

VALLEY OF THE MOON WATER DISTRICT
STANDARD PLANS
REVISED 01/2015

VALLEY OF THE MOON WATER DISTRICT
WATER MAIN CONSTRUCTION NOTES

1. THE EXISTING UNDERGROUND UTILITIES ARE PLOTTED FROM AVAILABLE RECORDS. THE CONTRACTOR SHALL PROTECT THESE EXISTING UTILITIES AND SHALL DO NO EXCAVATION UNTIL ALL UTILITY AGENCIES HAVE MARKED THEIR FACILITIES IN THE FIELD. CALL UNDERGROUND SERVICE ALERT (48 HOURS NOTICE REQUIRED) (800) 227-2600 OR 811.
2. THE LOCATIONS OF ALL EXISTING UTILITIES OR OTHER UNDERGROUND OBSTRUCTIONS SHOWN ON THE PLANS ARE APPROXIMATE ONLY AND SHOULD NOT BE TAKEN AS FINAL OR ALL INCLUSIVE. THE CONTRACTOR IS CAUTIONED THAT THE PLANS MAY NOT INCLUDE THE LOCATION OF ALL UNDERGROUND OBSTRUCTIONS WHICH MAY BE ENCOUNTERED.
3. PRIOR TO CONSTRUCTION OF ANY UNDERGROUND UTILITIES, INCLUDING WATER, SEWER AND STORM DRAINS, THE CONTRACTOR SHALL EXPOSE ALL EXISTING UTILITY FACILITIES WHICH ARE TO BE CONNECTED TO OR CROSSED AND THE ENGINEER SHALL VERIFY THEIR GRADE.
4. THE CONTRACTOR SHALL NOT OPERATE ANY MAIN LINE WATER VALVES. SUCH VALVES SHALL BE OPERATED BY THE VALLEY OF THE MOON WATER DISTRICT PERSONNEL ONLY OR AS DIRECTED.
5. CONTRACTOR SHALL OBTAIN AN ENCROACHMENT PERMIT FROM THE COUNTY OF SONOMA AND PROVIDE THE VALLEY OF THE MOON WATER DISTRICT WITH AN APPROVED COPY, INCLUDING ALL OTHER RELATED INFORMATION, BEFORE ANY WATER FACILITY WORK SHALL COMMENCE.
6. ALL WATER SYSTEM WORK SHALL CONFORM TO THE STANDARDS OF THE VALLEY OF THE MOON WATER DISTRICT. CONTRACTOR SHALL CONTACT THE VALLEY OF THE MOON WATER DISTRICT (996-1037) 72 HOURS PRIOR TO COMMENCEMENT OF CONSTRUCTION TO ARRANGE FOR A PRE-CONSTRUCTION MEETING AND INSPECTION, AS ALL WATER MAIN CONSTRUCTION MUST BE INSPECTED BY THE VALLEY OF THE MOON WATER DISTRICT. IN THE EVENT OF ANY BREAKS IN THE CONSTRUCTION PROCESS, CONTRACTOR SHALL CONTACT VALLEY OF THE MOON WATER DISTRICT 24 HOURS PRIOR TO RECOMMENCEMENT OF CONSTRUCTION.
7. CONSTRUCTION OF WATER FACILITIES SHALL CONFORM TO THE STANDARD SPECIFICATIONS OF THE VALLEY OF THE MOON WATER DISTRICT, INCLUDING STANDARD PLANS.
8. CONTRACTOR, WHEN APPLYING FOR ENCROACHMENT PERMIT WITH CALTRANS, SHALL INDICATE ON THE PERMIT THAT THE VALLEY OF THE MOON WATER DISTRICT WILL BE OWNER OF THE WATER FACILITIES AFTER THEY ARE CONVEYED TO THE DISTRICT.
9. CONTRACTOR SHALL OBTAIN ALL PERMITS AND PAY ALL FEES TO ALL RELATED AGENCIES PRIOR TO COMMENCEMENT OF ANY WORK.

10. WATER CONSTRUCTION, TESTING, CLEANING, AND DISINFECTION SHALL BE SUBJECT TO INSPECTION AND APPROVAL OF THE VALLEY OF THE MOON WATER DISTRICT. PRESSURE / LEAKAGE TESTS SHALL NOT BE MADE UNTIL A MINIMUM 72 HOURS AFTER THE LAST THRUST BLOCK HAS BEEN POURED.
11. ALL FLUSHING, TESTING AND DISINFECTION OF WATER MAINS SHALL BE COMPLETED PRIOR TO CONNECTING TO EXISTING WATER MAINS. THE CONTRACTOR SHALL DISINFECT THE NEWLY INSTALLED PIPELINE BY USE OF HTH TABLETS. TABLETS SHALL BE ATTACHED TO THE CROWN OF THE PIPE AT EACH JOINT WITH TYTON PIPE LUBRICANT, OR EQUAL, AS FOLLOWS:

Pipe Size	# of Tablets	Pipe Size	# of Tablets
4"	1	16"	8
6"	1	20"	12
8"	2	24"	18
12"	4	30"+	As approved

THE PIPELINE SHALL BE SLOWLY FILLED TO ALLOW PROPER CIRCULATION OF THE HTH AND THE SOLUTION SHALL BE ALLOWED TO STAND FOR A MINIMUM OF TWENTY-FOUR (24) HOURS.

CONNECTION IS TO BE MADE ONLY ON APPROVAL TO THE VALLEY OF THE MOON WATER DISTRICT.

12. CONTRACTOR SHALL PROVIDE VALLEY OF THE MOON WATER DISTRICT REPRESENTATIVES WITH A VALID COPY OF A "CALIFORNIA DIVISION OF INDUSTRIAL SAFETY PERMIT" FOR THE PROJECT.
13. CONSTRUCTION OF WATER FACILITIES SHALL BE IN COMPLIANCE WITH BASIC SEPARATION STANDARDS "CALIFORNIA WATER WORKS STANDARDS" CONTAINED IN SECTION 64630, TITLE 22, CALIFORNIA ADMINISTRATIVE CODE.
14. MINIMUM DEPTH OF COVER FROM FINISHED GRADE, EXCEPT AS NOTED ON PLANS, SHALL BE: 36" FOR 6" MAINS, 36" FOR 8" MAINS, 44" FOR 12" MAINS, AND 48" FOR 14" AND LARGER MAINS. 4" AND 10" MAINS MUST BE SPECIFICALLY APPROVED BY THE VALLEY OF THE MOON WATER DISTRICT. 6" AND 8" MAIN LINE VALVES SHALL BE RESILIENT SEAT GATE VALVES WITH TOTALLY ENCAPSULATED GATE. 12" AND LARGER MAIN LINE VALVES SHALL BE BUTTERFLY VALVES. BLOW OFF SPECIFIED ON IMPROVEMENT PLANS.
15. NO. 12 THW OR RHW SOLID COPPER WIRE SHALL BE LAID ON TOP OF AND ALONG ENTIRE LENGTH OF ALL NON METALLIC MAINS, AND SHALL BE EXTENDED TO THE SURFACE AT ALL VALVE LOCATIONS, BLOWOFFS AND METER BOXES SUFFICIENTLY FOR LOCATOR EQUIPMENT TO BE ATTACHED. WIRE TO BE AFFIXED TO TOP OF PIPE SO AS NOT TO BE DISPLACED BY BACKFILLING PROCEDURE. AFFIX THE WIRE TO THE TOP OF THE PIPE WITH DUCT TAPE AT

APPROXIMATELY 5 FEET INTERVALS. SPLICE CONNECTIONS TO BE MADE COPPER OR BRASS SPLIT BOLTS, WRAPPED WITH ELECTRICAL TAPE.

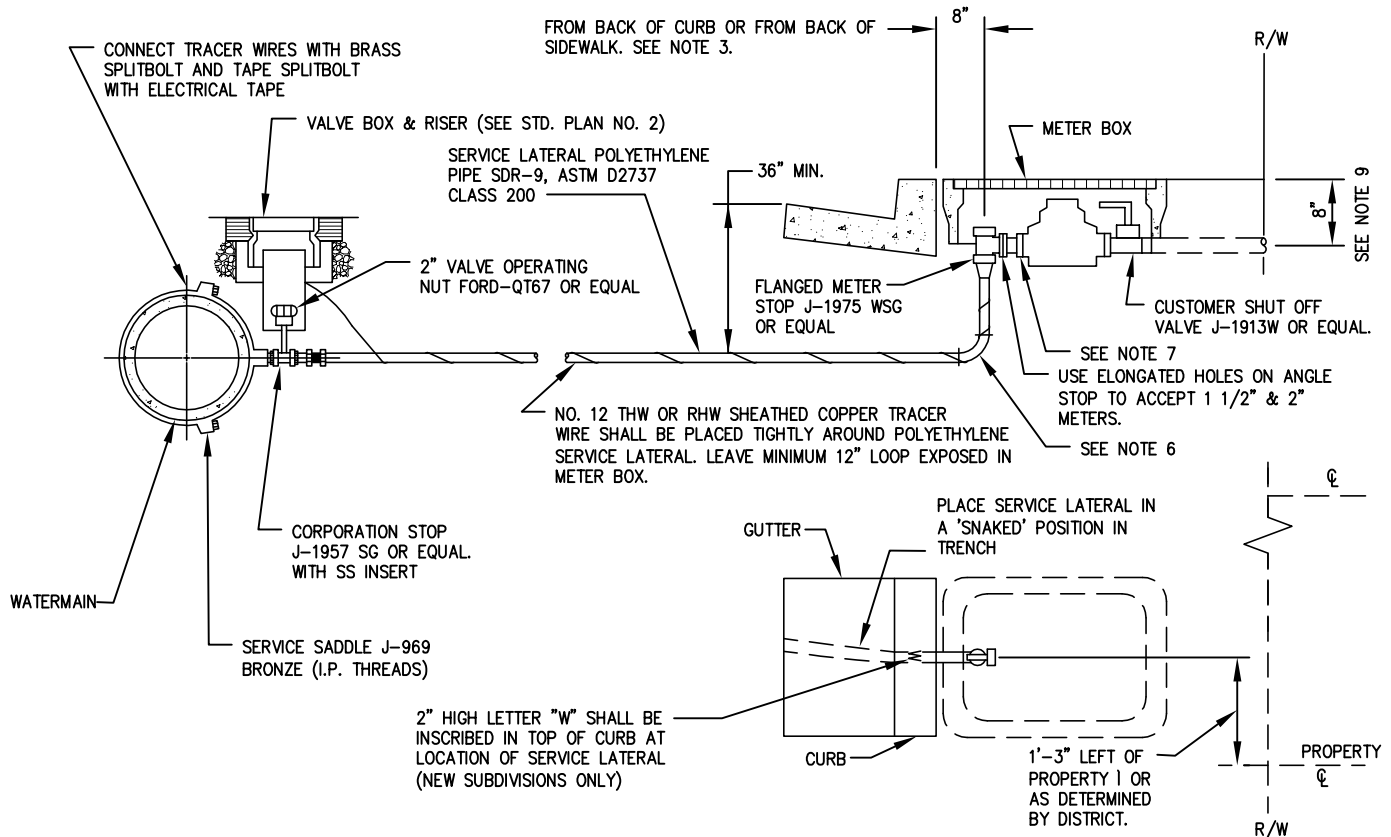
16. ALL EXPOSED BOLTS INSTALLED UNDERGROUND SHALL BE STAINLESS STEEL OR STEEL COATED WITH A FLUOROPLOYMER COATING AND HEAT TREATED (MUELLER TRIPAC 2000 BLUE COATING SYSTEM). THIS INCLUDES, BUT IS NOT LIMITED TO, FLANGE AND FLEXIBLE COUPLING BOLTS.
17. THERE SHALL BE NO UNMETERED CONNECTIONS TO THE VALLEY OF THE MOON WATER DISTRICT SYSTEM INCLUDING CONNECTIONS BYPASSING METER FOR TESTING ON-SITE PLUMBING OR FOR OBTAINING CONSTRUCTION WATER. PRESSURE TESTING AGAINST VALVES WILL ALSO NOT BE ALLOWED. WHEN A SUBDIVISION WATER MAIN HAS BEEN ACCEPTED AND TIED-IN, THE INDIVIDUAL CURB STOPS WILL BE LOCKED OFF WITH CABLE TIES. CUTTING OFF OR TAMPERING WITH THE CABLE TIES WILL CONSTITUTE A STRAIGHT TIE-IN CONNECTION. SUCH CONNECTIONS SHALL BE SEVERED BY THE DISTRICT AND WILL RESULT IN PENALTIES INCLUDING PAYMENT OF FINES AND ESTIMATED WATER USAGE FEES.
18. SERVICE LATERALS OTHER THAN THOSE SHOWN OR NOTED ON THE PLANS SHALL NOT BE INSTALLED PRIOR TO OBTAINING DISTRICT APPROVAL.
19. WATER AND SEWER SERVICE LATERALS SHALL BE SEPARATED HORIZONTALLY BY A MINIMUM OF 5 FEET.
20. METER MANIFOLDS MUST BE DETAILED AND APPROVED BY THE DISTRICT. IN GENERAL, MANIFOLDS WHERE ALL FITTINGS ARE 2" OR LESS, SHALL BE CONSTRUCTED FROM THREADED BRASS PIPE AND FITTINGS FROM THE END OF THE SERVICE LATERAL TO THE METER CONNECTION. NO PLASTIC PIPE SHALL BE USED IN CONSTRUCTION MANIFOLDS OF ANY SIZE. NO MORE THAN SIX METERS MAY BE MANIFOLDED OFF A SINGLE WATER SERVICE LATERAL, WITH NO MORE THAN 3 ON EITHER SIDE OF THE SERVICE.
21. ALL METER BOXES, VAULTS AND PITS SHALL BE BEDDED ON 3" MINIMUM THICK, 3/4" DRAIN ROCK BED AGAINST COMPACTED OR UNDISTURBED BASE. THE GRAVEL BED SHALL EXTEND TO 4" MINIMUM BEYOND ALL SIDES OF THE METER BOX. BOX SHALL BE SET FLUSH WITH TOP OF CURB, SIDEWALK OR GROUND, WHICHEVER IS APPLICABLE. LOT NUMBERS MUST BE NOTED ON TOP SIDE OF METER BOX WITH PERMANENT MARKING PEN.
22. CONTRACTOR AGREES THAT HE SHALL ASSUME SOLE AND COMPLETE RESPONSIBILITY FOR JOB SITE CONDITIONS DURING THE COURSE OF CONSTRUCTION OF THIS PROJECT, INCLUDING SAFETY OF ALL PERSONS AND PROPERTY; THAT THIS REQUIREMENT SHALL APPLY CONTINUOUSLY AND SHALL NOT BE LIMITED TO NORMAL WORKING HOURS, AND THAT THE CONTRACTOR SHALL DEFEND, INDEMNIFY AND HOLD THE DISTRICT AND THE ENGINEER HARMLESS FROM ANY AND ALL LIABILITY, REAL OR ALLEGED, IN CONNECTION WITH THE PERFORMANCE OF WORK ON THE PROJECT, EXCEPTING FOR LIABILITY ARISING FROM THE SOLE NEGLIGENCE OF THE DISTRICT OF THE ENGINEER.

