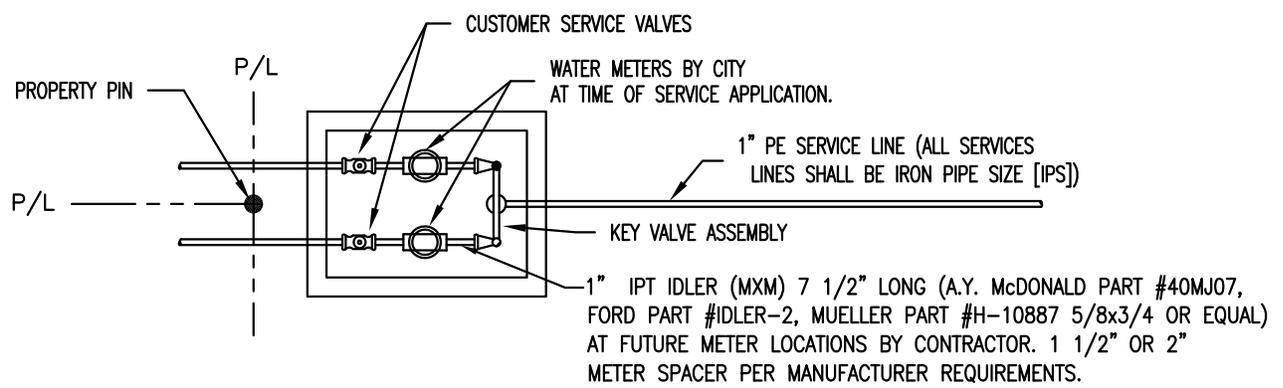


## PROFILE



## PLAN

## CONSTRUCTION NOTES

1. ALL POLYETHYLENE (PE) PIPE SHALL CONTAIN STAINLESS STEEL INSERT STIFFENERS INSIDE BOTH ENDS OF PIPE.
2. METER BOXES SHALL BE SET IN THE SIDEWALK AT THE BACK OF SIDEWALK OR DIRECTLY BEHIND THE BACK OF SIDEWALK.
3. REFER TO STANDARD DRAWINGS 7-100a - 7-100c FOR PARTS LIST.
4. TRACER WIRE SHALL BE EXTENDED 24" ABOVE FINISHED SURFACE AND LEFT COILED UNDER METER BOX LID.

# CITY OF KLAMATH FALLS

Date	Revision:	<b>WATER SERVICE CONNECTION RESIDENTIAL</b>	Drwn. By: GDG
3	3/10	5th EDITION	Date: 1/2002
2	6/06	4th EDITION	Drwg. No.: <b>7-100</b>
1	6/04	2nd EDITION	Approved By: <u>Don Wilcox</u>

# TYPICAL 1" TAP

#	1" MAIN TAP - FITTING	QTY	FORD	A.Y. McDONALD	MUELLER
1	Saddle Main size DD' x 1" IP tap Romac 10IS (12" Main + 202S)	1			
2	Corp Stop 1" IP x 1" PE/PJ	1	F1101-4	4704-33 1"	H-15029
3	PE Pipe 1" IPS 200#PSI Thick Wall				
4	Stiffener 1" IPS PE Pipe	1	Insert 72	6136 1"	505142
5	2" Water Detectortape				
6	14 gauge x 1 Blue UF Irr Cont Wire				
<b>Dual 5/8" x 3/4" SERVICE SETTING</b>					
7	U Branch Assembly 1" PE/PJ x 3/4" mip/MMN 3" MSN/LW (or)	1	UW63-42W-7.5	09U3AW 1" x 7.5	N/A
8	U Branch 1" PE/PJ x 3/4" mip	1	U68-43-7.5	08U3M 1" x 7.5	N/A
9	Angle meter valve 3/4" Fip x 3/4" swivel nut/lock wing	2	BA13-332W	460B-3/4	B 24265
10	Spacer PVC or Idler	2	Idler-2	40MA07	H-1088703
11	Angle meter valve 3/4" swivel nut/lock wing x 3/4" Cu	2	BA43-332W-Q, BA43-332W/4602BQ-3/4, 4602B-22-3/4	4602BQ-3/4, 4602B-22-3/4	B24258, P24258
12	Copper tubing 3/4" type K soft	3'			
13	Coupling 3/4" Cu flare x 3/4" Fip	2	C14-33-Q, C14-33	4754Q-3/4, 4754-22-3/4	H15451, P15451
14	Plug 3/4" PVC	2			
<b>METER BOXES</b>					
15	Dual Box Body	2	ARMORCAST		
16	Dual Box S-Cover	1	P6001534X28		
17	Dual Box St-Lid	1			
18	Dual Box Traffic Cover	1	A6001947T-H7		
<b>5/8" x 3/4" SINGLE SERVICE SETTING</b>					
19	Angle meter valve 1" PE/PJ x 3/4" swivel nut/lock wing	1	KV63-342W	4602B-33 1" x 3/4"	H-14259
20	Spacer/Idler PVC	1		40MA07	
21	Angle meter cplg 3/4" meter swivel nut x 3/4" Cu	1	BA43-332W-Q, BA43-332W	4602BQ-3/4, 4602B-22-3/4	B24258, P24258
22	Copper tubing 3/4" type K soft	1.5'			
23	Coupling 3/4" Cu flare x 3/4" Fip	1	C21-33	4754Q	H-15450
24	Plug 3/4" PVC	1			
<b>METER BOXES</b>					
25	Box Body	1	ARMORCAST		
26	Box Bottom	1			
27	Box Body	2	P6000485X24		
28	Box S-Cover	1			
29	Box St-Lid	1			
30	Box Traffic Cover	1	A6000484T-H7		

# CITY OF KLAMATH FALLS

MK	Date	Revision:
4	2/11	5th EDITION
3	6/06	4th EDITION
2	6/05	3rd EDITION
1	6/04	2nd EDITION

## WATER SERVICE CONNECTION RESIDENTIAL FITTINGS & BOXES

Approved By: Don Wilcox

Drwn. By: GDG  
Date: 1/2002  
Drwg. No.: **7-100a**

**TYPICAL 1" TAP (CONCLUDED)**

1" MAIN TAP					
#	FITTING	QTY			
1	Saddle Main size OD" x 1"IP tap Romac 101S (12"Main + 202S)	1		FORD	A.Y. McDONALD 4704-33 1"
2	Corp Stop 1"IPx1"PE/PJ	1		F1101-4	H-15029
3	PE Pipe 1"IPS 200#PSI Thick Wall				
4	Stiffener 1"IPS PE Pipe	1		Insert 72	6136 1"
5	2" Water Detectotape				
6	14 gauge x 1 Blue UF Irr Cont Wire				
1" SINGLE SERVICE SETTING					
7	Angle meter valve 1"PE/PJx1"swivel nut/lock wing	1		KV63-444W	4642B-33 1"
	or				
8	Straight meter valve 1"Fip x 1"swivel nut/lock wing	1		B13-444W	
9	Spacer PVC or Idler	1		Idler-4	Not Available
10	Angle meter valve 1" swivel nut/lock wing x 1" Cu	1		KV23-444W	4642B MH41255
11	Copper tubing 1" type K soft	1.5'			
12	Coupling 1"CU flare x 1 Fip	1		C21-44	4754 1"
13	Plug 1"PVC	1			
METER BOXES					
14	Box Body	1		ARMORCAST	
15	Box Bottom	1			
	or				
16	Box Body	2		P6000485X24	
17	Box S-Cover	1			
18	Box St-Lid	1			
	or				
19	Box Traffic Cover	1		A6000484T-H7	

**CITY OF KLAMATH FALLS**

MK	Date	Revision:
3	2/11	5TH EDITION
2	6/06	4TH EDITION
1	6/04	2nd EDITION

**WATER SERVICE CONNECTION  
RESIDENTIAL FITTINGS & BOXES**

Approved By: Don Wilcox

Drwn. By: GDG  
Date: 1/2002  
Drwg. No.: **7-100b**

TYPICAL 2" TAP

2" MAIN TAP

#	FITTING	QTY			
1	Saddle Main size 00" x 2" IP Tap Romac 202S	1			MUELLER
2	Corp Stop 2" IP x 2" IP	1		FORD FB500-7 MIPT	A.Y. McDONALD 3131B 2" MIPT B-2969 2" MIPT
3	Pipe 2" PVC Sch80 with Sch 80 fittings or 2" IPS PE or 2" Cu tubing type K soft				
4	2" Brass Adapter/Bushing/Coupling for connection/reduction or				
5	2" IPS PE or Cu tubing for connection.reduction			C86-77-IDR-7	4753-33 2" E-15429
6	2" Water Detectotape				
7	14 gauge x 1 Blue UF Iir Cont Wire				
2" SERVICE SETTING					
8	Angle Meter Valve 2" Fip x Fig	1		BFA13-777W	4604B 2" B-24286
9	Spacer PVC 2" or Idler	1		Idler-7	N/A
10	Angle Meter Coupling 2" Fip x Fig	1		LF31-77	4783FF 2" 2" H-14204
11	Pipe 2" PVC Sch80 with Sch80 fittings	1.5			
12	PVC 2" Sch80 Adapter/Bushing/Coupling for connection/reduction or				
13	2" IPS PE or Cu tubing type K soft	1.5			
14	Brass 2" IPS PE or Cu tubing size F0rd/McDonald/Mueller fittings for connection/reduction				
15	Plug 2" Brass	1			
METER BOXES					
16	2" & 3" Box Body	2		ARMORCAST P6001534X28	
17	2" & 3" Box S-Cover	1			
18	2" & 3" Box St-Lid or	1			
19	2" & 3" Traffic Cover	1		A6001947T-H7	

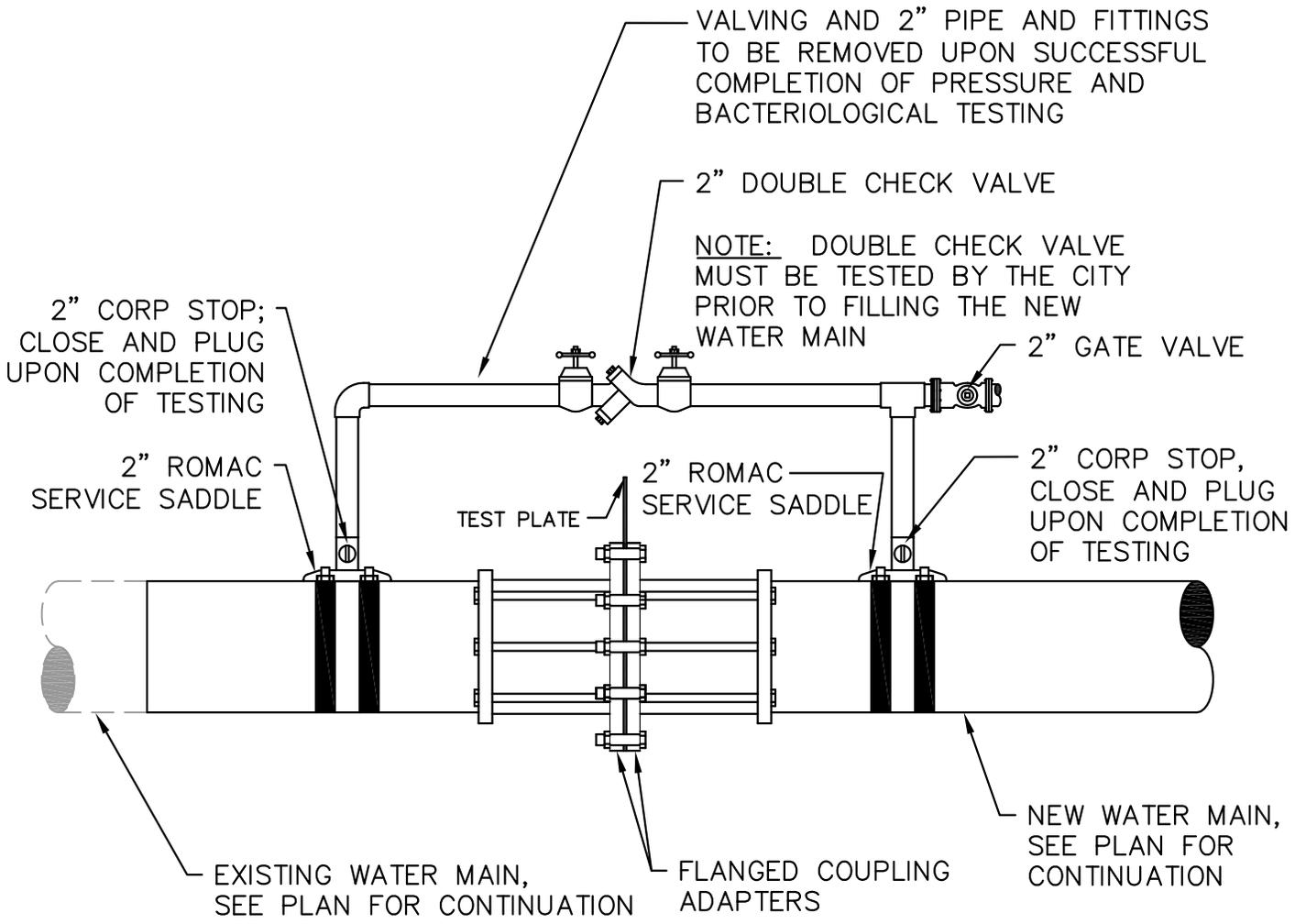
CITY OF KLAMATH FALLS

MK	Date	Revision:
2	2/11	5th EDITION
1	6/06	4th EDITION

WATER SERVICE CONNECTION  
RESIDENTIAL FITTINGS & BOXES

Approved By: Don Wilcox

Drwn. By: GDG  
Date: 1/2002  
Drwg. No.: **7-100c**



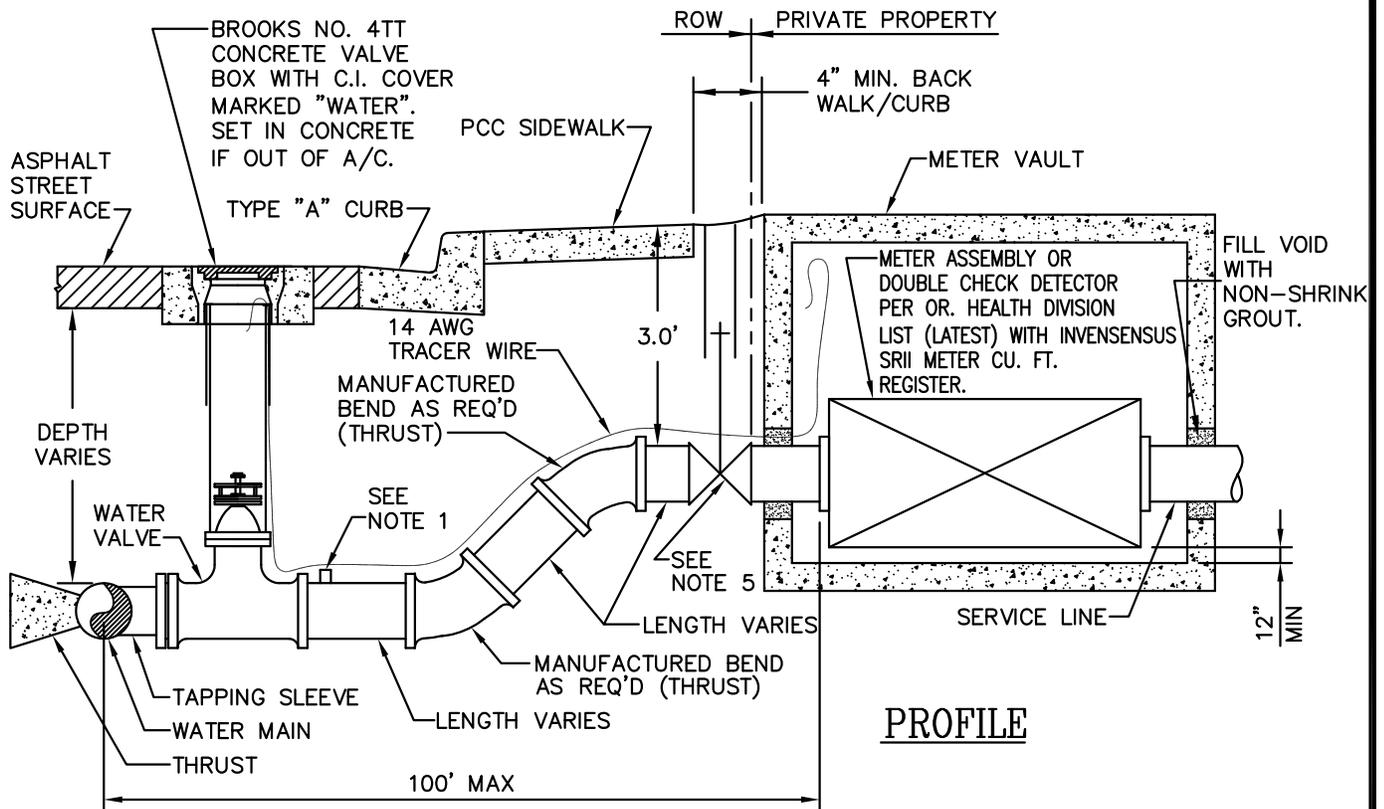
# CITY OF KLAMATH FALLS

## TESTING PLATE

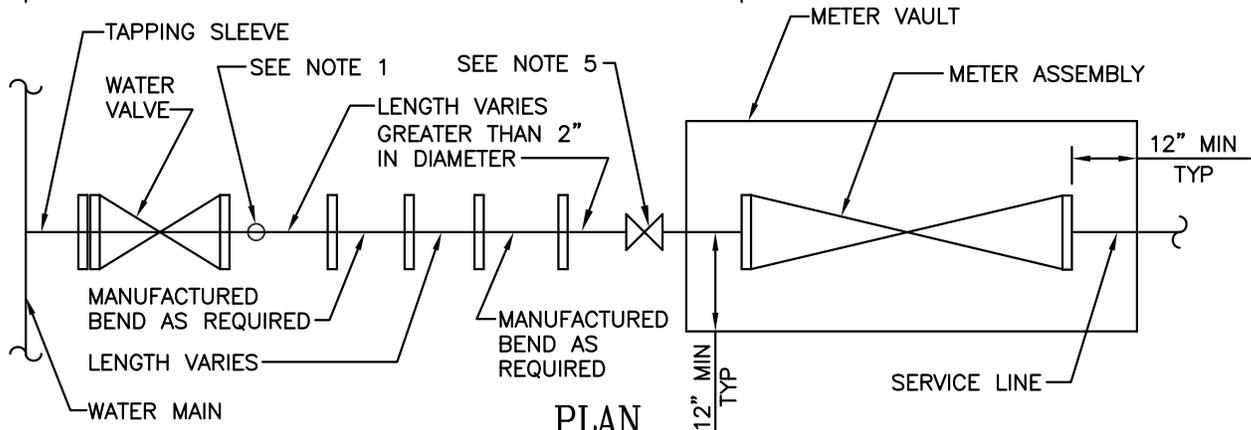
Date	Revision:
1 3/10	5th EDITION

Approved By: Don Wilcox

Drwn. By: JDH  
 Date: 12/2009  
 Drwg. No.: **7-102**



**PROFILE**



**PLAN**

**NOTES:**

1. 1" TESTING AND CHLORINATION TAP, TEMPORARY PIPE TO FINISH SURFACE (LOCATED AWAY FROM TRAFFIC AREAS) IPT OUTLET CORPORATION STOP AT SURFACE, TO BE REMOVED AND CAPPED (PLUGGED) AT THE MAIN AS SOON AS THE TESTING AND CHLORINATION IS COMPLETED.
2. ALL FIRE SERVICES TO BE CLASS 50 DUCTILE IRON PIPE WITH APPROPRIATE FITTINGS.
3. TRACER WIRE SHALL BE EXTENDED 24" ABOVE FINISHED SURFACE ON BOTH ENDS AND LEFT COILED UNDER VALVE CASE LID AND METER VAULT LID.
4. CITY PERSONNEL MUST BE PRESENT ANY TIME A TAP IS MADE ON AN EXISTING CITY WATER LINE.
5. WHEN INSTALLING FIRE SERVICE, INSTALL RESILIENT WEDGE GATE VALVE AT PROPERTY LINE.
6. FOR BACKFLOW PREVENTOR INSTALLATIONS, SEE STD DWGS 7-130 THRU 7-226.
7. REQUIRES BYPASS VALVE, SEE STD DWG 7-106.

**CITY OF KLAMATH FALLS**

Date	Revision:
4 3/11	5th EDITION
3 6/06	4th EDITION
2 6/05	3rd EDITION
1 6/04	2nd EDITION

**WATER SERVICE CONNECTION  
GREATER THAN 2" & FIRE SERVICE**

Approved By: Don Wilcox

Drwn. By: **GDG**  
 Date: **1/2002**  
 Drwg. No.: **7-105**

# CONSTRUCTION NOTES

FOR THE INSTALLATION OF FIRE SERVICES, OR SERVICE LINE GREATER THAN 2"

1. ALL WORK AND MATERIALS SHALL CONFORM TO THE MOST CURRENT EDITION OF APWA "STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION" AND THE CITY OF KLAMATH FALLS STANDARD DRAWINGS AND SPECIFICATIONS UNLESS OTHERWISE NOTED OR AMENDED.
2. CONTRACTOR SHALL LOCATE ALL EXISTING UTILITIES PRIOR TO DIGGING BY CONTACTING THE KLAMATH UTILITIES COORDINATING COUNCIL @ 811, 48 HOURS BEFORE DIGGING.
3. CONTRACTOR SHALL BE RESPONSIBLE FOR THE REPAIR OF ALL IMPROVEMENTS AND UTILITIES DAMAGED DURING CONSTRUCTION. ALL REPAIR WORK SHALL MEET OR EXCEED EXISTING CONDITIONS AND BE AT CONTRACTOR'S EXPENSE.
4. CONTRACTOR SHALL COORDINATE THE INSTALLATION OF ALL UTILITIES WITH THE UTILITY OWNERS TO PREVENT DELAYS DURING CONSTRUCTION.
5. ALL UTILITIES SHALL BE MARKED WITH AN APPROVED LOCATOR TAPE PLACED 12" BELOW THE GROUND SURFACE. TAPE SHALL BE COLOR CODED FOR THE UTILITY BEING MARKED. TRACER WIRE (14 AWG SINGLE STRAND WITH BLUE INSULATION) TO BE PLACED ON TOP OF PIPE ZONE. LOCATOR TAPE AND WIRE SHALL BE PLACED PER THE CITY OF KLAMATH FALLS STANDARD DRAWING NO. 2-105 UNLESS OTHERWISE NOTED.
6. ALL VALVES SHALL BE RESILIENT WEDGED EPOXY LINED AND COATED GATE VALVES. VALVES SHALL OPEN WHEN ROTATED COUNTER-CLOCKWISE.
7. ALL WATERLINE FITTINGS SHALL BE DUCTILE IRON AND SHALL BE INSTALLED WITH THRUST BLOCKS PER THE CITY OF KLAMATH FALLS STANDARD DRAWING NO. 2-120, UNLESS OTHERWISE NOTED.
8. GENERAL CONTRACTOR SHALL PERFORM DISINFECTION OF FACILITIES BY CHLORINATION ACCORDING TO OREGON ADMINISTRATIVE RULES 333-061-0050 (10) AND AWWA STANDARDS C651 THROUGH C654. CITY PERSONNEL SHALL PERFORM CHLORINE RESIDUAL TESTS IMMEDIATELY AFTER DISINFECTION AND IMMEDIATELY AFTER FLUSHING. CITY PERSONNEL SHALL PERFORM MICROBIOLOGICAL TEST PER CURRENT STANDARDS. SHOULD ANY TEST FAIL, THE CONTRACTOR IS RESPONSIBLE TO PAY THE CITY'S CURRENT HOURLY RATE AT NO LESS THAN 1/2 HOUR INCREMENTS FOR ADDITIONAL TESTS. CALL 883-5368 FOR CURRENT RATE. GENERAL CONTRACTOR SHALL BE RESPONSIBLE FOR DE-CHLORINATION AS REQUIRED BY FEDERAL, STATE AND LOCAL REGULATIONS.
9. THE CONTRACTOR SHALL MECHANICALLY CLEAN THE CONSTRUCTED WATER MAINS BEFORE WATER IS ALLOWED TO ENTER THE NEW MAIN. CLEANING WILL BE ACCOMPLISHED BY PROPELLING OR PULLING AN APPROPRIATELY SIZED BULLET SHAPED FOAM PLUG (PIG) THROUGH THE ENTIRE LENGTH OF THE WATER MAIN. REFER TO THE WATER DISTRIBUTION OPERATION TRAINING HANDBOOK FOR INSTRUCTIONS. A COPY OF THIS SECTION CAN BE OBTAINED FROM CITY ENGINEERING.
10. THE CONTRACTOR SHALL PRESSURE TEST THE WATERLINE AND THE SERVICE BY HYDROSTATIC METHOD PER CURRENT AWWA STANDARDS SECTION C600. TEST PRESSURE SHALL BE A MINIMUM OF 150 PSI FOR A TWO HOUR PERIOD DURATION. CITY PERSONNEL SHALL APPROVE ALL EQUIPMENT USED AND WITNESS FILLING OF THE LINE AND PRESSURE TESTING PROCESS. SHOULD THE TEST FAIL, THE CONTRACTOR IS RESPONSIBLE TO PAY THE CITY'S CURRENT RATE AT NOT LESS THAN 1/2 HOUR INCREMENTS FOR ADDITIONAL TESTS. CALL 883-5368 FOR CURRENT RATE.
11. CONNECTION TO THE EXISTING WATERLINES SHALL BE MADE BY THE CONTRACTOR (CONTRACTOR TO FURNISH AND INSTALL ALL FITTINGS) WITH THE CITY PERSONNEL OBSERVING. THE CONTRACTOR SHALL COORDINATE WITH THE CITY ON THE TIMING OF WORK.
12. MECHANICAL JOINT ADAPTERS SHALL BE FOSTER ADAPTERS, OR A COMPATIBLE EQUAL.
13. ALL WORK AND MATERIALS SHALL BE WARRANTED BY THE CONTRACTOR OR THE DEVELOPER FOR A PERIOD OF ONE YEAR AFTER THE DATE OF ACCEPTANCE BY THE CITY OF KLAMATH FALLS.
14. ALL TRENCH WORK SHALL CONFORM TO THE DETAILS ON STANDARD DRAWING NO. 2-105 OF THE CITY OF KLAMATH FALLS STANDARD DRAWINGS.

