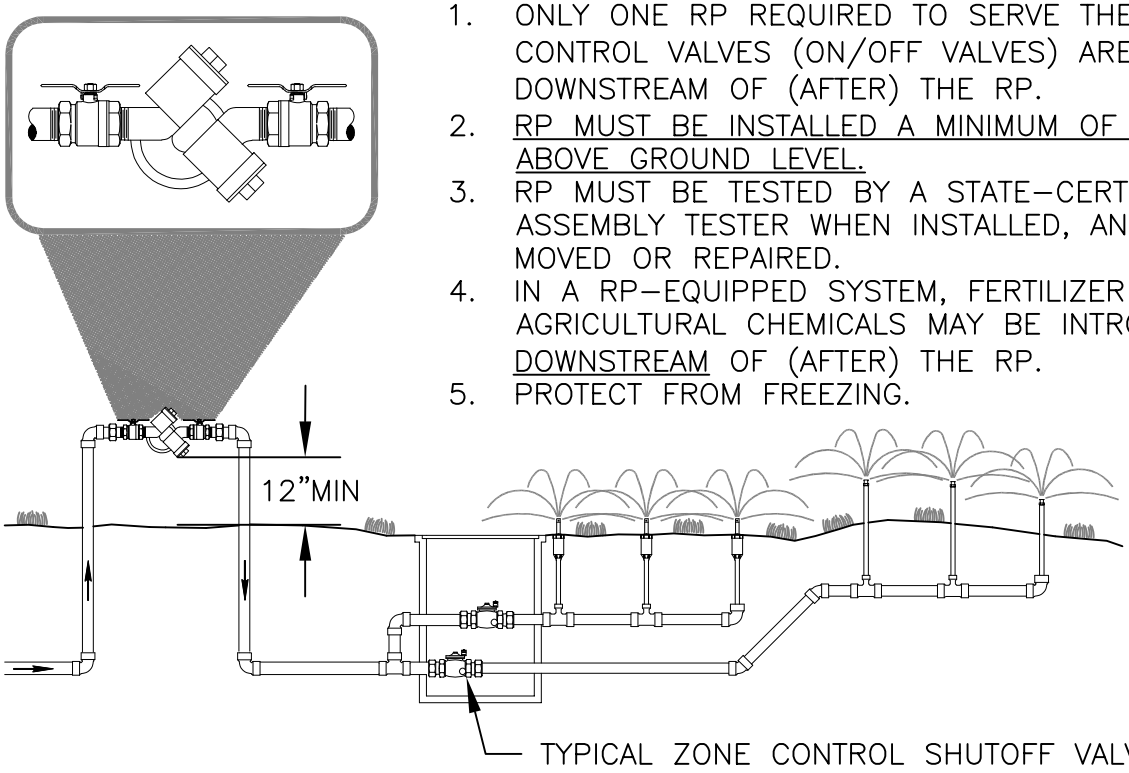
SCALE	NTS		
DATE	JAN '24	REV.	1
ENGR.	DW	DRAWN	KAE
DRAWING NO.	421-4		

D C - DOUBLE CHECK VALVE ASSEMBLY



1. ONLY ONE DC REQUIRED TO SERVE THE ENTIRE SYSTEM. CONTROL VALVES (ON/OFF VALVES) ARE ALLOWED DOWNSTREAM OF (AFTER) THE DC.
2. DC MUST BE TESTED BY A STATE–CERTIFIED BACKFLOW ASSEMBLY TESTER WHEN INSTALLED, ANNUALLY, AND WHEN MOVED OR REPAIRED.
3. NO CHEMICALS OR FERTILIZER MAY BE INTRODUCED INTO AN IRRIGATION SYSTEM EQUIPPED WITH A DC.
4. SEE DRAWING 424 FOR INSTALLATION REQUIREMENTS.
5. PROTECT FROM FREEZING.

R P - REDUCED PRESSURE PRINCIPLE BACKFLOW ASSY.



1. ONLY ONE RP REQUIRED TO SERVE THE ENTIRE SYSTEM. CONTROL VALVES (ON/OFF VALVES) ARE ALLOWED DOWNSTREAM OF (AFTER) THE RP.
2. RP MUST BE INSTALLED A MINIMUM OF ONE FOOT (12") ABOVE GROUND LEVEL.
3. RP MUST BE TESTED BY A STATE–CERTIFIED BACKFLOW ASSEMBLY TESTER WHEN INSTALLED, ANNUALLY, AND WHEN MOVED OR REPAIRED.
4. IN A RP–EQUIPPED SYSTEM, FERTILIZER AND OTHER AGRICULTURAL CHEMICALS MAY BE INTRODUCED DOWNSTREAM OF (AFTER) THE RP.
5. PROTECT FROM FREEZING.

