SECTION 15099
PROCESS VALVES AND MISCELLANEOUS VALVES

PART 1 - GENERAL

1.01 DESCRIPTION.

This section includes materials, testing and installation of manually operated process valves such as check valves, corporation stops, meter stops and ball valves.

1.02 REFERENCE STANDARDS.

The publications listed below form part of this specification to the extent referenced and are referred to in the text by the basic designation only. Reference shall be made to the latest edition of said standards unless otherwise called for.

ASTM A126	Specification for Gray Iron Castings for Valves, Flanges, and Pipe Fittings
ASTM A536	Specification for Ductile Iron Castings
ASTM B61	Specification for Steam or Valve Bronze Castings
ASTM B62	Specification for Composition Bronze or Ounce Metal Castings
ASTM B584	Specification for Copper Alloy Sand Castings for General Applications
NSF	National Sanitation Foundation

1.03 RELATED WORK SPECIFIED ELSEWHERE.

VCMWD Standard Drawings

Specification Sections 02221, 03300, 09900, 15000, 15041, 15044, and 15057.

1.04 SERVICE APPLICATIONS.

Check valves, bronze gate valves and ball valves are primarily used in the installation of potable and recycled water main appurtenances and where called for on the Approved Plans and indicated on the Standard Drawings.

1.05 SUBMITTALS.

A. If required by the District Engineer, the following items shall be submitted to the District for review and approval prior to ordering or delivery of valves.

1. The valve manufacturers catalog data showing the size to be used, valve dimensions, pressure rating and materials of construction.
2. Manufacturers catalog data and proof of NSF certification on the lining materials to be used.
3. Installation procedures including field adjustments as required.

1.06 SIZING OF VALVES.

Valves shall be the same size as the appurtenance in which they are to be installed with unless otherwise called for on the Approved Plans or indicated on VCMWD Standard Drawings.

1.07 VALVE ENDS.

Valve ends shall be compatible with the piping system or appurtenance in which they are to be installed or as called for on the Approved Plans or indicated on VCMWD Standard Drawings.

1.08 DELIVERY, STORAGE AND HANDLING.

Valves shall be delivered and stored in accordance with the manufactures recommendations. Valves shall remain in factory packaging until ready for installation. Valves shall not be stored in contact with bare ground.

1.09 POLYETHYLENE WRAP.

Polyethylene wrap shall be used for the buried installation of valves in accordance with Section 15000.

1.10 VALVE WELLS AND EXTENSION STEMS.

Valve boxes and extension stems shall be installed in accordance with Section 15000 and VCMWD Standard Drawings.

PART 2 - MATERIALS

2.01 RUBBER-FLAPPER SWING CHECK VALVE.

A. Flapper swing check valves shall be a DeZurik or approved equal. A submittal will be required as described in this Section.

B. Rubber-flapper swing check valves shall have a heavily constructed ductile-iron body and cover. The body shall be long pattern design (not wafer), with integrally cast-on end flanges. The flapper shall be Buna-N having an "O" ring seating edge and be internally reinforced with steel.

C. Flapper shall be captured between the body and the body cover in a manner to permit the flapper to flex from closed to full open position during flow through the valve. Flapper shall be easily removed without need to remove valve from line. Check valves shall have full pipe size flow area. Seating surface shall be on a 45° angle requiring the flapper to travel only 35° from closed to full open position, for minimum head loss and non-slam closure.

D. Buna-N flapper shall be high-strength coated fabric, coated both sides with 70 DURO, which creates an elastic spring effect, molded internally, to assist the flapper to close against a slight head to prevent slamming. When essential to create backflow through the check valve, as directed by the District Engineer, an external backflow device shall be furnished.

E. Valve ends shall be flanged ductile-iron in accordance with Section 15056 unless otherwise called for on the Approved Plans or directed by the District Engineer.

F. Check valves shall be tested by the manufacturer and the test results shall be approved by the District Engineer prior to shipment to the project. Check valves must unseat at a head no greater than 24”.

2.02 SMALL DIAMETER ISOLATING VALVES.

Provide all small diameter valves and cocks for shut-off process connections, instrumentation and other miscellaneous uses in accordance with the Approved Plans. These valves shall be of the same material and pressure rating as the adjacent process piping. Shutoff valves shall be compatible with instrumentation and other equipment in accordance with the manufacturer's recommendations.

2.03 CORPORATION STOPS.

Corporation stops shall be the ball type with a bronze body and T-Head operator. Valve ends shall be compatible with the piping system in which they are being installed or as called for on the Approved Plans or indicated on the Standard Drawings. Corporation stops shall be rated for a minimum pressure of 200 psi.

2.04 ANGLE METER STOPS.

Angle meter stops shall be the ball type with a bronze body and 90° lock wing. Valve ends shall be 110-style compression inlet and swivel meter nut for 1" and meter flange for 2" outlets. Angle meter stops shall be rated for a minimum pressure of 200 psi.

2.05 BALL VALVES.

Ball valves 2" and smaller shall be of bronze construction conforming to ASTM B62 and equipped with a lever handle operator as required. Valve ends shall be compatible with the piping system in which they are being installed or as indicated on the Approved Plans or VCMWD Standard Drawings. Ball valves shall be rated for a minimum pressure of 200 psi.

2.06 POLYETHYLENE WRAP.

Polyethylene wrap shall be in accordance with Section 15000.

2.07 VALVE WELLS AND EXTENSION STEMS.

Gate wells and extension stems for buried valves shall be in accordance with Section 15000.

PART 3 - EXECUTION

3.01 INSTALLATION.

A. Valves shall be set in true alignment straddling the centerline of pipe with the valve operator in the vertical position unless otherwise noted on the Approved Plans or shown on VCMWD Standard Drawings.

B. Valves shall be installed in accordance with the manufacturer's recommendations and the applicable section of these specifications for the piping material and joint type being used.

C. Aboveground valves shall be rigidly held in place using supports and hangers in accordance with the Approved Plans and VCMWD Standard Drawings. The stem orientation of valves in elevated piping shall be as approved by the District Engineer for accessibility, except that no valves shall be installed with stems aligned below horizontal. Saddle type valve supports shall be provided. Supports shall be of rugged construction providing at least one hundred twenty degrees (120°) under support for the valve body. Valve supports shall be constructed of steel, and shall be anchored to the foundations using stainless steel anchor bolts.

3.02 POLYETHYLENE WRAP.

Installation of polyethylene wrap for buried valves shall be in accordance with Section 15000.

3.03 VALVE WELLS AND EXTENSION STEMS.

Valve wells and extension stems for buried valves shall be in accordance with Section 15000 and VCMWD Standard Drawings.

3.04 DISINFECTION OF THE VALVES.

Disinfection and flushing shall be in accordance with Section 15041, as part of the process of disinfecting the main pipeline. The valves shall be operated during the disinfection period to completely disinfect all internal parts.

3.05 HYDROSTATIC TESTING.

Valves shall be hydrostatically tested in conjunction with the pipelines in which they are installed in accordance with Section 15044.

3.06 FIELD PAINTING AND COATING.

The exterior of valves installed above ground or exposed in vaults or enclosures shall be field painted in accordance with Section 09900.

3.07 HOLIDAY TESTING

Holiday testing of gate valves, butterfly valves and plug valves 4” and larger shall be required upon the request of the District Engineer.

END OF SECTION 15099