

COASTSIDE COUNTY WATER DISTRICT



SPECIFICATIONS FOR CONSTRUCTION OF WATER SERVICE CONNECTIONS AND FIRE PROTECTION SERVICE CONNECTIONS

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COASTSIDE COUNTY WATER DISTRICT

SPECIFICATIONS FOR CONSTRUCTION OF WATER SERVICE CONNECTIONS AND FIRE PROTECTION SERVICE CONNECTIONS

PART 1 – GENERAL

1.01 DEFINITIONS

- A. Water Service Connection. District Resolution No. 2003-11 defines a water service connection as: “An assembly consisting of the District-owned pipeline from the water main to the outlet side of the water meter, the meter box, fittings, and the water meter.
- B. Fire Protection Service Connection. District Resolution No. 831 defines a fire protection service connection as: “A service connection which is utilized solely for fire protection and through which no water usage occurs except for fire fighting purposes. The service connection consists of the District-owned pipeline from the water main (or other District-owned pipeline) to the outlet side of the gate valve downstream of the detector check device. Fire protection devices which may be connected to a fire protection service connection are fire sprinklers, standpipes and privately-owned fire hydrants.”
- C. Contractor. A Contractor possessing a valid California Contractor’s “A” or “C34” License, and which has been prequalified by the District to perform the work. A list of Contractors currently prequalified for constructing water service connections is available at the District office.
- D. District. Coastside County Water District.

1.02 REGULATORY AGENCIES

- A. Water System. All water system work shall be in conformance with the rules and regulations of the Coastside County Water District, County of San Mateo Department of Health Services, the State Department of Health Services, and the California Uniform Plumbing Code.
- B. Trench Backfill and Repaving. All trench backfill and repaving work within public right of way areas shall be performed in conformance with the requirements of the agency having jurisdiction over the right of way area:
 - 1. Within City of Half Moon Bay right of way areas, the agency having jurisdiction is the City of Half Moon Bay Department of Public Works.
 - 2. Within County of San Mateo right of way areas, the agency having jurisdiction is the County of San Mateo Department of Public Works.
 - 3. Within State highway right of way areas, the agency having jurisdiction is Caltrans (California Department of Transportation).
- C. Safety. All work shall be in conformance with applicable State and Federal laws regulations, rules and orders and as may be necessary in order that the work is performed in a safe manner and that the safety and health of the employees and the people of local communities is safeguarded.
- D. Pollution Abatement. All work shall be performed in conformance with NPDES (National Pollutant Discharge Elimination System) regulations as well as with all other applicable pollution abatement rules and regulations.

1.03 PERMITS

Prior to beginning work the Applicant and/or their Contractor shall obtain all permits required for the work. Normally the work location is within a public street right of way area that requires the Contractor to obtain an Encroachment Permit.

1.04 INSPECTION

- A. Responsible Agency.
 - 1. Water System Work. Inspection of water system facilities including backfill around piping will be performed by the District. Cost of the inspection shall be paid by the Applicant or their Contractor.
 - 2. Trench Backfill and Repaving in Public Right of Way Areas. Inspection shall be performed by the agency having jurisdiction over the right of way area. Cost of inspection shall be paid by the Applicant or their Contractor.
- B. Notification. The Contractor shall provide the District with written notification of the date of start of construction a minimum of 5 days before that starting date. If construction is not continuous, the District shall be notified a minimum of 48 hours prior to the date of resumption of work.
- C. District Inspection. All work performed and all materials furnished shall be subject to inspection by the District. The District will observe and inspect the work solely to protect the interests of the District and to determine whether the completed work is acceptable for incorporation into the District system. The District does not assume thereby any responsibility for the safety practices of the Contractor. The Contractor is responsible for the correct location of all facilities which are installed. All piping work shall be inspected by the District prior to backfill. Work which has been backfilled prior to inspection by the District shall be uncovered for District inspection at the expense of the Contractor.

1.05 REPAIR OF DAMAGES

The Contractor shall repair at his expense any damage to District facilities or other property caused by his work. At the option of the District, repairs to District facilities will be completed by the District with the cost of the repair work being paid by the Contractor.

1.06 SITE CONDITIONS

The District has performed no investigation of subsurface conditions in the work area. The Contractor shall visit the site prior to preparing their bid and shall be responsible for making their own evaluations, inspections and determinations of all site conditions including subsurface.

1.07 LINES AND GRADES

The Contractor will be solely responsible for all lines and grades:

- A. Water Pipeline Location. At no cost to the Contractor the District will mark in the field the approximate location of the existing pipeline to which the service connections are to be connected. The District files contain no information regarding depth of existing pipelines.
- B. Property Lines and Corners. Water meter boxes normally are required to be located in public right of way areas adjacent to the Applicant's property line. The Applicant and/or their Contractor shall retain the services of a licensed land surveyor to field locate each property corner required for installation of the new service connections.

1.08 QUALITY ASSURANCE

- A. Leakage Test. All water pipelines, water service tubing and piping accessories shall be tested for leakage in conformance with the requirements contained in Part 3 of this document.
- B. Disinfection. All potable water pipelines, service tubing and piping accessories shall be disinfected in conformance with the requirements contained in Part 3 of this document.

PART 2 – MATERIALS

2.01 GENERAL REQUIREMENTS

All materials shall be in conformance with CCWD rules and regulations, and shall be “District-approved” materials as described below. For required materials not described below, material requirements will be determined by the District. Where model, style or types of manufacturer’s products are listed below, they are intended to indicate a standard of quality. The Contractor shall verify that the referenced model, style or type is correct for the actual project application prior to ordering the materials. Where listed model numbers are no longer available or are incorrect, the District will provide new model numbers for District-approved materials. All materials shall be new.

2.02 DUCTILE IRON PIPE

- A. Pipe. Pipe shall normally be ductile iron pipe with push-on joints conforming to AWWA Standard C151, thickness Class 52. Where flanged joint pipe is required it shall conform to AWWA Standard C115, thickness Class 53.
- B. Pipe Joints:
 - 1. Push-On Pipe Joints. Joints shall conform to AWWA Standard C111.
 - 2. Restrained Joints for Push-on Pipe. Where restrained joints are required by the District, pipe gaskets shall be “Field-Lok” gaskets as manufactured by U.S. Pipe and Foundry Co.
 - 3. Flanged Pipe Joints. Where flanged joints are required, flanges shall be in conformance with AWWA C115. Flanges shall normally be Class 125, B16.1, rated for a service pressure of 250 psi. Bolts and nuts for all flanged joints shall be Type 316 stainless steel. Gaskets shall be normally 1/8-inch thick non-asbestos composition type.
- C. Fittings:
 - 1. Fittings for Push-On Joint Pipe. Fittings shall be ductile iron conforming to AWWA Standard C153. Fittings shall be push-on type (“Tyton” style) or mechanical joint type as directed by the District.
 - 2. Fitting Joint Restraint Devices. Where fitting joint restraint devices are required by the District, they shall be as follow:
 - a. Restraint Device for Push-On Fittings: “Field-Lok” gaskets as manufactured by U.S. Pipe and Foundry Co.
 - b. Restraint Device for Mechanical Joint Fittings: Series 1110HD Megalug Retainer Glands as manufactured by EBBA Iron Sales, Inc.
 - 3. Fittings for Flanged Pipe. Fittings shall be ductile iron conforming to AWWA C110. Fittings shall be screw- on type, normally Class 125, B16.1 Type, designed for a service pressure of 250 psi. Bolts and nuts for flanged joints shall be Type 304 stainless steel. Gaskets shall normally be 1/8-in thick non-asbestos composition type.
- D. Exterior Coating. Pipe and fittings shall be furnished with a 1 mil thick asphaltic coating. The finished coating shall be the manufacturer’s standard conforming to AWWA requirements.
- E. Interior Lining. Pipe and fittings shall be cement lined in conformance with AWWA Standard C104.
- F. Polyethylene encasement. Polyethylene encasement shall be tube type, minimum 8 mil thickness, conforming to AWWA Standard C105-99. The encasement material shall be marked at a minimum of every 2 feet along its length in conformance with the AWWA Standard which includes the manufacturer’s name, year of manufacturer, “AWWA C105”, film thickness, applicable range of nominal pipe diameter sizes, and “Warning---Corrosion Protection---Repair any Damage”.

2.03 PVC PIPE (FOR USE ONLY IN PRINCETON AREA)

- A. Pipe. Pipe shall conform to AWWA Standard C900, pressure Class 200 (DR=14).
- B. Pipe Joints. Joints shall be bell and spigot type conforming to AWWA Standard C900. Gaskets and lubricant shall be provided by the same manufacturer.
- C. Fittings. Fittings shall be ductile iron push-on type conforming to AWWA Standard C153 except where flanged joints are shown on the Drawings. Fittings shall be cement lined in conformance with AWWA Standard C104. Bolts and nuts for flanged joints shall be Type 316 stainless steel.
- D. Pipeline Locator Wire. No. 8 solid copper wire bare (without insulation).

2.04 COPPER TUBING

- A. Tubing:
 - 1. Buried Tubing. Copper tubing for buried service shall be Type K (soft) conforming to ASTM B88.
 - 2. Exposed Tubing. Copper tubing for exposed (not buried) service shall be Type L (hard) conforming to ASTM B88.
- B. Tubing Joints and Fittings:
 - 1. Buried Tubing. Joints and fittings for buried copper tubing shall be compression type not requiring flaring or soldering. Fittings shall be Mueller Series 110 compression connections as listed below:

Mueller Model Numbers

	Description	3/4" & 1" Size	1-1/2" & 2" Size
Mueller	Compression Tee	H15381	H15381
Mueller	Corporation Stop	B25008	B25008
Mueller	Meter Angle Stop	B24258	B24276
Mueller	Compression Union	H-15403	H-15403

2.05 BRASS PIPE

Brass pipe shall be in conformance with ASTM-B43, regular. Joints shall be screwed type.

2.06 GATE VALVES

- A. Gate Valves 4 Inches in Diameter and Larger. Gate valves shall be resilient-wedge type conforming to AWWA C509 and the following additional requirements. Valves shall be rated at 250 psi working pressure. All body and bonnet bolts, studs, and nuts shall be Type 316 stainless steel. Stem seals shall be O-ring type. Valve operators shall be 2 inch square nut type. Valve end connection connections shall be normally push-on or mechanical joint type except where flanged end connections are required. The interior and exterior of the valve body shall be coated with 10 mils minimum of epoxy material which conforms to AWWA Standard C550. Valve shall be Mueller Co. A-2360 Series or Clow Corp. Model 2639.
- B. Gate Valves 3 Inches in Diameter and Smaller. Valves shall be rated for 200 psi service, and shall be bronze body, solid wedge disc, non-rising stem, handwheel operated type with screwed end connections.

2.07 TAPPING SLEEVES AND TAPPING VALVES

Tapping sleeves shall be JCM Model 432 all stainless steel tapping sleeves with Type 316 stainless steel body and bolts. Tapping sleeves shall be Mueller tapping gate valves as specified above with a mechanical joint outlet connection.

Valve boxes shall be Christy Model G-5 with cast iron lids with the word "Water" cast into the lid. Riser pipe shall be 8-inch diameter PVC sewer pipe conforming to ASTM D-3034, SDR 35.

2.08 FIRE HYDRANT ASSEMBLIES

Each fire hydrant assembly shall consist of a Clow 960 fire hydrant, a Clow No. LB 40 breakoff check valve, a 26 inch long hydrant bury piece with a mechanical joint 6 inch diameter end connection, and extension pieces as required. Bolts and nuts for flanged joints shall be Type 316 stainless steel.

2.09 WATER METERS

Water meters will be furnished to the Contractor at no cost by the District.

2.10 METER BOXES

Meter boxes shall be concrete, and shall be products of Christy Concrete Products, Inc. Meter box lids in non-traffic areas shall normally be concrete, and in traffic areas shall be galvanized steel. Lids shall have the work "Water" cast into the top. Extension pieces shall be provided as required so that the bottom of the meter box assembly is above the bottom of the meter or other device inside the box as shown on the District Standard Installation Details or as directed by District field personnel. For water meter service connections, the following boxes and lids shall be provided:

Christy Meter Boxes and Lids

Water Meter Size	Box No.	Non-Traffic Lid No.	Traffic Lid No.
5/8" – 3/4"	B9	B9D	B9C
1"	B16	B16D	B16C
1-1/2"	As Required	E Type	61G Type
2"	As Required	E Type	61G Type

2.11 FLEXIBLE COUPLINGS

- A. Straight Flexible Couplings. Flexible couplings shall have cast iron bodies and stainless steel bolts and nuts. The District-approved coupling is the Smith Blair Type 441.
- B. Transition Flexible Couplings. Flexible transition couplings shall have epoxy lined and coated steel bodies and stainless steel bolts and nuts. The District-approved coupling is the Smith Blair Type 413.

2.12 FLANGED COUPLING ADAPTERS

Flanged coupling adapters for ductile iron pipe shall be epoxy coated Series 2100 megaflange-flange adapters as manufactured by EBBA Iron Sales, Inc.

2.13 SERVICE SADDLES

Service saddles shall be rated for a working pressure of 200 psi, and shall be bronze double strap type. Outlet shall be either AWWA taper or IPT as required for the pipe to be connected to the saddle. The District-approved service saddle is the Mueller BR2B Series.

2.14 BACKFLOW PREVENTION ASSEMBLIES

Backflow prevention assemblies shall normally be reduced pressure type. The assembly shall be a type approved by the San Mateo County Department of Health Services. The Contractor shall submit catalog information for the backflow prevention assembly proposed for use for approval of the District.

2.15 DETECTOR CHECKS

The District-approved detector check is the Hersey Model EDC3.

2.16 FIRE HYDRANT GUARD POSTS

Fire hydrant guard posts (bollards) shall be 4-inch diameter Schedule 40 galvanized steel pipe, 6 feet long.

2.17 CONCRETE

Concrete shall contain a minimum of 564 pounds of Portland cement per cubic yard and shall obtain a minimum compressive strength after 28 days of 3,500 psi.

2.18 TRENCH BACKFILL MATERIAL AND REPAVING MATERIALS

- A. Public Right of Way Areas. Materials shall conform to the requirements of the agency having jurisdiction over the right of way area (City of Half Moon Bay, County of San Mateo, or Caltrans).
- B. Non-Public Right of Way Areas. Sand and structure backfill material shall conform to the requirements contained in current edition of "Standard Specifications" issued by Caltrans (California Department of Transportation), Section 19.

2.19 WATER

Water shall be potable water unless otherwise permitted by the District. The District will make water available to the Contractor from available facilities at or in the vicinity of the work site. Cost of water shall be paid by the Contractor using a portable meter obtained from the District.

PART 3 – EXECUTION

3.01 EXISTING UNDERGROUND UTILITIES

Prior to beginning work the Contractor shall notify USA to have the location of all underground utilities marked in the field. Prior to beginning machine excavation the Contractor shall verify the exact location of each underground utility by hand excavation (potholing).

3.02 SITE MEETING WITH DISTRICT FIELD PERSONNEL

Prior to beginning work the Contractor shall arrange a meeting at the site with District field personnel to review the work requirements. The District will require satisfactory evidence such as field survey stakes or property corner survey markers of the location of the property line adjacent to which meter boxes are to be installed before the exact location of meter boxes can be determined.

