

# GREAT OAKS WATER COMPANY

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APPROVED BY

PROPOSED

DATE

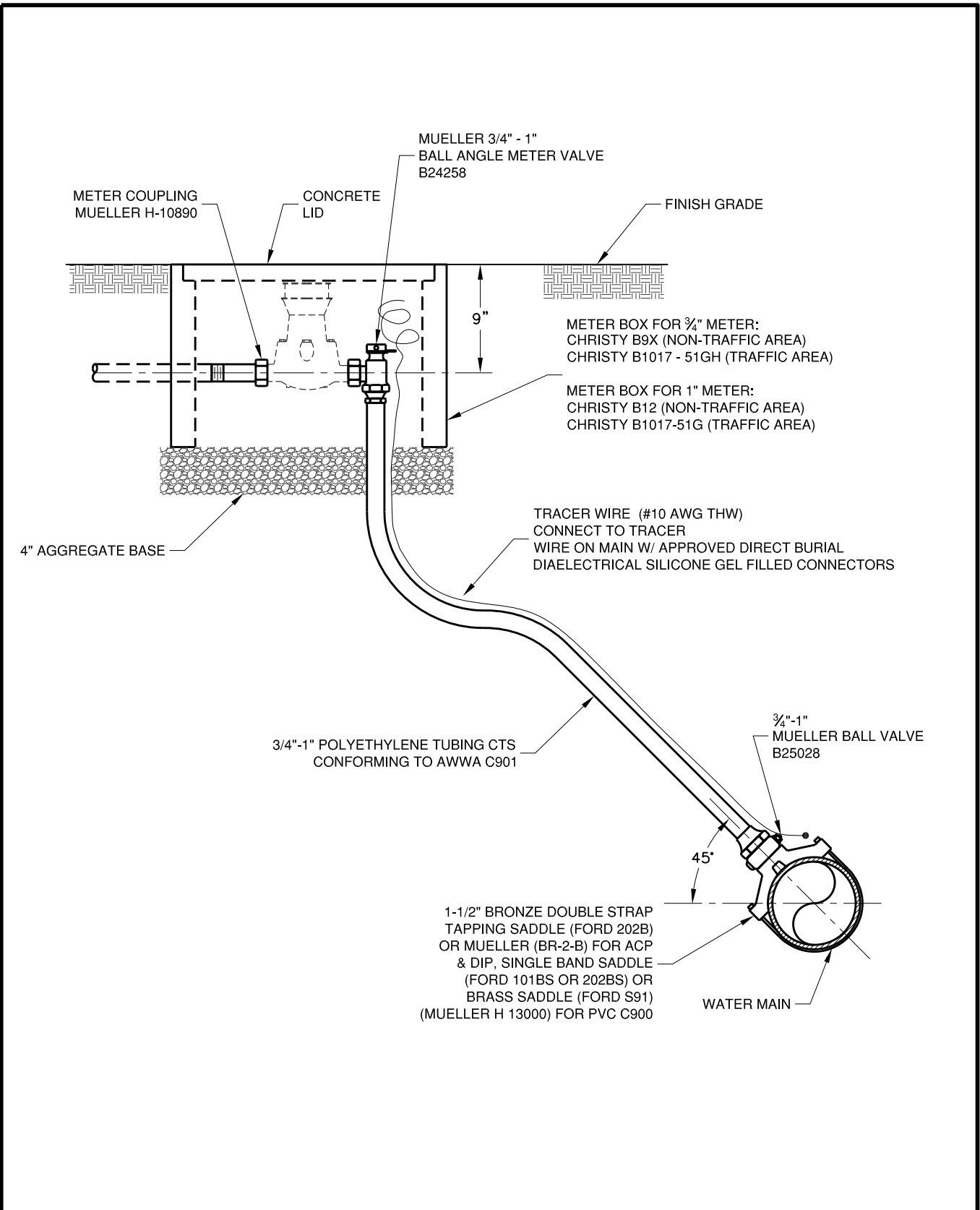
10/1/18

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STANDARD

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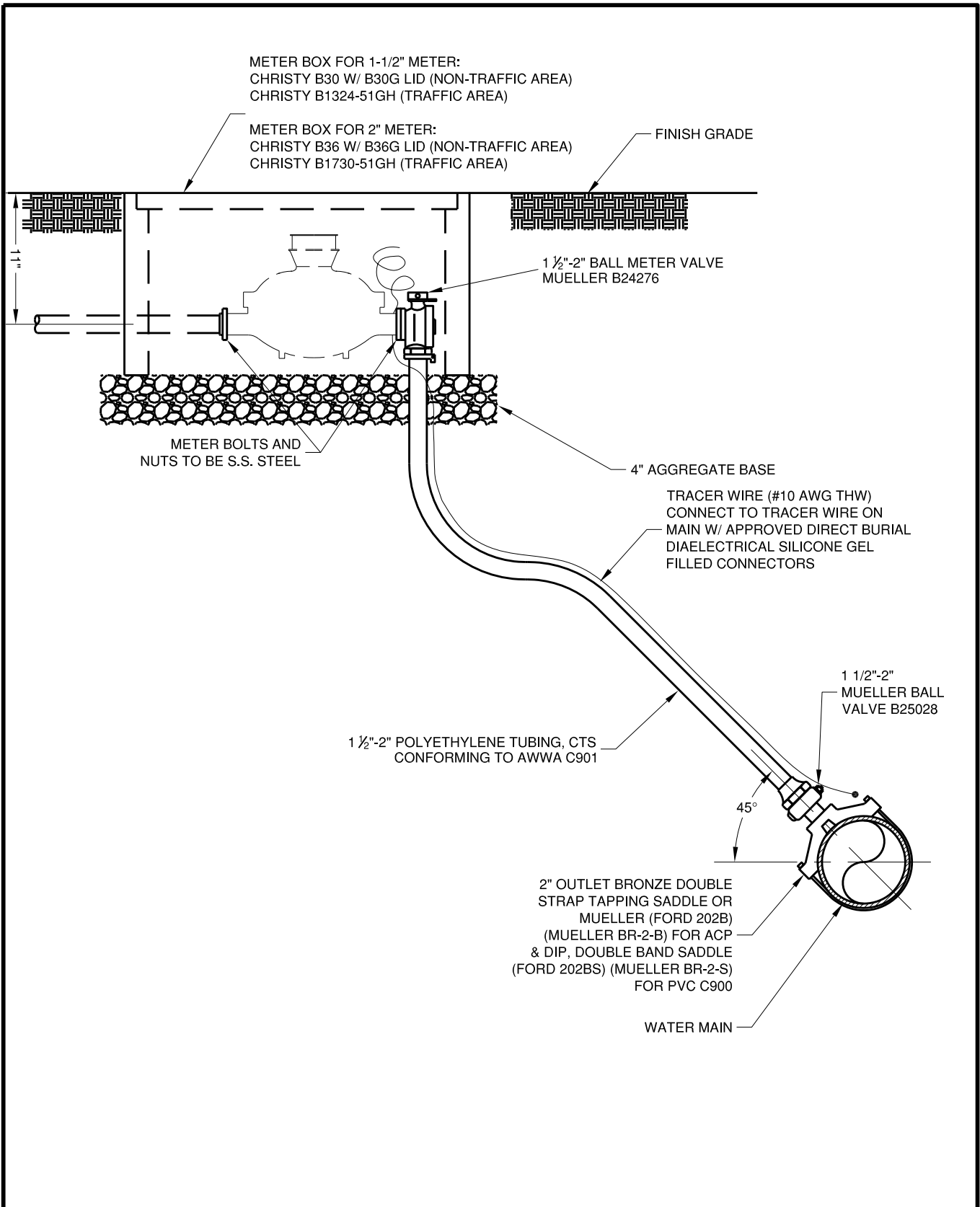


