

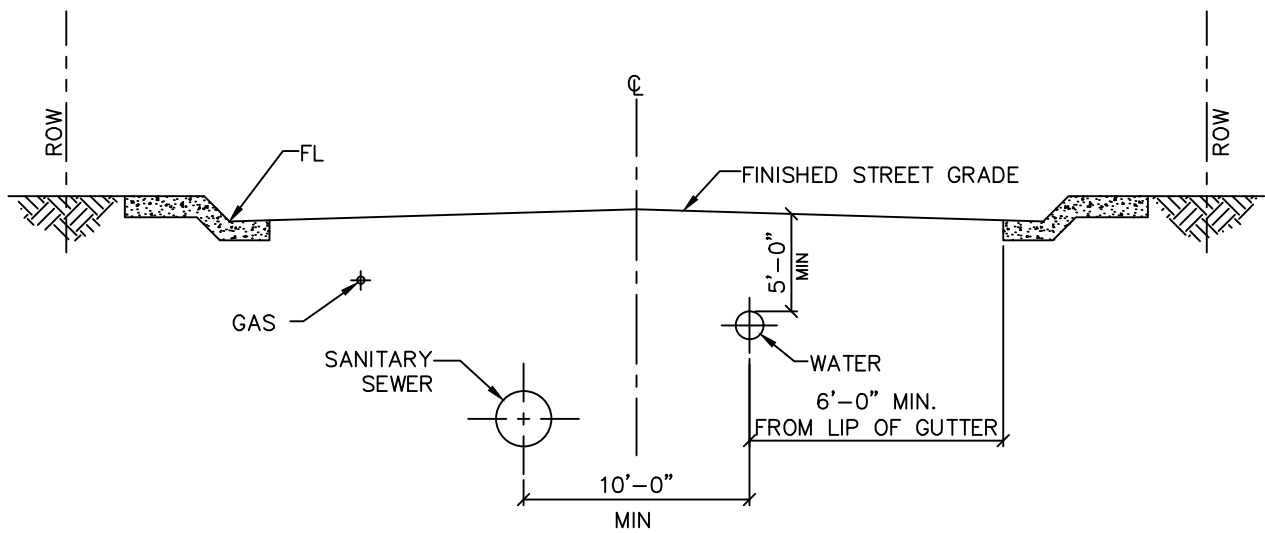
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WATER

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TYPICAL STREET CROSS SECTION

NOTES:

1. NORTH BOUND STREET,
WATER TO BE 6' FROM EAST
LIP OF GUTTER.
2. EAST BOUND STREET, WATER
TO BE 6' FROM NORTH LIP
OF GUTTER.
3. IF NO GUTTER, WATER TO BE
6' FROM EDGE OF PAVEMENT.



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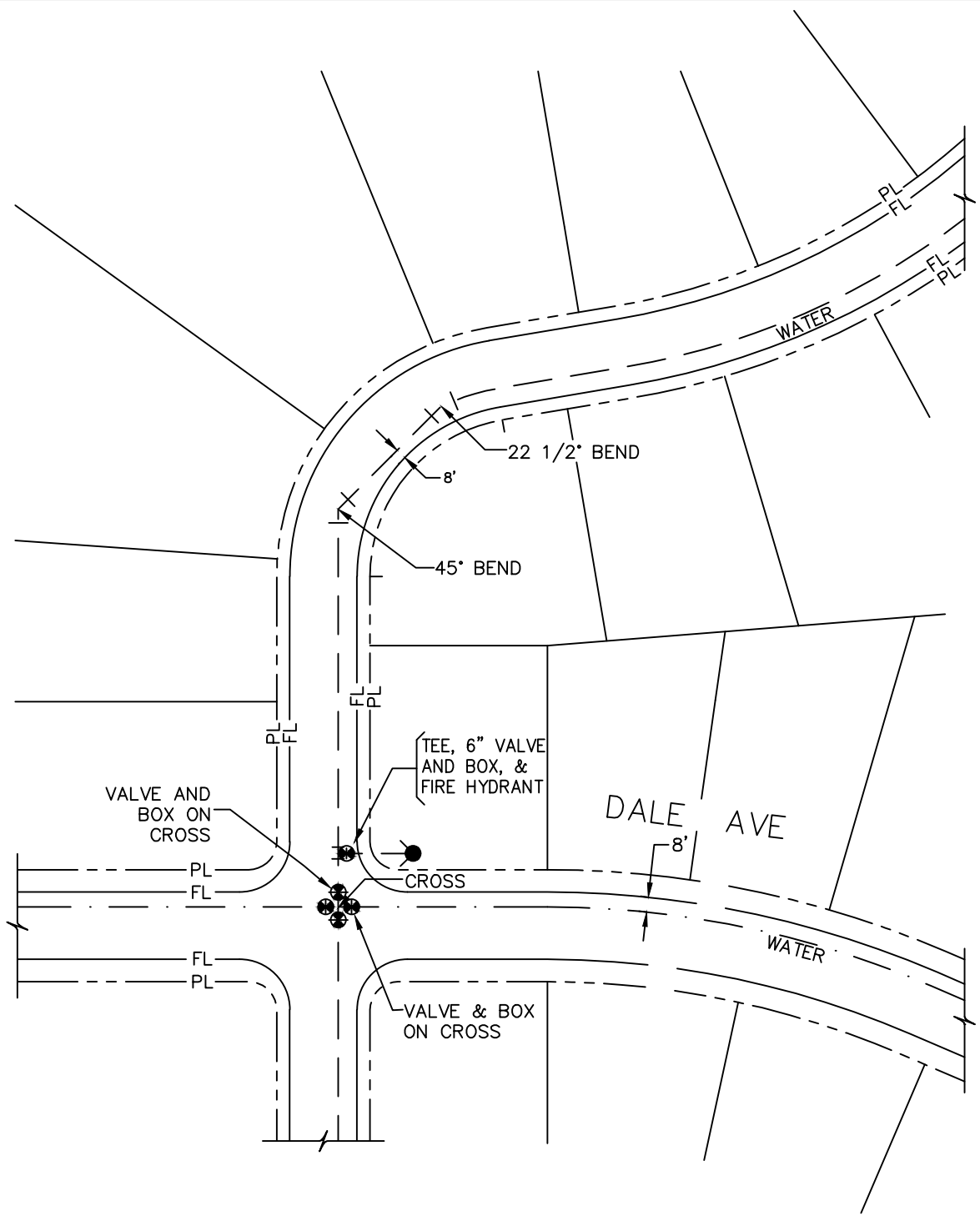
TYPICAL STREET CROSS SECTION
FOR WATER LINE LOCATION

Scale: NONE

Date: MARCH 2019

Revised:

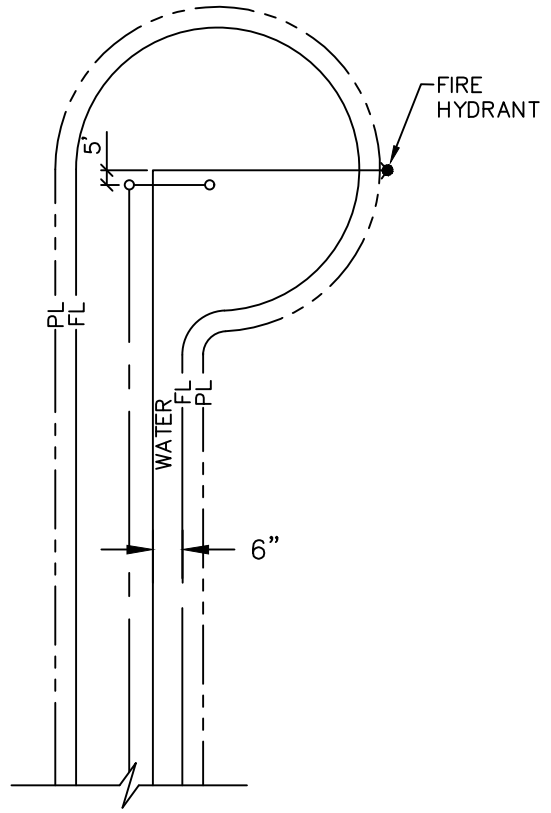
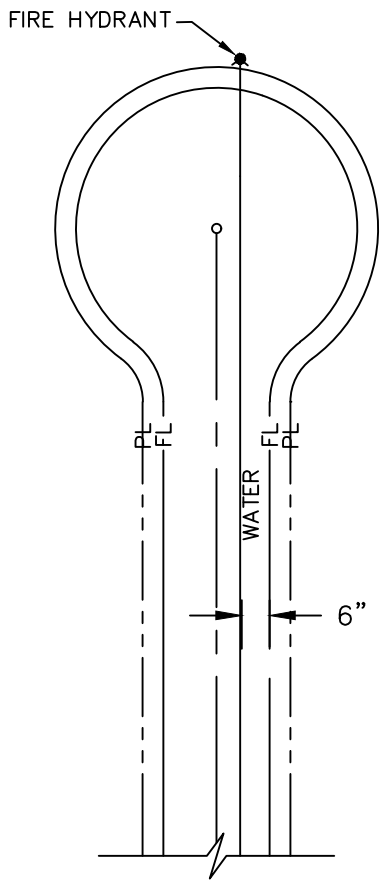
Detail: W-1



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WATER DISTRIBUTION SYSTEM
TYPICAL PLAN FOR CURVED STREETS

Scale: <i>NONE</i>	Date: <i>MARCH 2019</i>
Revised:	Detail: <i>W-2</i>




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WATER DISTRIBUTION SYSTEM
 TYPICAL PLAN FOR CUL-DE-SACS

Scale: *NONE*

Date: *MARCH 2019*

Revised:

Detail: *W-3*

PIPE BEDDING:

(a) Installation of Bedding and Pipe: After completion of the trench excavation and proper preparation of the foundation, six inches (6") of bedding material shall be placed on the trench bottom for support under the pipe. Bell holes shall be dug deep enough to provide a minimum of two inches (2") of clearance between the bell and bedding material. All pipe shall be installed in such a manner as to insure full support of the pipe barrel over its entire length. After the pipe is adjusted for line and grade, and the joint is made, the bedding material shall be carefully placed and tamped under the haunches of the pipe and in the previously dug bell holes.

Tamping is herein defined as the act of placing approved bedding material under the haunches of the pipe, paying particular attention to voids, bell holes, and sling holes. The purpose of tamping is to ensure uniform support for the pipe.

The limits of bedding shall be from six inches (6") below the bottom of the pipe to twelve inches (12") above the top of the pipe. Approved backfill may then be installed to the groundline.

Compaction of bedding is not required. The only requirement is sufficient tamping to achieve uniform support under the pipe. See Detail W-5 of the Standard Drawings for a typical trench cross section.

(b) Bedding Material: The bedding material shall be a clean well-graded sand or squeegee sand and shall conform to the following limits when tested by means of laboratory sieves:

Well-Graded Sand

<u>Sieve Size</u>	<u>Total Percent Passing by Weight</u>
3/8 inch	100
No. 4	95-100
No. 8	80-100
No. 16	50-85
No. 30	25-60
No. 50	10-30
No. 100	2-10
No. 200	0

Squeegee Sand

<u>Sieve Size</u>	<u>Total Percent Passing by Weight</u>
3/8 inch	100
No. 100	0-5

If approved by ARWP, fines from the trench walls and spoils pile may be used to provide uniform support for the pipe. No rock or stone larger than that allowed by the sieve analysis, or any other detrimental substance, shall be placed closer to the pipe than six inches (6"). Approved bedding materials shall be stockpiled on the jobsite to be used in the event natural materials become unsatisfactory. The ARWP reserves the right to require the use of the specified bedding material at any time.



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PIPE BEDDING

Scale: NONE

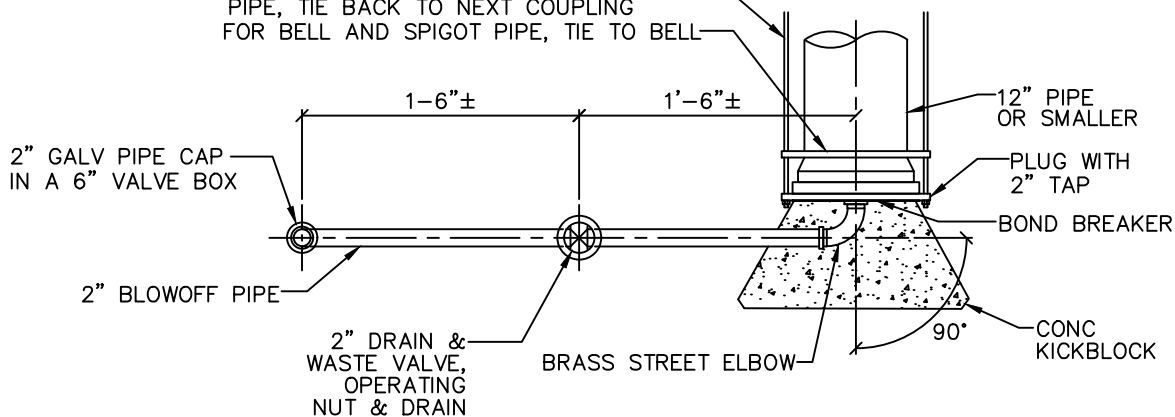
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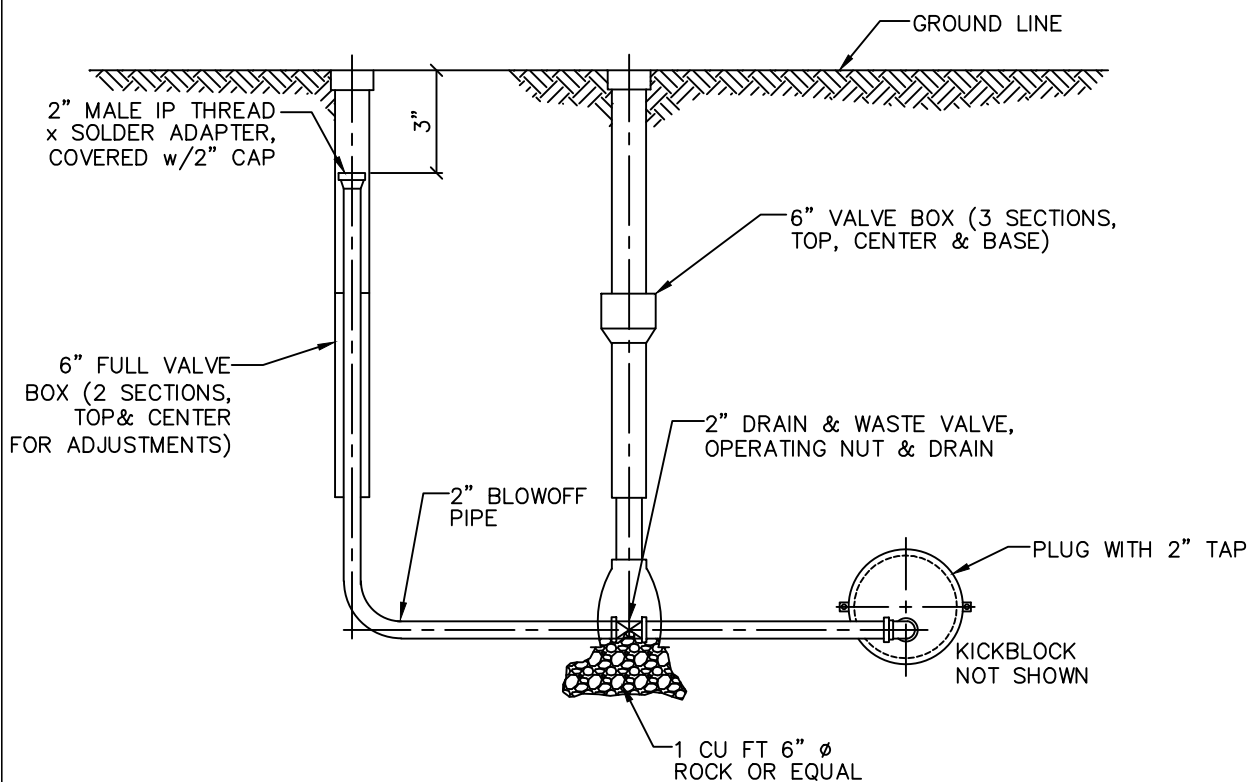
Detail: W-6

NOTE:
PLUG SHALL BE MECHANICALLY RESTRAINED:

FOR SLEEVE TYPE MACHINED COUPLING PIPE, TIE BACK TO NEXT COUPLING
FOR BELL AND SPIGOT PIPE, TIE TO BELL



PLAN



ELEVATION

NOTE:

BLOWOFF PIPE TO BE TYPE K
SOFT COPPER OR BRASS.
TEMPORARY BLOWOFFS ARE
ONLY ALLOWED IF MAINLINE
EXTENSIONS ARE PLANNED
WITHIN A 1 YEAR PERIOD.



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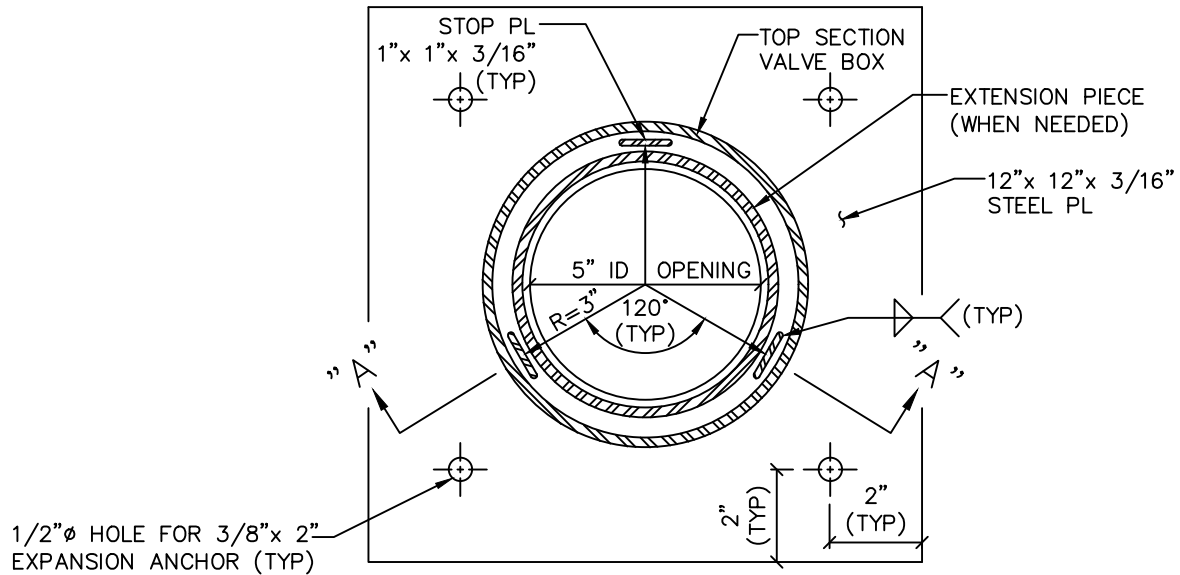
TEMPORARY BLOWOFF INSTALLATION
FOR 12" & SMALLER PIPE

Scale: NONE

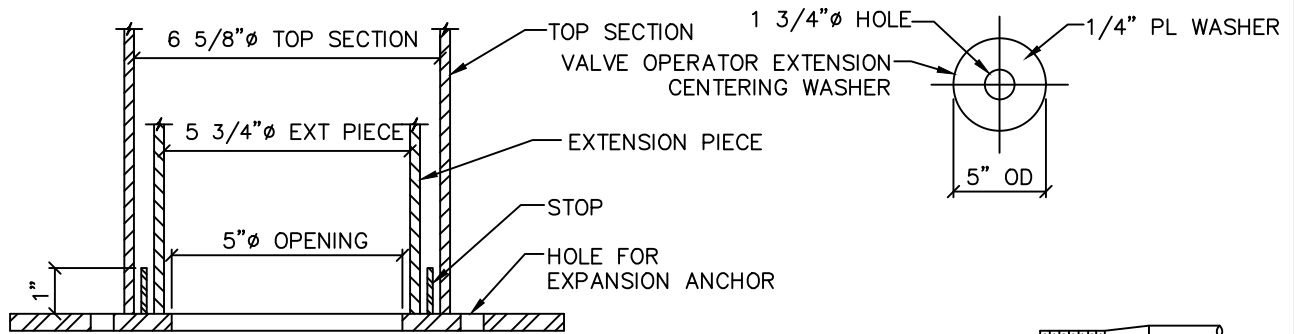
Date: MARCH 2019

Revised:

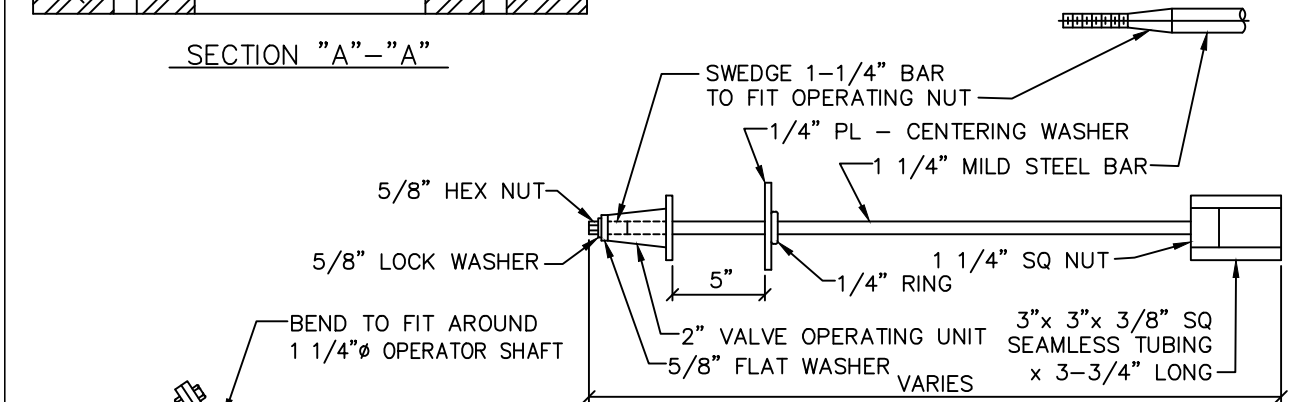
Detail: W-7



PLAN

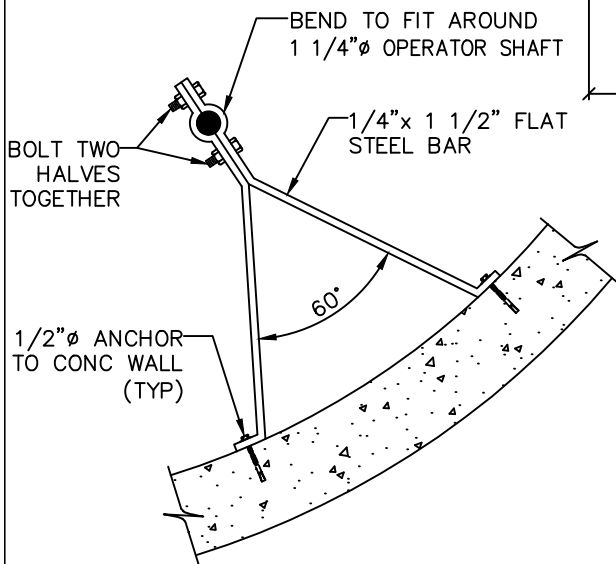


SECTION "A" - "A"



VALVE OPERATOR EXTENSION

EXTENSIONS ARE REQUIRED ON ALL VALVES WHERE TOP OF NUTS ARE GREATER THAN 5". MULTIPLE EXTENSIONS ARE NOT ALLOWED.



EXTENSION GUIDE



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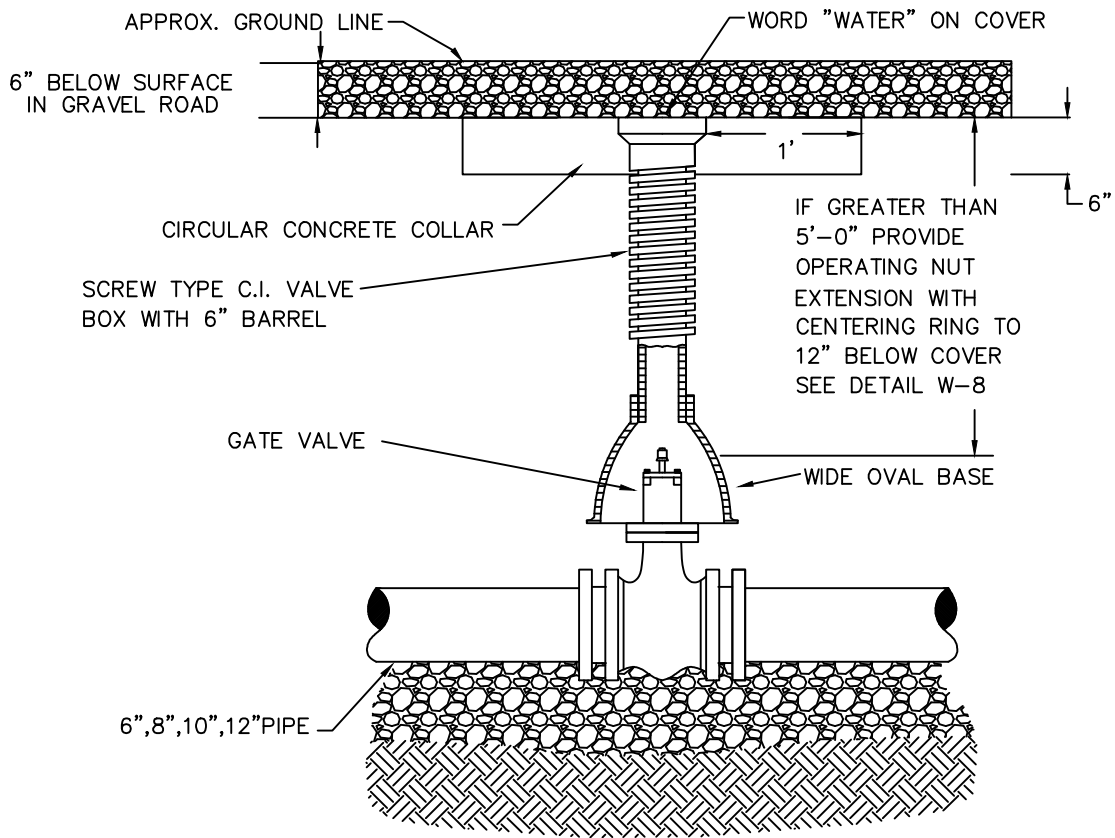
VALVE BOX SUPPORT PLATE
AND VALVE OPERATOR EXTENSION GUIDE

Scale: NONE

Date: MARCH 2019

Revised:

Detail: W-8



6-INCH VALVE BOXES

MATERIALS:

VALVE BOX PARTS SHALL BE MADE FROM GRAY CAST IRON, ASTM A48 CLASS 20A.

USE OF AN ALUMINUM ALLOY AS A CASTING MATERIAL IS NOT ACCEPTABLE.


APPROVED PATTERNS:

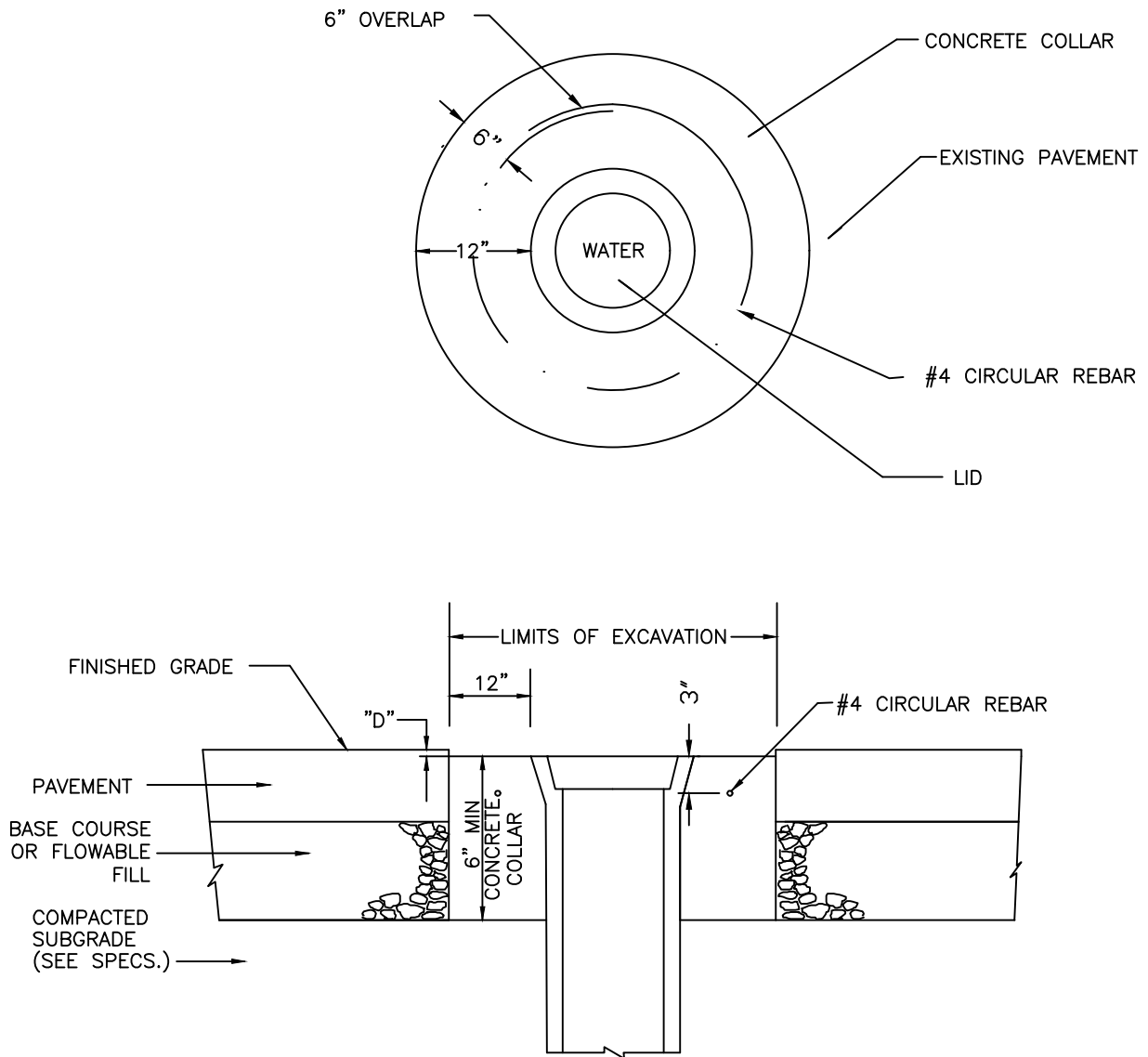
VALVE BOXES SHALL BE THE THREE-PIECE ADJUSTABLE SCREW TYPE AND THE FOLLOWING TWO PATTERNS ARE ACCEPTABLE.

1. TYLER SCREW-TYPE 6-INCH CAST IRON VALVE BOX ASSEMBLY SERIES 6860 WITH NO. 160 LARGE OVAL BASE.
2. CLAY AND BAILEY SCREW-TYPE 6-INCH CAST IRON VALVE BOX ASSEMBLY NO. P-108 WITH NO. 160 LARGE OVAL BASE.

NOTES:

1. ALL C.I. SHALL BE WRAPPED WITH 8 MIL. MIN. THICKNESS POLYETHYLENE.
2. VALVE NUT SHALL BE CENTERED.
3. VALVE BOX SHALL BE PLUMB.
4. IN GRAVEL ROADS TOP TO BE 6" BELOW GRADE.
5. IN ASPHALT TOP TO BE ½" TO 1" BELOW GRADE.

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VALVE BOX DETAIL	
Scale: <i>NONE</i>	Date: <i>MARCH 2019</i>
Revised:	Detail: <i>W-9</i>



NOTES:

1. "D" = 1/2" FOR H.M.A. PAVEMENT OVERLAYS OR SURFACE TREATMENTS
2. "D" = 1/2" FOR H.M.A. PAVEMENT RECONSTRUCTION OR NEW CONSTRUCTION
3. "D" = 1/4" FOR CONCRETE STREETS.
4. VALVE BOX MUST BE PLUMB AND CENTERED OVER THE VALVE NUT.
5. THIS DETAIL APPLIES TO BOTH ASPHALT AND CONCRETE STREETS
6. PLACE #4 CIRCULAR REBAR WITH 3" COVER – END OVERLAP 6".
7. IN GRAVELED ROADS VALVE BOX TOP AND CONCRETE TO BE PLACED 6" BELOW SURFACE.



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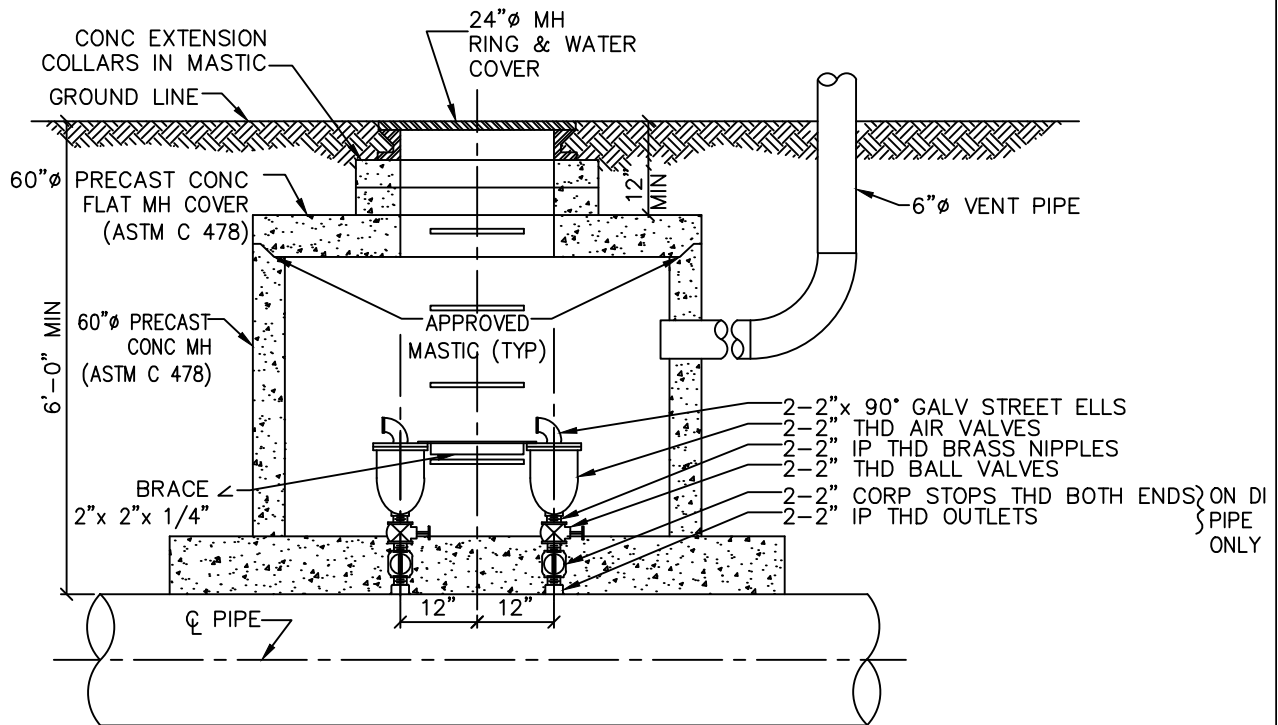
VALVE BOX FINISHING DETAIL

Scale: NONE

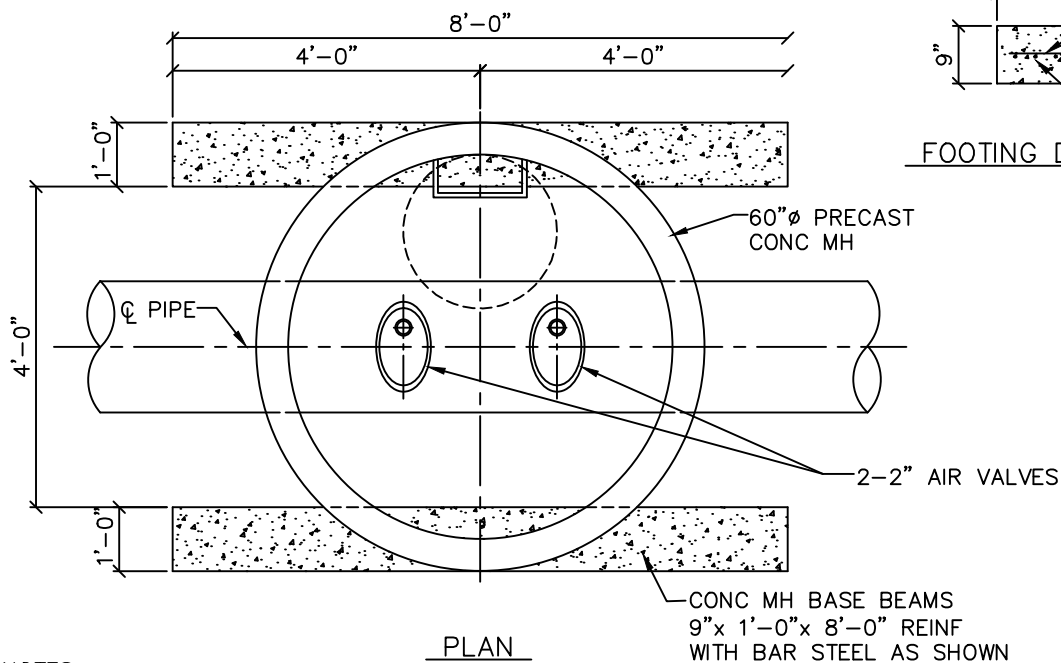
Date: MARCH 2019

Revised:

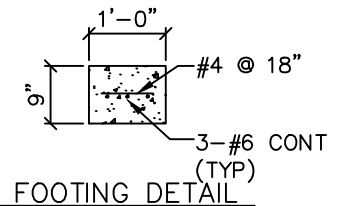
Detail: W-10



ELEVATION




PLAN

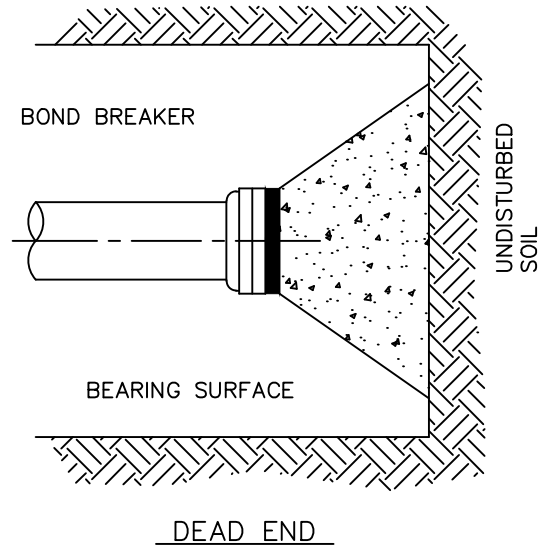
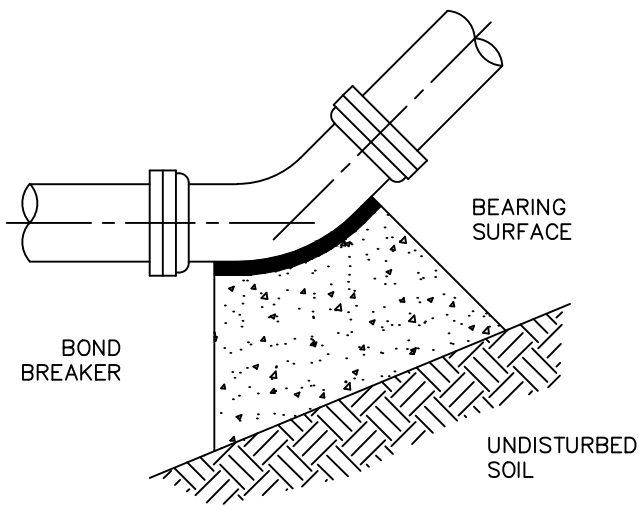


FOOTING DETAIL

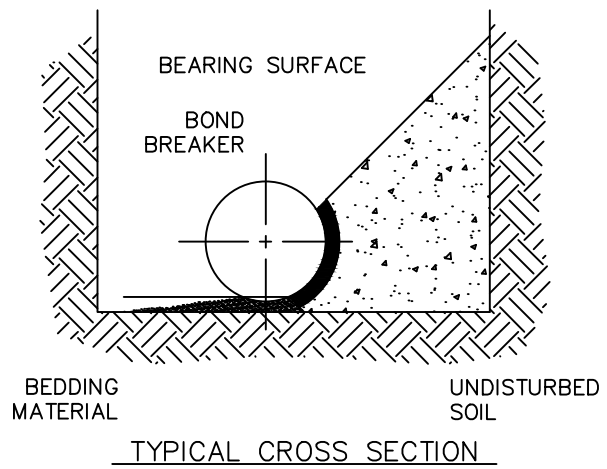
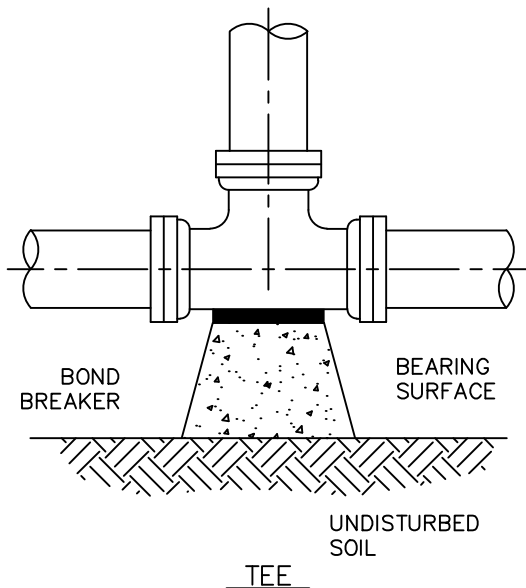
NOTES:

1. USE 2" AIR VALVE ASSEMBLY ON 30" OR SMALLER PIPE.
2. THE DISTANCE BETWEEN RUNGS, CLEATS, AND STEPS SHALL NOT EXCEED 12 INCHES AND SHALL BE UNIFORM THROUGHOUT THE LENGTH OF THE LADDER.
3. LADDER RUNGS ARE REQUIRED IN PRECAST CONC MH.

