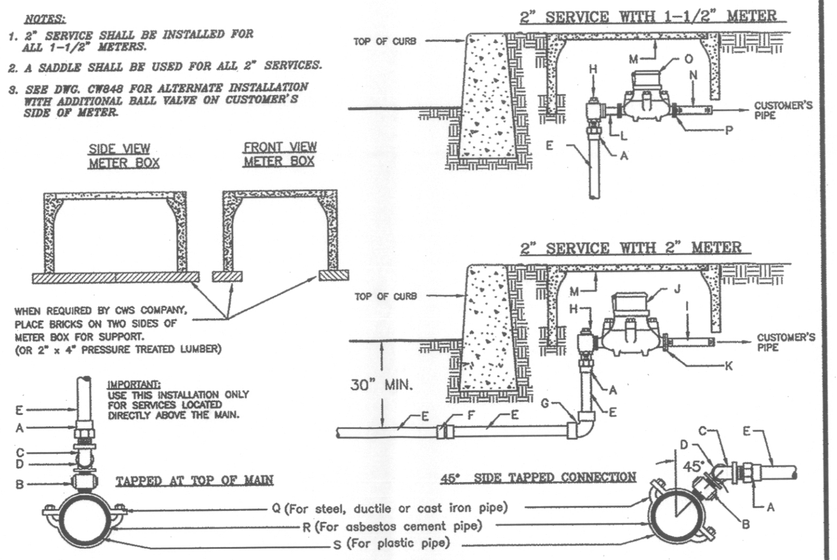
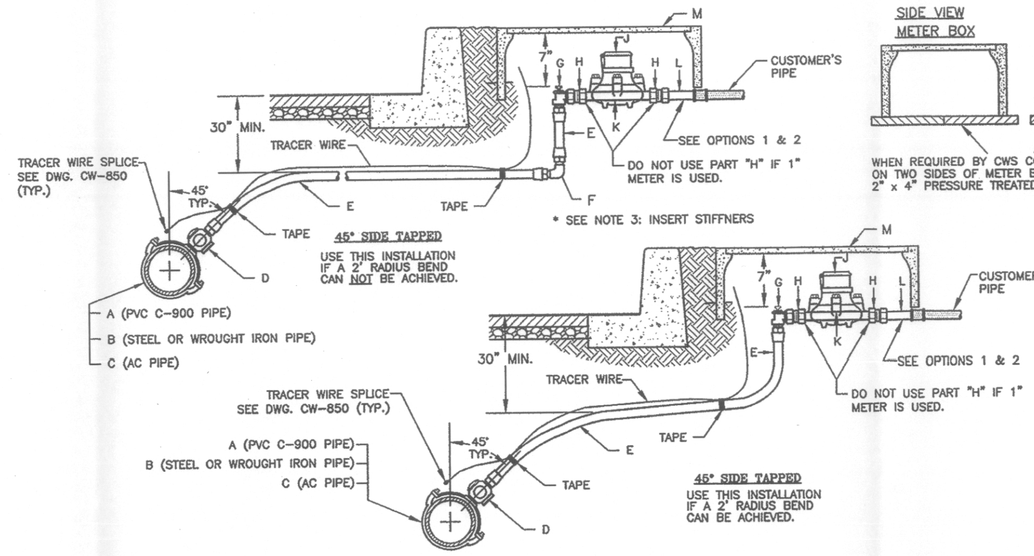
EP.08.9664

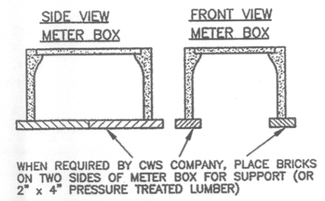
NOTES:
1. 2" SERVICE SHALL BE INSTALLED FOR ALL 1-1/2" METERS.
2. A SADDLE SHALL BE USED FOR ALL 2" SERVICES.
3. SEE DWG. CW848 FOR ALTERNATE INSTALLATION WITH ADDITIONAL BALL VALVE ON CUSTOMER'S SIDE OF METER.



