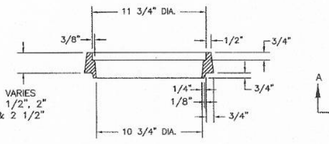
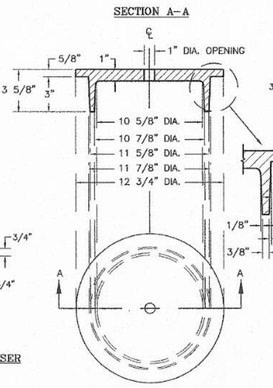
NOTE:

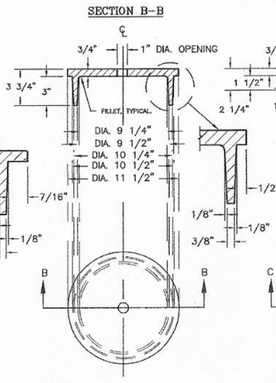
1. FRAME, COVER AND CASING EXTENSIONS TO BE OF GOOD QUALITY DOMESTIC CAST IRON, FREE FROM FLAWS AND BLOW HOLES, AND OF SUFFICIENT STRENGTH TO RESIST BREAKAGE BY STREET TRAFFIC.
2. CASTINGS TO BE TRUE, AND IF NECESSARY TO BE TRIMMED ON EMERY WHEEL TO PREVENT ROCKING OF COVER IN ANY POSITION IN THE FRAME.
3. SEE DRAWING CW 439 FOR VALVE COVER, CASING, AND FRAME INSTALLATION DETAILS.
4. COVER "A" DOES NOT HAVE A MATCHING CAST FRAME.



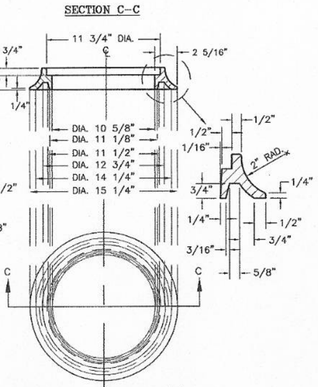
TYPICAL CENTER SECTION OF FRAME RISER FOR PAVED AREAS



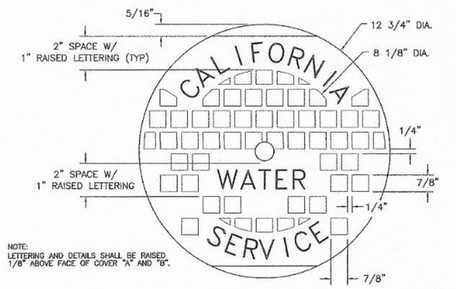
COVER "A" FOR UNPAVED AREAS



COVER "B" FOR PAVED AREAS

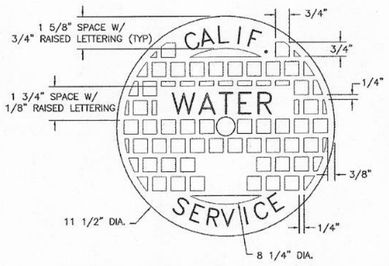


FRAME DETAIL FOR COVER "B" IN PAVED AREAS.



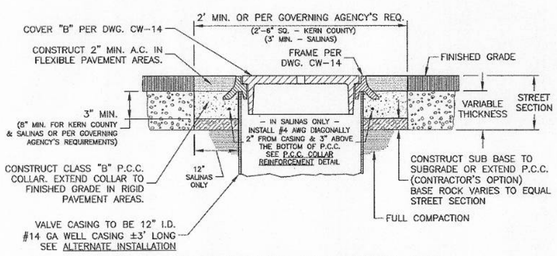
NOTE:
LETTERING AND DETAILS SHALL BE RAISED 1/8" ABOVE FACE OF COVER "A" AND "B".

TOP VIEW OF COVER "A"



TOP VIEW OF COVER "B"

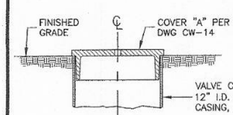
CW 14R5 VALVE COVER AND FRAME FABRICATION DETAILS FOR PAVED AND UNPAVED AREAS



STANDARD PAVED AREA INSTALLATION

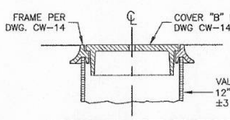
N.T.S.

