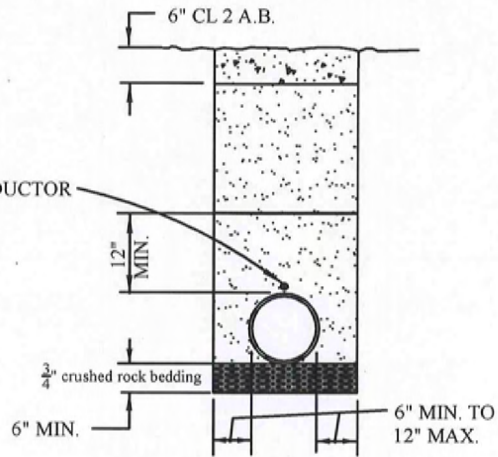


CLASS "C"

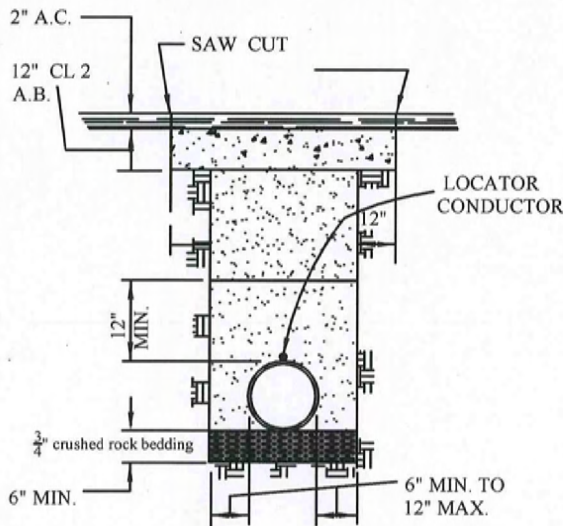
OUTSIDE ROAD R/W AND AT "CROSS COUNTRY AREA"



CLASS "B"

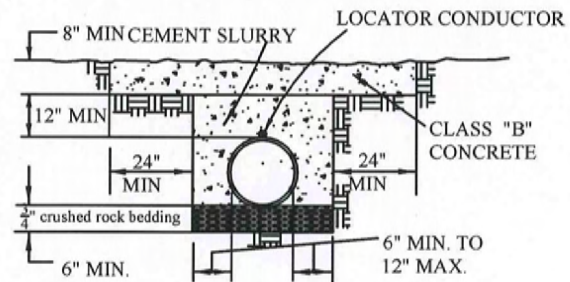
WITHIN ROAD R/W, OUTSIDE OF PAVED SHOULDER & AT DRIVEWAYS

BACKFILL PER SEC. 19-3 OF THE STANDARD SPECIFICATIONS.
SURFACE REPAIR IN PUBLIC RIGHT OF WAY PER AGENCY.



CLASS "A"

WITHIN TRAVELED WAY AND AT PAVED SHOULDERS



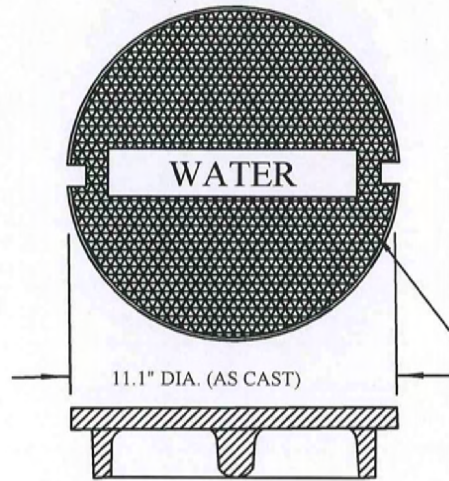
STREAM CROSSING

Design: TWSD
 Drawn: MLE
 Checked: N.STAR
 Date: 19 Feb 2008

TYPICAL TRENCH SECTIONS (WATER)

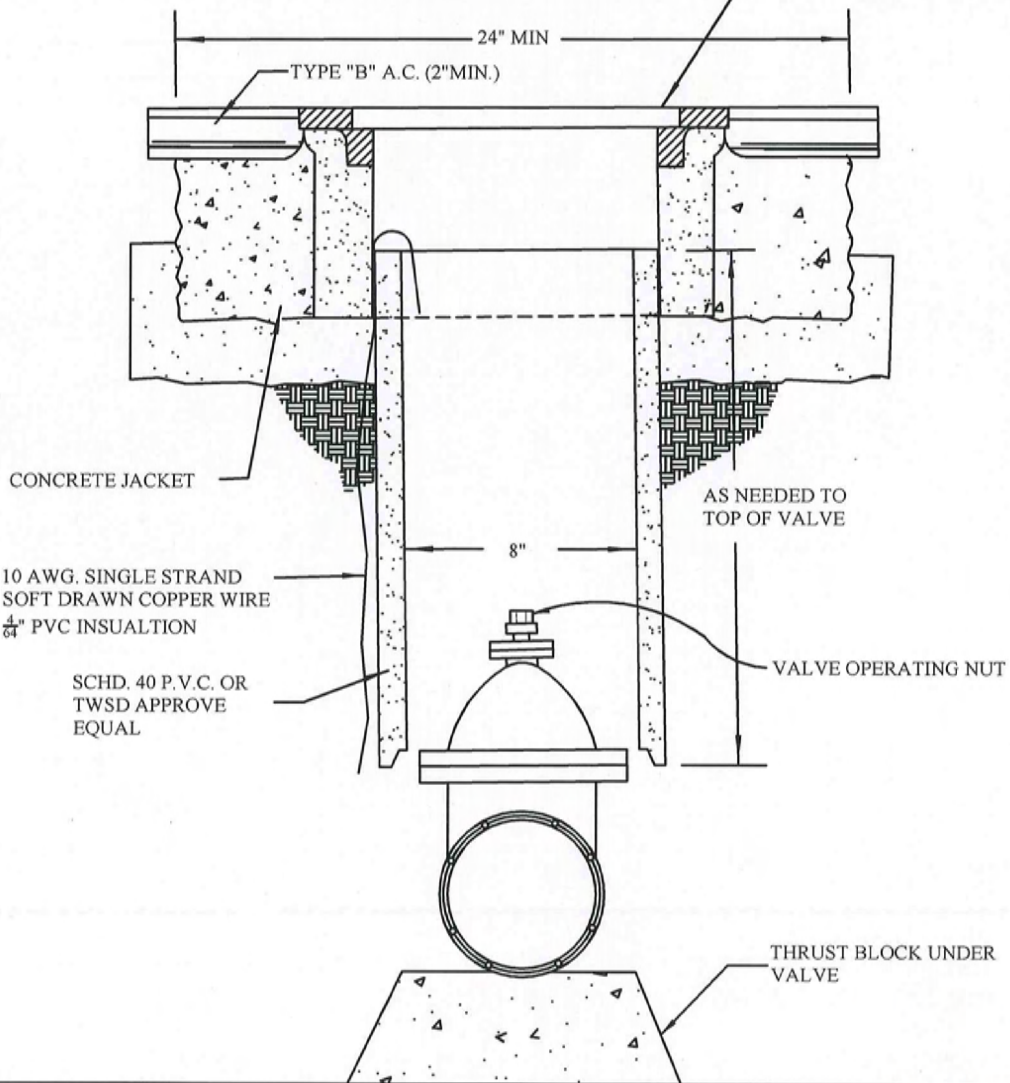
Thermalito Water and Sewer District

DWG. NO.
 W1



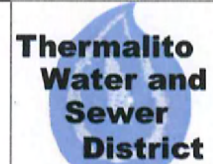
CHRISTY G-5 TRAFFIC VALVE BOX TYPE OR APPROVED EQUAL MARKED "WATER"

