

# STANDARD TITLE & REVISION BLOCKS COVER SHEET ONLY

9/16"	3-5/16"	1/2" 1/2" 1/2"	4"	4-3/16"	4-5/16"																																																																
<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 10%;">00</td> <td style="width: 10%;">ON.</td> <td style="width: 10%;">DESCRIPTION</td> <td style="width: 10%;">PRE. APP. DATE BY BY</td> <td style="width: 10%;">BY BY</td> <td style="width: 10%;">BY BY</td> <td style="width: 10%;">BY BY</td> <td style="width: 10%;">BY BY</td> <td style="width: 10%;">BY BY</td> <td style="width: 10%;">BY BY</td> </tr> </table>		00	ON.	DESCRIPTION	PRE. APP. DATE BY BY	BY BY	BY BY	BY BY	BY BY	BY BY	BY BY	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 10%;">DESIGN</td> <td style="width: 10%;">DRAWN</td> <td style="width: 10%;">CHECK</td> <td style="width: 10%;">DATE</td> <td style="width: 10%;">DATE</td> <td style="width: 10%;">DATE</td> <td style="width: 10%;">DATE</td> <td style="width: 10%;">DATE</td> <td style="width: 10%;">DATE</td> <td style="width: 10%;">DATE</td> </tr> </table>				DESIGN	DRAWN	CHECK	DATE	DATE	DATE	DATE	DATE	DATE	DATE																																												
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1-3/8"

5-1/16"

7-1/2"

1-1/2"

1-1/2"

1/2"

EDGE OF DRAWING

1. THIS TITLE BLOCK IS FOR COVER SHEET ONLY.
2. TITLE BLOCK SHALL CONTAIN THE TRACT OR OTHER PROJECT IDENTIFYING NUMBER AS WELL AS "WATER" AND THE TERM "COVER SHEET" OR STREET NAMES(S) AS APPLICABLE.
3. DISTRICT ENGINEER MAY SIGN FOR THE GENERAL MANAGER ON ANY PLANS.
4. REVISIONS (OR CHANGE ORDERS) MUST BE SIGNED BY THE DISTRICT ENGINEER OR ENGINEER DESIGNATED BY THE DISTRICT ENGINEER.

TS  
MANAGER  
  
TJC  
  
ENGINEER




DISTRICT  
STANDARD

W-1

REVISED: November 1, 2011

# STANDARD TITLE & REVISION BLOCKS PLAN & PROFILE SHEETS

9/16"	3-5/16"	1/2" 1/2" 1/2"	4"	4-3/16"	4-5/16"
00 ON.	DESCRIPTION	PRE. APP. DATE BY BY BY	DESIGN DRAWN CHECK DATE	 <b>CAMROSA</b> WATER DISTRICT BUILDING WATER SELF-RELIANCE	
			PREPARED BY: [FIRM NAME]		
			R.C.E. NO. EXP. DATE		

FOR CONTINUATION

CAMROSA WATER DISTRICT	[TYPE OF PLAN]	SHEET NO.	DRAWING NO.
REVIEWED: PROJECT MANAGER	[PROJECT TITLE]	— OF —	
DATE			

1-3/8"

5-1/16"

7-1/2"

1-1/2"

1-1/2"

1/2"

EDGE OF  
DRAWING

1. THIS TITLE BLOCK IS FOR PLAN & PROFILE SHEETS.
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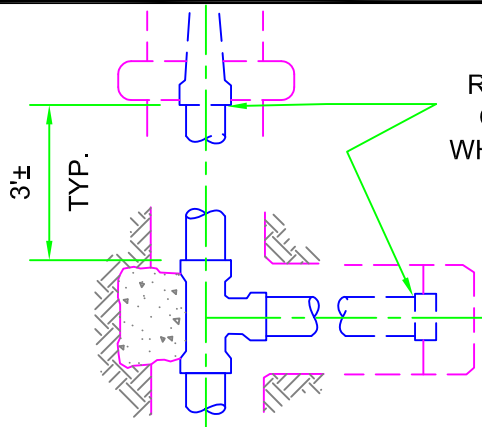


DISTRICT  
STANDARD

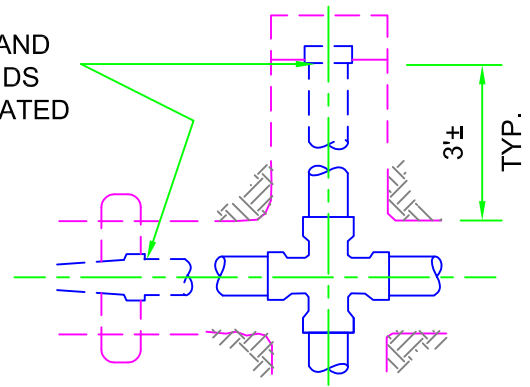
W-2

REVISED: November 1, 2011

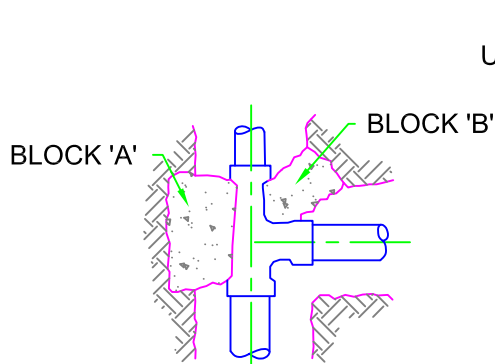
# D.I.P. FITTINGS AND THRUST BLOCK LAYOUT



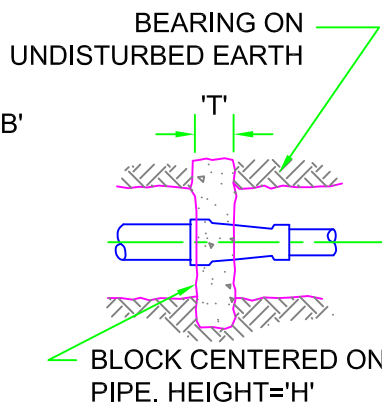
TEE



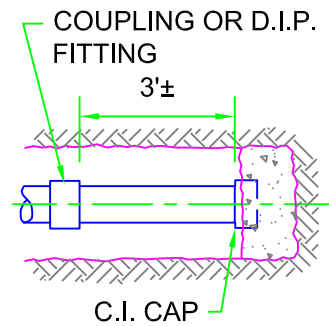
CROSS



TEE REDUCING IN LINE

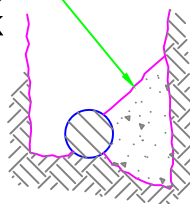


REDUCER

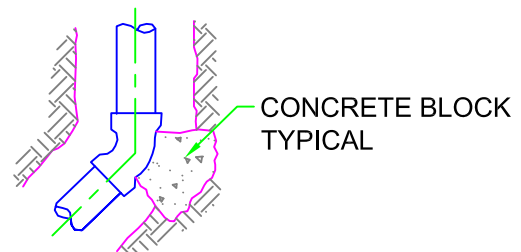


CAPPED END

45° MAX SLOPE TOP AND  
ENDS OF CONC. BLOCK



SECTION THRUST BLOCK



HORIZONTAL ELBOW

## NOTE:

1. ALL FITTINGS SHALL BE C110 D.I.P. GROOVED FOR RUBBER GASKET JOINTS.
2. C153 FITTINGS ARE NOT ALLOWED.
3. CONCRETE BLOCKS SHALL BEAR ON UNDISTURBED EARTH.
4. SEE DRAWINGS W-4 AND W-5 FOR SIZES OF CONCRETE BLOCKS.

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WATER DISTRICT



BUILDING WATER  
SELF-RELIANCE

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STANDARD

**W-3**

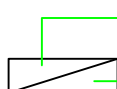
REVISED: November 1, 2011

# THRUST BLOCK SIZES FOR HORIZONTAL PRESSURES

PIPE DIA.	PIPE CLASS	PRESS P.S.I.	AREA		SQUARE		FEET			
			TEE	CAP	LINE VALVE	90° BEND	45° BEND	22 1/2° BEND	11 1/4° BEND	
4	200	150	2.5	1.9	2.5	1.9	3.5	2.7	1.9	1.5
	200	175	2.8	2.1	2.8	2.1	4.0	3.0	2.2	1.6
	200	200	3.1	2.3	3.1	2.3	4.4	3.3	2.3	1.8
6	200	150	5.1	3.8	5.1	3.8	7.2	5.4	3.9	3.0
	200	175	5.7	4.3	5.7	4.3	8.1	6.1	4.4	3.3
	200	200	6.4	4.8	6.4	4.8	9.0	6.8	4.9	3.7
8	200	150	8.8	6.6	8.8	6.6	12.4	9.3	6.8	5.1
	200	175	9.9	7.5	9.9	7.5	14.0	10.5	7.6	5.7
	200	200	11.0	8.3	11.0	8.3	15.5	11.7	8.4	6.3
10	200	150	14.4	10.8	14.4	10.8	20.3	15.2	11.0	8.3
	200	175	16.2	12.1	16.2	12.1	22.8	17.1	12.4	9.3
	200	200	18.0	13.5	18.0	13.5	25.4	19.0	13.4	10.3
12	200	150	20.5	15.4	20.5	15.4	28.9	21.7	15.7	11.8
	200	175	23.0	17.3	23.0	17.3	32.5	24.4	17.6	13.2
	200	200	25.5	19.2	25.5	19.2	36.1	27.1	19.6	14.7

**NOTE:**

USE SIZES FOR 1500 BEARING SOIL UNLESS HIGHER  
VALUE IS SUBSTANTIATED BY APPROVED SOILS  
REPORT.



SIZE FOR 1500 # BRG. SOIL

SIZE FOR 2000 # BRG. SOIL

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# THRUST BLOCK SIZES FOR REDUCERS AND TEES

## REDUCERS

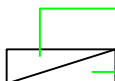
PIPE CLASS	PRESSURE P.S.I.	SIZE	DIMENSIONS - FT.			SIZE	DIMENSIONS - FT.		
			X	H	T		X	H	T
200	150	12x10	12" 8"	3'-0" 2'-0"	12"	10x8	9" 8"	2'-6" 2'-4"	12"
200	175		12" 9"	3'-0" 2'-6"	12"		12" 8"	3'-0" 2'-4"	12"
200	200		12" 9"	3'-0" 2'-6"	12"		12" 9"	3'-0" 2'-6"	12"
200	150	8x6	8" 8"	2'-0" 2'-0"	12"	6x4	8" 8"	2'-0" 2'-0"	12"
200	175		9" 8"	2'-6" 2'-0"	12"		8" 8"	2'-0" 2'-0"	12"
200	200		9" 8"	2'-6" 2'-0"	12"		8" 8"	2'-0" 2'-0"	12"

## TEE, REDUCING IN LINE

PIPE CLASS	PRESSURE P.S.I.	SIZE	AREA - SQ.FT.		SIZE	AREA - SQ.FT.	
			BLK."A"	BLK."B"		BLK."A"	BLK."B"
200	150	12x10 x10	14.4 10.8	4.4 3.3	10x8 x8	8.8 6.6	4.0 3.0
200	175		16.2 12.1	4.9 3.7		9.9 7.4	4.5 3.4
200	200		18.0 13.5	5.4 4.1		11.0 8.2	5.0 3.7
200	150	8x6 x6	5.1 3.8	2.7 2.8	6x4 x4	2.5 1.9	1.9 1.5
200	175		5.8 4.4	3.0 2.3		2.8 2.1	2.2 1.6
200	200		6.4 4.8	3.4 2.5		3.1 2.4	2.4 1.8

### NOTE:

1. SHOULD THE IN LINE REDUCTION BE GREATER THAN ONE SIZE, THRUST BLOCK AREA B SHALL BE THE SUM OF AREAS SHOWN FOR SIZES AS THOUGH REDUCTION WERE IN TWO OR MORE STEPS.

2.  SIZE FOR 1500 # BRG. SOIL  
SIZE FOR 2000 # BRG. SOIL

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ENGINEER

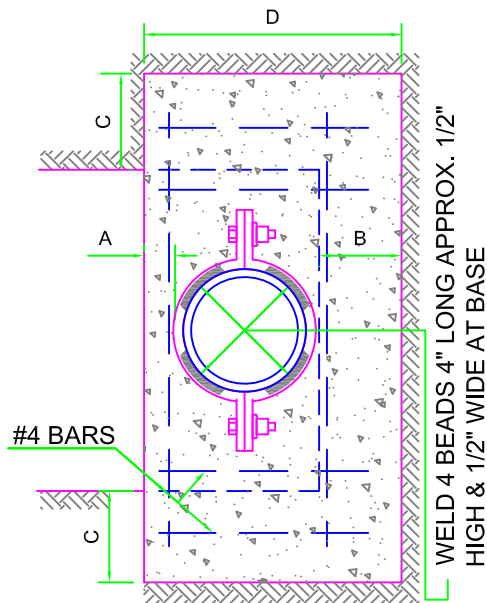


DISTRICT STANDARD **W-5**

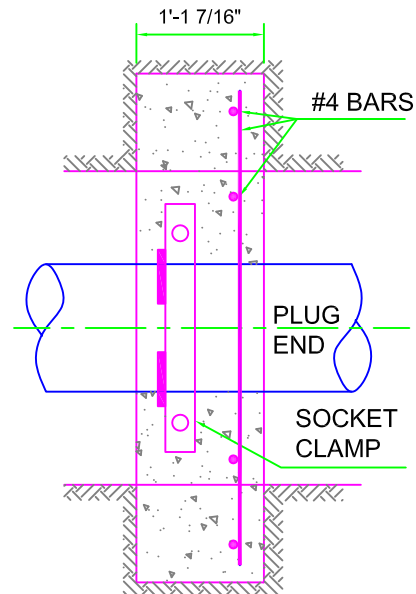
REVISED: November 1, 2011

# STANDARD THRUST BLOCK FOR DEADEND RING-TITE D.I.P. OR STEEL PIPE

PIPE SIZE (IN.)	LINE PRESSURE P.S.I.	1500 POUNDS PER SQUARE FOOT BEARING SOIL				2000 POUNDS PER SQUARE FOOT BEARING SOIL			
		A	B	C	D	A	B	C	D
6"	150	6"	8"	15"	20"	6"	6"	12"	18"
6"	200	8"	8"	18"	22"	6"	8"	14"	20"
8"	150	7"	8"	24"	23"	6"	8"	18"	22"
8"	200	8"	12"	24"	28"	6"	8"	24"	22"
10"	150	13"	15"	23"	35"	8"	10"	24"	28"
10"	200	16"	16"	28"	42"	12"	13"	24"	35"
12"	150	16"	15"	30"	43"	12"	15"	24"	39"
12"	200	15"	15"	40"	42"	13"	15"	30"	40"



END OF D.I.P. SHALL BE CAPPED WITH  
2 1/2" TEST PLUG



END OF STEEL PIPE SHALL HAVE WELDED DISHED  
HEAD WITH 2 1/2 " HALF WELDING COUPLING FOR  
BLOW-OFF.

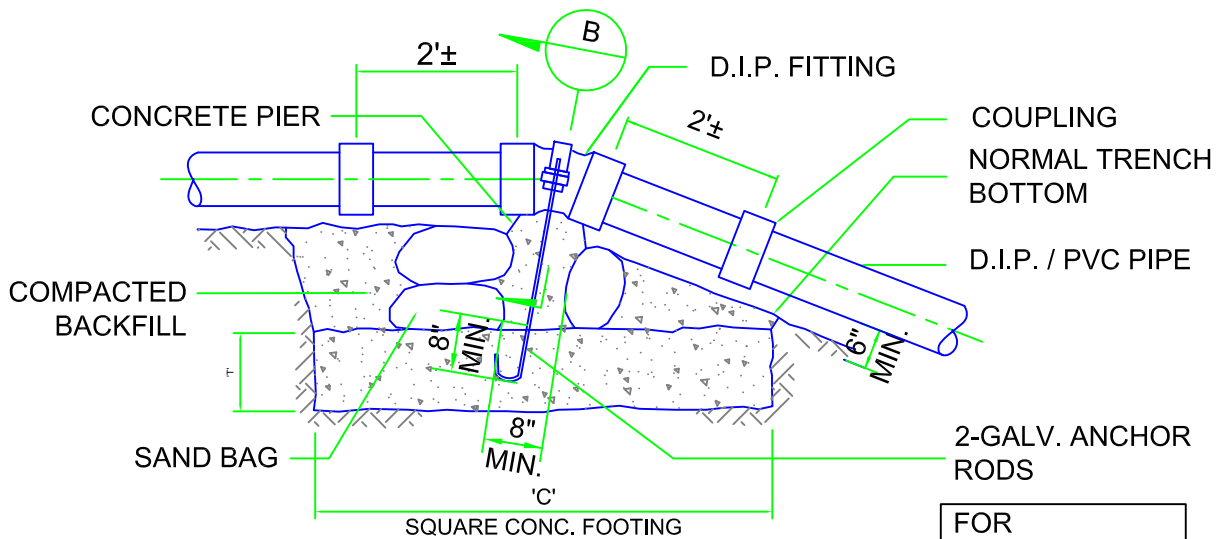
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DISTRICT  
STANDARD **W-6**

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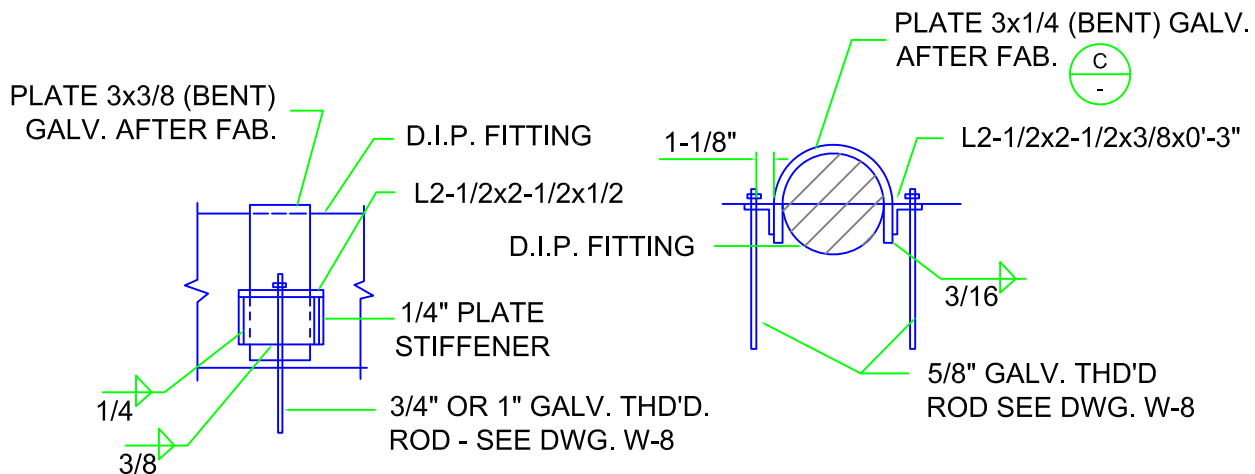
# VERTICAL BEND DETAILS FOR PIPE



**ELEVATION (AT TOP OF SLOPE)**

NOT TO SCALE

FOR  
DIMENSIONS 'C'  
AND 'T' SEE W-8



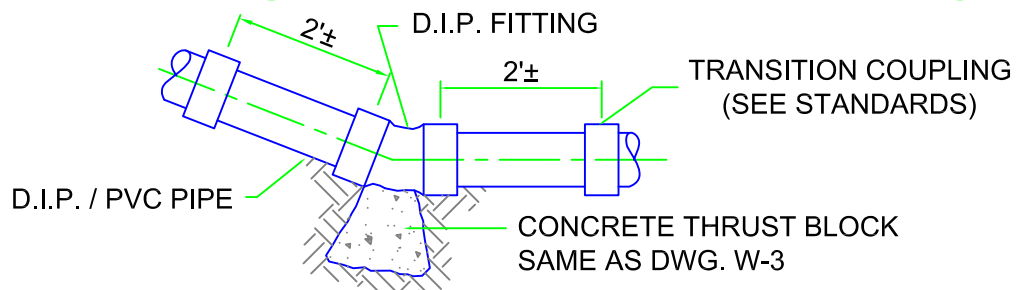
**DETAIL**

NOT TO SCALE



**SECTION**

NOT TO SCALE



**ELEVATION (AT BOTTOM OF SLOPES)**

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STANDARD **W-7**

REVISED: November 1, 2011

# THRUST BLOCK SIZES FOR VERTICAL BENDS

PIPE CLASS	PRESSURE P.S.I.	PIPE DIAMETER	FOOTING DIMENSION C	FOOTING THICKNESS T	ANCHOR RODS DIAMETER	PIPE DIAMETER	FOOTING DIMENSION C	FOOTING THICKNESS T	ANCHOR RODS DIAMETER
200	150	12	3'-6" 4'-9"	2'-0" 2'-0"	3/4" 1"	10	3'-0" 4'-0"	2'-0" 2'-0"	3/4" 3/4"
200	175		3'-6" 5'-3"	2'-0" 2'-0"	3/4" 1"		3'-3" 4'-4"	2'-0" 2'-0"	3/4" 3/4"
200	200		4'-0" 5'-6"	2'-0" 2'-0"	3/4" 1"		3'-3" 4'-6"	2'-0" 2'-0"	3/4" 3/4"
200	150	8	2'-6" 3'-3"	1'-6" 2'-0"	5/8" 5/8"	6	2'-6" 2'-9"	12" 18"	5/8" 5/8"
200	175		2'-6" 2'-6"	2'-0" 2'-0"	5/8" 5/8"		2'-6" 2'-9"	12" 1'-6"	5/8" 5/8"
200	200		2'-6" 2'-6"	2'-0" 2'-0"	5/8" 5/8"		2'-6" 2'-9"	12" 1'-6"	5/8" 5/8"

## LEGEND:



## NOTE:

- FOR ROD DIAMETER 5/8" USE B  
W-7
- FOR ROD DIAMETER 3/4" AND 1" USE C  
W-7
- ANCHOR BLOCKS FOR ANGLES GREATER THAN 22 1/2° SHALL REQUIRE SPECIAL DESIGN AND APPROVAL OF THE DISTRICT.

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ENGINEER

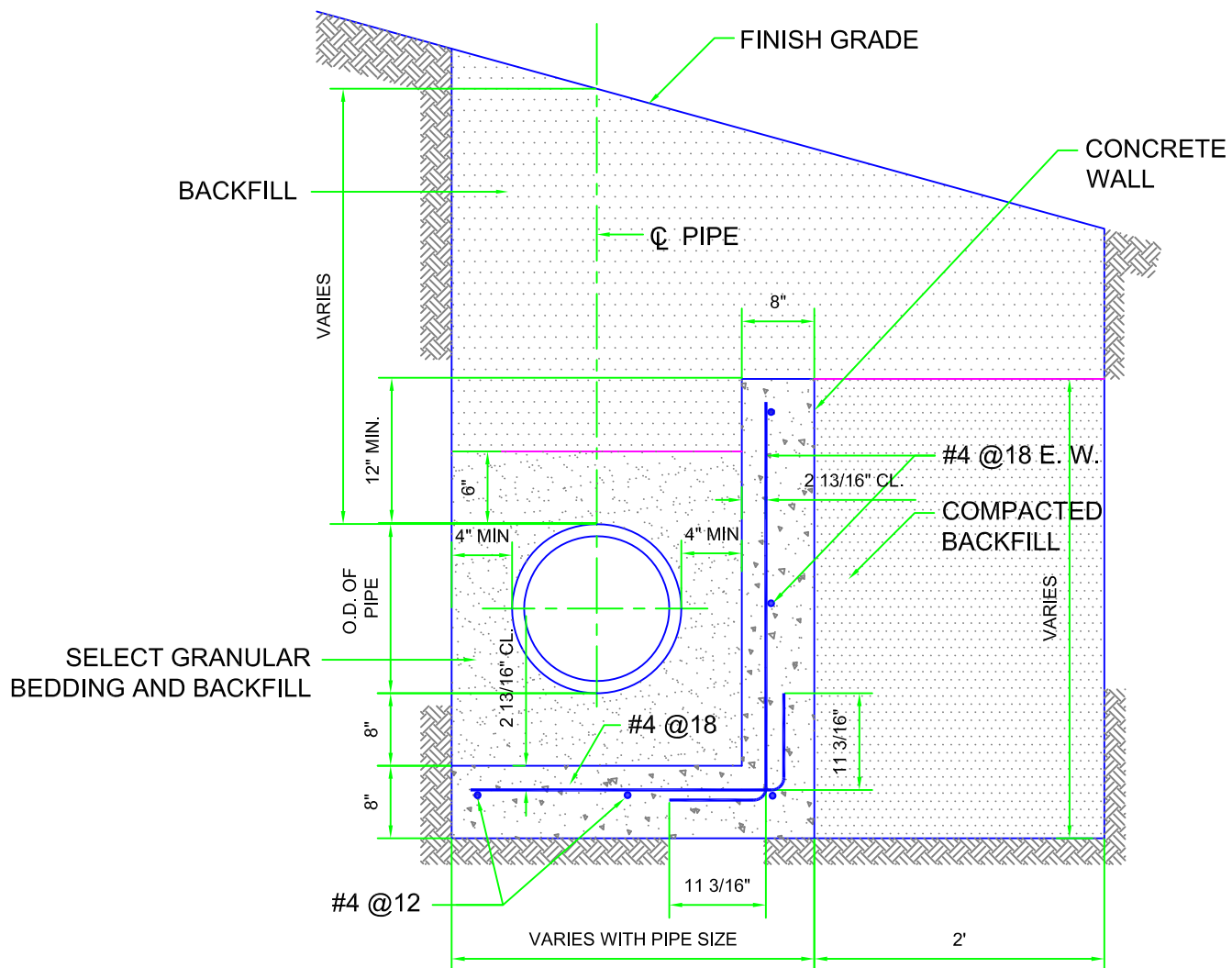


DISTRICT  
STANDARD **W-8**

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# CONCRETE PROTECTOR WALL



NOTE:  
LENGTH AS SPECIFIED ON PLAN AND PROFILE SHEETS.

