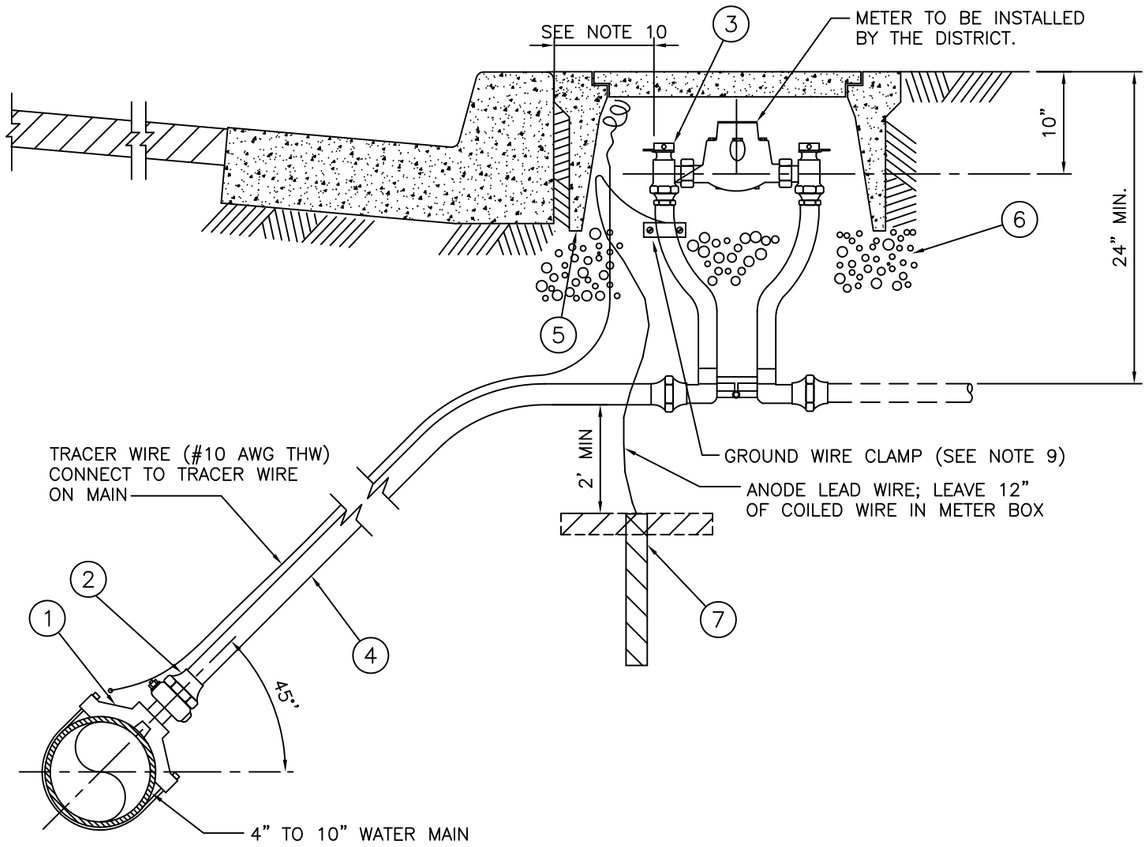
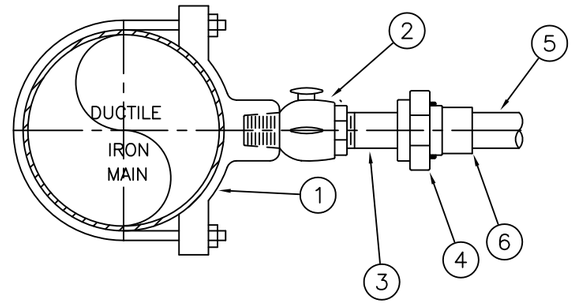


MATERIALS

ITEM NO.	SIZE & DESCRIPTION*
1	DOUBLE STRAP IRON BODY SERVICE SADDLE 1" I.P. OUTLET (FOR DUCTILE IRON PIPE MAINS) CAST BRONZE SERVICE SADDLE WITH 1" I.P. OUTLET (FOR C900 PVC PIPE MAIN)
2	3/4" BRONZE CORPORATION STOP I.P. THREAD X COMPRESSION (FOR DUCTILE IRON PIPE MAIN)
3	1" METER SIZE COPPERSETTER W/ 3/4" TO 1" METER SIZE MALE ADAPTOR (REQUIRED FOR 3/4" METERS), 15" HIGH, 1" INLET/OUTLET
4	1" COPPER OR POLYETHYLENE TUBING
5	METER BOX W/ CONCRETE LID CHRISTY BOX OR EQUAL
6	6" BASE OF 3/4" ROCK
7	ZINC ANODE AND LEAD WIRE. ANODE TO BE PLACED VERTICALLY OR HORIZONTALLY AT A MINIMUM SEPARATION OF 2 FEET FROM THE COPPER SERVICE. ANODE SHALL BE SIZED BASED ON METAL SURFACE AREA. ANODE SHALL BE BAGGED IN GYPSUM, BENTONITE AND SODIUM SULFATE.

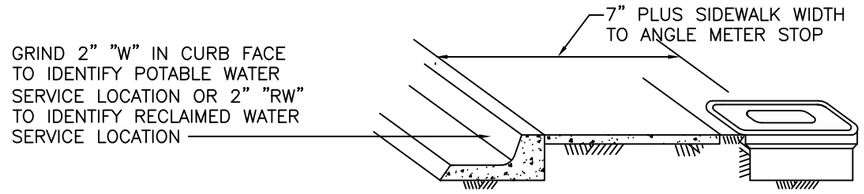
DIALECTRICAL INSULATION FOR DIP MAINS



MATERIALS*:

1. SERVICE SADDLE AND CORPORATION STOP
2. BRONZE CORPORATION STOP MALE I.P. X F.I.P.
3. NIPPLE MALE I.P. X MALE I.P., BRONZE
4. DIELECTRIC UNION F.I.P. X SWEAT
5. TYPE K COPPER SERVICE TUBING
6. COMPRESSION ADAPTER

* SEE SPECFICIATIONS FOR APPROVED MANUFACTURERS & MODELS.



NOTES:

1– SERVICE SADDLE SHALL NOT BE INSTALLED WITHIN 18" OF VALVE, COUPLING, JOINT OR FITTING. TAPPED COUPLINGS ARE NOT PERMITTED.

2– INSTALL CORPORATION STOP WITH KEY IN OPEN POSITION.

3– SET TOP OF METER BOX FLUSH WITH SIDEWALK OR CURB AS SHOWN.

4– THE CORPORATION STOP TAP SHALL BE MADE AS SPECIFIED PER MANUFACTURER'S RECOMMENDATION. ALL TAPS SHALL BE MADE WITH MACHINE GUIDE OR PILOT TAP.

5– THE WATER SERVICE SHALL EXTEND PERPENDICULAR TO THE CENTERLINE OF THE STREET FROM THE WATER MAIN TO THE METER STOP.

6– METER BOX SHALL BE SET BEHIND SIDEWALK WHERE SIDEWALK IS ADJACENT TO CURB, OR IN PARKWAY BETWEEN CURB AND SIDEWALK.

7– ALL SPLICES OF COPPER TUBING SHALL BE COMPRESSION CONNECTIONS.

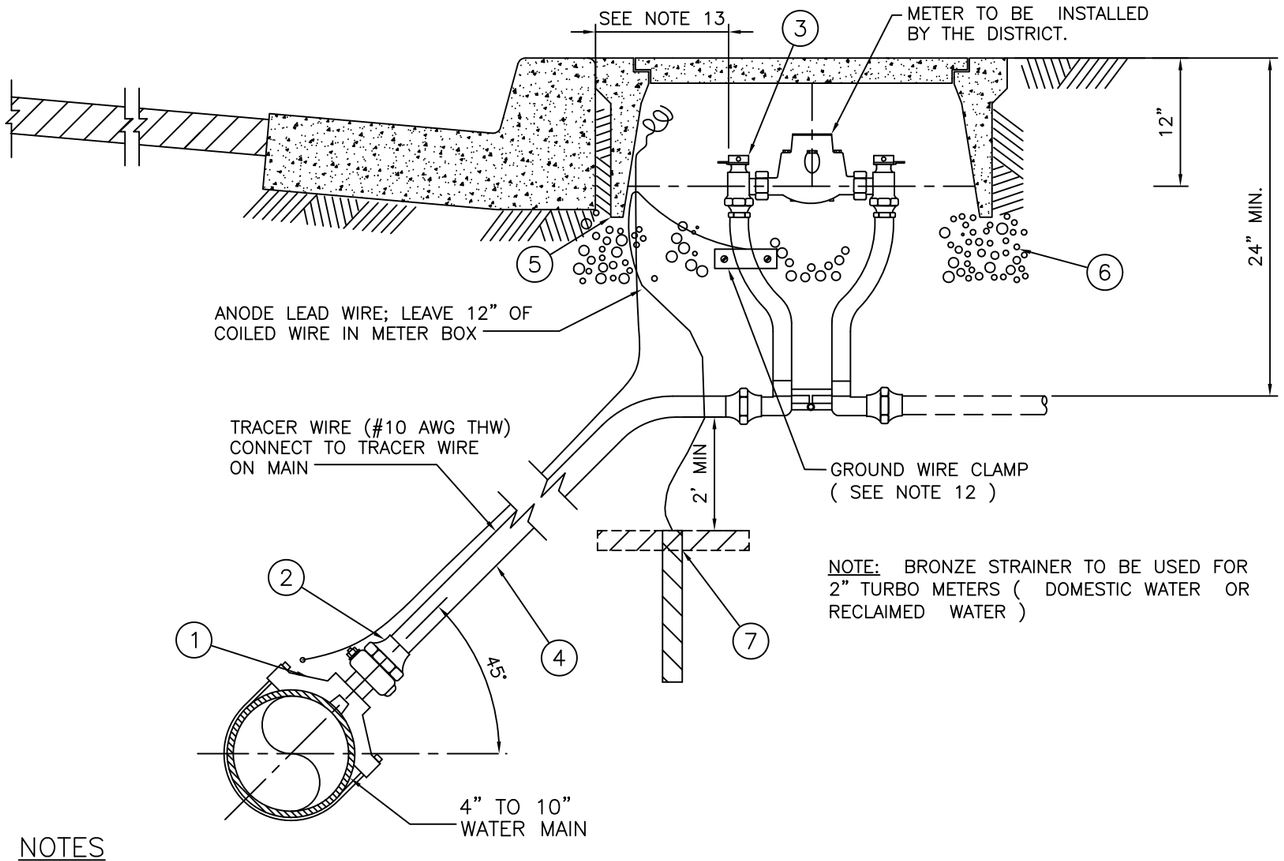
8– METER BOX LID FOR ALL RECYCLE WATER SERVICES SHALL BE PURPLE IN COLOR PER SPECIFICATIONS.

9– ANODE LEAD WIRE SHALL BE CLAMPED TO COPPER TUBING. CLAMP SHALL BE DIRECT BURIAL TYPE OF RED BRASS WITH BRASS SCREWS AS MANUFACTURED BY DOTTIE, OR APPROVED EQUAL.

10– COPPERSETTER SHALL BE CENTERED IN THE METER BOX. DISTANCE FROM THE CURB SHALL BE SPECIFIED IN THE CONTRACT DRAWINGS.

11– ANODE(S) SHALL BE INSTALLED WHEN REQURED BY CORROSION STUDY REPORT (SEE MASTER PLAN REQUIREMENT IN DEVELOPMENT PROCEDURE SECTION100).

APPROVED BY DISTRICT ENGINEER	MARINA COAST WATER DISTRICT STANDARD PLAN	STANDARD
DATE 11/2007	1" WATER SERVICE INSTALLATION	W-1
		SHEET 1 OF 1

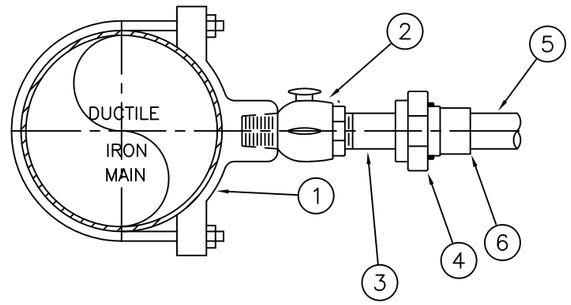


NOTE: BRONZE STRAINER TO BE USED FOR 2" TURBO METERS (DOMESTIC WATER OR RECLAIMED WATER)

MATERIALS

ITEM NO.	SIZE & DESCRIPTION*
1	DOUBLE STRAP IRON BODY SERVICE SADDLE 2" I.P. OUTLET (FOR DUCTILE IRON PIPE MAINS)
	CAST BRONZE SERVICE SADDLE 2" I.P. OUTLET (FOR C900 PVC PIPE MAINS)
2	2" BRONZE CORPORATION STOP MALE I.P. THREAD X F.I.P. (FOR DUCTILE IRON MAINS)
2A	2" BRONZE CORPORATION STOP MALE I.P. THREAD X COMPRESSION (FOR C900 PVC PIPE MAINS)
3	2" METER SIZE COPPERSETTERS, 15" HIGH
4	2" COPPER OR POLYETHYLENE TUBING
5	METER BOX W/CONCRETE LID CHRISTY BOX OR EQUAL
6	6" BASE OF 3/4" ROCK
7	ZINC ANODE AND LEAD WIRE. ANODE IS TO BE PLACED VERTICALLY OR HORIZONTALLY AT A MINIMUM SEPARATION OF 2 FEET FROM THE COPPER SERVICE. ANODE SHALL BE SIZED BASED ON METAL SURFACE AREA. ANODE SHALL BAGGED IN GYPSUM, BENTONITE AND SODIUM SULFATE.