NOTE:
TO EXTEND AN EXISTING STANDARD PAVED INSTALLATION: REMOVE FRAME, ADD STANDARD CAST FRAME RISER PER CW-14, OR TACK WELD ADDITIONAL STEEL CASING AS REQUIRED, REPLACE FRAME.



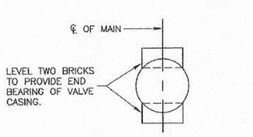
STANDARD INSTALLATION (IN UNPAVED AREAS)

NOTE:
TO EXTEND AN EXISTING STANDARD UNPAVED INSTALLATION: REMOVE COVER, TACK WELD ADDITIONAL STEEL CASING AS REQUIRED, AND REPLACE COVER.



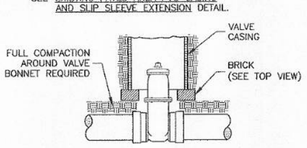
ALTERNATE INSTALLATION (IN PAVED AREAS)

NOTE:
TO EXTEND PVC CASING IN PAVED AREA: SEE EXISTING PAVED AREA PVC CASING AND SLIP SLEEVE EXTENSION DETAIL.



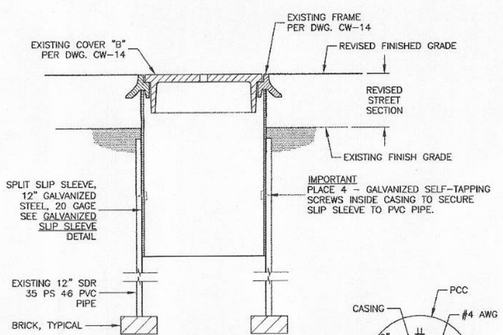
VALVE CASING FOOTING TOP VIEW

N.T.S.



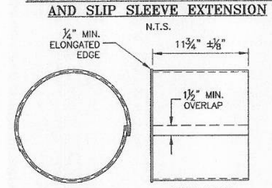
VALVE CASING FOOTING SIDE VIEW

N.T.S.

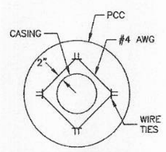


EXISTING PAVED AREA PVC CASING AND SLIP SLEEVE EXTENSION

N.T.S.

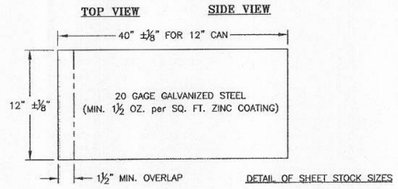


TOP VIEW SIDE VIEW



P.C.C. COLLAR REINFORCEMENT (SALINAS ONLY)

N.T.S.



GALVANIZED SLIP SLEEVE

N.T.S.

CW 439R5 VALVE CASING, COVER, AND FRAME INSTALLATION DETAILS

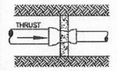
THRUST BLOCK SCHEDULE

PIPE SIZE	FITTING	TYPE OF SOIL: SOFT CLAY (1000 P.S.F.) MIN. BEARING AREA (SQ. FT.)	SOFT CLAY DIMENSION (FEET) A	SOFT CLAY DIMENSION (FEET) B	SAND (2000 P.S.F.) MIN. BEARING AREA (SQ. FT.)	SAND DIMENSION (FEET) A	SAND DIMENSION (FEET) B	ROCK (3000 P.S.F.) MIN. BEARING AREA (SQ. FT.)	ROCK DIMENSION (FEET) A	ROCK DIMENSION (FEET) B
6"	PLUG, CAP	6	3	2	3	2	1.5	2	2	1
	90° ELL	8	3.2	2.5	4.1	2.7	1.5	3	2	1.5
	45° ELL	4.4	2.2	2	2.3	1.5	1.5	1.5	1.5	1
	22 1/2° ELL	2.3	1.5	1.5	1	1	1	1	1	1
	TEE W/ 6"OUTLET	6	3	2	3	2	1.5	2	2	1
8"	PLUG, CAP	10	4	2.5	5	2.5	2	3.3	2.2	1.5
	90° ELL	14	4	3.5	7	2.8	2.5	5	2.5	2
	45° ELL	7.5	3	2.5	3.8	2	1.9	2.6	1.7	1.5
	22 1/2°ELL	4	2	2	2	2	1	1.5	1.5	1
	TEE W/8"OUTLET	10	4	2.5	5	2.5	2	3.3	2.2	1.5
12"	PLUG, CAP	24	6	4	12	4	3	7.5	3	2.5
	90° ELL	32.5	6.5	5	16.1	4.6	3.5	10.8	3.6	3
	45° ELL	17.5	5	3.5	8.6	3.5	2.5	6	3	2
	22 1/2° ELL	9	3.6	2.5	4.6	2.3	2	3	2	1.5
	TEE W/12"OUTLET	24	6	4	12	4	3	7.5	3	2.5
14"	PLUG, CAP	31.5	6.3	5	15.8	4.5	3.5	10.5	3.5	3
	90° ELL	44.4	7.4	6	22	5.5	4	14.7	4.2	3.5
	45° ELL	24	6	4	12	4	3	8.1	3	2.7
	22 1/2° ELL	12	4	3	6	3	2	4	2	2
	TEE W/ 14"OUTLET	31.5	6.3	5	15.8	4.5	3.5	10.5	3.5	3
16"	PLUG, CAP	40.7	7.4	5.5	20	5	4	13.5	4.5	3
	90° ELL	56	8	7	28.8	6.4	4.5	20	5	4
	45° ELL	31	6.2	5	15.8	4.5	3.5	10.5	3.5	3
	22 1/2° ELL	15.8	4.5	3.5	7.8	3	2.6	5.2	2.6	2
	TEE W/ 16"OUTLET	40.7	7.4	5.5	20	5	4	13.5	4.5	3
18"	PLUG, CAP	52	8	6.5	26.4	6.6	4	17.5	5	3.5
	90° ELL	75	10	7.5	37	7.4	5	24.8	6.2	4
	45° ELL	40.7	7.4	5.5	20	5	4	14	4	3.5
	22 1/2° ELL	20	5	4	10.5	3.5	3	6.9	3	2.3
	TEE W/ 18"OUTLET	52	8	6.5	26.4	6.6	4	17.5	5	3.5