VALVE BOX DETAIL

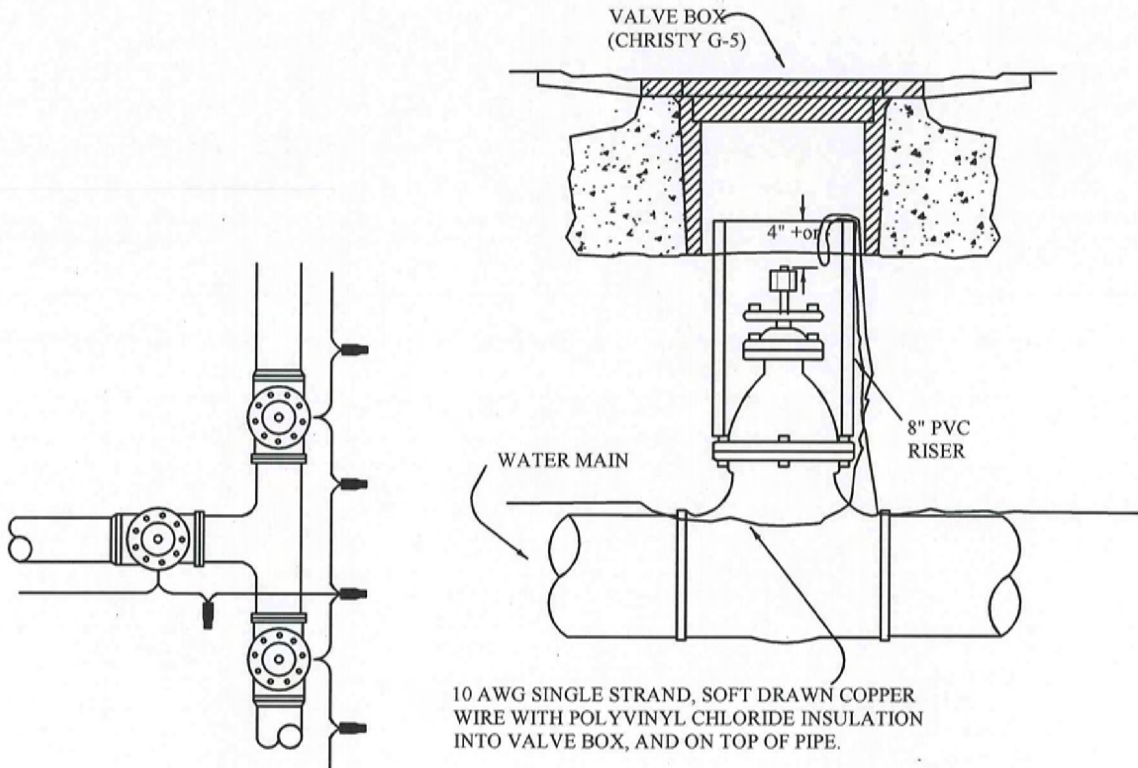


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 Date: 19 Feb 2008

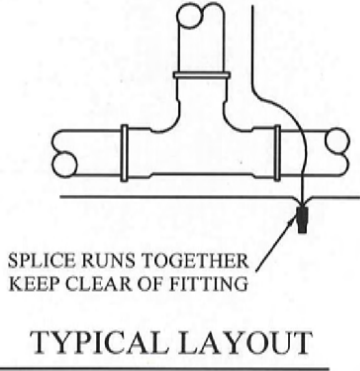
WATER VALVE AND BOX



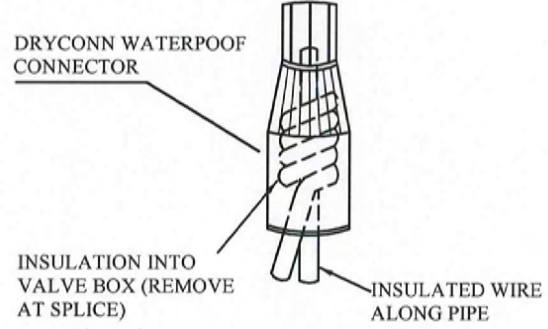
DWG. NO.
W2



10 AWG SINGLE STRAND, SOFT DRAWN COPPER WIRE WITH POLYVINYL CHLORIDE INSULATION INTO VALVE BOX, AND ON TOP OF PIPE.



TYPICAL LAYOUT

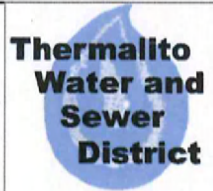


DIRECT BURY WATER PROOF CONNECTORS

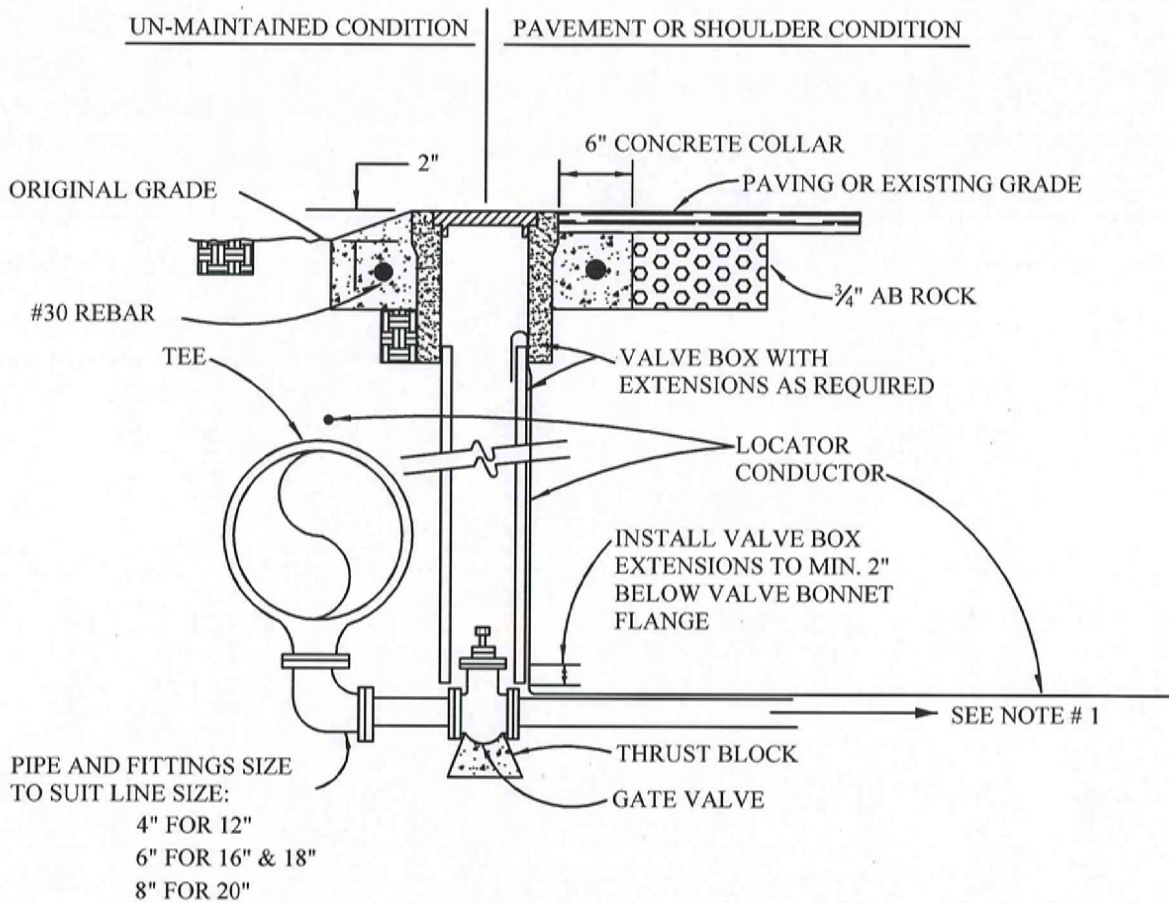
- NOTES:
1. WIRE TO BE CONTINUOUS BETWEEN VALVE BOXES
 2. LOCATING WIRE TO BE LAID ON TOP OF PIPE AND ATTACHED WITH DUCT TAPE

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 Date: 19 Feb 2008

TRACER WIRE LAYOUT



DWG. NO.
 W3

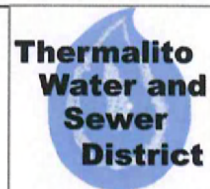


NOTES:

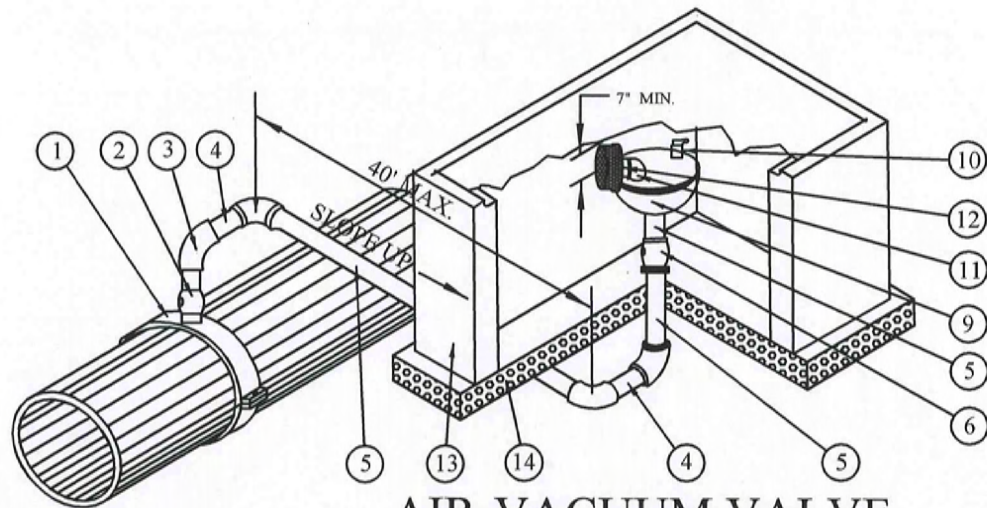
1. DAYLIGHT PIPE IN NATURAL DRAIN WITH FLAP GATE OR BRING TO SURFACE WITH VAULT AND CAP AND AT A LOCATION APPROVED BY THE DISTRICT MANAGER
2. PIPE MATERIALS, FITTINGS AND VALVES SHALL CONFORM TO DISTRICT STANDARDS

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 Date: 19 Feb 2008

BLOW OFF



DWG. NO.
 W4



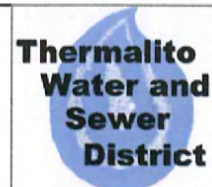
AIR-VACUUM VALVE TYPE "B"

1. SERVICE SADDLE - NON-FARIOUS OR DISTRICT APPROVED EQUAL
2. CORP. STOP - FORD FB 1700
3. 90° BRASS ELL
4. BRASS NIPPLE
5. BRASS PIPE
6. TEFLON BALL TYPE A.V. COCK MC DONALD #6101 OR EQUAL
7. BRASS UNION
8. BRASS TEE
9. AIR-VACUUM & AIR RELEASE VALVE APPCO-SER. 1700 FOR 2". 200A FOR 1" OR C.A. INDUSTRIES #980 FOR 2" #920 FOR 1" OR DISTRICT APPROVED EQUAL.
10. BIB W/TEE HANDLE
11. 90° BRASS ST. ELL
12. STAINLESS STEEL SCREEN (McMASTER - CAR NO. 9877K) OR EQUAL
13. VAULT: 17 1/4" X 30" - CHRISTY # B-36 WITH EXTENSION AS NECESSARY OR EQUAL
14. DRAIN ROCK 4 CU. FT. PER VAULT BOX

