

STANDARD SPECIFICATION
SECTION 15109 FIRE HYDRANT ASSEMBLIES

PART 1 - GENERAL

1.01 DESCRIPTION

This section includes materials, installation, and testing of fire hydrant assemblies for various working pressures. Assemblies shall be installed at the locations as shown on the Drawings or as established in the field by the District's Representative.

1.02 RELATED WORK SPECIFIED ELSEWHERE

- A. Standard Drawings.
- B. Record Drawings and Submittals: STD SPEC 01300.
- C. Trenching, Backfilling, and Compacting: STD SPEC 02223.
- D. General Concrete Construction: STD SPEC 03000.
- E. Miscellaneous Metalwork: STD SPEC 05121.
- F. Painting and Coating: STD SPEC 09900.
- G. Polyethylene Sheet or Tube Encasement: STD SPEC 09954.
- H. General Piping Requirements: STD SPEC 15050.
- I. Steel Transmission Pipe: STD SPEC 15061.
- J. Resilient Seated Gate Valves: STD SPEC 15101.
- K. Disinfection of Piping: STD SPEC 15141.
- L. Pressure Testing of Piping: STD SPEC 15144.
- M. Ductile Iron Pipe: STD SPEC 15240.
- N. Steel Pipe for Minor Applications: STD SPEC 15253.
- O. Polyvinyl Chloride (PVC) Pressure Pipe (AWWA C900): STD SPEC 15292.
- P. Polyvinyl Chloride (PVC) Distribution Pipe (AWWA C905): STD SPEC 15293.

1.03 SUBMITTALS

- A. Submit submittal packages in accordance with Standard Specification Section 01300.
- B. Submit manufacturer's catalog data, descriptive literature, and assembly drawings. Show dimensions, materials of construction by specification reference and grade, linings, and coatings.
- C. Submit manufacturer's certificate of compliance with AWWA C503 for fire hydrants designed for a working pressure of 150 psi.

1.04 MASONRY RETAINING WALLS

If the aboveground portion of the assembly is located within a cut slope or embankment fill, a masonry retaining wall shall be constructed on three sides around the assembly. Construct the concrete foundation and retaining wall similar to the requirements that San Diego Gas and Electric uses for their facilities. The face of wall shall be a minimum of one foot beyond the dimensional values of the concrete pad to be poured for the assembly as shown on the Standard Drawings. Use tan colored slump block and grout each cell solid. The concrete pad to be poured around the assembly shall extend to the face of the three walls and also to the adjacent sidewalk or curb. The District's Representative will decide whether the requirements of this paragraph are being followed by the Contractor. If in the opinion of the District's Representative modifications or changes are necessary, the work shall be performed as directed.

PART 2 - MATERIALS

2.01 GENERAL

- A. Provide wet barrel hydrants with a rated working pressure suitable for the pressure zone of the installation.
- B. Unless noted otherwise, provide two-way fire hydrants having one 2-1/2-inch and one 4-inch outlet. In commercial or high density residential zoned areas, or as shown on the Drawings, provide three-way fire hydrants with two 2-1/2-inch and one 4-inch outlet. Threads on outlets shall conform to NFPA No. 1963, Standard for Screw Threads and Gaskets for Fire Hose Connections. Provide bronze or plastic cap with chain on each outlet.
- C. Equip wet barrel fire hydrants with slow opening and closing type valves.

2.02 FLANGED OUTLETS

See Standard Specification Sections 15061, 15240, 15292, or 15293 as indicated by the pipeline material shown on the Drawings. Use 6-inch flanged outlets for the fire hydrant assemblies. Use Class 150 flanges for working pressures of 250 psi or less. Use Class 300 flanges for working pressures greater than 250 psi, but less than 300 psi.

2.03 RESILIENT SEATED GATE VALVES

See Standard Specification Section 15101. Use 6-inch resilient seated gate valves for the fire hydrant assemblies with working pressures of 250 psi or less, and with valve ends as shown in the Standard Drawings.

2.04 BALL VALVES

Use 6-inch flanged ball valves for the fire hydrant assemblies with working pressure greater than 250 psi.

