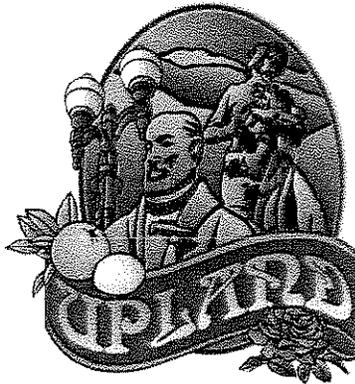


**CITY OF UPLAND
WATER DIVISION**



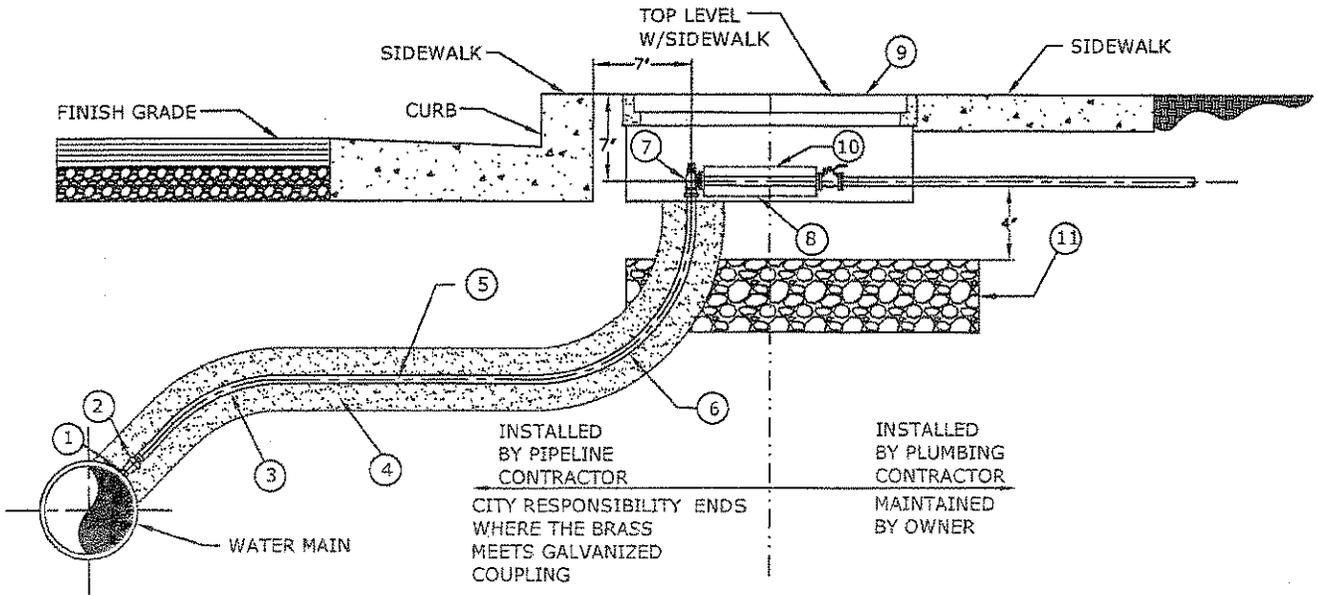
**SPECIFICATIONS
FOR THE CONSTRUCTION OF
WATER MAINS AND APPURTENANCES**

**City of Upland Water Division
Index of Standard Drawings**

STD#	ISSUE DATE	TITLE/DESCRIPTION	LATEST APPROVAL DATE
SERVICE DETAILS			
<u>W.01</u>		1" Service Detail	
<u>W.02</u>		Required Jumper Pipe and Meter Box Setting for 5/8" and 1" Meters	
<u>W.03</u>		2" and 1-1/2" Service Detail	
<u>W.04</u>		Required Jumper Pipe Setting for 1-1/2" and 2" Meters	
<u>W.05</u>		6" Fire Hydrant Installation	
<u>W.06</u>		Tapping Detail for 4" and Larger Contractor installed facilities	
<u>W.07</u>		Typical Gate Valve Installation	
<u>W.08</u>		Typical Butterfly Valve Installation	
<u>W.09</u>		Typical Valve Can Installation	
<u>W.10</u>		Details for 4"-16" Steel Pipe, Cut and Plug Existing Water Main	
<u>W.11</u>		4" through 16" Vertical off-set of Existing Steel Pipe	
<u>W.12</u>		Standard 6" Blow-off Detail	
<u>W.13</u>		Air-Vacuum and Air Release Valve Assembly	
<u>W.14</u>		Air Release Cover Assembly and Mounting Detail	
<u>W.15</u>		3" and Larger Domestic Service	

**City of Upland Water Division
Index of Standard Drawings**

STD#	ISSUE DATE	TITLE/DESCRIPTION	LATEST APPROVAL DATE
<u>W.16</u>		4" and Larger Aboveground Fire Service with Reduced Pressure Detector Check Assembly	
<u>W.17</u>		4" and Larger Aboveground Fire Service with Double Check Detector Check Assembly	
<u>W.18</u>		4" through 10" Double Check Detector Check Valve Assembly	
<u>W.19</u>		Typical Installation Reduced Pressure Principle Backflow Prevention Assembly	
<u>W.20</u>		Typical Installation of Double Check Valve Backflow Prevention Assembly	
<u>W.21</u>		Typical Pipe & Fire Hydrant Layout (Alignment)	
<u>W.22</u>		Blue Dot Pavement Markers and Fire Hydrant Marking	
<u>W.23</u>		Trench Bedding and Pavement Repair Detail	
<u>W.24</u>		Thrust Block Installation	
<u>W.25</u>		Pipe Zone	
<u>1-10</u>		Special and General Provisions	



INSTALLED
 BY PIPELINE
 CONTRACTOR
 CITY RESPONSIBILITY ENDS
 WHERE THE BRASS
 MEETS GALVANIZED
 COUPLING

INSTALLED
 BY PLUMBING
 CONTRACTOR
 MAINTAINED
 BY OWNER

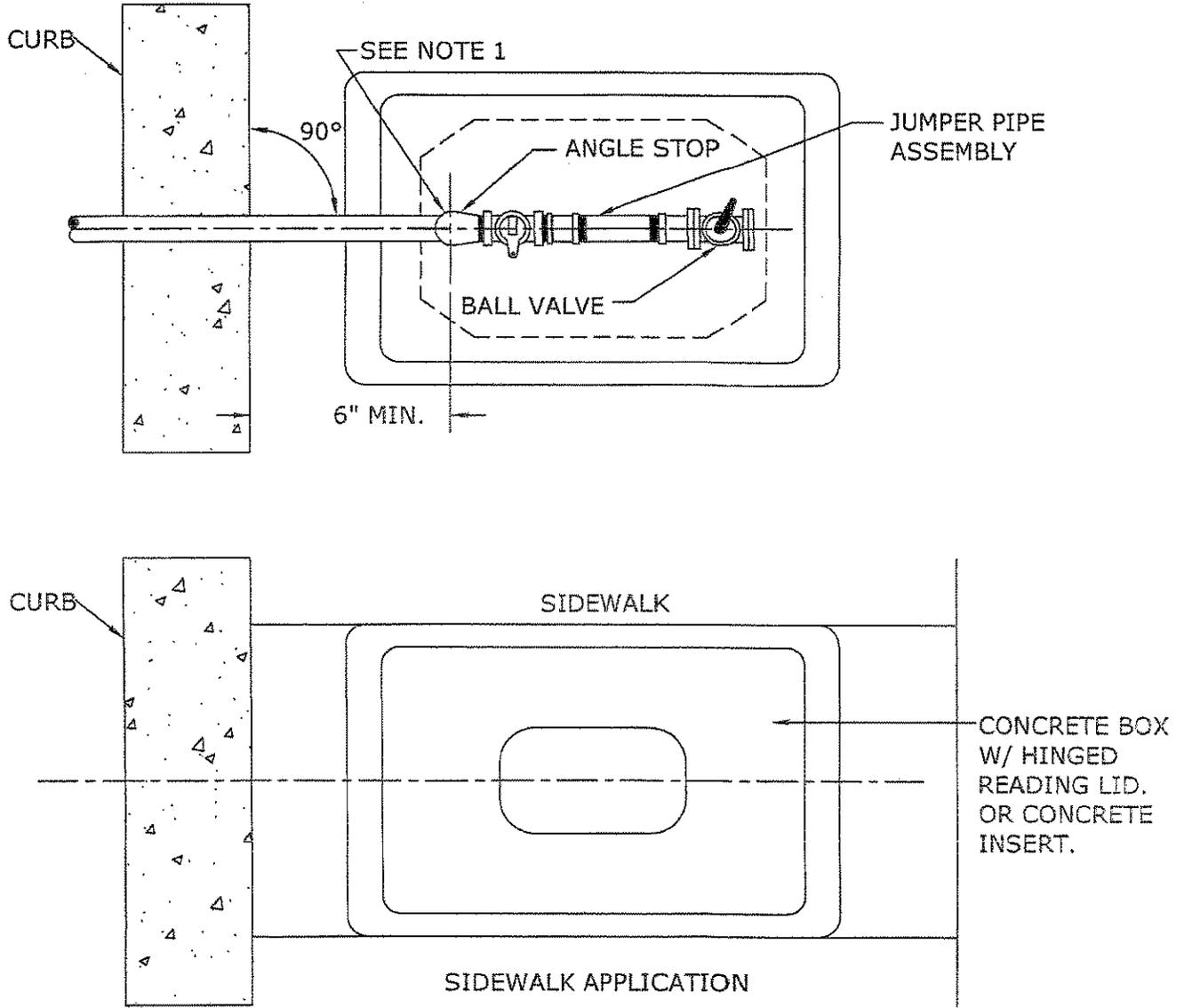
WATER SERVICE INSTALLATION
 KIT FOR DEVELOPER
 INSTALLED SERVICES

ITEM	QTY	DESCRIPTION	ITEM	QTY	DESCRIPTION
①	1 EA	TAP MAIN DIRECTLY USING UPW APPROVED TAPPING MACHINE OR DRILL CLEAN 1" DIA. HOLE IN MAIN AND USE HEAVY DUTY WELD COUPLING (I.P. THREADED, 3000#).	⑦	1 EA	1" ANGLE STOP.
②	1 EA	1" BRASS CORPORATION STOP.	⑧		1" JUMPER ASSEMBLY TO BE PROVIDED BY THE CITY OF UPLAND WATER DIV. TO BE INSTALLED BY THE DEVELOPER OR CONTRACTOR.
③	1 EA	ANGLE OF SERVICE INSTALLATION NOT TO EXCEED 45°.	⑨		VAULT TO BE PROVIDED BY THE CITY OF UPLAND WATER DIV. AND INSTALLED BY THE DEVELOPER OR CONTRACTOR.
④		IMPORTED SAND.	⑩	1 EA	CONTRACTOR OR DEVELOPER TO INSTALL A 1" BRASS BALL VALVE.
⑤		1" TYPE "K" SOFT COPPER.	⑪		4" THICK ¾" CRUSHED ROCK.
⑥		1" 90 DEGREE BEND (18" MIN. RADIUS).			

NOTE:

- (A) SIDEWALK AND PAVEMENT TO BE INSTALLED ONLY AFTER SERVICE INSTALLATION IS COMPLETE AND APPROVED BY UPLAND WATER DIVISION.
- (B) DIMENSIONS ARE TAKEN FROM TOP AND BACK OF CURB.
- (C) WATER METERS SHALL BE INSTALLED IN PARKWAY AND SHALL HAVE A MINIMUM OF 7 FEET FROM TREES, UNLESS OTHERWISE APPROVED BY THE WATER DIVISION INSPECTOR.
- (D) METER TO BE INSTALLED WHEN INSTALLATION HAS MET THE APPROVAL BY THE CITY OF UPLAND WATER DIVISION.

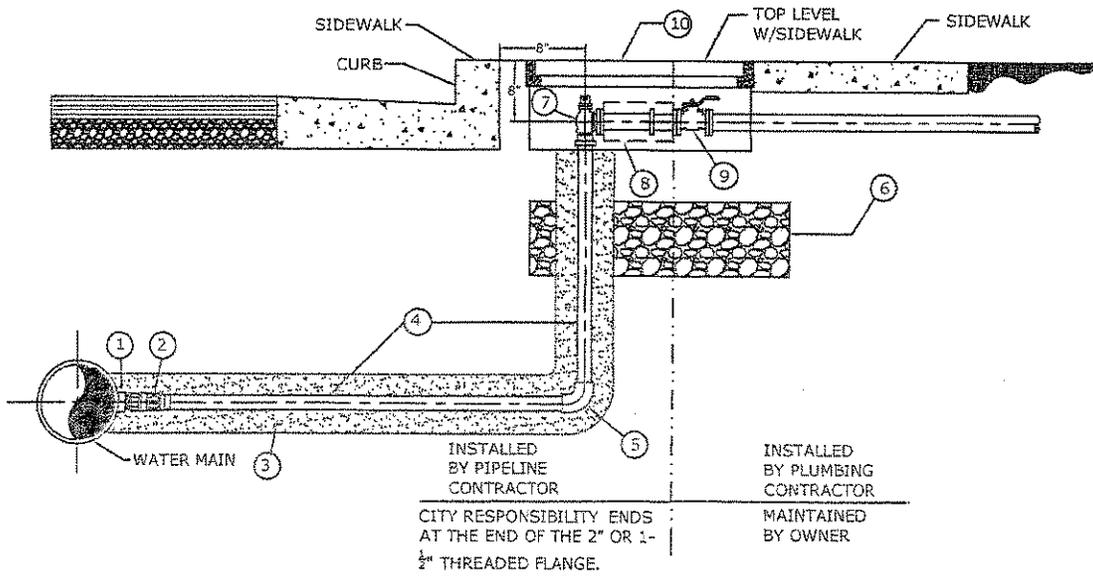
REVISION	DATE	UPLAND PUBLIC WATER DIVISION	DRAWING NUMBER
			UPW-WD
		1" SERVICE DETAIL	W.01
NOT TO SCALE		APPROVED: <i>Anthony M. La</i>	



NOTES:

- A. JUMPER PIPE ASSEMBLY WILL BE SET PERPENDICULAR TO CURB.
- B. PARKWAY TREES WILL BE PLACED A MINIMUM OF 7 FEET FROM WATER SERVICE.
- C. A PERMANENT "W" WILL BE MARKED ON THE FACE OF THE CURB AT EACH WATER SERVICE.
- D. WHERE BACKFLOW PREVENTION DEVICES ARE REQUIRED ALL STEEL PIPE MUST BE INSTALLED TO THE INLET OF THE DEVICE WITH NO TEES OR BYPASS LINES.
- E. BACKFLOW DEVICES SHALL BE INSTALLED ON PRIVATE PROPERTY BEHIND THE PUBLIC RIGHT OF WAY.
- F. BOXES & JUMPER PIPE ASSEMBLIES WILL BE FURNISHED BY THE CITY AND INSTALLED BY THE DEVELOPER.

<table border="1"> <thead> <tr> <th>REVISION</th> <th>DATE</th> </tr> </thead> <tbody> <tr><td> </td><td> </td></tr> </tbody> </table>		REVISION	DATE																	UPLAND PUBLIC WATER DIVISION REQUIRED JUMPER PIPE AND METER BOX SETTING FOR 5/8" AND 1" METERS	DRAWING NUMBER UPW-WD W.02
REVISION	DATE																				
NOT TO SCALE		APPROVED: <i>Anthony M. Co</i>	DATE: <i>3/16/09</i>																		

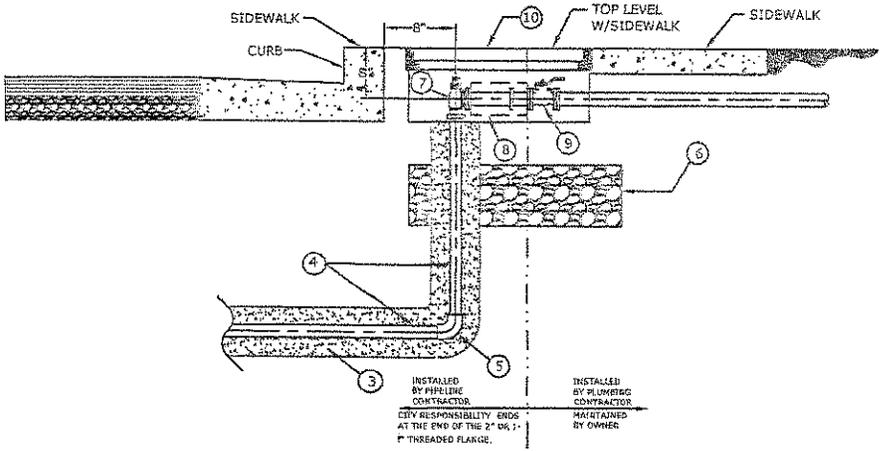
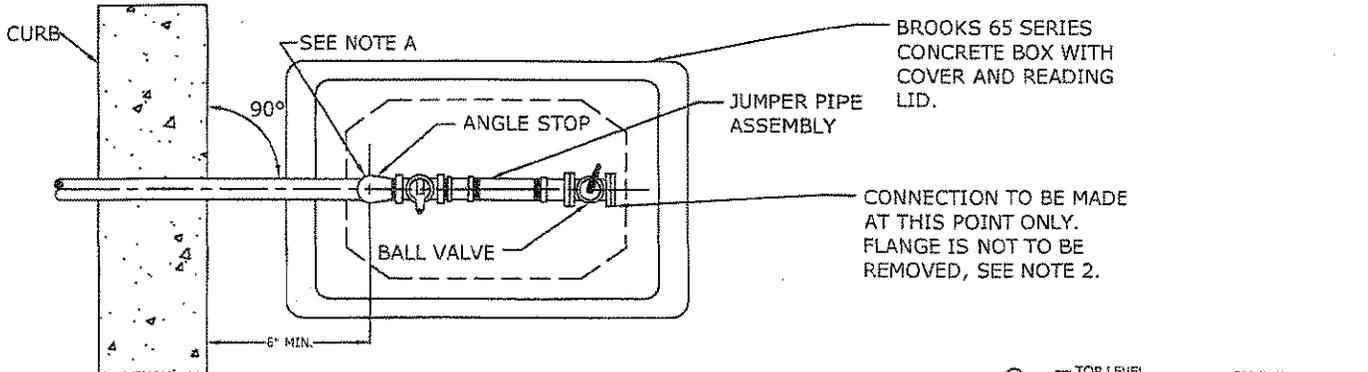


WATER SERVICE INSTALLATION KIT FOR DEVELOPER INSTALLED SERVICES

ITEM	QTY	DESCRIPTION
①	1 EA	TAP MAIN DIRECTLY USING UPW APPROVED TAPPING MACHINE. DRILL CLEAN 1- ⁵ / ₈ " OR 1- ³ / ₈ " DIA. HOLE IN MAIN AND USE HEAVY DUTY WELD COUPLING (I.P. THREADED, 3000#).
②	1 EA	2" OR 1- ¹ / ₂ " BRASS CORPORATION STOP TO SUIT LATERAL SIZE.
③		IMPORTED SAND.
④		2" OR 1- ¹ / ₂ " TYPE "K" SOFT COPPER.
⑤	1 EA	2" OR 1- ¹ / ₂ " 90 DEGREE SWEAT COPPER ELBOW W/ SILVER SOLDER.
⑥		4" THICK ³ / ₄ " CRUSHED ROCK.
⑦	1 EA	2" OR 1- ¹ / ₂ " ANGLE STOP.
⑧	1 EA	2" OR 1- ¹ / ₂ " JUMPER ASSEMBLY TO BE PROVIDED BY THE CITY OF UPLAND WATER DIV. TO BE INSTALLED BY THE DEVELOPER OR CONTRACTOR.
⑨	1 EA	CONTRACTOR OR DEVELOPER TO INSTALL A 2" OR 1- ¹ / ₂ " BRASS BALL VALVE.
⑩		METER VAULT TO BE PROVIDED BY THE CITY OF UPLAND WATER DIV.

