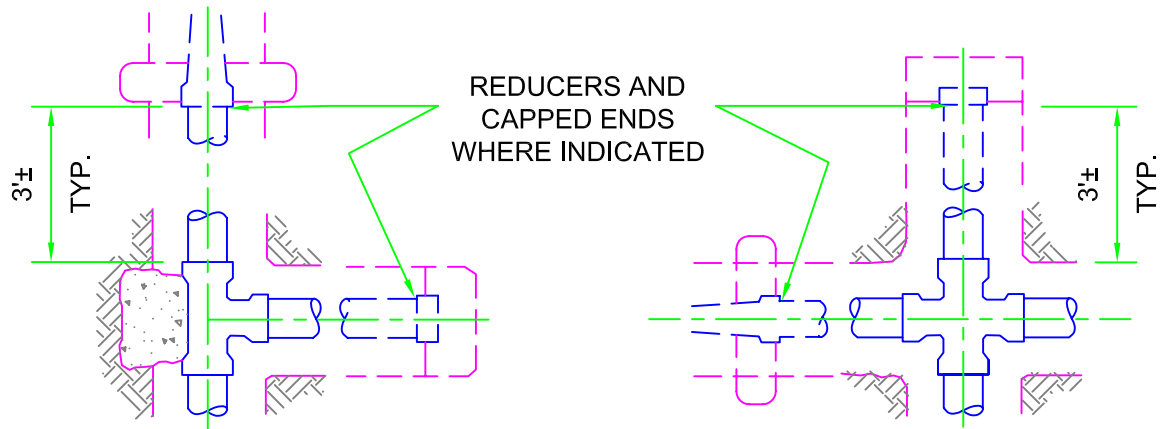


## **Standard Plate Drawings**

Not all of the Typical Water Plate Drawings are included here because several do not apply to the construction of non-potable mains and services. Only applicable drawings have been included as listed here and on the Camrosa web page for non-potable specifications.

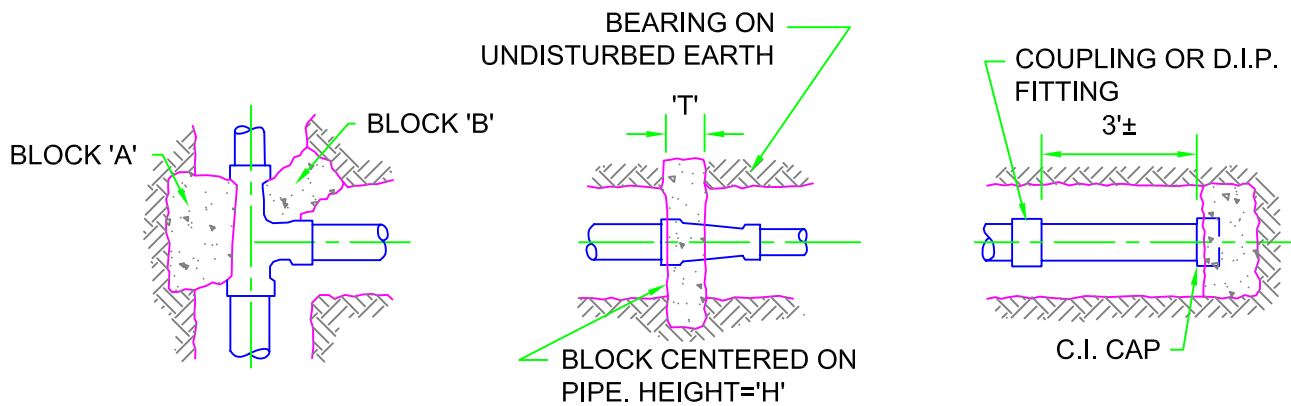
- W-1** Thrust Block Layouts for Typical Ductile Fittings
- W-2** Thrust Block Sizing for Horizontal Pressures
- W-3** Thrust Block Sizing for Reducers and Tees
- W-4** Thrust Blocks for Dead-end Ring-tite Pipe
- W-5** Thrust Blocks for Vertical Bends
- W-6** Thrust Block Sizing for Vertical Bends
- W-7** Concrete Protector Wall
- W-8** Anchor Wall Detail
- W-9** Slope Protection Detail
- W-10** Trench Sections for Pipe and Guard Post Detail
- W-11** Trench Section and Concrete Encasement Detail
- W-17** Welded Steel Pipe, Connections to PVC and DIP Details
- W-18** Mechanical Tapping Sleeve and Tapping Valve for A.C., DIP, and PVC Pipe
- W-20** Tapping Valve on PVC (**Tentative**)
- W-22** Tee in PVC, Transite, or Ductile Main with One Leg Dead-ended
- W-23** Cast Iron Cross and Valving Details
- W-24** Cast Iron Cross, Flanged and/or Ring-Tite Valves
- W-25** Valve Details for Inline or Lateral Pipes
- W-26** Valve Box Details
- W-27** Typical Valve Box Installation
- W-30** Typical End Drain and Blow-off with Copper Tubing
- W-31** Main Ending in Cul-de-Sac with Service Connections and End Drain (Blow-off)
- W-32** Large Blow-offs, 4" to 6"
- W-33** Air and Vacuum Release (Air/Vac) 1"
- W-34** Air and Vacuum Release 2"
- W-35** Air and Vacuum Release 4" and Larger
- W-35-1** Cabinet for Large Air/Vacs.
- W-37** Connections to PVC or AC Pipes, 2" and Smaller
- W-38** Connections to DIP, 2" and Smaller
- W-39** Typical Service Installations, Without Meters, 1", 1 ½", and 2"
- W-40** Typical Service Installations
- W-41** Typical Service Installations with Meters
- W-42** Meter Box Locations Relative to Sidewalks
- W-47** Two ¾" or 1" Meters from a Single Service Line, New Construction
- W-50** Typical Structure Installation, (Meter Box, Air/Vac, Fire Hydrant) in a Slope
- W-51** Allowable Leakage Chart
- W-55** Sanitary Protection for Water Mains Crossing Sewers
- W-56** Trench Section, for Separation of Water Mains and Sewers
- W-57** (Future)
- W-58** (Future)

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



TEE

CROSS



TEE REDUCING IN LINE

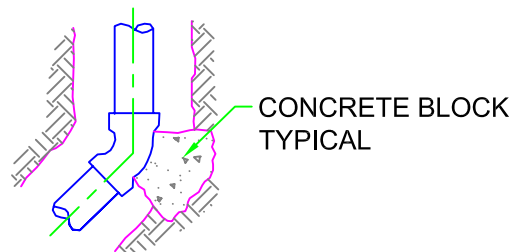
REDUCER

CAPPED END

45° MAX SLOPE TOP AND  
ENDS OF CONC. BLOCK



SECTION THRUST BLOCK



HORIZONTAL ELBOW

**NOTE:**

1. ALL FITTINGS SHALL BE D.I.P. GROOVED FOR RUBBER GASKET JOINTS.
2. CONCRETE BLOCKS SHALL BEAR ON UNDISTURBED EARTH.
3. SEE DRAWINGS W-2 AND W-3 FOR SIZES OF CONCRETE BLOCKS.

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DISTRICT  
STANDARD **W-1**

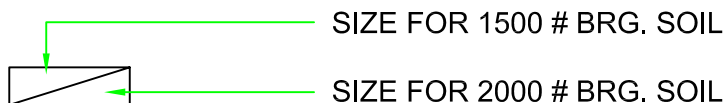
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# THRUST BLOCK SIZES FOR HORIZONTAL PRESSURES

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	2.5 1.9	3.5 2.7	1.9 1.5	1.0 0.8	1.0 0.8	
	200	175	2.8 2.1	2.8 2.1	2.8 2.1	4.0 3.0	2.2 1.6	1.1 0.9	1.1 0.9	
	200	200	3.1 2.3	3.1 2.3	3.1 2.3	4.4 3.3	2.3 1.8	1.2 0.9	1.2 0.9	
6	200	150	5.1 3.8	5.1 3.8	5.1 3.8	7.2 5.4	3.9 3.0	2.0 1.5	2.0 1.5	
	200	175	5.7 4.3	5.7 4.3	5.7 4.3	8.1 6.1	4.4 3.3	2.3 1.7	2.3 1.7	
	200	200	6.4 4.8	6.4 4.8	6.4 4.8	9.0 6.8	4.9 3.7	2.5 1.9	2.5 1.9	
8	200	150	8.8 6.6	8.8 6.6	8.8 6.6	12.4 9.3	6.8 5.1	3.4 2.6	3.4 2.6	
	200	175	9.9 7.5	9.9 7.5	9.9 7.5	14.0 10.5	7.6 5.7	3.9 2.9	3.9 2.9	
	200	200	11.0 8.3	11.0 8.3	11.0 8.3	15.5 11.7	8.4 6.3	4.3 3.2	4.3 3.2	
10	200	150	14.4 10.8	14.4 10.8	14.4 10.8	20.3 15.2	11.0 8.3	5.6 4.2	5.6 4.2	
	200	175	16.2 12.1	16.2 12.1	16.2 12.1	22.8 17.1	12.4 9.3	6.3 4.7	6.3 4.7	
	200	200	18.0 13.5	18.0 13.5	18.0 13.5	25.4 19.0	13.4 10.3	7.0 5.3	7.0 5.3	
12	200	150	20.5 15.4	20.5 15.4	20.5 15.4	28.9 21.7	15.7 11.8	8.0 6.0	8.0 6.0	
	200	175	23.0 17.3	23.0 17.3	23.0 17.3	32.5 24.4	17.6 13.2	9.0 6.7	9.0 6.7	
	200	200	25.5 19.2	25.5 19.2	25.5 19.2	36.1 27.1	19.6 14.7	9.9 7.5	9.9 7.5	

**NOTE:**

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



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STANDARD **W-2**


REVISED: March 1, 2007

# THRUST BLOCK SIZES FOR REDUCERS AND TEES

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	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	2.5	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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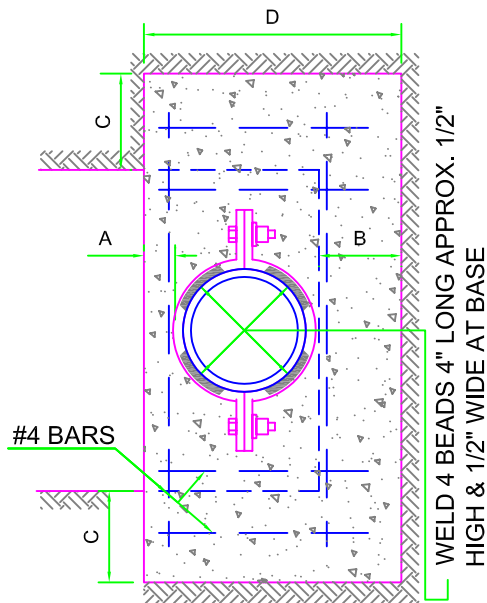
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DISTRICT STANDARD **W-3**

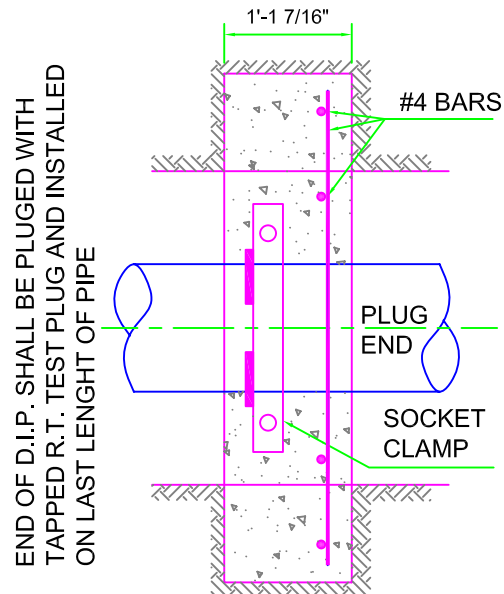
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# STANDARD THRUST BLOCK FOR DEADEND RING-TITE D.I.P. OR STEEL PIPE

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"



ELEV.



PLAN

END OF STEEL PIPE SHALL HAVE STEEL CAP WITH 2"  
HALF WELDING COUPLING FOR BLOW-OFF.

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CMS  
ENGINEER

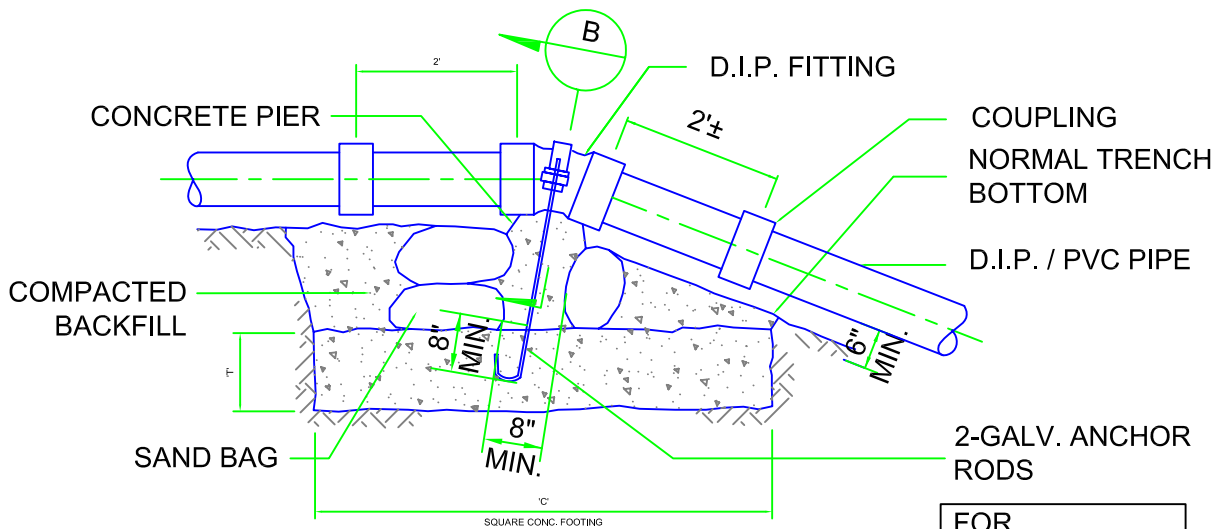


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DISTRICT  
STANDARD **W-4**

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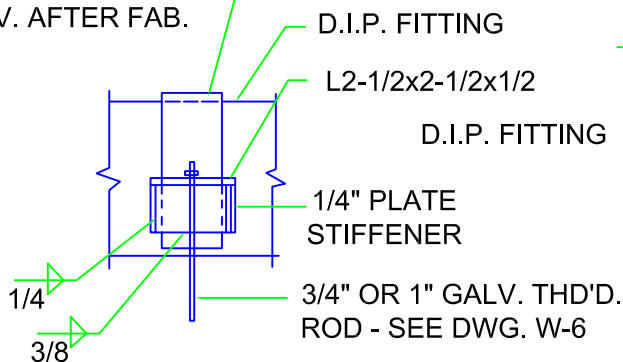
# VERTICAL BEND DETAILS FOR PIPE



**ELEVATION (AT TOP OF SLOPE)**  
NOT TO SCALE

FOR  
DIMENSIONS 'C'  
AND 'T' SEE W-6

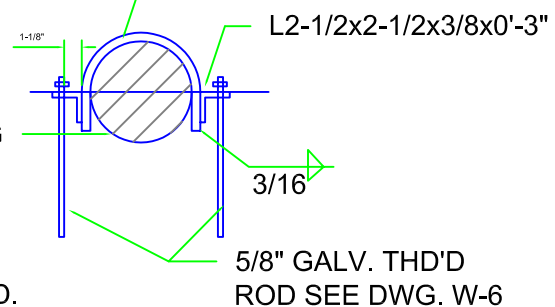
PLATE 3x3/8 (BENT)  
GALV. AFTER FAB.



**DETAIL**  
NOT TO SCALE

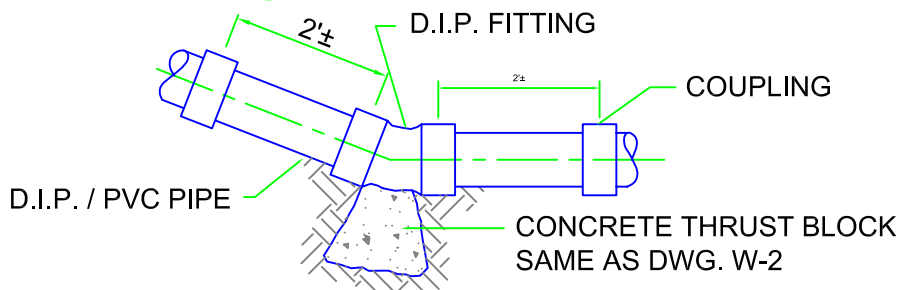
**C**  
-

PLATE 3x1/4 (BENT) GALV.  
AFTER FAB.