3.03 TRENCH EXCAVATION, BACKFILL AND REPAVING

- A. Trench Excavation. Trenching for pipe and service tubing shall be in open cut unless otherwise permitted by the District. Existing pavement shall be cut with a pavement saw. Existing vegetation shall be preserved and protected. Trees roots over 2 inches in diameter shall not be cut or otherwise damaged. In unpaved areas topsoil shall be removed, stockpiled, and replaced after completing of trench backfilling. Work shall be performed to minimize disruption of traffic and so as not to obstruct driveways and other access roadways. Excavation shall be to a depth of 4 inches below the pipe grade to accommodate the pipe bedding material. All pipe and service tubing shall be bedded in 4 inches of sand.
- B. Trench Backfill:
1. Pipe Zone Backfill. Backfilling work shall not begin until the District has completed its inspection of the piping work. All pipe and service tubing shall be backfilled with sand to a depth of 12 inches over the pipe. The sand shall be compacted to a relative compaction of 95%.
 2. Upper Levels Backfill:
 - a. Public Right of Way Areas. Backfilling shall conform to the requirements of the agency having jurisdiction over the right of way area (City of Half Moon Bay, County of San Mateo or Caltrans).
 - b. Non-Public Right of Way Areas. Under paved areas, backfill with structure backfill material compacted to 95% relative compaction. Under unpaved areas, backfill with suitable excavated material compacted to 90% relative compaction.
- C. Trench Repaving:
1. Public Right of Way Areas. Conform to the requirements of the agency having jurisdiction over the right of way area (City of Half Moon Bay, County of San Mateo, or Caltrans).
 2. Non-Public Right of Way Areas. Repave to restore paved area to a condition equal or better than that which existed prior to start of work including restoration of gravel, crushed rock or oiled surfaces.
 3. Steel Traffic Plates. Contractor shall have available in the vicinity of the job site a sufficient number of steel traffic plates to cover 20 linear feet of trench. These plates shall be utilized as required to maintain traffic flow in streets, allow access to driveways and similar private roadways, and for passage of emergency vehicles. Normally all trenches shall be backfilled at the completion of each work day and temporary asphalt concrete paving installed.
 4. Disposal of Excavated Materials. Excess and unsuitable materials shall be disposed off the site in conformance with the requirements of regulatory agencies.

5. Curb, Gutter and Sidewalk. All damaged areas shall be replaced with new materials. Work shall be performed in conformance with the requirements of the agency having jurisdiction over the right of way area (City of Half Moon Bay, County of San Mateo, or Caltrans). In privately owned areas restoration shall be to a condition equal or better than that which existed prior to start of work.

3.04 PIPING GENERAL REQUIREMENTS

- A. Location. Pipelines and service tubing shall be installed at a continuous sloping grade upward from the connection point with the existing water pipeline to the service connection without low or high points. Pipelines and service connection tubing shall be installed with a minimum depth of cover of 36 inches unless otherwise permitted by the District.
- B. Handling. Pipe and service tubing shall be handled carefully to prevent damage. Pipe and service tubing shall be plugged at the end of each work day and at other times as required to prevent the entry of water or foreign material.
- C. Trench Conditions. Piping shall have a full, even bearing on the top of the trench bedding material. All piping shall be laid in the dry; the Contractor shall dewater the trench as required. Piping ends shall be clean when joints are made.
- D. Clearance Distances of Water Pipelines from Other Underground Utilities. Water pipelines and service tubing shall be installed with the following minimum clearances from other underground utilities:
 1. Electrical Wires or Conduits, Storm Drains, Telephone Conduits, Cable TV wires or Conduits, and Other Utilities. Minimum horizontal clearance shall be 4 feet; minimum vertical clearance shall be one foot.
 2. Sanitary Sewers Including House Laterals. Minimum horizontal clearance shall be 10 feet; minimum vertical clearance shall be one foot. Water piping shall cross over sanitary sewers.
- E. Thrust Restraints. All piping shall be adequately braced against thrust. Buried pipe shall be provided with concrete thrust blocks in conformance with the details shown on the CCWD Standard Installation Details.
- F. Connections to Existing Water Pipelines. All connections shall be made by the "hot tap" method, which does not require taking the existing pipeline out of service. It shall be the responsibility of the Contractor to verify by actual field measurement all existing site conditions including the size and type of the existing pipeline prior to ordering piping materials for the hot-tap connection.
- G. Fire Hydrant Guard Posts. Guard posts (bollards) shall be installed at all fire hydrants not protected by curbing and at locations with curbing where in the opinion of the District the fire hydrant is not adequately protected from vehicle traffic. The number and location of required guard posts will be determined in the field by the District. The posts shall be installed 3 feet into the ground using concrete encasement. Following installation the interior of the pipe shall be filled with concrete.
- H. Leakage Test. All piping shall be tested for leakage in conformance with the requirements specified for each type of pipe. The Contractor shall provide all materials and labor required for the leakage test including the pump, pressure gauge, corporation stops, and temporary plugs and trust blocks. Following completion of the test the Contractor shall dispose of the leakage test water in conformance with NPDES regulations. It shall be the Contractor's responsibility to block off during the testing all piping appurtenances which may be damaged by the test pressure and to provide suitable thrust restraints. Leakage testing shall be witnessed by the District.
- I. Disinfection and Bacteriological Testing:

1. General. All piping systems conveying portable water shall be disinfected. Disinfection shall be in conformance with AWWA Standard C651 except as otherwise required by this document. The Contractor shall provide all materials and labor required for the disinfection process and shall dispose of the disinfection solution in conformance with NPDES requirements including dechlorination.
2. Procedure:
 - a. Preliminary Preparation. The system shall be flushed with water to remove any dirt introduced into the piping during construction operations. All service outlets and fire hydrants shall be opened and the flushing operations continued until clear water flows from each (Note: flushing shall be deferred until after completion of the disinfection process if tablets have been placed in the pipeline during construction for disinfection).
 - b. Introduction of Disinfection Agent. The disinfection agent may be any chlorine compound approved by AWWA C651. The disinfection agent shall be injected slowly and continuously into the system until tests indicate a chlorine residual concentration of at least 25 mg/L at each pipeline outlet. All outlets shall then be closed and this condition maintained for 24 hours.
 - c. Preliminary Tests. After 24 hours tests shall be made for residual chlorine at each pipeline outlet. The minimum acceptable concentration shall be 10 mg/L. If the concentration is less than 10 mg/L, the disinfection procedure shall be repeated. If the concentration at each outlet is over 10 mg/L, the system shall be flushed out until a test at each outlet indicates a chlorine residual of less than 0.5 mg/L.
 - d. Bacteriological Analyses. The CCWD will obtain samples from the piping being disinfected and have bacteriological analyses performed by a State certified laboratory. The number of samples taken shall conform to AWWA C651 (unless otherwise permitted by the District) and State Department of Health Services requirements. Costs of bacteriological analyses shall be paid by the Contractor.
 - e. Final Approval. The requirement for final approval is that each water sample analyzed shall be in conformance with State disinfection requirements. If all bacteriological analyses are not in conformance with these requirements the disinfection procedure shall be repeated.
 - f. Disinfection by Spraying or Swabbing. Water piping installations which cannot be disinfected using the procedure described above shall be disinfected by spraying or swabbing the pipeline interior with a minimum 1% chlorine solution immediately prior to installation.

3.05 DUCTILE IRON PIPE INSTALLATION

- A. General. Pipe installation shall be in conformance with Sections 1 through 3 of AWWA Standard C600 except as otherwise required by this specification section. Pipe installation shall also be in conformance with the recommendations of the manufacturers of the pipe and fittings.
- B. Restrained Joints. Restrained joints for pipe and fittings shall be utilized at locations where concrete thrust blocks are not sufficient or are impractical or on steep slopes where restrained joints are required to assure pipeline integrity.
- C. Pipe Taps. Pipe taps shall be permitted in accordance with the following schedule:

Pipe Tap Schedule

Pipe Diameter	Maximum Tap Size	
	Without Saddle	With Saddle
4"	3/4"	2-1/2"
6"	1-1/4"	2-1/2"
8"	1-1/2"	2-1/2"
10" and larger	2"	2-1/2"

If the piping connection of larger pipes than permitted for taps is required, standard tee fittings shall be utilized.

- D. Polyethylene Encasement. All ductile iron pipelines shall be polyethylene encased including fittings, valves and other appurtenances. Installation of polyethylene encasement shall be in conformance with AWWA Standard C105.
- E. Leakage Test. All ductile iron piping shall be tested for leakage for a duration of 2 hours at a test pressure of 250 psi. Allowable leakage for below grade piping shall not exceed the following:

Allowable Leakage

Pipe Diameter	Allowable Leakage per 1000 Linear Feet of Pipe during the 2-Hour Test Period
4"	0.47 gallons
6"	0.71 gallons
8"	0.95 gallons
10" and larger	1.19 gallons

3.06 PVC PIPE INSTALLATION

- A. Pipe Jointing. Jointing shall be in conformance with the pipe manufacturer's installation instructions.
- B. Maximum Joint Deflection. Special care shall be taken so as not to exceed the manufacturer's recommendations for pipe deflection for the diameter of pipe being installed. Where the curvature of the pipeline trench is less than the allowable pipe deflection, a fitting shall be installed. Use of short sections of PVC pipe instead of a fitting is not permitted.
- C. Service Connections. All connections to the PVC pipe shall be made using a double strap bronze saddle and corporation stop.
- D. Pipe Locator Wire. The No. 8 bare copper locator wire shall be installed at the top of the water pipeline and shall be attached to it using PVC tape or ties spaced 6 feet apart.
- E. Concrete Thrust Blocks. Concrete thrust blocks shall be installed at all below grade fittings. Thrust blocks shall be in conformance with the District Standard Installation Detail.
- F. Leakage Test. All PVC piping shall be tested for leakage for a duration of 2 hours at a test pressure of 200 psi. Allowable leakage for below grade piping shall not exceed the following:

Allowable Leakage

Pipe Diameter	Allowable Leakage per 1000 Linear Feet of Pipe during the 2-Hour Test Period
4"	0.77 gallons
6"	1.15 gallons
8"	1.53 gallons
10" and larger	1.91 gallons

3.07 COPPER SERVICE TUBING INSTALLATION

- A. Installation. Installation of copper tubing including jointing shall be in conformance with the recommendations of the manufacturers of the tubing and fittings.
- B. Leakage Test. Copper tubing shall be hydrostatically tested for leakage at 250 psi for a 2-hour test period. No leakage will be permitted.

3.08 INSTALLATION OF VALVES AND OTHER PIPING ACCESSORIES

Installation of valves and other piping accessories shall be in conformance with the recommendations of the manufacture of the product and in conformance with the District Standard Installation Details.

3.09 DISTRICT STANDARD INSTALLATION DETAILS AND SPECIAL INSTALLATION DETAILS

Installation of piping and appurtenances shall be in conformance with the applicable District Standard Installation Details and special installation details prepared by the District.

- A. District Standard Installation Details. These details are applicable for most service connection installations. Following determination of the applicant's service connection requirements, the District will provide to the applicant and their Contractor a copy of the Standard Installation Details for the project construction work. These details are general in nature, and will be revised in the field by District personnel as required by site conditions. District Standard Installation Details for use on service connection installations are as follow:

1. Water Service Connections:

- a. ¾" & 1" Domestic Service Connection.
- b. ¾" Domestic Service Connection with 1" Fire Service Connection
- c. 1-1/2" & 2" Service Connection.
- d. 4" Size Compound Water Meter.
- e. Master Water Service Connection.

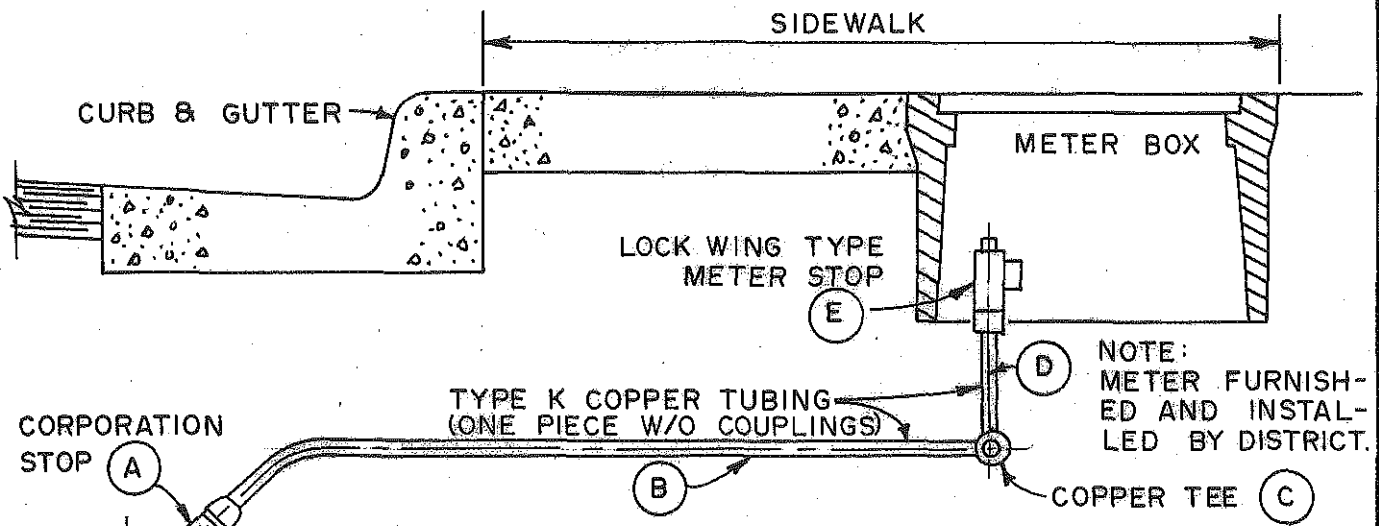
2. Fire Service Connections:

- a. ¾" through 1-1/2" Size Fire Service Connection.
- b. 4" and Larger Fire Service Connection with Backflow Prevention Assembly.
- c. 4" & 6" Size Fire Service Meter.
- d. Detector Check.
- e. 2" Detector Check.
- f. Combination Fire Hydrant and Detector Check.
- g. Combination Fire Hydrant, Fire meter & Backflow Prevention Device.
- h. Fire Hydrant.

3. Appurtenant Devices and Other Details:

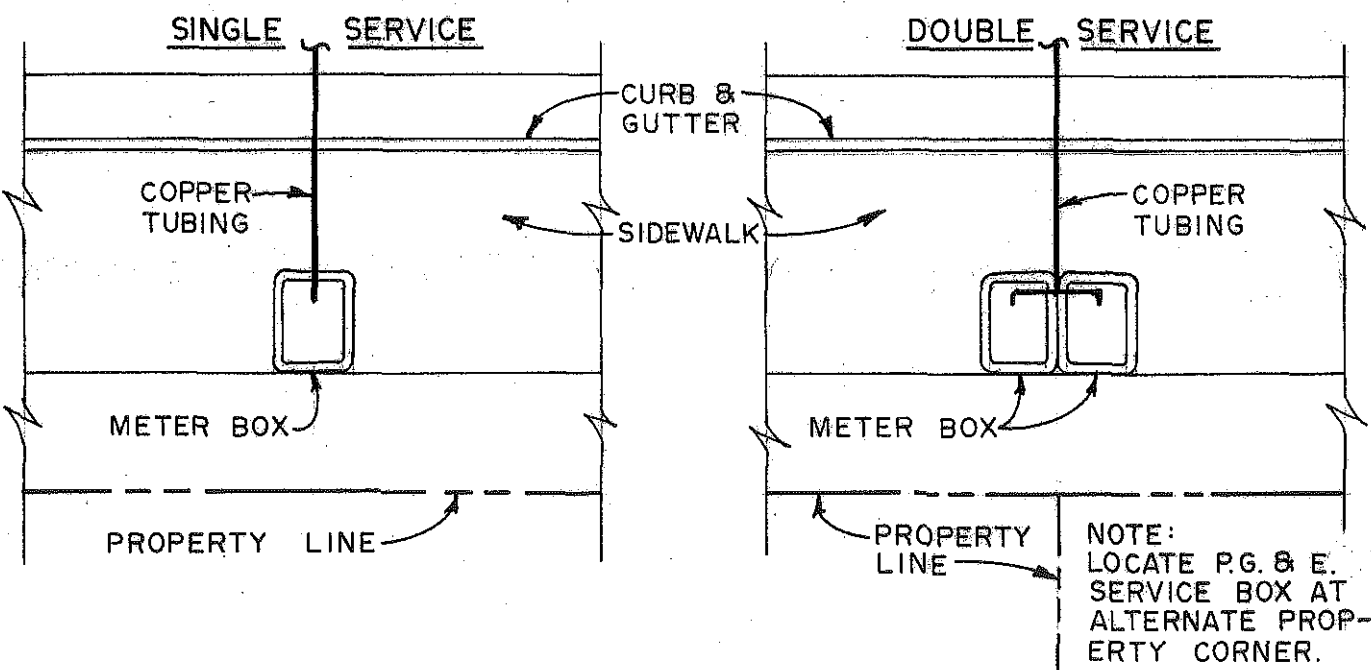
- a. ¾" through 2" Backflow Prevention Device.
 - b. Horizontal Thrust Blocks.
 - c. Vertical Thrust Blocks.
- B. Special Installation Details. For non-standard installations, the District Engineer will prepare a special installation detail. Cost of preparation shall be paid by the Applicant or Contractor.