TYPICAL SECTION  
NOT TO SCALE

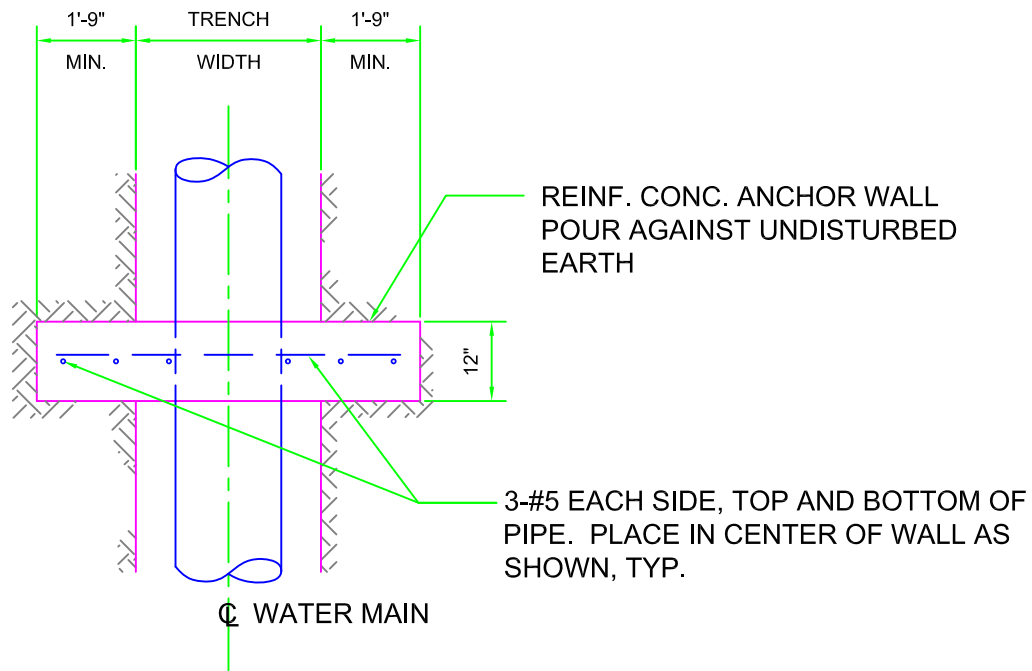
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TJC  
ENGINEER



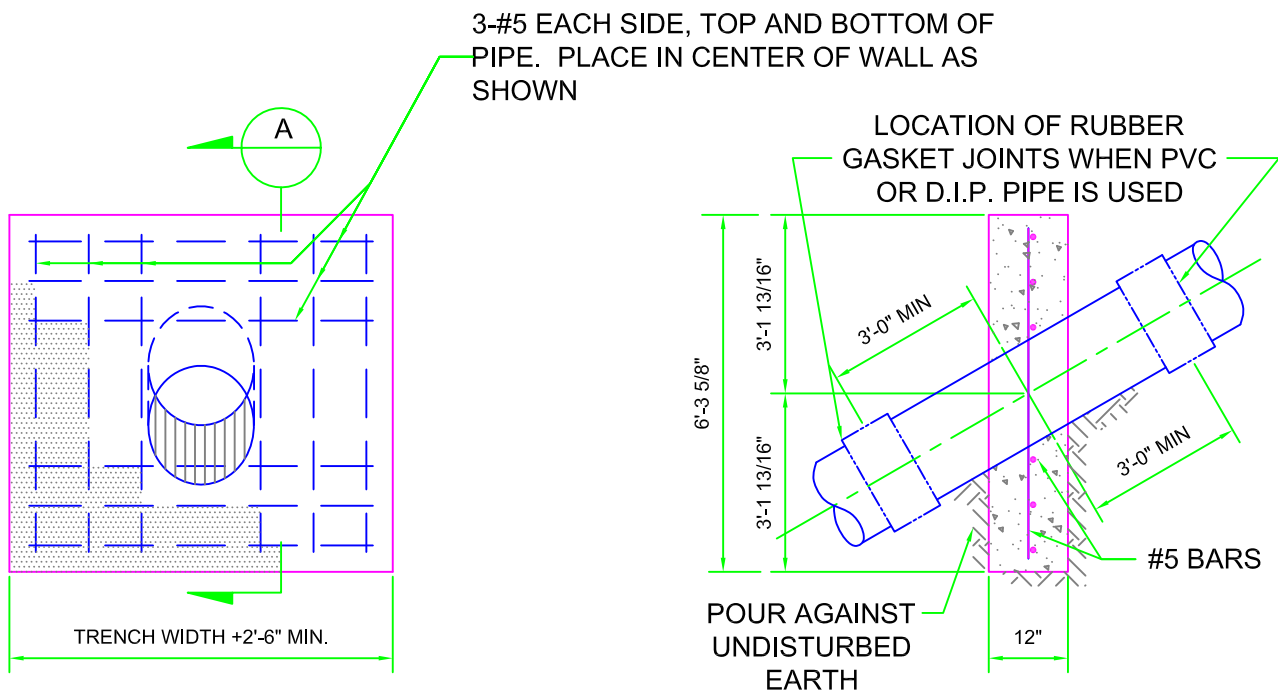
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# ANCHOR WALL DETAIL



P L A N  
NOT TO SCALE



ELEVATION

SECTION A

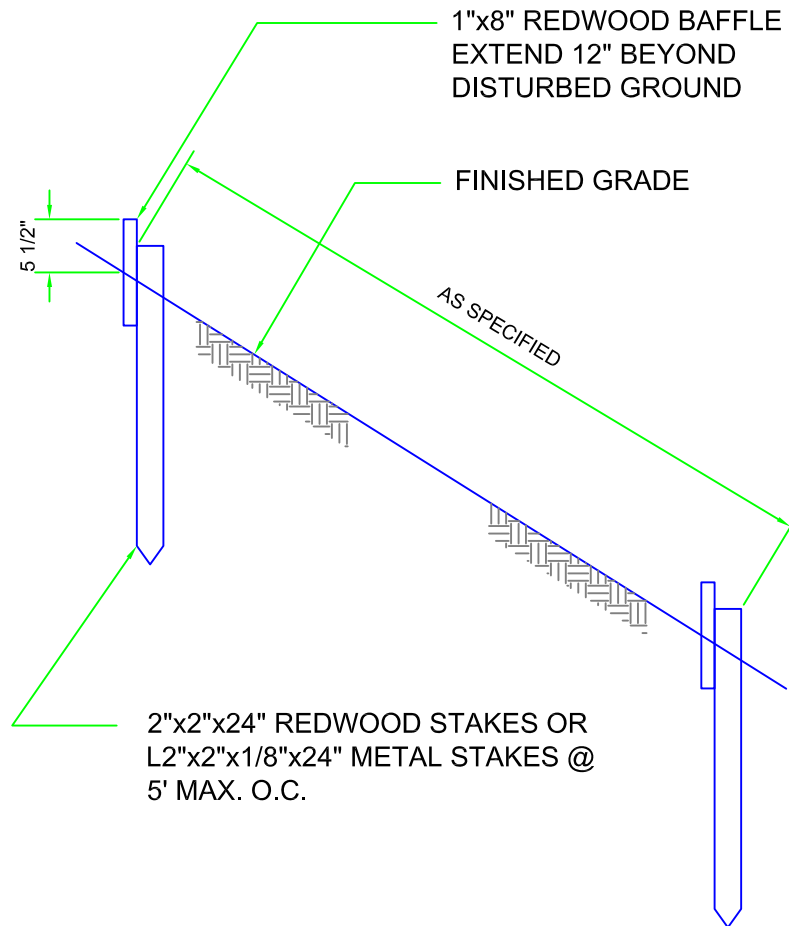
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BUILDING WATER  
SELF-RELIANCE

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STANDARD **W-10**

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# SLOPE PROTECTOR DETAIL



NOTE:  
PROVIDE WHERE INDICATED ON  
PLAN AND PROFILE DRAWINGS

ELEVATION  
NOT TO SCALE

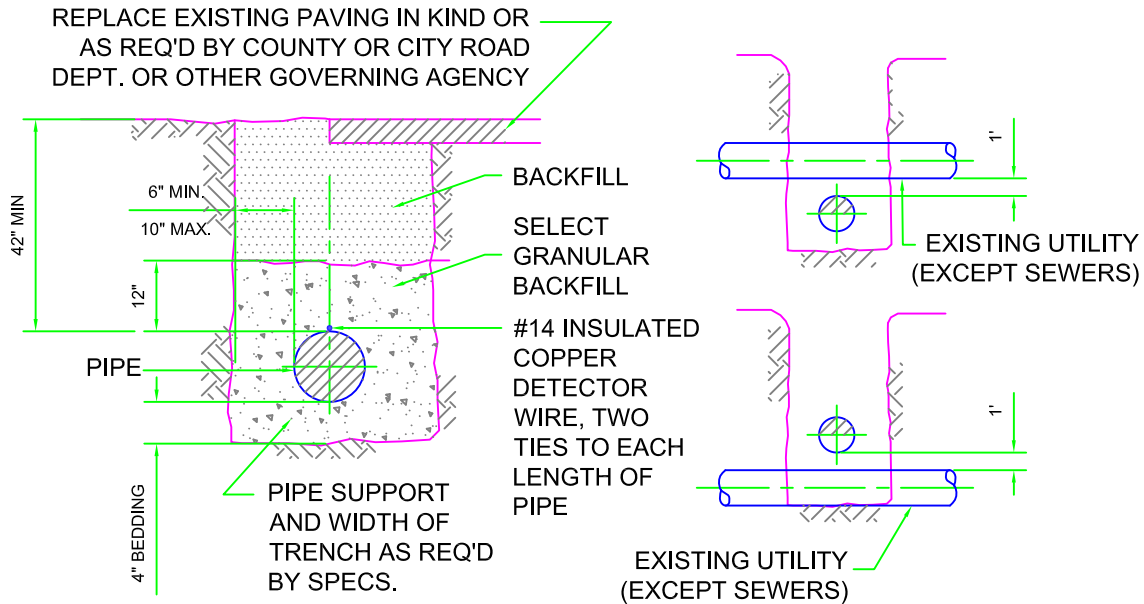
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CAMROSA  
WATER DISTRICT  
  
BUILDING WATER  
SELF-RELIANCE

DISTRICT  
STANDARD **W-11**

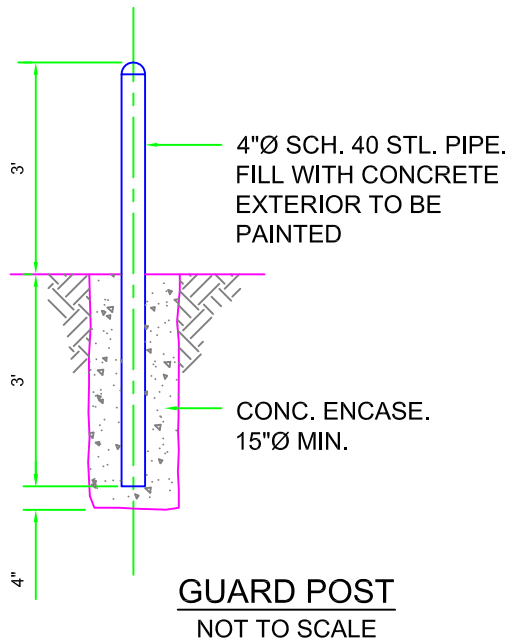
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# TRENCH SECTIONS FOR PIPE AND GUARD POST DETAIL



TRENCH SECTION  
NOT TO SCALE

SECTIONS AT EXIST. UTILITIES  
NOT TO SCALE



## SEWER CROSSING

1. THE HORIZONTAL SEPARATION BETWEEN WATER LINE AND A SEWER LINE SHALL NOT BE LESS THAN 10 FT.

2. WHEN WATER LINE AND SEWER LINE CROSS, THE WATER LINE SHALL BE HIGHER THAN SEWER LINE AND VERTICAL SEPARATION SHALL NOT BE LESS THAN 3 FT.

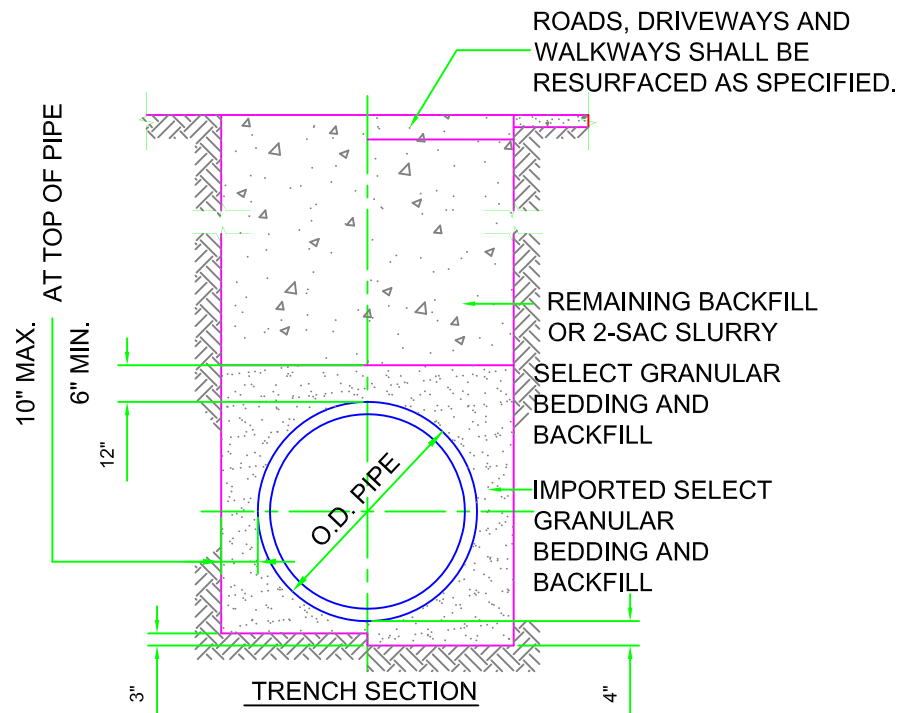
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ENGINEER

CAMROSA  
WATER DISTRICT  
  
BUILDING WATER  
SELF-RELIANCE

DISTRICT  
STANDARD **W-12**

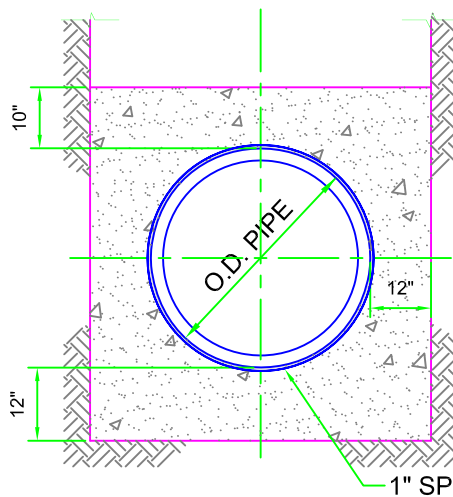
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# TRENCH SECTION & CONC. ENCASEMENT DETAIL FOR W.S. & STL. CYL. CONC. PIPES

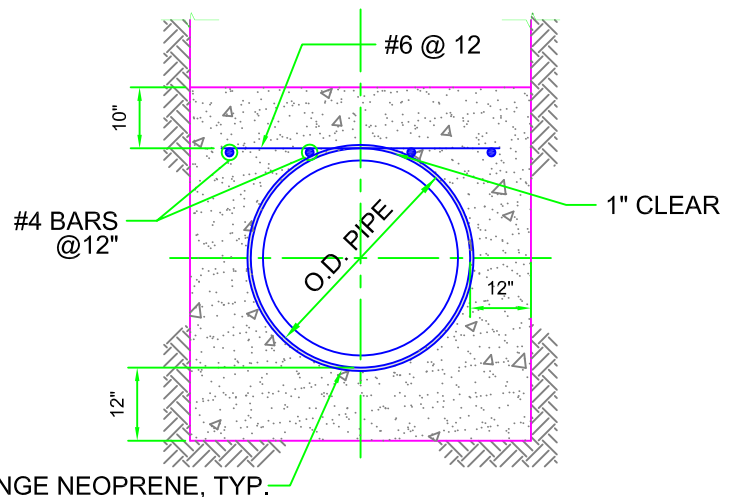


**NOTE:**  
USE WHEN EXCAVATED MATERIAL IS NOT SUITABLE FOR SELECT BEDDING AND BACKFILL.

**TYPICAL TRENCH SECTION**  
NOT TO SCALE



**FOR PIPES SMALLER THAN 24"**



**FOR PIPES 24" AND LARGER**

**CONCRETE ENCASEMENT DETAIL**

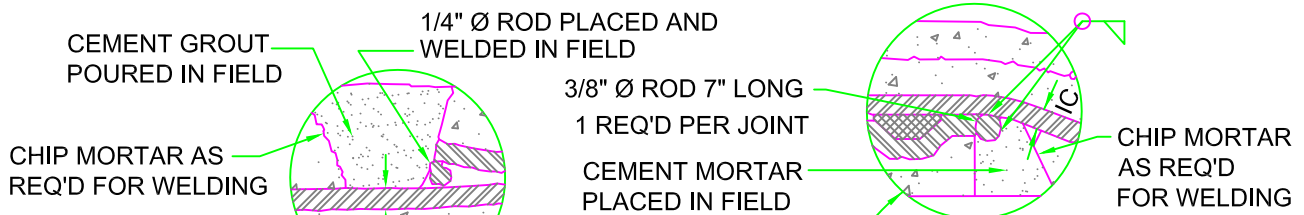
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TJC  
ENGINEER



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STANDARD **W-13**

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# WELDED STEEL PIPE (CEMENT MORTAR COATED) JOINT DETAILS



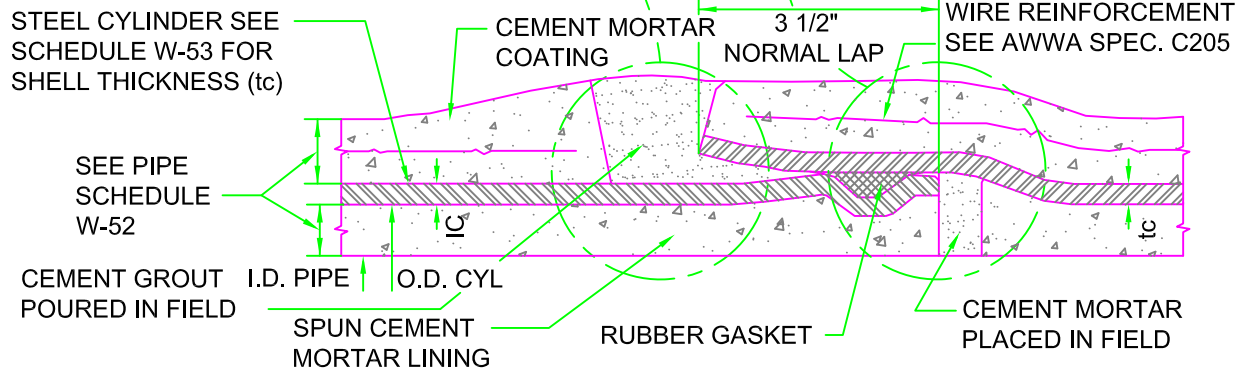
## MODIFICATION FOR FIELD WELDING



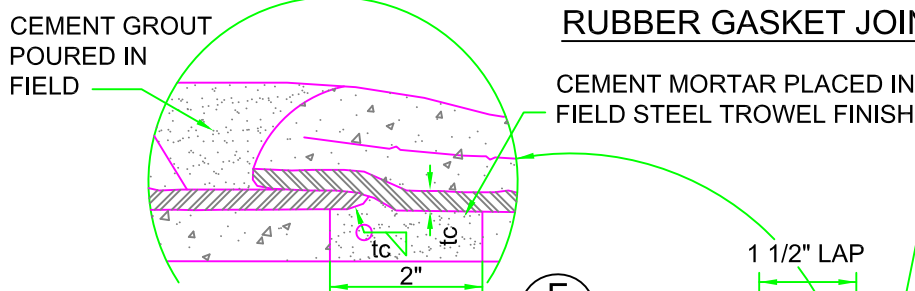
## MODIFICATION FOR PIPE INSIDE JACKED CASING



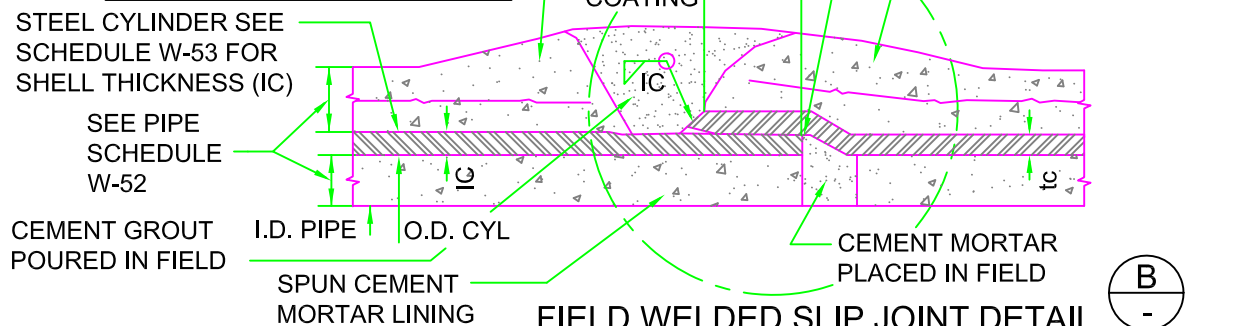
FOR PIPES 14" AND LARGER  
(FOR SMALLER PIPES USE SLIP JT.)



## RUBBER GASKET JOINT DETAIL TPE "D"



## MODIFICATION FOR ALTERNATE FIELD WELD



## FIELD WELDED SLIP JOINT DETAIL



TS  
MANAGER

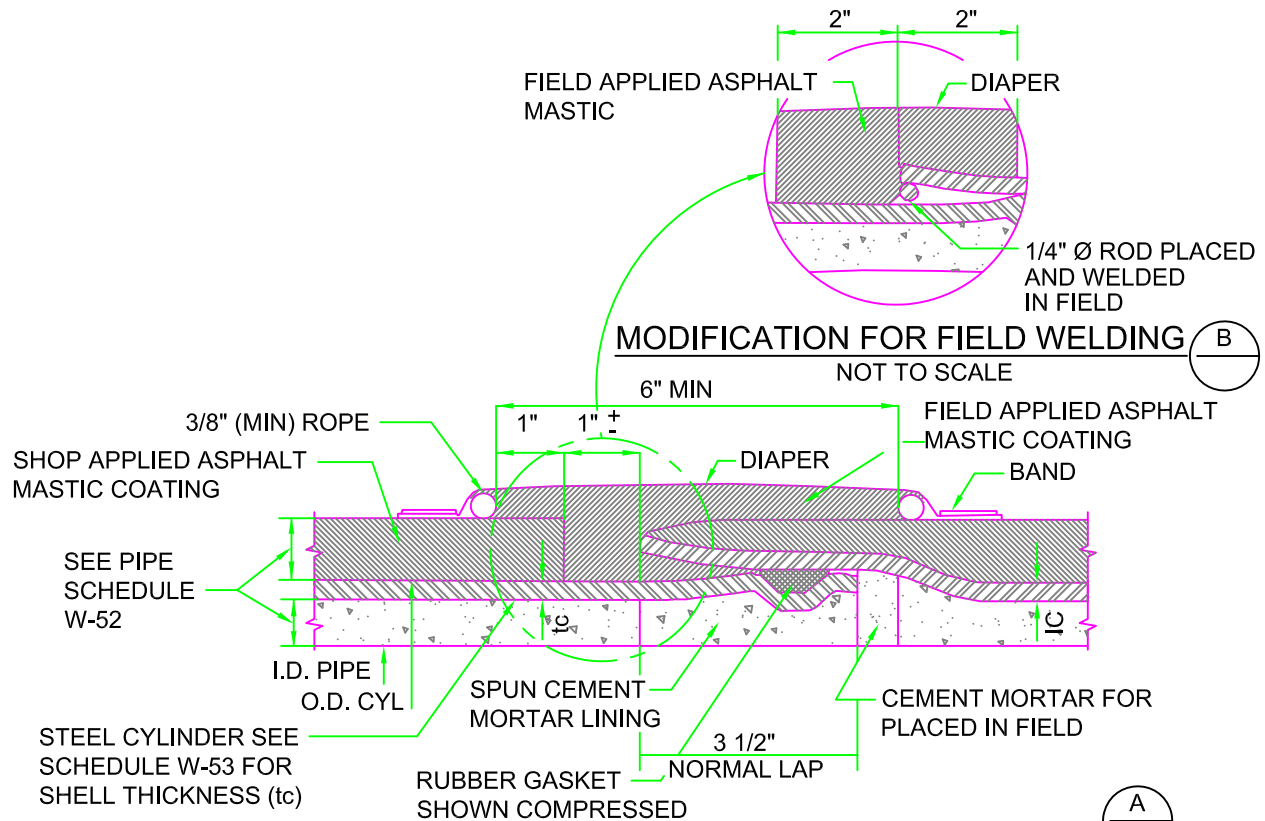
TJC  
ENGINEER



DISTRICT  
STANDARD **W-14**

REVISED: November 1, 2011

# WELDED STEEL PIPE (ASPHALT MASTIC COATED) JOINT DETAILS

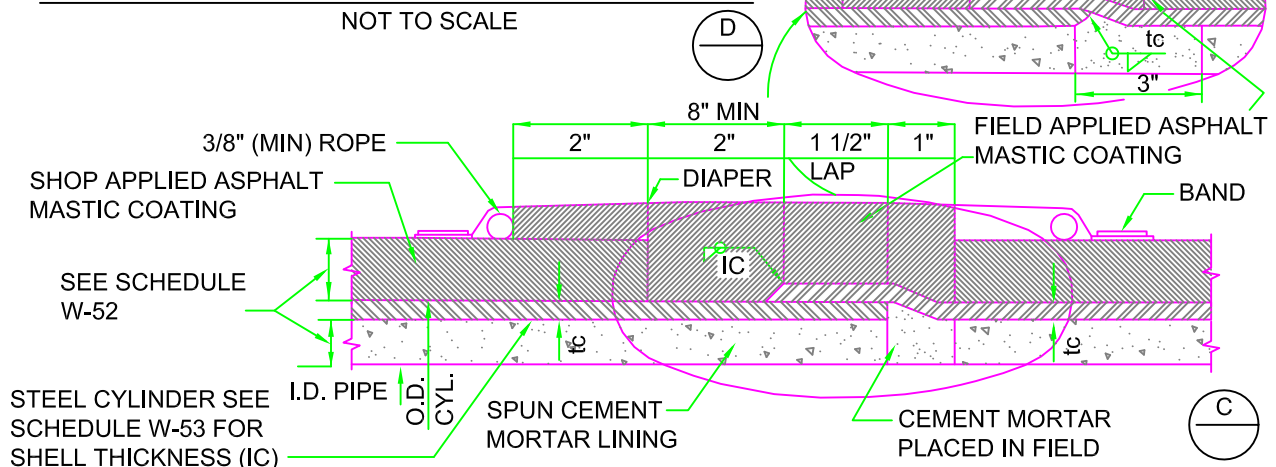


## RUBBER GASKET JOINT DETAIL ASPHALT MASTIC COATED

NOT TO SCALE

## MODIFICATION FOR ALTERNATE FIELD WELD

NOT TO SCALE



## FIELD WELDED SLIP JOINT DETAIL ASPHALT MASTIC COATED

TS  
MANAGER

TJC  
ENGINEER



DISTRICT  
STANDARD **W-15**

REVISED: November 1, 2011

# STEEL CYLINDER CONCRETE PIPE JOINT DETAILS

## NOTE:

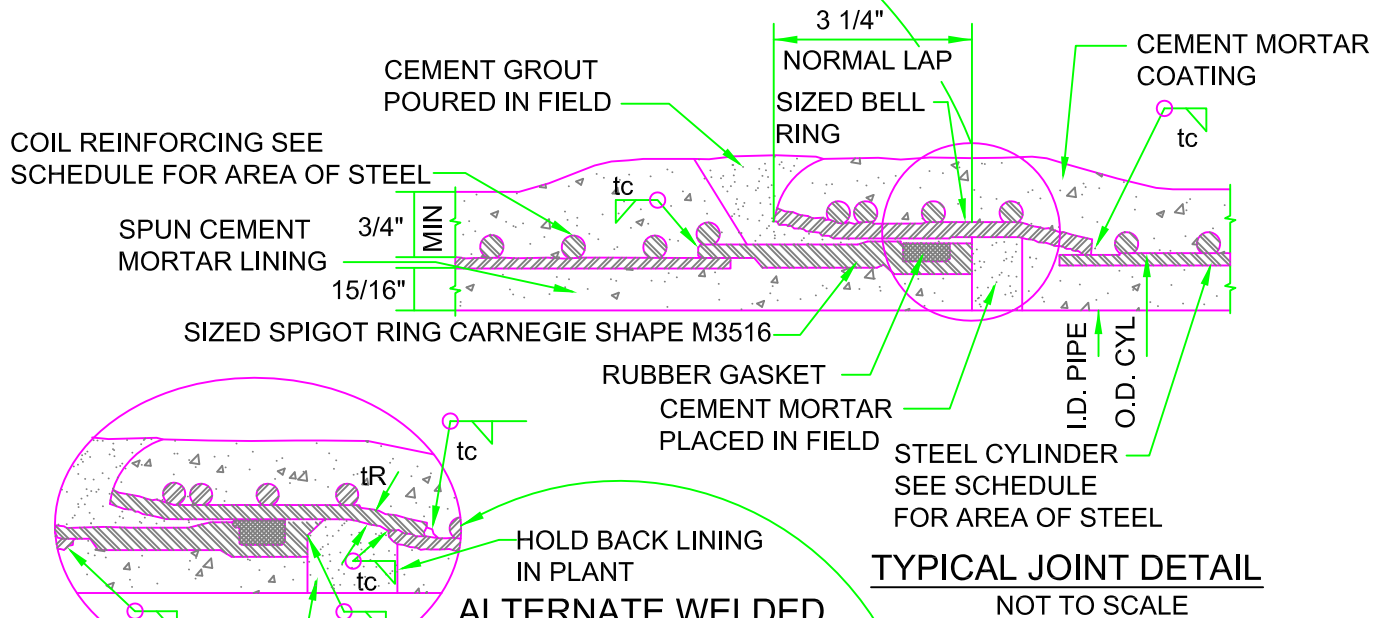
FOR SCHEDULE OF PIPE DIMENSION  
SEE DRWG. W-53

