

# Everett Water Department Specifications & Requirements

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#### HYDRANTS: The City of Everett has standardized M&H 929 Fire Hydrant

- Hydrants shall conform to the requirements of AWWA C502. They shall be equipped with a 5-1/4-inch main valve and 6-inch mechanical joint inlet.
- Hydrants shall have one 4-1/2-inch pumper and two 2-1/2-inch hose connections. Threads shall be NST.
- Hydrant operating and nozzle cap nuts shall be of pentagonal shape and measure one and one half inches from flat to point. The height of the nut shall not be less than one inch.
- All internal operating parts including main valve, main valve seat, drain valve mechanism, operating rod, etc., shall be removable without excavating.
- Main valve seats shall be made of brass or bronze, and shall screw into a seat ring or sub-seat, which shall also be made of brass or bronze.
- Hydrants shall be traffic models with frangible bolts or breakaway couplings. Details of hydrant design shall meet the requirements of the Owner.
- For purposes of standardization, hydrants shall be M&H Style 929 as manufactured by MH Valve Company, Anniston, AL; or approved equal.

#### HYDRANT PAINT:

- Hydrants shall be thoroughly cleaned and given two shop or field coats of paint in accordance with AWWA C502 and the instructions of the paint manufacturer. Paint color shall be the standard hydrant color of the Owner as follows:
  - Barrel - Red
  - Bonnet - Red
  - Nozzle Caps - Red
- If the hydrants are delivered with the Owner's standard color, they shall be given one matching field coat of alkyd gloss enamel. If the hydrants are not delivered with the Owner's standard color, they shall be given two coats of gloss enamel, colors as indicated above.
- Hydrant paint shall be as manufactured by Sherwin-Williams, Cleveland, OH; Tnemec Company, Inc., Kansas City, MO; or Minnesota Mining and Manufacturing Co. (3M), St. Paul, MN; or approval equal.
- Alkyd gloss enamel shall be 801 DTM by Sherwin-Williams, 2H-Tneme by Tnemec; or approved equal. Reflective paint shall be Scotchlite #7211 by 3M.

#### RESILIENT SEAT GATE VALVES:

- Resilient seat, wedge type gate valves shall be made and manufactured in the U.S.A and meet all applicable requirements of AWWA C509 or AWWA C515. All valves shall be bubble-tight at 200 psi water working pressure, tested in both directions.
- Valve bodies shall be of cast or ductile iron and shall have non-rising threaded bronze stems acting through a bronze stem nut. Opening nuts shall be 2-inches square and shall open as specified above. All buried valves shall have mechanical joint ends.

- Valve wedges shall be of ductile iron with resilient seating surfaces permanently bonded to the wedges in strict accordance with ASTM D429 or attached to the face of the wedges with stainless steel screws. Each valve shall have a smooth, unobstructed water way free from sediment pockets.
- Valves shall have low friction, torque-reduction thrust bearings. All O-rings and gaskets shall be removable without taking the valves out of service.
- An NSF 61-approved epoxy coating, which is safe for potable water, shall be applied to exterior and interior valve surfaces.
- Valves for horizontal applications shall have Delrin wedge covers, and be specifically designed for horizontal installation.
- Resilient seat gate valves shall be manufactured in the United States.
- Resilient seat gate valves shall be as manufactured by Clow Valve Co., Oskaloosa, IA; Mueller Co., Decatur, IL; American Valve and Hydrant; Birmingham, AL; Waterous Co., S. St. Paul, MN; MH Valve, Anniston, AL; Kennedy Valve, Elmira, NY; or approved equal.
- All Valves shall be open right

#### TAPPING SLEEVES AND VALVES:

- Tapping sleeves and valves shall consist of a split cast iron or ductile iron sleeve tee with mechanical joint ends on the main and a flange on the branch. Tapping-type gate valves shall have one flange and one mechanical joint end. The valves shall conform to the requirements hereinbefore specified for gate valves and shall be furnished with a 2-inch square operating nut. The Contractor shall be responsible for verifying the outside diameter of the pipe to be tapped.
- Oversized valves shall be provided as required to permit the use of full size cutters. Before backfilling, all exposed portions of bolts used to hold the two halves of the sleeve together shall be heavily coated with two coats of bituminous paint comparable to Inertol No. 66, Special Heavy. Sleeves shall be of cast iron furnished with rubber gaskets. Gaskets shall cover the entire area of flange surfaces.
- Tapping sleeves and valves shall be as manufactured by Clow Valve Co., Oskaloosa, IA; Mueller Co., Decatur, IL; American Valve and Hydrant, Birmingham, AL; MH Valve, Anniston, AL; Kennedy Valve, Elmira, NY; US Pipe, Chattanooga, TN; or approved equal.