END OF SECTION



MATERIAL SCHEDULE					
SERVICE TYPE	(A)	(B)	(C)	(D)	(E)
SINGLE 3/4"	3/4"	3/4"	—	3/4"	3/4"
DOUBLE 3/4"	1"	1"	1" X 3/4"	3/4"	3/4"
SINGLE 1"	1"	1"	—	1"	1"
DOUBLE 1"	1 1/2"	1 1/2"	1 1/2" X 1"	1"	1"

TYPICAL INSTALLATION DETAIL



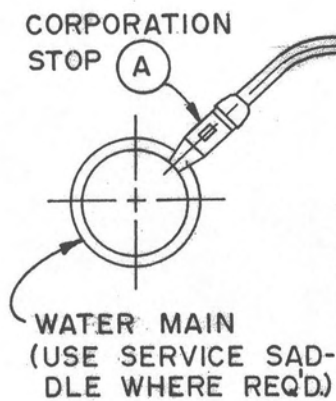
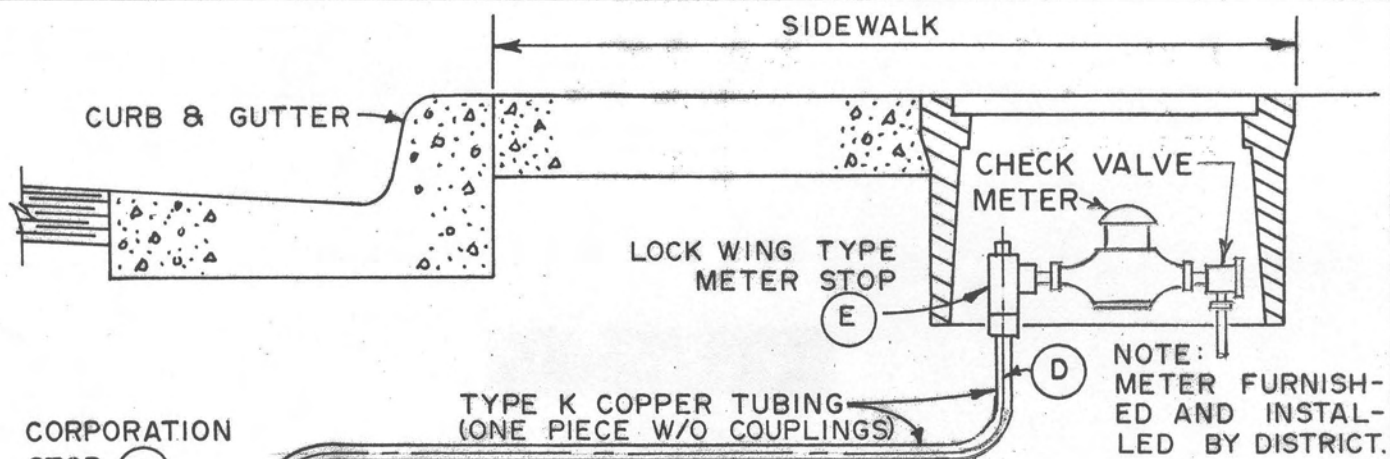
TYPICAL LOCATION DETAIL

3/4" & 1" DOMESTIC SERVICE CONNECTIONS

DATE: DEC. '75
 REV.: MAR. '83
 MAR. '08

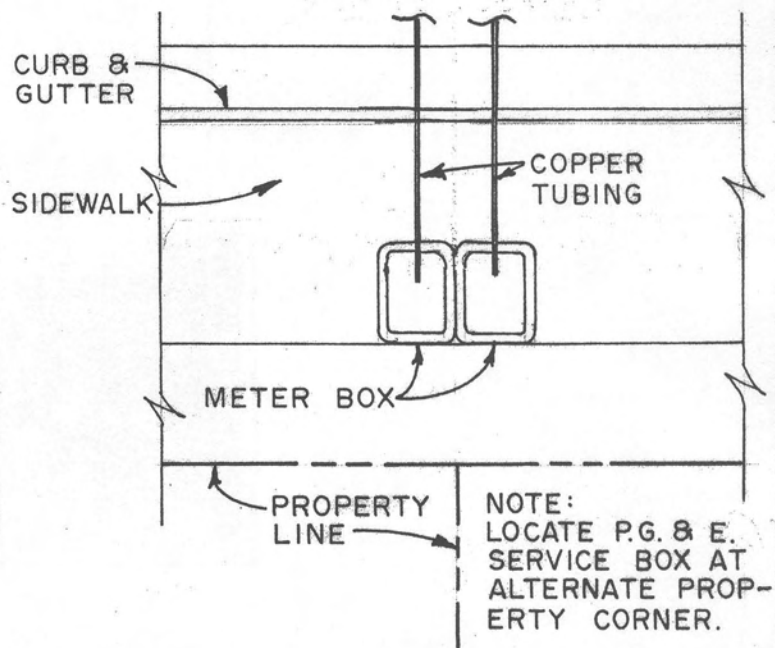
DISTRICT STANDARDS
 COASTSIDE COUNTY
 WATER DISTRICT

SAN MATEO COUNTY, CALIFORNIA



MATERIAL SCHEDULE					
SERVICE TYPE	(A)	(B)		(D)	(E)
SINGLE 3/4"	3/4"	3/4"	—	3/4"	3/4"
SINGLE 1"	1"	1"	—	1"	1"

TYPICAL INSTALLATION DETAIL



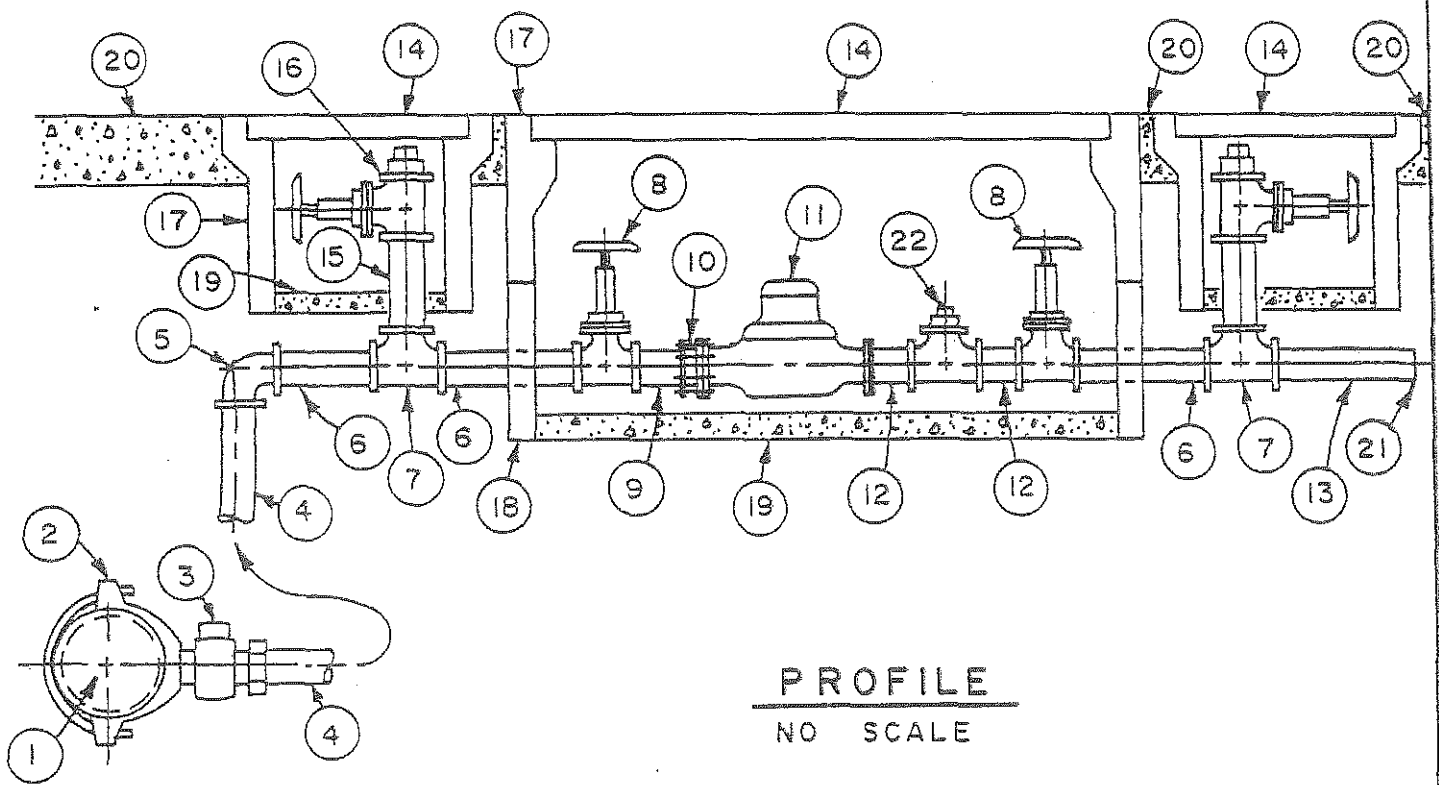
TYPICAL LOCATION DETAIL

3/4" DOMESTIC SERVICE
CONNECTION WITH 1" FIRE
SERVICE CONNECTION

DATE: DEC. '75
REV.: MAR. '83
MAR. '08
JULY '09

DISTRICT STANDARDS
COASTSIDE COUNTY
WATER DISTRICT

SAN MATEO COUNTY, CALIFORNIA



PROFILE

NO SCALE

LEGEND

- ① EXISTING PIPELINE (CONSULT DISTRICT FOR DIAMETER, MATERIAL, AND SADDLE REQUIREMENTS).
- ② DOUBLE STRAP BRONZE SADDLE (WHERE REQUIRED) WITH STAINLESS STEEL NUTS & BOLTS.
- ③ CORPORATION STOP WITH A.W.W.A. (CC) INLET THREAD & COMPRESSION TYPE OUTLET CONNECTION.
- ④ TYPE K COPPER TUBING WITH COMPRESSION TYPE FITTINGS; OR BRASS PIPE WITH SCREWED FITTINGS (NOTE: DIAMETER EQUAL TO SERVICE CONNECTION SIZE).
- ⑤ 90° ELL WITH COMPRESSION TYPE INLET CONNECTION FOR COPPER TUBING AND I.P. TYPE OUTLET CONNECTION FOR BRASS PIPE.
- ⑥ BRASS NIPPLE, LENGTH AS REQUIRED (NOTE: DIAMETER EQUAL TO SERVICE CONNECTION SIZE).
- ⑦ BRASS TEE.
- ⑧ GATE VALVE.

CONTINUED ON REVERSE SIDE

STANDARD INSTALLATION DETAIL
 1-1/2" & 2"
 SERVICE CONNECTION

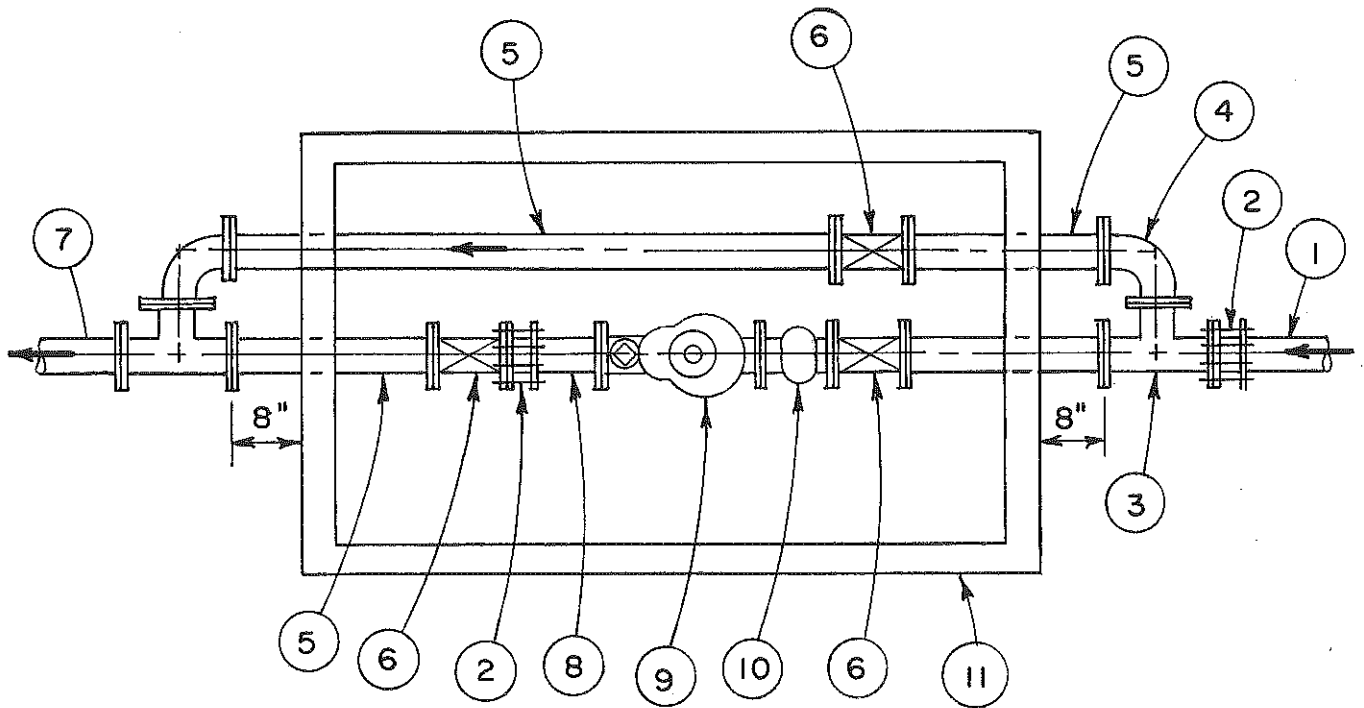
SAN MATEO COUNTY, CALIFORNIA
 COASTSIDE COUNTY
 WATER DISTRICT

LEGEND (CONTINUED)

- ⑨ BRASS NIPPLE, 4" LONG.
- ⑩ FLEXIBLE METER CONNECTION.
- ⑪ WATER METER. LOCATE DIRECTLY BENEATH READING LID.
- ⑫ BRASS NIPPLE, CLOSE.
- ⑬ BRASS NIPPLE, EXTEND 6" BEYOND METER BOX.
- ⑭ METER BOX COVER. SEE NOTE BELOW.
- ⑮ 2" DIAMETER BRASS NIPPLE, LENGTH AS REQUIRED.
- ⑯ 2" GATE VALVE WITH PLUG.
- ⑰ METER BOX, SIZE AS REQUIRED.
- ⑱ METER BOX EXTENSION.
- ⑲ CONCRETE, MINIMUM 1½" THICK, PLACED AFTER SATISFACTORY COMPLETION OF LEAKAGE TESTING AND INSPECTION BY DISTRICT OF SERVICE CONNECTION INSTALLATION.
- ⑳ SIDEWALK. SEE NOTE BELOW.
- ㉑ CUSTOMER POINT OF CONNECTION.
- ㉒ BRASS PLUG.