**SECTION**  
NOT TO SCALE

**B**  
-



**ELEVATION (AT BOTTOM OF SLOPES)**

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CMS  
ENGINEER



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DISTRICT  
STANDARD **W-5**

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# 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
200	175		3'-6"	5'-3"	2'-0"	2'-0"	3/4"	1"	
200	200		4'-0"	5'-6"	2'-0"	2'-0"	3/4"	1"	
200	150	8	2'-6"	3'-3"	1'-6"	2'-0"	5/8"	5/8"	6
200	175		2'-6"	2'-6"	2'-0"	2'-0"	5/8"	5/8"	
200	200		2'-6"	2'-6"	2'-0"	2'-0"	5/8"	5/8"	

## LEGEND:



## NOTE:

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

RHH  
MANAGER  
  
CMS  
ENGINEER

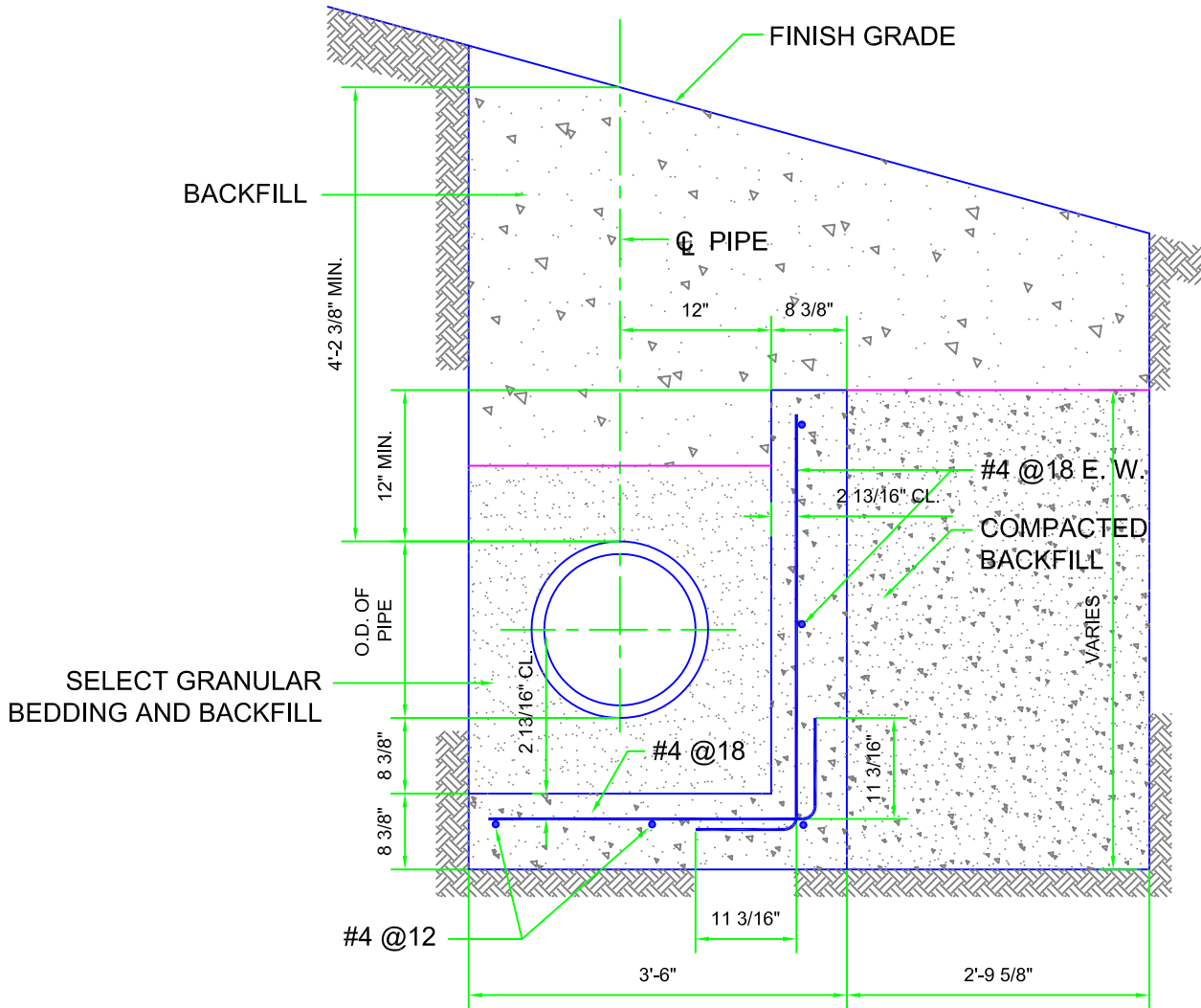


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DISTRICT  
STANDARD **W-6**

REVISED: March 1, 2007

# CONCRETE PROTECTOR WALL



NOTE:  
LENGTH AS SPECIFIED ON PLAN AND PROFILE SHEETS.

**TYPICAL SECTION**  
**NOT TO SCALE**

RHH  
MANAGER

CMS  
ENGINEER

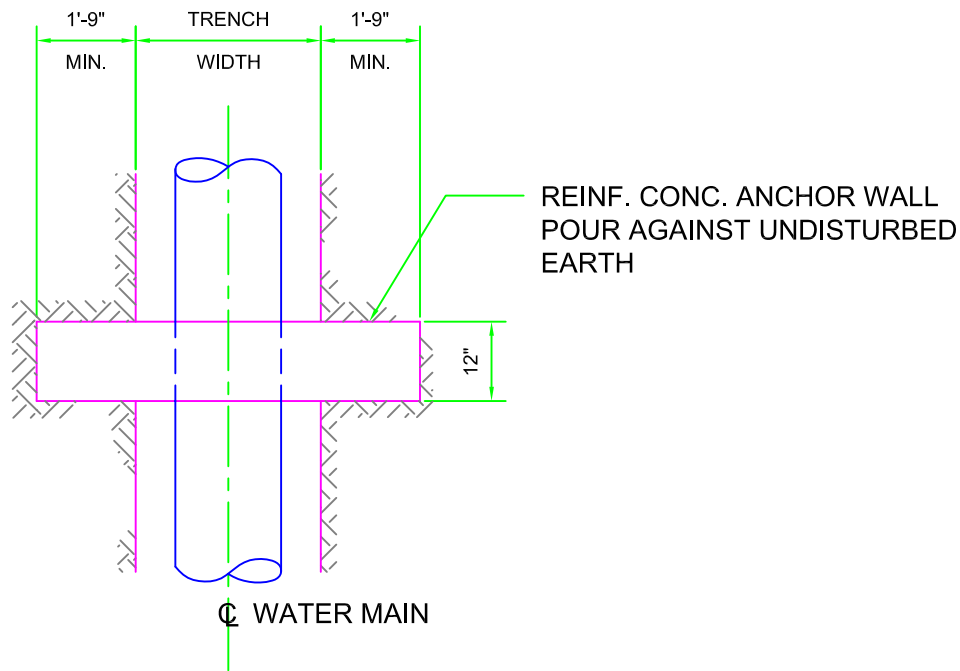


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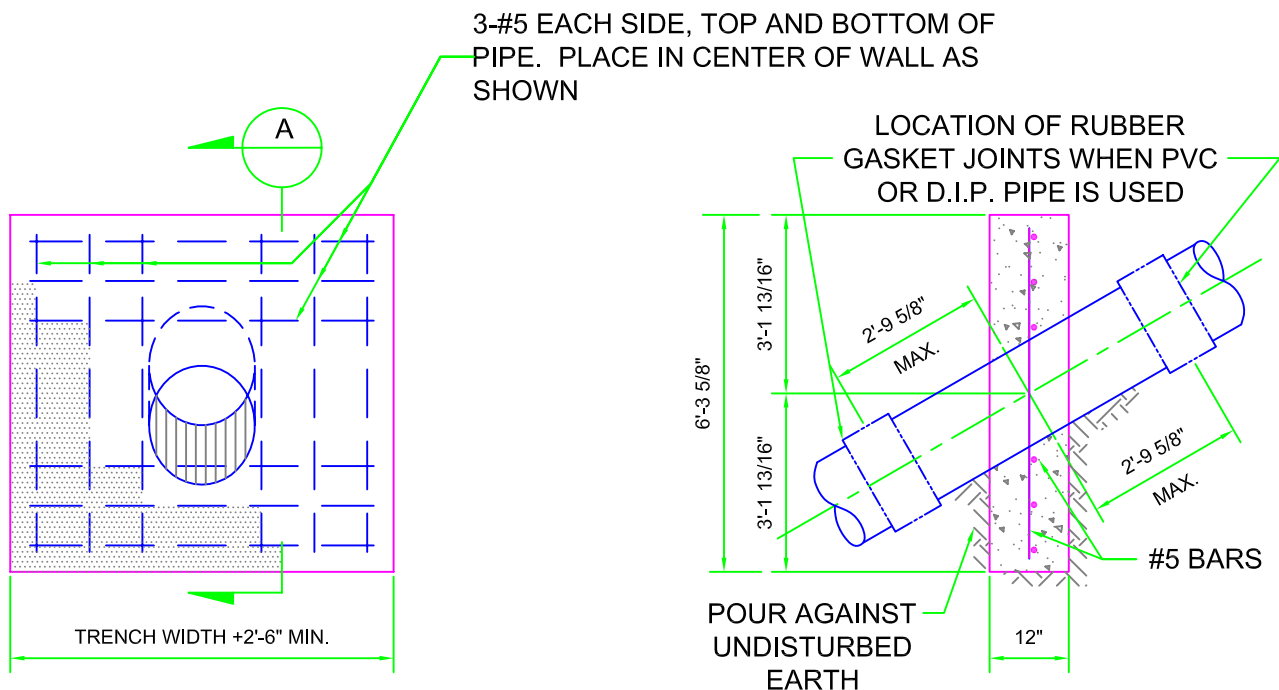
# DISTRICT STANDARD **W-7**

REVISÉD: March 1, 2007

# ANCHOR WALL DETAIL



P L A N  
NOT TO SCALE



ELEVATION

SECTION A

RHH  
MANAGER  
  
CMS  
ENGINEER

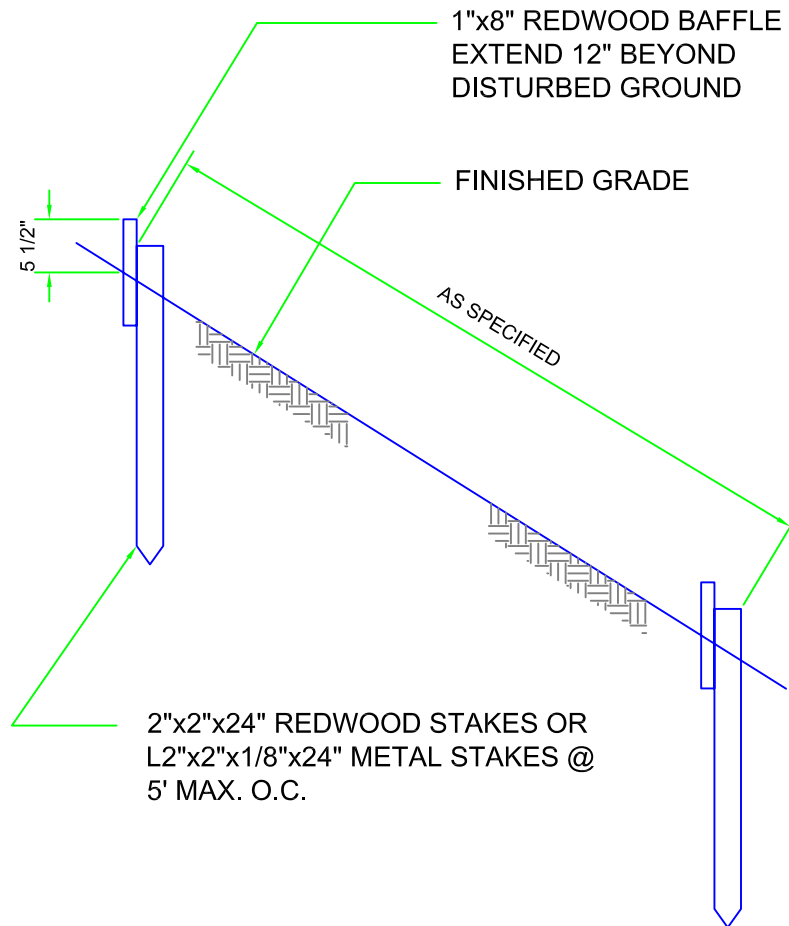


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DISTRICT  
STANDARD **W-8**

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# SLOPE PROTECTOR DETAIL



NOTE:  
PROVIDE WHERE INDICATED ON  
PLAN AND PROFILE DRAWINGS

ELEVATION  
NOT TO SCALE

RHH  
MANAGER  
  
CMS  
ENGINEER

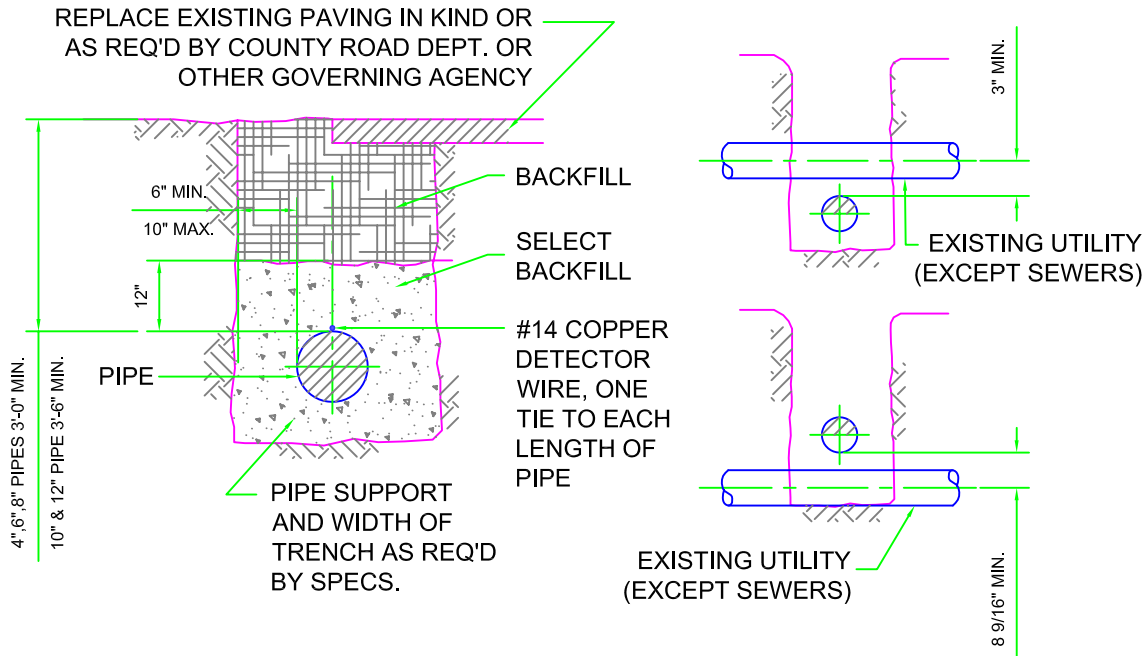


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DISTRICT  
STANDARD **W-9**

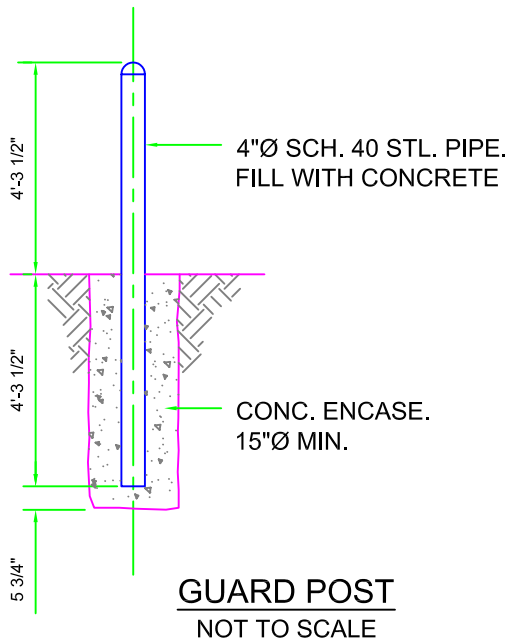
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# TRENCH SECTIONS FOR PIPE AND GUARD POST DETAIL



TRENCH SECTION  
NOT TO SCALE

SECTIONS AT EXIST. UTILITIES  
NOT TO SCALE



GUARD POST  
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.

RHH  
MANAGER  
  
CMS  
ENGINEER

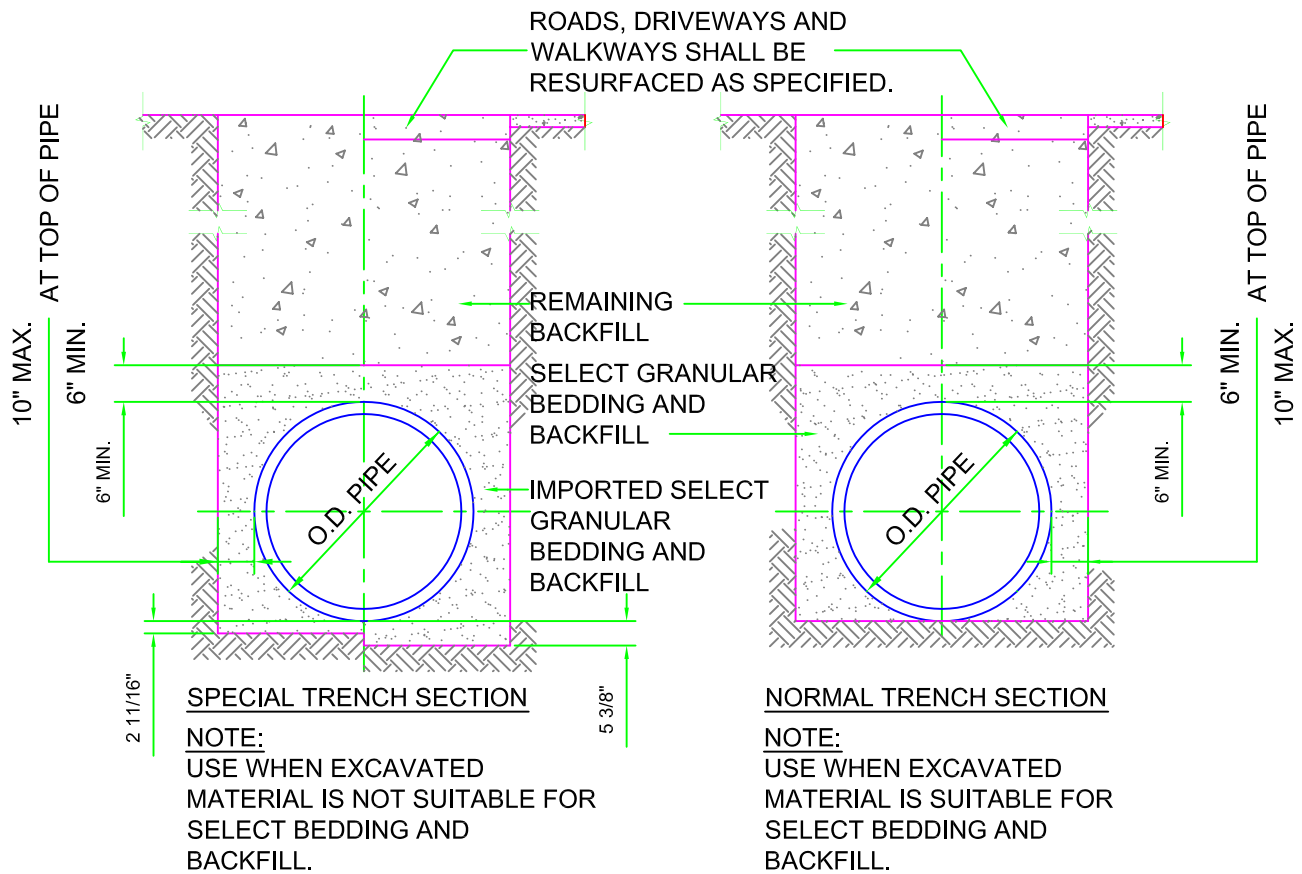


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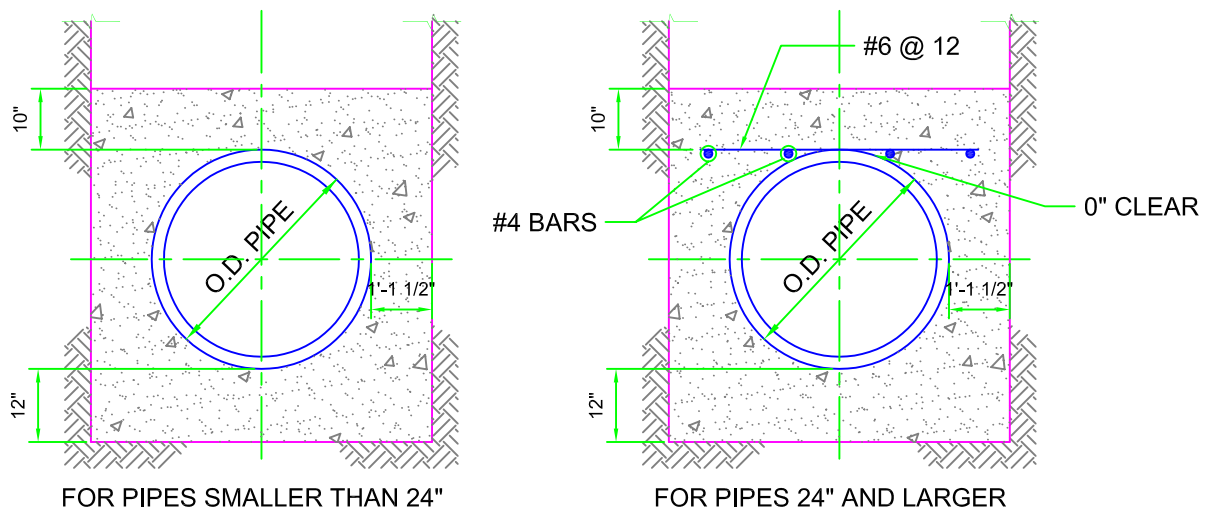
DISTRICT  
STANDARD **W-10**