23. TREES SHALL NOT BE REMOVED, UNLESS OTHERWISE SHOWN, WITHOUT AUTHORIZATION BY THE DISTRICT. ROOTS LARGER THAN 2 INCHES IN DIAMETER SHALL NOT BE CUT; TUNNELING UNDER LARGE ROOTS MAY BE REQUIRED. DAMAGE TO LIMBS, TRUNKS OR ROOTS SHALL BE REPAIRED BY QUALIFIED PERSONNEL.
24. WATER MAINS SHALL BE INSTALLED IN STRAIGHT ALIGNMENTS BETWEEN FITTINGS. CURVED MAINS SHALL REQUIRE PRIOR DISTRICT APPROVAL. THE RADIUS OF CURVED MAINS SHALL NOT EXCEED THE PIPE MANUFACTURER'S RECOMMENDED LIMITS. FITTING SHALL BE REQUIRED WHERE THE RADIUS EXCEEDS THE LIMITS, OR IF PRIOR DISTRICT APPROVAL FOR CURVED MAINS WAS NOT OBTAINED.

STANDARD PLANS

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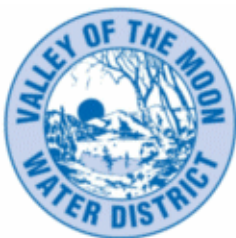
NO.	TITLE
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1C	Water Service For 3" Meter
1D	By – Pass For 3" Meter
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NOTES:

- METER WILL BE INSTALLED BY DISTRICT.
- BACKFILL SHALL CONFORM TO STD. PLAN 10.
- METER LOCATION SHOWN IS AT BACK OF CURB; HOWEVER, METER SHALL BE INSTALLED BEHIND SIDEWALK OR CURB AS DETERMINED BY THE DISTRICT.
- INSTALLATION OF SERVICE LATERAL IN DRIVEWAYS WILL NOT BE ALLOWED.
- NO UNIONS ALLOWED IN SERVICE LATERALS UNLESS APPROVED.
- SERVICE TAP SHALL BE A MIN. OF 18" FROM ANY TAP, BELL, FITTING OR OTHER SERVICE.
- SET MTR. BOXES ON MIN. 3" OF 3/4" DRAIN ROCK. (TYP)
- ALL COMPRESSION FITTINGS SHALL HAVE SS INSERTS.
- INSTALL 90° COMPRESSION ELBOW.
- FOR 2" TURBINES, ADD 2" Ø X 6" BRASS NIPPLE AND FLANGES.
- ADJUST AS NEEDED FOR COMPOUND METERS.

METER SIZE	LATERAL SIZE	CHRISTY METER BOX	CHRISTY METER BOX COVER	
			NON-TRAFFIC	TRAFFIC
1 1/2"	2"	B30	FL30D	B30-61G
2"	2"	B36	FL36D	B36-61G



NO.	REV. DATE	BY
1	OCT. 1992	JO
2	APR. 1994	JO
3	JAN. 1998	BEC
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WATER SERVICE FOR 1-1/2" & 2" METERS

APPROVED BY

Daniel M. Muth
MANAGER

01/2015
DATE

STANDARD
PLAN

1B

SEE STANDARD PLAN ID FOR METER BOX & BYPASS DETAILS

METER BOX
6"

VALVE BOX
SEE STD. PLAN 2B

20"

36" MIN.

TAPPING GATE VALVE.

MJ W/LOCKING GLAND

P.V.C. OR DUCTILE IRON PIPE
SEE NOTE 4

FOR DETAILS OF THRUST BLOCK,
SEE STANDARD PLAN 2A

TAPPING SLEEVE

THRUST BLOCK

24"

NO.	ITEM
1.	4" FLANGE OR MJ FLG. ADAPTOR W/ LOCKING GLAND
2.	4" X 90° FLANGED ELL.
3.	4" FLANGED SPOOL-LENGTH AS REQUIRED
4.	4" X 3" COMPANION FLANGE
5.	3" BRASS CLASS NIPPLE
6.	3" METER BY DISTRICT
7.	3" X 17-1/4" P.V.C. PIPE (SEE NOTE 1)
8.	3" FLANGE X FLANGE STRAINER

NOTES:

- CONTRACTOR TO INSTALL SCHL. 40 PVC PIPE SPACER WITH 1/2" Ø HOLES @ 2" O.C. (VERTICALLY DRILLED THRU PIPE). DISTRICT TO REMOVE SPACER & INSTALL 3" METER.
- BOX PIPE KNOCKOUTS TO BE GROUTED SUFFICIENTLY TO PREVENT INTRUSION OF DIRT.
- FOR TURBINE METERS, PROVIDE STRAIGHT PIPE A MINIMUM OF FIVE (5) DIAMETERS UPSTREAM AND TWO (2) DIAMETERS DOWN-STREAM OF METER.
- END W/FULL LENGTH PIECE OF PIPE.
- SERVICE TAP SHALL BE A MIN. OF 24" FROM ANY TAP, BELL, FITTING OR OTHER SERVICE.



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WATER SERVICE FOR 3" METERS

APPROVED BY

Daniel M. Kuth
MANAGER

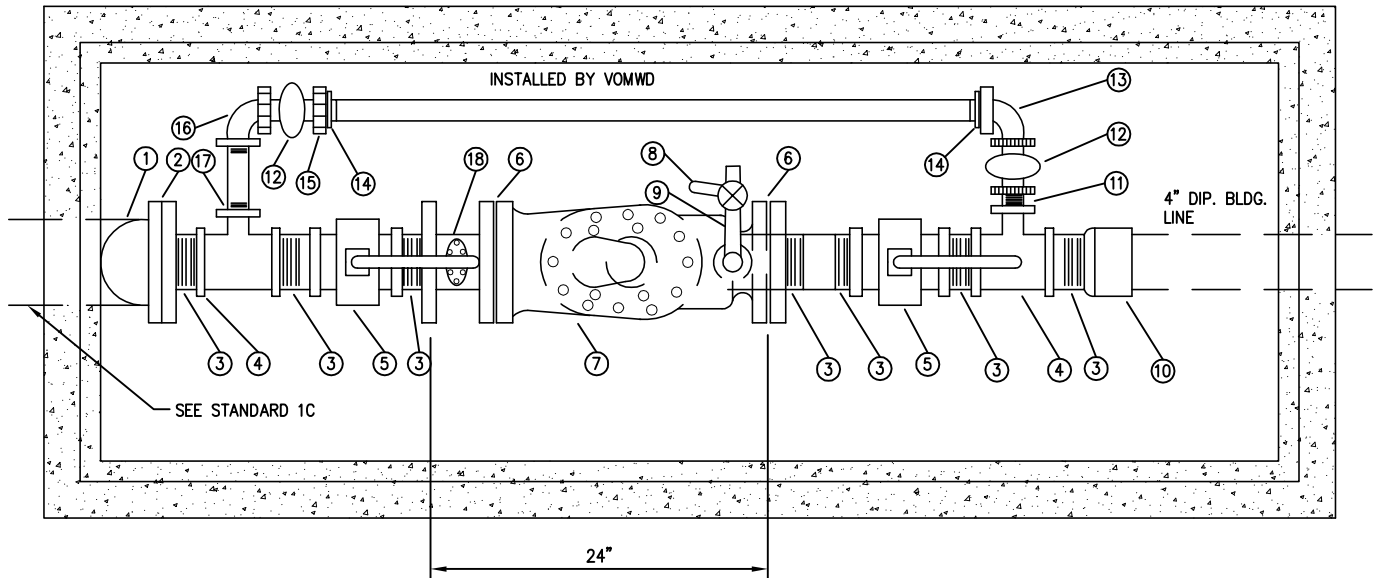
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STANDARD
PLAN

1C

APPROVED METER BOX & COVER

CHRISTY NO. R-17 P24, 2 - PIECE CHECKER PLATE
 PARKWAY HINGED, SPRING LOADED, SCREW DOWN, GALVANIZED LID WITH 8" RD READING
 LID.



NO.	ITEM
1	4" X 90° FLANGED ELL
2	4" X 3" COMPANION FLANGE
3	3" X CLOSE BRASS NIPPLE
4	3" X 1 1/2" BRASS TEE
5	3" BALL VALVE - WATTS NO. 6000
6	3" BRASS COMPANION FLANGE
7	WATER METER BY VOMWD
8	TEST B/V
9	6" NIPPLE
10	4" X 3" REDUCING ADAPTER
11	1 1/2" X 2 1/2" BRASS NIPPLE
12	1 1/2" BALL VALVE - FORD B 81- 666 W
13	1 1/2" X 90° BRASS STREET ELL
14	1 1/2" BRASS PLUG
15	FORD BVLC 2 - LOCK CAP
16	1 1/2" X 90° BRASS ELL
17	1 1/2" X 6" BRASS NIPPLE
18	3" FLANGE X FLANGE STRAINER

NOTES:

1. REFER TO STANDARD 1C FOR DIMENSIONS & PROFILE VIEW OF SERVICE LATERAL INSTALLATION.
2. THE VOMWD SHALL PROVIDE & INSTALL THE MASTER PADLOCK ON THE BY-PASS BALL VALVE.
3. SET VAULT ON MIN. 6" OF DRAIN ROCK.
4. INSTALL RISER AND BALL VALVE ON TEST PLUG PORT OF METER.



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BY-PASS FOR 3" METERS

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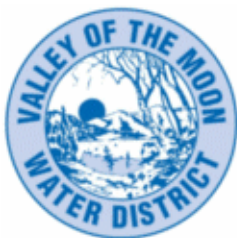
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VALVE SIZE	THRUST BLOCK BEARING AREA
8	5 FT ² MIN.
10	8 FT ² MIN.
12	12 FT ² MIN.
14	16 FT ² MIN.



1. VALVES AND FITTINGS SHALL BE TEMPORARILY SUPPORTED PRIOR TO CONSTRUCTION OF CONCRETE SUPPORTS AND THRUST BLOCKS IN A MANNER SATISFACTORY TO THE DISTRICT.
2. BACKFILL SHALL CONFORM TO STD. PLAN 10.
3. CONCRETE SHALL BE CLASS "B" FOR ALL THRUST BLOCKS AND SUPPORTS AND SHALL BE POURED AGAINST UNDISTURBED EARTH. ALLOW WATER IN PIPE ONLY AFTER 24 HRS. CURING. PRESSURE TEST ONLY AFTER 3 DAYS MOISTURE CURING.
4. ALL VALVE MANIFOLDS TO BE FLANGE CONNECTION.



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WATER VALVE INSTALLATION

APPROVED BY

Daniel Mubuthu
MANAGER

01/2015
DATE

STANDARD PLAN

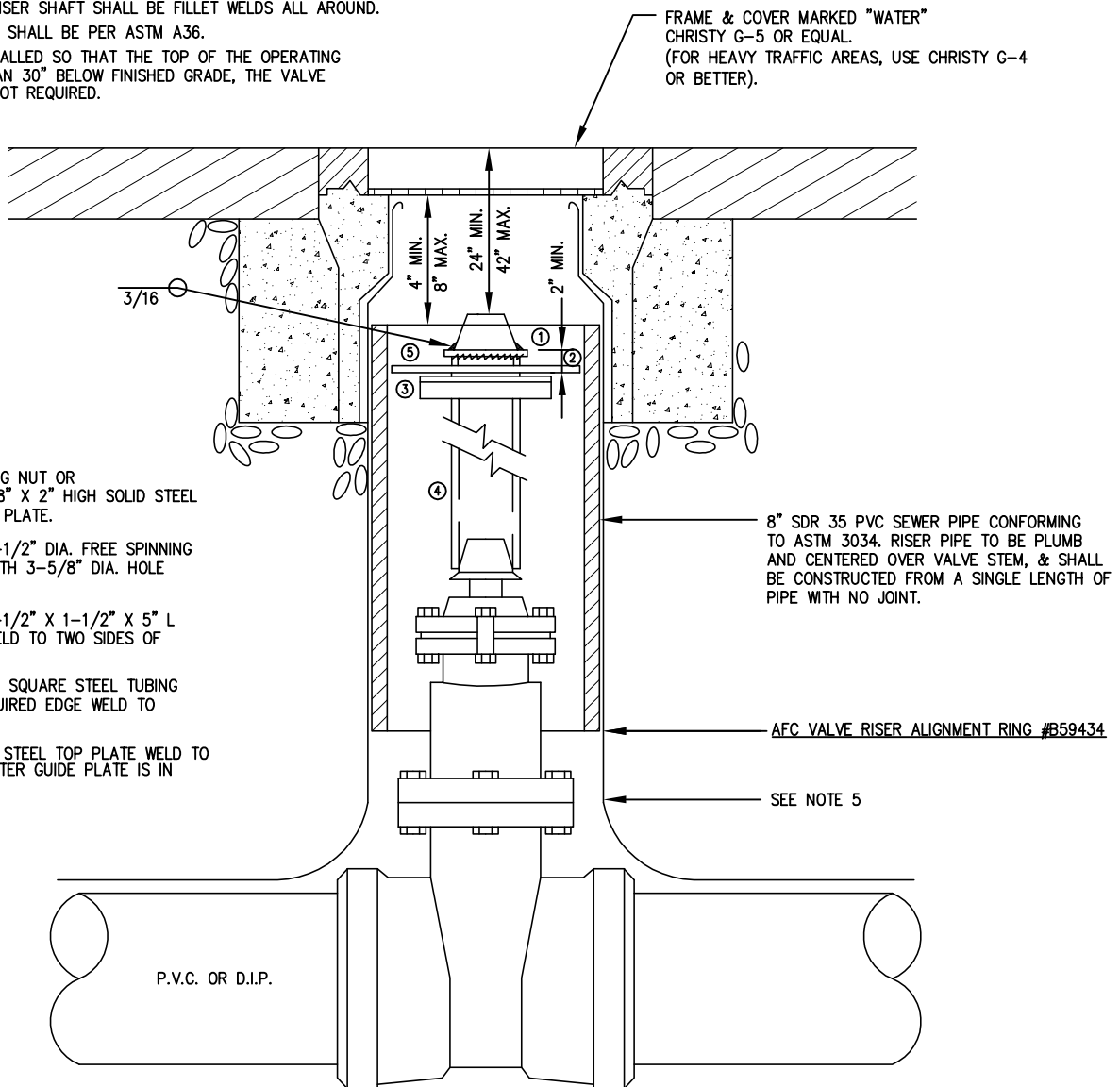
2A

STEM EXTENSION NOTES:

- ALL WELDS TO RISER SHAFT SHALL BE FILLET WELDS ALL AROUND.
- ALL RISER STEEL SHALL BE PER ASTM A36.
- IF VALVE IS INSTALLED SO THAT THE TOP OF THE OPERATING NUT IS LESS THAN 30" BELOW FINISHED GRADE, THE VALVE STEM RISER IS NOT REQUIRED.