OREGON CITY

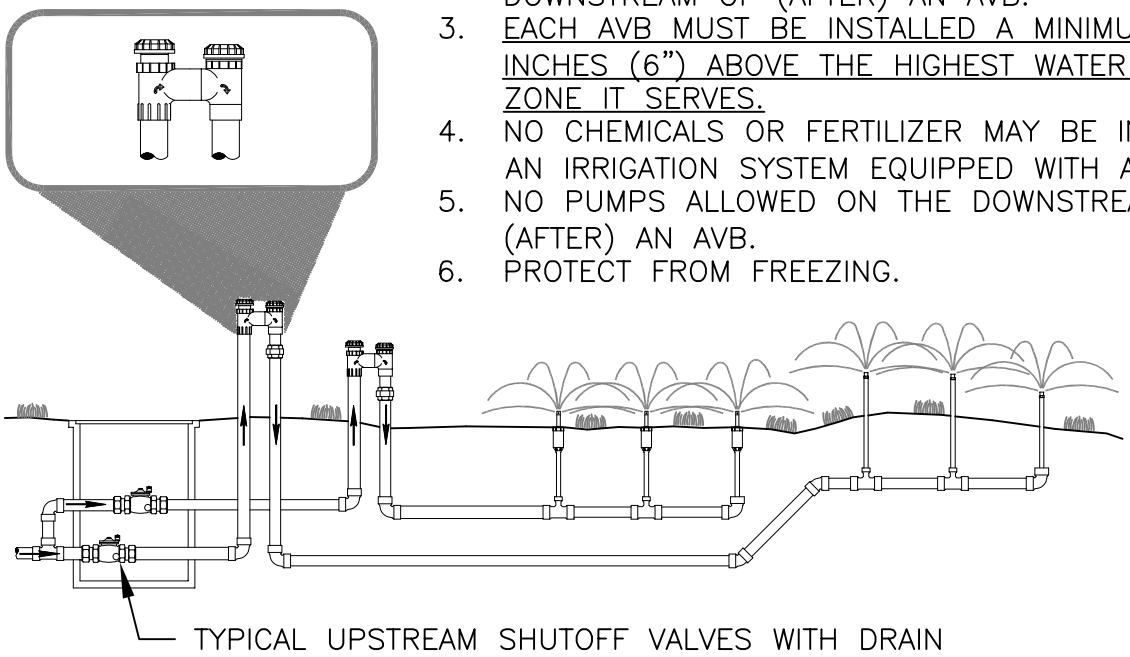
Public Works Standard Drawings

TYPICAL BACKFLOW PREVENTORS FOR RESIDENTIAL IRRIGATION SYSTEMS

SCALE	NTS		
DATE	MAY '24	REV.	1
ENGR.	DW	DRAWN	KAE
DRAWING NO.	422		

A V B - ATMOSPHERIC VACUUM BREAKER

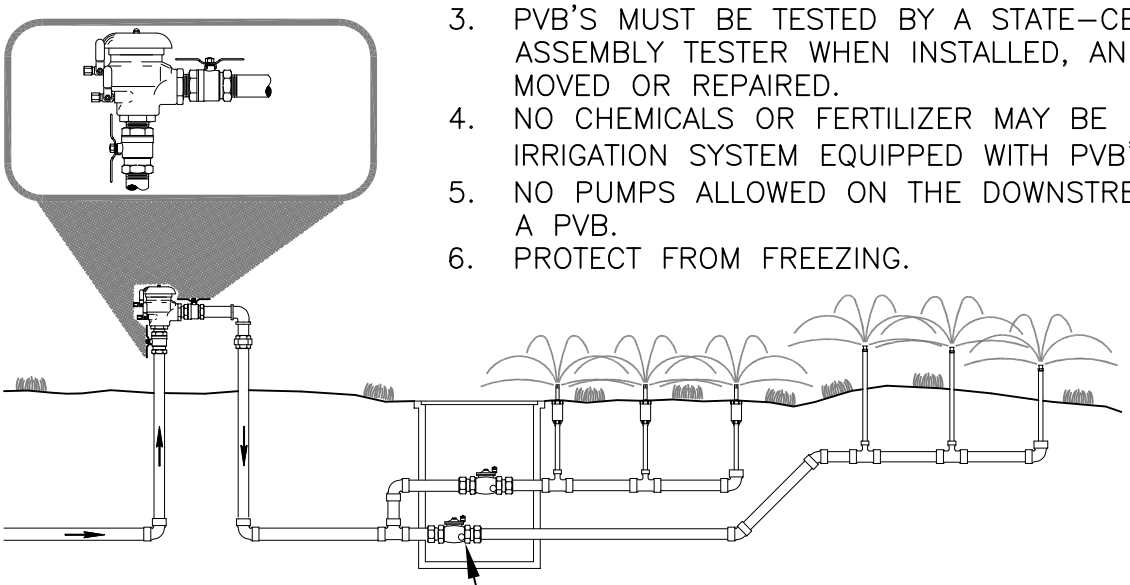
1. ONE AVB REQUIRED FOR EACH IRRIGATION ZONE.
2. NO CONTROL VALVES (ON/OFF VALVES) ALLOWED DOWNSTREAM OF (AFTER) AN AVB.
3. EACH AVB MUST BE INSTALLED A MINIMUM OF SIX INCHES (6") ABOVE THE HIGHEST WATER OUTLET IN THE ZONE IT SERVES.
4. NO CHEMICALS OR FERTILIZER MAY BE INTRODUCED INTO AN IRRIGATION SYSTEM EQUIPPED WITH AVB'S.
5. NO PUMPS ALLOWED ON THE DOWNSTREAM SIDE OF (AFTER) AN AVB.
6. PROTECT FROM FREEZING.



TYPICAL UPSTREAM SHUTOFF VALVES WITH DRAIN

P V B - PRESSURE VACUUM BREAKER ASSEMBLY

1. ONLY ONE PVB REQUIRED TO SERVE THE ENTIRE SYSTEM. CONTROL VALVES (ON/OFF VALVES) ARE ALLOWED DOWNSTREAM OF (AFTER) THE PVB.
2. PVB'S MUST BE INSTALLED A MINIMUM OF ONE FOOT (12") ABOVE THE HIGHEST WATER OUTLET.
3. PVB'S MUST BE TESTED BY A STATE–CERTIFIED BACKFLOW ASSEMBLY TESTER WHEN INSTALLED, ANNUALLY, AND WHEN MOVED OR REPAIRED.
4. NO CHEMICALS OR FERTILIZER MAY BE INTRODUCED INTO AN IRRIGATION SYSTEM EQUIPPED WITH PVB'S.
5. NO PUMPS ALLOWED ON THE DOWNSTREAM SIDE OF (AFTER) A PVB.
6. PROTECT FROM FREEZING.