MATERIAL REQUIREMENTS			MATERIAL REQUIREMENTS	
PART	DESCRIPTION	PART	DESCRIPTION
A	2" ADAPTER C TO I.P.T. MALE STREAMLINE	L	METER FLG ADAPTER, FORD A67-2" MET.FLG.x1-1/2" MET.FLG.
B	CORPORATION STOP-MT MUELLER H-10003 1-1/2" CCx2" M.I.P., OR -FORD FB-800 1-1/2" CCx2" M.I.P.	M	BOX, METER: (FOR 2" AND 1-1/2" METER) 17" X 28" NOMINAL BROOKS CONCRETE #85 BOX W/ #6SS CONCRETE COVER & LID CHRISTY CONCRETE B6S BOX W/ B6SE CONCRETE COVER & LID NOTE: CAST IRON COVERS REQUIRED IN TRAFFIC AREAS.
C	2" ELL STD. BRASS 90° (F.I.P. x F.I.P.)	N	1-1/2" NIPPLE STD. BRASS
D	2" ELL STREET STD. BRASS 90° (F.I.P. x M.I.P.)	O	1-1/2" METER (BY CWS COMPANY) LENGTH 13" NOTE: DEVELOPER'S CONTRACTOR SHALL INSTALL SPACER IN PLACE OF METER, PER CWS CO.'S DIRECTION.
E	2" TUBING COPPER, TYPE "K", SOFT	P	1-1/2" METER FLG. (FLG. x F.I.P.) BRONZE W/ FULL FACE GASKET AND #304 STAINLESS STEEL BOLTS & NUTS
F	2" COUPLING C TO C STREAMLINE	Q	SADDLE, MALLEABLE IRON, DOUBLE STRAP, MUELLER H-10500, FORD F202, JAMES JONES, ROCKWELL INT'L.
G	2" ELL C TO C STREAMLINE 90°	R	SERVICE SADDLE, ALL BRONZE, DOUBLE STRAP, FORD 202B STYLES, OR JAMES JONES J-979, OR ROCKWELL INTERNATIONAL NO. 323, MUELLER H-16000.
H	2" BALL ANGLE METER VALVE – F.I.P. x METER FLANGE – FULL PORT MUELLER B-24286, FORD BFA13-777W.	S	SERVICE SADDLE, ALL BRONZE, JAMES JONES J-996, FORD METER BOX CO. S-90 STYLES, OR MUELLER #H-13400 SERIES
I	2" NIPPLE STD. BRASS		
J	2" METER, (BY CWS COMPANY) LENGTH 17" NOTE: DEVELOPER'S CONTRACTOR SHALL INSTALL SPACER IN PLACE OF METER, PER CWS CO.'S DIRECTION.		
K	2" METER FLG. (FLG. x F.I.P.) BRONZE WITH FULL FACE GASKET AND #304 STAINLESS STEEL BOLTS & NUTS.		

CW 436R6 — STANDARD 2" SERVICE CONNECTION FOR 2" METER OR 1-1/2" METER





NOTES:
1. ALL PE PLASTIC PIPE REQUIRES TRACER WIRE TAPED TO PE PIPE AND EXTENDED INTO METER BOX PER LATEST REVISION OF DWG. CW-850 AND AS SPECIFIED IN CWS CO. MATERIAL SPECIFICATIONS DWG. CW-832.
2. SADDLES ARE REQUIRED ON ALL PVC C-900, AC, STEEL, OR WROUGHT IRON PIPE.
3. INSERT STIFFNERS SHALL BE USED ON ALL PE PIPE WITH COMPRESSION CONNECTIONS.
4. WHEN USING MUELLER INSTA-TITE, BEVEL THE PE PIPE WITH MUELLER'S BEVELING TOOL PER MANUFACTURER'S SPECIFICATIONS.
5. RESPONSIBILITY FOR SERVICE MAINTENANCE BY CWS CO. ENDS AT DOWNSTREAM METER COUPLING (OR LEFT TO DISTRICT'S DISCRETION).

