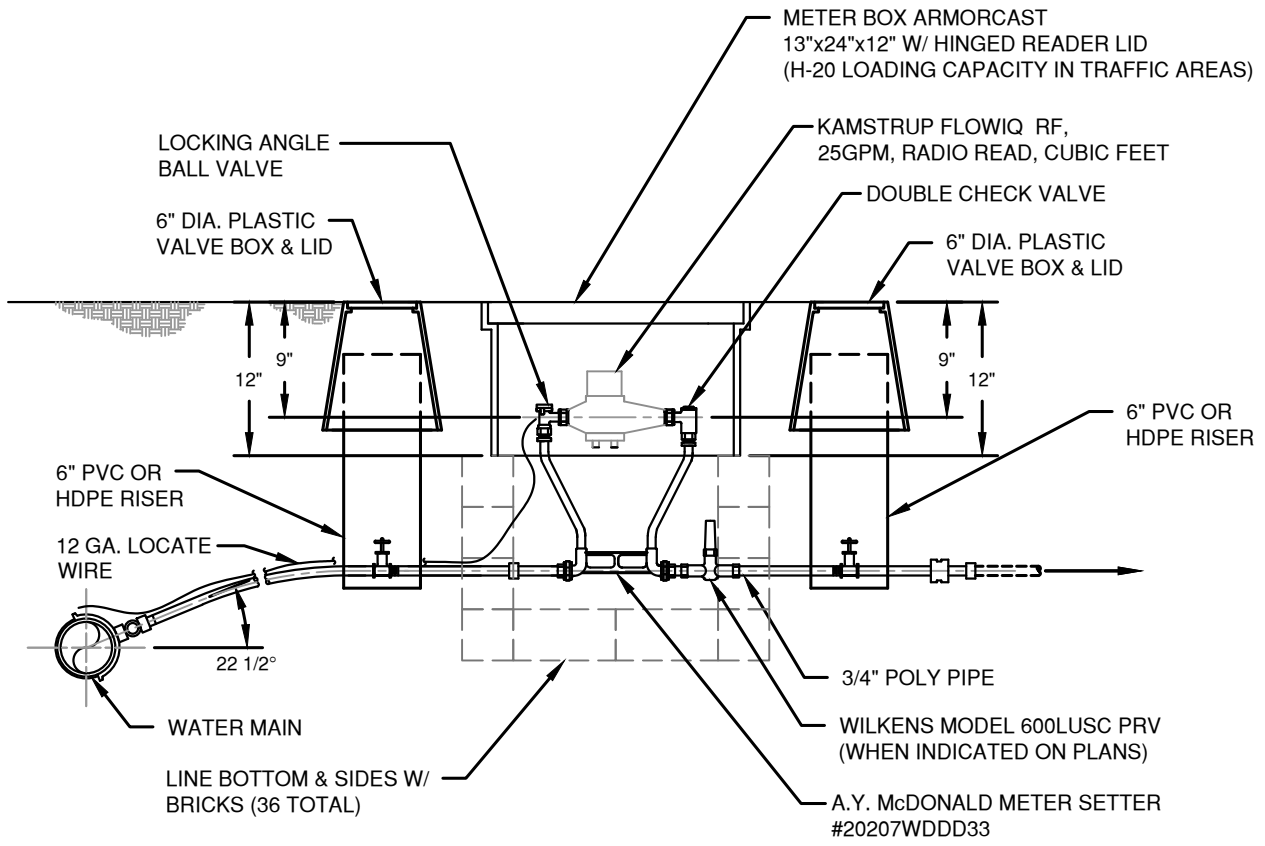


**PLAN VIEW**

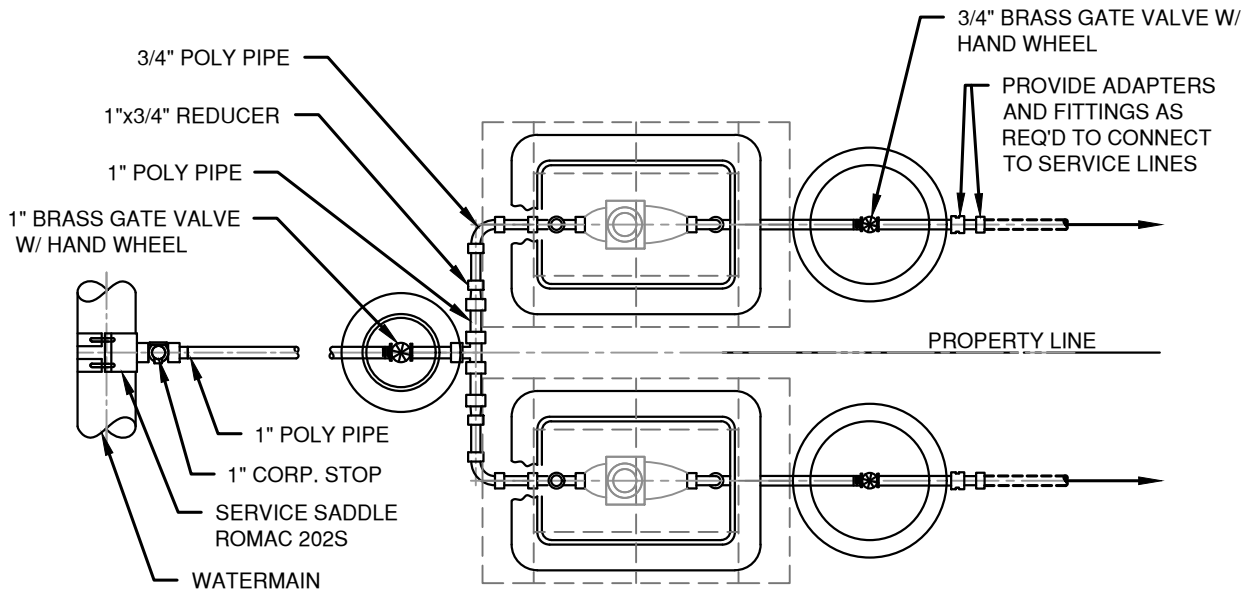


**SECTION VIEW**

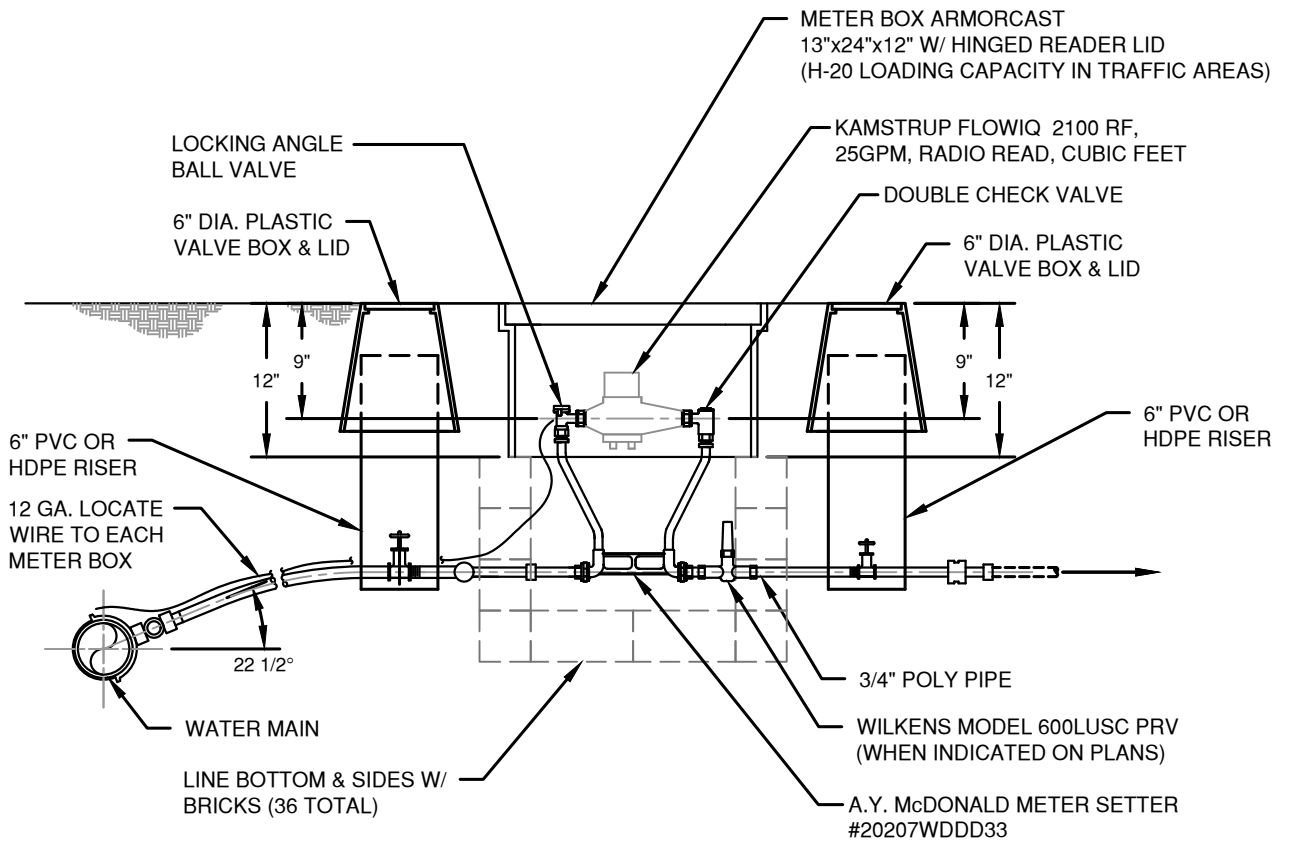
M:\Winlock\Public Works Standards\DETAILS\Details-Water\_2020.08.27.dwg, 9/10/2020 12:06 PM, JIM WEIS



<p><b>CITY OF WINLOCK</b> DEPARTMENT OF PUBLIC WORKS</p>	<p>WATER DETAILS TYPE 1 WATER SERVICE</p>	<p>REVISED 9/10/2020</p>	<p>DRAWING NO. <b>4-1</b></p>
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**PLAN VIEW**