LEGEND:

- VALVE OPERATING NUT OR 1-7/8" X 1-7/8" X 2" HIGH SOLID STEEL WELDED TO TOP PLATE.
- 3/16" THK X 7-1/2" DIA. FREE SPINNING GUIDE PLATE, WITH 3-5/8" DIA. HOLE IN CENTER.
- TWO 3/16" X 1-1/2" X 1-1/2" X 5" L STEEL ANGLE WELD TO TWO SIDES OF RISER SHAFT.
- 2-1/2" X 3/16" SQUARE STEEL TUBING LENGTH AT REQUIRED EDGE WELD TO TOP PLATE.
- 3" X 3" X 1/4" STEEL TOP PLATE WELD TO RISER SHAFT AFTER GUIDE PLATE IS IN PLACE.



VALVE NOTES:

- GATE VALVES SHALL CONFORM TO A.W.W.A. STANDARD C509 OF LATEST REVISION AND SHALL BE RESILIENT SEAT TYPE WITH TOTALLY ENCAPSULATED GATE, NON-RISING STEM, OPENING COUNTER-CLOCKWISE WITH O-RING STEM SEAL AND 2" OPERATING NUT.
- VALVES 4" THROUGH 8" SHALL BE GATE VALVES. VALVES 10" AND LARGER SHALL BE CLASS 150B BUTTERFLY VALVES CONFORMING TO A.W.W.A. C504 WITH 2" OPERATING NUT UNLESS OTHERWISE APPROVED BY THE DISTRICT.
- FOR 1 1/2" AND 2" VALVES (SEE STANDARD PLAN 1B)
- VALVE BOLT RINGS, EXPOSED TIE-RODS & U-BOLTS SHALL BE COVERED WITH PRIMER AND THOROUGHLY WRAPPED WITH APPROVED ASPHALT BASE WRAP. VALVE AND FLANGE BOLTS SHALL BE BLUE BOLTS.
- CONNECT #12 THW OR RHW SHEATHED COPPER TRACER WIRE WITH BRASS SPLIT BOLT. TAPE SPLIT BOLT WITH ELECTRICAL TAPE. LEAVE 12" EXPOSED IN VALVE BOX.



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VALVE INSTALLATION DETAILS

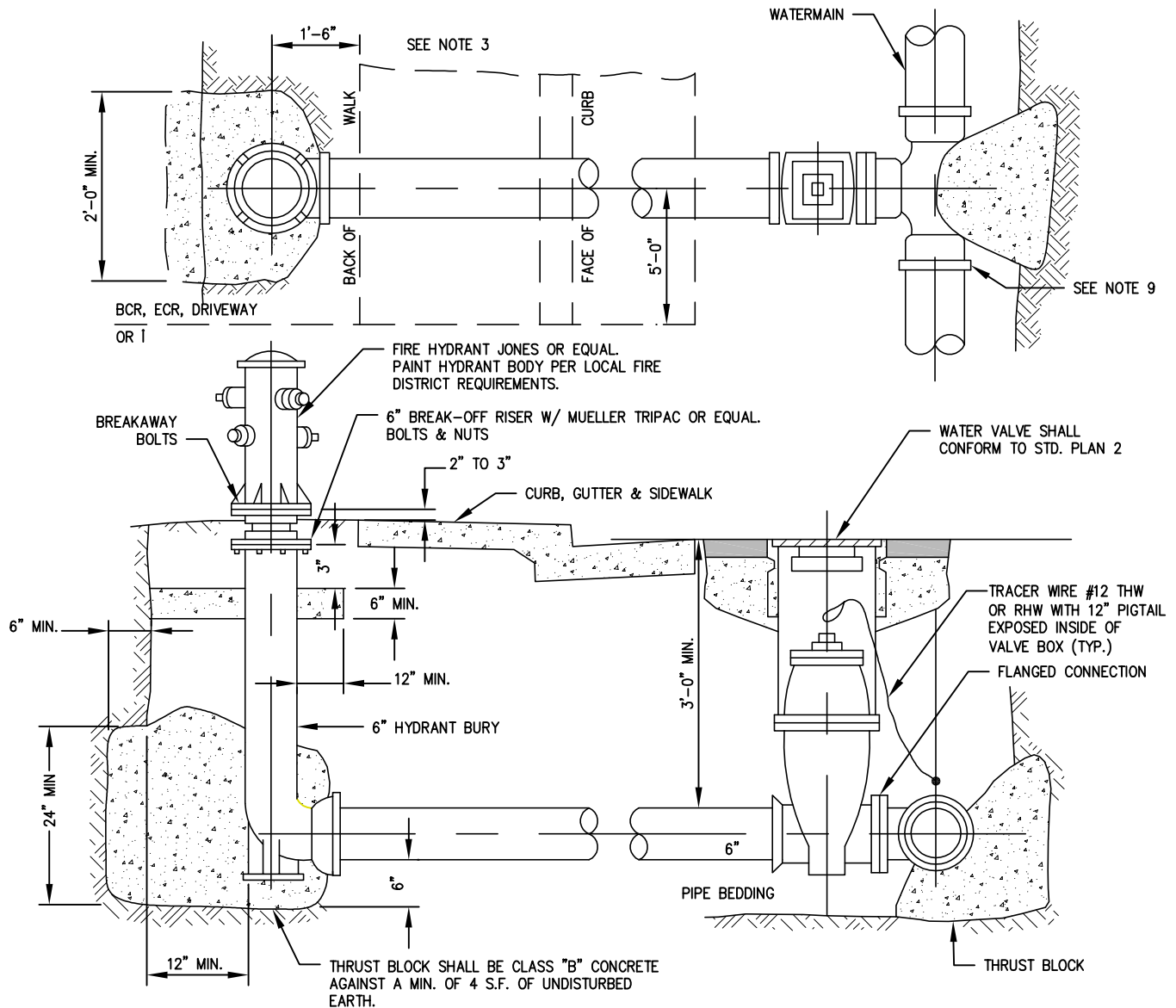
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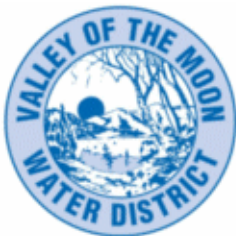
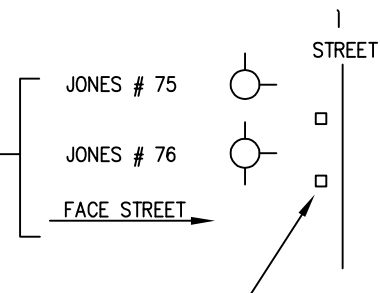
STANDARD
PLAN

2B



NOTES:

- ALL BACKFILL SHALL CONFORM TO STD. PLAN 10
- HYDRANT SHALL BE SET PLUMB WITH 4 1/2" OUTLET ORIENTED TOWARD STREET.
- WHERE FIRE HYDRANT IS NOT TO BE INSTALLED WITH HYDRANT ASSEMBLY, A BLIND FLANGE SHALL BE USED TO CAP OFF BREAK-OFF RISER.
- BLUE MARKER SHALL BE PLACED ON THE PAVEMENT 3" FROM THE STREET CENTERLINE TOWARD THE HYDRANT. ADD 2ND MARKER AT CORNER INTERSECTIONS.
- INSTALL GUARD POSTS (STD. PLAN 3B) AS REQUIRED BY DISTRICT.
- USE FLANGE TEE WHEN PART OF A VALVE MANIFOLD INSTALLATION.



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FIRE HYDRANT INSTALLATION

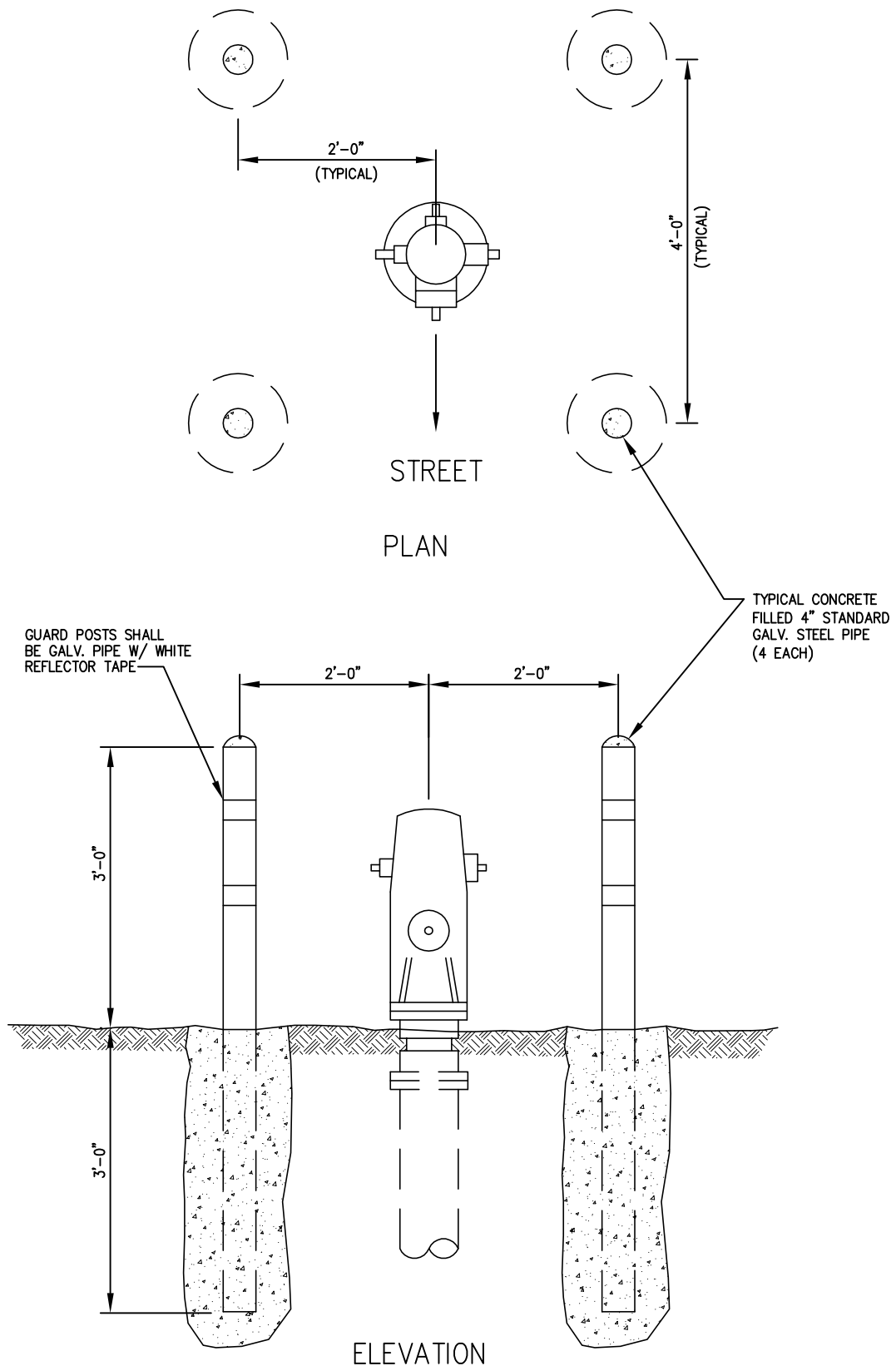
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3A



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FIRE HYDRANT GUARD POST INSTALLATION

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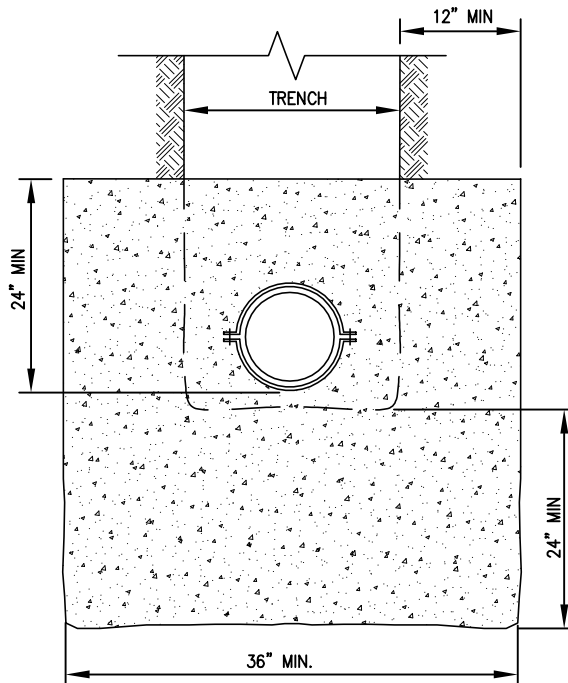
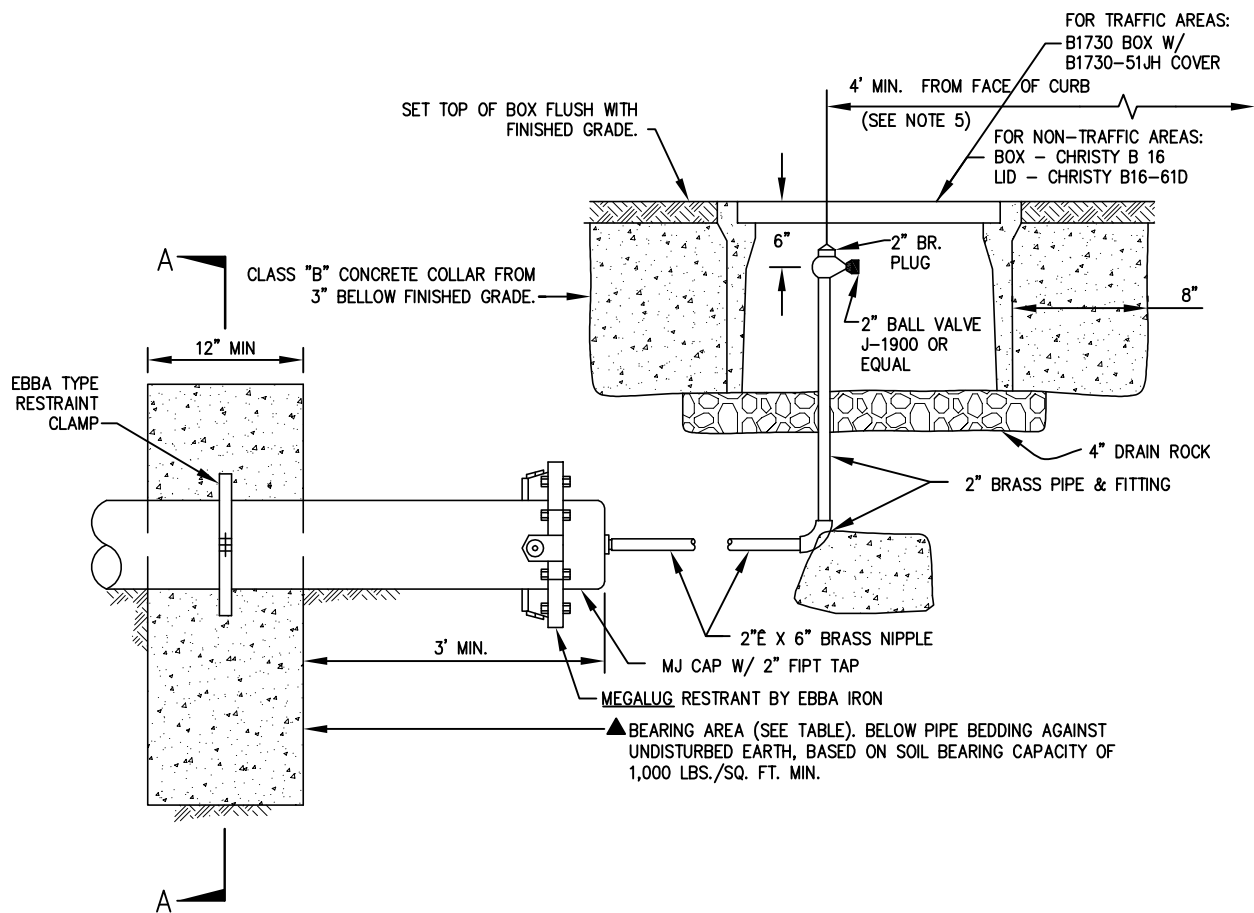
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MANAGER