- NOTE:
- (A) SIDEWALK AND PAVEMENT TO BE INSTALLED ONLY AFTER SERVICE INSTALLATION IS COMPLETE AND APPROVED BY UPLAND WATER DIVISION.
 - (B) DIMENSIONS ARE TAKEN FROM TOP AND BACK OF CURB.
 - (C) WATER METER SHALL BE INSTALLED IN PARKWAY AND SHALL HAVE A MINIMUM 7 FEET SEPARATION FROM TREES, UNLESS OTHERWISE APPROVED BY THE WATER DIVISION INSPECTOR.
 - (D) METER TO BE INSTALLED WHEN INSTALLATION HAS MET THE APPROVAL BY THE CITY OF UPLAND WATER DIVISION.

REVISION	DATE	<h2 style="margin: 0;">UPLAND PUBLIC WATER DIVISION</h2> <h3 style="margin: 0;">2" AND 1-¹/₂" SERVICE DETAIL</h3>	DRAWING NUMBER
			UPW-WD
			W.03
NOT TO SCALE		APPROVED: <i>Anthony M. Co</i>	DATE: 3/16/09



WATER SERVICE INSTALLATION KIT FOR DEVELOPER INSTALLED SERVICES

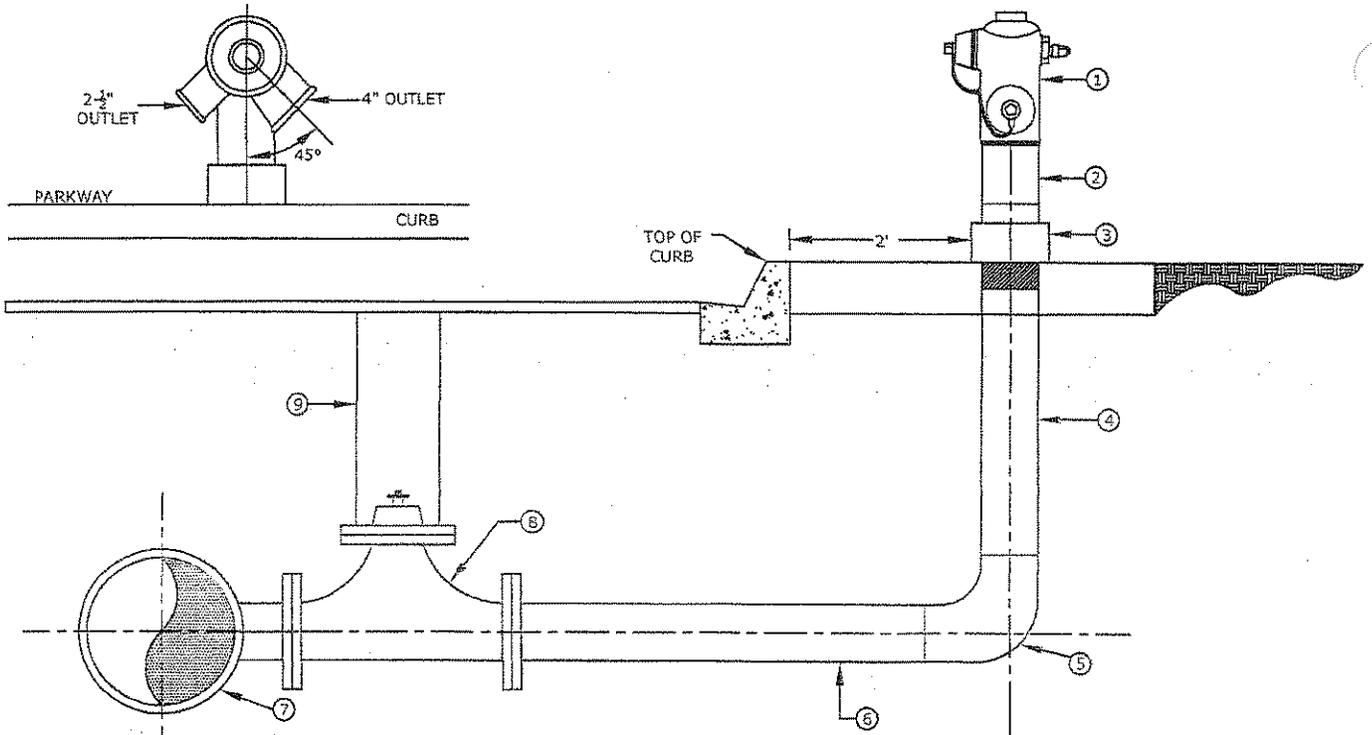
ITEM	QTY	DESCRIPTION
1	1 EA	TAP BRASS BALL VALVE WITH APPROVED TAPING MACHINE, ORAL CLEAN 2-1/2\"/>
2	1 EA	2\"/>
3		IMPORTED SAND.
4		2\"/>
5	1 EA	2\"/>

6		4\"/>
7	1 EA	2\"/>
8	1 EA	2\"/>
9	1 EA	CONTRACTOR OR DEVELOPER TO INSTALL A 2\"/>
10		METER VAULT TO BE PROVIDED BY THE CITY OF UPLAND WATER DIV.

NOTE:

- A. JUMPER PIPE ASSEMBLY WILL BE SET PERPENDICULAR TO CURB.
- B. PARKWAY TREES WILL BE PLACED A MINIMUM OF 7 FEET FROM WATER SERVICE UNLESS OTHERWISE APPROVED BY THE WATER DIVISION.
- C. A PERMANENT "W" WILL BE MARKED ON THE FACE OF THE CURB AT EACH WATER SERVICE.
- D. WHERE BACKFLOW PREVENTION DEVICES ARE REQUIRED, ALL STEEL PIPE MUST BE INSTALLED TO THE INLET OF THE DEVICE WITH NO TEES OR BYPASS LINES.
- E. BACKFLOW DEVICES SHALL BE INSTALLED ON PRIVATE PROPERTY BEHIND THE PUBLIC RIGHT OF WAY.
- F. BOXES & JUMPERS PIPE ASSEMBLIES WILL BE FURNISHED BY THE CITY AND INSTALLED BY THE DEVELOPER.

REVISION	DATE	UPLAND PUBLIC WATER DIVISION		DRAWING NUMBER
		REQUIRED JUMPER PIPE SETTING FOR 1-1/2" AND 2" METERS		UPW-WD
NOT TO SCALE		APPROVED: <i>Anthony M. Co</i>	DATE: <i>3/16/09</i>	W.04

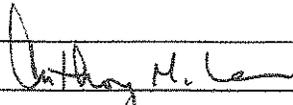


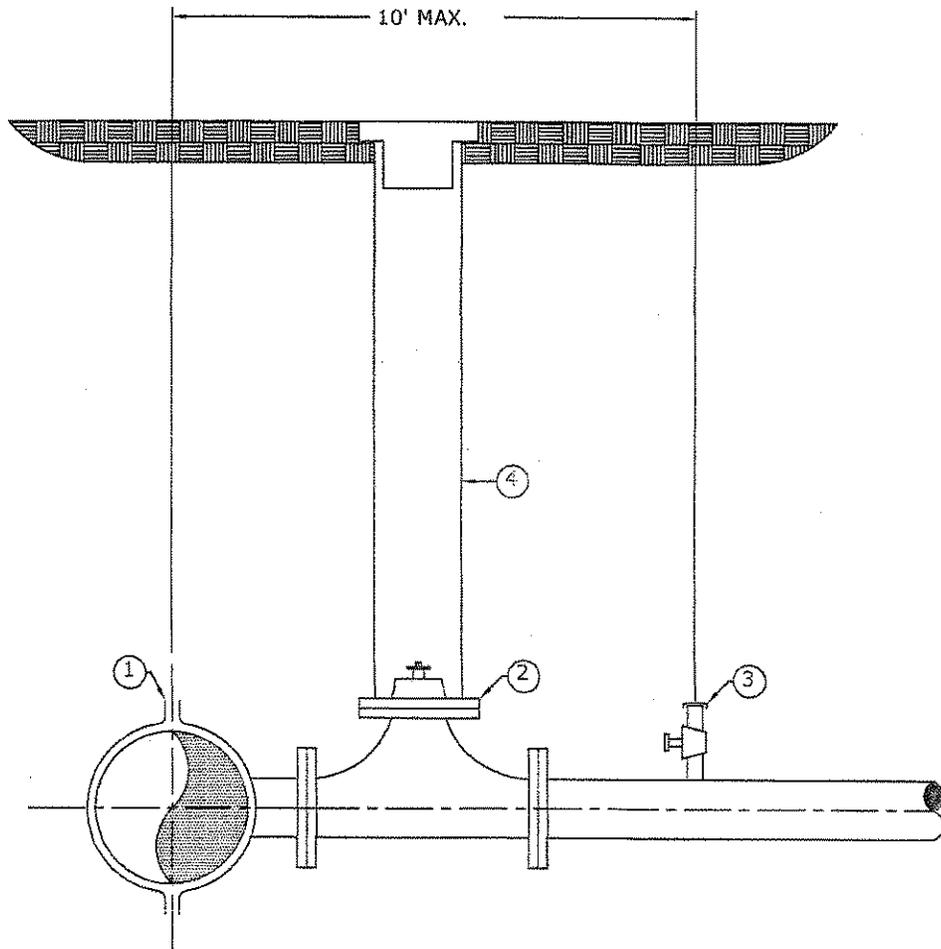
ITEM QTY. DESCRIPTION

- ① 1 EA JAMES JONES J-3708 6" HEAD
- ② 1 EA 20"x6" TBE BLACK NIPPLE AWWA APPROVED
- ③ 1 EA 6" BREAK AWAY COUPLING AWWA APPROVED
- ④ ___ LF CEMENT LINED AND MORTOR COATED PIPE WITH A T.O.E WELDED TO TOP OF RISER
- ⑤ 1 EA 6" CML&C WELD 90° ELBOW
- ⑥ ___ LF CML&C PIPE
- ⑦ 1 EA USE WELD NOZZLE WITH DOUBLER OR TAPPING SLEEVE ON EXISTING MAIN.
- ⑧ 1 EA INSTALL PER CITY OF UPLAND WATER DIV. STD.-W.06
- ⑨ 1 EA INSTALL PER CITY OF UPLAND WATER DIV. STD.-W.09

NOTE:

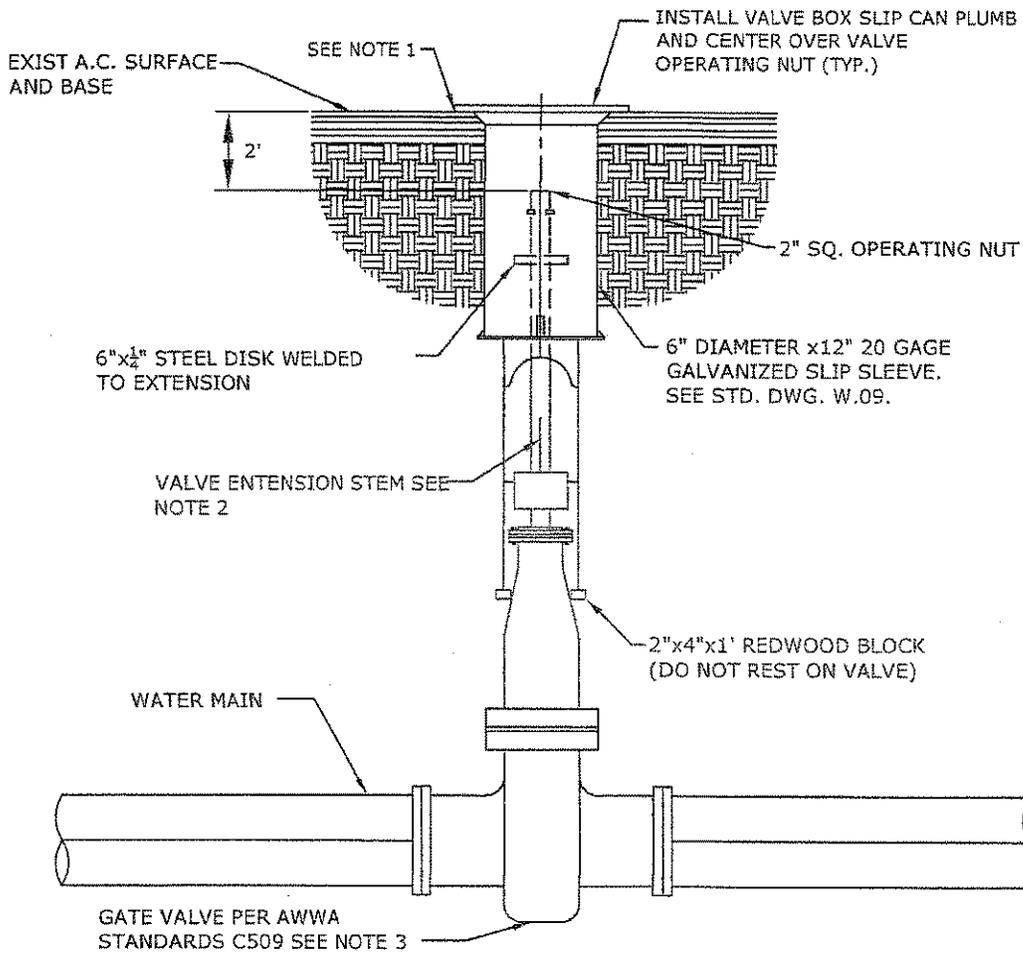
- A. ALL FITTINGS TO BE WELDED TO THE SATISFACTION OF THE UPW DIVISION
- B. FIRE HYDRANT LATERAL IS TO BE HYDROSTATIC PRESSURE TESTED TO A MINIMUM OF 200 PSI FOR A 2 HR. PERIOD
- C. FIRE HYDRANT LATERAL TO BE DISINFECTED WITH CHLORINE. RESIDUAL MUST BE 50mg/l. AFTER A 24 HR. CONTACT TIME
- D. ANY EXPOSED METAL TO BE COVERED WITH CONCRETE OR 10mil. TAPE
- E. ALL EXPOSED SURFACES TO BE PAINTED WITH 2 COATS OR RUST OLEUM GLOSS SUNBURST YELLOW #7747
- F. INSTALL BLUE DOT PAVEMENT MARKERS PER UPW STD.-W.22

REVISION	DATE	UPLAND PUBLIC WATER DIVISION		DRAWING NUMBER
		6" FIRE HYDRANT INSTALLATION		UPW-WD W.05
NOT TO SCALE		APPROVED: 	DATE: 3/16/09	



ITEM	QTY.	DESCRIPTION
①	1 EA.	___" EPOXY COATED TAPPING SADDLE (___" O.D. x ___" FLG) OR ___" FABRICATED TAPPING SADDLE (___" O.D. x ___" FLG) OR ___" FABRICATED WELD NOZZLE WITH DOUBLERS (___" O.D. x ___" FLG)
②	1 EA.	___" FLGXFLG GATE VALVE
③	1 EA.	1" CHLORINATION AND FLUSHING PORT (INSTALL WHEN LATERAL IS LONGER THAN 10')
④	1 EA.	INSTALL PER STD.-W.09

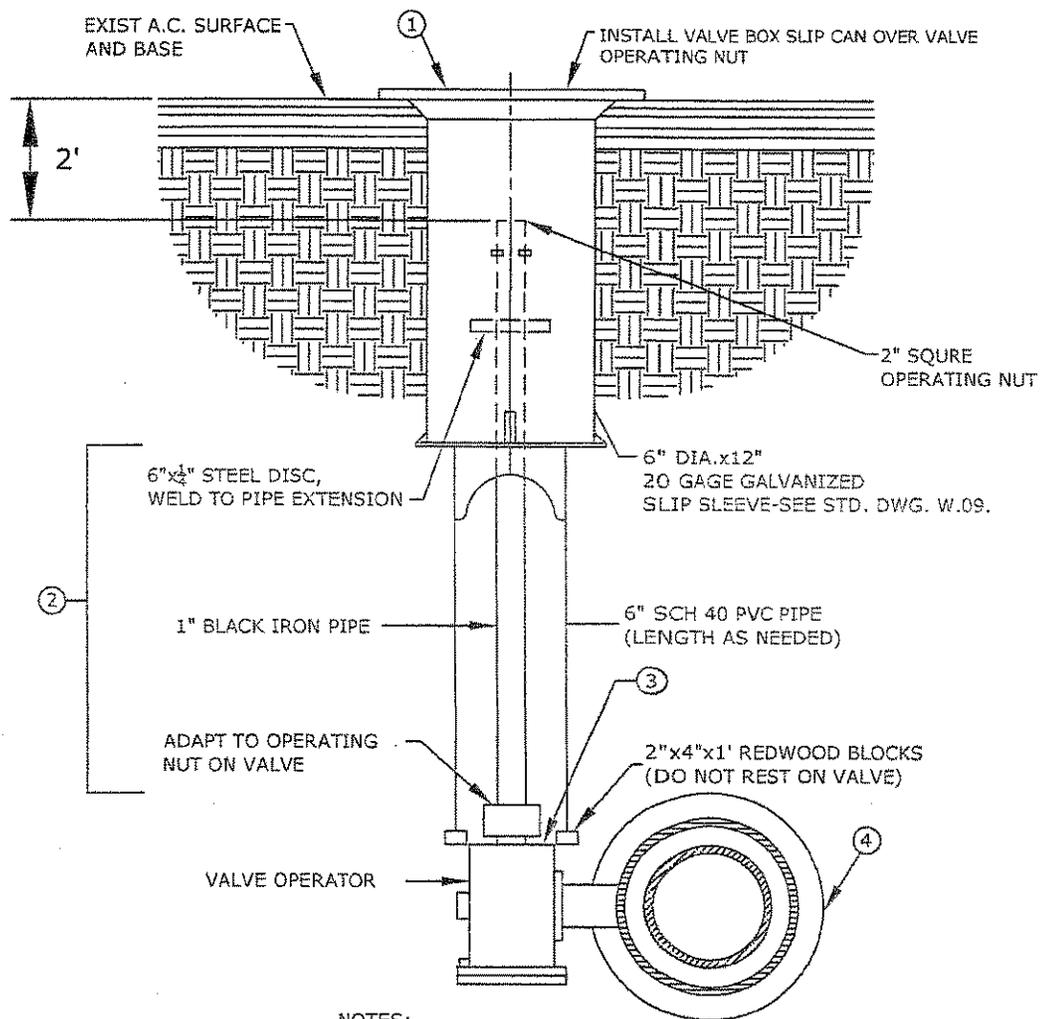
REVISION	DATE	UPLAND PUBLIC WATER DIVISION	DRAWING NUMBER
		TAPPING DETAIL FOR 4" AND LARGER CONTRACTOR INSTALLED FACILITIES	UPW-WD
			W.06
NOT TO SCALE		APPROVED: <u>Anthony M. Le</u>	DATE: <u>3/16/09</u>



NOTES:

1. FINAL RIM ELEVATION TO BE $\frac{1}{8}$ " TO $\frac{1}{4}$ " BELOW FINAL STREET GRADE.
2. A VALVE EXTENSION STEM SHALL BE PROVIDED WHERE THE OPERATING NUT DEPTH EXCEEDS FIVE (5) FEET AND SHALL BE 1" BLACK IRON PIPE.
3. GATE VALVE: PER AWWA STANDARD UPLAND WATER DIVISION APPROVED RESILIENT SEAT GATE VALVE, 200 PSI MINIMUM PRESSURE RATING, INTERNAL EPOXY COATED.