**SECTION VIEW**

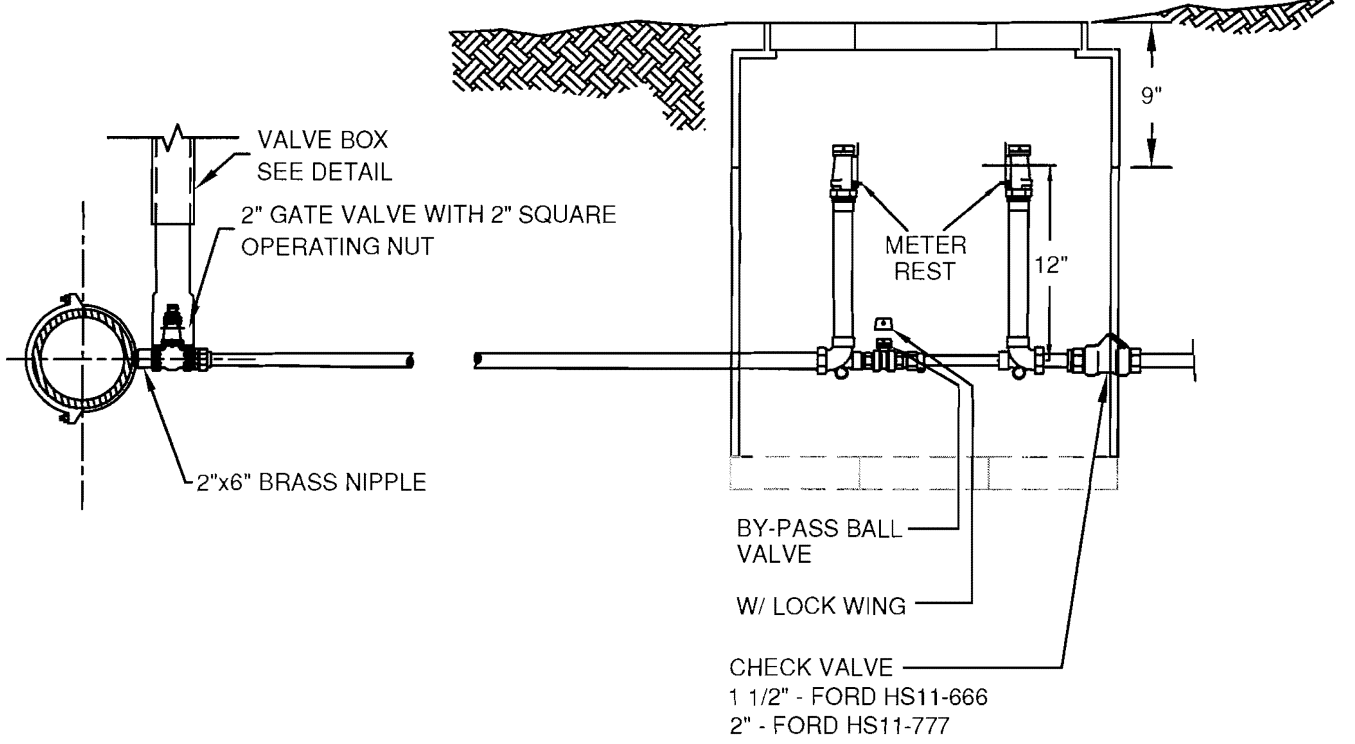
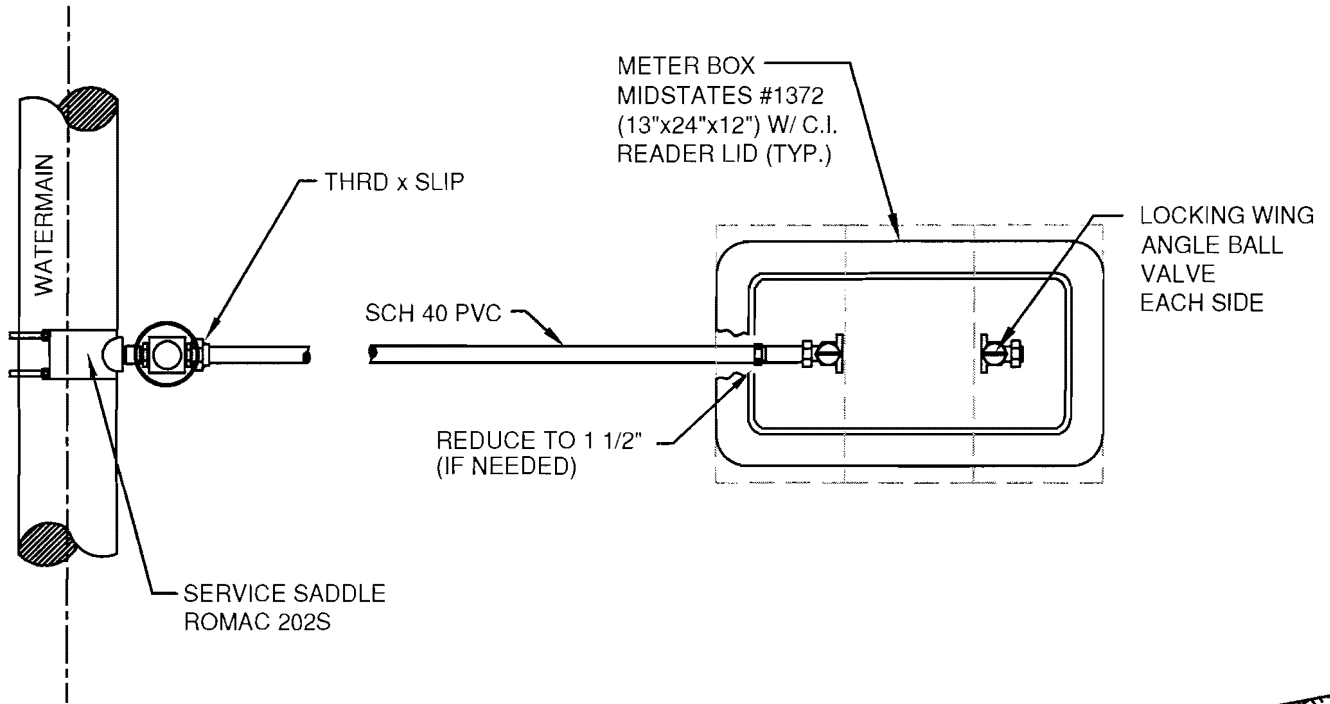


**CITY OF WINLOCK**  
DEPARTMENT OF PUBLIC WORKS

**WATER DETAILS**  
TYPE 2 WATER SERVICE

**REVISED**  
9/11/2020

**DRAWING**  
NO.  
**4-2**



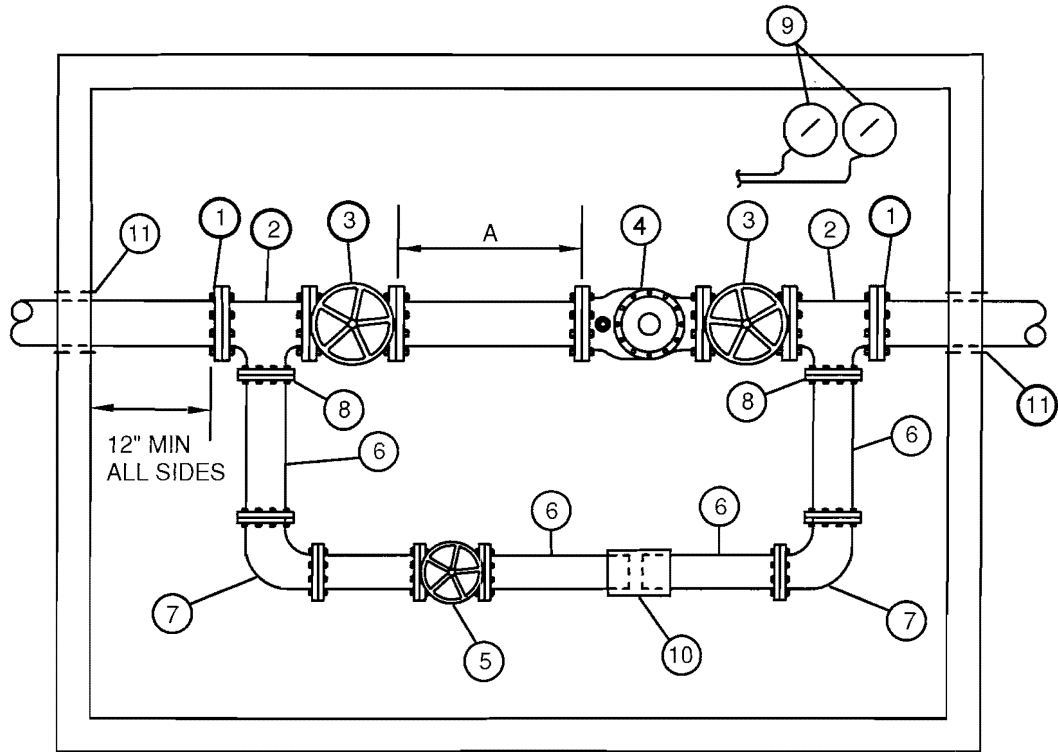
**NOTES:**

1. COPPER SETTERS SHALL BE:  
 1 1/2" - FORD VVF76-12B-13-11-66  
 2" - FORD VVF77-12B-17-11-77



<b>CITY OF WINLOCK</b> DEPARTMENT OF PUBLIC WORKS	<b>WATER DETAILS</b> 1 1/2" - 2" WATER SERVICE WITH BYPASS	REVISED 08/20/2007	DRAWING NO. <b>4-3</b>

T:\Custom\Details\City of Winlock\Details-Water.dwg, 4-3bypass, 8/20/2007 4:10:22 PM, D\Frye, DW\F6 ePlot.pc3, Gibbs & Olson - Report A Size (8.50 x 11.00 Inches), 1:1, Gibbs & Olson, Inc.