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3/4" - 1"  
**WATER SERVICE  
INSTALLATION**



STANDARD  
**W-01**

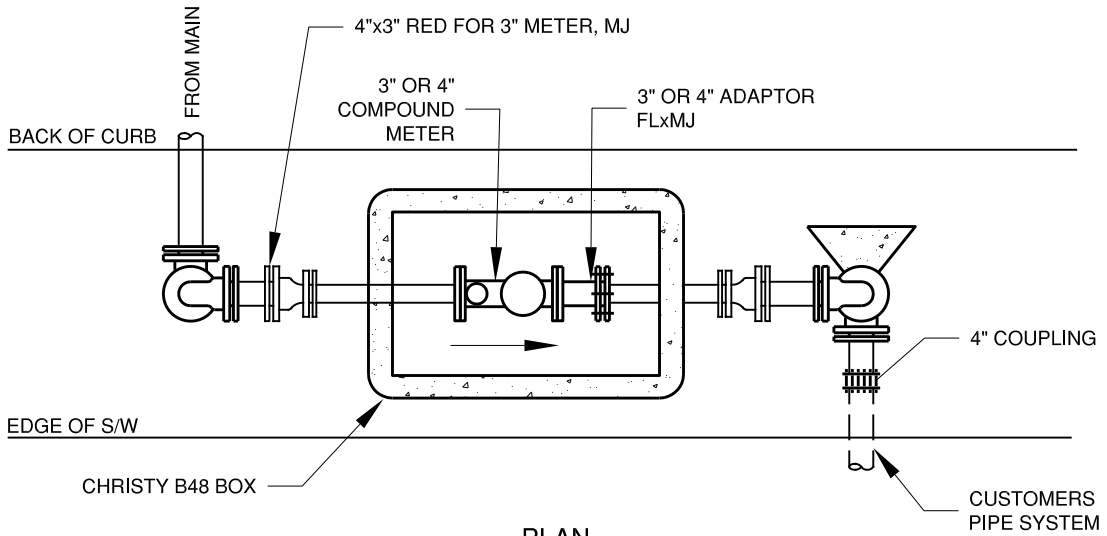


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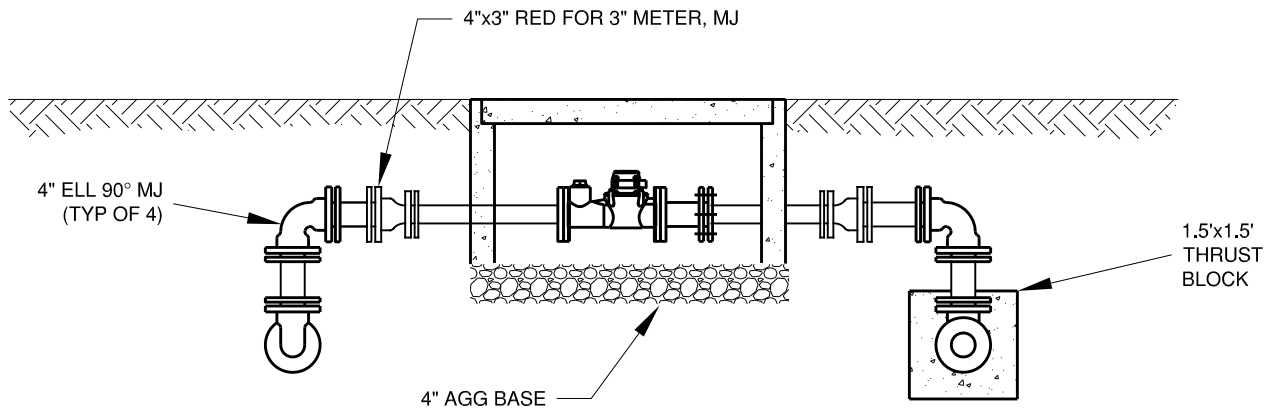
1.5" - 2"  
**WATER SERVICE  
INSTALLATION**



STANDARD  
**W-02**



PLAN



PROFILE

**NOTE:**  
ALL MJ FITTINGS SHALL BE RESTRAINED WITH MEGALUGS.

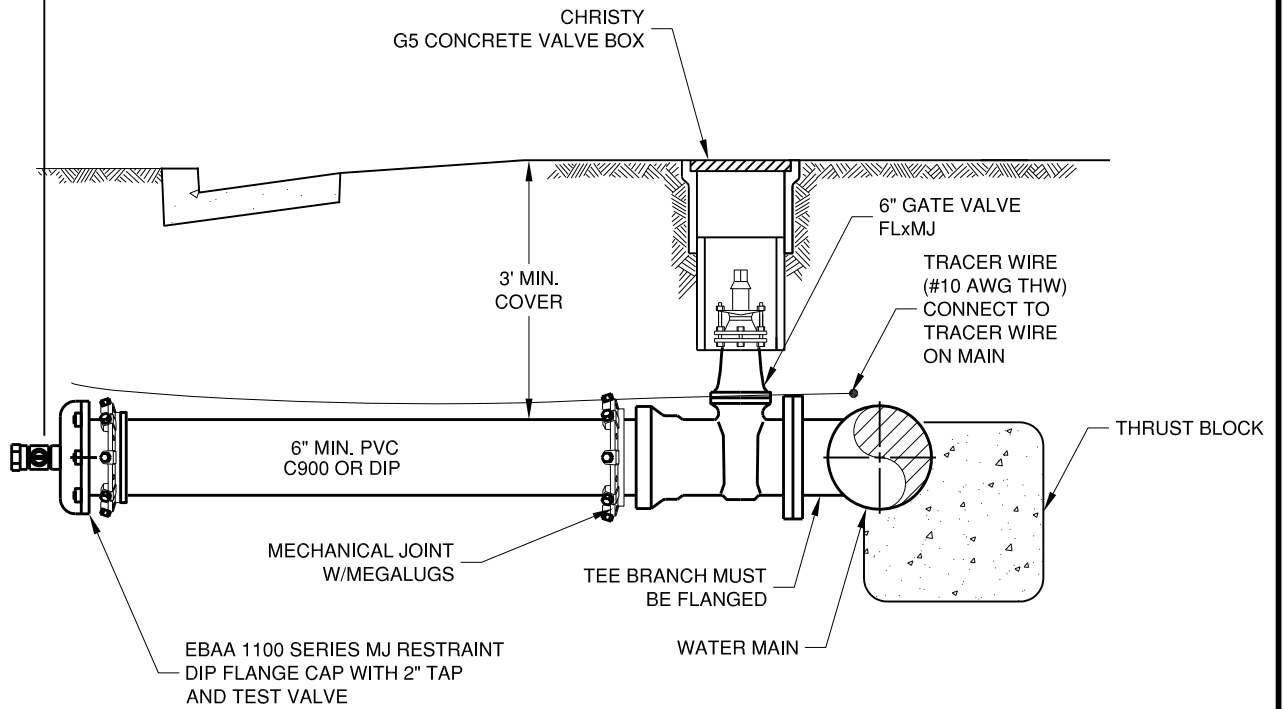
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**3" - 4"  
WATER SERVICE  
INSTALLATION**