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



**TYPICAL TRENCH SECTION**  
NOT TO SCALE



**CONCRETE ENCASEMENT DETAIL**

RHH  
MANAGER  
CMS  
ENGINEER

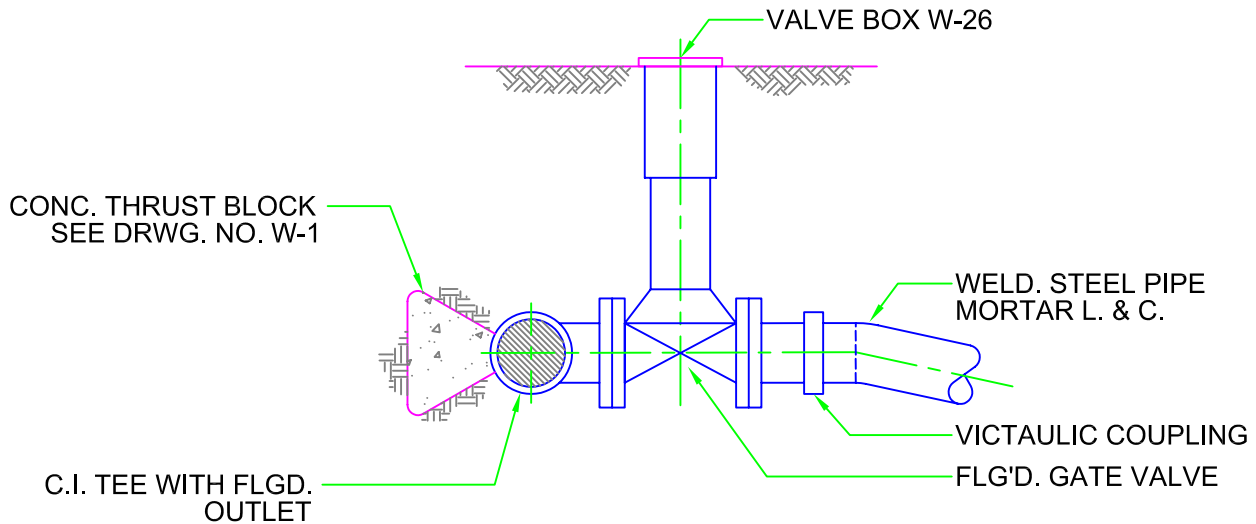


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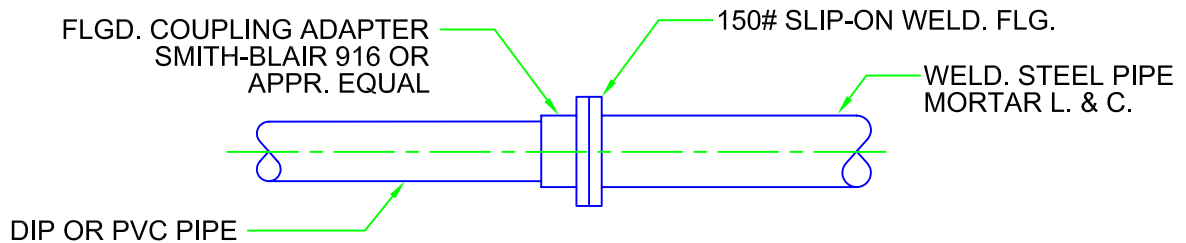
DISTRICT  
STANDARD **W-11**

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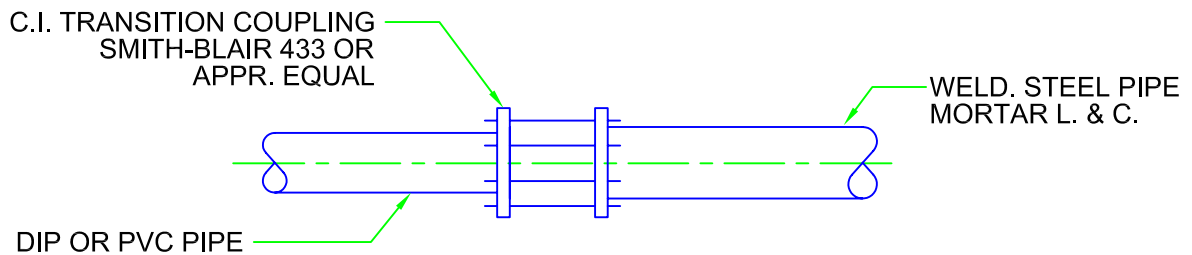
# CONNECTION DETAILS - WELDED STEEL PIPE TO P.V.C & D.I.P.



LATERAL CONNECTION  
NOT TO SCALE



ALTERNATE - 1



ALTERNATE - 2

LINE CONNECTIONS  
NOT TO SCALE

RHH  
MANAGER  
  
CMS  
ENGINEER



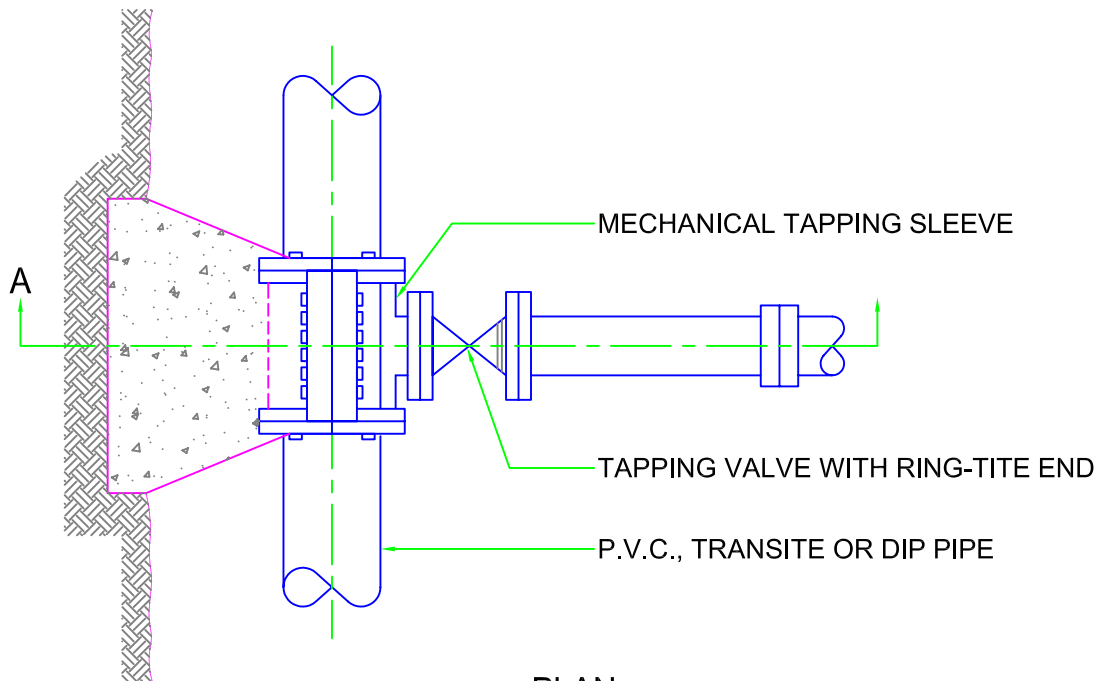
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DISTRICT  
STANDARD

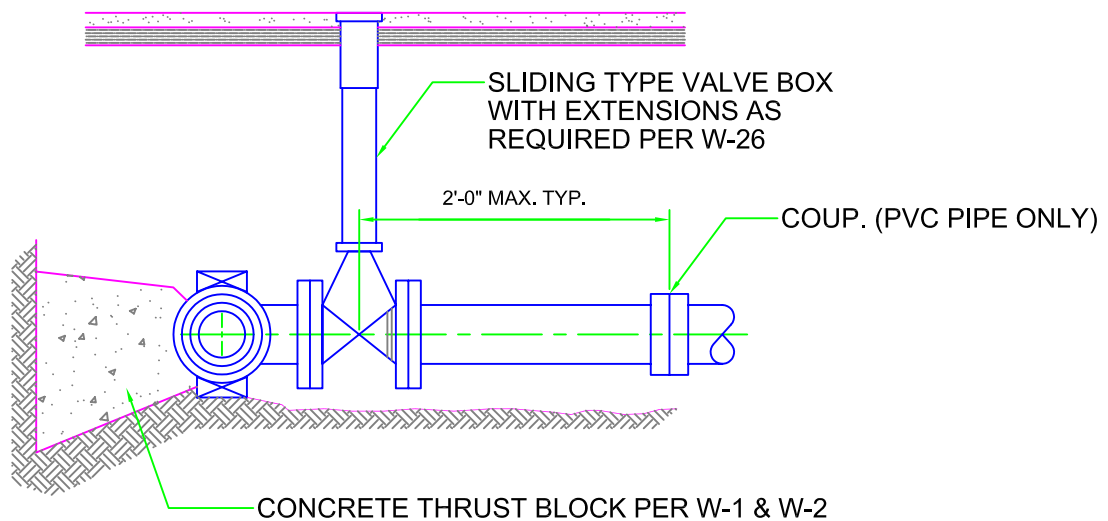
**W-17**

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



PLAN



ELEV. A-A

RHH  
MANAGER  
  
CMS  
ENGINEER

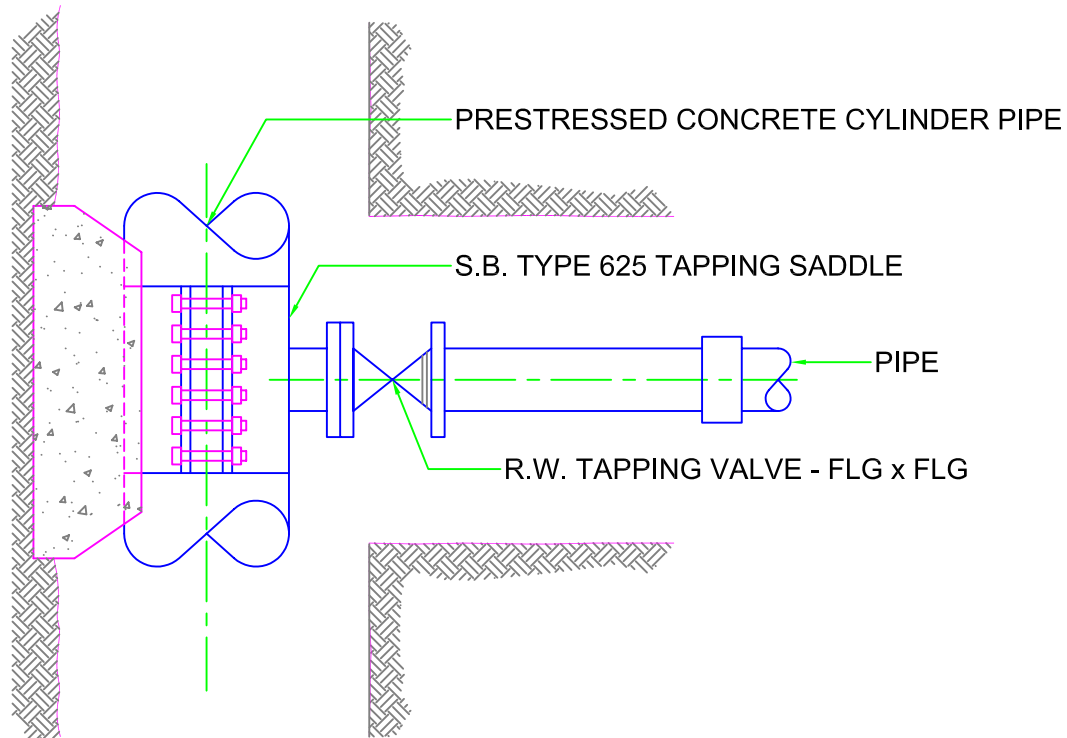


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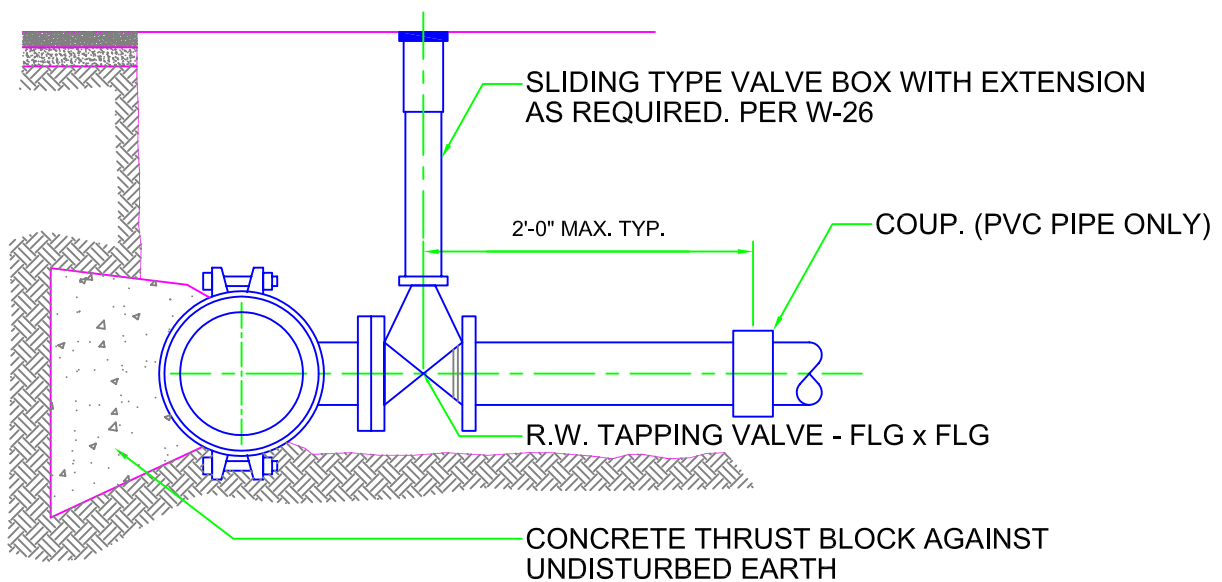
DISTRICT  
STANDARD **W-18**

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# TAPPING VALVE ON P.V.C.