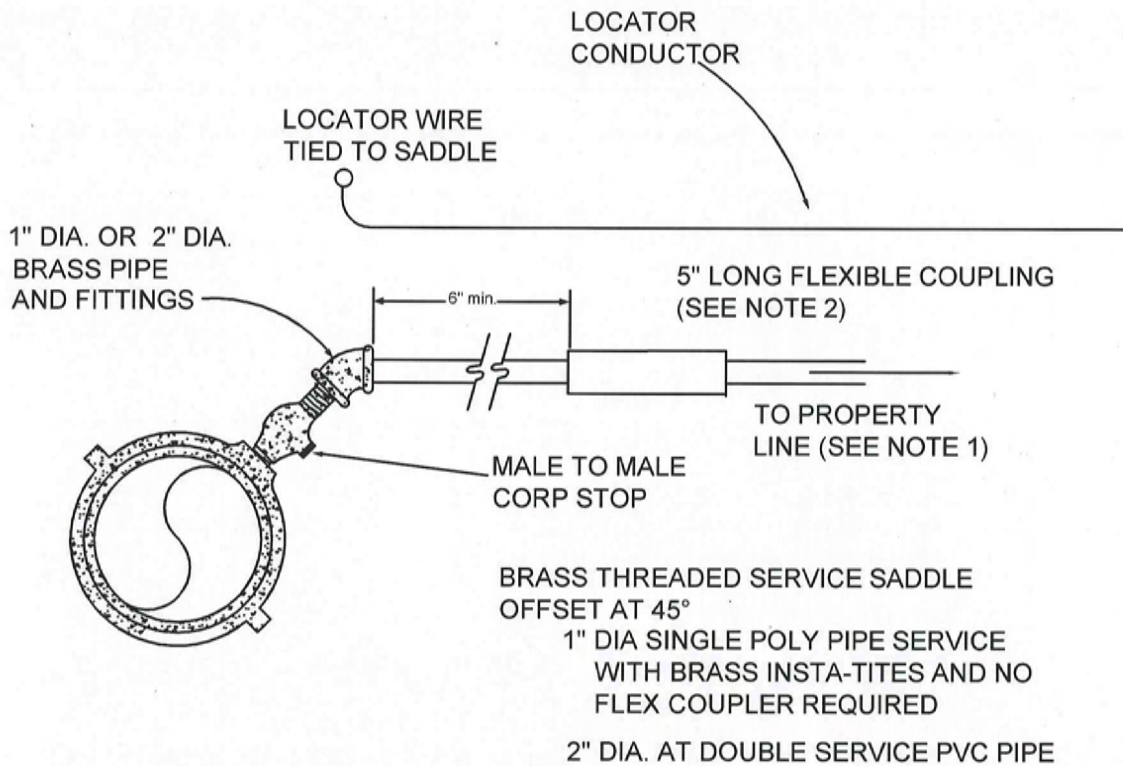
TYPE	AIR-VALVE SIZE	SIZE OF PIPE FITTINGS
A	1"	1"
A	2"	2"
B	1"	2"
B	2"	2"

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 Drawn: MLE
 Checked: N.STAR
 Date: 19 Feb 2008

AIR-VACUUM VALVE



DWG. NO.
W5

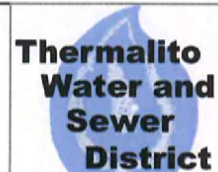


NOTES:

1. SERVICE PIPE SHALL BE BROUGHT TO AND FINISHED WITH CURB STOP INSIDE A METER BOX LOCATED WITHIN 18" OF THE PROPERTY LINE.
2. STEEL "2-BOLT" MECHANICAL COUPLINGS.

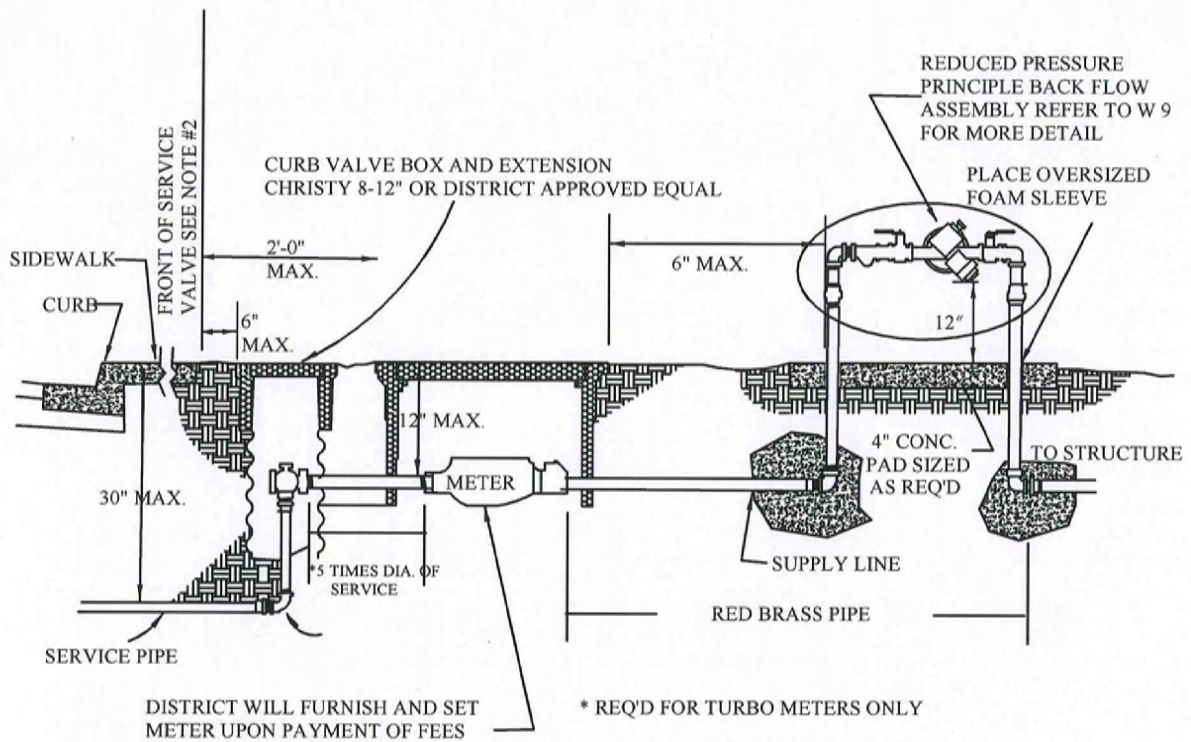
Design: TWSD
 Drawn: MLE
 Checked: N. STAR
 Date: 19 Feb 2008

SERVICE CONNECTION
 AT DISTRICT MAIN



DWG. NO.

W 6



1. REDUCED PRESSURE BACKFLOW PREVENTION ASSEMBLY MUST BE CONNECTED TO THE DISTRICT WATER METER & TESTED BY DISTRICT PERSONNEL.
2. POINT OF SERVICE:
 - A. POINT OF SERVICE IS THE BACK OF SIDEWALK FOR STREETS WITH SIDEWALK CONTIGUOUS WITH CURB & GUTTER.
 - B. POINT OF SERVICE IS THE RIGHT OF WAY LINE ON ALL UNIMPROVED ROADS.
 - C. WHERE THE POINT OF SERVICE IS UNCLEAR THE LOCATION SHALL BE DETERMINED BY THE DISTRICT
3. LIST OF APPROVED BACK FLOW PREVENTION ASSEMBLIES:
WILKINS 975XL, WATTS 800MY, FEBCO 765 -766 OR DISTRICT APPROVED EQUAL .
4. THE BACKFLOW PREVENTION ASSEMBLIES SHALL BE INSTALLED ABOVE GROUND, IN A HORIZONTAL & LEVEL POSITION. THE ASSEMBLY SHALL BE LOCATED ON THE CUSTOMER'S SIDE & NO FURTHER THAN HALF A FOOT FROM THE POINT OF SERVICE OF THE WATER METER. PROVIDE A POLAR PARKA INSULATION BLANKET , OR DISTRICT APPROVED EQUAL.
5. NO OUTLET, TAP, TEE, OR CONNECTION BETWEEN THE WATER METER AND THE BACK FLOW PREVENTER IS ALLOWED.

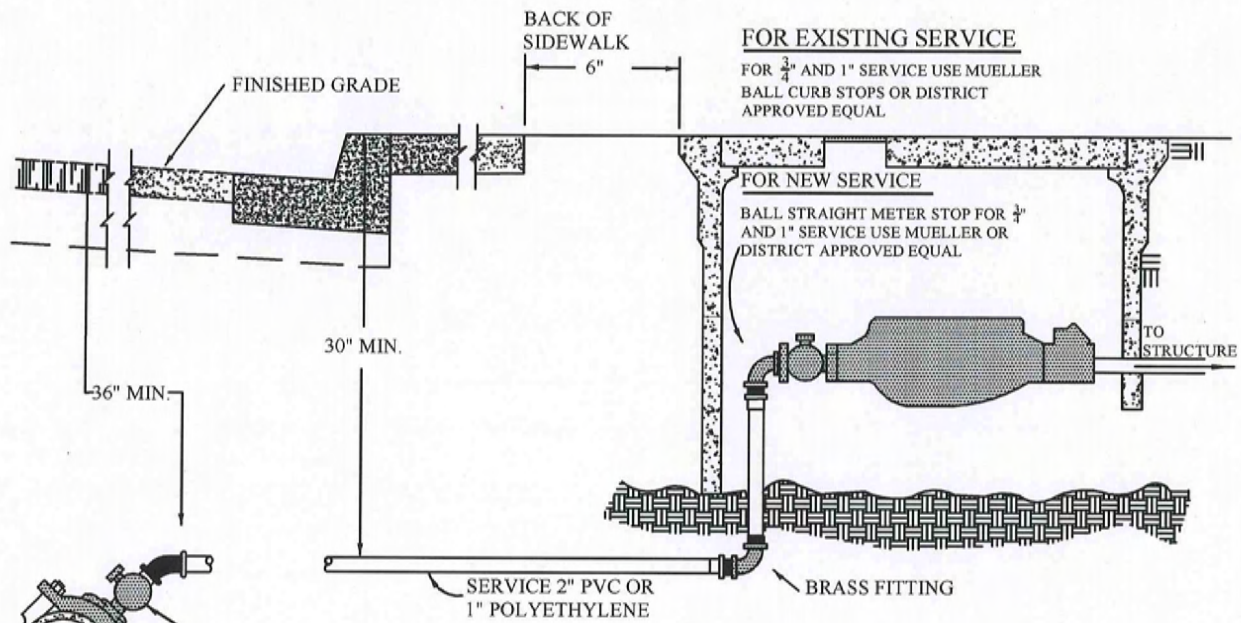
REDUCED PRESSURE BACK FLOW ASSEMBLY

Design: TWSD
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 Checked: N.STAR
 Date: 19 Feb 2008