STANDARD  
**W-03**

PROPERTY LINE



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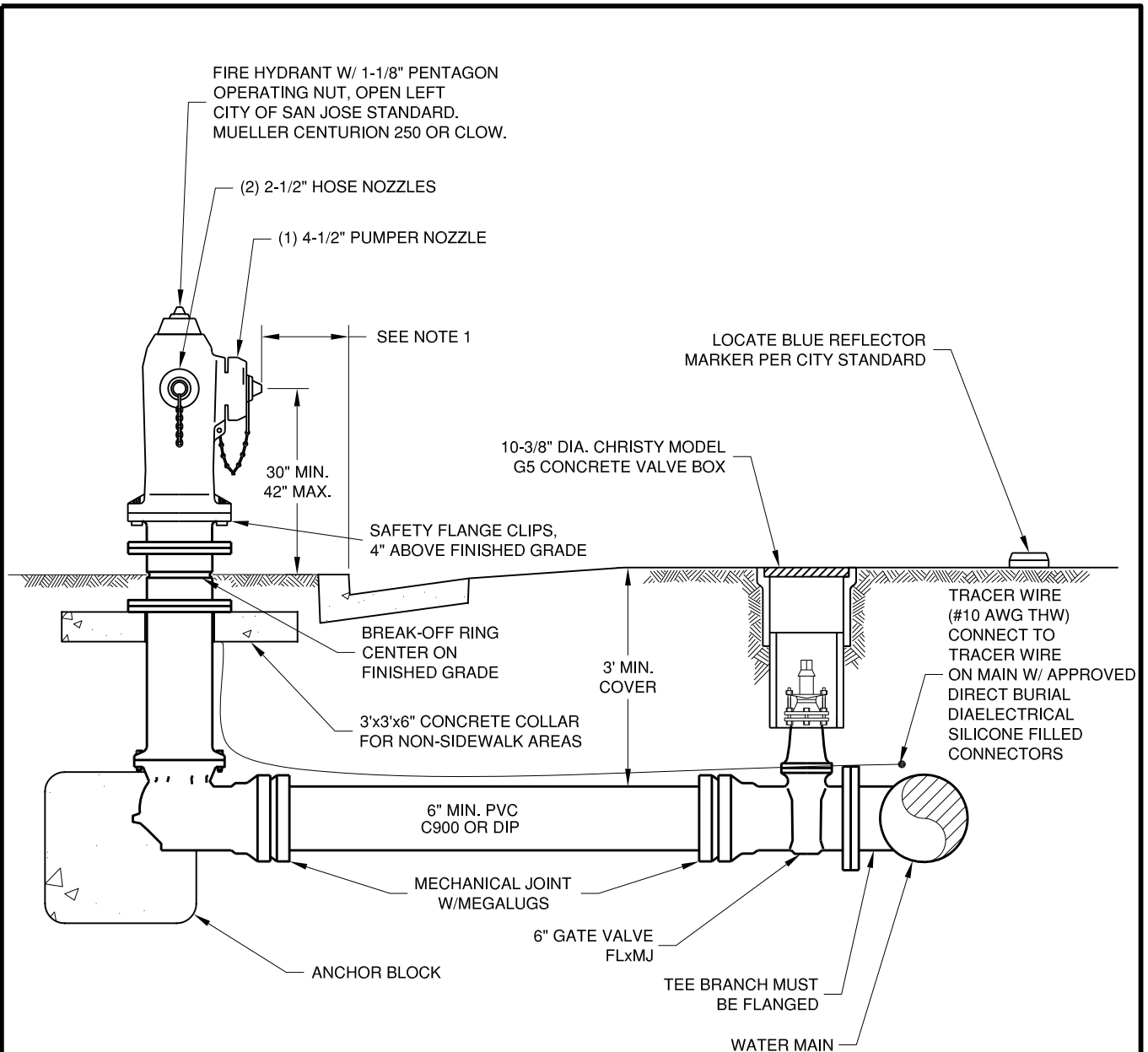
FIRE SERVICE



GREAT OAKS WATER COMPANY

STANDARD

W-04



**HYDRANT TYPE:**

CITY OF SAN JOSE STANDARD HYDRANT SHALL HAVE (2) 2-1/2" AND (1) 4-1/2" OUTLET. OUTLET CAPS SHALL BE CAST IRON. PAINT FINISH TO BE HIGHWAY YELLOW. HYDRANT INSTALLATION SHALL INCLUDE A BREAK-OFF FLANGE.

**NOTES:**

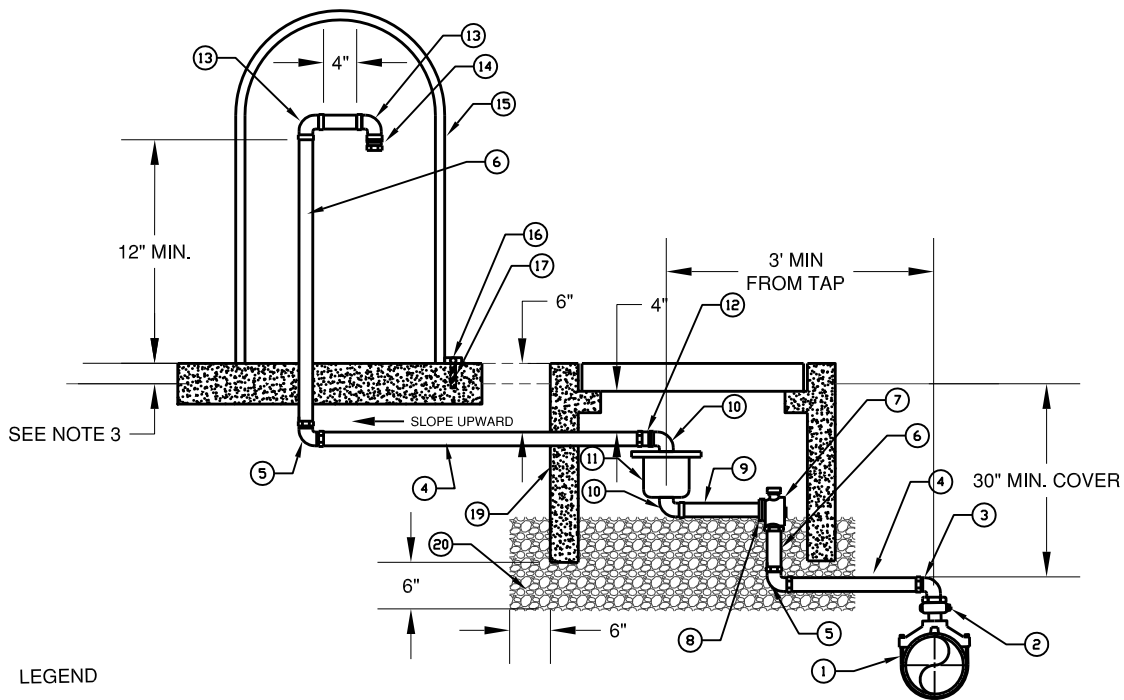
- 1- HYDRANT SHALL BE LOCATED 18" BEHIND FACE OF CURB WHERE THERE IS A PLANTING STRIP OR NO SIDEWALK. IN SIDEWALK AREAS THE HYDRANT SHALL BE LOCATED BEHIND THE SIDEWALK.
- 2- HYDRANTS LOCATED IN A PARK STRIP OR PLANTER AREA SHALL HAVE A CONCRETE COLLAR.