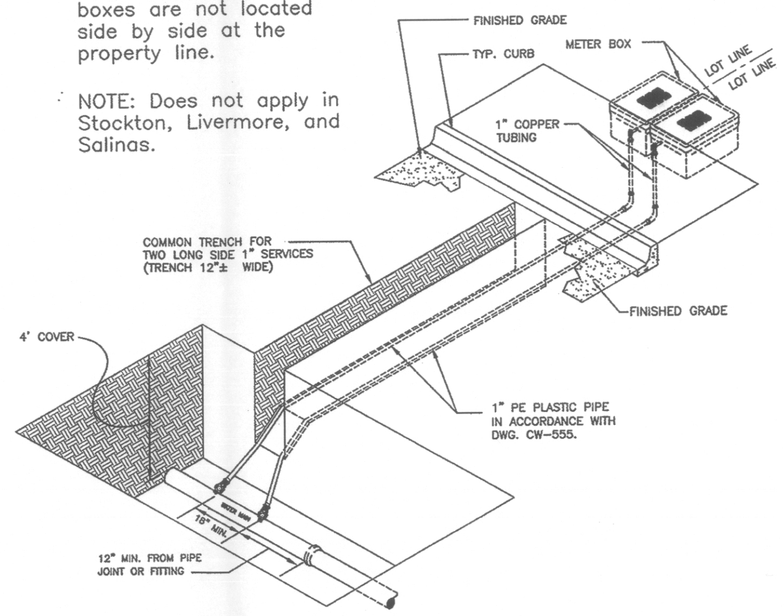
OPTIONS: THESE OPTIONS MAY BE REQUIRED BY CWS CO.
1. EXTEND CUSTOMER'S PIPING ±12" BEYOND METER BOX WITH TWO 12" NIPPLES & TWO 90° ELLS, BRASS (OR GALVANIZED IF PREFERRED BY CWS). SEE NOTE 5.
2. INSTALL BALL VALVE DOWNSTREAM FROM METER WHEN CUSTOMER'S PIPING IS UPHILL FROM METER OR CUSTOMER'S VALVE IS A GREAT DISTANCE FROM METER.
3. INSTALL 1" COPPER TUBING, TYPE K SOFT, INSTEAD OF PE WHEN CWS REPRESENTATIVE DETERMINES THAT CONDITIONS ARE UNFAVORABLE TO PE.

PART LETTER	PART NAME	PART SIZE	MUELLER INSTA-TITE	MUELLER COMPR.	FORD	JAMES JONES	A.Y. McDONALD	SMITH-BLAIR	APAC	IN FULL TRAFFIC AREAS: BROOKS	IN FULL TRAFFIC AREAS: CHRISTY	OUTSIDE FULL TRAFFIC AREAS: ARMORCAST
A	SERVICE SADDLE ALL BRONZE	NOMINAL MAIN SIZE x 1" CC	H-13400 SERIES	H-13400 SERIES	S90 SERIES	J-996 SERIES	3805 SERIES	393 SERIES	———	———	———	———
B	SERVICE SADDLE DUCTILE IRON	NOMINAL MAIN SIZE x 1" CC	DR 2A SERIES	DR 2A SERIES	F202 SERIES	———	———	313 SERIES	102 SERIES	———	———	———
C	SERVICE SADDLE ALL BRONZE	NOMINAL MAIN SIZE x 1" CC	BR 2 B SERIES	BR 2 B SERIES	202B SERIES	J-979 SERIES	3825 SERIES	323 SERIES	———	———	———	———
D	CORPORATION STOP (BALL)	1" CC x 1" MFG. F/PE IPS	B-25005 OR 20045 + 15426	B-25009 OR 20045 + 15429	FB1001-4-Q		4701B-3Q	———	———	———	———	———
E	1" PE PLASTIC PIPE	1" PE PLASTIC PIPE IPS	HIGH DENSITY POLYETHYLENE PIPE, IRON PIPE SIZE, AWWA STANDARD C901, PE 3408, PC 200, IDR7							———	———	———
F	1" 90° ELBOW	1" MFG F/PE IPS	H-15464	ELL BRASS FIP w/TWO H-15429	L66-44-G	J-2610-SGP	4761-3Q	———	———	———	———	———
G	ANGLE METER STOP (BALL)	1" x 1" x 1"	B-24266	B-24259	BA63-444W-Q		4602B-3Q	———	———	———	———	———
H	METER ADAPTER	1" PIPE TO 5/8" x 3/4" METER	H-10879	H-10879	A24	J-128-H	10J24	———	———	———	———	———
J	METER	BY CWS COMPANY: 5/8" x 3/4" METER (USE FOR LOT SIZE < 10,000 SQ. FT) LENGTH 7 1/2". 1" METER (USE FOR LOT SIZE 10,000 SQ. FT. OR LARGER OF IF REQ'D TO MEET CITY'S FIRE SPRINKLER ORDINANCE) LENGTH 10"								———	———	———
K	METER SPACER	DEVELOPER'S CONTRACTOR SHALL INSTALL SCH. 80 PVC NIPPLE IN PLACE OF METER: 1-1/4" DIAMETER, 11" LONG WITH IPT								———	———	———
L	METER COUPLING	1" METER SWIVEL NUT x M.I.P.	H-10890	H-10890	C38-44-2.625	J-134	4624	———	———	———	———	———
M	METER BOX	12" x 20" x 12"	———	———	———	———	———	———	———	#37 BOX WITH CAST IRON COVER	#812 BOX WITH CAST IRON COVER	P6000485-ROTOCAST BOX w/A6000484DQ COVER & DROP-IN LID A6000487 CWS OPTION: 1-PIECE COVER A6000484