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STANDARD
PLAN

3B



SECTION A-A

NOTES:

1. BACKFILL SHALL CONFORM TO STD. PLAN 10.
2. CONCRETE SHALL BE CLASS "B", AND POURED AGAINST UNDISTURBED EARTH.
3. COAT ALL EXPOSED IRON WITH ASPHALT PAINT (BITUMASTIC)
4. DISTRICT MAY REQUIRE INSTALLATION BEHIND SIDEWALK IN CASE OF CONFLICTS.
5. MAY ALLOW THRUST BLOCK PER DISTRICT DISCRETION.



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BLOW OFF AT END OF LINE

APPROVED BY

Daniel M. Reith

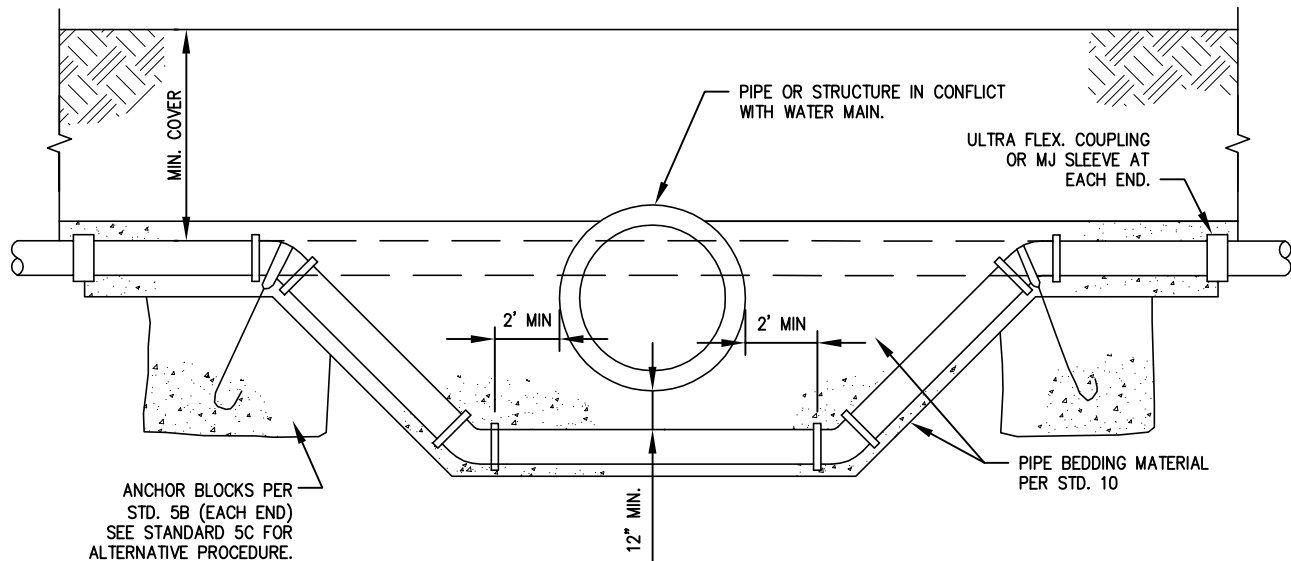
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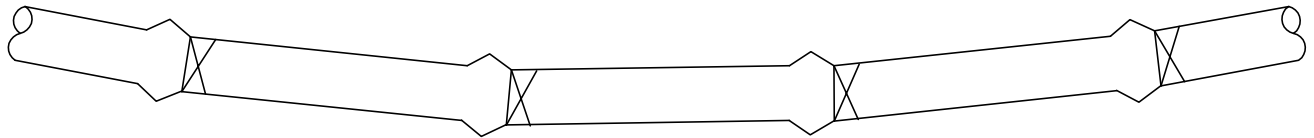
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STANDARD
PLAN

4A



WATER MAIN LOWERING



WATER MAIN LOW POINT

NOTES:

1. ALL PIPE & FITTINGS SHALL BE DUCTILE IRON EXCEPT AS MAY BE ALLOWED UPON DISTRICT APPROVAL.
2. ONLY MECHANICAL JOINT FITTINGS WITH RETAINER GLANDS OR FLANGED FITTINGS MAY BE USED.
3. ALL BENDS SHALL BE 45°; 22-1/2° FITTINGS MAY BE ALLOWED UPON DISTRICT APPROVAL.
4. BACKFILL SHALL CONFORM TO STD. PLAN 10.



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WATER MAIN LOWERING DETAIL

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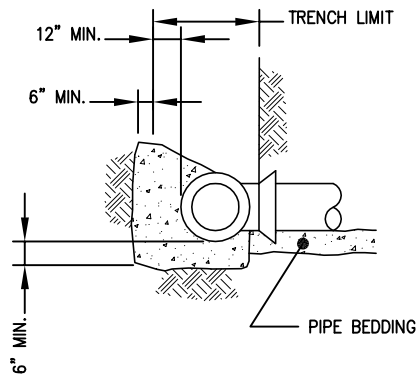
Daniel M. Kuth

MANAGER

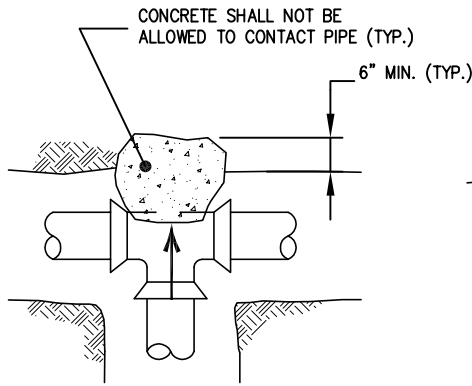
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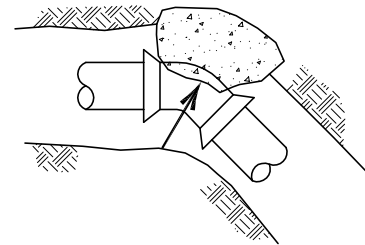
4B



TYPICAL SECTION



TEE



11 1/4", 22 1/2", 45", 90"
HORIZONTAL BEND

MINIMUM THRUST BLOCK BEARING REQUIREMENTS NORMAL TO THRUST (TOTAL AREA IN SQ. FT.)					
TYPE FITTING	PIPE SIZES				
	6"	8"	10"	12"	14"
90° BEND	4	7	12	16	22
45° BEND	2	4	6	9	12
22 1/2° BEND	1	2	3	5	6
11 1/4° BEND	1	1	2	3	3
DEAD END	3	5	8	12	16
TEE	3	5	8	12	16

NOTES:

- THRUST BLOCKS FOR CONDITIONS NOT COVERED ON THIS DRAWING SHALL BE SATISFACTORY TO THE DISTRICT. THE CONTRACTOR SHALL CONSTRUCT THRUST BLOCKS AS NECESSARY TO PROVIDE SUPPORT WHILE CONNECTING TO EXISTING FACILITIES. SAND BAG FORMED PRIOR TO POURING CONCRETE.
- FOR PURPOSES OF DETERMINING THRUST BLOCK REQUIREMENTS, TEES SHALL INCLUDE TAPPING SLEEVES AND FLANGED NIPPLES OR OTHER WELDED CONNECTIONS OVER 3" IN DIAMETER TO MAIN LINE PIPE.
- THRUST BLOCKS SHALL NOT INTERFERE WITH PIPE JOINTS, BOLTS, NUTS, ETC.
- ARROWS (—>) INDICATE DIRECTION OF THRUST.
- CONCRETE SHALL BE CLASS "B" FOR ALL THRUST BLOCKS AND SUPPORTS AND SHALL BE POURED AGAINST UNDISTURBED EARTH. ALLOW WATER IN PIPE ONLY AFTER 24HRS. CURING. PRESSURE TEST ONLY AFTER 3 DAYS MOISTURE CURING.
- ALL FITTINGS SHALL BE SUPPORTED IN CONCRETE AS SHOWN IN TYPICAL SECTION.
- THE ABOVE BEARING AREAS ARE BASED ON 150 PSI TEST PRESSURE AND 2,000 PSF SOIL BEARING CAPACITY. THE DESIGN ENGINEER SHALL FURNISH BLOCKING REQUIREMENTS WHERE DESIGN CRITERIA DIFFER FROM ABOVE.
- FOR OTHER THRUST BLOCKING REQUIREMENTS REFER TO:
STD. PLAN 3A FOR FIRE HYDRANTS STD. PLAN 5B FOR VERTICAL BENDS
STD. PLAN 4A FOR BLOWOFFS
- VALVES AND FITTINGS SHALL BE TEMPORARILY SUPPORTED PRIOR TO CONSTRUCTION OF CONCRETE SUPPORTS AND THRUST BLOCKS IN A MANNER SATISFACTORY TO THE DISTRICT.
- DISTRICT MAY WAIVE THRUST BLOCK REQUIREMENTS FOR PIPE WITH RESTRAINED JOINTS. SEE STD. PLAN 5C.



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HORIZONTAL THRUST BLOCK REQUIREMENTS

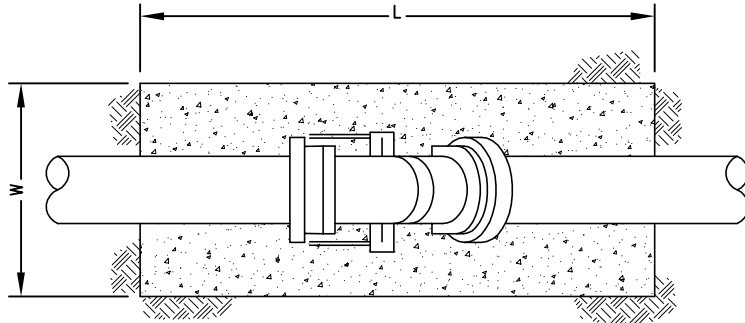
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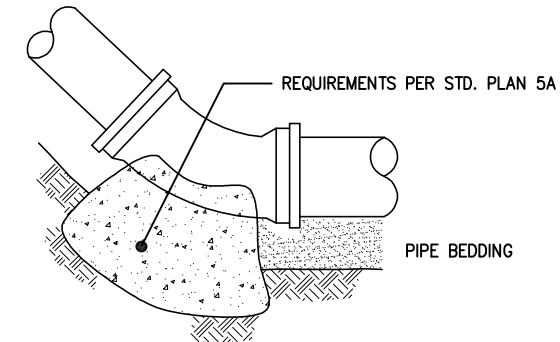
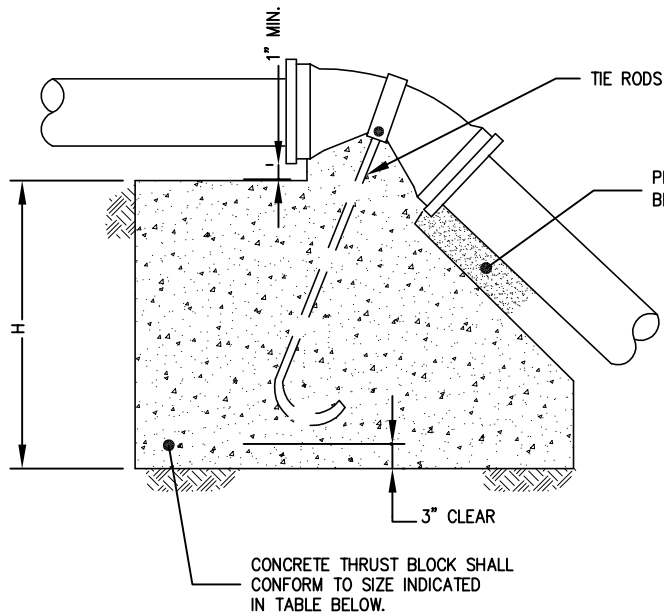
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STANDARD
PLAN

5A



STEEL CLAMP



NOTES:

1. CONCRETE SHALL BE CLASS "B" AND SHALL BE POURED AGAINST UNDISTURBED EARTH.
2. THIS TYPE OF VERTICAL OFFSET SHALL BE USED ONLY WHERE THERE IS A CONFLICT IN GRADE
3. USE MECHANICAL JOINT FITTINGS WITH LOCKING RETAINER GLANDS AT ALL FITTINGS.
4. DISTRICT MAY WAIVE THRUST BLOCK REQUIREMENTS FOR PIPE WITH RESTRAINT JOINTS. SEE STD. PLAN 5C.
5. USE BLUE BOLTS FOR ALL FLANGES.