 Aristocrat Ranchette Water Project, Inc.	
<h2 style="margin: 0;">2" AIR VALVE & VACUUM ASSEMBLY</h2>	
Scale: NONE	Date: MARCH 2019
Revised:	Detail: W-11



11 1/4", 22 1/2",
45° AND 90° BENDS



MINIMUM BEARING SURFACE AREA
(IN SQUARE FEET)

SIZE OF PIPE	BENDS				TEE OR DEAD END
	11 1/4"	22 1/2"	45°	90°	
4"	1.00	1.00	1.00	N/A	1.50
6"	1.00	1.25	2.25	N/A	3.00
8"	1.00	2.00	4.00	N/A	5.25
12"	2.25	4.50	8.75	N/A	11.25
16"	3.75	7.50	14.50	27.00	19.00
20"	5.00	10.00	19.50	35.50	25.00
24"	7.00	14.00	27.75	51.00	36.00

NOTES:

- ON 16" AND 20" TRANSMISSION MAINS, ALL BENDS SHALL BE BOTH RODDED AND KICKBLOCKED.
- BEARING SURFACES SHOWN IN CHART ARE MIN.
- BASED ON 150 PSI INTERNAL PIPE PRESSURE PLUS WATER HAMMER.
4", 6", 8" AND 12" WATER HAMMER = 110 PSI
16", 20" AND 24" WATER HAMMER = 70 PSI
- BASED ON 3,000 PSF SOIL BEARING CAPACITY.
- ALL VALVES, TEES, BENDS AND PLUGS SHALL BE BOTH RODDED AND KICKBLOCKED.
- 4000 PSI CONCRETE MINIMUM



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CONCRETE KICKBLOCKS
BEARING SURFACES & INSTALLATION

Scale: NONE

Date: MARCH 2019

Revised:

Detail: W-12

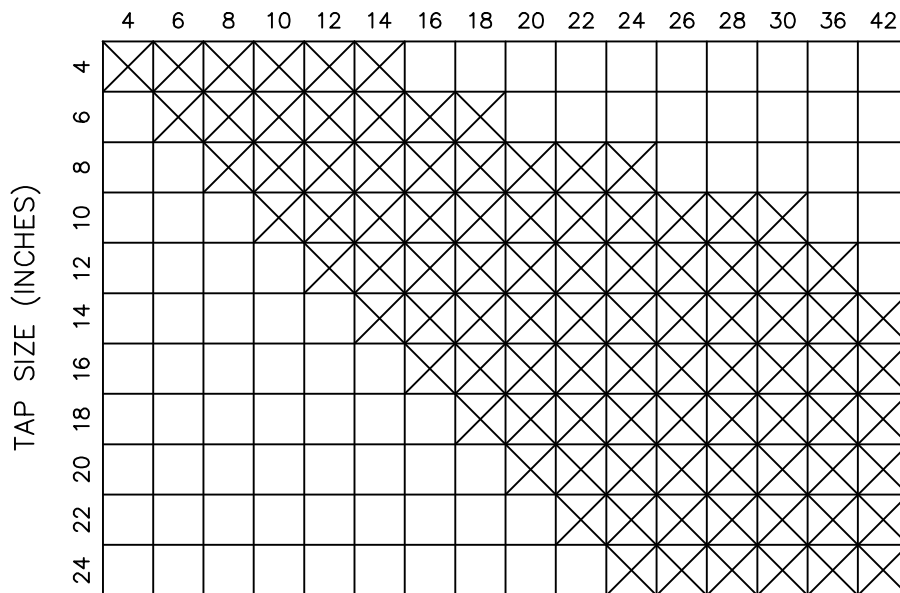
CONCRETE KICKBLOCKS

WATER MAIN AND TAP SIZE COMBINATIONS WHICH
REQUIRE A CONC KICKBLOCK BEHIND THE MAIN
AT THE TAPPING SLEEVE OR SADDLE

ALL WATER MAINS



INDICATED CONC KICKBLOCK REQD
MAIN SIZE (INCHES)



ANY KICKBLOCK REQUIREMENTS FOR WATER MAIN AND TAP SIZE
COMBINATIONS OTHER THAN THOSE SHOWN ABOVE WILL REQUIRE
SPECIAL DESIGN APPROVAL BY ARISTOCRAT RANCHETTE ENGINEER.



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CONCRETE KICKBLOCKS TABLE

Scale: *NONE*

Date: *MARCH 2019*

Revised:

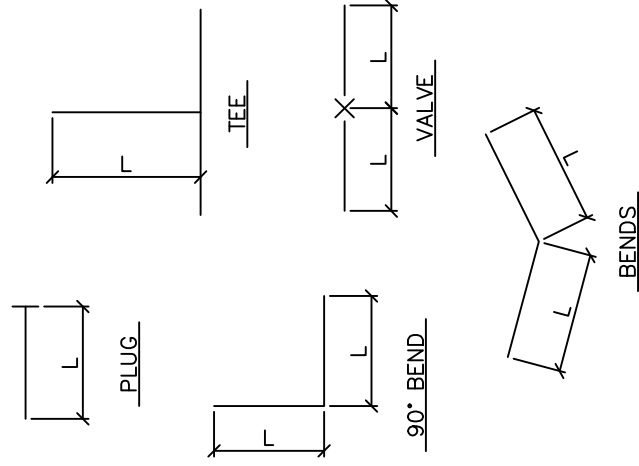
Detail: *W-13*

ROD DIAMETER, GRADE & LENGTH OF RESTRAINED PIPE

PIPE SIZE	4"			6"			8"			12"			16"			20"			24"			
	D	L	G	D	L	G	D	L	G	D	L	G	D	L	G	D	L	G	D	L	G	
FITTING																						
90° BEND, TEE, PLUG, VALVE	3/4"	50'	MS	3/4"	71'	MS	3/4"	94'	MS	3/4"	134'	HS	1"	173'	HS	1 1/4"	212'	HS				
45° BEND	3/4"	25'	MS	3/4"	35'	MS	3/4"	46'	MS	3/4"	66'	HS	1"	85'	HS	1 1/4"	104'	HS				
22 1/2° BEND	3/4"	12'	MS	3/4"	17'	MS	3/4"	23'	MS	3/4"	32'	HS	1"	41'	HS	1 1/4"	50'	HS				
11 1/4° BEND	-	-	-	-	-	-	3/4"	7'	MS	3/4"	10'	HS	1"	13'	HS	1 1/4"	15'	HS				

NOTES:

1. LENGTH OF RESTRAINED PIPE MEASURED EACH WAY FROM VALVES AND BENDS.
2. CLAMPS, RODS & MEGALUGS NOT ALLOWED FOR 24" & LARGER PIPES.
3. D=ROD DIAMETER, L=LENGTH, G=GRADE, MS=MILD STEEL, HS=HIGH STRENGTH.
4. MIN 5.0' GROUND COVER REQUIRED.
5. BASED ON 150 PSI INTERNAL PRESSURE PLUS WATER HAMMER.
6. MS = MILD STEEL ROD ASTM A 36.
7. HS = HIGH STRENGTH ROD ASTM A 193 GRADE B7.
8. NUTS SHALL BE ASTM A 307 GRADE A OR B HEXAGON HEAVY SERIES. HS NUTS SHALL CONFORM TO ASTM A194 GRADE 2H.
9. SEE TIED PIPE DETAIL W-25. ALSO, TIE ROD COUPLING DETAIL W-20, CLAMP AND SET CLAMP DETAIL W-22.
10. LENGTH REFERS TO THE AMOUNT OF PIPE WHICH MUST BE RESTRAINED TOGETHER AND IS NOT NECESSARILY THE LENGTH OF THE RODS.
11. LENGTH OF RESTRAINED PIPE CHART IS ALSO FOR THE LENGTH OF JOINT RESTRAINT FOR MEGALUGS.
12. CROSSES MUST BE RESTRAINED IN ALL APPLICABLE DIRECTIONS.
13. 12" AND SMALLER IN-LINE VALVES AND TEES SHALL HAVE A MECHANICAL JOINT RESTRAINT DEVICE ON EACH SIDE OF THE FITTING OR VALVE. MECHANICAL JOINT RESTRAINT DEVICE SHALL BE PER DETAIL W-24.
14. A SECOND VALVE WILL BE REQUIRED TO BE CLOSED WHEN EXCAVATING NEXT TO AN EXISTING VALVE.
15. ON PLUGS, TEES AND BENDS, KICKBLOCKS SHALL BE USED IN ADDITION TO RESTRAINT.
16. WHEN REDUCERS ARE USED ON VALVE INSTALLATIONS THE LENGTH OF RESTRAINT SHALL BE BASED ON THE SIZE OF THE PIPE NOT THE SIZE OF THE VALVE.
17. IF INTERNAL PRESSURE EXCEEDS 250 PSI OR IF PIPE DIAMETER IS OVER 10", THE DESIGN ENGINEER WILL PROVIDE LENGTH OF RESTRAINED PIPE FOR REVIEW.



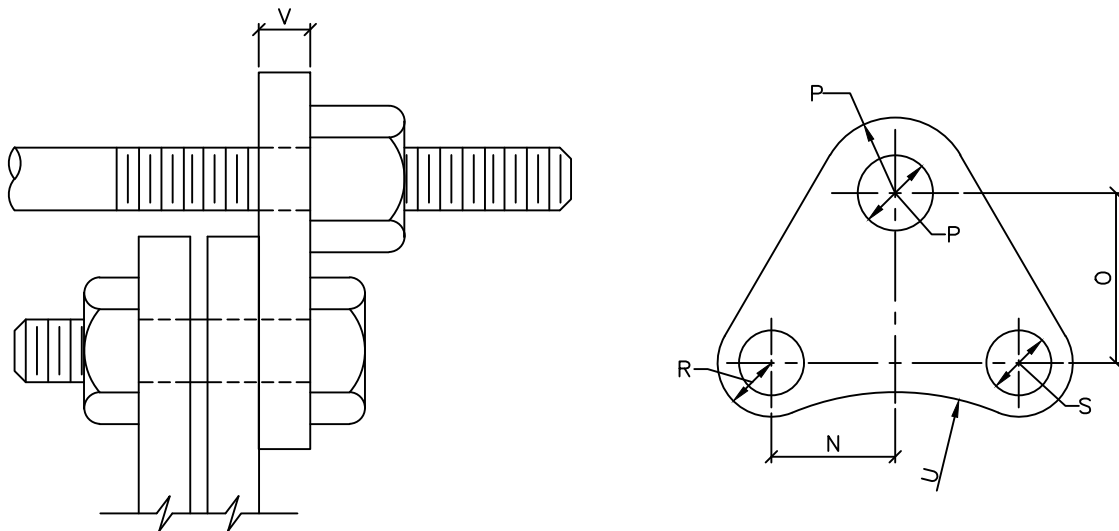
LENGTH OF RESTRAINED PIPE

Scale: NONE

Date: MARCH 2019

Revised:

Detail: W-14



FLANGE LUG DETAIL

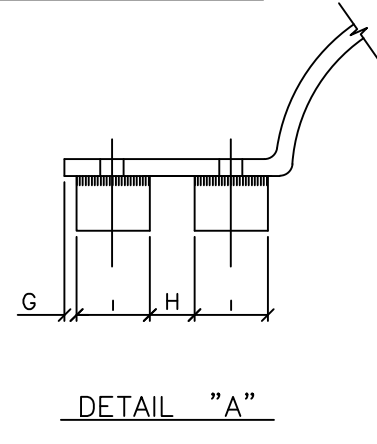
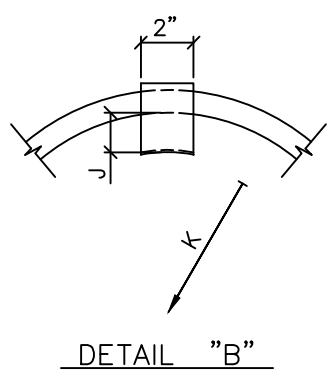
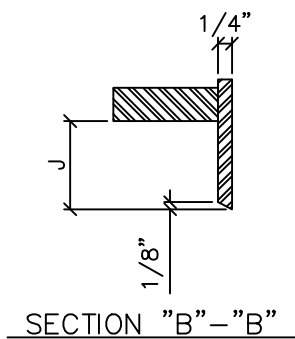
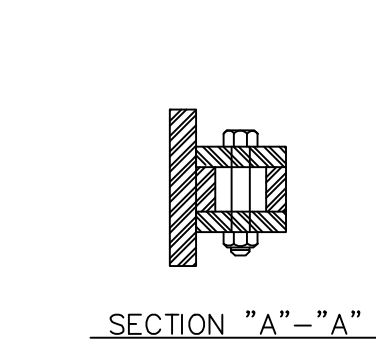
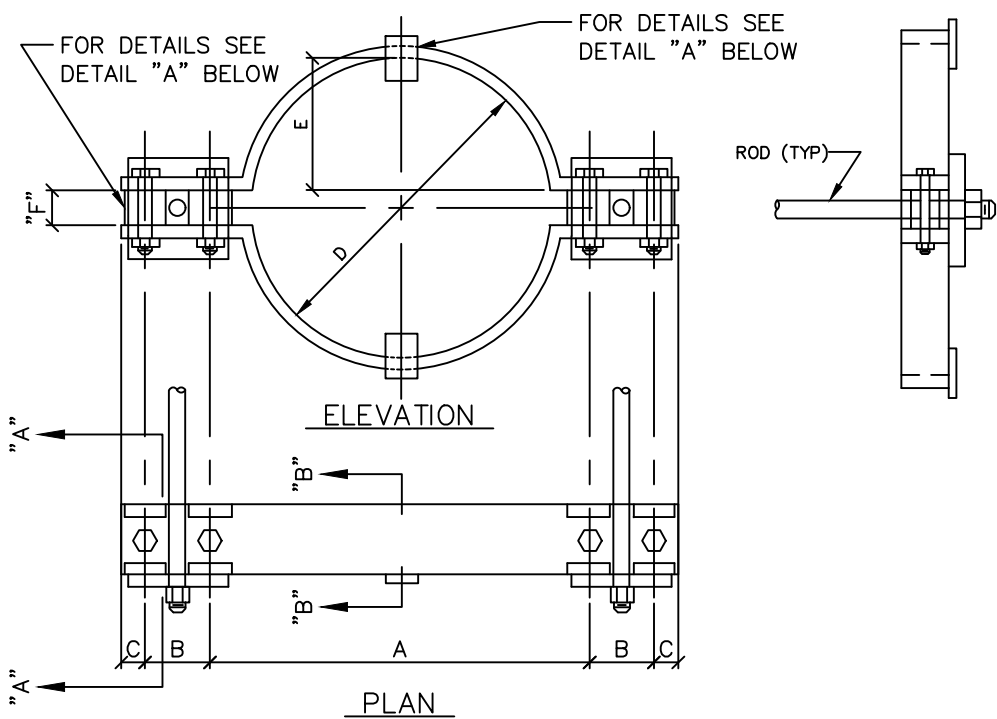
DIMENSIONS
(IN INCHES)

PIPE ∅	N	O	HS RODS		MS RODS		R	S	U	V	PIPE ∅
			P	ROD ∅	P	ROD ∅					
3	2 1/8	2 9/16	-	-	7/8	3/4	3/4	5/8	2 3/8	3/4	3
4	1 7/16	2	-	-	7/8	3/4	3/4	5/8	3 1/8	3/4	4
6	1 13/16	2 1/16	-	-	7/8	3/4	7/8	3/4	4	3/4	6
8	2 1/4	2 1/4	-	-	7/8	3/4	7/8	3/4	5 1/8	3/4	8
10	1 7/8	2 1/16	-	-	7/8	3/4	1	7/8	6 1/4	3/4	16
12	2 1/4	2 5/16	7/8	3/4	-	-	1	7/8	5 7/8	1	10
16	2 1/8	2 7/16	1 1/8	1	-	-	1 1/8	1	9 5/8	1 1/8	12
20	2	2 5/8	1 3/8	1 1/4	-	-	1 1/4	1 1/8	11 3/8	1 1/4	20
24	RODS AND CLAMPS NOT ALLOWED										24

NOTES:

1. MS MEANS MILD STEEL ROD ASTM A 36 (NUTS SHALL BE ASTM A 307 GRADE A OR B HEXAGON HEAVY SERIES)
2. HS MEANS HIGH STRENGTH STEEL ROD ASTM A 193 GRADE B7. (NUTS SHALL BE ASTM A 194 GRADE 2H)

 Aristocrat Ranchette Water Project, Inc.	
FLANGE LUG DETAIL	
Scale: NONE	Date: MARCH 2019
Revised:	Detail: W-15



NOTE:
ALL DIMENSIONS IN INCHES
NOT FOR USE WITH 18" & 20" DI COMPACT FITTINGS.