METER	MINIMUM DIMENSION "A"	DOOR SIZE	VAULT DEPTH	TEES
3" COMPOUND	15"	3' X 3'	5'0"	3"X1-1/2"
4" COMPOUND	20"	3' X 3'	5'0"	4"X2"
6" COMPOUND	30"	3' X 3'	5'0"	6"X4"
8" COMPOUND	40"	3' X 6'	5'0"	8"X6"

\* VARIES, TO BE DETERMINED BASED ON SPECIFIC PARTS USED.

- ① RESTRAINED FLG ADAPTER (RFA)
- ⑧ RFA OR BLIND FLG W/ THRD TAP
- ② FLG TEE
- ⑨ REMOTE READERS
- ③ FLG GATE VALVE W/ HAND WHEEL
- ⑩ MECHANICAL COUPLING OR UNION
- ④ COMPOUND METER
- ⑪ SEAL ANNULAR SPACE W/ NON-SHRINK GROUT
- ⑤ GATE VALVE W/HAND WHEEL
- ⑥ DUCTILE IRON SPOOL OR BRASS NIPPLES
- ⑦ 90° ELBOWS (MATERIAL TO BE SAME AS PIPE)

**NOTES:**

1. VAULTS SHALL BE THE STANDARD PRODUCTS AS MANUFACTURED BY UTILITY VAULT "LA" SERIES OR EQUAL. TOP SECTIONS SHALL INCLUDE HINGED LOCKING COVER (NO. 332P OR 2-332P) HINGED READER LID FOR REMOTE READERS.
2. PIPE AND FIXTURES TO BE SET ON VALVE STANDS INSTALLED ACCORDING TO MANUFACTURERS SPECS.
3. DRAINAGE MUST BE PROVIDED FOR THE VAULT.

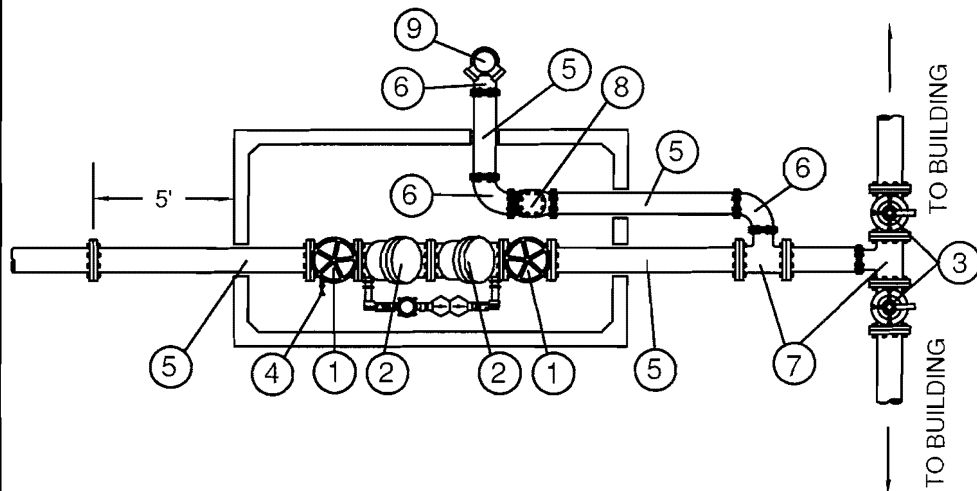


**CITY OF WINLOCK**  
DEPARTMENT OF PUBLIC WORKS

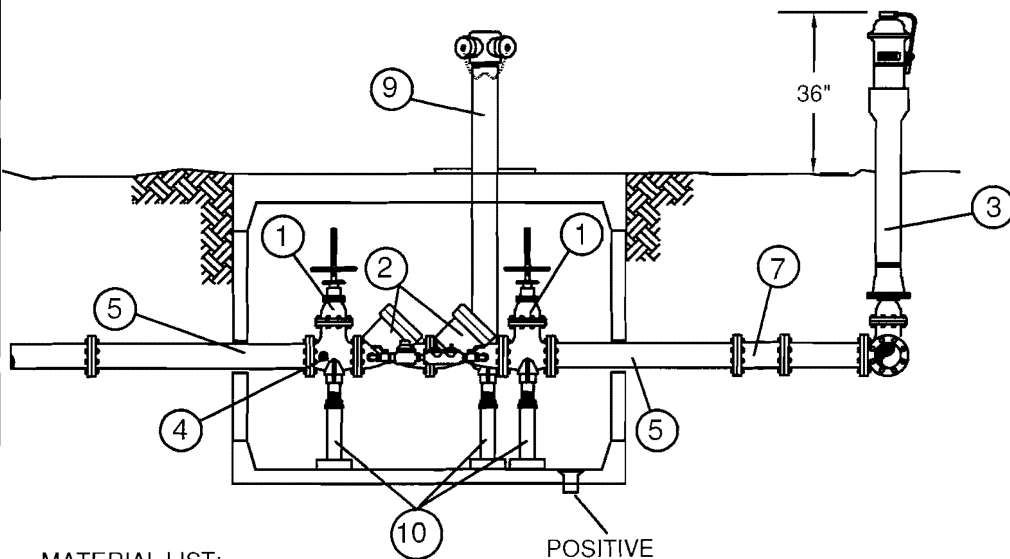
**WATER DETAILS**  
COMPOUND WATER  
METER WITH BYPASS FOR  
3" - 8" WATER SERVICE

REVISED  
08/20/2007

**DRAWING**  
NO.  
**4-4**



PLAN



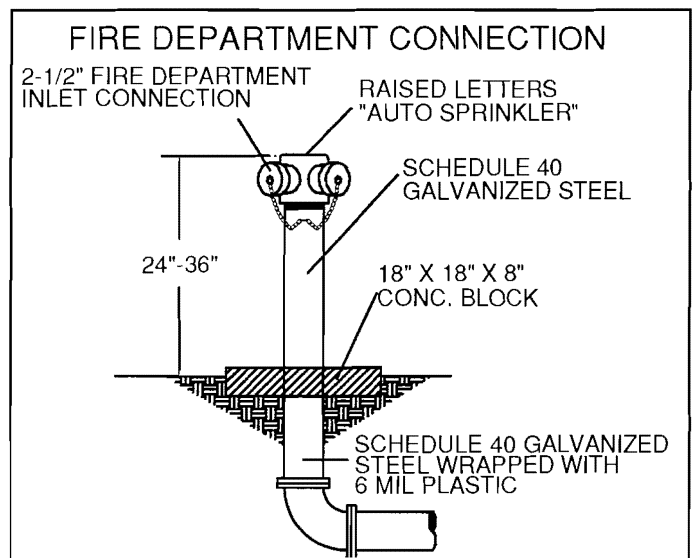
PROFILE

**MATERIAL LIST:**

1. FLG GATE VALVE W/ HANDWHEEL
2. DOUBLE CHECK DETECTOR ASSEMBLY  
FLGxFLG (DOH APPROVED)
3. POST INDICATOR VALVE
4. 3/4" BALL VALVE (TEST COCK)
5. DI PIPE SPOOL
6. DI 90° FLG BEND
7. DI FLG TEE
8. SWING CHECK VALVE W/BALL DRIP ASSEMBLY
9. FIRE DEPARTMENT CONNECTION
10. VALVE STANDS
11. WHERE PIPING PASSES THROUGH CONCRETE  
WALL PROVIDE 2" CLEARANCE W/ WATERPROOF  
MASTIC OR FLEXIBLE SEALANT

**GENERAL NOTES:**

- A. PIPE FROM WATER MAIN TO BUILDING  
SHALL BE CLASS 50 OR 52 DI.
- B. INSTALL PLUGS ON ALL TEST COCKS.  
(FINGER TIGHT)
- C. ALL PIPING SHALL BE SIZED BY A LICENSED  
FIRE SYSTEMS DESIGNER. (MINIMUM OF 4").