## CITY OF KLAMATH FALLS

	Date	Revision:	<h3 style="margin: 0;">CONSTRUCTION NOTES</h3> <p style="margin: 0;">FOR STANDARD DRAWING NO. 7-105</p>	Drwn. By: GDG Date: 1/2002 Drwg. No.: <b>7-105a</b>
4	3/10	5th EDITION	Approved By: <u>Don Wilcox</u>	
3	6/06	4th EDITION		
2	6/05	3rd EDITION		
1	6/04	2nd EDITION		

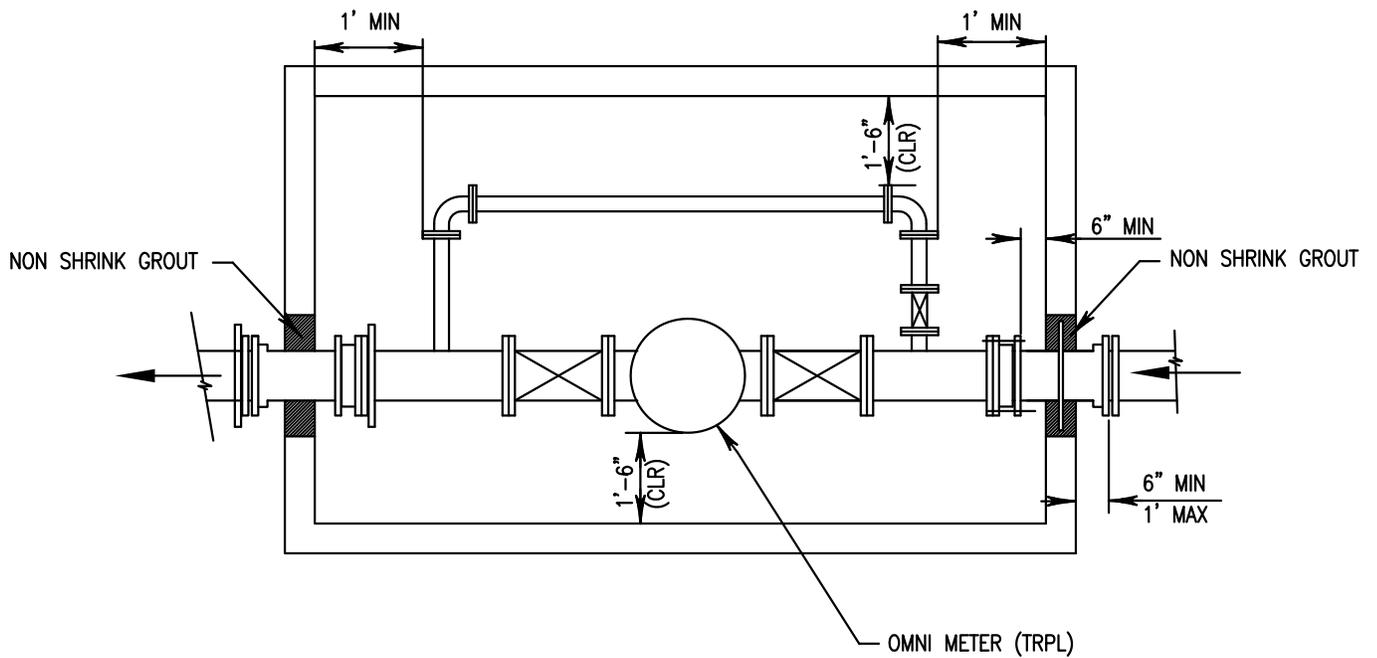
# CONSTRUCTION NOTES

FOR THE INSTALLATION OF FIRE SERVICES, OR SERVICE LINE GREATER THAN 2" (CONTINUED)

15. ALL VAULTS SHALL BE MANUFACTURED BY UTILITY VAULT COMPANY OR A COMPATIBLE EQUAL. APPROVAL OF EQUALS REQUIRED.
16. WATER METERS SHALL BE MANUFACTURED BY SENSUS TECHNOLOGIES, INC. AND WILL MEET ALL CITY REQUIREMENTS FOR EACH APPLICATION. 1 1/2" AND LARGER SHALL BE SENSUS OMNI METER.
17. FIRE SERVICE METERS SHALL CONFORM WITH AWWA STANDARD C703.
18. FOR FIRE SERVICES INSIDE A BUILDING:
  - SENSUS SR11 TRPL GALLON METER W/LENGTH OF WIRE PER EACH UNIT
  - PAD HEIGHT – REASONABLE
  - TOUCH PAD–2" HOLE THROUGH WALL, 1 1/2"± CONDUIT IN WALL FOR WIRE TO CONNECT PAD TO SENSOR. WIRE SHALL BE STRAPPED TO FITTINGS AND PIPE.
19. WHEN TAPPING EXISTING WATER MAIN LINES, THE CONTRACTOR SHALL MAKE PROVISIONS TO CONTINUOUSLY FLUSH AND PURGE WATER THROUGH THE NON-PRESSURIZED SIDE OF THE TAPPING VALVE (TOWARD THE BOTTOM), OR THROUGH THE TAPPING MACHINE. USING A CORPORATION STOP ON THE TESTING TAP ON THE TAPPING SLEEVE IS NOT ACCEPTABLE. AN ALTERNATE METHOD MAY BE APPROVED BY THE CITY INSPECTOR TWO WORKING DAYS PRIOR TO THE ACTUAL TAP. WHEN WORKING WITH ASBESTOS PIPE, REFER TO APPENDIX 7-A FOR PROPER HANDLING. THE CONTRACTOR IS RESPONSIBLE TO DISPOSE OF CONTAMINATED WATER AND ASBESTOS PIPE IN ACCORDANCE WITH DEQ REGULATIONS.
20. THE CONTRACTOR SHALL NOT ADJUST OR OPERATE WATER VALVES UNDER CITY JURISDICTION. IF IT IS DETERMINED BY THE CONTRACTOR THAT A CITY VALVE NEEDS TO BE OPERATED, THE CONTRACTOR SHALL NOTIFY THE CITY INSPECTOR A MINIMUM OF TWO WORKING DAYS BEFORE THE CONTRACTOR'S SCHEDULED DATE.
21. CONTRACTOR TO NOTIFY THE CITY INSPECTOR A MINIMUM OF THREE WORKING DAYS BEFORE THE PRESSURE TEST SO THE CITY INSPECTOR CAN NOTIFY THE WATER DIVISION TO SCHEDULE MICROBIOLOGICAL TESTING.
22. IF THE CONTRACTOR IS PLANNING A CITY WATER MAIN SHUT DOWN, THE CONTRACTOR SHALL GIVE ALL AFFECTED WATER USERS A MINIMUM OF TWO WORKING DAYS WRITTEN NOTICE (FLYERS INSERTED ON DOOR HANDLES ARE RECOMMENDED) PRIOR TO THE CITY SHUTTING DOWN THE MAIN LINE. THE CITY INSPECTOR WILL SUPPLY THE CONTRACTOR WITH THE ADDRESSES OF THE AFFECTED WATER USERS.
23. THE CONTRACTOR SHALL NOT MIX GALVANIZED AND BRASS FITTINGS.
24. A RESTRAINT SCHEDULE SHALL BE INCLUDED ON THE DESIGN PLANS OR SUBMITTED BY THE CONTRACTOR SEPARATELY FOR CITY ENGINEERING APPROVAL.

## CITY OF KLAMATH FALLS

	Date	Revision:	CONSTRUCTION NOTES FOR STANDARD DRAWING NO. 7-105	Drwn. By: GDG
4	3/10	5th EDITION		Date: 1/2002
3	6/06	4th EDITION		Drwg. No.: <b>7-105b</b>
2	6/05	3rd EDITION		
1	6/04	2nd EDITION	Approved By: <u>Don Wilcox</u>	

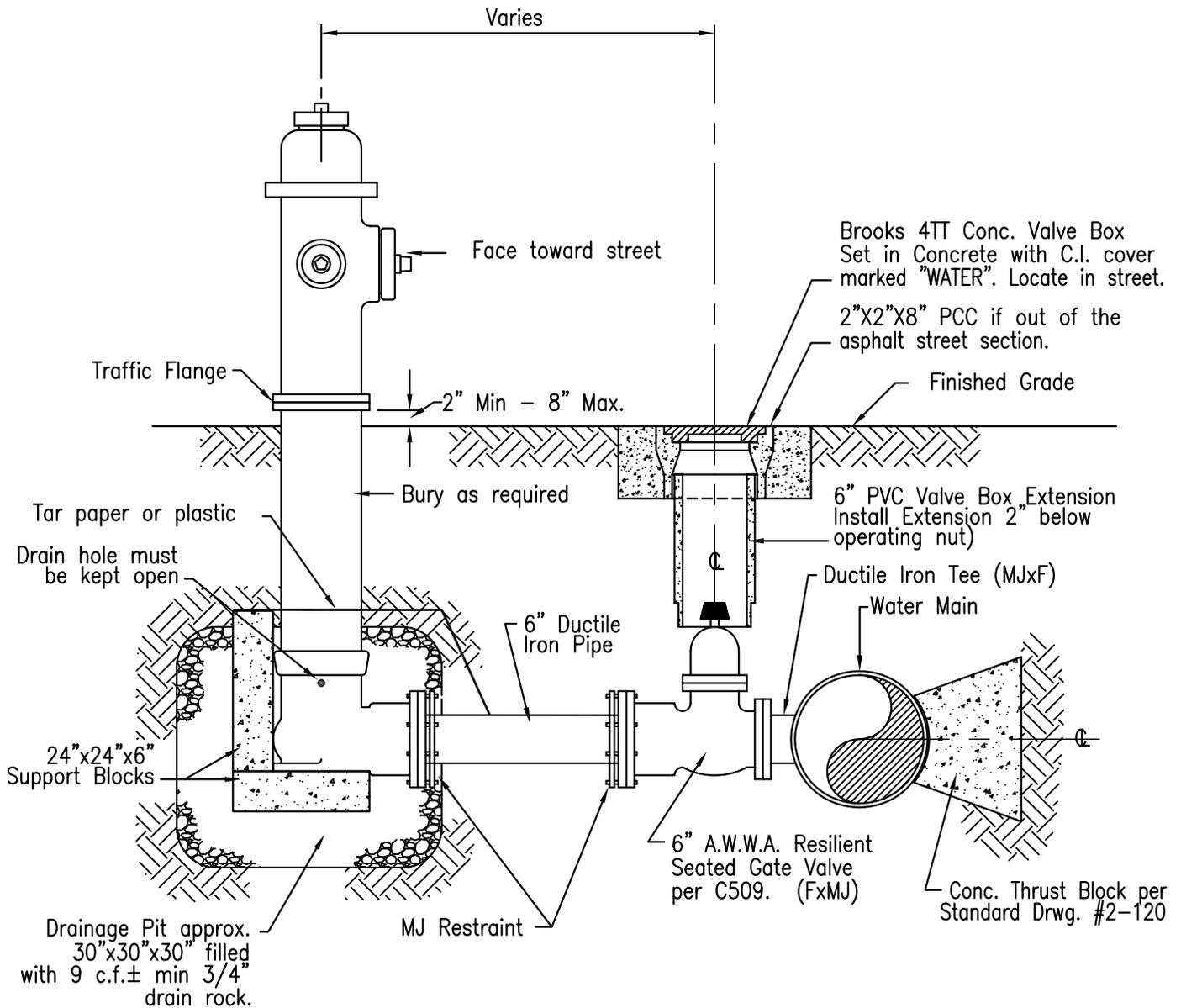


NOTES

1. ALL JOINTS MUST BE RESTRAINED.

CITY OF KLAMATH FALLS

Date	Revision:	WATER SERVICE CONNECTION GREATER THAN 2"	Drwn. By: JDH
			Date: 3/2011
			Drwg. No.: <b>7-106</b>
			Approved By: <u>Don Wilcox</u>



## CONSTRUCTION NOTES:

1. MATERIALS: Fire Hydrant shall be KENNEDY, MODEL K81D. No substitutions will be permitted. Connection shall be Mechanical Joint unless otherwise noted.
2. All joints will be restrained from the valve to the hydrant.
3. Fire hydrant shall be installed on the same side of street as main line (short service only).
4. Maximum installation distance of 500' between hydrants.
5. Protective bollards required for fire hydrants in close proximity of vehicle travel. (See detail 7-110a)
6. Public Fire Hydrants and bollards shall be painted chrome yellow.

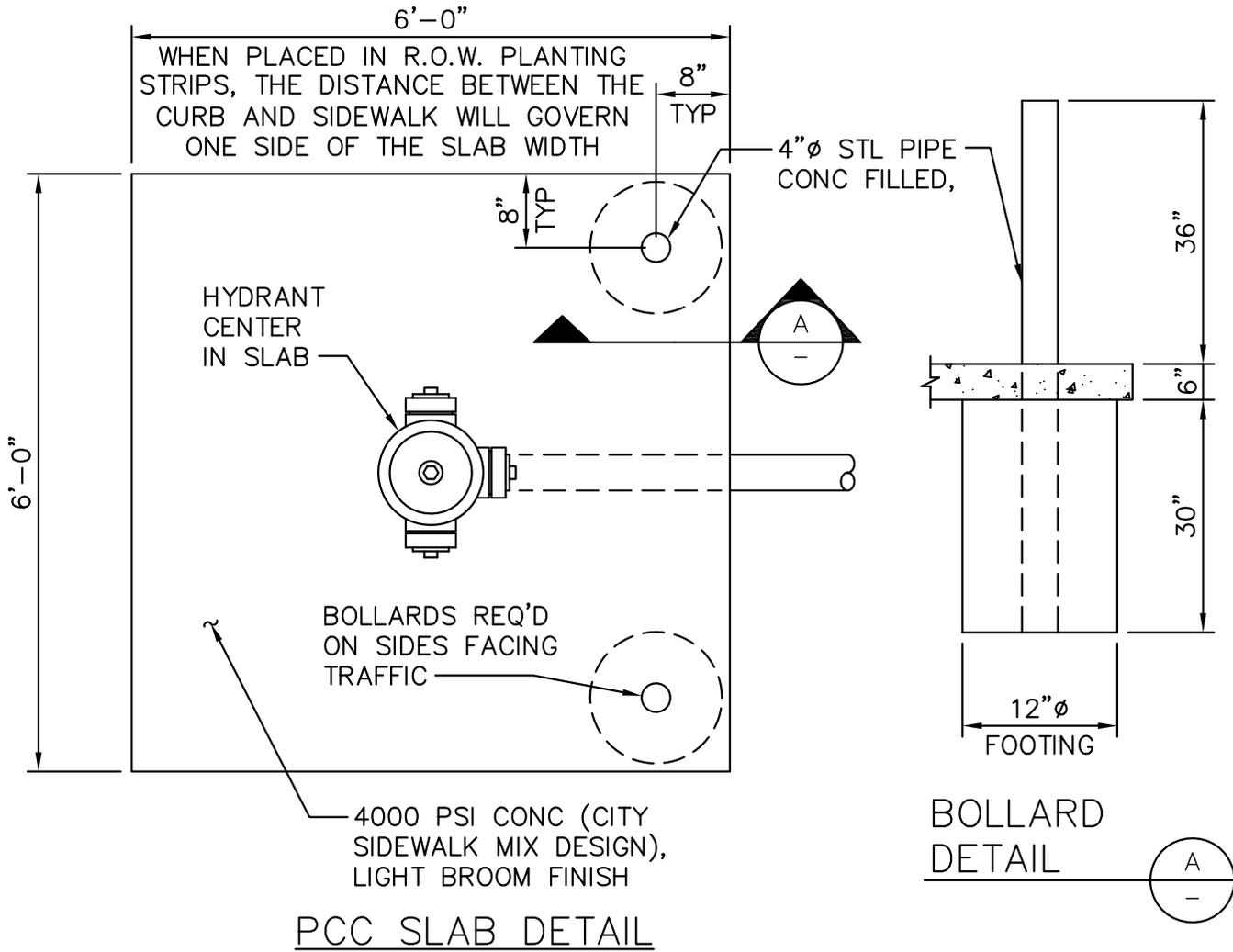
CITY OF KLAMATH FALLS

Date	Revision:
4 3/10	5th EDITION
3 6/06	4th EDITION
2 6/05	3rd EDITION
1 6/04	2nd EDITION

FIRE HYDRANT ASSEMBLY

Approved By: Don Wilcox

Drwn. By: GDG
Date: 1/2002
Drwg. No.: <b>7-110</b>



NOTES

- 1. CONSTRUCTED IN PLANTER OR PARKING AREAS.
- 7. PCC SLAB SHALL SLOPE TO THE STREET WITH A 2% GRADE.

SCALE: NONE

CITY OF KLAMATH FALLS

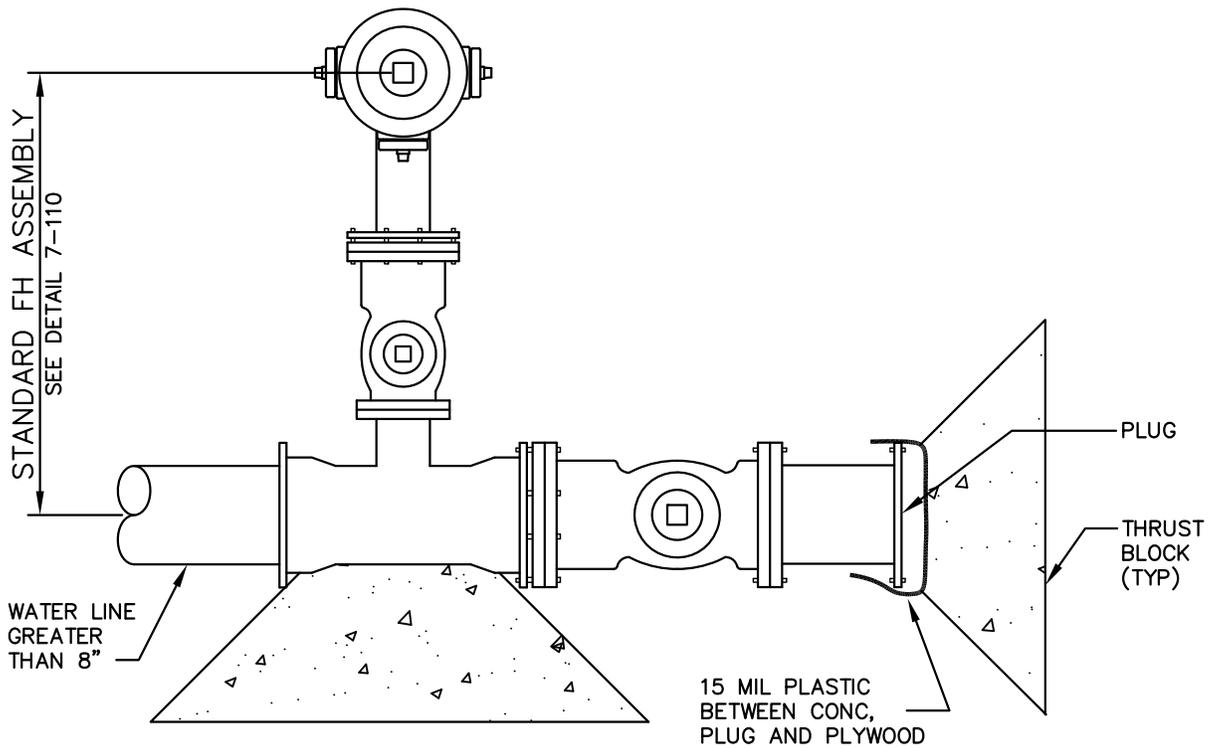
Date	Revision:
1	3/10 5th EDITION

FIRE HYDRANT  
BOLLARD LOCATION DETAIL

Approved By: Don Wilcox

Drwn. By: WM  
Date: 10/04  
Drwg. No.: **7-110a**





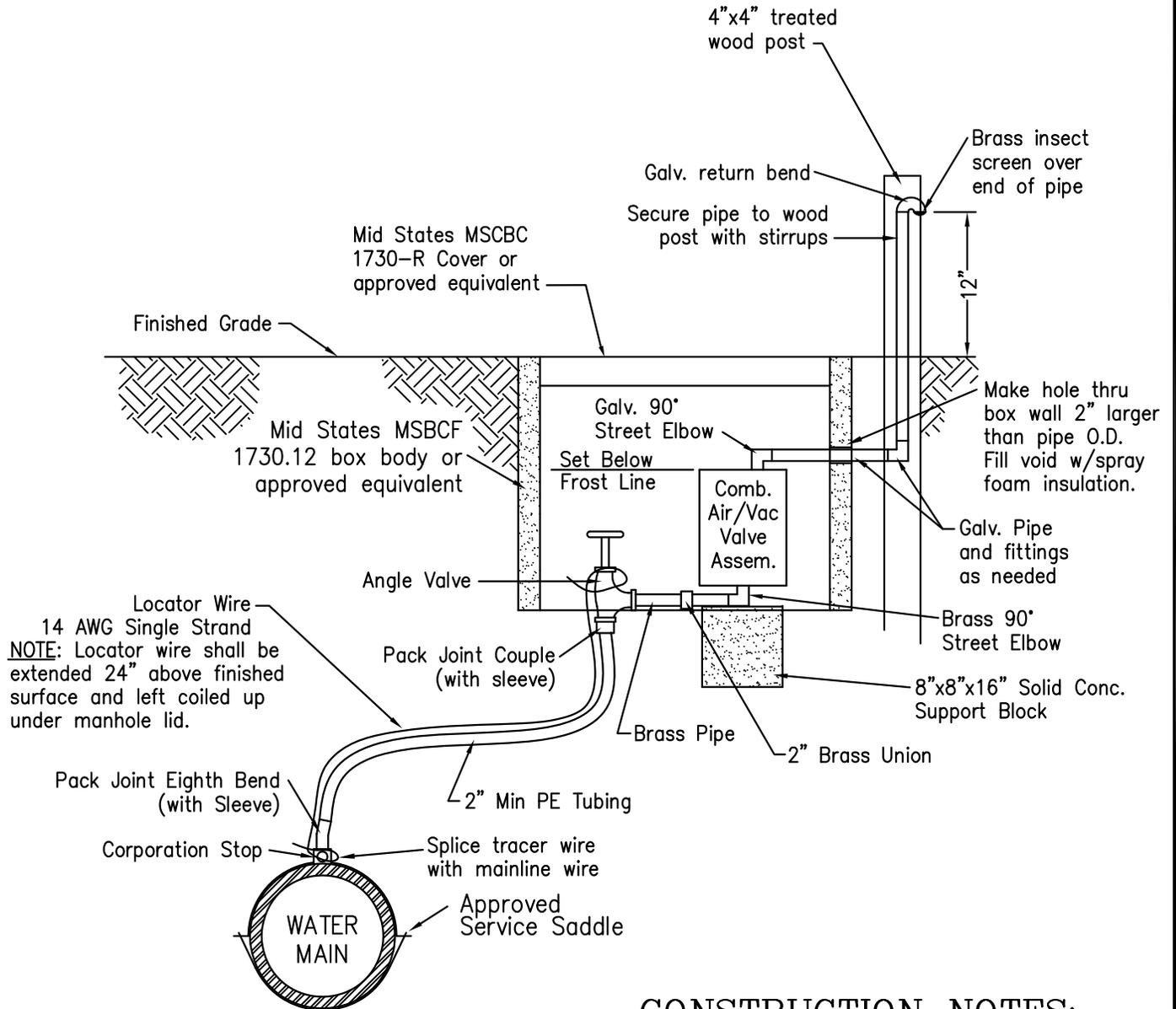
# CITY OF KLAMATH FALLS

Date	Revision:
2 3/10	5th EDITION
1 6/04	2nd EDITION

FUTURE CONNECTION FOR  
LINES GREATER THAN 8"

Approved By: Don Wilcox

Drwn. By: WEM  
Date: 2/2004  
Drwg. No.: **7-117**



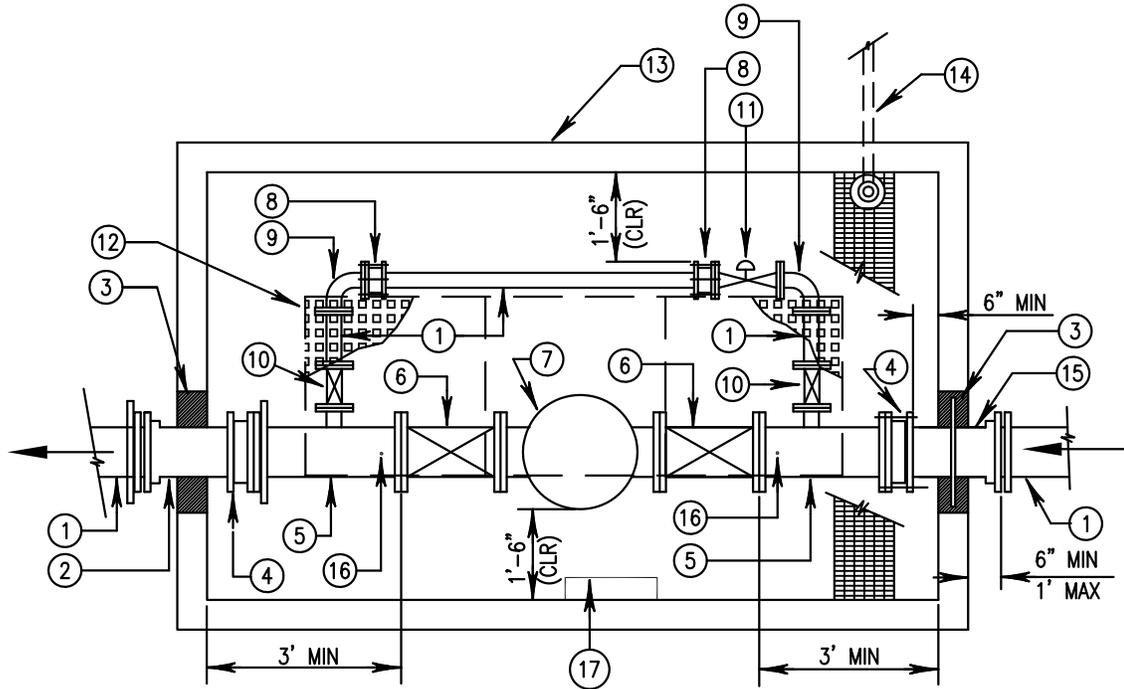
**CONSTRUCTION NOTES:**

1. Locate assembly away from driveways.
2. Refer to 7-5.7

**AIR/COMBINATION AIR-VACUUM  
VALVE ASSEMBLY**

CITY OF KLAMATH FALLS

	Date	Revision:	COMBINATION AIR/ VACUUM VALVE	Drwn. By: GDG
				Date: 1/2002
3	3/10	5TH EDITION		Drwg. No.: <b>7-120</b>
2	6/06	4TH EDITION		
1	6/04	2nd EDITION	Approved By: <u>Don Wilcox</u>	



## PARTS LIST

- |  |   |
|--|---|
| ① DUCTILE IRON PIPE  | ⑩ GV (FLxFL)  |
| ② SPOOL (MJxPE) WITH MEGA-LUGS OR EQUAL TO BE USED IN PRECAST VAULTS | ⑪ LOW FLOW PRV (FLxFL) (CLA - VAL)  |
| ③ NON-SHRINK GROUT   | ⑫ UTILITY VAULT CO., OR EQUAL, LID WITH TRAFFIC LOADED LOCKING STEEL COVERS.. |
| ④ FLANGED COUPLING ADAPTER (FLxMJ)                                   | ⑬ UTILITY VAULT CO, OR EQUAL, PRECAST VAULT.                                  |
| ⑤ TEE (ALL FL)   | ⑭ 2" GRAVITY SUMP DRAIN EXTEND TO DAY-LIGHT OR TO STORM DRAINAGE SYSTEM.      |
| ⑥ GV CL 200 (FLxFL), OR BUTTERFLY VALVE IF LARGER THAN 12 INCH.      | ⑮ WALL SLEEVE (FLxPE) TO BE USED WITH CAST IN PLACE VAULTS.                   |
| ⑦ PRV (FLxFL) (CLA - VAL), HIGH FLOW                                 | ⑯ 1/4" GAUGE TAPS WITH 1/4" BALL VALVES FOR ISOLATION.                        |
| ⑧ FLANGE COUPLING ADAPTER  | ⑰ GALVANIZED STEEL LADDER TO BE SECURED TO THE VAULT.                         |
| ⑨ FLG x FLG 90° ELL  |   |

## NOTES

- MINIMUM CLEARANCE BETWEEN PRV VALVES AND FLOOR SHALL BE 12".
- MINIMUM CLEARANCE BETWEEN HIGHEST PART OF ASSEMBLY AND TOP OF VAULT SHALL BE 24".
- PROVIDE LIQUID FILLED 2 1/2" GAUGES AMETEK SERIES 550L OR EQUAL.
- ALL EQUIPMENT MUST BE RATED FOR SOURCE PRESSURE.
- PIPING AND VALVES SHALL BE SUPPORTED BY POURED-IN-PLACE CONCRETE OR STEEL STANDS. NUMBER AND PLACEMENT OF STANDS TO BE DETERMINED BY CITY ACCORDING TO VALVE SIZE.
- BRAND, TYPE OF PRV, AND ACCESSORIES TO BE APPROVED BY CITY. PRESSURE SETTINGS TO BE DETERMINED BY CITY. SUBMITTAL REQUIRED.