3/8" Ø ROD 7" LONG  
1 REQ'D PER JOINT

CHIP MORTAR AS REQ'D FOR WELDING

## MODIFICATION OF TYPICAL JOINT FOR PIPE INSIDE JACKED CASING

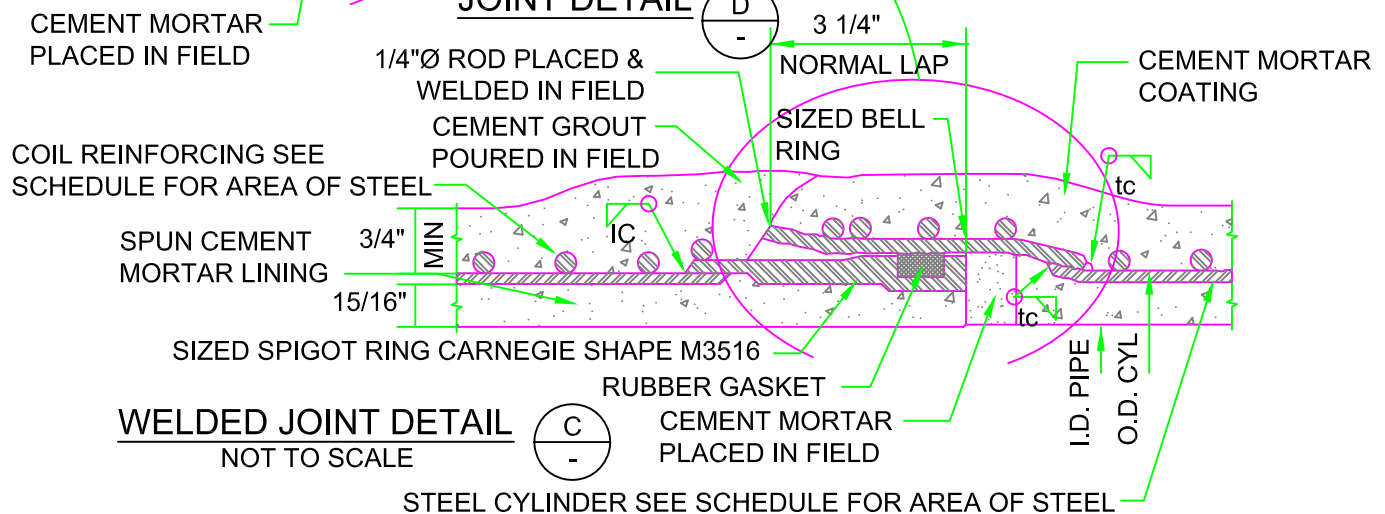
(B)  
-



## TYPICAL JOINT DETAIL NOT TO SCALE

## ALTERNATE WELDED JOINT DETAIL

(D)  
-



## WELDED JOINT DETAIL NOT TO SCALE

(C)  
-

TS  
MANAGER  
  
TJC  
ENGINEER

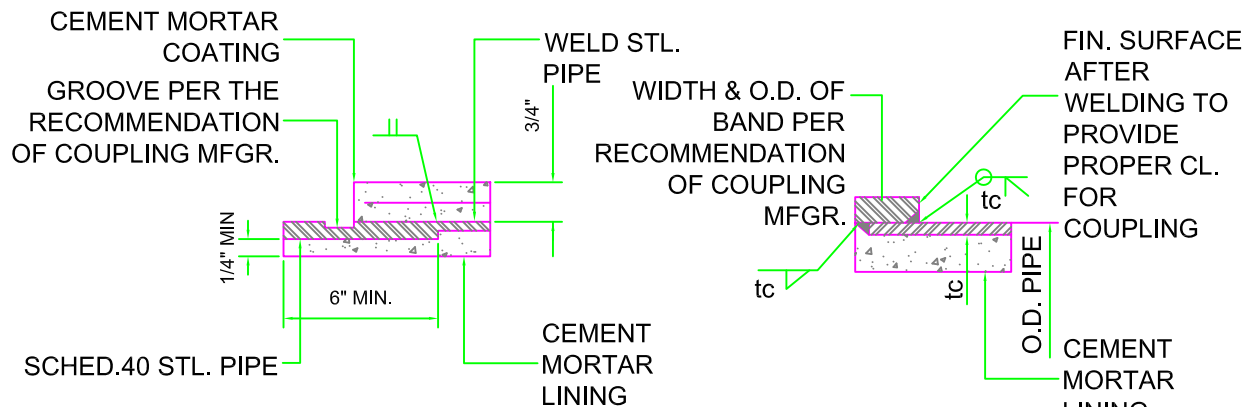


DISTRICT  
STANDARD **W-16**

REVISED: November 1, 2011



# WELD. STL. AND STL. CYL. CONC. PIPE - CONNECTION DETAILS



FOR PIPES 12" AND SMALLER

FOR PIPES LARGER THAN 12"

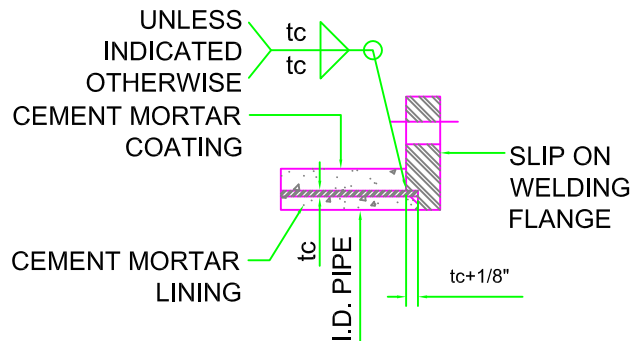
## PIPE DETAIL FOR VICTAULIC COUPLINGS (A) NOT TO SCALE

### NOTE:

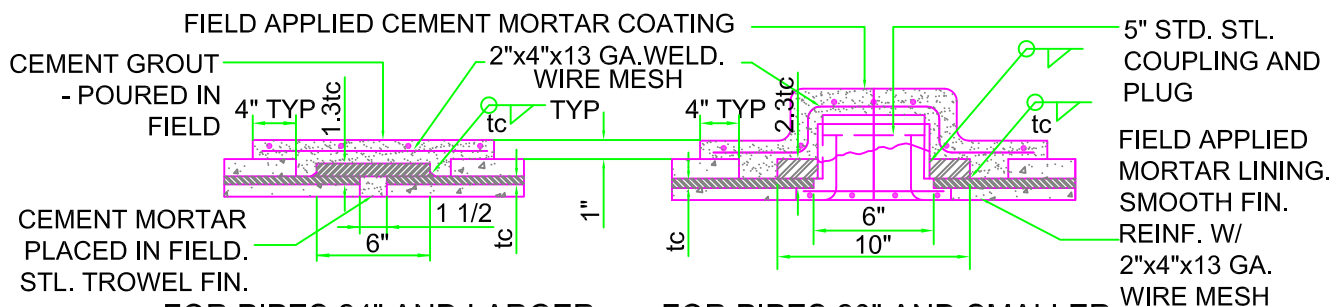
\* PIPE O.D. FOR 6", 8", 10" AND 12" NOMINAL PIPE SIZES SHALL BE 6-5/8", 8-5/8", 10-3/4" AND 12-3/4" RESPECTIVELY

\* COUPLINGS SHALL BE VICTAULIC STYLE 41, 44 OR 77 AS REQ'D OR EQUAL.

\* DIMENSIONS NOT SHOWN SHALL BE AS REQ'D BY THE COUPLING MFGR.



## FLANGE CONNECTION DETAIL FOR FLANGES WHERE O.D. OF PIPE IS LARGER THAN STD. OPENING FOR FLANGE (B) NOT TO SCALE



FOR PIPES 24" AND LARGER

FOR PIPES 20" AND SMALLER

## BUTT STRAP CONNECTION DETAIL (C) NOT OT SCALE

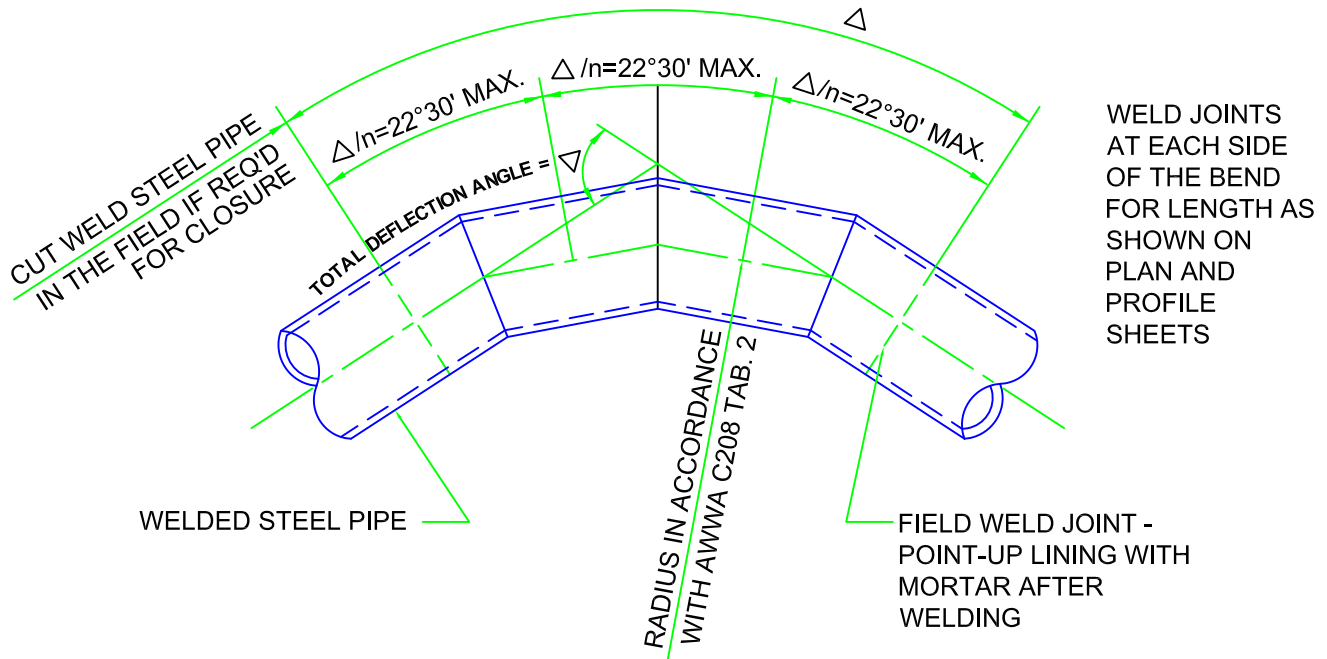
TS  
MANAGER  
  
TJC  
ENGINEER



DISTRICT  
STANDARD **W-17**

REVISED: November 1, 2011

# WELDED STEEL PIPE - BEND DETAIL



TYPICAL FABRICATED BEND (B)  
NOT TO SCALE

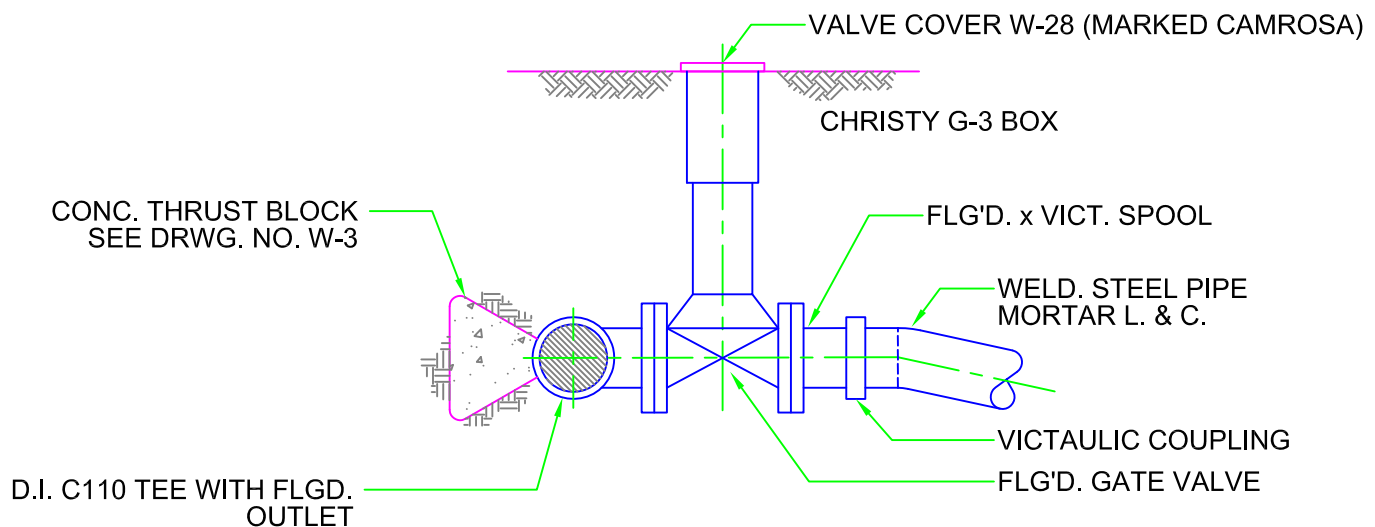
TS  
MANAGER  
  
TJC  
  
ENGINEER



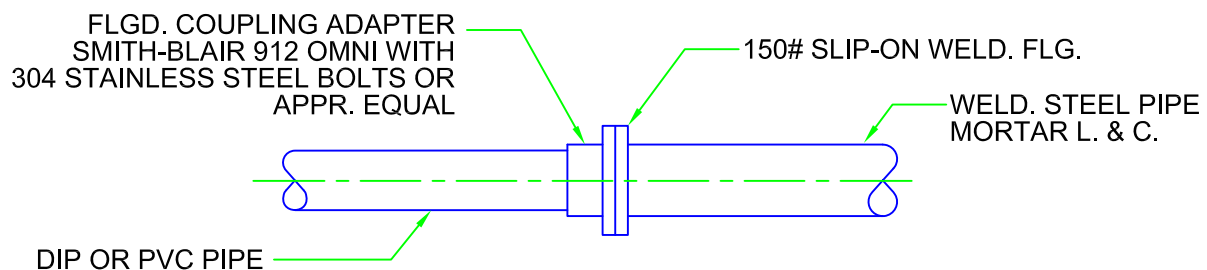
DISTRICT  
STANDARD **W-18**

REVISED: November 1, 2011

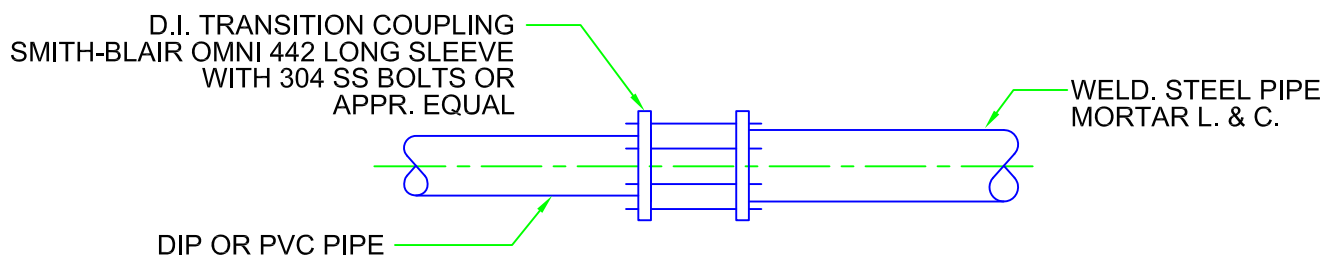
## CONNECTION DETAILS - WELDED STEEL PIPE TO P.V.C & D.I.P.



LATERAL CONNECTION  
NOT TO SCALE



ALTERNATE - 1



ALTERNATE - 2

LINE CONNECTIONS  
NOT TO SCALE

FR  
MANAGER

TJC

ENGINEER

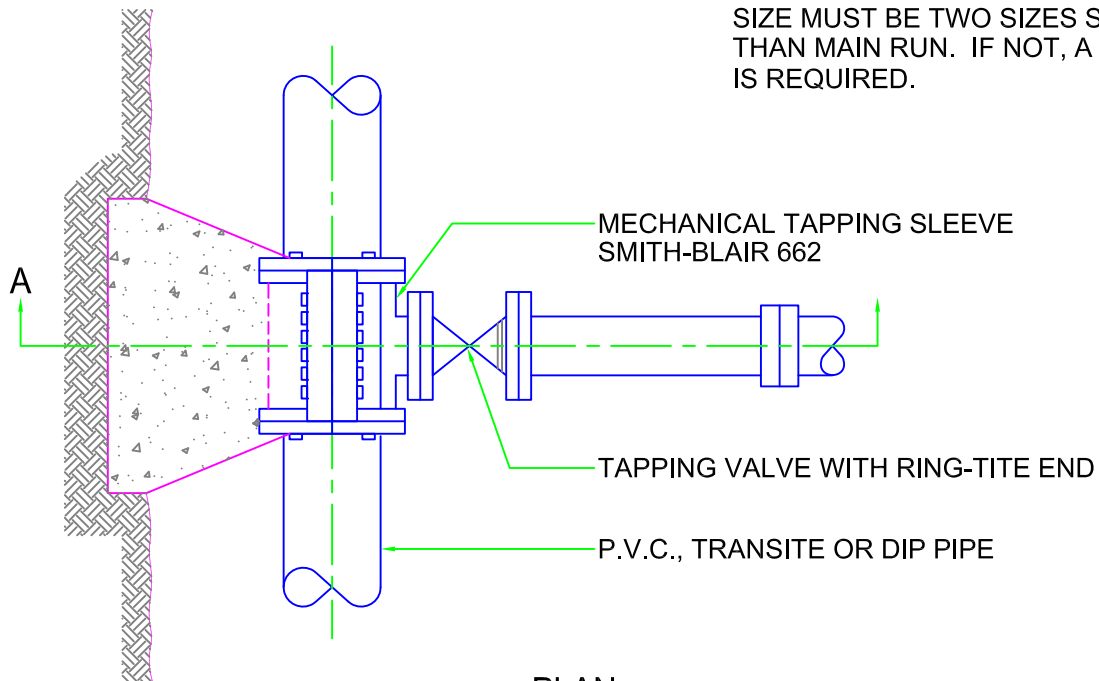
DISTRICT  
STANDARD

# W-19

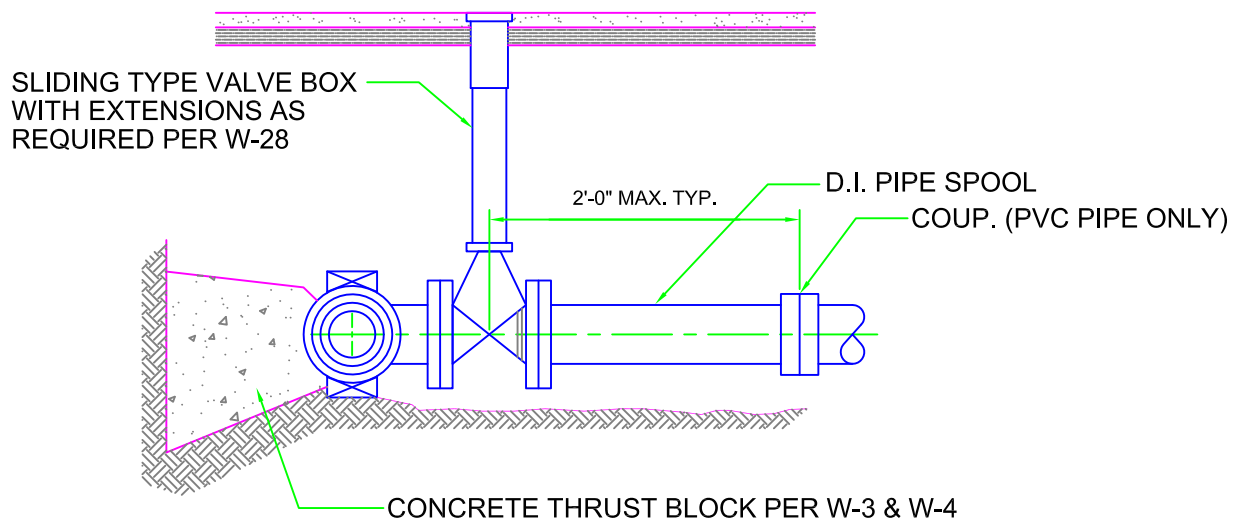
REVISÉD: November 1, 2011

# TAPPING VALVE & MECHANICAL TAPPING SLEEVE CONNECTION TO A.C./D.I.P./P.V.C. PIPE

NOTE: TAPPING SLEEVES OUTLET SIZE MUST BE TWO SIZES SMALLER THAN MAIN RUN. IF NOT, A CUT-IN-TEE IS REQUIRED.



PLAN



ELEV. A-A

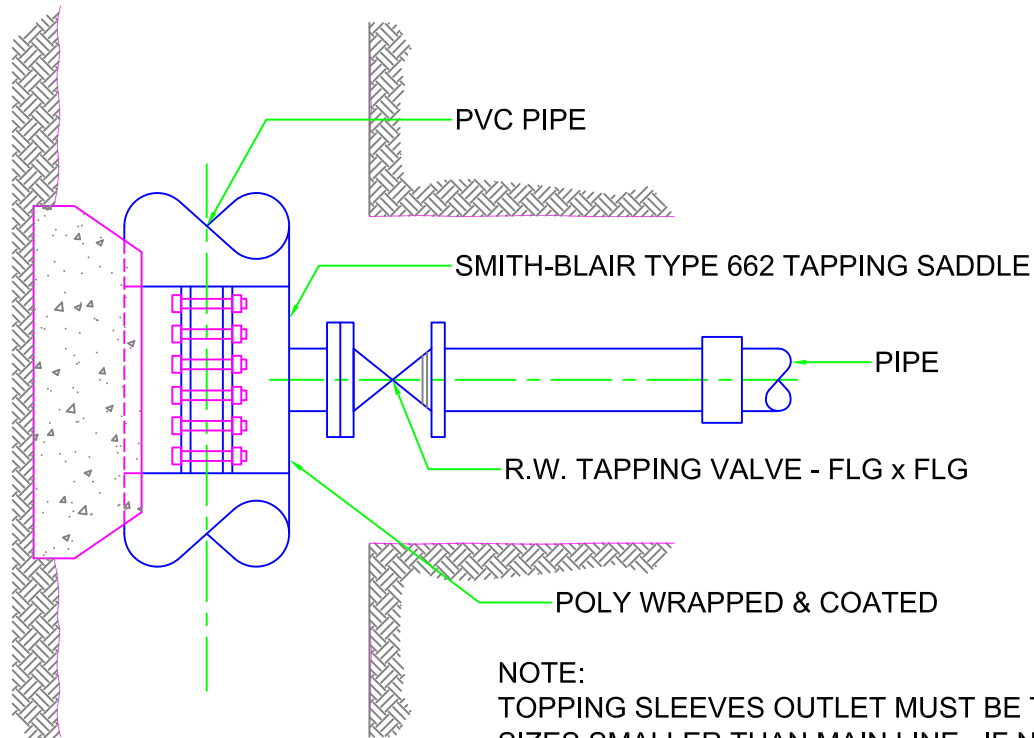
TS  
MANAGER  
  
TJC  
ENGINEER



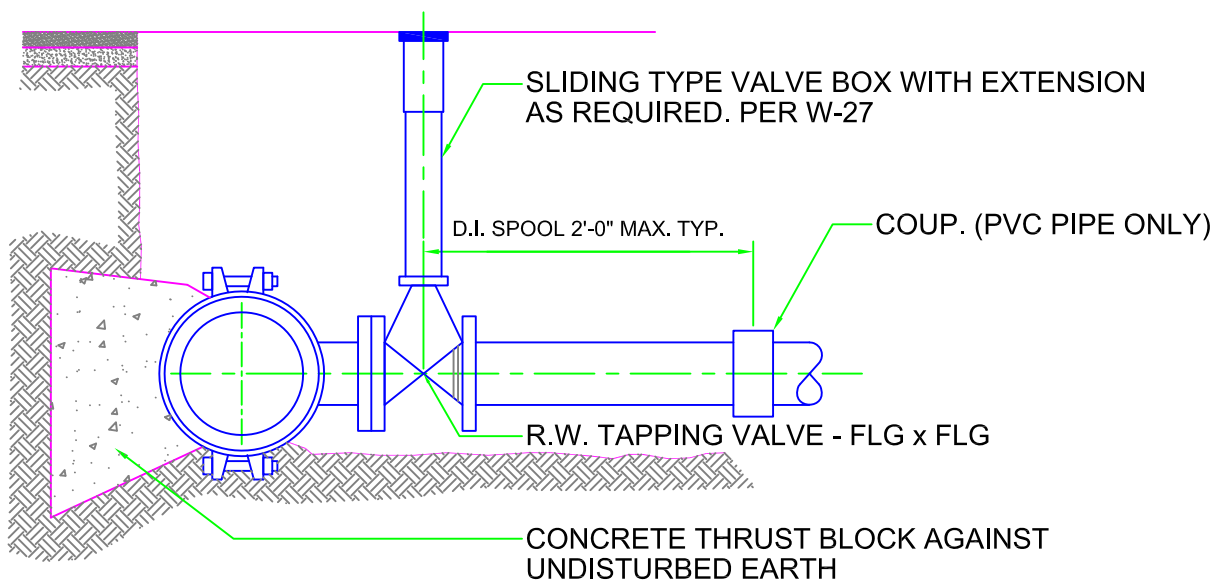
DISTRICT  
STANDARD **W-20**

REVISED: November 1, 2011

# TAPPING VALVE ON P.V.C.



PLAN



PROFILE

TS  
MANAGER  
TJC  
ENGINEER



DISTRICT  
STANDARD **W-21**

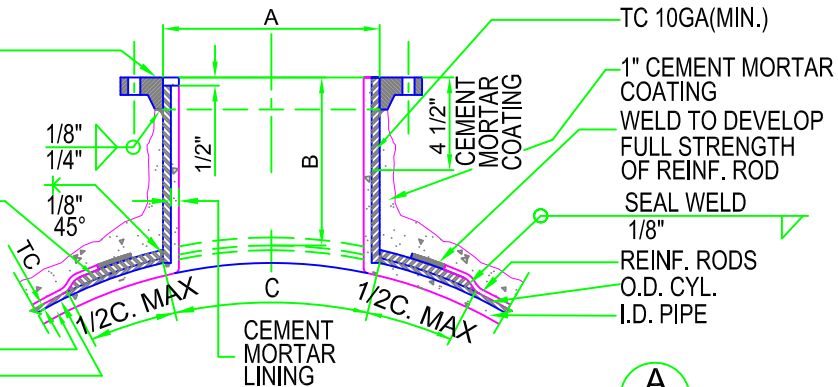
REVISED: November 1, 2011

# STEEL CYLINDER COATED PIPE FLANGED OUTLET DETAILS

150# SLIP-ON WELD FLG. FOR PIPE  
CLASS 200 AND LESS  
300# SLIP-ON WELD FLG. FOR PIPE  
CLASS OVER 200

REINFORCING COLLAR MIN.  
THICKNESS TO PROVIDE  
CROSS-SECTIONAL AREA  
THRU  $\phi$  OF OPENING = TO  
1-1/2 X TOTAL EQUIV. AREA  
REQ'D FOR CYL. AND ROD  
WRAP IN ADJACENT PIPE

3/4" CEMENT MORTAR LINING  
STEEL CYLINDER



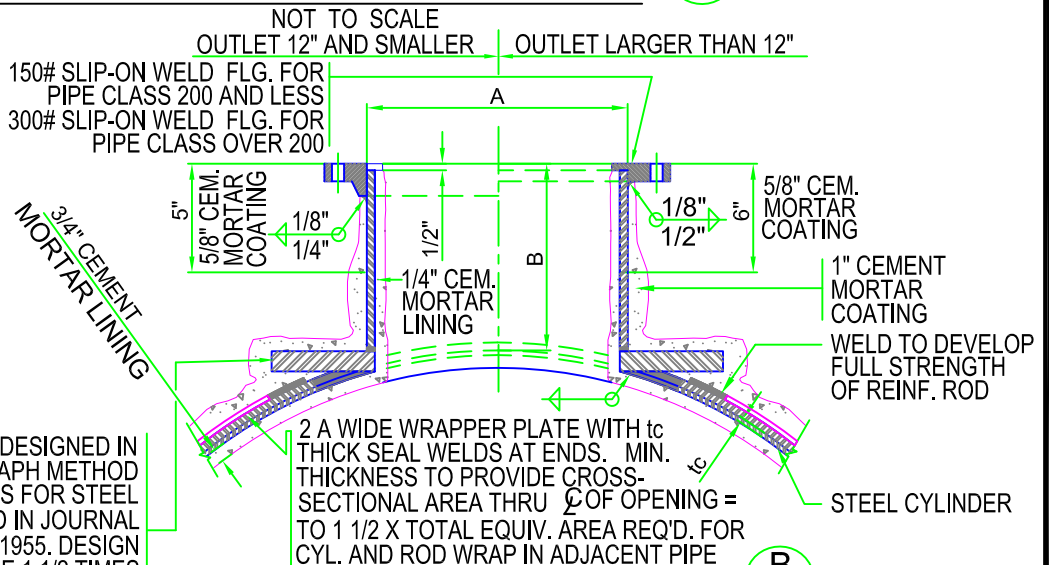
## REINFORCING SADDLE TYPE OUTLET

A  
-

### SCHEDULE OF DIMENSIONS

NOMINAL OUTLET SIZE INCHES	A INCHES	B INCHES
4	4 1/2	8
6	6 5/8	8
8	8 5/8	8
10	10 3/4	8
12	12 3/4	8
14	16	10
16	18	10
18	20	10
21	23	10
24	26	10
27	29	10