THRUST BLOCK DIMENSIONS											
PIPE SIZE	TIE RODS	STEEL CLAMP	11 1/2' BEND			22 1/2' BEND			45' BEND		
			L	W	H	L	W	H	L	W	H
6"	5/8"	3" X 1/4"	2'-0"	2'-0"	1'-0"	2'-0"	2'-0"	2'-0"	3'-0"	2'-0"	2'-0"
8"	3/4"	3 1/4" X 1/4"	2'-0"	2'-0"	1'-0"	3'-0"	2'-0"	2'-0"	4'-6"	2'-0"	3'-0"
10"	1"	4" X 3/8"	3'-0"	2'-0"	2'-0"	4'-0"	2'-0"	2'-0"	6'-0"	2'-0"	3'-8"
12"	1 1/4"	4" X 1/2"	3'-0"	2'-0"	2'-0"	6'-0"	2'-0"	2'-0"	7'-0"	2'-6"	4'-0"



NO.	REV. DATE	BY
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VERTICAL THRUST BLOCK REQUIREMENTS

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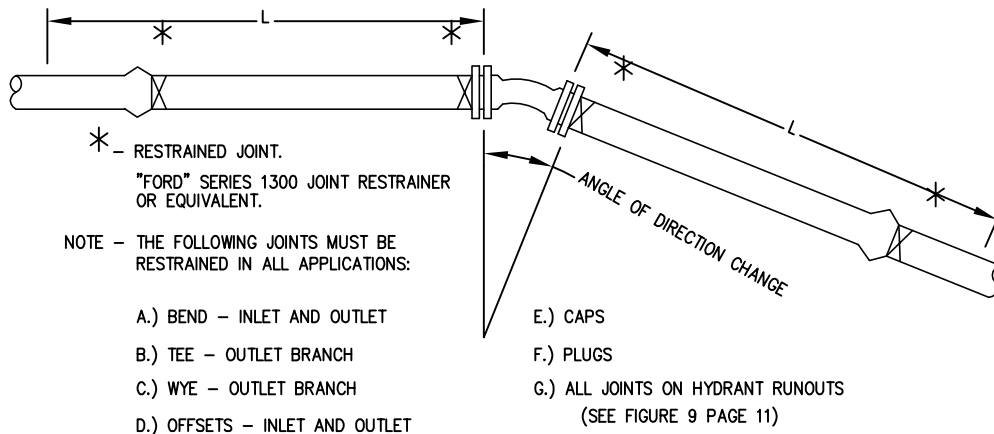
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PLAN

5B

THURST AT FITTINGS PER 150 PSI (LBS. FORCE)

NOMINAL PIPE SIZE	FITTING: 90 DEGREE ELBOW	FITTING: 45 DEGREE ELBOW	FITTING: VALVES, TEES, DEAD ENDS
2	950	520	670
3	2620	1420	1850
4	3850	2080	2720
6	7930	4290	5610
8	13640	7380	9650
10	20530	11110	14520
12	29050	15720	20550



NOM. PIPE SIZE	L – MINIMUM LENGTH TO BE RESTRAINED ON EACH SIDE OF FITTING (FT.)																			
	CLAY					COHESIVE GRANULAR MAT					SAND					SILT, MUCK, PEAT				
	ELBOWS (DEG.)				VALVES TEE DEAD ENDS	ELBOWS (DEG.)				VALVES TEE DEAD ENDS	ELBOWS (DEG.)				VALVES TEE DEAD ENDS	ELBOWS (DEG.)				VALVES TEE DEAD ENDS
	11 ¼	22 ½	45	90		11 ¼	22 ½	45	90		11 ¼	22 ½	45	90		11 ¼	22 ½	45	90	
2	1	2	3	5	4	2	3	4	7	6	2	3	5	8	6	2	4	6	11	9
3	2	2	4	8	5	3	4	5	9	7	3	4	7	10	8	3	5	8	13	10
4	2	3	5	9	6	3	5	7	11	8	3	5	8	12	9	4	6	11	17	13
6	3	4	6	13	7	4	6	9	14	10	4	6	10	15	11	4	7	13	21	15
8	3	5	7	16	8	4	7	11	19	13	4	7	13	20	14	5	10	16	26	18
10	4	6	9	19	11	5	10	15	22	15	5	9	15	25	18	6	11	20	32	22
12	4	8	11	23	13	6	11	17	26	18	6	10	17	29	21	7	14	24	39	27

VALUES FOR "L" ARE BASED ON PVC PIPE AT 150 PSI OPERATING PRESSURE WITH A 100 PSI SURGE ALLOWANCE INCLUDED.

WHEN DEPTH OF SOIL COVER IS LESS THAN 2 FT., VALUES FOR "L" MUST BE INCREASED BY 30%.

WHEN DEPTH OF SOIL COVER IS LESS THAN 1/2 OF PIPE OUTSIDE DIAMETER, VALUES FOR "L" MUST BE INCREASED BY 100%.

WHEN PIPE IS PARTIALLY OR FULLY EXPOSED, ALL JOINTS MUST BE RESTRAINED.

EXAMPLE: A 12 INCH PVC PIPE BEING INSTALLED IN SANDY SOIL, ENTERS A 45 DEGREE HORIZONTAL BEND.

FROM THE CHART THE MINIMUM LENGTH (L) TO BE RESTRAINED IS 17 FEET. THEREFORE ALL JOINTS THAT FALL WITHIN 17 FEET BEFORE AND AFTER THE ELBOW MUST BE RESTRAINED. IF NO JOINTS ARE ENCOUNTERED WITHIN THIS DISTANCE, THE NEXT CLOSEST JOINT DOES NOT NECESSARILY HAVE TO BE RESTRAINED.



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RESTRAINED JOINT REQUIREMENTS

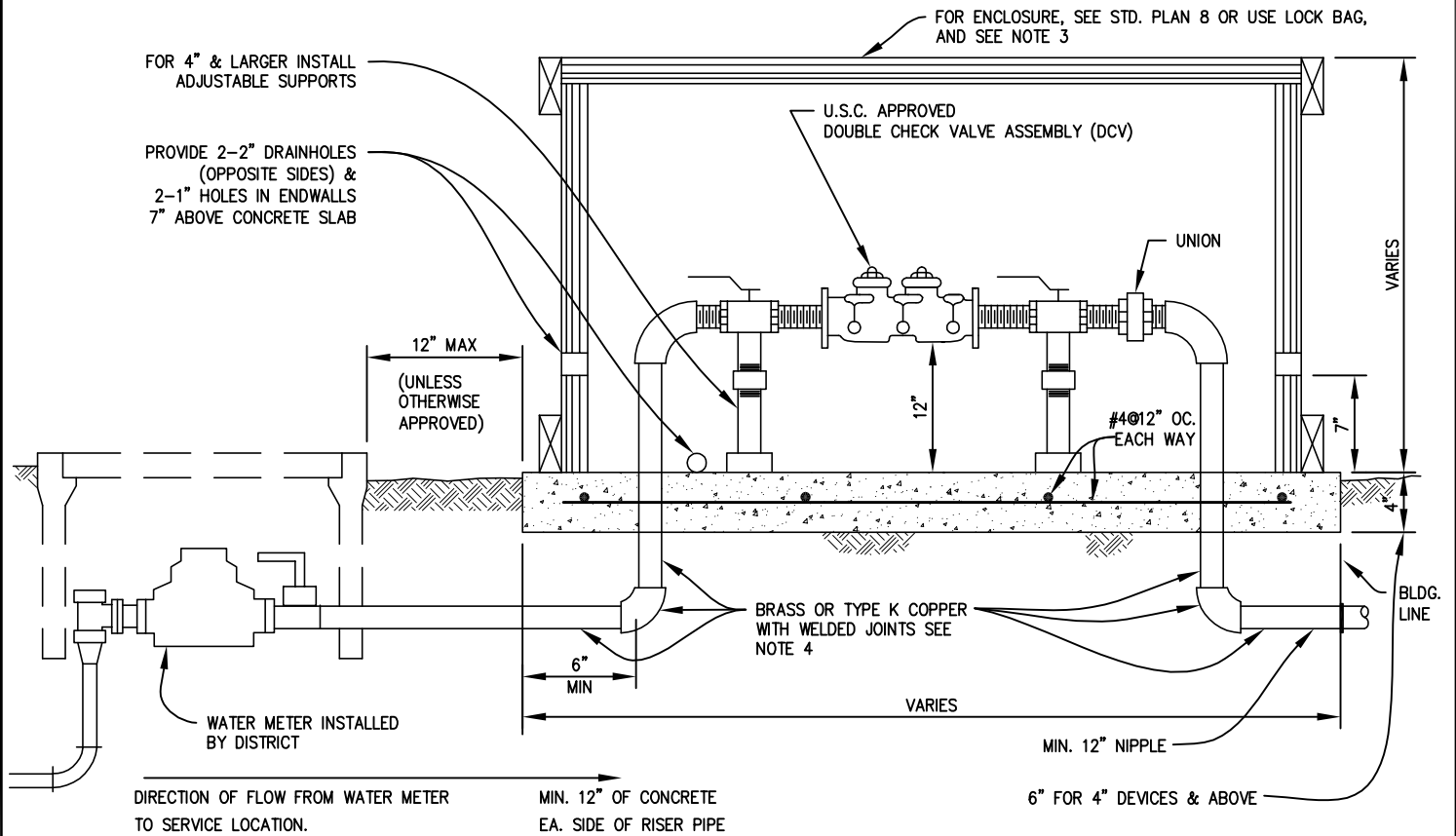
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MANAGER

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STANDARD
PLAN

5C



NOTES:

1. IF INSTALLATION IS MADE BY THE PROPERTY OWNER, WATER WILL NOT BE TURNED ON UNLESS THE DISTRICT HAS RECEIVED A SATISFACTORY CERTIFIED TEST REPORT AND THE INSTALLATION MEETS ALL OTHER DISTRICT REQUIREMENTS.
2. IT IS THE CONSUMERS RESPONSIBILITY TO HAVE THE DOUBLE CHECK VALVE ASSEMBLY CHECKED ON A YEARLY BASIS AND TO KEEP IT IN GOOD OPERATING CONDITION.
3. 3" INSTALLATIONS AND ABOVE SHALL BE WESTERN CHAIN LINK ENCLOSURE.
4. 3" INSTALLATION AND ABOVE SHALL BE DUCTILE IRON PIPE.



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1	OCT. 1992	JO
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DOUBLE CHECK VALVE ABOVE GRADE

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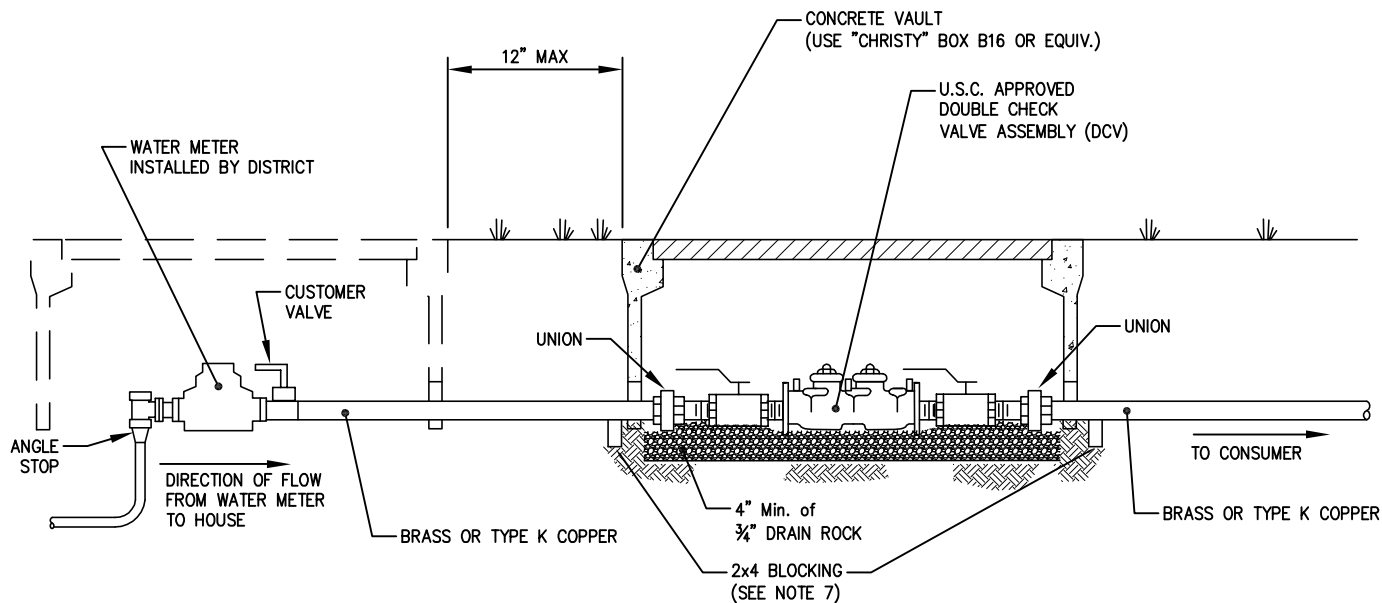
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STANDARD
PLAN

6A



NOTES:

1. WATER WILL NOT BE TURNED ON UNLESS THE DISTRICT HAS RECEIVED A SATISFACTORY CERTIFIED TEST REPORT AND THE INSTALLATION MEETS ALL OTHER DISTRICT REQUIREMENTS.
2. IT IS THE CONSUMERS RESPONSIBILITY TO HAVE THE DOUBLE CHECK VALVE ASSEMBLY CHECKED ON A YEARLY BASIS AND TO KEEP IT IN GOOD OPERATING CONDITION.
3. THE DEVICE MUST BE LISTED ON THE MOST CURRENT USE LIST OF APPROVED BACKFLOW PREVENTION DEVICES IN THE "USC FOUNDATION FOR CROSS CONNECTION CONTROL AND HYDRAULIC RESEARCH" DOCUMENT.
4. KEEP THE DEVICE AS HIGH AS POSSIBLE IN THE BOX WITHOUT THE PIPING TOUCHING THE BOX (INSIDE THE MOUSE HOLE).
5. USE A "TOP SERVICE" DCV
6. ADEQUATE SPACE FOR TESTING AND MAINTENANCE MUST BE MAINTAINED WITHIN THE DCV BOX OR VAULT.
7. USE CUT PRESSURE TREATED OR REDWOOD 2X4, 8" LONG BLOCKING TO COVER THE BOTTOM OF THE MOUSE HOLE. PLACE OUTSIDE THE VAULT.



