

SECTION 300

WATER SYSTEM REQUIREMENTS

The general design and construction requirements for the City of Puyallup shall be those contained in the Standard Specifications for Road, Bridge, and Municipal Construction (hereinafter referred to as the "Standard Specifications"), Washington State Department of Transportation and American Public Works Association, Washington State Chapter, latest edition, unless superseded or amended by the City of Puyallup City Standards for Public Works Engineering and Construction (hereinafter referred to as the "City Standards").

301 Water System Design Criteria

301.1 Water Mains

1. All new water main lines shall be installed to the size as indicated in the City's Comprehensive Plan. The minimum water pipe size shall be 8-inch diameter. The only exception is a dead-end line with no possibility of being expanded in the future and beyond the last fire hydrant, shall be 4-inch diameter.
2. Pipe for water mains shall be ductile iron conforming to Section 7-09 of the Standard Specifications and shall be thickness Special Class 52 or greater. Joints shall be Tyton or approved equal. Pipe shall be cement lined in accordance with A.S.A Specification A21.4-1964.
3. Connections to existing water mains typically shall be wet taps through a tapping tee and tapping valve and shall be made by a city approved contractor. The tapping sleeve shall be Romac SST all stainless steel tapping sleeve or approved equal. A two-piece epoxy coated or ductile iron tapping sleeve may be used on ductile iron pipe, when the tap is smaller than the water main size i.e. 6 inch tap on 8 inch pipe. The City shall approve the time and location for these connections.
4. Where water mains are to be extended to serve a particular property, the water lines shall be extended along the entire frontage of the property to be served. Looped connections may be required to maintain continuity in the system.
5. Water mains shall have a minimum cover of 36 inches from paved final grade in improved right-of-way and improved easements, and 48 inches of cover in unimproved right-of-way and unimproved easements.
6. All water mains and appurtenances shall be hydrostatically tested at 200 psi in accordance with Standard Specification 7-09.3(23). Pressure testing shall not be performed until satisfactory bacteriological (Coliform and Iron Bacteria) purity samples have been received, except when new water mains are installed independently from the water system piping.
7. Two-inch blow-off assemblies are required on dead-end water lines, except where fire hydrants are installed at the dead end. The blow-off assembly shall be installed in accordance with City Standard Detail 03.06.01.
8. Minimum distance between sewer and water lines shall be 10 feet horizontally and 18 inches vertically measured from outside edge of pipe to outside edge of pipe.
9. Air relief valves are required at high points in water lines. Air relief valves shall be installed in accordance with City Standard Detail 03.07.01.

10. Water valves shall be installed along the water line at a maximum spacing of 400 feet and at the intersection of lateral lines. Water valves shall be located in clusters when possible and shall be located so that each leg of the main line system can be isolated separately.
11. Easements shall be a minimum of 40 feet in width for water lines. The water main shall be a minimum of 10 feet away from building foundations and/or roof lines. No structures or woody landscape plants shall be allowed within easements. The easement may be fenced, as long as it has a minimum 10 foot wide access gate with a key provided to the City.
12. No woody landscape plants shall be planted within 10 feet of any water structure (e.g. valves, air reliefs, sample stations, blow-off assemblies, etc.).
13. Detectable marking tape shall be installed on all new water main including water service lines. The tape shall be placed approximately 1.5 feet (18 inches) above the top of pipe and shall extend its full length. Detectable marking tape shall be blue in color and meet the material requirements specified in Standard Specification 9-15.18.