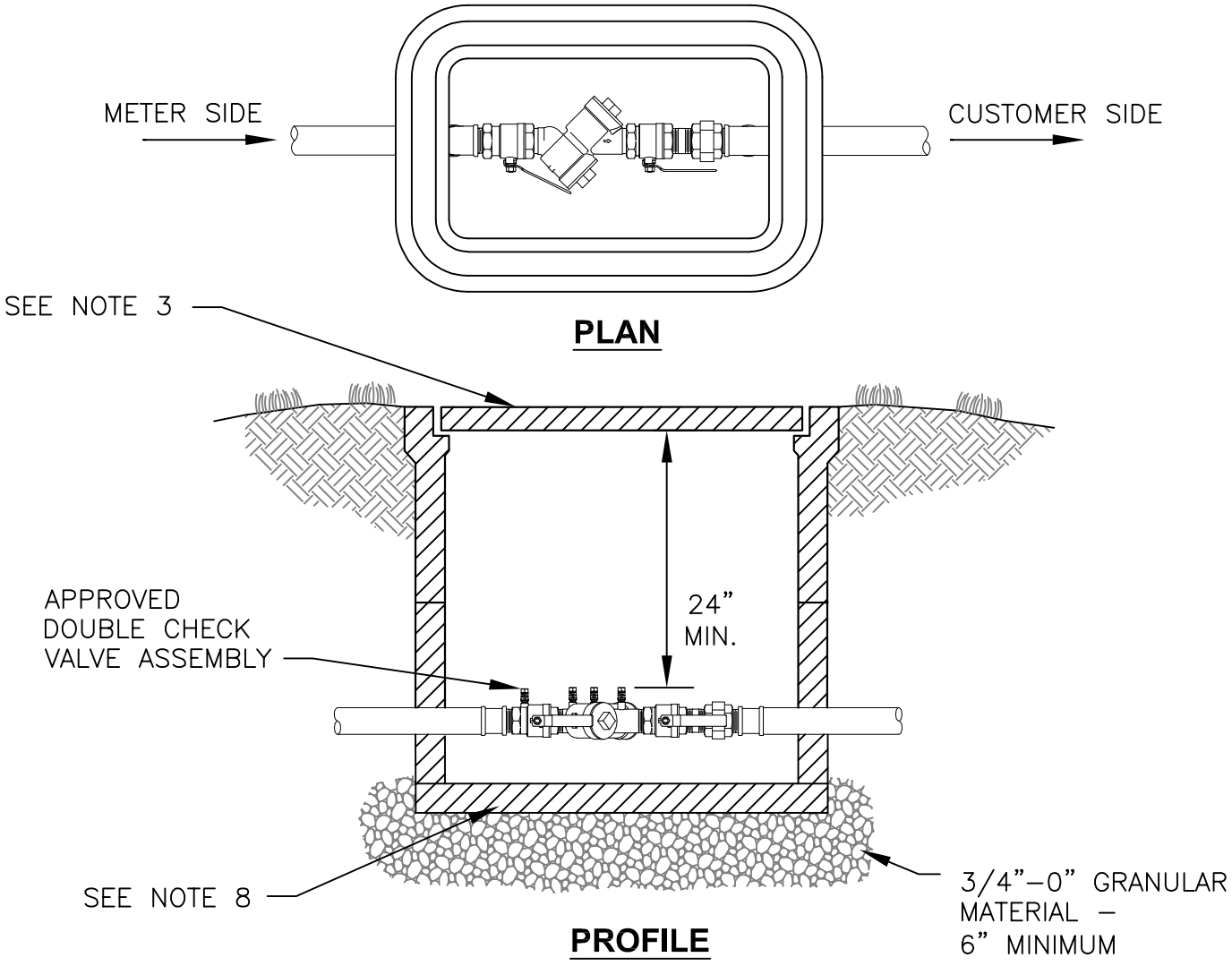
TYPICAL ZONE CONTROL SHUTOFF VALVES

OREGON CITY

Public Works Standard Drawings

AV & PV BREAKER ASSEMBLY FOR RESIDENTIAL IRRIGATION SYSTEMS

SCALE	NTS		
DATE	JAN '23	REV.	
ENGR.	DW	DRAWN	KAE
DRAWING NO.	423		



NOTES:

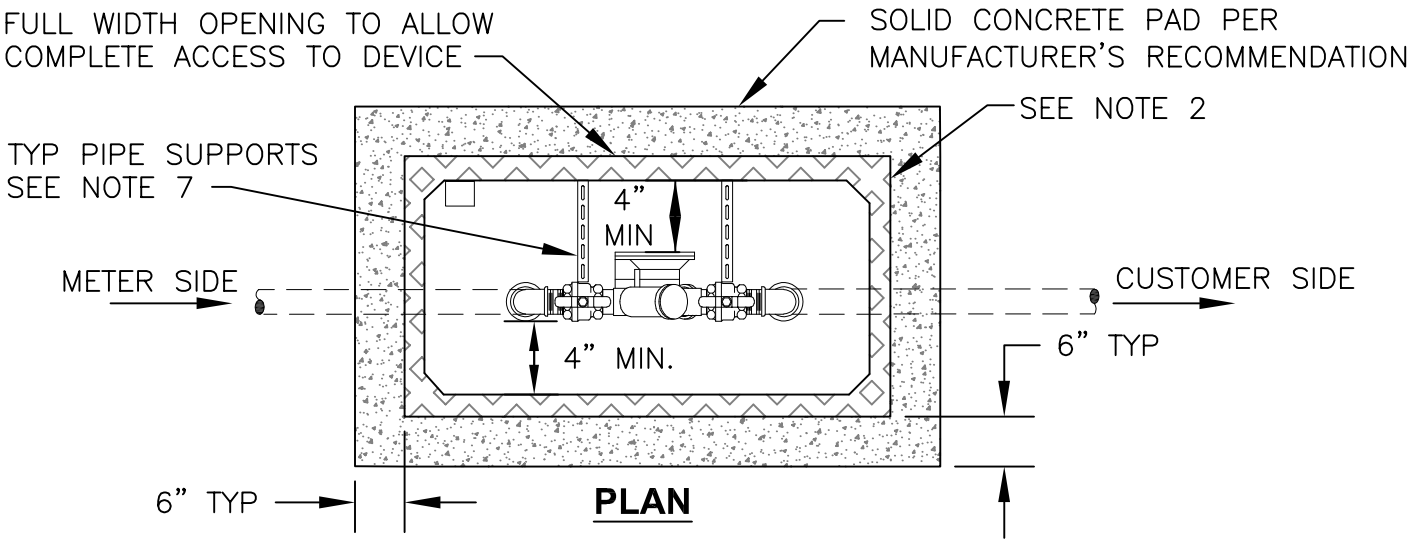
1. PLACE DC WITHIN PROPERTY LINE AS CLOSE TO METER AS POSSIBLE WITH NO CONNECTIONS OR TEES BETWEEN METER AND DC.
2. BACKFLOW PREVENTION ASSEMBLIES FOR THE PROTECTION OF THE PUBLIC WATER SYSTEM SHALL MEET THE REQUIREMENTS SET FORTH IN THE CURRENT EDITIONS OF OREGON ADMINISTRATIVE RULES (OAR) CHAPTER 333–061–0070 AND THE OREGON PLUMBING SPECIALTY CODE (OPSC).
3. ALL BOXES LOCATED IN TRAFFIC AREAS SHALL BE RATED FOR THE ANTICIPATED LOADS AND FURNISHED WITH APPROVED TRAFFIC–RATED COVERS.
4. DC'S SHALL BE READILY ACCESSIBLE WITH ADEQUATE SPACE FOR TESTING AND MAINTENANCE. PROVIDE AT LEAST 6 INCHES OF CLEARANCE ON BOTH SIDES AND BELOW THE DC.
5. WHEN THE DC IS INSTALLED BELOW GROUND, THE TEST PORTS MUST NOT FACE DOWNWARD. TEST PORTS MUST BE PROVIDED WITH PLASTIC OR BRASS PLUGS.
6. THE DC SHALL BE INSTALLED PER PLUMBING CODE.
7. CONTACT BUILDING DIVISION FOR THE REQUIRED PLUMBING PERMIT.
8. UPON COMPLETION OF INSTALLATION, THE DC MUST BE TESTED BY A STATE CERTIFIED BACKFLOW TESTER.
9. CONSULT WITH BUILDING DIVISION FOR PROPER SIZING OF DC.