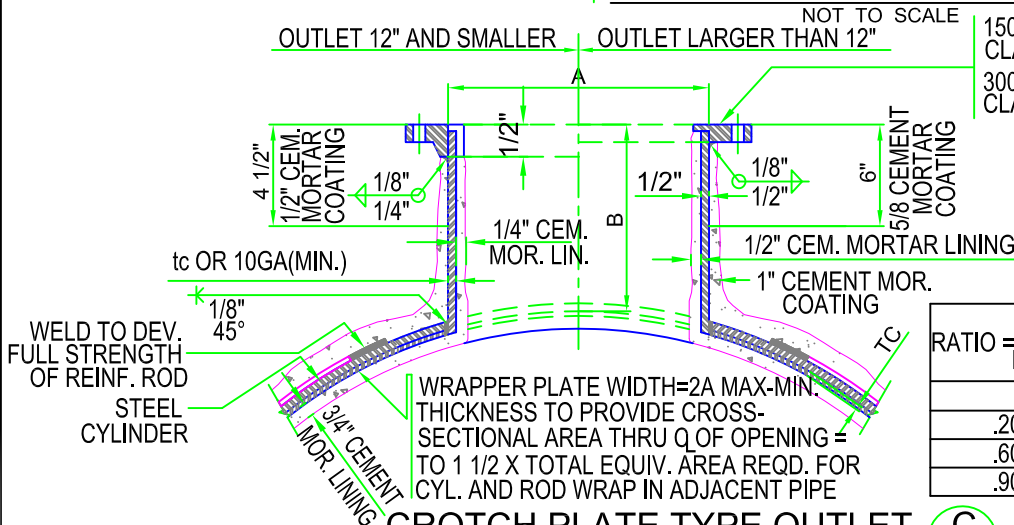
SINGLE CROTCH PLATE DESIGNED IN  
ACCORDANCE IN NOMOGRAPH METHOD  
FOR DESIGN OF WYE BRANCHES FOR STEEL  
PIPE ET AL PUBLISHED IN JOURNAL  
A.W.W.A. VOL.47 JUNE 6, 1955. DESIGN  
PRESSURE SHALL BE 1 1/2 TIMES  
WORKING REPRESENTED BY CLASS OF PIPE



## CROTCH PLATE TYPE OUTLET

B  
-

NOT TO SCALE  
OUTLET 12" AND SMALLER | OUTLET LARGER THAN 12"



## CROTCH PLATE TYPE OUTLET

NOT TO SCALE

### NOTES

2" AND SMALLER OUTLET NO REINF.  
TO SELECT TYPE OF OUTLET FOR  
OUTLETS LARGER THAN 2" USE THE  
FOLLOWING TABLE

RATIO = $\frac{\text{OUTLET DIA.}}{\text{MAIN PIPE DIA.}}$	TYPE OF OUTLET
- .20	SADDLE
.20 - .60	WRAPPER PLATE
.60 - .90	SINGLE CROTCH PLATE
.90 - 1.0	SINGLE CROTCH PLATE

TS

MANAGER

TJC

ENGINEER

CAMROSA  
WATER DISTRICT



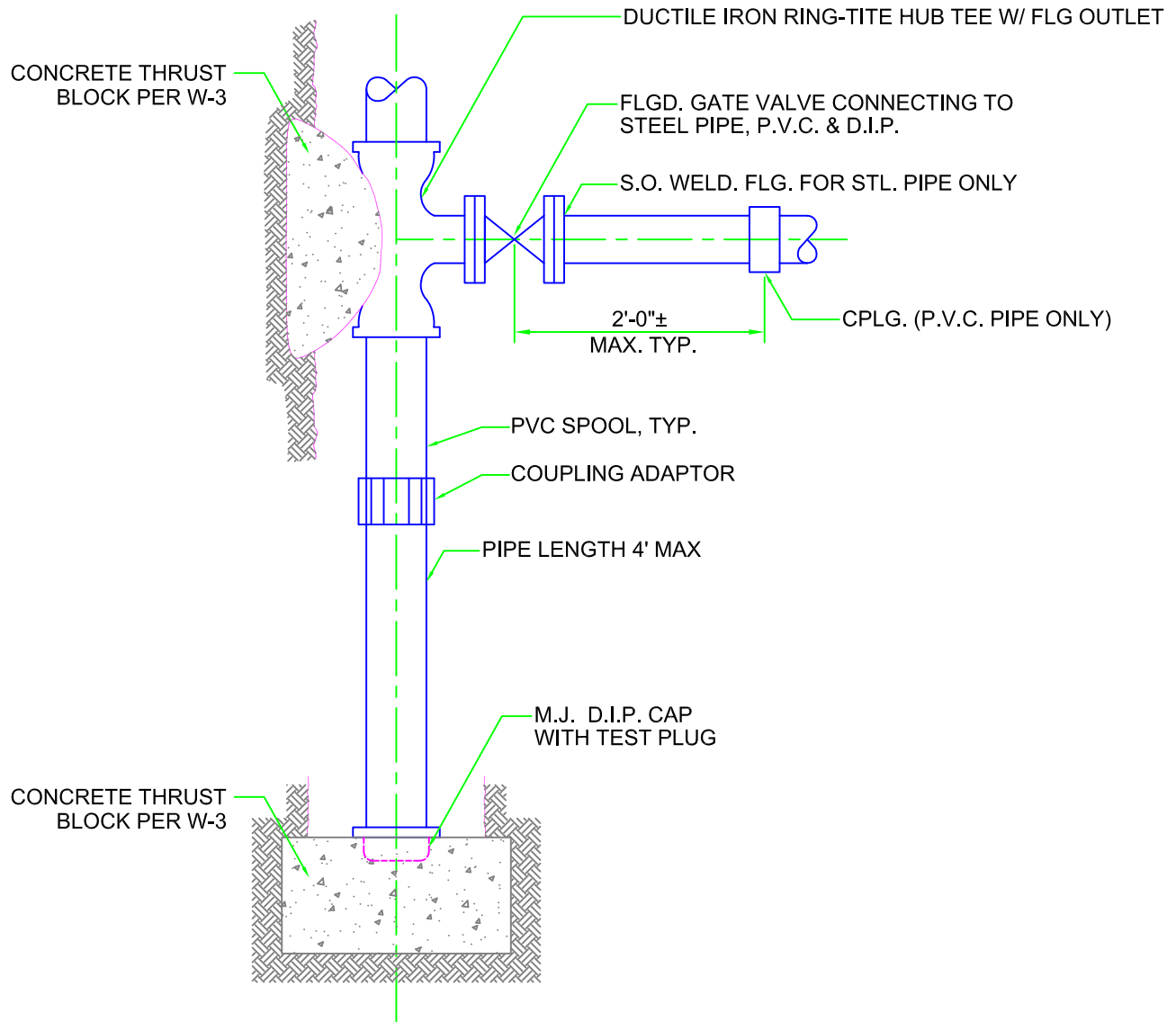
BUILDING WATER  
SELF-RELIANCE

DISTRICT  
STANDARD

W-22

REVISED: November 1, 2011

# TEE IN TRANSITE OR DUCTILE MAIN WITH ONE RUN DEAD-ENDED



PLAN

TS  
MANAGER

TJC

ENGINEER

CAMROSA  
WATER DISTRICT

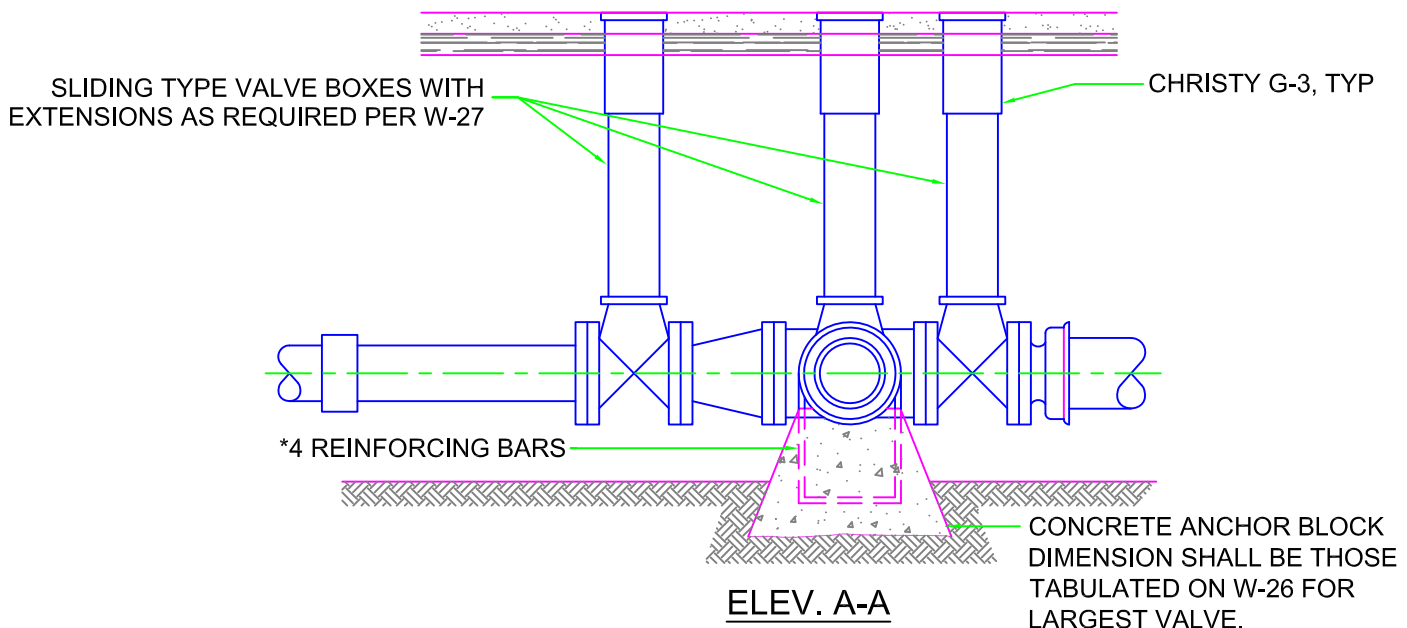
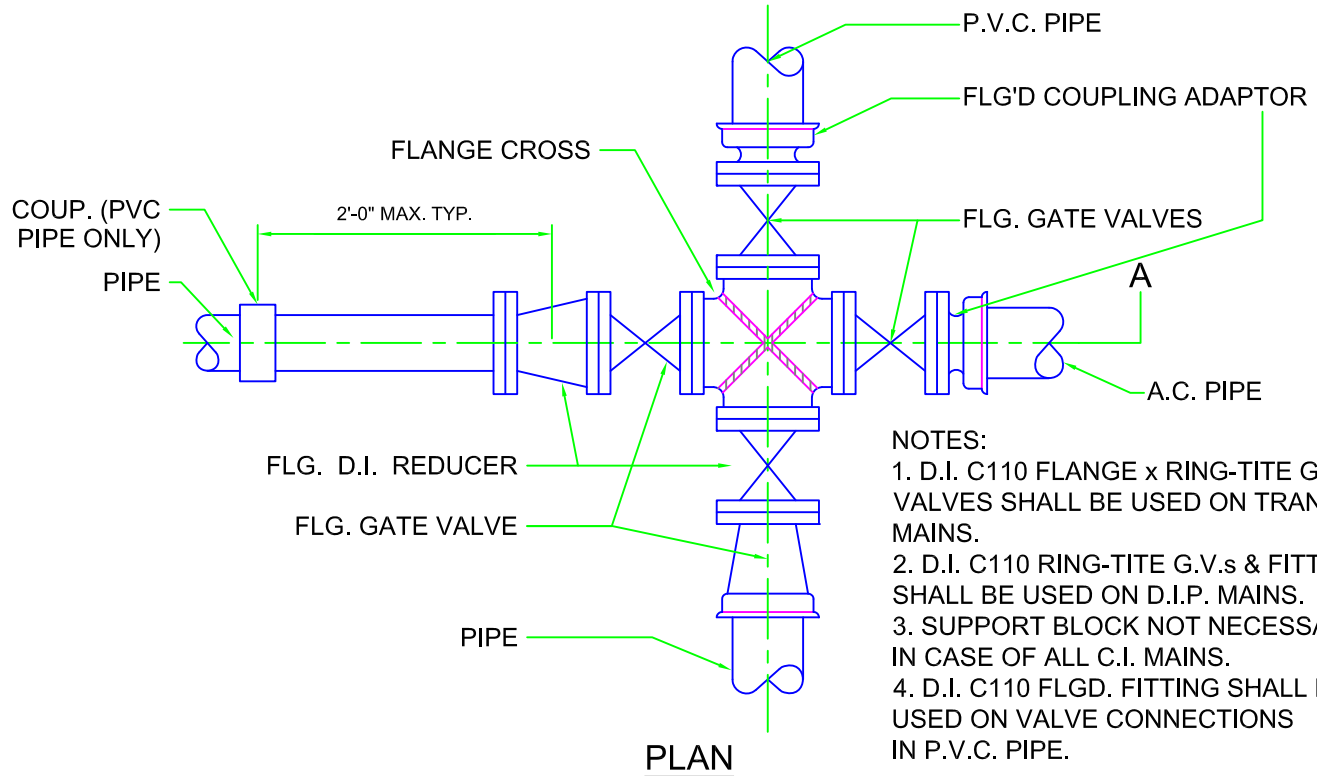


BUILDING WATER  
SELF-RELIANCE

DISTRICT  
STANDARD **W-23**

REVISED: November 1, 2011

# D.I. CROSS IN P.V.C. MAINS, 4 VALVES 12 INCH & SMALLER, 2 SIDES REDUCED, 2 SIDES INCREASED



TS  
MANAGER  
TJC  
ENGINEER

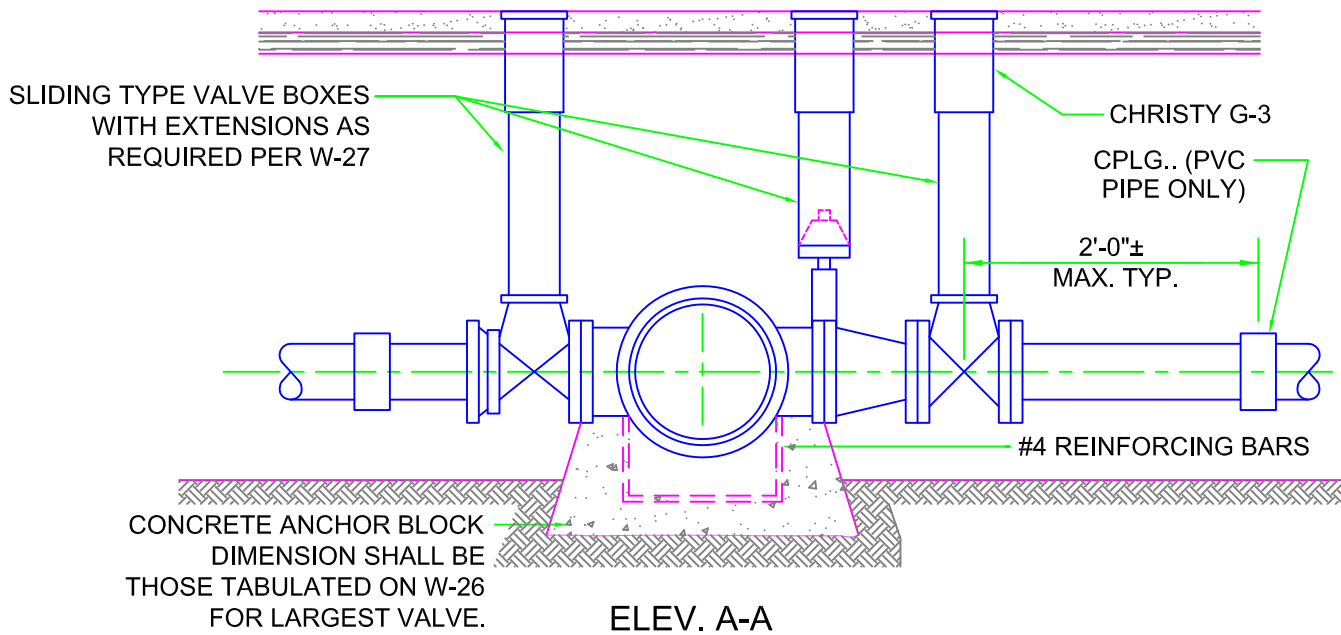
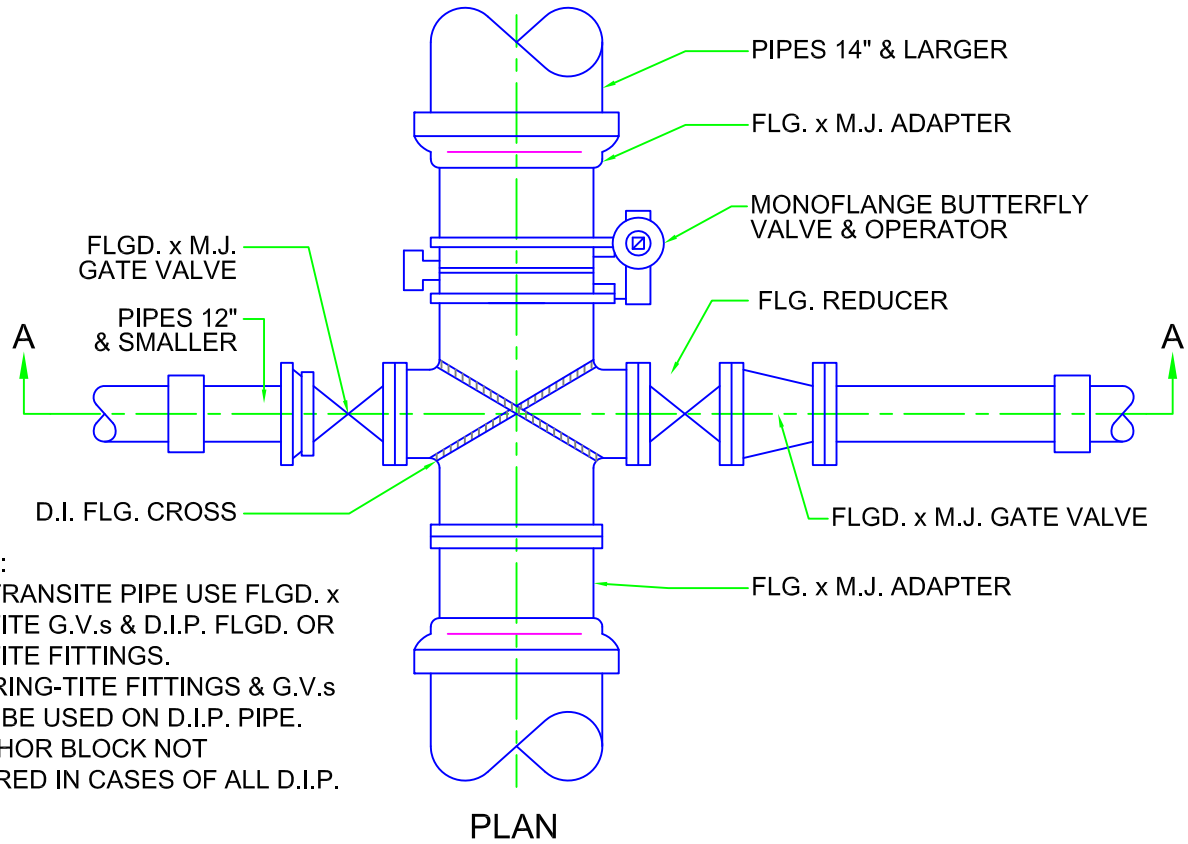
CAMROSA  
WATER DISTRICT  
BUILDING WATER  
SELF-RELIANCE

DISTRICT  
STANDARD **W-24**

REVISED: November 1, 2011



# CROSS IN MAINS-ONE MONOFLANGE BUTTERFLY VALVE AND TWO FLGD. X RING-TITE GATE VALVES



TS  
MANAGER

TJC  
ENGINEER

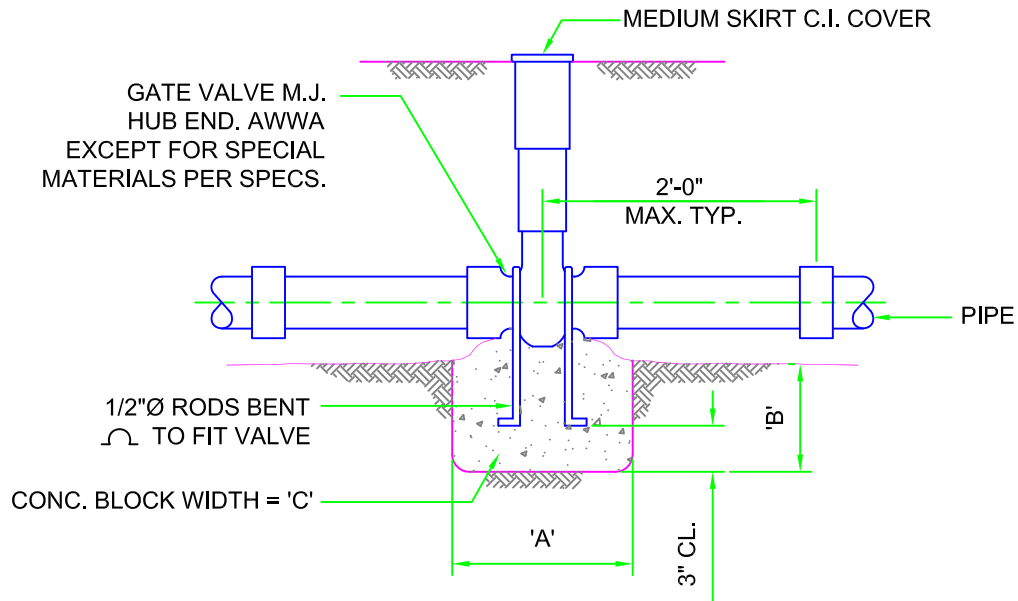
CAMROSA  
WATER DISTRICT

BUILDING WATER  
SELF-RELIANCE

DISTRICT  
STANDARD **W-25**

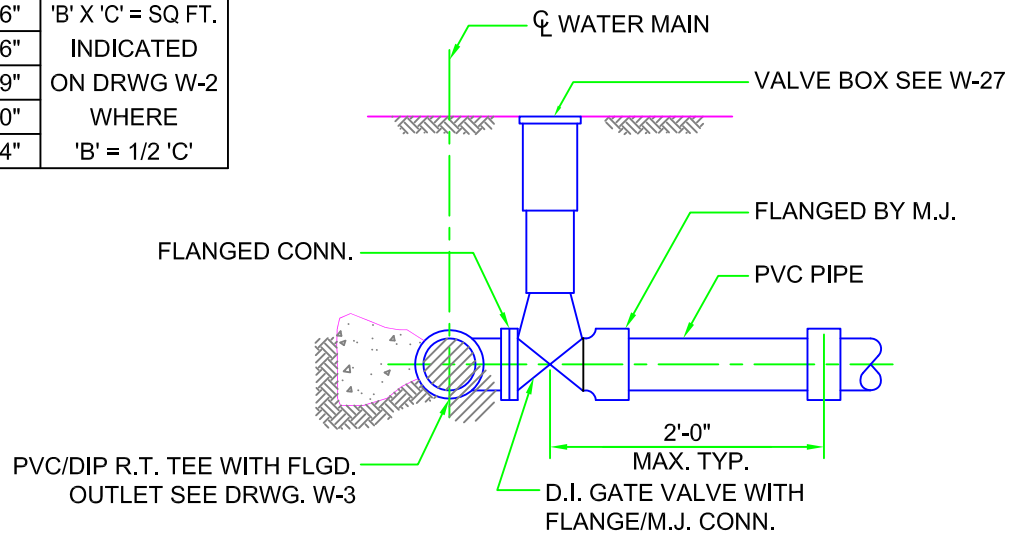
REVISED: November 1, 2011

# VALVE DETAILS FOR PIPE



ANCHOR BLOCK DIMENSIONS		
VALVE SIZE	'A'	'B' & 'C'
4"	1'- 6"	'B' X 'C' = SQ FT. INDICATED ON DRWG W-2 WHERE 'B' = 1/2 'C'
6"	1'- 6"	
8"	1'- 9"	
10"	2'- 0"	
12"	2'- 4"	

**ELEVATION**  
NOT TO SCALE



**ELEVATION**

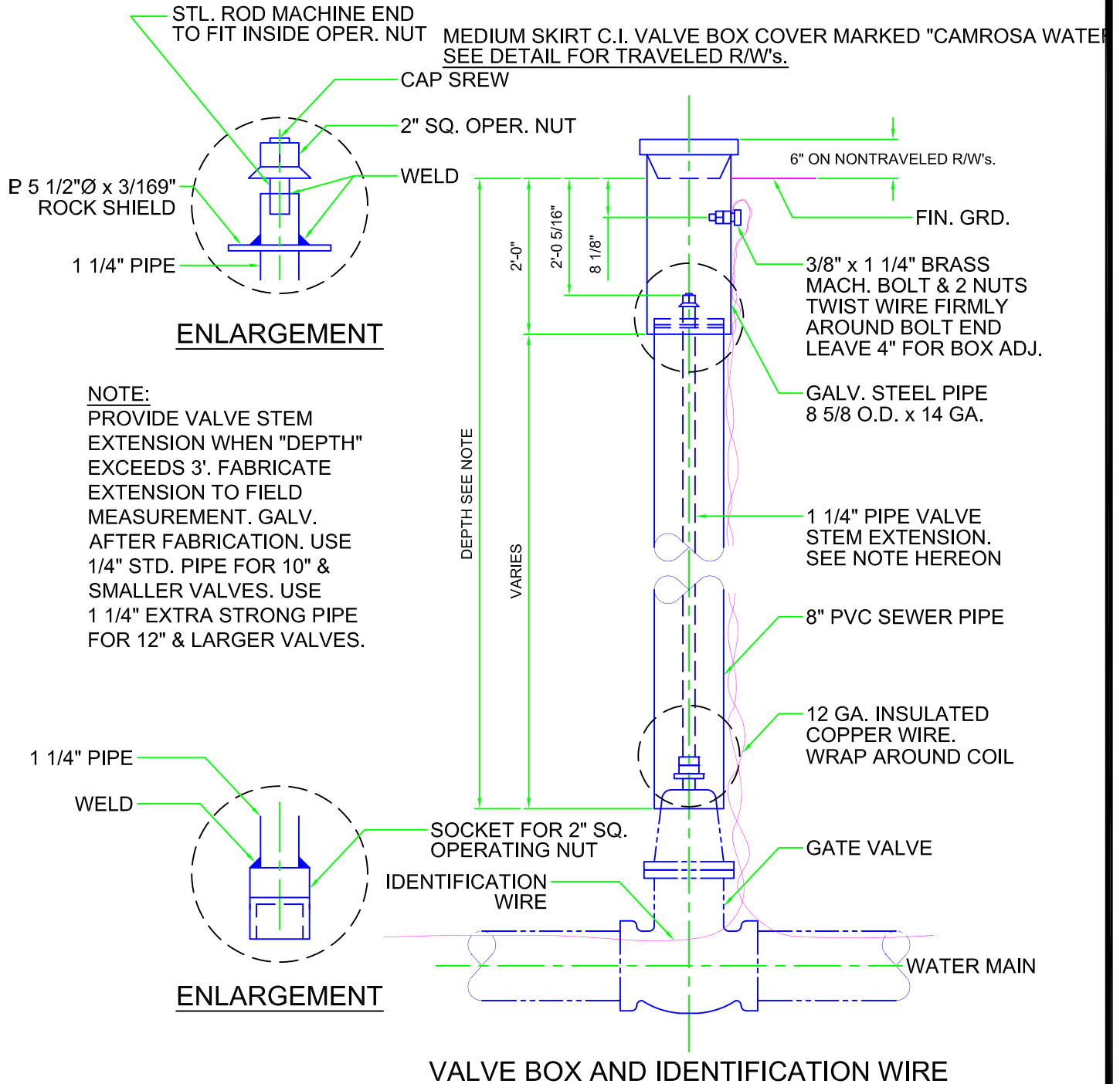
TS  
MANAGER  
  
TJC  
ENGINEER



DISTRICT  
STANDARD **W-26**

REVISED: November 1, 2011

# VALVE BOX DETAILS



NOTE:  
PROVIDE VALVE STEM  
EXTENSION WHEN "DEPTH"  
EXCEEDS 3'. FABRICATE  
EXTENSION TO FIELD  
MEASUREMENT. GALV.  
AFTER FABRICATION. USE  
1/4" STD. PIPE FOR 10" &  
SMALLER VALVES. USE  
1 1/4" EXTRA STRONG PIPE  
FOR 12" & LARGER VALVES.

NOTE: WIRE MUST BE DUCT  
TAPED @ 10" O.C. TO THE PIPE.