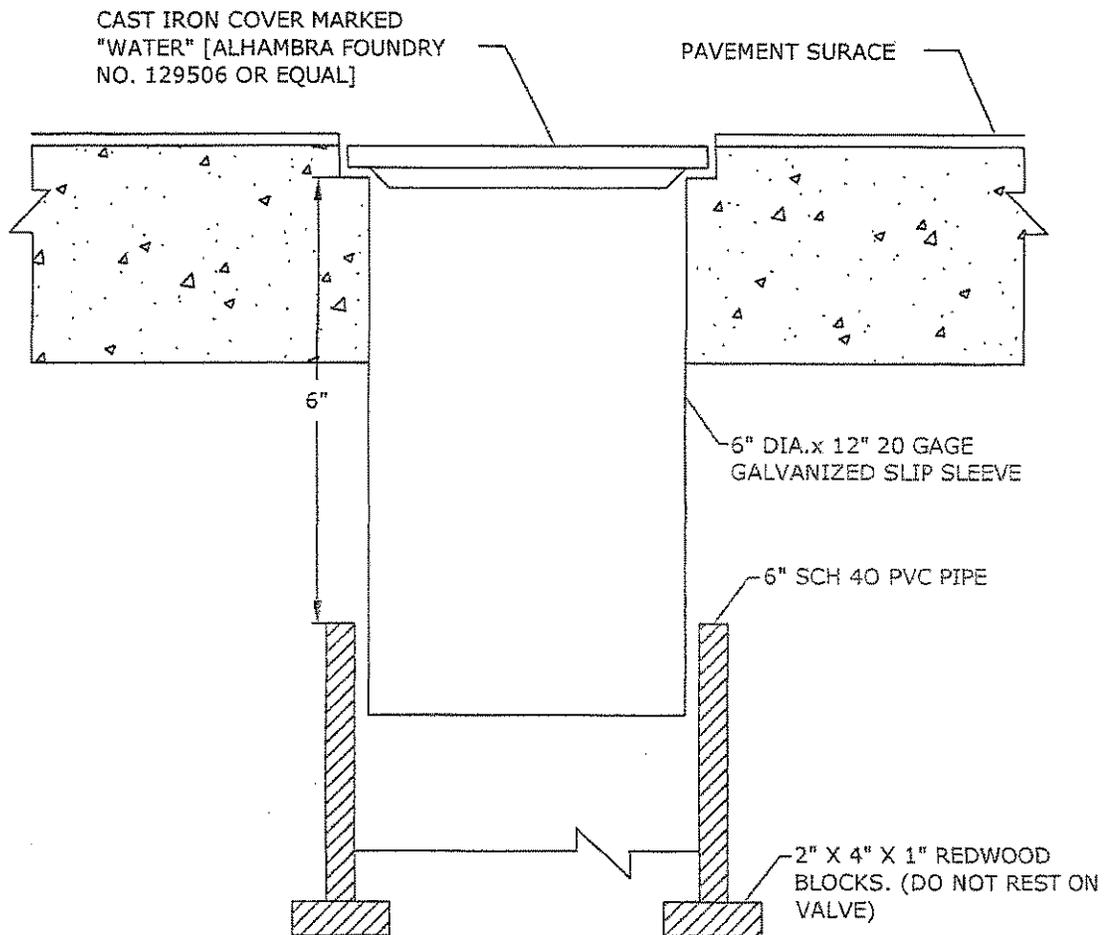
REVISION	DATE	UPLAND PUBLIC WATER DIVISION		DRAWING NUMBER
		TYPICAL GATE VALVE INSTALLATION		UPW-WD W.07
NOT TO SCALE		APPROVED: <i>Anthony M. ...</i>	DATE: <i>3/16/09</i>	



NOTES:

1. FINAL RIM ELEVATION TO BE $\frac{1}{8}$ " TO $\frac{1}{4}$ " BELOW FINAL STREET GRADE.
2. A VALVE EXTENSION STEM SHALL BE PROVIDED WHERE THE OPERATING NUT DEPTH EXCEEDS FIVE (5) FEET AND SHALL BE 1" BLACK IRON PIPE.
3. BACKFILL VALVE WITH SAND UP TO PACKING.
4. VALVE SHALL BE A RUBBER SEATED BUTTERFLY VALVE FURNISHED WITH FLANGED ENDS, A CAST IRON BODY AND DISC, AND MOLDED RUBBER SEAT. THE INTERIOR SHALL BE CLASS 200 UNLESS OTHERWISE SPECIFIED AND SHALL CONFORM TO AWWA STD. C504.

REVISION	DATE	UPLAND PUBLIC WATER DIVISION	
		DRAWING NUMBER	
		UPW-WD	
		W.08	
NOT TO SCALE		APPROVED: <i>Anthony M. Le</i>	DATE: <i>3/16/09</i>

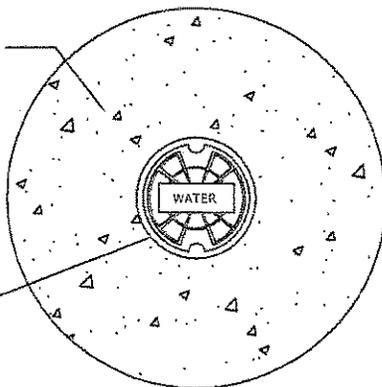


STANDARD VALVE

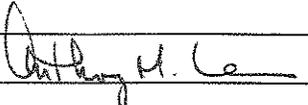
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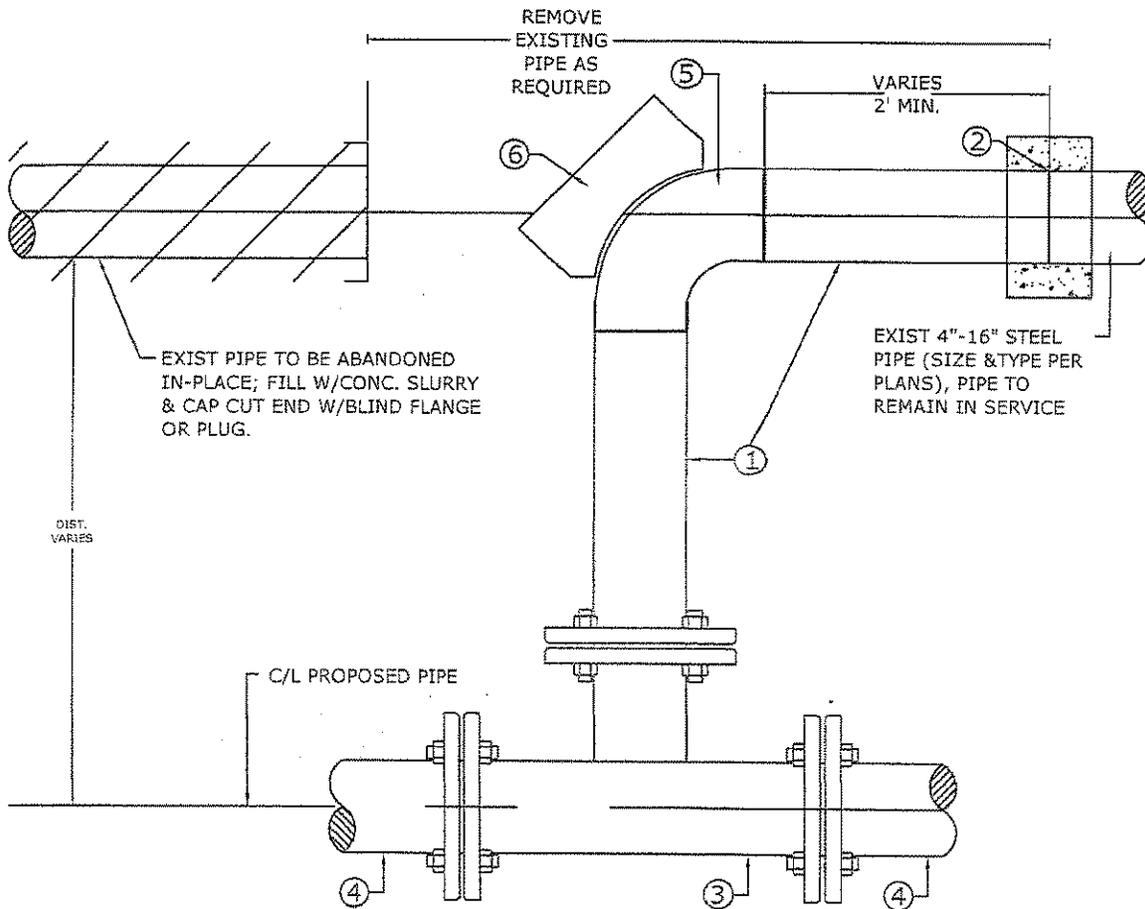
24" DIAMETER CONCRETE COLLAR (UNIMPROVED ONLY AREAS)

BROOKS TRIANGULAR CAST IRON COVER MARKED "WATER" W/ CONCRETE BASE NO SLIP SLEEVE REQUIRED WHEN BOX IS ENCASED IN CONCRETE



1. INSTALL VALVE BOX OVER OPERATING NUT.
2. VALVE STEM EXTENSION SHALL EXTEND TO 2" BELOW PAVED SURFACE.

REVISION	DATE	UPLAND PUBLIC WATER DIVISION	DRAWING NUMBER
		TYPICAL VALVE CAN INSTALLATION	UPW-WD
			W.09
NOT TO SCALE		APPROVED: 	DATE: 3/16/09

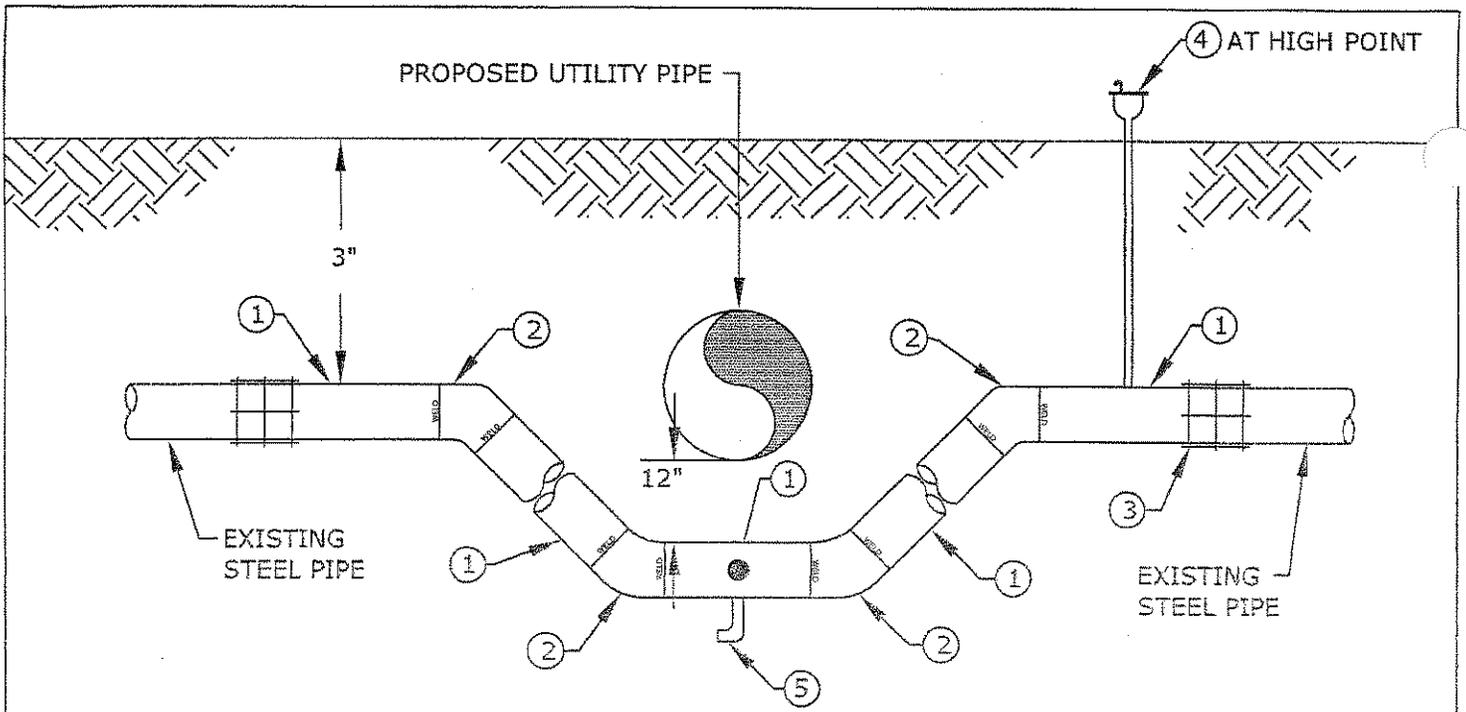


ITEM	QTY	DESCRIPTION	ITEM	QTY	DESCRIPTION
①		AS REQUIRED EXIST PIPE SIZE X REQUIRED LENGTH CML&C.	④		AS REQUIRED PROPOSED PIPE MAIN SIZE X REQUIRED LENGTH CML&C.
②	1 EA	EXISTING PIPE SIZE TO BE WELDED TO NEW PIPE OR INSTALL FLEXIBLE STEEL PIPE COUPLING.	⑤	1 EA.	EXIST PIPE SIZE X CML&C 90 DEGREE WELD ELBOW.
③	1 EA	CEMENT LINE AND MORTAR COATED PRE FABRICATED TEE WITH WELD ON FLANGES. (SIZE VARIES)	⑥	1 EA	THRUST BLOCK TO BE INSTALLED IF A FLEXIBLE COUPLING IS USED PER UPW STD. W.24.

NOTE:
 ALL MATERIAL, CONSTRUCTION METHODS AND TESTING SHALL BE IN ACCORDANCE WITH UPW STANDARDS AND SPECIFICATIONS. A UPW INSPECTOR SHALL BE PRESENT AT ALL TIMES DURING CONSTRUCTION UNLESS OTHERWISE APPROVED BY UPW.

*CML&C: CEMENT MORTER LINED AND CEMENT COATED.

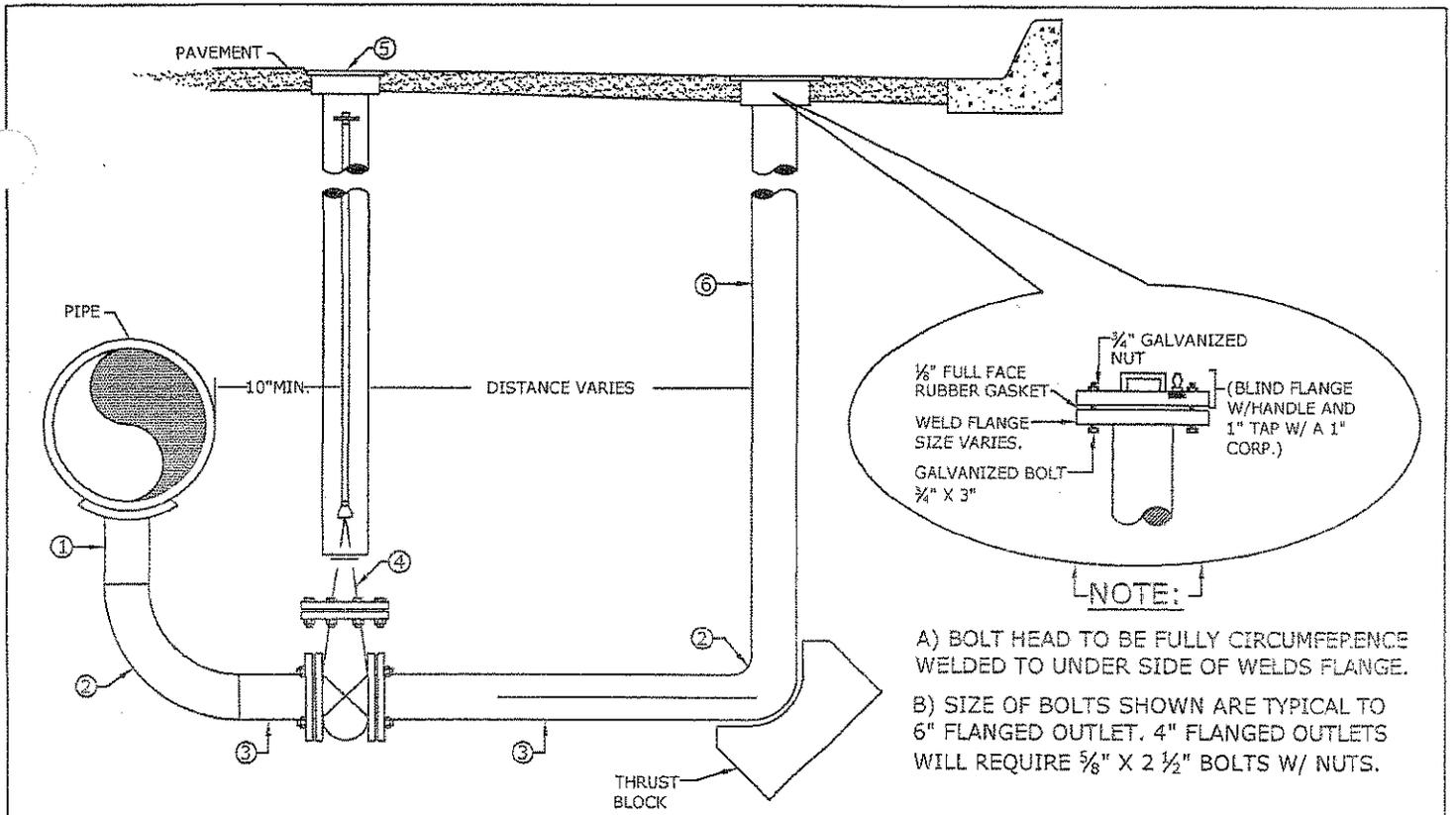
REVISION	DATE	UPLAND PUBLIC WATER DIVISION		DRAWING NUMBER
		DETAIL FOR 4"-16" STEEL PIPE, CUT AND PLUG EXISTING WATER MAIN		UPW-WD W.10
NOT TO SCALE		APPROVED: <i>Anthony M. Lee</i>	DATE: <u>3/16/09</u>	



ITEM	QTY	DESCRIPTION
①	_LF	_ " STEEL PIPE CML&C
②	4 EA.	_ " 45° STEEL BEND CML&C
③	2 EA.	_ " FLEX COUPLING WITH THRUST HARNESS (AS NEEDED) PER AWWA M-11, LATEST EDITION
④	1 EA.	_ " COMBINATION AIR/ VACUUM VALVE PER STD. DWG.-W.13 AND W.14 UPW SHALL DETERMINE NECESSITY OF VALVE ON A CASE BY CASE BASIS.
⑤	1 EA.	MANUAL BLOW-OFF ASSEMBLY UPW STD. W.12. (SIZE TO BE HALF THAT OF THE WATER LINE OFF SET)

- NOTE:**
- CONTRACTOR TO FIELD VERIFY EXISTING STEEL THICKNESS, COATING AND LINNING AND MATCH EXISTING.
 - ALL JOINTS TO BE WELDED.