TABLE OF DIMENSIONS FOR CLAMPS

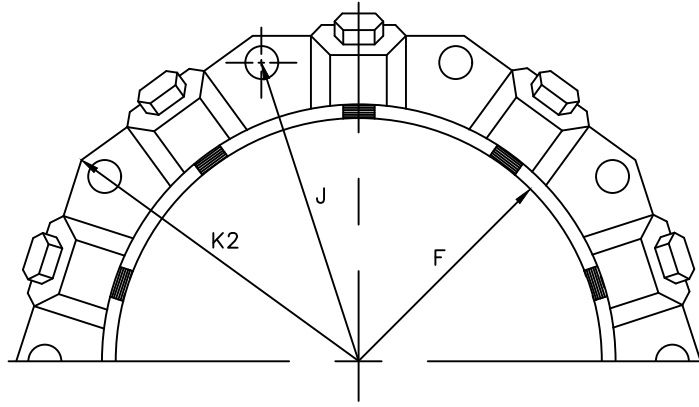
P.D.F	BAR SIZE	A		B		C		D		E		F		G		H		I		J		K		BOLT SIZE		P.D.F
		BELL CLAMP	BODY CLAMP	BELL CLAMP	BODY CLAMP	BELL CLAMP	BODY CLAMP	BELL CLAMP	BODY CLAMP	BELL CLAMP	BODY CLAMP	BELL CLAMP	BODY CLAMP	BELL CLAMP	BODY CLAMP	BELL CLAMP	BODY CLAMP	BELL CLAMP	BODY CLAMP	BELL CLAMP	BODY CLAMP	BELL CLAMP	BODY CLAMP	BELL CLAMP	BODY CLAMP	
4	1 1/2x 1/2	9	7 3/8	4	1 1/2	1 1/2	6 1/4	4 3/4	2 5/8	1 7/8			3/8	3/8	1 1/4	1 1/4	2 1/4	2 1/2	5/8	2 1/2	3x 1 1/2	2 1/2x 3/8	4			
6	2 x 1/2	11 1/4	9 5/8	4	1 1/2	1 1/2	8 1/2	6 7/8	3 3/4	2 15/16					2 1/4	2 1/4	2 1/2	1/2	3 3/4	3 1/2x 1/2	3 1/2x 1/2	6				
8	2 1/2x 1/2	13 5/8	11 7/8	4	1 1/2	1 1/2	10 3/4	9 1/8	4 7/8	4 1/16					2 1/4	2 1/2	5/8	5/8	4 3/4	4 1/2x 1/2	4x 1/2	8				
12	2 1/2x 5/8	18 1/4	16 3/8	4	1 1/2	1 1/2	15 1/8	13 1/4	7 1/16	6 1/8					2 1/4	2 1/2	13/16	6 3/4	4 3/4	4 1/2x 5/8	4 1/2x 5/8	12				
16	3x 3/4	23 1/8	20 5/8	4	4 1/2	1 1/2	19 3/4	17 3/8	9 1/4	8 1/16	1 1/4	1 1/4	1 1/4	1 1/4	2 1/4	2 1/4	2 3/4	15/16	8 15/16	5 1/2x 5/8	5 1/2x 5/8	16				
20	3x 3/4	27 1/2	25	4	4 1/2	1 1/2	24 1/8	21 5/8	11 5/16	10 1/16	1 1/2	1 1/2	3/8	3/8	1 3/4	1 3/4	2 1/4	2 1/2	1	11 1/16	5 1/2x 5/8	5 1/2x 5/8	20			
24																								24		

RODS AND CLAMPS NOT ALLOWED.

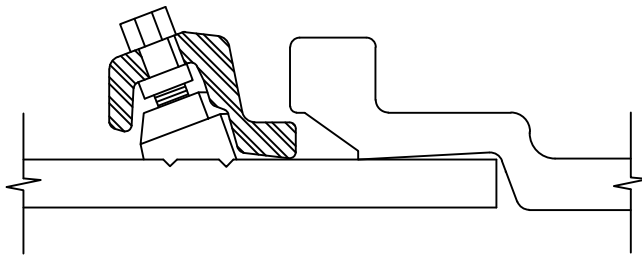
Aristocrat Ranchette
Water Project, Inc.

CLAMP DETAILS & DIMENSIONS FOR
USE WITH CI & DI FITTINGS ONLY

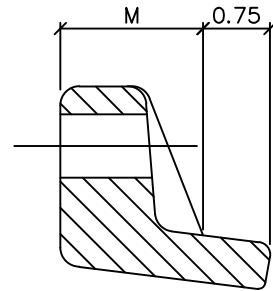
Scale: NONE	Date: MARCH 2019
Revised:	Detail: W-16



MECHANICAL JOINT RESTRAINT



WEDGE DETAIL



BOLT HOLE DETAIL

DIMENSIONS

	NOMINAL PIPE SIZE	NO OF BOLTS	NO OF WEDGES	K2 INCHES	J INCHES	F INCHES	M INCHES	
D 	4"	4	2					D
	6"	6	3	11.12	9.50	7.00	0.88	
	8"	6	4	13.37	11.75	9.15	1.00	
	10"	8	6	15.62	14.00	11.20	1.00	
	12"	8	8	17.88	16.25	13.30	1.25	
	16"	12	12	22.50	21.00	17.54	1.56	
	20"	14	14	27.00	25.50	21.74	1.69	

NOTE:

OTHER MECHANICAL JOINT RESTRAINT DEVICES MUST BE APPROVED BEFORE INSTALLATION.



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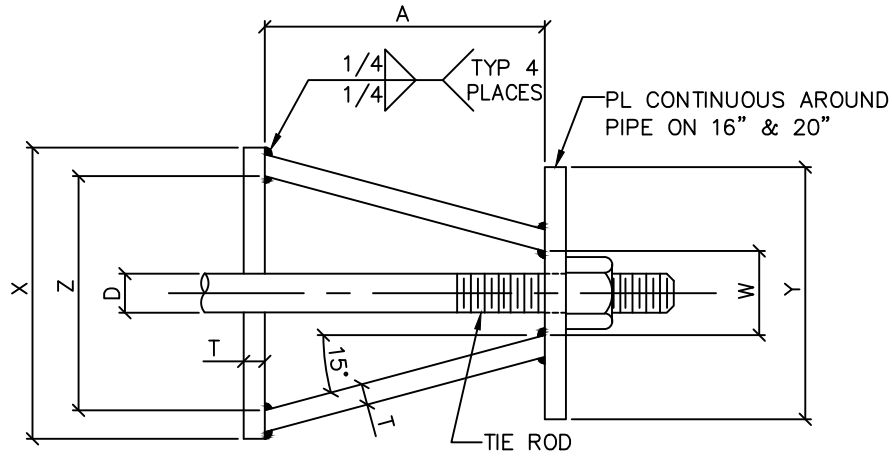
MECHANICAL JOINT RESTRAINT DETAILS

Scale: NONE

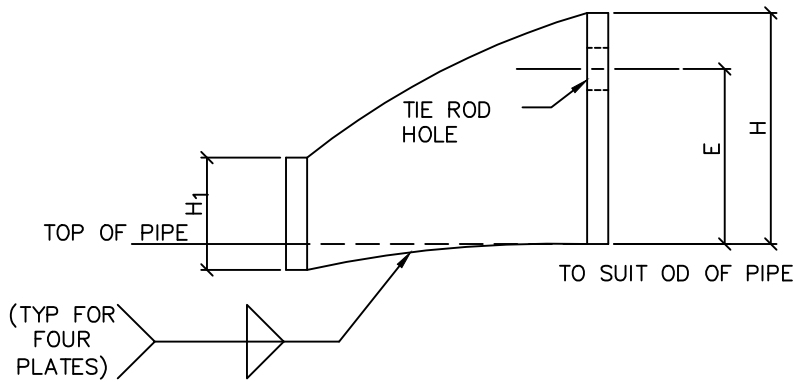
Date: MARCH 2019

Revised:

Detail: W-17



TOP VIEW



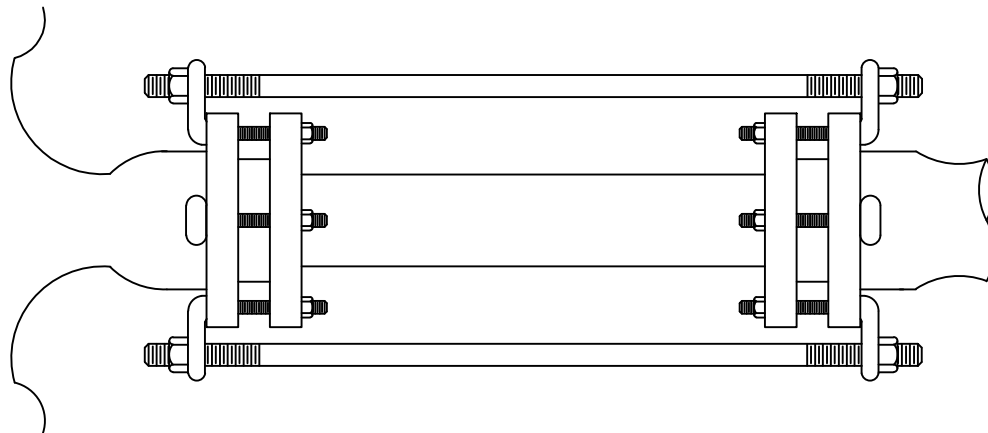
SIDE VIEW

	CARRIER PIPE NOMINAL ϕ	STUD ϕ D	A	W	Z	T	H	E	H ₁	Y	X
W/O FLANGED LUGS	4" TO 12"	3/4"	5"	1 1/2"	3 3/4"	3/8"	4 1/8"	3 1/8"	2"	4 1/2"	5"
	16"	1"	5 3/4"	1 3/4"	4 1/2"	1/2"	4 1/2"	3 1/4"	2"	RING	6"
	20"	1 1/4"	7 1/2"	2"	5 3/4"	5/8"	5"	3 3/4"	2 1/2"	RING	7 1/2"

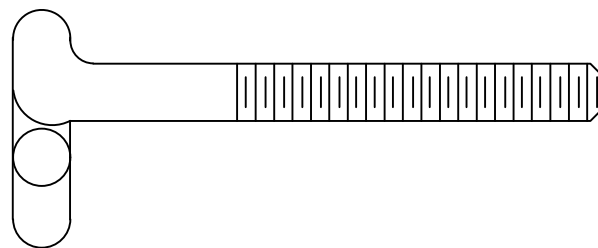
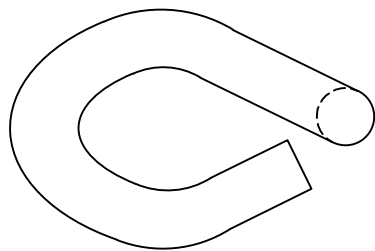
NOTES:

1. USE TWO HS STEEL TIE RODS AT END OF CASING.
2. TIE ROD HOLE ϕ 1/8" LARGER THAN STUD ϕ .
3. BOTTOM EDGE OF ALL PLATES SHAPED TO FIT OD OF PIPE.
4. HARNESS LUGS AS PER AWWA MANUAL M11.

 Aristocrat Ranchette Water Project, Inc.	
COMBINATION FLANGED HARNESS LUG DETAILS	
Scale: <i>NONE</i>	Date: <i>MARCH 2019</i>
Revised:	Detail: <i>W-18</i>



PLAN



DETAIL

DIMENSIONS

ALLOWABLE PIPE Ø INCHES	BOLT SIZE INCHES	NO OF BOLTS REQD
4	3/4	2
6	3/4	2
8	3/4	2
10	3/4	4
12	3/4	6

NOTES:

1. THE BOLT SHALL BE MANUFACTURED OF "COR-TEN" OR APPROVED EQUAL.
2. THE BOLT MAY BE HEAT TREATED.



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Water Project, Inc.

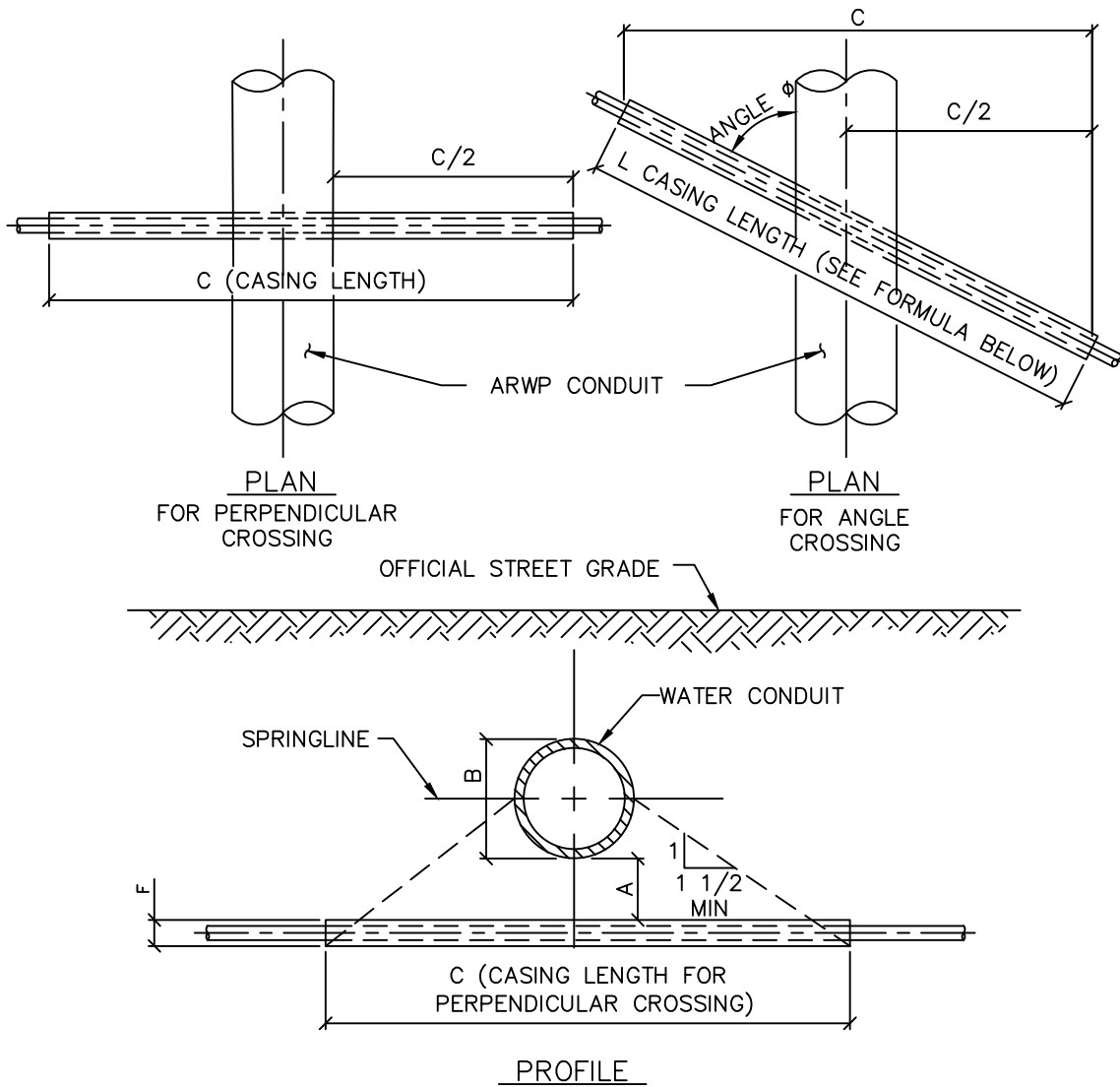
TIED PIPE DETAIL

Scale: NONE

Date: MARCH 2019

Revised:

Detail: W-19



FORMULA FOR FINDING C:

$$C = B + (2)(1.5) \left[\frac{B}{2} + A + F \right]$$

PERPENDICULAR CROSSING CASING LENGTH \rightarrow C
 OD ARWP CONDUIT \rightarrow B
 CONSTANT \rightarrow (2)
 RATIO OF MIN SLOPE \rightarrow 1.5
 CASING OD \rightarrow B
 VERTICAL DISTANCE BETWEEN CASING AND ARWP CONDUIT. \rightarrow A
 1/2 OD ARWP CONDUIT \rightarrow F

NOTES:

1. FINAL APPROVAL OF BORING AND CASING METHOD AND MATERIALS SHALL BE OBTAINED FROM THE ENGINEER PRIOR TO CONSTRUCTION.
2. SOIL AT ENDS OF CASING SHALL BE STABLE AT ALL TIMES.
3. CATHODIC PROTECTION SHALL BE PROVIDED FOR STEEL CASING AS REQUIRED BY THE ENGINEER.
4. CASING PIPE SHALL BE ONE PIECE, STRAIGHT, ROUND, AND OF NEW MATERIAL.

FORMULA FOR FINDING L:

$$L = \frac{C}{\sin \phi}$$



Aristocrat Ranchette
Water Project, Inc.

BORED CROSSING BENEATH CONDUITS

Scale: NONE

Date: MARCH 2019

Revised:

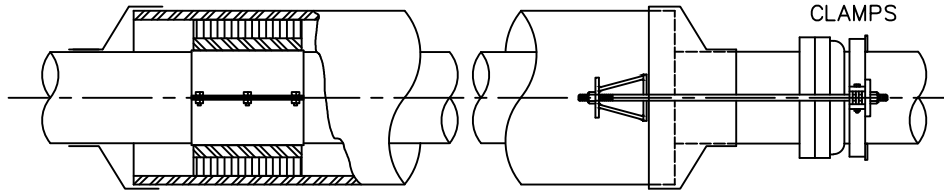
Detail: W-20

CASING END SEAL

STEEL SKID CLAMP

HARNESS LUGS WELDED TO CASING BOTH ENDS (SEE DETAIL W-18)

TIE RODS AND CLAMPS



PUSH-ON SINGLE GASKET OR MECHANICAL JOINT DI CARRIER PIPE RESTRAINED THROUGH CASING

NEOPRENE OR PVC RUNNER

NOTES:

1. SEE DETAIL W-20 FOR CASING LENGTH.
2. HARNESS LUGS TO BE INSULATED FROM DI PIPE (SEE DETAIL W-18).

SLED DETAIL

STEEL CASING PIPE (SEE TABLE BELOW FOR SIZE AND WALL THICKNESS)

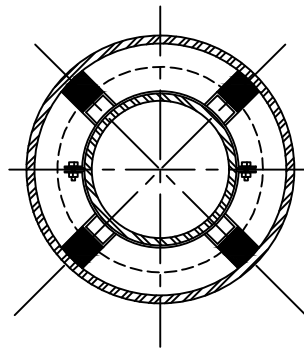
OVERALL PIPE JOINT DIMENSION

CARRIER PIPE

STEEL CASING PIPE

NEOPRENE OR PVC RUNNER

STEEL SKID CLAMP



SKIDS

3 SKIDS PER 20' PIPE LENGTH

PIPE CASING DETAIL

CARRIER PIPE NOMINAL ϕ	CASING PIPE	
	MIN OD	MIN WALL THICKNESS
4"	12"	0.188"
6"	16"	0.25"
8"	18"	0.282"
12"	22"	0.344"
16"	28"	0.406"
20"	32"	0.469"

NOTE:

TRENCH LAID CASINGS SHALL BE DESIGNED AND INSTALLED TO CONDUIT STANDARDS.



Aristocrat Ranchette
Water Project, Inc.