NOTE:
1. THRUST BLOCKS DESIGNED FOR A MAXIMUM OF 150 PSI WATER PRESSURE
2. ALL CONCRETE SHALL CONTAIN 6 SACKS OF CEMENT PER CUBIC YARD.
3. THRUST BLOCKS SHALL BE POURED AGAINST UNDISTURBED SOIL.
4. KEEP ALL CONCRETE CLEAR OF THE JOINTS ON ALL FITTINGS.
5. FORMS ARE REQUIRED ON ALL THRUST BLOCKS AND TO BE SUPPLIED BY CONTRACTOR. ALL FITTINGS TO BE WRAPPED WITH POLYETHELENE PRIOR TO POURING THRUST BLOCKS.

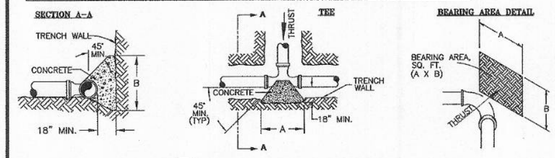
TEE & SOLID PLUG

NOTE:
SEE PLANS FOR SIZE & DETAIL OF CONCRETE BLOCK WHEN REQUIRED FOR REDUCER.

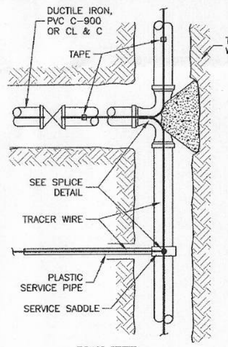


REDUCER

90° ELL



CW 435R4 TYPICAL THRUST BLOCK INSTALLATION



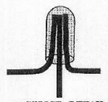
PLAN VIEW

STEPS:

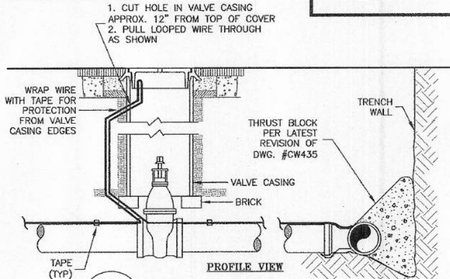
1. STRIP 1" OF INSULATION FROM END OF EACH WIRE.
2. TWIST WIRES TOGETHER WITH PLIERS.
3. PLACE SPLICE CAP OVER TWISTED WIRES AND CRIMP W/CRIMPING TOOL.
4. BEND CRIMP FLAT WITH WIRE.
5. WRAP SPLICED CONNECTION WITH RUBBER MOULDING TAPE, COMPLETELY COVERING BARE WIRE.