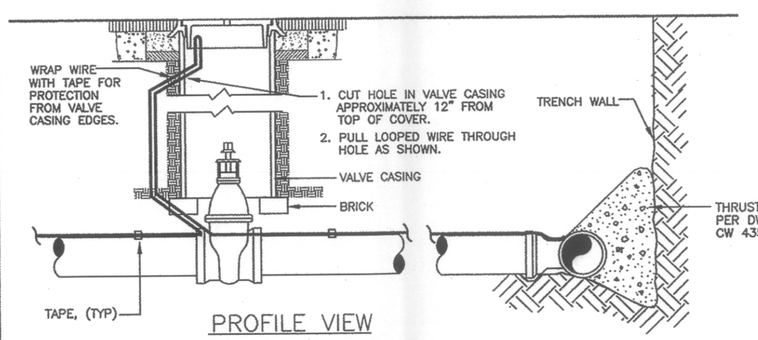
CW 555R13 — STANDARD 1" SERVICE CONNECTION FOR 5/8" x 3/4" METER AND 1" METER

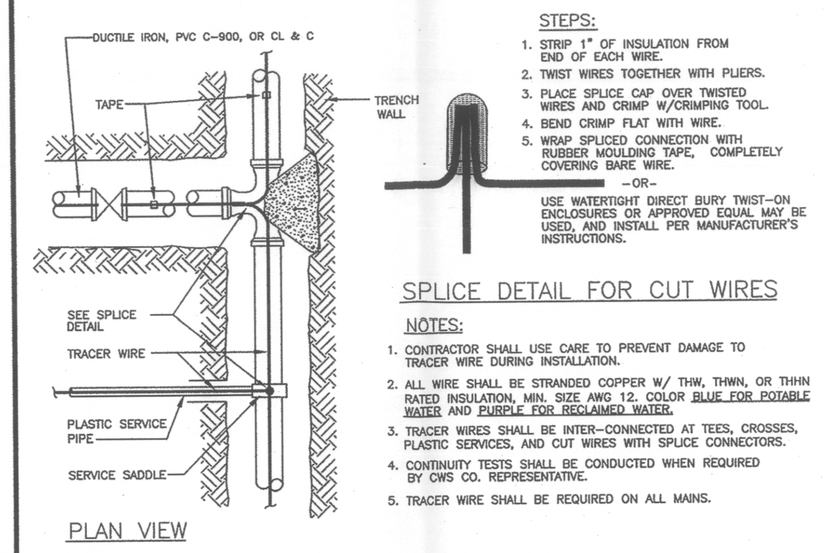
NOTE: All long side 1" services shall be placed in a common trench, except when the meter boxes are not located side by side at the property line.

NOTE: Does not apply in Stockton, Livermore, and Salinas.



CW 837R2 — TWO 1" LONG SIDE SERVICES IN COMMON TRENCH





STEPS:
1. STRIP 1" OF INSULATION FROM END OF EACH WIRE.
2. TWIST WIRES TOGETHER WITH PLIERS.
3. PLACE SPLICE CAP OVER TWISTED WIRES AND CRIMP W/CRIMPING TOOL.
4. BEND CRIMP FLAT WITH WIRE.
5. WRAP SPLICED CONNECTION WITH RUBBER MOULDING TAPE, COMPLETELY COVERING BARE WIRE.

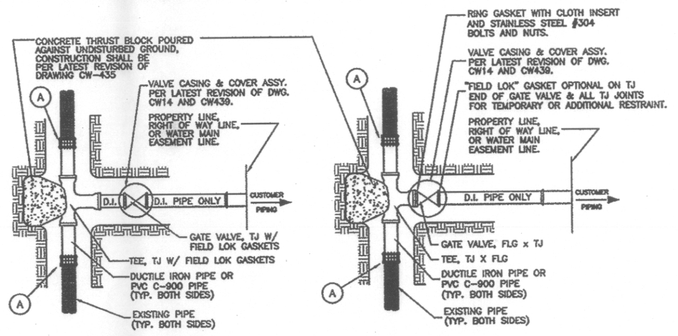
–OR–

USE WATERTIGHT DIRECT BURY TWIST-ON ENCLOSURES OR APPROVED EQUAL MAY BE USED, AND INSTALL PER MANUFACTURER'S INSTRUCTIONS.