NO.	REV. DATE	BY
1	DEC. 2014	KSB

DOUBLE CHECK VALVE BELOW GRADE

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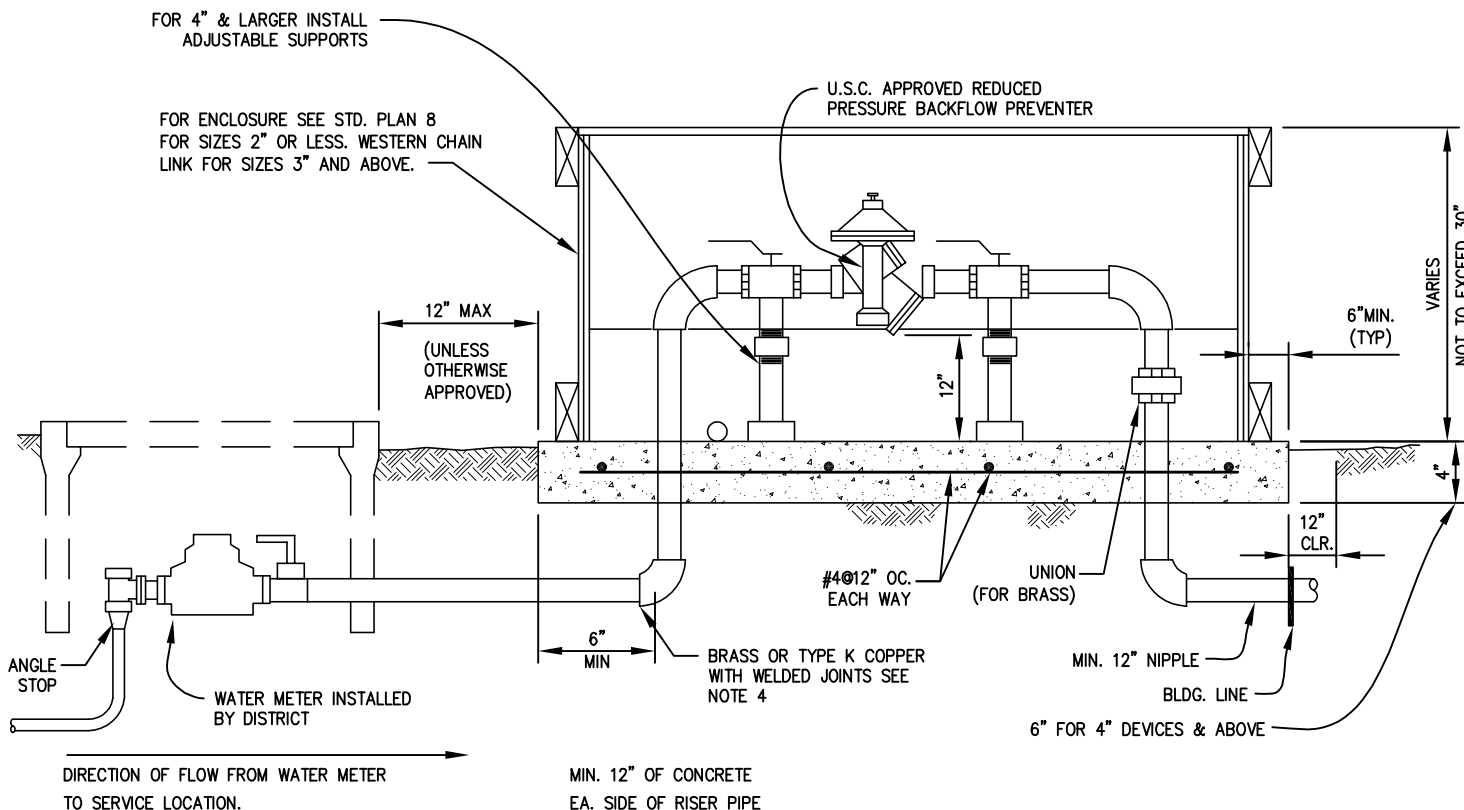
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STANDARD
PLAN

6B



NOTES:

1. REDUCED PRESSURE BACKFLOW PREVENTER SHALL MEET THE APPROVAL OF THE FOUNDATION FOR CROSS CONNECTION CONTROL AND RESEARCH.
2. FOR CERTIFIED TESTS REQUIRED, SEE DISTRICT REQUIREMENTS.
3. WATER SERVICE WILL NOT BE TURNED ON UNLESS DISTRICT HAS RECEIVED A SATISFACTORY CERTIFIED TEST REPORT AND THE INSULATION MEETS ALL OTHER DISTRICT REQUIREMENTS.
4. IF UNINTERRUPTABLE SERVICE IS REQUIRED, A DUAL R.P.V. ASSEMBLY TO BE INSTALLED.
5. 3" INSTALLATIONS AND ABOVE SHALL BE DUCTILE IRON PIPE.



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4	DEC. 2003	BEC
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REDUCED PRESSURE BACKFLOW PREVENTER

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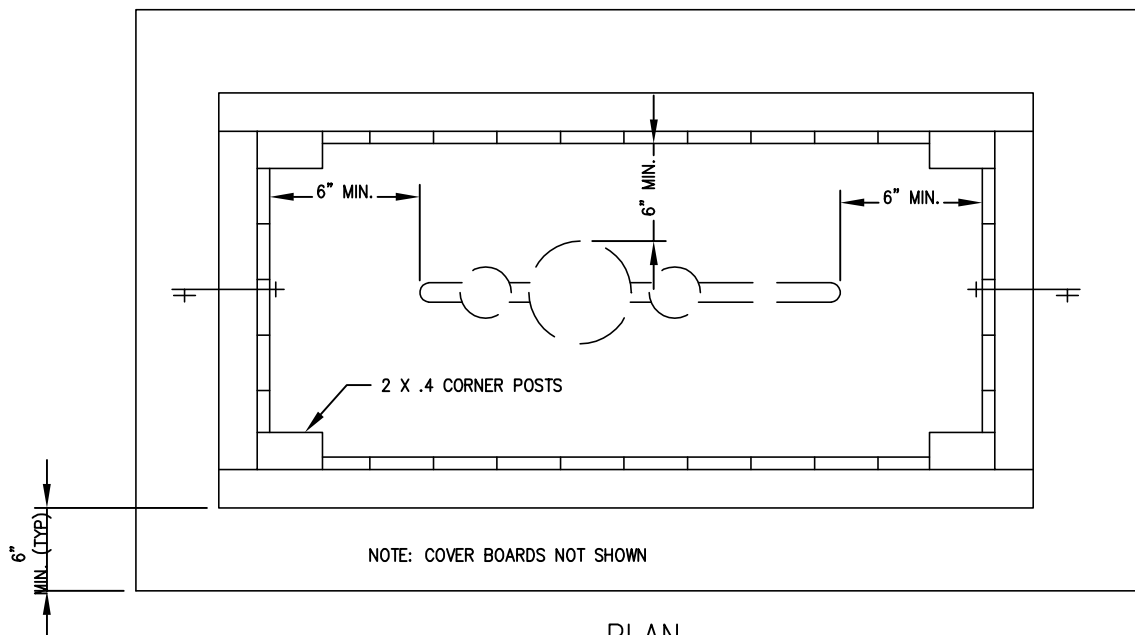
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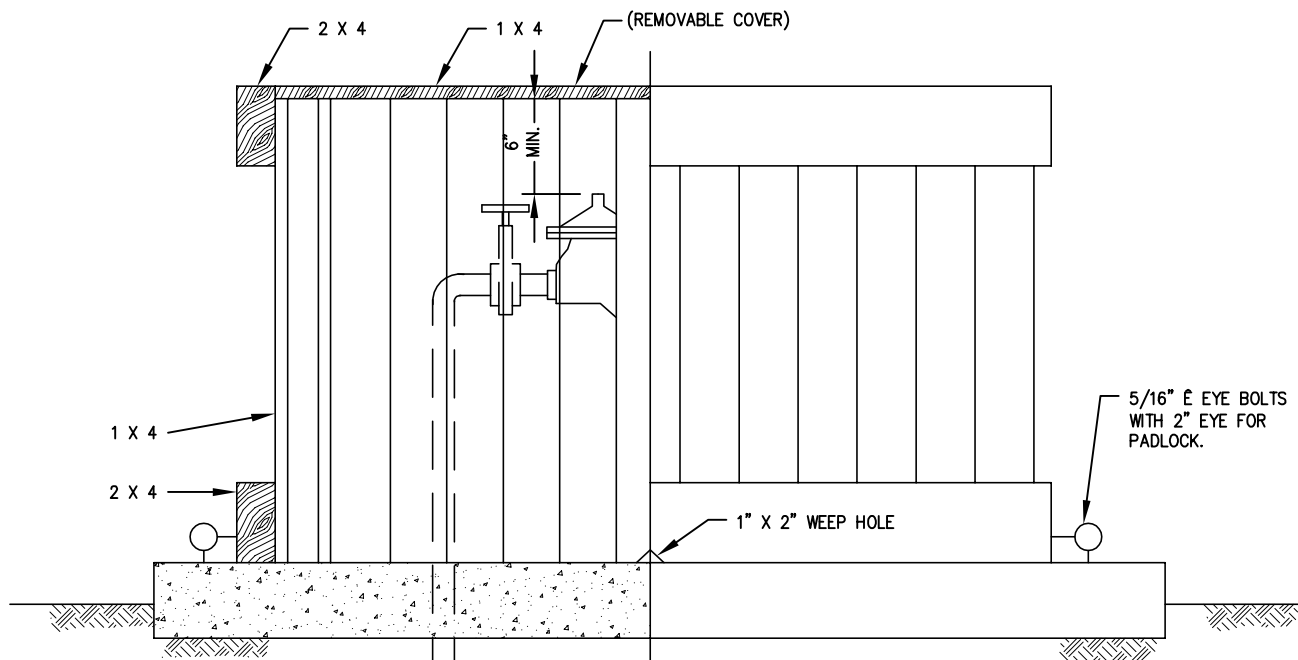
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STANDARD
PLAN

7



PLAN



SECTION / ELEVATION

NOTES:

1. ALL 2 X WOOD SHALL BE S4S CONST. HT. REDWOOD.
2. ALL 1 X WOOD SHALL BE ROUGH STD. REDWOOD.
3. ALL NAILS SHALL BE GALVANIZED.
4. STAIN WITH 2 COATS OLYMPIC SEMI-TRANS.
5. COVER TO BE REMOVABLE.

- | |
|--------------------------------------|
| 6. LOCKABLE BAG ENCLOSURE ACCEPTABLE |
|--------------------------------------|



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REDWOOD ENCLOSURE

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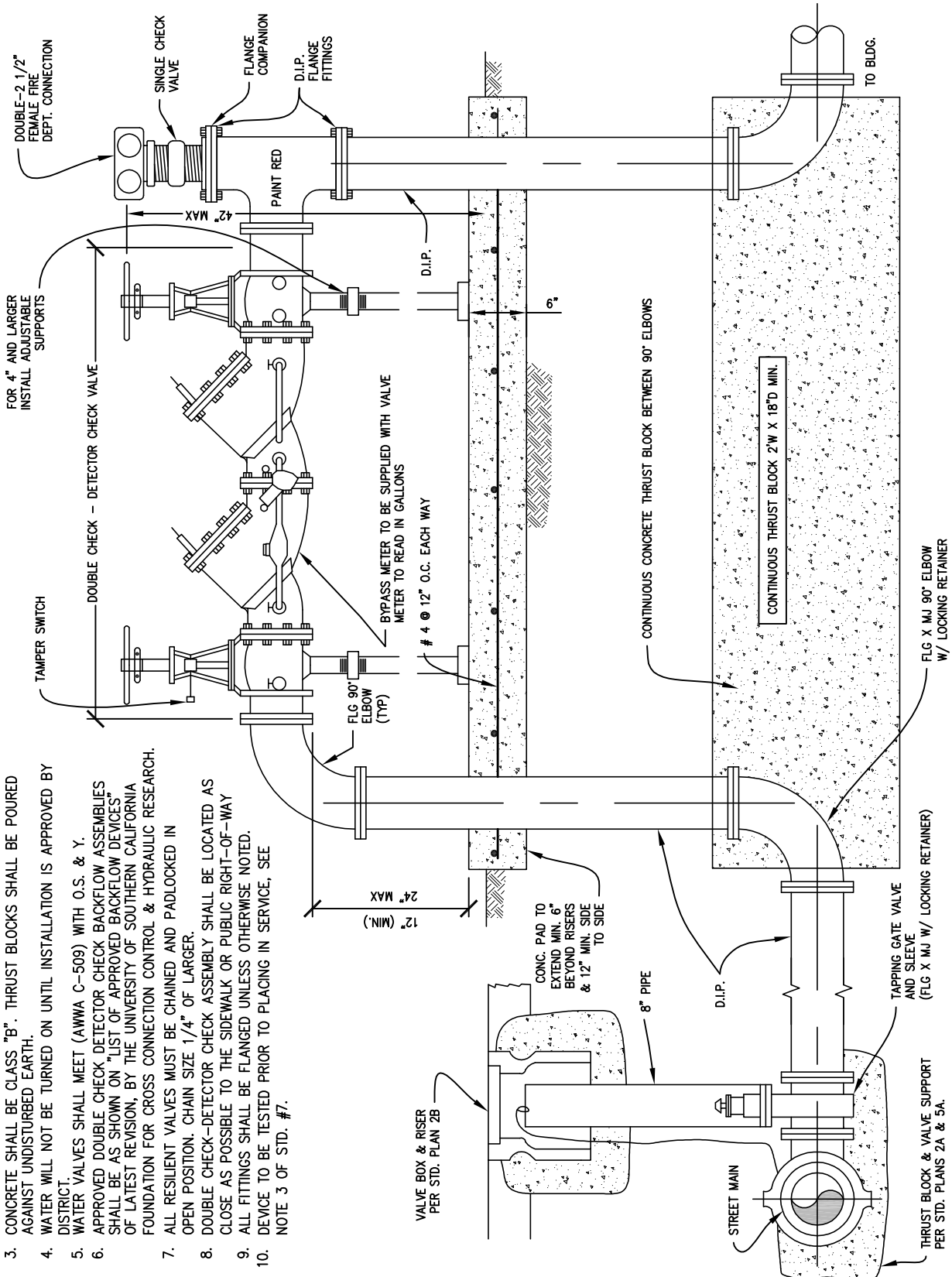
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STANDARD
PLAN

8

NOTES:

1. GATE VALVES SHALL BE OPERATED BY DISTRICT PERSONNEL ONLY.
2. BACKFILL SHALL CONFORM TO STD. PLAN 10.
3. CONCRETE SHALL BE CLASS "B". THRUST BLOCKS SHALL BE POURED AGAINST UNDISTURBED EARTH.
4. WATER WILL NOT BE TURNED ON UNTIL INSTALLATION IS APPROVED BY DISTRICT.
5. WATER VALVES SHALL MEET (AWWA C-509) WITH O.S. & Y.
6. APPROVED DOUBLE CHECK, DETECTOR CHECK BACKFLOW ASSEMBLIES SHALL BE AS SHOWN ON "LIST OF APPROVED BACKFLOW DEVICES" OF LATEST REVISION, BY THE UNIVERSITY OF SOUTHERN CALIFORNIA FOUNDATION FOR CROSS CONNECTION CONTROL & HYDRAULIC RESEARCH.
7. ALL RESILIENT VALVES MUST BE CHAINED AND PADLOCKED IN OPEN POSITION. CHAIN SIZE 1/4" OF LARGER.
8. DOUBLE CHECK-DETECTOR CHECK ASSEMBLY SHALL BE LOCATED AS CLOSE AS POSSIBLE TO THE SIDEWALK OR PUBLIC RIGHT-OF-WAY
9. ALL FITTINGS SHALL BE FLANGED UNLESS OTHERWISE NOTED.
10. DEVICE TO BE TESTED PRIOR TO PLACING IN SERVICE, SEE NOTE 3 OF STD. #7.