301.2 Fire Hydrants

1. Fire hydrants shall be installed at a maximum lateral spacing of 1000 feet along streets in single family residential zones and 330 feet in all other zones, or as directed by the Fire Code Official.
2. On-site hydrants shall be a maximum of 150 feet from the farthest point of the building(s) and a minimum of 50 feet from building(s) or structures, or as directed by the Fire Code Official.
3. Fire hydrant feed lines shall be installed at right angles to the supply main.
4. Fire hydrant leads over 50 feet in length from the water main to the hydrant shall be no less than 8 inches in diameter.
5. The fire hydrant assembly shall be installed in accordance with City Standard Detail 03.05.01.
6. Easements, when required, shall be a minimum of 5 feet each side of any fire hydrant.
7. A minimum 3 foot radius unobstructed clear zone (work area) shall be provided around all fire hydrants. Only ground level landscaping (grass, mulch, bark, etc.) is allowed within this clear zone.
8. No woody landscape plants shall be planted within 10 feet of any fire hydrant. Overreaching branches of trees adjacent to fire hydrants shall have a maintained vertical clearance of 7 feet above finished grade of the hydrant.
9. Fire hydrant assemblies shall have a maintained minimum sight distance from roadway of 50 feet in each direction of travel.

301.3 Water Service Connections

1. For single family residential construction in new subdivisions, the contractor shall furnish and install all materials for the service connection, including the meter setter, except that the City shall furnish and install the meter and the automated meter reading transmitter at the time of occupancy.
2. For commercial and multi-family construction, the meter and the automated meter reading transmitter shall be furnished and installed by the contractor.
3. Installation of water service connections shall be in accordance with City Standard Details 03.03.01, 03.03.02, 03.03.03, and 03.03.04.
4. Where possible, adjacent lots may use dual water services installed in accordance with City Standard Detail 03.03.01.
5. No woody landscape plants shall be planted within 10 feet of any water meter.

302 Water Quality Requirements

302.1 Irrigation Systems

1. A minimum of a double check valve assembly (DCVA) is required on the irrigation water supply service, three (3) feet downstream of the water meter, prior to any branch connections for all commercial projects. If chemical injection is used in the irrigation system, the protection needs to be upgraded to a reduced pressure backflow assembly (RPBA).
2. Irrigation systems on residential water services shall be protected by a minimum of a DCVA. The irrigation branch connection shall be located three (3) feet downstream of the water service meter. The DCVA shall be placed just after the irrigation tee connection on private property.
3. The DCVA shall be installed in accordance with City Standard Detail 03.04.01. The RPBA shall be installed in accordance with City Standard Detail 03.04.02 and 03.04.03.
4. Upon approval of the installation by the city inspector, the DCVA/RPBA shall be tested by a Washington State certified backflow assembly tester, and the test report results shall be submitted to the City prior to occupancy of the building and annually thereafter. Test results shall be sent to: City of Puyallup, Water Quality Operations, 1100 39th Ave SE, Puyallup, WA 98374.

302.2 Commercial and Industrial Uses

1. A double check valve assembly (DCVA) is required on the domestic water supply service to any commercial or industrial building. Exceptions for businesses that fall under WAC 246-290-490 Table 9 facilities. A Table 9 water supply service needs to be upgraded to a reduced pressure backflow assembly (RPBA). Final determination of the proper backflow assembly to be determined by the City Water Division.
2. Duplexes, Tri-plexes, and 4-plexes are not considered commercial buildings for the purposes of water quality, and do not require backflow protection at the service connection. Multi-family buildings (i.e. apartment complexes) are considered commercial buildings, and require a minimum of a DCVA. Exceptions for multi-family buildings that fall under WAC 246-290-490 Table 9 facilities. A Table 9 water supply service needs to be upgraded to a reduced pressure backflow assembly (RPBA). Final determination of the proper backflow assembly to be determined by the City Water Division.
3. The placement of the DCVA/RPBA shall be three (3) feet downstream of the water meter, prior to any branch connection. The DCVA shall be installed in accordance with City Standard Detail 03.04.01. The RPBA shall be installed in accordance with City Standard Detail 03.04.02 and 03.04.03.
4. Upon approval of the installation by the city inspector, the DCVA/RPBA shall be tested by a Washington State certified backflow assembly tester, and the test report results shall be submitted to the City prior to occupancy of the building and annually thereafter. Test results shall be sent to: City of Puyallup, Water Quality Operations, 1100 39th Ave SE, Puyallup, WA 98374.