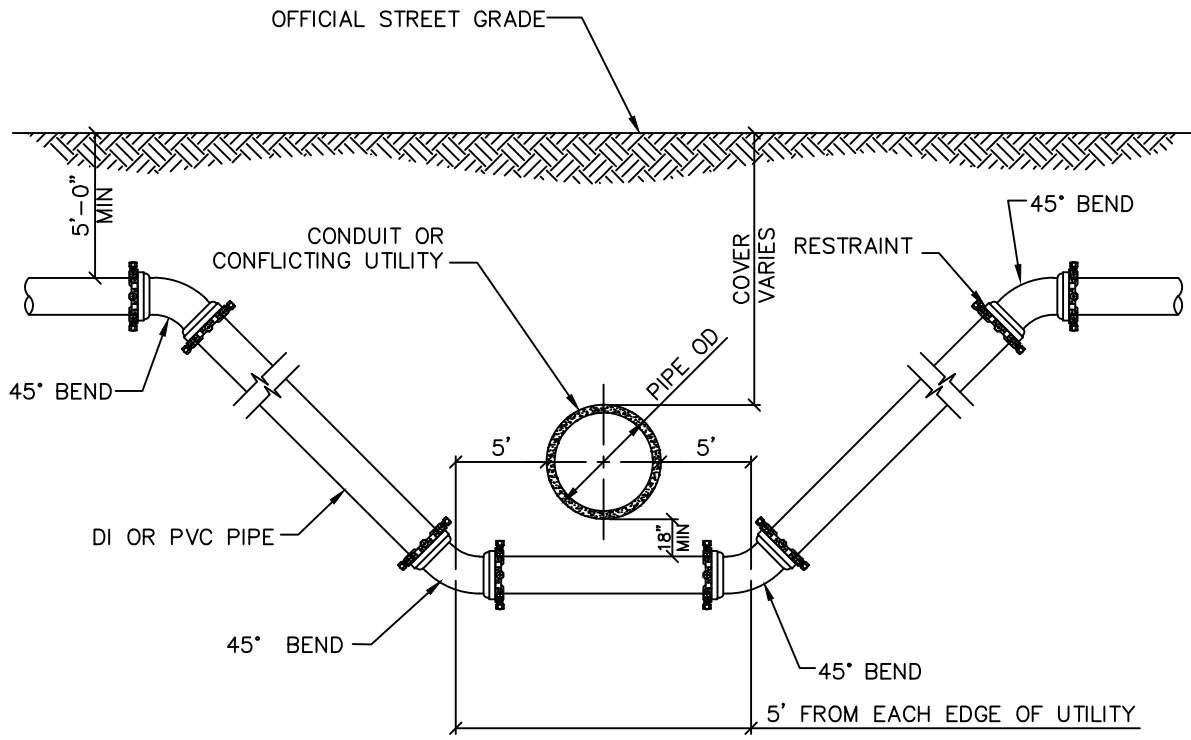
BORE CASING DETAIL

Scale: NONE

Date: MARCH 2019

Revised:

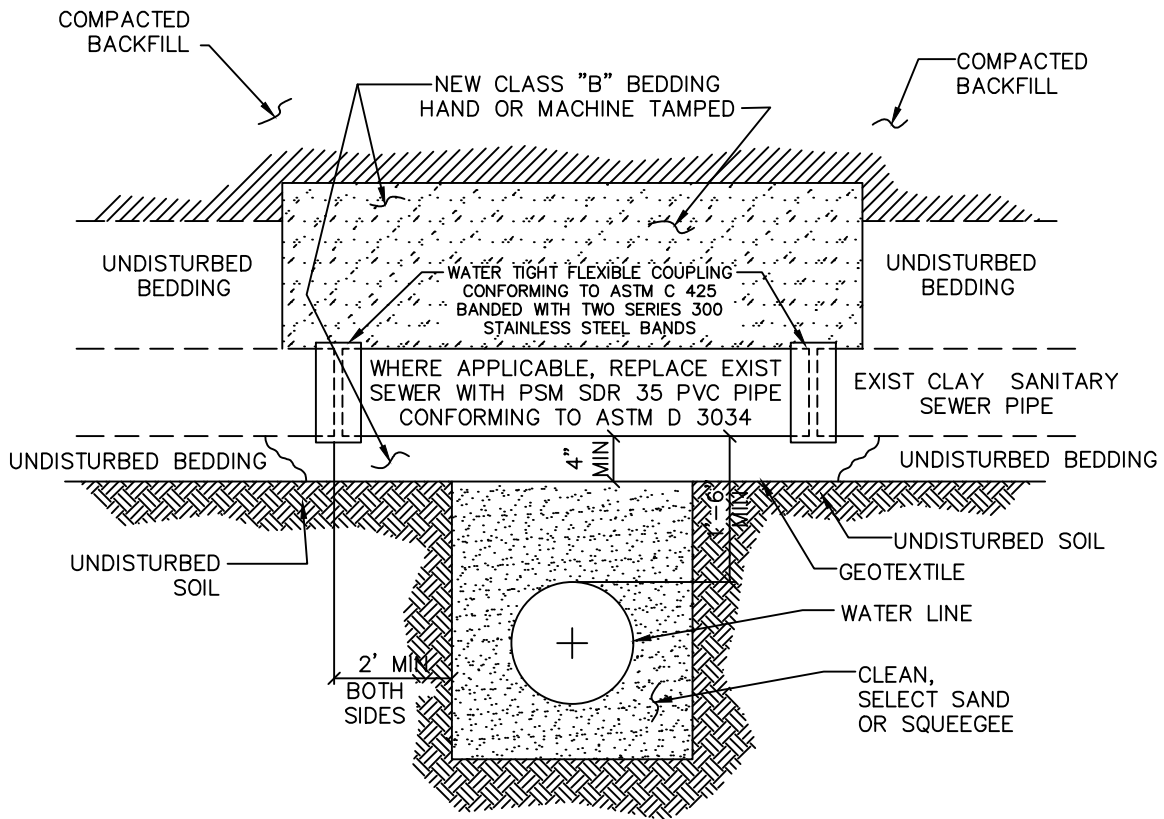
Detail: W-21



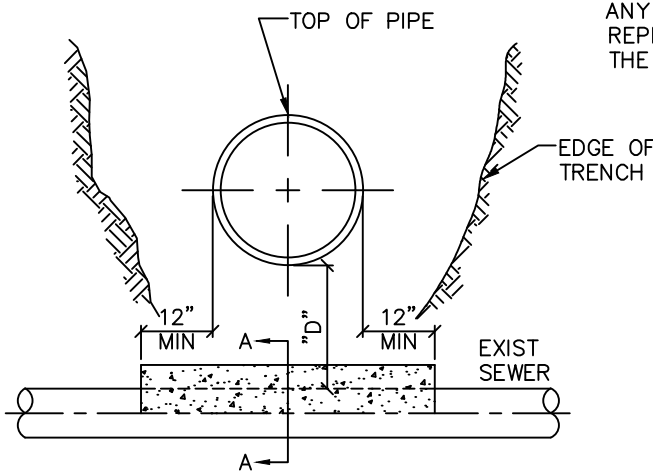
NOTES:

1. LENGTH OF EXTENSION OF PIPE AND RESTRAINED JOINTS SHALL BE IN ACCORDANCE WITH THESE ENGINEERING STANDARDS.

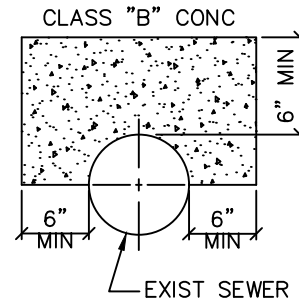
 Aristocrat Ranchette Water Project, Inc.	
<h2>WATER LINE LOWERING</h2>	
Scale: <i>NONE</i>	Date: <i>MARCH 2019</i>
Revised:	Detail: <i>W-22</i>



NOTE:
 ANY SUBDRAIN UNDER THE SEWER SHALL BE REPLACED SUCH THAT NO FLOW SHALL ENTER THE WATER LINE TRENCH.



SEWER CROSSING UNDER
 WITH "D" LESS THAN 18"
 MINIMUM 6" SEPARATION
 REQUIRED



SECTION A-A

NOTE:
 ALL EXISTING SEWER DAMAGED DURING
 INSTALLATION MUST BE REPLACED
 WITH PVC PIPE.


 Aristocrat Ranchette
 Water Project, Inc.

CROSSING
 SANITARY SEWERS

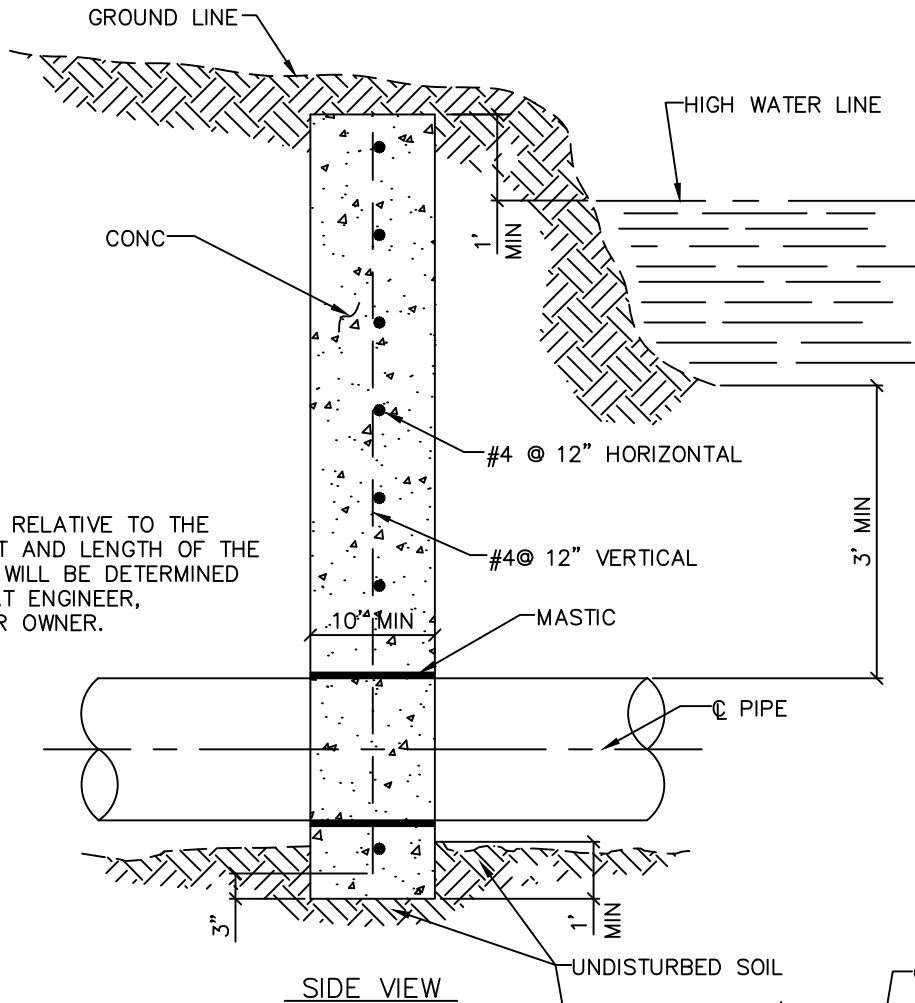
Scale: NONE

Date: MARCH 2019

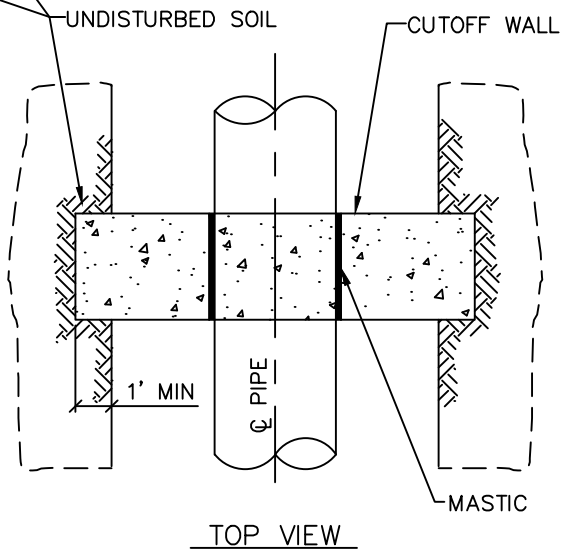
Revised:

Detail: W-23

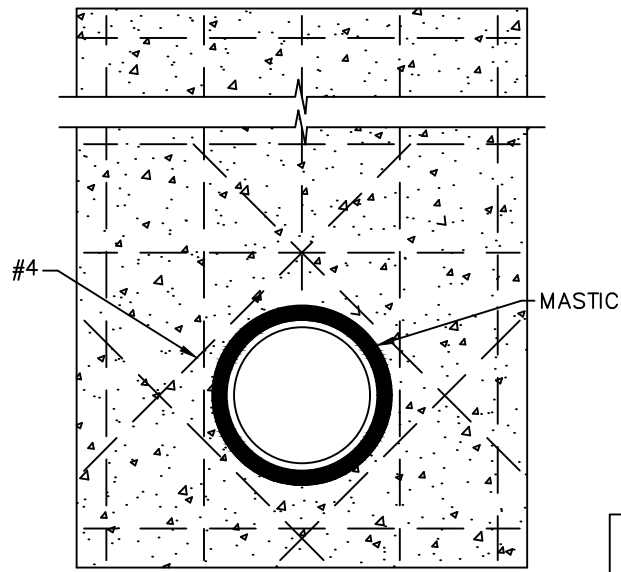
NOTE:
 THE LOCATION RELATIVE TO THE
 CANAL, HEIGHT AND LENGTH OF THE
 CUTOFF WALL WILL BE DETERMINED
 BY ARISTOCRAT ENGINEER,
 INSPECTOR, OR OWNER.



SIDE VIEW



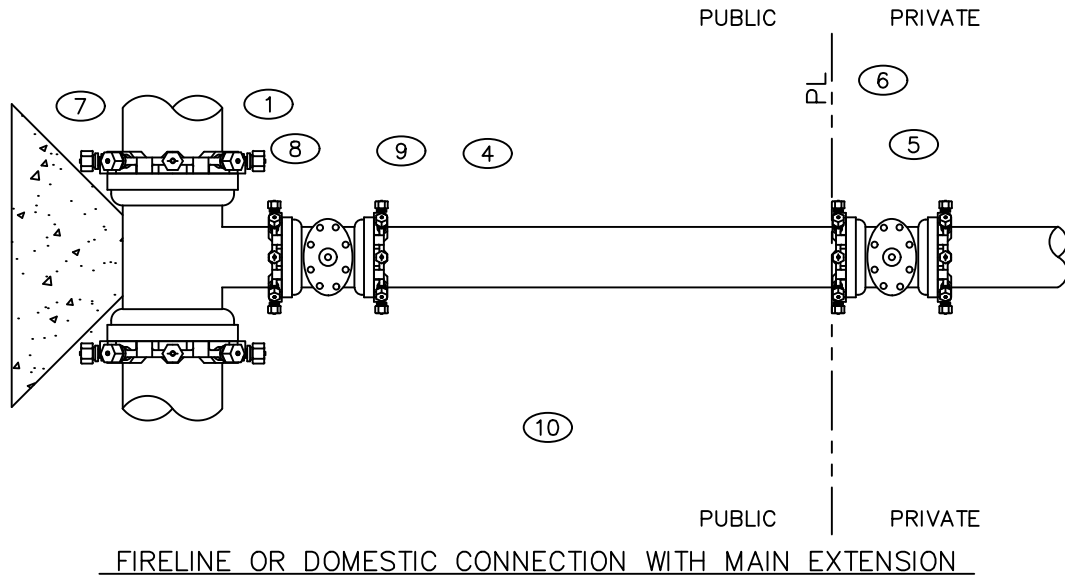
TOP VIEW



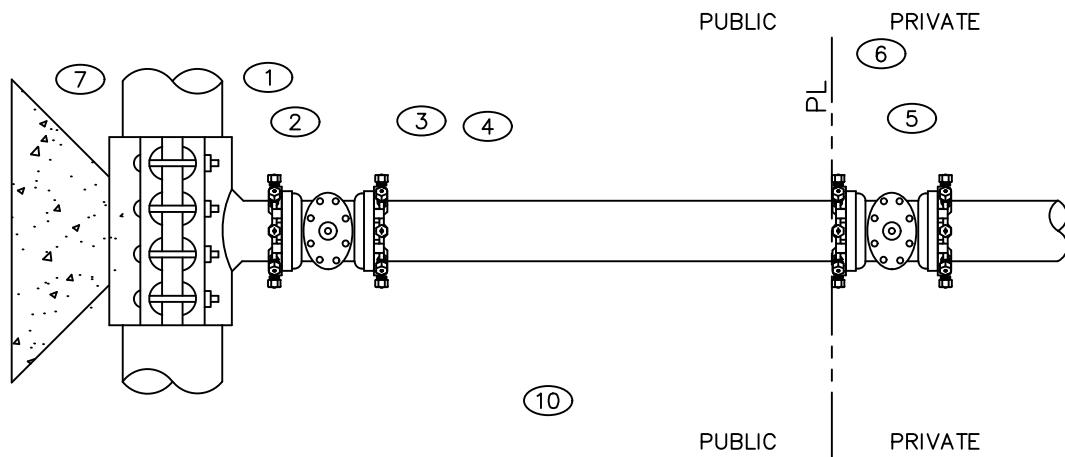
FRONT VIEW

NOTE:
 REINFORCEMENT NOT SHOWN.

 Aristocrat Ranchette Water Project, Inc.	
TYPICAL CUTOFF WALL FOR DITCH OR CANAL CROSSING	
Scale: <i>NONE</i>	Date: <i>MARCH 2019</i>
Revised:	Detail: <i>W-24</i>



FIRELINE OR DOMESTIC CONNECTION WITH MAIN EXTENSION



FIRELINE OR DOMESTIC CONNECTION WITH TAPPING SLEEVE

VALVE BOXES FOR FIRE LINES MUST BE LABELED AS SUCH

- ① EXIST MAIN
- ② TAPPING SLEEVE
- ③ TAPPING VALVE
- ④ DOUBLE SPIGOT PIPE FULLY RESTRAINED
- ⑤ MJ GATE VALVE 2' FROM PL
- ⑥ MECHANICAL RESTRAINT
- ⑦ CONC KICKBLOCK
- ⑧ MJ ANCHORING TEE (SWIVEL TEE WHERE APPLICABLE)
- ⑨ MJ GATE VALVE
- ⑩ POLYETHYLENE WRAPPED



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Water Project, Inc.

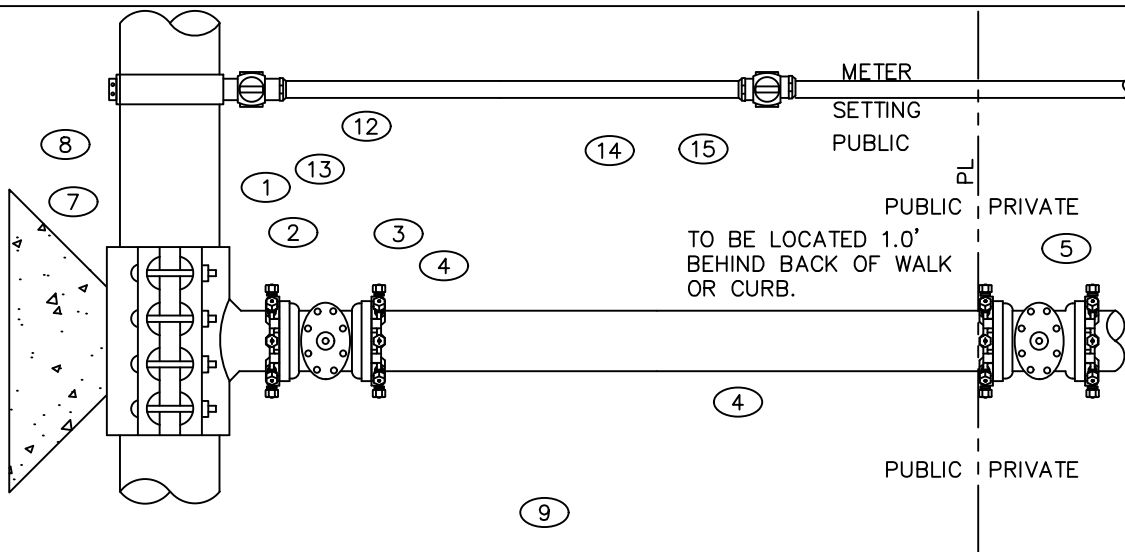
2" & LARGER DOMESTIC & FIRELINE CONNECTIONS

Scale: NONE

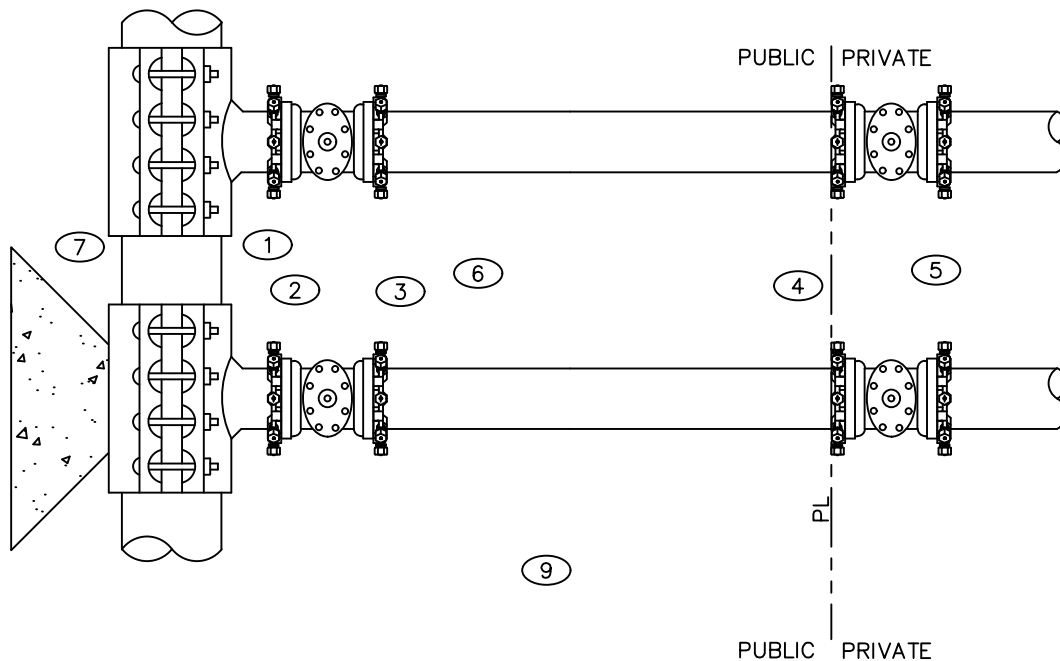
Date: MARCH 2019

Revised:

Detail: W-25



FIRELINE CONNECTION WITH DOMESTIC SERVICE TEE UP TO 2"



FIRELINE CONNECTION WITH DOMESTIC SERVICE TEE 3" AND LARGER

- ① EXIST MAIN
- ② TAPPING SLEEVE OR SWIVEL TEE
- ③ TAPPING VALVE OR MECHANICAL JOINT GATE VALVE
- ④ DI DBL SPIGOT PIPE
- ⑤ MECHANICAL JOINT GATE VALVE
- ⑥ RESTRAINT DEVICE
- ⑦ CONC KICKBLOCK
- ⑧ BRASS SERVICE SADDLE
- ⑨ POLYETHYLENE WRAPPED
- ⑩ 90° FITTING
- ⑪ MJ TEE
- ⑫ SERVICE INSULATOR
- ⑬ CORP STOP (UP TO 2")
- ⑭ COPPER TUBING (UP TO 2")
- ⑮ CURB STOP

NOTE:
 ALL DOMESTIC TAPS 2" AND SMALLER REQUIRE A BRASS SERVICE SADDLE EXCEPT ON 4" FIRELINE CONNECTIONS WITH A 1 1/2" UP TO 2" DOMESTIC SERVICE THEN A 4" MJ x 1 1/2" UP TO 2" THD TEE WILL BE USED.