2.05 PVC PRESSURE PIPE (AWWA C900)

See Standard Specification Section 15292.

2.06 STEEL PIPE FOR MINOR APPLICATIONS

See Standard Specification Section 15253.

2.07 HYDRANTS

- A. For 150 psi maximum working pressure, provide hydrants that conform to AWWA C503. Construct hydrant of all bronze conforming to ASTM B 62 and cast head in either one or two parts. Drill base flange of hydrant to the 6 hole San Diego standard with six 7/8-inch diameter bolt holes on a 9-1/2-inch bolt circle. Use O-ring gaskets for stem seals and between head pieces. Outlets shall be fully serviceable in the field. Two-way hydrants shall be Long Beach Model 125, Clow Model 2050, or District approved equal. Three-way hydrants shall be Long Beach Model 130, Clow Model 2060, or District approved equal.
- B. For 200 psi maximum working pressure, provide hydrants that are constructed similar to the requirements of AWWA C503 but are designed for a working pressure of 200 psi. Construct hydrant of all bronze conforming to ASTM B 62 and cast head in either one or two parts. Drill base flange of hydrant to the 6 hole San Diego standard with six 7/8-inch diameter bolt holes on a 9-1/2-inch bolt circle. Use O-ring gaskets for stem seals and between head pieces. Outlets shall be fully serviceable in the field. Two-way hydrants shall be Clow Model 2050, or District approved equal.
- C. For 300 psi maximum working pressure, provide wharf hydrants with angle plug design and single outlet. Construct hydrant of all bronze conforming to ASTM B 62. Threaded inlet shall be 4-inch and conform to ANSI B1.20.1, NPT. Threaded outlet shall be 2-1/2-inch, conform to NFPA No. 1963, and have cap and chain. Wharf hydrants shall be James Jones J-344 H.P. or District approved equal. Connect hydrant to riser flange with a 5-inch long threaded brass nipple conforming to ASTM B 43, regular wall thickness; and a ductile iron reducing threaded flange conforming to ANSI B16.42 Class 150 or 300 as shown.

2.08 BREAK-OFF RISERS

- A. For working pressures of 200 psi and less, provide pipe spools of the indicated length with flat faced flanged ends. Provide Class 53 ductile iron pipe with Class 150 threaded flanges. Drill flanged ends to the 6 hole San Diego standard with six 7/8-inch diameter bolt holes on a 9-1/2-inch bolt circle. Line interior of pipe with cement mortar and provide double thickness (1/8-inch minimum) per AWWA C104. Score one end of the spool 4 inches from

the flange face. Cut a V-groove 1/4-inch wide and to a depth of 1/8-inch minimum to 3/16-inch maximum on the pipe exterior.

- B. For working pressures greater than 200 psi, but less than 300 psi, provide pipe spools of the indicated length with flat faced flanged ends. Provide Class 53 ductile iron pipe with Class 150 threaded flanges conforming to Standard Specification Section 15240. Line interior of pipe with cement mortar and provide double thickness (1/8-inch minimum) per AWWA C104. Score one end of the spool 4 inches from the flange face. Cut a V-groove 1/4-inch wide and to a depth of 1/8-inch minimum to 3/16-inch maximum on the pipe exterior.
- C. For working pressures greater than 250 psi, but less than 300 psi, provide pipe spools of the indicated length with flat faced flanged ends. Provide Class 53 ductile iron pipe with Class 300 threaded flanges conforming to Standard Specification Section 15240. Line interior of pipe with cement mortar and provide double thickness (1/8-inch minimum) per AWWA C104. Score one end of the spool 5 inches from the flange face. Cut a V-groove 1/4-inch wide and to a depth of 1/8-inch minimum to 3/16-inch maximum on the pipe exterior.

2.09 BURY SECTIONS

Provide two-piece bury sections consisting of an elbow and extension. Design bury sections for a working pressure of 200 psi. Construct of cast iron conforming to ASTM A 126 Class B, or ductile iron conforming to ASTM A 395 or A 536. Provide bury elbow with integral base and mechanical joint by flat faced flanged end. Provide pipe extension with flat faced flanged ends and of the required length to adjust the hydrant to grade. Drill flanged ends to the 6 hole San Diego standard with six 7/8-inch diameter bolt holes on a 9-1/2-inch bolt circle. Line the interior of the bury section with cement mortar to a 5/16-inch thickness. Line interior of mechanical joint bells per Standard Specification Section 09900, System No. 5. Coat the exterior with asphalt varnish.