302.3 Fire Service Connections

1. A double detector check valve assembly (DDCVA) complete with 3/4-inch bypass DCVA and 5/8-inch Sensus SR-II water meter reading in cubic feet is required on the fire service line to any building which is equipped with a fire sprinkler system.
2. The DDCVA shall be located inside the building or in a vault at or near the property line and shall be installed in accordance with City Standard Detail 03.10.01-1 and 03.10.01-2.
3. Upon approval of the installation by the city inspector, the DDCVA and the DCVA shall be tested by a Washington State certified backflow assembly tester, and the test report results shall be submitted to the City prior to occupancy of the building and annually thereafter. Test results shall be sent to: City of Puyallup, Water Quality Operations, 1100 39th Ave SE, Puyallup, WA 98374.
4. The domestic water service shall not be connected directly to a fire system service line, but rather shall be a separate connection to the main line.
5. The fire department connection shall be located within 15 feet of a fire hydrant but not less than 10 feet.
6. A ball drip valve is required on the Fire Department Connection (FDC) line when the FDC is lower in elevation than the Double Detector Check Valve Assembly.
7. Any fire system that is required will be designed (from water main through DDCVA to top of riser in building) by a state certified level III designer or state licensed professional civil engineer.

302.4 Additional Water Quality Requirements

1. Brass or dielectric unions shall be installed immediately downstream of all backflow assemblies 2-inch and smaller.

303 Water System Plan Requirements

The following items shall be shown on the plans:

- Plan and profile in accordance with Section 2.0
- Water pipe including location, length, material, slope, depth, and size
- Detail all new connections to the existing water system
- Identify any possible utility conflicts
- Stationing and reference points
- Valves, meters, and fittings, including size and location
- Fire hydrant protection for hydrant outside City right-of-way if hydrant is not protected by street curb and gutter
- Blow-offs at dead ends (2-inch minimum)
- Air and vacuum relief valve at high points
- Pressure reducing valves
- Concrete blocking
- An all-weather maintenance access, including typical cross section of said access road
- Service sizes and locations
- Meter sizes and locations
- Minimum one (1) service per lot
- Proper reference and layout for saw cutting and patching existing streets
- Fire sprinkler system location from public water line to building showing gate valve at main line connection
- Existing and/or abandoned wells
- Provide plan and elevation detail drawings of the fire line riser where it enters the building. The detail drawing shall include call-outs containing dimensions and clearances, and type of riser joint restraint. The details shall be in compliance with NFPA 24.

304 Water System Plan Notes

The following notes shall also be shown on the plans.

WATER SYSTEM NOTES:

1. All work in City right-of-way requires a permit from the City of Puyallup. Prior to any work commencing, the general contractor shall arrange for a preconstruction meeting at the Development Services Center to be attended by all contractors that will perform work shown on the engineering plans, representatives from all applicable Utility Companies, the project owner and appropriate City staff. Contact Engineering Services to schedule the meeting (253) 841-5568. The contractor is responsible to have their own approved set of plans at the meeting.
2. After completion of all items shown on these plans and before acceptance of the project, the contractor shall obtain a “punch list” prepared by the City's inspector detailing remaining items of work to be completed. All items of work shown on these plans shall be completed to the satisfaction of the City prior to acceptance of the water system and provision of sanitary sewer service.
3. All materials and workmanship shall conform to the Standard Specifications for Road, Bridge, and Municipal Construction (hereinafter referred to as the “Standard Specifications”), Washington State Department of Transportation and American Public Works Association, Washington State Chapter, latest edition, unless superseded or amended by the City of Puyallup City Standards for Public Works Engineering and Construction (hereinafter referred to as the “City Standards”), or as directed by Fruitland Mutual Water Company (FMWC), Valley Water (VW), or Tacoma City Water (TCW) is the purveyor.
4. A copy of these approved plans and applicable city developer specifications and details shall be on site during construction.
5. Any revisions made to these plans must be reviewed and approved by the developer's engineer, the Engineering Services Staff, and the FMWC, VW or TCW when served by that purveyor, prior to any implementation in the field. The City shall not be responsible for any errors and/or omissions on these plans.
6. The contractor shall have all utilities verified on the ground prior to any construction. Call (811) at least two working days in advance. The owner and his/her engineer shall be contacted immediately if a conflict exists.
7. Any structure and/or obstruction which requires removal or relocation relating to this project shall be done so at the developer's expense.
8. Bacteriological (Coliform and Iron Bacteria) test samples will be taken by the City (or FMWC, VW or TCW when served by that purveyor) and paid for by the contractor, except for Capital Improvement Projects (CIP) which shall be paid for by the City.
9. Water mains shall have a minimum cover of 36 inches from paved final grade in improved right-of-way and improved easements, and a minimum of 48 inches in unimproved right-of-way and unimproved easements.