PLAN



PROFILE

RHH  
MANAGER

CMS  
ENGINEER

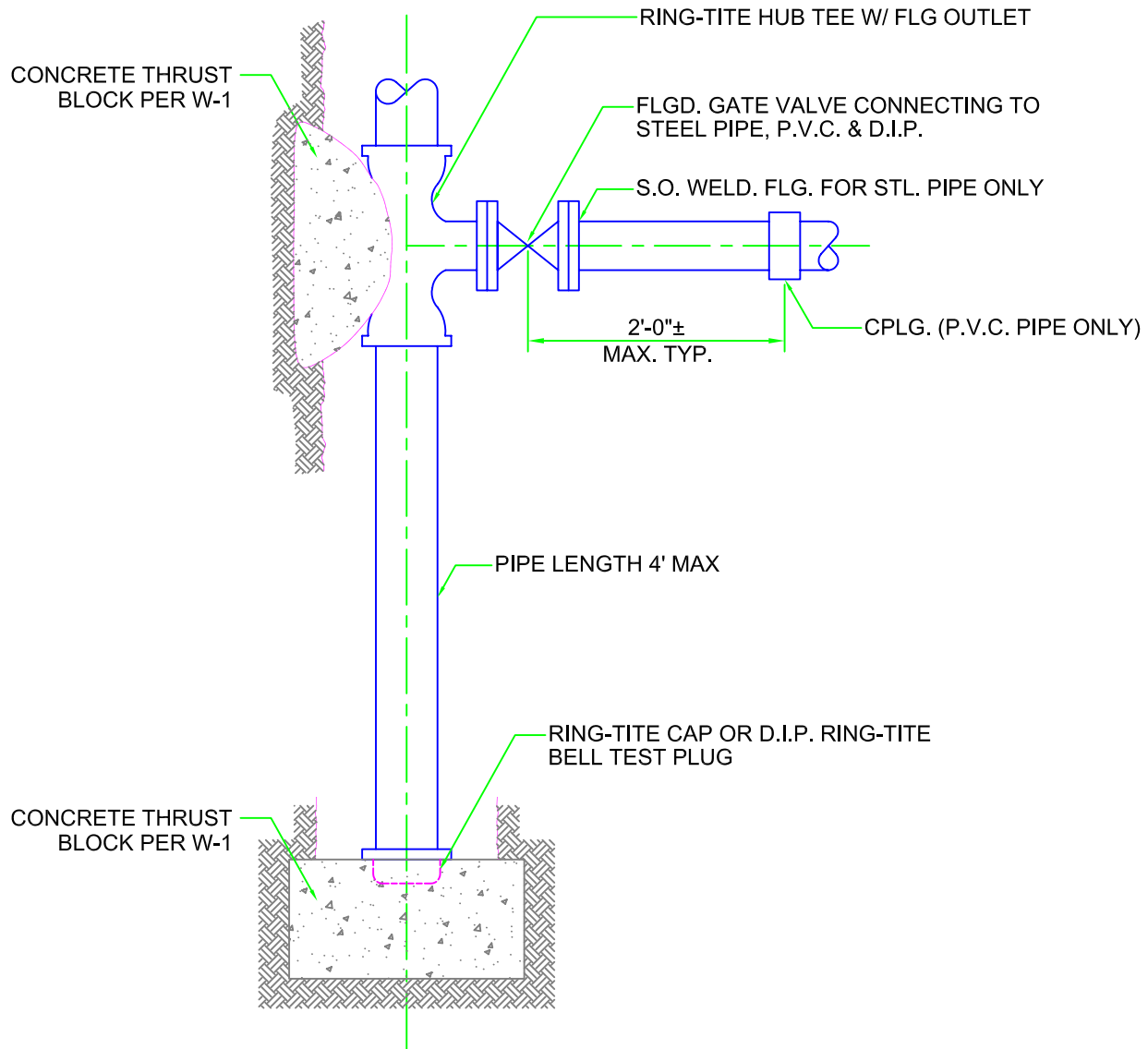


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STANDARD **W-20**

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



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CMS  
ENGINEER

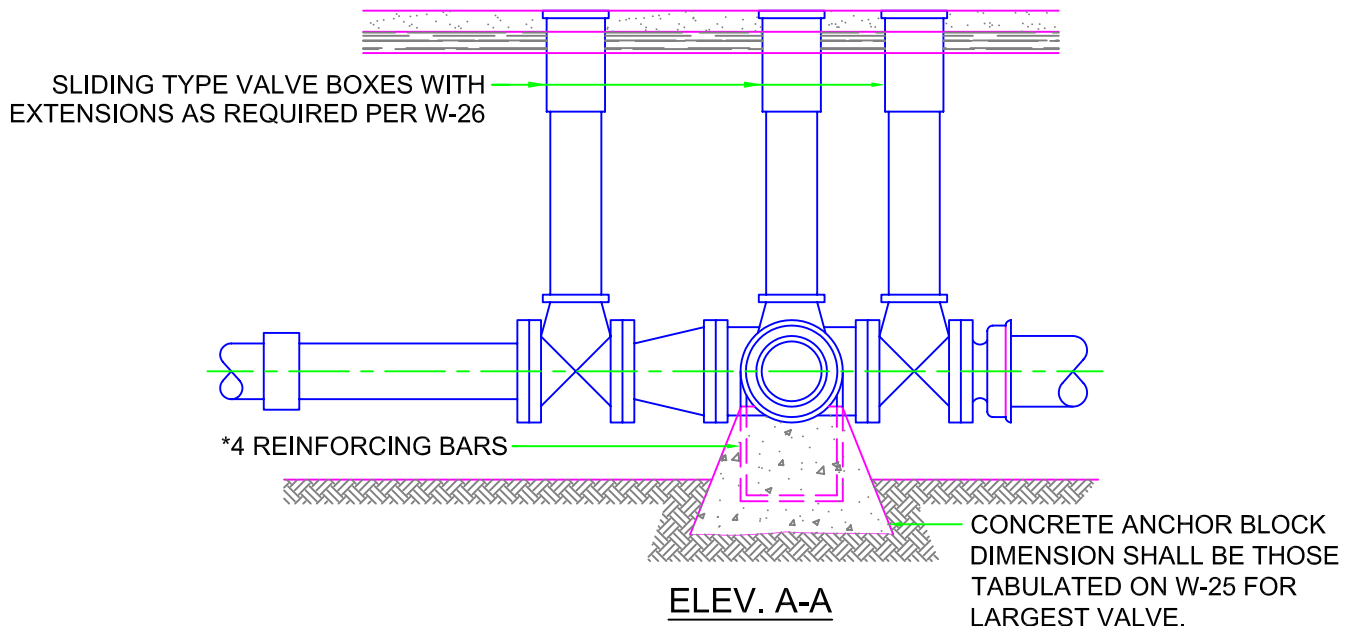
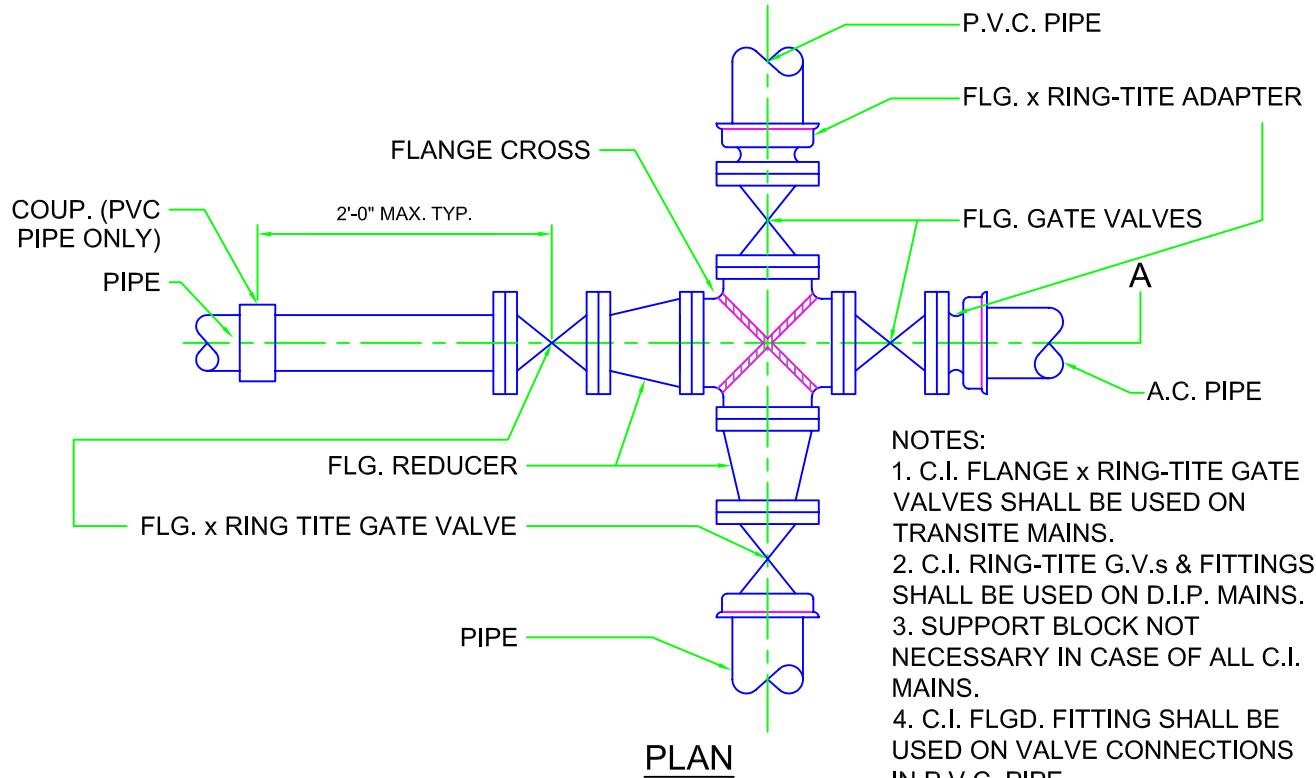


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STANDARD **W-22**

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



RHH  
MANAGER  
  
CMS  
ENGINEER

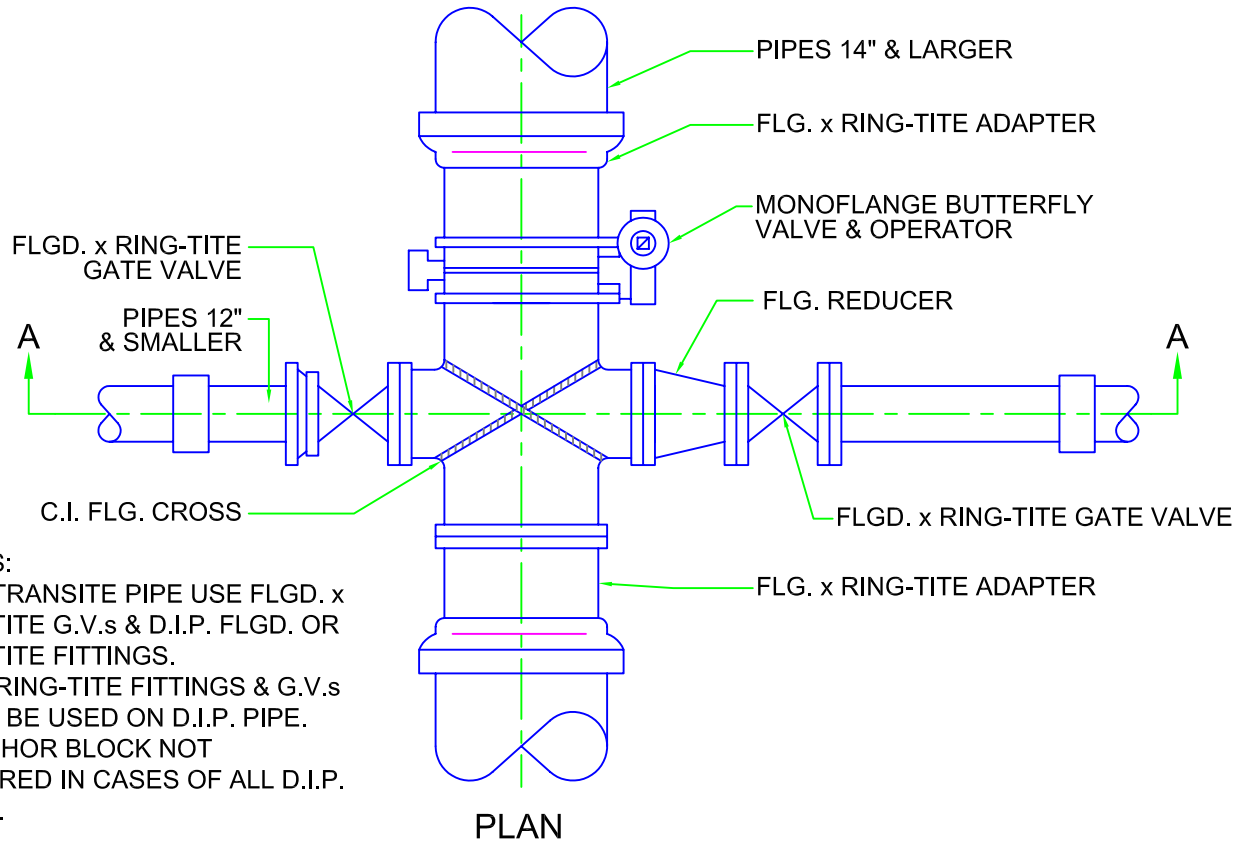


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DISTRICT  
STANDARD **W-23**

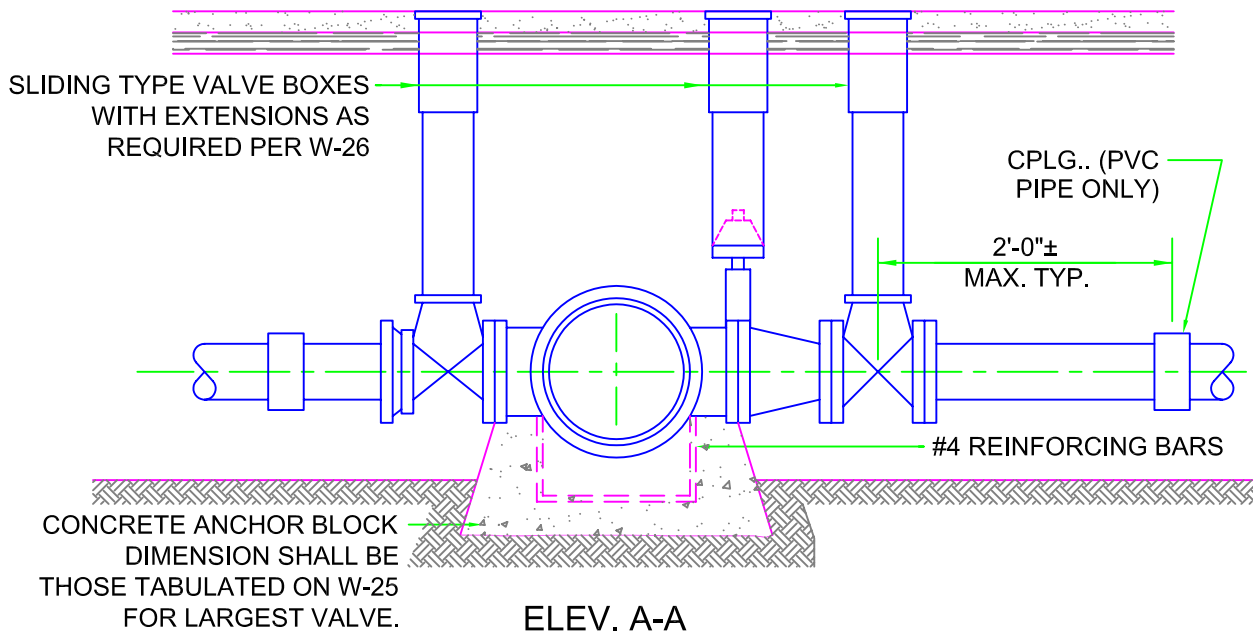
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# CROSS IN MAINS-ONE MONOFLANGE BUTTERFLY VALVE AND TWO FLGD. X RING-TITE GATE VALVES



## NOTES:

1. ON TRANSITE PIPE USE FLGD. x RING-TITE G.V.s & D.I.P. FLGD. OR RING-TITE FITTINGS.
2. C.I. RING-TITE FITTINGS & G.V.s SHALL BE USED ON D.I.P. PIPE.
3. ANCHOR BLOCK NOT REQUIRED IN CASES OF ALL D.I.P. MAINS.



RHH  
MANAGER  
CMS  
ENGINEER

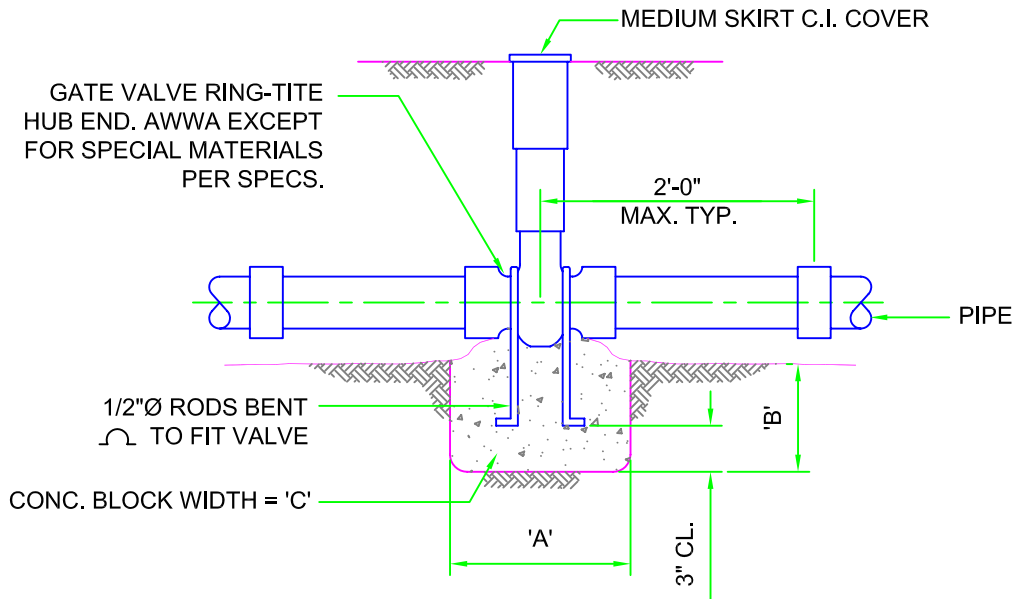


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DISTRICT  
STANDARD **W-24**