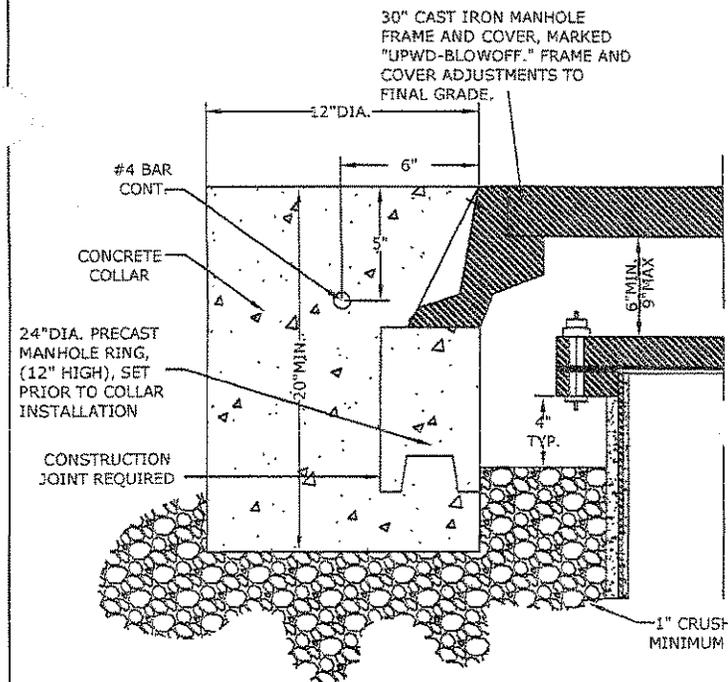
REVISION	DATE	UPLAND PUBLIC WATER DIVISION		DRAWING NUMBER
		4" THROUGH 16" VERTICAL OFF-SET OF EXISTING STEEL PIPE		UPW-WD
NOT TO SCALE		APPROVED: <i>Anthony M. La</i>	DATE: <i>3/16/09</i>	W.11



[NOTE:]

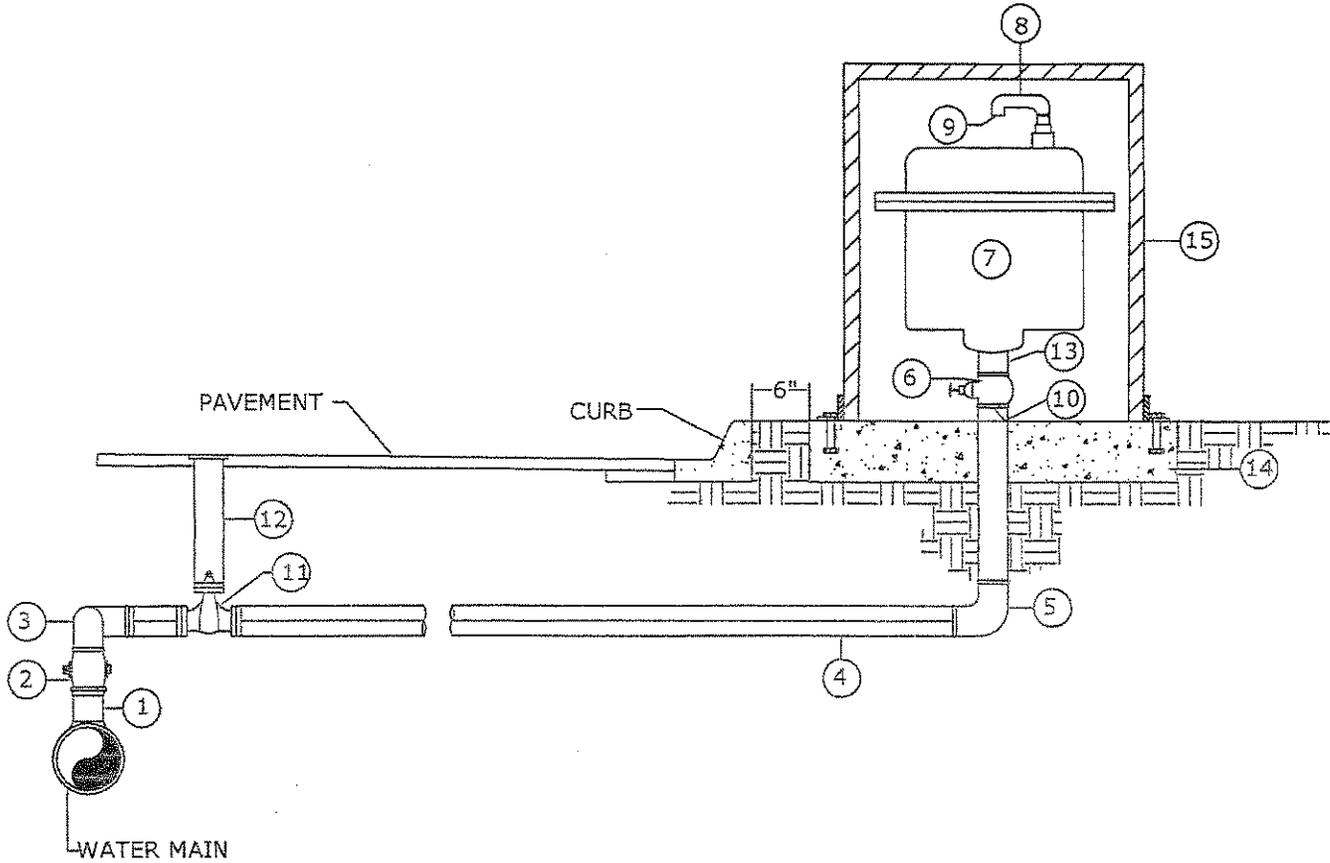
A) BOLT HEAD TO BE FULLY CIRCUMFERENCE WELDED TO UNDER SIDE OF WELDS FLANGE.

B) SIZE OF BOLTS SHOWN ARE TYPICAL TO 6" FLANGED OUTLET. 4" FLANGED OUTLETS WILL REQUIRE 5/8" X 2 1/2" BOLTS W/ NUTS.



ITEM	QTY	DESCRIPTION
①	1 EA	USE WELD NOZZLE WITH DOUBLER OR TAPPING SLEEVE ON EXISTING MAIN
②	2 EA	6" CEMENT LINED AND MORTAR COATED WELD 90 DEGREE ELBOW
③	—LF	6" C.L.M.C. PIPE
④	1 EA	INSTALL PER UPW STD. #W.07
⑤	1 EA	INSTALL PER UPW STD. #W.09
⑥	—LF	6" C.L.M.C.

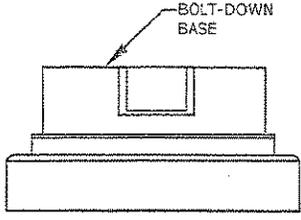
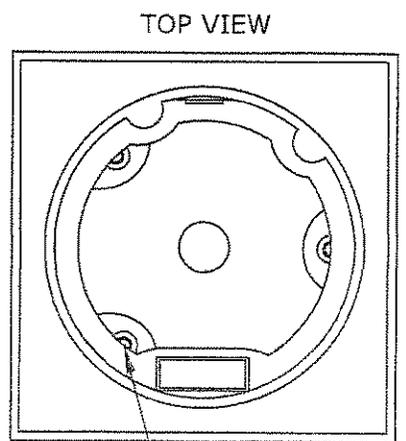
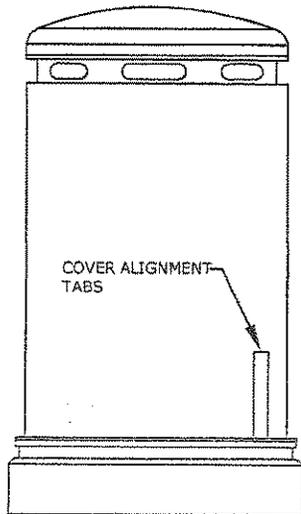
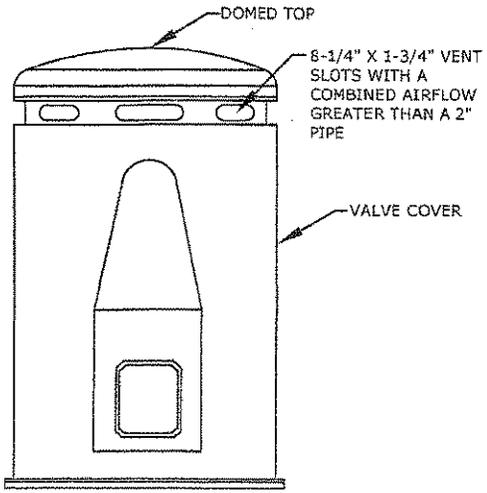
REVISION	DATE	UPLAND PUBLIC WATER DIVISION		DRAWING NUMBER
		STANDARD 6" BLOW-OFF DETAIL		UPW-WD
		APPROVED: <i>Anthony M. Co</i>	DATE: <i>3/16/09</i>	W.12
NOT TO SCALE				



ITEM	QTY	DESCRIPTION
①	1 EA	TAP MAIN DIRECTLY USING UPW APPROVED TAPPING MACHINE. DRILL CLEAN 1- ⁷ / ₈ " OR 1- ³ / ₈ " DIA. HOLE IN MAIN AND USE APPROVED SERVICE SADDLE OR 2" WELD ON COUPLING.
②	1 EA	2" BRASS CORPORATION STOP TO SUIT LATERAL SIZE.
③	1 EA	90 DEGREE ELBOW.
④	1 EA	2" TYPE 'K' SOFT COPPER PIPE.
⑤	1 EA	2" 90 DEGREE ELBOW
⑥	1 EA	2" OR 1" BRASS GATE VALVE A.W.W.A. APPROVED.
⑦	1 EA	2" OR 1" AIR RELEASE VALVE A.W.W.A. APPROVED.
⑧	2 EA	TYPE 'K' SOFT COPPER STRAIGHT ELBOW.
⑨	1 EA	SCREEN WITHIN ELBOW.
⑩	1 EA	2"x1" BELL REDUCER FOR 1" AIR RELEASE.
⑪	1 EA	2" THREADED RESILIENT WEDGE GATE VALVE A.W.W.A. APPROVED.
⑫	1 EA	INSTALL PER U.P.W. STD. DRAWING-W.09
⑬	1 EA	2" OR 1" CLOSE NIPPLE.
⑭	1 EA	CONCRETE BASE REFER TO DRAWING-W.14
⑮	1 EA	AIR RELEASE VALVE COVER SEE U.P.W. STD. DRAWING-W.14 FOR DESIGN SPECIFICATIONS.

NOTE: ALL AIR RELEASE ASSEMBLY
LATERALS SHALL BE 2" AND
BUSHED DOWN TO 1" DEPENDING
ON DESIGN SPECS.

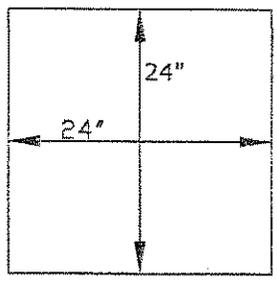
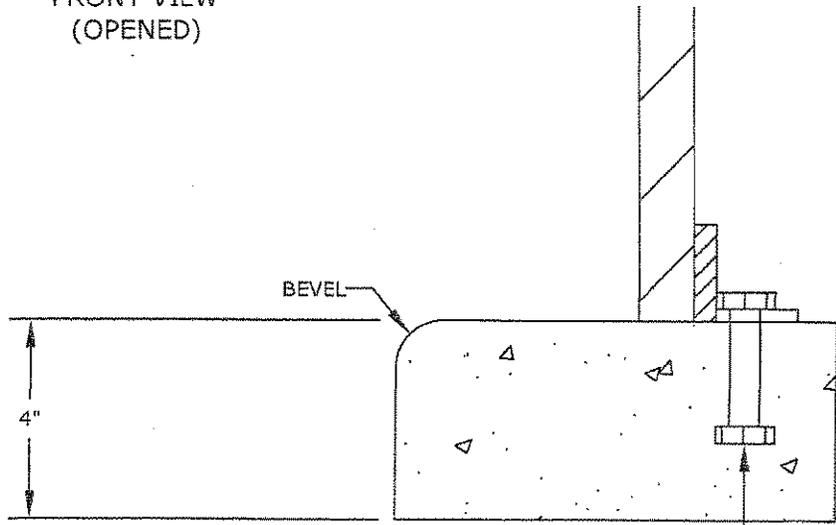
REVISION	DATE	UPLAND PUBLIC WATER DIVISION		DRAWING NUMBER
		AIR-VACUUM & AIR RELEASE VALVE ASSEMBLY		UPW-WD W.13
NOT TO SCALE		APPROVED: <i>Anthony M. Co</i>	DATE: <i>3/16/09</i>	



FRONT VIEW (OPENED)

SIDE VIEW

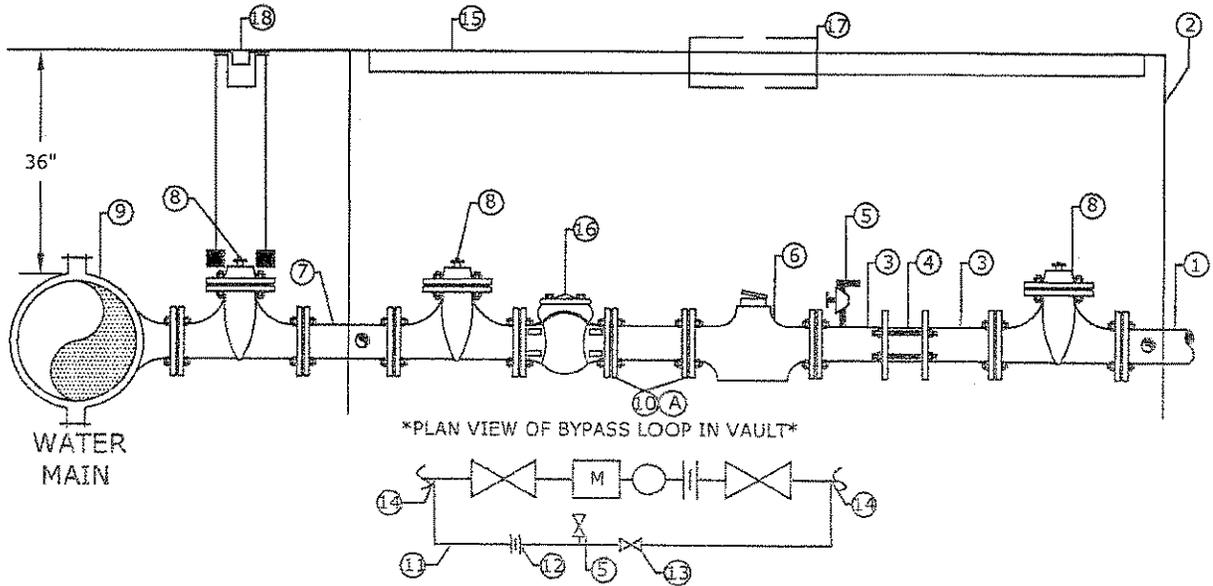
3-1/2" CONCRETE ANCHORS WITH STAINLESS FENDER WASHERS



SIZE	CONCRETE BASE
2"	4" THICK 24"x24"

18" DIA. X 30" TALL VALVE ENCLOSURE. ENCLOSURE TO HAVE A BOLT DOWN BASE WITH REMOVABLE COVER. COVER & BASE TO BE MANUFACTURED FROM 3/16" WALL POLYETHYLENE WITH UV STABILIZERS. COVER SHALL LOCK TO BASE WITH AN INTEGRAL AUTO-LATCH AND PADLOCK HASP. COVER TO BE PIPELINE PRODUCTS' MODEL #VCAS-1830 OR APPROVED EQUAL.

REVISION	DATE	UPLAND PUBLIC WATER DIVISION		DRAWING NUMBER
		AIR RELEASE COVER ASSEMBLY & MOUNTING DETAIL		UPW-WD W.14
NOT TO SCALE		APPROVED: <i>Anthony M. Co</i>	DATE: <i>3/16/09</i>	

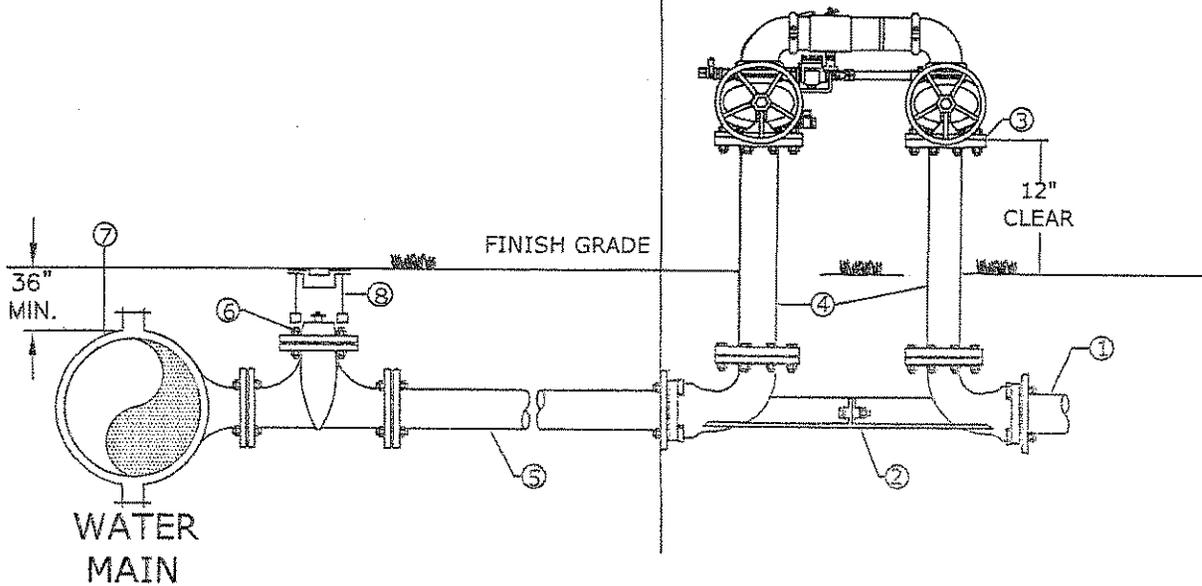


ITEM	QTY.	DESCRIPTION
①	4 LF	___" STUB-OUT SERVICE CONNECTION MATERIAL SPECIFIED BY CUSTOMER
②	1 EA	PRE-CAST CONCRETE VAULT DIMENSION VARIES
③	2 EA	___" STANDARD STEEL PIPE WITH WELD ON FLANGE
④	1 EA	___" FLEX COUPLING FROM THE WATER DIVISION APPROVED LIST
⑤	1 EA	2" BRASS TEST PORT WITH WHEEL VALVE AND CAP
⑥	1 EA	___" WATER METER TO BE PROVIDED BY THE CITY, INSTALLED BY THE DEVELOPER OR CONTRACTOR
⑦	___ LF	___" CEMENT LINED & MORTAR COATED PIPE
⑧	3 EA	FLANGE RW GATE VALVE ASSEMBLY PER UPW STD.-W.07
⑨	1 EA	EPOXY COATED STAINLESS STEEL TAPPING SLEEVE, OR WELD NOZZLE WITH DOUBLER ___" O.D. MAIN WITH ___" SERVICE LATERAL
⑩		SPOOL LENGTH TO BE 5 TIMES THE DIAMETER OF THE METER, DEVELOPER OR CONTRACTOR TO PROVIDE AND INSTALL
⑪	1 EA	BYPASS LOOP-BRASS PIPE (U.S. MANUFACTURED) (SIZE TO BE HALF THAT OF THE SERVICE)
⑫	1 EA	___" BRASS-THREE PART UNION
⑬	1 EA	___" THREADED GATE VALVE
⑭	1 EA	___"x___" TAPPING SADDLE
⑮	1 EA	STEEL DOOR ACCESS HATCH
⑯	1 EA	___"x___" BRASS STRAINER PROVIDED BY CITY, INSTALLED BY THE DEVELOPER OR CONTRACTOR.
⑰		4" ACCESS HATCH TO READ METER
⑱	1 EA	VALVE BOX PER UPW STD.-W.09
Ⓐ	2 EA	WELD FLANGES