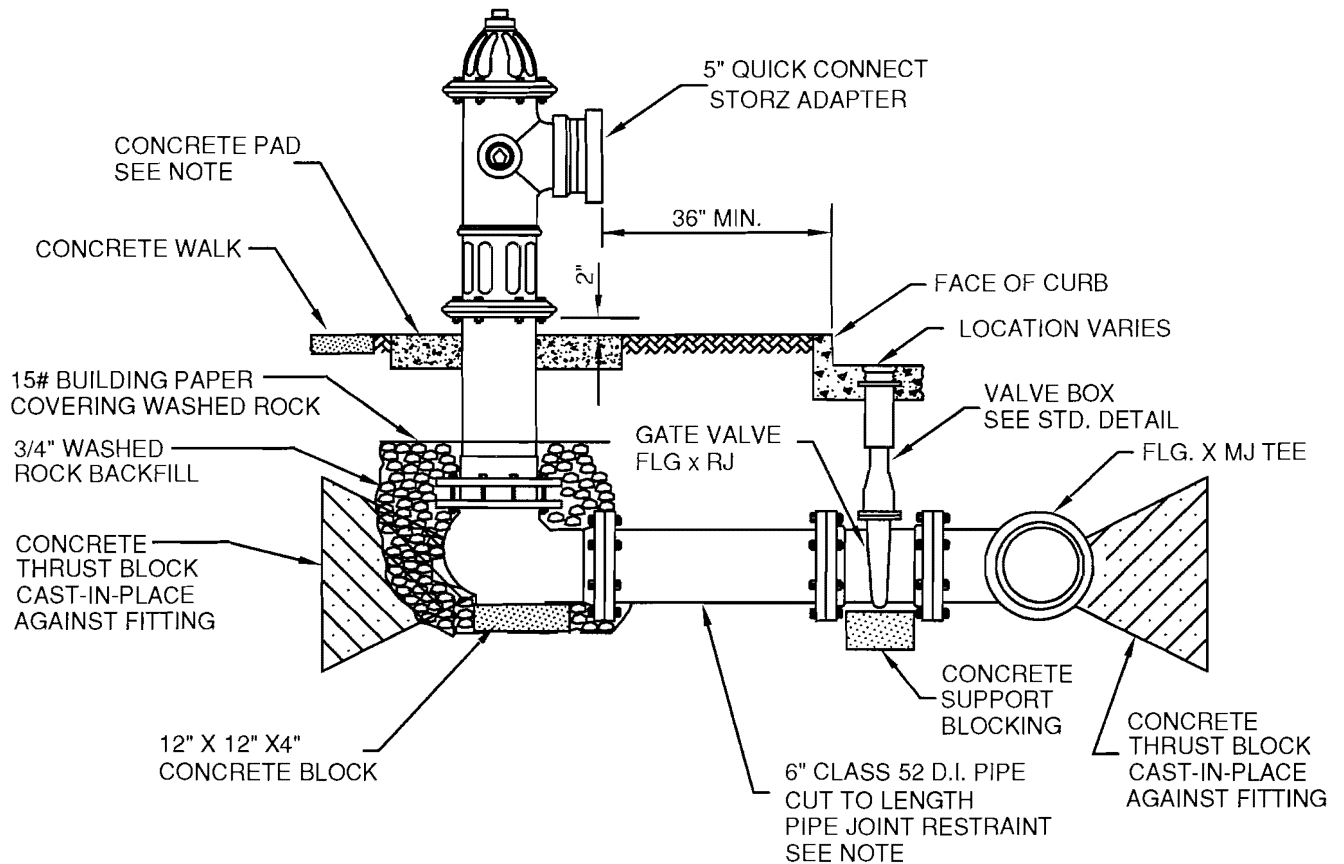


**CITY OF WINLOCK**  
DEPARTMENT OF PUBLIC WORKS

**WATER DETAILS**  
**FIRE DEPARTMENT**  
**CONNECTION WITH DCDA**

**REVISED**  
**08/20/2007**

**DRAWING**  
**NO.**  
**4-5**



**NOTES**

1. HYDRANTS SHALL BE LOCATED WITHIN THE STREET RIGHT-OF-WAY, WITH A MINIMUM THREE-FOOT RADIUS UNOBSTRUCTED WORKING AREA.
2. HYDRANT SHALL BE CLOW MEDALLION.
3. HYDRANT SHALL BE PAINTED SUNBURST YELLOW HIGH-GRADE ENAMEL AFTER INSTALLATION.
4. MECHANICAL PIPE JOINTS SHALL BE MEGALUG SERIES RESTRAINING GLANDS.
5. A 4' X 4' X 8" DEEP CONCRETE PAD WILL BE POURED AROUND THE HYDRANT. ENTEND PAD TO 2' BEYOND GATE VALVE WHEN VALVE IS OUTSIDE OF PAVEMENT.
6. MINIMUM HYDRANT BURY SHALL BE 30".
7. INSTALL 4 BOLLARDS AROUND HYDRANT (4' RADIUS) IN UN-PROTECTED LOCATIONS.



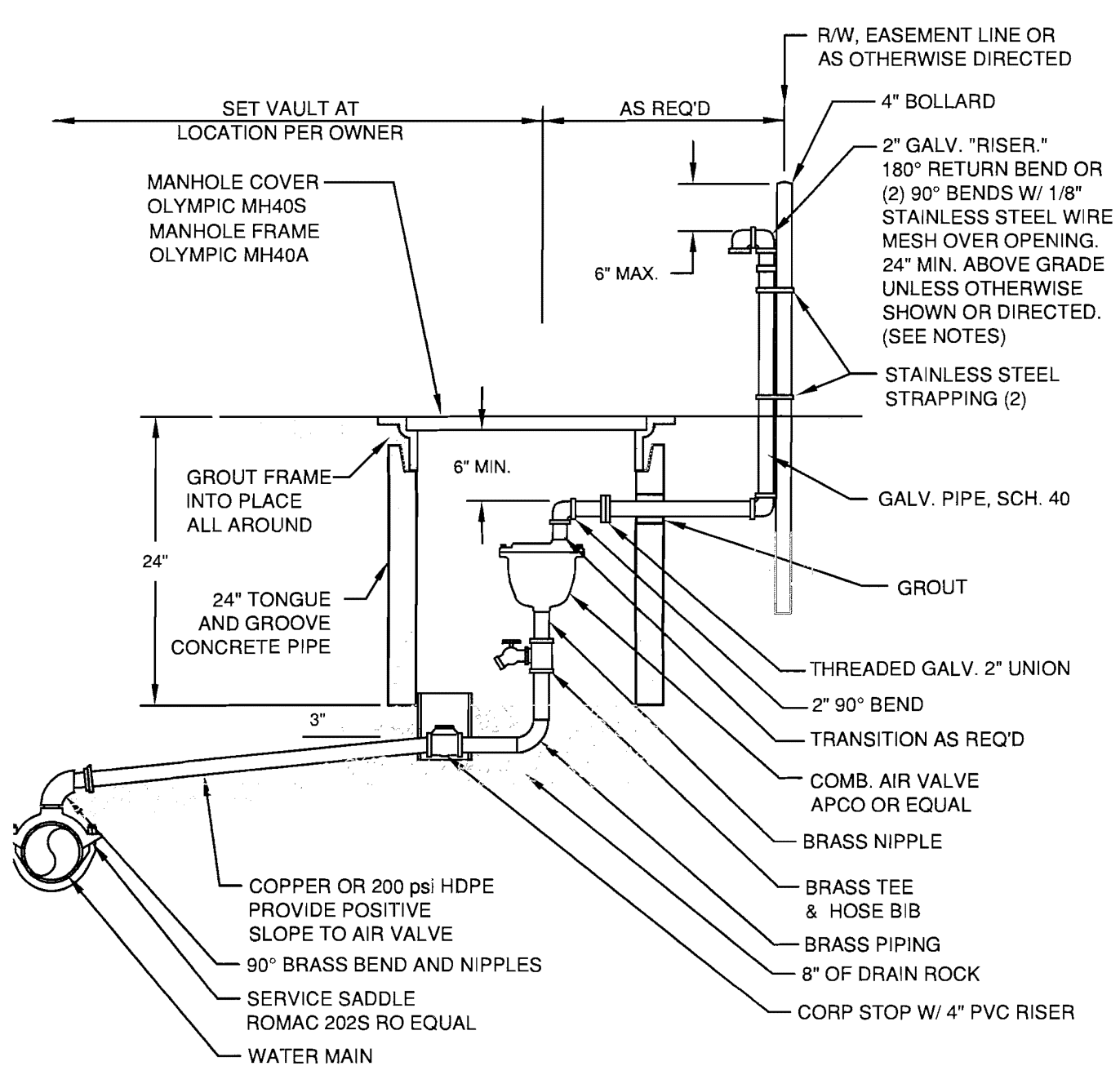
**CITY OF WINLOCK**  
DEPARTMENT OF PUBLIC WORKS

**WATER DETAILS**  
**FIRE HYDRANT**

**REVISED**  
**08/20/2007**

**DRAWING**  
**NO.**  
**4-6**

T:\Custom\Details\City of Winlock\Details\Water.dwg, 4:7Comb AV, 8/20/2007 4:10:27 PM, D\Fye, DW\F6 ePlot.pc3, Gibbs & Olson - Report A Size (8.50 x 11.00 Inches), 1:1, Gibbs & Olson, Inc.