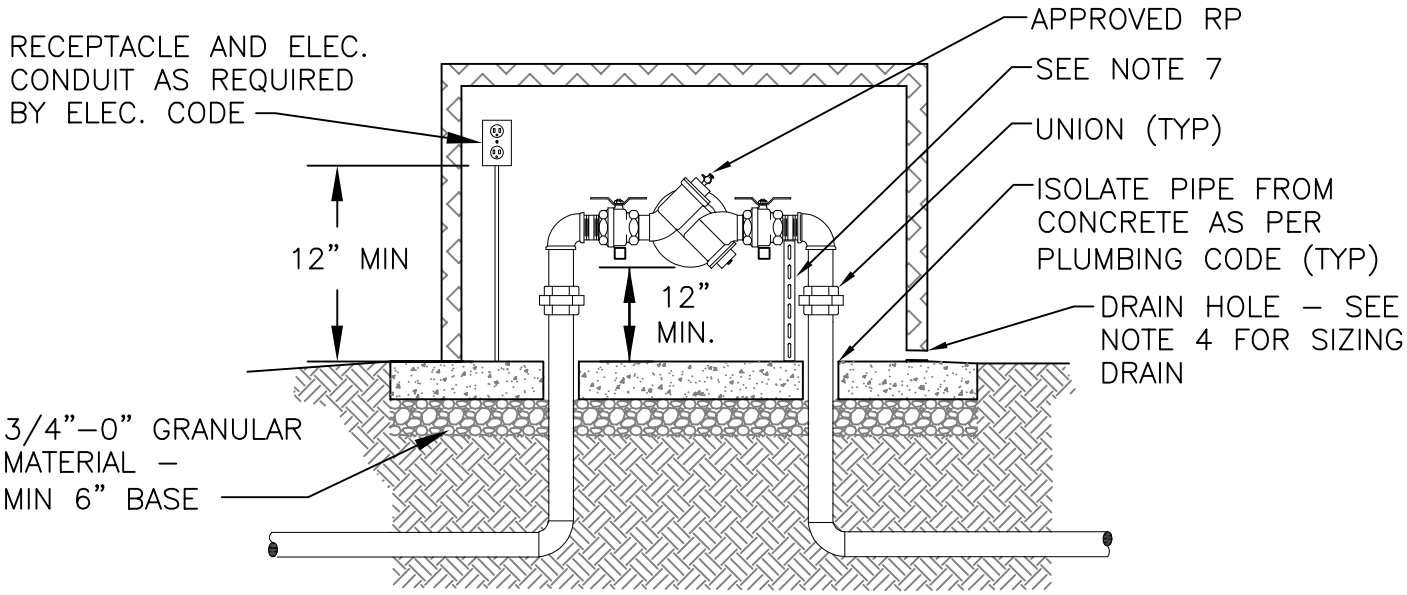
OREGON CITY

Public Works Standard Drawings

1" OR 2" DOUBLE CHECK ASSEMBLY (DC)

SCALE	NTS		
DATE	JAN '24	REV.	1
ENGR.	DW	DRAWN	KAE
DRAWING NO.	424		





PROFILE

NOTES:

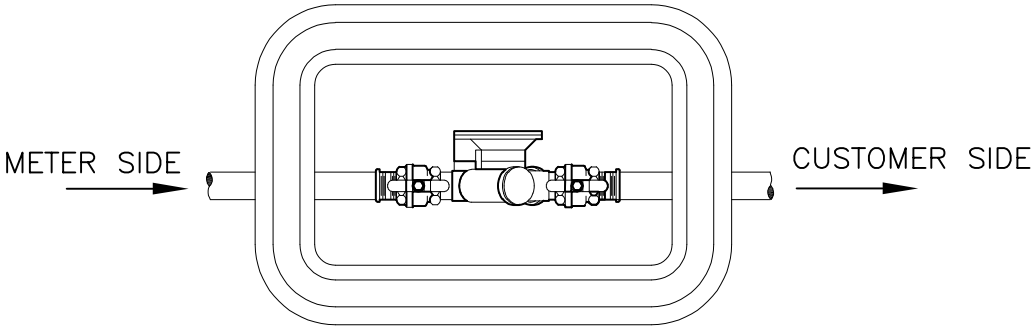
1. PLACE RP WITHIN PROPERTY LINE AS CLOSE TO METER AS POSSIBLE WITH NO CONNECTIONS OR TEES BETWEEN METER AND RP., OR CITY APPROVED LOCATION.
2. PROVIDE ADEQUATE PROTECTION AGAINST FREEZING, SUCH AS AN INSULATED AND HEATED PRE–MANUFACTURED ENCLOSURE (HOT BOX, SAFE–T–COVER, OR APPROVED EQUAL).
3. CUSTOM–BUILT ENCLOSURES MUST BE PRE–APPROVED BY WATER DIVISION DURING PLAN REVIEW.
4. PROVIDE A SCREENED DRAIN CAPABLE OF PASSING A FULL RELIEF DISCHARGE (SEE DRAWING 429 FOR GUIDANCE ON DRAIN SIZING).
5. ALL PRE–MANUFACTURED ENCLOSURES SHALL COMPLY WITH ASSE1060, CLASS III.
6. CONCRETE PAD MUST BE SET AT OR ABOVE SURROUNDING FINISH GRADE AND/OR MAXIMUM FLOOD ELEVATION.
7. DEVICE IS TO BE SUPPORTED BY SUBSTANTIAL MATERIAL SUCH AS UNISTRUT TO RESIST RUST AND DECAY. SUPPORTS ARE TO BE INSTALLED TO PREVENT UNDUE STRESS OR STRAIN ON THE DEVICE AND ITS SERVICE PIPING.
8. AS A PRIVATE FACILITY, THE INSTALLATION IS GOVERNED BY THE OREGON PLUMBING SPECIALTY CODE (OPSC) AND OREGON HEALTH AUTHORITY, AS APPLICABLE.
9. CONSULT WITH BUILDING DIVISION FOR PROPER SIZING OF RP.