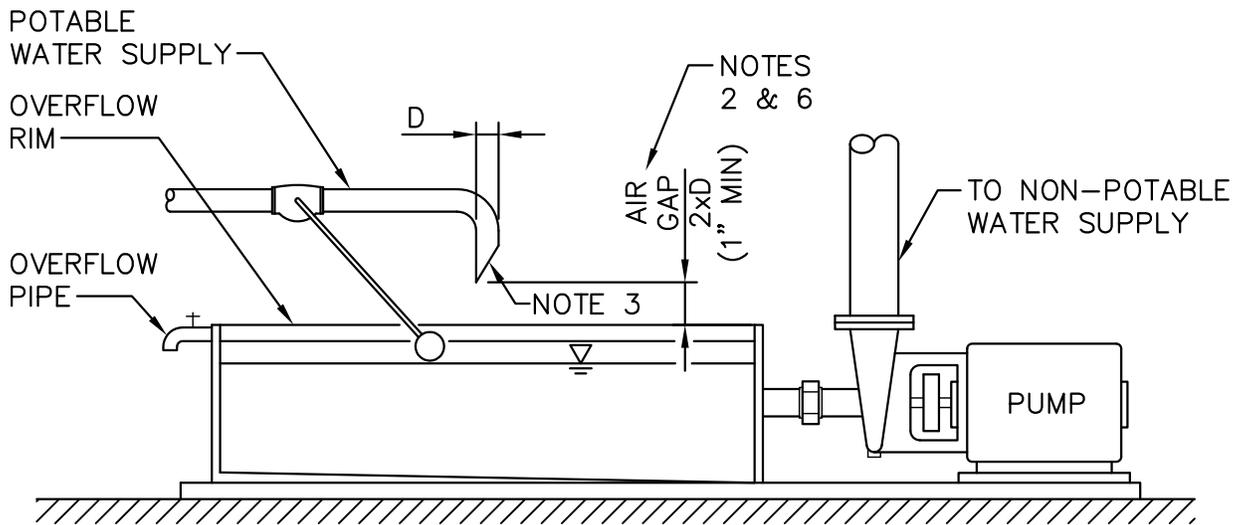
CITY OF KLAMATH FALLS

TYPICAL P.R.V. STATION

Date	Revision:
3/10	5th EDITION
6/06	4th EDITION
6/04	2nd EDITION

Approved By: Don Wilcox

Drwn. By: GDG  
 Date: 1/2002  
 Drwg. No.: **7-125**



**MINIMUM AIRGAPS FOR WATER DISTRIBUTION**

<b>FIXTURES</b>	<b>WHEN NOT AFFECTED BY SIDE WALLS<sup>1</sup> INCH (MM)</b>	<b>WHEN AFFECTED BY SIDE WALLS<sup>2</sup> INCH (MM)</b>
LAVATORIES AND OTHER FIXTURES WITH EFFECTIVE OPENINGS <sup>3</sup> NOT GREATER THAN ONE HALF (1/2) INCH IN DIAMETER	1" (25)	1 1/2" (38)
SINKS, LAUNDRY TRAYS, GOOSE-NECKS BATH FAUCETS AND OTHER FIXTURES WITH EFFECTIVE OPENINGS <sup>3</sup> NO GREATER THAN THREE QUARTERS (3/4) INCH IN DIAMETER	1 1/2" (38)	2 1/4" (57)
OVER RIM BATH FILLERS AND OTHER FIXTURE WITH EFFECTIVE OPENINGS <sup>3</sup> NO GREATER THAN ONE (1) INCH IN DIAMETER	2" (51)	3" (76)
EFFECTIVE OPENINGS <sup>3</sup> GREATER THAN ONE (1) INCH IN DIAMETER	TWO (2) TIMES DIAMETER OF EFFECTIVE OPENING	THREE (3) TIMES DIAMETER OF EFFECTIVE OPENING

SCALE: NONE

# CITY OF KLAMATH FALLS

MK	Date	Revision:	<b>AIRGAP BACKFLOW PROTECTION</b>	Drwn. By: WEM
				Date: 5/06
				Drwg. No.: <b>7-130</b>
		Approved By: _____		

<sup>1</sup> SIDE WALLS, RIBS OR SIMILAR OBSTRUCTIONS DO NOT AFFECT AIRGAPS WHEN SPACED FROM THE INSIDE EDGE OF THE SPOUT OPENING A DISTANCE GREATER THAN THREE TIMES THE DIAMETER OF THE EFFECTIVE OPENING FOR A SINGLE WALL, OR A DISTANCE GREATER THAN FOUR TIMES THE EFFECTIVE OPENING FOR TWO INTERSECTING WALLS.

<sup>2</sup> VERTICAL WALLS, RIBS, OR SIMILAR OBSTRUCTIONS EXTENDING FROM THE WATER SURFACE TO OR ABOVE THE HORIZONTAL PLANE OF THE SPOUT OPENING OTHER THAN SPECIFIED IN NOTE 1 ABOVE. THE EFFECT OF THREE OR MORE SUCH VERTICAL WALLS OR RIBS HAS NOT BEEN DETERMINED. IN SUCH CASES, THE AIRGAP SHALL BE MEASURED FROM THE TOP OF THE WALL.

<sup>3</sup> THE EFFECTIVE OPENING SHALL BE THE MINIMUM CROSS-SECTIONAL AREA AT THE SEAT OF THE CONTROL VALVE OR THE SUPPLY PIPE OR TUBING WHICH FEEDS THE DEVICE OUTLET. IF TWO OR MORE LINES SUPPLY ONE OUTLET, THE EFFECTIVE OPENING SHALL BE THE SUM OF THE CROSS-SECTIONAL AREAS OF THE INDIVIDUAL SUPPLY LINES OR THE AREA OF THE SINGLE OUTLET, WHICHEVER IS SMALLER.

<sup>4</sup> AIRGAPS LESS THAN ONE (1) INCH (25 MM) SHALL BE APPROVED AS A PERMANENT PART OF A LISTED ASSEMBLY THAT HAS BEEN TESTED UNDER ACTUAL BACKFLOW CONDITIONS WITH VACUUMS OF FROM 0 TO 25 INCHES OF MERCURY.

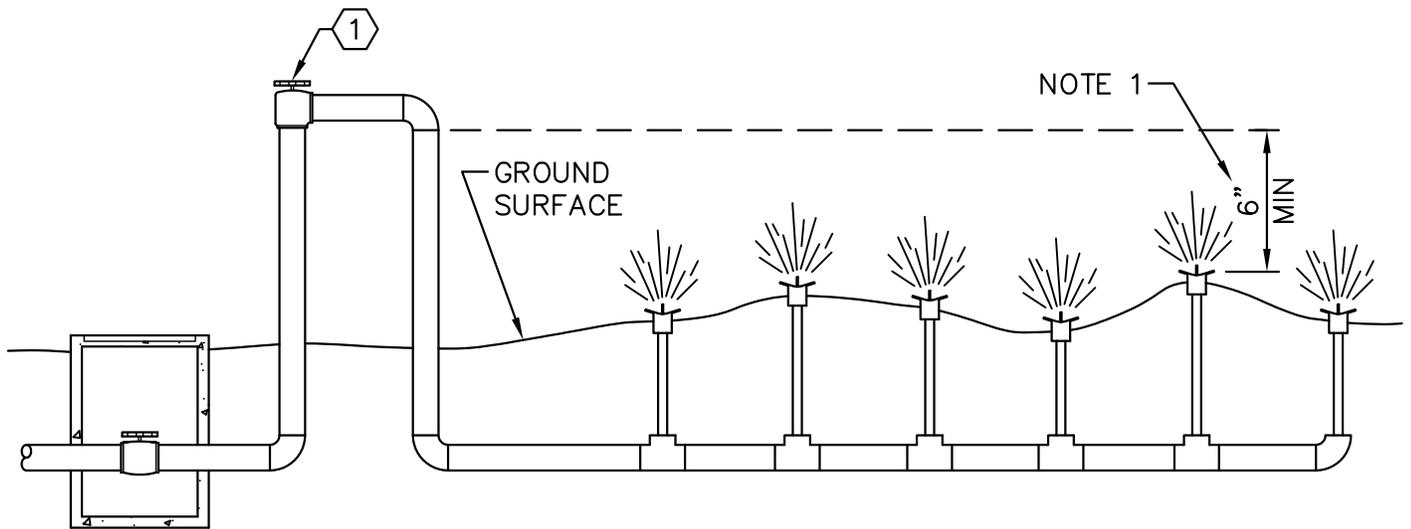
NOTES

1. AIRGAP PROTECTION MAY BE USED IN LIEU OF MECHANICAL BACKFLOW PROTECTION, WITH CITY OF KLAMATH FALLS APPROVAL IN THEIR RESPECTIVE SERVICE AREA.
2. ALL AIRGAPS ARE MEASURED FROM THE BOTTOM OF THE SUPPLY LINE TO THE TOP OF THE OVERFLOW RIM OF THE SINK OR BASIN THAT IS BEING FILLED. THE AIRGAP SHALL BE TWICE THE DIAMETER (2xD) OF THE SUPPLY LINE, BUT IN NO CASE LESS THAN 1". IF THE SUPPLY LINE IS ADJACENT TO THE WALL, THE AIRGAP SHALL BE INCREASED TO THREE TIMES THE DIAMETER (3xD) OF THE SUPPLY PIPING.
3. IF THE SUPPLY LINE IS CUT AT AN ANGLE, THE POINT CLOSEST TO THE BASIN IS USED FOR MEASUREMENT.
4. IF THE SUPPLY LINE IS REDUCED AT THE OPENING, THE DIAMETER USED FOR AIRGAP IS TAKEN AT THE LARGEST PORTION OF THE SUPPLY PIPING.
5. THERE SHALL BE NO EXTENSIONS OR ATTACHMENTS ON THE OPEN END OF THE SUPPLY PIPING. ANY SUCH EXTENSIONS OR ATTACHMENTS WILL VOID THE AIRGAP PROTECTION.
6. REFERENCE DOCUMENT-UNIFORM PLUMBING CODE, CHAPTER 10, SECTION 2003, AND MINIMUM AIRGAPS FOR WATER DISTRIBUTION.

SCALE: NONE

# CITY OF KLAMATH FALLS

MK	Date	Revision:	<h2 style="margin: 0;">AIRGAP BACKFLOW PROTECTION NOTES</h2>	Drwn. By: WEM Date: 5/06 Drwg. No.: <b>7-131</b>
			Approved By: _____	



**NOTES**

1. ATMOSPHERIC VACUUM BREAKERS SHALL BE INSTALLED A MINIMUM OF 6" ABOVE THE HIGHEST PIPING OR OUTLET THAT IT SERVES.
2. FOR TESTING AND MAINTENANCE PURPOSES, ATMOSPHERIC VACUUM BREAKER (AVB) SHALL NOT BE INSTALLED MORE THAN 6" ABOVE THE GROUND OR FLOOR LEVEL, UNLESS ACCOMPANIED BY A PERMANENT OSHA APPROVED PLATFORM,
3. ALL CLEARANCES APPLY TO OUTSIDE OR IN-BUILDING INSTALLATIONS.
4. AVB'S SHALL NOT BE INSTALLED IN AN AREA WHERE FLOODING IS A POSSIBILITY.
5. AVB'S SHALL NOT BE INSTALLED WHERE DUSTY, CORROSIVE, OR TOXIC ATMOSPHERES ARE PRESENT. NO CHEMICAL OR FERTILIZER MAY BE INTRODUCED THROUGH AN IRRIGATION SYSTEM EQUIPPED WITH AVB'S.
6. THERE SHALL BE NO SHUT-OFF VALVES DOWNSTREAM (ON THE DISCHARGE SIDE) OF THE DEVICE.
7. DEVICE CANNOT BE UNDER CONSTANT PRESSURE MORE THAN 12 HOURS IN ANY 24 HOUR PERIOD.

① - APPROVED ATMOSPHERIC VACUUM BREAKER (DEVICES WITH IAPMO AND ASSE APPROVAL ARE APPROVED BY ODHS).

SCALE: NONE

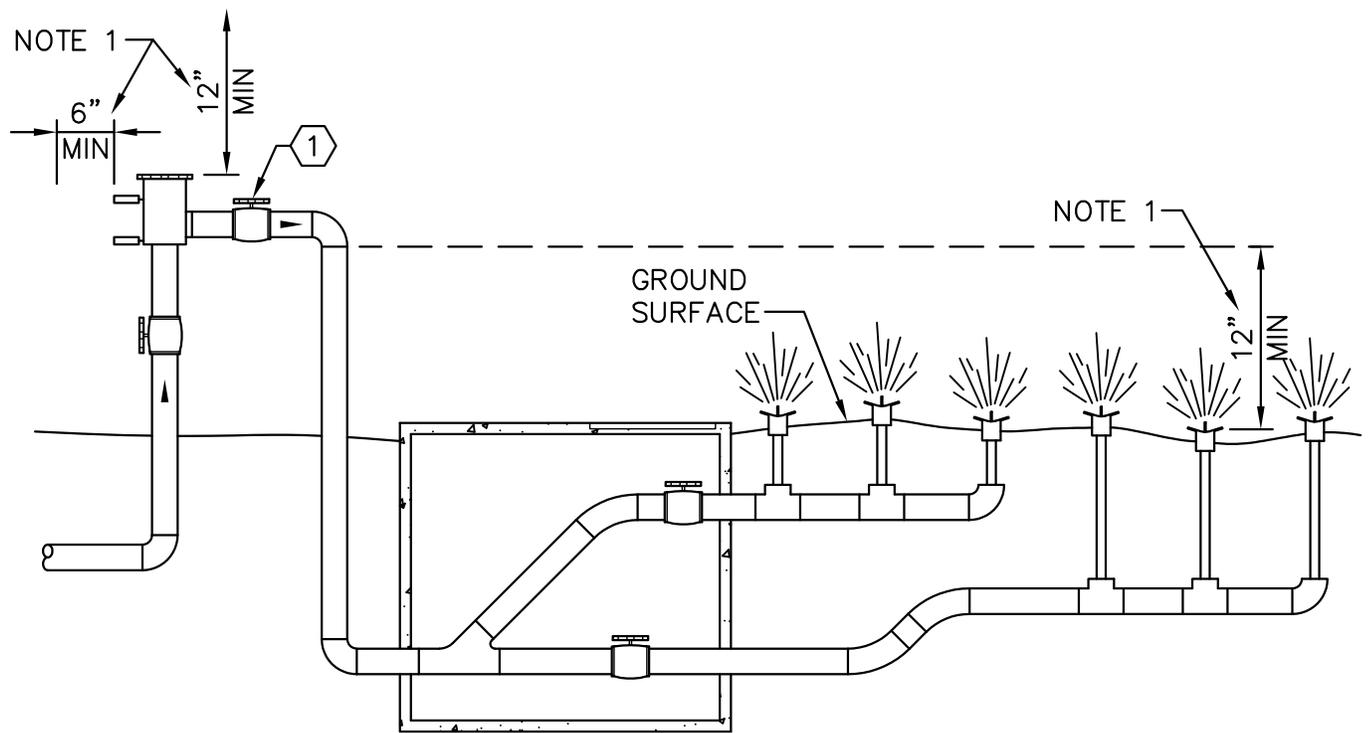
CITY OF KLAMATH FALLS

MK	Date	Revision:
1	6/06	4th EDITION

ATMOSPHERIC  
VACUUM BREAKER

Approved By: ***Mark Willrett***

Drwn. By:	WEM
Date:	5/06
Drwg. No.:	<b>7-135</b>



**NOTES**

1. PRESSURE VACUUM BREAKER ASSEMBLY (PVB) SHALL BE INSTALLED A MINIMUM OF 12" ABOVE THE HIGHEST PIPING THAT IT SERVES, 12" CLEARANCE ABOVE THE DEVICE FOR MAINTENANCE AND 6" CLEARANCE ON THE TEST-COCK SIDE FOR TESTING.
2. FOR TESTING AND MAINTENANCE PURPOSES, PVB ASSEMBLY SHALL NOT BE INSTALLED MORE THAN 5' ABOVE GROUND OR FLOOR LEVEL, UNLESS ACCOMPANIED BY A PERMANENT OSHA APPROVED PLATFORM.
3. ALL CLEARANCES APPLY TO OUTSIDE OR IN-BUILDING INSTALLATIONS. WHEN INSTALLED INSIDE A BUILDING, THERE MUST BE A DRAINAGE SYSTEM CAPABLE OF HANDLING THE VOLUME OF WATER, WHICH COULD DISCHARGE FROM THE ASSEMBLY.
4. PVB ASSEMBLY SHALL NOT BE INSTALLED IN AN AREA WHERE IT IS POSSIBLE TO FLOOD THE ASSEMBLY.
5. PVB'S SHALL NOT BE INSTALLED WHERE DUSTY, CORROSIVE, OR TOXIC ATMOSPHERES ARE PRESENT. NO CHEMICAL OR FERTILIZER MAY BE INTRODUCED THROUGH AN IRRIGATION SYSTEM EQUIPPED WITH PVB'S.

① - APPROVED PRESSURE VACUUM BREAKER ASSEMBLY

AS REQUIRED BY OAR 333-061-0070 AND THE OREGON PLUMBING SPECIALTY CODE, AN INITIAL TEST PERFORMED BY A STATE CERTIFIED BACKFLOW ASSEMBLY TESTER IS REQUIRED AT THE TIME OF INSTALLATION, WITH COPIES FURNISHED TO:

1. THE OWNER
2. THE WATER SUPPLIER
3. THE BUILDING OFFICIAL

SCALE: NONE

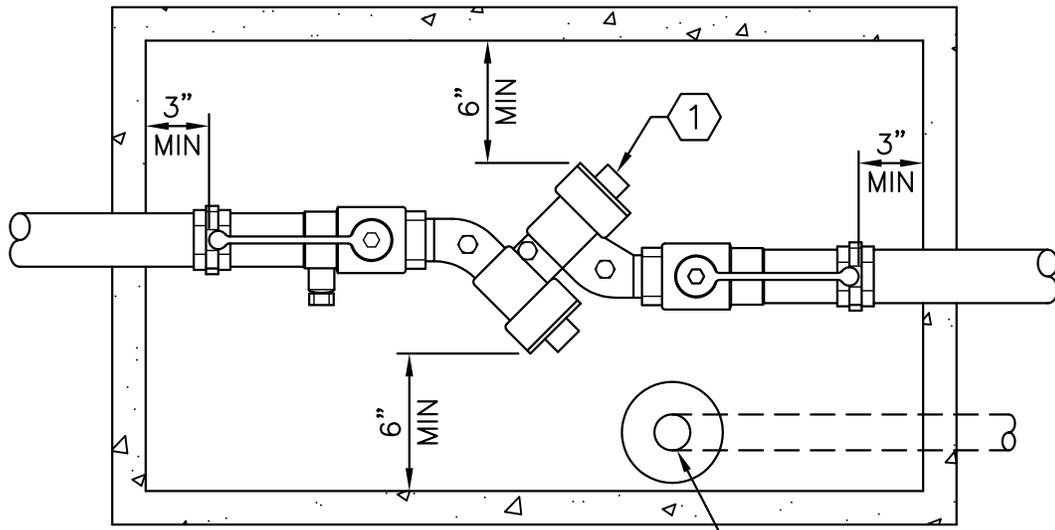
CITY OF KLAMATH FALLS

MK	Date	Revision:
1	6/06	4th EDITION

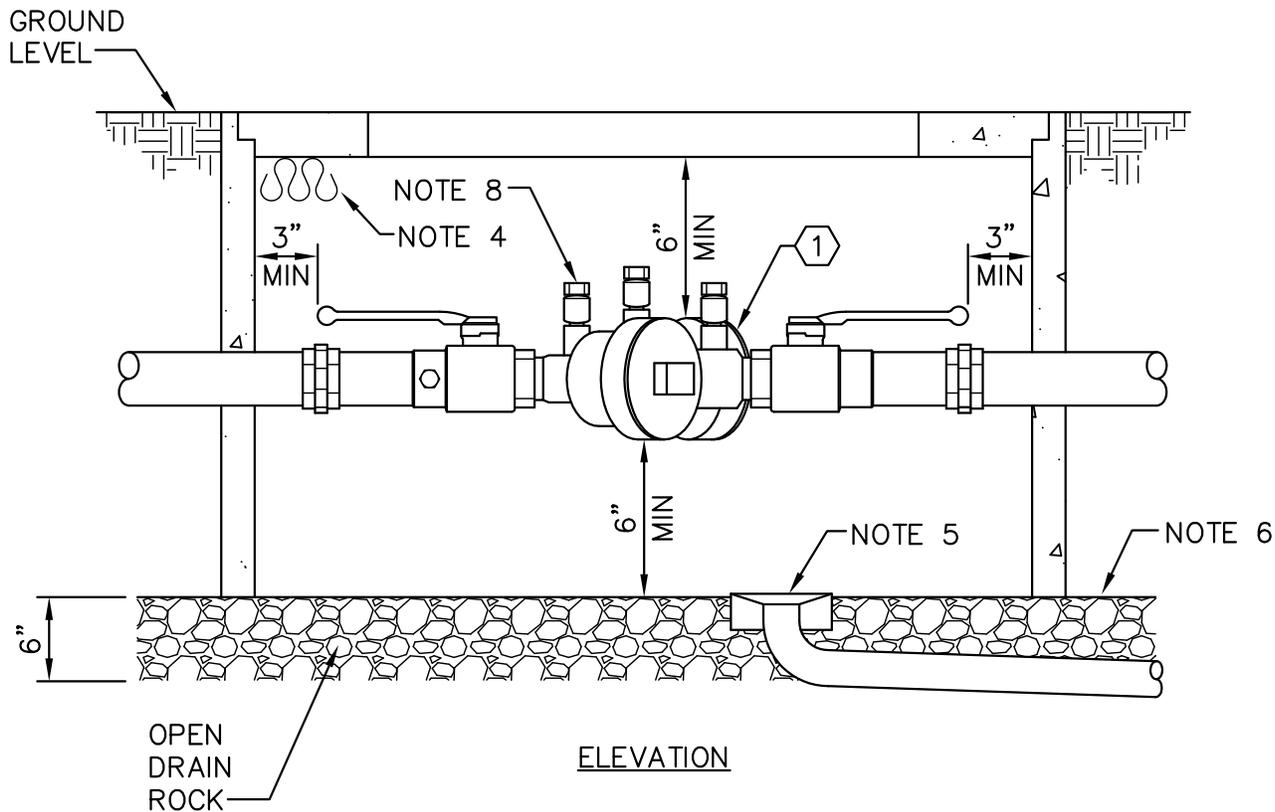
PRESSURE VACUUM  
BREAKER ASSEMBLY

Approved By: *Mark Willrett*

Drwn. By:	WEM
Date:	5/06
Drwg. No.:	<b>7-140</b>



PLAN



ELEVATION

SCALE: NONE

# CITY OF KLAMATH FALLS

MK	Date	Revision:
1	6/06	4th EDITION

DOUBLE CHECK VALVE  
 1/2" - 2" BELOW GROUND

Approved By: *Mark Willrett*

Drwn. By:	WEM
Date:	5/06
Drwg. No.:	<b>7-145</b>

NOTES

1. DOUBLE CHECK VALVE ASSEMBLY SHALL BE INSTALLED IN A LOCATION APPROVED BY CITY OF KLAMATH FALLS FOR THEIR RESPECTIVE SERVICE AREA.
2. DOUBLE CHECK VALVE ASSEMBLY MAY BE INSTALLED VERTICALLY, PROVIDED THAT THE ASSEMBLY:
  - A. IS RECOMMENDED BY THE MANUFACTURER FOR VERTICAL INSTALLATION
  - B. IS INSTALLED IN AN ORIENTATION AS LISTED IN THE CURRENT "APPROVED BACKFLOW ASSEMBLY LIST" (OREGON DEPARTMENT OF HUMAN SERVICES, 503-731-4007).
3. ALL CLEARANCES APPLY TO OUTSIDE, IN-BUILDING, AND VERTICAL INSTALLATIONS.
4. INSULATION-FREEZE PROTECTION TO BE INSULATION AND/OR HEAT SOURCE TO KEEP ENCLOSURES AT A MINIMUM TEMPERATURE OF 40°F (NFPA 13-4-5.4.1.1).
5. CITY OF KLAMATH FALLS DEVICES IN ITS SERVICE AREA MAY APPROVE ALTERNATE METHODS. ALLOWABLE ALTERNATIVES TO DAYLIGHT MAY INCLUDE:
  - A. DRY WELL
6. COMPACTED GRAVEL OR UNDISTURBED BASE.
7. A DOOR OR OTHER ACCESS SHALL BE PROVIDED.
8. ASSEMBLIES INSTALLED BELOW GROUND LEVEL SHALL HAVE WATERTIGHT PLUGS OR CAPS INSTALLED ON THE TEST COCKS.

FOR FIRE SERVICES

9. FIRE ASSEMBLIES SHALL BE INSTALLED WITHIN 100 FT OF THE CONNECTION TO THE PUBLIC SUPPLY WATER MAIN.
10. ALL PIPING PRECEDING THE DOUBLE CHECK VALVE SHALL BE CONSTRUCTED OF POTABLE APPROVED MATERIAL, (E.G., PVC, LINED CAST IRON, OR DUCTILE IRON).
11. NO OUTLETS OR CONNECTIONS (INCLUDING HYDRANTS) WILL BE PERMITTED ON FIRE SERVICE LIES PRIOR TO THE DOUBLE CHECK VALVE.

① - APPROVED CHECK VALVE ASSEMBLY INCLUDING FACTORY SUPPLIED SHUT-OFF VALVES

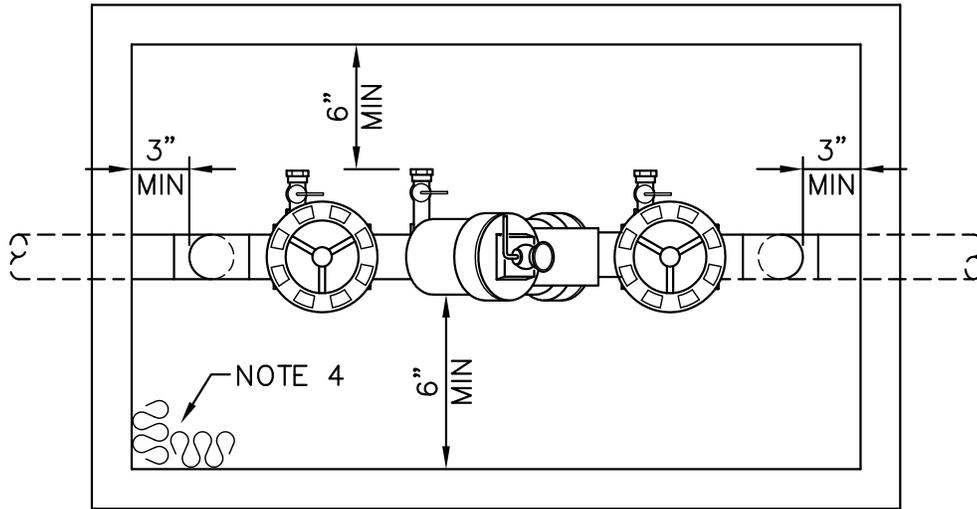
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3. THE BUILDING OFFICIAL

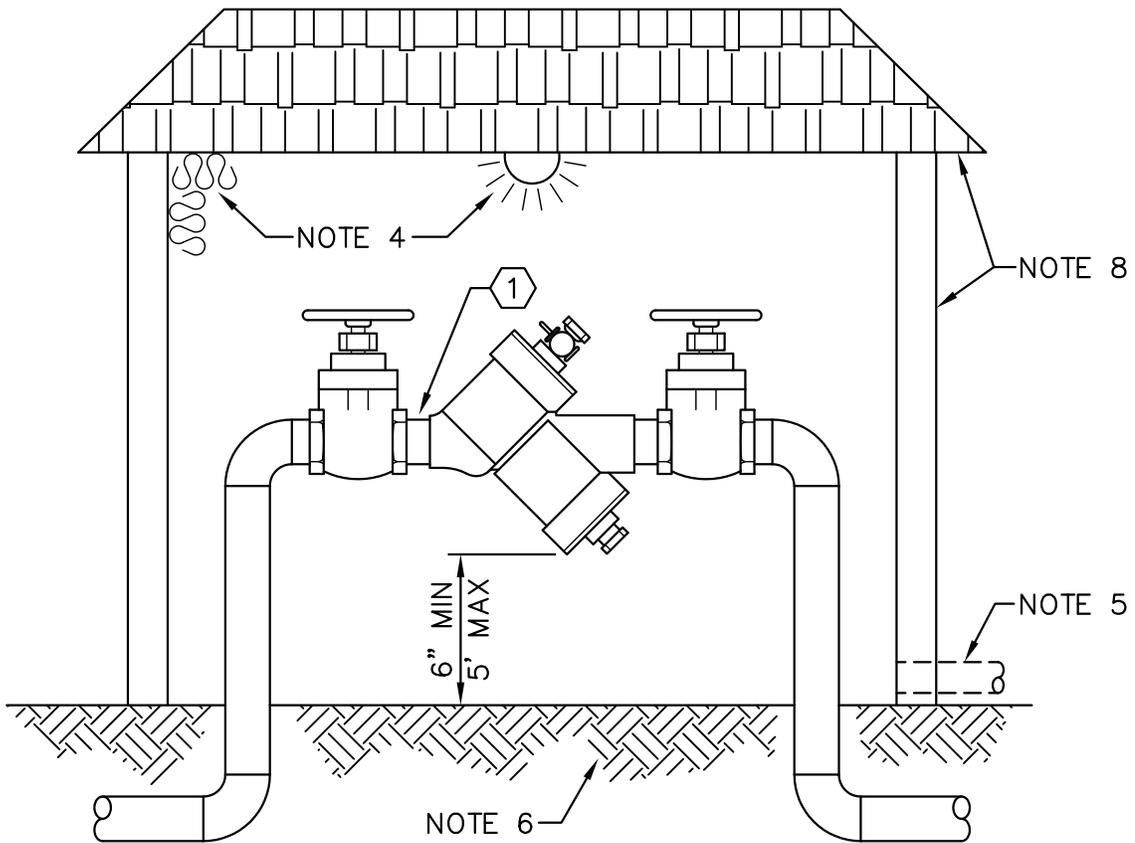
SCALE: NONE

# CITY OF KLAMATH FALLS

MK	Date	Revision:	DOUBLE CHECK VALVE 1/2" - 2" BELOW GROUND NOTES	Drwn. By: WEM Date: 5/06 Drwg. No.: <b>7-146</b>
1	6/06	4th EDITION	Approved By: <i>Mark Willrett</i>	



PLAN



ELEVATION

SCALE: NONE

# CITY OF KLAMATH FALLS

MK	Date	Revision:
1	6/06	4th EDITION

DOUBLE CHECK VALVE ASSY  
1/2" - 2" ABOVE GROUND

Approved By: *Mark Willrett*

Drwn. By: KBW  
Date: 5/06  
Drwg. No.: **7-150**

NOTES

1. DOUBLE CHECK VALVE ASSEMBLY SHALL BE INSTALLED IN A LOCATION APPROVED BY CITY OF KLAMATH FALLS FOR THEIR RESPECTIVE SERVICE AREA.
2. DOUBLE CHECK VALVE ASSEMBLY MAY BE INSTALLED VERTICALLY, PROVIDED THAT THE ASSEMBLY:
  - A. IS RECOMMENDED BY THE MANUFACTURER FOR VERTICAL INSTALLATION
  - B. IS INSTALLED IN AN ORIENTATION AS LISTED IN THE CURRENT "APPROVED BACKFLOW ASSEMBLY LIST" (OREGON DEPARTMENT OF HUMAN SERVICES, 503-731-4007).
3. ALL CLEARANCES APPLY TO OUTSIDE, IN-BUILDING, AND VERTICAL INSTALLATIONS.
4. INSULATION-FREEZE PROTECTION TO BE INSULATION AND/OR HEAT SOURCE TO KEEP ENCLOSURES AT A MINIMUM TEMPERATURE OF 40°F (NFPA 13-4-5.4.1.1).
5. CITY OF KLAMATH FALLS DEVICES IN ITS SERVICE AREA MAY APPROVE ALTERNATE METHODS. ALLOWABLE ALTERNATIVES TO DAYLIGHT MAY INCLUDE:
  - A. DRY WELL
6. COMPACTED GRAVEL OR UNDISTURBED BASE.
7. A DOOR OR OTHER ACCESS SHALL BE PROVIDED.
8. ALL STRUCTURES TO COMPLY WITH LOCAL CODES.