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**FIRE HYDRANT  
ASSEMBLY**



STANDARD  
**W-05**



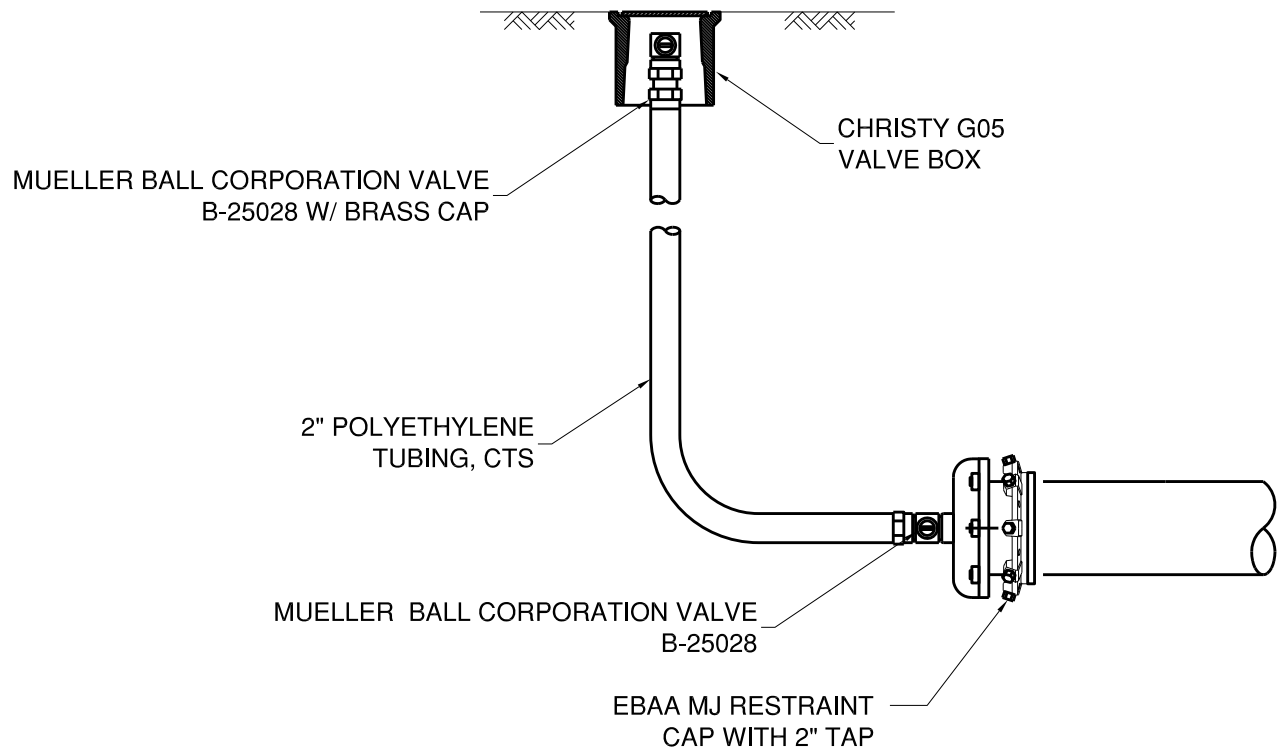
**LEGEND**

- |   |  |   |  |
|---|--|---|--|
| ① | DOUBLE BAND BRONZE SERVICE SADDLE<br>MUELLER BR2B IP                                 | ⑫ | MUELLER 110 STRAIGHT COUPLING<br>COMPRESSION H-15428-N   |
| ② | CORP STOP MUELLER B-20046 (IPxFIP)   | ⑬ | 90° COPPER SWEAT   |
| ③ | 90° MIP x COMP MUELLER FITTING   | ⑭ | SS MESH VENT CAP VC-1 (1") OR VC-2 (2") TO A<br>1" OR 2" ADAPTER, COPPER SLP   |
| ④ | TYPE K COPPER TUBING. MAINTAIN UPWARD<br>SLOPE. UNIONS OR COUPLINGS NOT<br>PERMITTED | ⑮ | ENCLOSURE BPDI GS-1. COLOR SHALL BE<br>GREEN   |
| ⑤ | 90° COMP x COMP MUELLER FITTING  | ⑯ | PADLOCK FURNISHED BY WATER COMPANY   |
| ⑥ | STRAIGHT COPPER PIPE   | ⑰ | THREADED SS EYEBOLT, 7/16" I.D.  |
| ⑦ | BALL ANGLE METER VALVE<br>MUELLER B-24274 FOR 1-INCH<br>MUELLER B-24276 FOR 2-INCH   | ⑱ | CHRISTY N30 BOX WITH FL30-D COVER.<br>TRAFFIC COVER TO BE USED IN TRAFFIC<br>AREAS AND WHERE DIRECTED BY<br>DISTRICT ENGINEER.<br>VALVE BOX EXTENSION B30 x 12 IF<br>NECESSARY |
| ⑧ | BUDCO BRASS METER FLANGE (MF)<br>DOMESTIC LOW LEAD FOR 2-INCH                        | ⑳ | AGGREGATE BASE   |
| ⑨ | BRASS PIPE (LOW LEAD)  |   |  |
| ⑩ | BRASS 90° BEND STREET  |   |  |
| ⑪ | COMBO AIR VALVE APCO 50  |   |  |

**NOTES:**

- VALVE BOX SHALL BE SET ADJACENT TO PROPERTY LINE IN UNIMPROVED STREETS OR BEHIND CURB IN IMPROVED STREETS.
- SIZES OF PIPES, FITTINGS, VALVES, CORPORATION STOPS SHALL MATCH THE SIZE OF THE COMBINATION AIR VALVE AS SPECIFIED BY THE DISTRICT.
- 2" ABOVE FINISHED GRADE OR LEVEL WITH SIDEWALK/PAVEMENT GRADE.
- CONTINUOUS COPPER TUBING MAY BE USED BETWEEN THE WATER MAIN AND COMBINATION AIR VALVE IF CLEARANCES ALLOW OR AS DIRECTED BY DISTRICT.