RPP BACKFLOW ASSEMBLY INSTALLATION

**Thermalito
Water and
Sewer
District**

DWG. NO.
W 7



FOR EXISTING SERVICE

FOR 3/4" AND 1" SERVICE USE MUELLER BALL CURB STOPS OR DISTRICT APPROVED EQUAL

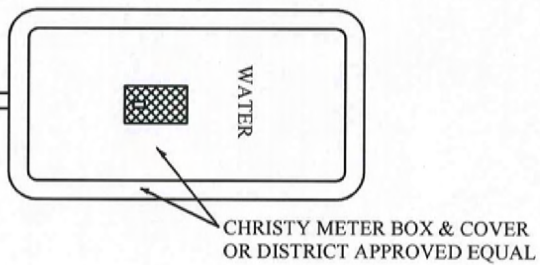
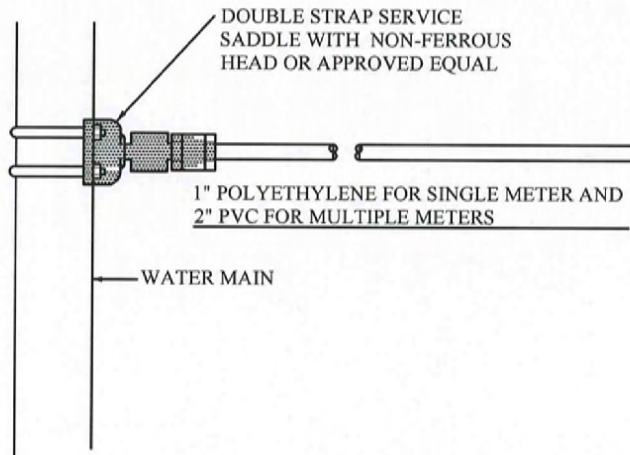
FOR NEW SERVICE

BALL STRAIGHT METER STOP FOR 3/4" AND 1" SERVICE USE MUELLER OR DISTRICT APPROVED EQUAL

CORPORATION STOP:
FORD BALLCORP FB 700
OR DISTRICT APPROVED
EQUAL

NOTES:

1. SINGLE 3/4" AND 1" SERVICE METER SHALL BE POLYETHYLENE PIPE
2. SPLICES IN THE SERVICE LINE ARE TO BE AVOIDED BUT IF ALLOWED, THEY SHALL BE MADE WITH INSTAL-TITES AND BRASS FITTING
3. ALL FITTINGS ARE BRASS AND SHALL BE MUELLER BRAND OR DISTRICT APPROVED EQUAL
4. WHEN BACKFLOW PREVENTER IS REQUIRED SEE BACKFLOW DETAILS

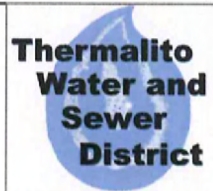


3/4" & 1" WATER SERVICE CONNECTIONS

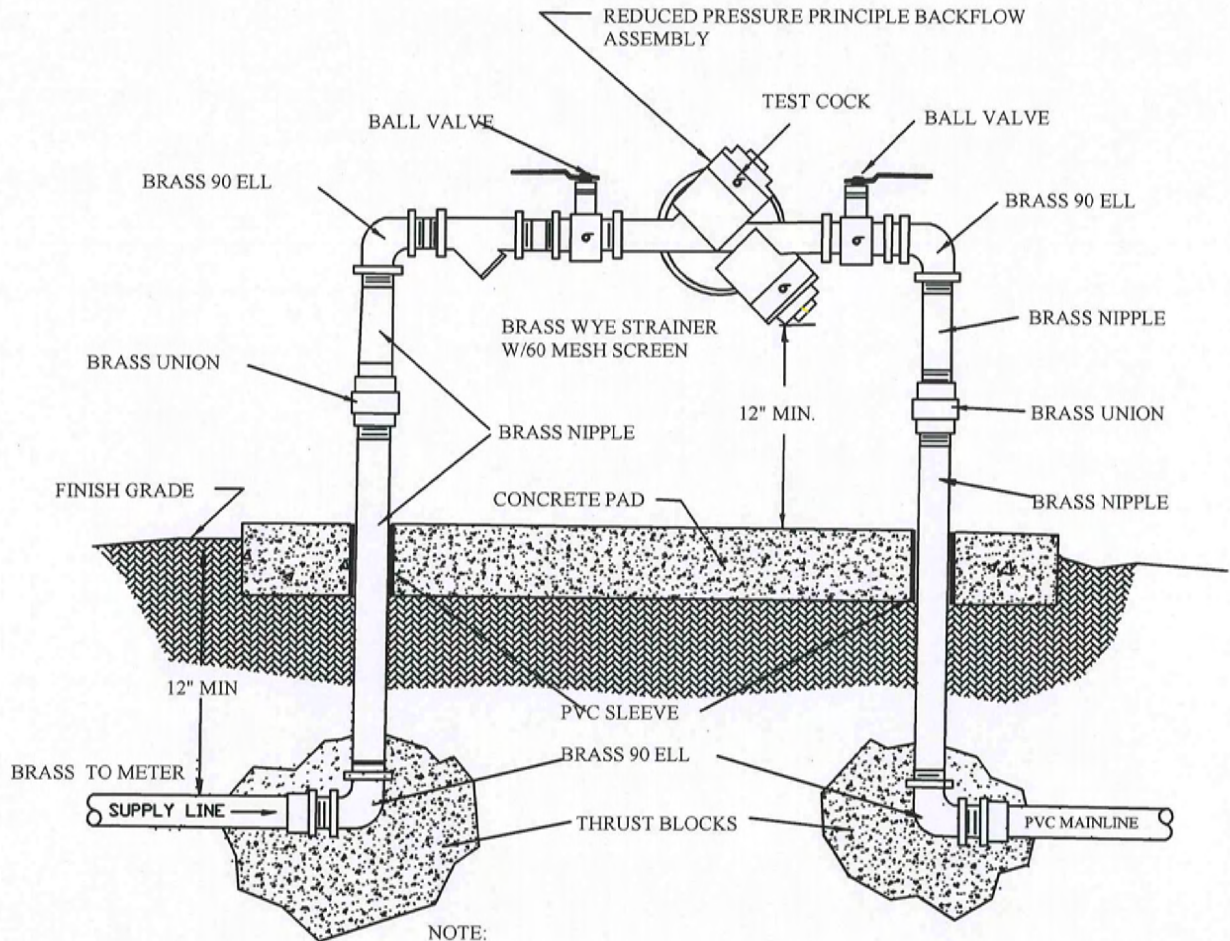
METER SIZE	CHRISTY	
	MODEL NO.	LID TYPE
3/4"	B-16	G
1"	B-16	G

Design: TWSD
 Drawn: MLE
 Checked: N.STAR
 Date: 19 Feb 2008

3/4" & 1" WATER SERVICE AND MAIN CONNECTION



DWG. NO.
W 8



NOTE:

1. EQUIPMENT TO BE INSTALLED A MIN. OF 12" FROM THE METER ON THE CUSTOMER'S PROPERTY
2. WHEN UNIT IS NEAR A STRUCTURE MOUNT TEST COCK ON OPEN OR NON-OBSTRUCTED SIDE
3. PROVIDE A POLAR PARKA INSULATION BLANKET, OR DISTRICT APPROVED EQUAL NO WRAPPING OF BACKFLOW ASSEMBLIES ALLOWED.
4. PROVIDE A LOCKABLE, EXPANDED METAL PROTECTIVE ENCLOSURE OR DISTRICT APPROVED ALTERNATIVE.
5. OWNERSHIP AND MAINTENANCE SHALL BE THE PROPERTY OWNERS RESPONSIBILITY

