

SECTION 3

VALVES, FIRE HYDRANTS, AND APPURTENANCES

3-01. Gate Valves.

Unless otherwise specified, no gate valves larger than ten (10) inch shall be used.

All gate valves must equal or exceed the requirements of the latest revision of AWWA C500 or AWWA C509, standards for gate valves and resilient-seated gate valves, and shall further be Mueller, Stockham, Clow, Kennedy, A.P. Smith, American, or approved equal.

Valves supplied shall be resilient seated wedge, with O-ring seals, non-rising stems, two (2) inch operation nut, opening left.

Valves specified "with handwheels" shall be supplied with operating handwheels instead of two (2) inch operating nut.

Valve ends shall conform to AWWA standard; flanged ends per AWWA C110 as required for steel pipe; or mechanical joints as required for ductile iron and polyvinyl chloride (PVC) pipe.

Valves shall be suitable for buried service and horizontal mounting. Valves shall be adequately anchored for thrust in accordance with the requirements of these specifications and as shown in the Standard Drawing W-4.

a) Gate Valves Two and One-half (2-1/2) Inches and Smaller.

Valves shall conform to Fed. Spec. WW-V-54, Type III, Class C, and style as required. Valves shall be supplied with operating handwheels.

3-02. Check Valves.

Check valves shall have an unrestricted opening with an adjustable controlled closure rate so that valve slamming is reduced to an absolute minimum upon instantaneous shut-off. Valves shall be mounted vertically between ANSI required class flanges. Body shall be cast iron or steel. Disc and shaft shall be stainless steel 18-8 or 303. It shall be complete with hydraulic or pneumatic cushion chamber, counter-weight, and accumulator for hydraulic operators. Seat ring shall be replaceable and shall be Viton or Teflon. Valves shall be Prince Cushion Valves, Apco Cushioned Check Valves, or approved equal. Check valves two and one-half (2-1/2) inches and smaller shall be Walworth, or approved equal.

3-03. Plug Valves.

Plug valves shall be used only where specified.

Plug valves shall be lubricated, have a semi-steel body, and tapered plug with dry film coating on seating surface with adjustable 3-bolt gland assembly sealed by double o-rings. The plug shall be removable through the top of the valve. The valves shall be designed for the working pressures shown on the plans. Valves shall be Rockwell, Dezurick, or approved equal.

Unless approved otherwise, valves shall have flanged ends and shall be equipped for totally enclosed worm gear operating with a two (2) inch square operating nut where called for on plans. Other valves shall be lever operated. Valves shall be equipped with lubricator extensions as indicated on the plans.

3-04. Butterfly Valves.

Butterfly valves, if shown on the plans, shall meet the provisions of AWWA C504 for rubber seated, tight closing valves. Valves shall be flanged-pattern short body, and shall be cast iron, shaft or stainless steel 18-8 Type 304, disc of Ni-Resist Type 1. They shall be Class 150 unless noted on the plans. Valve operators shall be waterproof, suitable for buried service and equipped with a two (2) inch square operating nut. Where possible, operators shall be placed on the side of the pipeline nearest the curb, opposite centerline of street. Valves shall be adequately anchored for thrust in accordance with the requirements of these specifications and as shown in the Standard Drawing W-4. Concrete pads shall be poured under butterfly valves adequately anchored for thrust.

All butterfly valves shall be field tested in the presence of the inspector prior to installation for compliance with Section 5 of AWWA C504. This includes performance, leak, and hydrostatic testing. Factory certification is not an acceptable substitute for the field testing. Any valves not tested will be rejected.

Contractor shall coordinate pipe manufacture to insure free movement of valve disc within the pipe.

3-05. Combination Air and Vacuum Valve Assemblies and Blow-off Assemblies.

a) General.

Combination air and vacuum valves and blow-off valves shall be installed in the pipeline at locations shown on the plans. The tap for the air valves and/or blow-off valves shall be made in a level section of pipe, no closer than twenty-four (24) inches from any machined section of pipe, rubber gasketed joint, or flanged joint.

Where practical, connections to steel pipe for combination valve assemblies and/or blow-off assemblies shall be made with a 3,000 lb half weld-on coupling welded to the pipe in the shop at time of fabrication.

Where it is necessary to make the connection in the field, additional care shall be exercised to minimize the damage to mortar-linings. Wherever connections can be made dry, the coupling shall be welded to the pipe and the mortar lining repaired. The exterior concrete lining shall be repaired and two heavy coats of coal tar enamel paint applied to all exposed steel fittings in conformance with AWWA C203.

b) Combination Air and Vacuum Valve Assemblies.

The Contractor shall install in the water main combination air and vacuum valve assembly as shown on Standard Drawing W-16 at locations detailed on the plans and sized in accordance with manufacturers recommendations. Generally, one (1) inch assemblies are used for eight (8) inch and smaller mains, two (2) inch assemblies for larger mains.

c) Blow-off Valve Assemblies.

The Contractor shall install blow-off assemblies as detailed on the plans. Valves and fittings shall equal or exceed the pressure rating of the pipe to which they are attached. Materials and required fittings are shown on Standard Drawings W-6, W-6A, and W-7. The blow-off valves shall be adequately sized for blow-down of water lines.

d) Tapping Valves.

Tapping valves shall be Mueller, A.P. Smith, Clow, or approved equal, and shall have flanged end connection with the appropriate adapters.