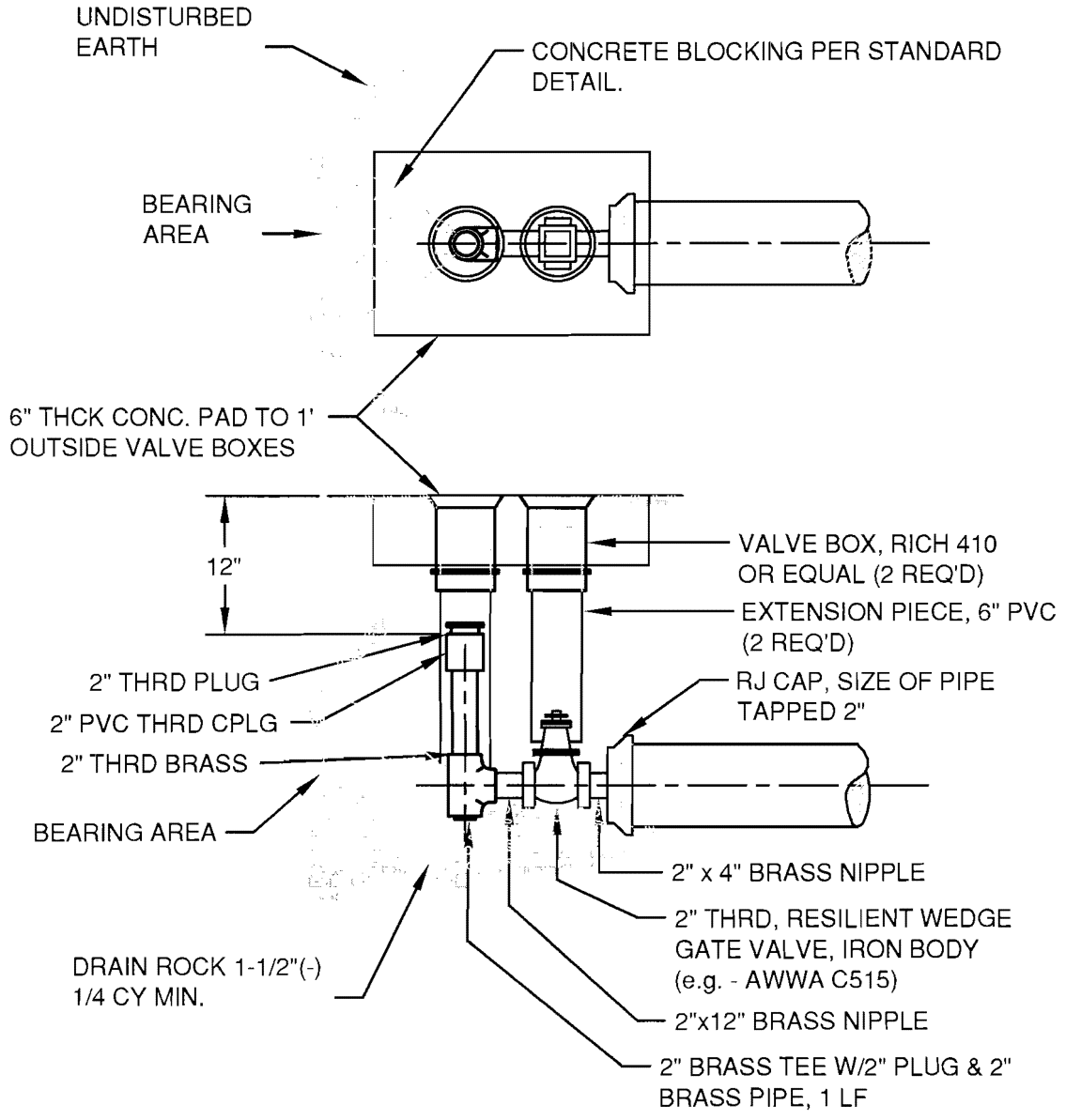


**COMBINATION AIR VALVE NOTE:**  
 1. DRAIN TO DAYLIGHT W/ 2" PVC IF APPLICABLE.  
 2. TERMINATE EXHAUST INSIDE VAULT W/ 90° BEND (DOWN) AND WIRE MESH IF VAULT IS DRAINED TO DAYLIGHT.



<b>CITY OF WINLOCK</b> DEPARTMENT OF PUBLIC WORKS	<b>WATER DETAILS</b>	<b>REVISED</b> 08/20/2007	<b>DRAWING NO.</b>
	<b>COMBINATION AIR VALVE</b>		<b>4-7</b>

T:\Custom\Details\City of Winlock\Details-Water.dwg, 4-880, 8/20/2007 4:10:28 PM, D\Frye, DW\F6 a\F61.p3, Gibbs & Olson - Report A Size (8.50 x 11.00 Inches), 1:1, Gibbs & Olson, Inc.



**CITY OF WINLOCK**  
DEPARTMENT OF PUBLIC WORKS

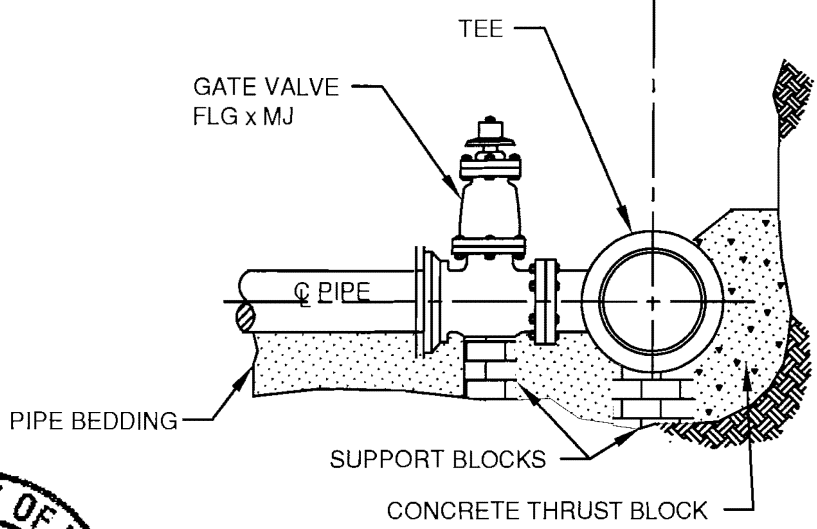
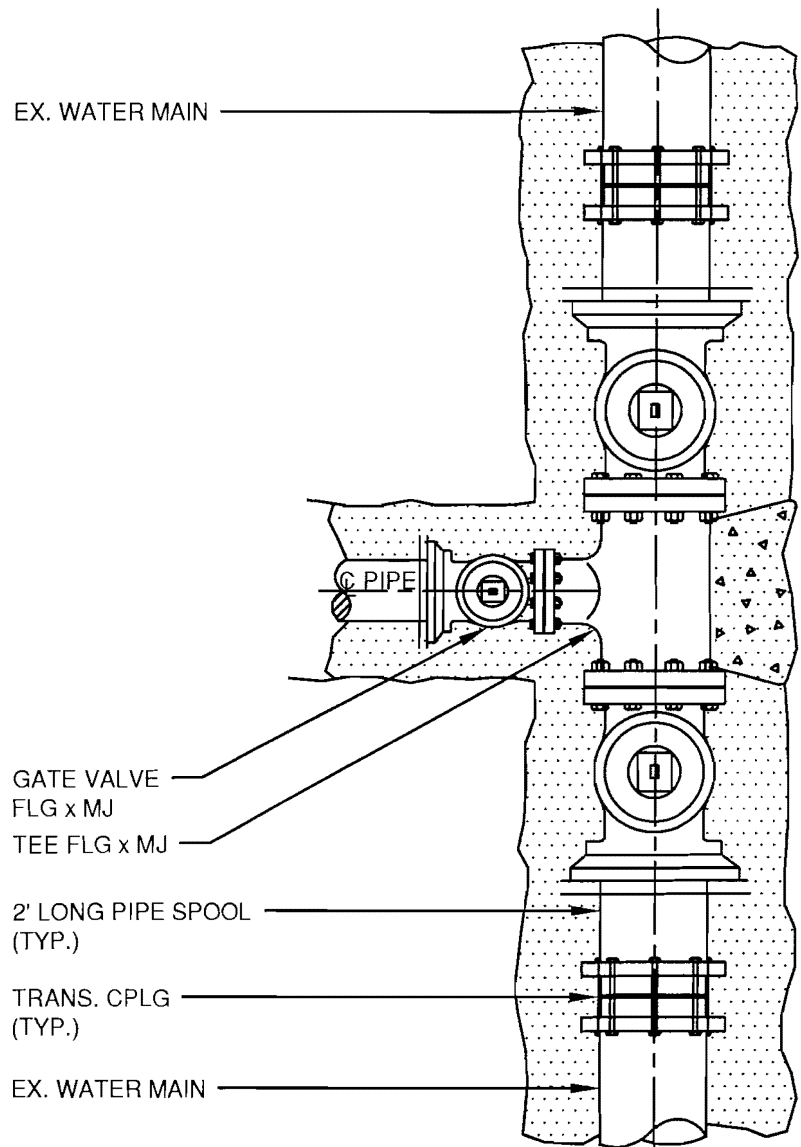
**WATER DETAILS**  
**BLOW OFF VALVE**

**REVISED**  
**08/20/2007**

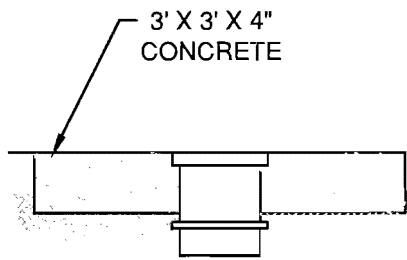
**DRAWING**  
**NO.**  
**4-8**



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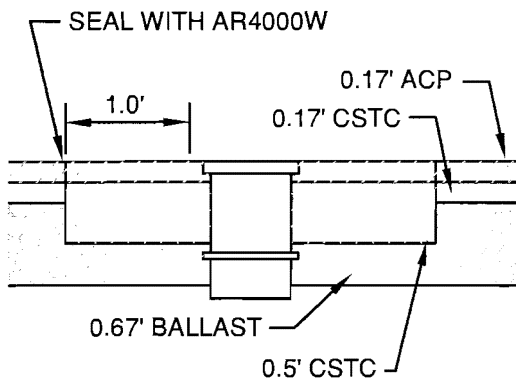


<p><b>CITY OF WINLOCK</b> DEPARTMENT OF PUBLIC WORKS</p>	<p>WATER DETAILS CUT-IN TEE</p>	<p>REVISED 08/20/2007</p>	<p>DRAWING NO. 4-9</p>
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3' X 3' X 4" CONCRETE

OUTSIDE PAVED AREA



SEAL WITH AR4000W

1.0'