APPROVED BY	<b>1" - 2"</b> <b>COMBINATION ARV</b>	 <b>GREAT OAKS WATER COMPANY</b>	STANDARD
PROPOSED			<b>W-06</b>
DATE 10/1/18			



**NOTES:**

- 1- LOCATION TO BE SHOWN ON PLANS OR AS DIRECTED.
- 2- INSTALLATION OF CAP AND CORPORATION STOP INCLUDING TAP, SHOULD BE DONE PRIOR TO PLACING PIPE IN TRENCH.
- 3- THE NOMINAL SIZE OF TUBING AND FITTINGS IS 2". THE COMPANY MAY DIRECT USE OF OTHER SIZES FOR SPECIAL SITUATIONS.

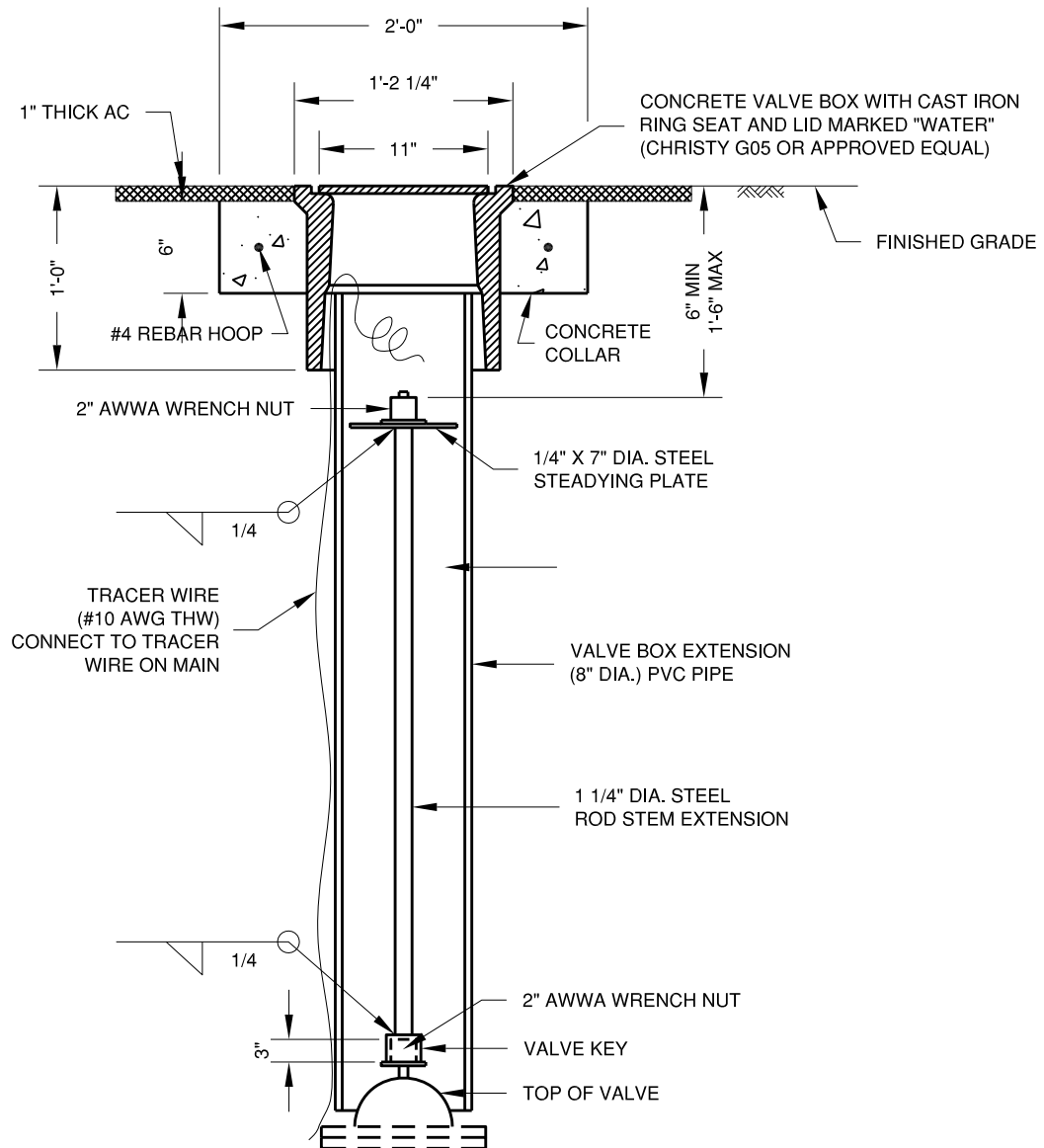
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**BLOW OFF  
ASSEMBLY**



STANDARD  
**W-07**





**NOTES:**

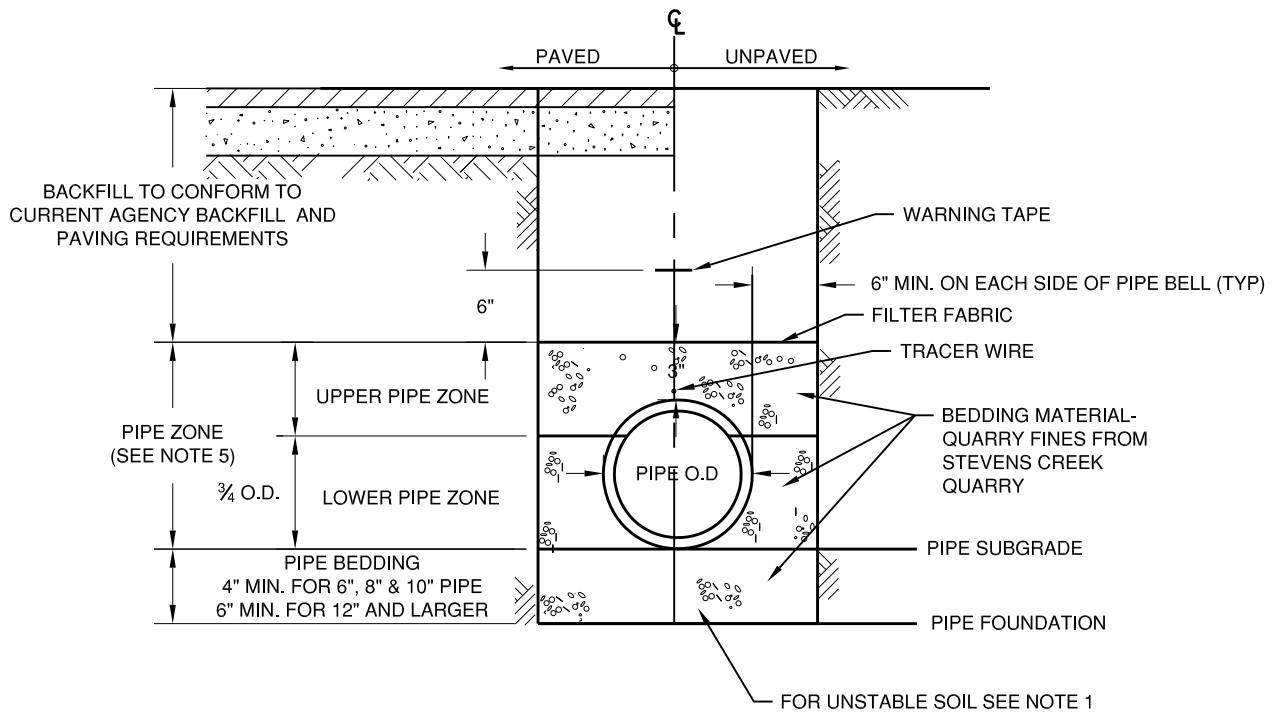
- 1- MILL TOP OF STEM EXTENSION TO ACCEPT AWWA WRENCH NUT AND PEEN TOP OF EXTENSION TO SECURE NUT.
- 2- STEM EXTENSION REQUIRED ONLY WHEN THE DEPTH TO TOP OF VALVE OPERATOR NUT IS GREATER THAN 3'-0".
- 3- VALVE BOX EXTENSION MAY BE 8" PVC CLASS 150 PIPE MATERIAL.
- 4- FIBERGLASS EXTENSIONS MAY BE USED IN LIEU OF STEEL.