2.10 BOLTS, NUTS AND GASKETS FOR RISERS AND BURY SECTIONS

See Standard Specification Section 15050.

2.11 POLYETHYLENE ENCASEMENT

See Standard Specification Section 09954.

2.12 GUARD POSTS

See Standard Specification Section 05121. Provide two guard posts for each fire hydrant assembly except where assembly is located adjacent to a paved street with concrete curbs.

2.13 REFLECTIVE PAVEMENT MARKERS

Fire hydrant markers shall be of the reflective type and colored blue. Markers shall conform to Section 85 of the State Standard Specifications, State of California, Department of Transportation, Caltrans, latest editions.

PART 3 - EXECUTION

3.01 INSPECTION BEFORE INSTALLATION

Operate the valves on the fire hydrant from closed to fully open, then close again before installing. Check for broken, cracked, or missing parts; malfunctioning stems; and faulty operation.

3.02 INSTALLATION

- A. See Standard Specification Section 02223 for earthwork requirements. Use imported sand in the pipe base and pipe zone.
- B. Install piping and valves per the instructions contained in the appropriate Standard Specification for the material used.
- C. Piping from the main to the hydrant shall be placed level or on a continuous upward grade to avoid pocketing air.
- D. Clean threaded joints by wire brushing or swabbing. Apply Teflon joint compound or Teflon tape to pipe threads before installing screwed hydrants. Joints shall be watertight.
- E. Install flanged joints per the installation instructions in Standard Specification Section 15050.

3.03 INSTALLING POLYETHYLENE ENCASEMENT

After applying primer for wax tape coating to all buried bolts and nuts, wrap bury section including mechanical joint and flanged ends with polyethylene material per Standard Specification Section 09954. Complete the wrap prior to placing concrete thrust block, concrete anchor block on bury section, and concrete pad on grade. Repair polyethylene material damaged during construction.

3.04 PLACING CONCRETE

Place concrete against the bury elbow section and the undisturbed ground with the bearing area as shown on the Standard Drawings. Allow concrete to set and be hard enough to be self-supporting. Place and compact trench backfill up to the subgrade of the concrete anchor block. Pour a concrete anchor block below grade around the bury section to force the aboveground grooved spool to break on an impact. Cover the anchor block with backfill material and compact up to the subgrade of the concrete pad on grade. Pour a concrete pad on grade around the break-off riser. Concrete shall be Class C per Standard Specification Section 03000.

3.05 SETTING GUARD POSTS

Position guard posts to protect the fire hydrant assembly. Locate posts 2-1/2 feet to each side and 2 feet in front of the hydrant. Excavate a hole 16 inches in diameter by 3-1/2 feet deep for each post. Set posts plumb, fill holes with concrete to 2 inches above finish grade, and crown to slope away from post. Posts shall be embedded a minimum of 3 feet in concrete. Fill posts with grout and crown top. Concrete shall be Class C per Standard Specification Section 03000.

3.06 PAINTING AND COATING

Paint aboveground surfaces of the break-off riser, hydrant, guard posts, and top side of valve box cover per Standard Specification Section 09900, System No. 20. Color of finish coat shall be OSHA Yellow.

3.07 INSTALLING FIRE HYDRANT MARKERS

Install a blue reflective marker opposite each fire hydrant. Place the marker on the pavement and locate 6 inches off the centerline of the traffic striping or reflective pavement markers towards the hydrant. Install markers in accordance with Section 85 of the State Standard Specifications.

3.08 PRESSURE TESTING

Test fire hydrant assemblies at the same time that the connecting pipelines are pressure tested. See Standard Specification Section 15144 for pressure testing requirements. Repair leaks in the fire hydrant assemblies and joints of the interconnecting piping and retest.

3.09 DISINFECTION

See Standard Specification Section 15141 for chlorination requirements.

END OF SECTION