#### INSERTION VALVES:

- Insertion valves shall consist of a ductile iron or ASTM A-36 steel fusion bonded epoxy coated to 10-12 mils in accordance with AWWA C-213. The valves shall conform to the requirements herein specified for gate valves and shall be furnished with a 2-inch square operating nut. The contractor shall be responsible for verifying the outside diameter of the pipe where the valve will be inserted.
- Before backfilling, all exposed portions of bolts used to hold the two halves of the sleeve together shall be heavily coated with two coats of bituminous paint comparable to Inertol No.

66, Special Heavy. Sleeves shall be furnished with a rubber gasket that fits 360 degrees around the pipe at each end.

- Insertion valves shall be as manufactured by Hydra-Stop, Inc., Blue Island, IL; Romac Industries, Inc, Seattle, Washington; or approved equal.

#### WATER LINE STOPS:

- Water line stop fitting body shall consist of a ductile iron or ASTM A-36 steel fusion bonded epoxy coated to 10-12 mils in accordance with AWWA C-213. The fitting shall be full encirclement, pressure retention-type split tee. The outlet of the fitting shall have locking pins built in to retain the completion plug. The contractor shall be responsible for verifying the outside diameter of the pipe where the valve will be inserted.
- Before backfilling, all exposed portions of bolts used to hold the two halves of the sleeve together shall be heavily coated with two coats of bituminous paint comparable to Inertol No. 66, Special Heavy. Sleeves shall be furnished with a nitrile gasket that fits 360 degrees around the pipe at each end.
- The completion plug shall be machined from a stress relieved carbon steel weldment. It shall contain two (2) circumferential grooves: one to receive the locking devices from line stop flange and second to contain a compressible "O" ring to seal tight under pressure. The line stop fitting shall be closed with a blind flange. Facing and drilling of the blind flange shall be compatible with that of the line stop flange.
- The Contractor shall provide the materials, machines, and related equipment necessary to install the line stop into an existing piping system under full operating pressure without interrupting service.
- Line stops shall be as manufactured by South Shore Pipeline, Hanover MA, John Hoadley & Sons, Inc. Rockland MA, Hydra-Stop, Inc., Blue Island, IL; IPSCO Paulsboro NJ; or approved equal.

#### VALVE BOXES AND COVERS:

- Gate Valve boxes shall be manufactured in North America. The minimum outside diameter of the boxes shall be 5 '2-inches and the lengths shall be as necessary to suit the ground elevation and the depth of each valve operator, regardless of the depth of cover.
- Gate Valve boxes shall be of cast iron and of the adjustable sliding, heavy pattern type. They shall be so designed and constructed as to prevent direct transmission of traffic loads to the pipe or valve. The upper or sliding section of the box shall be provided with a flange on the top of the section (not on the bottom) having sufficient bearing area to prevent undue settlement. The lower section of the box shall be designed to enclose the operating nut and stuffing box of the valve and to rest on the backfill. The boxes shall be adjustable through at least 6 inches vertically without reduction of lap between sections to less than 8-inches.
- The top of the cover shall be flush with the top of the box rim. The word "WATER" shall be cast in the top of the cover.
- Service Boxes shall be Buffalo Style 2 ½" in diameter made of heavy cast iron

#### SERVICE PIPING:

- Piping for buried copper water services shall be continuous Type K annealed seamless copper water tubing conforming to ASTM B88 Standard Specification for Seamless Copper Water Tube or U.S. Federal Specification WW-T-799C for Tube, Copper, Seamless.
- Couplings shall have compression connections on the inlet and compression connections on the outlet. Couplings shall be made of brass as specified in AWWA C800. Couplings shall be NSF/ANSI 61 Annex F and Annex G and NSF/ANSI 372 certified by an ANSI accredited organization and shall be stamped or embossed with a mark or name indicating that the product is manufactured with No Lead.