REVISION	DATE	UPLAND PUBLIC WATER DIVISION	DRAWING NUMBER
			UPW-WD
		3" AND LARGER DOMESTIC SERVICE	W.15
APPROVED: <i>Anthony M. [Signature]</i>		DATE: 3/16/09	
NOT TO SCALE			

MAINTAINED BY UPW

INSTALLED AND
MAINTAINED BY OTHERS



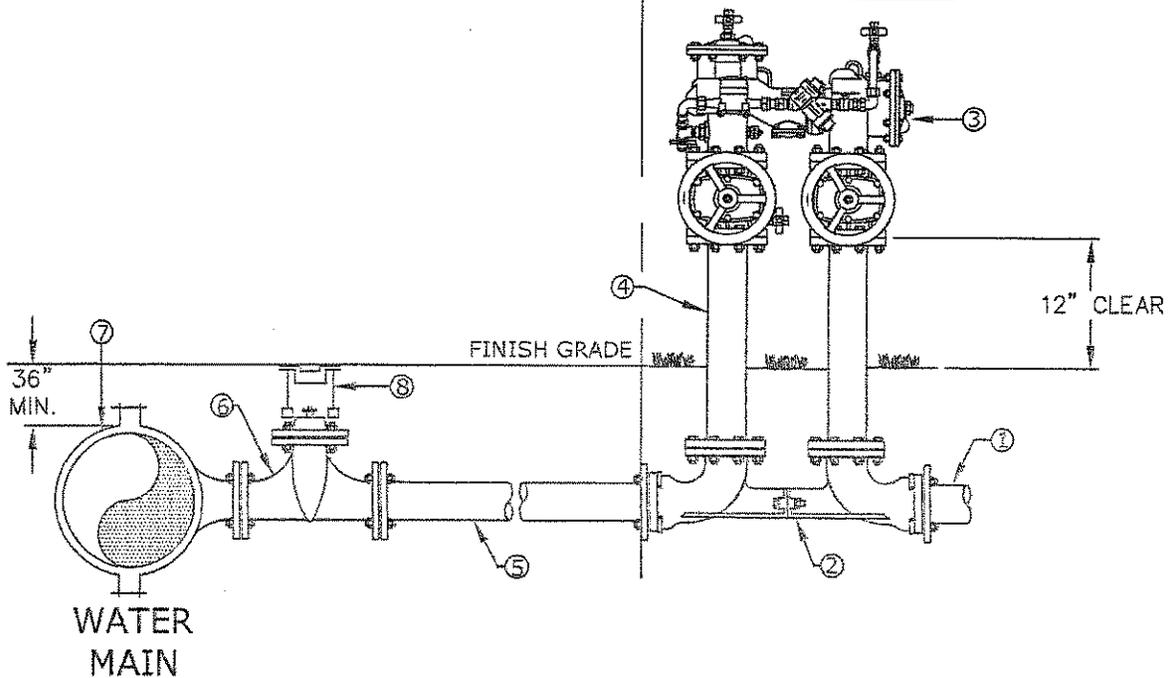
ITEM	QTY	DESCRIPTION
①	4 LF	STUB-OUT FOR SERVICE CONNECTION (MATERIAL SPECIFIED BY CUSTOMER)
②	1 EA	___" VALVE SETTER
③	1 EA	REDUCER PRESSURE DETECTOR CHECK ASSEMBLY (WATTS SERIES 957RPDA, OR APPROVED EQUAL.)
④	2 EA	___" SCH. 40 STEEL OR DUCTILE IRON PIPE SPOOLS.
⑤	___LF	___" CLMC PIPE SEE SPECIFICATIONS FOR BACKFILL REQUIREMENTS UPW STD.-W.23
⑥	1 EA	___" FLANGE GATE VALVE ASSY PER UPW STD.-W.6
⑦	1 EA	EPOXY COATED TAPPING SLEEVE, TAPPING SLEEVE, WELD NOZZEL WITH DOUBLER, OR TEE ___"O.D. MAIN WITH ___" SERVICE LATERAL
⑧	1 EA	INSTALL VALVE BOX PER UPW STD.-W.09

NOTE:
ONCE INSTALLATION IS COMPLETED DEVICE MUST BE TESTED BY A CERTIFIED TESTER OF SAN BERNARDINO COUNTY.

REVISION	DATE	UPLAND PUBLIC WATER DIVISION		DRAWING NUMBER
		4" AND LARGER ABOVEGROUND FIRE SERVICE W/REDUCED PRESSURE DETECTOR CHECK ASSEMBLY		UPW-WD W.16
NOT TO SCALE		APPROVED: <i>Anthony M. Co</i>	DATE: 3/16/09	

MAINTAINED BY UPW

INSTALLED AND
MAINTAINED BY
OTHERS

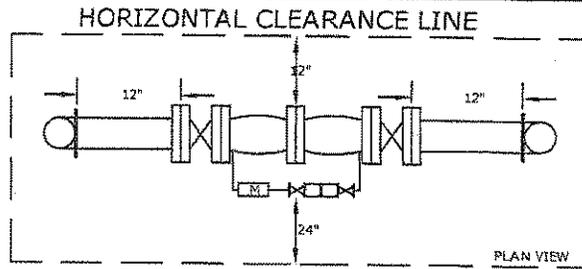


ITEM QTY DESCRIPTION

- ① 4 LF STUB-OUT FOR SERVICE CONNECTION (MATERIAL SPECIFIED BY CUSTOMER)
- ② 1 EA ___" VALVE SETTER
- ③ 1 EA ___" DOUBLE CHECK DETECTOR ASSEMBLY (FEBCO 876/876V OR APPROVED EQUAL)
- ④ 2 EA ___" SCH. 40 STEEL OR DUCTILE IRON PIPE SPOOLS.
- ⑤ 1 LF ___" CLMC PIPE SEE SPECIFICATIONS FOR BACKFILL REQUIREMENTS UPW STD.-W.23
- ⑥ 1 EA ___" FLANGE GATE VALVE ASSY PER UPW STD.-W.06
- ⑦ 1 EA EPOXY COATED TAPPING SLEEVE, TAPPING SLEEVE, WELD NOZZLE WITH DOUBLER, OR TEE ___" O.D. MAIN WITH ___" SERVICE LATERAL
- ⑧ 1 EA INSTALL VALVE BOX PER UPW STD.-W.09

NOTE:
ONCE INSTALLATION IS COMPLETED
DEVICE MUST BE TESTED BY A
CERTIFIED TESTER OF SAN
BERNARDINO COUNTY.

REVISION	DATE	UPLAND PUBLIC WATER DIVISION	DRAWING NUMBER
			UPW-WD
		4" AND LARGER ABOVEGROUND FIRE SERVICE W/DOUBLER CHECK DETECTOR CHECK ASSEMBLY	W.17
NOT TO SCALE		APPROVED: <i>Anthony M. La</i>	DATE: <i>3/16/09</i>

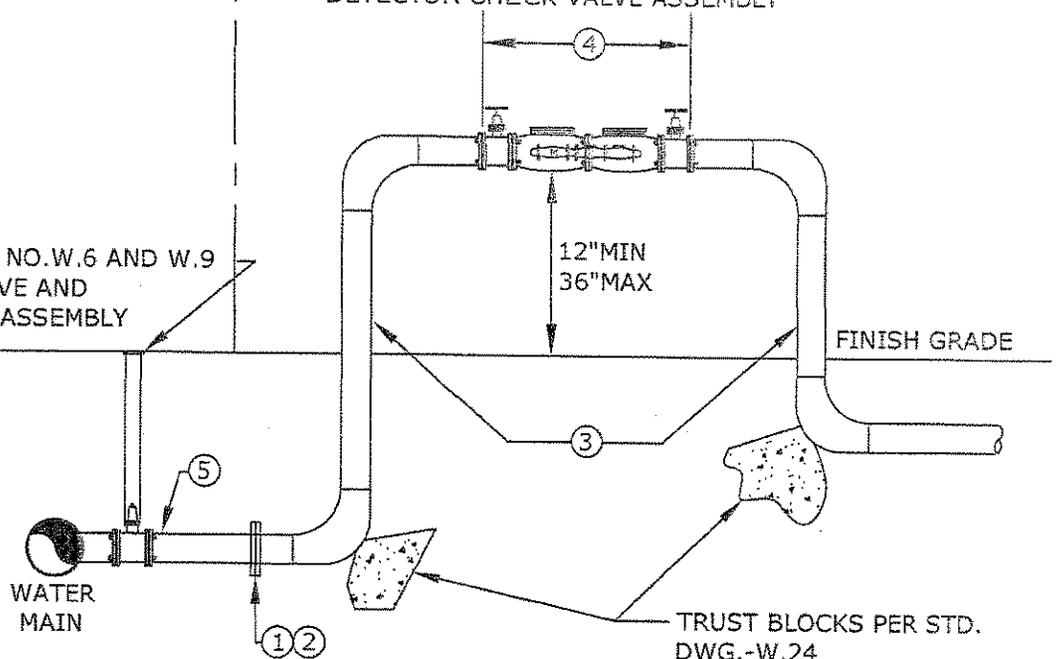


INSTALLED AND MAINTAINED BY UPW

INSTALLED AND MAINTAINED BY CUSTOMER

APPROVED DOUBLE CHECK DETECTOR CHECK VALVE ASSEMBLY

SEE UPW STD. NO. W.6 AND W.9 FOR GATE VALVE AND VALVE COVER ASSEMBLY

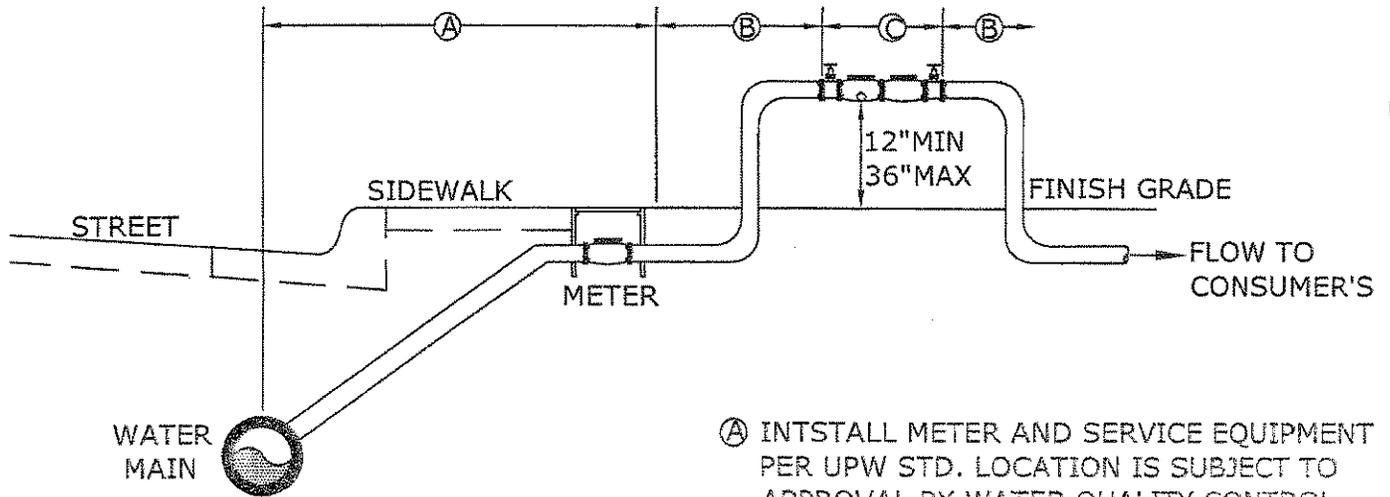


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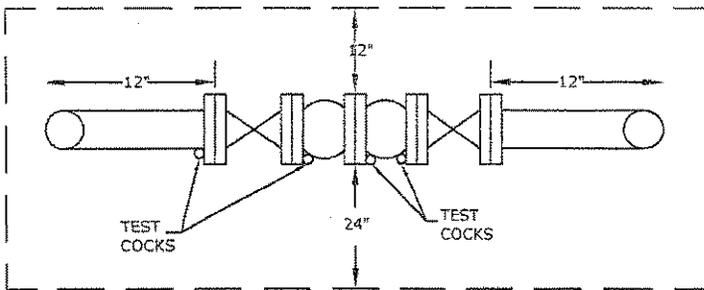
- 1 CITY WILL INSTALL BLIND FLANGE AT CONNECTION POINT. THE CITY'S WATER DEPARTMENT INSPECTOR TO BE PRESENT WHEN BLIND FLANGE IS REMOVED AND DETECTOR CHECK VALVE ASSEMBLY IS INSTALLED.
- 2 CUSTOMER TO SWAB CONNECTING FLANGE WITH 600 PPM CHLORINE SOLUTION WHEN MAKING CONNECTION.
- 3 CUSTOMER TO PAINT ALL ABOVE GRADE PIPING AND DETECTOR ASSY.
- 4 THE DETECTOR ASSY. SHALL BE INSPECTED AND TESTED IMMEDIATELY AFTER INSTALLATION.
- 5 ALL UPW INSTALLED WATER LINES SHALL BE CLMC PIPE. FOR 10" DETECTOR ASSEMBLY INSTALL 12" LATERAL AND PIPING.

TRUST BLOCKS PER STD. DWG.-W.24

REVISION	DATE	UPLAND PUBLIC WATER DIVISION		DRAWING NUMBER
		4" THROUGH 10" DOUBLE CHECK DETECTOR CHECK VALVE ASSEMBLY		UPW-WD
NOT TO SCALE		APPROVED: <i>Anthony M. Co</i>	DATE: <i>3/16/09</i>	W.18



HORIZONTAL CLEARANCE LINE

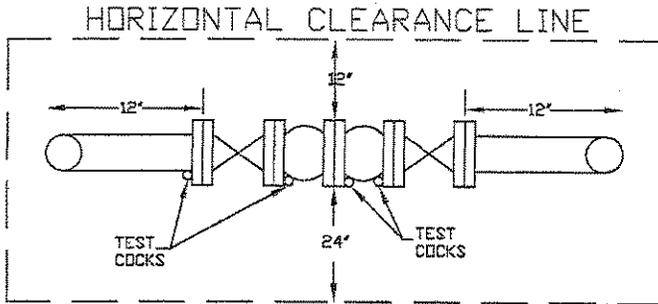
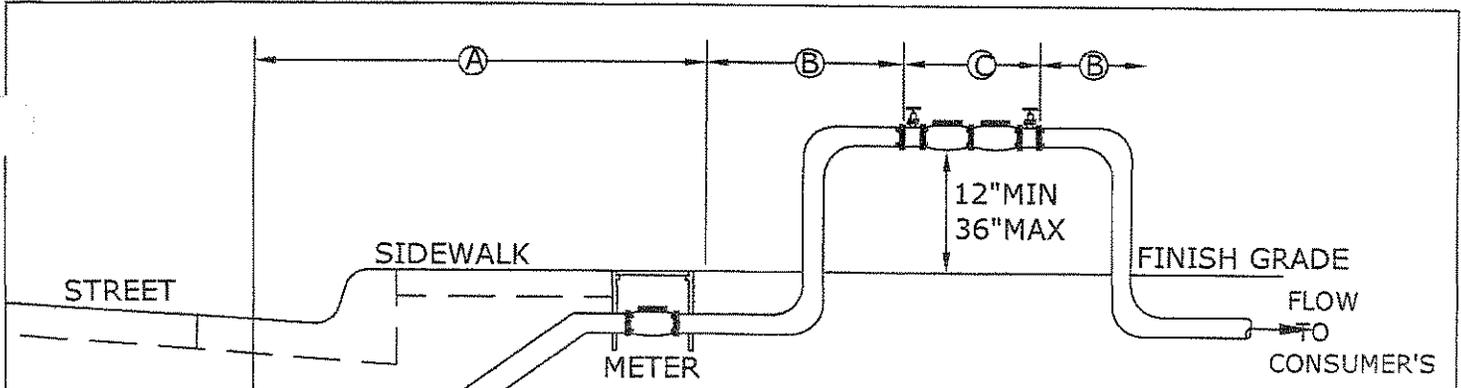


- Ⓐ INSTALL METER AND SERVICE EQUIPMENT PER UPW STD. LOCATION IS SUBJECT TO APPROVAL BY WATER QUALITY CONTROL.
- Ⓑ INSTALLED AND MAINTAINED BY CONSUMER PER CITY OF UPLAND WATER DIVISION.
- Ⓒ APPROVED REDUCED PRESSURE PRINCIPLE BACKFLOW PREVENTION ASSEMBLY WITH RESILIENT SEATED SHUT-OFF VALVES.

NOTES:

1. THE ASSEMBLY MUST BE INSPECTED AND APPROVED BY UPW IMMEDIATELY AFTER INSTALLATION. THE ASSEMBLY MUST BE TESTED BY A CERTIFIED BACKFLOW TESTER OF SAN BERNARDINO COUNTY.
2. NO CONNECTIONS OR TEES ARE PERMITTED BETWEEN THE METER AND BACKFLOW PREVENTER. STRAINERS WILL BE REVIEWED ON AN INDIVIDUAL BASIS.
3. PRIOR TO INSTALLATION OF THE ASSEMBLY, THE WATER SERVICE SHALL BE FLUSHED.
4. A MANIFOLD CONNECTION WITH DUPLEX UNITS SHOULD BE INSTALLED IF AN UNINTERRUPTED SUPPLY OF WATER IS NECESSARY.