TS  
MANAGER  
  
TJC  
ENGINEER

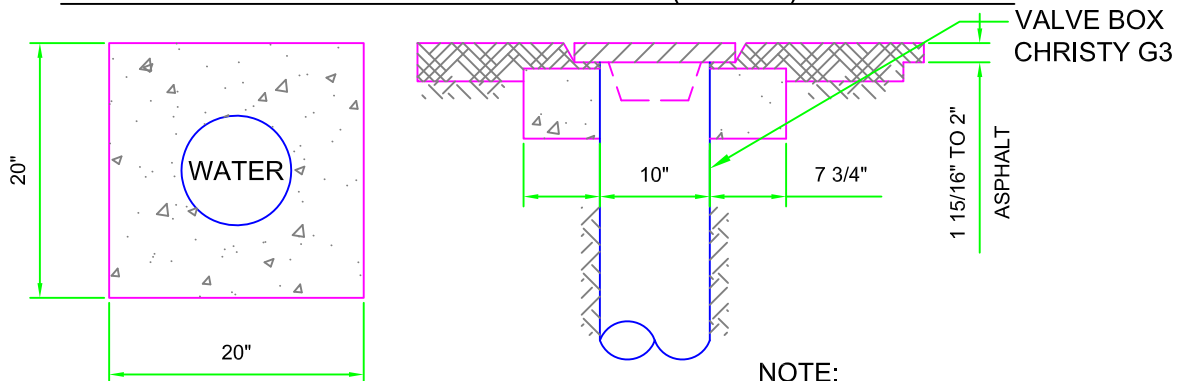
CAMROSA  
WATER DISTRICT  
  
BUILDING WATER  
SELF-RELIANCE

DISTRICT  
STANDARD **W-27**

REVISED: November 1, 2011

# TYPICAL VALVE BOX INSTALLATION

## TYPICAL VALVE BOX INSTALLATION IN (PAVED) TRAVEL WAY

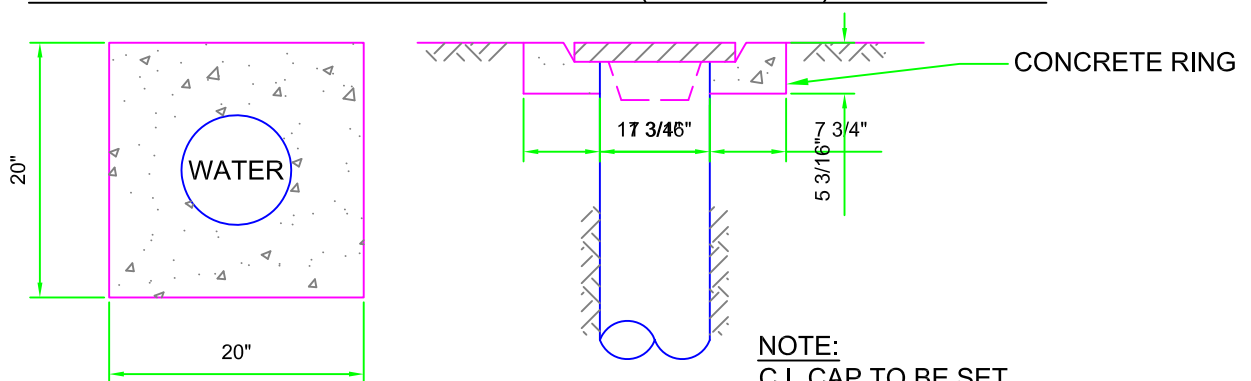


VALVE BOX SUPPORT PAD DETAIL

NOTE:

C.I. CAP TO BE SET  
FLUSH WITH FINISHED  
SURFACE.

## TYPICAL VALVE BOX INSTALLATION IN (non-PAVED) TRAVEL WAY

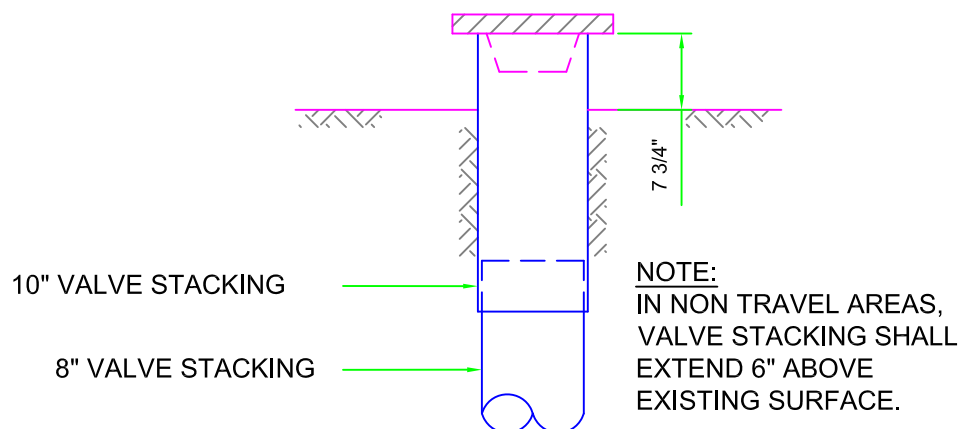


VALVE BOX SUPPORT PAD DETAIL

NOTE:

C.I. CAP TO BE SET  
FLUSH WITH FINISHED  
SURFACE.

## TYPICAL VALVE BOX INSTALLATION IN (NON) -TRAVEL WAY



TS  
MANAGER

TJC  
ENGINEER

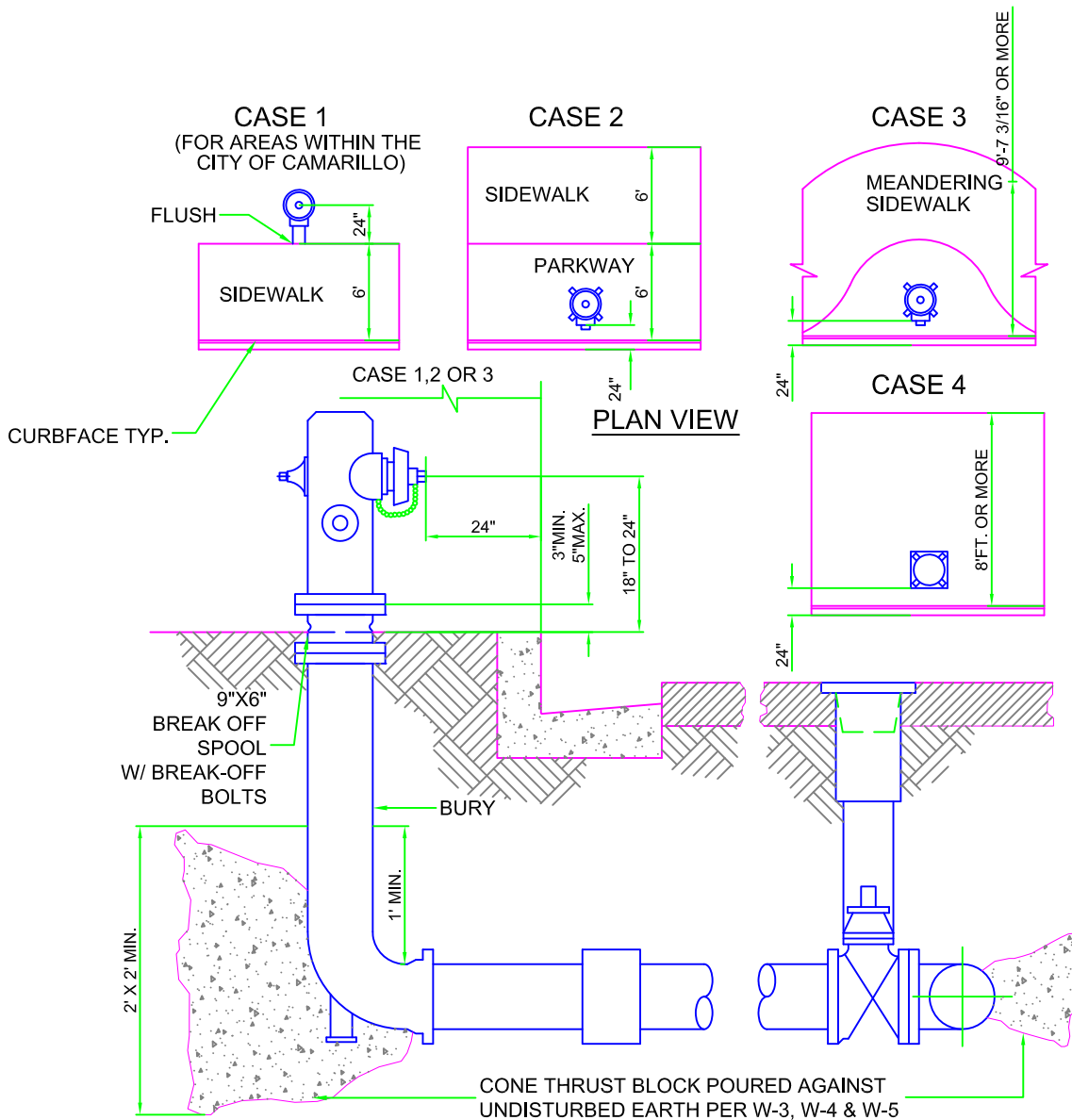
CAMROSA  
WATER DISTRICT

BUILDING WATER  
SELF-RELIANCE

DISTRICT  
STANDARD **W-28**

REVISED: November 1, 2011

# TYPICAL FIRE HYDRANT INSTALLATION



- NOTE:**
1. RESIDENTIAL FIRE HYDRANTS SHALL BE WET BARREL TYPE, NATIONAL STD. THREAD, JONES 3700, OR AVK 2442 OR 2452 1-4" & 1-2 1/2" OUTLET, 4" SET 45° TO CURB FACING STREET
  2. INDUSTRIAL, COMMERCIAL & MOBILE HOME PARKS USE 2-2 1/2 & 1-4" OUTLET
  3. IN RESIDENTIAL TRACT LOCATIONS, HYDRANTS SHALL STRADDLE PROPERTY LINES

TS  
MANAGER

TJC

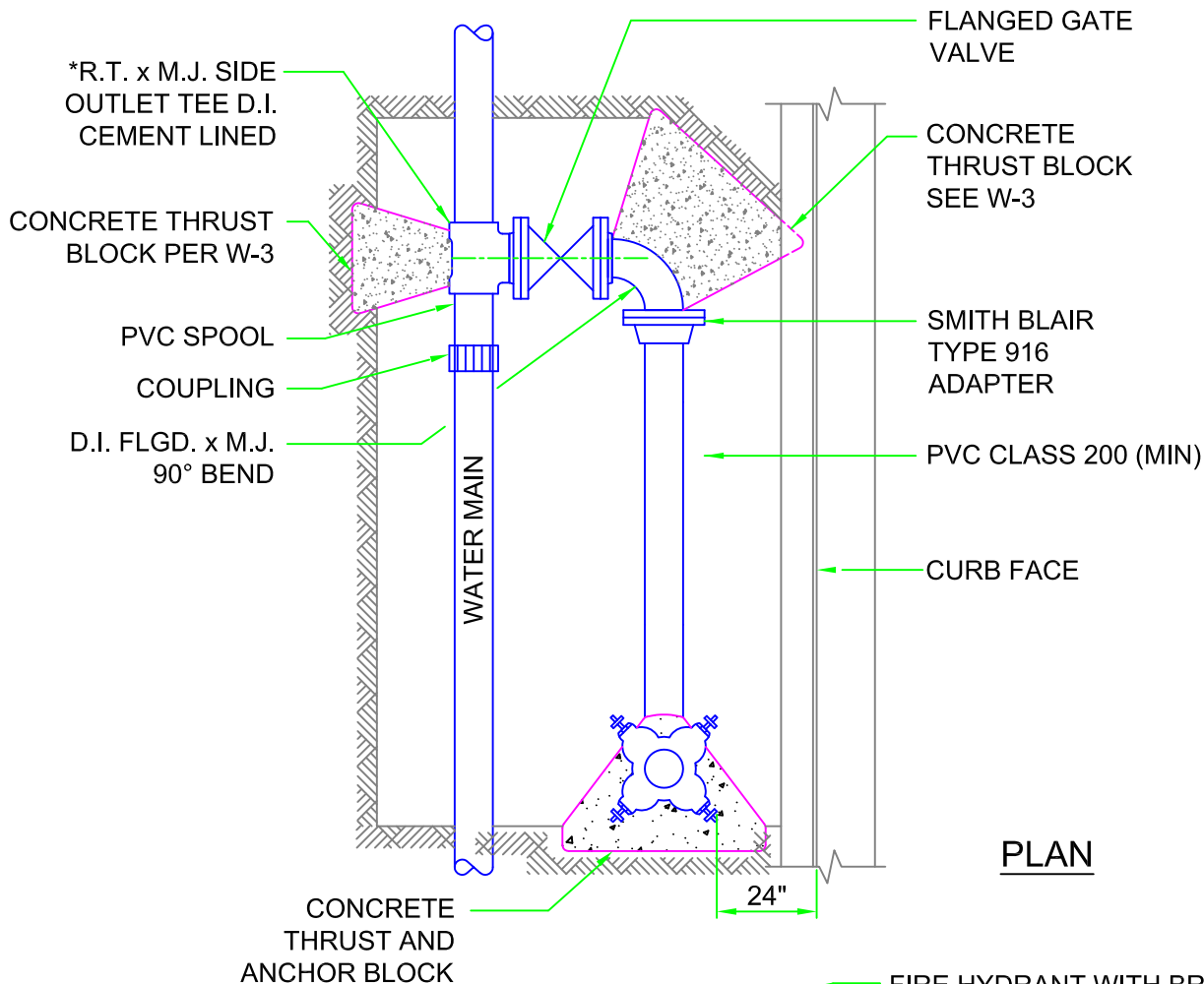
ENGINEER



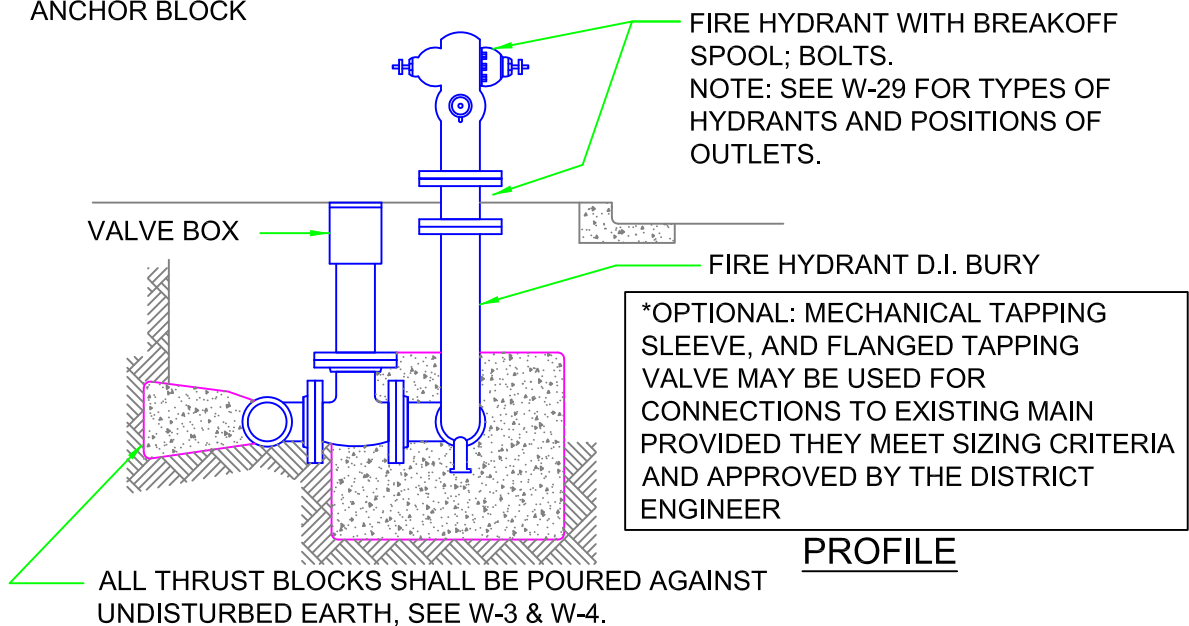
DISTRICT  
STANDARD **W-29**

REVISED: November 1, 2011

# FIRE HYDRANT SET BEHIND CURB WITH WATER MAIN BACK OF CURB



PLAN



PROFILE

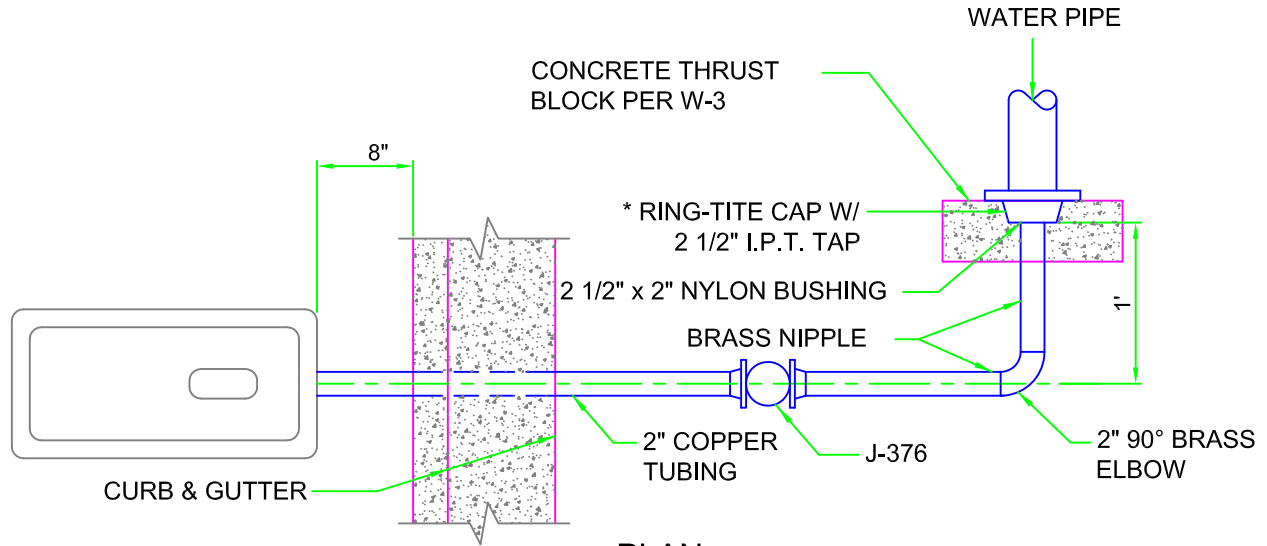
TS  
MANAGER  
  
TJC  
ENGINEER



DISTRICT  
STANDARD **W-30**

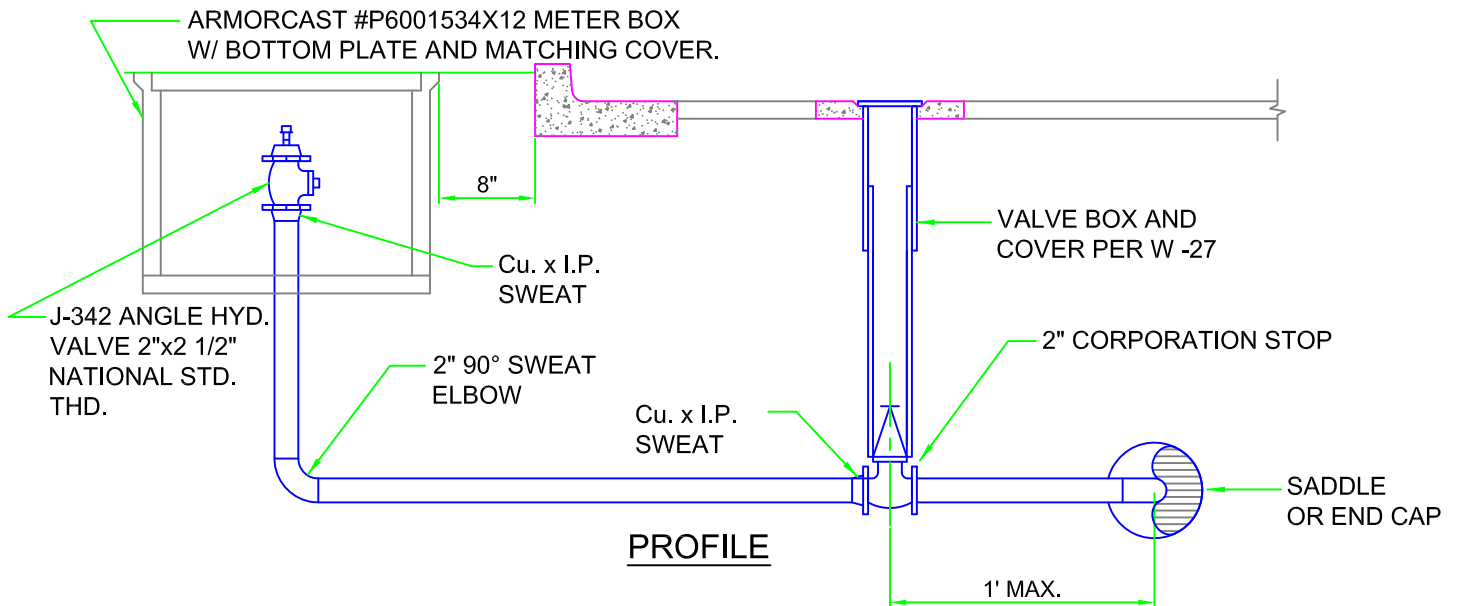
REVISED: November 1, 2011

# TYPICAL END DRAIN AND BLOW-OFF WITH COPPER TUBING



PLAN

\* R.T. PLUG MAY BE  
USED IN PLACE OF CAP



PROFILE

## NOTES:

1. USE SILVER SOLDER ON ALL SWEAT JOINTS.
2. COMPANY CLASSIFICATIONS ARE USED TO IDENTIFY FITTINGS.  
SIMILAR FITTINGS FROM OTHER MANUFACTURERS MAY BE APPROVED.
3. COPPER TUBING SHALL BE TYPE "L" RIGID.