3-06. Fire Hydrant Assemblies.

a) General.

Fire hydrant assemblies shall include the connection to the main and shall consist of fire hydrant and appurtenances in accordance with these specifications and as shown on the Standard Drawings W-2, W-2A, W-3, or W-3A.

b) Location.

Fire hydrant risers shall be located on lot lines or at intersections a minimum of five (5) feet beyond curb radius ends and shall set back from face of curb two (2) feet. Distances in each case are measured from the centerline of the fire hydrant riser.

Gate valves shall be located adjacent to the water main.

c) Materials.

Fire hydrants shall be six (6) inches x four (4) inches by two and one-half (2-1/2) inches James Jones No. J-3711R or equal. All valve operating stem ends shall be equipped with pentagonal dummy nuts the same size as the nozzle cap ends.

Fire hydrants shall be brass or bronze. All hydrants must conform to AWWA C503 and in all cases must be approved by the County of Los Angeles, Forester, and Fire Warden. Fire hydrant tops shall be tapped for two and one-half (2-1/2) inch I.P.T.

Fire hydrant risers and runners shall be a full six (6) inches inside diameter pipe. Type of pipe shall be ten (10) ga. CMLC steel as described in Section 2-04 of these specifications when installed with asbestos cement or steel pipe. The run shall be ductile iron as described in Section 2-05 for all other materials. The bury shall be ductile iron with an eight (8) hole patterned flange.

All required bolts, nuts, and gaskets shall be provided. Bolt holes shall be seven-eighths (7/8) inches in diameter, and bolts shall be three-quarter (3/4) inches by three (3) inches machined bolts. Bolts at hydrant flange shall be Cad-Plated hollow bolts, installed with nuts on bottom. Only hexagonal nuts and bolts will be permitted. All bolts provided must be a minimum length of at least three threads past nut when tightened.

All hydrants shall be painted with one (1) coat of red primer and two (2) finish coats of Rust-Oleum Safety Yellow or approved equal. The Contractor shall apply an additional finish coat after installation.

3-07. Location of Appurtenances.

The District reserves the right to direct the location of all valve marker posts, air release valve assemblies, and blow-off valve assemblies within the road right-of-way or easement to ensure proper drainage and to minimize interference with traffic.

3-08. Valve Boxes and Covers.

Valve boxes for buried valves shall be installed with eight (8) inch Schedule 40 PVC pipe risers. The entire valve box assembly shall be per Standard Drawing No. W-5.

Concrete meter boxes shall be furnished and installed as shown on the plans or in the Standard Drawings. Meter boxes shall be as manufactured by Eisel Enterprises, Inc., or approved equal.

Meter boxes shall be furnished according to the following schedule:

- a) Three-quarter (3/4) inch water service and meter:
Eisel No. W437MB, or equal.
- b) One (1) inch water service and meter:
Eisel No. W438MB, or equal.

- c) One and one-half (1-1/2) inch or two (2) inch water service and meter: Eisel No. W66BMB, or equal.
- d) Two (2) inch blow-off assembly: Eisel No. W437MB, or equal.
- e) Water sampling station: Brook No. 3RT or equal.

3-09. Flexible Couplings.

Flexible couplings shall have all stainless steel nuts and bolts and be either stainless steel bodies or all epoxy lined and coated. They shall be Rockwell, Smith-Blair, Baker, Dayton, or approved equal. Flanged couplings adapters shall be Rockwell, Smith-Blair, Baker, Dayton, or approved equal. Clamp type mechanical couplings shall be as manufactured by the Victaulic Company of America, Gustin-Bacon, or equal and shall be for pipe with grooved ends for water service and able to withstand a pressure equal to the strength of the pipe to which they are attached. All flexible couplings shall be protected by coating with NO-OX Grease.

3-10. Compound Meters.

All projects that are required to provide on-site fire protection will be required to install a compound meter that is sized appropriately to meet the projects on-site fire protection and domestic requirements. Compound meter assemblies, when required, shall be completely contained in a vault and include sufficient valving and bypass capabilities to allow the meter to be serviced, removed, or tested without interrupting water service to the customer. Serial number of compound meter shall be stamped on body of meter. The compound meter and vault must be fully detailed on improvement plans. The vault shall have the following features:

- a) A steel hot-dipped, galvanized, removable lid with a spring-loaded access hatch;
- b) A ladder; and
- c) A concrete floor sloped to a sump constructed per Standard Drawing W-12.

The compound meter, registers, and automatic reading system shall be manufactured and assembled as a complete unit and shall be accompanied by certification from the manufacturer that the automatic reading system is appropriate and an integral part of same. Certification of bench test accuracy shall be provided at the time of delivery of the unit. The remote readers shall accurately reflect the actual meter readings. Compound meters shall also be field tested for accuracy by a certified testing firm prior to issuance of Fire System Activation Letter. Testing shall be done at one-year intervals thereafter until the project is accepted. All registers of the meter shall comply with the AWWA C702-8 Section 3.6.1 standard for accuracy. All flanged bolts and appurtenances shall be painted a minimum of two (2) coats of automotive grade non-lead red primer.

3-11. Flange Insulation Kits.

Flange insulation kits are required at connections between ductile mains and steel mains or services. Flange insulation kits shall be installed as shown on approved plans or as directed by the District and shall be Calpico, Inc. rubber-coated gasket kits or approved equal.

