

SECTION 16

BLOWOFF VALVE ASSEMBLIES

16-1 General

16-1.01 Scope

This section describes the requirements for furnishing and installing Blowoff Valve Assemblies as an appurtenance to treated water mains. These requirements include the materials to be used, methods and requirements for installation, and measurement for payment.

This section does not include blowoff valves that are an integral part of other major installations, such as pumping and pressure reducing stations and other in-plant blowoff or purge valves. If required, items such as these have been shown on the plans and have been described elsewhere in these specifications.

16-1.02 Description of Work

Work under this section shall include, but not be limited to, excavation (regardless of surface and subsurface conditions), installing the connection to the main, blowoff lateral and valve, blowoff discharge pipeline, corrosion protection, backfilling, installing the blowoff valve box and riser box along with lid and extensions, forming and pouring of valve and riser box pad, installing and testing the locating wire, installing a valve operator extension shaft, placement of stone slope protection, restoration of the surface area around the Blowoff Valve Assembly, and installing a post and guide marker.

16-1.03 Location

Blowoff Valve Assemblies shall be located at the low points of the water main, at the end of all water mains that are not looped, and at other locations shown on the plans. Location stationing is approximate and intended as a general location only. The final location of the Blowoff Valve Assembly shall be as determined by the District Engineer in the field.

16-1.04 Design

The minimum size blowoff valve assembly covered by this specification is 2-inches. Larger assemblies shall be sized in 2- inch increments.

Blowoff Valve Assemblies shall be designed to withstand the working pressures shown on the plans, or to a design working pressure of 150 psi, whichever is greater.

16-1.05 Submittals

Submittals furnished by the Contractor shall include: catalog data for the valves: valve boxes, lids, and extensions; and catalog data or shop drawings for the valve operator extension shaft. All other materials shall be furnished with materials as described elsewhere in the specifications. The Contractor's attention is directed to the General Conditions of this Contract under "Submittals".

16-1.06 Inspection

The Contractor shall make all blowoff valves, piping and fittings, and valve boxes available for inspection by the District Engineer prior to installation. The Contractor shall provide men and equipment necessary for the Inspector to examine all materials thoroughly. Each phase of the

work shall pass inspection by the District Engineer before commencing work on the next phase. Phases shall consist of, but not be limited to, pavement cutting, excavation, tapping the water main, installing the blowoff lateral, valve, and discharge piping, applying corrosion protection, backfilling, raising the valve box and riser box to final grade, testing the locating wire, and surface restoration. After installation is complete, the blowoff valve will be inspected for leaks and proper operation.

16-2 Materials

16-2.01 General

Materials furnished for Blowoff Valve Assemblies shall include, but not be limited to, saddles or fittings used for the connection to the main, pipe and fittings used for the blowoff discharge line, blowoff valve, valve and riser boxes along with lid and extensions, drain rock, concrete for valve and riser box pads, valve operator extension shafts, slope protection, materials necessary for restoration of the area around the assemblies, and posts and guide markers.

16-2.02 Connection to the Water Main

Connections to the water mains for 2-inch Blowoff Valve Assemblies shall be as shown on the plans and as described for Water Main Taps elsewhere in these specifications.

Connections to water mains for Blowoff Valve Assemblies 4-inches and larger shall be as shown in the plans and shall use fittings conforming to AWWA C110 or C153, all as shown on the plans and as described for fittings of Water Mains elsewhere in these specifications.

16-2.03 Pipe and Fittings for Blowoff Valve Laterals

Pipe and fittings for the lateral; i.e., the pipe between the water main and the valve, shall be as shown on the plans and as specified herein.

For 2-inch blowoff valve assemblies, the pipe and fittings shall be brass. Brass pipe shall conform in all respects to Section 34 Brass Pipe and Fittings and shall be standard weight. Pipe ends shall be finished with male iron pipe threads.

For blowoff valve assemblies 4-inches and larger, the pipe and fittings shall be ductile iron, conforming in all respects to Water Mains described elsewhere in these specifications. Pipe and fitting end configurations shall be as shown on the plans.

16-2.04 Pipe and Fittings for Blowoff Discharge Pipes

Pipe and fittings for the discharge pipe shall be as shown on the plans and as specified herein. For 2-inch blowoff valve assemblies, the discharge pipe shall be Schedule 40 galvanized steel pipe with ends finished with male iron pipe threads. The fittings shall also be galvanized steel, banded with dimensions and threads conforming to ASA B16.3 and B2.1.

For blowoff valve assemblies 4 inch and larger, the discharge pipe and fittings shall be ductile iron conforming in all respects to Water Mains described elsewhere in these specifications. Pipe and fitting end configurations shall be as shown on the plans.

16-2.05 Blowoff Valves

Blowoff valves shall conform in all respects to the requirements for Main Line Valve Assemblies.

16-2.06 Locating Wire

Locating wire shall be bare No. 8-gauge, single strand soft drawn copper.

Connectors shall be brass split-bolt connectors or other type of mechanically tightened joint connector approved by the District Engineer. Wire nuts or twisted joints shall not be used.

16-2.07 Valve and Riser Box, Lid, and Extensions

Blowoff valves of all sizes and risers on discharge pipes for 2-inch blowoff pipes shall be furnished with a box, lid, and extensions, conforming in all respects to those shown on the plans and to those required for Main Line Valve Assemblies. Boxes for risers on discharge pipes for blowoff pipes larger than 2-inch shall be as shown on the plans.

16-2.08 Drain Rock

Drain rock to be placed beneath the box containing the blowoff pipe risers and in other locations as shown on the plans shall conform to 1-inch size permeable backfill as described for Water Mains.