-OR-

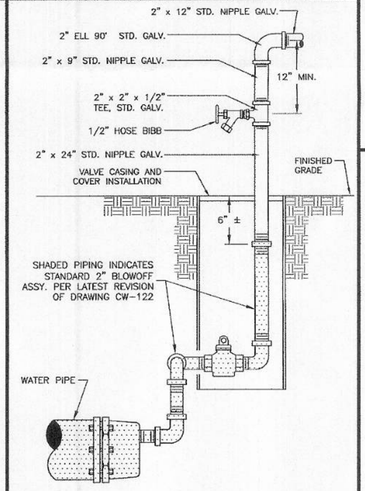
USE WATERTIGHT DIRECT BURY TWIST-ON ENCLOSURES OR APPROVED EQUAL MAY BE USED, AND INSTALL PER MANUFACTURER'S INSTRUCTIONS.



SPLICE DETAIL FOR CUT WIRES



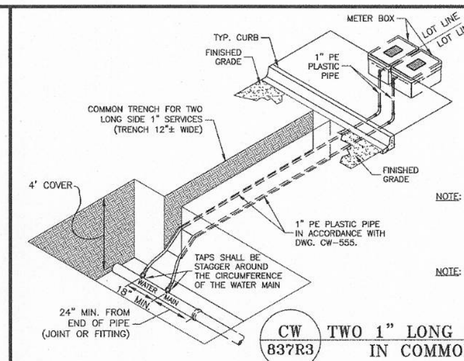
CW 850R3 STANDARD INSTALLATION DETAILS FOR TRACER WIRES



CW 638R1 SAMPLING DEVICE FOR 2" BLOW-OFF

NOTES:

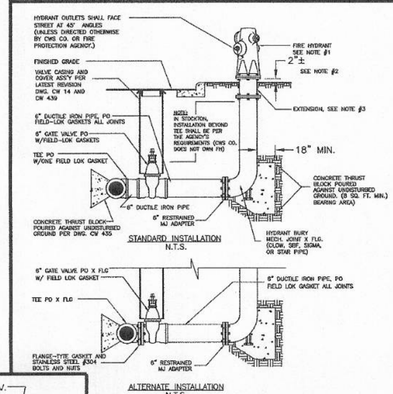
1. CONTRACTOR SHALL USE CARE TO PREVENT DAMAGE TO TRACER WIRE DURING INSTALLATION.
2. ALL WIRE SHALL BE SOLID COPPER W/ 45 MILS OF HIGH MOLECULAR WEIGHT POLYETHYLENE (HMWPE) INSULATION, UL LISTED, RATED FOR DIRECT BURIAL. MIN. SIZE AWG 12. COLOR BLUE FOR POTABLE WATER AND PURPLE FOR RECLAIMED WATER.
3. TRACER WIRES SHALL BE INTER-CONNECTED AT TEES, CROSSES, PLASTIC SERVICES, AND CUT WIRES WITH SPLICE CONNECTORS.
4. ENOUGH SLACK OF TRACER WIRE SHALL BE EXTENDED INTO VALVE CASING AND METER BOX FOR FUTURE ACCESS. LOOPED WIRE SHALL BE PULLED INTO VALVE CASING AS SHOWN ON "PROFILE VIEW" ABOVE. TRACER WIRE SHALL BE TAPED TO BLOW OFF ASSEMBLY AT DEAD ENDS AND TO ANGLE METER STOP AT END OF SERVICE CONNECTIONS.
5. CONTINUITY TESTS SHALL BE CONDUCTED WHEN REQUIRED BY CWS CO. REPRESENTATIVE.
6. TRACER WIRE SHALL BE REQUIRED ON ALL MAINS.



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.

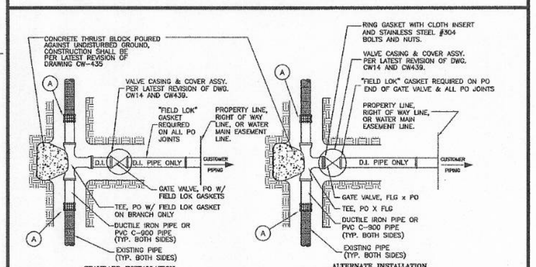
CW 837R3 TWO 1" LONG SIDE SERVICES IN COMMON TRENCH



NOTES:

1. For district specific fire hydrant models and requirements, see district fire hydrant form, note 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 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 Cooting Specification.
10. A break-off check valve may be required in sloped terrain as specified by district personnel. Use Clow Model LB400 or approved equal.