BACKFLOW ASSEMBLY DETAIL

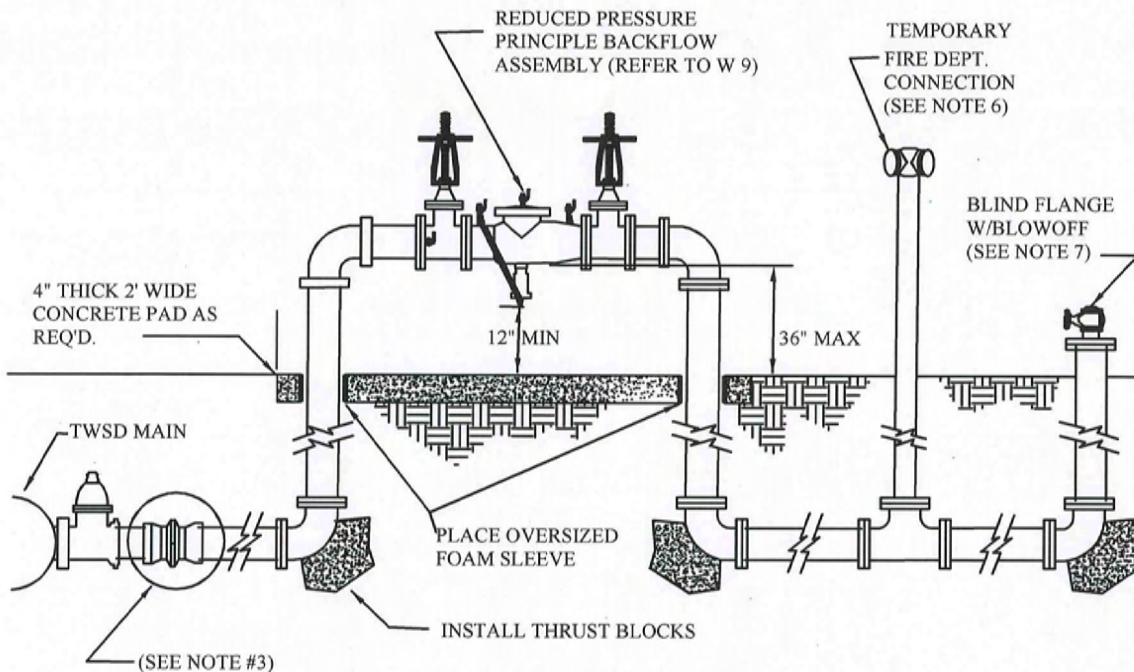
REFER TO W 7

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 Date: 19 Feb 2008

BACKFLOW ASSEMBLY DETAIL

**Thermalito
Water and
Sewer
District**

DWG. NO.
W 9



1. INSTALLATION OF THE FIRE SERVICE SHALL BE IN ACCORDANCE WITH AWWA C600.
2. INSTALL TEST PLATE AND JUMPER ASSEMBLY IN ACCORDANCE WITH W 16.
3. PIPES AND FITTINGS SHALL BE DUCTILE IRON CL-250 MINIMUM.
4. IF POSSIBLE, PLACE REDUCED PRESSURE DEVICE 8' BEHIND BACK OF S/W APPROVED BACKFLOW ASSEMBLIES: WILKINS-375, HMES-5000 OR APPROVED EQUAL. CERTIFICATION BY THE DISTRICT TESTER SHALL BE REQUIRED.
5. FIRE SERVICE CONNECTION SHALL BE INTALLED 18" FROM BACK OF ASSEMBLY. 30" MIN./50" MAX. FROM A FIRE HYDRANT.
6. PROVIDE TEMPORARY BLIND FLANGE W/BLOWOFF AT BUILDING AFTER TESTING THE FIRE SERVICE FROM THE MAIN TO THE BUILDING, REMOVE FLANGE AND MAKE CONNECTION.
7. DISINFECTING OF THE FIRE SERVICE SHALL BE IN ACCORDANCE WITH AWWA C-651.
8. TESTING THE FIRE SERVICE FROM THE WATER MAIN TO THE BUILDING SHALL BE COORDINATED WITH DISTRICT.
9. THE TEST WILL CONSIST OF A 2-HOUR PRESSURE TEST @ 200 PSI AND A BACTERIA TEST AFTER THE FIRE SERVICE HAS BEEN SUFFICIENTLY FLUSHED.
10. IF THE FIRE SERVICE CONNECTION SERVES MORE THAN ONE BUILDING, A POST INDICATOR VALVE IS REQUIRED FOR EACH BUILDING.

REDUCED PRESSURE DEVICE WITH DETECTOR ASSEMBLY

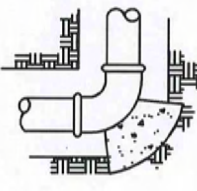
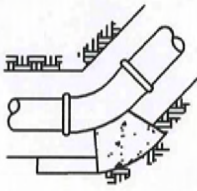
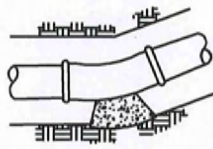
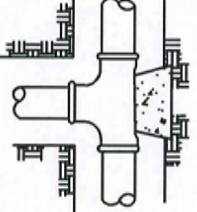
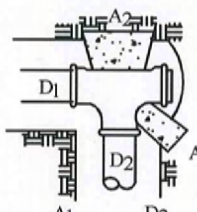
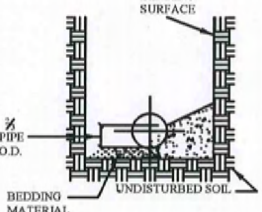
OUTSIDE INSTALLATION

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FIRE SERVICE
CONNECTION

**Thermalito
Water and
Sewer
District**

DWG. NO.
W 10

TYPE OF FITTING		90° BEND	45° BEND	11 1/2° OR 22 1/2° BEND
TYPICAL INSTALLATION				
SIZE OF PIPE	4"	2.5	1.5	1.0
	6"	5.5	3.0	1.5
	8"	9.0	5.0	2.5
	10"	14.0	7.5	4.0
	12"	20.0	11.0	5.5
	24"	78.5	42.5	22.0
	30"	90.0	45.0	25.0
TYPE OF FITTING		TEE OR DEAD-END	TEE WITH PLUG	TYPICAL CROSS SECTION
TYPICAL INSTALLATION				
SIZE OF PIPE	4"	2	4" 2	4" 2
	6"	4	6" 4	6" 3
	8"	6.5	8" 6	8" 5
	10"	10	10" 10	10" 8
	12"	14	12" 14	12" 12
	24"	55.5	24" 55	24" 40
	30"	60	30" 80	30" 60

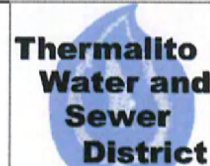
REQUIRED MINIMUM BEARING ~TOTAL SQUARE FEET

NOTES:

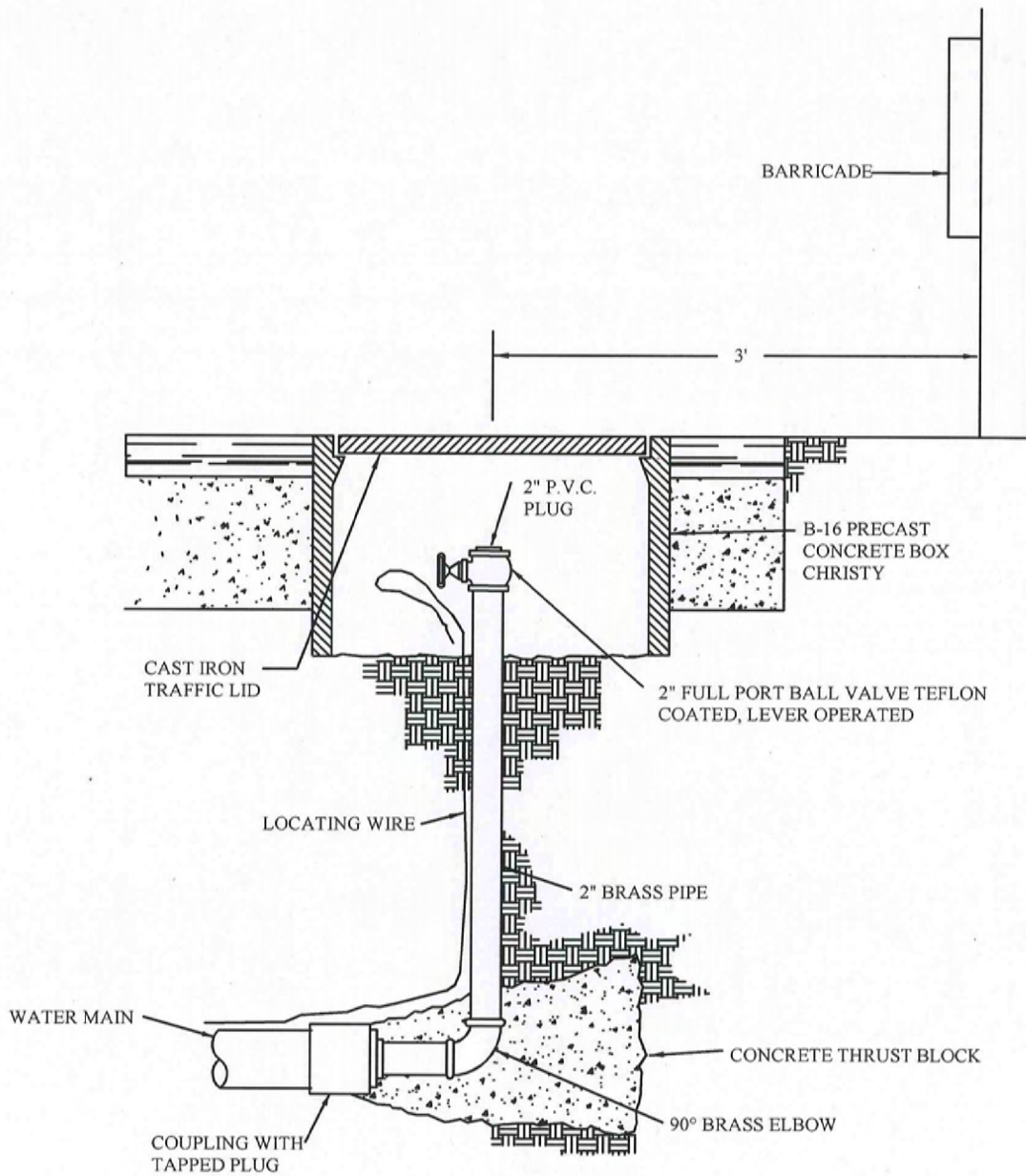
1. BASED ON 250 PSI MAXIMUM PRESSURE AND 2500 LBS/SQ.FT. BEARING CAPACITY.
2. ALL FITTINGS MUST BE WRAPPED WITH POLYETHYLENE TO PREVENT CONCRETE FROM ADHERING TO BOLTS OR PIPES.
3. MAXIMUM JOINT DEFLECTION WITHOUT REACTION BLOCK IS $1 \pm \frac{1}{2}^\circ$
4. JOINTS AND BOLTS SHALL BE ACCESSIBLE FOR REPAIRS
5. THRUST BLOCKS TO BE IN PLACE 7 (SEVEN) DAYS BEFORE TESTING.
6. ALL PLUGS SHALL BE SECURED WITH THRUST BLOCKS.