SPLICE DETAIL FOR CUT WIRES

NOTES:
1. CONTRACTOR SHALL USE CARE TO PREVENT DAMAGE TO TRACER WIRE DURING INSTALLATION.
2. ALL WIRE SHALL BE STRANDED COPPER W/ THW, THWN, OR THHN RATED INSULATION, MIN. SIZE AWG 12. COLOR BLUE FOR POTABLE WATER AND PURPLE FOR RECLAIMED WATER.
3. TRACER WIRES SHALL BE INTER-CONNECTED AT TEES, CROSSES, PLASTIC SERVICES, AND CUT WIRES WITH SPLICE CONNECTORS.
4. CONTINUITY TESTS SHALL BE CONDUCTED WHEN REQUIRED BY CWS CO. REPRESENTATIVE.
5. TRACER WIRE SHALL BE REQUIRED ON ALL MAINS.

CW 850R2 — STANDARD INSTALLATION DETAILS FOR TRACER WIRE ON MAINS



TYPICAL MATERIALS FOR ____ INCH FIRE SERVICE:

1 – ____" X ____" TEE TJ CL DI
1 – ____" GATE VALVE FLG X TJ NRS NO RS
1 – VALVE CASING AND COVER ASSEMBLY
____ – FEET OF 4" DUCTILE IRON PIPE (SEE NOTE #3)
____ – 20" POLYWRAP TUBING 8 MIL W/PVC TAPE
____ – ____" "FIELD LOK" GASKET F/TJ (WHEN REQUIRED)
____ – FEET OF ____" DUCTILE IRON PIPE

TYPICAL MATERIALS FOR ____ INCH FIRE SERVICE:

1 – ____" X ____" TEE TJ X FLG CL DI
1 – ____" GATE VALVE FLG X TJ NRS NO RS
1 – VALVE CASING AND COVER ASSEMBLY
____ – FEET OF ____" DUCTILE IRON PIPE (SEE NOTE #3)
1 – GAL. METAL GUARD #301
1 – ROLL BIT OR RES WRAP
____ – 20" POLYWRAP TUBING 8 MIL W/PVC TAPE
____ – ____" "FIELD LOK" GASKET F/TJ (WHEN REQUIRED)
____ – FEET OF PVC C-900 PIPE OR DUCTILE IRON PIPE

NOTES:
1. A DETECTOR CHECK VALVE AND/OR BACKFLOW PROTECTION DEVICE MAY BE REQUIRED FOR EACH FIRE SERVICE.
2. APPLICANT MAY BE REQUIRED TO PROVIDE AND INSTALL A ____ INCH DETECTOR CHECK VALVE BETWEEN THE WATER COMPANY'S SERVICE AND CUSTOMER'S PIPING. THE METER ON THE CHECK VALVE IS TO BE LOCATED SO THAT IT PROVIDES EASY ACCESS AND INSPECTION BY CALIFORNIA WATER SERVICE CO. PERSONNEL.
3. POLYETHYLENE ENCASEMENT WITH PVC TAPE RE-QUIRED FOR ALL DUCTILE IRON PIPE AND ALL FITTINGS.
4. PROTECT ALL UNDERGROUND BOLTS, NUTS, FLEX. COUPLINGS, AND BARE STEEL PER C.W.S. CO. PRO-TECTION COATING SPECIFICATIONS.
5. BLOCK AND POUR CONCRETE THRUST BLOCKS ON ALL ELLS, TEES, AND CAPS, PER LATEST REVISION OF DRAWING CW-435.
6. THE USE OF "FIELD LOK" GASKETS DOES NOT ELIMINATE THE NEED FOR CONCRETE THRUST BLOCKS.