#### CORPORATION STOPS:

- Corporation stops shall be made of brass as specified in AWWA C800. All brass components that come into contact with potable water shall NO LEAD certified by an ANSI accredited organization and shall be stamped or embossed with a mark or name indicating that the product is manufactured from a low-lead alloy, as specified above.
- The inlet shall have compression connections and the outlet shall have compression connections.
- Corporation stops shall be manufactured in the United States.
- Corporation stops shall be by Ford Meter Box Co., Inc., Wabash, IN; Red Hed Manufacturing Co., Lincoln, RI; Mueller Co., Decatur, IL; or approved equal.

#### CURB STOPS:

- Curb stops shall be of brass as specified in AWWA C800. All brass components that come into contact with potable water shall be no lead
- Curb stops shall be ball style and the inlet and the outlet shall have compression connections.
- Curb stops shall be manufactured in the United States.
- Curb stops shall be by Red Head Manufacturing Co., Lincoln, RI; Ford Meter Box Co., Inc., Wabash, IN; Mueller Co., Decatur, IL; or approved equal.

#### Brass Goods:

- compression style or flared, No Lead
- Acceptable manufacturers: Ford Meter Box, AY McDonald, Cambridge Brass, RedHed Manufacturing, Mueller Co.,

#### Service Saddles:

- epoxy coated only, with Stainless Steel Band, double u-bolt, AWWA taper, CC thread outlet;
- c. Acceptable service saddles: Romac 202NU, Mueller DRA2A, AY McDonald 4825A, Ford Meter Box F202 or equivalent.

#### Ductile Iron Pipe:

- Push on joint type ductile iron pipe
- All ductile iron pipe shall be designed in accordance with AWWA C150 and shall be manufactured in accordance with AWWA C151, unless otherwise indicated or specified, ductile iron pipe shall be thickness class 52

#### Joints:

- Joints for ductile iron pipe shall conform to AWWA C111
- Fittings:
- Fittings should conform to the requirements of AWWA C110 or C153 and shall be of a pressure classification at least equal to that of the pipe with which they are using.
- Ductile Iron or Cast iron class 250 fitting shall be used
- Flexible Couplings:
- Couplings shall be cast or ductile iron
- Couplings for buried pipe shall be Dresser 153, Smith Blair Type 441 or 443, Romac Style 501, Ford Style FC1 or FC2, or approved equal.
- Two-Bolt Couplings Acceptable couplings they shall be sleeve type design consisting of center sleeve, with one end ring per end equipped with a multi-range, two-layered EPDM gasket with stainless steel spanner and one 304 stainless steel nut and bolt; AWWA Standard C219-01, Acceptable couplings: Romac Macro, Hymax 2000 series, Smith Blair Model 421 or approved equal.

#### Repair Clamps:

- 304 stainless steel shell and armors per ASTM A240. Shell hemmed to strengthen engagement with lugs
- Lugs cast from ductile iron per ASTM A536;
- 304 stainless steel nuts and bolts;
- AWWA Standard C230;
- Acceptable couplings: Romac CL-Series, Smith Blair 22x-Series, Ford Meter Box F-series.

#### INSTALLATION:

- All valves shall be carefully installed and supported in their respective positions free from distortion and strain. Care shall be taken to prevent damage or injury to the valves and appurtenances during handling and installation.
- All material shall be carefully inspected for defects in workmanship and all debris and foreign material cleaned out of valve openings and seats. All mechanisms shall be operated to check for proper functioning, and all nuts and bolts checked for tightness.
- Valves and other equipment that do not operate easily or are otherwise defective shall be repaired or replaced at the Contractor's expense.