REVISION	DATE	UPLAND PUBLIC WATER DIVISION		DRAWING NUMBER
		TYPICAL INSTALLATION REDUCED PRESSURE PRINCIPLE BACKFLOW PREVENTION ASSEMBLY		UPW-WD W.19
NOT TO SCALE		APPROVED: <i>Anthony M. Co</i>	DATE: 3/16/09	

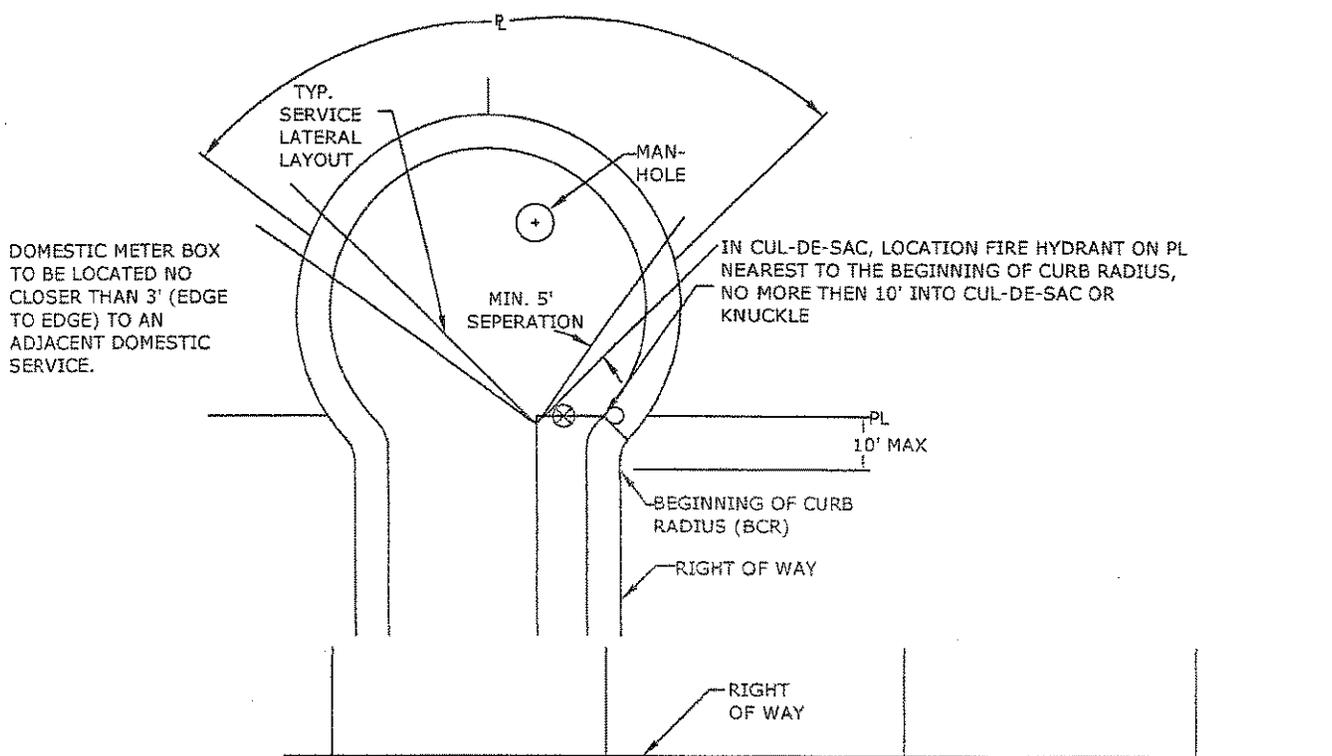


- Ⓐ INSTALL METER AND SERVICE EQUIPMENT PER UPW STD. LOCATION IS SUBJECT TO APPROVAL BY WATER QUALITY CONTROL.
- Ⓑ INSTALLED AND MAINTAINED BY CONSUMER PER CITY OF UPLAND WATER DIVISION.
- Ⓒ APPROVED DOUBLE CHECK ASSEMBLY WITH RESILIENT SEATED SHUT-OFF VALVES.

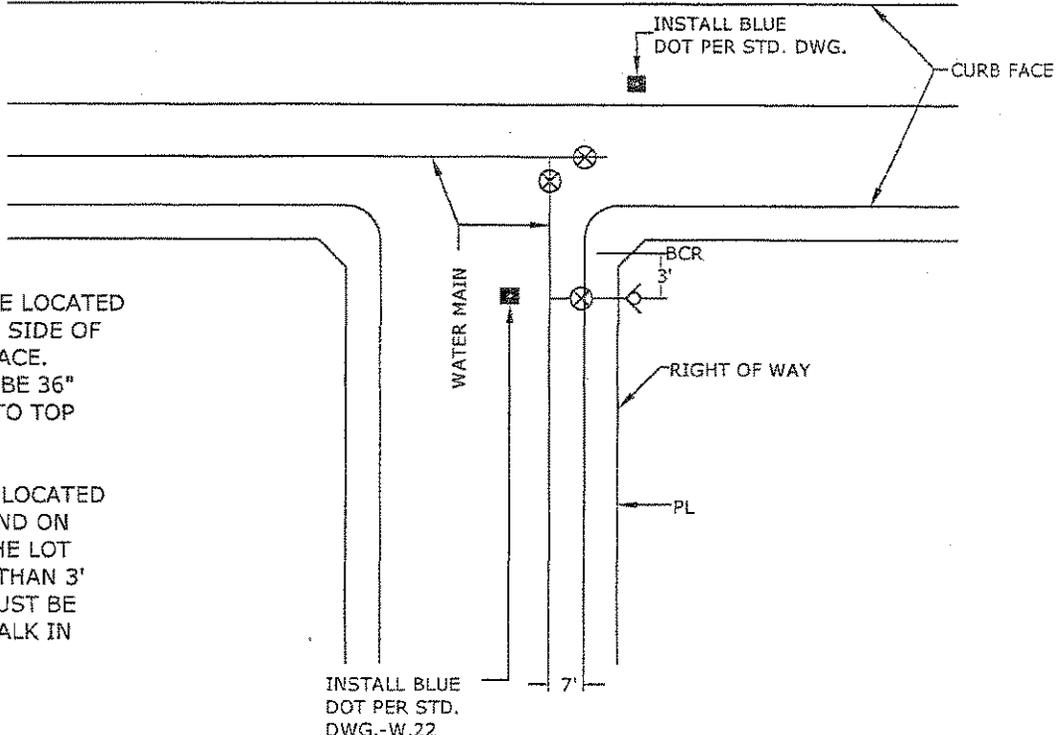
NOTES:

1. THE ASSEMBLY MUST BE INSPECTED AND APPROVED BY UPW IMMEDIATELY AFTER INSTALLATION. THE ASSEMBLY MUST BE TESTED BY A CERTIFIED BACKFLOW TESTER OF SAN BERNARDINO COUNTY.
2. NO CONNECTIONS OR TEES ARE PERMITTED BETWEEN THE METER AND BACKFLOW PREVENTER. STRAINERS WILL BE REVIEWED ON AN INDIVIDUAL BASIS.
3. PRIOR TO INSTALLATION OF THE ASSEMBLY, THE WATER SERVICE SHALL BE FLUSHED.
4. A MANIFOLD CONNECTION WITH DUPLEX UNITS SHOULD BE INSTALLED IF AN UNINTERRUPTED SUPPLY OF WATER IS NECESSARY.

REVISION	DATE	UPLAND PUBLIC WATER DIVISION	DRAWING NUMBER
			UPW-WD
		TYPICAL INSTALLATION OF DOUBLE CHECK VALVE BACKFLOW PREVENTION ASSEMBLY	W.20
NOT TO SCALE		APPROVED: <i>Anthony M. Co</i>	DATE: 3/16/09



DOMESTIC METER BOX TO BE LOCATED NO CLOSER THAN 3' (EDGE TO EDGE) TO AN ADJACENT DOMESTIC SERVICE.



- NOTES:**
- 1) WATER MAINS SHALL BE LOCATED ON THE SOUTH OR EAST SIDE OF STREET 7' FROM CURB FACE. MINIMUM COVER SHALL BE 36" FROM FINISH SURFACE TO TOP OF PIPE.
 - 2) FIRE HYDRANTS TO BE LOCATED 2' BEHIND CURB FACE AND ON THE PROJECTION OF THE LOT LINE. IF THERE IS LESS THAN 3' CLEAR, THE HYDRANT MUST BE SET BEHIND THE SIDEWALK IN THE PARKWAY.

REVISION	DATE	UPLAND PUBLIC WATER DIVISION		DRAWING NUMBER
		TYPICAL PIPE & FIRE HYDRANT LAYOUT (ALIGNMENT)		UPW-WD
				W.21
NOT TO SCALE		APPROVED: <i>Anthony M. Co</i>	DATE: 3/16/09	

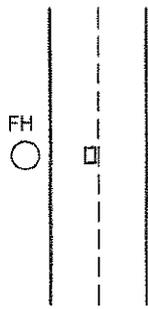


FIGURE 1
TWO LANE STREET

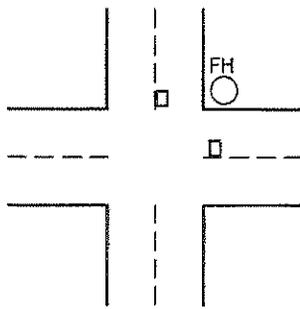


FIGURE 3
INTERSECTION

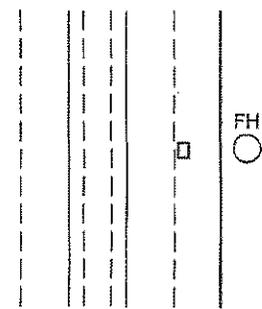


FIGURE 5
MULTI-LANE STREET
WITH TURN LANE

LEGEND

- ◻ REFLECTORIZED BLUE DOT PAVEMENT MARKER
- FH ○ FIRE HYDRANT
- - - LANE DIVIDER LINE
- NO TURNS DIVIDER LINE
- CURB LINE

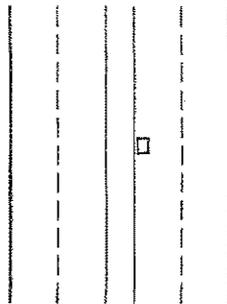


FIGURE 2
MULTI-LANE STREET

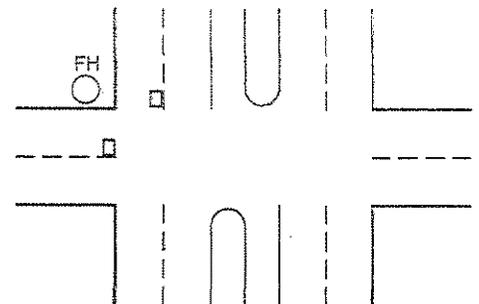
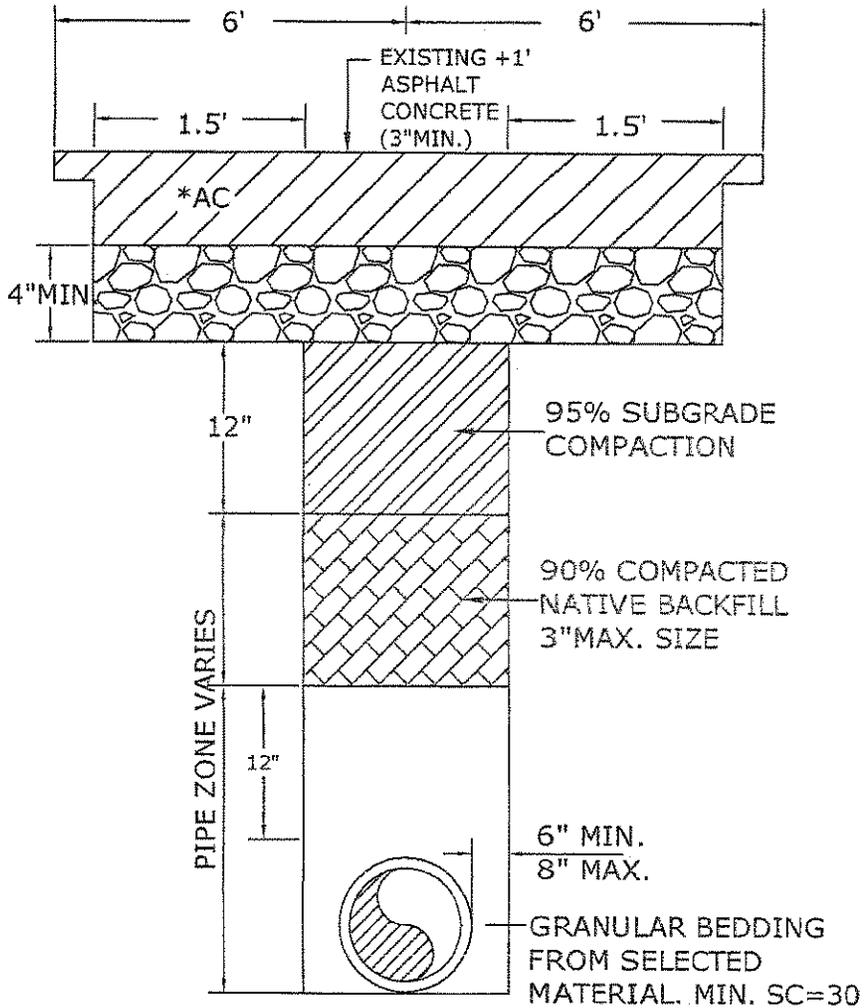


FIGURE 4
FOUR-LANE WITH TURN
LANE AT INTERSECTION

- A. TWO-WAY STREETS AND ROADS: MARKERS SHOULD BE PLACED SIX INCHES FROM EDGE OF PAINTED CENTERLINE ON THE SIDE NEAREST THE FIRE HYDRANT. IF THE STREET HAD NO CENTERLINE, THE MARKER SHOULD BE PLACED SIX INCHES FROM THE APPROXIMATE CENTER ON THE ROADWAY ON THE SIDE NEAREST THE HYDRANT (SEE FIGURE 1 THROUGH 3)
- B. STREETS WITH LEFT TURN LANE AT THE INTERSECTION: MARKERS SHOULD BE PLACED SIX INCHES FROM THE EDGE OF THE PAINTED WHITE LINE ON THE SIDE NEAREST THE HYDRANT (SEE FIGURE 4)
- C. STREETS WITH CONTINUOUS TWO-WAY LEFT TURN LANE: MARKERS SHOULD BE PLACED SIX INCHES FROM THE EDGE OF THE PAINTED YELLOW BARRIER LINE ON THE SIDE NEAREST THE FIRE HYDRANT (SEE FIGURES)
- D. CUL-DE-SAC: MARKER SHOULD BE 6" FROM THE CENTER OF THE CUL-DE-SAC CURB RADIUS ON THE SIDE NEAREST THE FIRE HYDRANT.

REVISION	DATE	UPLAND PUBLIC WATER DIVISION	DRAWING NUMBER
			UPW-WD
		BLUE DOT PAVEMENT MARKERS AND FIRE HYDRANT MARKING	W.22
NOT TO SCALE		APPROVED: <i>Anthony M. Co</i>	DATE: 3/16/09

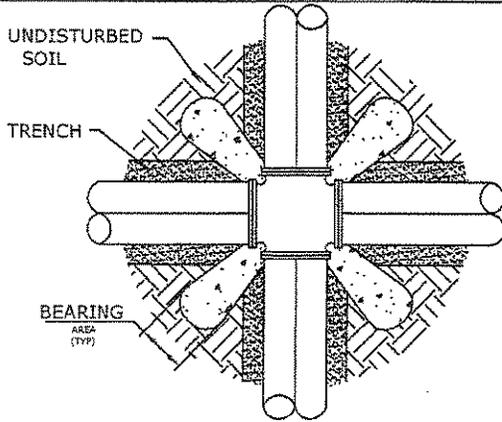


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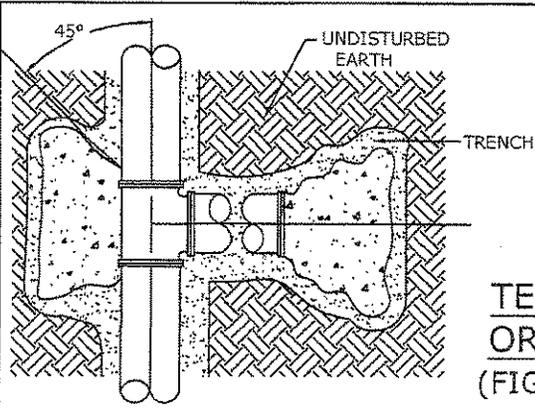
1. TRENCH WIDTH BE CONTROLLED TO TOP OF PIPE ZONE.
2. ALL PAVEMENT SECTION FLOATERS THAT ARE 4 FEET OR LESS SHALL BE REMOVED AND REPLACED WITH TRENCH REPAIR.
3. FINISH SURFACE PAVEMENT REQUIREMENT SHALL BE DETERMINED BY CITY ENGINEER
4. TRENCH DEPTHS OF GREATER THAN 5 FEET SHALL HAVE ADEQUATE SHORING.
5. COMPACTION SHALL BE 90% IN ALL ZONES UNLESS OTHER WISE SPECIFIED. TRENCH STABILITY SHALL CONFORM TO CAL-OSHA REQUIREMENTS.

REVISION	DATE	UPLAND PUBLIC WATER DIVISION	DRAWING NUMBER
			TRENCH BEDDING AND PAVEMENT REPAIR DETAIL
		W.23	
NOT TO SCALE		APPROVED: <i>Anthony M. La...</i>	DATE: 3/16/09

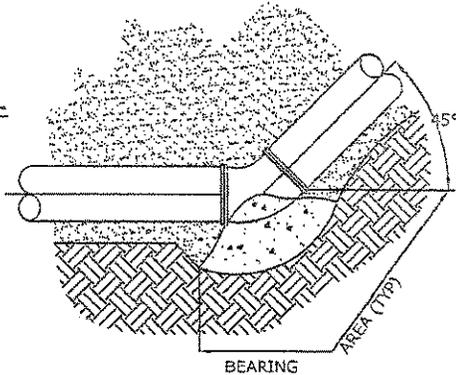
**CROSS
(FIGURE 1)**



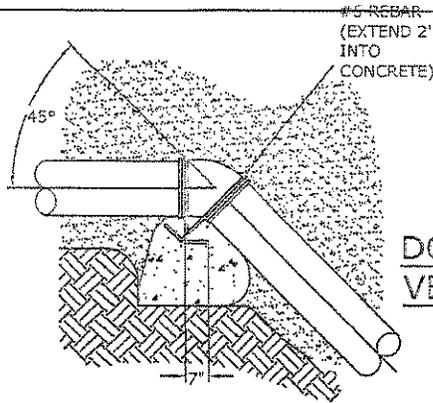
**TEE, PLUG
OR CAP
(FIGURE 2)**



**HORIZONTAL
OR UPWARD
VERTICAL
BEND
(FIGURE 3)**



**DOWNWARD
VERTICAL BEND
(FIGURE 4)**



GENERAL NOTES:

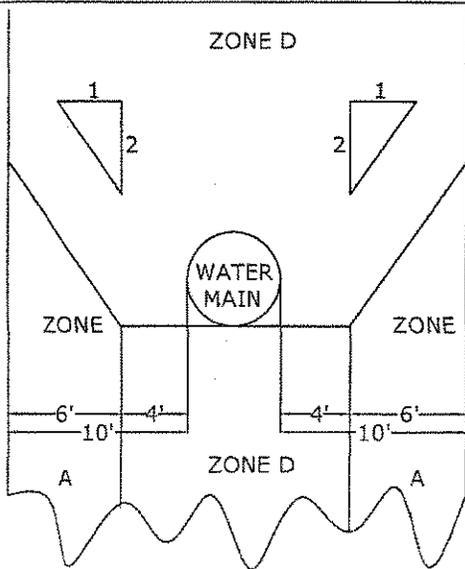
ALL CONCRETE SHALL BE 3000 PSI MINIMUM, 28 DAYS COMPRESSIVE STRENGTH. CONCRETE IS TO BE PLACED AGAINST UNDISTURBED EARTH. TABLE BELOW DENOTES MINIMUM BEARING AREA OR VOLUME OF TRUST BLOCK. SPECIAL DESIGN CALCULATIONS ARE TO BE SUBMITTED TO UPW FOR APPROVAL IF ALLOWABLE SOIL BEARING CAPACITY IS LESS THAN 3000 PSF. ALL VERTICAL SURFACES NOT BEARING AGAINST UNDISTURBED EARTH SHALL BE FORMED. ALL THRUST BLOCKS SHALL BE PLACED IN THE PRESENCE OF AN UPW INSPECTOR.