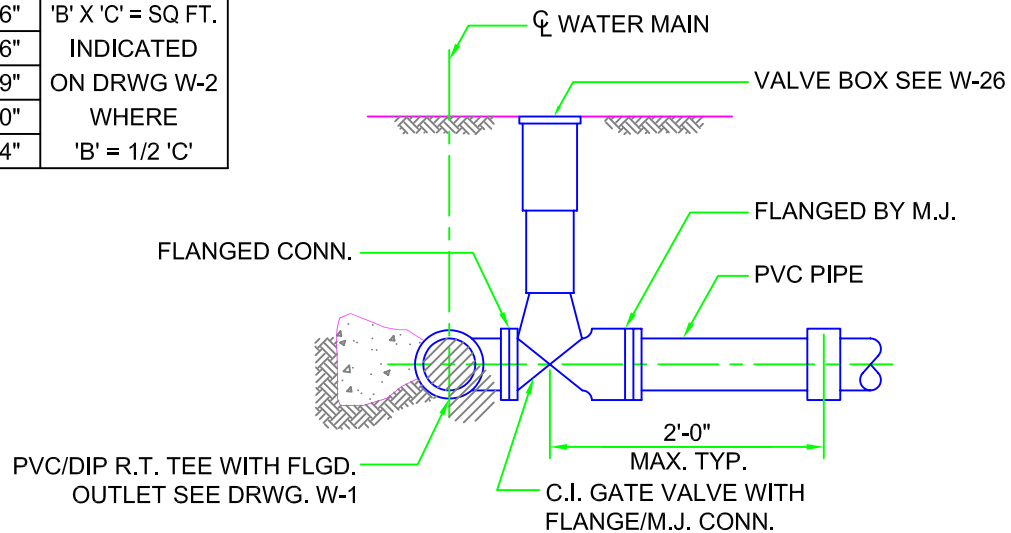
REVISED: March 1, 2007

# 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**

RHH  
MANAGER  
  
CMS  
ENGINEER

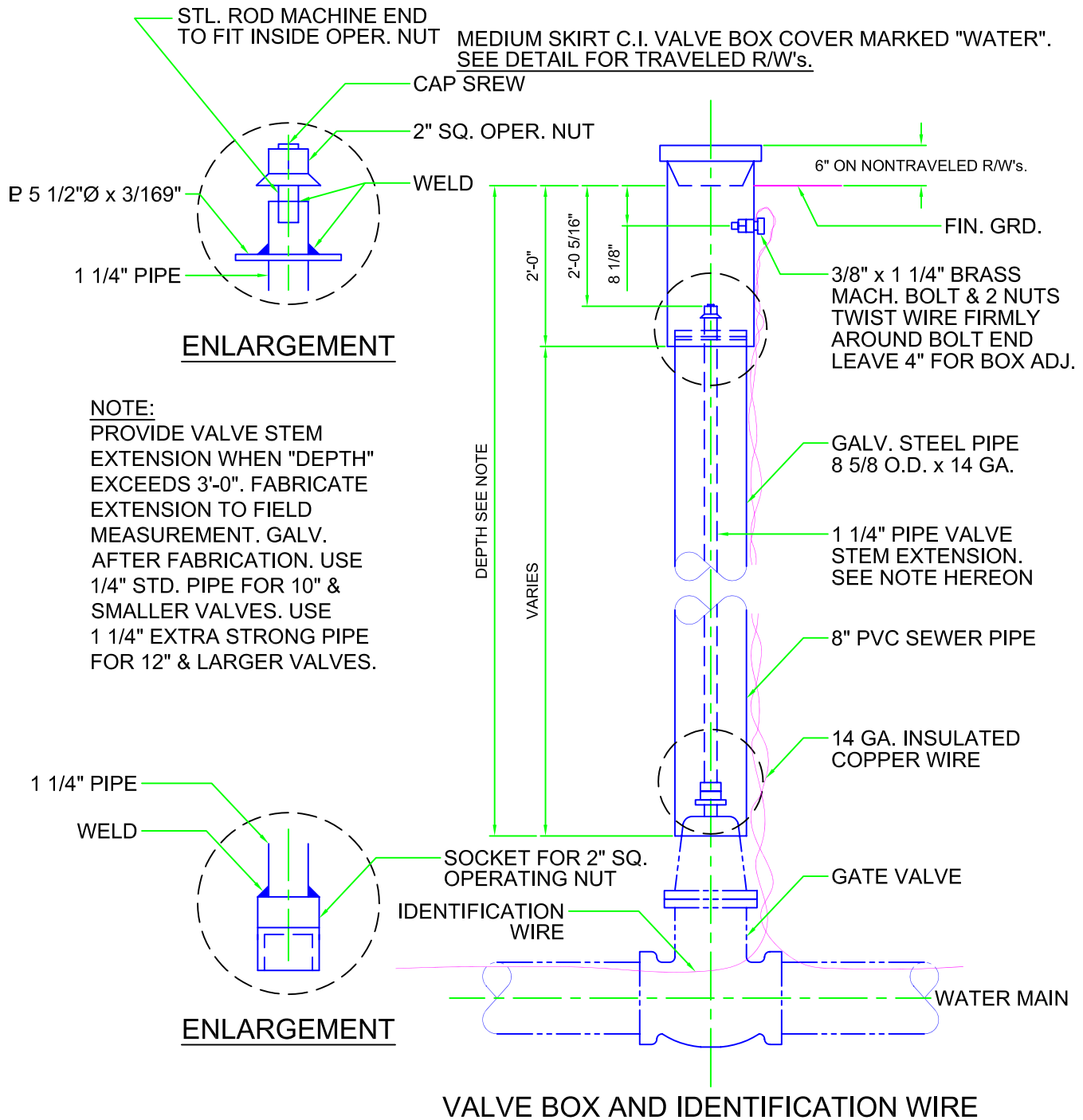


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STANDARD **W-25**

REVISED: March 1, 2007

# VALVE BOX DETAILS



RHH  
MANAGER  
CMS  
ENGINEER



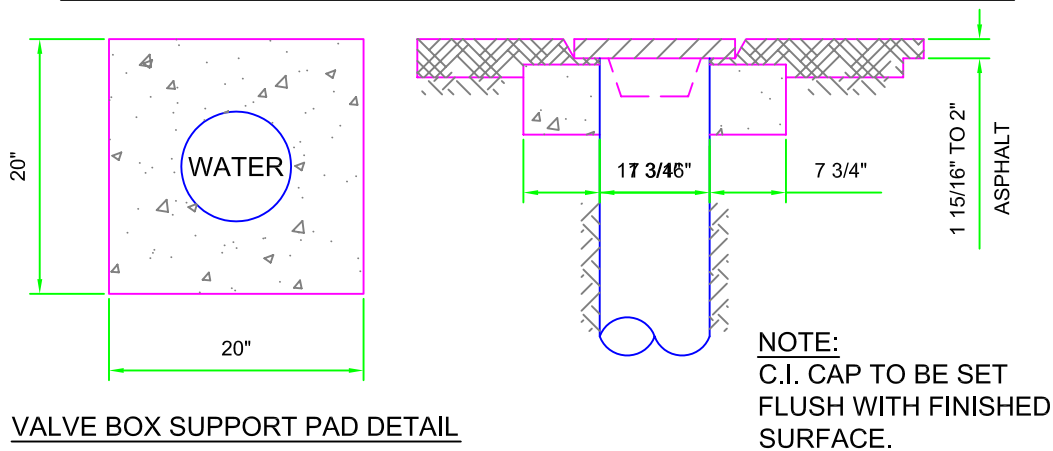
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DISTRICT STANDARD **W-26**

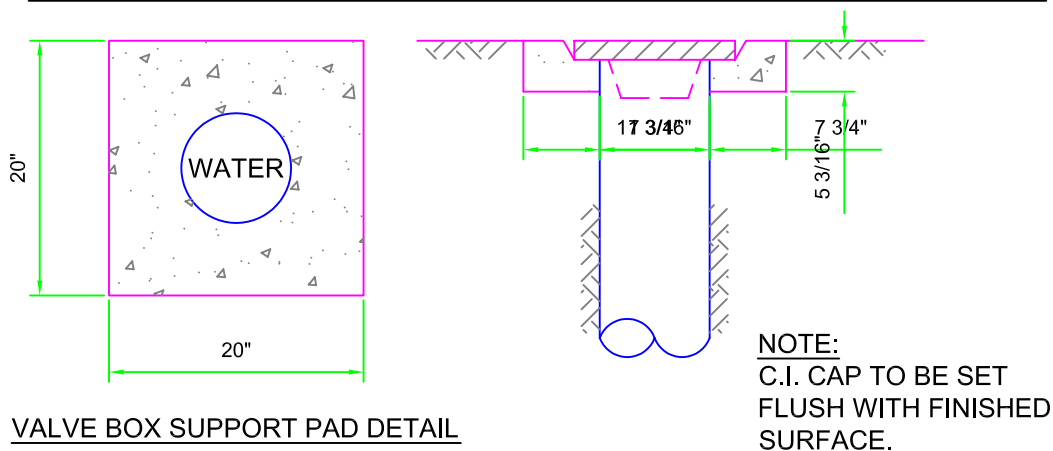
REVISED: March 1, 2007

# TYPICAL VALVE BOX INSTALLATION

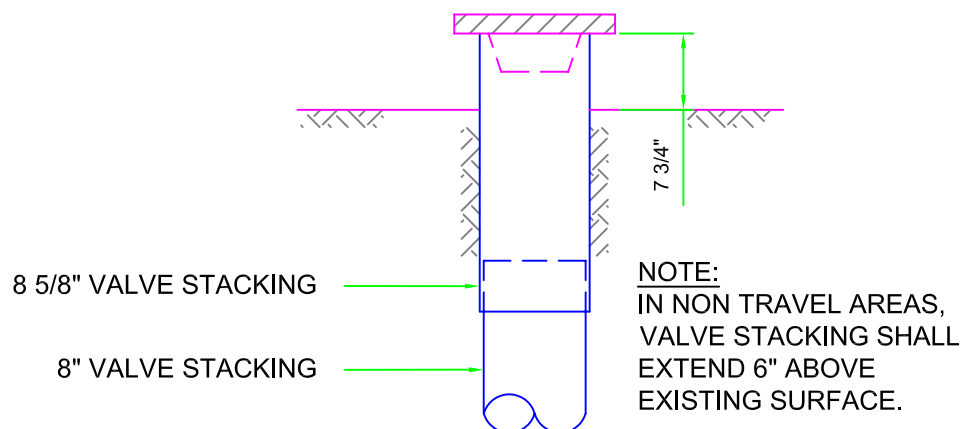
## TYPICAL VALVE BOX INSTALLATION IN (PAVED) TRAVEL WAY



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



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



RHH  
MANAGER  
CMS  
ENGINEER

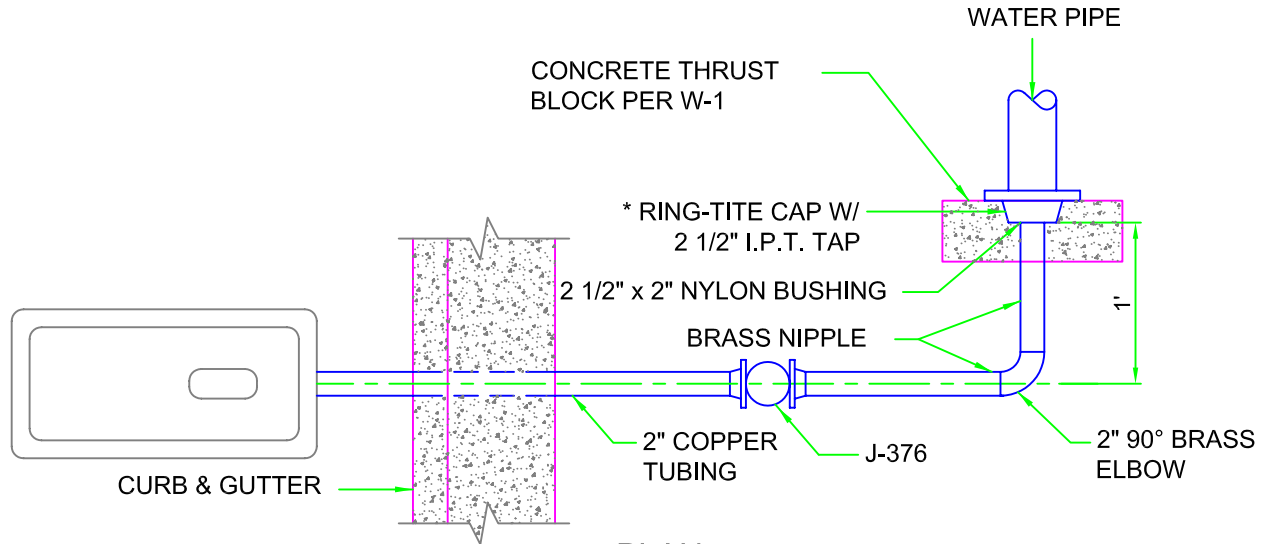


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DISTRICT  
STANDARD **W-27**