NOTES

1. MATERIALS AND INSTALLATION SHALL BE IN CONFORMANCE WITH DISTRICT STANDARD SPECIFICATIONS.
2. UNLESS OTHERWISE DIRECTED BY THE DISTRICT, THE 3 METER BOXES SHALL BE LOCATED WITHIN, AND AT THE BACK EDGE OF, THE SIDEWALK. THIS WILL NORMALLY REQUIRE THAT THE BOXES BE INSTALLED PARALLEL TO THE SIDEWALK.
3. METER BOX COVER REQUIREMENTS WILL BE DETERMINED BY THE DISTRICT. IN POTENTIAL TRAFFIC LOCATIONS, STEEL CHECKERED PLATE COVERS WILL BE REQUIRED; IN NON-TRAFFIC LOCATIONS, REINFORCED CONCRETE COVERS WILL BE REQUIRED. THE COVER OVER THE WATER METER SHALL BE A READING-LID TYPE.



PLAN OF COMPOUND METER INSTALLATION

NO SCALE

LEGEND

- ① DISTRICT-OWNED PIPELINE.
- ② FLANGED COUPLING ADAPTER W/ ANCHOR STUDS.
- ③ FLANGED DUCTILE IRON TEE.
- ④ FLANGED 90° DUCTILE IRON ELL.
- ⑤ FLANGED DUCTILE IRON PIPE SPOOL.
- ⑥ FLANGED GATE VALVE W/ 2" SQUARE OPERATING NUT.
- ⑦ CUSTOMER-OWNED PIPELINE.
- ⑧ FLANGED BY PLAIN END DUCTILE IRON PIPE SPOOL.

SEE PAGE 2 FOR CONTINUATION

Page 17

STANDARD INSTALLATION DETAIL
4" SIZE
COMPOUND WATER METER

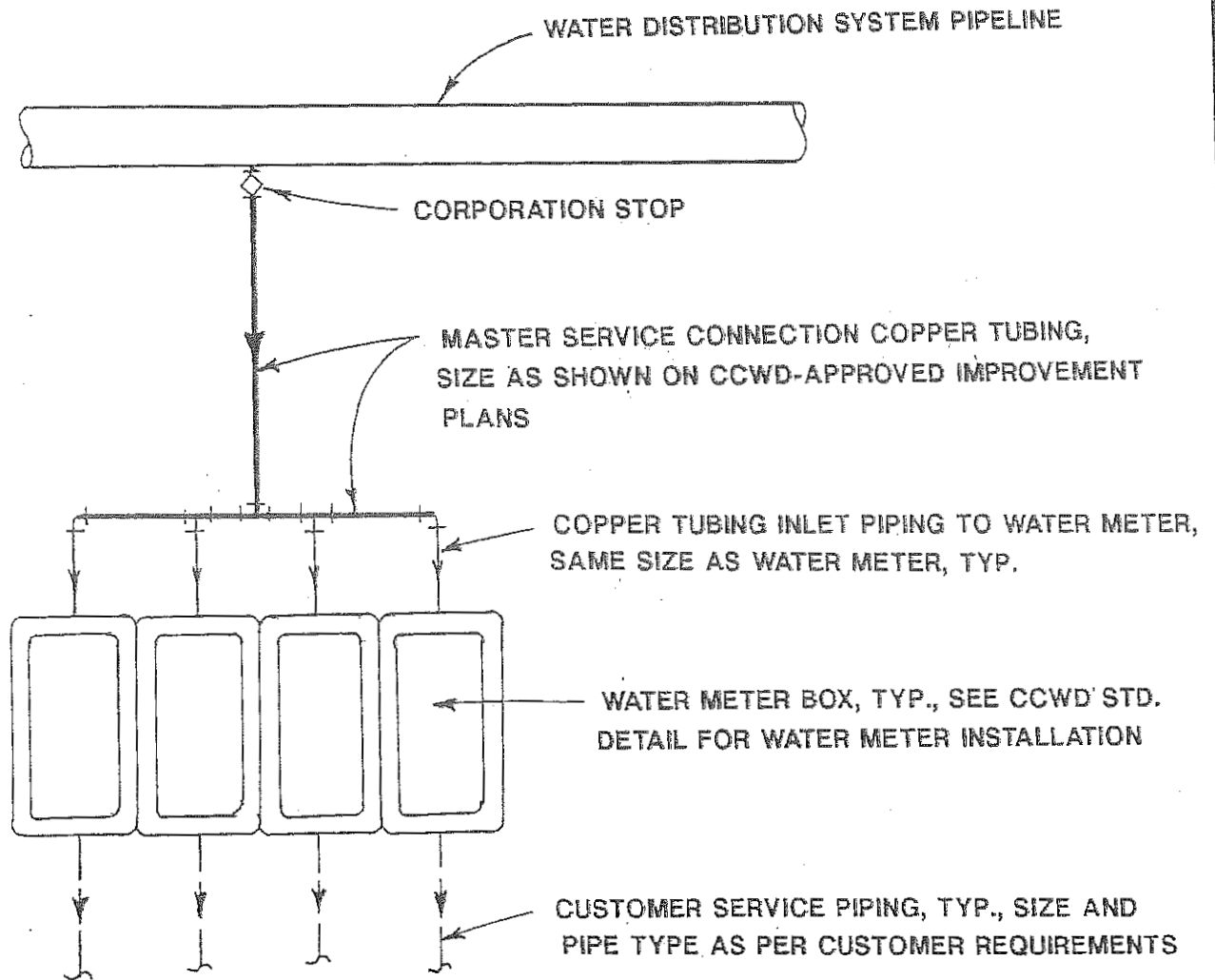
SAN MATEO COUNTY, CA
COASTSIDE COUNTY
WATER DISTRICT

LEGEND CONTINUED

- ⑨ 4" WATER METER, COMPOUND TYPE.
- ⑩ METER STRAINER.
- ⑪ 7' LONG BY 4' WIDE PRECAST CONCRETE PIT, EXTENSION PIECES, AND COVER.

NOTES

1. MATERIALS SHALL CONFORM TO DISTRICT REQUIREMENTS AS DESCRIBED IN THE CCWD SPECIFICATIONS.
2. SEE THE CCWD SPECIFICATIONS FOR INSTALLATION REQUIREMENTS IN ADDITION TO THOSE SHOWN ON THIS STANDARD DETAIL.
3. METER LOCATION SHALL BE DETERMINED BY THE CCWD.
4. PIPING DOWNSTREAM FROM THE METER INSTALLATION (SEE LEGEND ITEM NO. 7) SHALL BE CUSTOMER OWNED AND MAINTAINED.
5. INSTALL A 12" DEEP LAYER OF CRUSHED ROCK UNDER THE ENTIRE AREA OF THE PRECAST PIT. THE PIPING WITHIN THE PIT SHALL BE INSTALLED DIRECTLY ON TOP OF THE CRUSHED ROCK AND SHALL BE SUPPORTED BY THE CRUSHED ROCK.
6. ALL NUTS, BOLTS & WASHERS SHALL BE TYPE 316 STAINLESS STEEL.
7. GUARD POSTS (BOLLARDS) SHALL BE INSTALLED IF DIRECTED BY THE DISTRICT. NUMBER, LOCATION AND TYPE OF GUARD POSTS SHALL BE DETERMINED IN THE FIELD BY THE DISTRICT.

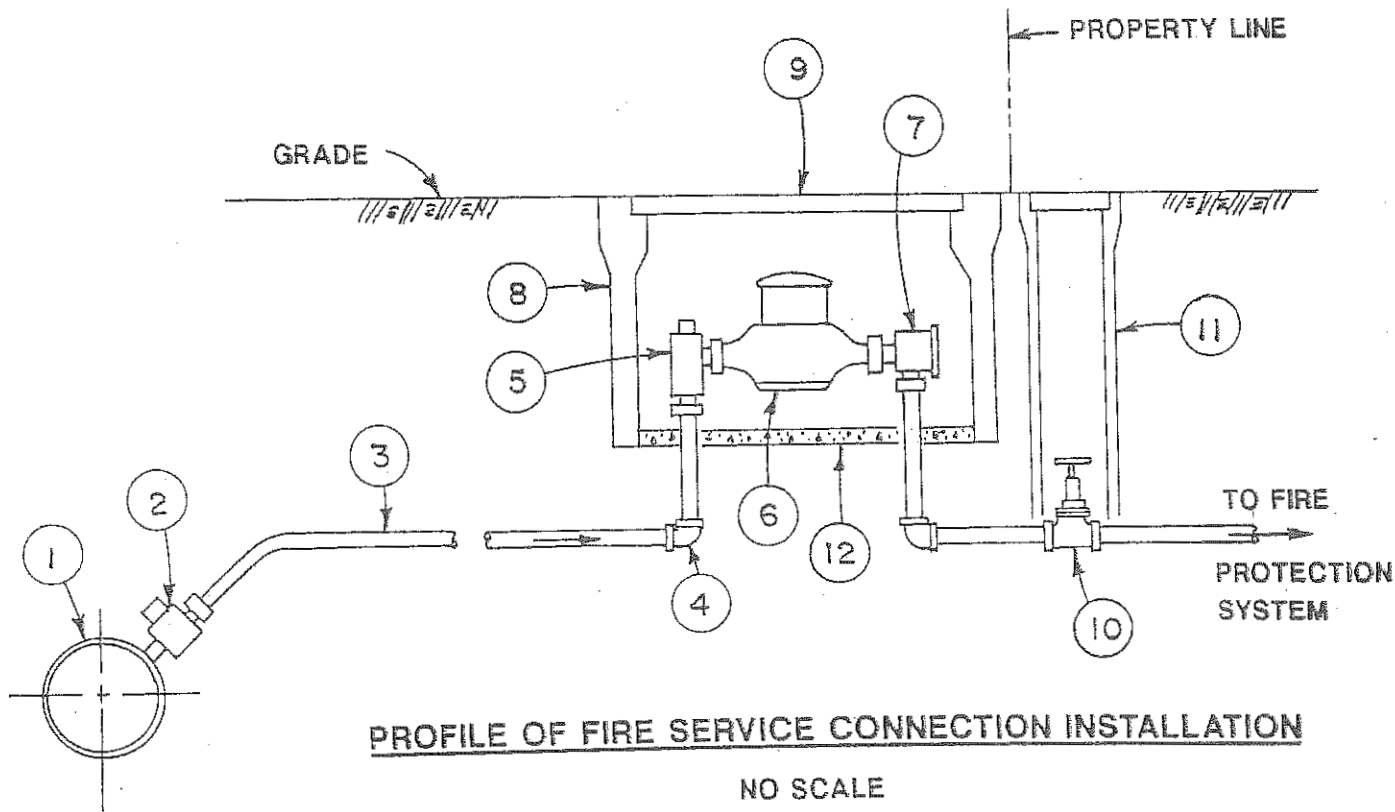


MASTER SERVICE CONNECTION INSTALLATION PLAN

NO SCALE

NOTES

1. MATERIALS SHALL CONFORM TO CCWD REQUIREMENTS.
2. SIZING OF SERVICE CONNECTION TUBING AND WATER METERS SHALL BE IN CONFORMANCE WITH CCWD RULES AND REGULATIONS.



LEGEND

- ① CCWD WATER MAIN. CONSULT DISTRICT FOR DIAMETER, MATERIAL & SADDLE REQUIREMENTS.
- ② CORPORATION STOP, A.W.W.A. INLET THREAD & COMPRESSION TYPE OUTLET CONNECTION.
- ③ COPPER TUBING, TYPE K (SOFT), SAME SIZE AS WATER METER.
- ④ QUARTER BEND (90 DEGREE) UNION, COMPRESSION CONNECTION TYPE.
- ⑤ ANGLE METER STOP, INLET COMPRESSION CONNECTION TYPE.
- ⑥ WATER METER. INSTALL DIRECTLY BENEATH READING LID IN METER BOX COVER (WHERE APPLICABLE).

CONTINUED ON REVERSE SIDE

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STANDARD INSTALLATION DETAIL

3/4 - 1-1/2" SIZE
FIRE SERVICE CONNECTION

SAN MATEO COUNTY, CA.

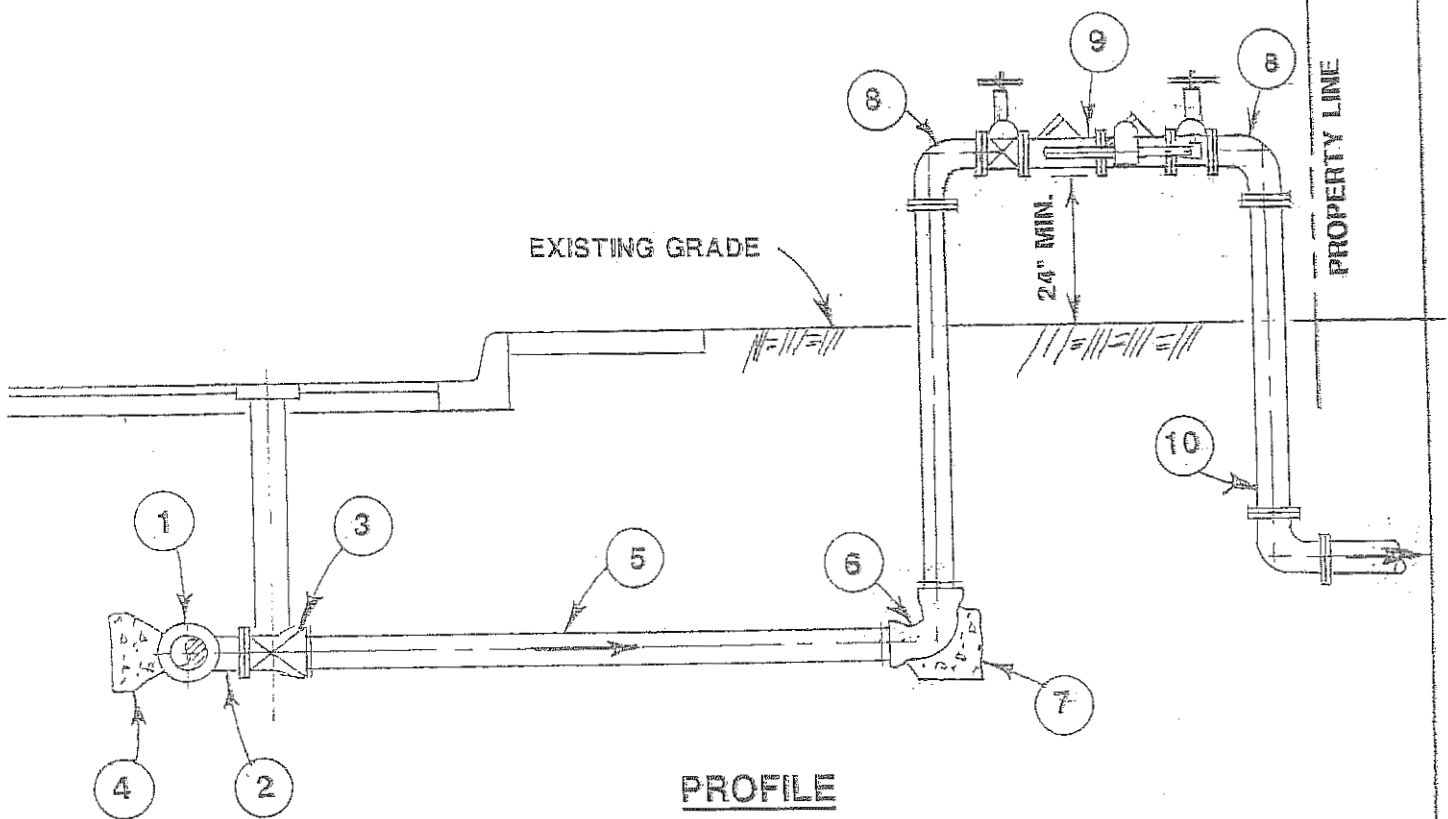
COASTSIDE COUNTY
WATER DISTRICT

LEGEND FOR 3/4" - 1-1/2" SIZE FIRE SERVICE CONNECTIONS CONTINUED:

- ⑦ ANGLE DUAL CHECK VALVE (NOTE: NOT REQUIRED WHERE BACKFLOW PREVENTION DEVICE IS INSTALLED).
- ⑧ METER BOX.
- ⑨ METER BOX LID (SEE NOTES).
- ⑩ GATE VALVE.
- ⑪ VALVE BOX.
- ⑫ CONCRETE, MINIMUM 1-1/2" THICK, PLACED AFTER SATISFACTORY COMPLETION OF LEAKAGE TESTING AND INSPECTION BY DISTRICT OF SERVICE CONNECTION INSTALLATION.