16-2.09 Concrete

Concrete used for the valve and riser box pads shall be 3,000 psi conforming in all respects to the requirements for Concrete Work.

16-2.10 Replacement Pavement

Replacement pavement shall be asphaltic concrete pavement conforming to CALTRANS, Section 39, and meeting the aggregate grading requirement for ½-inch maximum, medium gradation, and using grade AR-4000 paving asphalt conforming to CALTRANS, Section 92.

16-2.11 Valve Operator Extension Shaft

Valve operator extension shafts shall conform to the details as shown on the plans or approved equal. After fabrication, extensions shall be prepared, primed, and painted with two coats of asphalt varnish or coal-tar enamel; black in color.

16-2.12 Stone Slope Protection

Stone slope protection for cut banks around the valve and riser box shall meet all the requirements for No. 3 backing rock, as designated in CALTRANS, Section 72.

Stone slope protection for blowoff discharge lines shall be hard, dense, durable stone free from cracks, seams and other defects that would tend to foster deterioration from natural causes. The maximum stone size shall be 12 inches and the minimum size shall be 3 inches. The stones shall meet all requirements for No. 1 Backing material, as designated in CALTRANS, Section 72. The Contractor shall obtain approval of the materials from the District Engineer prior to use.

16-2.13 Guide Markers

Guide markers and posts shall conform to the plans and to CALTRANS, Section 82. Posts shall be metal, and target plates shall be Type M.

16-3 Installation

16-3.01 General

Blowoff Valve Assemblies shall be installed as shown on the plans and as designated in these specifications.

Blowoff discharge pipelines are constructed as either a riser pipe, or as a discharge pipe into a drainage structure or natural drainage course. Fittings shall be placed on the end of discharge pipe to direct the flow of water so as to minimize damage to surrounding areas. The District Engineer will make the final determination as to the direction of the discharge water, and the amount of slope protection to be placed around the end of the discharge pipe in order to dissipate the velocity of the water and prevent erosion.

16-3.02 Storage and Handling

Blowoff valves shall be stored and handled in their original containers, which shall not be unpackaged until 24 hours prior to the installation, except for inspection. The valves shall be maintained free from dirt and foreign matter and shall be stored on wooden pallets in their original containers. Blowoff valves and discharge piping and related fittings and valve boxes shall not be strung out on the job more than three days prior to installation.

16-3.03 Excavation and Backfill

Excavation and backfill operations shall conform to all the requirements for Water Main Pipe Trench Excavation and Backfilling.

16-3.04 Pipe and Fitting Installation

Installation of the pipe and fittings necessary for blowoff discharge pipes shall be in conformance with all the requirements for Water Mains.

16-3.05 Corrosion Protection

Corrosion protection for the connections to the main shall conform to Corrosion Protection for Water Main Taps described elsewhere in these specifications.

All brass and galvanized pipe and fittings to be buried shall be primed and wrapped with tape after assembly is complete. The tape shall be made of coal tar and/or synthetic resin compounds and shall be laminated to an outer film of vinyl for added strength. The tape, with the vinyl cover, shall have a total minimum thickness of 45 mils. The pipe and fittings shall be cleaned of all loose scale and dirt, and all grease, oil and other foreign matter before applying the primer. The tape shall be spiral-wrapped with a 1/2-inch minimum overlap. The primer and tape shall both be supplied by the same manufacturer and applied in accordance with the manufacturer's recommendation. This corrosion protection tape shall be as manufactured by Protecto Wrap (Primer No. 1170 and Tape No. 200) or Polyguard (Primer No. 600 and Tape No. 610).

Blowoff valve assembly laterals and discharge pipes constructed with ductile iron pipe shall have all bolts, glands, set screws and other metal fasteners protected from corrosion. These joints shall be wrapped in conformance with corrosion protection for Water Main Joints as designated elsewhere in these specifications. If the plans require the water main to which the blowoff laterals are attached to be polyethylene encasement per AWWA C105, then the ductile iron blowoff lateral and discharge pipes shall be encased accordingly.

16-3.06 Blowoff Valve Assembly Installation

Installation of the Blowoff Valve Assembly shall conform in all respects to the installation of Main Line Valve Assemblies.

16-3.07 Valve and Riser Box Installation

Valves installed for Blowoff Valve Assemblies and riser pipes shall be installed complete with a valve box, lid, and extensions as shown on the plans. Installation of these boxes shall conform in all respects to that of a valve box for Main Line Valve Assemblies.

16-3.08 Locating Wire

The locating wire from the water main shall be extended into the blowoff valve box, all as shown on the plans and as described for Water Mains elsewhere in these specifications.

16-3.09 Stone Slope Protection

Installation of stone slope protection shall be in accordance with CALTRANS, Section 72, Method B placement.

16-3.10 Surface Restoration and Final Cleanup

After backfill and compaction is complete, the surface over the Blowoff Valve Assembly and all other surfaces disturbed by this work shall be restored to an "equal to, or better than" condition as it existed prior to the start of construction, all conforming to Trench Restoration and Final Cleanup for Water Mains, as described elsewhere in these specifications.

16-4 Measurement and Payment

16-4.01 Measurement

Work performed under this section shall be measured as the number of various size Blowoff Valve Assemblies that have been completely installed.

16-4.02 Payment

The contract unit prices shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals for doing all the work necessary for the installation of Blowoff Valve Assemblies as shown on the plans or as designated in these specifications. A description of the work is included at the head of this section. Any work associated herewith, but not included in other bid items, shall be deemed as included in the work described in this section.