OREGON CITY

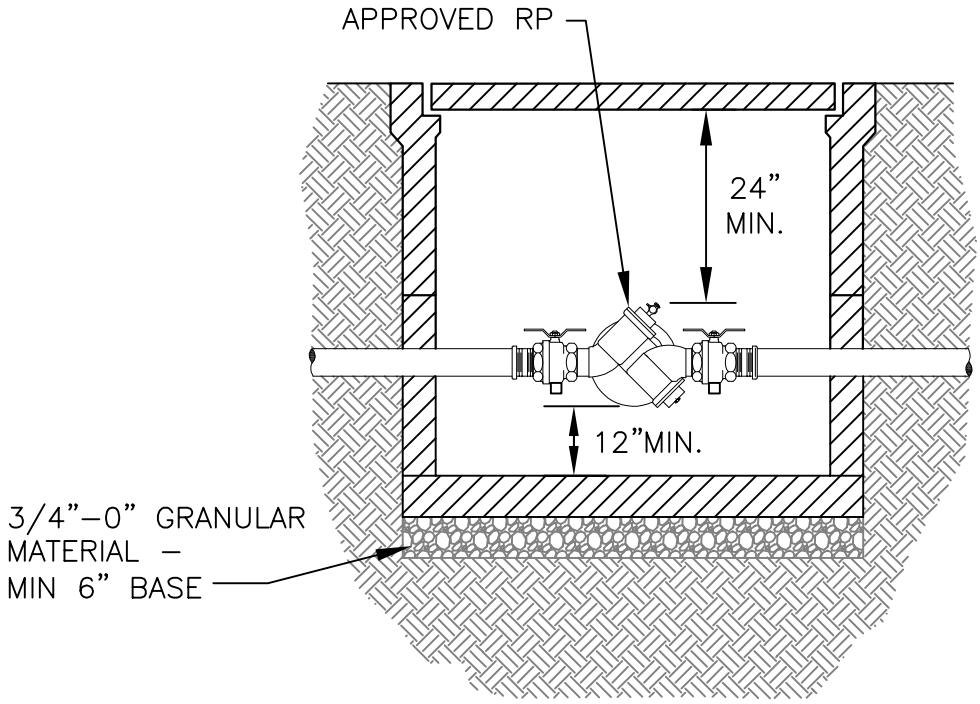
Public Works Standard Drawings

1" OR 2" REDUCED PRESSURE BACKFLOW ASSEMBLY (RP) (ABOVE GROUND)

SCALE	NTS		
DATE	JAN '24	REV.	1
ENGR.	DW	DRAWN	KAE
DRAWING NO.	425		



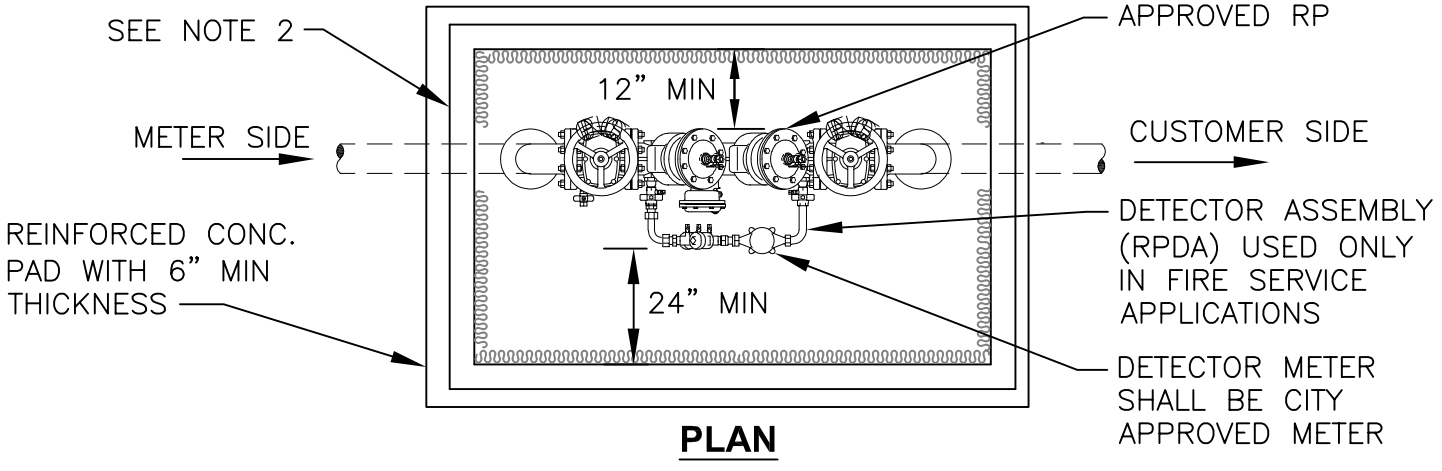
PLAN



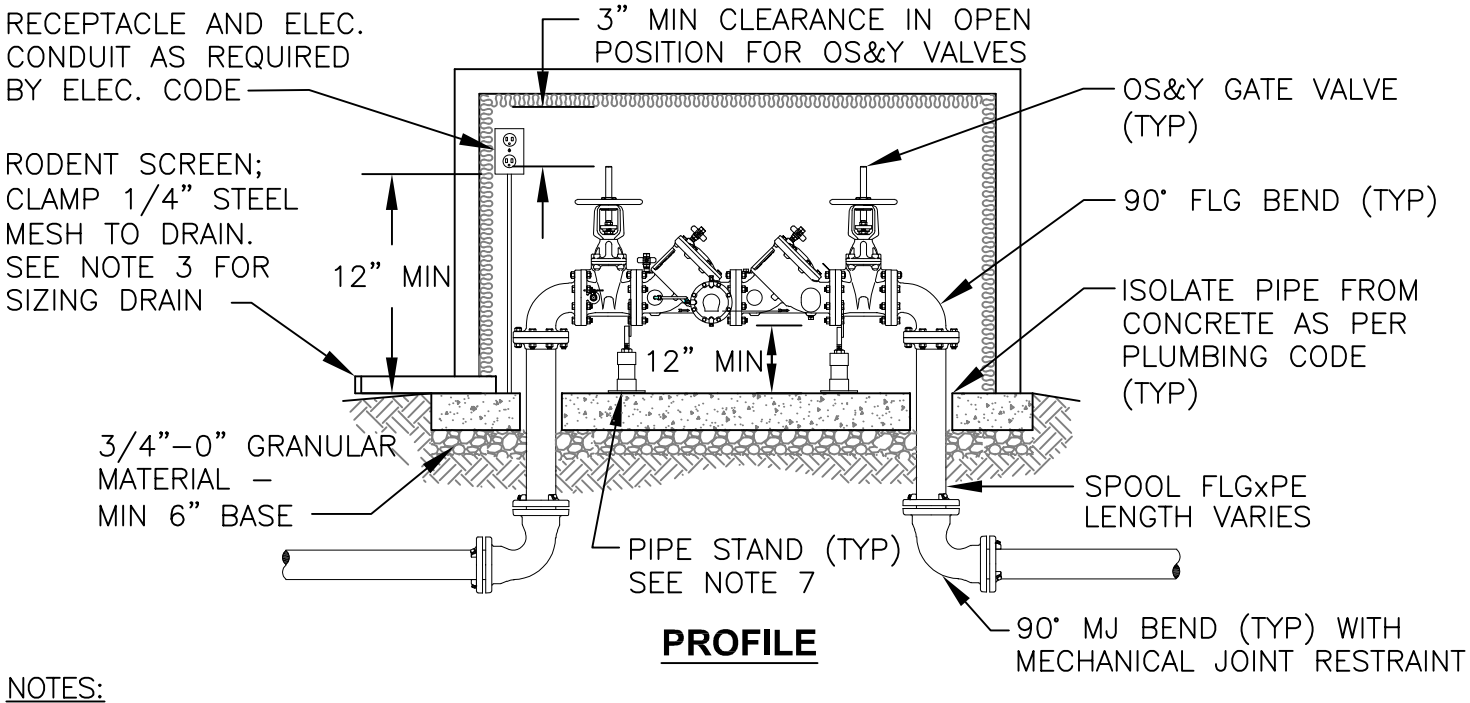
PROFILE

NOTES:
1. PLACE RP WITHIN PROPERTY LINE AS CLOSE TO METER AS POSSIBLE WITH NO CONNECTIONS OR TEES BETWEEN METER AND RP, OR CITY APPROVED LOCATION.
2. AS A PRIVATE FACILITY, THE INSTALLATION IS GOVERNED BY THE OREGON PLUMBING SPECIALTY CODE (OPSC) AND OREGON HEALTH AUTHORITY, AS APPLICABLE.
3. CONSULT WITH BUILDING DIVISION FOR PROPER SIZING OF RP.