NOTES:

1. MATERIALS AND INSTALLATION SHALL BE IN CONFORMANCE WITH DISTRICT STANDARD SPECIFICATIONS.
2. UNLESS OTHERWISE REQUIRED BY THE DISTRICT, THE BACK EDGE OF THE METER BOX SHALL BE LOCATED IN PUBLIC RIGHT OF WAY ADJACENT TO THE PROPERTY LINE. WHERE REQUIRED BY THE DISTRICT, THE APPLICANT SHALL HAVE THE PROPERTY CORNERS ESTABLISHED BY A LICENSED SURVEYOR IN ORDER THAT THE PROPERTY LINE LOCATION CAN BE DETERMINED.
3. WHERE THERE IS A WATER WELL ON THE LAND PARCEL, INSTALLATION OF A BACKFLOW PREVENTION DEVICE WILL BE REQUIRED IN CONFORMANCE WITH CROSS CONNECTION REGULATIONS (NOTE: SEE DISTRICT STANDARD INSTALLATION DETAILS FOR BACKFLOW PREVENTION DEVICES).
4. METER BOX COVER REQUIREMENTS WILL BE DETERMINED BY THE DISTRICT. IN TRAFFIC OR POTENTIAL TRAFFIC LOCATIONS, STEEL CHECKER PLATE COVERS WILL BE REQUIRED. IN NON-TRAFFIC LOCATIONS, REINFORCED CONCRETE COVERS WILL BE REQUIRED.
5. THE PIPING FROM THE CCWD WATER MAIN TO THE METER STOP SHALL BE OWNED AND MAINTAINED BY THE CCWD. ALL PIPING AND APPURTENANCES DOWNSTREAM FROM THE METER STOP, INCLUDING THE METER BOX AND LID, SHALL BE CUSTOMER OWNED AND MAINTAINED.



PROFILE

NO SCALE

LEGEND

CIRCLED
NUMBER

DESCRIPTION

- | | |
|---|---|
| 1 | EXISTING WATER PIPELINE. DISTRICT WILL PROVIDE BEST AVAILABLE INFORMATION REGARDING PIPE MATERIAL AND DIAMETER, BUT CONTRACTOR SHALL "POTHOLE" TO VERIFY THIS INFORMATION PRIOR TO ORDERING THE TAPPING SLEEVE. |
| 2 | TAPPING SLEEVE (MUELLER H-615 SERIES FOR DUCTILE IRON, CAST IRON AND PVC PIPE; STAINLESS STEEL TYPE FOR WELDED STEEL PIPE). |
| 3 | TAPPING GATE VALVE (MUELLER A-2360 SERIES, TAPPING TYPE) WITH MECHANICAL JOINT OUTLET CONNECTION. SEE GATE VALVE STANDARD INSTALLATION DETAIL. |

CONTINUED ON REVERSE SIDE

STANDARD INSTALLATION DETAIL
4 INCH AND LARGER FIRE SERVICE
CONNECTION WITH BACKFLOW
PREVENTION ASSEMBLY

SAN MATEO COUNTY, CA.
COASTSIDE COUNTY
WATER DISTRICT

REVERSE SIDE OF STANDARD INSTALLATION DETAIL FOR 4 INCH AND LARGER FIRE SERVICE CONNECTION WITH BACKFLOW PREVENTION ASSEMBLY

LEGEND CONTINUED

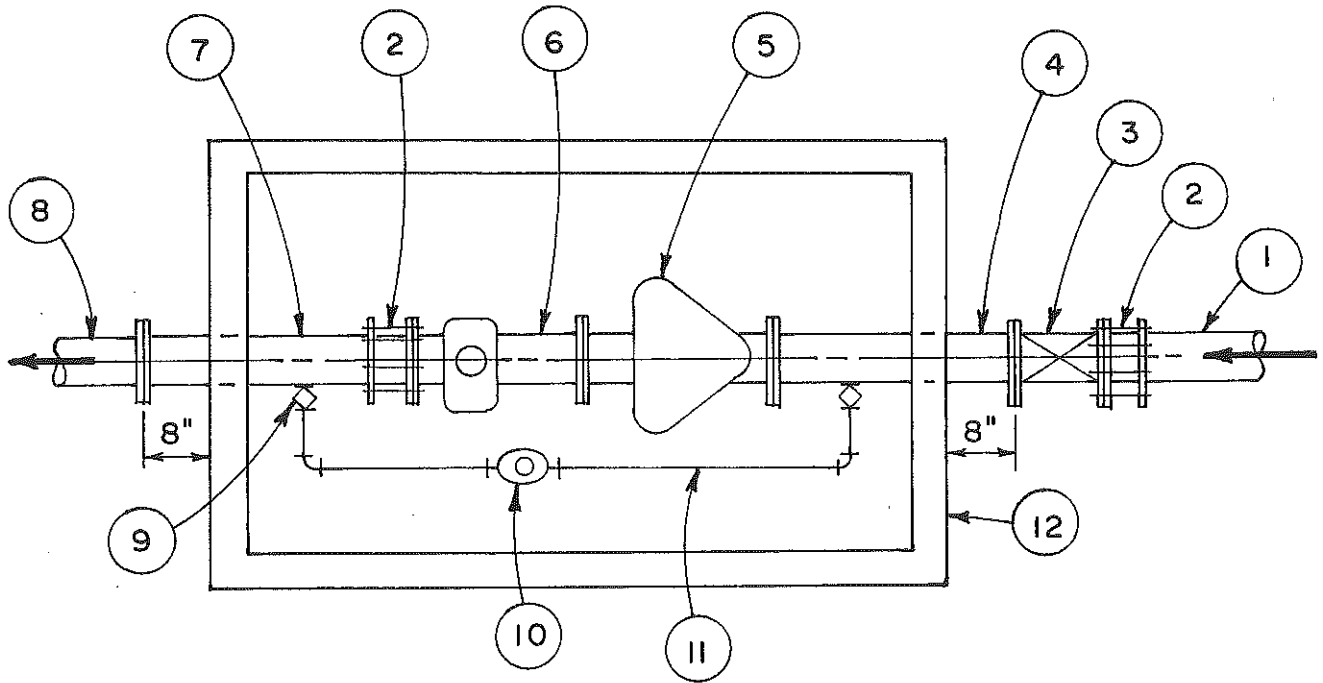
CIRCLED NUMBER

DESCRIPTION

4	CONCRETE THRUST BLOCK.
5	CLASS 52 DUCTILE IRON PIPE (C900 PVC PIPE IN THE PRINCETON AREA ONLY).
6	MECHANICAL JOINT 90 DEGREE DUCTILE IRON ELL WITH EBBA RETAINER GLANDS.
7	CONCRETE THRUST BLOCK AND PIPE SUPPORT.
8	FLANGED 90 DEGREE DUCTILE IRON ELL.
9	BACKFLOW PREVENTION DEVICE ASSEMBLY, DOUBLE CHECK VALVE TYPE OR REDUCED PRESSURE TYPE AS REQUIRED BY DISTRICT. THE ASSEMBLY SHALL INCLUDE A ¾ INCH BYPASS METER WITH A ¾ INCH BACKFLOW PREVENTION DEVICE. THE ASSEMBLY SHALL BE A TYPE APPROVED BY THE UNIVERSITY OF SOUTHERN CALIFORNIA (USC) FOUNDATION FOR CROSS-CONNECTION CONTROL AND HYDRAULIC RESEARCH. A LIST OF APPROVED DEVICES IS AVAILABLE ON-LINE AT THE FOLLOWING WEB SITE: http://www.usc.edu/dept/fccchr/list.html . SUBMIT MANUFACTURER'S CATALOG INFORMATION TO DISTRICT FOR REVIEW FOR CONFORMANCE WITH DISTRICT REQUIREMENTS PRIOR TO INSTALLATION.
10	PIPELINE TO FIRE SPRINKLER SYSTEM. MATERIALS AND INSTALLATION NOT SUBJECT TO DISTRICT INSPECTION.

NOTES

1. THE FIRE SERVICE CONNECTION SHALL BE INSTALLED AT A LOCATION APPROVED BY THE DISTRICT. THE BACKFLOW PREVENTION DEVICE ASSEMBLY SHALL BE INSTALLED WHEN FEASIBLE WITHIN THE STREET RIGHT OF WAY IN ORDER TO PROVIDE ACCESS FOR DISTRICT PERSONNEL TO READ THE BYPASS METER. IF INSTALLATION WITHIN THE STREET RIGHT OF WAY IS NOT FEASIBLE, THE BACKFLOW PREVENTION DEVICE ASSEMBLY SHALL BE INSTALLED ON PRIVATE PROPERTY AT A LOCATION ACCESSIBLE FOR DISTRICT PERSONNEL, AND AN EASEMENT SHALL BE GRANTED TO THE DISTRICT FOR THIS ACCESS.
2. THE FIRE SERVICE CONNECTION FROM THE TAPPING SLEEVE TO THE BACKFLOW PREVENTION ASSEMBLY DEVICE SHALL BE TESTED FOR LEAKAGE AND DISINFECTED IN CONFORMANCE WITH DISTRICT REQUIREMENTS.
3. DISTRICT RESPONSIBILITY FOR MAINTENANCE OF THE FIRE SERVICE CONNECTION PIPELINE ENDS WITH THE UNDERGROUND VERTICAL 90 DEGREE ELL IDENTIFIED IN THE ABOVE DRAWING AS CIRCLED ITEM NO. 6. THE CUSTOMER IS RESPONSIBLE FOR MAINTENANCE BEYOND THAT POINT INCLUDING ANNUAL TESTING OF THE BACKFLOW PREVENTION DEVICE.



PLAN OF FIRE SERVICE METER INSTALLATION

NO SCALE

LEGEND

- ① DISTRICT-OWNED PIPELINE.
- ② FLANGED COUPLING ADAPTER W/ ANCHOR STUDS.
- ③ FLANGED GATE VALVE W/ 2" SQUARE OPERATING NUT & VALVE BOX.
- ④ FLANGED DUCTILE IRON PIPE SPOOL.
- ⑤ METER STRAINER, FIRE SYSTEM U.L. TYPE.
- ⑥ WATER METER, TURBINE FIRE SYSTEM TYPE.
- ⑦ FLANGED BY PLAIN END DUCTILE IRON PIPE SPOOL.
- ⑧ CUSTOMER-OWNED PIPELINE.
- ⑨ 3/4" CORPORATION STOP.

SEE PAGE 2 FOR CONTINUATION

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STANDARD INSTALLATION DETAIL

4" & 6" SIZE
FIRE SERVICE METER

SAN MATEO COUNTY, CA

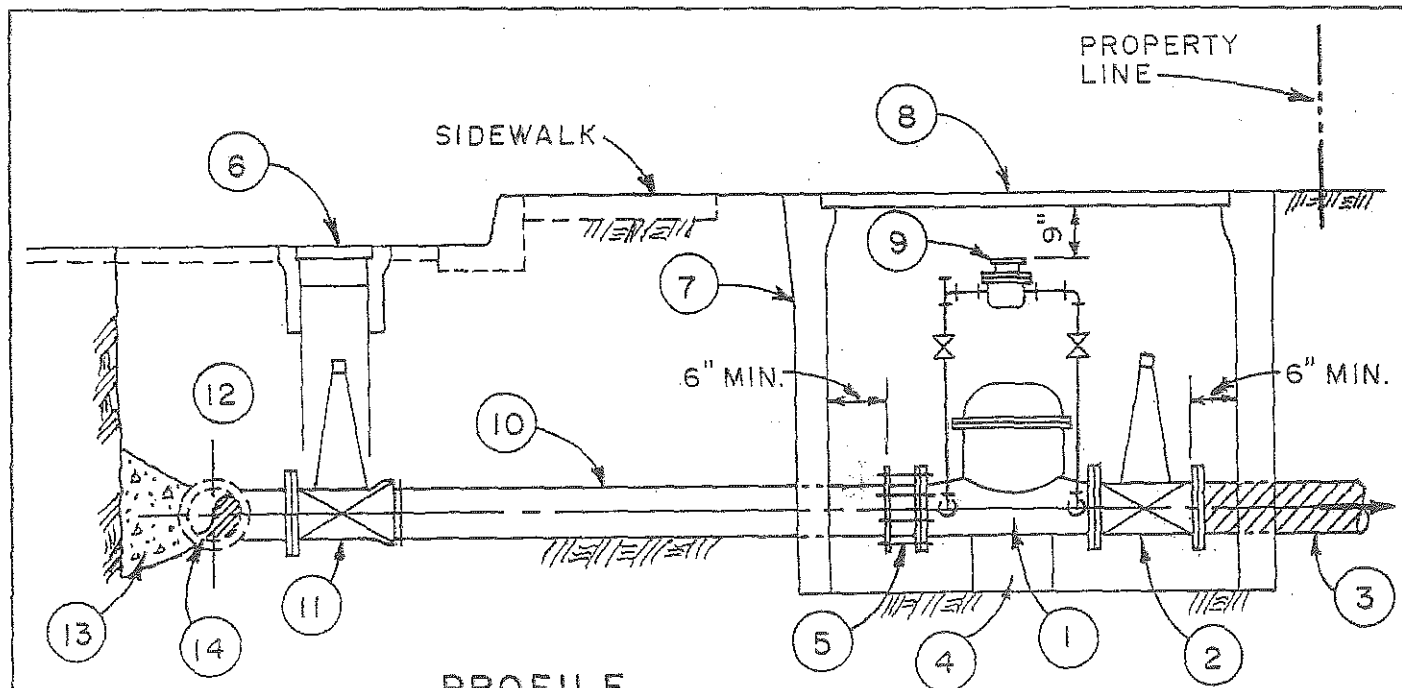
COASTSIDE COUNTY
WATER DISTRICT

LEGEND CONTINUED

- ⑩ 3/4" WATER METER.
- ⑪ 3/4" BRASS PIPE.
- ⑫ 7' LONG BY 4' WIDE PRECAST CONCRETE PIT, EXTENSION PIECES, AND COVER.

NOTES

1. MATERIALS SHALL CONFORM TO DISTRICT REQUIREMENTS AS DESCRIBED IN THE CCWD SPECIFICATIONS.
2. SEE THE CCWD SPECIFICATIONS FOR INSTALLATION REQUIREMENTS IN ADDITION TO THOSE SHOWN ON THIS STANDARD DETAIL.
3. METER LOCATION SHALL BE DETERMINED BY THE CCWD.
4. PIPING DOWNSTREAM FROM THE METER INSTALLATION (SEE LEGEND ITEM NO. 8) SHALL BE CUSTOMER OWNED AND MAINTAINED.
5. INSTALL A 12" DEEP LAYER OF CRUSHED ROCK UNDER THE ENTIRE AREA OF THE PRECAST CONCRETE PIT. THE PIPING WITHIN THE PIT SHALL BE INSTALLED DIRECTLY ON TOP OF THE CRUSHED ROCK AND SHALL BE SUPPORTED BY THE CRUSHED ROCK.
6. ALL NUTS, BOLTS & WASHERS SHALL BE TYPE 316 STAINLESS STEEL.
7. GUARD POSTS (BOLLARDS) SHALL BE INSTALLED IF DIRECTED BY THE DISTRICT. NUMBER, LOCATION AND TYPE OF GUARD POSTS SHALL BE DETERMINED IN THE FIELD BY THE DISTRICT.



