

SECTION 400 SANITARY SEWER SYSTEM

The design of sanitary sewers shall be in conformance with the applicable sections of the State of Washington, Department of Ecology manual, Criteria for Sewage Works Design, revised August 2008, as there after; and 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Department of Transportation and American Public Works Association, Washington State Chapter, latest edition, unless superseded or amended by the City of Puyallup City Standards for Public Works Engineering and Construction (hereinafter referred to as the “City Standards”).

401 Sanitary Sewer System Design Criteria

The following additional design requirements shall also apply:

1. All public sanitary sewer lines shall be 8-inch-minimum diameter. All lines shall be to the minimum size as indicated in the City's Comprehensive Plan.
2. All sewer pipe shall be PVC, Polypropylene, or Ductile Iron. PVC sewer pipe shall conform to ASTM D-3034, SDR35 for pipe sizes 15-inch and smaller and ASTM F679 for pipe sizes 18- to 27-inch, ductile iron pipe shall be Class 51 or greater unless otherwise noted., 12-inch through 30”-inch Polypropylene Pipe (PP) shall be dual walled, have a smooth interior and exterior corrugations and meet WSDOT 9-05.24(2). It shall meet or exceed ASTM F2736. 36-inch through 60-inch PP pipe shall be triple walled and meet WSDOT 9-05.24(2). It shall meet or exceed ASTM F2764. PP shall have a minimum pipe stiffness of 46 pii when tested in accordance with ASTM D2412. Testing shall be per ASTM F1417.
3. All sewer lines shall be designed and constructed to give mean velocities, when flowing full, of not less than 2.0 feet per second. The following minimum slopes should be provided:

Sewer size <u>(inches)</u>	Minimum slope <u>(percent)</u>
8	0.40
10	0.28
12	0.22
14	0.17
15	0.15
16	0.14
18	0.12
21	0.10
24	0.08
27	0.07
30	0.06
36	0.05

4. Commercial Developments:
The City may require specific monitoring facilities to be installed. This will allow inspection, sampling, and flow measurement of the building sewer and/or internal drainage system. This shall include but not limited to such devices as sampling tees, sampling manholes, industrial wastewater monitoring stations, flow meters and flume vaults. Contact Public Works Collection Division at (253) 841-5505 to determine specific requirements for the facilities to be constructed.

Puyallup Municipal Code 14.06.082

Monitoring - The City may require, to be provided and operated at the user's own expense, monitoring facilities to allow inspection, sampling and flow measurement of the building sewer and/or internal drainage system. There shall be ample room in or near such sampling manhole or facility to allow accurate sampling and preparation of samples for analysis. The facility, sampling and measuring equipment shall be maintained at all times in a safe and proper operating condition at the expense of the user. Whether constructed on public or private property, the sampling and monitoring facilities shall be provided in accordance with the City's requirements and all applicable local construction standards and specifications.

5. For commercial developments in which sources of grease and/or oils may be introduced to the City's sanitary sewer system, a City approved grease interceptor shall be installed downstream from the source.
6. Side sewers shall be installed from the City sewer main to 15 feet beyond the property line at all building sites and shall be a minimum of 6 inches in diameter with a 0.02 foot per foot minimum slope. The depth at the property line shall be a minimum of 5 feet.
7. A separate and independent side sewer from the public main to all building sites shall be provided for each building. A cleanout shall be installed on side sewer lines at the property line or easement line.
8. Manholes shall be installed at a maximum spacing of 400 feet.
9. All public sanitary sewer lines shall end with a manhole; cleanouts will not be allowed.
10. The minimum design velocity shall be 2 feet per second flowing full unless directed otherwise.
11. Sewer lines shall have a 0.1 foot drop through manholes from inlet invert to outlet invert.
12. Manholes shall be installed at all junctions of two (2) or more connecting sanitary sewer pipes and at changes of direction, slope, and/or pipe size.
13. Connection of side sewer to main line shall be with a 'tee'.
14. Easements shall be a minimum of 40-feet wide. No building structures shall be allowed within easements.
15. The City requires that all new construction provide a new sanitary sewer service all the way to the main. Redevelopment project shall utilize the existing trench where possible.
16. The City Sewer Department must conduct a visual inspection of a previously used side sewer to determine if that side sewer can be used again. It is the responsibility of the property owner to expose the line as necessary for that inspection. The City reserves the right to request video inspection of the side sewer to assist in its determination.
17. Residential Sanitary Sewer Pump and Pressure line systems:
 - a. Only "Environment One" Packaged Grinder Lift Station Model # 2010 (<http://www.eone.com>) or approved equal shall be used.
 - b. A gravity sewer line with clean out shall be installed to each building site, with the pressure line installed in accordance with City of Puyallup Standard Detail 04.05.01.