OREGON CITY	Public Works Standard Drawings	SCALE NTS
	1" OR 2" REDUCED PRESSURE BACKFLOW ASSEMBLY (RP) (BELOW GROUND)	DATE JAN '24 REV. 1
		ENGR. DW DRAWN KAE
		DRAWING NO. 426



PLAN



PROFILE

NOTES:

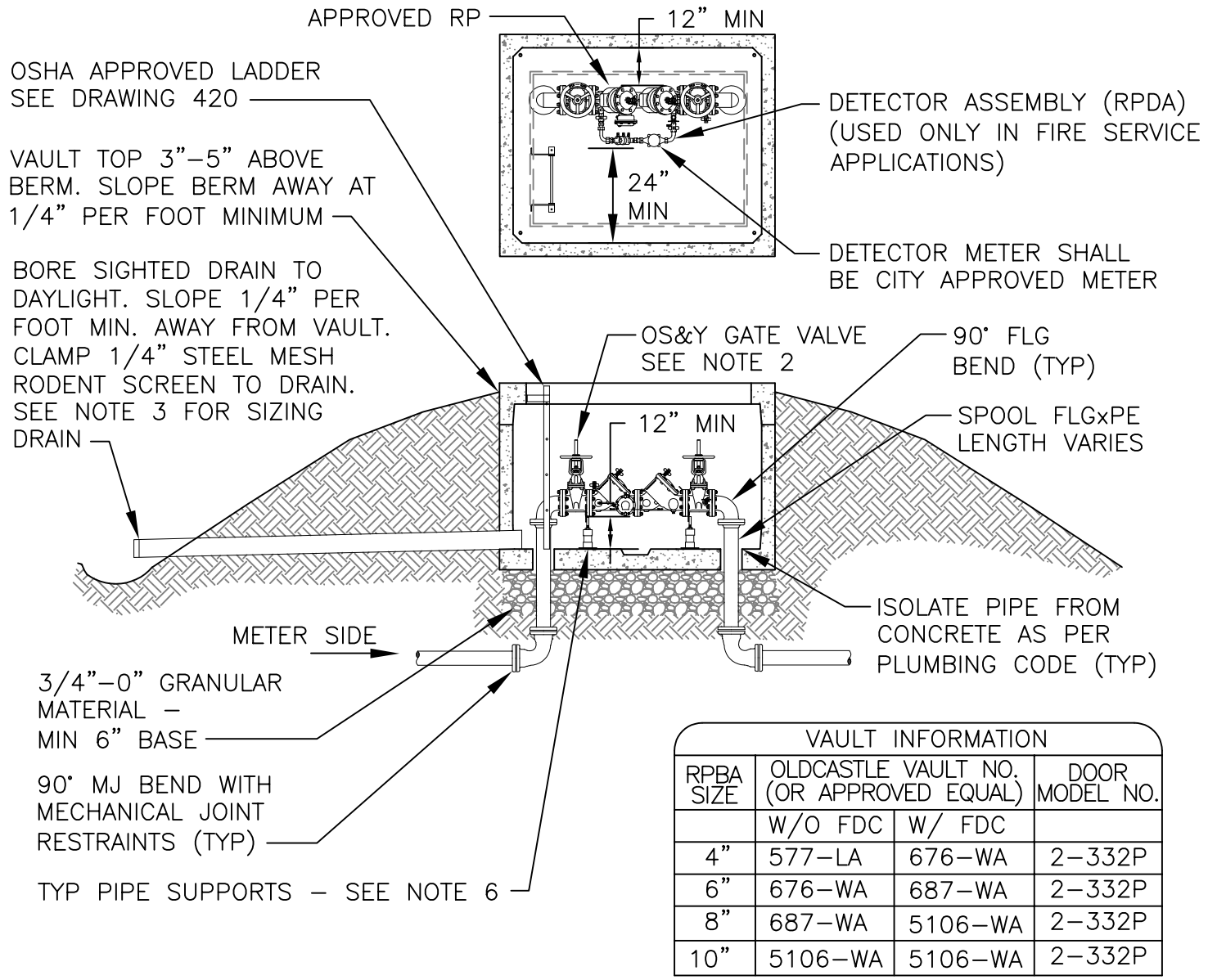
1. PLACE RP WITHIN PROPERTY LINE AS CLOSE TO METER AS POSSIBLE WITH NO CONNECTIONS OR TEES BETWEEN METER AND RP, OR CITY APPROVED LOCATION.
2. PROVIDE STRUCTURE WITH INSULATION AND HEAT SOURCE (SUCH AS HOT BOX, SAFE-T-COVER, OR APPROVED EQUAL) FOR FREEZE PROTECTION. GFI RECEPTACLE REQUIRED.
3. PROVIDE A SCREENED DRAIN CAPABLE OF PASSING A FULL RELIEF DISCHARGE (SEE DRAWING 429 FOR GUIDANCE ON DRAIN SIZING).
4. A DOOR OR OTHER APPROVED ACCESS SHALL BE PROVIDED.
5. STRUCTURES SHALL COMPLY WITH LOCAL BUILDING CODES.
6. CONCRETE PAD MUST BE SET AT OR ABOVE SURROUNDING FINISH GRADE AND/OR MAXIMUM FLOOD ELEVATION.
7. DEVICE IS TO BE SUPPORTED BY UNISTRUT, STANDON, OR APPROVED EQUAL TO RESIST RUST AND DECAY. SUPPORTS ARE TO BE INSTALLED TO PREVENT UNDUE STRESS OR STRAIN ON THE DEVICE AND ITS SERVICE PIPING.
8. ALL MJ JOINTS SHALL HAVE MECHANICAL JOINT RESTRAINTS.
9. AS A PRIVATE FACILITY, THE INSTALLATION IS GOVERNED BY THE OREGON PLUMBING SPECIALTY CODE (OPSC) AND OREGON HEALTH AUTHORITY, AS APPLICABLE.
10. CONSULT WITH FIRE DEPARTMENT INSPECTOR OR BUILDING DIVISION FOR SIZING OF RP.