PROFILE

NO SCALE

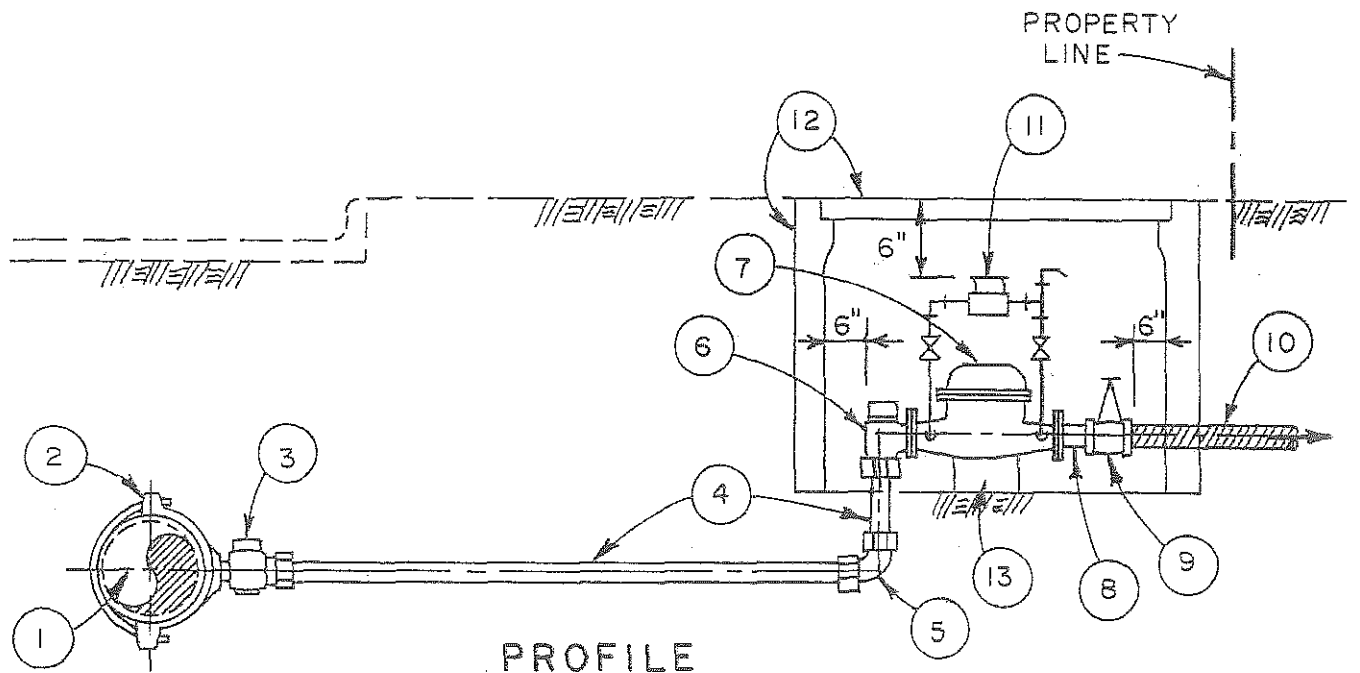
- ① DETECTOR CHECK (SIZE AS REQ'D. FOR FIRE SERVICE)
- ② GATE VALVE (FLANGE BY FLANGE)
- ③ APPLICANT-OWNED PIPELINE (FIRE SERVICE ONLY)
- ④ PIPE SUPPORT
- ⑤ FLANGED COUPLING ADAPTER (WITH 2 ANCHOR STUDS)
- ⑥ VALVE BOX (SEE GATE VALVE STD. DETAIL)
- ⑦ METER BOX & EXTENSION PIECES (SIZE AS REQ'D.)
- ⑧ TRAFFIC COVER WITH READING LID
- ⑨ BYPASS WATER METER
- ⑩ CCWD-OWNED PIPELINE (SIZE AS REQ'D.)
- ⑪ TAPPING VALVE (FLANGE BY MECH. JT. WITH RETAINER GLAND)
- ⑫ TAPPING SLEEVE
- ⑬ CONC. THRUST BLOCK
- ⑭ EXISTING PIPELINE (CONSULT DISTRICT FOR SIZE & TYPE)

NOTES

1. MATERIALS AND INSTALLATION SHALL BE IN CONFORMANCE WITH DISTRICT STANDARD SPECIFICATIONS.
2. DETECTOR CHECK ASSEMBLY SHALL TYPICALLY BE LOCATED ADJACENT TO PROPERTY LINE.
3. ALL NUTS AND BOLTS SHALL BE STAINLESS STEEL.
4. PIPING FOR THE BYPASS METER SHALL BE BRASS.

STANDARD INSTALLATION DETAIL
DETECTOR CHECK
 CONNECTION TO EXISTING PIPELINE

SAN MATEO COUNTY, CALIFORNIA
 COASTSIDE COUNTY
 WATER DISTRICT

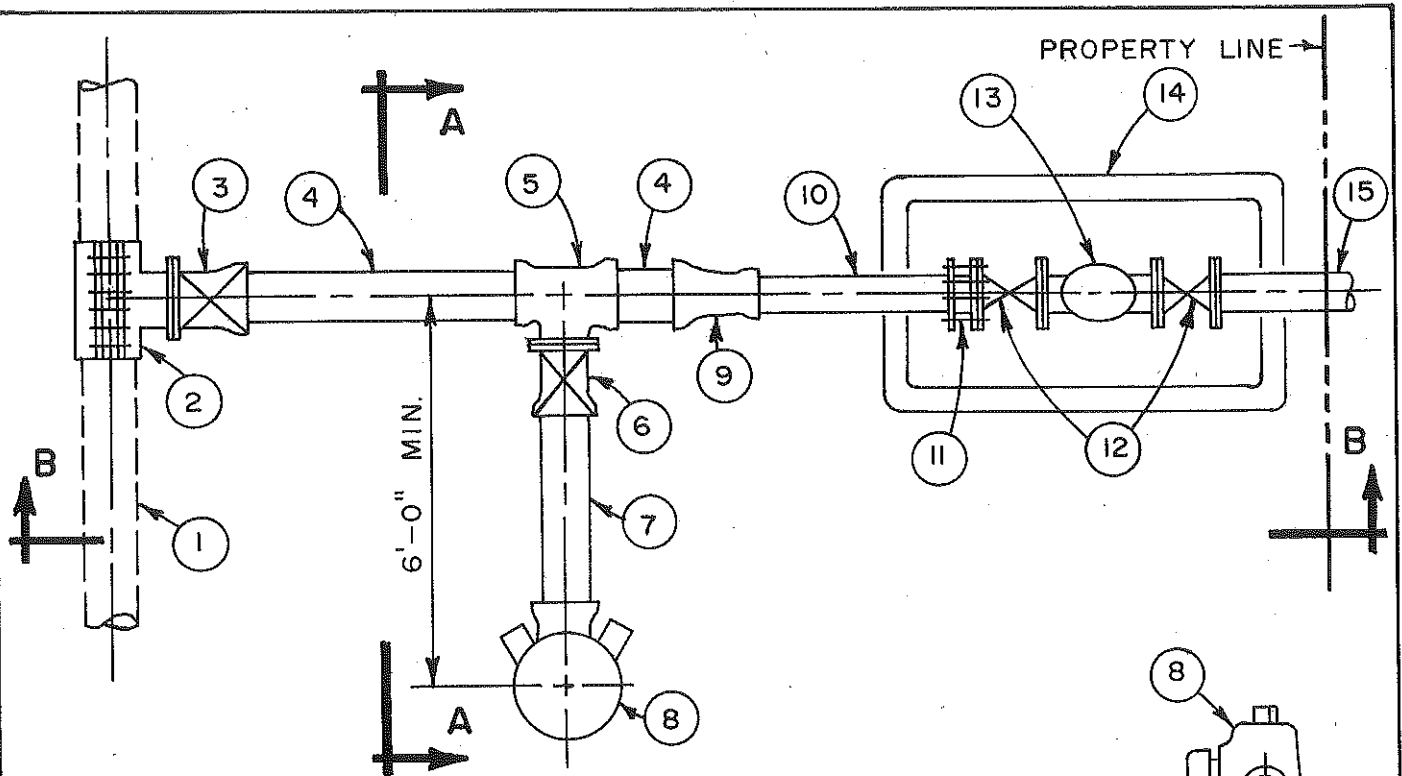


PROFILE
NO SCALE

- ① EXISTING PIPELINE (CONSULT DISTRICT FOR SIZE, TYPE, & SADDLE REQUIREMENTS).
- ② DOUBLE STRAP BRONZE SADDLE (WHERE REQUIRED) WITH STAINLESS STEEL BOLTS & NUTS.
- ③ CORP. STOP WITH A.W.W.A. (CC) INLET THREAD & COMPRESSION TYPE OUTLET.
- ④ 2 INCH DIAMETER TYPE L COPPER TUBING.
- ⑤ 90° BRASS OR COPPER ELL WITH FLARED END CONNECTIONS.
- ⑥ METER STOP WITH WING NUTS & COMPRESSION INLET CONNECTION.
- ⑦ 2 INCH DETECTOR CHECK ASSEMBLY WITH FLANGED END CONNECTIONS.
- ⑧ BRASS OR BRONZE FLANGE WITH BRASS NIPPLE.
- ⑨ GATE VALVE WITH SCREWED END CONNECTIONS AND DUCTILE IRON HANDWHEEL OPERATOR.
- ⑩ APPLICANT-OWNED PIPELINE (FIRE SERVICE ONLY).
- ⑪ BYPASS METER, FACTORY ASSEMBLED WITH BRASS PIPING AND APPURTENANCES (EXTEND HEIGHT IF REQUIRED).
- ⑫ CONCRETE METER BOX. INSTALL STEEL COVER IN TRAFFIC LOCATIONS; CONCRETE COVER IN NON-TRAFFIC LOCATIONS. COVER SHALL HAVE A READING LID, AND BYPASS METER SHALL BE EASILY READ THROUGH IT.
- ⑬ PIPE SUPPORT.

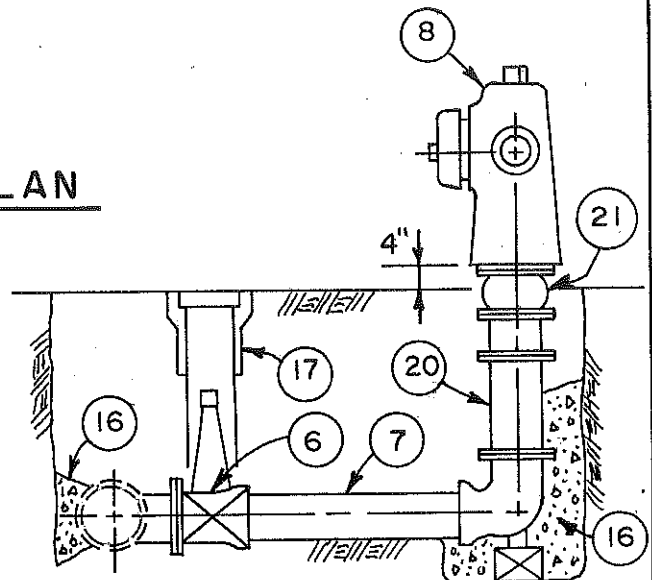
NOTES:

1. MATERIALS AND INSTALLATION SHALL BE IN CONFORMANCE WITH DISTRICT STANDARD SPECIFICATIONS.
2. DETECTOR CHECK ASSEMBLY SHALL TYPICALLY BE LOCATED ADJACENT TO PROPERTY LINE.



TYPICAL PLAN

NO SCALE



SECTION A

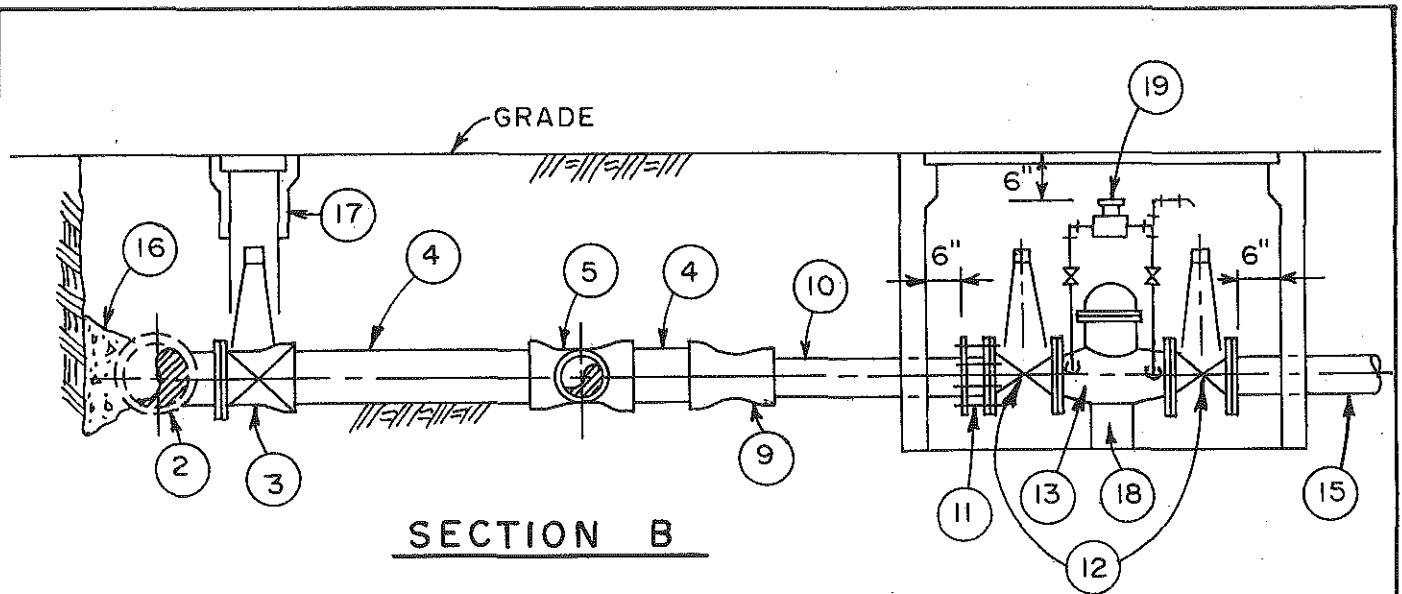
LEGEND

- ① EXISTING PIPELINE (CONSULT DISTRICT FOR SIZE & TYPE).
- ② TAPPING SLEEVE.
- ③ TAPPING VALVE, FLANGED BY PUSH-ON.
- ④ DUCTILE IRON PIPE (SIZE AS REQD.).
- ⑤ TEE, PUSH-ON BY FLANGED (SIZE AS REQD.).
- ⑥ 6" GATE VALVE, FLANGED BY PUSH-ON.
- ⑦ 6" DUCTILE IRON PIPE.
- ⑧ FIRE HYDRANT, ORIENT NOZZLES TO SUIT LOCATION.