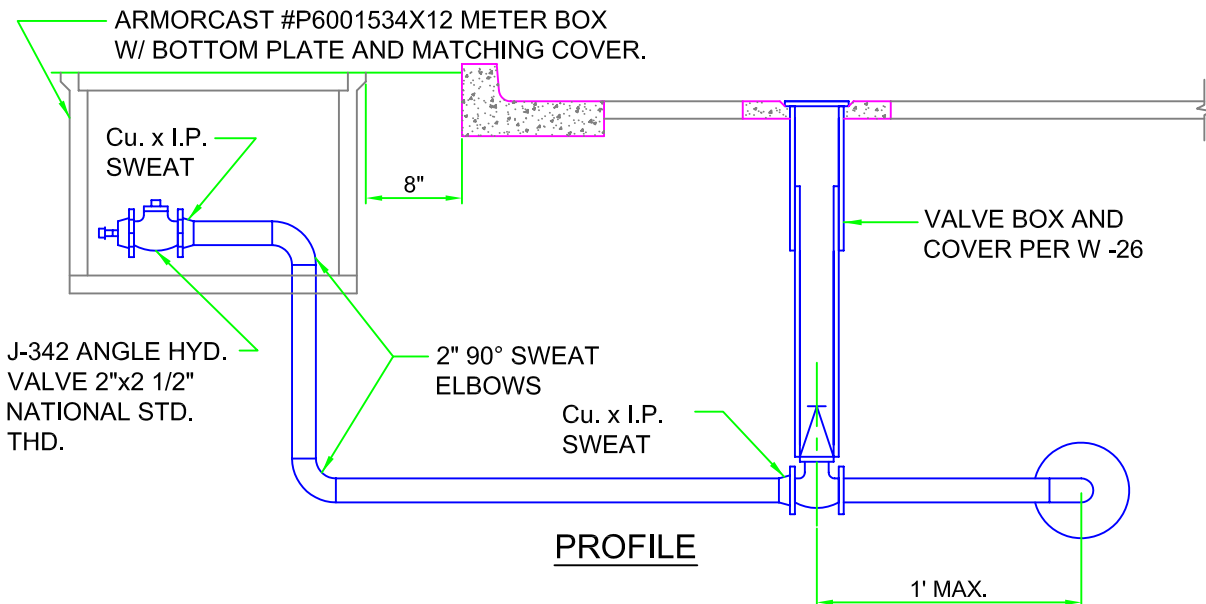
REVISED: March 1, 2007

# 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 "K" RIGID.

RHH  
MANAGER  
  
CMS  
ENGINEER

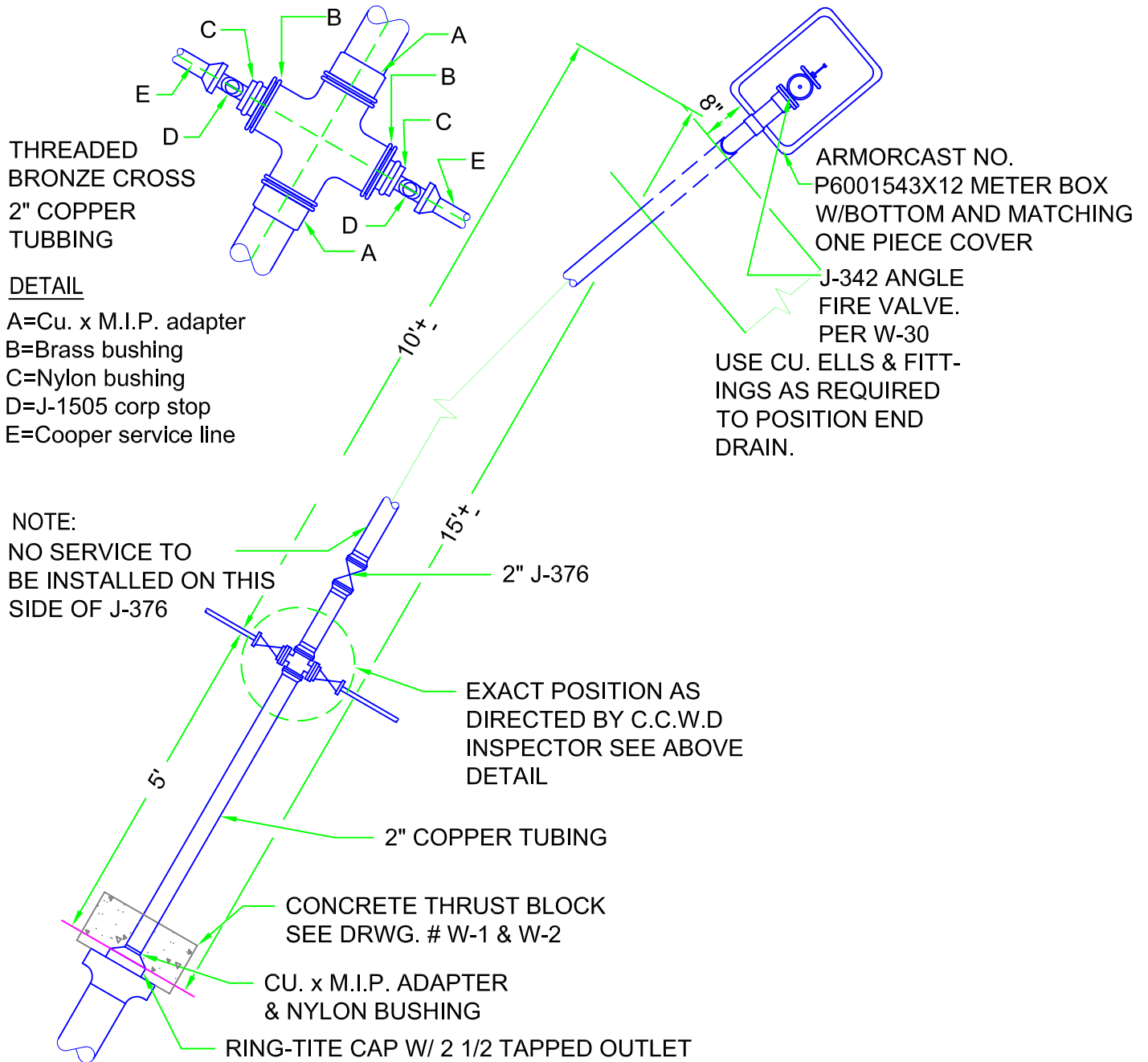


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DISTRICT STANDARD **W-30**

REVISED: March 1, 2007

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



RHH  
MANAGER  
  
CMS  
ENGINEER

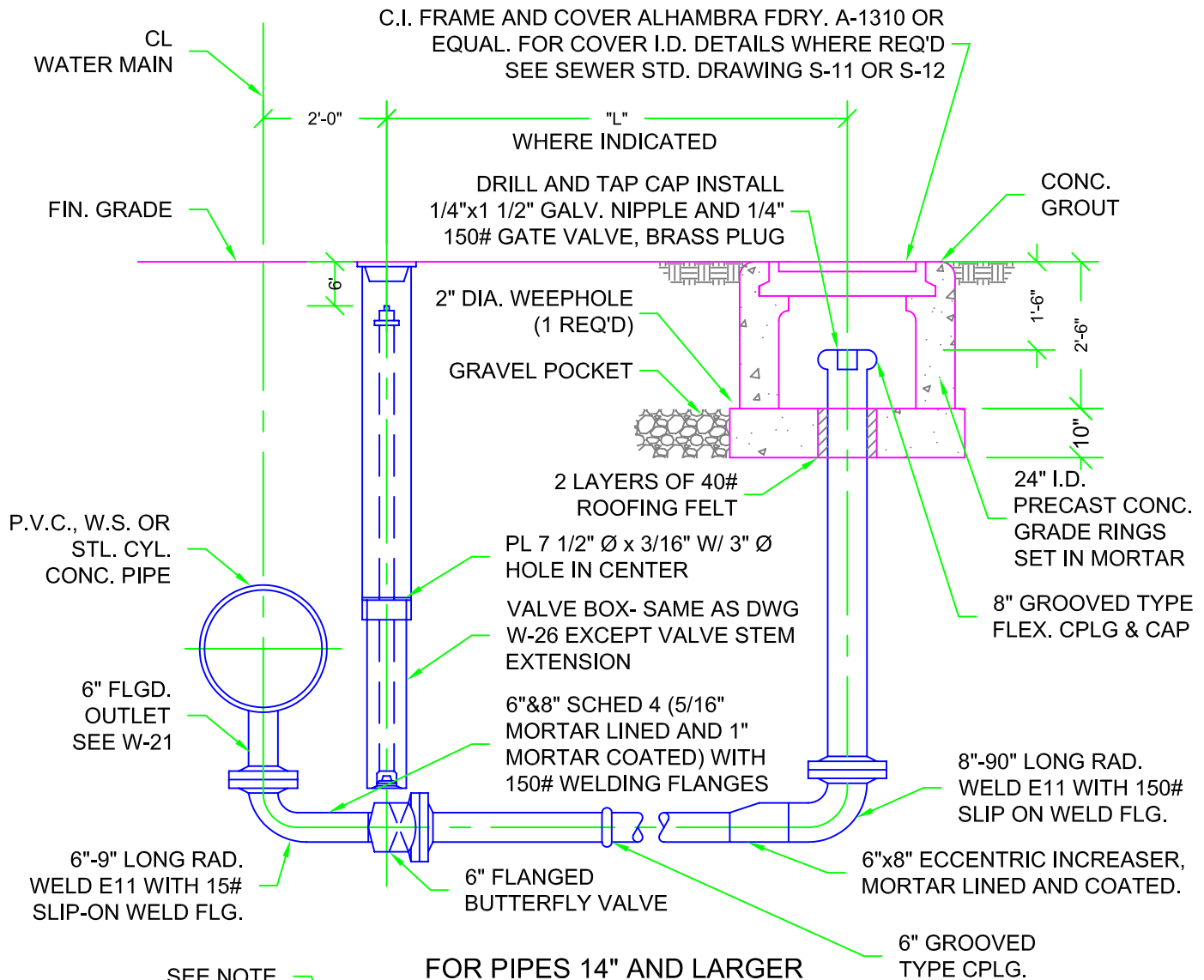


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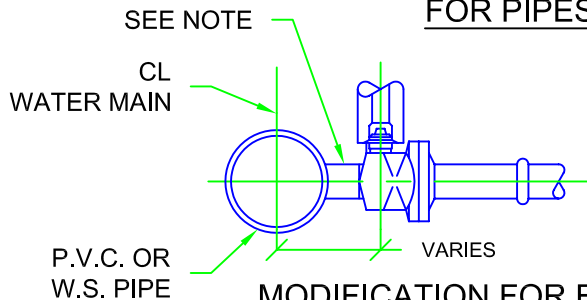
DISTRICT STANDARD **W-31**

REVISED: March 1, 2007

# TYPICAL 4" BLOW-OFF



## FOR PIPES 14" AND LARGER



### MODIFICATION FOR FOR PIPES 12" AND SMALLER

NOTE:

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

## ELEVATION

NOT TO SCALE

RHH  
MANAGER

CMS  
ENGINEER

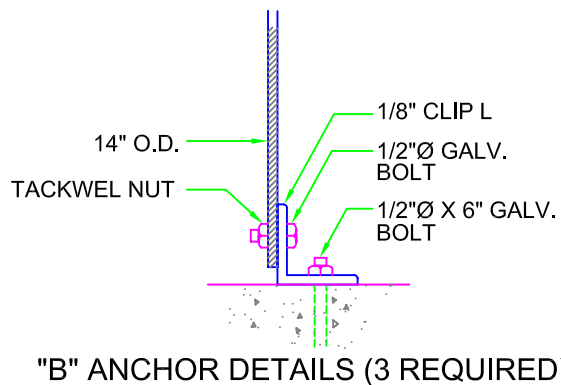
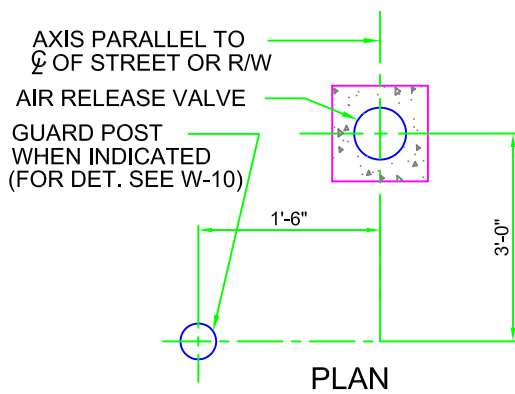
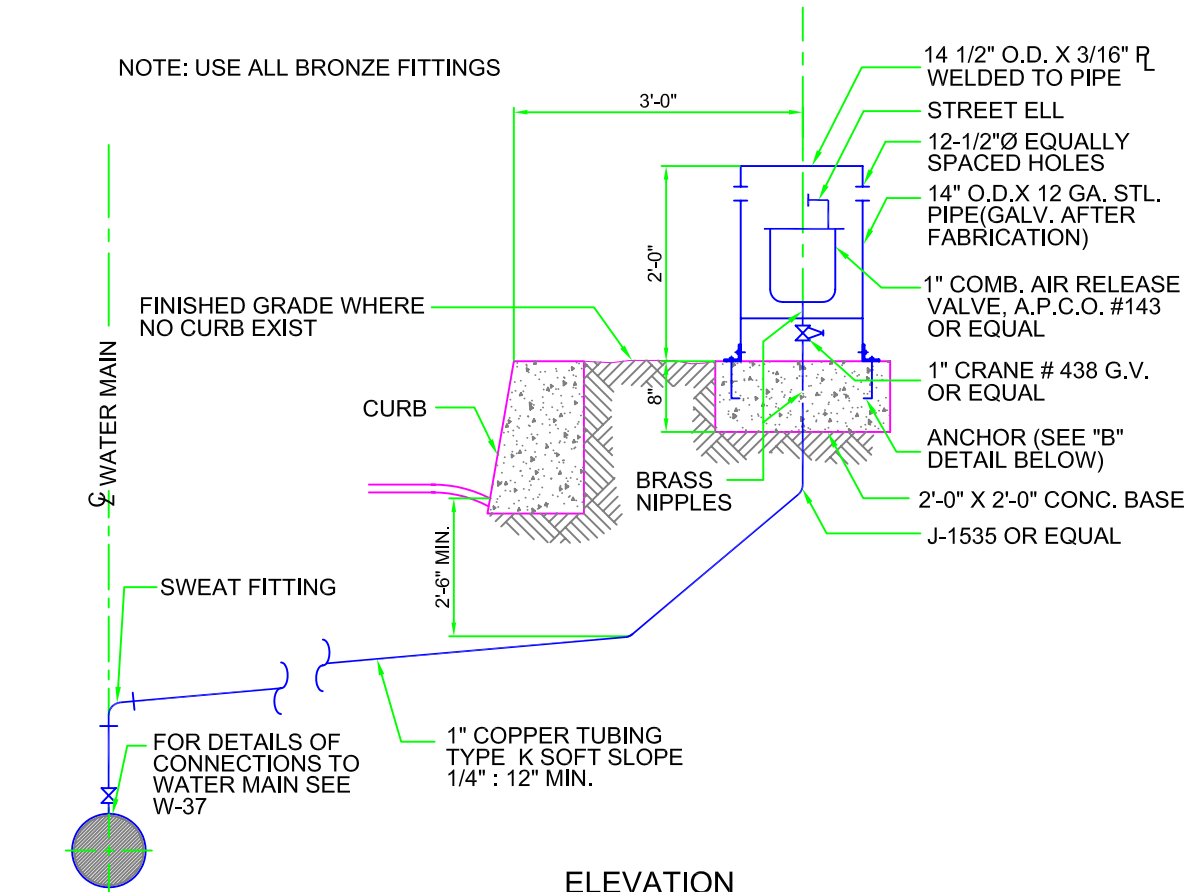


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DISTRICT STANDARD **W-32**

REVISÉ: March 1, 2007

# 1 INCH VACUUM AND AIR RELEASE



RHH  
MANAGER

CMS  
ENGINEER

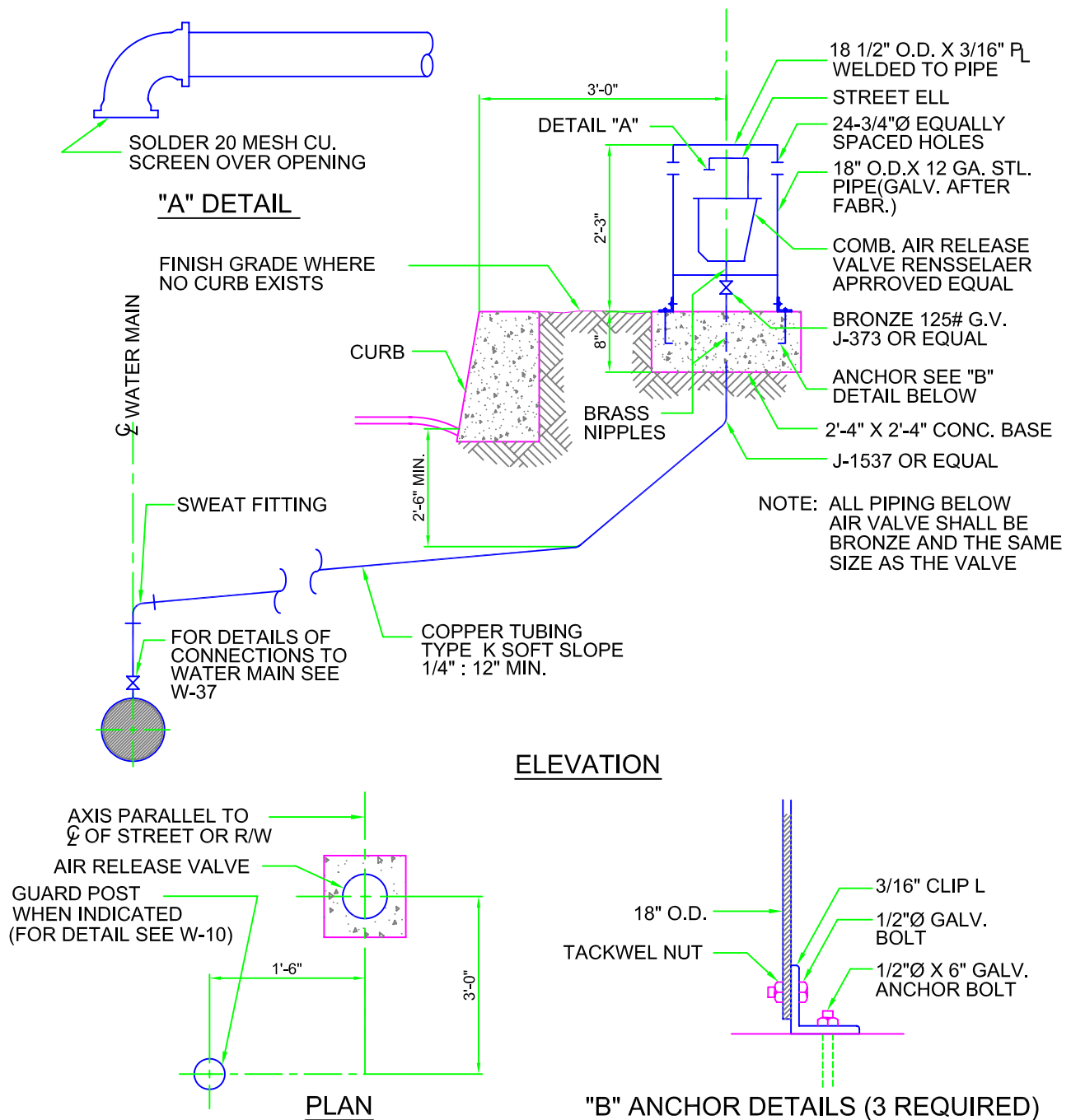


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REVISED: March 1, 2007

# 1 1/2 & 2 INCH VACUUM AND AIR RELEASE



RHH  
MANAGER  
CMS  
ENGINEER

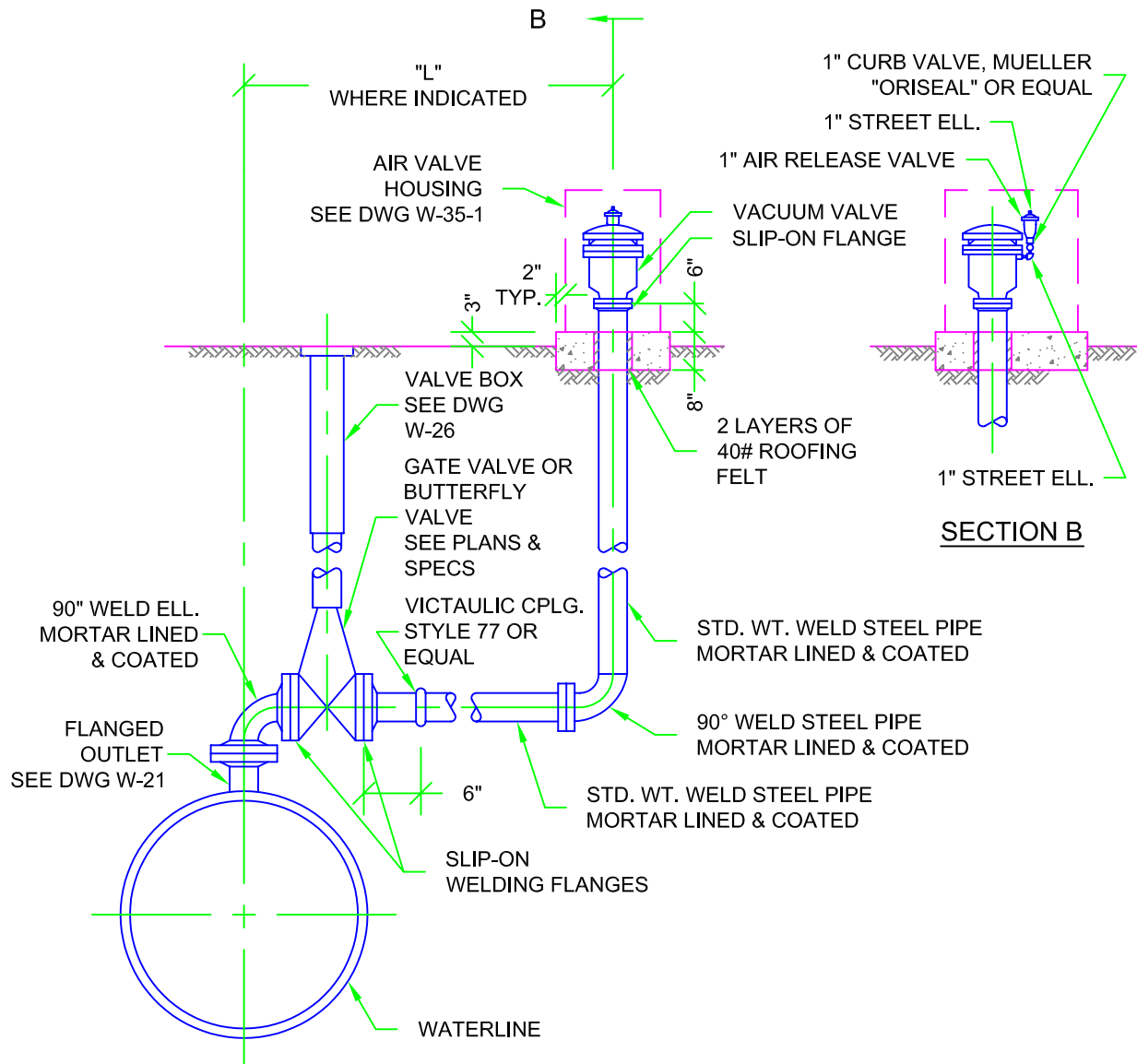


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DISTRICT STANDARD **W-34**

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# 4" AIR RELEASE VALVE



RHH  
MANAGER  
  
CMS  
ENGINEER

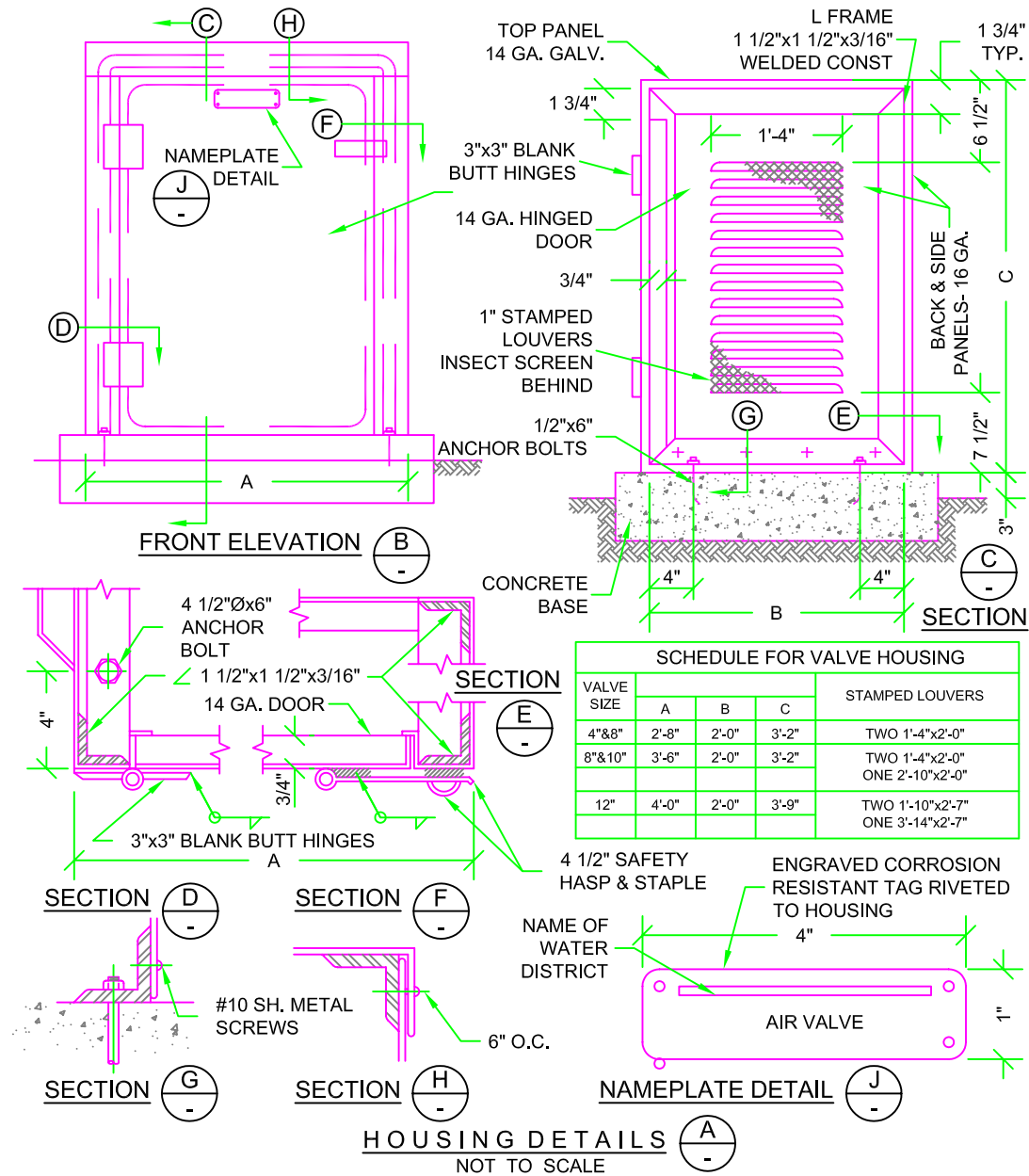


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DISTRICT  
STANDARD **W-35**