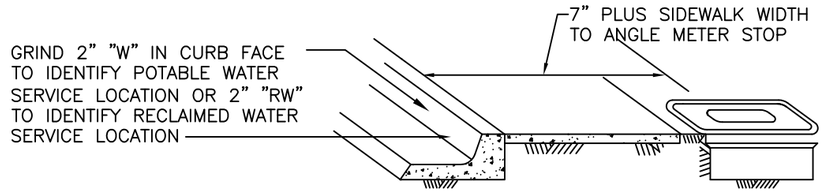
DIALECTRICAL INSULATION FOR DIP MAINS



MATERIALS*:

1. SERVICE SADDLE AND CORPORATION STOP
2. BRONZE CORPORATION STOP MALE I.P. X F.I.P.
3. NIPPLE MALE I.P. X MALE I.P., BRONZE
4. DIELECTRIC UNION F.I.P. X SWEAT
5. TYPE K COPPER SERVICE TUBING
6. COMPRESSION ADAPTER

*SEE SPECIFICATIONS FOR APPROVED MANUFACTURERS & MODELS.



NOTES

1– SERVICE SADDLE SHALL NOT BE INSTALLED WITHIN 18" OF VALVE, COUPLING, JOINT OR FITTING. TAPPED COUPLINGS ARE NOT PERMITTED

2– INSTALL CORPORATION STOP WITH KEY SIDEWAYS IN OPEN POSITION.

3– SET TOP OF METER BOX FLUSH WITH SIDEWALK OR CURB AS SHOWN

4– THE CORPORATION STOP TAP SHALL BE MADE AS SPECIFIED PER MANUFACTURER'S RECOMMENDATION.

5– THE WATER SERVICE SHOULD EXTEND PERPENDICULAR TO THE CENTERLINE OF THE STREET FROM THE WATER MAIN TO THE METER STOP.

6– METER BOX SHALL BE SET BEHIND SIDEWALK WHERE SIDEWALK IS ADJACENT TO CURB, OR IN PARKWAY BETWEEN CURB AND SIDEWALK.

7– ALL SPLICES OF COPPER TUBING SHALL BE COMPRESSION CONNECTIONS.

8– METER BOX LID FOR ALL RECYCLE WATER SERVICE SHALL BE PURPLE IN COLOR PER SPECIFICTIONS.

9– COMPRESSION TYPE CORPORATION STOP AND ANGLE METER STOP MAY BE SUBSTITUTED FOR THE FEMALE IRON PIPE STYLE WITH MALE IRON BY SWEAT ADAPTERS AS SHOWN.

10– ALL SWEAT JOINTS SHALL BE SILVER SOLDER (EXCEPT AS NOTED)

11– A 1" BYPASS LINE WITH LOCKING CURB STOP MAY BE REQUIRED FOR INSTALLATIONS NEEDING CONTINUOUS SERVICE.

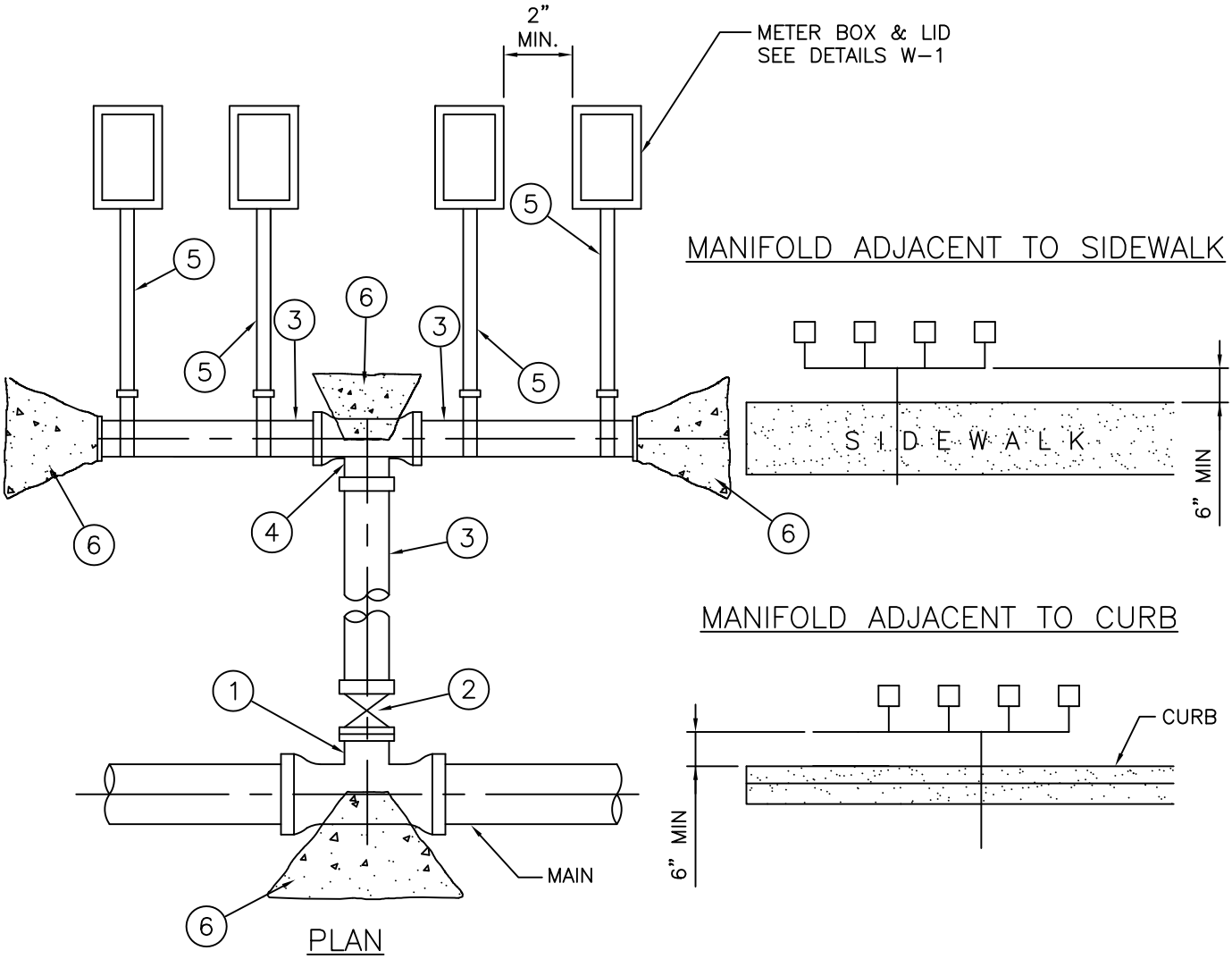
12– ANODE LEAD WIRE SHALL BE CLAMPED TO COPPER TUBING. CLAMP SHALL BE DIRECT BURIAL TYPE OF RED BRASS WITH BRASS SCREWS AS MANUFACTURED BY DOTTIE, OR APPROVED EQUAL.

13– COPPERSETTER SHALL BE CENTERED IN THE METER BOX. DISTANCE FROM THE CURB SHALL BE SPECIFIED IN CONTRACT DRAWINGS.

14– WATER SERVICES SHALL NOT BE PERMITTED ON WATER MAINS LARGER THAN 10"

15– ANODE(S) SHALL BE INSTALLED WHEN REQUIRED BY CORROSION STUDY REPORT (SEE MASTER PLAN REQURIEMENT IN DEVELOPMENT PROCEDURE SECTION 100).

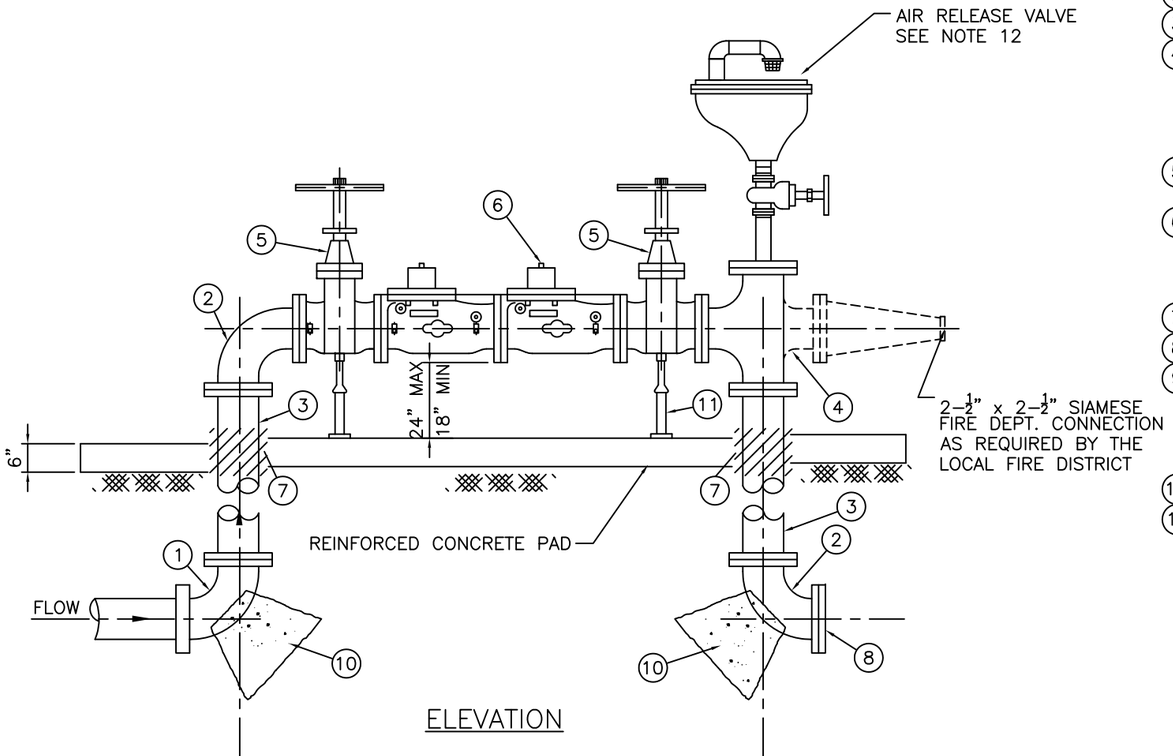
APPROVED BY DISTRICT ENGINEER	MARINA COAST WATER DISTRICT STANDARD PLAN	STANDARD
DATE 11/2007	2" WATER SERVICE INSTALLATION	W-2
		SHEET 1 OF 1



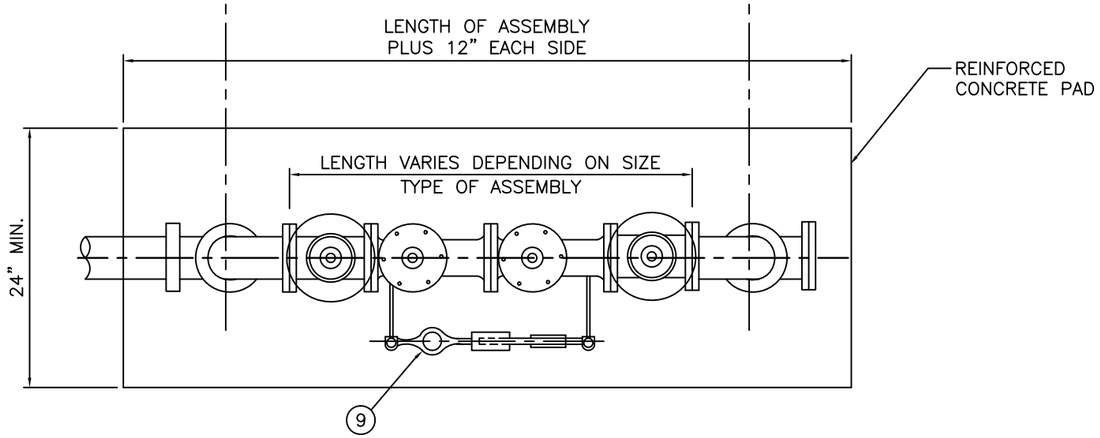
MATERIALS

1	D.I. MJ X FLG. TEE
2	4" MJ X FLG GATE VALVE
3	4" PVC
4	D.I. MJ TEE
5	1" SERVICE INSTALLATION – SEE MCWD STD. DWG. W-1
6	THRUST BLOCK – SEE MCWD STD. PLAN W-13

APPROVED BY DISTRICT ENGINEER DATE 11/2007	MARINA COAST WATER DISTRICT	MARINA COAST WATER DISTRICT STANDARD PLAN MANIFOLD ASSEMBLY FOR 4 TO 10 1-INCH SERVICES	STANDARD W-3 SHEET 1 OF 1