APPROVED BY
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DATE
10/1/18

**VALVE BOX  
INSTALLATION**



**STANDARD  
W-08**



**NOTES:**

1. IF UNSTABLE SOIL IS ENCOUNTERED, WATER COMPANY REPRESENTATIVE SHALL DETERMINE DEPTH OF REMOVAL AND SIZE OF FOUNDATION ROCK REFILL
2. NO NATIVE BACKFILL SHALL BE ALLOWED IN THE PIPE ZONE.
3. PIPE INSTALLED MORE THAN 20' BELOW GRADE SHALL BE ENGINEERED AND SUBMITTED TO THE DISTRICT ENGINEER FOR APPROVAL.
4. THESE ARE MINIMUM REQUIREMENTS. IF OTHER JURISDICTIONAL REQUIREMENTS DIFFER FROM THOSE CONTAINED HEREIN, THE MOST STRINGENT REQUIREMENTS SHALL DICTATE.

<u>APPROVED BY</u>	<b>TRENCH DETAIL</b>	 <b>GREAT OAKS WATER COMPANY</b>	<u>STANDARD</u>
PROPOSED			<b>W-09</b>
<u>DATE</u> 10/1/18			

## DUCTILE IRON PIPE (POLY-WRAP)

REQUIRED LENGTH (FT): 150 PSI PRESSURE						
NOMINAL PIPE SIZE	TEE BRANCH	BEND 90°	BEND 45°	BEND 22.5°	BEND 11.25°	DEAD END/VALVE
6	12	15	6	3	2	71
8	34	19	8	4	2	93
10	52	23	10	5	3	111
12	71	27	11	6	3	131

NOTES:

-RESTRAINT LENGTHS IN TABLE ARE TO BE APPLIED IN BOTH DIRECTIONS OF FEATURE.  
 -RESTRAINT LENGTH CALCULATION CRITERIA:

- SOIL TYPE: SW (WELL-GRADED SAND)
- SAFETY FACTOR: 1.5
- TRENCH TYPE: TYPE 5
- DEPTH OF BURY: 3.5 FEET
- TEST PRESSURE: 150 PSI
- TEE (BRANCH): LR=5 FEET (LENGTH TO FIRST JOINT ON RUN)

## PVC

REQUIRED LENGTH (FT): 150 PSI PRESSURE						
NOMINAL PIPE SIZE	TEE BRANCH	BEND 90°	BEND 45°	BEND 22.5°	BEND 11.25°	DEAD END/VALVE
6	7	13	6	3	2	39
8	19	17	7	4	2	51
10	29	20	8	4	2	61
12	39	23	10	5	3	72

NOTES:

-RESTRAINT LENGTHS IN TABLE ARE TO BE APPLIED IN BOTH DIRECTIONS OF FEATURE.  
 -RESTRAINT LENGTH CALCULATION CRITERIA:

- SOIL TYPE: SW (WELL-GRADED SAND)
- SAFETY FACTOR: 1.5
- TRENCH TYPE: TYPE 5
- DEPTH OF BURY: 3.5 FEET
- TEST PRESSURE: 150 PSI
- TEE (BRANCH): LR=5 FEET (LENGTH TO FIRST JOINT ON RUN)

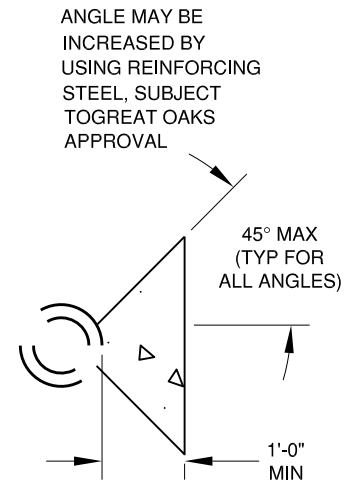
APPROVED BY	<b>THRUST RESTRAINT TABLE</b>	 <b>GREAT OAKS WATER COMPANY</b>	STANDARD
PROPOSED			<b>W-10</b>
DATE 10/1/18			

TYPE OF FITTING		90° BEND	45° BEND	11-1/4° BEND OR 22-1/2° BEND	TEE OR DEAD END	TEE W/ PLUG	CROSS W/ PLUG	CROSS W/ PLUGS
TYPICAL INSTALLATION								
SIZE OF PIPE	4"	2	1	1	2	2	2	2
	6"	4	2	2	3	4	3	4
	8"	8	4	2	6	8	6	8
	10"	12	7	3	9	12	9	12
	12"	18	10	5	13	18	13	16
	16"	32	17	9	23	32	23	32

SQUARE FEET

**NOTES:**

1. JOINTS AND FACE OF PLUGS TO BE KEPT CLEAR OF CONCRETE.
2. BLOCKS MUST BE POURED AGAINST UNDISTURBED SOIL.
3. THRUST BLOCKS TO BE CONSTRUCTED OF 2000 PSI CONCRETE.
4. STRAPS TO BE #4 REBAR EMBEDDED IN THRUST BLOCK TO A DEPTH EQUAL TO 3/4 OF PIPE DIAMETER. STRAP BEND EQUALS 1/2 PIPE DIAMETER.
5. THRUST BLOCK AREA IS BASED ON A TEST PRESSURE OF 150 PSI AND A HORIZONTAL SOIL BEARING STRENGTH OF 2000 PSF.
6. WRAP EXPOSED PORTION OF BARS AND 2" INTO CONCRETE WITH HALF LAPPED, 10 MIL PVC TAPE.
7. THRUST BLOCKS NOT REQUIRED ON FULLY RESTRAINED PIPE.