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 Date: 19 Feb 2008

THRUST BLOCKS



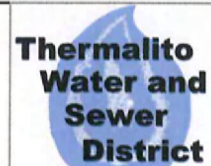
DWG. NO.
W 11



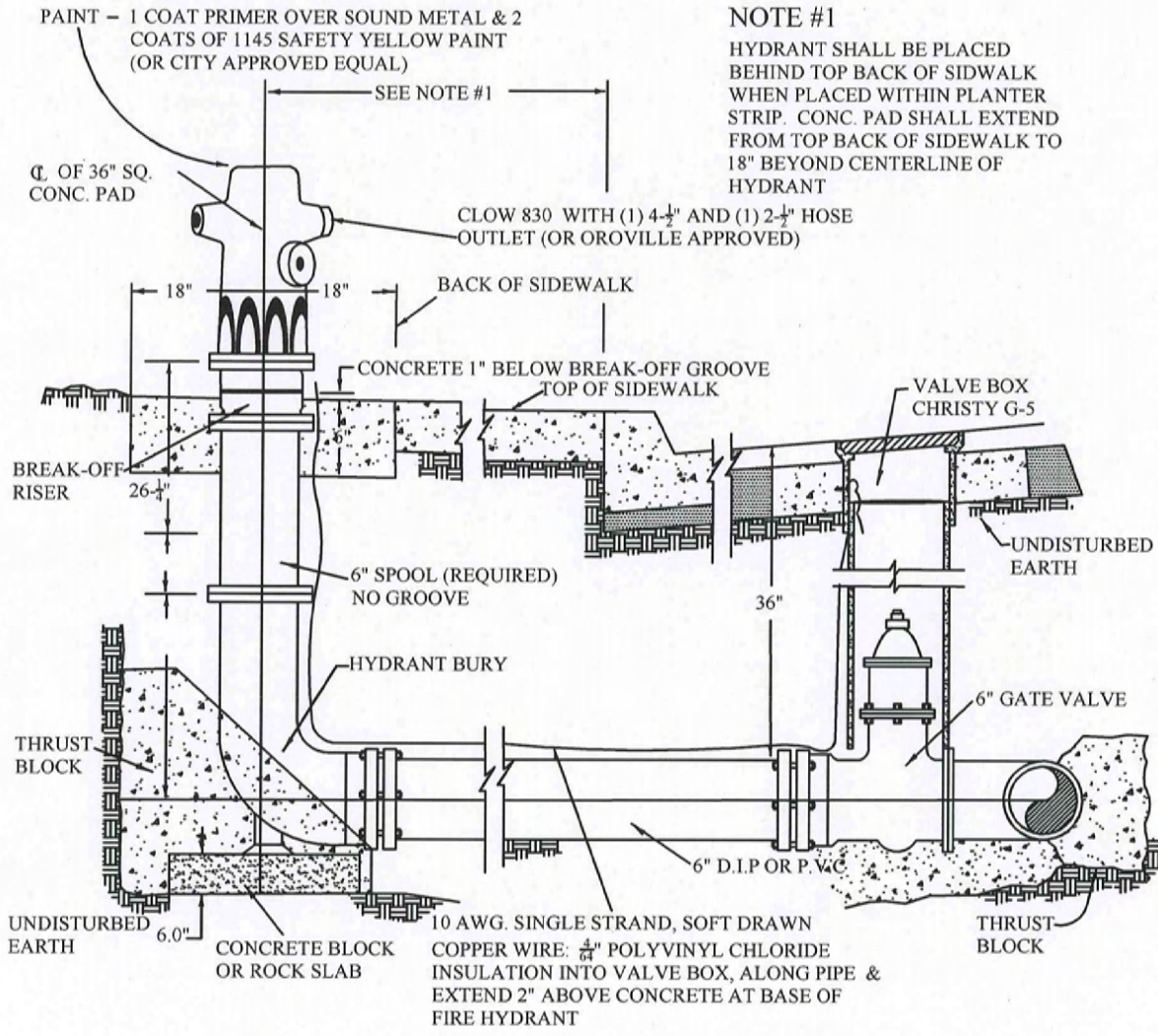
DEAD-END WATER MAIN WHERE ROAD CAN BE EXTENDED

Design: TWSD
 Drawn: MLE
 Checked: N.STAR
 Date: 19 Feb 2008

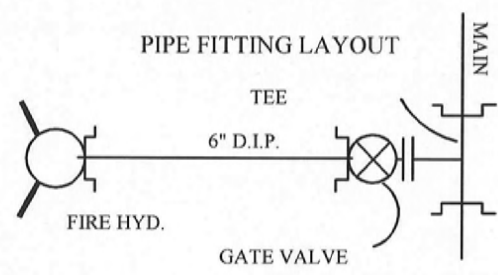
DEAD-END BLOW OFF



DWG. NO.
 W 12

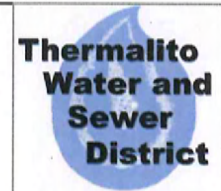


NOTE #1
 HYDRANT SHALL BE PLACED BEHIND TOP BACK OF SIDEWALK WHEN PLACED WITHIN PLANTER STRIP. CONC. PAD SHALL EXTEND FROM TOP BACK OF SIDEWALK TO 18" BEYOND CENTERLINE OF HYDRANT

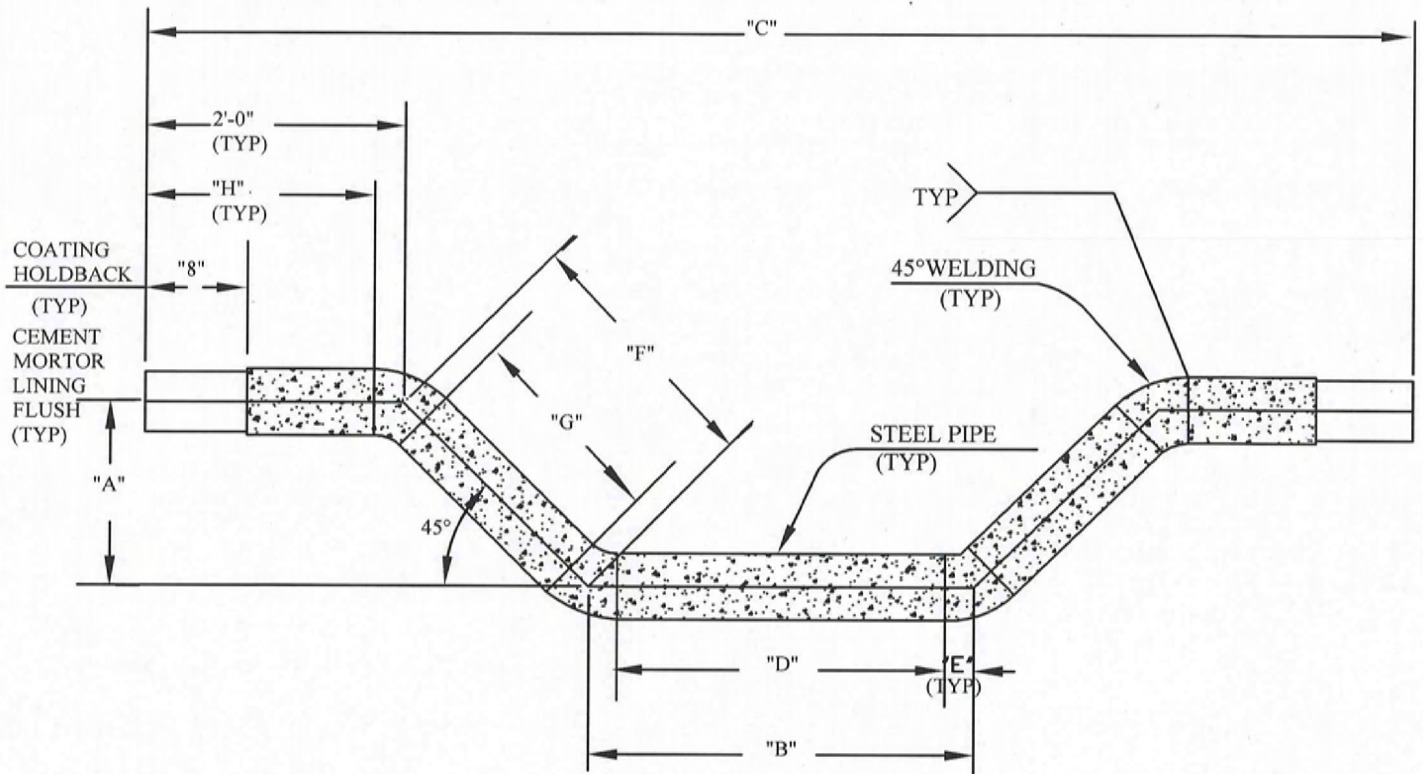


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 Date: 19 Feb 2008

FIRE HYDRANT



DWG. NO.
W 13



NOTES:

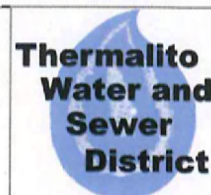
1. STEEL CYLINDER TO BE PER A.S.A. WITH ASTM A53 TEST PRESSURE AND ASTM A36 PHYSICAL PROPERTIES
2. USE 14 GAUGE WIRE REINFORCING SPIRALLY WOUND EMBEDDED IN CENTER OF COATING PER LATEST REVISION OF AWWA STANDARD C205.
3. USE ASTM A234 GRADE B WELDING FITTINGS.

PIPE				ELBOW	
STEEL CYL. (OD)	SCHED.	CML	CMC	SCHED.	"E"
6.63"	40	3/8"	3/4"	40	3.75"
8.63"	20	3/8"	3/4"	40	5.00"
10.75"	20	1/2"	3/4"	40	6.25"
12.75"	20	1/2"	3/4"	.375"	7.50"
14.0"	10	1/2"	3/4"	30	8.75"
16.0"	10	1/2"	3/4"	30	10.00"
18.0"	10	1/2"	3/4"	.375"	11.25"
20.0"	10	1/2"	3/4"	20	12.50"