CW 380R14 TYPICAL FIRE HYDRANT INSTALLATION



STANDARD INSTALLATION

TYPICAL MATERIALS FOR ____ INCH FIRE SERVICE:

1 - ____" X ____" TEE PO CL DI
1 - ____" GATE VALVE PO MRS NO RS
1 - VALVE CASING AND COVER ASSEMBLY
____ - FEET OF ____" DUCTILE IRON PIPE (FOR FIRE SERVICE RUN)
____ - 20" POLYWRAP TUBING 8 MIL W/PVC TAPE
____ - ____" "FIELD LOK" GASKET F/PO
____ - FEET OF ____" DUCTILE IRON PIPE OR PVC C-900 PIPE (FOR TEE RUN)

NOTES:

1. A DOUBLE CHECK VALVE OR REDUCED PRESSURE PRINCIPLE BACKFLOW PREVENTION ASSEMBLY IS REQUIRED.
2. POLYETHYLENE ENCASEMENT WITH PVC TAPE IS REQUIRED FOR ALL DUCTILE IRON PIPE AND ALL FITTINGS.
3. PROTECT ALL UNDERGROUND BOLTS, NUTS, FLEX. COUPLINGS, AND BARE STEEL PER C.W.S. CO. PROTECTION COATING SPECIFICATIONS.
4. BLOCK AND POUR CONCRETE THRUST BLOCKS ON ALL ELLS, TEES, AND CAPS, PER LATEST REVISION OF DRAWING CW-435.
5. THE USE OF "FIELD LOK" GASKETS DOES NOT ELIMINATE THE NEED FOR CONCRETE THRUST BLOCKS.

ALTERNATE INSTALLATION

TYPICAL MATERIALS FOR ____ INCH FIRE SERVICE:

1 - ____" X ____" TEE PO X FLG CL DI
1 - ____" GATE VALVE FLG X PO MRS NO RS
1 - VALVE CASING AND COVER ASSEMBLY
____ - FEET OF ____" DUCTILE IRON PIPE (FOR FIRE SERVICE RUN)
1 - GAL. METAL GUARD #301
1 - ROLL BIT OR RES WRAP
____ - 20" POLYWRAP TUBING 8 MIL W/PVC TAPE
____ - ____" "FIELD LOK" GASKET F/PO
____ - FEET OF PVC C-900 PIPE OR DUCTILE IRON PIPE (FOR TEE RUN)

FLANGE MATERIAL - CHECK ONE BOX

☐ 1 - 4" FLANGE TYTE GASKET 8 - 5/8" ø x 3" #304 SS MACHINE BOLTS W/ HN
☐ 1 - 6" FLANGE TYTE GASKET 8 - 3/4" ø x 3-1/2" #304 SS MACHINE BOLTS W/ HN
☐ 1 - 8" FLANGE TYTE GASKET 8 - 3/4" ø x 3-1/2" #304 SS MACHINE BOLTS W/ HN
☐ 1 - 10" FLANGE TYTE GASKET 12 - 7/8" ø x 4" #304 SS MACHINE BOLTS W/ HN

MATERIAL FOR ITEM (A) (EITHER INSTALLATION)	
TIE-INS FROM D.I. TO D.I. OR PVC C-900 OR ACME(-410"DIA.) USE SOLID SLEEVE MJ TIE-INS FROM D.I. TO CI USE SOLID SLEEVE MJ DUAL PURPOSE	TIE-INS FROM D.I. TO OD STEEL USE OD STEEL X D FLEX. COUPLING (10" SLV IF STL OR STD SLV IF D.I.) TIE-INS FROM D.I. TO STD STEEL USE STD X D FLEX. COUPLING (10" SLV IF STL OR STD SLV IF D.I.) TIE-INS FROM PVC C-900 TO PVC C-900 USE "CERTAINTEED" PVC CLOSURE COUPLING
TIE-INS FROM D.I. TO ACBB (ASBESTOS CEMENT ROUGH BARREL) USE ACBB X D FLEX. COUPLING (10" SLEEVE IF STEEL OR STANDARD SLEEVE IF DUCTILE IRON).	

CW 840R4 STANDARD PRIVATE FIRE SERVICE CONNECTION

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: N.T.S.

DRAWN BY: M. FONG

DESIGNED BY:

CHECKED BY: DATE:

APPROVED BY: DATE:

8/14/13

TITLE: CALIFORNIA WATER SERVICE COMPANY STANDARD DRAWINGS

DISTRICT: ALL

DATE: 8-14-13

PROJECT ID.:

DRAWING NO.: CWDWGS

SHT 1 OF 2