ELEVATION



PLAN

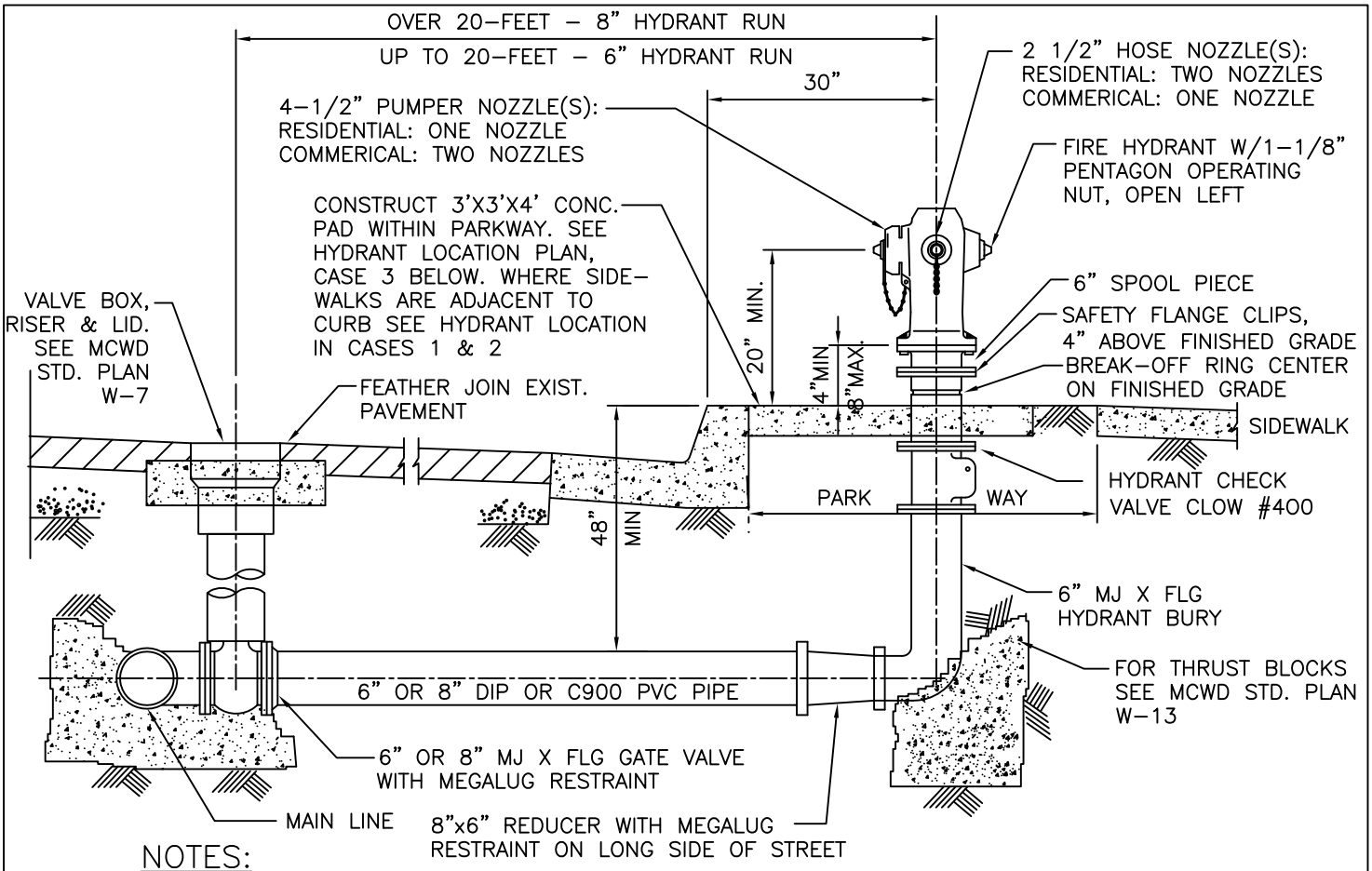
MATERIALS

1. 90° D.I. ELL FLG x PE
2. 90° D.I. ELL MJ X MJ WITH MEGALUG RESTRAINT
3. D.I. SPOOL PE WITH MEGALUG RESTRAINT
4. 90° D.I. (CL) TEE FLG x FLG x FLG OR OPTIONAL D.I. (CL) CROSS AND SIAMESE FIRE DEPT. CONNECTION (2 1/2" x 2 1/2"). CLEARANCE AND ORIENTATION AS APPROVED BY THE FIRE DEPARTMENT.
5. U.S.C.–APPROVED SHUT–OFF VALVES. SEE GENERAL NOTE 1.
6. DOUBLE CHECK DETECTOR ASSEMBLY OR REDUCED PRESSURE BACKFLOW ASSEMBLY AS APPROVED BY THE DISTRICT (SIZE DEPENDS UPON REQUIREMENT)
7. CALPICO VI–10 PROTECTIVE TAPE OR EQUAL
8. BLIND FLANGE
9. FACTORY INSTALLED BY–PASS METER ASSEMBLY CONSISTING OF APPROVED POSITIVE DISPLACEMENT METER, DOUBLE CHECK VALVE AND ASSOCIATED PIPING. BY–PASS METER TO BE SUPPLIED BY THE DISTRICT.
10. THRUST BLOCK PER MCWD STD. PLAN W–14
11. GALVANIZED ADJUSTABLE PIPE SUPPORT SHALL BE GRINELL FIG. 264, ELCEN FIG. 40 OR EQUAL. SUPPORT SHALL BE GALVANIZED AFTER FABRICATION.

NOTES:

1. NOTIFY M.C.W.D. PRIOR TO INSTALLATION OF UNIT.
2. DOUBLE CHECK VALVE BACKFLOW PREVENTION ASSEMBLIES SHALL BE FEBCO MODEL 805 OR 806 SERIES OR EQUAL. ENTIRE ASSEMBLIES INCLUDING ISOLATION VALVES, TEST COCKS AND BYPASS METER (IF REQUIRED) SHALL BE PROVIDED AS A COMPLETE UNIT.
3. REDUCED PRESSURE PRINCIPLE BACKFLOW PREVENTION ASSEMBLIES SHALL BE FEBCO MODEL 825Y OR EQUAL. ENTIRE ASSEMBLY INCLUDING ISOLATION VALVES, TEST COCKS AND BYPASS METER WITH BACKFLOW DEVICE (IF REQUIRED) SHALL BE PROVIDED AS A COMPLETE UNIT.
4. INSTALLATION SHALL COMPLY WITH THE LATEST PLUMBING CODES AND APPLICABLE LOCAL AGENCY REQUIREMENTS.
5. THRUST BLOCKS SHALL BE SIZED PER MCWD STD. PLAN W–14.
6. THE APPROPRIATE EASEMENTS MUST BE DEDICATED TO THE DISTRICT PRIOR TO PLAN APPROVAL.
7. ALL BACKFLOW ASSEMBLIES SHALL BE PAINTED PER SECTION 09900.
8. TEST COCKS FOR BACKFLOW PREVENTERS 3" AND LARGER SHALL BE PROVIDED WITH STANDARD MALE 3/4" IRON PIPE BY MALE GARDEN HOSE THREAD ADAPTERS.
9. BACKFLOW PREVENTERS 3" AND LARGER SHALL BE SUPPORTED BY GALVANIZED PIPE SADDLE SUPPORTS.
10. ASSEMBLIES ON FIRE SERVICE LINES SHALL HAVE OS&Y VALVES. HAND WHEELS ON OS&Y VALVES SHALL BE CHAINED AND LOCKED. USE GALVANIZED CHAIN, STRAIGHT LINK. CHAIN SHALL BE DOUBLE LOCKED. ONE LOCK WILL BE SUPPLIED BY MCWD.
11. INSTALLATION REQUIRED BY TITLE 17 OF THE CALIFORNIA CODE OF REGULATIONS AND THE DEPARTMENT OF HEALTH SERVICES RECOMENDATIONS.
12. BACKFLOW PREVENTERS 3" AND LARGER SHALL HAVE AN AIR RELEASE VALVE. VALVES SHALL BE APCO NO. 50, 1/2" FOR 3" TO 6" SERVICE, 3/4" FOR 8" TO 12" SERVICE.
13. ASSEMBLY SHALL BE PROTECTED BY GUARD POSTS WHEN LOCATED NEAR TRAFFIC AREAS, AS REQUIRED BY THE DISTRICT.
14. NO CONNECTIONS OR TEES WILL BE ALLOWED BETWEEN METER AND BACKFLOW PREVENTER.
15. DEVICE MUST BE ACCESSIBLE FOR TESTING AND MAINTENANCE. LOCATION SHALL BE APPROVED BY DISTRICT PRIOR TO INSTALLATION.
16. INSTALLATIONS USING THREADED OR SOLDERED FITTINGS SHALL INCLUDE ONE THREE PART UNION ON EACH SIDE OF THE ASSEMBLY. SOLDER SHALL BE LEAD FREE.
17. ASSEMBLIES INSTALLED IN AREAS SUBJECT TO VANDALISM SHALL BE ENCLOSED IN A CAGE. CAGE SHALL PROVIDE 12" MINIMUM CLEARANCE ALL AROUND AND SHALL BE SUBMITTED TO MCWD FOR APPROVAL.

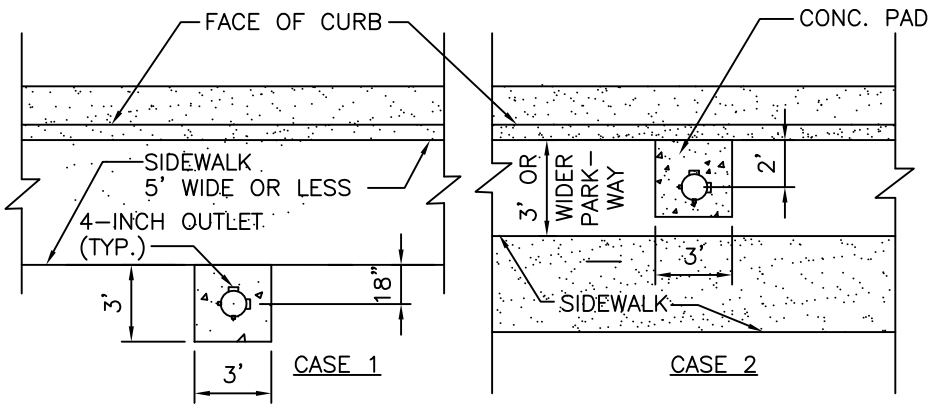
APPROVED BY DISTRICT ENGINEER		MARINA COAST WATER DISTRICT STANDARD PLAN	STANDARD
DATE 11/2007	MARINA COAST WATER DSTR CT	DOUBLE CHECK BACKFLOW ASSEMBLY & ABOVE GROUND FIRE LINE	W-4
			SHEET 1 OF 1



NOTES:

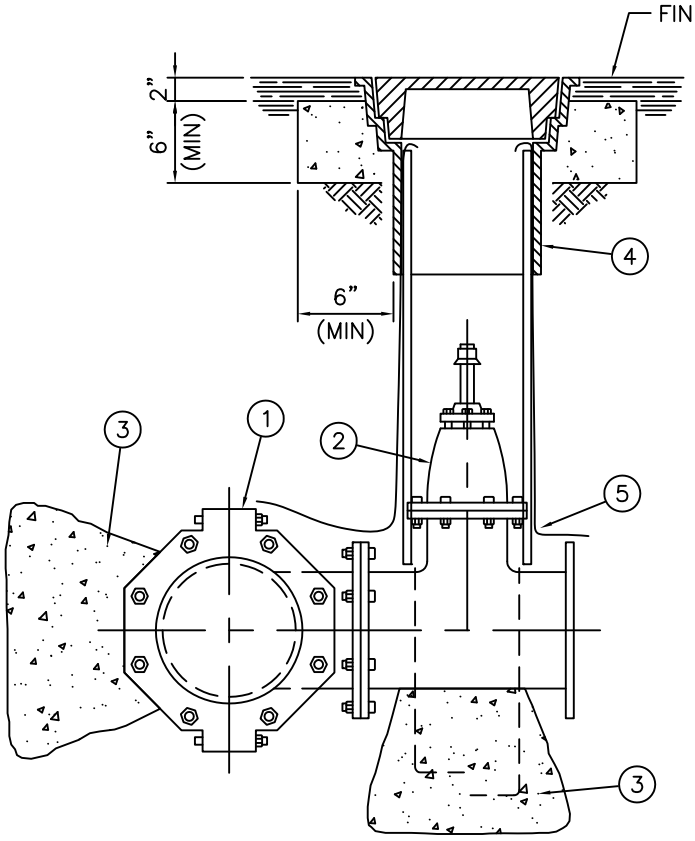
1. FOR APPROVED TYPES OF FIRE HYDRANTS SEE SPECIFICATIONS SECTION 15139
2. HYDRANTS TO BE PAINTED ACCORDING TO PAINT SPECIFICATION SECTION 09900
3. HYDRANT FLANGE GASKET SHALL BE "FULL FACE" AND OF RUBBER COMPOSITION 1/8" THICK.
4. BOLLARDS SHALL BE INSTALLED AS REQUIRED BY THE DISTRICT.
5. THRUST BLOCK NOT REQUIRED IF LATERAL IS FULLY RESTRAINED.

HYDRANT LOCATION PLANS



SIDEWALK NOT
ADJACENT TO CURB

APPROVED BY DISTRICT ENGINEER		MARINA COAST WATER DISTRICT STANDARD PLAN	STANDARD
DATE 11/2007		FIRE HYDRANT INSTALLATION	W-5
			SHEET 1 OF 1