- c. Each building site shall have its own Grinder Pump Station and discharge to its own gravity side sewer connection.
- d. Grinder Pump Stations shall be installed within 15 feet of the building. The pump station shall be accessible for maintenance and repair. Finished grade shall slope away from the pump station. The pump station is not to be located within low areas that may pond. Fences, plants, or any other object shall not hinder the maintenance or repair of the pump station.
- e. The property owner shall retain ownership and maintenance of the Grinder Pump Station and associated lines to the property line, gravity side sewer clean-out, or where the pressure line discharges to a City of Puyallup owned gravity sewer clean-out or structure.
- f. The property owner shall be responsible for any sewer backups or spills due to power or pump failure.
- g. See Grinder Pump Installation Details and Pressure Line to Gravity Line Side Sewer Connection and Clean-out Details.

402 Wastewater Quality Requirements

Discharge of objectionable materials of any sort is prohibited by the Puyallup Municipal Code 14.06.021, 14.06.022, 14.06.023, and 14.06.024. "Objectionable material" includes rubbish, dead animals, brush, concentrations of grease and oils, anything over 100°F in temperature, stormwater, septic tank pumping, and other matter not normally and customarily discharged into the sanitary sewer system. Normal material entering a toilet, kitchen sink, and wash trays is the only type of material permitted to enter a sewer or sewer treatment plant without pretreatment.

Commercial and industrial operations which discharge into the City's sanitary sewer system shall be responsible for compliance with the requirements of the Washington State Water Pollution Control Act (RCW 90.48) including application for State Waste Discharge Permit (WAC 173-216) and Submission of Plans and Reports for Construction of Wastewater Facilities (WAC-240). City of Puyallup building permits may be issued only upon proof of submittals to the Washington State Department of Ecology. Examples are car washes, automobile service stations, paint shops, and chemical processing of hazardous materials. Industries which discharge domestic wastewater or wastewater similar in character and strength to domestic wastewater which does not have the potential to adversely affect performance of the treatment system only require a permit from the City. Examples are hotels, restaurants, non-industrial laundries, and food preparation. In both cases the City regulates the effluent into the system.

402.1 Effluent Requirements

Effluent discharged into the City's sanitary sewer system shall not exceed 100 mg/l oil and grease if discharged to the sanitary sewer. The use of grease interceptors and/or oil/water separators shall be required when the effluent is expected to be greater than the 100 mg/l maximum.

402.2 Oil/Water Separators

Oil/water separators are required when petroleum-derived waste is to be discharged into the sanitary sewer in which the effluent is expected to be greater than the 100 mg/l maximum.

1. The business owner shall provide three (3) sets of specifications and plans for the project. The plans shall bear the stamp of a Washington State licensed professional engineer.

2. The plans and specifications shall illustrate property boundaries, piping, and drainage details, and connections to the sanitary or storm sewer. Detail and elevation drawings of the oil/water separator shall be supplemented with design calculations to show capacity, detention time, and removal efficiencies.
3. Effluent from oil/water separators shall not exceed 100 mg/l oil and grease if discharged to the sanitary sewer. When effluent discharge is to the storm sewer, there shall be no visible oil sheen allowed. The oil and grease discharge shall average less than 10 mg/l daily and at no time shall exceed 15 mg/l.
4. The applicant shall be responsible for compliance with the requirements of the Washington State Water Pollution Control Act (RCW 90.48) including application for State Waste Discharge Permit (WAC 173-216) and Submission of Plans and Reports for Construction of Wastewater Facilities (WAC-240). A City of Puyallup building permit may be issued upon proof of submittals to the Washington State Department of Ecology.
5. Separators installed in paved areas shall comply with HS-20 loading standards.
6. The separator shall be so installed and connected such that it shall be easily accessible for inspection, cleaning, and removal at all times. No sanitary wastewater shall be conveyed to the separator. It shall be placed as close as practical to the service area. Manhole covers shall be gas tight and have a minimum opening of 24 inches in diameter.
7. Plumbing/piping shall be constructed to establish "parallel flow" (90° to the tank baffle) through the separator. No radius, bend, or elbow shall be allowed in the inlet pipe for a minimum of 10 feet or 20 pipe diameters upstream of the separator, whichever is greater (e.g., where the inlet pipe = 6 inches, then 6 inches x 20 = 120 inches = 10 feet).
8. A valve shall be located in the discharge piping, a maximum of 10 feet from the separator. This valve shall be closed when cleaning or servicing the device. Any pump mechanism shall be installed downstream of the separator to prevent oil emulsification. A 'tee' connection shall be installed in the discharge piping to provide for sample collection.
9. All separators shall be filled with clean water before use.
10. The design engineer shall provide the Engineering Services Staff with a letter of inspection certifying that the installation was performed in accordance with all regulations and the approved plan.
11. Final inspection is required by the Engineering Services Staff prior to connection to the sanitary or storm sewer.
12. The property owner shall retain ownership of the separator and side sewer lines and shall be responsible for their operation and maintenance. A service/maintenance record shall be kept on the premises at all times and shall be immediately available to the Engineering Services Staff upon request.
13. The property owner shall report immediately to the City's Public Works Division any spill, surcharge, bypass, or mechanical fault or failure which interrupts or otherwise reduces the capacity or removal efficiency of the separator. Please call

253-841-5505 during regular business hours or 253-770-3336 after hours.