10. Pipe for water mains shall be ductile iron conforming to Section 7-09 of the Standard Specifications, Class 52 with tyton or approved equal joints. Pipe shall be cement lined in accordance with A.S.A. Specification A 21.4-1964.
11. Connections to existing water mains typically shall be wet taps through a tapping tee and tapping valve and shall be made by a city approved contractor. The tapping sleeve shall be Romac SST all stainless steel tapping sleeve or approved equal. A two-piece epoxy coated or ductile iron tapping sleeve may be used on ductile iron pipe, when the tap is smaller than the water main size i.e. 6 inch tap on 8 inch pipe. The City (or FMWC, VW or TCW when served by that purveyor) shall approve the time and location for these connections.
12. All water mains and appurtenances shall be hydrostatically tested at 200 psi in accordance with Standard Specification 7-09.3(23). Pressure testing shall not be performed until satisfactory purity samples have been received, except when new water mains are installed independently from the water system piping.
13. Fire hydrants shall be installed in accordance with City Standard Detail 03.05.01 and as directed by the City of Puyallup Fire Code Official.
14. Valve marker posts shall be installed where valve boxes are hidden from view or in unpaved areas. The installation shall be in accordance with City Standard Detail 03.01.02.
15. Resilient seated wedge gate valves shall be used for 10-inch mains and smaller. Butterfly valves shall be used for mains greater than 10 inches.
16. Pipe fitting for water mains shall be ductile iron and shall be mechanical joint conforming to AWWA Specification C111-72.
17. Water main pipe and service connections shall be a minimum of 10 feet away from building foundations and/or roof lines.
18. Where a water main crosses the Northwest Gas pipeline, the water line shall be cased with PVC pipe a minimum of 10 feet beyond each side of the gas line easement. Contact Williams Northwest Pipeline before the crossing is made.
19. Trenching, bedding, and backfill for water mains shall be installed in accordance with City Standard Detail 06.01.01.
20. All commercial and industrial developments, irrigation systems, and multi-family water service connections shall be protected by a double check valve assembly or a reduced pressure backflow assembly as directed by the City (or FMWC, VW or TCW when served by that purveyor) conforming to City Standard Details 03.04.01, 03.04.02, and 03.04.03.
21. Any lead joint fitting disturbed during construction shall be replaced with a mechanical joint fitting at the contractor's expense.
22. When hydraulic fire flow modeling is required for a project, the City will issue a permit. The hydraulic modeling criteria is based on the projected 2030 water demand, while maintaining a minimum system pressure of 20 pounds per square inch and a maximum velocity of 10 feet per second.

23. When filling a new water main for purity with highly concentrated chlorine water, that “super” chlorinated water cannot sit inside the new water main for greater than 5 days.
24. When using a fire hydrant for non-firefighting purposes, a city hydrant meter must be used. Coordinate the acquisition of the hydrant meter with the City’s Utility Billing Division at Puyallup City Hall. A city approved backflow protection assembly shall be installed by the person requesting use of a fire hydrant. The assembly shall be accompanied by a current backflow assembly test report. The test report shall be available at the site for the duration of the hydrant use.