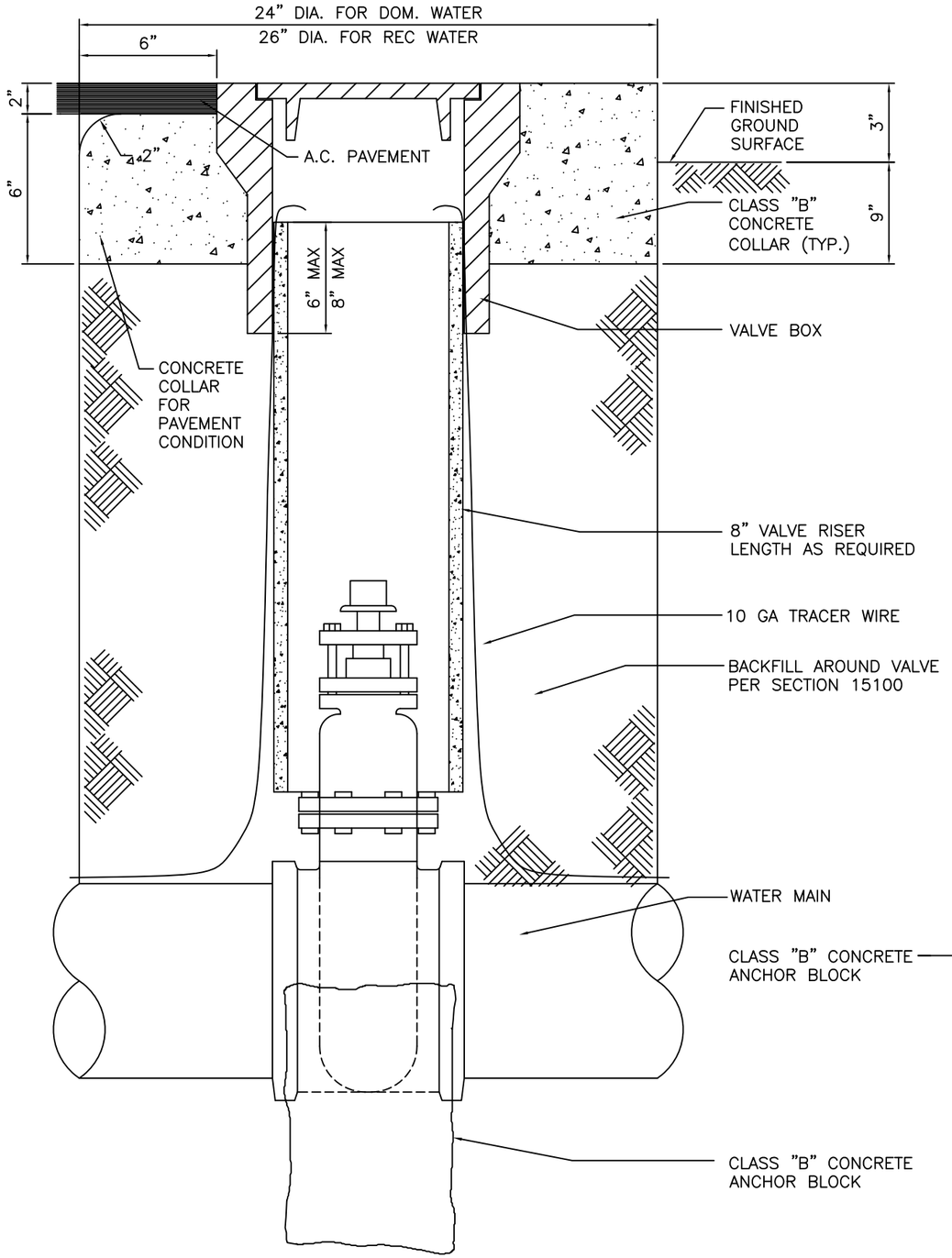
1. TAPPING SLEEVE – CAST IRON, MJ
2. GATE VALVE – RESILIENT WEDGE, FLANGED
3. CONSTRUCT CONCRETE THRUST BLOCK PER STD. PLAN W–13
4. VALVE RISER, BOX & LID PER STD. PLAN W–7
5. TRACER WIRE

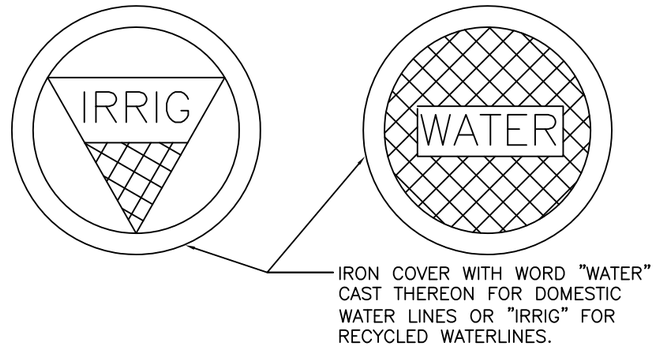
NOTES

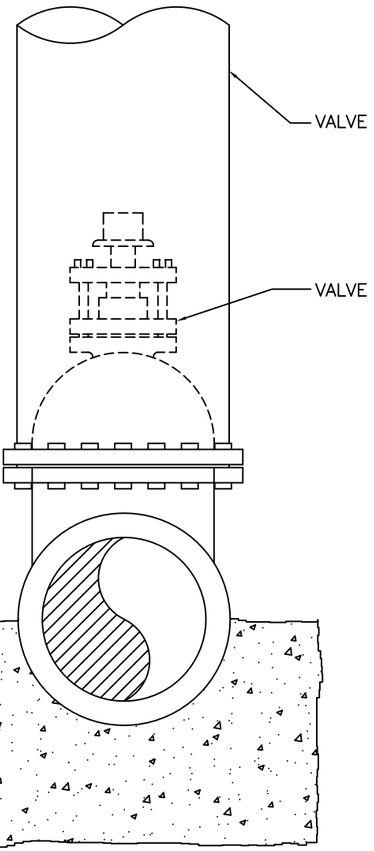
1. AIR TEST TAPPING SLEEVE PRIOR TO TAP
2. COAT ALL TAPPING SLEEVE BOLTS WITH KOPPERS BITSMASTIC
3. USE SHELL CUTTER ON ALL PVC TAPS

TAP OF ACP, PVC OR D.I.P. MAINS

APPROVED BY DISTRICT ENGINEER DATE 11/2007	MARINA COAST WATER DISTRICT	MARINA COAST WATER DISTRICT STANDARD PLAN CONNECTION TO EXISTING PIPE	STANDARD W-6 SHEET 1 OF 1







NOTES:

1– PROVIDE VALVE STEM EXTENSION IF DEPTH TO VALVE NUT EXCEEDS 4 FEET.

IN NEW TRACT DEVELOPMENTS EXTEND VALVE WELL PIPE 2' ABOVE GROUND ON "KEY VALVES" FOR EMERGENCY SHUTOFFS.

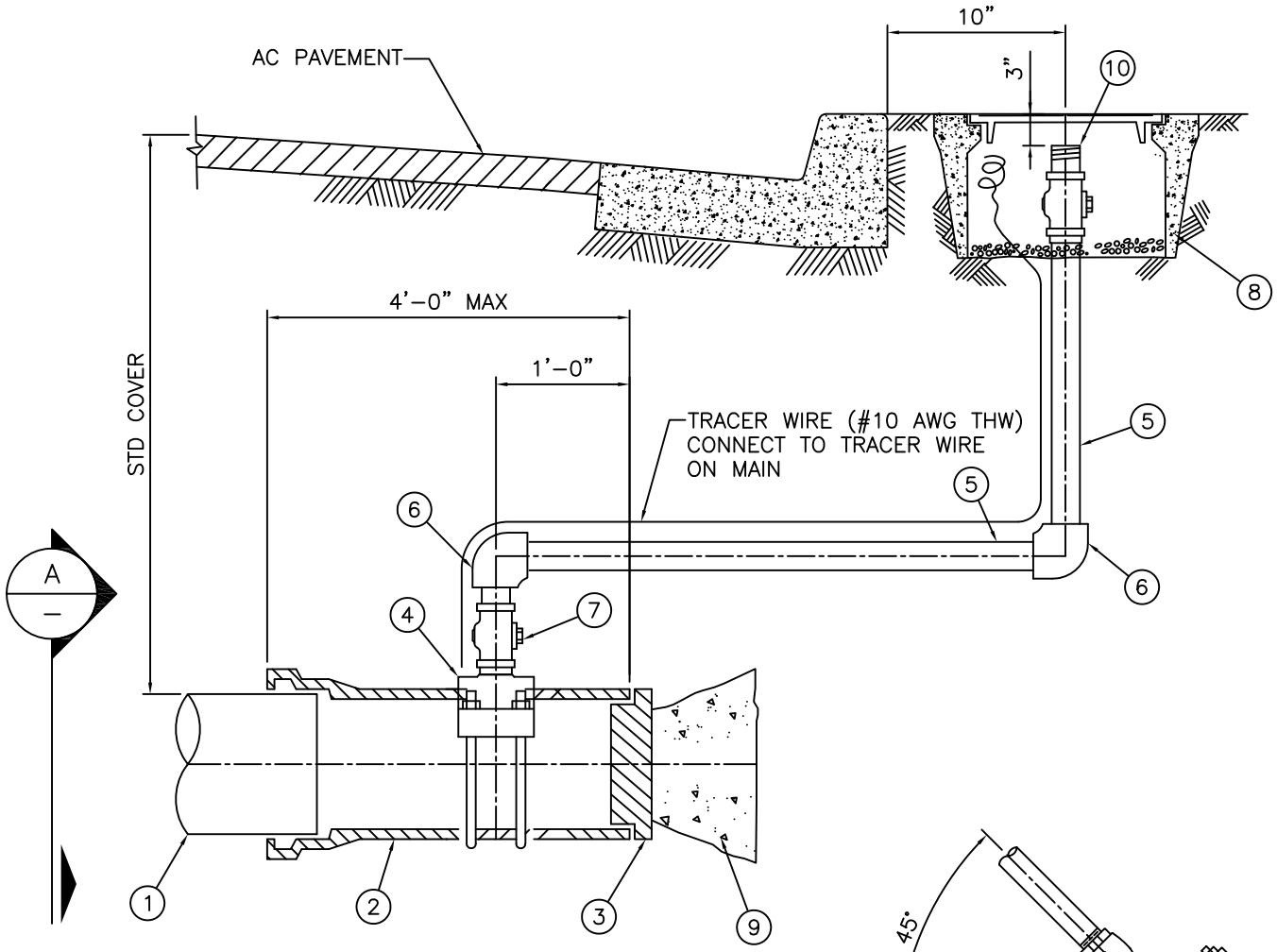
2– BUTTERFLY VALVE OPERATORS SHALL BE LOCATED ON THE LEFT–HAND SIDE OF THE VALVE (AT THE TEE OR CROSS), LOOKING THROUGH THE VALVE TOWARD THE PIPE END.

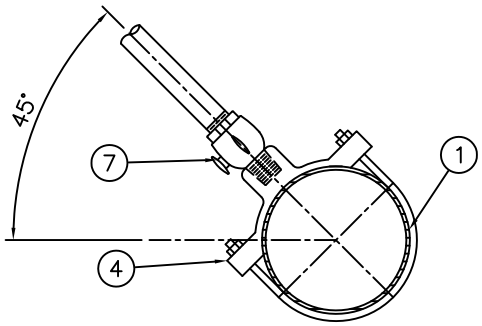
3– WHERE CONCRETE CROSS GUTTERS AT STREET INTERSECTIONS WILL INTERFERE WITH VALVE BOXES, THE PIPELINE SHALL BE MOVED TO A POSITION 7 FEET OFF THE CURB FACE TO CLEAR THE CROSS GUTTER.

4– VALVES TO BE LOCATED ADJACENT TO FITTINGS WHEREVER POSSIBLE.

5– VALVES BOLTED TO FITTINGS WILL NOT REQUIRE ANCHOR BLOCKS.

APPROVED BY DISTRICT ENGINEER	MARINA COAST WATER DISTRICT STANDARD PLAN	STANDARD
DATE 11/2007	VALVE & VALVE BOX INSTALLATION	W-7
		SHEET 1 OF 1



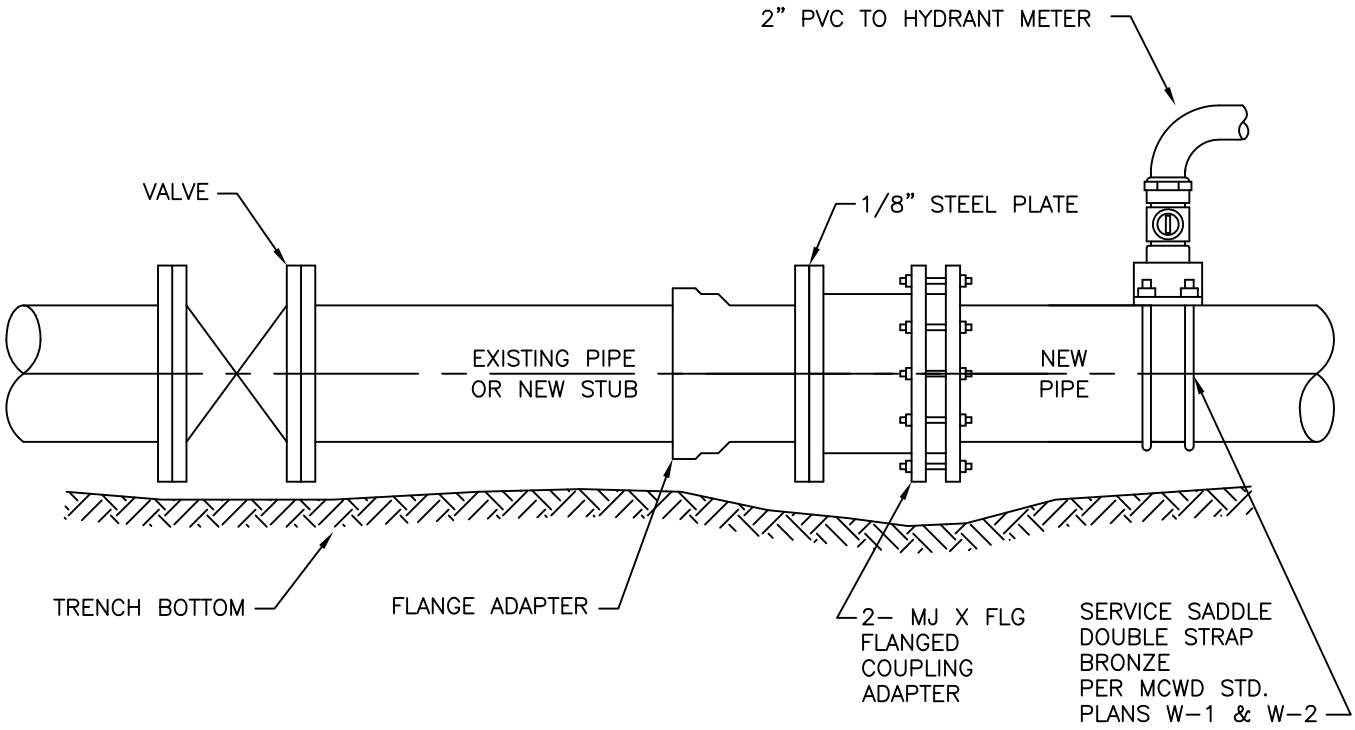


SECTION 'A'

NOTES:

1. 4", 6", 8", 10" OR 12" PVC OR DUCTILE IRON PIPE
2. PVC SPOOL (TO BE REMOVED AT TIME OF FUTURE MAIN EXTENSION INSTALLATION
3. DIP MJ CAP
4. 1–1/2" BRONZE DOUBLE STRAP TAPPING SADDLE FOR ACP & DIP, SINGLE BAND SADDLE OR BRASS SADDLE FOR PVC C900
5. 1" TYPE K RIGID COPPER TUBING
6. 1" 90° ELBOW, COPPER
7. CORPORATION STOP
8. TRAFFIC VALVE BOX
9. THRUST BLOCK PER MCWD STD. PLAN W–13
10. 1" ANGLE INVERTED KET VALVE W/ LOCK WING & BRASS SERVICE PLUG

APPROVED BY DISTRICT ENGINEER		MARINA COAST WATER DISTRICT STANDARD PLAN	STANDARD
DATE 11/2007		MANUAL AIR RELEASE ASSEMBLY	W-8
			SHEET 1 OF 1



1- THE CONTRACTOR SHALL NOT OPERATE DISTRICT VALVES. 24 HOURS NOTICE IS REQUIRED FOR OPERATION BY DISTRICT.