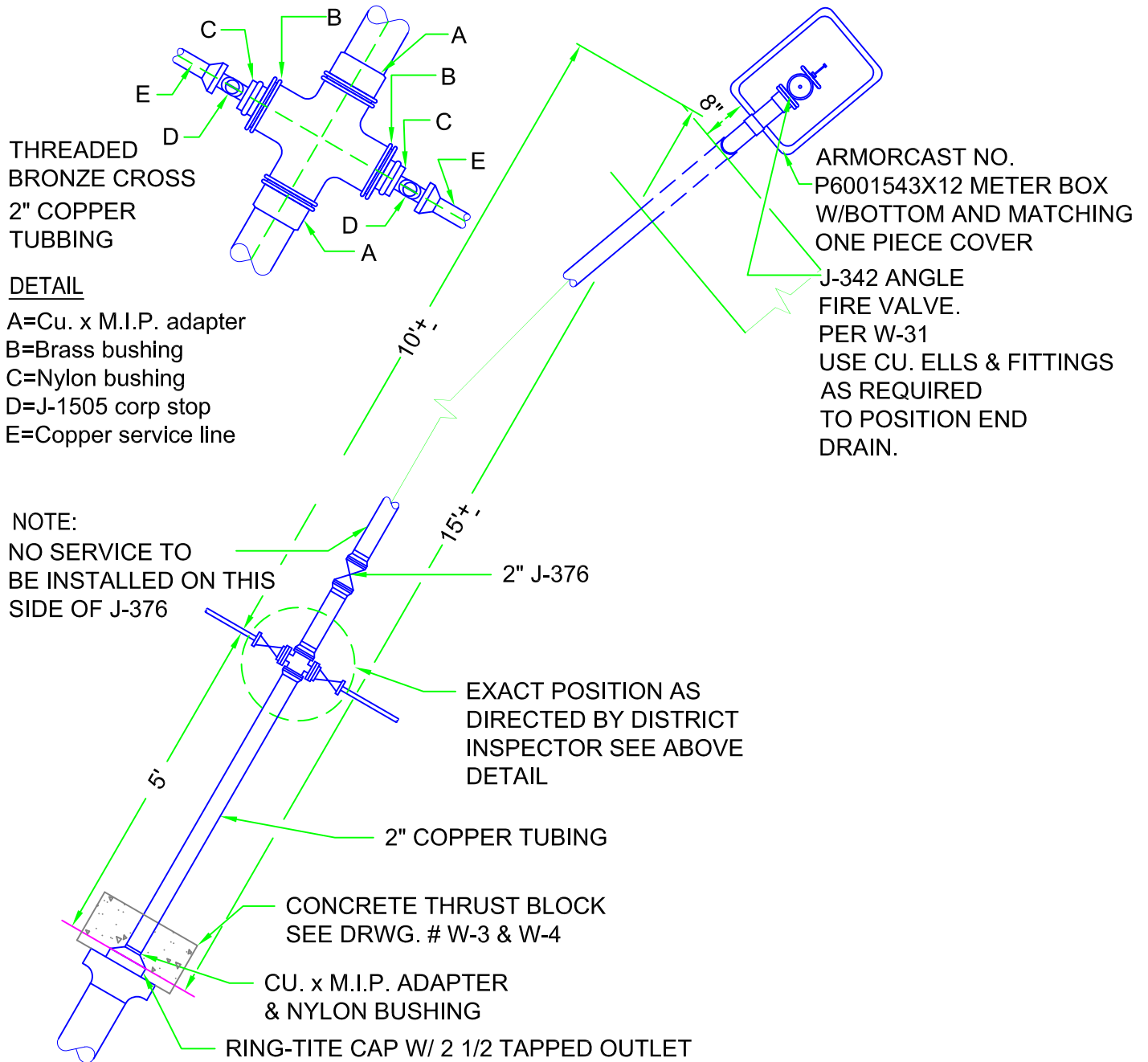
TS  
MANAGER  
  
TJC  
ENGINEER



DISTRICT  
STANDARD **W-31**

REVISED: November 1, 2011

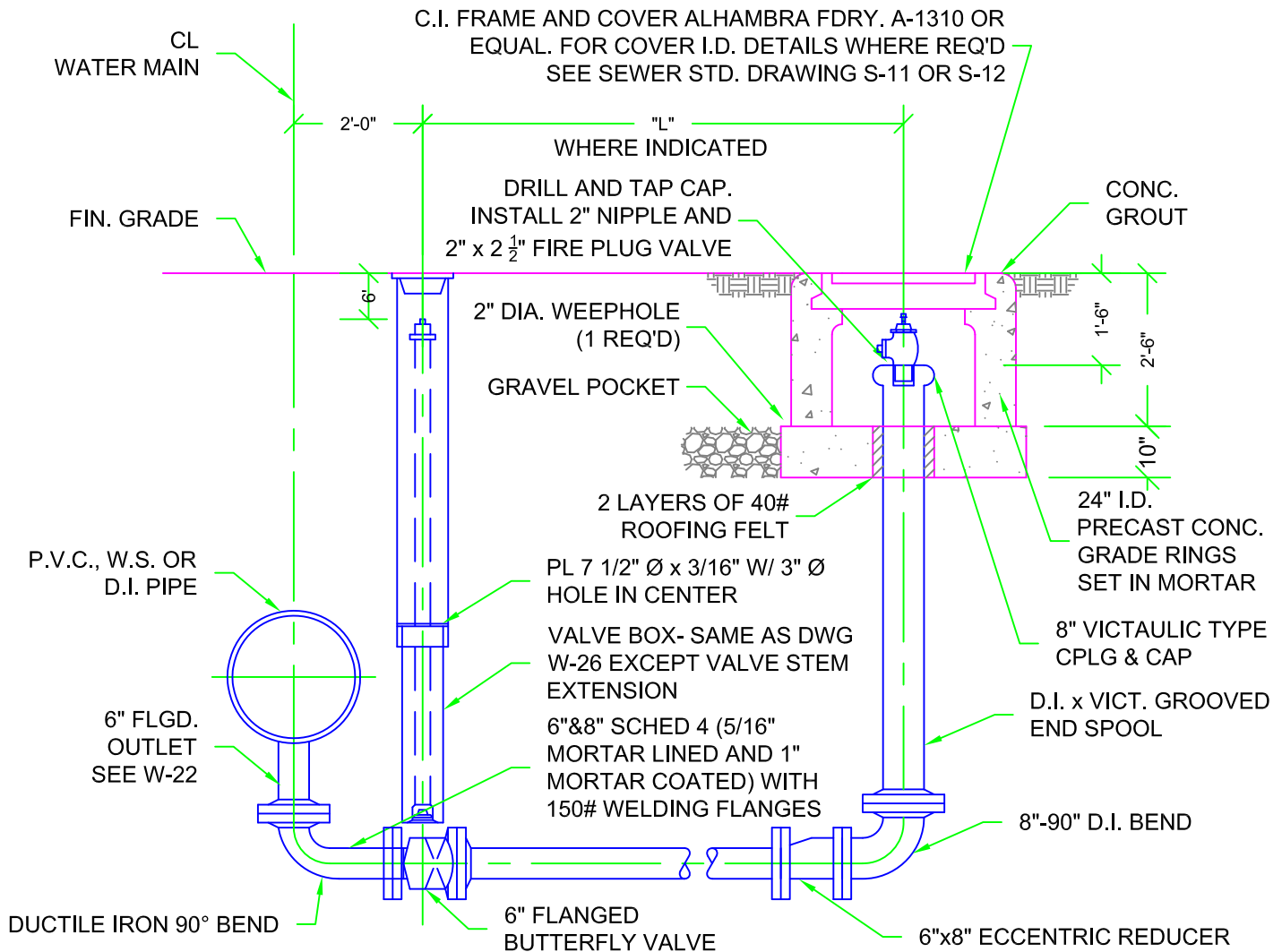
# MAIN ENDING IN CUL-DE-SAC WITH SERVICE CONNECTIONS AND END DRAIN



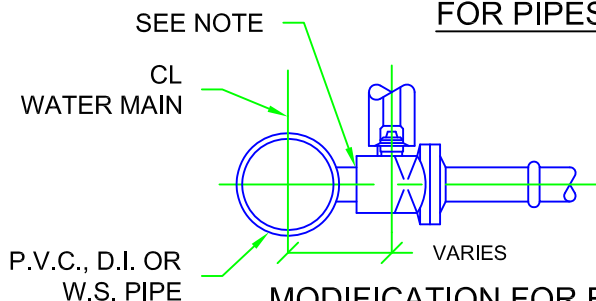
TS  
MANAGER  
  
TJC  
ENGINEER



# TYPICAL 4" BLOW-OFF



## FOR PIPES 14" AND LARGER



### NOTE:

- \* FOR P.V.C. PIPE USE D.I. TEE WITH FLGD. OUTLET
- \* FOR W.S. PIPE USE 4" FLGD. OUTLET

## MODIFICATION FOR FOR PIPES 12" AND SMALLER

## ELEVATION

NOT TO SCALE

TS  
MANAGER  
TJC  
ENGINEER

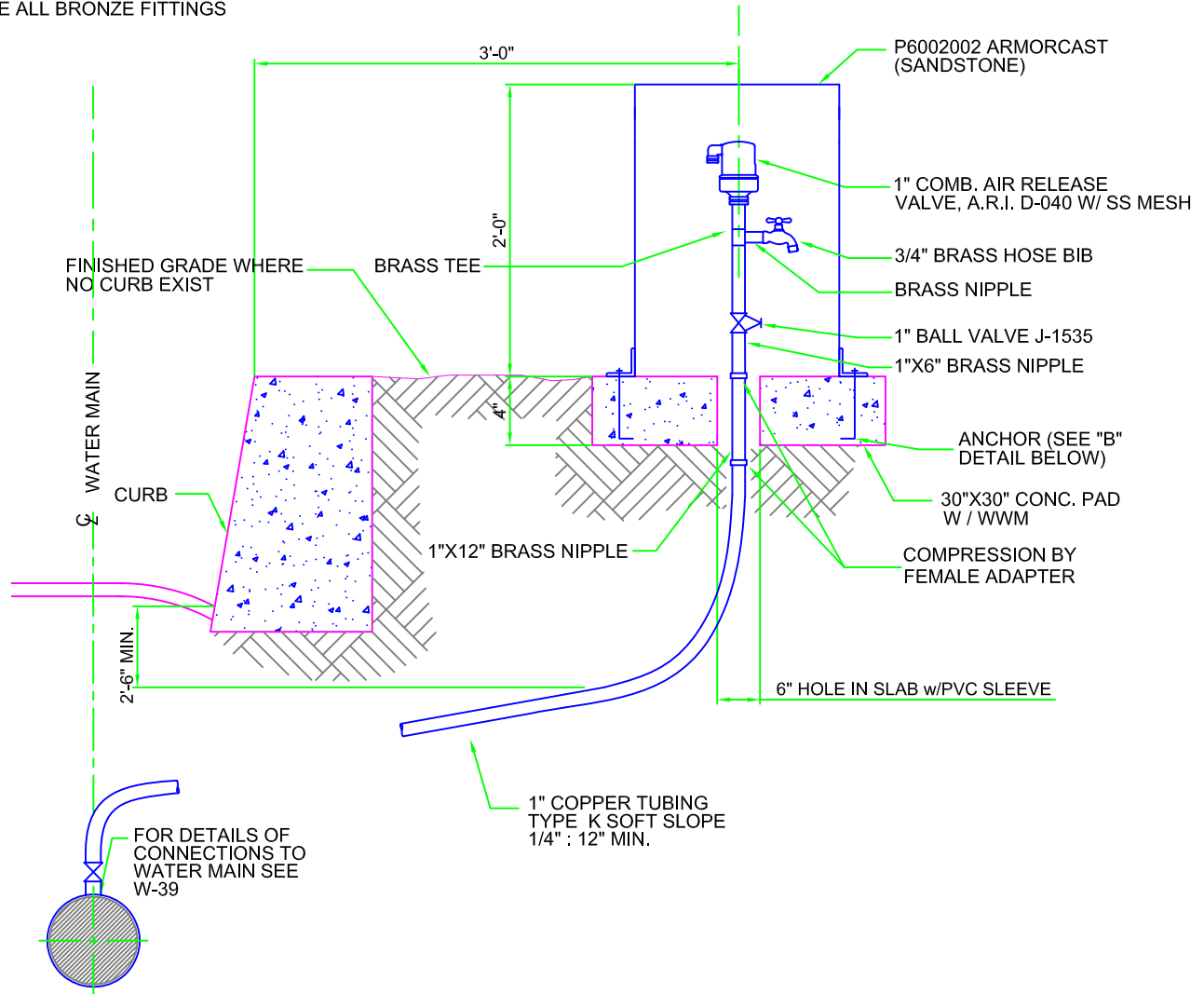


DISTRICT STANDARD **W-33**

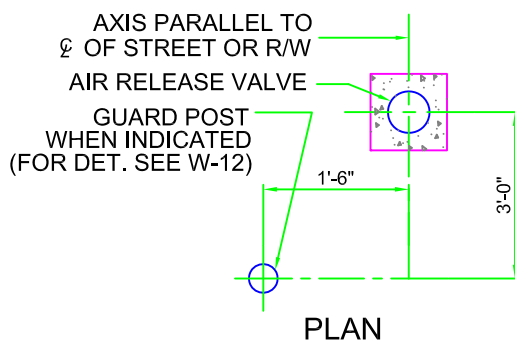
REVISED: November 1, 2011

## 1 INCH VACUUM AND AIR RELEASE

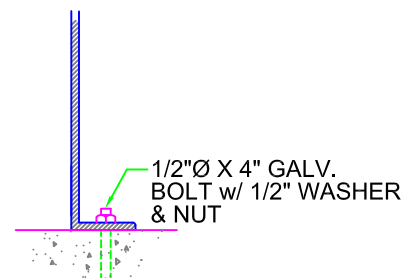
NOTE: USE ALL BRONZE FITTINGS



## ELEVATION



## PLAN



## "B" ANCHOR DETAILS

TS  
MANAGER

TJC

ENGINEER

**CAMROSA**  
WATER DISTRICT



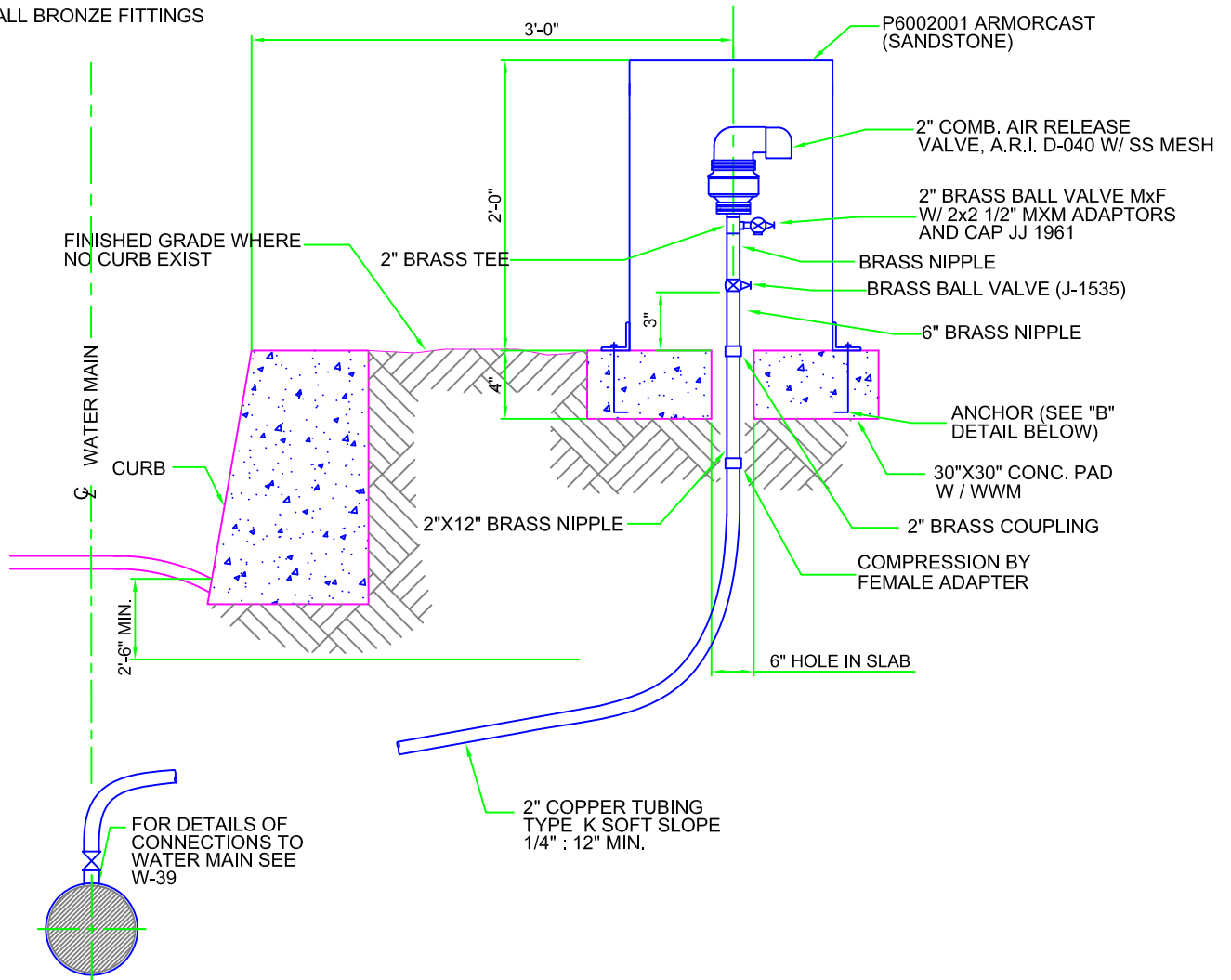
## BUILDING WATER SELF-RELIANCE

DISTRICT STANDARD **W-34**

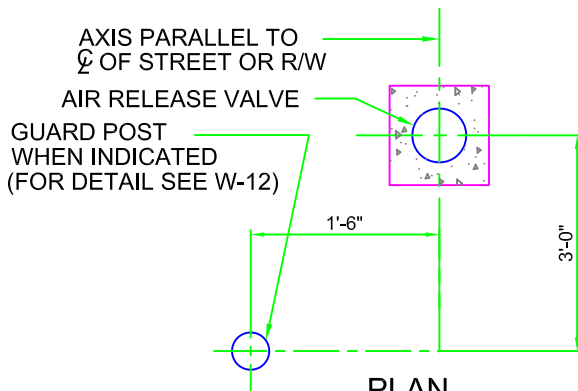
REVISÉD: November 1, 2011

# 2 INCH VACUUM AND AIR RELEASE

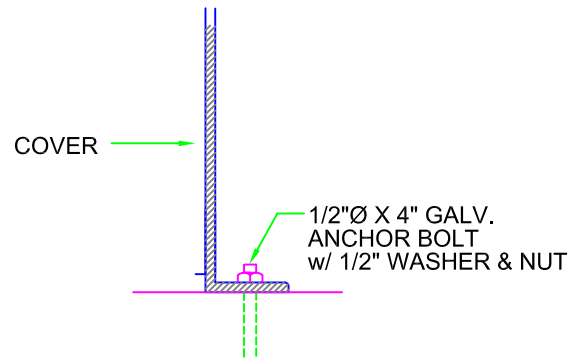
NOTE: USE ALL BRONZE FITTINGS



ELEVATION



PLAN



"B" ANCHOR DETAILS (3 REQUIRED)

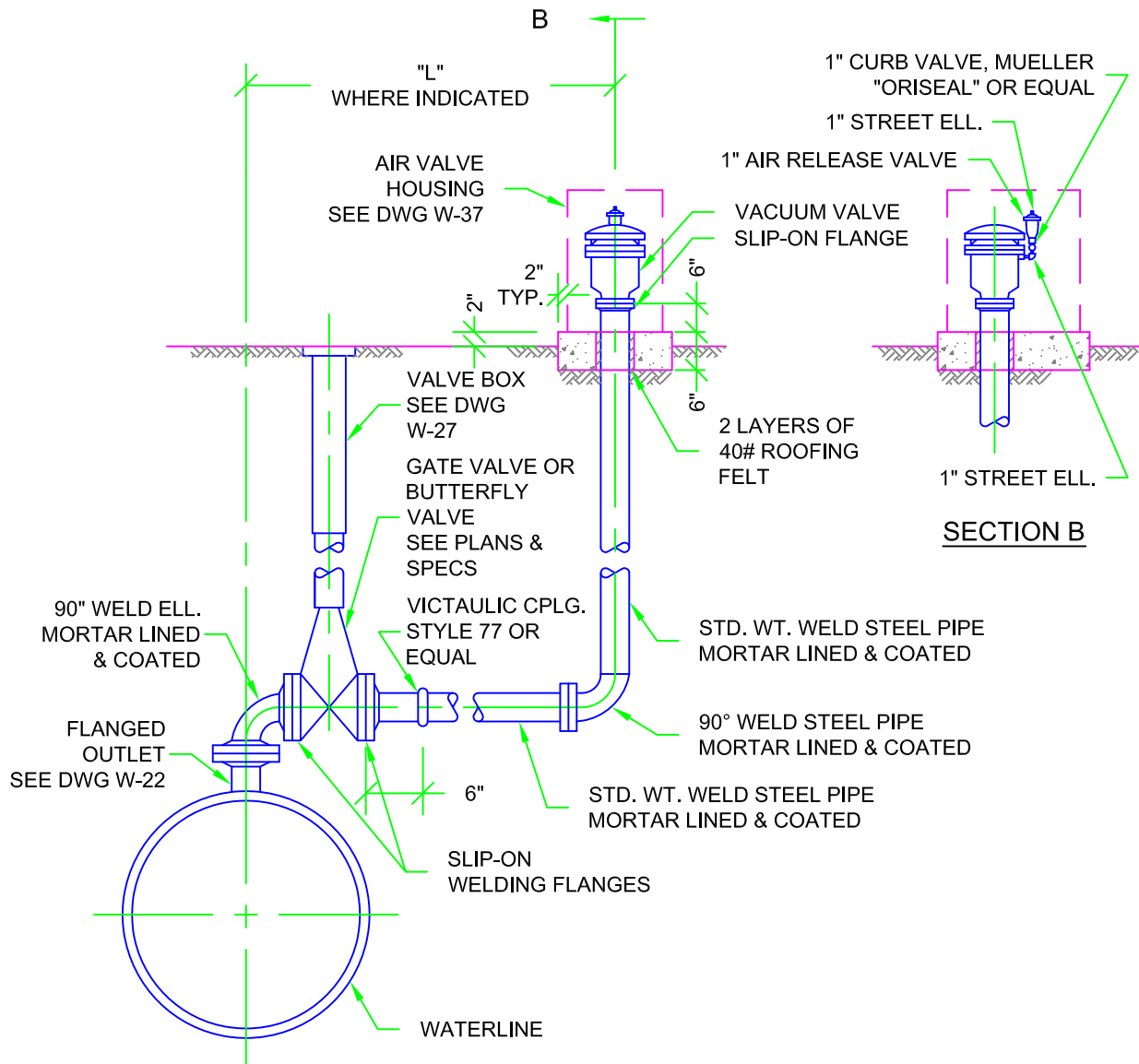
TS  
MANAGER  
  
TJC  
ENGINEER



DISTRICT STANDARD **W-35**

REVISED: November 1, 2011

# 4" AIR RELEASE VALVE



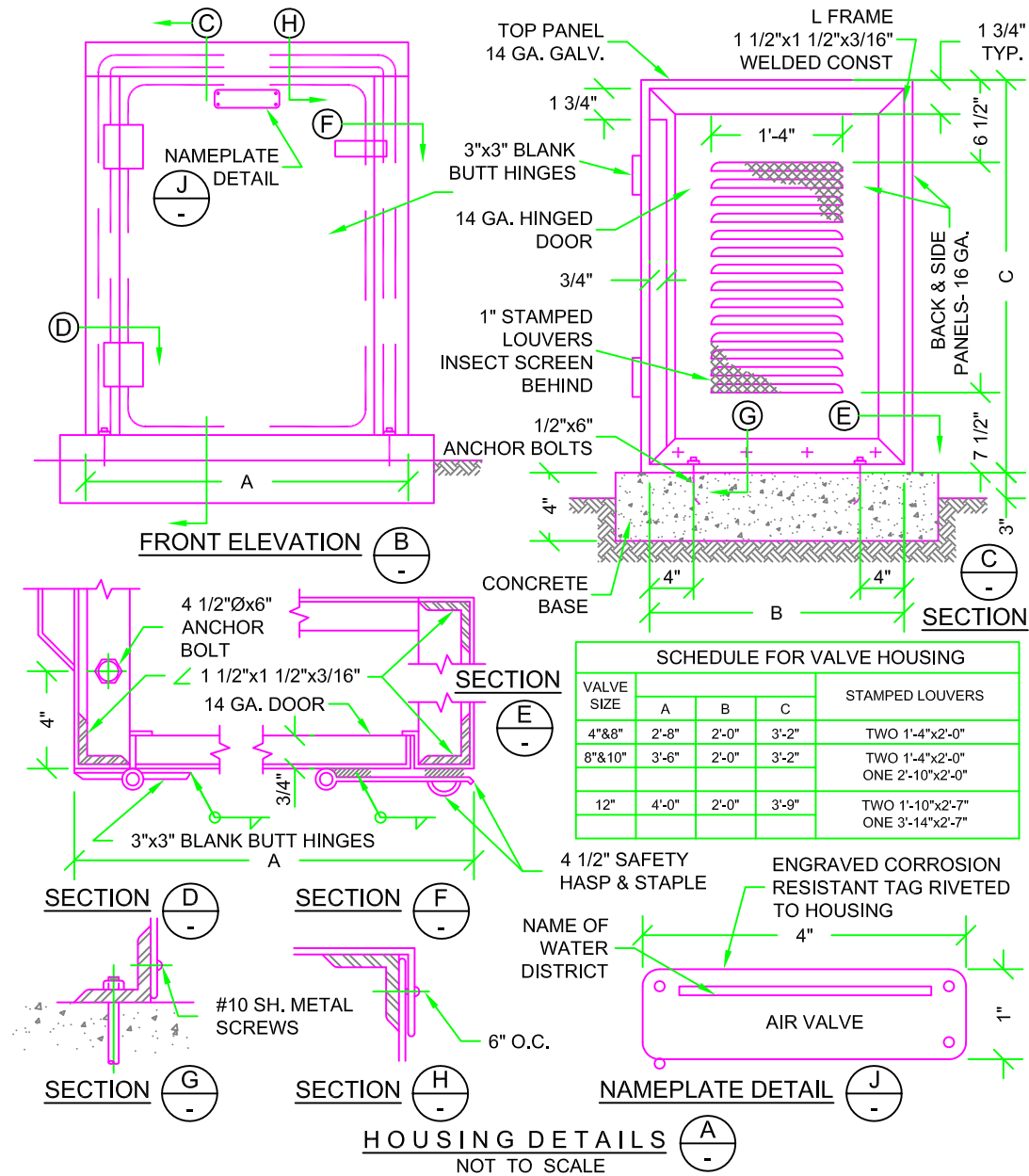
TS  
MANAGER  
  
TJC  
ENGINEER



DISTRICT  
STANDARD **W-36**

REVISED: November 1, 2011

# TYPICAL 4" AIR RELEASE VALVE ENCLOSURE



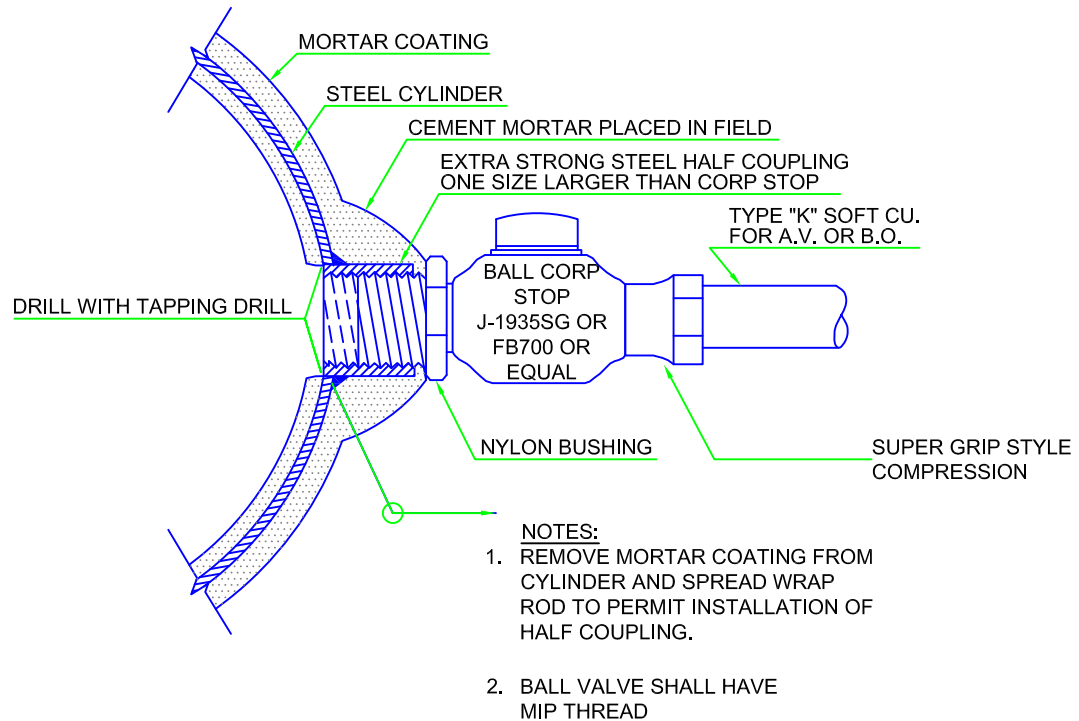
TS  
MANAGER  
  
TJC  
ENGINEER



DISTRICT  
STANDARD **W-37**

REVISED: November 1, 2011

## 2" AND SMALLER CONNECTION DETAILS WELDED STEEL & STEEL CYLINDER CONC. PIPE



TYPICAL DETAIL FOR 3/4"-2" SERVICE CONNECTION  
FOR AIR-VACS. AND BLOW-OFFS THROUGH 2"

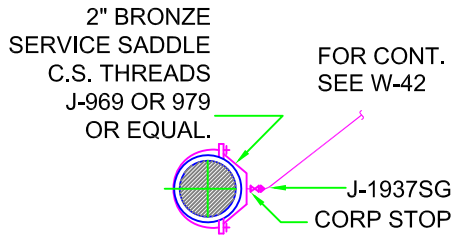
FR  
MANAGER  
  
TJC  
  
ENGINEER

CAMROSA  
WATER DISTRICT  
  
  
BUILDING WATER  
SELF-RELIANCE

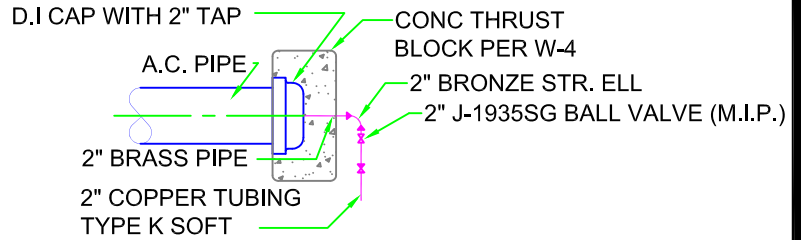
DISTRICT  
STANDARD **W-38**

REVISED: November 1, 2011

# 2 INCH & SMALLER CONNECTION FOR A.C. DUCTILE IRON AND PVC PIPE

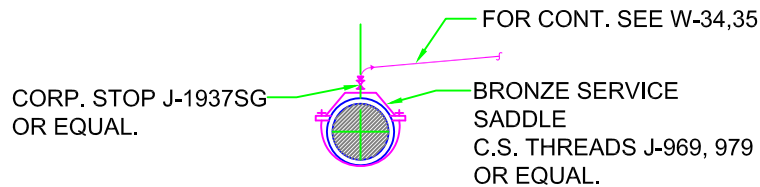


SECTION TYP. CONNECTION

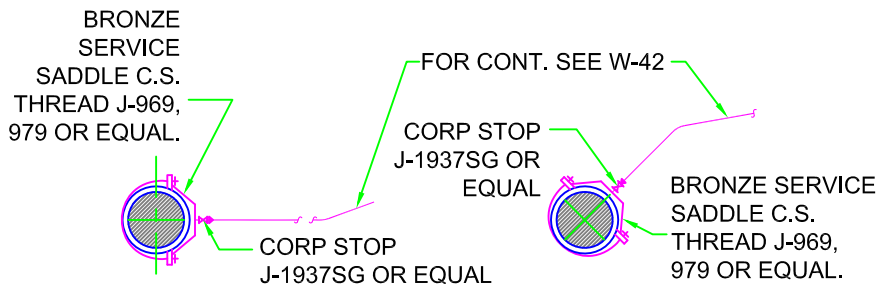


TYP. CONNECTION AT DEAD END

## 2" BLOW-OFF CONNECTIONS



## 1"-2" INCL. AUTO AIR & VACUUM-AIR RELEASE CONNECTIONS



TYPICAL CONNECTION

ALTERNATE NO. 1

## 1" THROUGH 2" SERVICE CONNECTIONS

### NOTE:

1. SEE SECTION III-II FOR DETERMINATION OF SERVICE SIZE.

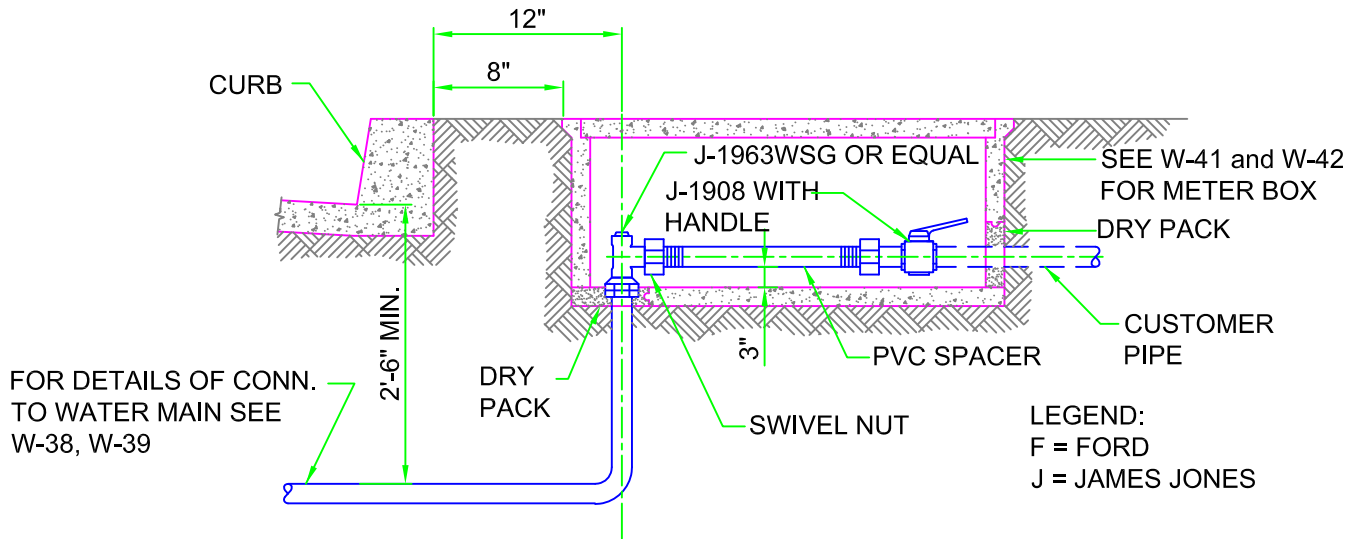
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STANDARD **W-39**

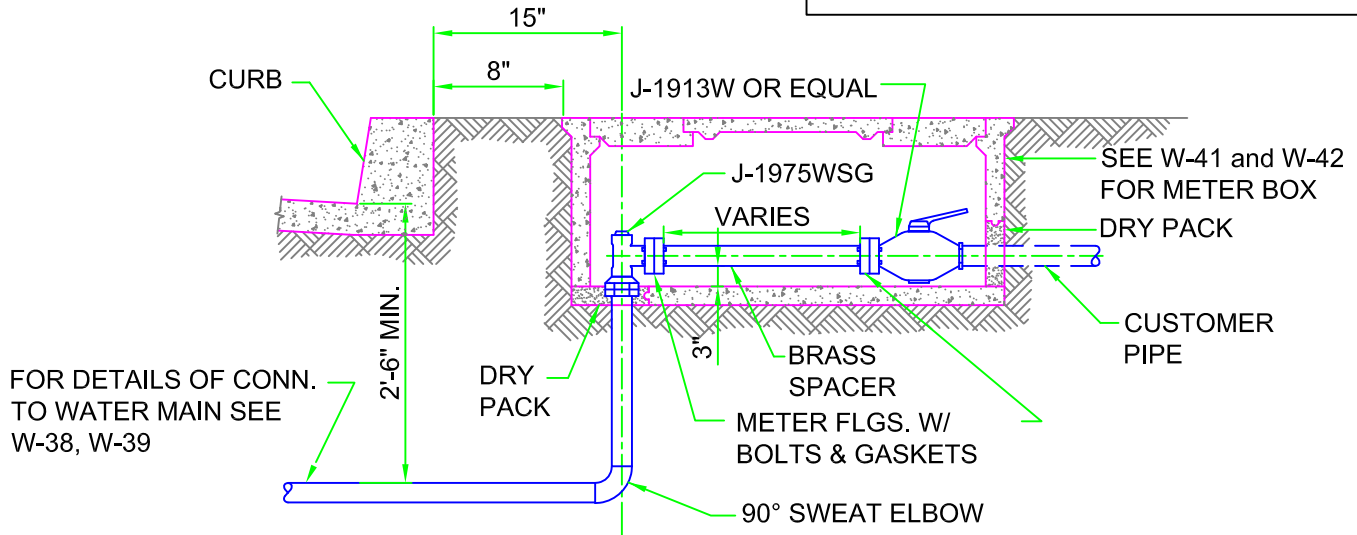
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# TYPICAL SERVICE INSTALLATIONS WITHOUT METERS



**1" SERVICE INSTALLATION**

COMPANY CLASSIFICATIONS ARE USED TO IDENTIFY FITTINGS. SIMILAR FITTINGS FROM OTHER MANUFACTURERS MAY BE APPROVED.