FOR FIRE SERVICES

9. FIRE ASSEMBLIES SHALL BE INSTALLED WITHIN 100 FT OF THE CONNECTION TO THE PUBLIC SUPPLY WATER MAIN.
10. ALL PIPING PRECEDING THE DOUBLE CHECK VALVE SHALL BE CONSTRUCTED OF POTABLE APPROVED MATERIAL, (E.G., PVC, LINED CAST IRON, OR DUCTILE IRON).
11. NO OUTLETS OR CONNECTIONS (INCLUDING HYDRANTS) WILL BE PERMITTED ON FIRE SERVICE LIES PRIOR TO THE DOUBLE CHECK VALVE.

① - APPROVED CHECK VALVE ASSEMBLY INCLUDING FACTORY SUPPLIED SHUT-OFF VALVES

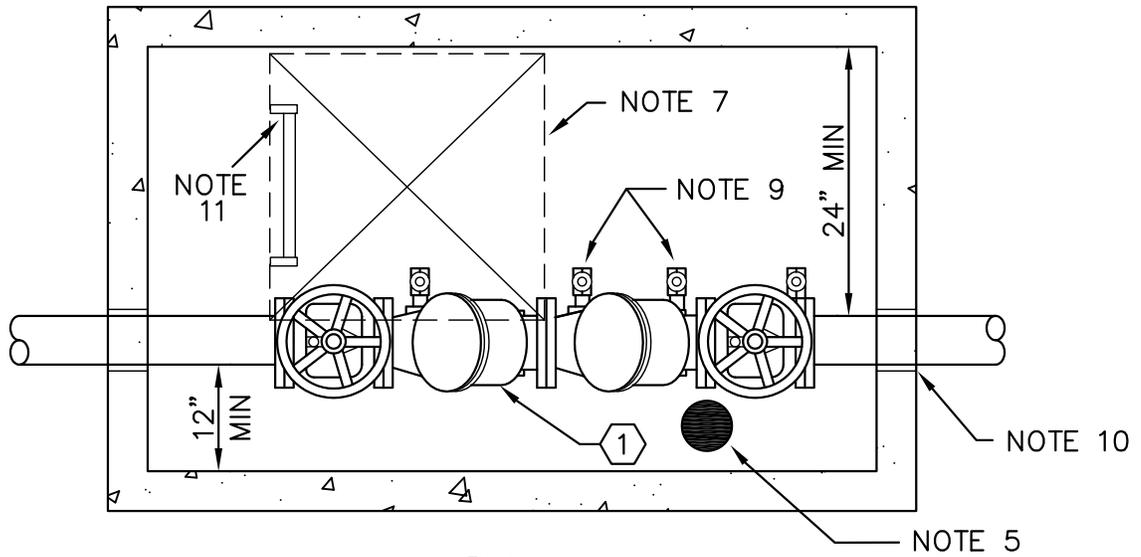
AS REQUIRED BY OAR 333-061-0070 AND THE OREGON PLUMBING SPECIALTY CODE, AN INITIAL TEST PERFORMED BY A STATE CERTIFIED BACKFLOW ASSEMBLY TESTER IS REQUIRED AT THE TIME IF INSTALLATION, WITH COPIES FURNISHED TO:

1. THE OWNER
2. THE WATER SUPPLIER
3. THE BUILDING OFFICIAL

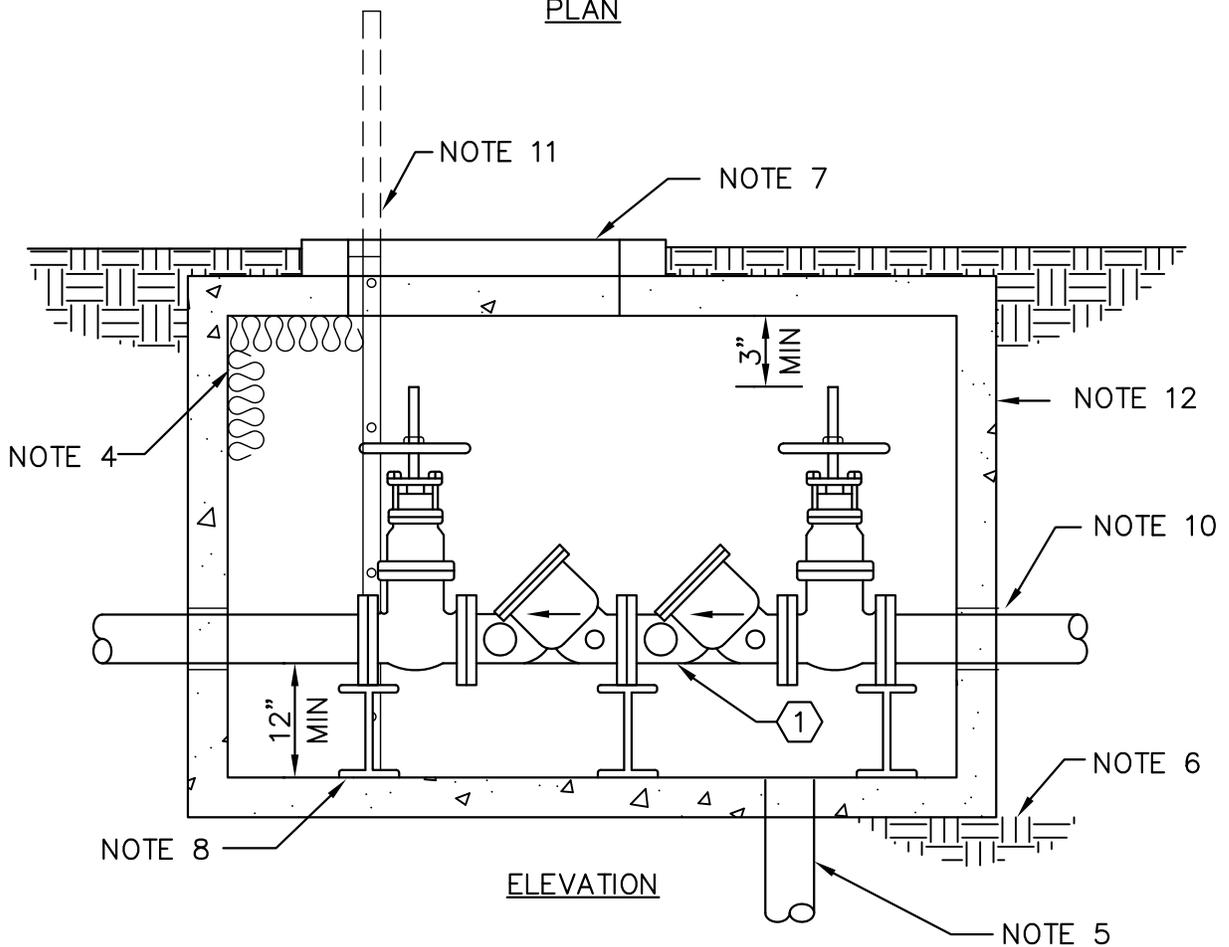
SCALE: NONE

# CITY OF KLAMATH FALLS

MK	Date	Revision:	DOUBLE CHECK VALVE 1/2" - 2" ABOVE GROUND NOTES	Drwn. By: KBW
				Date: 5/06
				Drwg. No.: <b>7-151</b>
1	6/06	4th EDITION	Approved By: <i>Mark Willrett</i>	



PLAN



ELEVATION

SCALE: NONE

# CITY OF KLAMATH FALLS

MK	Date	Revision:	DOUBLE CHECK VALVE ASSY 2 1/2" - 10" BELOW GROUND	Drwn. By: KBW
				Date: 5/06
1	6/06	4th EDITION	Approved By: <i>Mark Willrett</i>	Drwg. No.: <b>7-155</b>

NOTES

1. DOUBLE CHECK VALVE ASSEMBLY SHALL BE INSTALLED IN A LOCATION APPROVED BY CITY OF KLAMATH FALLS FOR THEIR RESPECTIVE SERVICE AREA.
2. DOUBLE CHECK VALVE ASSEMBLY MAY BE INSTALLED VERTICALLY, PROVIDED THAT THE ASSEMBLY:
  - A. IS RECOMMENDED BY THE MANUFACTURER FOR VERTICAL INSTALLATION
  - B. IS INSTALLED IN AN ORIENTATION AS LISTED IN THE CURRENT "APPROVED BACKFLOW ASSEMBLY LIST" (OREGON DEPARTMENT OF HUMAN SERVICES, 503-731-4007).
3. ALL CLEARANCES APPLY TO OUTSIDE, IN-BUILDING, AND VERTICAL INSTALLATIONS.
4. INSULATION-FREEZE PROTECTION TO BE INSULATION AND/OR HEAT SOURCE TO KEEP ENCLOSURES AT A MINIMUM TEMPERATURE OF 40°F (NFPA 13-4-5.4.1.1).
5. CITY OF KLAMATH FALLS DEVICES IN ITS SERVICE AREA MAY APPROVE ALTERNATE METHODS. ALLOWABLE ALTERNATIVES MAY INCLUDE:
  - A. DRY WELL (2 CUBIC YARD MINIMUM)
  - B. SUMP PUMP
6. COMPACTED GRAVEL OR UNDISTURBED BASE.
7. HATCH, MINIMUM 3' X 3', SPRING ASSISTED, GALVANIZED OR ALUMINUM DIAMOND PLATE.
8. ALL ASSEMBLIES 2½" AND LARGER SHALL HAVE FLANGE SUPPORTS.
9. ASSEMBLIES INSTALLED BELOW GROUND LEVEL SHALL HAVE WATERTIGHT PLUGS OR CAPS INSTALLED ON TEST COCKS.
10. WATERTIGHT GROUT SHALL BE USED TO SEAL OPENINGS.
11. IF VAULT DEPTH EXCEEDS 4', USE OSHA APPROVED FIXED LADDER (OAR CH 437, DIVISION 2, 1910.27). PROVIDE LOCKABLE EXTENSION W/LADDER.
12. REINFORCED CONCRETE VAULT (ASTM C-875).

FOR FIRE SERVICES

13. FIRE ASSEMBLIES SHALL BE INSTALLED WITHIN 100 FT OF THE CONNECTION TO THE PUBLIC SUPPLY WATER MAIN.
14. ALL PIPING PRECEDING THE DOUBLE CHECK VALVE SHALL BE CONSTRUCTED OF POTABLE APPROVED MATERIAL, (E.G., PVC, LINED CAST IRON, OR DUCTILE IRON).
15. NO OUTLETS OR CONNECTIONS (INCLUDING HYDRANTS) WILL BE PERMITTED ON FIRE SERVICE LIES PRIOR TO THE DOUBLE CHECK VALVE.

① – APPROVED DOUBLE CHECK VALVE ASSEMBLY INCLUDING FACTORY SUPPLIED SHUT-OFF VALVES

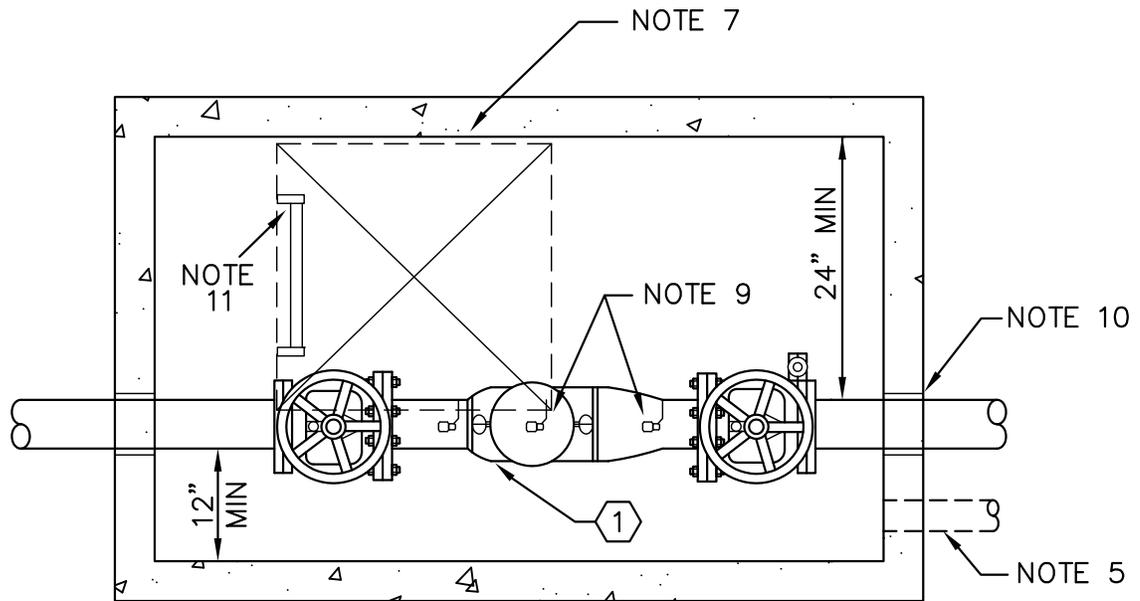
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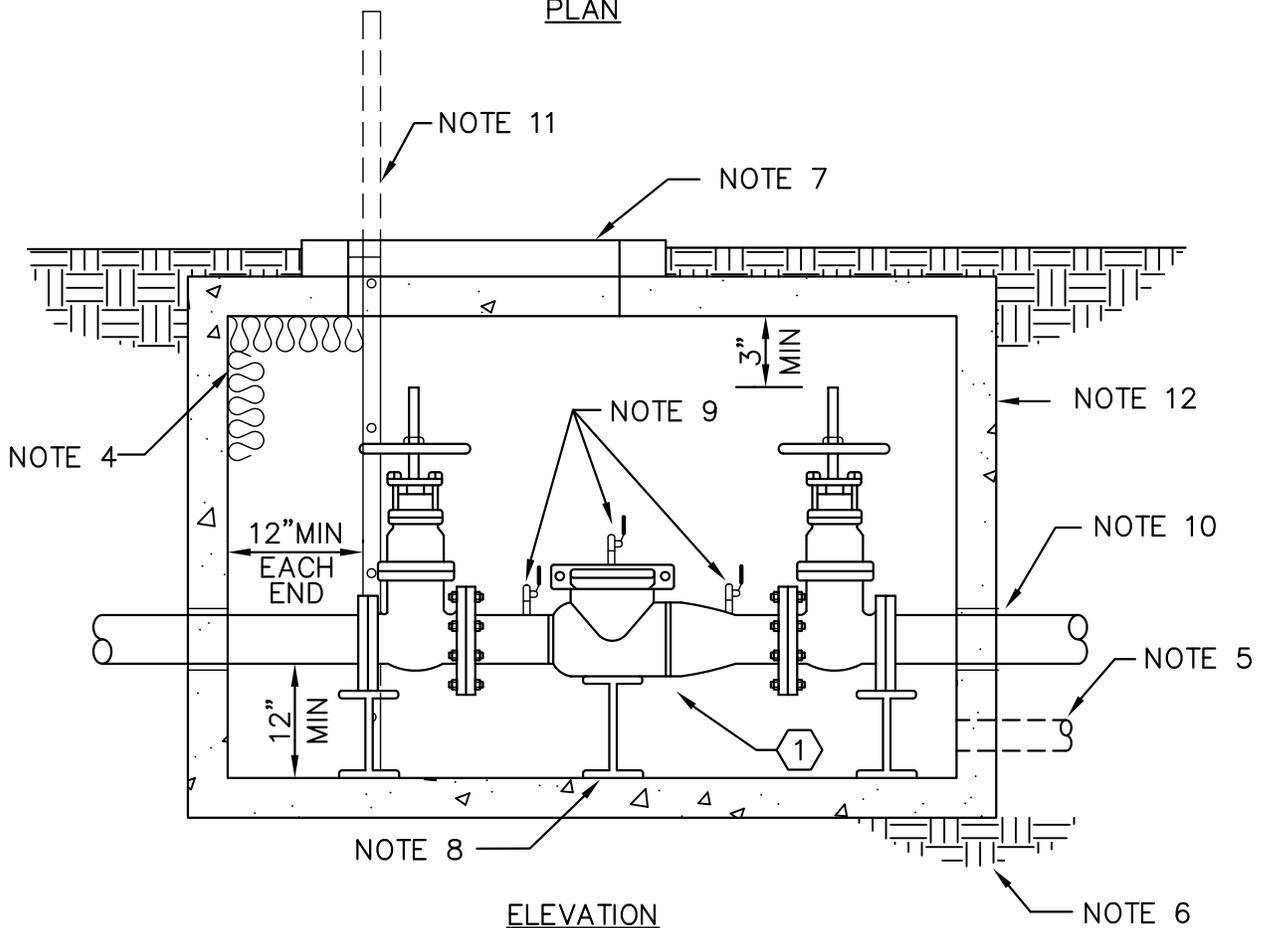
SCALE: NONE

# CITY OF KLAMATH FALLS

MK	Date	Revision:	DOUBLE CHECK VALVE ASSY 2½" - 10" BELOW GROUND	Drwn. By: KBW Date: 5/06 Drwg. No.: <b>7-156</b>
1	6/06	4th EDITION	Approved By: <i>Mark Willrett</i>	



PLAN



ELEVATION

SCALE: NONE

# CITY OF KLAMATH FALLS

MK	Date	Revision:
1	6/06	4th EDITION

DOUBLE CHECK VALVE ASSEMBLY  
 2 1/2" - 10" BELOW GROUND  
 AMES SS/SE PATTERN

Approved By: *Mark Willrett*

Drwn. By:	KBW
Date:	5/06
Drwg. No.:	<b>7-160</b>

**NOTES**

1. DOUBLE CHECK VALVE ASSEMBLY SHALL BE INSTALLED IN A LOCATION APPROVED BY CITY OF KLAMATH FALLS FOR THEIR RESPECTIVE SERVICE AREA.
2. DOUBLE CHECK VALVE ASSEMBLY MAY BE INSTALLED VERTICALLY, PROVIDED THAT THE ASSEMBLY:
  - A. IS RECOMMENDED BY THE MANUFACTURER FOR VERTICAL INSTALLATION
  - B. IS INSTALLED IN AN ORIENTATION AS LISTED IN THE CURRENT "APPROVED BACKFLOW ASSEMBLY LIST" (OREGON DEPARTMENT OF HUMAN SERVICES, 503-731-4007).
3. ALL CLEARANCES APPLY TO OUTSIDE, IN-BUILDING, AND VERTICAL INSTALLATIONS.
4. INSULATION-FREEZE PROTECTION TO BE INSULATION AND/OR HEAT SOURCE TO KEEP ENCLOSURES AT A MINIMUM TEMPERATURE OF 40°F (NFPA 13-4-5.4.1.1).
5. CITY OF KLAMATH FALLS DEVICES IN ITS SERVICE AREA MAY APPROVE ALTERNATE METHODS. ALLOWABLE ALTERNATIVES MAY INCLUDE:
  - A. DRY WELL (2 CUBIC YARD MINIMUM)
  - B. SUMP PUMP
6. COMPACTED GRAVEL OR UNDISTURBED BASE.
7. HATCH, MINIMUM 3' X 3', SPRING ASSISTED, GALVANIZED OR ALUMINUM DIAMOND PLATE.
8. ALL ASSEMBLIES 2½" AND LARGER SHALL HAVE FLANGE SUPPORTS.
9. ASSEMBLIES INSTALLED BELOW GROUND LEVEL SHALL HAVE WATERTIGHT PLUGS OR CAPS INSTALLED ON TEST COCKS.
10. WATERTIGHT GROUT SHALL BE USED TO SEAL OPENINGS.
11. IF VAULT DEPTH EXCEEDS 4', USE OSHA APPROVED FIXED LADDER (OAR CH 437, DIVISION 2, 1910.27). PROVIDE LOCKABLE EXTENSION W/LADDER.
12. REINFORCED CONCRETE VAULT (ASTM C-875).

**FOR FIRE SERVICES**

13. FIRE ASSEMBLIES SHALL BE INSTALLED WITHIN 100 FT OF THE CONNECTION TO THE PUBLIC SUPPLY WATER MAIN.
14. ALL PIPING PRECEDING THE DOUBLE CHECK VALVE SHALL BE CONSTRUCTED OF POTABLE APPROVED MATERIAL, (E.G., PVC, LINED CAST IRON, OR DUCTILE IRON).
15. NO OUTLETS OR CONNECTIONS (INCLUDING HYDRANTS) WILL BE PERMITTED ON FIRE SERVICE LIES PRIOR TO THE DOUBLE CHECK VALVE.

① – APPROVED DOUBLE CHECK VALVE ASSEMBLY INCLUDING FACTORY SUPPLIED SHUT-OFF VALVES

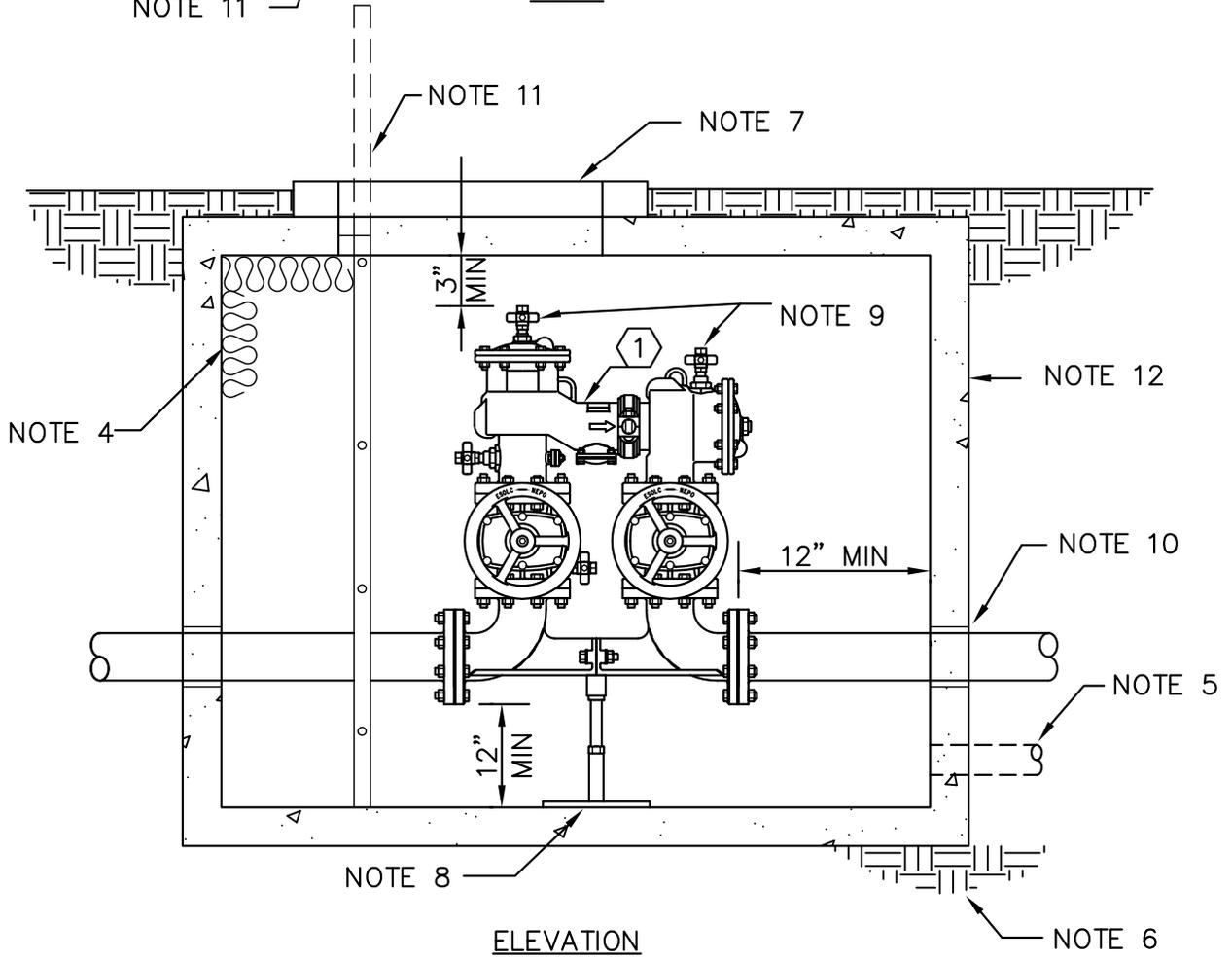
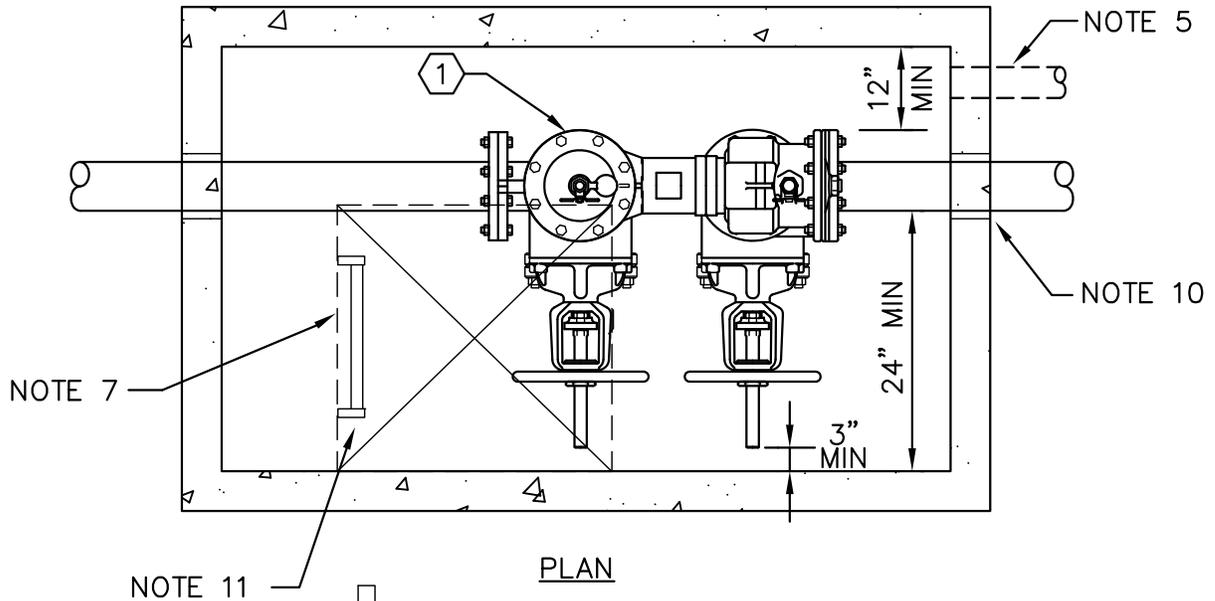
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1. THE OWNER
2. THE WATER SUPPLIER
3. THE BUILDING OFFICIAL

SCALE: NONE

**CITY OF KLAMATH FALLS**

MK	Date	Revision:	DOUBLE CHECK VALVE ASSEMBLY 2½" – 10" BELOW GROUND AMES SS/SE PATTERN	Drwn. By: KBW
				Date: 5/06
				Drwg. No.: <b>7-161</b>
1	6/06	4th EDITION		Approved By: <u>Mark Willrett</u>



SCALE: NONE

# CITY OF KLAMATH FALLS

MK	Date	Revision:
1	6/06	4th EDITION

DOUBLE CHECK VALVE ASSEMBLY  
 2½" - 10" BELOW GROUND  
 FEBCO N PATTERN

Approved By: *Mark Willrett*

Drwn. By: KBW  
 Date: 5/06  
 Drwg. No.: **7-165**

NOTES

1. DOUBLE CHECK VALVE ASSEMBLY SHALL BE INSTALLED IN A LOCATION APPROVED BY CITY OF KLAMATH FALLS FOR THEIR RESPECTIVE SERVICE AREA.
2. DOUBLE CHECK VALVE ASSEMBLY MAY BE INSTALLED VERTICALLY, PROVIDED THAT THE ASSEMBLY:
  - A. IS RECOMMENDED BY THE MANUFACTURER FOR VERTICAL INSTALLATION
  - B. IS INSTALLED IN AN ORIENTATION AS LISTED IN THE CURRENT "APPROVED BACKFLOW ASSEMBLY LIST" (OREGON DEPARTMENT OF HUMAN SERVICES, 503-731-4007).
3. ALL CLEARANCES APPLY TO OUTSIDE, IN-BUILDING, AND VERTICAL INSTALLATIONS.
4. INSULATION-FREEZE PROTECTION TO BE INSULATION AND/OR HEAT SOURCE TO KEEP ENCLOSURES AT A MINIMUM TEMPERATURE OF 40°F (NFPA 13-4-5.4.1.1).
5. CITY OF KLAMATH FALLS DEVICES IN ITS SERVICE AREA MAY APPROVE ALTERNATE METHODS. ALLOWABLE ALTERNATIVES MAY INCLUDE:
  - A. DRY WELL (2 CUBIC YARD MINIMUM)
  - B. SUMP PUMP
6. COMPACTED GRAVEL OR UNDISTURBED BASE.
7. HATCH, MINIMUM 3' X 3', SPRING ASSISTED, GALVANIZED OR ALUMINUM DIAMOND PLATE.
8. ALL ASSEMBLIES 2½" AND LARGER SHALL HAVE FLANGE SUPPORTS.
9. ASSEMBLIES INSTALLED BELOW GROUND LEVEL SHALL HAVE WATERTIGHT PLUGS OR CAPS INSTALLED ON TEST COCKS.
10. WATERTIGHT GROUT SHALL BE USED TO SEAL OPENINGS.
11. IF VAULT DEPTH EXCEEDS 4', USE OSHA APPROVED FIXED LADDER (OAR CH 437, DIVISION 2, 1910.27). PROVIDE LOCKABLE EXTENSION W/LADDER.
12. REINFORCED CONCRETE VAULT (ASTM C-875).