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FIRE SPRINKLER SERVICE 4" THROUGH 8"

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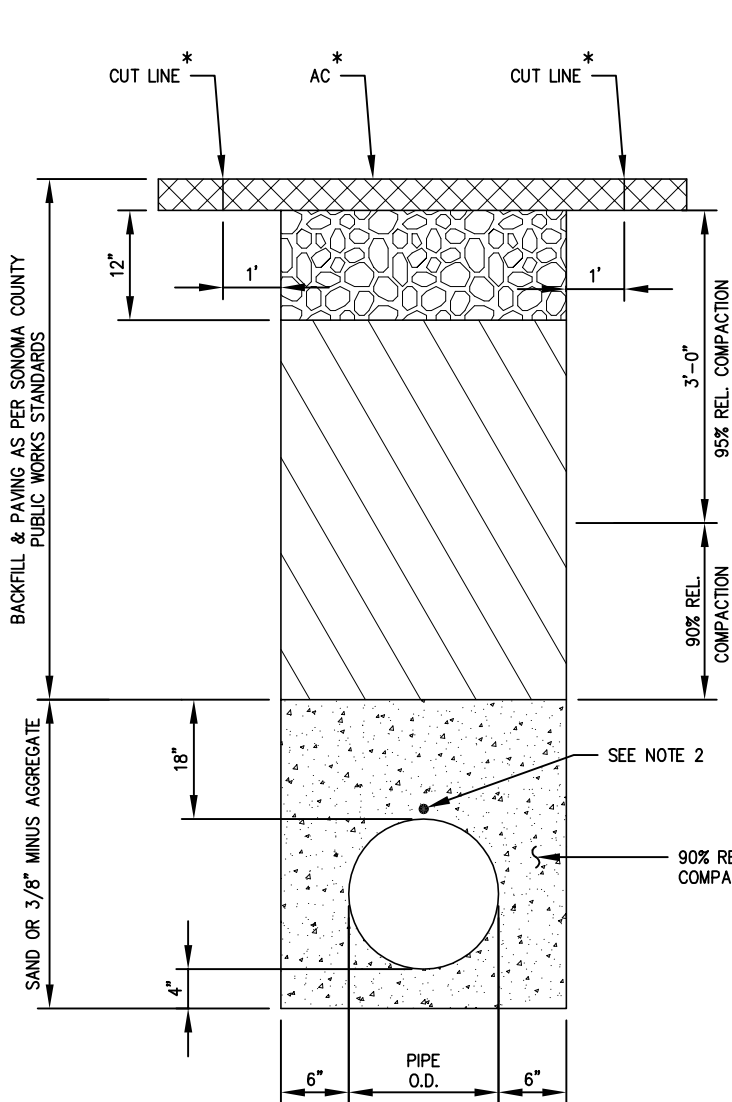
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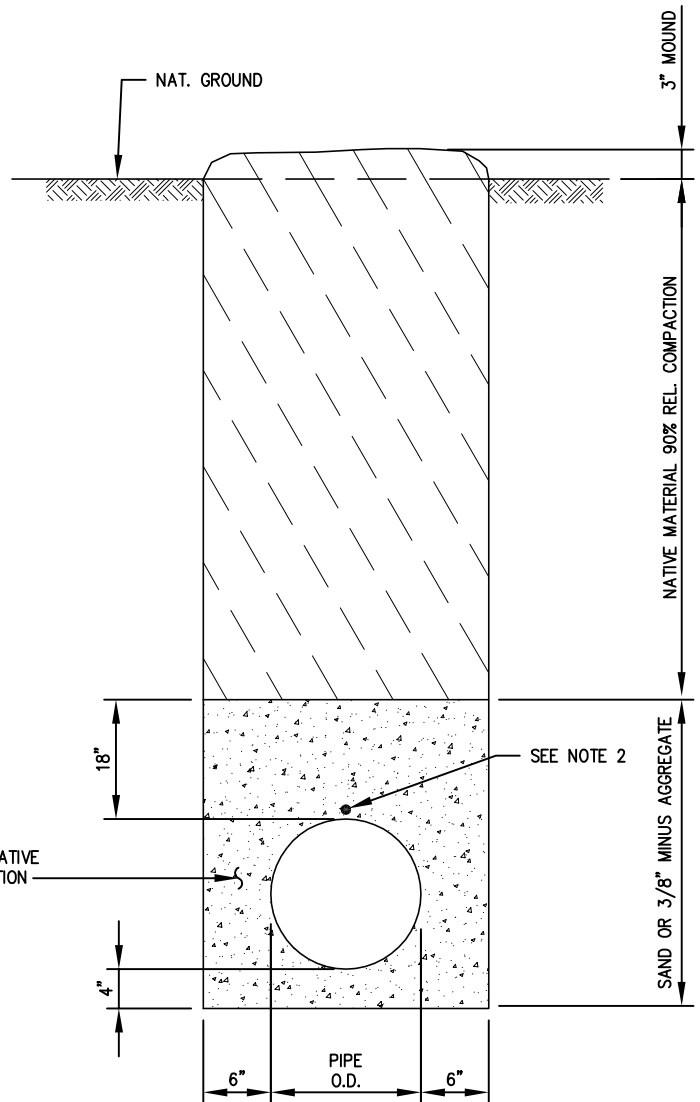
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PLAN

9

ROADWAY AND SHOULDER AREAS



NON-ROADWAY AREAS



NOTES:

1. NATIVE MATERIAL TO BE FREE FROM VEGETABLE MATTER AND REFUSE AS ROCKS, CLODS OR RUBBLE LARGER THAN 4" IN DIAMETER.
2. NO. 12 THW OR RHW SOLID COPPER WIRE. SEE WATER MAIN CONSTRUCTION NOTE 15.

* PAVED AREAS



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TRENCH BACKFILL AND SURFACING

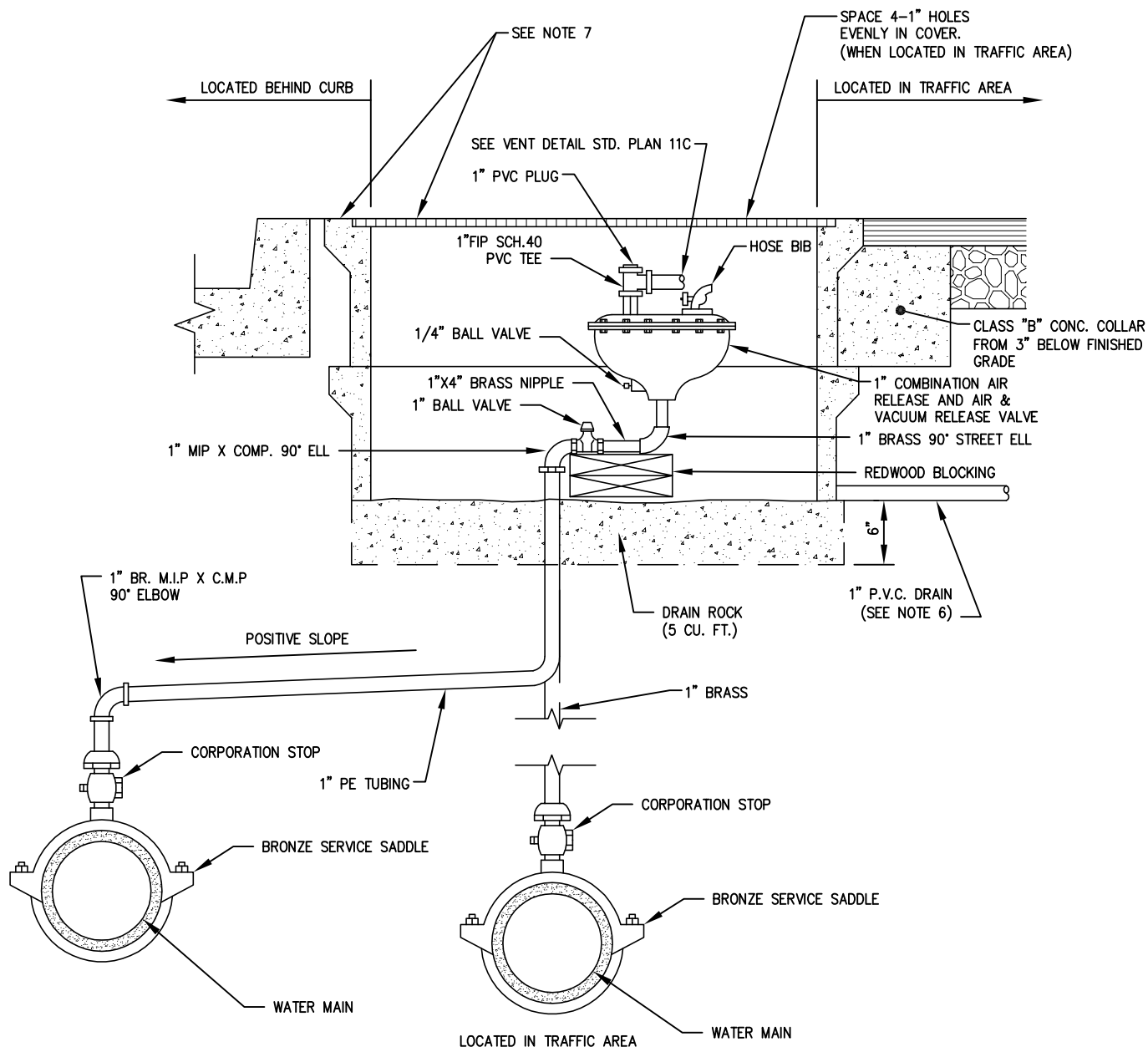
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STANDARD
PLAN

10



NOTES:

1. USE 1" VALVES & PIPING FOR ALL MAINS, UNLESS OTHERWISE SPECIFIED.
2. MAX. LENGTH OF MAIN TO AIR VALVE: 40'.
3. GROUT FIELD JOINTS IN CONCRETE BOXES.
4. VALVE LOCATION IS SHOWN BEHIND CURB, BUT SHALL BE INSTALLED AS DETERMINED BY DISTRICT.
5. SECURE ARV TO BOX, SEE 11B FOR BRACKET DETAIL.
6. POSITIVE DRAINAGE OF BOX AND PRIOR DISTRICT APPROVAL REQUIRED.
7. CHRISTY B-24 METER BOX (18"x19 1/2") AND B24-61D LID. IF BOX IS LOCATED IN TRAFFIC AREA USE CHRISTY B1730 BOX WITH B1730-51JH COVER AND B1730 EXT EXTENSION.



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AIR VACUUM & AIR RELEASE VALVE

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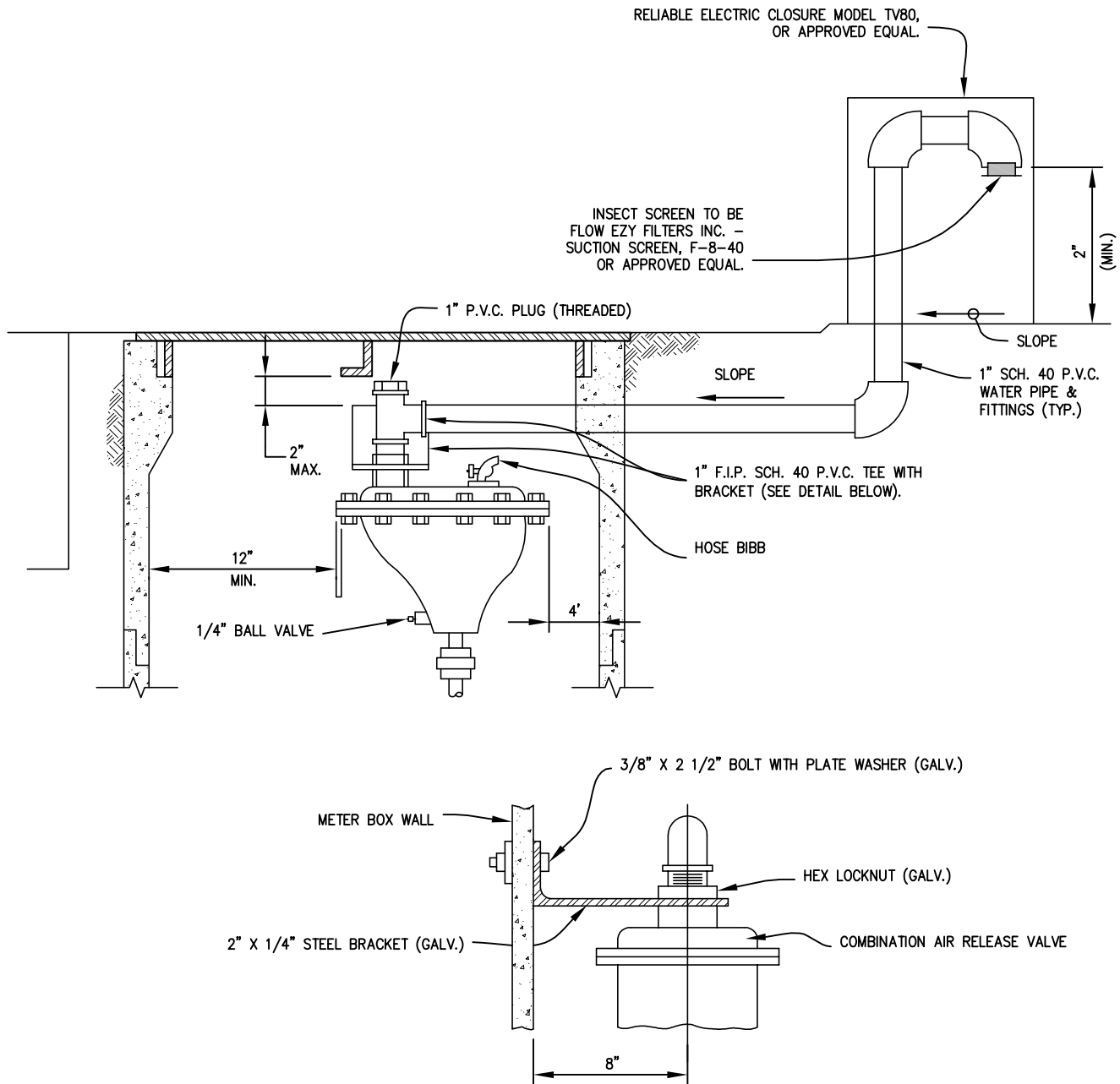
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PLAN

11A



BRACKET DETAIL



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4	DEC. 2003	BEC
5	DEC. 2014	KSB