**1 1/2" & 2" SERVICE INSTALLATION**

**NOTE:**

IF OCCUPANT HAS NOT MADE APPLICATION FOR METER BEFORE INSIDE PLUMBING IS COMPLETED, THE CONTRACTOR SHALL INSTALL METER COUPLING AND SPACERS IN PLACE OF THE METER. THESE ITEMS WILL BE RETURNED TO THE CONTRACTOR WHEN THE METER IS INSTALLED. THE DISTRICT WILL INSTALL THE METER AFTER APPLICATION HAS BEEN COMPLETED PER DISTRICT RULES AND REGULATIONS.

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# TYPICAL SERVICE INSTALLATIONS

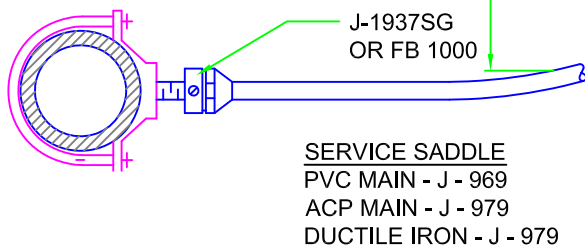
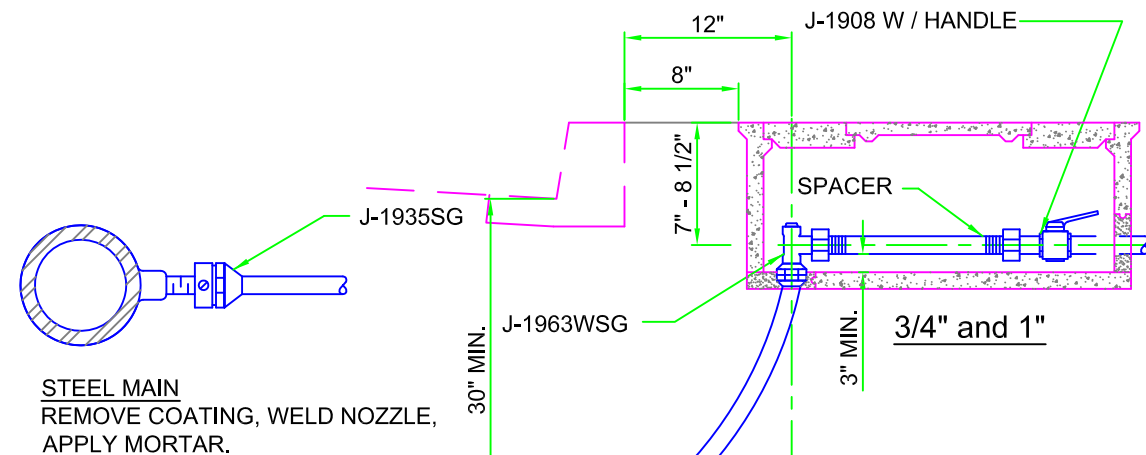
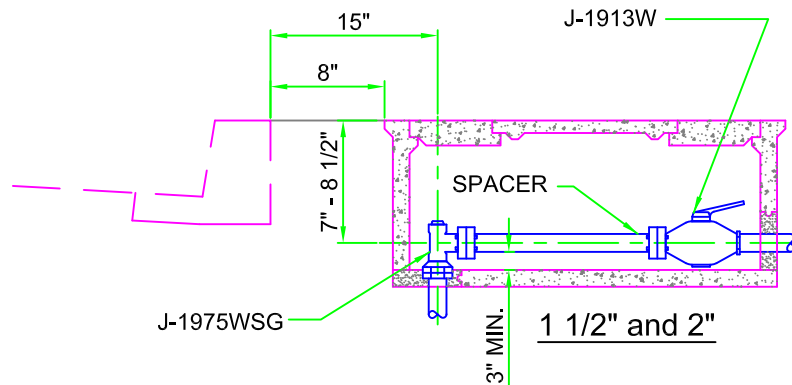
NOTE: COMPANY CLASSIFICATIONS ARE USED TO IDENTIFY FITTINGS. SIMILAR FITTINGS FROM OTHER MANUFACTURERS MAY BE APPROVED.

LEGEND:

A - ARMORCAST PRODUCTS  
F - FORD PRODUCTS  
J - JAMES JONES PRODUCTS

PVC SPACER LENGTHS:

3/4" - 1 1/4" x 11"  
1" - 1 1/4" x 11"  
1 1/2" - 13 1/4" W/ FLGS.  
2" - 10' W/ FLGS.



METER BOXES (ARMORCAST)

3/4" - P6000485  
1" - P6000485  
1 1/2" - P6001534X12  
2" - P6001534X12

METER BOX COVERS (ARMORCAST)

3/4" - A6000848  
1" - A6000848  
1 1/2" - A6001643DZ-H1 (2 PIECE)  
2" - A6001643DZ-H1 (2 PIECE)

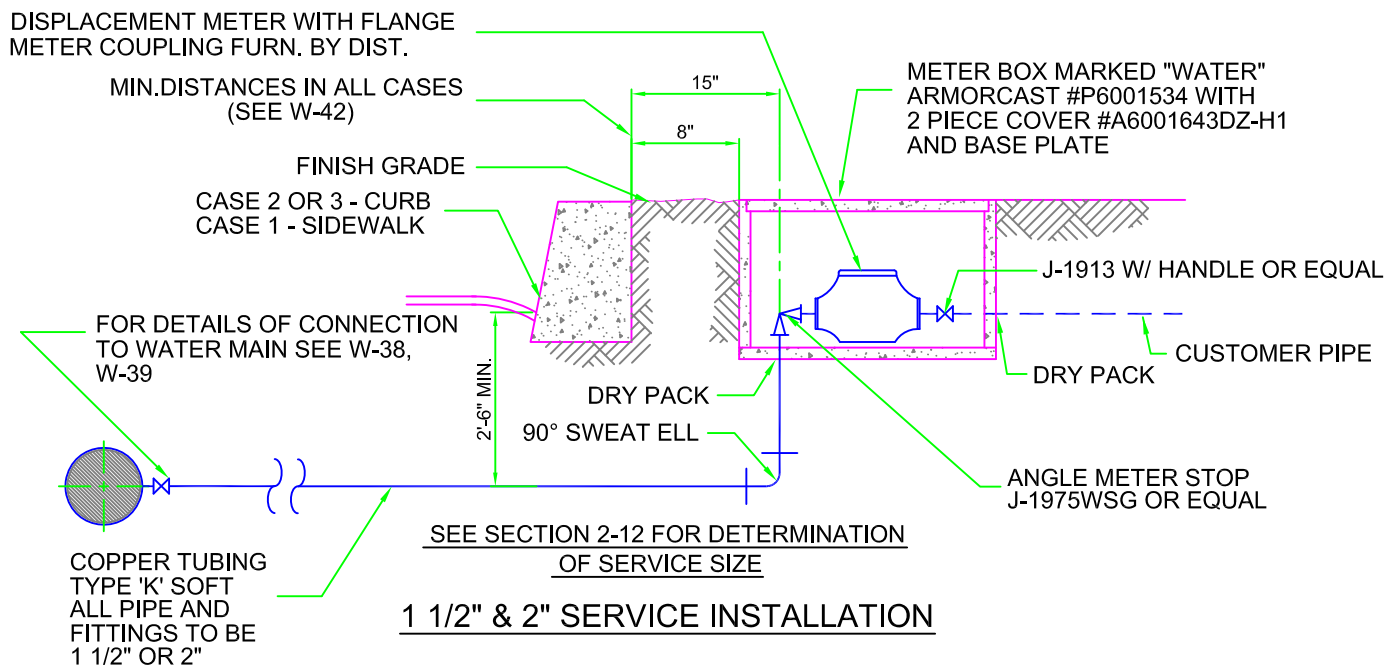
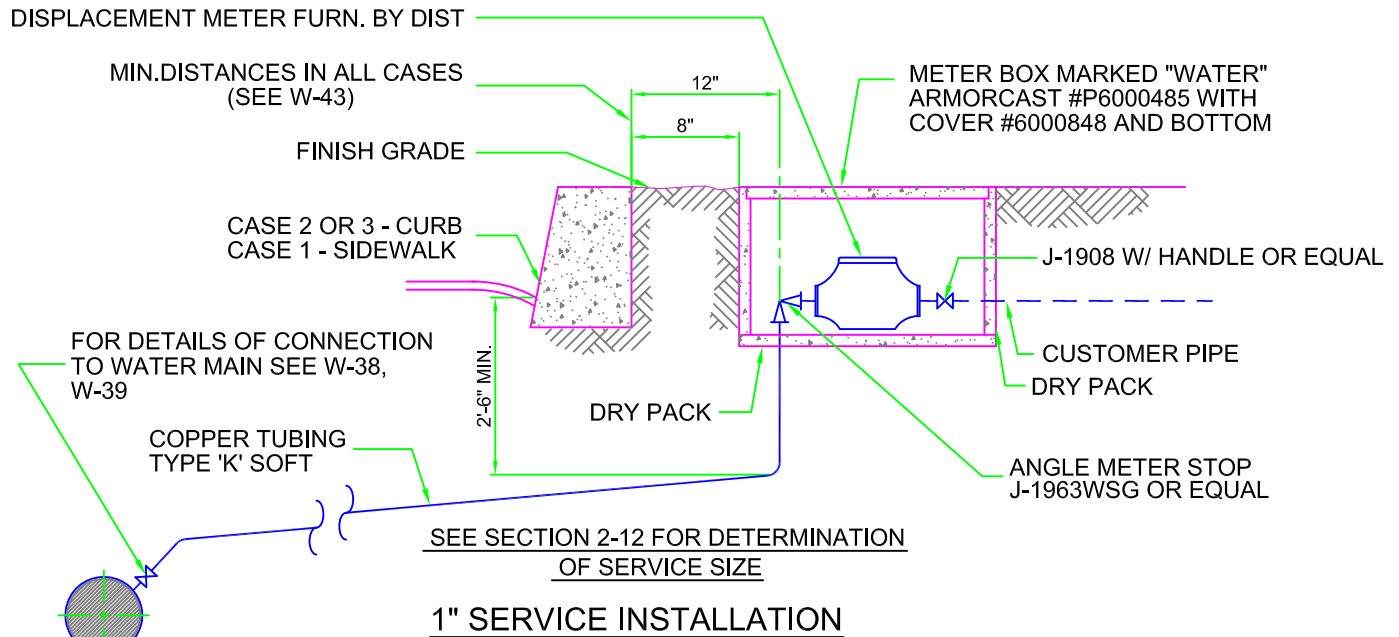
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# TYPICAL SERVICE & METER INSTALLATIONS



**NOTE:** COMPANY CLASSIFICATIONS ARE USED TO IDENTIFY FITTINGS  
SIMILAR FITTINGS FROM OTHER MANUFACTURERS MAY BE APPROVED

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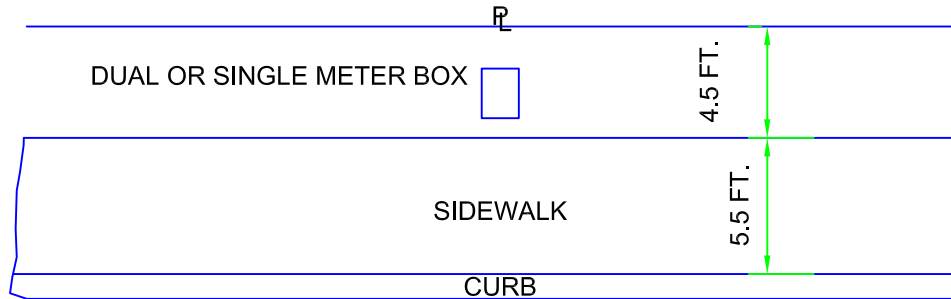


DISTRICT  
STANDARD **W-42**

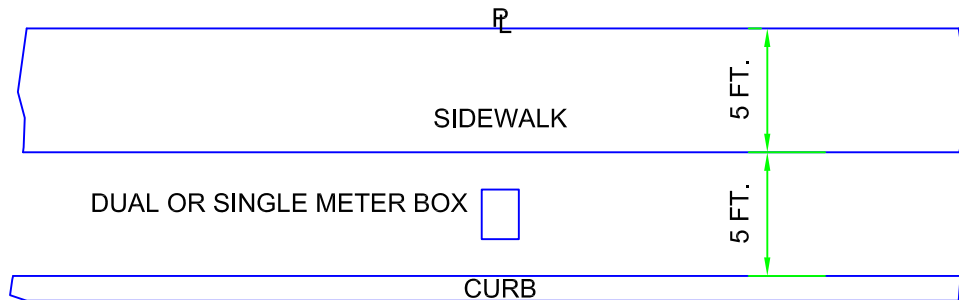
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# METER-SERVICE INSTALLATION

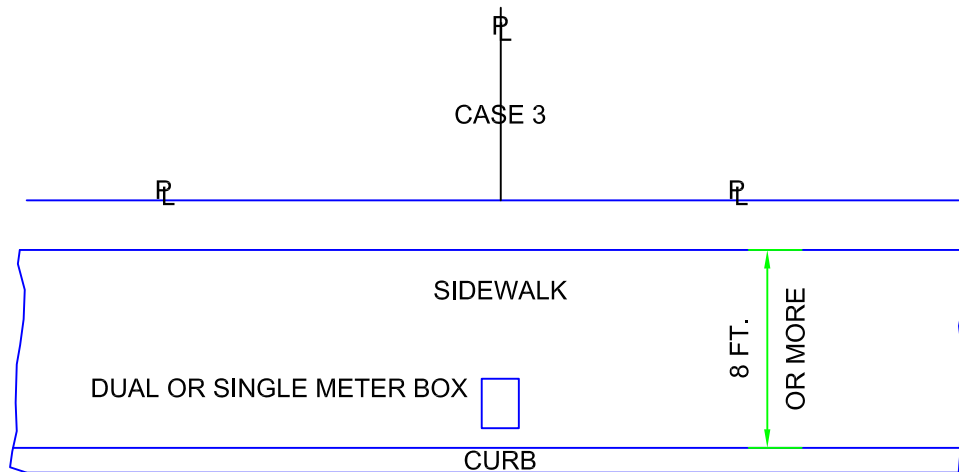
CASE 1



CASE 2



CASE 3



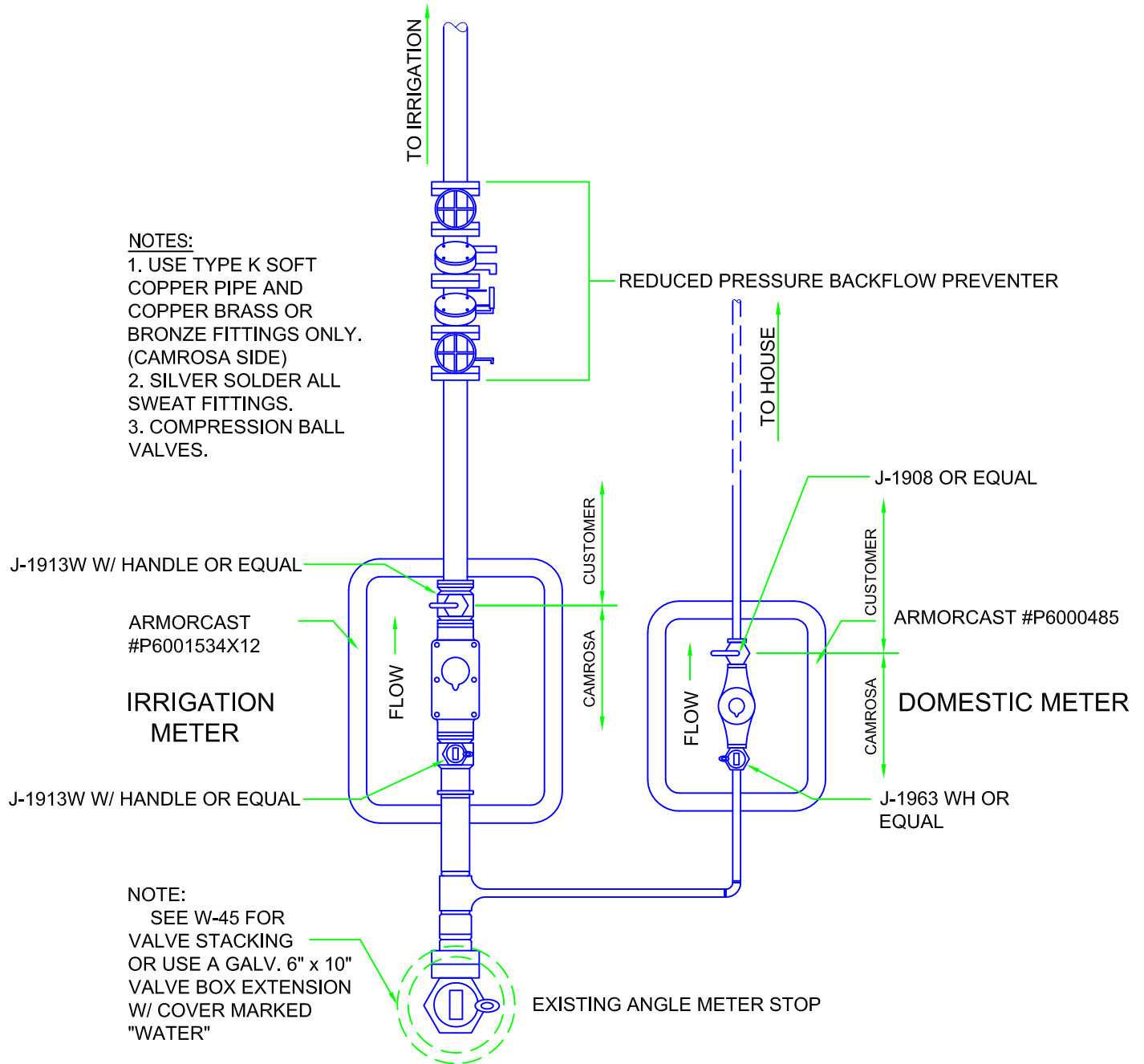
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WATER DISTRICT  
  
  
BUILDING WATER  
SELF-RELIANCE

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# DUAL METER RETROFIT



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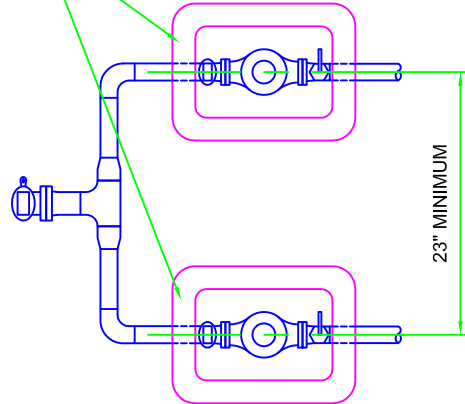


DISTRICT STANDARD **W-44**

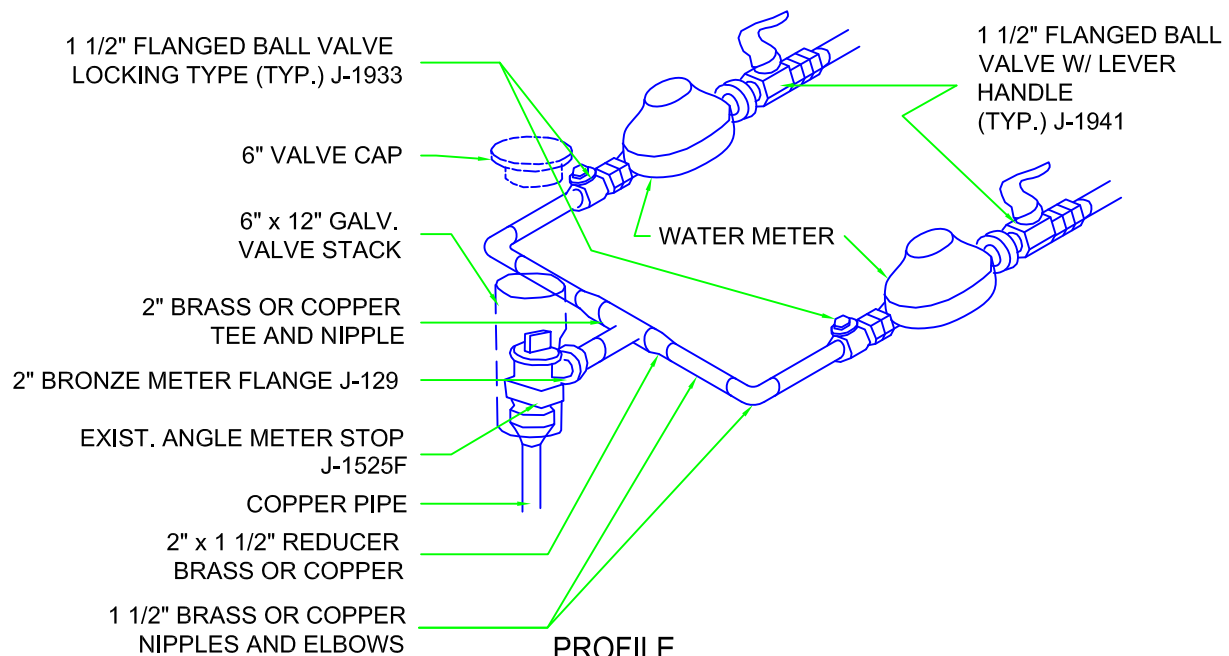
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# TWO 1 1/2" METERS FROM AN EXISTING 2" SERVICE

ARMORCAST P6001534 W/2 PIECE COVER  
A6001643D2-HI AND BASE PLATE



PLAN



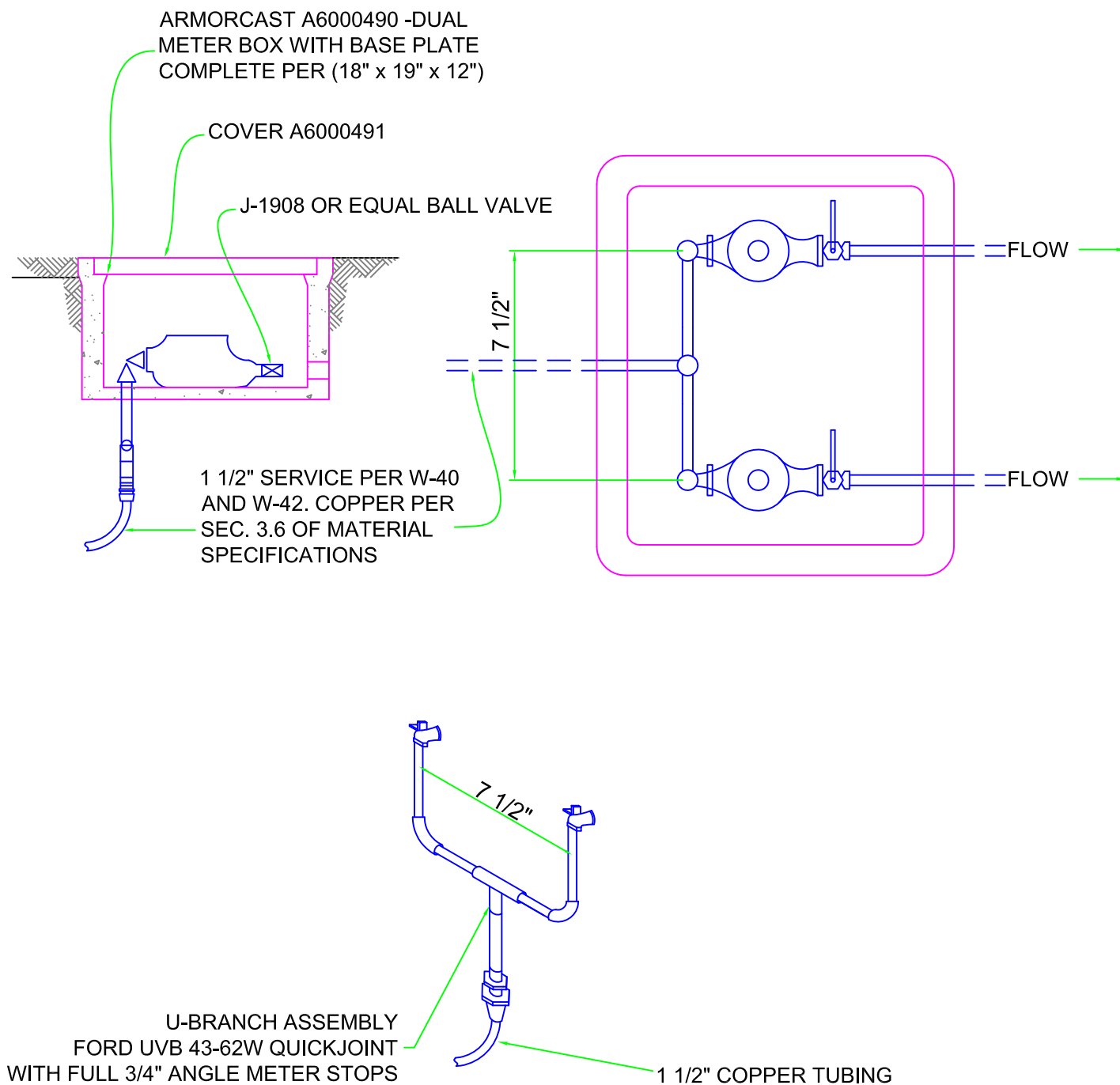
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# DETAIL FOR TWO 3/4" OR 1" METERS FROM SINGLE 1 1/2" SERVICE



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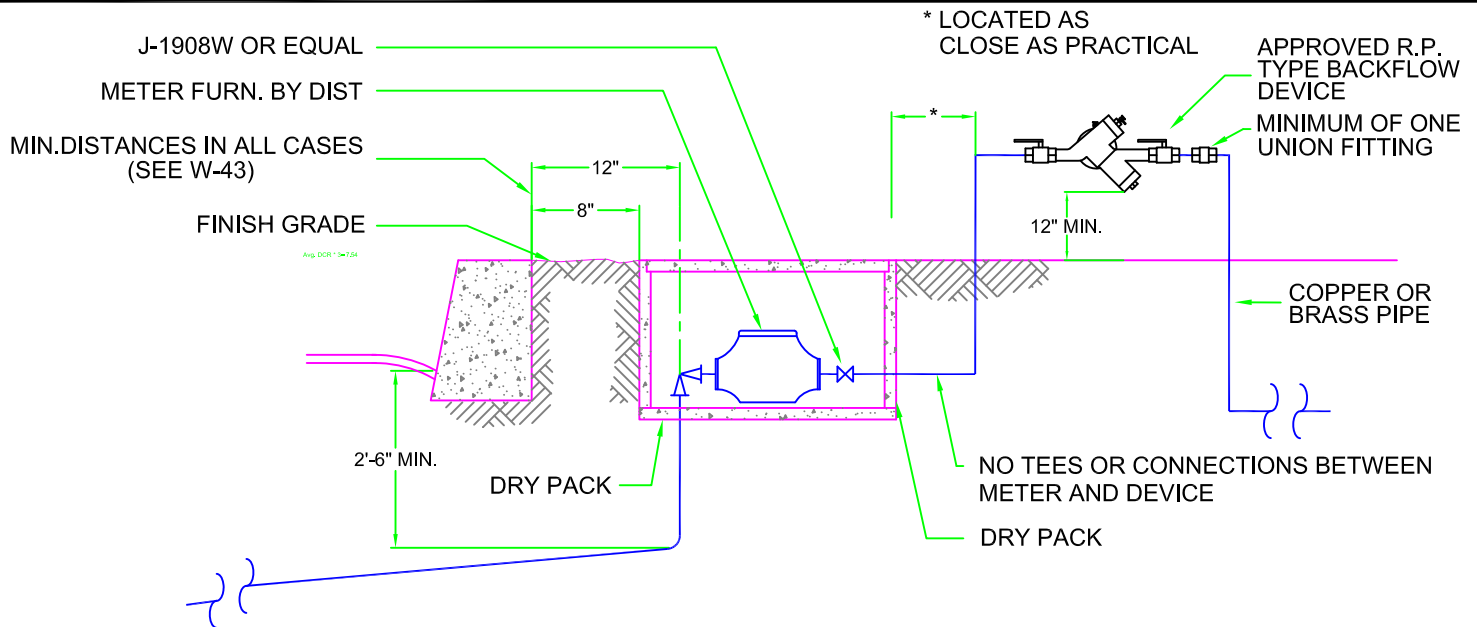
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# TYPICAL BACKFLOW DEVICE INSTALLATIONS

## 3/4" THRU 2"



### 3/4" THRU 2" BACKFLOW DEVICE INSTALLATION

BACKFLOW DEVICE INSTALLATION SHALL CONFORM TO THE GUIDELINES IN THE "MANUAL OF CROSS-CONNECTION CONTROL" BY USC.