PIPE I.D.	BEARING AREA SQ. FT.						CONC/CU YDS		
	FIGURE 1	FIGURE 2	FIGURE 3, 90*	FIGURE 3, 45*	FIGURE 3, 22-1/2*	FIGURE 3, 11-1/4*	FIGURE 4, 45*	FIGURE 4, 22-1/2*	FIGURE 4, 11-1/4*
4"	2	2	2	2	1	1	1	0.5	0.5
6"	2	3	4	2	1	1	1.5	1.0	0.5
8"	3	5	7	4	2	1	3.0	1.5	1.0
10"	4	8	11	6	3	2	4.0	2.5	1.5
12"	6	11	15	8	4	2	6.0	3.0	1.5
16"	10	20	28	15	8	4	10.5	6.0	3.0
18"	13	25	35	19	10	5	13.5	7.5	3.5
20"	16	31	44	24	12	6	16.0	9.0	4.5
24"	22	44	63	34	17	9	23.5	12.5	6.5

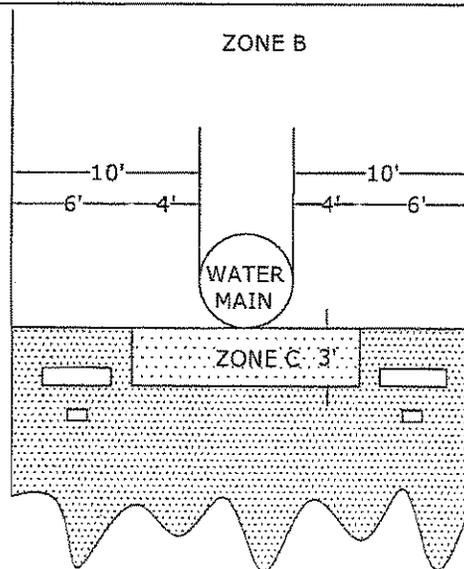
NOTE:

USE OF THRUST BLOCKS REQUIRES PRIOR DEPARTMENT APPROVAL AND WILL BE EVALUATED ON A CASE BY CASE BASIS.

REVISION	DATE	UPLAND PUBLIC WATER DIVISION THRUST BLOCK INSTALLATION	DRAWING NUMBER	
			UPW-WD	
			W.24	
			APPROVED: <i>Anthony M. La</i>	DATE: <u>3/6/09</u>
NOT TO SCALE				



PARALLEL CONSTRUCTION
 IF A MAIN LINE SEWER CANNOT BE LOCATED TEN OR MORE FEET FROM A PRESSURE WATER MAIN AND MUST BE LOCATED WITHIN ANY OF THE ABOVE INDICATED ZONES, SPECIAL CONSTRUCTION WILL BE REQUIRED AS SHOWN BELOW.



PERPENDICULAR CONSTRUCTION
 IF A MAIN LINE SEWER MUST CROSS A PRESSURE WATER MAIN WITHIN ANY OF THE ABOVE INDICATED ZONES, OR IS A HOUSE LATERAL MUST CROSS IN ZONE B, SPECIAL CONSTRUCTION WILL BE REQUIRED AS SHOWN BELOW.

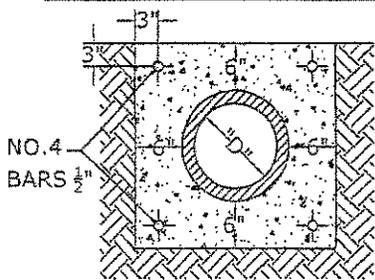
ZONE	SEWER CONSTRUCTION REQUIREMENTS
A	V.C.P. WITH COMPRESSION JOINTS
B OR C	C.I.P. (CLASS 150) APPROVED MECHANICAL JOINTS, OR C.V.P. WITH SPECIAL CONCRETE ENCASEMENT PER (S-23 CASE IV), OR V.C.P. GROUTED IN CONTINUOUS STEEL CASING.
D	DO NOT LOCATED ANY PARALLEL SEWER IN THIS AREA WITHOUT HEALTH DEPARTMENT APPROVAL CALL MA 0-2980

FORCE MAINS:

PARALLEL CONSTRUCTION NOT PERMITTED IN ANY ZONE.

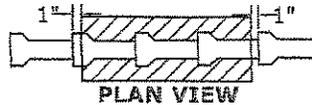
PERPENDICULAR CONSTRUCTION IN ANY ZONE REQUIRES C.I.P. (CLASS 150) WITH APPROVED MECHANICAL JOINTS, OR ASBESTOS CEMENT PIPE WITH SPECIAL CONCRETE ENCASEMENT PER IV.

CASE IV-SPECIAL ENCASEMENT



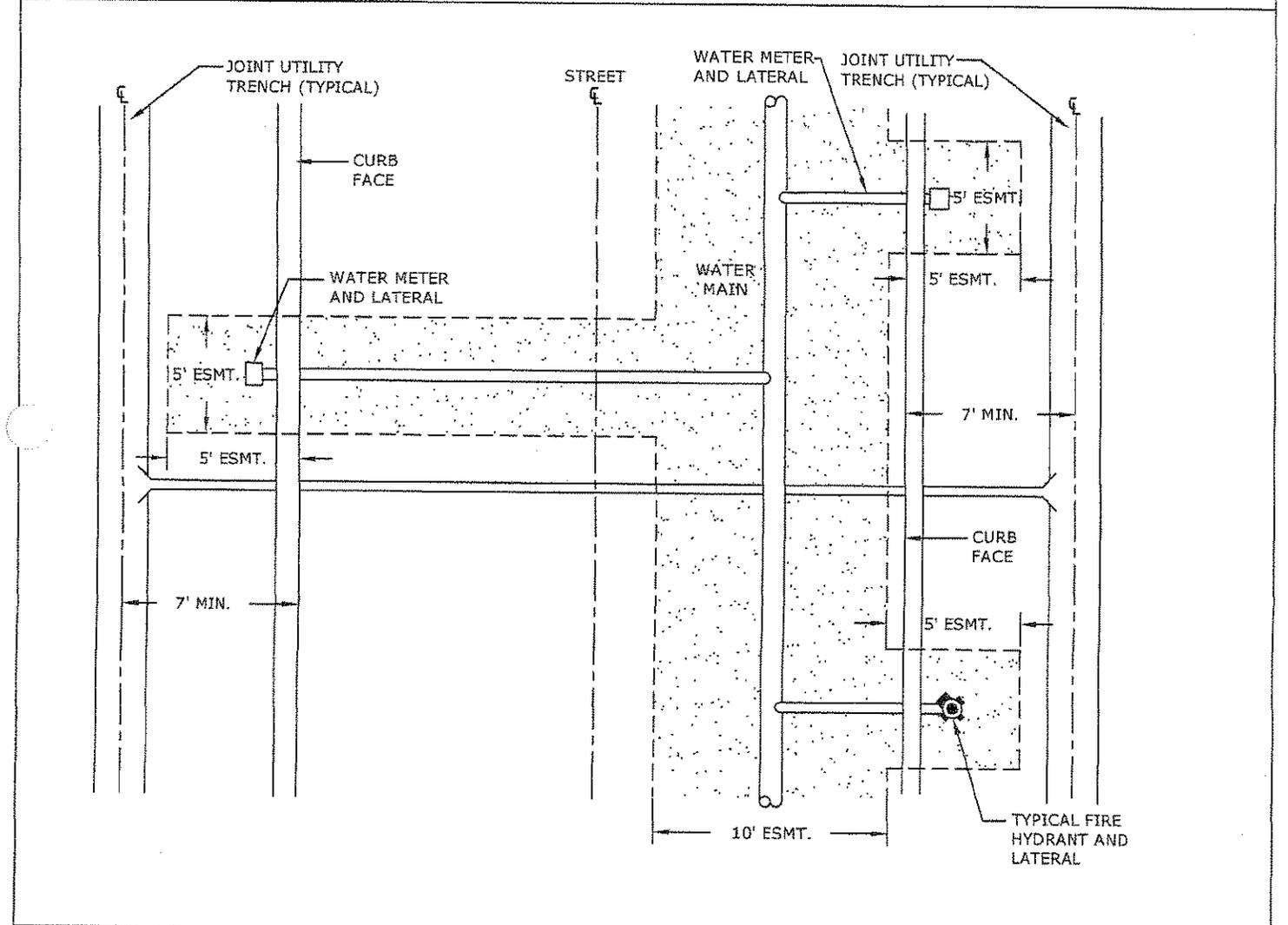
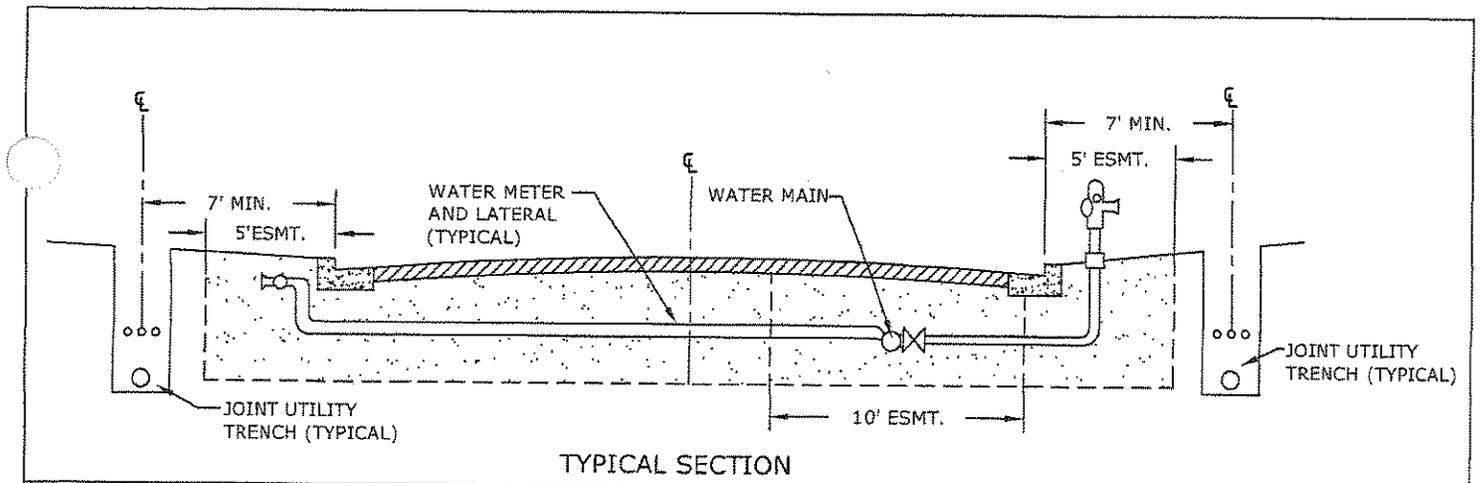
GENERAL NOTES:

1. EXTEND BOTH ENDS OF ENCASEMENT TO A POINT ONE INCH SHORT OF FIRST PIPE JOINT BEYOND LOCATIONS SPECIFIED ON PLAN.

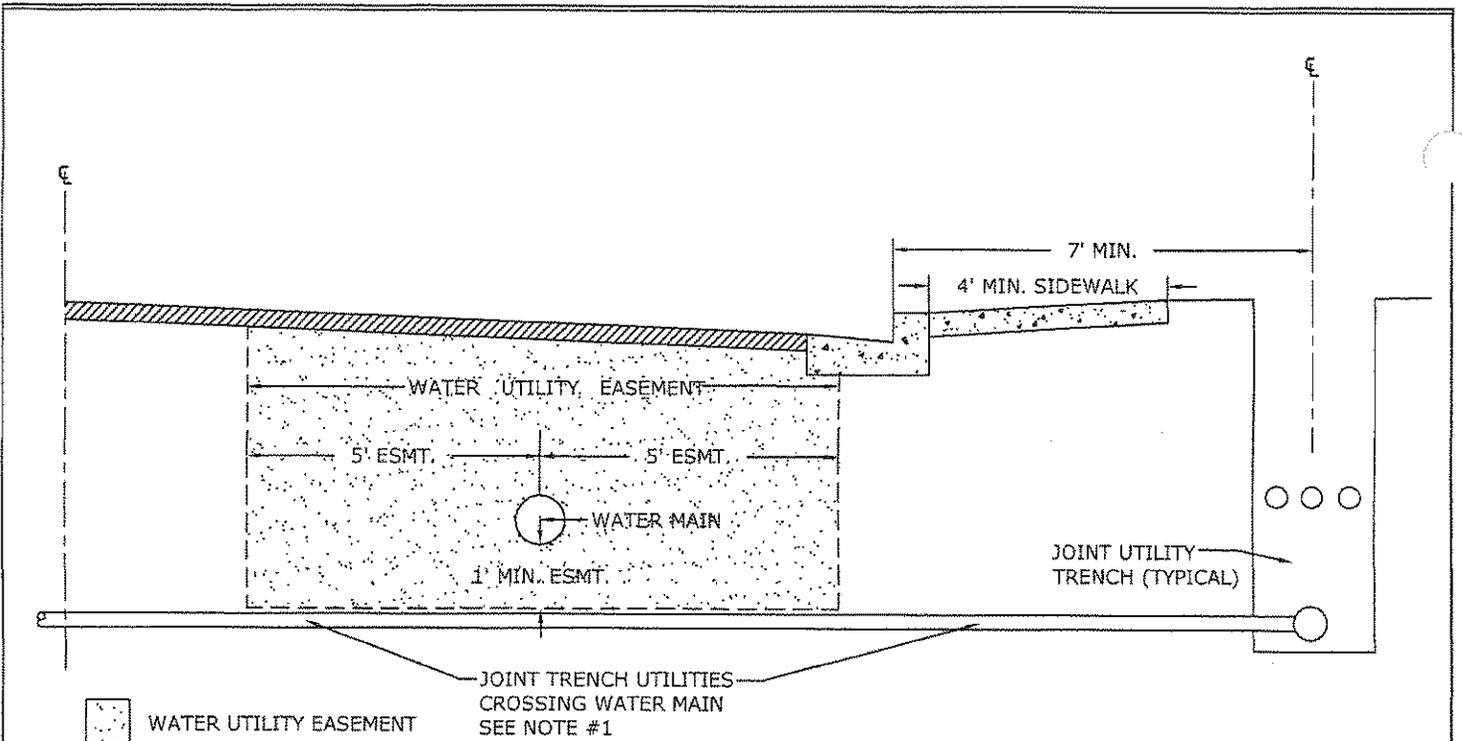


- 2. APPLY FORM OIL, THIN PLASTIC SHEET, OR OTHER ACCEPTABLE MATERIAL TO PIPE, TO PREVENT BOND BETWEEN PIPE AND CONCRETE.
- 3. USE CLASS 5C2500 CONCRETE FOR ALL CASES.

REVISION	DATE	UPLAND PUBLIC WATER DIVISION		DRAWING NUMBER
		PIPE ZONE		UPW-WD
		APPROVED: <i>Anthony M. Co</i>		W.25
NOT TO SCALE				



REVISION	DATE	UPLAND PUBLIC WATER DIVISION	
		DRAWING NUMBER	
		UPW-WD	
		EASEMENT ZONE AND JOINT TRENCH UTILITIES	
		W.26A	
NOT TO SCALE		APPROVED: <i>[Signature]</i>	DATE: 7/16/09



NOTES:

1. ALL UTILITIES* CROSSING A WATER MAIN OR LATERAL SHALL HAVE A MINIMUM SEPARATION OF 12 INCHES FROM THE BOTTOM OF THE WATER FACILITY TO THE TOP OF THE SHALLOWEST CONDUIT.
2. SPECIAL CONSTRUCTION SHALL BE REQUIRED AT EACH UTILITY CROSSING A WATER FACILITY IF THE REQUIREMENTS CANNOT BE MET.
3. SPECIAL CONSTRUCTION MAY INCLUDE A 12 INCH SEPARATION FROM THE WATER FACILITIES AND A CONCRETE EASEMENT AROUND ALL CONDUITS WITHIN THE EASEMENT ZONE, AS NECESSARY.
4. THE WATER DEPARTMENT SHALL BE NOTIFIED WHEN SUCH CROSSINGS ARE TO BE MADE. UTILITY CROSSINGS OF WATER FACILITIES REQUIRE INSPECTION BY THE WATER DEPARTMENT.

* UTILITIES DO NOT INCLUDE SEWER FACILITIES.
SEE WATER AND SEWER SPECIFICATIONS.

REVISION	DATE	UPLAND PUBLIC WATER DIVISION		DRAWING NUMBER
		EASEMENT ZONE AND JOINT TRENCH UTILITIES		UPW-WD
				W.26B
NOT TO SCALE		APPROVED: <i>[Signature]</i>	DATE: 7/16/09	

SPECIAL PROVISIONS
CONSTRUCTION MATERIALS

GENERAL: All material furnished shall be new and of recent manufacture and shall be completely suitable for the purpose intended. All materials shall be provided as specified, unless prior determination is obtained from the Assistant Public Works Director, or an approved equal.

PIPE: Small steel pipe 2 inches in diameter and smaller unless otherwise shown, shall be galvanized and conform to the requirements of the "Specifications for Black and Hot-Dipped Zinc-Coated (galvanized) Welded and Seamless Steel Pipe for Ordinary Uses" (ASTM Designation A120), and shall be standard weight unless otherwise shown. Fittings shall be of galvanized malleable iron, unless otherwise shown. All pipe bigger than 2 inches shall be Cement Mortar Lined & Cement Coated 10 gauge steel cylinder, bell and spigot ends with rubber gaskets A.W.W.A approved.

FIRE HYDRANTS: The Fire Hydrant Assemblies shall be Class 200 constructed as shown in Standard Drawing W.05 and in the locations shown on the construction drawings.

FLEXIBLE STEEL PIPE COUPLINGS: Flexible steel pipe couplings shall be Smith- Blair, Inc. Type 400 Series Steel Couplings or approved equal.

FLANGED COUPLING ADAPTERS: Flanged Coupling Adapters shall be Smith-Blair, Inc. Type 900 Series Flanged Coupling Adapters or approved equal.

SADDLES: Saddles shall be Smith-Blair, Inc. Type 900 Series or approved equal.

FLANGES: Materials, dimensions and drilling of flanges for pipe and fittings shall be in accordance with A.W.W.A designation C207-94 D ring Flanges. All flanges shall be attached to the pipe with the bolt holes straddling the vertical axis of the pipe.

GASKETS FOR FLANGED JOINTS: Flanged joints shall be provided with 1/16 inch thick full face rubber gaskets or approved equal.

MANHOLE FRAMES AND COVERS: Manhole frames and covers shall be Alhambra Foundry Co. No. A-1170 with 24-inch clear opening or approved equal. The manhole cover shall be plainly marked "WATER".

VALVES SLEEVES AND CAPS: Sleeves constructed of 6-inch P.V.C. Schedule 40 and galvanized slip sleeve shall provide access from the street or ground surface to the gate valve as shown on Standard Drawing No. W.09. The valve sleeve shall be cut and positioned so as to provide proper clearance between the lower end of the sleeve and the valve housing. The valve sleeve within the paved roadway shall be capped by means of a 6-inch cast iron pavement cap. The pavement cap shall be plainly marked "WATER".

PRE-CAST VAULTS: Pre-Cast Concrete Vaults shall be Jenson Pre-Cast Manufacture, size and dimensions will vary.

VALVES-GENERAL:

- (A) The Contractor shall furnish and install all valves shown. All valves shall be new and of recent manufacture and A.W.W.A. approved.
- (B) The flanges of valves may be either raised or plain faced. Flanges of all valves shall be faced and drilled to 125-pound American Standard Dimensions.
- (C) Each valve body shall be tested under a test pressure equal to twice its design water working pressure.
- (D) The Contractor shall furnish to the Engineer prior to purchase, sufficient literature, catalog data and drawings to assure that the valves proposed to be furnished meet all requirements of these specifications.