OREGON CITY

Public Works Standard Drawings

4" & LARGER REDUCED PRESSURE BACKFLOW ASSEMBLY (RP) (ABOVE GROUND)

SCALE	NTS		
DATE	JAN '24	REV.	1
ENGR.	DW	DRAWN	KAE
DRAWING NO.	427		



VAULT INFORMATION			
RPBA SIZE	OLDCASTLE VAULT NO. (OR APPROVED EQUAL)		DOOR MODEL NO.
	W/O FDC	W/ FDC	
4"	577–LA	676–WA	2–332P
6"	676–WA	687–WA	2–332P
8"	687–WA	5106–WA	2–332P
10"	5106–WA	5106–WA	2–332P

NOTES:

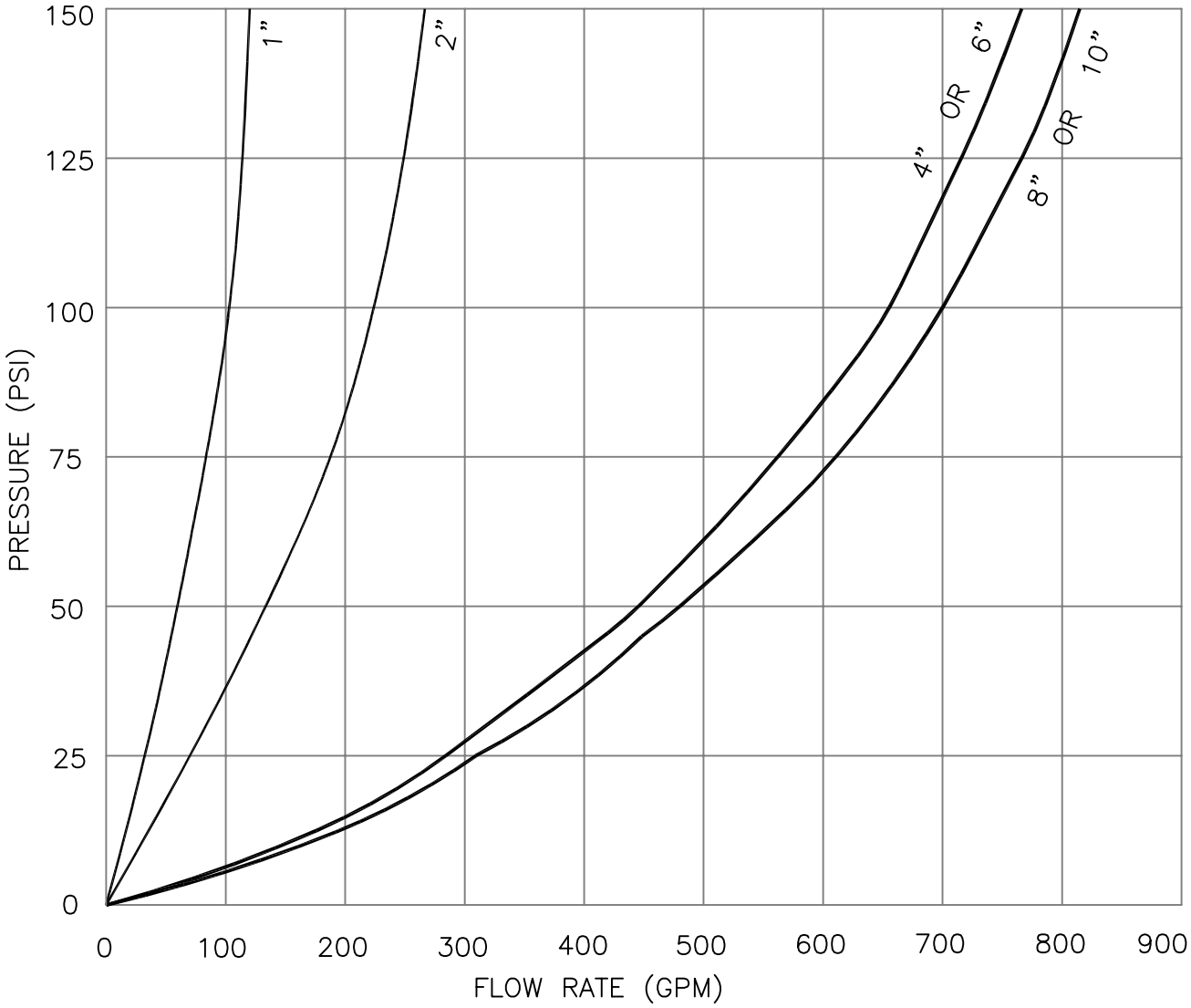
1. ENCLOSE VAULT IN EARTH BERM AS TO PROVIDE ADEQUATE FREEZE PROTECTION.
2. OS&Y VALVES REQUIRED ONLY IN FIRE SERVICE APPLICATIONS. (MINIMUM CLEARANCE OF 3–INCHES REQUIRED BETWEEN VAULT LID AND TOP OF OS&Y VALVES IN OPEN POSITION.)
3. PROVIDE A SCREENED DRAIN CAPABLE OF PASSING A FULL RELIEF DISCHARGE (SEE DRAWING 429 FOR GUIDANCE ON DRAIN SIZING).
4. ALL ENCLOSURES SHALL COMPLY WITH ASSE1060.
5. VAULT FLOOR MUST BE SET AT MINIMUM 12 INCHES ABOVE SURROUNDING FINISH GRADE TO ALLOW GRAVITY DRAINAGE.
6. DEVICE IS TO BE SUPPORTED BY UNISTRUT, STANDON, OR APPROVED EQUAL TO RESIST RUST AND DECAY. SUPPORTS ARE TO BE INSTALLED TO PREVENT UNDUE STRESS OR STRAIN ON THE DEVICE AND ITS SERVICE PIPING.
7. ALL MJ JOINTS SHALL HAVE MECHANICAL JOINT RESTRAINTS.
8. AS A PRIVATE FACILITY, THE INSTALLATION IS GOVERNED BY THE OPSC AND OREGON HEALTH AUTHORITY, AS APPLICABLE.
9. CONSULT WITH FIRE DEPARTMENT INSPECTOR OR BUILDING DIVISION FOR SIZING OF RP.
10. FOR DOMESTIC SERVICE APPLICATIONS RP MUST BE PLACED AS CLOSE TO METER AS POSSIBLE WITH NO CONNECTIONS OR TEES BETWEEN METER AND RP, OR CITY APPROVED LOCATION.