MINIMUM SIZE IS DETERMINED BY SIZE OF METER

ALL DEVICES TO BE R.P. TYPE UNLESS OTHERWISE APPROVED.

AFTER INSTALLATION, ALL DEVICES TO BE TESTED BY AN APPROVED CERTIFIED TESTER AND TEST RESULTS SUBMITTED TO DISTRICT

### 3/4" & 1" SERVICE INSTALLATION

METER BOX MARKED "WATER" ARMORCAST # P6000485  
WITH COVER #6000848 AND BOTTOM  
CUSTOMER VALVE J-1908W OR EQUAL

### 1 1/2" & 2" SERVICE INSTALLATION

METER BOX MARKED "WATER" ARMORCAST #P6001534  
WITH 2 PIECE COVER #A6001643DZ-H1 AND BASE PLATE  
CUSTOMER VALVE J-1913W OR EQUAL

COPPER TUBING TYPE 'K' SOFT  
ALL PIPE AND FITTINGS TO BE 1 1/2" OR 2"

NOTE: COMPANY CLASSIFICATIONS ARE USED TO IDENTIFY FITTINGS  
SIMILAR FITTINGS FROM OTHER MANUFACTURERS MAY BE APPROVED

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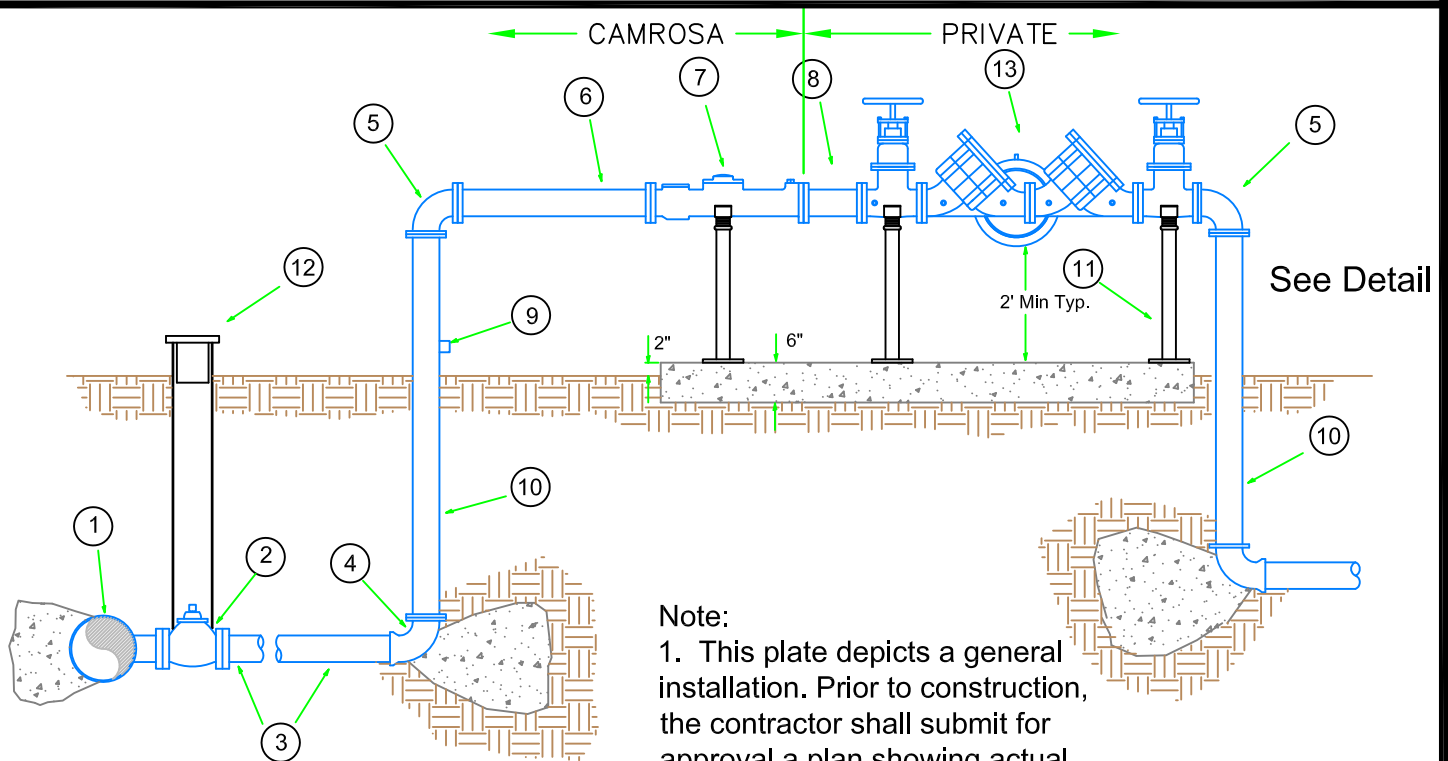
CAMROSA  
WATER DISTRICT



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STANDARD **W-47**

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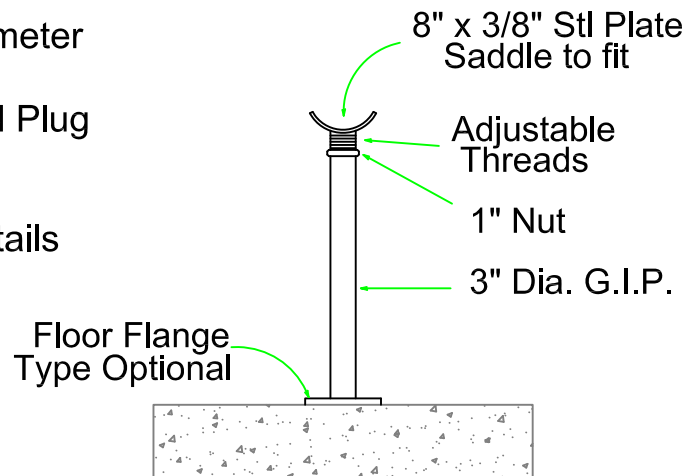
# TYPICAL METER & REDUCED PRESSURE BACKFLOW PREVENTER INSTALLATION FOR 3" AND LARGER SERVICE



## Note:

1. This plate depicts a general installation. Prior to construction, the contractor shall submit for approval a plan showing actual installation, including list of materials.

- 1 Tapping Sleeve or D.I. Tee
- 2 Gate Valve
- 3 PVC Pipe (Min. Class 200)
- 4 90° Ductile Iron C110 Elbow
- 5 90° Elbow - Flg x Flg
- 6 Flg x Flg D.I. Spool - Min 5x Pipe Diameter
- 7 Meter w/Strainer (By District)
- 8 Flg x Flg D.I. Spool - Min 3x Pipe Diameter w/2" Threaded Test Port & Plug
- 9 2" Port w/2" Ball Valve (No Lever) and Plug
- 10 Flg x Flg D.I. Spool - Length Varies
- 11 Pipe Supports - Galvanized
- 12 See Standard W-27 for Valve Box Details
- 13 Approved R.P. Backflow Preventer (Febco #825 or Equal)



Valve Support Detail

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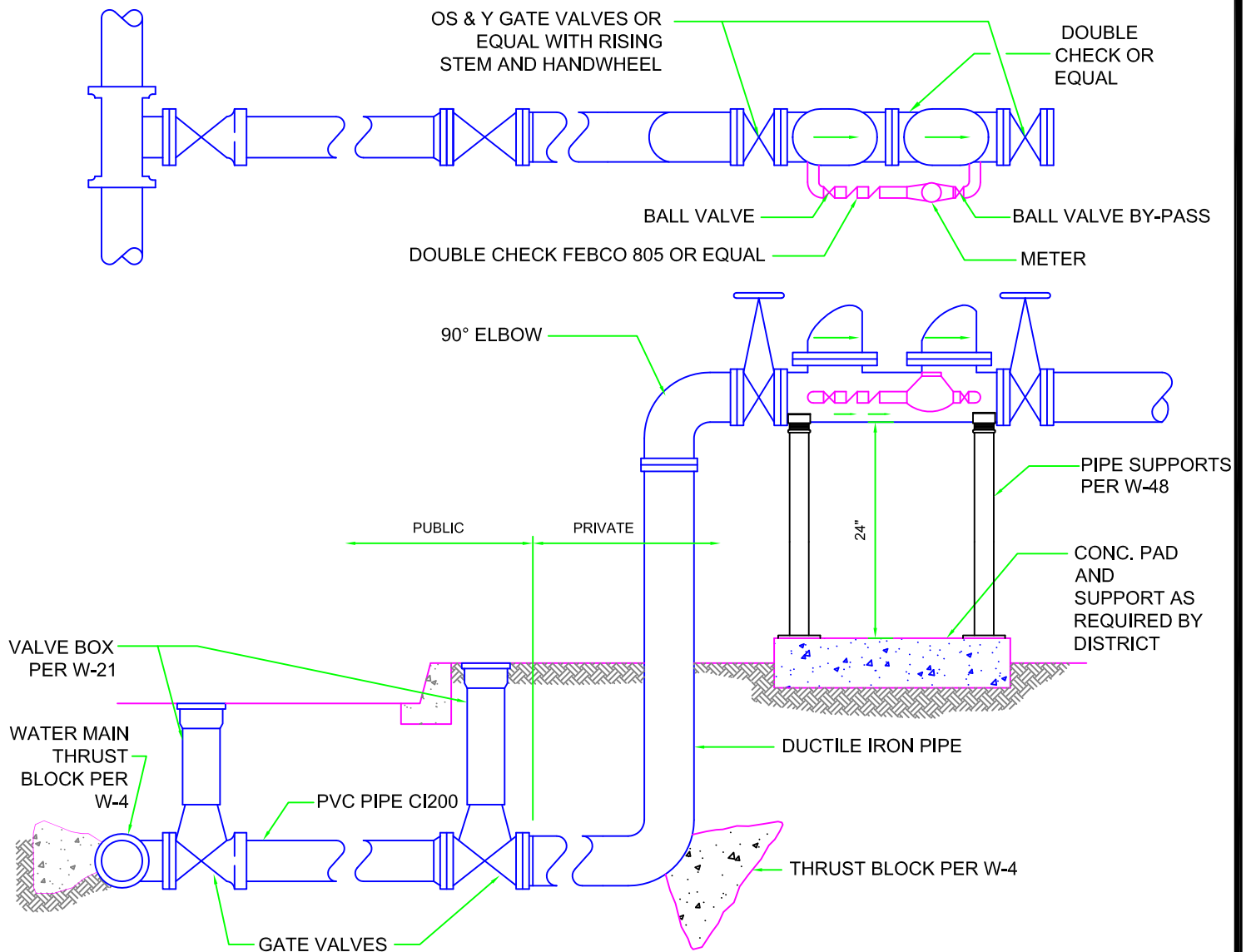
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STANDARD

**W-48**

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# TYPICAL FIRE SERVICE WITH BACKFLOW DEVICES AND DETECTOR METER



## NOTES:

1. GUARD POSTS SHALL BE PROVIDED AND INSTALLED WHEN REQUIRED BY THE DISTRICT.
2. FOR 4" AND 6" FIRE SERVICES, USE 3/4" DETECTOR METER.
3. FOR 8" FIRE SERVICE, USE 1" DETECTOR METER.
4. FOR 10" AND 12" FIRE SERVICES, USE 1-1/2" OR 2" METERS, RESPECTIVELY.
5. BACKFLOW LOCATION IS DETERMINED ON A CASE-BY-CASE BASIS. DEPENDING ON LOCATION, A SECOND GATE VALVE MAY BE REQUIRED TO DELINEATE P.O.C.

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WATER DISTRICT



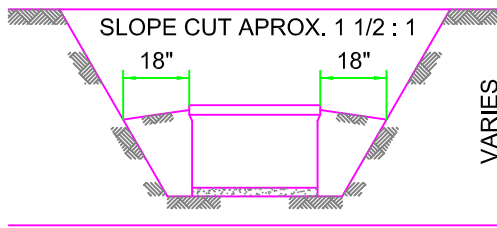
BUILDING WATER  
SELF-RELIANCE

DISTRICT  
STANDARD **W-49**

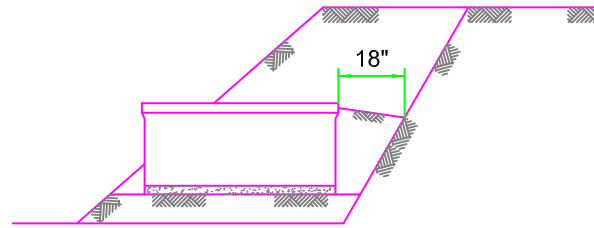
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# TYPICAL STRUCTURE INSTALLATION IN SLOPE

## METER BOX INSTALLATION



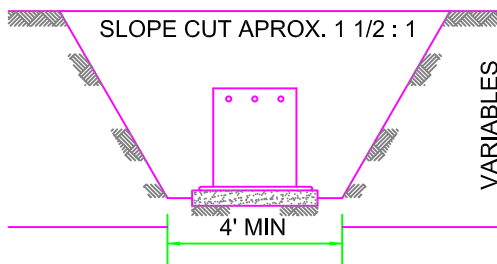
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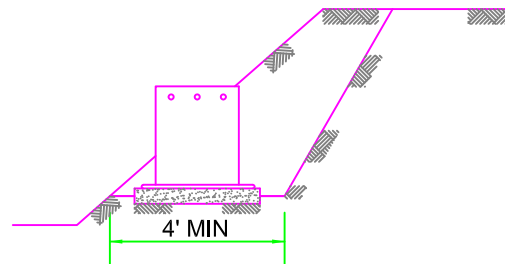
SIDE

NOTE:  
WHERE INSTALLATION OF STRUCTURES ARE WITHIN UNSTABLE SOIL  
A RETAINING WALL SHALL BE INSTALLED IN  
ACCORDANCE WITH DISTRICT REQUIREMENTS.

## AIR-VAC INSTALLATION

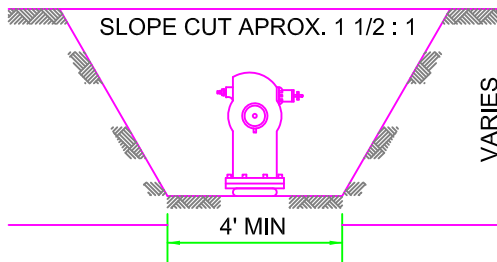


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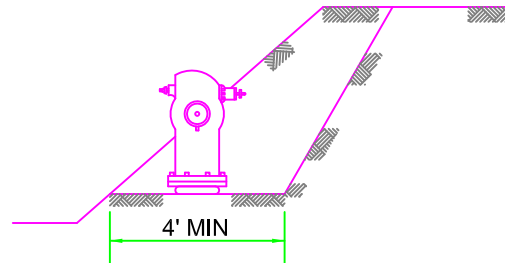


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## FIRE HYDRANT INSTALLATION



PROFILE



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# SCHEDULE OF PIPE DIMENSIONS FOR STEEL PIPE

SCHEDULE OF PIPE DIMENSIONS FOR STEEL PIPE						
NOMINAL PIPE SIZE INCHES	O.D. CYLINDER INCHES	DESIGN PRESSURE P.S.I.	THICKNESSES - INCHES			
			STEEL CYLINDER (tc)	MORTAR LINING	MORTAR COATING	ASPHALT MASTIC COATING
4	4 1/2	580	.1046	5/16	3/4	3/8
6	6 5/8	390	.1046	5/16	3/4	3/8
8	8 5/8	300	.1046	5/16	3/4	3/8
10	10 3/4	310	.1345	5/16	1	1/2
12	12 3/4	260	.1345	5/16	1	1/2
14	15 3/8	210	.1345	1/2	1	1/2
16	17 3/8	200	.1345	1/2	1	1/2
18	19 3/8	220	.1644	1/2	1	1/2
21	22 3/8	190	.1644	1/2	1	1/2
		210	.1875	1/2	1	1/2
24	25 1/2	170	.1644	1/2	1	1/2
		190	.1875	1/2	1	1/2
		250	.2500	1/2	1	1/2
27	28 1/2	175	.1875	1/2	1	1/2
		220	.2500	1/2	1	1/2

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# SCHEDULE OF PIPE DIMENSIONS AND REINFORCEMENT FOR STEEL PIPE

SCHEDULE OF PIPE DIMENSIONS AND REINFORCEMENT			
PIPE CLASS - P.S.I. (Pw)	MIN. GAUGE OF CYL. (tc)	MIN. BELL RING THICK. (tR)	MIN. TOTAL AREA STEEL SQ.IN. / L.F.
14" I.D. PIPE - O.D. CYLINDER = 15 1/4"			
STANDARD PIPE			
150	12	3/16"	1.49
175	12	3/16"	1.49
200	12	3/16"	1.49
16" I.D. PIPE - O.D. CYLINDER = 17 3/8"			
STANDARD PIPE			
150	12	3/16"	1.49
175	12	3/16"	1.49
200	12	3/16"	1.52
18" I.D. PIPE - O.D. CYLINDER = 19 25/32"			
STANDARD PIPE			
150	10	3/16"	1.84
175	10	3/16"	1.84
200	10	3/16"	1.84
21" I.D. PIPE - O.D. CYLINDER = 22 25/32"			
STANDARD PIPE			
150	10	3/16"	1.84
175	10	3/16"	1.84
200	10	3/16"	1.98
24" I.D. PIPE - O.D. CYLINDER = 25 3/4"			
STANDARD PIPE			
150	10	3/16"	1.84
175	10	3/16"	1.98
200	10	3/16"	2.27
27" I.D. PIPE - O.D. CYLINDER = 29 9/32"			
STANDARD PIPE			
150	10	3/16"	1.93
175	10	3/16"	2.27
200	10	3/16"	2.58

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DISTRICT STANDARD **W-52**

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# WELDED STEEL & STEEL CYLINDER CONCRETE PIPE WELDED LENGTH AT BENDS AND FITTINGS

WELD. STL. AND STL. CYL. CONC. PIPE - WELDED LENGTH AT BENDS AND FITTINGS		
PIPE DIAMETER  (INCHES)	PRESSURE  (P.S.I.)	<u>MINIMUM WELDED LENGTH (IN FEET)</u> * AT EACH SIDE OF BEND IN ANY PLANE * ALONG T-LEG FOR T-CONNECTION * ON ANY ONE SIDE OF GATE VALVE
12	100	25
	125	30
	150	35
	175	40
	200	45
10	100	20
	125	25
	150	30
	175	35
	200	40
8	100	15
	125	20
	150	25
	175	30
	200	35
6	100	12
	125	16
	150	20
	175	25
	200	30
4	100	10
	125	14
	150	18
	175	22
	200	26

WELDED LENGTHS AT BENDS AND FITTINGS FOR PIPES 14" DIAMETER  
AND LARGER ARE AS MARKED ON PLAN AND PROFILE SHEETS.

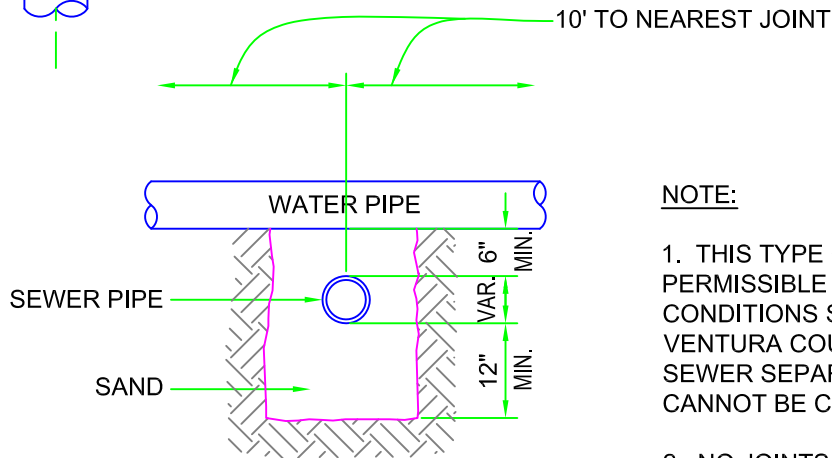
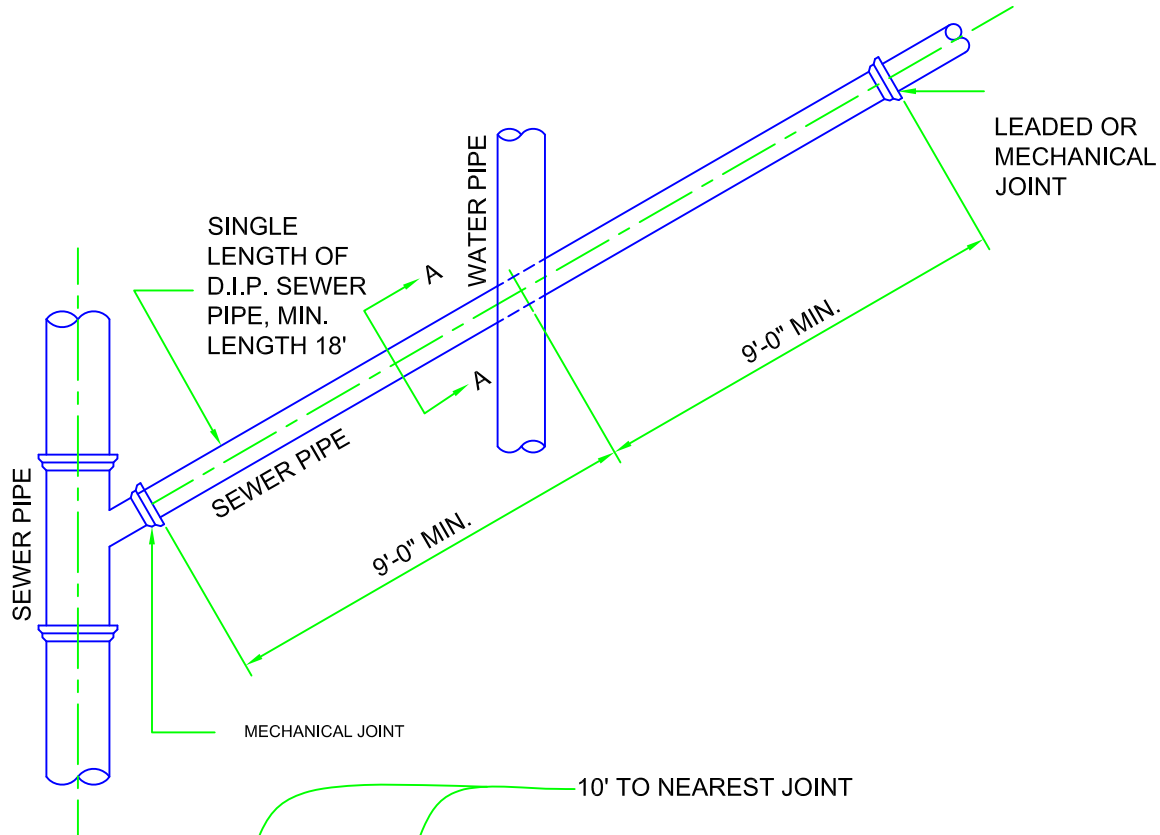
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# SANITARY PROTECTION FOR WATER MAINS CROSSING SEWERS



SECTION A-A

## NOTE:

1. THIS TYPE OF CONSTRUCTION IS PERMISSIBLE ONLY IF THE CONDITIONS SET FORTH IN THE VENTURA COUNTY WATER AND SEWER SEPARATION. ORDINANCE CANNOT BE COMPLIED WITH.

2. NO JOINTS WITHIN 10' EACH WAY.

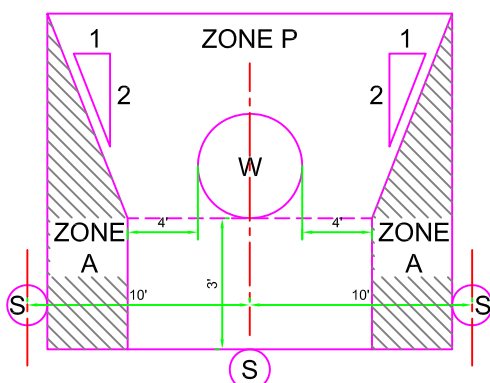
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DISTRICT STANDARD **W-54**

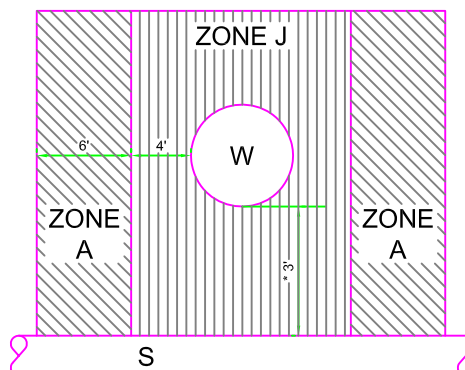
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# WATER AND SEWER SEPARATION REQUIREMENTS



## PARALLEL CONSTRUCTION

IF A SANITARY SEWER IS TO BE LOCATED WITHIN 10 FEET OF A WATER MAIN OR SERVICE LATERAL WITHIN ANY OF THE ABOVE INDICATED ZONES, SPECIAL SEWER CONSTRUCTION WILL BE REQUIRED AS SHOWN BELOW.



## PERPENDICULAR CONSTRUCTION

IF A SANITARY SEWER OR HOUSE SEWER LATERAL CROSSES A WATER MAIN OR SERVICE LATERAL WITHIN ANY OF THE INDICATED ZONES, SPECIAL CONSTRUCTION WILL BE REQUIRED AS SHOWN BELOW. \* 2' CLEAR FOR LATERALS.

ZONE	SEWER CONSTRUCTION REQUIREMENTS
A	VITRIFIED CLAY PIPE WITH MECH. COMP. JOINTS OR PVC PIPE WITH RUBBER RING JOINTS OR CAST IRON PIPE WITH MECHANICAL COMPRESSION JOINTS. (V.C.P. OR P.V.C. OR C.I.P.)
J	SAME MATERIAL AS ALLOWED IN ZONE "A" EXCEPT THAT NO JOINTS MAY FALL IN ZONE J. MINIMUM CLEARANCE BETWEEN OUTSIDES OF PIPE SHALL BE NOT LESS THAN 6".
P	DO NOT LOCATE ANY PARALLEL SEWER IN THIS AREA WITHOUT SPECIAL APPROVAL OF THE DISTRICT ENGINEER.
W	INDICATES WATER MAIN AND SERVICE LATERALS. WHERE SERVICE LATERAL IS GALVANIZED IRON OR COPPER, WITHOUT JOINTS IN THE PROHIBITED AREA, NO SPECIAL CONSTRUCTION IS REQUIRED FOR CROSSING SEWER IN ANY ZONE.
S	INDICATES SEWER OR HOUSE LATERAL.

WATER AND SEWER LINES MAY BE CONSTRUCTED IN AREAS PROHIBITED BY SECTION 8602 OF THE VENTURA COUNTY CODE IF WATER LINES ARE INSTALLED IN WATER TIGHT STEEL CASINGS AND SEWER LINES ARE CONSTRUCTED OF ZONE "A" MATERIALS.

WATER LINES AND SERVICE LATERALS INSTALLED SO-AS TO PLACE A SEWER OR HOUSE LATERAL IN ANY OF THE RESTRICTED ZONES MUST BE PROTECTED IN A MANNER APPROVED BY THE DISTRICT ENGINEER OR BY RECONSTRUCTION OF SEWER LINES IN THE RESTRICTED ZONES TO MEET REQUIREMENTS.

THIS STANDARD IS ISSUED IN COMPLIANCE WITH VENTURA COUNTY ORDINANCE NUMBER 1457, DIV. 8, CHAP. 6, SEC. 8603(b) OF ORDINANCE CODE.

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