FLANGE MATERIAL – CHECK ONE BOX

☐ 1 – 4" x 6-7/8" x 1/16" RING GASKET W/ CI
8 – 5/8" # x 3" #304 SS MACHINE BOLTS W/ HN

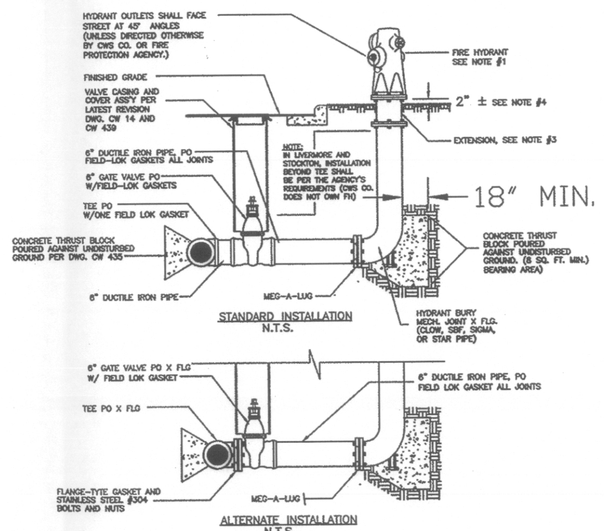
☐ 1 – 6" x 8-3/4" x 1/16" RING GASKET W/ CI
8 – 3/4" # x 3-1/2" #304 SS MACHINE BOLTS W/ HN

☐ 1 – 10" x 13-3/8" x 1/16" RING GASKET W/ CI
12 – 7/8" # x 4" #304 SS MACHINE BOLTS W/ HN

☐ 1 – 8" x 11" x 1/16" RING GASKET W/ CI
8 – 3/4" # x 3-1/2" #304 SS MACHINE BOLTS W/ HN

MATERIAL FOR ITEM (A)	(OTHER INSTALLATION)
TIE-INS FROM CL 150 D.I. OR PVC C-900 OR ASBESTOS CEMENT (ADDITIONAL) USE SOLID SLEEVE MJ TIE-INS FROM D.I. TO CI USE SOLID SLEEVE MJ DUAL PURPOSE	TIE-INS FROM D.I. TO CO. STEEL USE STD X DI FLEX. COUPLING (10" SLV IF STL OR STD SLV IF D.I.)
TIE-INS FROM D.I. TO ACBS (ASBESTOS CEMENT BOOSTER BARREL) USE ACBS X DI FLEX. COUPLING (10" SLEEVE IF STEEL OR STANDARD SLEEVE IF DUCTILE IRON).	TIE-INS FROM D.I. TO STD STEEL USE STD X DI FLEX. COUPLING (10" SLV IF STL OR STD SLV IF D.I.)
	TIE-INS FROM PVC C-900 TO PVC C-900 USE "CENTAMITED" PVC CLOSURE COUPLING

CW 840R1 — STANDARD PRIVATE FIRE SERVICE CONNECTION



NOTES:
1. For district specific fire hydrant models and requirements, see district fire hydrant note form, 17 on main extension drawing, or verify with CWS Co. representative.
2. All fire hydrant materials shall comply with latest CWS Co. material specifications.
3. A hydrant extension may be required to adjust for finished grade.
4. For wet barrel hydrants this dimension is from finished grade to bury's flange or extension's flange when an extension is required.
5. Push-on, flanged fitting joints, and/or threaded-flanged risers may be required in certain fire protection districts. Verify with a CWS Co. representative all fire hydrant material prior to the installation. (In Livermore and Stockton verify with the Fire Protection Agency that has jurisdiction.)
6. Fire hydrant barricades shall be required when a vertical or rolled curb does not exist, or when the fire hydrant needs to be protected from moving vehicles, per latest revision of drawing CW-822.
7. All machine bolts and nuts shall be 304 stainless steel, except for breakoff bolts .
8. A 90° Elbow with Field Lok gaskets may be required for the fire hydrant installation when space is limited and the hydrant lead must run parallel to the main or the location of the fire hydrant requires the bend.
9. Protect all underground bolts and nuts per CWS Co. Standard Coating Specification.

CW 380R12 — TYPICAL FIRE HYDRANT INSTALLATION

ENGINEERING

CALIFORNIA WATER SERVICE CO.

DEPARTMENT

REVISIONS:

	DATE:	INIT.
DISTRIBUTION MAP		
PLAT SHEET		
SYSTEM SCHEMATIC		
STATION SCHEMATIC		
ZONE MAP		
VALVE RECORD		

PLAT SHEET NO.:

SCALE: NONE

DRAWN BY: A. GALINDO

DESIGNED BY:

CHECKED BY: DATE:

APPROVED BY: DATE: 4/08/05

TITLE: CALIFORNIA WATER SERVICE COMPANY
STANDARD DRAWINGS

DISTRICT: ALL

DATE: 3/03

PROJECT ID.:

DRAWING NO.: CWDWGS

SHT 2 OF 2

CWDWGS2.DWG