2- UPON THE ACCEPTANCE OF THE NEW SYSTEM. THE CONTRACTOR SHALL REMOVE THE 2" BYPASS, PLUG THE SADDLES WITH BRASS PLUGS AND REMOVE THE STEEL PLATE.

3- THE BYPASS SHALL BE CHECKED BY THE DISTRICT'S INSPECTOR.

4- THE DOUBLE CHECK VALVE ASSEMBLY SHALL BE DOHS APPROVED.

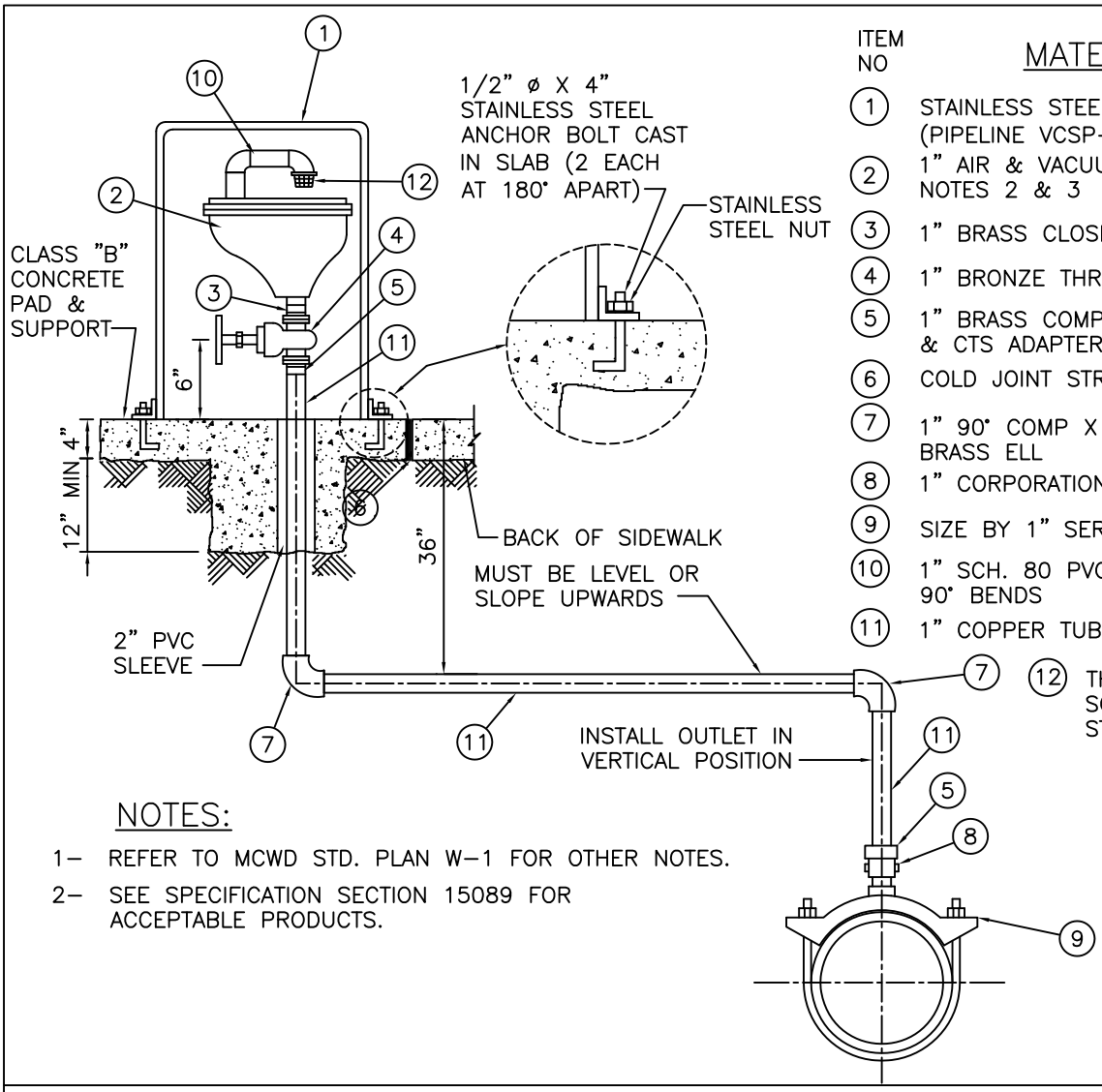
5- THE SHUTOFF VALVE ON THE DOWN STREAM SIDE ON THE BACK FLOW PREVENTER SHALL BE CLOSED DURING PRESSURE TESTING AND DISINFECTING THE NEW PIPE.

6- THE CONTRACTOR SHALL PROVIDE THRUST RESTRAINTS TO PREVENT JOINT SEPARATION.

7- SIZE OF BYPASS MAY BE INCREASED SUBJECT TO MCWD APPROVAL.

8- DOUBLE CHECK VALVE ASSEMBLY SHALL NOT BE BACKFILLED.

APPROVED BY DISTRICT ENGINEER		MARINA COAST WATER DISTRICT STANDARD PLAN	STANDARD
DATE 11/2007		TEMPORARY BYPASS CONNECTION TO NEW MAINS	W-9
			SHEET 1 OF 1



MATERIALS

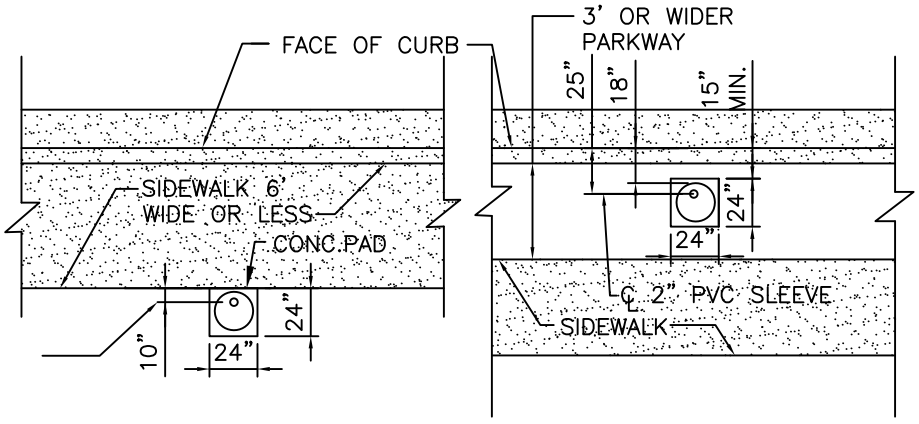
ITEM NO	
1	STAINLESS STEEL VENTED COVER (PIPELINE VCSP–1530)
2	1" AIR & VACUUM RELIEF VALVE SEE NOTES 2 & 3
3	1" BRASS CLOSE NIPPLE
4	1" BRONZE THREADED GATE VALVE
5	1" BRASS COMPRESSION FITTING WITH IP & CTS ADAPTER
6	COLD JOINT STRIP
7	1" 90° COMP X COMP COPPER OR BRASS ELL
8	1" CORPORATION STOP
9	SIZE BY 1" SERVICE SADDLE, SEE W–1
10	1" SCH. 80 PVC CLOSE NIPPLES AND 90° BENDS
11	1" COPPER TUBING TYPE 'K' RIGID
12	THREADED PRE–FAB. PVC SCREEN OUTLET WITH RIGID STAINLESS STEEL SCREEN.

NOTES:

1– REFER TO MCWD STD. PLAN W–1 FOR OTHER NOTES.

2– SEE SPECIFICATION SECTION 15089 FOR ACCEPTABLE PRODUCTS.

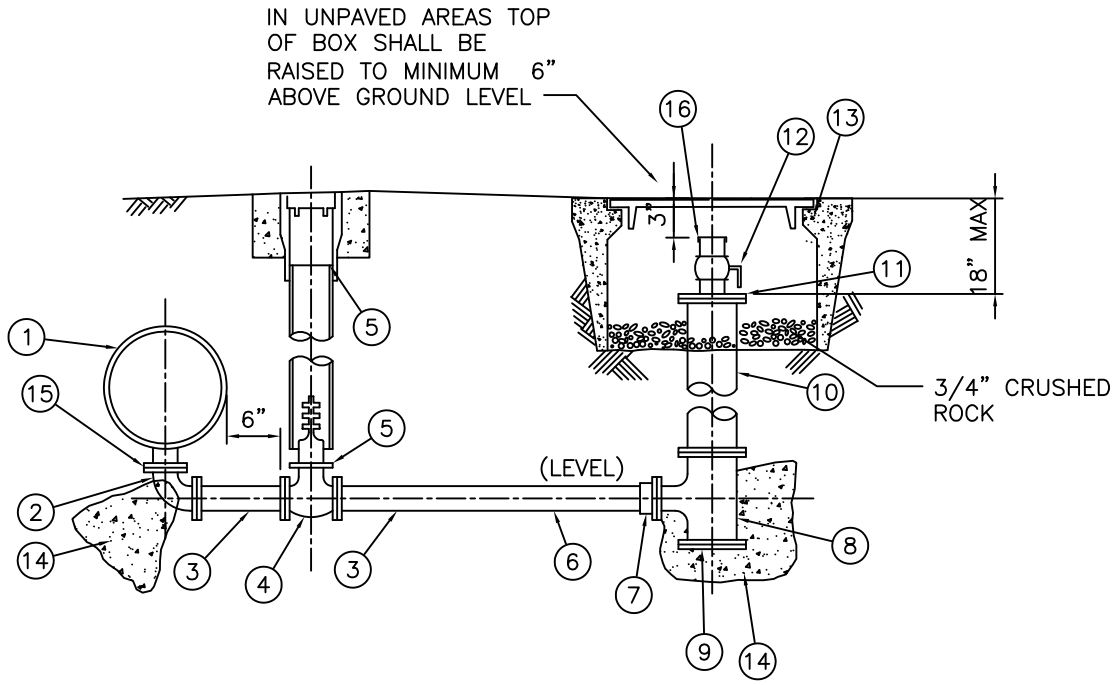
VALVE ASSEMBLY LOCATION



SIDEWALK ADJACENT TO CURB

SIDEWALK NOT ADJACENT TO CURB

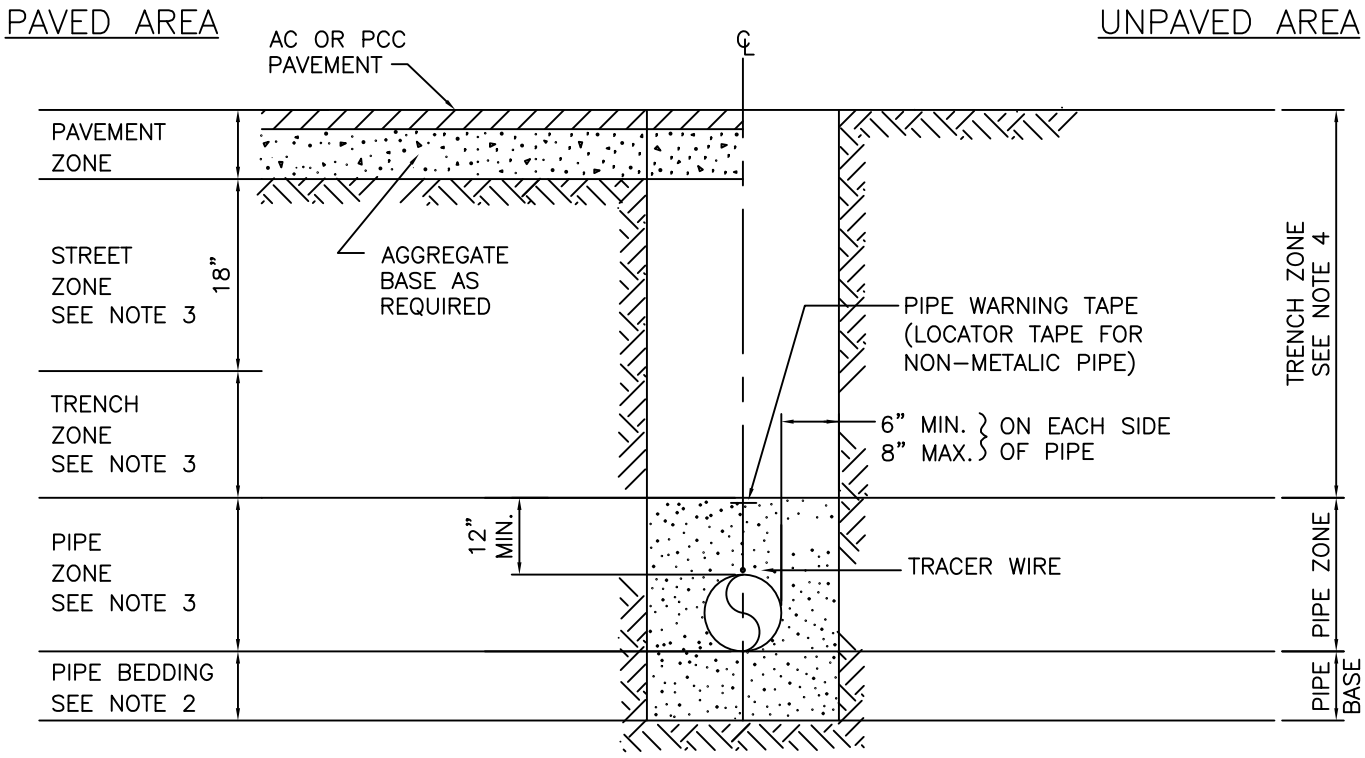
APPROVED BY DISTRICT ENGINEER	MARINA COAST WATER DISTRICT STANDARD PLAN	STANDARD
DATE 11/2007	1" AIR RELEASE & VACUUM RELIEF VALVE ASSEMBLY	W-10
		SHEET 1 OF 1