FOR FIRE SERVICES

13. FIRE ASSEMBLIES SHALL BE INSTALLED WITHIN 100 FT OF THE CONNECTION TO THE PUBLIC SUPPLY WATER MAIN.
14. ALL PIPING PRECEDING THE DOUBLE CHECK VALVE SHALL BE CONSTRUCTED OF POTABLE APPROVED MATERIAL, (E.G., PVC, LINED CAST IRON, OR DUCTILE IRON).
15. NO OUTLETS OR CONNECTIONS (INCLUDING HYDRANTS) WILL BE PERMITTED ON FIRE SERVICE LIES PRIOR TO THE DOUBLE CHECK VALVE.

① – APPROVED DOUBLE CHECK VALVE ASSEMBLY INCLUDING FACTORY SUPPLIED SHUT-OFF VALVES

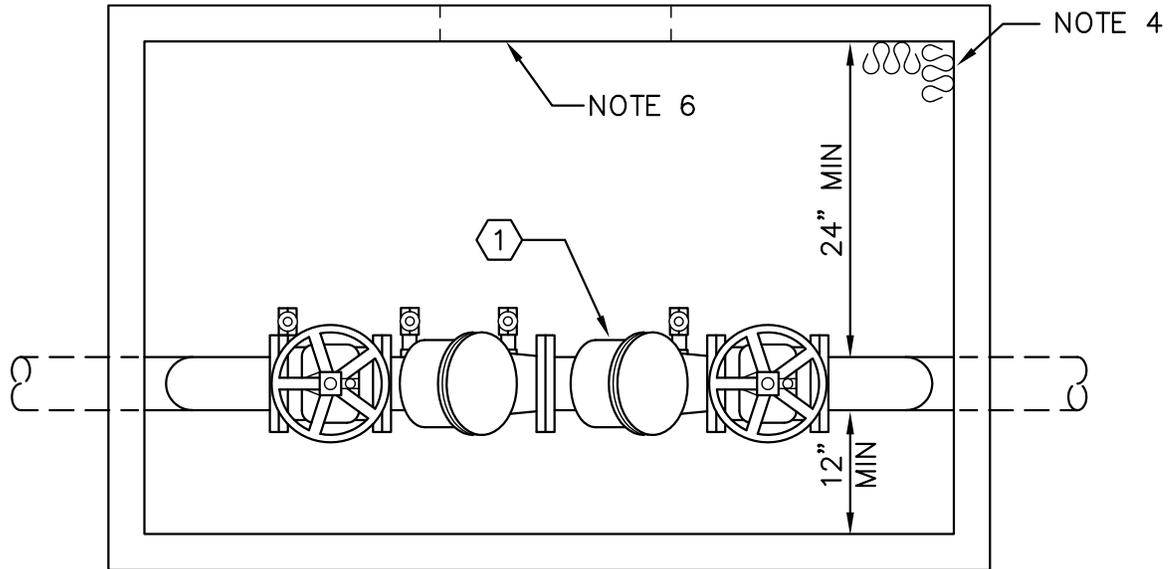
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2. THE WATER SUPPLIER
3. THE BUILDING OFFICIAL

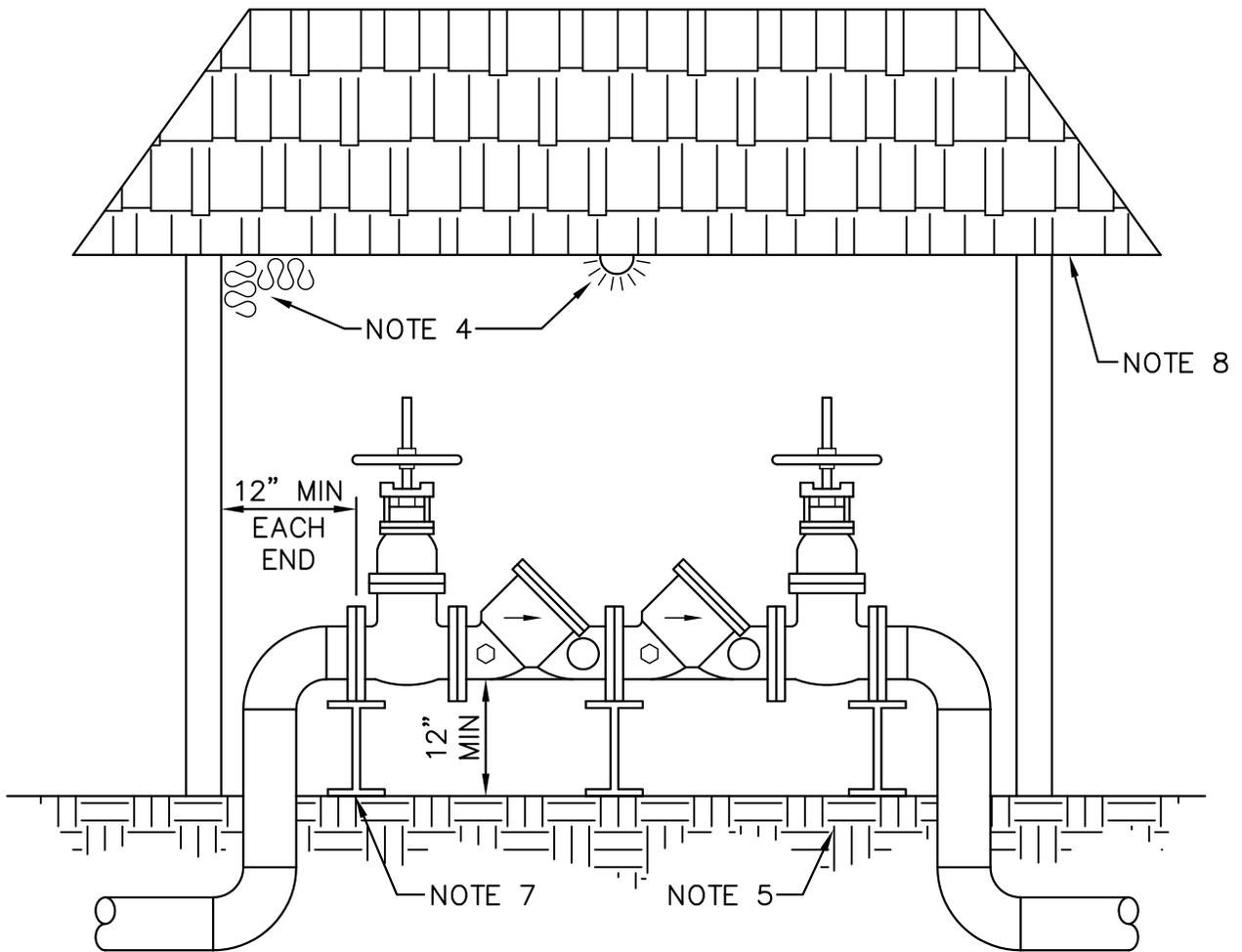
SCALE: NONE

# CITY OF KLAMATH FALLS

MK	Date	Revision:	DOUBLE CHECK VALVE ASSEMBLY 2½" – 10" BELOW GROUND FEBCO N PATTERN	Drwn. By: KBW
				Date: 5/06
			Approved By: <i>Mark Willrett</i>	Drwg. No.: <b>7-166</b>
1	6/06	4th EDITION		



PLAN



ELEVATION

SCALE: NONE

# CITY OF KLAMATH FALLS

MK	Date	Revision:	DOUBLE CHECK VALVE ASSY 2 1/2 - 10" ABOVE GROUND	Drwn. By:	KBW
				Date:	5/06
				Drwg. No.:	<b>7-170</b>
1	6/06	4th EDITION	Approved By:	<i>Mark Willrett</i>	

NOTES

1. DOUBLE CHECK VALVE ASSEMBLY SHALL BE INSTALLED IN A LOCATION APPROVED BY CITY OF KLAMATH FALLS FOR THEIR RESPECTIVE SERVICE AREA.
2. DOUBLE CHECK VALVE ASSEMBLY MAY BE INSTALLED VERTICALLY, PROVIDED THAT THE ASSEMBLY:
  - A. IS RECOMMENDED BY THE MANUFACTURER FOR VERTICAL INSTALLATION
  - B. IS INSTALLED IN AN ORIENTATION AS LISTED IN THE CURRENT "APPROVED BACKFLOW ASSEMBLY LIST" (OREGON DEPARTMENT OF HUMAN SERVICES, 503-731-4007).
3. ALL CLEARANCES APPLY TO OUTSIDE, IN-BUILDING, AND VERTICAL INSTALLATIONS.
4. INSULATION-FREEZE PROTECTION TO BE INSULATION AND/OR HEAT SOURCE TO KEEP ENCLOSURES AT A MINIMUM TEMPERATURE OF 40°F (NFPA 13-4-5.4.1.1).
5. COMPACTED GRAVEL OR UNDISTURBED BASE.
6. A DOOR OR OTHER ACCESS SHALL BE PROVIDED.
7. ALL ASSEMBLIES 2½" AND LARGER SHALL HAVE FLANGE SUPPORTS.
8. ALL STRUCTURES TO COMPLY WITH LOCAL CODES.

FOR FIRE SERVICES

9. FIRE ASSEMBLIES SHALL BE INSTALLED WITHIN 100 FT OF THE CONNECTION TO THE PUBLIC SUPPLY WATER MAIN.
10. ALL PIPING PRECEDING THE DOUBLE CHECK VALVE SHALL BE CONSTRUCTED OF POTABLE APPROVED MATERIAL, (E.G., PVC, LINED CAST IRON, OR DUCTILE IRON).
11. NO OUTLETS OR CONNECTIONS (INCLUDING HYDRANTS) WILL BE PERMITTED ON FIRE SERVICE LIES PRIOR TO THE DOUBLE CHECK VALVE.

① - APPROVED DOUBLE CHECK VALVE ASSEMBLY INCLUDING FACTORY SUPPLIED SHUT-OFF VALVES

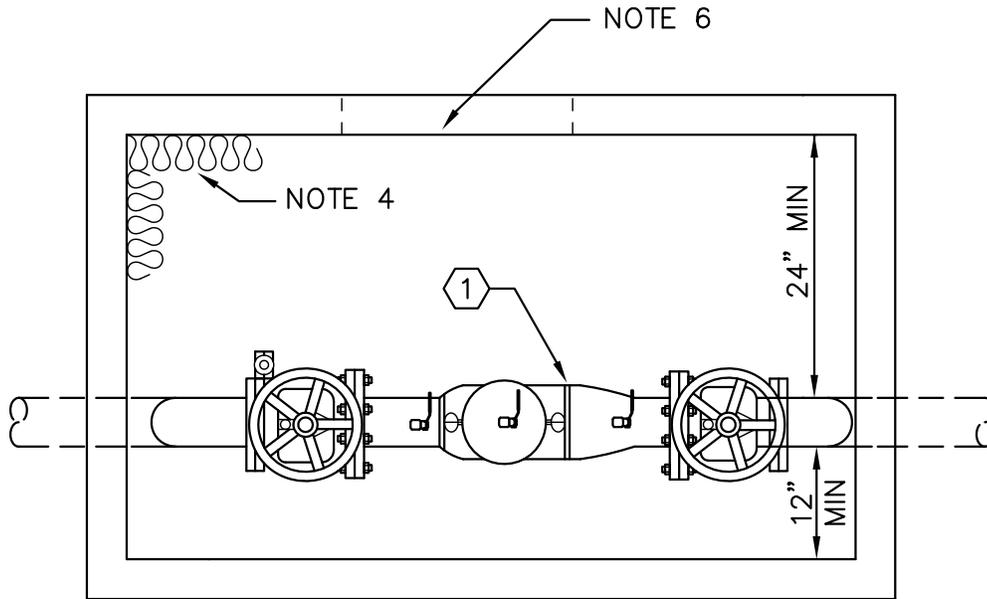
AS REQUIRED BY OAR 333-061-0070 AND THE OREGON PLUMBING SPECIALTY CODE, AN INITIAL TEST PERFORMED BY A STATE CERTIFIED BACKFLOW ASSEMBLY TESTER IS REQUIRED AT THE TIME OF INSTALLATION, WITH COPIES FURNISHED TO:

1. THE OWNER
2. THE WATER SUPPLIER
3. THE BUILDING OFFICIAL

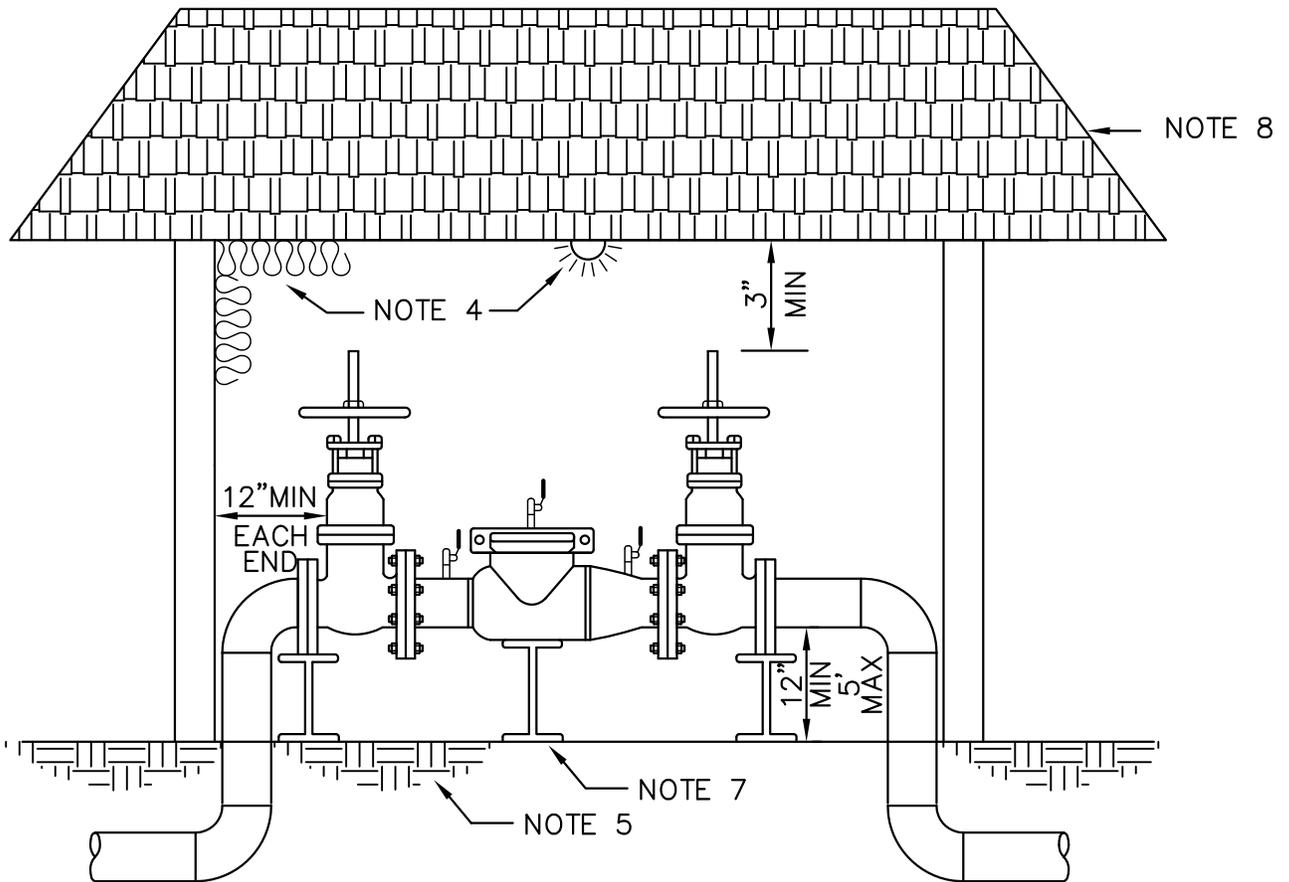
SCALE: NONE

# CITY OF KLAMATH FALLS

MK	Date	Revision:	DOUBLE CHECK VALVE ASSY 2½ - 10" ABOVE GROUND	Drwn. By: KBW
			Approved By: <i>Mark Willrett</i>	Date: 5/06
1	6/06	4th EDITION		Drwg. No.: <b>7-171</b>



PLAN



ELEVATION

SCALE: NONE

# CITY OF KLAMATH FALLS

Date	Revision:
2 3/10	5th EDITION
1 6/06	4th EDITION

DOUBLE CHECK VALVE ASSEMBLY  
 2 1/2" - 10" ABOVE GROUND  
 AMES SS/SE PATTERN

Approved By: Don Wilcox

Drwn. By:	KBW
Date:	5/06
Drwg. No.:	<b>7-175</b>

NOTES

1. DOUBLE CHECK VALVE ASSEMBLY SHALL BE INSTALLED IN A LOCATION APPROVED BY CITY OF KLAMATH FALLS FOR THEIR RESPECTIVE SERVICE AREA.
2. DOUBLE CHECK VALVE ASSEMBLY MAY BE INSTALLED VERTICALLY, PROVIDED THAT THE ASSEMBLY:
  - A. IS RECOMMENDED BY THE MANUFACTURER FOR VERTICAL INSTALLATION
  - B. IS INSTALLED IN AN ORIENTATION AS LISTED IN THE CURRENT "APPROVED BACKFLOW ASSEMBLY LIST" (OREGON DEPARTMENT OF HUMAN SERVICES, 503-731-4007).
3. ALL CLEARANCES APPLY TO OUTSIDE, IN-BUILDING, AND VERTICAL INSTALLATIONS.
4. INSULATION-FREEZE PROTECTION TO BE INSULATION AND/OR HEAT SOURCE TO KEEP ENCLOSURES AT A MINIMUM TEMPERATURE OF 40°F (NFPA 13-4-5.4.1.1).
5. COMPACTED GRAVEL OR UNDISTURBED BASE.
6. A DOOR OR OTHER ACCESS SHALL BE PROVIDED.
7. ALL ASSEMBLIES 2½" AND LARGER SHALL HAVE FLANGE SUPPORTS.
8. ALL STRUCTURES TO COMPLY WITH LOCAL CODES.

FOR FIRE SERVICES

9. FIRE ASSEMBLIES SHALL BE INSTALLED WITHIN 100 FT OF THE CONNECTION TO THE PUBLIC SUPPLY WATER MAIN.
10. ALL PIPING PRECEDING THE DOUBLE CHECK VALVE SHALL BE CONSTRUCTED OF POTABLE APPROVED MATERIAL, (E.G., PVC, LINED CAST IRON, OR DUCTILE IRON).
11. NO OUTLETS OR CONNECTIONS (INCLUDING HYDRANTS) WILL BE PERMITTED ON FIRE SERVICE LIES PRIOR TO THE DOUBLE CHECK VALVE.

① - APPROVED DOUBLE CHECK VALVE ASSEMBLY INCLUDING FACTORY SUPPLIED SHUT-OFF VALVES

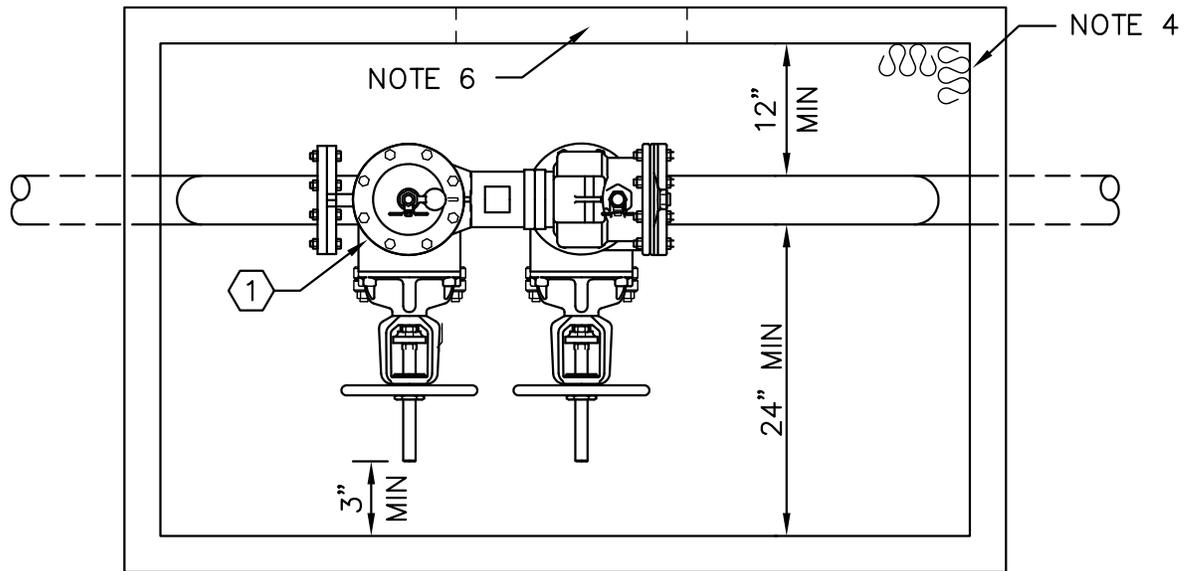
AS REQUIRED BY OAR 333-061-0070 AND THE OREGON PLUMBING SPECIALTY CODE, AN INITIAL TEST PERFORMED BY A STATE CERTIFIED BACKFLOW ASSEMBLY TESTER IS REQUIRED AT THE TIME OF INSTALLATION, WITH COPIES FURNISHED TO:

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3. THE BUILDING OFFICIAL

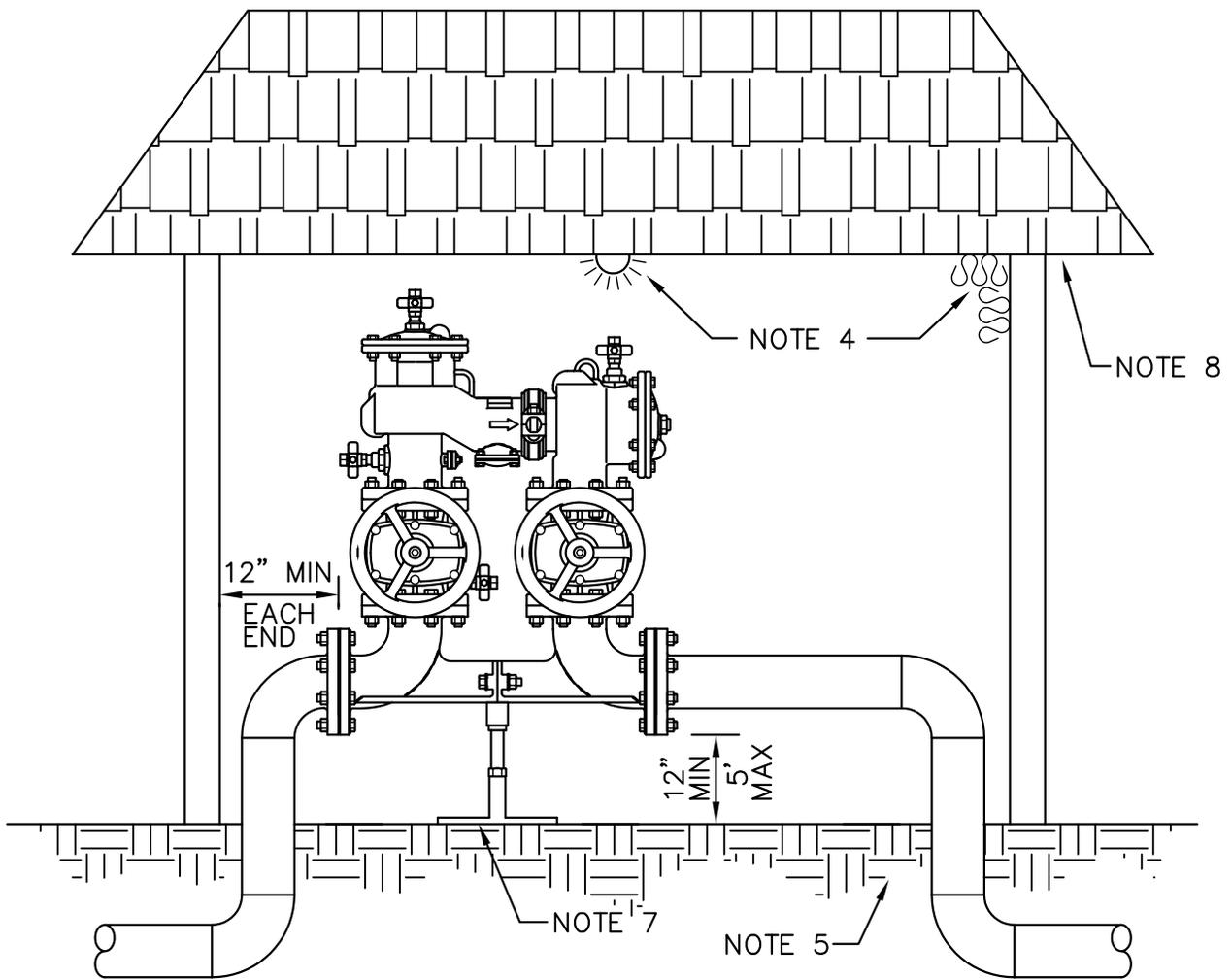
SCALE: NONE

# CITY OF KLAMATH FALLS

	Date	Revision:	DOUBLE CHECK VALVE ASSEMBLY 2½" - 10" ABOVE GROUND AMES SS/SE PATTERN	Drwn. By: KBW
				Date: 5/06
2	3/10	5th EDITION	Approved By: <i>Mark Willrett</i>	Drwg. No.: <b>7-176</b>
1	6/06	4th EDITION		



PLAN



ELEVATION

SCALE: NONE

# CITY OF KLAMATH FALLS

MK	Date	Revision:
1	6/06	4th EDITION

DOUBLE CHECK VALVE ASSEMBLY  
 2½" - 10" ABOVE GROUND  
 FEBCO N PATTERN

Approved By: *Mark Willrett*

Drwn. By:	KBW
Date:	5/06
Drwg. No.:	<b>7-180</b>

NOTES

1. DOUBLE CHECK VALVE ASSEMBLY SHALL BE INSTALLED IN A LOCATION APPROVED BY CITY OF KLAMATH FALLS FOR THEIR RESPECTIVE SERVICE AREA.
2. DOUBLE CHECK VALVE ASSEMBLY MAY BE INSTALLED VERTICALLY, PROVIDED THAT THE ASSEMBLY:
  - A. IS RECOMMENDED BY THE MANUFACTURER FOR VERTICAL INSTALLATION
  - B. IS INSTALLED IN AN ORIENTATION AS LISTED IN THE CURRENT "APPROVED BACKFLOW ASSEMBLY LIST" (OREGON DEPARTMENT OF HUMAN SERVICES, 503-731-4007).
3. ALL CLEARANCES APPLY TO OUTSIDE, IN-BUILDING, AND VERTICAL INSTALLATIONS.
4. INSULATION-FREEZE PROTECTION TO BE INSULATION AND/OR HEAT SOURCE TO KEEP ENCLOSURES AT A MINIMUM TEMPERATURE OF 40°F (NFPA 13-4-5.4.1.1).
5. COMPACTED GRAVEL OR UNDISTURBED BASE.
6. A DOOR OR OTHER ACCESS SHALL BE PROVIDED.
7. ALL ASSEMBLIES 2½" AND LARGER SHALL HAVE FLANGE SUPPORTS.
8. ALL STRUCTURES TO COMPLY WITH LOCAL CODES.