OREGON CITY

Public Works Standard Drawings

4" & LARGER REDUCED PRESSURE BACKFLOW ASSEMBLY (RP) (IN BERM)

SCALE	NTS		
DATE	JAN '24	REV.	1
ENGR.	DW	DRAWN	KAE
DRAWING NO.	428		



APPROXIMATE RELIEF VALVE DISCHARGE RATES
FOR REDUCED PRESSURE BACKFLOW ASSEMBLIES

MAXIMUM FLOW (GPM) PER DRAIN PIPE SIZE FOR EFFECTIVE DRAINAGE OF R.P. DISCHARGE INTO A VAULT. SEE NOTE BELOW.	
DRAIN PIPE SIZE	FLOW (GPM)
2.5"	105
3"	262
4"	1620

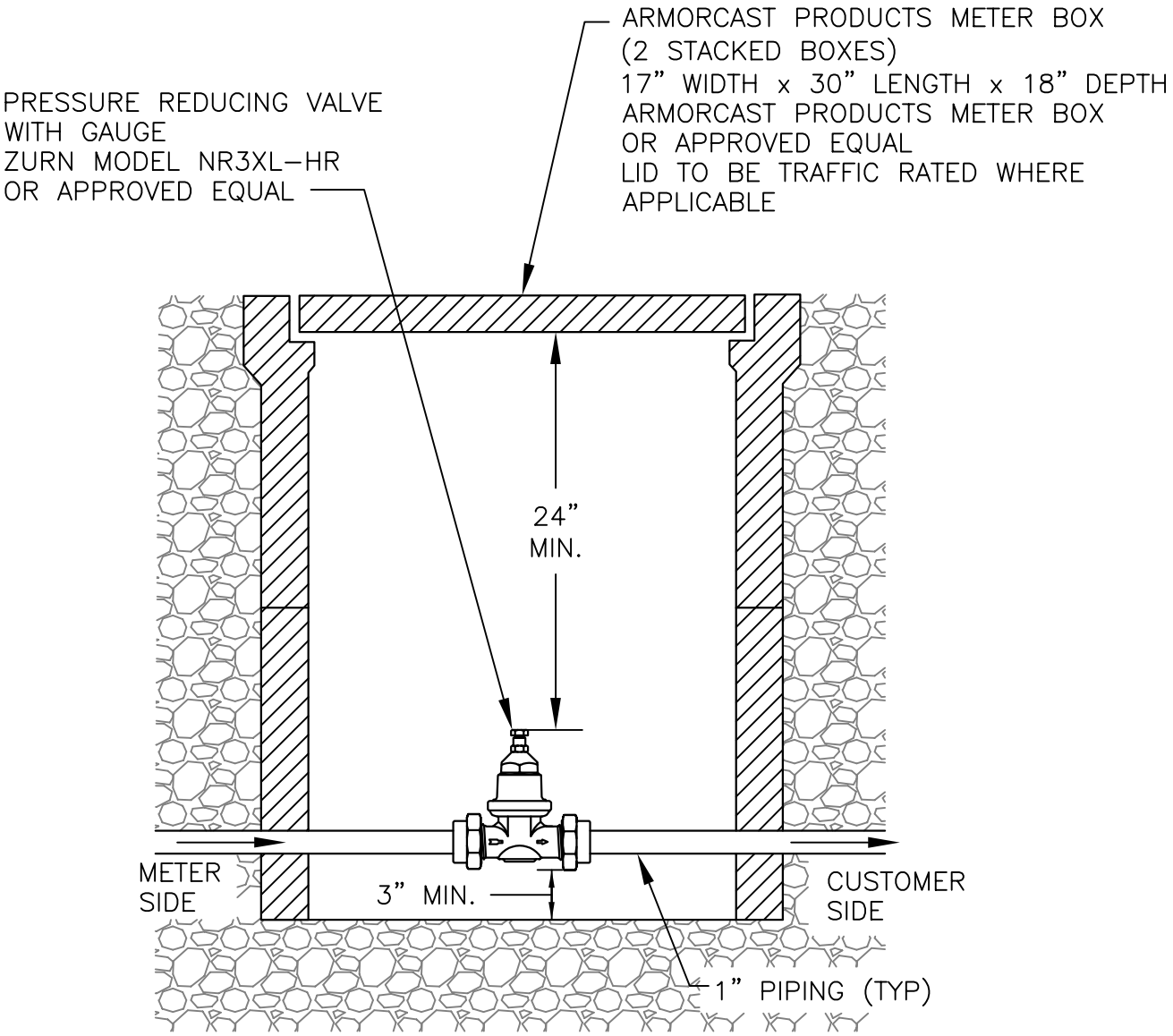
NOTE:
CARE SHOULD BE TAKEN TO ENSURE THAT THE ENTIRE DRAINAGE SYSTEM HAS ADEQUATE CAPACITY TO CARRY THE CONTINUOUS DISCHARGE RATES SHOWN ABOVE. DESIGNER SHALL BE RESPONSIBLE FOR PROVIDING ADEQUATELY SIZED DRAIN LINES FOR THE APPLICABLE RELIEF VALVE DISCHARGE RATE. FOR PARALLEL ASSEMBLIES, THE DRAINAGE SYSTEM SHOULD BE DESIGNED FOR THE DISCHARGE FROM BOTH ASSEMBLIES.

OREGON CITY

Public Works Standard Drawings

REDUCED PRESSURE BACKFLOW ASSEMBLY DISCHARGE RATES FOR DRAIN PIPE SIZE

SCALE	NTS		
DATE	JAN '23	REV.	
ENGR.	DW	DRAWN	KAE
DRAWING NO.	429		



NOTES:

1. INSTALL PRIVATE PLUMBING PIPE, FITTINGS, AND PRESSURE REDUCING VALVE BEHIND METER AND CONNECT TO EXISTING. PIPE SHALL BE COPPER OR PEX MEETING PLUMBING CODE. INDIVIDUAL PLUMBING PERMITS REQUIRED FOR EACH SERVICE. PLUMBING PERMIT SHALL BE OBTAINED BY THE CONTRACTOR.
2. THE FUNCTION OF A PRESSURE REDUCING VALVE IS TO REDUCE HIGH PRESSURE IN THE SERVICE CONNECTION TO AN ACCEPTABLE RANGE OF 25 TO 75 PSI. INSTALLATION OF A PRESSURE REDUCING VALVE IS REQUIRED WHERE THE SERVICE CONNECTION PRESSURE EXCEEDS 70 PSI IN ACCORDANCE TO CITY OF OREGON CITY STANDARDS.
3. THE PRESSURE REDUCING VALVE SHALL BE "DOWNSTREAM" OF THE METER BOX. RESPONSIBILITY FOR PROPER OPERATION AND MAINTENANCE OF THE VALVE SHALL BE ASSUMED BY THE CUSTOMER.

OREGON CITY	Public Works Standard Drawings	SCALE NTS
		DATE JAN '24 REV.
	1" OR 2" PRESSURE REDUCING VALVE (PRV)	ENGR. DW DRAWN KAE
		DRAWING NO. 430