VENT DETAIL

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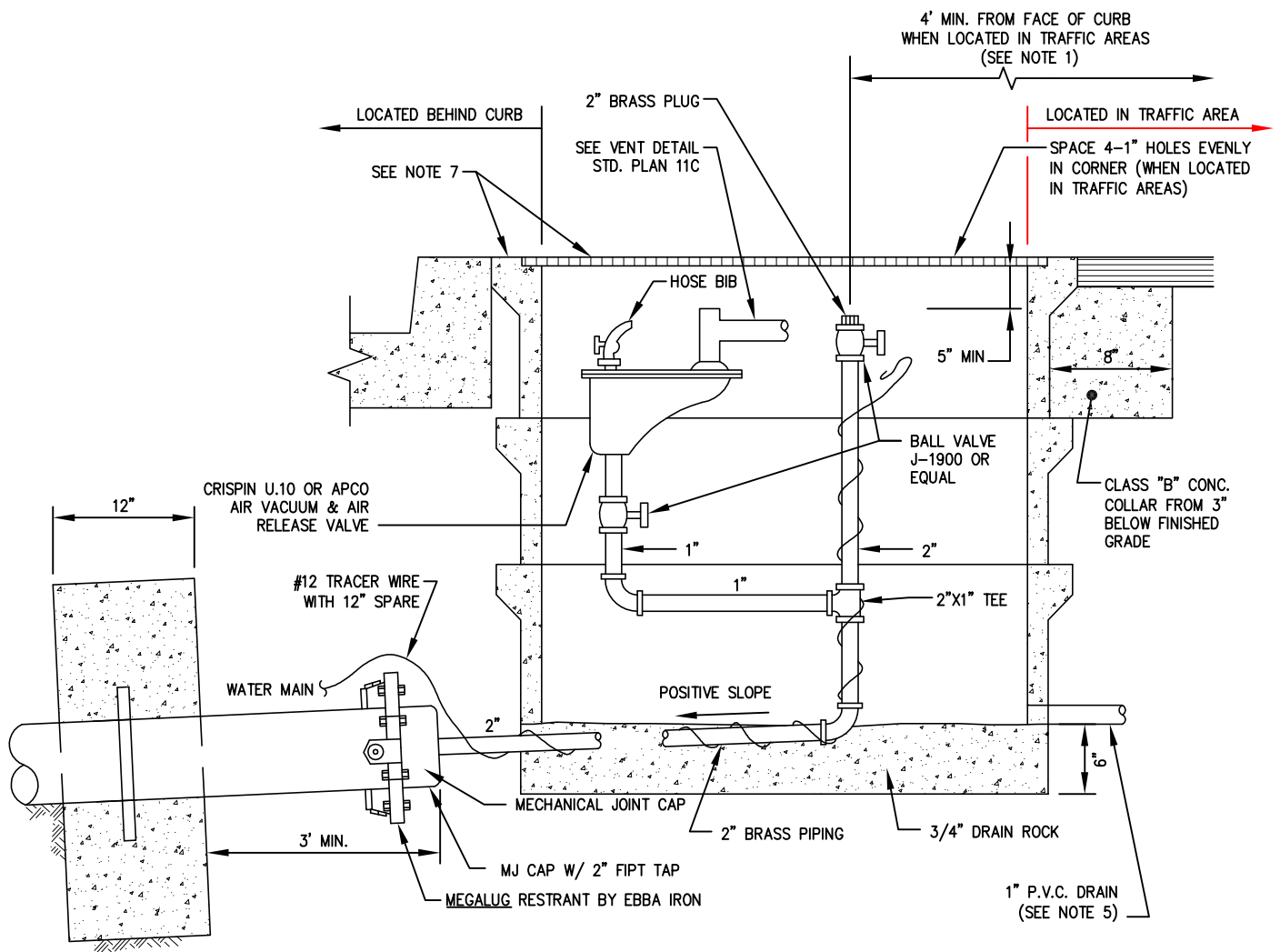
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PLAN

11B



NOTES:

1. USE 2" VALVES & PIPING UNLESS OTHERWISE SPECIFIED.
2. GROUT FIELD JOINTS IN CONCRETE BOXES.
3. VALVE LOCATION IS SHOWN BEHIND CURB, BUT VALVE SHALL BE INSTALLED AS DETERMINED BY DISTRICT.
4. FOR THRUST BLOCK DETAILS, SEE STANDARD PLAN 4A.
5. POSITIVE DRAINAGE OF BOX AND PRIOR DISTRICT APPROVAL REQUIRED WHEN INSTALLED IN TRAFFIC AREA.
6. CHRISTY B-24 METER BOX (18"x19 1/2") AND B24-61D LID. IF BOX IS LOCATED IN TRAFFIC AREA USE CHRISTY B1730 BOX WITH B1730-51JH COVER AND B1730 EXT EXTENSION.



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A.V. & A.R. VALVE WITH BLOW-OFF

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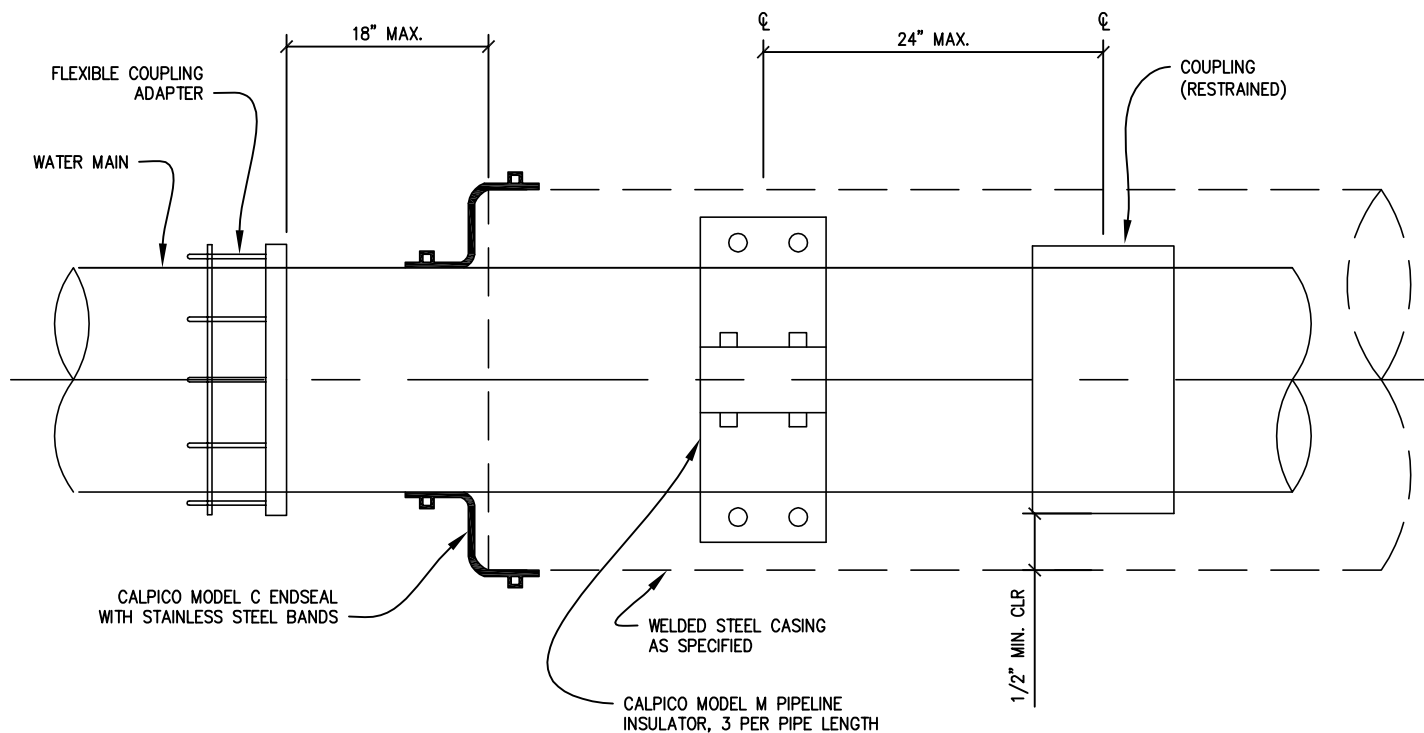
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STANDARD
PLAN

12



MINIMUM SIZE CASING REQUIRED

PIPE SIZE	6"	8"	10"	12"
CASING SIZE (INSIDE DIA.)	16"	16"	20"	20"
CASING WALL THICKNESS	0.250"	0.250"	0.250"	0.250"

NOTES:

1. INSTALL PIPELINE INSULATORS AND ENDSEALS PER MANUFACTURER'S SPECIFICATIONS.
2. SKID HEIGHT SHALL BE SUCH THAT THE PIPE JOINTS CLEAR THE INSIDE OF THE CASING AS SHOWN.
3. CADMIUM PLATED BOLTS SHALL BE USED TO SECURE THE PIPELINE INSULATOR.



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WATER MAIN ENCASEMENT

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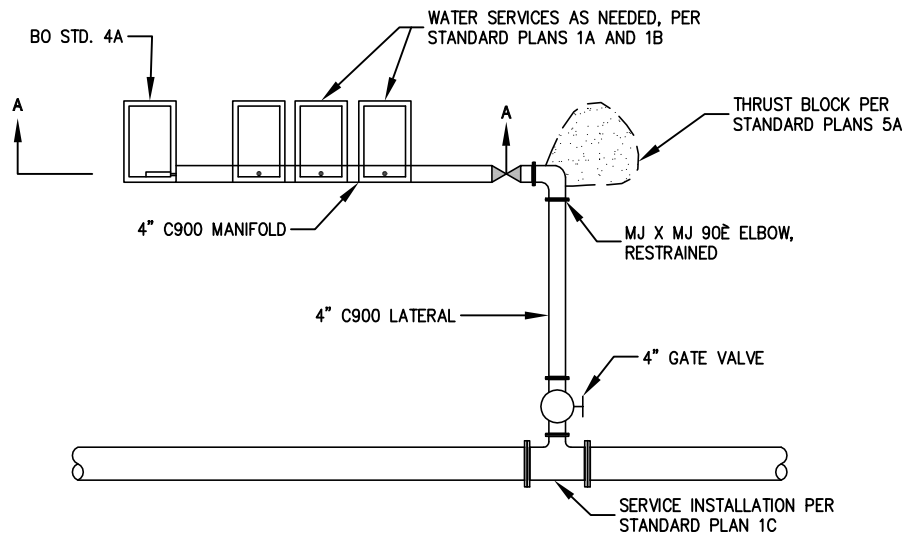
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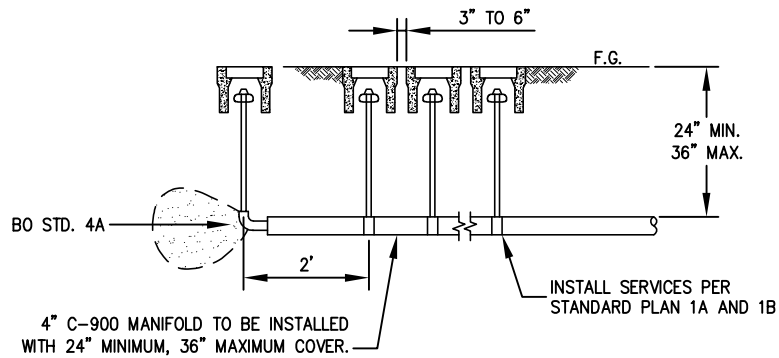
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13



PLAN VIEW



SECTION "A-A"

NOTES:

1. RESTRAINED JOINTS ARE REQUIRED FOR ALL NEW CONSTRUCTION FROM GATE VALVE TO END OF 4" MANIFOLD.



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MULTI-SERVICE MANIFOLD

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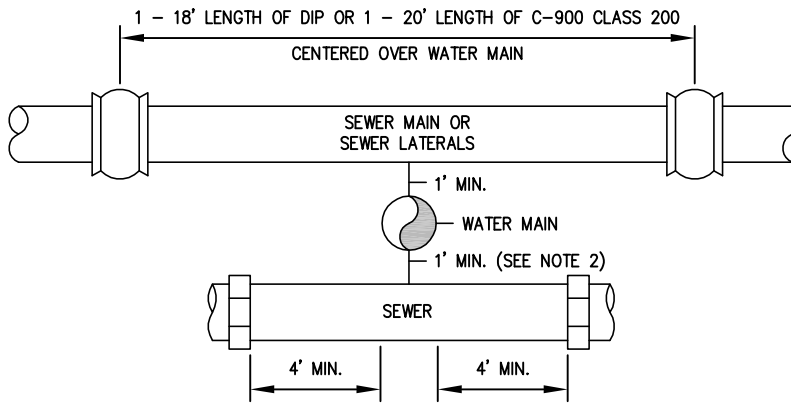
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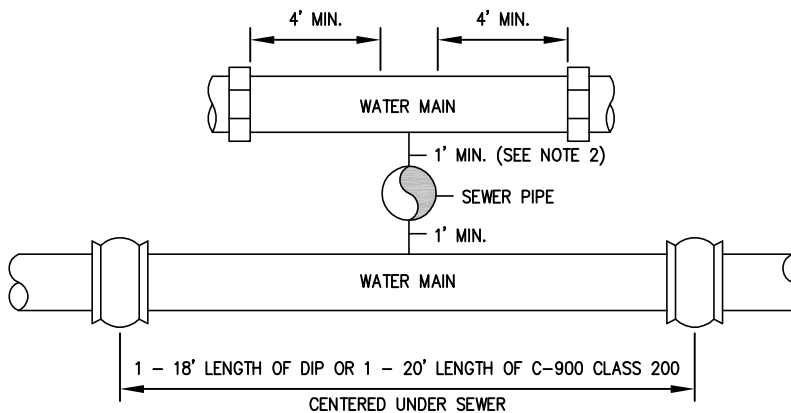
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14



SEWER OVER OR UNDER WATER



WATER OVER OR UNDER SEWER

NOTES:

- ALL INSTALLATIONS SHALL CONFORM TO THE STATE OF CALIFORNIA DEPARTMENT OF HEALTH SERVICES "CRITERIA FOR THE SEPARATION OF WATER MAINS & SANITARY SEWERS".
- PER STATE STANDARDS, A MIN. 1' VERTICAL CLEARANCE IS REQUIRED WHERE SEWER CROSSES A WATER MAIN. WHERE THERE IS LESS THAN 1' VERTICAL CLEARANCE, SPECIAL INSTALLATION IS REQUIRED AS APPROVED BY THE DISTRICT.
- ANY PIPE/PIPE CROSSINGS WITH LESS THAN 6" VERTICAL CLEARANCE SHALL BE PADDED WITH STYROFOAM, FELT EXPANSION JOINT MATERIAL, OR OTHER EXPANSIVE MATERIALS BETWEEN PIPES AS APPROVED BY THE DISTRICT.



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1	OCT. 1992	JO
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WATER-SEWER MAIN CROSSING DETAIL

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Daniel M. Reubath

MANAGER

01/2015
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15