CONTINUED ON REVERSE SIDE

STANDARD INSTALLATION DETAIL
COMBINATION FIRE HYDRANT
AND DETECTOR CHECK

SAN MATEO COUNTY, CALIFORNIA
COASTSIDE COUNTY
WATER DISTRICT

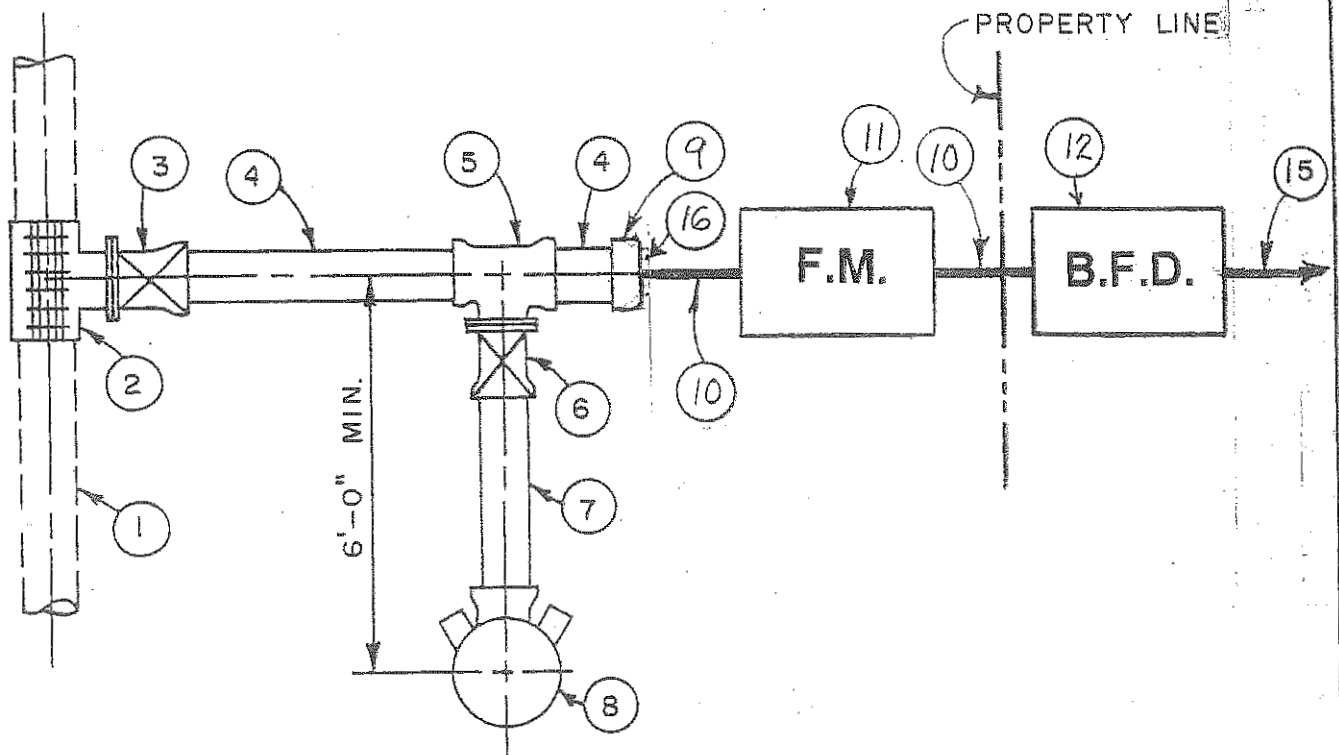


LEGEND (CONTINUED)

- (9) REDUCER, PUSH-ON (SIZE AS REQD.).
- (10) DUCTILE IRON PIPE (SIZE AS REQD.).
- (11) FLANGED COUPLING ADAPTER WITH 2 ANCHOR STUDS.
- (12) GATE VALVE, FLANGED.
- (13) DETECTOR CHECK, FLANGED (SIZE AS REQD BY FIRE DISTRICT).
- (14) CONCRETE METER BOX WITH STEEL COVER IN TRAFFIC LOCATIONS & CONCRETE COVER IN NON-TRAFFIC LOCATIONS. COVER SHALL HAVE A READING LID, AND BYPASS METER SHALL BE EASILY READ THROUGH IT.
- (15) APPLICANT-OWNED PIPELINE (FIRE SERVICE ONLY).
- (16) CONCRETE THRUST BLOCK.
- (17) VALVE BOX (SEE "GATE VALVE" STANDARD DETAIL).
- (18) PIPE SUPPORT.
- (19) BYPASS METER (IN CUBIC FEET), FACTORY-ASSEMBLED WITH BRASS PIPING AND APPURTENANCES (EXTEND HEIGHT IF REQD).
- (20) EXTENSION PIECES AS REQD.
- (21) FIRE HYDRANT CHECK VALVE.

NOTES

1. MATERIALS AND INSTALLATION SHALL BE IN CONFORMANCE WITH DISTRICT STANDARD SPECIFICATIONS.
2. ALL BELOW GRADE BOLTS & NUTS SHALL BE 316 STAINLESS STEEL.
3. LOCATION OF FIRE HYDRANT SHALL BE DETERMINED IN FIELD BY DISTRICT.
4. DETECTOR CHECK ASSEMBLY SHALL TYPICALLY BE LOCATED ADJACENT TO PROPERTY LINE.



TYPICAL PLAN

NO SCALE

LEGEND

- ① EXISTING PIPELINE (CONSULT DISTRICT FOR SIZE & TYPE).
- ② TAPPING SLEEVE.
- ③ TAPPING VALVE, FLANGED BY PUSH-ON.
- ④ DUCTILE IRON PIPE (SIZE AS REQD.).
- ⑤ TEE, PUSH-ON BY FLANGED (SIZE AS REQD.).
- ⑥ 6" GATE VALVE, FLANGED BY PUSH-ON.
- ⑦ 6" DUCTILE IRON PIPE.
- ⑧ FIRE HYDRANT, SEE "FIRE HYDRANT" STANDARD DETAIL

CONTINUED ON REVERSE SIDE

STANDARD INSTALLATION DETAIL
COMBINATION FIRE HYDRANT, FIRE
METER & BACKFLOW PREVENTION DEVICE

SAN MATEO COUNTY, CALIFORNIA
COASTSIDE COUNTY
WATER DISTRICT

LEGEND (CONTINUED)

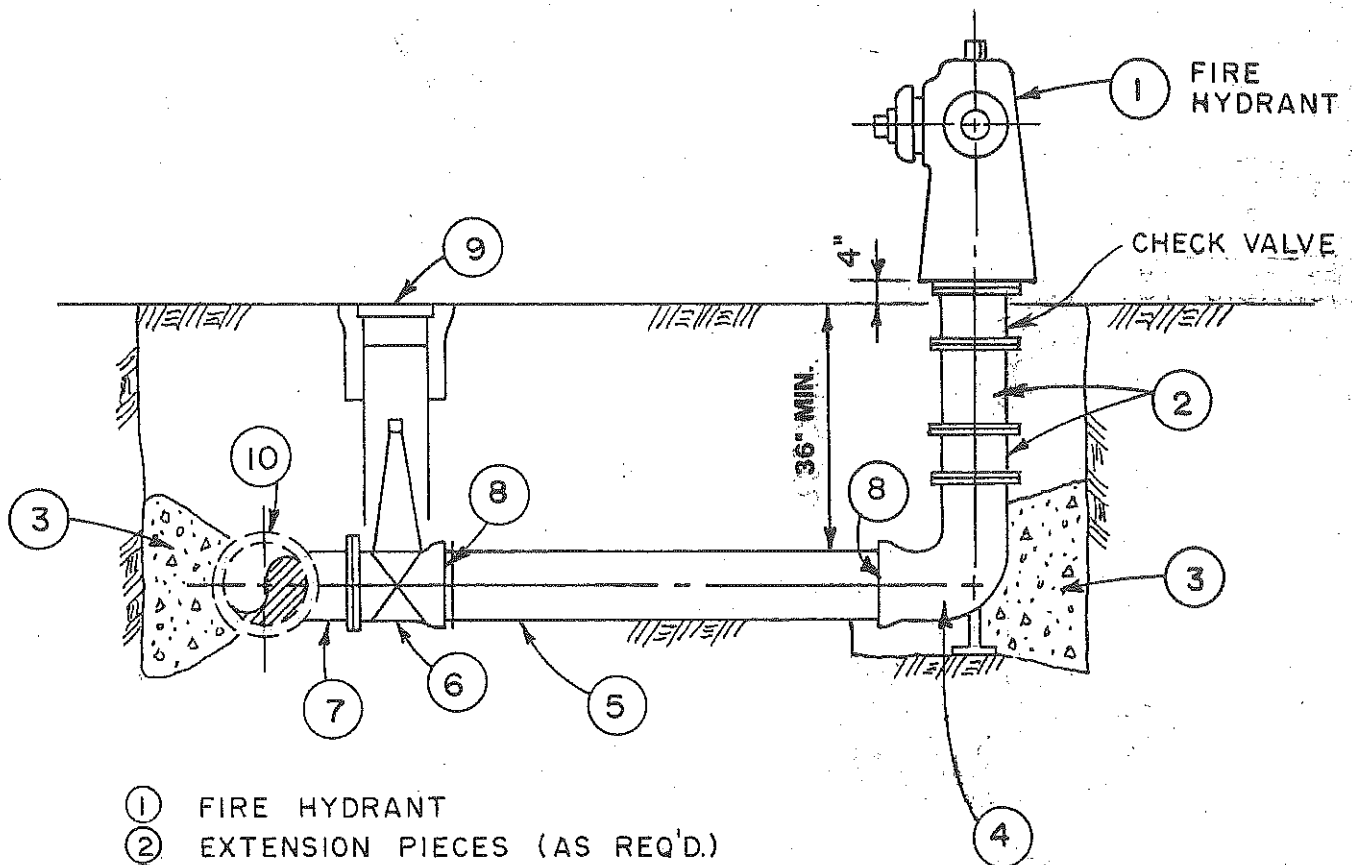
- ⑨ DUCTILE IRON CAP TAPPED FOR SIZE OF COPPER SERVICE TUBING
- ⑩ COPPER SERVICE TUBING (SAME SIZE AS WATER METER AND BACKFLOW PREVENTION DEVICE)
- ⑪ FIRE METER ASSEMBLY (SEE "SERVICE CONNECTION" STANDARD DETAIL)
- ⑫ BACKFLOW PREVENTION DEVICE ASSEMBLY (SEE "BACKFLOW PREVENTION DEVICE" STANDARD DETAIL)

- ⑮ APPLICANT-OWNED PIPELINE (FIRE SERVICE ONLY).
- ⑯ CONCRETE THRUST BLOCK.
- ⑰ VALVE BOX (SEE "GATE VALVE" STANDARD DETAIL).

- ⑳ EXTENSION PIECES AS REQD.

NOTES

1. MATERIALS AND INSTALLATION SHALL BE IN CONFORMANCE WITH DISTRICT STANDARD SPECIFICATIONS.
2. ALL BELOW GRADE BOLTS & NUTS SHALL BE STAINLESS STEEL.
3. LOCATION OF FIRE HYDRANT SHALL BE DETERMINED IN FIELD BY DISTRICT.



- ① FIRE HYDRANT
- ② EXTENSION PIECES (AS REQ'D.)
- ③ CONC. THRUST BLOCK
- ④ HYDRANT BURY
- ⑤ 6" PIPELINE
- ⑥ TAPPING VALVE (FLANGE BY MECH. JT.)
- ⑦ TAPPING SLEEVE
- ⑧ FIELD LOK GASKET SYSTEM (WHERE REQ'D. BY DISTRICT)
- ⑨ VALVE BOX (SEE "GATE VALVE" STD. DETAIL)
- ⑩ EXISTING PIPELINE (CONSULT DISTRICT FOR SIZE & TYPE)

NOTES

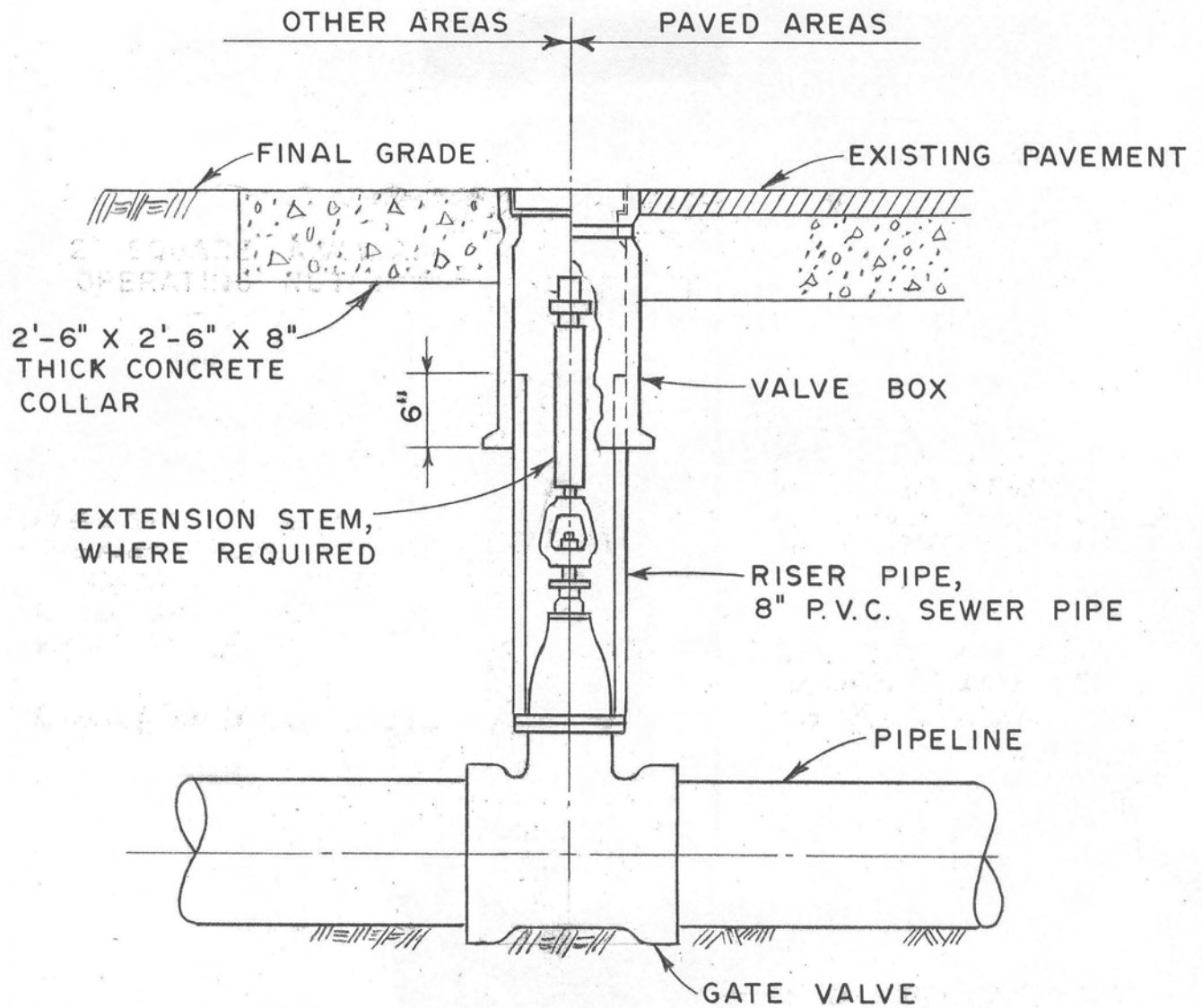
- 1. MATERIALS AND INSTALLATION SHALL BE IN CONFORMANCE WITH DISTRICT STANDARD SPECIFICATIONS.
- 2. HYDRANT SHALL TYPICALLY BE LOCATED 2 FEET BEHIND CURB. IN OTHER AREAS, LOCATION SHALL BE DETERMINED IN FIELD BY DISTRICT. ORIENT NOZZLES TO SUIT LOCATION,
- 3. USE HORIZONTAL BENDS IN 6" PIPELINE AS REQUIRED, BUT NO VERTICAL BENDS.
- 4. ALL BOLTS AND NUTS FOR FLANGED JOINTS SHALL BE STAINLESS STL.
- 5. GUARD POSTS SHALL BE INSTALLED IN CONFORMANCE WITH DISTRICT REQUIREMENTS.