FOR FIRE SERVICES

9. FIRE ASSEMBLIES SHALL BE INSTALLED WITHIN 100 FT OF THE CONNECTION TO THE PUBLIC SUPPLY WATER MAIN.
10. ALL PIPING PRECEDING THE DOUBLE CHECK VALVE SHALL BE CONSTRUCTED OF POTABLE APPROVED MATERIAL, (E.G., PVC, LINED CAST IRON, OR DUCTILE IRON).
11. NO OUTLETS OR CONNECTIONS (INCLUDING HYDRANTS) WILL BE PERMITTED ON FIRE SERVICE LIES PRIOR TO THE DOUBLE CHECK VALVE.

① - APPROVED DOUBLE CHECK VALVE ASSEMBLY INCLUDING FACTORY SUPPLIED SHUT-OFF VALVES

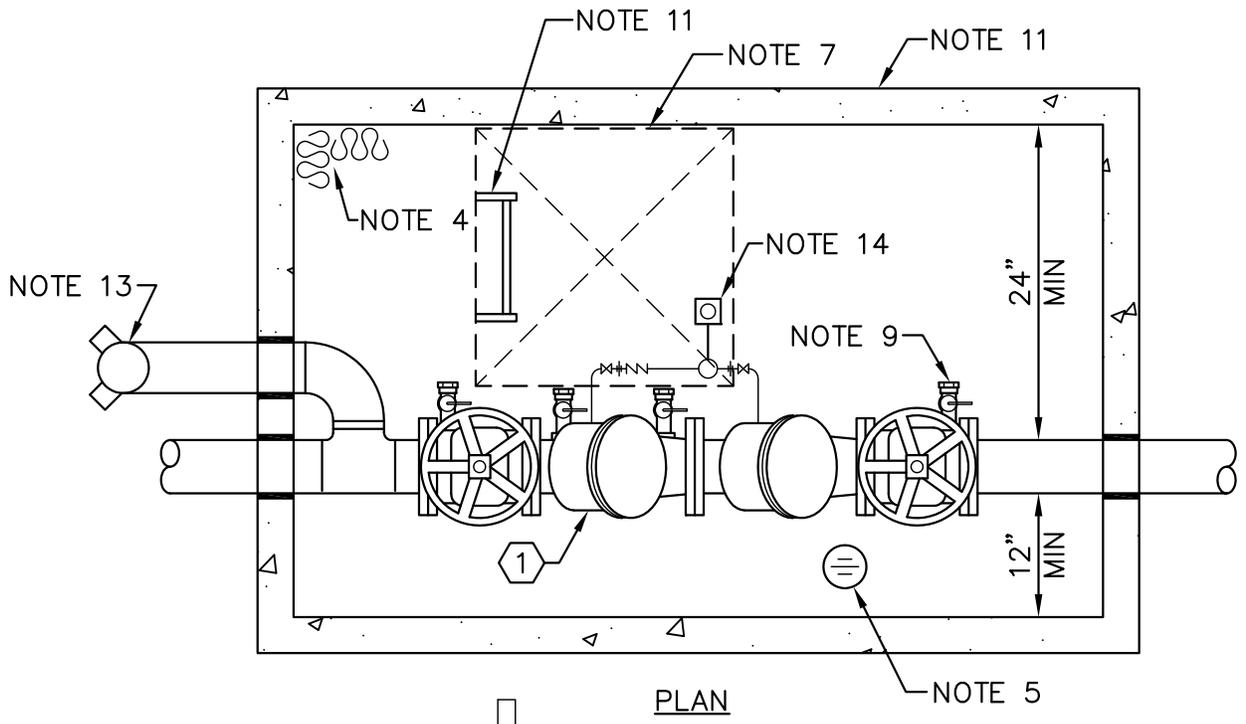
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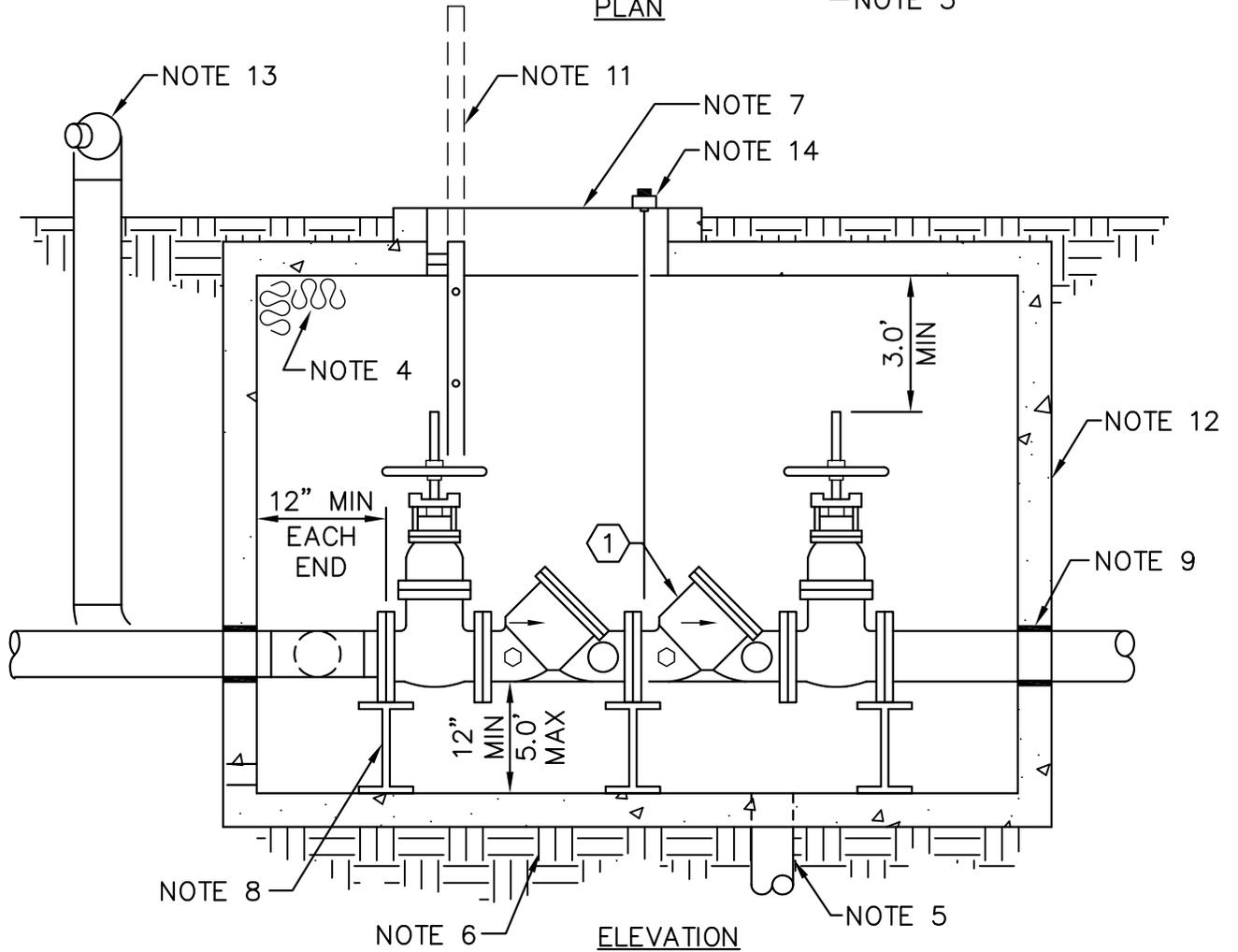
SCALE: NONE

# CITY OF KLAMATH FALLS

MK	Date	Revision:	DOUBLE CHECK VALVE ASSEMBLY 2½" - 10" ABOVE GROUND FEBCO N PATTERN	Drwn. By: KBW
				Date: 5/06
				Drwg. No.: <b>7-181</b>
1	6/06	4th EDITION	Approved By: <i><b>Mark Willrett</b></i>	



PLAN



ELEVATION

SCALE: NONE

# CITY OF KLAMATH FALLS

MK	Date	Revision:
1	6/06	4th EDITION

DETECTOR DOUBLE CHECK  
ASSEMBLY, 2 1/2" - 10"  
BELOW GROUND

Approved By: **Mark Willrett**

Drwn. By: WEM  
Date: 5/06  
Drwg. No.: **7-185**

**NOTES**

1. DETECTOR DOUBLE CHECK VAULT OR ENCLOSURE SHALL BE INSTALLED AT POINT OF SERVICE OR AN ALTERNATIVE LOCATION APPROVED BY THE CITY FOR THEIR RESPECTIVE SERVICE ARE, BUT NO LESS THAN 10 FEET FROM POINT OF SERVICE.
2. DETECTOR DOUBLE CHECK ASSEMBLY MAY BE INSTALLED VERTICALLY, PROVIDED THAT THE ASSEMBLY:
  - A. IS RECOMMENDED BY THE MANUFACTURER FOR VERTICAL INSTALLATION
  - B. IS INSTALLED IN AN ORIENTATION AS LISTED IN THE CURRENT "APPROVED BACKFLOW PREVENTION ASSEMBLY LIST" (OREGON DEPARTMENT OF HUMAN RESOURCES, HEALTH SERVICES 503-731-4007).
3. ALL CLEARANCES APPLY TO OUTSIDE AND IN-BUILDING INSTALLATIONS.
4. INSULATION-FREEZE PROTECTION TO BE INSULATION AND/OR HEAT SOURCE TO KEEP ENCLOSURES AT A MINIMUM TEMPERATURE OF 40°F (NFPA 13-4-5.4.1.1).
5. BORE-SIGHTED DRAIN TO DAYLIGHT IS REQUIRED. ALLOWABLE ALTERNATIVES MAY INCLUDE:
  - A. DRY WELL
  - B. SUMP PUMP
6. COMPACTED GRAVEL OR UNDISTURBED BASE.
7. HATCH MINIMUM 3'x3', SPRING ASSISTED, GALVANIZED OR ALUMINUM DIAMOND PLATE.
8. ALL ASSEMBLIES 2 1/2" AND LARGER SHALL HAVE FLANGE SUPPORTS.
9. ASSEMBLIES INSTALLED BELOW GROUND LEVEL SHALL HAVE WATERTIGHT PLUGS OR CAPS INSTALLED ON ALL TEST COCKS.
10. WATERTIGHT GROUT SHALL BE USED TO SEAL OPENINGS.
11. IF VAULT DEPTH EXCEEDS 4', USE OSHA APPROVED FIXED LADDER (OAR Ch 437, DIVISION 2, 1910.27). PROVIDE LOCKABLE EXTENSION W/LADDER.
12. REINFORCED CONCRETE VAULT (ASTM C-875).
13. FIRE DEPARTMENT PUMPER CONNECTION PER LOCAL FIRE CODE.
14. INSTALL REMOTE READER, METER AND TOUCH PAD SUPPLIED BY CITY.

① - APPROVED REDUCED PRESSURE BACKFLOW ASSEMBLY INCLUDING FACTORY SUPPLIED SHUT-OFF VALVES

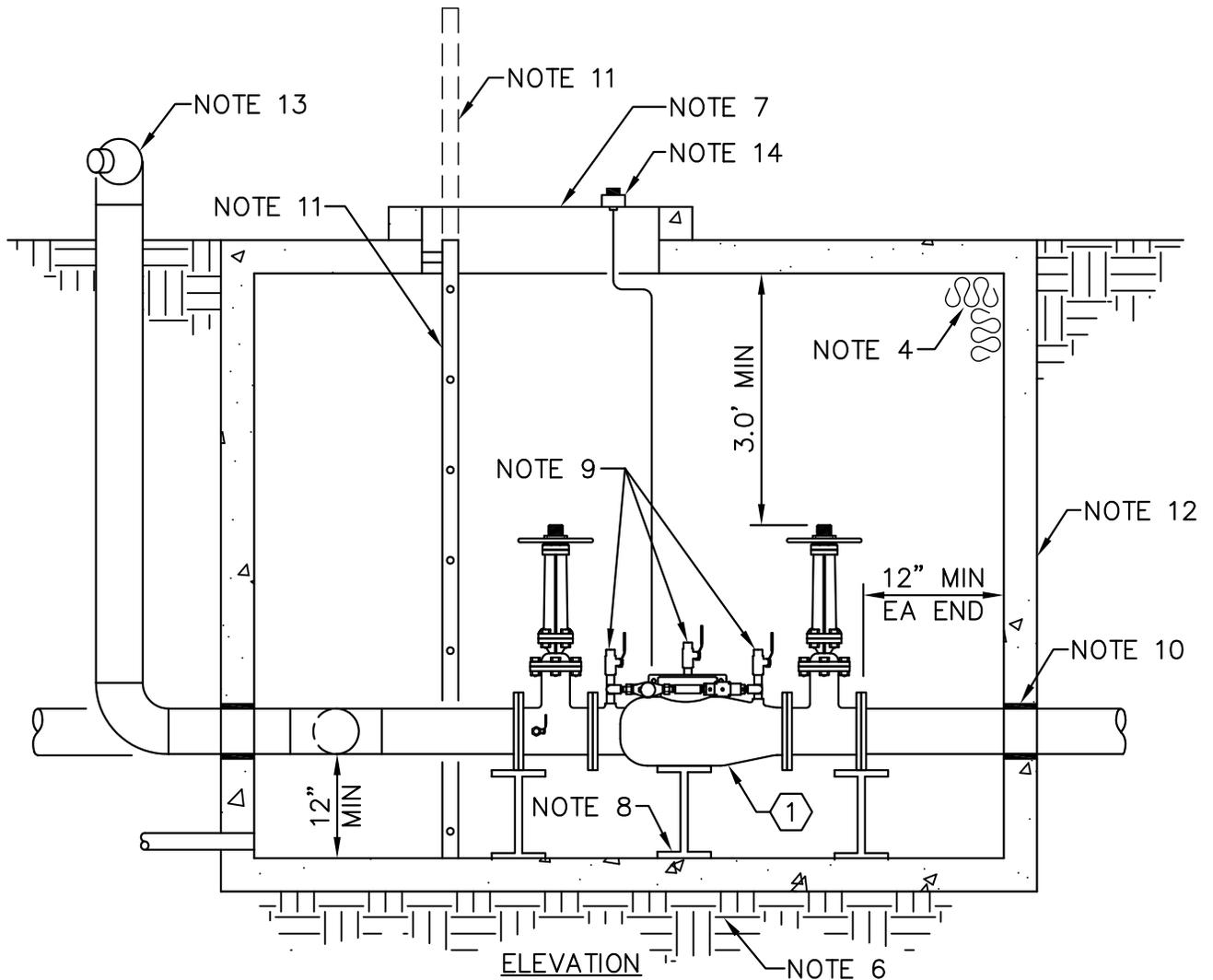
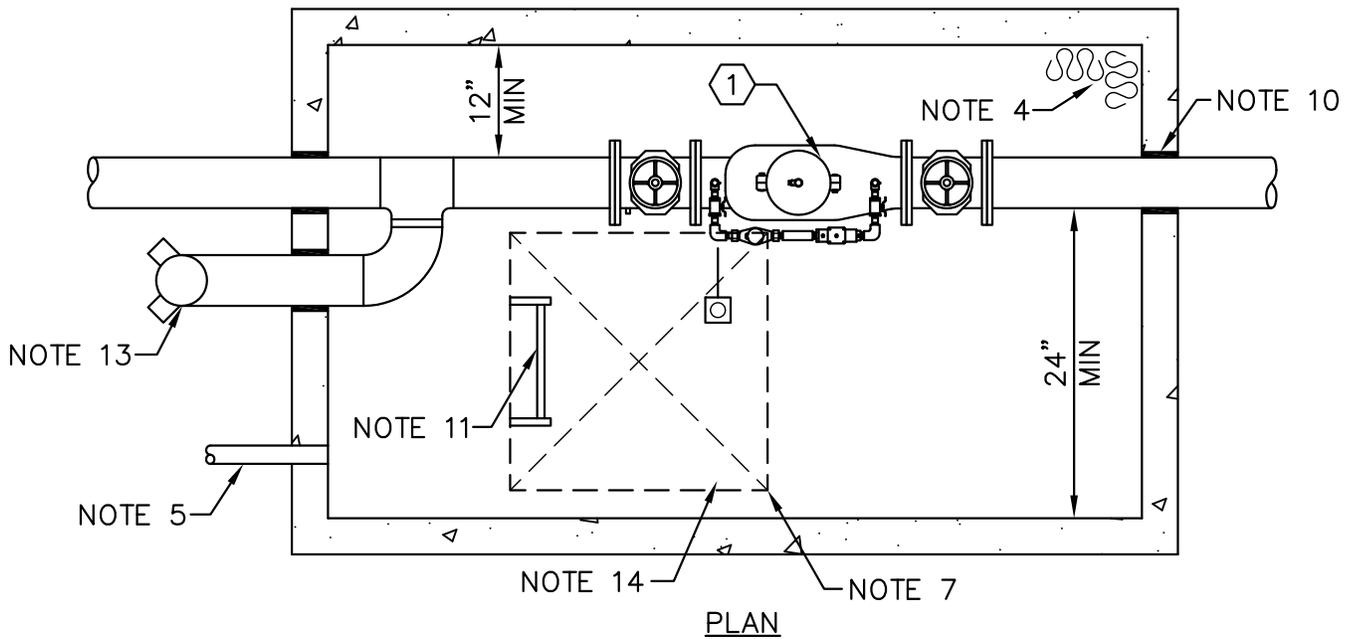
AS REQUIRED BY OAR 333-061-0070 AND THE OREGON PLUMBING SPECIALTY CODE, AN INITIAL TEST PERFORMED BY A STATE CERTIFIED BACKFLOW ASSEMBLY TESTER IS REQUIRED AT THE TIME IF INSTALLATION, WITH COPIES FURNISHED TO:

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2. THE WATER SUPPLIER
3. THE BUILDING OFFICIAL

SCALE: NONE

# CITY OF KLAMATH FALLS

MK	Date	Revision:	DETECTOR DOUBLE CHECK ASSEMBLY, 2 1/2" - 10" BELOW GROUND NOTES	Drwn. By: WEM
				Date: 5/06
			Approved By: <i>Mark Willrett</i>	Drwg. No.: <b>7-186</b>
1	6/06	4th EDITION		



SCALE: NONE

# CITY OF KLAMATH FALLS

MK	Date	Revision:
1	6/06	4th EDITION

DETECTOR DOUBLE CHECK  
 ASSEMBLY, 2 1/12" - 10" BELOW  
 GROUND AMES SS/SE PATTERN

Approved By: **Mark Willrett**

Drwn. By:	WEM
Date:	5/06
Drwg. No.:	<b>7-190</b>

**NOTES**

1. DETECTOR DOUBLE CHECK VAULT OR ENCLOSURE SHALL BE INSTALLED AT POINT OF SERVICE, OR IN AN ALTERNATE LOCATION APPROVED BY THE CITY FOR ITS SERVICE AREA, BUT NO MORE THAN 10 FEET FROM POINT OF SERVICE.
2. DETECTOR DOUBLE CHECK ASSEMBLY MAY BE INSTALLED VERTICALLY, PROVIDED THAT THE ASSEMBLY:
  - A. IS RECOMMENDED BY THE MANUFACTURER FOR VERTICAL INSTALLATION
  - B. IS INSTALLED IN AN ORIENTATION AS LISTED IN THE CURRENT "APPROVED BACKFLOW PREVENTION ASSEMBLY LIST" (OREGON DEPARTMENT OF HUMAN RESOURCES, HEALTH SERVICES 503-731-4007).
3. ALL CLEARANCES APPLY TO OUTSIDE AND IN-BUILDING INSTALLATIONS.
4. INSULATION-FREEZE PROTECTION TO BE INSULATION AND/OR HEAT SOURCE TO KEEP ENCLOSURES AT A MINIMUM TEMPERATURE OF 40°F (NFPA 13-4-5.4.1.1).
5. BORE-SIGHTED DRAIN TO DAYLIGHT IS REQUIRED FOR ALL INSTALLATIONS. ALLOWABLE ALTERNATIVES MAY INCLUDE:
  - A. DRY WELL
  - B. SUMP PUMP
6. COMPACTED GRAVEL OR UNDISTURBED BASE.
7. HATCH, MINIMUM 3'x3', SPRING ASSISTED, GALVANIZED OR ALUMINUM DIAMOND PLATE.
8. ALL ASSEMBLIES 2 1/2" AND LARGER SHALL HAVE FLANGE SUPPORTS.
9. ASSEMBLIES INSTALLED BELOW GROUND LEVEL SHALL HAVE WATERTIGHT PLUGS OR OR CAPS ON THE TEST COCKS.
10. WATERTIGHT GROUT SHALL BE USED TO SEAL OPENINGS.
11. IF VAULT DEPTH EXCEEDS 4', USE OSHA APPROVED FIXED LADDER (OAR CH 437, DIVISION 2, 1910.27). PROVIDE LOCKABLE EXTENSION W/LADDER.
12. REINFORCED CONCRETE VAULT (ASTM C-875).
13. FIRE DEPARTMENT PUMPER CONNECTION PER LOCAL FIRE CODE.
14. INSTALL REMOTE READER, METER AND TOUCH PAD AS PROVIDED BY CITY.

① - APPROVED DETECTOR DOUBLE CHECK ASSEMBLY INCLUDING FACTORY SUPPLIED SHUT-OFF VALVES

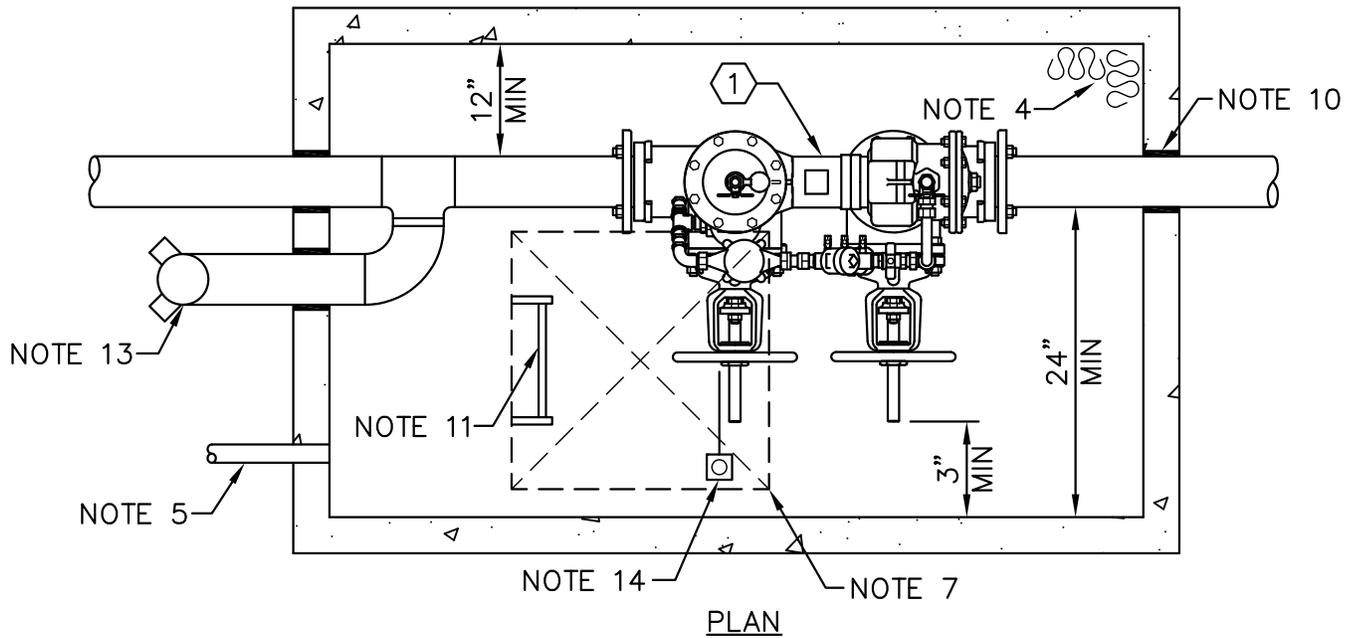
AS REQUIRED BY OAR 333-061-0070 AND THE OREGON PLUMBING SPECIALTY CODE, AN INITIAL TEST PERFORMED BY A STATE CERTIFIED BACKFLOW ASSEMBLY TESTER IS REQUIRED AT THE TIME IF INSTALLATION, WITH COPIES FURNISHED TO:

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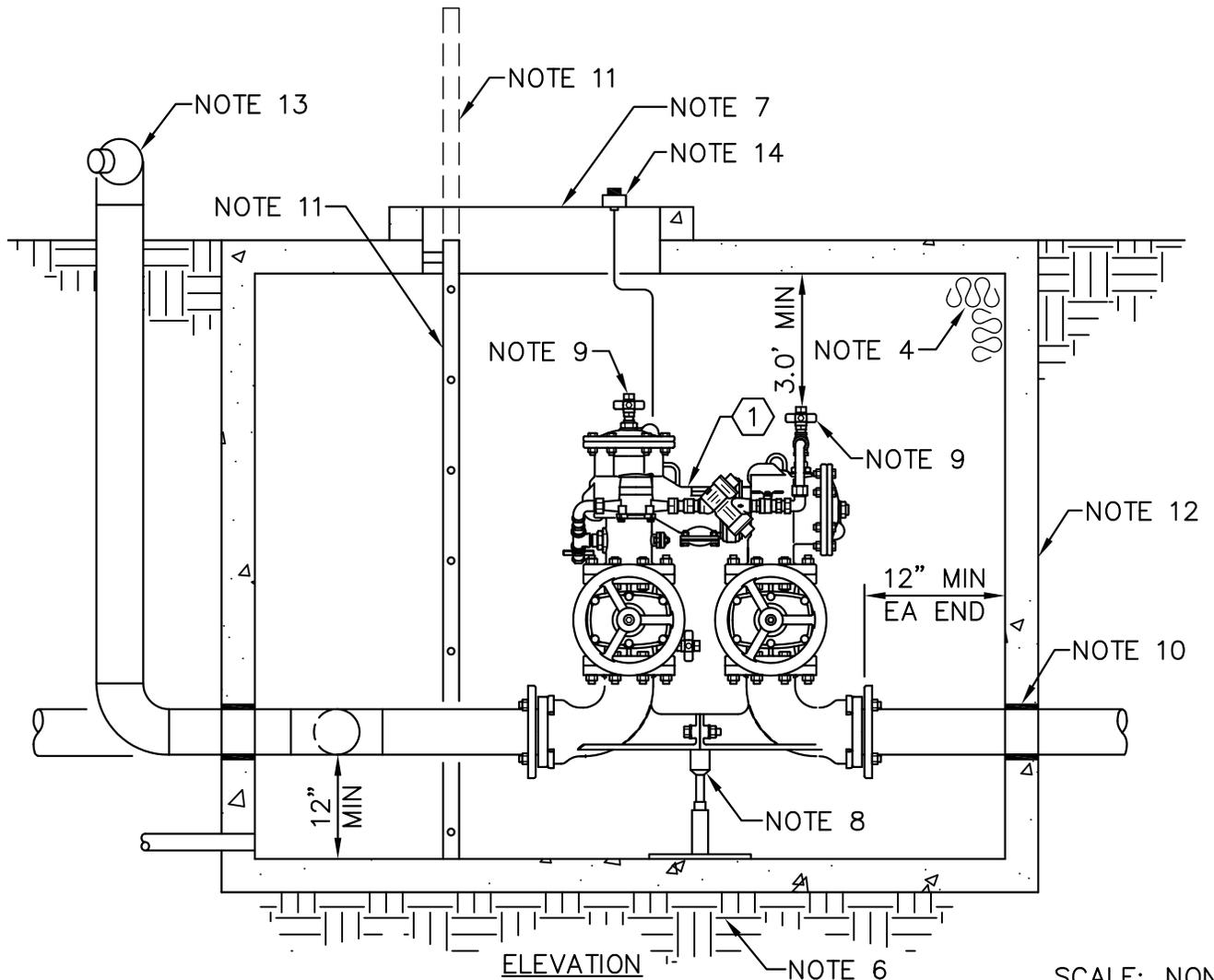
SCALE: NONE

**CITY OF KLAMATH FALLS**

MK	Date	Revision:	DETECTOR DOUBLE CHECK ASSEMBLY, 2 1/12" - 10" BELOW GROUND AMES SS/SE PATTERN NOTES	Drwn. By: WEM
				Date: 5/06
				Drwg. No.: <b>7-191</b>
1	6/06	4th EDITION		Approved By: <b><i>Mark Willrett</i></b>



PLAN



ELEVATION

SCALE: NONE

# CITY OF KLAMATH FALLS

MK	Date	Revision:
1	6/06	4th EDITION

DETECTOR DOUBLE CHECK  
 ASSEMBLY, 2 1/2" - 10" BELOW  
 GROUND FEBCO N PATTERN

Approved By: *Mark Willrett*

Drwn. By: WEM  
 Date: 5/06  
 Drwg. No.: **7-195**

**NOTES**

1. DETECTOR DOUBLE CHECK VAULT OR ENCLOSURE SHALL BE INSTALLED AT POINT OF SERVICE, OR IN AN ALTERNATE LOCATION APPROVED BY THE CITY FOR ITS SERVICE AREA, BUT NO MORE THAN 10 FEET FROM POINT OF SERVICE.
2. DETECTOR DOUBLE CHECK ASSEMBLY MAY BE INSTALLED VERTICALLY, PROVIDED THAT THE ASSEMBLY:
  - A. IS RECOMMENDED BY THE MANUFACTURER FOR VERTICAL INSTALLATION
  - B. IS INSTALLED IN AN ORIENTATION AS LISTED IN THE CURRENT "APPROVED BACKFLOW PREVENTION ASSEMBLY LIST" (OREGON DEPARTMENT OF HUMAN RESOURCES, HEALTH SERVICES 503-731-4007).
3. ALL CLEARANCES APPLY TO OUTSIDE AND IN-BUILDING INSTALLATIONS.
4. INSULATION-FREEZE PROTECTION TO BE INSULATION AND/OR HEAT SOURCE TO KEEP ENCLOSURES AT A MINIMUM TEMPERATURE OF 40°F (NFPA 13-4-5.4.1.1).
5. BORE-SIGHTED DRAIN TO DAYLIGHT IS REQUIRED FOR ALL INSTALLATIONS. ALLOWABLE ALTERNATIVES MAY INCLUDE:
  - A. DRY WELL
  - B. SUMP PUMP
6. COMPACTED GRAVEL OR UNDISTURBED BASE.
7. HATCH, MINIMUM 3'x3', SPRING ASSISTED, GALVANIZED OR ALUMINUM DIAMOND PLATE.
8. ALL ASSEMBLIES 2 1/2" AND LARGER SHALL HAVE FLANGE SUPPORTS.
9. ASSEMBLIES INSTALLED BELOW GROUND LEVEL SHALL HAVE WATERTIGHT PLUGS OR OR CAPS ON THE TEST COCKS.
10. WATERTIGHT GROUT SHALL BE USED TO SEAL OPENINGS.
11. IF VAULT DEPTH EXCEEDS 4', USE OSHA APPROVED FIXED LADDER (OAR CH 437, DIVISION 2, 1910.27). PROVIDE LOCKABLE EXTENSION W/LADDER.
12. REINFORCED CONCRETE VAULT (ASTM C-875).
13. FIRE DEPARTMENT PUMPER CONNECTION PER LOCAL FIRE CODE.
14. INSTALL REMOTE READER, METER AND TOUCH PAD AS PROVIDED BY CITY.

① - APPROVED DETECTOR DOUBLE CHECK ASSEMBLY INCLUDING FACTORY SUPPLIED SHUT-OFF VALVES

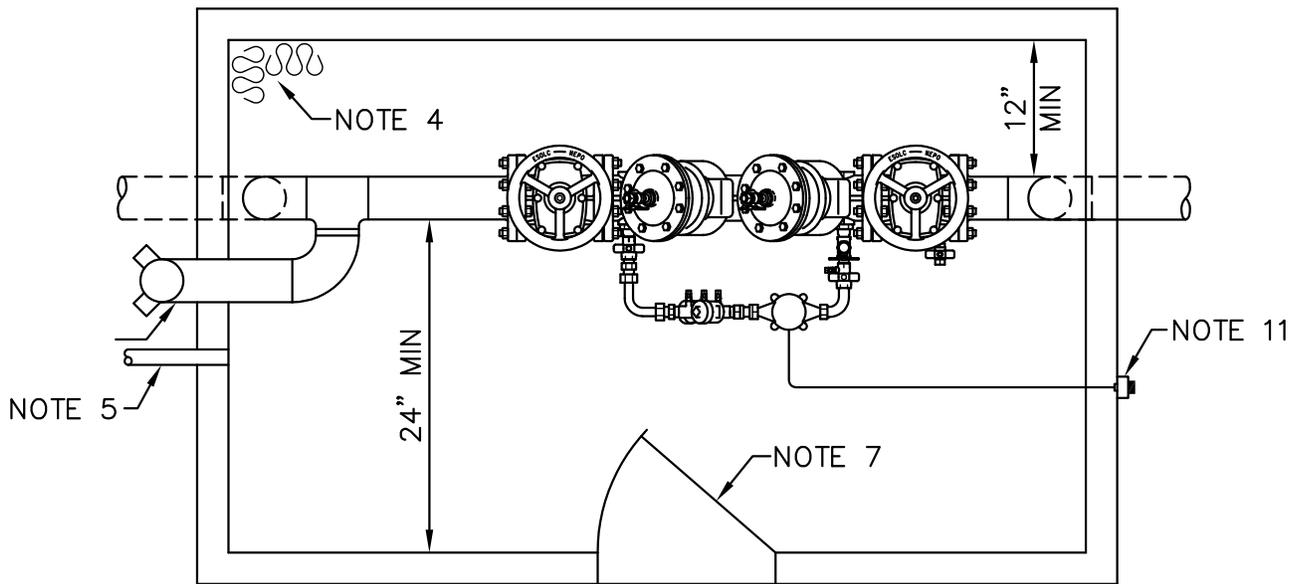
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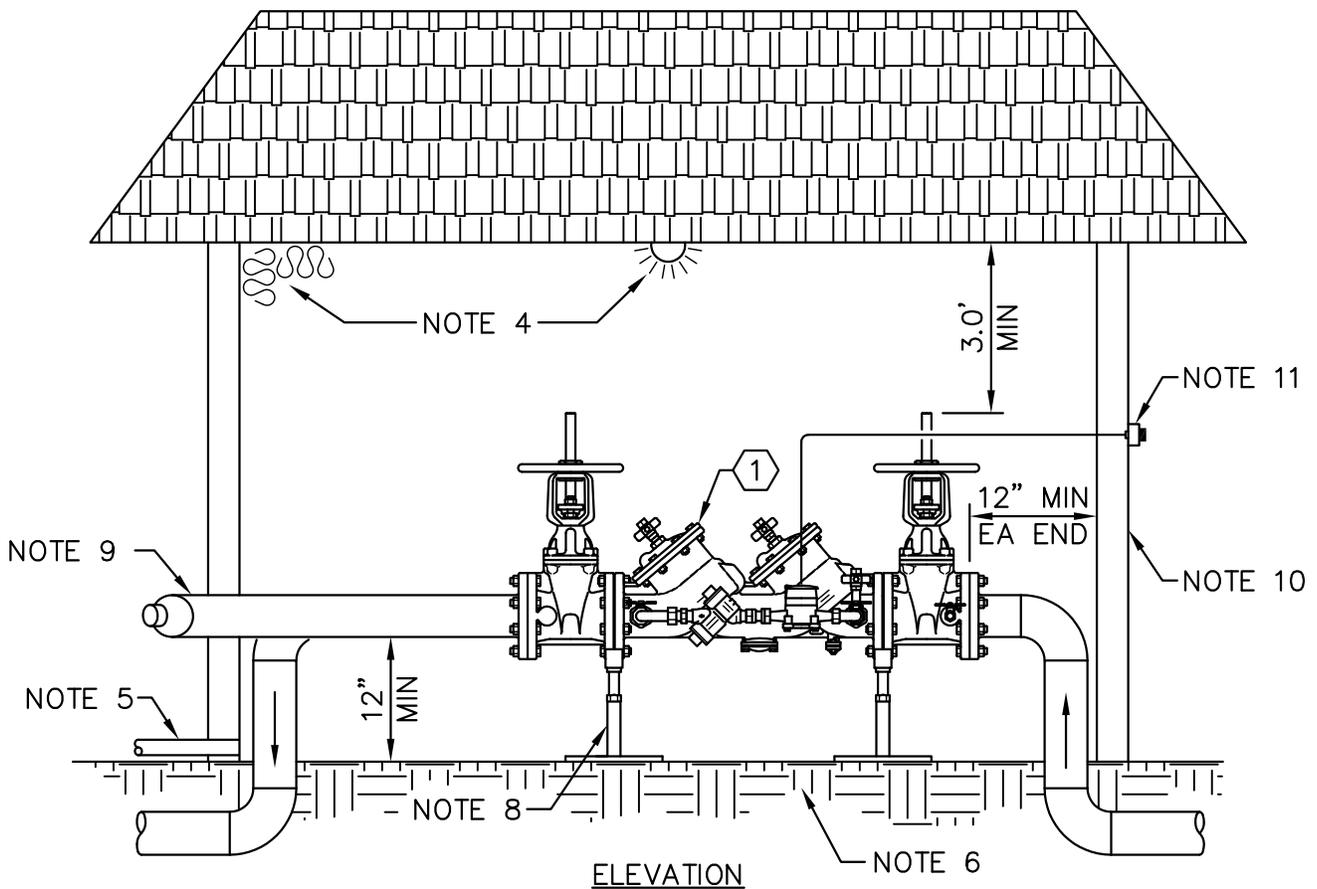
SCALE: NONE

# CITY OF KLAMATH FALLS

MK	Date	Revision:	DETECTOR DOUBLE CHECK ASSEMBLY, 2 1/2"-10" BELOW GROUND FEBCO N PATTERN NOTES	Drwn. By: WEM
				Date: 5/06
			Approved By: <i>Mark Willrett</i>	Drwg. No.: <b>7-196</b>
1	6/06	4th EDITION		



PLAN



ELEVATION

SCALE: NONE

# CITY OF KLAMATH FALLS

MK	Date	Revision:
1	6/06	4th EDITION

DETECTOR DOUBLE CHECK  
ASSEMBLY, 2 1/2" - 10"  
ABOVE GROUND

Approved By: *Mark Willrett*

Drwn. By:	WEM
Date:	5/06
Drwg. No.:	<b>7-200</b>

**NOTES**

1. DETECTOR DOUBLE CHECK VAULT OR ENCLOSURE SHALL BE INSTALLED AT POINT OF SERVICE, OR IN AN ALTERNATE LOCATION APPROVED BY THE CITY FOR ITS SERVICE AREA, BUT NO MORE THAN 10 FEET FROM POINT OF SERVICE.
2. DETECTOR DOUBLE CHECK ASSEMBLY MAY BE INSTALLED VERTICALLY, PROVIDED THAT THE ASSEMBLY:
  - A. IS RECOMMENDED BY THE MANUFACTURER FOR VERTICAL INSTALLATION
  - B. IS INSTALLED IN AN ORIENTATION AS LISTED IN THE CURRENT "APPROVED BACKFLOW PREVENTION ASSEMBLY LIST" (OREGON DEPARTMENT OF HUMAN RESOURCES, HEALTH SERVICES 503-731-4007).
3. ALL CLEARANCES APPLY TO OUTSIDE AND IN-BUILDING INSTALLATIONS.
4. INSULATION-FREEZE PROTECTION TO BE INSULATION AND/OR HEAT SOURCE TO KEEP ENCLOSURES AT A MINIMUM TEMPERATURE OF 40°F (NFPA 13-4-5.4.1.1).
5. BORE-SIGHTED DRAIN TO DAYLIGHT IS REQUIRED.
6. COMPACTED GRAVEL OR UNDISTURBED BASE.
7. A DOOR OR OTHER ACCESS SHALL BE PROVIDED.
8. ALL ASSEMBLIES 2 1/2" AND LARGER SHALL HAVE FLANGE SUPPORTS.
9. FIRE DEPARTMENT PUMPER CONNECTION PER LOCAL FIRE CODES.
10. ALL STRUCTURES TO COMPLY WITH LOCAL BUILDING CODES.
11. INSTALL REMOTE READER, METER AND TOUCH PAD AS PROVIDED BY CITY.

① - APPROVED DETECTOR DOUBLE CHECK ASSEMBLY INCLUDING FACTORY SUPPLIED SHUT-OFF VALVES

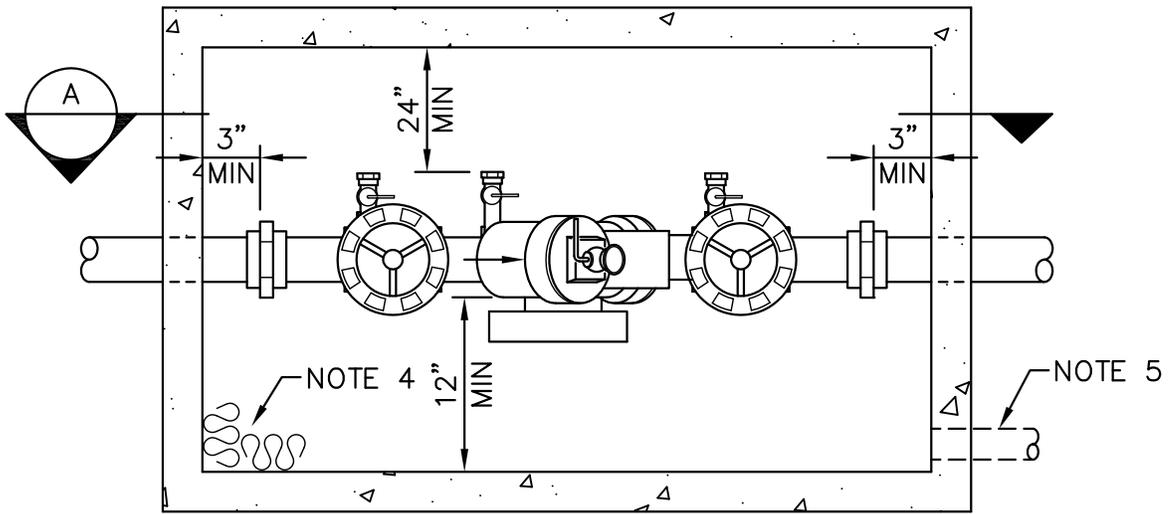
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3. THE BUILDING OFFICIAL

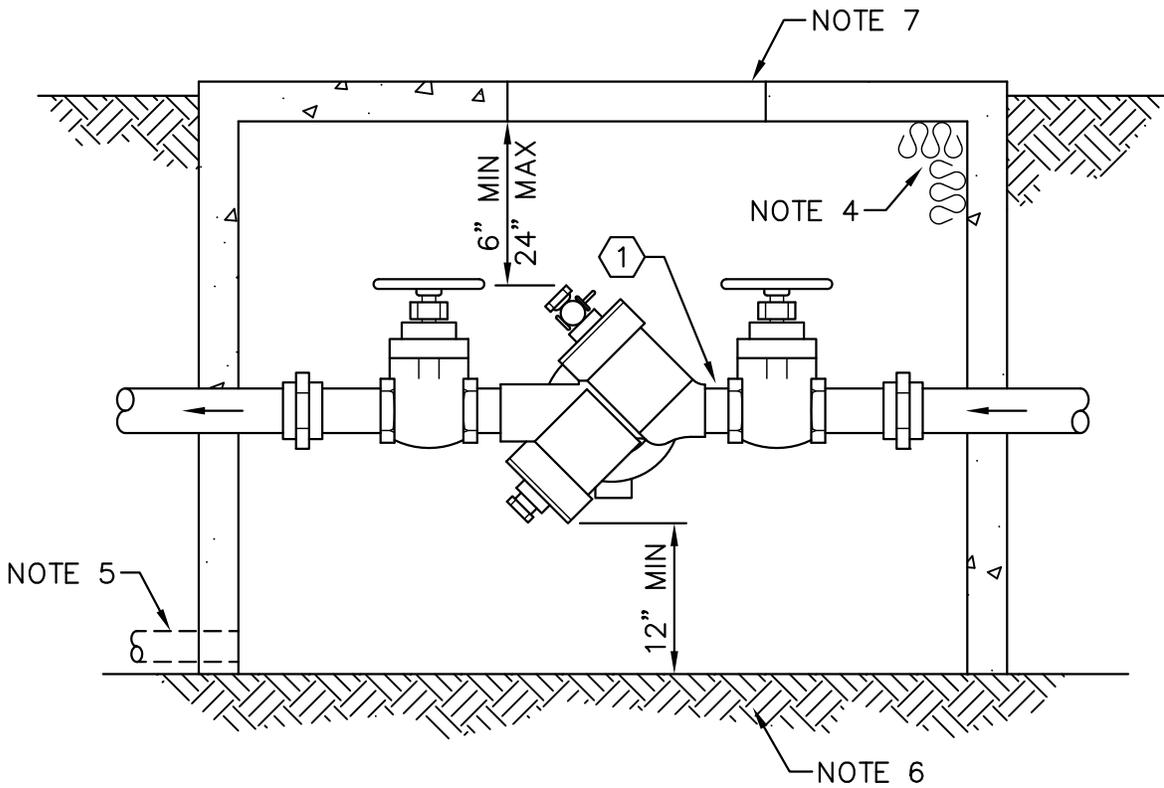
SCALE: NONE

**CITY OF KLAMATH FALLS**

MK	Date	Revision:	DETECTOR DOUBLE CHECK ASSEMBLY, 2 1/2" - 10" ABOVE GROUND NOTES	Drwn. By: WEM
				Date: 5/06
				Drwg. No.: <b>7-201</b>
1	6/06	4th EDITION		Approved By: <u>Mark Willrett</u>



PLAN



SECTION A

SCALE: NONE

# CITY OF KLAMATH FALLS

MK	Date	Revision:
1	6/06	4th EDITION

REDUCED PRESSURE BACKFLOW  
 ASSEMBLY, 1 1/2"-2"  
 BELOW GROUND

Approved By: **Mark Willrett**

Drwn. By:	WEM
Date:	2/03
Drwg. No.:	<b>7-205</b>

**NOTES**

1. REDUCED PRESSURE BACKFLOW ASSEMBLY SHALL BE INSTALLED IN A LOCATION APPROVED BY CITY OF KLAMATH FALLS FOR THEIR RESPECTIVE SERVICE AREA, AND SHALL BE ABOVE THE 100-YEAR FLOOD PLAIN.
2. REDUCED PRESSURE BACKFLOW ASSEMBLY SHALL BE INSTALLED HORIZONTAL AND PLUMB.
3. ALL CLEARANCES APPLY TO OUTSIDE, IN-BUILDING, AND VAULT INSTALLATIONS. MINIMUM CLEARANCES FOR DEVICE ASSEMBLIES 2 INCHES OR SMALLER MAY BE REDUCED PROVIDED THAT THEY ARE ACCESSIBLE FOR TESTING AND REPAIRING AND THE CITY OF KLAMATH FALLS APPROVES THE VARIANCE FOR THEIR RESPECTIVE SERVICE AREA.
4. INSULATION-FREEZE PROTECTION TO BE INSULATION AND/OR HEAT SOURCE TO KEEP ENCLOSURES AT A MINIMUM TEMPERATURE OF 40°F (NFPA 13-4-5.4.1.1).
5. ASSEMBLY ENCLOSURE SHALL INCLUDE A BORE SIGHTED DRAIN TO DAYLIGHT CAPABLE OF DRAINING A FULL RELIEF VALVE DISCHARGE (LENGTH OF DRAIN TO BE APPROVED BY CITY OF KLAMATH FALLS FOR THEIR RESPECTIVE SERVICE AREA).
6. COMPACTED GRAVEL OR UNDISTURBED BASE.
7. DEVICE ENCLOSURE – (E.G., METER BOX, IRRIGATION CONTROL VAULT, OR FABRICATED PERMANENT ENCLOSURE).

① – APPROVED REDUCED PRESSURE BACKFLOW ASSEMBLY INCLUDING FACTORY SUPPLIED SHUT-OFF VALVES

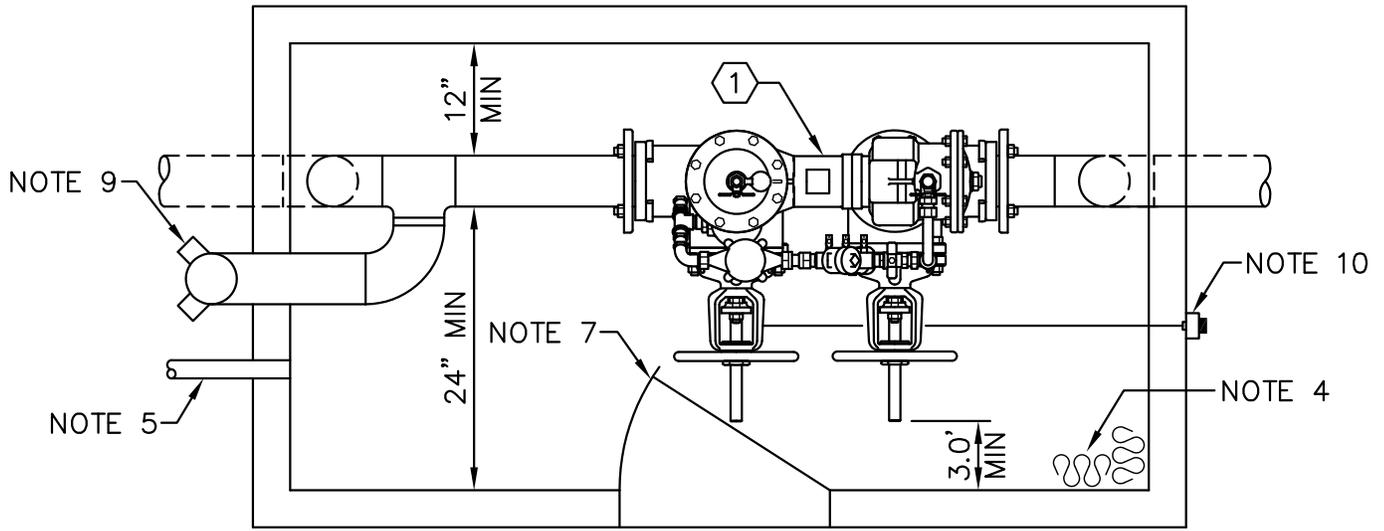
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1. THE OWNER
2. THE WATER SUPPLIER
3. THE BUILDING OFFICIAL

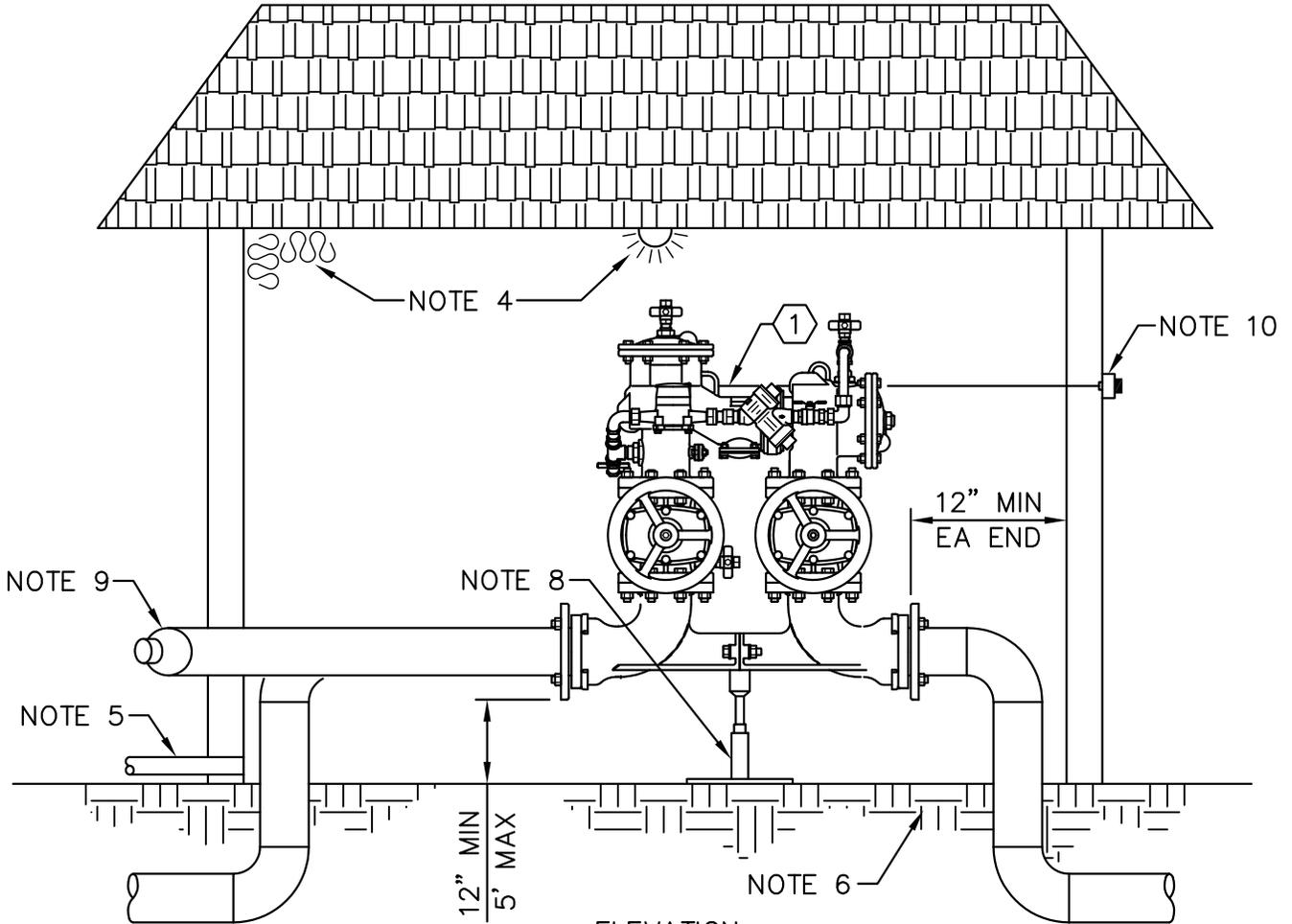
SCALE: NONE

**CITY OF KLAMATH FALLS**

MK	Date	Revision:	REDUCED PRESSURE BACKFLOW ASSEMBLY, 1 1/2"–2" BELOW GROUND NOTES	Drwn. By: WEM
				Date: 5/06
				Drwg. No.: <b>7-206</b>
1	6/06	4th EDITION		Approved By: <u>Mark Willrett</u>



PLAN



ELEVATION

SCALE: NONE

# CITY OF KLAMATH FALLS

MK	Date	Revision:
1	6/06	4th EDITION

DETECTOR DOUBLE CHECK  
 ASSEMBLY, 2 1/2" - 10" ABOVE  
 GROUND FEBCO N PATTERN

Approved By: *Mark Willrett*

Drwn. By:	WEM
Date:	5/06
Drwg. No.:	<b>7-210</b>

**NOTES**

1. DETECTOR DOUBLE CHECK VAULT OR ENCLOSURE SHALL BE INSTALLED AT POINT OF SERVICE, OR IN AN ALTERNATE LOCATION APPROVED BY THE CITY FOR ITS SERVICE AREA, BUT NO MORE THAN 10 FEET FROM POINT OF SERVICE.
2. DETECTOR DOUBLE CHECK ASSEMBLY MAY BE INSTALLED VERTICALLY, PROVIDED THAT THE ASSEMBLY:
  - A. IS RECOMMENDED BY THE MANUFACTURER FOR VERTICAL INSTALLATION
  - B. IS INSTALLED IN AN ORIENTATION AS LISTED IN THE CURRENT "APPROVED BACKFLOW PREVENTION ASSEMBLY LIST" (OREGON DEPARTMENT OF HUMAN RESOURCES, HEALTH SERVICES 503-731-4007).
3. ALL CLEARANCES APPLY TO OUTSIDE AND IN-BUILDING INSTALLATIONS.
4. INSULATION-FREEZE PROTECTION TO BE INSULATION AND/OR HEAT SOURCE TO KEEP ENCLOSURES AT A MINIMUM TEMPERATURE OF 40°F (NFPA 13-4-5.4.1.1).
5. BORE-SIGHTED DRAIN TO DAYLIGHT IS REQUIRED.
6. COMPACTED GRAVEL OR UNDISTURBED BASE.
7. A DOOR OR OTHER ACCESS SHALL BE PROVIDED.
8. ALL ASSEMBLIES 2 1/2" AND LARGER SHALL HAVE FLANGE SUPPORTS.
9. FIRE DEPARTMENT PUMPER CONNECTION PER LOCAL FIRE CODES.
10. INSTALL REMOTE READER, METER AND TOUCH PAD AS PROVIDED BY CITY.