Aristocrat Ranchette
 Water Project, Inc.

FIRELINE CONNECTION WITH
 DOMESTIC SERVICE TEE

Scale: NONE

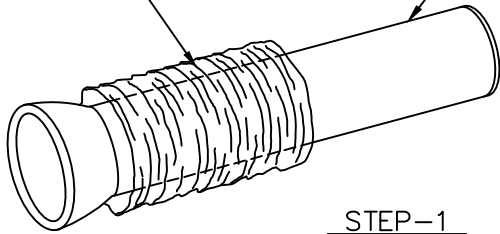
Date: MARCH 2019

Revised:

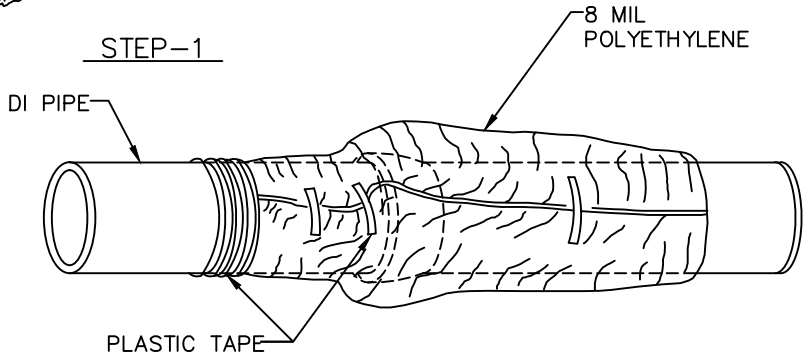
Detail: W-26

8 MIL POLYETHYLENE

DI PIPE



STEP-1

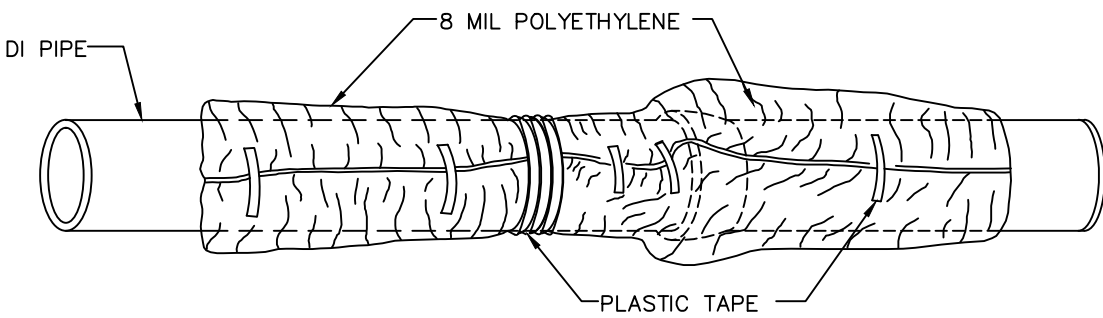


8 MIL POLYETHYLENE

DI PIPE

PLASTIC TAPE

STEP-2



8 MIL POLYETHYLENE

DI PIPE

PLASTIC TAPE

STEP-3

FIELD INSTALLATION-POLYETHYLENE WRAP

STEP-1 PLACE TUBE OF POLYETHYLENE MATERIAL AROUND PIPE PRIOR TO LOWERING PIPE INTO TRENCH.

STEP-2 PULL THE TUBE OVER THE LENGTH OF THE PIPE. TAPE TUBE TO PIPE AT JOINT. FOLD MATERIAL AROUND THE ADJACENT SPIGOT END AND WRAP WITH THREE CIRCUMFERENTIAL TURNS OF TWO-INCH WIDE PLASTIC TAPE TO HOLD PLASTIC TUBE AROUND SPIGOT END.

STEP-3 ADJACENT TUBE OVERLAPS FIRST TUBE AND IS SECURED WITH PLASTIC ADHESIVE TAPE. THE POLYETHYLENE TUBE MATERIAL COVERING THE PIPE WILL BE LOOSE. EXCESS MATERIAL SHALL BE NEATLY DRAWN UP AROUND THE PIPE BARREL, FOLDED INTO AN OVERLAP ON TOP OF THE PIPE AND HELD IN PLACE BY MEANS OF PIECES OF THE PLASTIC TAPE AT APPROXIMATELY THREE TO FIVE FT INTERVALS.

ALL FITTINGS, VALVES, BELL JOINT RESTRAINTS TO BE WRAPPED.



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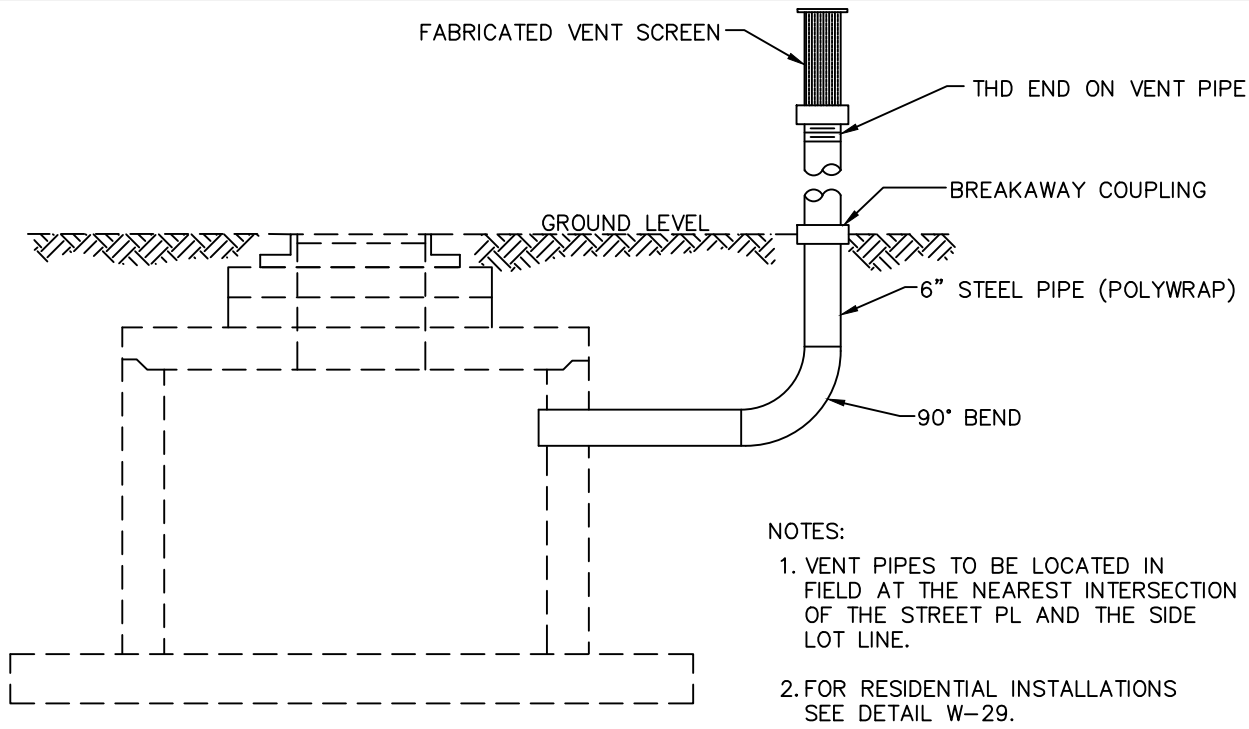
POLYETHYLENE WRAP

Scale: NONE

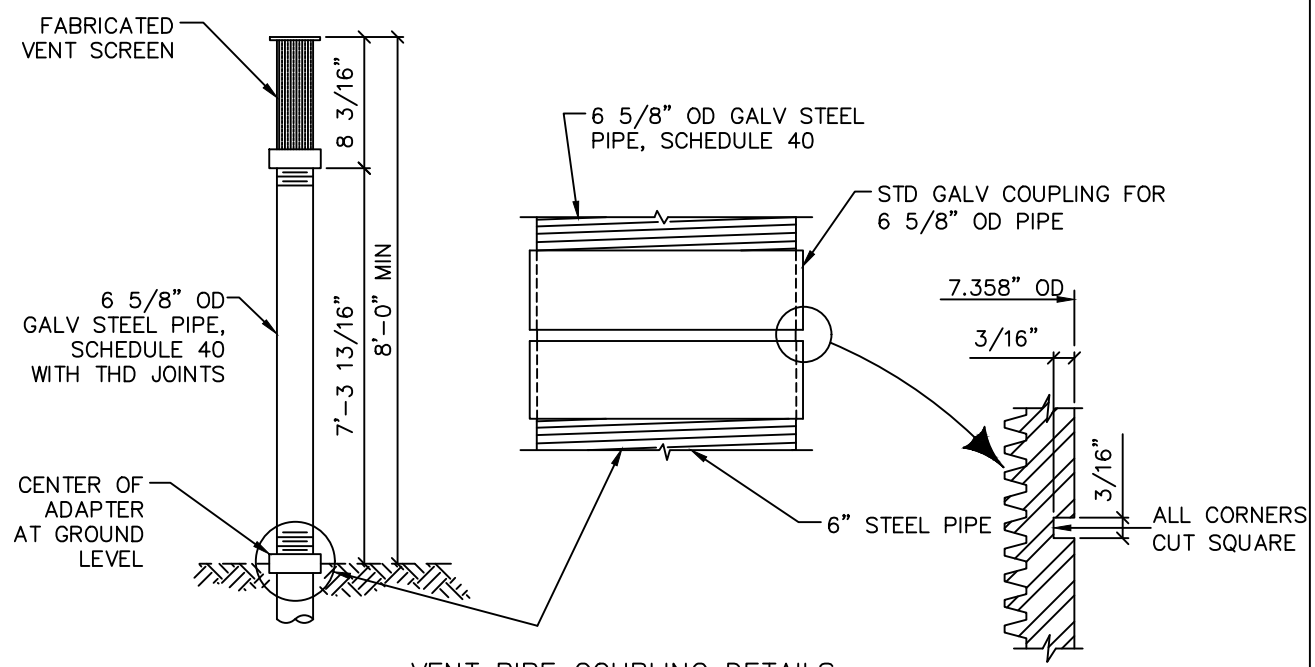
Date: MARCH 2019

Revised:


Detail: W-27

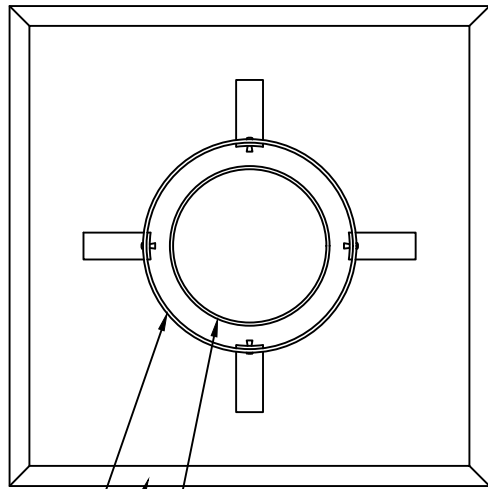


VENT PIPE INSTALLATION



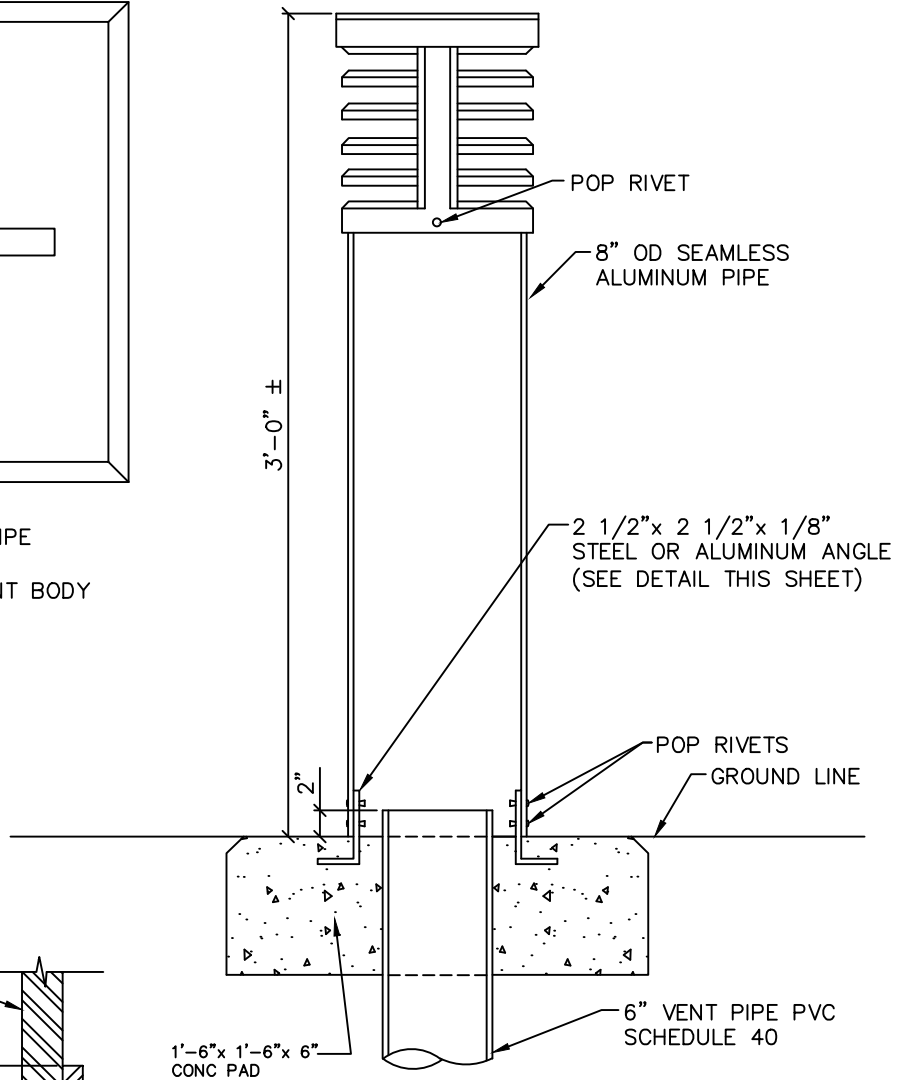
VENT PIPE COUPLING DETAILS

 Aristocrat Ranchette Water Project, Inc.	
INDUSTRIAL VENT ASSEMBLY INSTALLATION AND DETAILS	
Scale: <i>NONE</i>	Date: <i>MARCH 2019</i>
Revised:	Detail: <i>W-28</i>

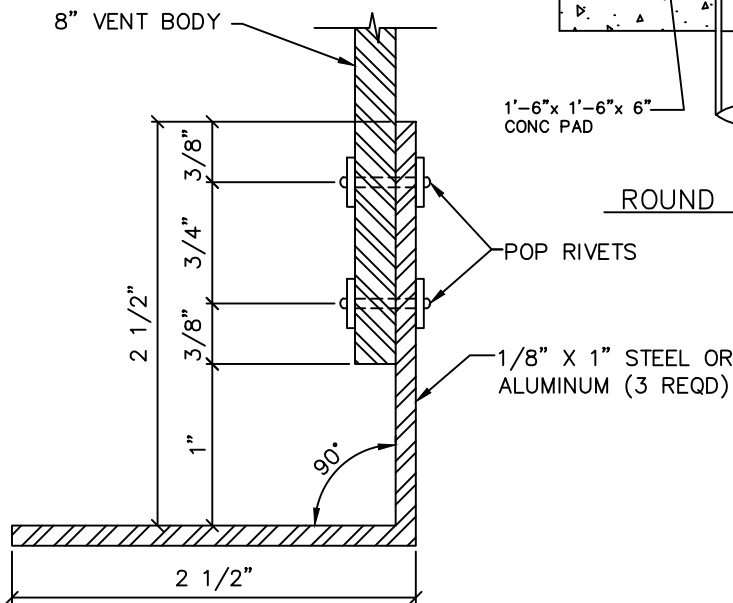


6" VENT PIPE
 CONC PAD
 20 GA VENT BODY

BASE DETAIL



ROUND VENT SCREEN



STEEL OR ALUMINUM ANGLE DETAIL

NOTE:
 COLOR SHALL BE OLIVE GREEN
 OR FLAT BLACK TO MATCH
 SURROUNDINGS.



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 Water Project, Inc.