STANDARD INSTALLATION DETAIL

FIRE HYDRANT
CONNECTION TO EXISTING PIPELINE

SAN MATEO COUNTY, CALIFORNIA

COASTSIDE COUNTY
WATER DISTRICT



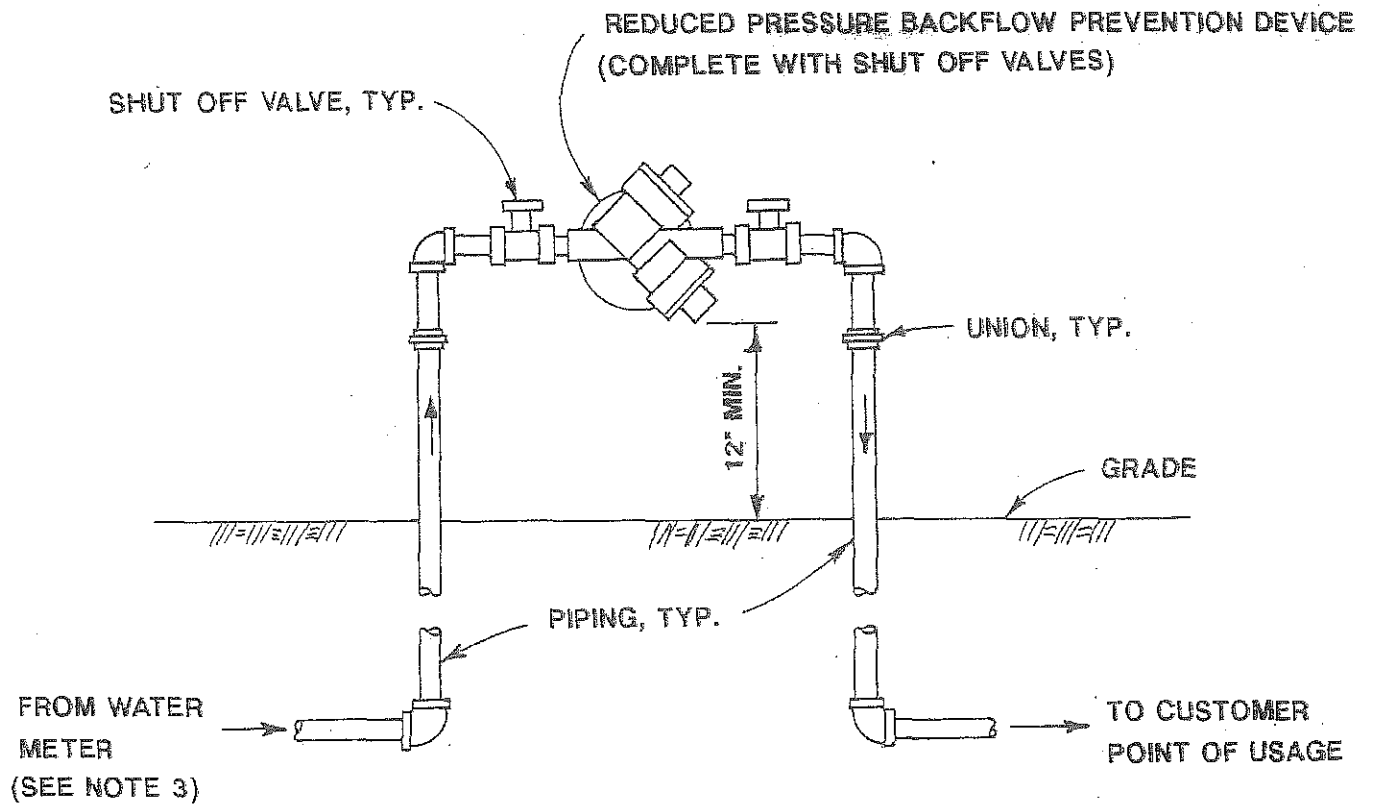
NOTES:

- I. SEE SPECIFICATIONS FOR MATERIAL AND ADDITIONAL INSTALLATION REQUIREMENTS.

GATE VALVE
 (ALL VALVES 12" AND SMALLER)

DATE	SEPT. 69
REV.	
	JULY 1974
	NOV. 1981
	JULY 2009

DISTRICT STANDARDS
 COASTSIDE COUNTY
 WATER DISTRICT
 SAN MATEO COUNTY, CALIFORNIA

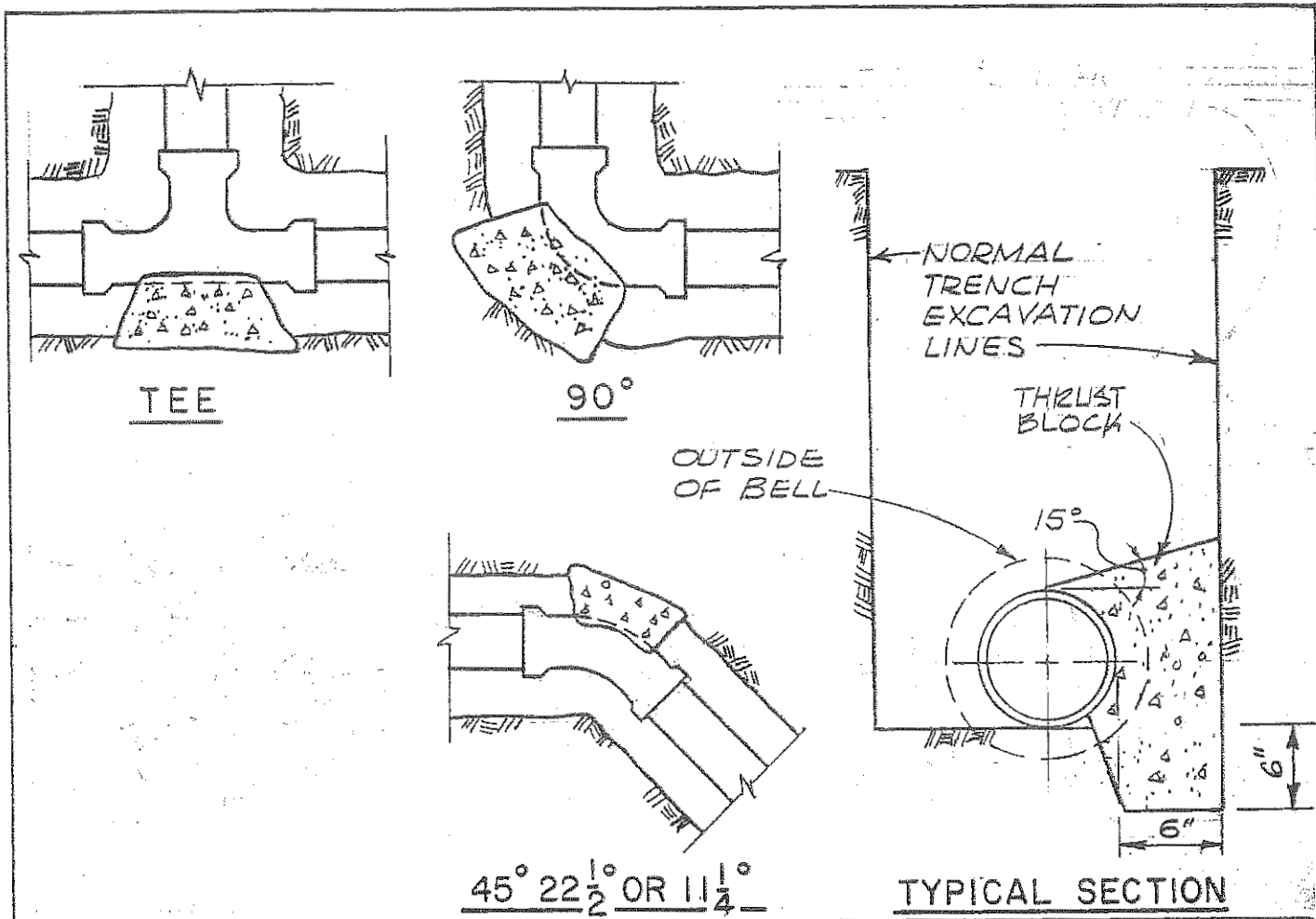


PROFILE OF BACKFLOW PREVENTION DEVICE INSTALLATION

NO SCALE

NOTES:

1. BACKFLOW PREVENTION DEVICE MATERIALS AND INSTALLATION SHALL BE IN CONFORMANCE WITH COUNTY OF SAN MATEO REQUIREMENTS.
2. BACKFLOW PREVENTION DEVICE AND PIPING SHALL BE CUSTOMER OWNED AND MAINTAINED.
3. THE BACKFLOW PREVENTION DEVICE ASSEMBLY SHALL BE LOCATED AS CLOSE TO THE WATER METER AS IS PRACTICABLE.
4. A REMOVABLE ENCLOSURE OVER THE BACKFLOW PREVENTION DEVICE AND/OR INSULATION TO PROTECT AGAINST FREEZING IS RECOMMENDED (NOT SHOWN ABOVE).
5. MINIMUM PIPING SIZE SHALL BE THE SAME DIAMETER AS THE INLET PIPING TO THE WATER METER.



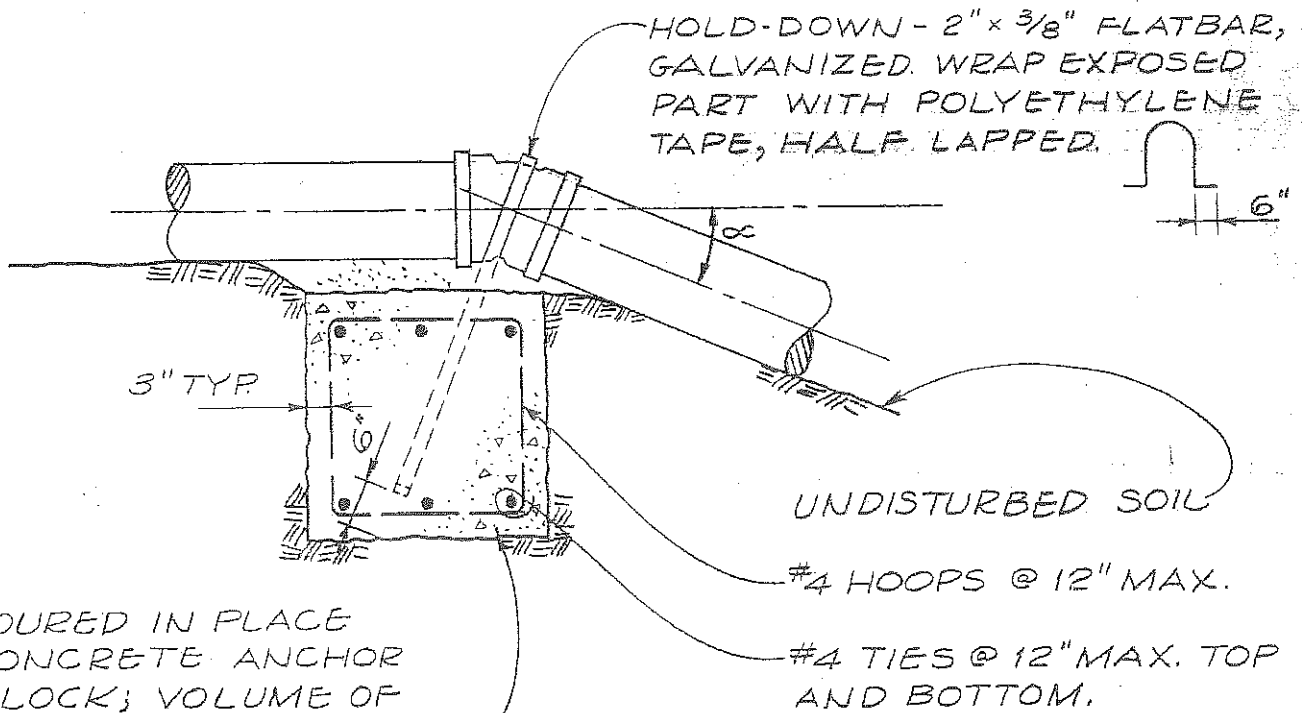
MINIMUM REQUIRED BEARING AREA AGAINST UNDISTURBED EARTH WALL

PIPE SIZE	AREA IN SQUARE FEET AT FITTINGS				
	TEE & CROSS	90°	45°	22 1/2°	11 1/4°
6	3	5	3	2	2
8	6	8	4	2	2
10	8	11	6	3	2
12	11	15	8	4	2
16	18	25	14	7	4

NOTES:

1. THRUST BLOCKS SHALL BE PLAIN CONCRETE POURED AGAINST UNDISTURBED EARTH.
2. CAPS AND PLUGS SHALL HAVE THRUST BLOCKS WITH AREAS AS SPECIFIED FOR TEES. CAPS, PLUGS, FLANGES, AND MECHANICAL JOINTS SHALL BE COVERED WITH 8 MILS OF POLYETHYLENE BEFORE THRUST BLOCKS ARE POURED.
3. AREA IS IN A PLANE AT RIGHT ANGLES TO THE LINE OF RESULTANT THRUST.
4. THRUST BLOCKS ARE DESIGNED FOR AN ALLOWABLE SOIL BEARING VALUE OF 3000 LB/S.F. AND 200 P.S.I.G. TEST PRESSURE. AREAS SHALL BE INCREASED FOR SOILS WITH LOWER BEARING VALUES OR FOR HIGHER TEST PRESSURE.

<p>HORIZONTAL THRUST BLOCKS</p>	DATE SEPT. 69	<p>DISTRICT STANDARDS COASTSIDE COUNTY WATER DISTRICT SAN MATEO COUNTY, CALIFORNIA</p>
	REV. APR. 72	



POURED IN PLACE CONCRETE ANCHOR BLOCK; VOLUME OF CONCRETE PER TABLE

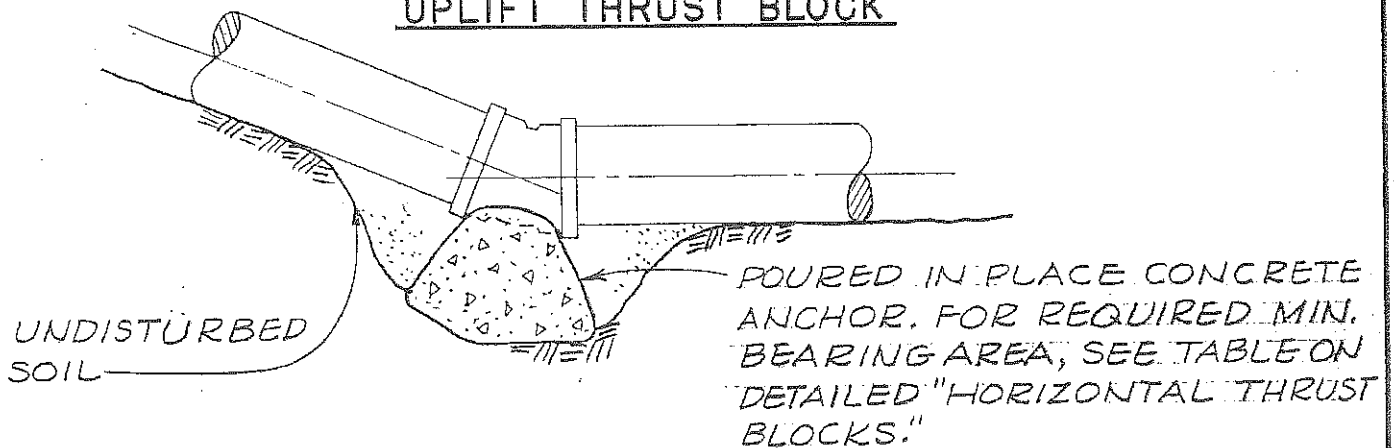
NOTE:

WHERE PERMITTED BY THE DISTRICT, MECHANICAL JOINT FITTINGS WITH RETAINER GLANDS MAY PROVIDED IN LIEU OF CONCRETE THRUST BLOCKS.

TABLE-FOR WORKING PRESSURE 150 PSI

PIPE SIZE	REQUIRED CONCRETE VOLUME CUBIC FEET		
	$\alpha = 11\frac{1}{4}^\circ$	$\alpha = 22\frac{1}{2}^\circ$	$\alpha = 45^\circ$
6"	11	21	41
8"	19	38	74
10"	29	58	112
12"	41	84	—

UPLIFT THRUST BLOCK



DOWNTHRUST THRUST BLOCK

VERTICAL THRUST BLOCKS

DATE DEC. 69
REV.
JULY 1974
NOV. 1981

DISTRICT STANDARDS
COASTSIDE COUNTY
WATER DISTRICT
SAN MATEO COUNTY, CALIFORNIA