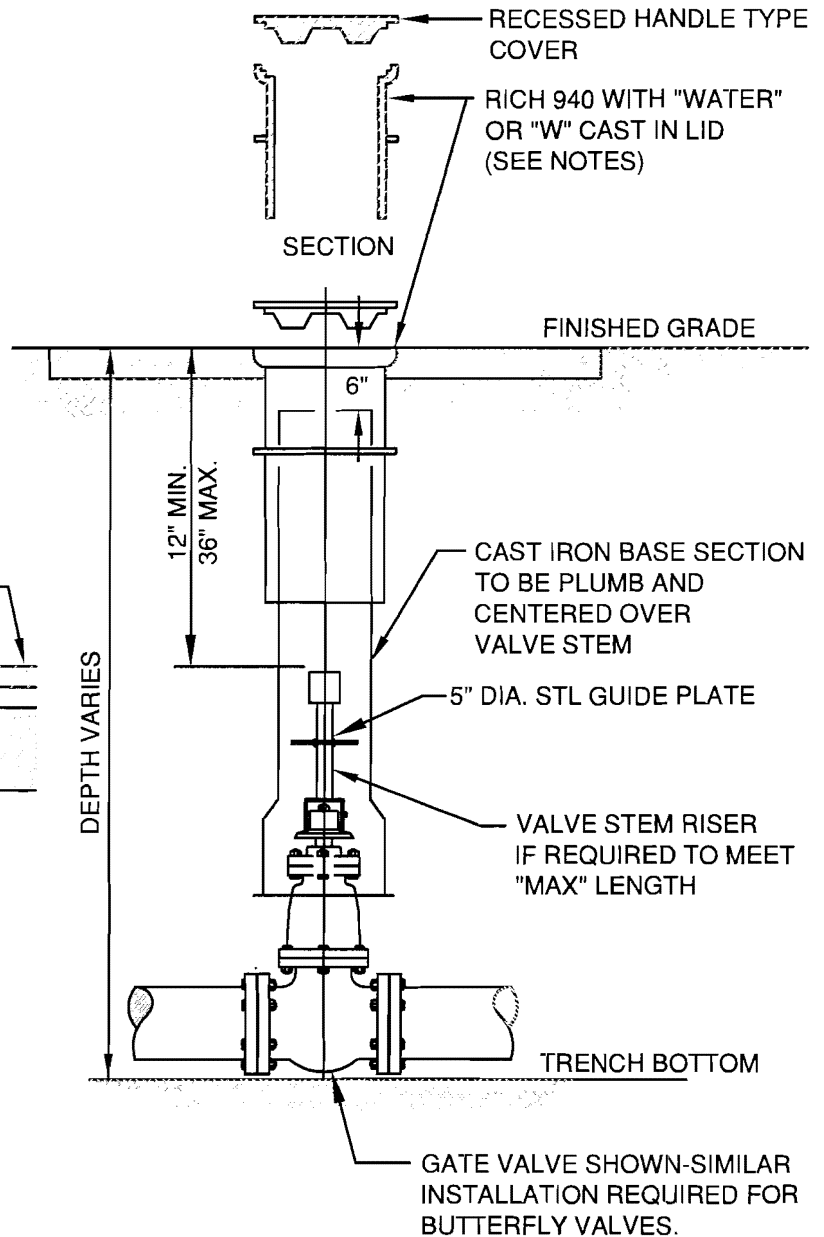
0.17' ACP

0.17' CSTC

0.67' BALLAST

0.5' CSTC

INSIDE PAVED ROADWAY



RECESSED HANDLE TYPE COVER

RICH 940 WITH "WATER" OR "W" CAST IN LID (SEE NOTES)

SECTION

FINISHED GRADE

12" MIN.  
36" MAX.

CAST IRON BASE SECTION TO BE PLUMB AND CENTERED OVER VALVE STEM

5" DIA. STL GUIDE PLATE

VALVE STEM RISER IF REQUIRED TO MEET "MAX" LENGTH

DEPTH VARIES

TRENCH BOTTOM

GATE VALVE SHOWN-SIMILAR INSTALLATION REQUIRED FOR BUTTERFLY VALVES.

**NOTES:**

1. ALIGN VALVE COVER EARS IN DIRECTION OF FLOW THROUGH VALVE.



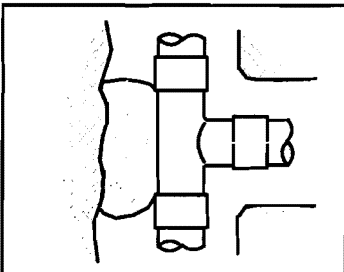
**CITY OF WINLOCK**  
DEPARTMENT OF PUBLIC WORKS

WATER DETAILS  
VALVE BOX DETAIL

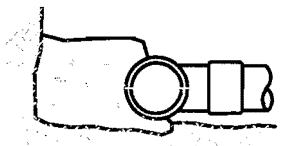
REVISED  
08/20/2007

DRAWING  
NO.  
4-10

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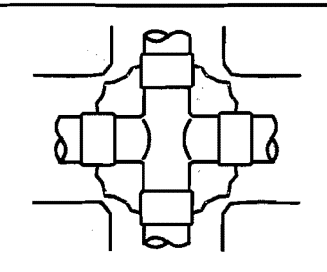


TOP VIEW

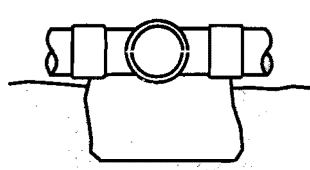


SIDE VIEW

TEE

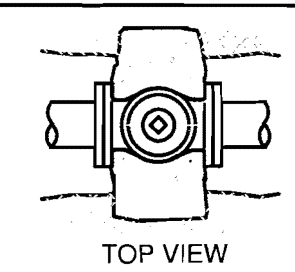


TOP VIEW

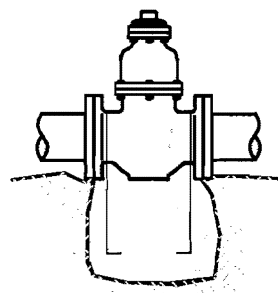


SIDE VIEW

CROSS

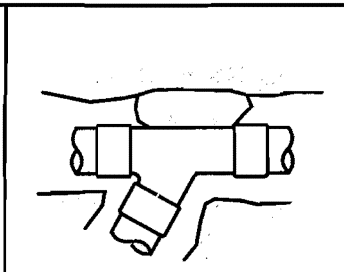


TOP VIEW

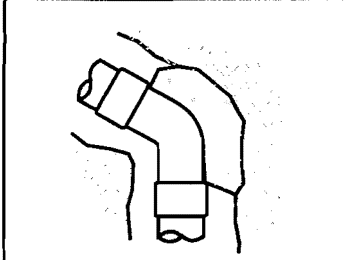


SIDE VIEW

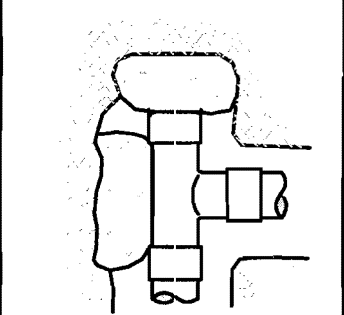
GATE VALVE



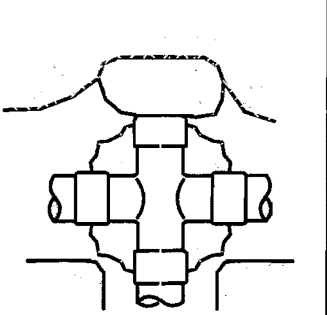
WYE



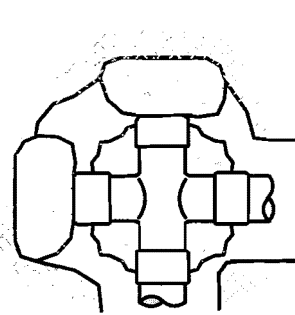
HORIZ. BEND



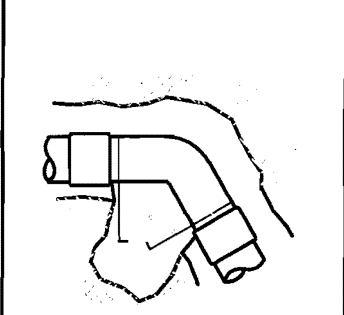
TEE WITH PLUG



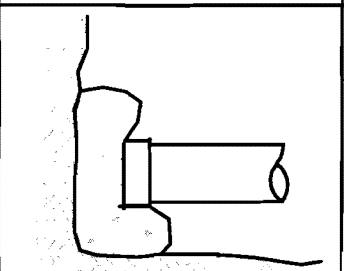
CROSS WITH PLUG



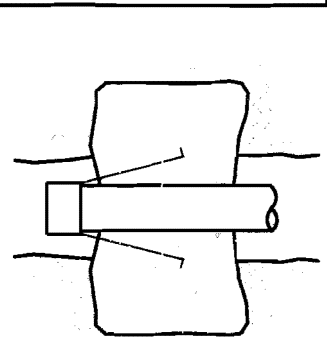
CROSS WITH PLUGS



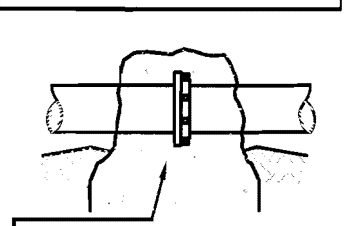
45° - 90° VERTICAL BEND



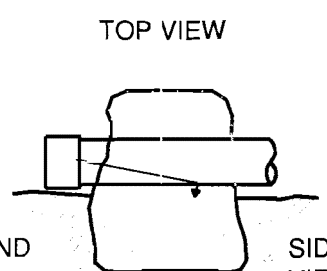
PLUG OR CAP



TOP VIEW



LOCKING RETAINER GLAND  
ALTERNATIVE STRADDLE BLOCK



SIDE VIEW

DEAD-MAN THRUST BLOCKING

- NOTES:
1. CONCRETE THRUST BLOCKING TO BE POURED AGAINST UNDISTURBED EARTH.
  2. PLASTIC BARRIER SHALL BE PLACED BETWEEN ALL THRUST BLOCKS AND PIPE AND/OR FITTINGS.
  3. ANCHOR REBAR SHALL BE 5/8" MINIMUM DIAMETER.
  4. CONCRETE DEAD-MAN THRUST BLOCKING MAY BE REQUIRED BY THE CITY, OR ALLOWED AT THE DISCRETION OF THE PUBLIC WORKS DIRECTOR.
  5. ALL STANDARD BLOCKING AND THRUST CRITERIA, AS LISTED ON "STANDARD THRUST LOADS DETAIL", SHALL APPLY.



**CITY OF WINLOCK**  
DEPARTMENT OF PUBLIC WORKS

WATER DETAILS  
THRUST BLOCKING  
DETAIL

REVISED  
08/20/2007

DRAWING NO.  
**4-11a**

## THRUST LOADS

THRUST AT FITTINGS IN POUNDS AT 200 POUNDS PER SQUARE INCH OF WATER PRESSURE

PIPE DIAMETER	90° BEND	45° BEND	22-1/2° BEND	11-1/4° BEND	DEAD END OR TEE
4"	3,600	2,000	1,000	500	2,600
6"	8,000	4,400	2,300	1,200	5,700
8"	14,300	7,700	4,000	2,000	10,100
10"	22,300	12,100	6,200	3,100	15,800
12"	32,000	17,400	8,900	4,500	22,700
14"	43,600	23,600	12,100	6,100	30,800
16"	57,000	30,800	15,700	7,900	40,300

**NOTES:**

- BLOCKING SHALL BE COMMERCIAL CONCRETE POURED IN PLACE AGAINST UNDISTURBED EARTH. FITTING SHALL BE ISOLATED FROM CONCRETE THRUST BLOCK WITH PLASTIC OR SIMILAR MATERIAL.
- TO DETERMINE THE BEARING AREA OF THE THRUST BLOCK IN SQUARE FEET (S.F.):  
EXAMPLE : 12" - 90° BEND IN SAND AND GRAVEL  
32,000 LBS 3000 LB/S.F. = 10.7 S.F. OF AREA
- AREAS MUST BE ADJUSTED FOR OTHER PIPE SIZE, PRESSURES AND SOIL CONDITIONS.
- BLOCKING SHALL BE ADEQUATE TO WITHSTAND FULL TEST PRESSURE AS WELL AS TO CONTINUOUSLY WITHSTAND OPERATING PRESSURE UNDER ALL CONDITIONS OF SERVICE.