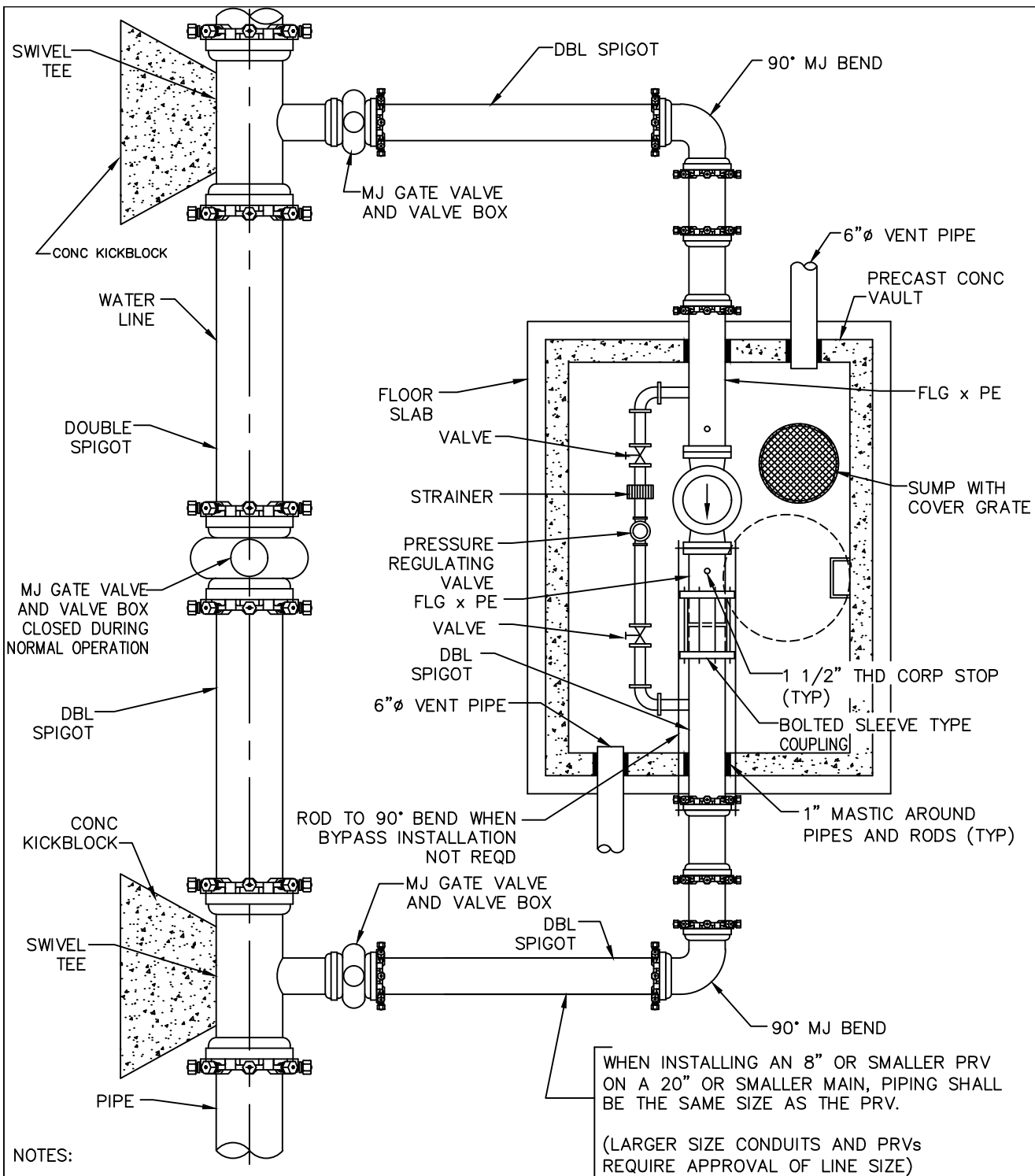
RESIDENTIAL VENT ASSEMBLY

Scale: NONE

Date: MARCH 2019

Revised:

Detail: W-29



NOTES:

1. A RECTANGULAR VAULT IS REQ'D WHERE TELEMETRY OR ELECTRICAL EQUIPMENT IS ANTICIPATED INSIDE THE VAULT.
2. ACCESS STAIRS WITH DOOR OUTSIDE OF PAVEMENT MAY BE REQ'D ON STREETS WITH HEAVY TRAFFIC.
3. FOR CROSS SECTION VIEW, SEE CROSS SECTION DETAIL W-31.
4. DO NOT PLACE SUMP DIRECTLY UNDER MH.
5. THIS MH IS SUITABLE FOR CHECK VALVE INSTALLATIONS.
6. PIPING FOR PRV AND CHECK VALVE INSTALLATIONS SHALL BE DI. LADDER RUNGS ARE REQD IN PRE-CAST MH.
7. THE DISTANCE BETWEEN RUNGS, CLEATS, AND STEPS SHALL NOT EXCEED 12" AND SHALL BE UNIFORM THROUGHOUT THE LENGTH OF THE LADDER.



Aristocrat Ranchette
Water Project, Inc.

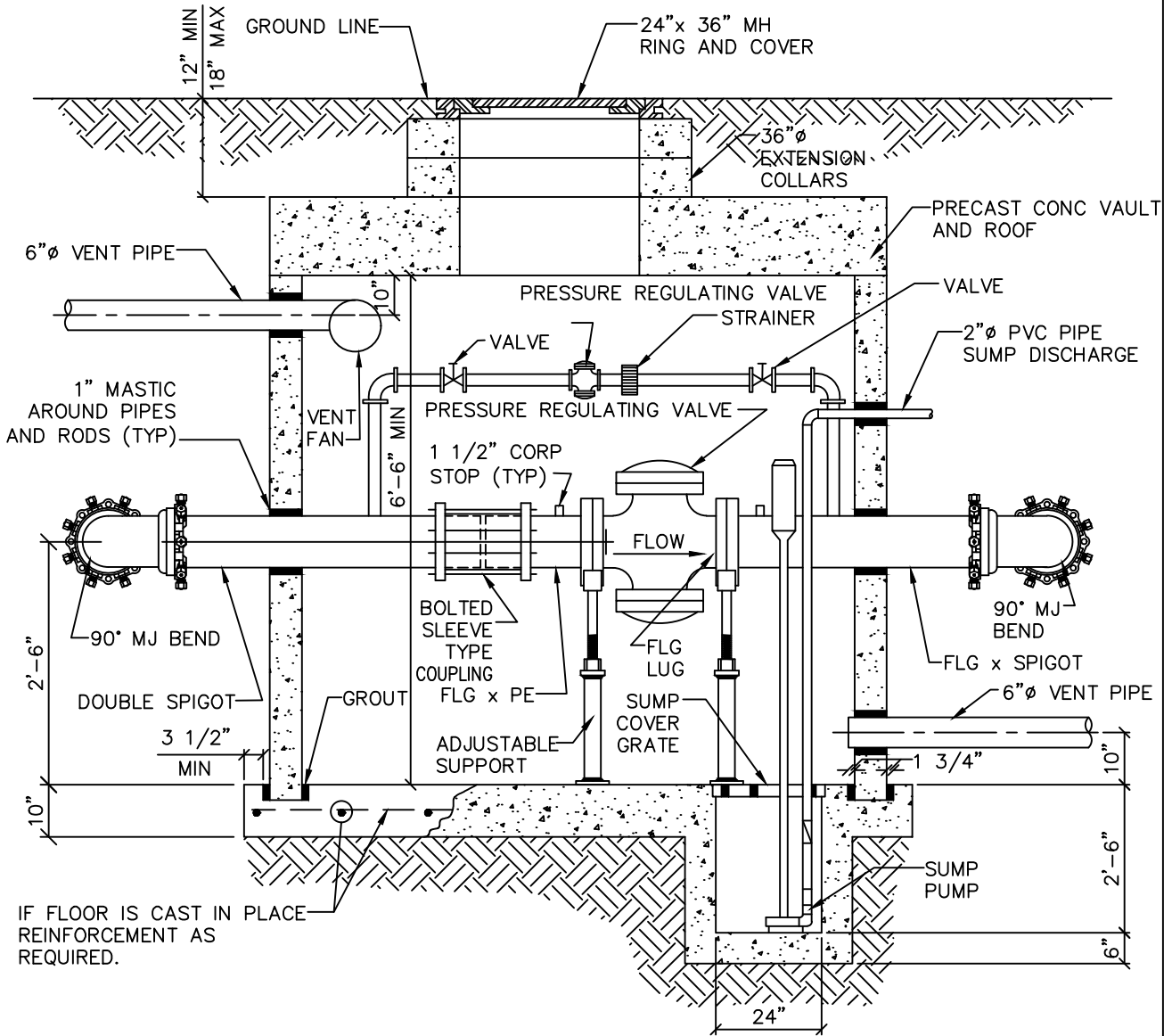
PRESSURE REGULATING VALVE
RECTANGULAR VAULT
TYPICAL PLAN

Scale: NONE

Date: MARCH 2019

Revised:

Detail: W-30



Aristocrat Ranchette
Water Project, Inc.

PRESSURE REGULATING VALVE
RECTANGULAR VAULT
CROSS SECTION

Scale: NONE

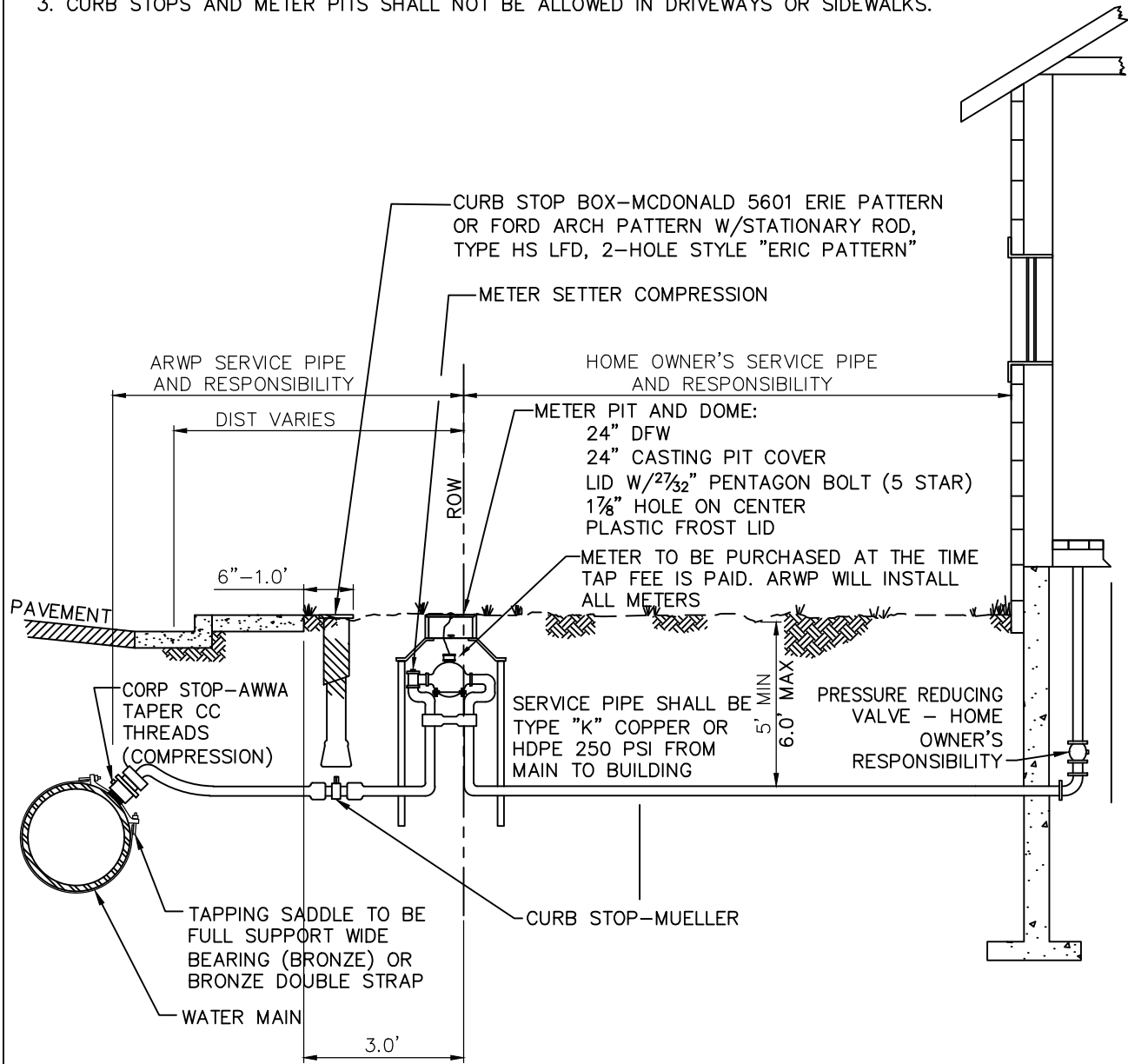
Date: MARCH 2019

Revised:

Detail: W-31

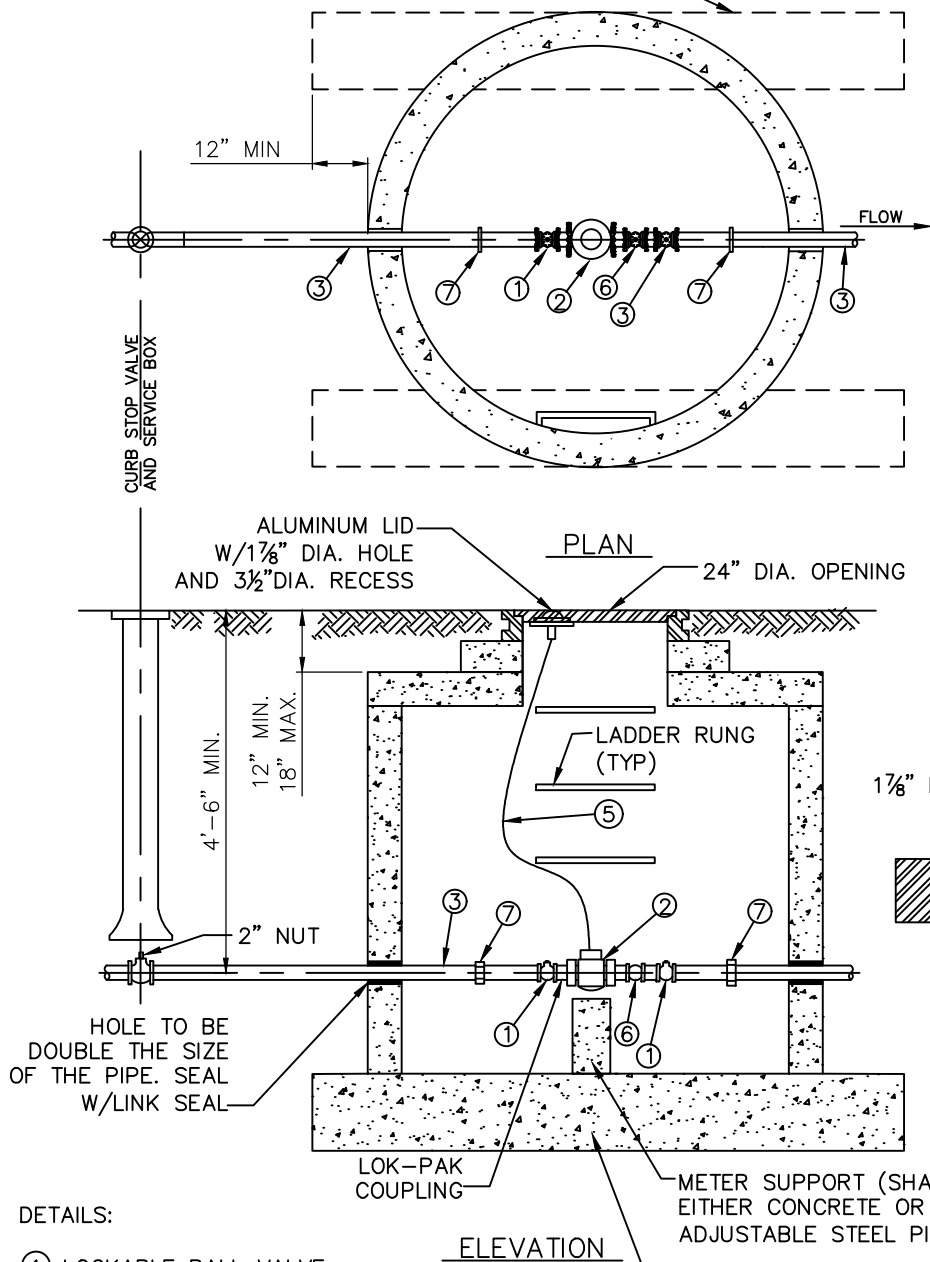
NOTES:

1. STOP BOX AND METER PIT MUST BE ACCESSIBLE AT ALL TIMES.
2. NO BENDS, FITTINGS, CONNECTIONS OR CHANGES IN PIPE SIZE ARE PERMITTED BETWEEN THE TAP AND A POINT 5 FT BEYOND THE WALL OF THE METER PIT.
3. CURB STOPS AND METER PITS SHALL NOT BE ALLOWED IN DRIVEWAYS OR SIDEWALKS.



 Aristocrat Ranchette Water Project, Inc.	
SERVICE LINE, STOP BOX, AND OUTSIDE METER INSTALLATION	
Scale: <i>NONE</i>	Date: <i>MARCH 2019</i>
Revised:	Detail: <i>W-32</i>

OPTIONAL CONCRETE MANHOLE BASE BEAMS
IF CONCRETE BEAMS ARE NOT USED, USE
½" ROCK, 6" DEEP MINIMUM.




NOTES:

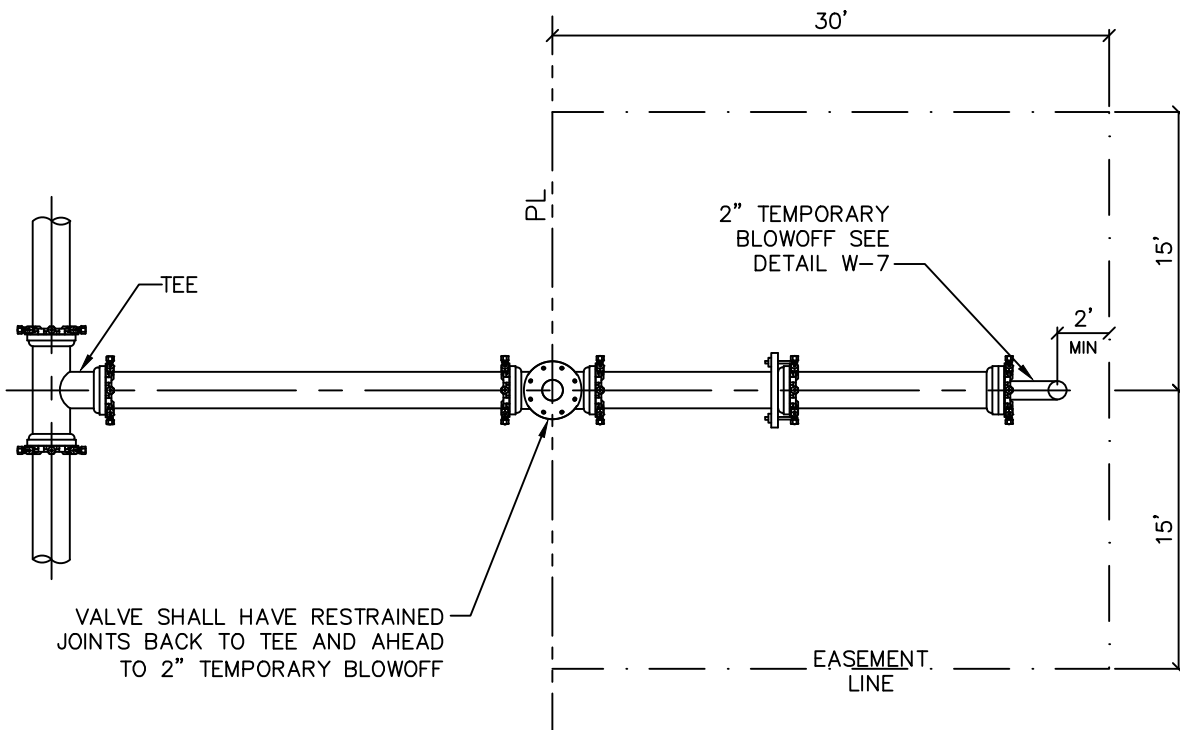
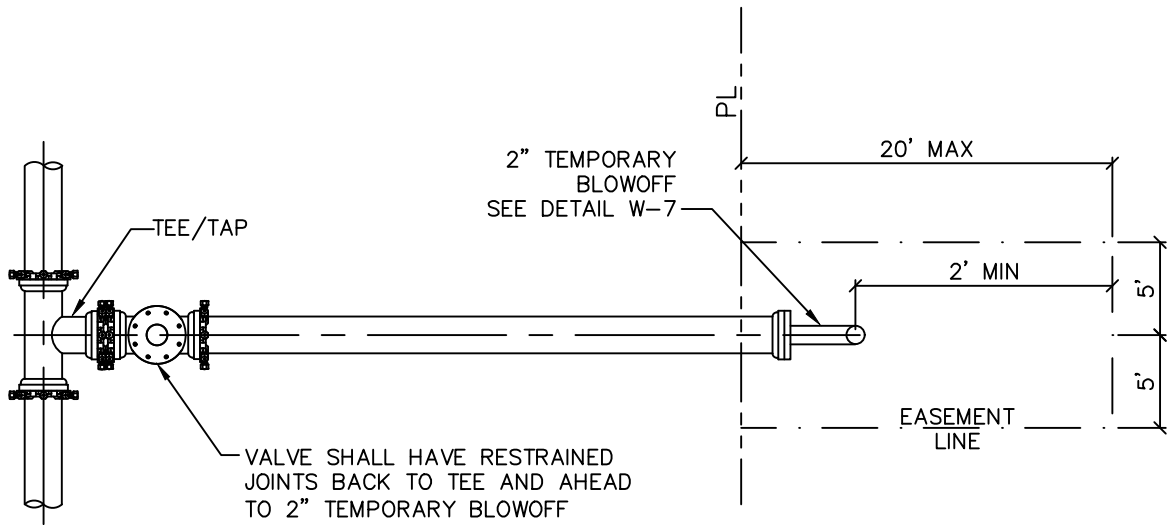
- A. MANHOLE BASE BEAMS SHALL BE REQUIRED FOR INSTALLATIONS IN DRIVEWAYS OR PARKING AREAS
- B. A 60" MANHOLE PIT WILL ACCOMODATE 1 ½" & 2" METERS.
- C. JOINTS SHALL BE EITHER THREADED OR COMPRESSION. NO SWEATED JOINTS WILL BE ALLOWED
- D. NO CONCRETE TO BE LAID IN FLOOR OF METER MANHOLE
- E. METER SHALL BE FLANGED WITH BRASS COMPANION FLANGES
- F. NO CONNECTIONS OR CHANGES IN PIPE DIAMETER SHALL BE MADE IN THE METER PIT OR IN THE METER PIT ON THE OUTLET SIDE
- G. LADDER RUNGS SHALL BE REQUIRED
- H. FOLE IN LID TO BE RECESSED TO ACCEPT TRANSMITTER

DETAILS:

- ① LOCKABLE BALL VALVE
- ② METER
- ③ TYPE K COPPER TUBING
- ④ CONCRETE MANHOLE
- ⑤ REMOTE REGISTER WIRE
- ⑥ DOUBLE CHECK VALVE
- ⑦ COPPER TO IRON CPLG.