CEMENT MORTAR LINING, CML
 CEMENT MORTAR COATING, CMC

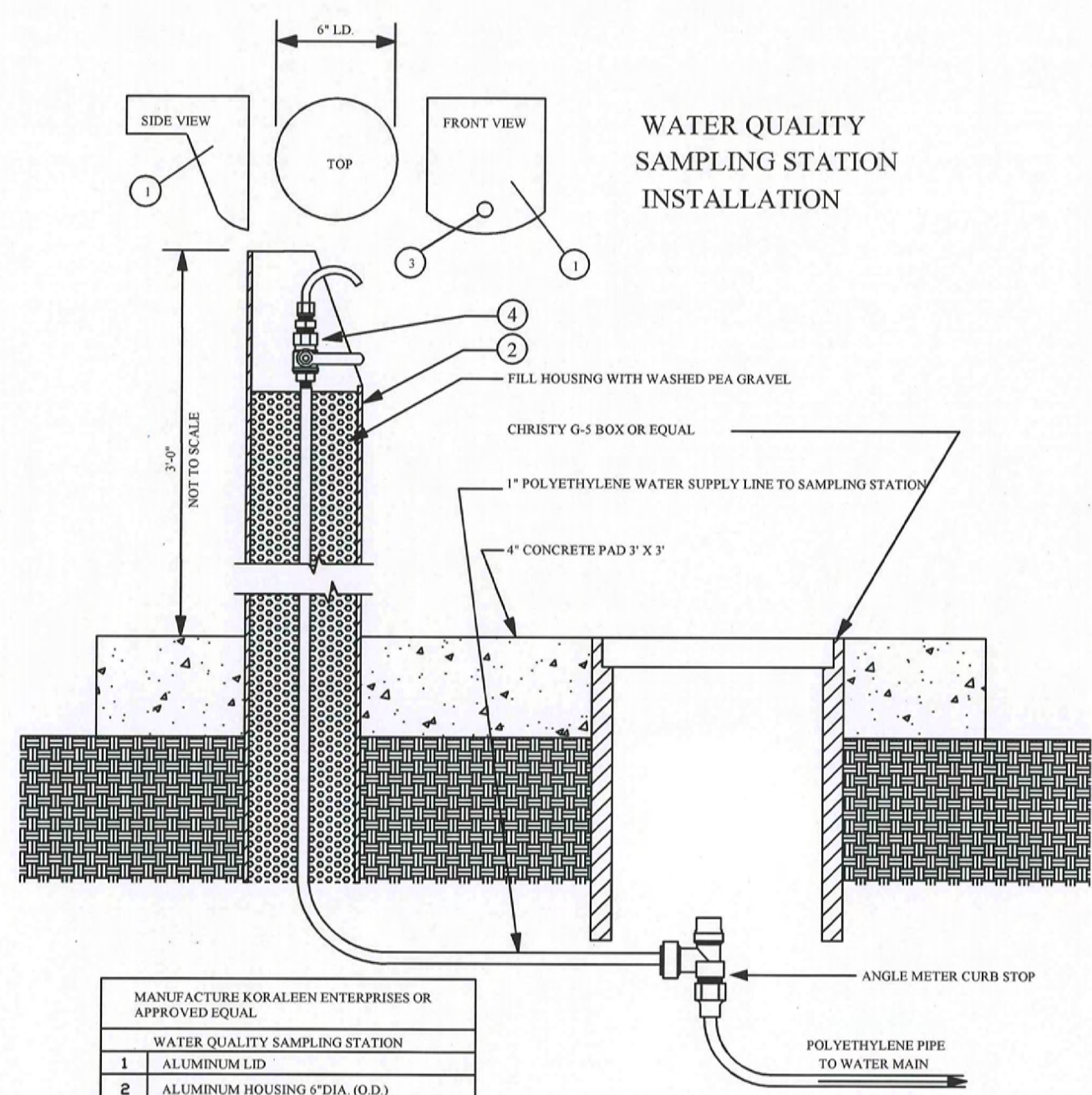
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 Drawn: MLE
 Checked: N.STAR
 Date: 19 Feb 2008

**CEMENT MORTAR LINED AND COATED
 STEEL DOUBLE OFFSET WITH
 45° ELBOWS**



DWG. NO.
 W 14

WATER QUALITY SAMPLING STATION INSTALLATION

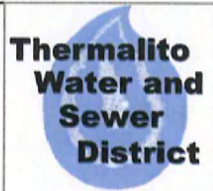


MANUFACTURE KORALEEN ENTERPRISES OR APPROVED EQUAL	
WATER QUALITY SAMPLING STATION	
1	ALUMINUM LID
2	ALUMINUM HOUSING 6" DIA. (O.D.)
3	FLUSH MOUNTED LOCK
4	1/2" X 3/8" BALL VALVE

LOCATION MUST BE APPROVED BY TWS D PRIOR TO START OF CONSTRUCTION

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 Date: 19 Feb 2008

WATER QUALITY SAMPLING STATION



DWG. NO.
W 15

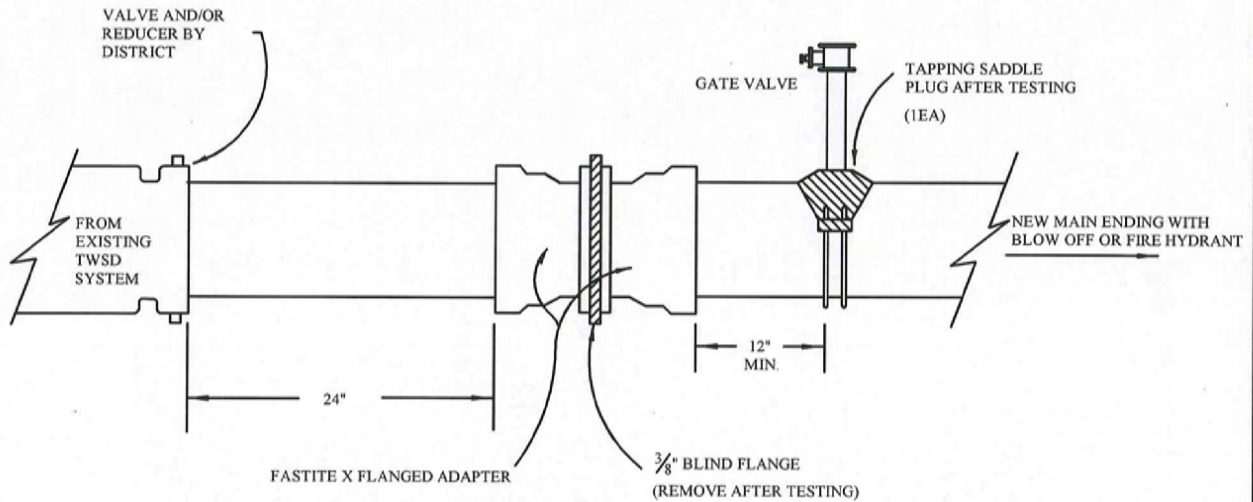
FLOW AND OUTLET OPENINGS TO FLUSH PIPE

PIPE DIAMETER INCHES	FLOW REQUIRED TO PRODUCE 2.5 FT/S (APPROX) VELOCITY IN MAIN	SIZE OF TAP, INCHES			NUMBER OF 2 1/2 INCHES HYDRANT OUTLETS
		1"	1-1/2"	2"	
4	100	1	-	-	1
6	200	-	1	-	1
8	400	-	2	1	1
10	600	-	3	2	1
12	900	-	-	2	2
16	1600	-	-	4	2

PER AWWA
(C651)

NOTE

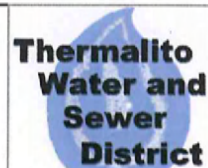
THE SIZE OF BYPASS PIPING SHALL BE MODIFIED TO BE NOT LESS THAN $\frac{1}{3}$ OF THE DIAMETER OF THE NEW MAIN TO ACHIEVE MINIMUM FLUSHING VELOCITY.



FOR NEW WATER MAIN CONSTRUCTION

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DEAD END TESTING BLOCK AND BYPASS



DWG. NO.
W 16

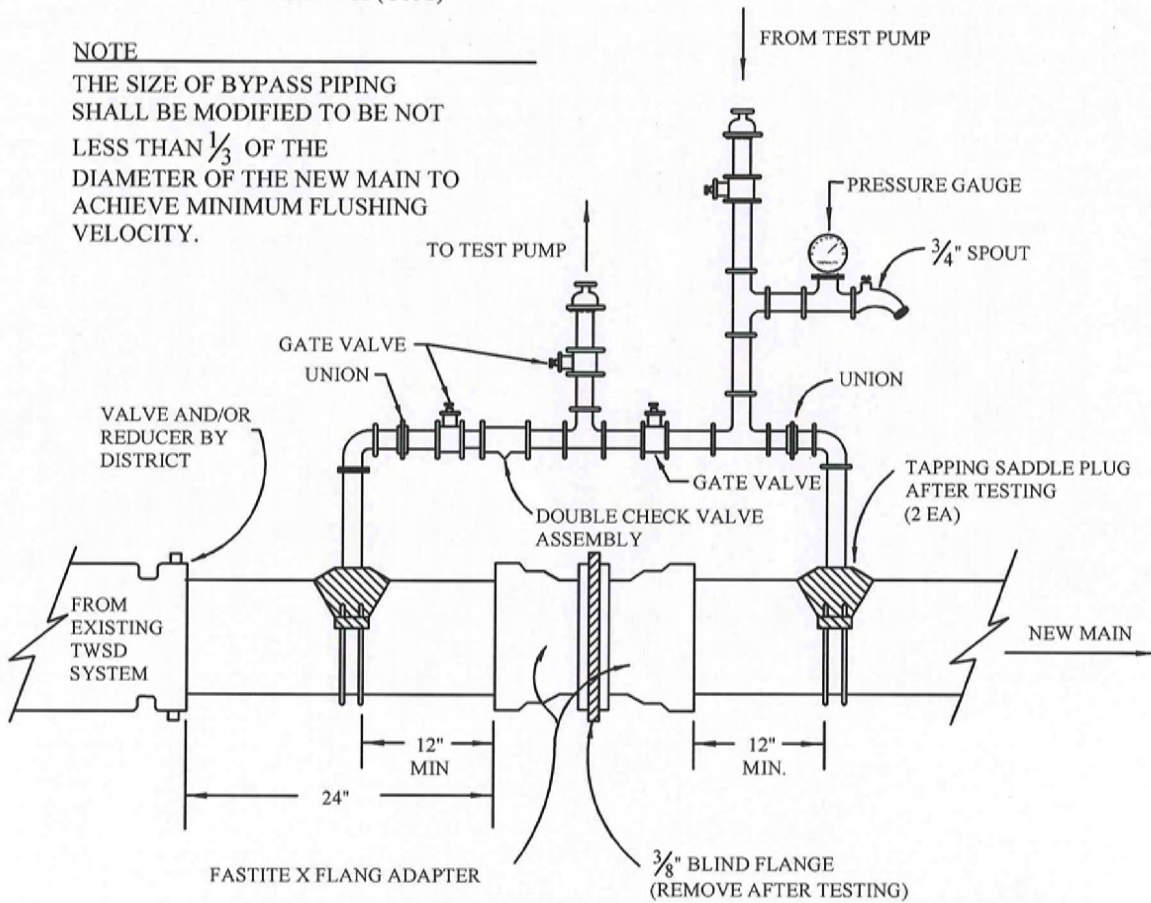
FLOW AND OUTLET OPENINGS TO FLUSH PIPE

PIPE DIAMETER Inches	FLOW REQUIRED TO PRODUCE 2.5 FT/S (APPROX) VELOCITY IN MAIN	SIZE OF TAP, INCHES			NUMBER OF 2 1/2 INCHES HYDRANT OUTLETS
		1"	1-1/2"	2"	
4	100	1	-	-	1
6	200	-	1	-	1
8	400	-	2	1	1
10	600	-	3	2	1
12	900	-	-	2	2
16	1600	-	-	4	2

PER AWWA (C651)

NOTE

THE SIZE OF BYPASS PIPING SHALL BE MODIFIED TO BE NOT LESS THAN 1/3 OF THE DIAMETER OF THE NEW MAIN TO ACHIEVE MINIMUM FLUSHING VELOCITY.