REVISED: March 1, 2007

# TYPICAL 4" AIR RELEASE VALVE ENCLOSURE



RHH  
MANAGER  
  
CMS  
ENGINEER

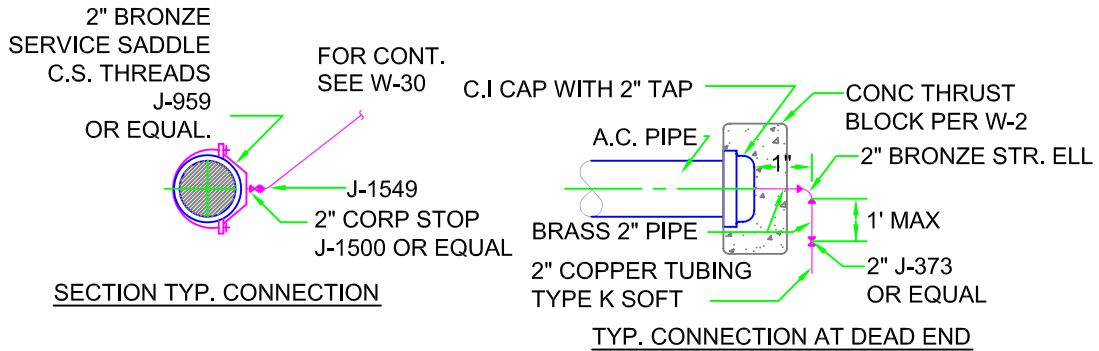


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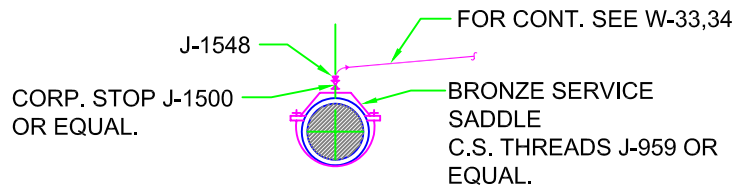
DISTRICT STANDARD **S-35-1**

REVISED: mARCH 1, 2007

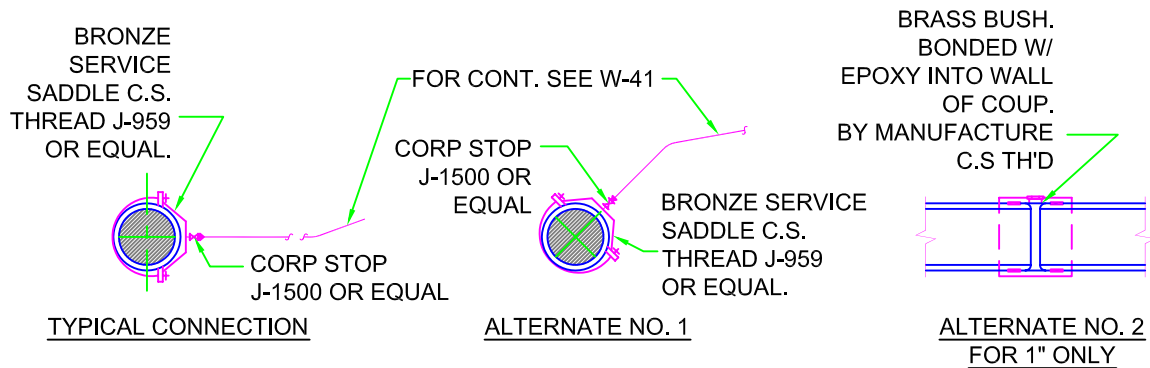
# 2 INCH & SMALLER CONNECTION FOR A.C. AND PVC PIPE



## 2" BLOW-OFF CONNECTIONS



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



## 1" THROUGH 2" SERVICE CONNECTIONS

### NOTE:

1. SEE SECTION III-II FOR DETERMINATION OF SERVICE SIZE.
2. ALL SERVICE SADDLES SHALL BE EQUIPPED WITH TWO (2) FLAT BRONZE STRAPS.

RHH  
MANAGER  
  
CMS  
ENGINEER

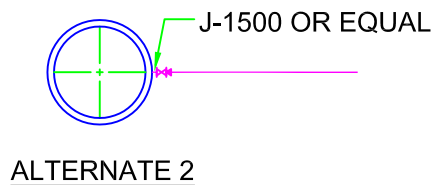
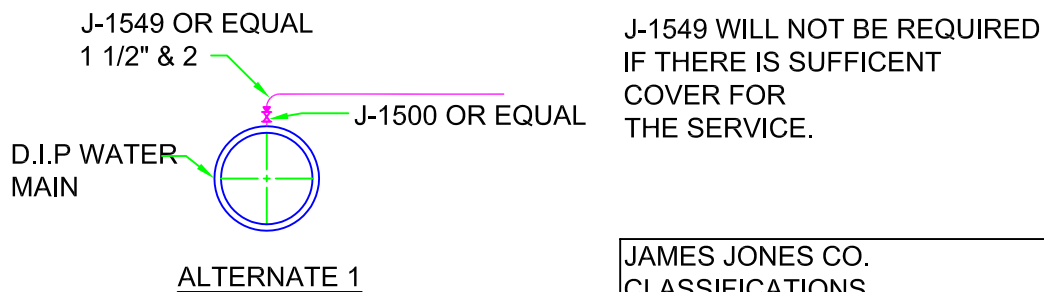
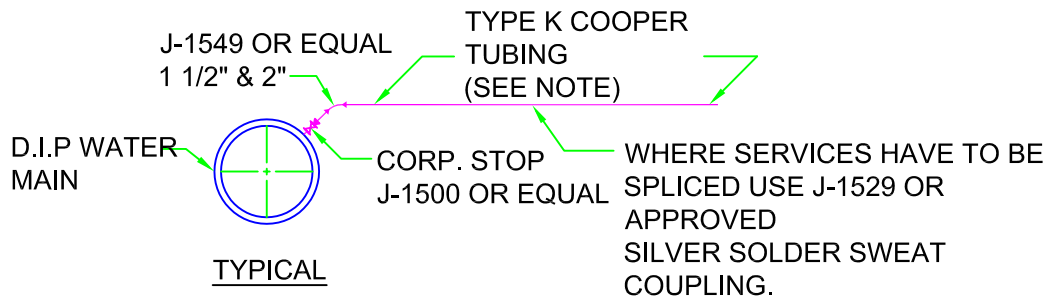


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DISTRICT STANDARD **W-37**

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# 2" AND SMALLER CONNECTIONS TO D.I.P. PIPE



JAMES JONES CO. CLASSIFICATIONS ARE USED TO IDENTIFY FITTINGS. SIMILAR FITTINGS FROM OTHER MANUFACTURERS MAY BE APPROVED.

## NOTE:

1. FOR 1 1/2" & 2" SERVICES TO 6" SMALLER D.I.P. PIPE USE

J-957 SADDLE OR APPROVED EQUAL WITH C.S. THREAD.

2. FOR 2" & SMALLER SER'S. IN D.I.P. PIPE OVER 6" IN DIAMETER

TAP WITH C.S. THREAD, NO SADDLE REQUIRED.

3. MINIMUM DISTANCE BETWEEN SERVICE TAPS SHALL BE ONE FOOT

RHH  
MANAGER  
  
CMS  
ENGINEER

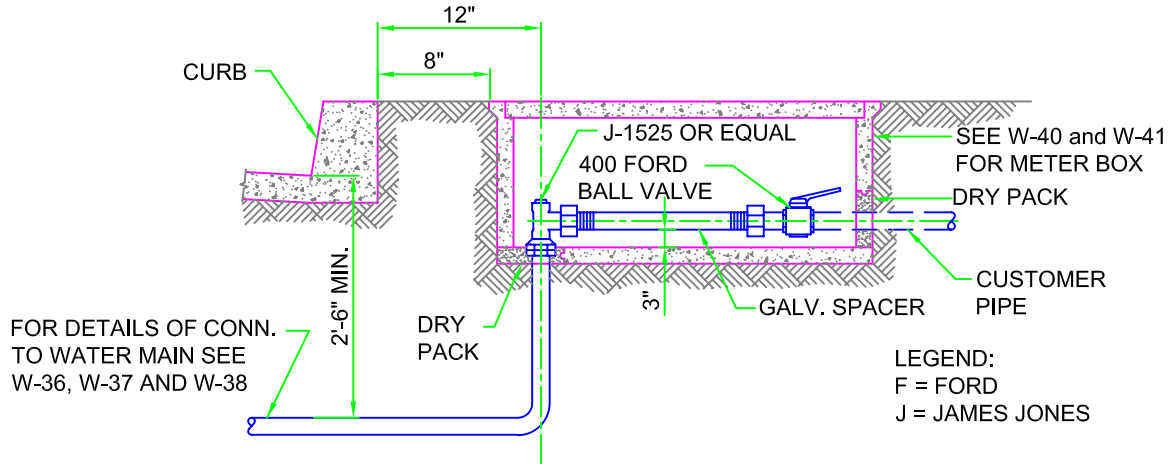


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DISTRICT  
STANDARD **W-38**

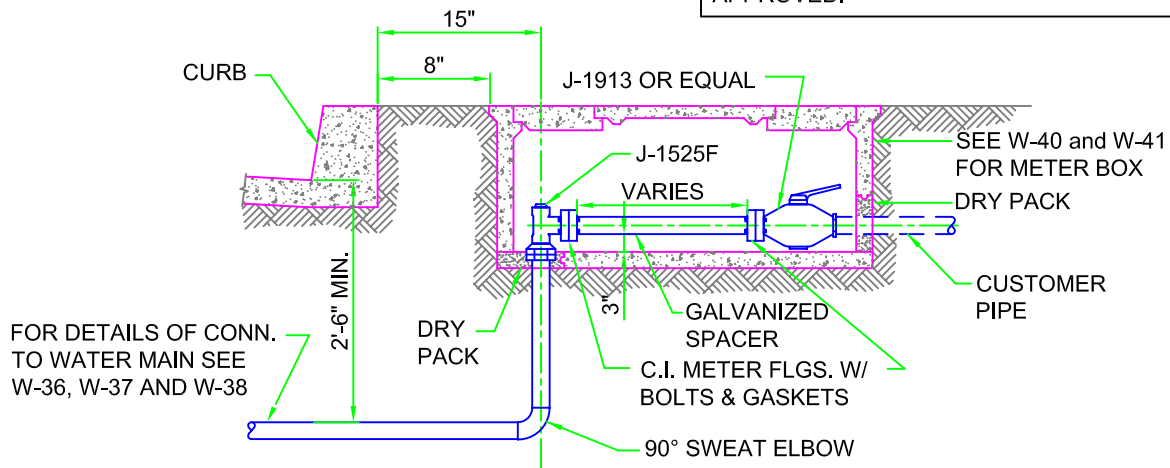
REVISED: March 1, 2007

# 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: WITHIN SUBDIVISION:  
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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CMS  
ENGINEER



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# TYPICAL SERVICE INSTALLATIONS

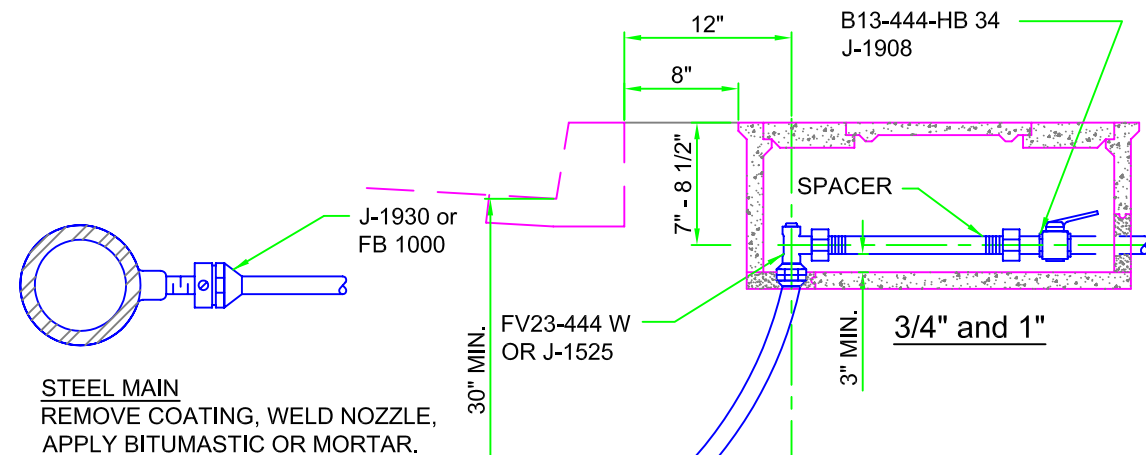
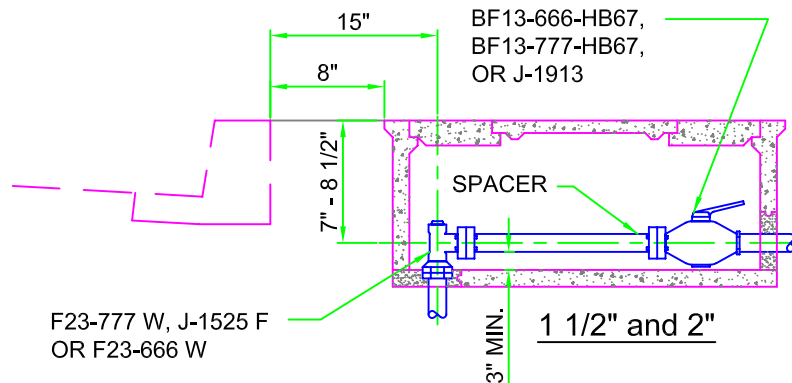
NOTE: COMPANY CLASSIFICATIONS ARE USED TO IDENTIFY FITTINGS. SIMILAR FITTINGS FROM OTHER MANUFACTURERS MAY BE APPROVED.

## 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)

## SERVICE SADDLE

PVC MAIN - J - 996 OR FS 90 - CC  
ACP MAIN - J - 959 OR F202 B - CC

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CMS  
ENGINEER

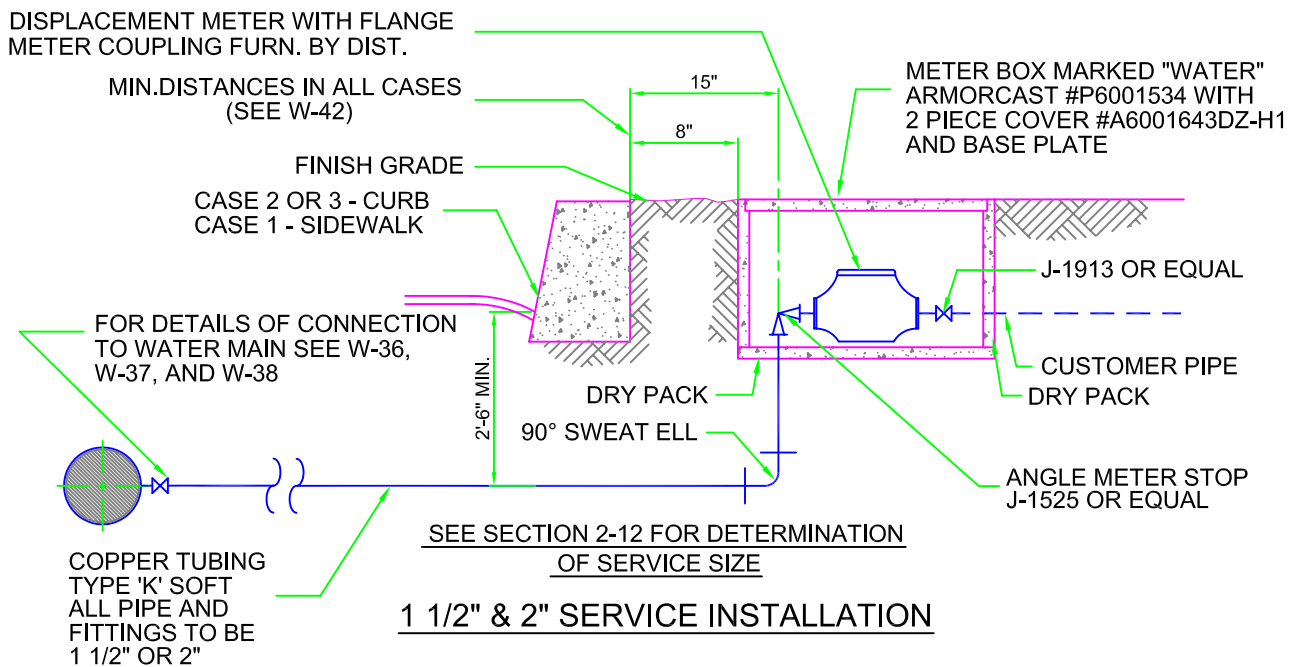
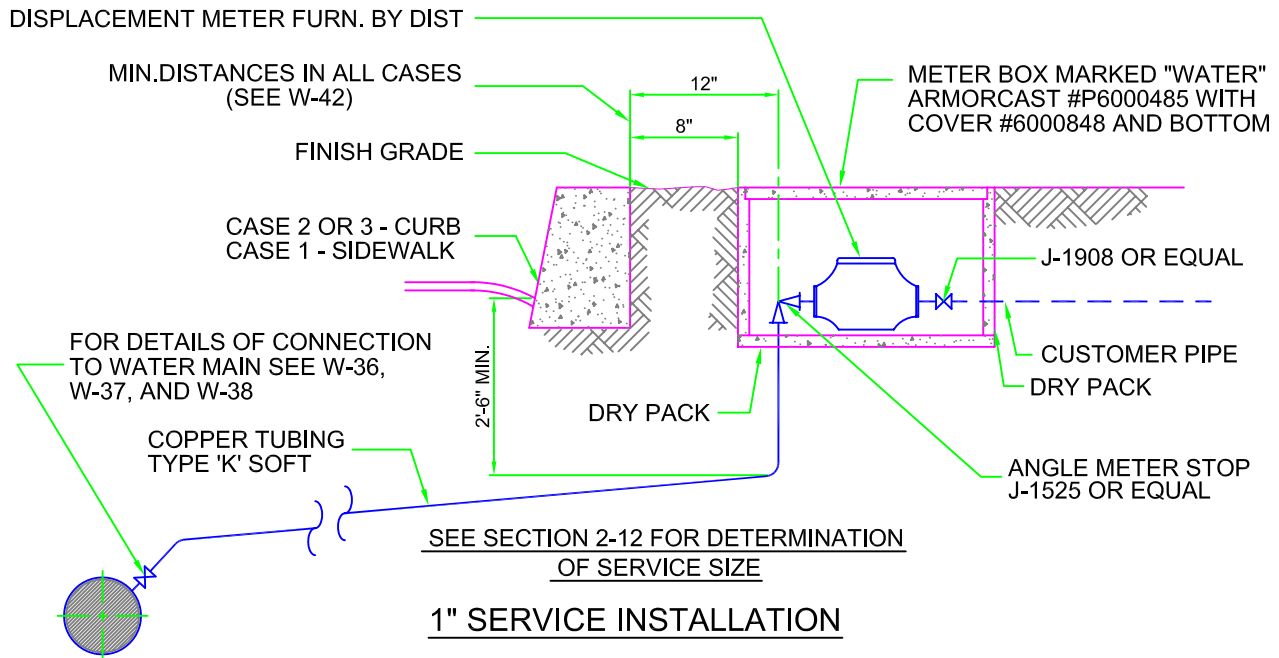