MATERIALS

1. PIPE DIA. x 4" D.I. OR WSP TEE, FLANGED
2. 4" D.I. 90° ELL, FLG. x FLG.
3. 4" x AS REQ'D D.I. SPOOL
4. 4" RW GATE VALVE, FLG. x FLG. ONE VALVE REQUIRED FOR MAINS LESS THAN 24–INCHES IN DIAMETER. TWO VALVES ARE REQUIRED, AS SHOWN, FOR MAINS 24–INCHES IN DIAMETER AND LARGER.
5. VALVE AND VALVE BOX INSTALLATION PER M.C.W.D. STD. PLAN W–7
6. 4" x AS REQ'D FLG. x PE D.I. PIPE
7. 4" D.I. FLANGE COUPLING ADAPTER
8. 8" x 4" D.I. TEE
9. 8" D.I. BLIND FLANGE
10. 8" x AS REQ'D D.I. PIPE
11. 8" BLIND FLANGE W/ 2 1/2 " TAP
12. 2 1/2" BRASS NIPPLE AND 2 1/2" BALL VALVE, IP THREAD
13. 8" MINIMUM DIAMETER VALVE BOX
14. THRUST BLOCKS PER MCWD STD. PLAN W–13
15. INSULATING KIT SHALL BE PROVIDED AS REQUIRED BY CORROSION STUDY & DISTRICT.
16. 2 1/2" BRASS NIPPLE, I.P. THREAD X FH THREAD, WITH PROTECTIVE CAP

APPROVED BY DISTRICT ENGINEER		MARINA COAST WATER DISTRICT STANDARD PLAN	STANDARD
DATE 11/2007		4 INCH LINE DRAIN BLOWOFF ASSEMBLY (FOR >12" MAINS)	W-11
			SHEET 1 OF 1



TRENCH SECTION

NOTES:

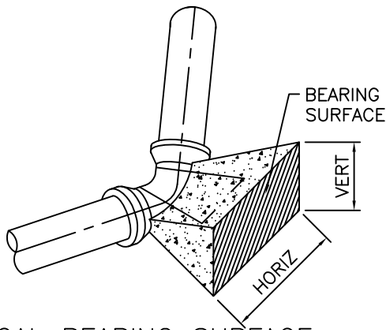
1– ALL WORKS SHALL BE IN ACCORDANCE WITH SPECIFICATION SECTION 02223.

2– FOR PIPE SIZES 4–INCH THROUGH 10–INCH DIAMETER, PIPE BASE SHALL BE A MINIMUM OF 4–INCHES IN DEPTH; FOR 12–INCH DIAMETER PIPE AND LARGER, PIPE SHALL BE A MINIMUM OF 6–INCHES IN DEPTH.

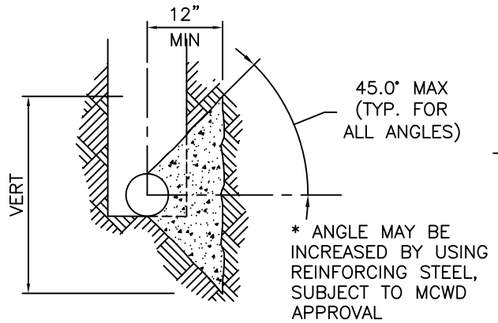
3– 95% COMPACTION OF IMPORTED BACKFILL OR NATIVE BACKFILL AS APPROVED BY DISTRICT ENGINEER

4– 90% COMPACTION OF IMPORTED BACKFILL OR NATIVE BACKFILL AS APPROVED BY DISTRICT ENGINEER

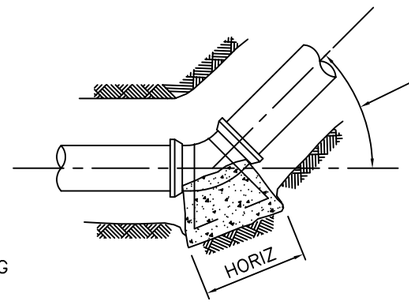
APPROVED BY DISTRICT ENGINEER		MARINA COAST WATER DISTRICT STANDARD PLAN	STANDARD
DATE 11/2007		WATER LINE TRENCH SECTION AND BEDDING DETAILS	W-12
			SHEET 1 OF 1



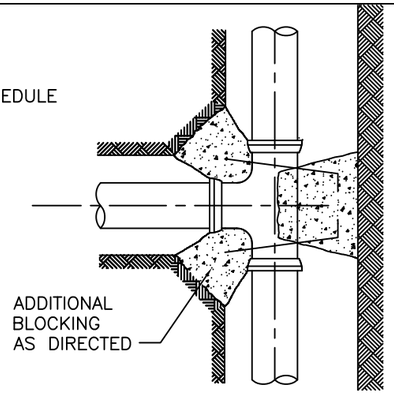
TYPICAL BEARING SURFACE



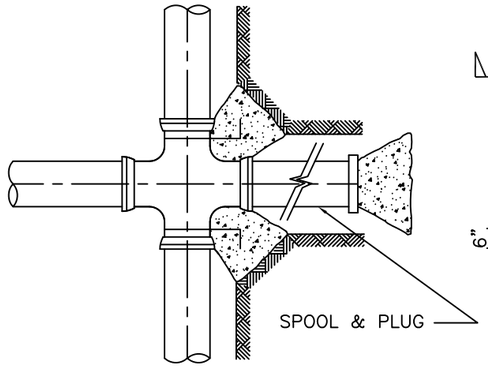
TYPICAL SECTION



TYPICAL BEND

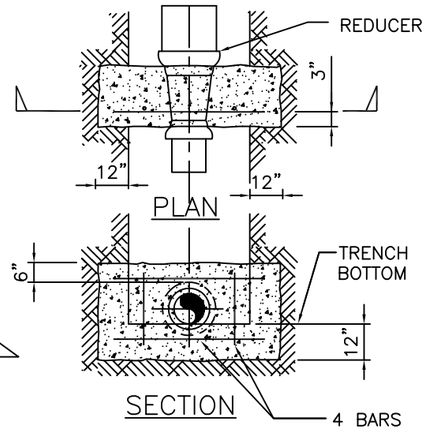


TEE OR VALVE

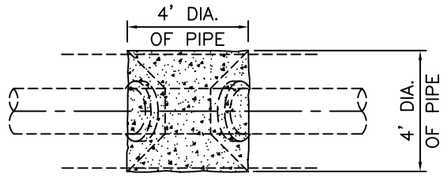


CROSS

SEE NOTE 8

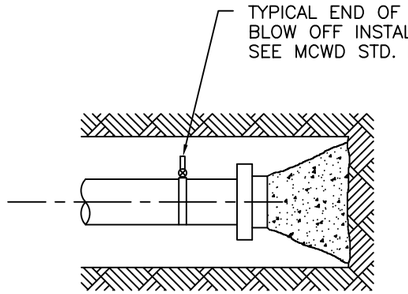


REDUCER



SECTION

VERTICAL BEND



END CAP

NOTES:

1- THRUST BLOCK BEARING AREA BASED ON ALLOWABLE SOIL BEARING VALUE OF 1500 psf PRESSURE AND 225 psi LINE PRESSURE WITH 3'-0" COVER MINIMUM.
FOR BEARING = 1000 psf, 1.5 X AREA SHOWN
FOR BEARING = 500 psf, 3.0 X AREA SHOWN

2- ALL THRUST BLOCKS SHALL BE 2,000 PSI CONCRETE AND PLACED AGAINST UNDISTURBED SOIL. DESIGN ENGINEER SHALL DETERMINE SIZES NOT SHOWN.

3- STRAPS TO BE #4 REBARS EMBEDDED IN THRUST BLOCK TO A DEPTH EQUAL TO 3/4 OF PIPE DIAMETER. STRAP BEND EQUALS 1/2 PIPE DIAMETER

4- CONCRETE SHALL NOT EXTEND ONTO FLANGE OR ADJOINING PIPE.

5- JOINTS AND FACE OF PLUGS TO BE KEPT CLEAR OF CONCRETE

6- WRAP EXPOSED PORTION OF BARS AND 2" INTO CONCRETE WITH HALF LAPPED, 10 MIL PVC TAPE

7- WHEN CLEARANCES TO OTHER FACILITIES OR UTILITIES DO NOT ALLOW THE USE OF THRUST BLOCK, RESTRAINED PIPE SHALL BE USED.

8- THRUST BLOCKS ON CROSSES SHALL BE USED ONLY WHEN THERE IS A STUB-OUT ON ONE OR MORE SIDES, OR WHEN THERE IS ADJOINING UNRESTRAINED LENGTHS OF VALVES.

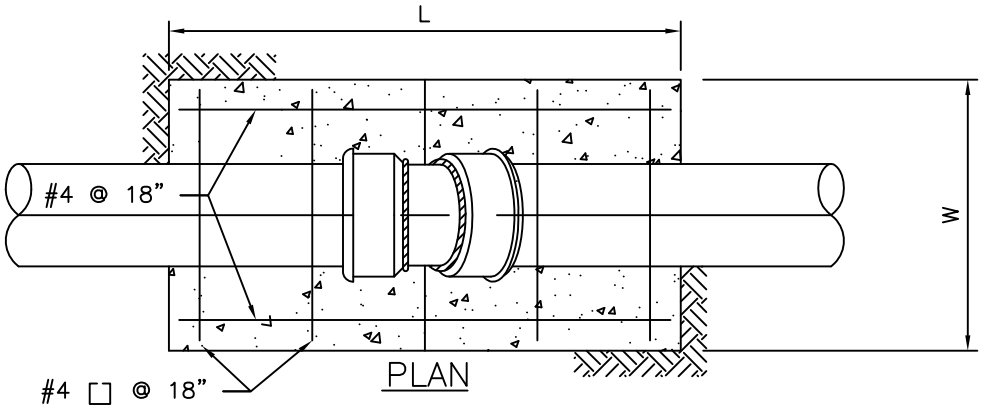
9- PIPE DIAMETERS GREATER THAN 12" SHALL BE CALCULATED BY THE ENGINEER & SUBMITTED TO DISTRCIT ENGINEER FOR APPROVAL.

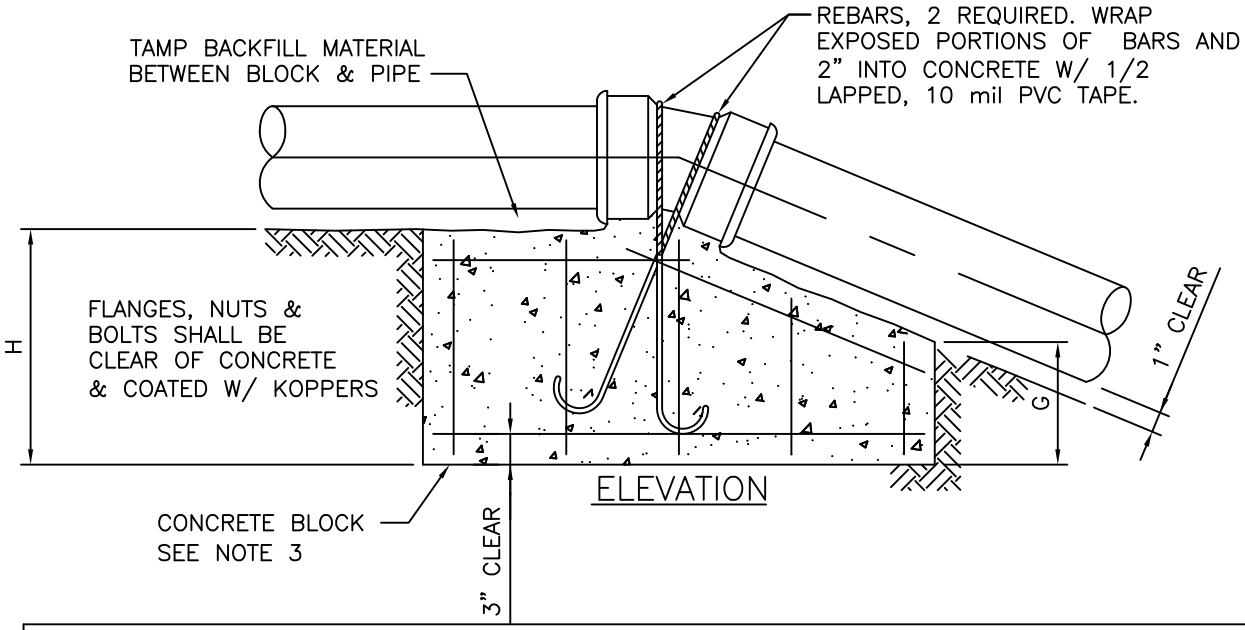
10- DISTRICT ALLOWS RESTRAINED JOINTS AS AN ALTERNATIVE TO THRUST BLOCKS.