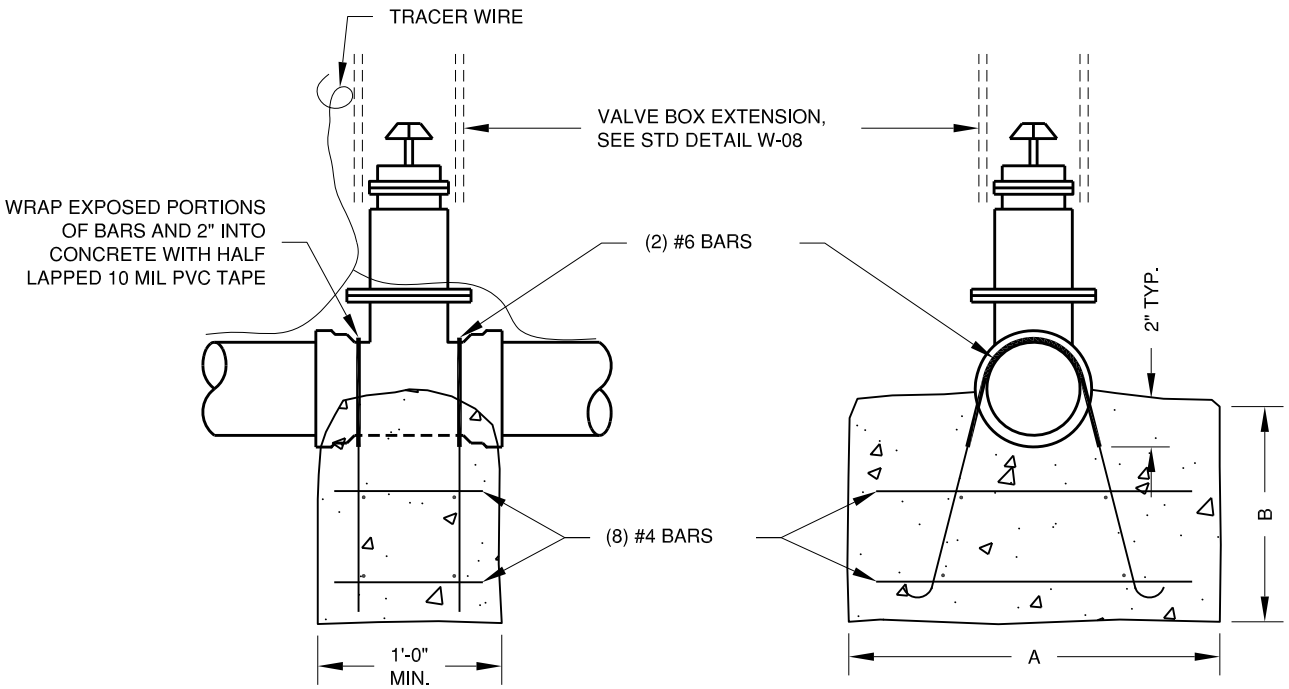
**SECTION**

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**THRUST BLOCK  
 DETAIL**



STANDARD  
**W-11**



**NOTES:**

- 1- ENCASE ALL BURRIED METALIC SURFACES WITH POLYETHYLENE WRAP (6 MIL) AS SPECIFIED IN AWWA C105
- 2- FLANGES, BOLTS AND NUTS SHALL BE KEPT CLEAR OF CONCRETE AND COATED WITH KOPPERS BITMASTIC EC244
- 3- THRUST BLOCK NOT REQUIRED IF PIPE IS RESTRAINED

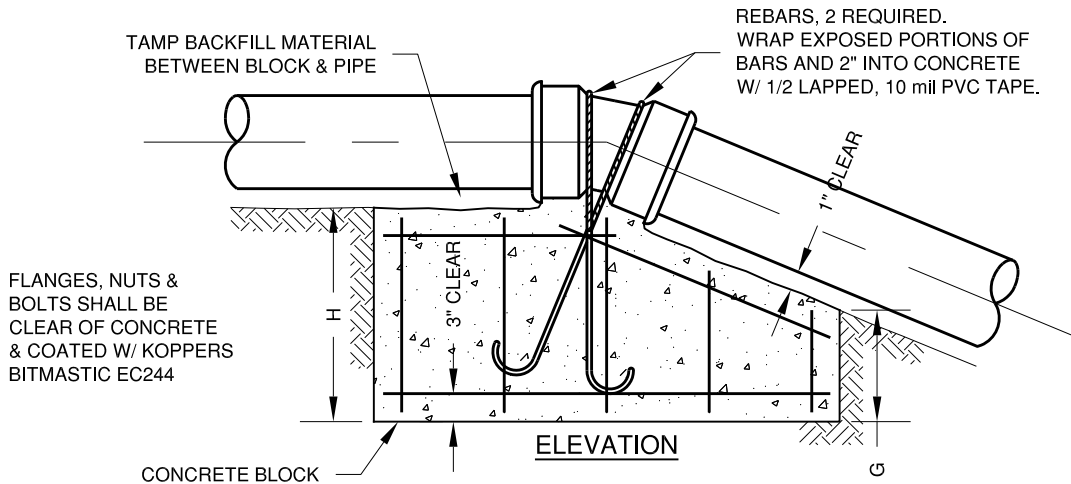
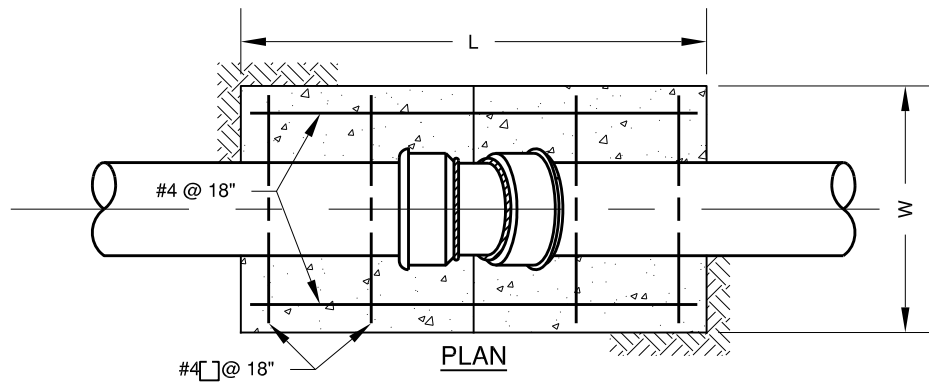
SIZE OF GATE VALVE	150 PSI TEST ANCHOR BLOCK	
	A	B
3"	1'-6"	1'-6"
4"	2'-6"	1'-6"
6"	3'-0"	2'-0"
8"	3'-6"	2'-6"
10"	4'-0"	3'-0"
12"	4'-0"	4'-0"

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**VALVE THRUST  
 BLOCK DETAIL**



STANDARD  
**W-12**



THRUST BLOCK DIMENSION - UPWARD THRUST															
PIPE SIZE	11-1/4° BEND					22-1/2° BEND					45° BEND				
	L	W	H	G	BAR	L	W	H	G	BAR	L	W	H	G	BAR
6"	3.5	2.0	2.0	1.0	4	4.5	2.0	3.0	1.0	4	4.5	4.0	3.0	1.0	4
8"	3.5	3.0	2.0	1.0	4	4.5	4.0	3.0	2.0	4	5.5	5.0	4.0	1.5	5
10"	4.0	3.5	2.5	1.0	4	5.0	4.0	3.5	1.5	5	6.0	5.0	4.5	1.5	6
12"	4.0	3.5	3.5	1.0	4	5.0	4.0	4.0	2.0	5	6.5	5.0	5.0	2.5	7
16"	6.0	4.0	4.0	1.0	5	6.5	5.0	5.0	2.5	7	10.0	5.0	6.0	3.0	10