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STANDARD **W-40**

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# TYPICAL SERVICE & METER INSTALLATIONS



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

RHH  
MANAGER

CMS  
ENGINEER



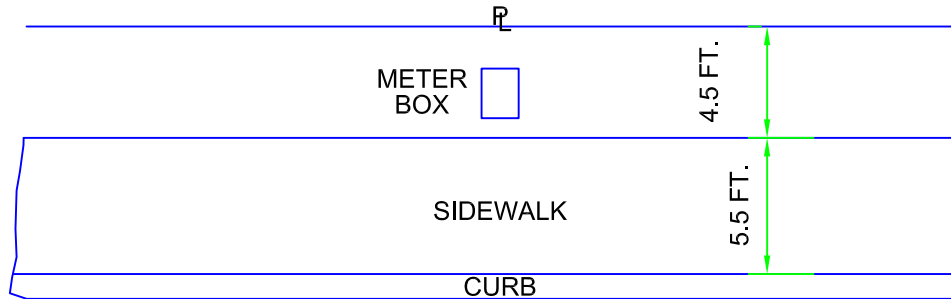
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DISTRICT  
STANDARD **W-41**

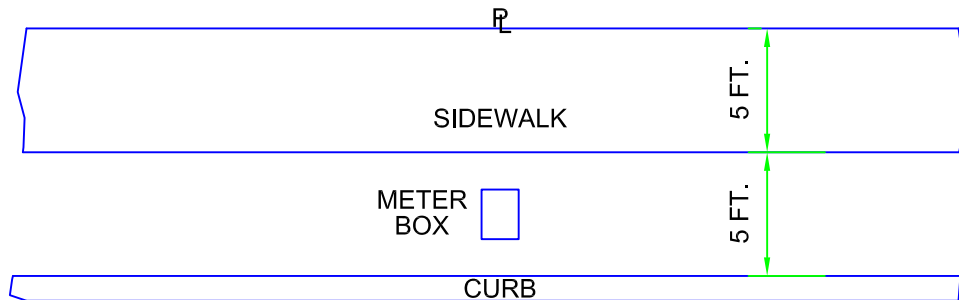
REVISED: March 1, 2007

# METER-SERVICE INSTALLATION

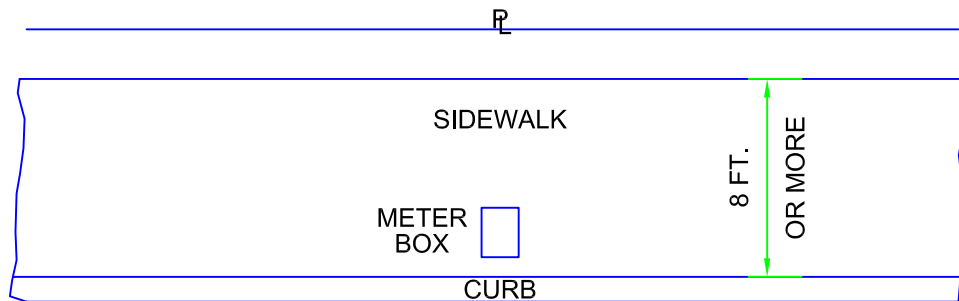
CASE 1



CASE 2



CASE 3



RHH  
MANAGER  
CMS  
ENGINEER

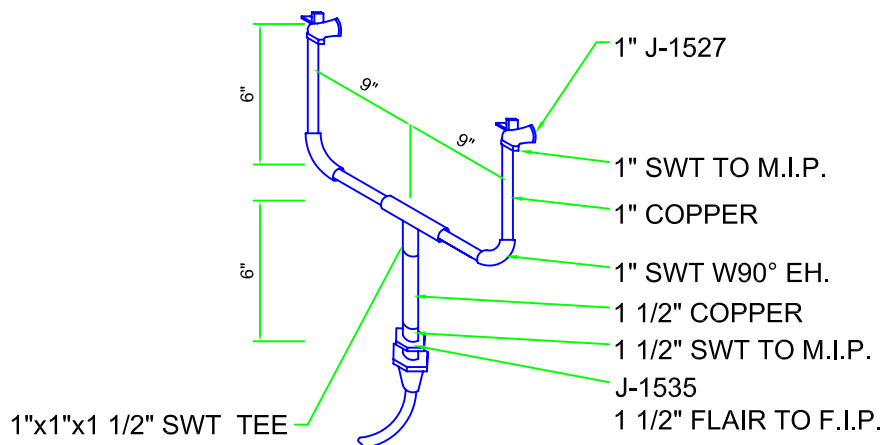
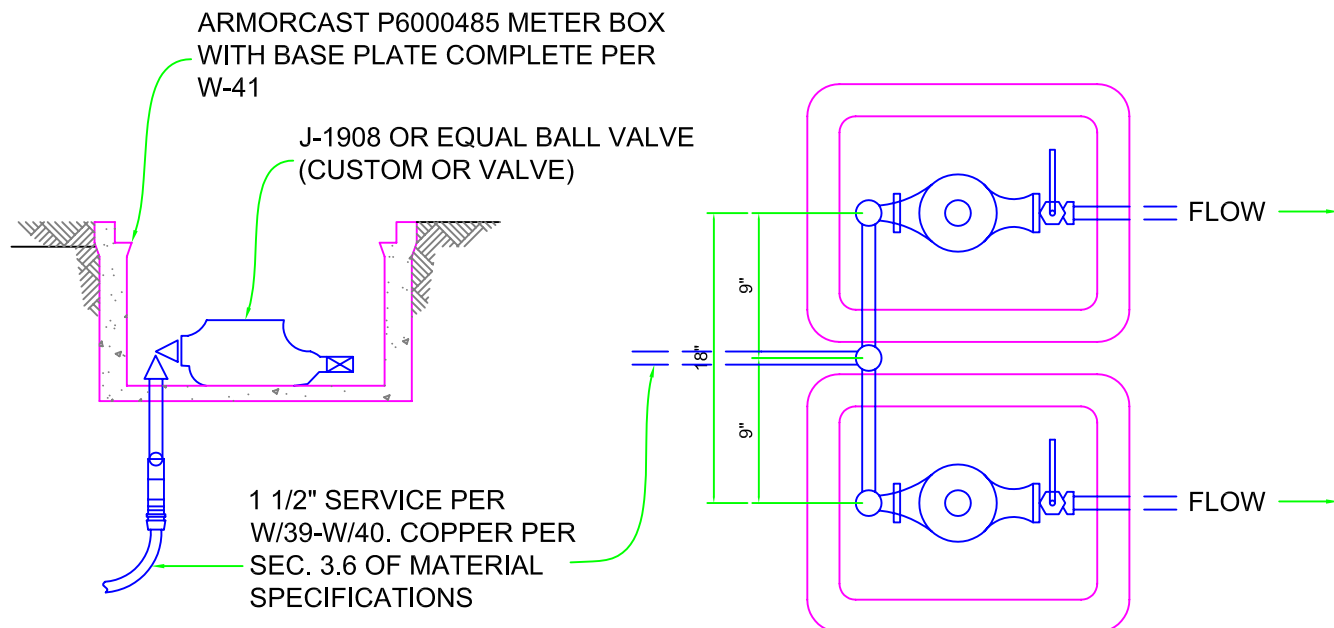


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DISTRICT  
STANDARD **W-42**

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



RHH  
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CMS  
ENGINEER



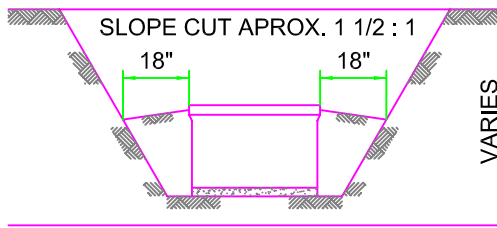
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DISTRICT  
STANDARD **W-47**

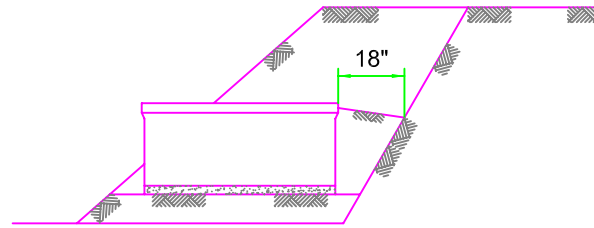
REVISED: March 1, 2007

# TYPICAL STRUCTURE INSTALLATION IN SLOPE

## METER BOX INSTALLATION



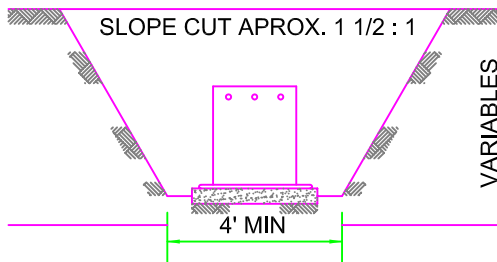
PROFILE



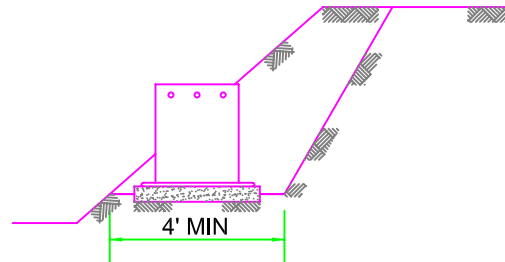
SIDE

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

## AIR-VAC INSTALLATION

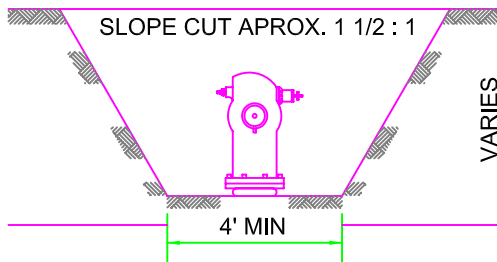


PROFILE

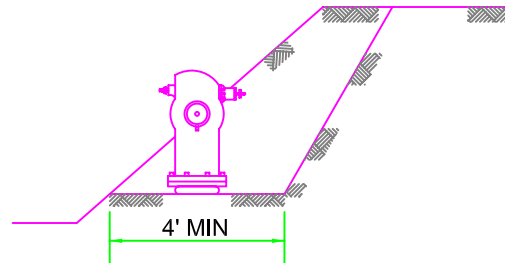


SIDE

## FIRE HYDRANT INSTALLATION



PROFILE



SIDE

RHH  
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CMS  
ENGINEER



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DISTRICT  
STANDARD **W-50**

REVISED: March 1, 2007

# ALLOWABLE LEAKAGE CHART

ALLOWABLE LEAKAGE PER 65 COUPLINGS *							
PIPE DIAMETER INCHES	TEST PRESSURE AT LOWEST POINT IN LINE - P.S.I.						
	50	75	100	125	150	200	225
	LEAKAGE - G.P.H.						
4	0.71	0.87	1.00	1.02	1.23	1.42	1.51
6	1.06	1.29	1.51	1.68	1.84	2.12	2.25
8	1.42	1.72	2.00	2.24	2.45	2.84	3.00
10	1.77	2.15	2.50	2.79	3.07	3.54	3.75
12	2.12	2.58	3.00	3.35	3.68	4.24	4.52
14	2.48	3.01	3.50	3.91	4.28	4.96	5.26
16	2.83	3.44	4.01	4.47	4.89	5.68	6.00
18	3.18	3.87	4.52	5.02	5.52	6.37	6.75
20	3.54	4.30	5.00	5.58	6.12	7.08	7.51
24	4.24	5.16	6.00	6.69	7.34	8.50	9.01
30	5.30	6.45	7.51	8.37	9.18	10.62	11.26
36	6.37	7.75	9.01	10.07	11.02	12.74	13.50

\* THE DATA ARE BASED ON 150 P.S.I. AND REPRESENT A LEAKAGE OF APPROXIMATELY 30 G.P.D. PER MILE OF PIPE PER INCH OF PIPE DIAMETER FOR PIPE IN 20 FT. LENGTHS.

RHH  
MANAGER  
  
CMS  
ENGINEER

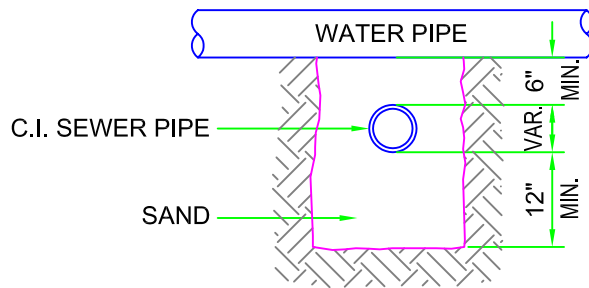
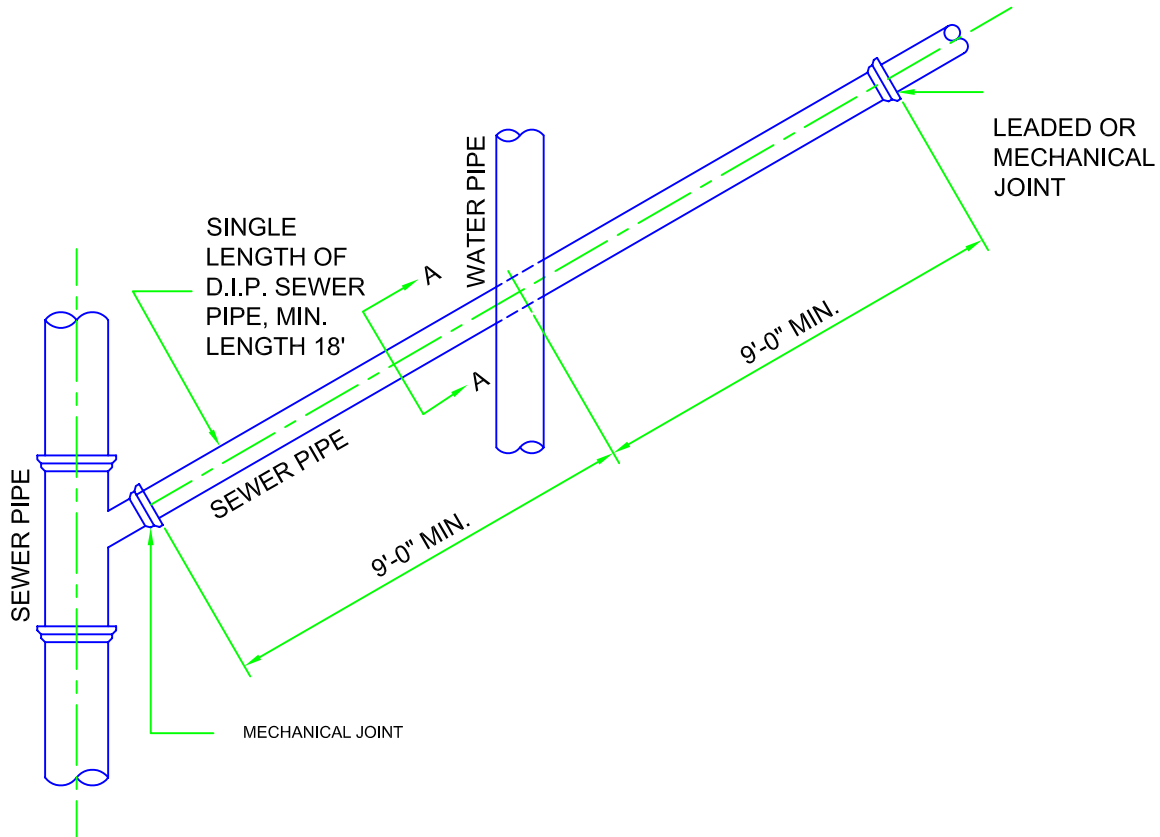


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STANDARD **W-51**

REVISED: March 1, 2007

# 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 COMPILED WITH.

2. NO JOINTS WITHIN 10' EACH WAY.

RHH  
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CMS  
ENGINEER



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