FOR SIZE OF METER PIT LARGER THAN 2"
METER, CONTACT THE ARWP ENGINEER.

 Aristocrat Ranchette Water Project, Inc.	
<h2 style="margin: 0;">OUTSIDE METER SETTING FOR 1 ½" & 2" METERS</h2>	
Scale: NONE	Date: MARCH 2019
Revised:	Detail: W-33



Aristocrat Ranchette
Water Project, Inc.

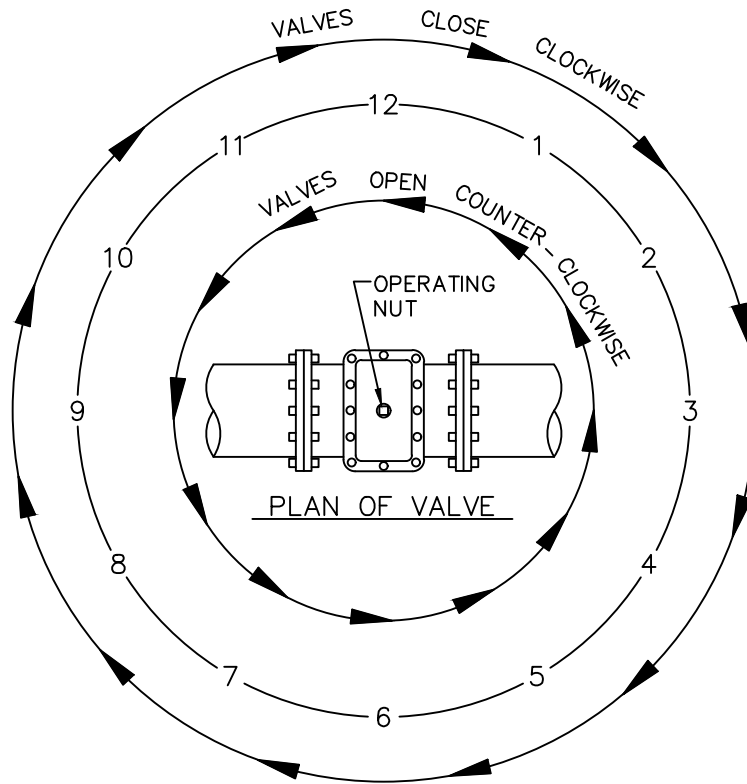
STUB-OUT CONFIGURATIONS FOR FUTURE MAIN EXTENSIONS

Scale: NONE

Date: MARCH 2019

Revised:

Detail: W-34



VALVE OPENING & CLOSING PROCEDURE



Aristocrat Ranchette
Water Project, Inc.

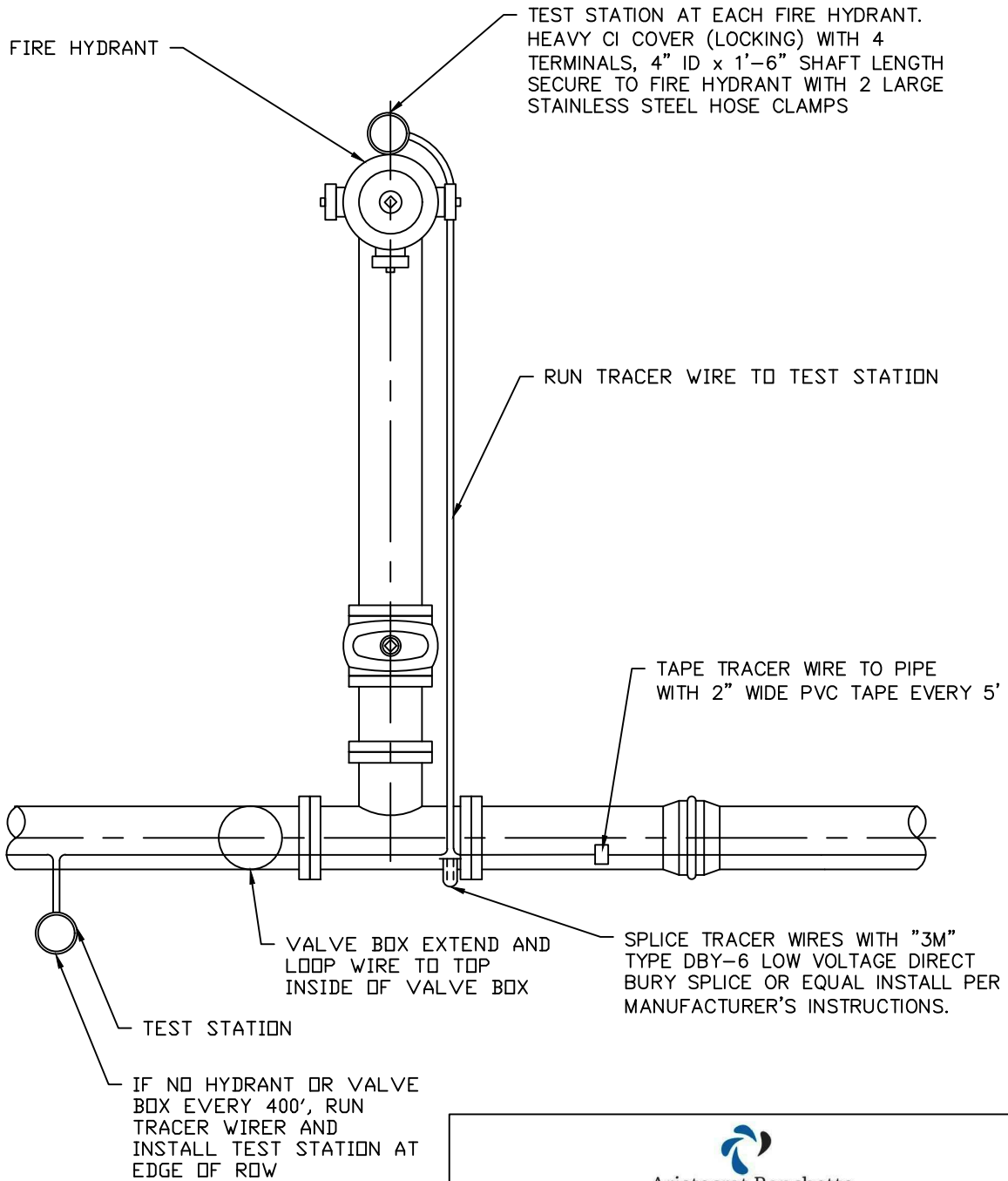
VALVE OPERATION

Scale: *NONE*

Date: *MARCH 2019*

Revised:

Detail: *W-35*



Aristocrat Ranchette
Water Project, Inc.

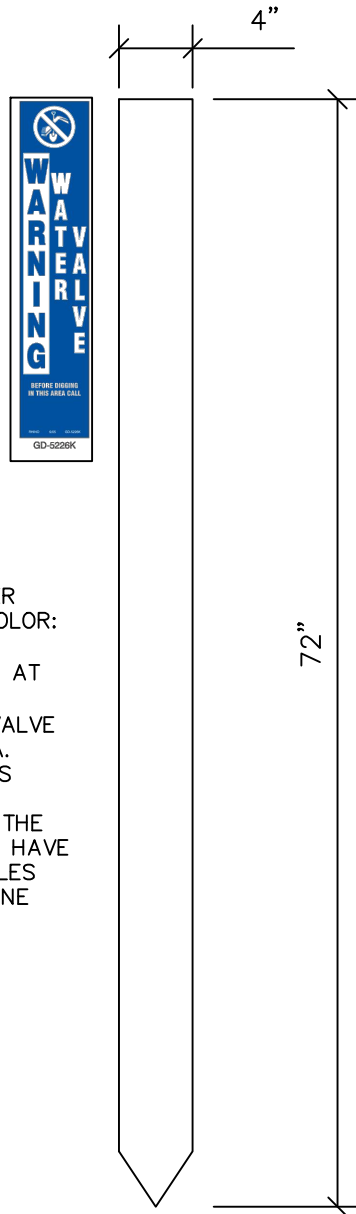
TRACER WIRE INSTALLATION

Scale: NONE

Date: MARCH 2019

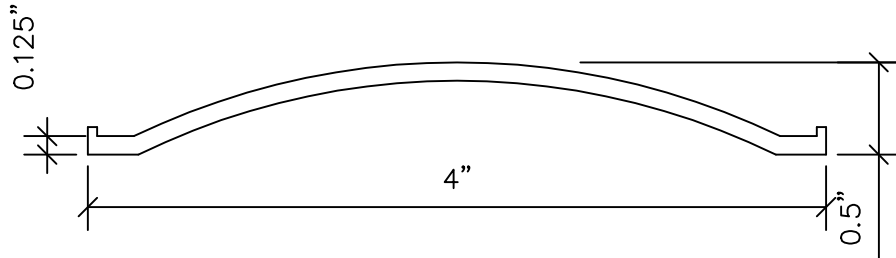
Revised:

Detail: W-36



NOTE:

1. FIBERGLASS COMPOSITE MARKER POST. POLYTECH STANDARD COLOR: BLUE. 72" LENGTH
2. VALVE MARKER TO BE PLACED AT EDGE OF ROW (OR EASEMENT) DIRECTLY ADJACENT TO ANY VALVE BURIED IN A DRIVE ABLE AREA. VALVES IN NON-DRIVING AREAS SHALL HAVE MARKERS PLACED ADJACENT TO EACH VALVE IN THE EASEMENT. ALL VALVES SHALL HAVE MARKERS. WHERE SEVERAL VALES ARE LOCATED IN ONE AREA, ONE MARKER MAY BE USED.



 Aristocrat Ranchette Water Project, Inc.	
VALVE AND LINE MARKER	
Scale: <i>NONE</i>	Date: <i>MARCH 2019</i>
Revised:	Detail: <i>W-37</i>

1. ALL MATERIALS AND WORKMANSHIP SHALL BE IN CONFORMANCE WITH ARISTOCRAT RANCHETTE WATER PROJECT (ARWP) ENGINEERING STANDARDS MATERIALS SPECIFICATION AND STANDARD DRAWINGS. ALL WORK SHALL BE INSPECTED AND APPROVED BY PERSONNEL OF ARWP.
2. ALL WATER MAINS, EXCEPT LEADS, SHALL BE PVC C-900 PRESSURE CLASS 150. ALL FITTINGS SHALL HAVE A PRESSURE RATING OF 250 PSI AND SHALL BE WRAPPED WITH AN 8 MIL. MINIMUM THICKNESS POLYETHYLENE MATERIAL PER A.W.W.A. STANDARD C105. ALL DUCTILE IRON PIPE TO BE POLYETHYLENE WRAPPED.
3. BENDS TO BE RESTRAINED AS PER STANDARD DETAIL W-14 AND W-17.
4. THERE SHALL BE A MINIMUM COVER OF 5 FEET OVER ALL WATER MAINS.
5. FIRE HYDRANTS SHALL CONFORM TO ARISTOCRAT RANCHETTE STANDARDS.
6. ALL BENDS, TEES, FIRE HYDRANTS, BLOW-OFFS AND PLUGS AT DEAD END MAINS SHALL BE PROTECTED BY USING CONCRETE THRUST BLOCKS PER ARISTOCRAT RANCHETTE STANDARDS.
7. CHLORINATION AND FLUSHING: THE LINES SHALL BE CHLORINATED IN ACCORDANCE WITH A.W.W.A. C-601. "DISINFECTING WATER MAINS", THE PREFERRED METHOD, IS TO USE SUFFICIENT CHLORINE TABLETS TO PRODUCE A 50 PPM SOLUTION. THESE TABLETS SHOULD BE ADHERED TO THE TOP OF THE PIPE SECTION WITH PERMATEX NO. 1 (RED). THE CHLORINATION AND FLUSHING OF ANY FINISHED PIPELINE SHALL BE DONE PRIOR TO THE HYDROSTATIC TESTING. DE-CHLORINATION IS REQUIRED.
8. HYDROSTATIC TESTING: ALL PIPE SHALL BE FIELD PRESSURE TESTED, VALVE TO VALVE, TO A MINIMUM OF 150 PSI FOR 1 HOUR. ALL TESTING SHALL BE DONE IN THE PRESENCE OF A ARWP INSPECTOR.
9. ALL VALVES ARE TO BE LOCATED AT TEES AND CROSSES. OTHER VALVE LOCATIONS MAY BE REQUIRED AS SHOWN ON THE PLAN.
10. WHEN NECESSARY TO LOWER OR RAISE WATER LINES AT STORM DRAINS AND OTHER UTILITY CROSSINGS, A MINIMUM CLEARANCE OF 1.50 FEET BETWEEN OUTSIDE OF PIPES IS REQUIRED.
11. THE CONTRACTOR SHALL HAVE IN HIS POSSESSION AT ALL TIMES ONE (1) SIGNED COPY OF THE PLANS WHICH HAS BEEN APPROVED BY ARISTOCRAT RANCHETTES.
12. THE CONTRACTOR SHALL NOTIFY THE ARWP ENGINEER AT LEAST 48 HOURS PRIOR TO ANY CONSTRUCTION.
13. ALL REQUIRED PERMITS SHALL BE OBTAINED FROM ARWP AND COUNTY BY THE CONTRACTOR FOR WORK PERFORMED IN THE PUBLIC RIGHT OF WAY.
14. THE CONTRACTOR SHALL NOTIFY ALL UTILITY COMPANIES AND DETERMINE THE LOCATION OF ALL EXISTING UNDERGROUND UTILITIES PRIOR TO PROCEEDING WITH THE EXCAVATION. ALL WORK PERFORMED IN THE AREA OF THE PUBLIC UTILITIES SHALL BE PERFORMED ACCORDING TO THE REQUIREMENTS OF THESE AGENCIES.
15. COMPACTION OF ALL TRENCHES MUST BE ATTAINED IN ACCORDANCE WITH THE SOILS REPORT AND COMPACTION TEST RESULTS SUBMITTED TO THE ARWP ENGINEER ON A DAILY BASIS PRIOR TO INITIAL ACCEPTANCE.
16. AT LEAST FIVE (5) DAYS PRIOR TO THE START OF CONSTRUCTION, A PRE-CONSTRUCTION MEETING WILL BE HELD AT THE ARWP OFFICE AND ATTENDED BY THE CONTRACTOR AND REPRESENTATIVES OF OTHER APPROVING AGENCIES. IT WILL BE THE RESPONSIBILITY OF THE CONTRACTOR TO CONTACT THE ARWP ENGINEER.



Aristocrat Ranchette
Water Project, Inc.

WATER MAIN NOTES

Scale: *NONE*

Date: *MARCH 2019*

Revised:

Detail: *W-38*

PIPE

P.V.C.

AWWA STANDARD SPECIFICATION C 900
6" THROUGH 12" CLASS 235 (DR 18)

POLYETHYLENE WRAPPING- AWWA C-105/A21.5-82, OR LATEST REVISION.
MIN. 8 MILS.

VALVES

GATE VALVES

AWWA C-500-80 (OR LATEST REVISION) FLEXIBLE WEDGE
MINIMUM WORKING PRESSURE 200 PSIG FOR 12" AND SMALLER
VALVE SEATS, THE DISCS AND THE STEM SHALL BE CONSTRUCTED OF BRONZE
STEM SEALS SHALL BE WITH 2 "O" RINGS, EACH OF WHICH SHALL BE DESIGNED
AS TO ALLOW REPLACEMENT UNDER FULL LINE PRESSURE WHEN THE VALVE IS IN
THE FULL OPEN POSITION
2" SQUARE OPERATING NUTS
OPEN COUNTER CLOCKWISE (LEFT)

FIRE HYDRANTS

MUELLER CENTURION MODEL 423

OPEN COUNTER CLOCKWISE (LEFT)
COLOR SHALL BE RED
EACH HYDRANT SHALL BE RESTRAINED IF THERE IS MORE THAN ONE JOINT OF
PIPE AND WRAPPED FROM THE HYDRANT SHOE TO THE MAIN LINE TEE, AND
SHALL BE THRUST BLOCKED.

VALVE BOXES

TYLER SCREW- TYPE 6" C.I. SERIES 6860 WITH NO. 160 LARGE OVAL BASE OR
CLAY & BAILEY SCREW- TYPE 6" C.I. NO. P-108 WITH NO. 160 LARGE OVAL
BASE.
WORD WATER ON COVER



Aristocrat Ranchette
Water Project, Inc.

WATER EQUIPMENT STANDARD
MATERIALS

Scale: *NONE*

Date: *MARCH 2019*

Revised:

Detail: *W-39*

TAPPING SADDLES

PVC- FULL SUPPORT WIDE BEARING (BRONZE) OR BRONZE DOUBLE STRAP

CORPS

MUELLER AWWA TAPER CC THREADS

CURB STOPS

MUELLER (COMPRESSION)

CURB STOP BOXES

MC DONALD 5601 ERIE PATTERN OR
FORD ARCH PATTERN WITH STATIONARY ROD, TYPE HS LID,
2 HOLE STYLE "ERIE PATTERN"

METER PIT

24" DFW

METER PIT LID

24" CASTING METER PIT COVER WITH ALUMINUM LID
 $2\frac{7}{32}$ " PENTAGON BOLT (FIVE STAR)
1 $\frac{7}{8}$ " DRILLED HOLE (OFFSET RIGHT SINGLE HOLE)
INTER LID (FROST LID)

YOKE

MCDONALD 702 COMPRESSION
WITH VERTICAL CHECK VALVE

SERVICE LINE MATERIAL

TYPE K COPPER OR HDPE 250 PSI



Aristocrat Ranchette
Water Project, Inc.

WATER EQUIPMENT STANDARD
MATERIALS

Scale: *NONE*

Date: *MARCH 2019*

Revised:

Detail: *W-40*