**NOTES:**

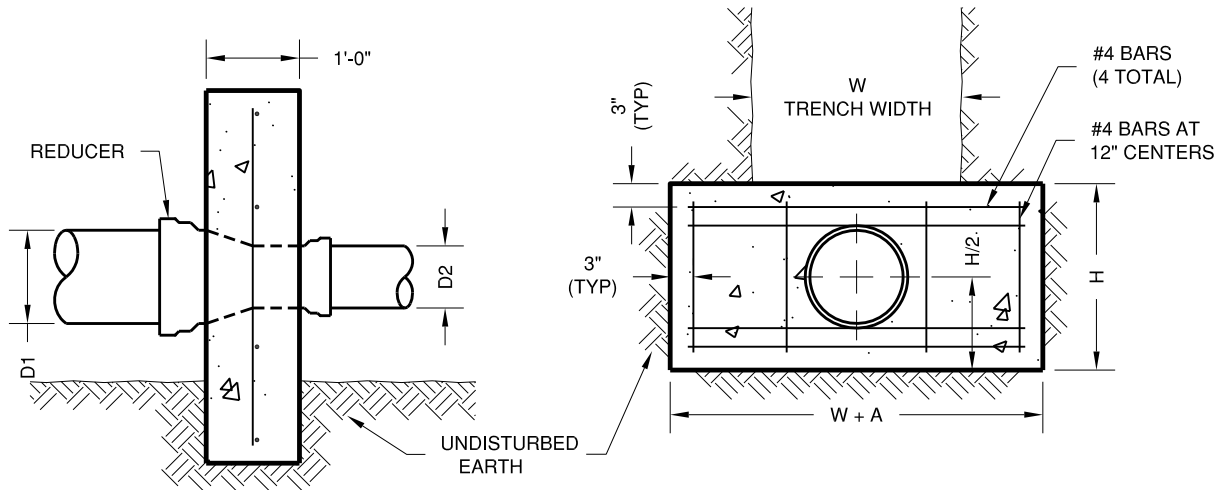
- 1- ENCASE ALL BURIED METALLIC SURFACES WITH POLYETHYLENE WRAP AS SPECIFIED IN AWWA C105.
- 2- RESTRAINED JOINT PIPE MAY BE USED IN PLACE OF THRUST BLOCK. CONTACT GREAT OAKS WATER COMPANY FOR APPROVAL AND DETAILS.
- 3- DIMENSIONS L, W, H, G ARE IN FEET.
- 4- THRUST BLOCK DIMENSIONS BASED ON 150 PSI TEST PRESSURE AND CONCRETE OF 150 PCF UNIT WEIGHT.

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**VERTICAL THRUST  
BLOCK DETAIL**



STANDARD  
**W-13**



ANCHORS FOR REDUCERS		
REDUCER SIZE D1 X D2	H	A
18" X 12"	3'-0"	5'-0"
12" X 10"	1'-4"	2'-0"
12" X 8"	2'-0"	2'-6"
12" X 6"	2'-0"	3'-2"
8" X 6"	1'-0"	2'-0"

**NOTES:**

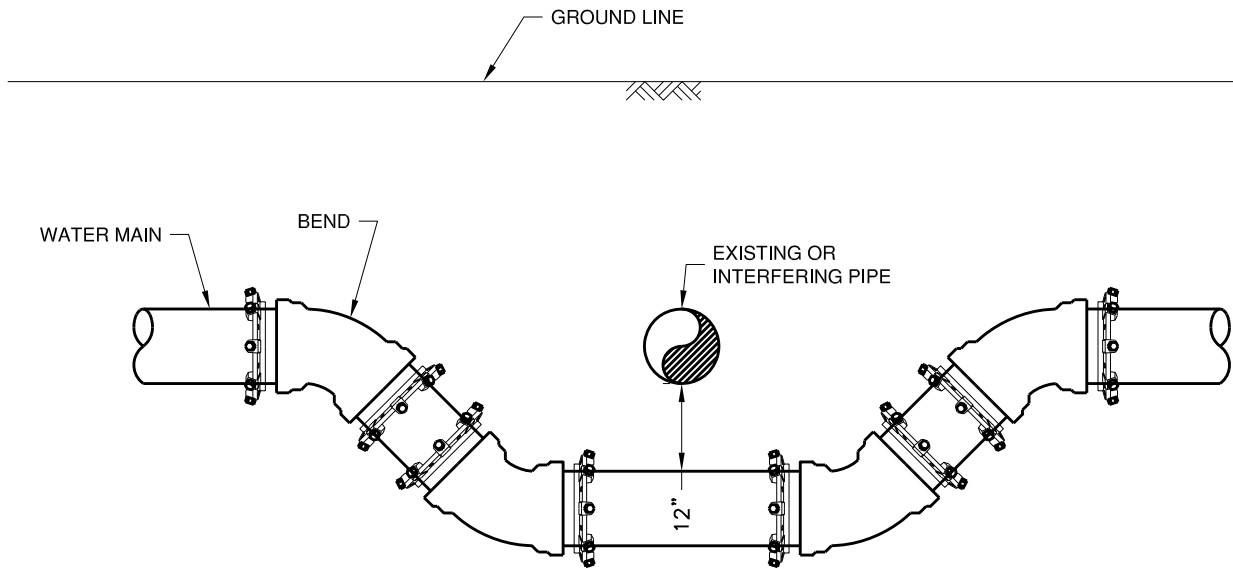
- 1- ENCASE ALL BURRIED METALIC SURFACES WITH POLYETHYLENE WRAP AS SPECIFIED IN AWWA C105.
- 2- REDUCER ANCHOR IS REQUIRED ONLY WHEN LARGER CONNECTING JOINT IS OTHER THAN FLANGED.
- 3- THRUST BLOCKS TO BE CONSTRUCTED OF 2000 PSI CONCRETE.
- 4- THRUST BLOCK AREA BASED ON A TEST PRESSURE OF 150 PSI AND A HORIZONTAL BEARING STRENGTH OF 2000 PSI.
- 5- APPLICABLE FOR UNRESTRAINED PIPE ONLY.

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**REDUCER ANCHOR  
BLOCK**



STANDARD  
**W-14**



**NOTES:**

- 1- ALL MATERIAL SHALL BE DUCTILE IRON WITH POLY WRAP.
- 2- DETAIL SHOWS PIPE OFFSET INSTALLATION WITH RESTRAINED PIPE.
- 3- IF PIPE IS NOT RESTRAINED, INSTALL THRUST BLOCKS PER DETAILS W-11, W-12 AND W-13.
- 4- WATER MAIN OFFSET MAY BE ACCOMPLISHED USING ALLOWABLE DEFLECTION AT PIPE JOINTS. CONTACT GREAT OAKS WATER FOR APPROVAL.

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**WATERMAIN  
 OFFSET**



STANDARD  
**W-15**