AIR-VACUUM AND AIR RELEASE VALVES: Air vacuum and air release valves shall be of the sizes shown and shall have screwed ends. Bodies shall be of high strength cast iron, and the float, seat, and all moving parts shall be constructed of Type 18-8 stainless steel. Seat washers and gaskets shall be of a material insuring water tightness with a minimum of maintenance. Air – Vacuum and Air Release Valves shall be designed for a working pressure of 200 PSI.

SMALL VALVES: Valves 2 inch and smaller, unless otherwise shown, shall be all bronze with screwed ends designed for a water working pressure of 200 psi and be A.W.W.A.

SERVICE LATERAL VALVES: Service lateral valves and piping shall be provided where shown on the drawings. The service lateral assemblies shall be constructed as shown on Standard Drawing W.01 and W.03

BUTTERFLY VALVES: Butterfly Valves shall conform to the "Standard Specifications for Gate Valves for Ordinary Water Service" (A.W.W.A. C-504-94). The valves shall be designed for the specified Class and shall be furnished complete with manual operator and worm gear reducer totally enclosed in a gear case, unless specified otherwise on the drawings. On North and South Water Mains the operating nut shall be installed on the west side of the Water Main and on the East and West Water Mains the operating nut shall be installed on the north side of the main.

RESILIENT WEDGE GATE VALVES: Resilient Wedge Gate Valves shall be encapsulated solid wedge with sealing mechanism in accordance with A.W.W.A. C-509 or C-515. The valve body shall be cast iron or ductile iron. Gate valves shall be of the non-rising stem type with "O" rings. When both "O" rings are located above the thrust collar the bearing area shall be fusion-bonded epoxy coated and contain a thermoplastic washer to reduce friction.

PLUG VALVES: Lubricated Plug Valves shall be pressure lubricated tapered plug type or approved equal. The valve bodies and plugs shall be constructed of cast iron and shall have smooth finished water passages. The lubrication system shall be designed to provide for application of the lubricant through a

check protected passage in the valve stem. Provision shall be made by ducts and grooves to insure the maintenance of a film of lubricant between all contact surfaces of moving parts. Suitable gaskets and packing shall be provided to insure that the valve is water tight at all times and to prevent escape of water or lubricant. The valves shall operate smoothly and easily after lubrication. All valves shall be packed with the proper lubricant. Valves shall have flanged ends and all valves shall open with counterclockwise turn. 14 inch valves and larger shall be of the straightway short pattern type and shall be designed for and equipped with worm gearing and side hand wheel. 14 inch and larger lubricated Plug Valves shall be Nordstrom Figure 4149, 4149-1/2, 4149-1/4, ANSI Class 150 or approved equal. Lubricated Plug Valves 12 inches or smaller in diameter shall be Nordstrom Figure 1949, 1949-1/2 ANSI Class 150 or approved equal.

PRESSURE RELIEF VALVES: Pressure Relief Valves shall be of the modified globe type operated by an automatically controlled diaphragm. The valve shall be designed to automatically maintain a predetermined maximum line pressure by opening and discharging to atmosphere. The valve shall be designed for fast opening and slow closing to prevent surges. Valve Discs shall be non metallic and renewable. Valve seats shall be bronze and replaceable. All shafts and stems shall be constructed of corrosion resistant metal. The diaphragm shall be constructed of reinforced synthetic rubber. The valves shall be Cla-Val Company's Pressure Relief Valve Model 50-01 and 650-01 or approved equal.

PUMP CONTROL VALVES: Pump Control Valves shall be of the modified globe type operated by an automatically controlled diaphragm. The valves shall be designed to eliminate booster pump starting and stopping pressure surges by automatically opening at controlled rate after the pump starts and automatically closing at controlled rate before the pump stops. In the event of a power failure the valve shall close quickly at the moment flow stops. Valve discs shall be non metallic and renewable. Valve seats shall be bronze and shall be replaceable. All shafts and stems shall be constructed of corrosion resistant metal. The diaphragm shall be constructed of reinforced synthetic rubber. Included with each valve shall be all solenoids, micro switches, strainers and other accessories necessary to the complete operation of the valves. All electrical equipment shall be designed for all weather outdoor service, and shall operate on 480 volts A.C. The valve shall be Cla-Val Company's Booster Pump Control Valve 60 Series or approved equal.

**SPECIAL PROVISIONS
CONSTRUCTION METHODS**

LAYING AND JOINTING CEMENT LINED AND MORTAR COATED PIPE

- (A) **LAYING:** Trenches shall be in a reasonably dry condition when the pipe is laid. Necessary facilities shall be provided for lowering and properly placing the pipe sections in the trench without damage. All handling of piping shall be done with fabric type slings which will not damage the coating of the pipe section. The slings shall bear uniformly against the pipe. When not being handled, all pipe shall be supported on timber cradles, sand bags or mounds of earth. The pipe shall be laid carefully to the lines and grades given and the sections shall be closely jointed to form a smooth flow line. Immediately before placing each section of pipe in final position for jointing, the bedding for the pipe shall be checked for firmness and uniformity of surface.
- (B) **JOINTING:** The rubber gasket joint shall be made by properly lubricating with a suitable vegetable compound soap, the endless rubber ring gasket before it is placed in the groove at the spigot end. The gasket shall be stretched over the spigot end of the pipe and carefully seated in the groove. The gasket shall not be twisted, rolled, cut, crimped or otherwise injured or forced out of position during the closure of the joints. A feeler gauge shall be used to check the position of the rubber gasket after the joint has been telescoped. For Pipe 20 inches and larger 6" diameter hand holes shall be installed on opposite sides of the pipe where any offsets or angles are installed. Hand Holes shall be 6" Black Weld on Couplings. After pipe is mortared, 6" Galvanized Plugs shall be installed and properly cemented over to the satisfaction of the Water Utility Inspector For pipe 20 inches and smaller the spigot end of the pipe shall be daubed with mortar containing 1 part lumnite cement to not more than 3 parts of sand, then inserted into the bell and forced to the bottom of the bell. Excess mortar on the inside shall be swabbed out. After the pipe has been laid, but before backfill has been completed, the outside annular space between pipe sections shall be completely filled with grout. The grout shall be poured in such a manner that all exposed portions of the metal joint shall be completely protected with cement mortar. Grout used on the outside of the joints shall be a mixture of 1 part of cement to 3 parts of sand, and shall be sufficiently fluid to permit it to be poured into the joint space. The outside mortar joints shall be properly formed by use of heavy duty diapers as manufactured by the Mar-Mac Manufacturing Co., McBee, South Carolina, or approved equal.
- (C) **FIELD WELDING:** At all changes in direction and elsewhere as called for on the drawings, the bell end shall be circumferentially welded to the spigot end of the adjoining pipe. The weld shall be continuous and ample bell holes shall be dug to permit proper welding. The field welds between the bell and spigot ends shall be made in 2 or more passes so as to build up a fillet weld having a minimum thickness of 1/4 inch. Prior to welding those joints designated for welding, the joints shall be made up in accordance with (B) above, except that at the Contractor's option the rubber gasket may be omitted. Such joints shall be inspected and approved by the City of Upland Water Utility Inspector before the coating is placed around the outside of the joint.
- (D) **CLOSURE PIECES:** Where butt straps or closure pieces are used, the exterior of the closure pieces shall be given a coating at least equal to that on the pipe, or may be given a protective

coating in accordance with the requirements of (B) above. Where butt straps or closure pieces are used, the interior of the closure pieces shall be given a lining of mortar containing 1 part lumnite cement to not more than 3 parts of sand. The completed hand lining shall provide a smooth transition surface across the closure piece.

CONNECTIONS TO EXISTING FACILITIES: The contractor shall make all the connections to existing pipelines as shown and all connections, 8 inches and smaller shall be made by Hot Tap method unless otherwise approved by the Water Utility Inspector. Dry connections to existing facilities shall be made at times which will cause the least inconvenience to the water consumer, and shall be planned in such a manner that the duration of any shutdown will be kept to a minimum. The Contractor shall notify the Water Utility Inspector at least 3 days in advance of the date on which he proposes to begin to make connection to the existing facilities. It is the Contractors responsibility to give any Residences or Businesses affected by the shutdown a 24 hour written notice. The Date, duration of the shutdown and a brief description of the work being done shall be written on the notice. Notices will be provided by the City of Upland Water Division. When a connection to an existing main is made, about 2 ounces of Calcium Hypochlorite shall be placed in the pipe at each point where the existing main is cut. All new pipe and fittings at such connections shall be swabbed internally with an approved chlorine solution. All connections shall be made in the presence of the Water Utility Inspector. After the new main is complete, it shall be sterilized and tested, before the valve, between the new main and old main is opened.

INSTALLATION OF VALVES: All buried valves shall have the operating nuts in a vertical position except as otherwise noted and the valve sleeves shall be centered over the operating nuts and shall be set plumb. Valves shall be provided with a stem extension where the depth to operator exceeds 5 feet from finished grade. Clearance must be provided between the vane seal of butterfly valves when in the full open position and the adjacent connections. This may require chamfering of the pipe mortar lining and/or other measures. Reducing flanges may not be connected to butterfly valves.

DISINFECTING PIPELINES

- (A) **GENERAL:** Disinfection shall be accomplished by chlorination. Chlorine residuals must be tested and found satisfactory, before the lines are tested for leakage.
- (B) **CHLORINATION PROCESS:** Chlorine Tablets or Powdered Chlorine shall be applied to each section of pipe as the pipe is installed. Chlorine gas injection may also be used. The amount of chlorine applied shall provide a minimum of 50 milligrams per liter after 24 hours in a water chlorine solution. The pipe ends shall have valves or sealed at the end of each work day, until the pipe system is complete.

Newly constructed Water Mains connecting to existing facilities shall have a Steel Test Plate installed between the valve and the new section of water pipe that was installed. 1 inch Chlorination Ports shall be installed at each point of connection, on the downstream side of the newly constructed Water Main as shown on UPW-WD W.06. The Contractor may proceed with the chlorination process and Hydrostatic Test once the above mentioned has been inspected by the Water Utility Inspector. The new main and laterals shall be loaded slowly, so that all internal piping is exposed to the chlorine water solution. A schedule of loading procedures shall be supplied to the Water Division or Inspector.

It shall be the responsibility of the Contractor or Developer to supply water to the newly installed water main for Disinfection and Hydrostatic purposes. The Contractor or Developer will take special precautions to ensure that no highly chlorinated water backpressures into the existing Domestic Distribution System. The use of A.W.W.A. approved Backflow Devices are to be used when the Contractor is drawing water from an existing source of water (Fire Hydrants or Service Laterals) to fill the new main with water. If for any reason the contractor or Developer is unable to get water to the new main, then special provisions will be made and coordinated with the Water Division. All valves shall remain closed tight, until results of the bacteria testing processes are confirmed to show a Negative Bacteria count for each sample taken. If the sample(s) show a positive count, the Disinfection process, and Bacteria Analysis shall be repeated.

- (C) **RETENTION PERIOD:** Chlorinated water shall be retained in the pipeline long enough to destroy all non-spore forming bacteria. This period shall be at least 24 hours. After the chlorine treated water has been retained for the required time the chlorine residual at the pipe extremities, and at other representative points shall be at least 50 milligrams per liter. The pipeline shall be thoroughly flushed of all chlorinated water.
- (D) **BACTERIA ANALYSIS:** The Contractor or Developer shall employ the services of a Certified Laboratory to collect water samples for bacterial analysis. No samples shall be taken by the Developer or Contractor and then transported to the Laboratory for analysis. The number of samples and locations of the samples for Bacterial Analysis shall be determined by the Water Division or Inspector.
- (E) **REMOVAL OF HIGHLY CHLORINATED WATER:** At no time shall the Contractor or Developer discharge any highly chlorinated water into the Storm Drain. High solutions of chlorinated water shall be dumped into the City's Sewer System or spread onto a vacant field or lot where there is no possibility of the water contaminating the Storm Drain. Special precautions shall be made when discharging the chlorinated water into the Sewer Line. Backflow prevention devices will be used to prevent cross-contamination from the Sewer Line.
- (F) **CHARGING SYSTEM FOR SERVICE:** The Test Plates shall be removed, Chlorination Ports plugged and the connecting valve(s) shall be fully opened to Provide the maximum flow required. All Fire Hydrant valves shall be fully opened.

FIELD APPLICATION OF PROTECTIVE COATING: Except as otherwise shown all buried valves, flanged joints, buried steel piping in the Fire Hydrant assemblies and other buried items which are not galvanized or mortar coated shall be thoroughly cleaned and given 2 coats of Carboline, Bit mastic 50 Black 0900, Batch # 0D8255Y or approved equal. The dry film thickness shall be at least 1/8 inch over all surfaces. The coating shall be applied strictly in accordance with the manufacturer's recommendations.

TESTING PIPELINES

(A) **GENERAL:** The Contractor shall furnish all equipment, labor and material, exclusive of water, for testing and disinfecting the pipelines. Water used for testing and disinfecting will be furnished by the Agency but the Contractor shall provide the necessary means to deliver water from the nearest available connection to the points of use. All tests of pressure piping shall be made in the presence of the Water Utility Inspector. All pipelines and piping shall be thoroughly flushed out with water prior to testing.

(B) **TESTING:** The Contractor shall test the pipeline either in sections or as a unit before any resurfacing is done, provided however, that resurfacing at intersections may be done prior to testing. The pipeline shall not be tested before the mortar lining and coating on the entire pipe lengths in the line have attained an age of 14 days. The test shall be made by closing valves when available or by placing temporary bulk heads in the pipe and filling the line slowly with water. Care shall be used to see that all air vents are open during the filling. After the line or section thereof has been completely filled, it shall be allowed to stand under a slight pressure for a sufficient length of time to allow the mortar lining to absorb what water it will and to allow the escape of air from any air pockets. Steel Test Plates shall be installed to UPW-WD, W.06 before the Hydrostatic Test is performed. During this period, the bulkheads, valves, and connections shall be examined for leaks. If any are found they shall be stopped, or in case of leakage through valves in the main line or through bulkheads, provisions shall be made for measuring such leakage during the test. The test shall consist of holding the test pressure on each section of the line between valves or bulkheads for a period of 2 hours. The test pressure at the lowest point in the line, or in the section of line being tested, shall be 200 psi. The water necessary to maintain this pressure shall be measured through a meter or by other means satisfactory to the Water Utility Inspector. The leakage shall be considered the amount of water entering the pipeline during the test, less the measured leakage through valves and bulkheads. This leakage shall not exceed 25 gallons per inch of diameter per mile per 24 hours. Any noticeable leaks shall be stopped and any defective pipe shall be replaced with new sections.

**SPECIAL PROVISIONS
CONSTRUCTION METHODS
SEWER & WATER SPECIFICATIONS**

All water lines installed in the City of Upland, and within the boundaries of the City's influence shall be installed in accordance with the State Health Department's guidelines, and meet all City of Upland Water Division Specifications for all sewer main, sewer laterals crossings and separations.

(1) Horizontal Separation for Water and Sewer Mains. Water mains shall be installed at least:

- A. Ten feet horizontally from and 1 foot higher than sanitary sewers located parallel to the main,
- B. One foot higher than sanitary sewers crossing the main,
- C. and ten feet, and preferably 25 feet, horizontally from sewage leach fields, cesspools, seepage pits and septic tanks.

Special distances specified in 1 shall be measured from the nearest edges of the facilities.

(2) Where the requirements cannot be met due to topography, inadequate right-of-way or Easements or conflicts with other specifications, lesser separation is permissible if:

- A. The water main and the sewer are located as far apart as feasible within the Conditions listed above.
- B. The water main and the sewer are not installed within the same trench.
- C. The water main is appropriately constructed to prevent contamination of the water in the main by sewer leakage.

(3) Vertical Separation for Water and Sewer Mains

- A. Where a water main line crosses a sewer main line, there shall be a 3 foot separation between the two lines.
- B. Where the vertical separation between a water main and a sewer main is more than 2 feet, but less than 3 feet, the sewer line shall be Cast Iron, and if a water main joint is within 10 feet of the Cast Iron, the water main joint shall be welded solid.
- C. Where the vertical separation between a water main and a sewer main is more than 1 foot, but less than 2 feet, the sewer line shall be incased with Cast Iron or cement with ½ inch rebar.

- D. Under No circumstances shall a water main be installed under a sewer main line, and no water main shall be installed in the same ditch line with a sewer main.

(4) Vertical Separation for Water Mains and Sewer Laterals

- A. The vertical separation between a water main and sewer laterals shall meet the same requirements as the vertical separation between the water main and sewer main lines.

(5) Vertical and Horizontal Separation for Water Services and Sewer Laterals

- A. A water service lateral shall be installed at least 3 feet away from a sewer lateral unless the terrain does not permit then it is up to the Inspector on the job site to determine the closest separation that is to be allowed on the laterals. The water lateral will not be allowed to be installed in the same ditch line with sewer lateral, under no circumstances.

GENERAL PROVISIONS

SPECIFICATIONS: All materials supplied and all work performed shall be in accordance with the Standard Specifications For Public Works Construction, as adopted by the City of Upland, except as otherwise specified in these General Provisions, the Special provisions, on the Construction Drawings or on the Standard Drawings. Copies of the Specifications for the Construction of Water Mains and Appurtenances and current supplements may be purchased at the office of the City Engineer, Water Division Office or online at www.upland.ca.us.

ORDINANCES: Connections to the City mains for water service to parcels of land may not be made until the requirements of Ordinance 615, relating to the payment of a water connection fee, and the requirements of Ordinance 643, relating to the sale of water stock to the City, have been satisfied.

PERMITS AND FEES: All applicable City of Upland construction permits and inspection fees including a Fire Hydrant use permit fee, or deposit for Fire Hydrant Meter will be required prior to commencing with the construction of the water facilities.

CONSTRUCTION DRAWINGS: All drawings of the water systems facilities proposed to be constructed must be submitted to the Engineering Division, and routed to the Water Division, for approval, and are not valid until signed and approved, by the Design Engineer, the Fire Department, the Assistant P.W. Director of Utilities the Engineering Division and the Public Works Director. Drawings must show the profile view, with elevations proposed, as well as the plan view of the system. The scale of the plan view shall be 1"= 40'. The scale of the profile view shall be 1"= 40' horizontal and 1"= 4' vertical. The drawing sheet size shall be 24"x 36" unless approved otherwise by the Engineer. Electronic plan and profile sheets are available from the Development Service section of the Engineering Division.

STANDARD DRAWING: Copies of the Standard Drawings applicable to water mains and appurtenant works may be obtained from Development Services, Engineering Division or found on the City's web site.

EASEMENTS: All water system facilities located on private property and which is to be part of the public water system must be constructed in easements deeded to the City of Upland. A fully dimensioned drawing showing the proposed easements as well as a legal description of the easements must be furnished to the City of Upland for recording. In addition, a small size (approximately 11.5"x 15") reproducible drawing of the proposed easements, with dimensions shown, will be required for use as an exhibit to supplement the other easement documents.

MAIN EASEMENT WIDTH: Water Main Easement Widths shall be a minimum of 15 ft. for water pipe buried at 36 inches. Water Pipe buried deeper or less than 36 inches, easement widths shall be determined by the Design Engineer and approved by the City of Upland Deputy Director of Utilities.