### SAFE SOIL BEARING LOADS

FOR HORIZONTAL THRUSTS WHEN THE DEPTH OF COVER OVER THE PIPE EXCEEDS 2 FEET

SOIL	POUNDS PER SQUARE FOOT
MUCK, PEAT	0
SOFT CLAY	1,000
SAND	2,000
SAND & GRAVEL	3,000
SAND & GRAVEL CEMENTED WITH CLAY	4,000
HARD SHALE	10,000



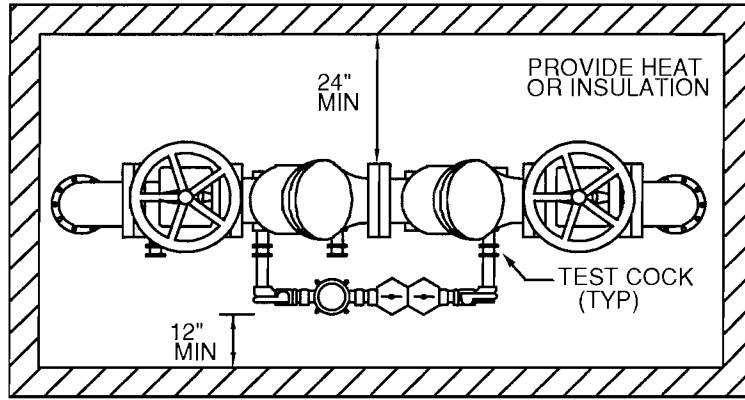
**CITY OF WINLOCK**  
DEPARTMENT OF PUBLIC WORKS

WATER DETAILS  
THRUST LOADS DETAIL

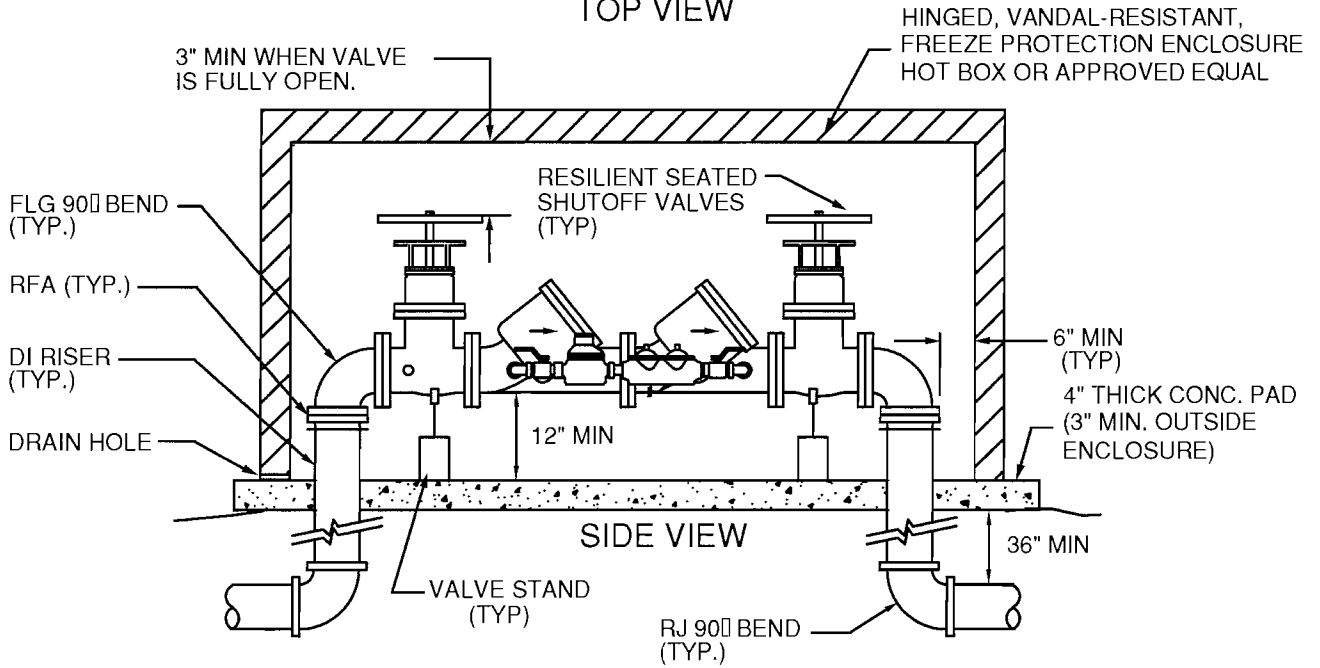
REVISED  
08/20/2007

DRAWING  
NO.  
**4-11b**

A CITY APPROVED VALVE IS REQ'D BETWEEN THE SUPPLY MAIN AND THE DCDA VALVE



TOP VIEW



## ABOVE GROUND INSTALLATION

### NOTES:

1. DOUBLE CHECK DETECTOR CHECK VALVE ASSEMBLY (DCDA) SHALL BE ON THE CURRENT WASHINGTON STATE DEPT. OF HEALTH APPROVED LIST AND SHALL BE EQUIPED WITH 4 TEST COCKS AND A RESILIENT SEATED SHUT OFF VALVE MOUNTED AT EACH END.
2. THE BACKFLOW ASSEMBLY SHALL BE TESTED AFTER INSTALLATION BY A CERTIFIED BACKFLOW ASSEMBLY TESTER.
3. ALL PIPE, VALVE, AND FITTING JOINTS FROM THE SUPPLY MAIN, SHALL BE FLANGED OR RESTRAINED.
4. THE WATER LINE SHALL BE DISINFECTED, FLUSHED AND PRESSURE TESTED PRIOR TO INSTALLING THE BACKFLOW ASSEMBLY.
5. THE BACKFLOW ASSEMBLY SHALL BE PROTECTED FROM FREEZING AND FLOODING.
6. ALL ENCLOSURES SHALL BE PRE-APPROVED BY THE CITY, PRIOR TO INSTALLATION.
7. DCDA SHALL BE INSTALLED AT PROPERTY LINE OF OWNERS PROPERTY.
8. DCDA SHALL HAVE A MINIMUM OF 3' CLEARANCE FROM ALL STRUCTURES.
9. VALVE STANDS SHALL BE INSTALLED ACCORDING TO MANUFACTURERS RECOMMENDATIONS.



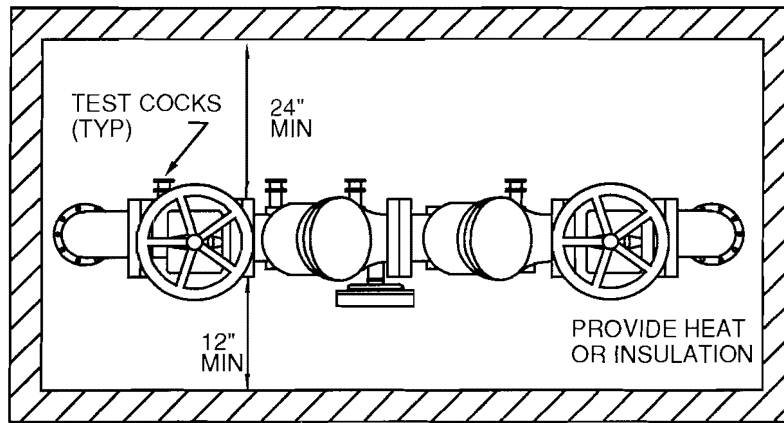
**CITY OF WINLOCK**  
DEPARTMENT OF PUBLIC WORKS