① - APPROVED DETECTOR DOUBLE CHECK ASSEMBLY INCLUDING FACTORY SUPPLIED SHUT-OFF VALVES

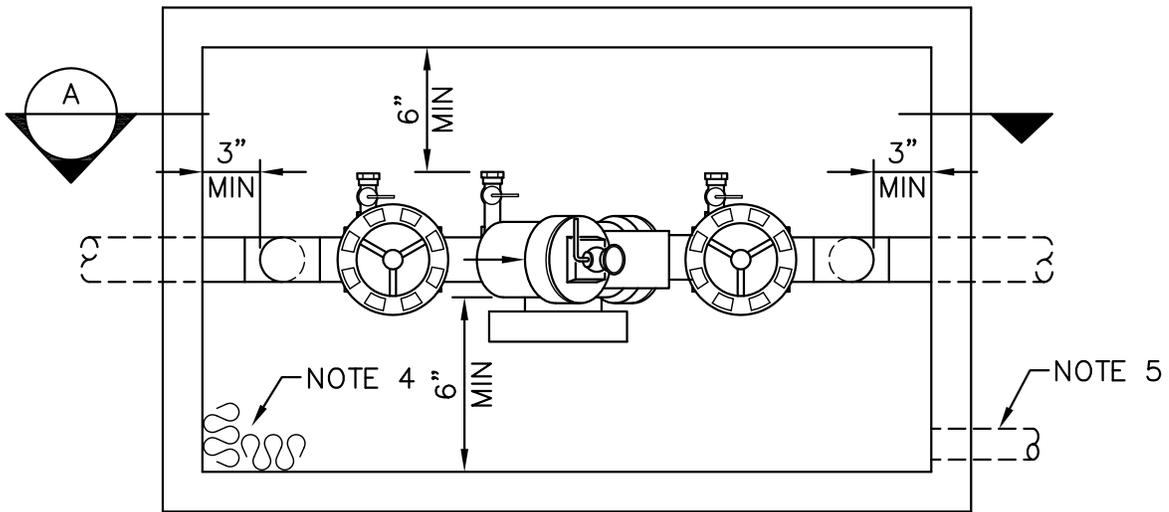
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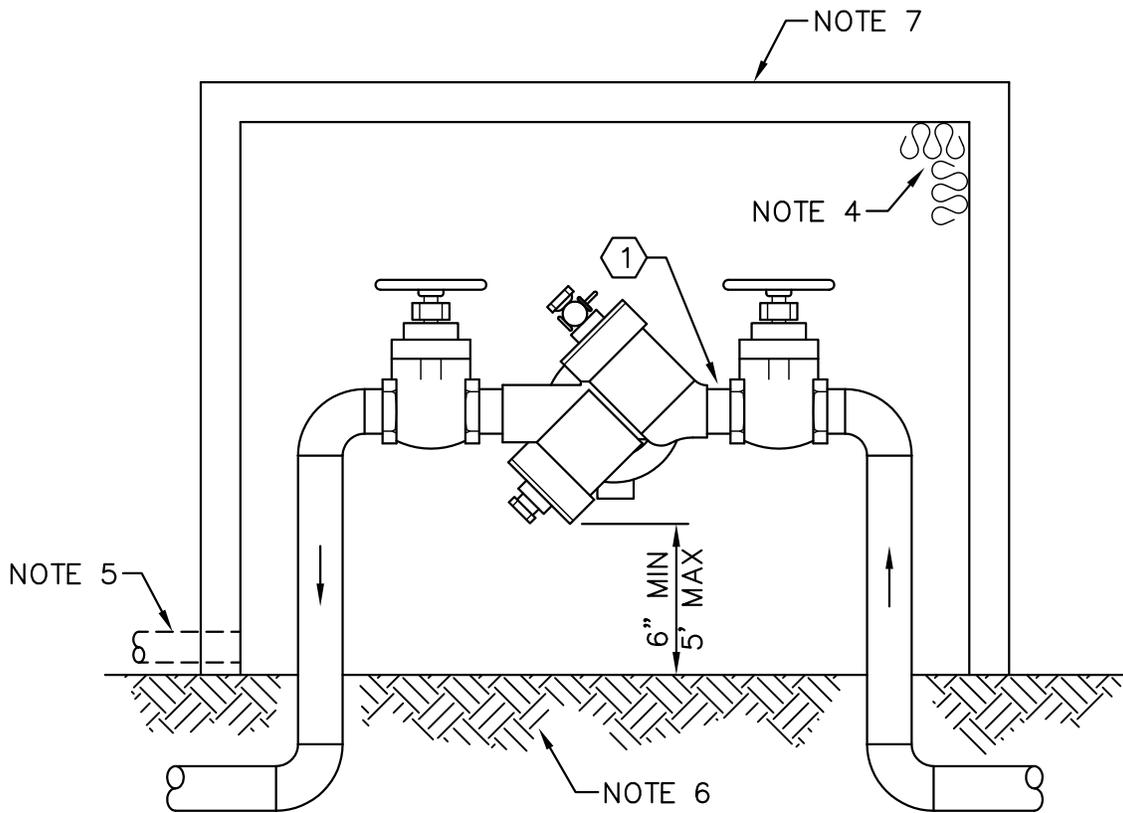
SCALE: NONE

# CITY OF KLAMATH FALLS

MK	Date	Revision:	DETECTOR DOUBLE CHECK ASSEMBLY, 2 1/2" - 10" ABOVE GROUND FEBCO N PATTERN NOTES	Drwn. By: WEM
			Approved By: <i>Mark Willrett</i>	Date: 5/06
1	6/06	4th EDITION		Drwg. No.: <b>7-211</b>



PLAN



SECTION A

SCALE: NONE

# CITY OF KLAMATH FALLS

MK	Date	Revision:
1	6/06	4th EDITION

REDUCED PRESSURE BACKFLOW  
ASSEMBLY, 1 1/2"-2"  
ABOVE GROUND

Approved By: **Mark Willrett**

Drwn. By:	WEM
Date:	2/03
Drwg. No.:	<b>7-215</b>

**NOTES**

1. REDUCED PRESSURE BACKFLOW ASSEMBLY SHALL BE INSTALLED IN A LOCATION APPROVED BY CITY OF KLAMATH FALLS FOR THEIR RESPECTIVE SERVICE AREA, AND SHALL BE ABOVE THE 100-YEAR FLOOD PLAIN.
2. REDUCED PRESSURE BACKFLOW ASSEMBLY SHALL BE INSTALLED HORIZONTAL AND PLUMB.
3. ALL CLEARANCES APPLY TO OUTSIDE, IN-BUILDING, AND VAULT INSTALLATIONS. MINIMUM CLEARANCES FOR DEVICE ASSEMBLIES 2 INCHES OR SMALLER MAY BE REDUCED PROVIDED THAT THEY ARE ACCESSIBLE FOR TESTING AND REPAIRING AND THE CITY OF KLAMATH FALLS APPROVES THE VARIANCE FOR THEIR RESPECTIVE SERVICE AREA.
4. INSULATION-FREEZE PROTECTION TO BE INSULATION AND/OR HEAT SOURCE TO KEEP ENCLOSURES AT A MINIMUM TEMPERATURE OF 40°F (NFPA 13-4-5.4.1.1).
5. ASSEMBLY ENCLOSURE SHALL INCLUDE A BORE SIGHTED DRAIN TO DAYLIGHT CAPABLE OF DRAINING A FULL RELIEF VALVE DISCHARGE (LENGTH OF DRAIN TO BE APPROVED BY CITY OF KLAMATH FALLS FOR THEIR RESPECTIVE SERVICE AREA).
6. COMPACTED GRAVEL OR UNDISTURBED BASE.
7. DEVICE ENCLOSURE – (E.G., METER BOX, IRRIGATION CONTROL VAULT, OR FABRICATED PERMANENT ENCLOSURE).

① – APPROVED REDUCED PRESSURE BACKFLOW ASSEMBLY INCLUDING FACTORY SUPPLIED SHUT-OFF VALVES

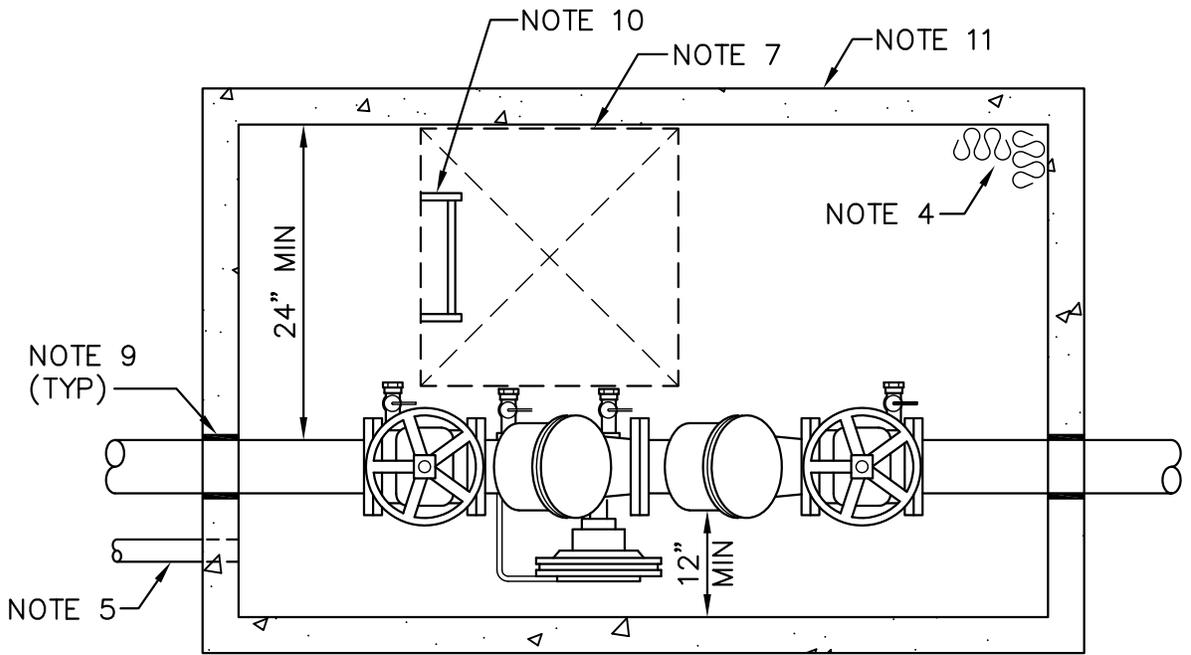
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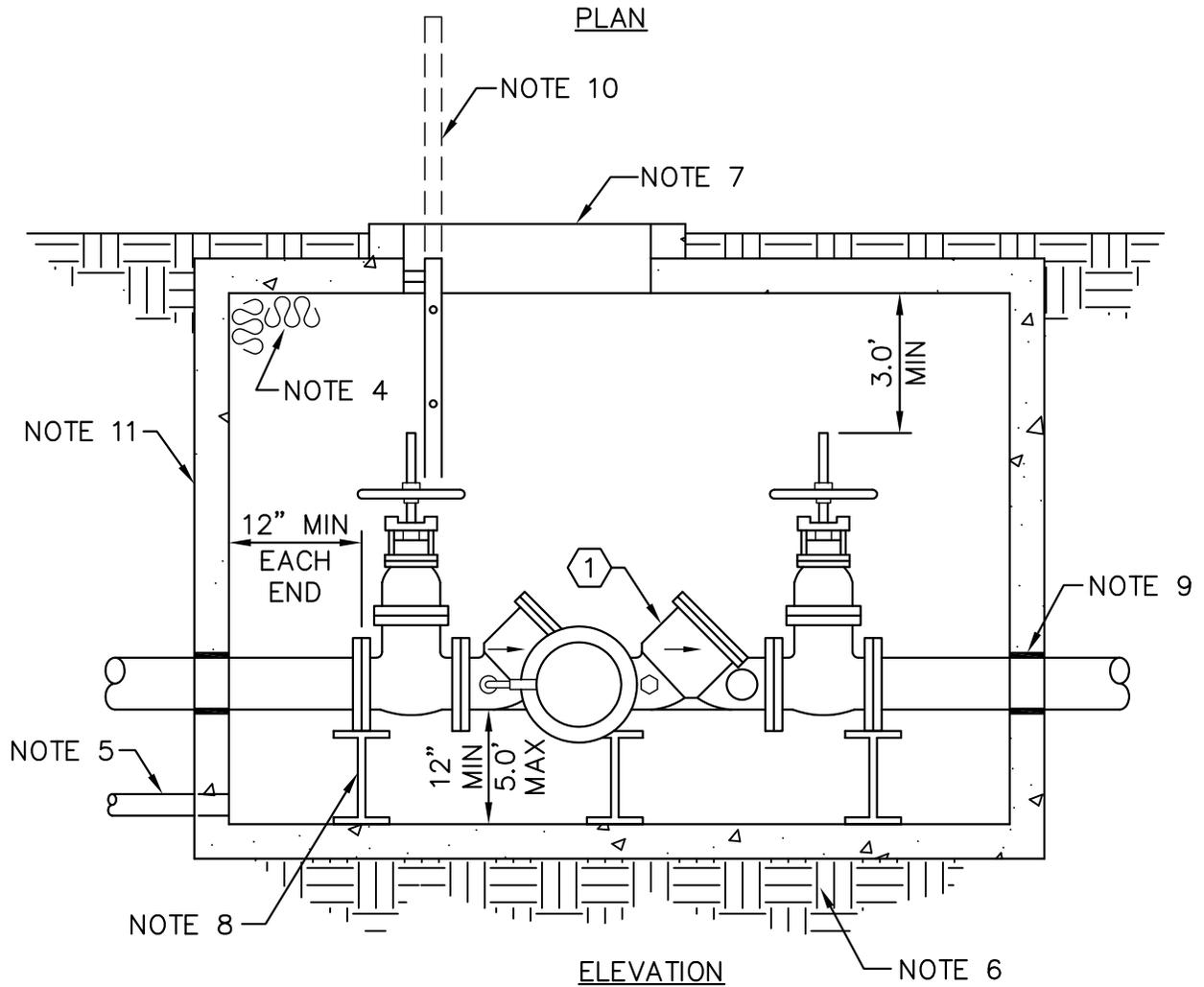
SCALE: NONE

# CITY OF KLAMATH FALLS

MK	Date	Revision:	REDUCED PRESSURE BACKFLOW ASSEMBLY, 1 1/2"–2" ABOVE GROUND NOTES	Drwn. By:	WEM
				Date:	5/06
				Drwg. No.:	<b>7-216</b>
1	6/06	4th EDITION	Approved By:	<i><b>Mark Willrett</b></i>	



PLAN



ELEVATION

SCALE: NONE

# CITY OF KLAMATH FALLS

MK	Date	Revision:
1	6/06	4th EDITION

REDUCED PRESSURE BACKFLOW  
 ASSEMBLY, 2 1/2" - 10"  
 BELOW GROUND

Approved By: *Mark Willrett*

Drwn. By: WEM  
 Date: 5/06  
 Drwg. No.: **7-220**

**NOTES**

1. REDUCED PRESSURE BACKFLOW ASSEMBLY SHALL BE INSTALLED IN A LOCATION APPROVED BY CITY OF KLAMATH FALLS FOR THEIR RESPECTIVE SERVICE AREA, AND SHALL BE ABOVE THE 100-YEAR FLOOD PLAIN.
2. REDUCED PRESSURE BACKFLOW ASSEMBLY SHALL BE INSTALLED HORIZONTAL AND PLUMB.
3. ALL CLEARANCES APPLY TO OUTSIDE, IN-BUILDING, AND VAULT INSTALLATIONS.
4. INSULATION-FREEZE PROTECTION TO BE INSULATION AND/OR HEAT SOURCE TO KEEP ENCLOSURES AT A MINIMUM TEMPERATURE OF 40°F (NFPA 13-4-5.4.1.1).
5. ASSEMBLY ENCLOSURE SHALL INCLUDE A BORE SIGHTED DRAIN TO DAYLIGHT CAPABLE OF DRAINING A FULL RELIEF VALVE DISCHARGE (LENGTH OF DRAIN TO BE APPROVED BY CITY OF KLAMATH FALLS FOR THEIR RESPECTIVE SERVICE AREA).
6. COMPACTED GRAVEL OR UNDISTURBED BASE.
7. HATCH MINIMUM 3'x3', SPRING ASSISTED, GALVANIZED OR ALUMINUM DIAMOND PLATE.
8. ALL ASSEMBLIES 2 1/2" AND LARGER SHALL HAVE FLANGE SUPPORTS.
9. WATERTIGHT GROUT SHALL BE USED TO SEAL OPENINGS.
10. IF VAULT DEPTH EXCEEDS 4', USE OSHA APPROVED FIXED LADDER (OAR Ch 437, DIVISION 2, 1910.27). PROVIDE LOCKABLE EXTENSION W/LADDER.
11. REINFORCED CONCRETE VAULT (ASTM C-875).

① - APPROVED REDUCED PRESSURE BACKFLOW ASSEMBLY INCLUDING FACTORY SUPPLIED SHUT-OFF VALVES

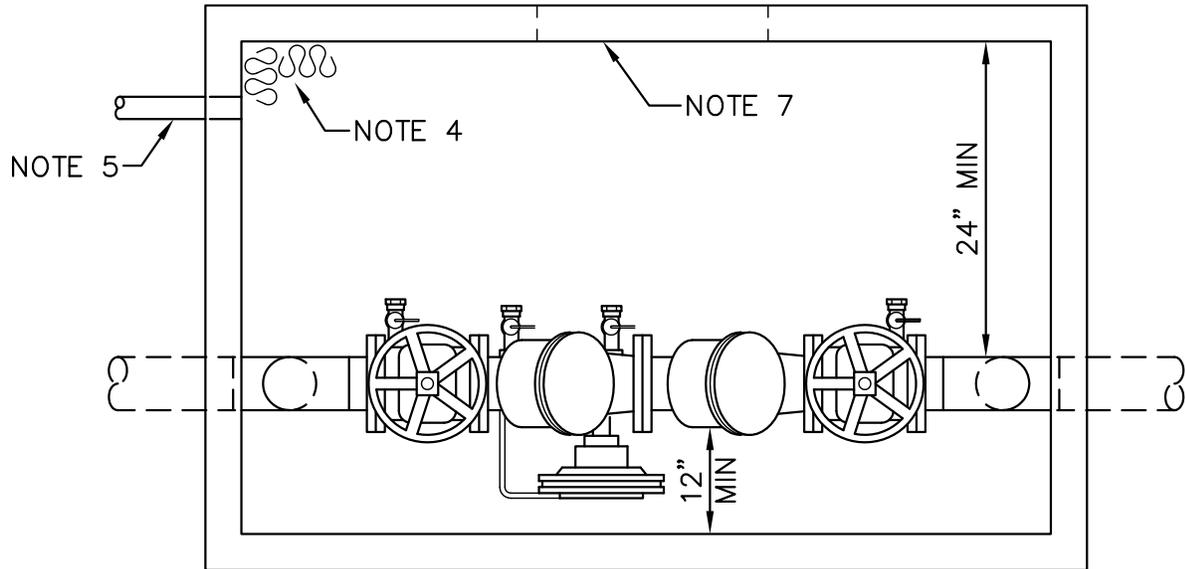
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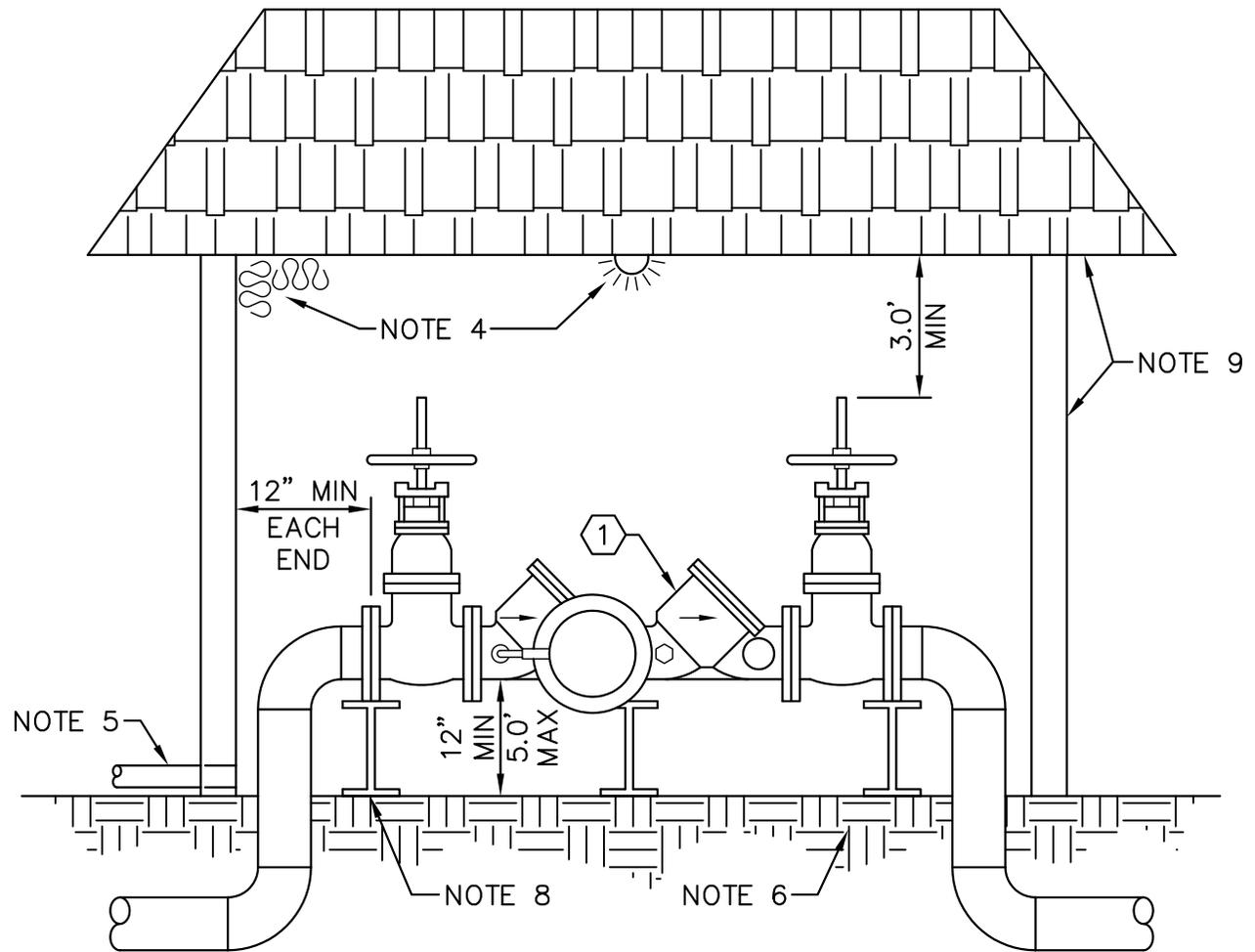
SCALE: NONE

**CITY OF KLAMATH FALLS**

MK	Date	Revision:	REDUCED PRESSURE BACKFLOW ASSEMBLY, 2 1/2" - 10" BELOW GROUND NOTES	Drwn. By: WEM
				Date: 5/06
				Drwg. No.: <b>7-221</b>
1	6/06	4th EDITION		Approved By: <i>Mark Willrett</i>



PLAN



ELEVATION

SCALE: NONE

# CITY OF KLAMATH FALLS

MK	Date	Revision:
1	6/06	4th EDITION

REDUCED PRESSURE BACKFLOW  
 ASSEMBLY, 2 1/2" - 10"  
 ABOVE GROUND

Approved By: *Mark Willrett*

Drwn. By:	WEM
Date:	5/06
Drwg. No.:	<b>7-225</b>

NOTES

1. REDUCED PRESSURE BACKFLOW ASSEMBLY SHALL BE INSTALLED IN A LOCATION APPROVED BY CITY OF KLAMATH FALLS FOR THEIR RESPECTIVE SERVICE AREA, AND SHALL BE ABOVE THE 100-YEAR FLOOD PLAIN.
2. REDUCED PRESSURE BACKFLOW ASSEMBLY SHALL BE INSTALLED HORIZONTAL AND PLUMB.
3. ALL CLEARANCES APPLY TO OUTSIDE, IN-BUILDING, AND VAULT INSTALLATIONS.
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6. COMPACTED GRAVEL OR UNDISTURBED BASE.
7. A DOOR OR OTHER ACCESS SHALL BE PROVIDED.
8. ALL ASSEMBLIES 2 1/2" AND LARGER SHALL HAVE FLANGE SUPPORTS.
9. ALL STRUCTURES TO COMPLY WITH LOCAL CODES.

① - APPROVED REDUCED PRESSURE BACKFLOW ASSEMBLY INCLUDING FACTORY SUPPLIED SHUT-OFF VALVES

AS REQUIRED BY OAR 333-061-0070 AND THE OREGON PLUMBING SPECIALTY CODE, AN INITIAL TEST PERFORMED BY A STATE CERTIFIED BACKFLOW ASSEMBLY TESTER IS REQUIRED AT THE TIME OF INSTALLATION, WITH COPIES FURNISHED TO:

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3. THE BUILDING OFFICIAL

SCALE: NONE

# CITY OF KLAMATH FALLS

MK	Date	Revision:	REDUCED PRESSURE BACKFLOW ASSEMBLY, 2 1/2" - 10" ABOVE GROUND NOTES	Drwn. By: WEM Date: 5/06 Drwg. No.: <b>7-226</b>
1	6/06	4th EDITION	Approved By: <u>Mark Willrett</u>	