MINIMUM SIZE OF THRUST BLOCK BEARING SURFACE

PIPE	11 1/4" BEND		22 1/2" BEND		45° BEND		90° BEND		TEE		END CAP	
SIZE	HORIZ.	VERT.	HORIZ.	VERT.	HORIZ.	VERT.	HORIZ.	VERT.	HORIZ.	VERT.	HORIZ.	VERT.
4"	1'-6"	0'-9"	1'-6"	0'-9"	1'-6"	1'-0"	2'-3"	1'-3"	1'-6"	1'-0"	1'-6"	1'-6"
6"	2'-6"	1'-0"	2'-6"	1'-0"	3'-6"	1'-6"	4'-6"	2'-3"	4'-0"	2'-0"	2'-6"	1'-9"
8"	3'-0"	1'-6"	3'-0"	1'-6"	4'-3"	2'-3"	5'-6"	3'-0"	5'-0"	2'-6"	3'-9"	2'-0"
10"	3'-9"	1'-9"	3'-9"	1'-9"	5'-0"	2'-9"	7'-0"	3'-6"	5'-6"	3'-3"	4'-6"	2'-6"
12"	4'-3"	2'-3"	4'-3"	2'-3"	5'-6"	3'-6"	8'-3"	4'-0"	7'-0"	3'-6"	5'-3"	3'-0"

APPROVED BY DISTRICT ENGINEER	MARINA COAST WATER DISTRICT	MARINA COAST WATER DISTRICT STANDARD PLAN	STANDARD
DATE 11/2007		THRUST BLOCK DETAILS	W-13
			SHEET 1 OF 1





THRUST BLOCK DIMENSION – UPWARD THRUST															
PIPE SIZE	11–1/4° BEND					22–1/2° BEND					45° BEND				
	L	W	H	G	BAR	L	W	H	G	BAR	L	W	H	G	BAR
6"	3.5	2.0	2.0	1.0	4	4.5	2.0	3.0	1.0	4	4.5	4.0	3.0	1.0	4
8"	3.5	3.0	2.0	1.0	4	4.5	4.0	3.0	2.0	4	5.5	5.0	4.0	1.5	5
10"	4.0	3.5	2.5	1.0	4	5.0	4.0	3.5	1.5	5	6.0	5.0	4.5	1.5	6
12"	4.0	3.5	3.5	1.0	4	5.0	4.0	4.0	2.0	5	6.5	5.0	5.0	2.5	7
16"	6.0	4.0	4.0	1.0	5	6.5	5.0	5.0	2.5	7	10.0	5.0	6.0	3.0	10

NOTES:

1– ENCASE ALL BURIED METALIC SURFACES WITH POLYETHYLENE WRAP AS SPECIFIED IN AWWA C105.

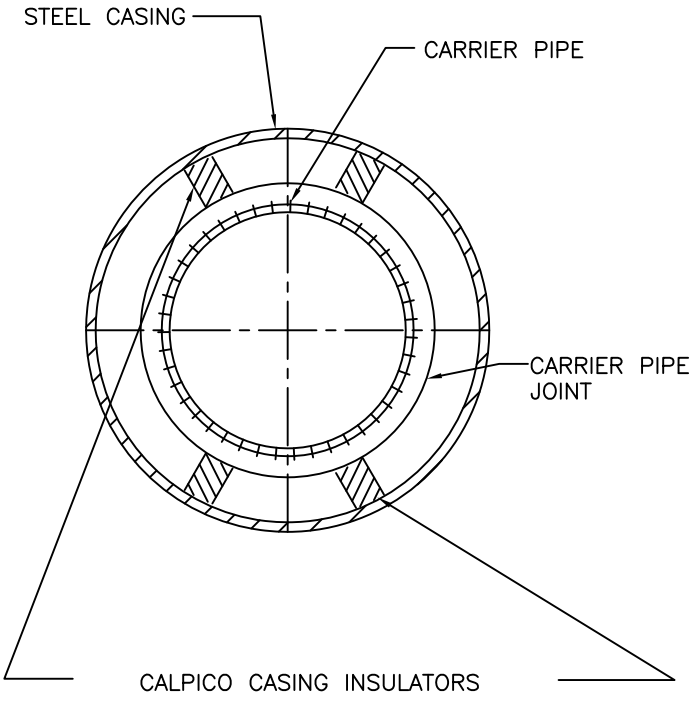
2– RESTRAINED JOINT DUCTILE IRON PIPE MAY BE USED IN PLACE OF THRUST BLOCK. CONTACT MCWD FOR APPROVAL AND DETAILS.

3– DIMENSIONS L, W, H, G ARE IN FEET.

4– THRUST BLOCK DIMENSIONS BASED ON 150 PSI TEST PRESSURE AND CONCRETE SHALL BE 2000 PSI MIN, 28 DAY COMPRESSIVE STRENGTH.

APPROVED BY DISTRICT ENGINEER		MARINA COAST WATER DISTRICT STANDARD PLAN	STANDARD
DATE 11/2007		UPWARD THRUST BLOCK DETAILS	W-14
			SHEET 1 OF 1

SCHEDULE STEEL CASING		
NOMINAL CARRIER PIPE SIZE	MINIMUM CASING SIZE	MIN. WALL THICK.
4"	10 3/4 O.D.	1/4"
6"	12 3/4 O.D.	1/4"
8"	16" O.D.	5/16"
10"	18" O.D.	5/16"
12"	20" O.D.	5/16"



NOTES:

1– CASING SHALL BE INSTALLED BY THE BORE, JACK AND/OR TUNNEL METHOD.

2– SIZE AND THICKNESS OF CASING SHALL BE AS SHOWN IN SCHEDULE. FOR LONG BORES OR SPECIAL SITUATIONS, GREATER WALL THICKNESS THAN SHOWN IN THE SCHEDULE MAY BE REQUIRED

3– ALL STEEL CASING PIPE FIELD JOINTS SHALL BE WELDED FULL–CIRCUMFERENCE.

4– CALPICO CASING INSULATORS SHALL BE PROVIDED PER DETAIL ABOVE AND INSTALLED PER MANUFACTURER'S RECOMMENDATIONS.

5– CARRIER PIPE SHALL BE PRESSURE TESTED PRIOR TO FILLING CASING.

6– EACH END OF CASING SHALL BE SEALED WITH CONCRETE.

7– CONTRACTOR SHALL FURNISH ALL NECESSARY THRUST RESTRAINT DEVICES.

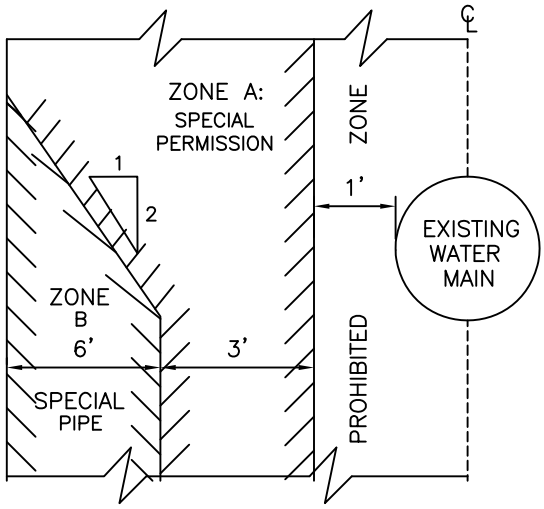
8– BACKFILL FOR CASING IN OPEN CUT SHALL BE IN ACCORDANCE WITH MCWD STD. PLAN W–12.

9– STEEL CASING PIPE SHALL BE ANALYZED FOR PASSIVE CORROSION RESISTANCE & ANALYSIS SUBMITTED TO DISTRICT ENGINEER FOR APPROVAL.

10– FILLING OF ANNULAR SPACE MAY BE REQURIED BY ROW JURISDICTION OVER ROAD OR RAIL OR AS DIRECTED BY DISTRICT ENGINEER.

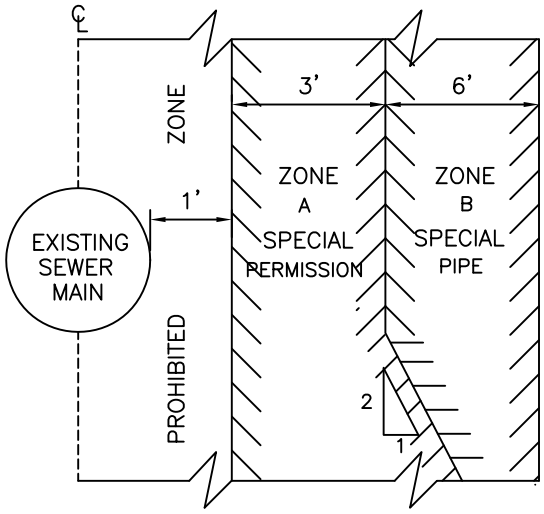
APPROVED BY DISTRICT ENGINEER		MARINA COAST WATER DISTRICT STANDARD PLAN	STANDARD
DATE 11/2007		TRENCHLESS CROSSING STEEL CASING PIPE	W-15
			SHEET 1 OF 1

CASE 1: NEW SEWER MAIN



PARALLEL CONSTRUCTION

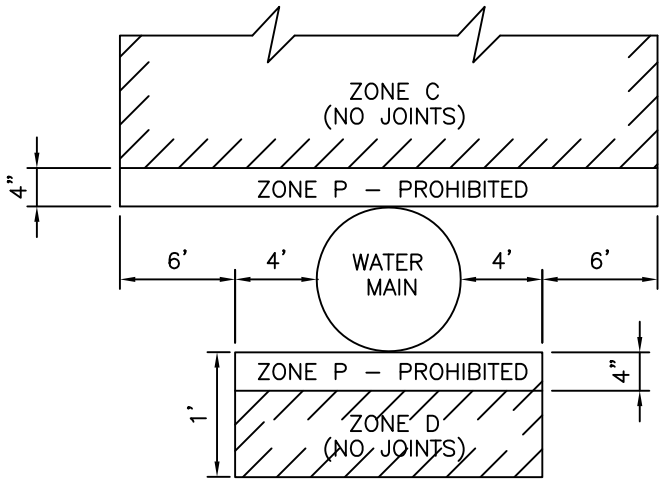
CASE 2: NEW WATER MAIN



PARALLEL CONSTRUCTION

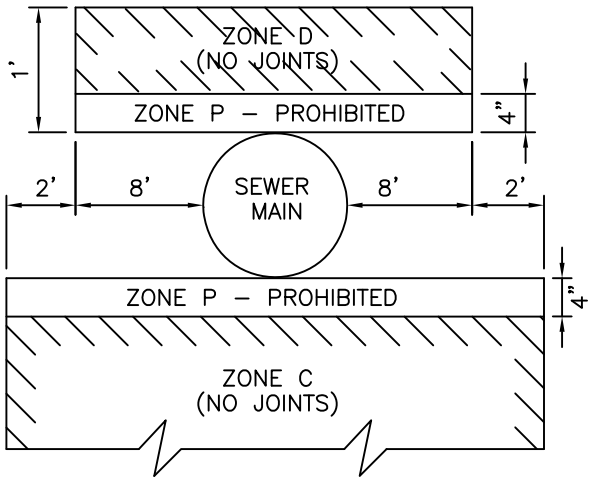
FIGURE 1

CASE 1: NEW SEWER MAIN



PERPENDICULAR CROSSING

CASE 2: NEW WATER MAIN



PERPENDICULAR CROSSING

FIGURE 2

APPROVED BY DISTRICT ENGINEER DATE 11/2007	MARINA COAST WATER DISTRICT	MARINA COAST WATER DISTRICT STANDARD PLAN STATE HEALTH DEPT. EXCEPTIONS TO BASIC SEPARATION AND STANDARDS FOR WATER MAINS AND NON-POTABLE PIPELINES	STANDARD W-16 SHEET 1 OF 3

Proposed requirements as of the date of this document (April 14, 2003; Revised October 16, 2003)

Title 22 California Code of Regulations

Section 64572. Water Main Separation

(a) New water mains and new supply lines shall be installed at least 10 feet horizontally from, and one foot vertically above, any parallel pipeline conveying:
(1) Untreated sewage,
(2) Primary or secondary treated sewage,
(3) Disinfected secondary-2.2 recycled water (defined in section 60301.220),
(4) Disinfected secondary-23 recycled water (defined in section 60301.225), and
(5) Hazardous fluids such as fuels, industrial wastes, and wastewater sludge.
(b) New water mains and new supply lines shall be installed at least 4 feet horizontally from, and one foot vertically above, any parallel pipeline conveying:
(1) Disinfected tertiary recycled water (defined in section 60301.230), and
(2) Storm drainage.
(c) New supply lines conveying raw water to be treated for drinking purposes shall be installed at least 4 feet horizontally from, and one foot vertically below, any water main.
(d) If crossing a pipeline conveying a fluid listed in subsection (a) or (b), a new water main shall be constructed perpendicular to and at least one foot above that pipeline. No connection joints shall be made in the water main within eight horizontal feet of fluid pipeline.
(e) The vertical separation specified in subsections (a), (b), and (c) is required only when the horizontal distance between a water main and pipeline is eleven feet or less.
(f) New water mains and new supply lines shall not be installed within 100 horizontal feet of any sanitary landfill, wastewater disposal pond, or hazardous waste disposal site, or within 25 feet of any cesspool, septic tank, sewage leach field, seepage pit, or groundwater recharge project site.
(g) The minimum separation distances set forth in this section shall be measured from the nearest outside edge of each pipe.

ALTERNATIVE CRITERIA FOR CONSTRUCTION

Water Mains, and Sewers and Other Non-potable Fluid-carrying Pipelines

When new water mains, new sanitary sewer mains, or other non-potable fluid-carrying pipelines are being installed in existing developed areas, local conditions (e.g., available space, limited slope, existing structures) may create a situation in which there is no alternative but to install water mains, sanitary sewer mains, or other non-potable pipelines at a distance less than that required by the regulations [existing Section 64630 (proposed Section 64572)]. In such cases, through permit action, the Department may approve alternative construction criteria. The alternative approach is allowed under the proposed regulation Section 64551(c):
"A water system that proposes to use an alternative to the requirements in this chapter shall demonstrate to the Department how it will institute additional mitigation measures to ensure that the proposed alternative would not result in an increased risk to public health."
Appropriate alternative construction criteria for two different cases in which the regulatory criteria for sanitary sewer main and water main separation cannot be met are shown in **Figures 1 and 2**.

Case 1 - New sanitary sewer main and a new or existing water main; alternative construction criteria apply to the sanitary sewer main.
Case 2 - New water main and an existing sanitary sewer main; alternative construction criteria may apply to either or both the water main and sanitary sewer main.