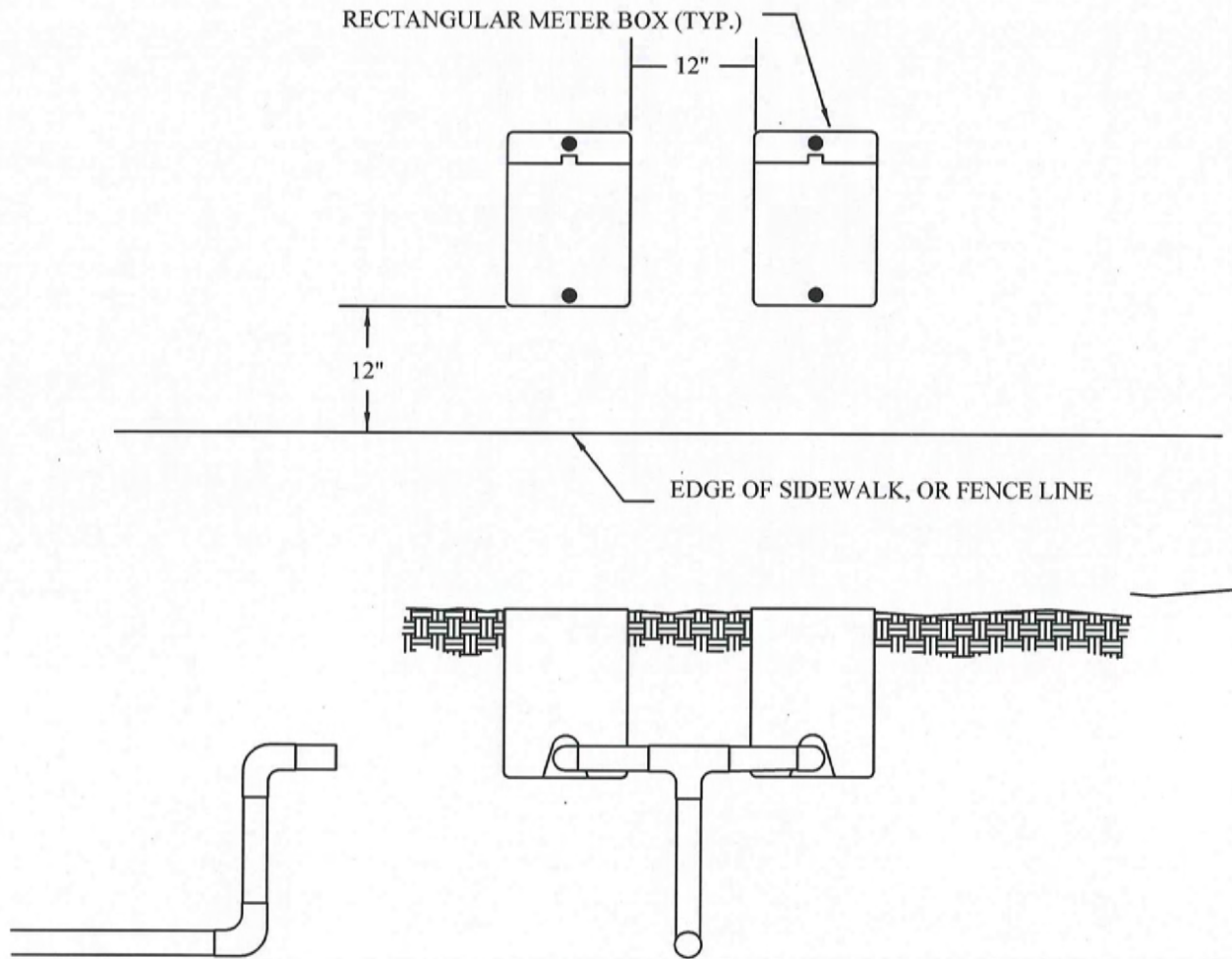


FOR NEW WATER MAIN CONSTRUCTION

Design: <u>TWSD</u> Drawn: <u>MLE</u> Checked: <u>N.STAR</u> Date: <u>NOT Approved</u>	<h2 style="margin: 0;">TESTING BLOCK AND BYPASS</h2>		DWG. NO. <h2 style="margin: 0;">W 17</h2>
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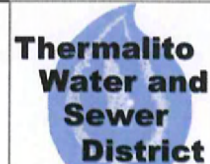
NOTES:

1. CENTER BOXES OVER THE METER ASSEMBLY
2. SET METER BOXES BEHIND SIDE WALKS WHEN GRASS MEDIAN IS BETWEEN CURB AND SIDEWALK
3. SET BOXES PARALLEL TO EACH OTHER & PERPENDICULAR TO EDGES
4. AVOID HEAVILY COMPACTING SOIL AROUND BOXES TO PREVENT DAMAGING THE BOXES.
5. IF METER ASSEMBLY IS LOWER THAN BOTTOM OF BOX, ADD EXTENSION SLEEVE TO BOX.
6. THE SINGLE 2" PVC MANIFOLD MAY BE REPLACED WITH INDEPENDENT 1" POLYETHYLENE PIPE LINES TO EACH METER.

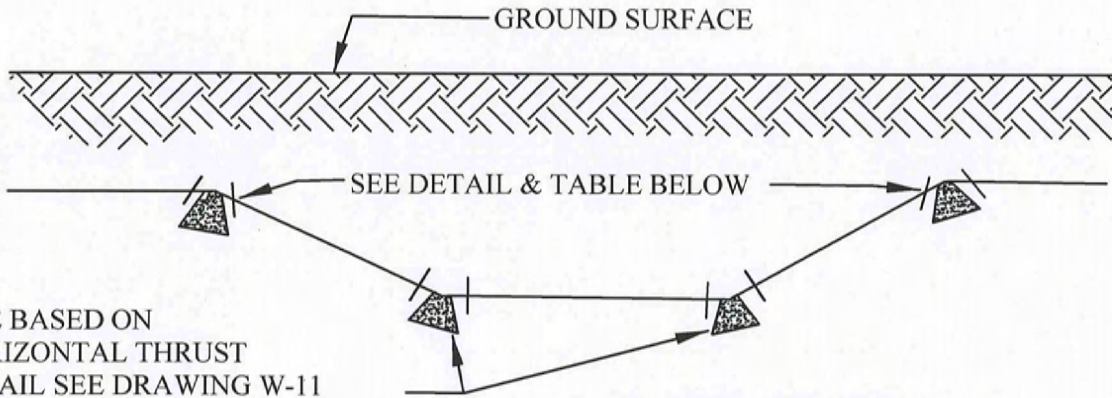


Design: TWSD
Drawn: MLE
Checked: N.STAR
Date: 19 Feb 2008

METER BOX
INSTALLATION FOR
SPLIT SERVICE



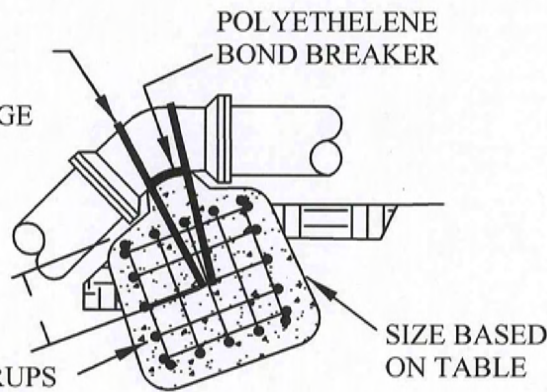
DWG. NO.
W 18



SIZE BASED ON
HORIZONTAL THRUST
DETAIL SEE DRAWING W-11

PIPE PROFILE

1/2" x 2" STAINLESS STEEL
STRAPS WITH 6" HOOKS
ATTACHED TO REBAR CAGE



#4 REBAR STIRRUPS
AT 12" ON CENTER
EACH DIRECTION

NOTE:
ALL FITTINGS MUST
BE WRAPPED WITH
POLYETHYLENE TO
PREVENT CONCRETE
FROM ADHERING TO
BOLTS OR PIPE.

DETAIL

REQUIRED CUBIC YARDS OF CONCRETE *			
SIZE	11-1/4° BEND	22-1/2° BEND	45° BEND
4"	0.2	0.3	0.9
6"	0.4	0.7	2.1
8"	0.6	1.3	3.6
10"	1.0	1.9	5.6
12"	1.4	2.7	8.1
14"	1.9	3.8	11.1
16"	2.4	4.9	14.4
18"	3.1	6.2	18.3
20"	3.8	7.6	22.6
24"	5.5	10.7	32.5

* BASED ON 250 PSI MAXIMUM PRESSURE WITH NO SOIL BEARING PRESSURE

Design: TWSD
Drawn: MLE
Checked: N.STAR
Date: 19 Feb 2008

THERMALITO IRRIGATION
DISTRICT
VERTICAL
THRUST BLOCK

**Thermalito
Water and
Sewer
District**

DWG. NO.
W 19