**WATER DETAILS**  
**STANDARD DOUBLE**  
**CHECK DETECTOR**  
**ASSEMBLY 3" OR LARGER**

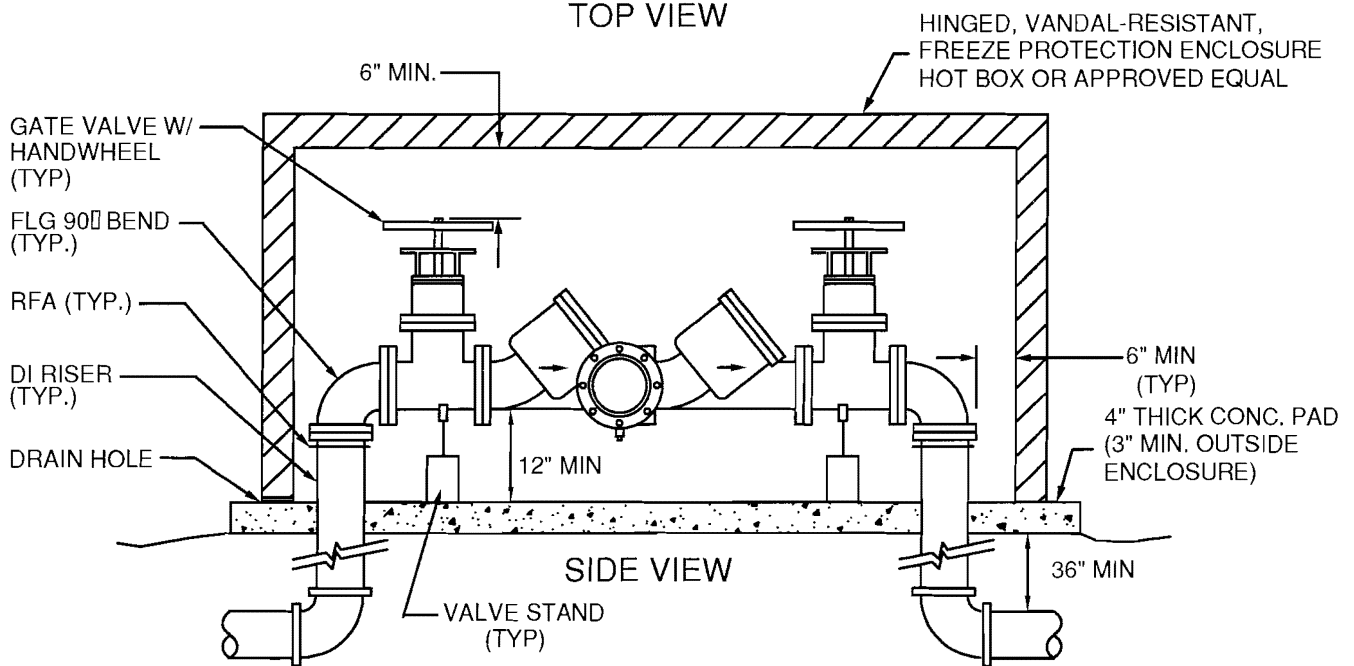
REVISED  
08/20/2007

**DRAWING**  
**NO.**  
**4-12**

A CITY APPROVED VALVE IS REQ'D. BETWEEN THE SUPPLY MAIN AND THE RPBA VALVE



TOP VIEW



**NOTES:**

1. REDUCED PRESSURE BACKFLOW ASSEMBLY (RPBA) SHALL BE ON THE WASHINGTON STATE DEPT. OF HEALTH APPROVED LIST.
2. RPBA SHALL LAY HORIZONTAL AND BE INSTALLED ABOVE GROUND ONLY.
3. RPBA SHALL BE TESTED AFTER INSTALLATION BY A CERTIFIED BACKFLOW ASSEMBLY TESTER.
4. ALL PIPE, VALVE AND FITTING JOINTS FROM THE SUPPLY MAIN, SHALL BE FLANGED OR RESTRAINED.
5. THE WATER LINE SHALL BE DISINFECTED, FLUSHED AND PRESSURE TESTED PRIOR TO INSTALLING THE BACKFLOW ASSEMBLY.
6. THE BACKFLOW ASSEMBLY SHALL BE PROTECTED FROM FREEZING AND FLOODING.
7. ALL ENCLOSURES SHALL BE PRE-APPROVED BY THE CITY, PRIOR TO INSTALLATION.
8. RPBA SHALL BE INSTALLED AT PROPERTY LINE ON OWNERS SIDE.
9. RPBA SHALL HAVE A MINIMUM OF 3' CLEARANCE FROM ALL STRUCTURES.
10. VALVE STANDS SHALL BE INSTALLED ACCORDING TO MANUFACTURERS RECOMMENDATIONS.
11. TEST COCKS SHALL BE LOCATED SO AS TO FACILITATE ACCESS.

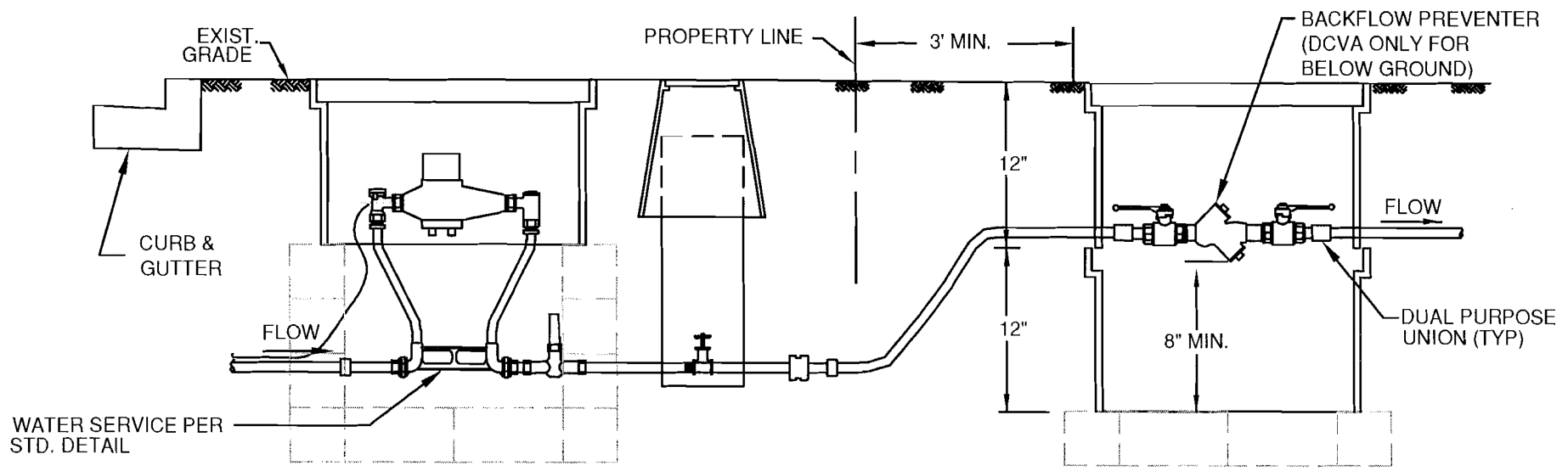


**CITY OF WINLOCK**  
DEPARTMENT OF PUBLIC WORKS

**WATER DETAILS**  
STANDARD REDUCED  
PRESSURE BACKFLOW  
ASSEMBLY 3" OR LARGER

REVISED  
08/20/2007

DRAWING  
NO.  
**4-13**

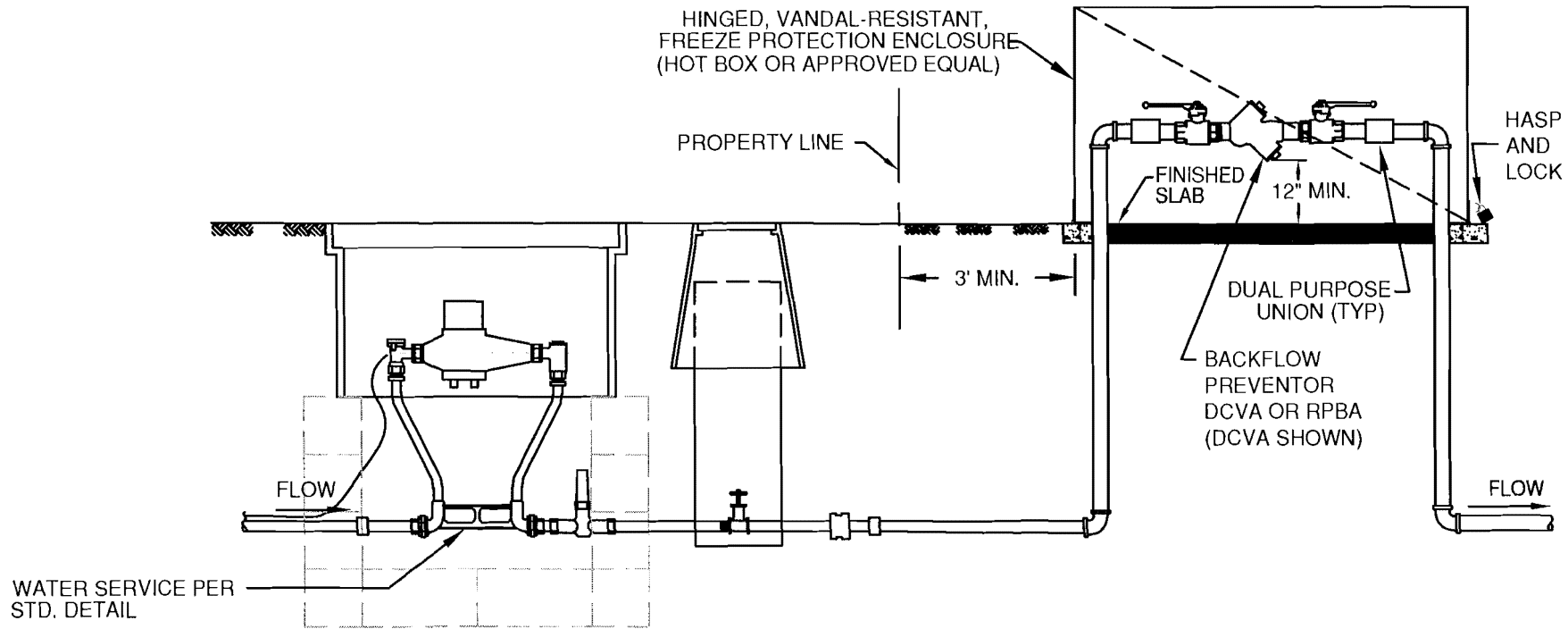


NOTES:

- 1. BACKFLOW ASSEMBLY SHALL BE A WA. STATE D.O.H. APPROVED MODEL.
- 2. ALL MATERIALS TO BE BRASS OR COPPER AS APPROVED BY THE CITY.



<b>CITY OF WINLOCK</b> DEPARTMENT OF PUBLIC WORKS	<b>WATER DETAILS</b> <b>3/4" - 2" BACKFLOW PREVENTER BELOW GROUND</b>	<b>REVISED</b> 08/20/2007	<b>DRAWING NO.</b> <b>4-14a</b>
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NOTES:

1. BACKFLOW ASSEMBLY SHALL BE A WA. STATE D.O.H. APPROVED MODEL.
2. ALL MATERIALS TO BE BRASS OR COPPER AS APPROVED BY THE DIRECTOR OF PUBLIC WORKS.



<b>CITY OF WINLOCK</b> DEPARTMENT OF PUBLIC WORKS	WATER DETAILS	REVISED 08/20/2007	DRAWING NO. <b>4-14b</b>
	$\frac{3}{4}$ " - 2" BACKFLOW PREVENTER ABOVE GROUND		