- Hydrants shall be set plumb. Earth fill shall be carefully tamped around the hydrants to a distance of 4 feet on all sides of the hydrant, or to the undisturbed trench face, if less than 4 feet. Hydrants and connecting pipe shall have at least the same depth of cover as the distributing main. Hydrants shall be set upon a layer of stone or a slab of concrete not less than 4-inches thick and 15-inches square. The side of the hydrant opposite the pipe connection shall be firmly wedged against the vertical face of the trench with a concrete thrust block, as indicated on the drawings.
- Broken stone shall be placed around the base of the hydrant at the location of the drain hole, and backfill around the hydrant shall be thoroughly compacted to the grade line in a satisfactory manner. Hydrants shall have the interiors cleaned of all foreign matter before installation, and shall be inspected in both the open and closed positions.
- The body of the hydrant shall be of sufficient length to allow the hydrant to be set at the proper elevation, as shown on the drawings. Extensions shall be furnished and installed at the Contractor's expense, when required for greater depths.
- Valve boxes shall be set plumb, flush with the ground or paved surface, and centered directly over the operating nut of the valves. Earth fill shall be carefully tamped around the valve boxes to a distance of 4 feet on all sides of the boxes or to the undisturbed trench face, if less than 4 feet.
- Valves shall be operational and accessible at all times during construction. The Contractor shall verify proper operation of all valves in the presence of the Engineer and/or Water Department following completion of the project and prior to the acceptance of Substantial Completion.

#### SERVICE CONNECTIONS (WATER SERVICES):

- This section covers the furnishing and installation of new water service connections and the repair, replacement, and/or transfer of existing water service connections as shown on the drawings, as specified herein, and as required by the Engineer.
- Where new water mains are being installed and existing water services are to be transferred to the new main, the Contractor shall discontinue the existing water services by shutting down the corporation stop at the old water main and disconnecting the service from the main, unless specifically otherwise required by the Engineer or Water Department . The Contractor shall take special care to minimize the interruption of existing water service.
- The Contractor shall tap a new corporation stop and run new line from main to curb and tie in to homeowner's service with a new approved curb stop.
- Where transfers are to be made and the existing curb stop and box cannot be utilized or a new curb stop and box is required, the Contractor shall connect the new service piping to the existing service piping using an approved coupling approximately 12-inches from the curb stop on the building side of the stop.
- Where transfers are being made and the existing service is of lead, galvanized steel, or iron, the service shall be replaced from main to curb shut off. A new curb stop is also required.

- Curb stops and boxes shall be set plumb, flush with the ground or paved surface, and centered with the box located directly over the stop. The box shall be set on a concrete block or flat stone. Earth fill shall be carefully tamped around the boxes to a distance of 4 feet on all sides of the box or to the undisturbed face of the trench, if less than 4 feet.
- Curb stops shall be operational and accessible at all times during construction. The Contractor shall verify the proper operation of all curb stops in the presence of the Engineer and/or Water Department following completion of the project and prior to the acceptance of substantial completion.
- All services shall be installed at 5 feet 0 inches of cover unless otherwise required by the Engineer or Water Department.
- Service connections shall be Pressure tested and disinfected in accordance with AWWA standards and Witnessed by Water Department Personnel

#### Hydrostatic Pressure Test:

- Hydrostatic testing of pipelines shall be performed prior to the disinfection operations
- Hydrostatic testing shall be performed prior to connections to existing mains. Water Department authorization for connection to the existing system shall be given only after acceptable hydrostatic, disinfection and bacteriological test results are received by the Water Department in writing.

#### Testing Procedure:

- Testing water shall be supplied through a metered connection equipped with a backflow prevention device at the point of connection to the potable water source used.
- The test shall be conducted with all valves in the open position.
- Before applying the specified test pressure, the pipe should be thoroughly flushed clean of dirt, dust, oil, grease, and other materials.
- The hydrostatic test shall consist of raising the water pressure within the pipe to a pressure no less than 1.5 times normal operating pressure of the water distribution system. Normally (150 PSI) unless otherwise specified by the Water Department.
- The test shall be 2 hours and the pressure shall not drop more than 5 PSI.
- Makeup water shall be measured by suitable methods and shall not exceed the maximum allowable quantity of makeup water.

#### Disinfection:

- The general procedure for disinfecting the main shall be to apply the chlorine through a tap in one end of the section of pipe and bleed it off through a tap the other end of the pipe.
- The dose shall be adequate to produce a chlorine concentration of no less than 10 mg/l after a contact time of no less than 24 hours.
- After the 24 hour period, the main shall be flushed until the chlorine residual less than 0.2 mg/l



- A bacteriological sample must be taken, as required by Standard Method. No hose or fire hydrants should be used to collect the sample. A corporation stop on the main, with a removable copper gooseneck assembly is recommended.
- All samples need brought to a State Certified Lab certified for total coliform and fecal coliform analyses of potable water.
- No water is to be turned on until the Water Department has receive documentation of the clean water sample.