Case 1: New Sanitary Sewer Main Installation (Figures 1 and 2)

Zone Special Construction Required for Sanitary Sewer Main

A) Sanitary sewer mains parallel to water mains shall not be permitted in this zone without prior written approval from the Department and public water system.
B) If the water main paralleling the sanitary sewer main does not meet the Case 2 Zone B requirements, the sanitary sewer main should be constructed of one of the following:
1. PVC sewer pipe with rubber ring joints (per ASTM D3034) or equivalent;
2. Cast or ductile iron pipe with compression joints; or
3. Reinforced concrete pressure pipe with compression joints (per AWWA C302-95).
C) If the water main crossing below the sanitary sewer main does not meet the Case 2 Zone C requirements, the sanitary sewer main should have no joints within 10 feet from either side of the water main (in Zone C) and should be constructed of one of the following:
1. A continuous section of ductile iron pipe with hot dip bituminous coating; or
2. One of the Zone C options 1, 2, 3, or 4 below.
D) If the water main crossing above the sanitary sewer main does not meet the requirements for Case 2 Zone D, the sanitary sewer main should have no joints within four feet from either side of the water main (in Zone D) and should be constructed of one of the following:
1. Ductile iron pipe with hot dip bituminous coating and mechanical joints (gasketed, bolted joints);
2. A continuous section of Class 200 (DR 14 per AWWA C900-97) PVC pipe or equivalent, centered over the pipe being crossed;
3. A continuous section of reinforced concrete pressure pipe (per AWWA C302-95) centered over the pipe being crossed; or
4. Any sanitary sewer main within a continuous sleeve.

Proposed Regulations, continued:

Case 2: New water mains Installation (Figures 1 and 2)
Zone Special Construction Required for Water Main
A) No water mains parallel to sanitary sewer mains shall be constructed without prior written approval from the Department.
B) If the sanitary sewer main paralleling the water main does not meet the Case 1 Zone B requirements, the water main should be constructed of one of the following:
1. Ductile iron pipe with hot dip bituminous coating;
2. Class 200 pressure rated PVC water pipe (DR 14 per AWWA C900-97) or equivalent; or
3. Reinforced concrete pressure pipe, steel cylinder type, per AWWA (C300-97 or C302-99 or C303-95).
C) If the sanitary sewer main crossing above the water main does not meet the Case 1 Zone C requirements, the water main should have no joints within ten feet from either side of the sanitary sewer main (in Zone C) and be constructed of one of the following:
1. Ductile iron pipe with hot dip bituminous coating;
2. Class 200 pressure rated PVC water pipe (DR 14 per AWWA C900-97); or
3. Reinforced concrete pressure pipe, steel cylinder type, per AWWA (C300-97 or C301-99 or C303-95).
D) If the sanitary sewer main crossing below the water main does not meet the requirements for Zone D Case 1, the water main should have no joints within eight feet from either side of the sanitary sewer main and should be constructed as for Zone C.

Water Mains and Pipelines Conveying Non-potable Fluids
When the basic separation criteria cannot be met between water mains and pipelines conveying non-potable fluids, the requirements described above for sanitary sewer mains should apply. This includes the requirements for selecting special construction materials and the separation requirements shown in Figures 1 and 2. Note that not all construction materials allowed for sanitary sewer mains will be appropriate for other non-potable fluid lines. For example, certain plastic lines may not be appropriate for the transport of some fuel products. The selection of compatible materials of construction for non-potable fluids is a decision to be made by the project engineer.

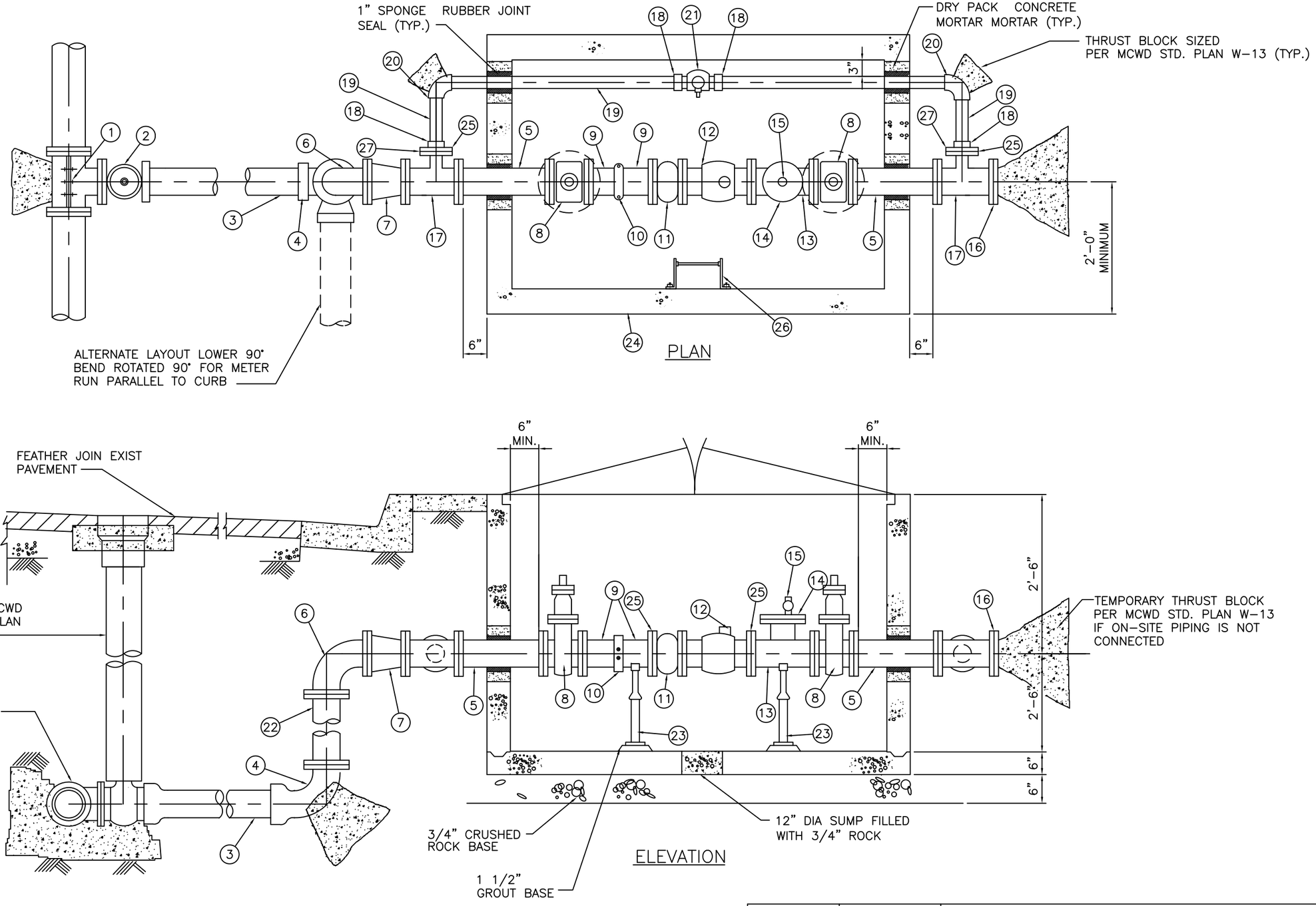
Water Mains and Sewage Force Mains
* Sewage force mains shall not be installed within ten feet (horizontally) of a water main.
* When a sewage force main must cross a water main, the crossing should be as close as practical to the perpendicular. The sewage force main should be at least one foot below the water main.
* When a new sewage force main crosses under an existing water main, and a one foot vertical separation cannot be provided, all portions of the sewage force main within eight feet (horizontally) of the outside walls of the water main should be enclosed in a continuous sleeve. In these cases, a minimum vertical separation distance of 4 inches should be maintained between the outside edge of the bottom of the water main and the top of the continuous sleeve.
* When a new water main crosses over an existing sewage force main, the water main should be constructed of pipe materials with a minimum rated working pressure of 200 psig or the equivalent.

Water Mains and Tertiary Treated Recycled Water or New Supply Lines
* The basic separation criteria for water mains and pipelines conveying tertiary treated recycled water or supply lines are a 4-foot horizontal separation where lines are running parallel and a 1-foot vertical separation (water line above recycled or supply line) where the lines cross each other.
* When these criteria cannot be met, the Zone A criteria apply where lines are running parallel, and the Zone C and Zone D criteria apply where the lines cross each other as shown on Figures 1 and 2. For these situations, the Zone "P" criteria are in effect and prohibit construction less than 1 foot in parallel installations and less than 4 inches in vertical (crossing) situations.
* For tertiary treated recycled water and new supply lines, the Zone B criteria (requirements for special pipe) do not apply as the basic separation criteria is a four-foot horizontal separation criteria for parallel lines. The tertiary treated recycled water lines should be constructed in accordance with the color-coding, and labeling requirements per Section 116815, California Health and Safety Code of Regulations.

MISCELLANEOUS GUIDANCE
* More stringent requirements may be necessary if conditions such as high groundwater exist. HDPE or similar pipe may be required to provide flexibility to move without potential joint leaks.
* Sanitary sewer mains should not be installed within 25 feet horizontally of a low head (5 psig or less pressure) water main.
* New water mains and sanitary sewer mains should be pressure tested in accordance with manufacturer's specifications.
* When installing water mains, sewers, or other pipelines, measures should be taken to prevent or minimize disturbances of existing pipelines. Disturbance of the conduit's supporting base could eventually result in pipeline failure.
* Special consideration should be given to the selection of pipe materials if corrosive conditions are likely to exist. These conditions may be due to soil type and/or the nature of the fluid conveyed in the conduit, such as a septic sewage producing corrosive hydrogen sulfide.

NOTE: Dimensions are from the outside of the water main to the outside of the other pipeline, manhole, or sleeve.

APPROVED BY DISTRICT ENGINEER		MARINA COAST WATER DISTRICT STANDARD PLAN	STANDARD
DATE 11/2007		STATE HEALTH DEPT. EXCEPTIONS TO BASIC SEPARATION AND STANDARDS FOR WATER MAINS AND NON-POTABLE PIPELINES	W-16
			SHEET 3 OF 3



APPROVED BY DISTRICT ENGINEER DATE 11/2007	MARINA COAST WATER DISTRICT	MARINA COAST WATER DISTRICT STANDARD PLAN 3" TO 10" TURBINE METER INSTALLATION	STANDARD W-17 SHEET 1 OF 2

MATERIALS

ITEM	QUANTITY	DESCRIPTION
1	1 EACH	SIZE X 4" TAPPING SLEEVE (USE PUSH–ON X FLG. TEE IF HOT TAP IS NOT REQUIRED).
2	1 EACH	4" PUSH–ON X FLG. TAPPING VALVE (USE RW OR GATE VALVE IF HOT TAP IS NOT REQUIRED).
3	AS REQ'D	4" PVC PIPE OR D.I. PIPE LATERAL, PUSH–ON JOINTS
4	1 EACH	4" D.I. 90° ELL, PUSH–ON X FLG.
5	2 EACH	FLG x FLG. D.I. SPOOL – METER SIZE X 2'–6"
6	1 EACH	4" D.I. 90° ELL FLG. X FLG.
7	1 EACH	4" X 3" D.I. REDUCER FLG. X FLG. (FOR 3" SERVICE ONLY)
8	2 EACH	RW OR GATE VALVE FLG. X FLG.
9	2 EACH	FLG. X GROOVED END D.I. SPOOL, 6" LENGTH
10	1 EACH	GROOVED–END COUPLING
11	1 EACH	STRAINER
12	1 EACH	TURBINE METER
13	1 EACH	METER SIZE X 6" D.I. TEE – FLANGED
14	1 EACH	METER–SIZE D.I. COMPANION FLANGE TAPPED FOR 2 1/2" I.P.
15	1 EACH	2" CORPORATION STOP – MIP X MIP
16	1 EACH	D.I. BLIND FLANGE
17	2 EACH	METER SIZE FLANGED D.I. TEE
18	4 EACH	ADAPTER – 2" M.I.P. BY S.J.
19	AS REQ'D	2" COPPER TUBING
20	2 EACH	2" 90° ELBOW – S.J. X S.J.
21	1 EACH	2" BALL VALVE WITH LOCKING WING – F.I.P. X F.I.P.
22	1 EACH	4" D.I. SPOOL – FLG. X FLG. (IF REQUIRED)
23	2 EACH	GALVANIZED PIPE SUPPORT
24	1 EACH	PRECAST CONCRETE VAULT (5'–0" WIDE X 6'–6" LONG X 5'–0" HIGH) WITH HALLIDAY SPRING ASSIST HINGED DIAMOND PLATE ALUMINUM COVER (M4' X 4' MIN.) AND RECESSED LOCKING HASP. PROVIDE 6" X 12" HINGED READING LID INSTALLED OVER METER REGISTER.
25	4 EACH	BOLT AND FLANGE INSULATING KIT
26	1 EACH	GALV. STEEL LADDER W/LADDER – UP AND S.S. ANCHOR BOLTS.
27	2 EACH	METER SIZE BRONZE COMPANION FLANGE WITH 2" THREADED I.P. OUTLET

NOTES:

1. VAULT SHOWN IS FOR PARKWAY USE ONLY. FOR TRAFFIC LOADING AND OTHER REQUIREMENTS, CONTACT DISTRICT REPRESENTATIVE.
2. VAULT COVER TO BE SET TO CONFORM TO PARKWAY GRADE.
3. WHEN A BY – PASS LINE IS NOT REQUIRED PER SECTION 15150, DELETE ITEMS 18, 19, 20 AND 21.
4. ALL PART SHALL BE INSTALLED SUCH THAT THEY MAY BE LIFTED DIRECTLY THROUGH THE ACCESS COVER.

APPROVED BY DISTRICT ENGINEER		MARINA COAST WATER DISTRICT STANDARD PLAN	STANDARD
DATE 11/2007		3" TO 10" TURBINE METER INSTALLATION MATERIALS LIST	W-17
			SHEET 2 OF 2