402.3 Grease Interceptors

Grease interceptors are required for all commercial facilities involved in food preparation. The design of grease interceptors shall be in accordance with the Uniform Plumbing Code currently adopted by the City of Puyallup, City Standard Details and the following design criteria:

1. The business owner shall provide three (3) sets of specifications and plans for the project. They shall bear the stamp of a Washington State licensed professional engineer.
2. The plans and specifications shall illustrate property boundaries, piping/drainage details, and connections to the sanitary sewer. Detail and elevation drawings of the grease interceptor shall include sizing calculations in accordance with the Uniform Plumbing Code currently adopted by the City of Puyallup.
3. Venting of the interceptor shall be in accordance with the uniform plumbing code currently adopted by the City of Puyallup.
4. Effluent from grease interceptor shall not exceed 100 mg/l fat, oil, and/or grease discharged to the sanitary sewer.
5. Grease interceptors installed in paved areas shall comply with HS-20 loading standards.
6. The grease interceptor shall be so installed and connected such that it shall be easily accessible for inspection, cleaning, and removal at all times. Manhole covers shall be gas tight and have a minimum opening of 24 inches in diameter.
7. No sanitary wastewater shall be conveyed to the separator. A separate side sewer shall be required to carry sanitary waste to the main. It shall be placed as close as practical to the service area..
8. Plumbing/piping shall be constructed to establish “parallel flow” (90° to the tank baffle) through the grease interceptor. No radius, bend, or elbow shall be allowed in the inlet pipe upstream of the interceptor for a minimum of 10-feet, or 20-pipe diameters, whichever is greater. (e.g., where the inlet pipe = 6-inches, then 6-inches x 20 = 120-inches = 10-feet).
8. A ballcentric valve shall be located in the discharge piping at a maximum of 10-feet from the grease interceptor. This valve shall be closed when cleaning or servicing the device. Any pump mechanism shall be installed downstream of the interceptor to prevent fat, oil, and grease emulsification. A ‘tee’ connection shall be installed in the discharge piping to provide for sample collection.
10. All grease interceptors shall be filled with clean water before use.
11. The design engineer shall provide the Engineering Services Staff with a letter of inspection certifying that the installation was performed in accordance with all regulations and the approved plan.

12. Final inspection is required by the Engineering Services Staff prior to connection to the sanitary sewer.
13. The property owner shall retain ownership of grease interceptor and side sewer lines and shall be responsible for their operation and maintenance. A service/maintenance record shall be kept on the premises at all times and shall be immediately available to the Engineering Services Staff upon request.
14. The property owner shall report immediately to the Engineering Services Staff, any spill, surcharge, bypass, or mechanical fault or failure which interrupts or otherwise reduces the capacity or removal efficiency of the grease interceptor.

403 Design Criteria Specific to Short Plats

Sewers or septic tanks: The proposed short plat shall be reviewed for potential sewer or septic tank adequacy. If known local conditions exist which may affect future building sites, these conditions shall be stated on the face of the short plat.

404 Sanitary Sewer Plan Requirements

The following requirements shall be shown on the plans:

- Plan and profile in accordance with Section 2.0 herein
- Sanitary sewer pipe including locations, length, material, slope, depth, and size
- Manholes including location, type, and rim and invert elevations. All new manholes shall be numbered consecutively and all existing manholes shall be referenced to the City's current numbering system.
- Detail any inside drop manhole connections per City Standard Details. 04.01.02 and 04.01.03.
- Identify any possible utility conflicts.
- Provide stationing and reference points.
- All public sewer main lines shall be located within roadway rights-of-way or easements.
- Location and stationing from downstream manholes shown
- Perpendicular connection of side sewers to the main lines
- Proper reference and layout for saw cutting and patching existing streets
- An all-weather maintenance access, including typical cross section of said access roads
- Existing septic tanks and drainfields

405 Sanitary Sewer Plan Notes

The following applicable notes shall also be shown on the plans.

SANITARY SEWER 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").
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 and the Engineering Services Staff 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 require removal or relocation relating to this project shall be done so at the developer's expense.
8. Minimum grade on all 4 inch residential side sewers shall be 2 percent and 6 inch commercial side sewers shall be 1 percent; maximum shall be 8 percent. All side sewers shall be 6 inches within City right-of-way.
9. Side sewers shall be installed in accordance with City Standard Nos. 04.03.01, 04.03.02, 04.03.03 and 04.03.04. Side sewer installation work shall be done in accordance with the Washington Industrial Safety and Health Act (WISHA).
10. All sewer pipe shall be PVC, Polypropylene, or Ductile Iron. PVC sewer pipe shall conform to ASTM D-3034, SDR35 for pipe sizes 15-inch and smaller and ASTM F679 for pipe sizes 18- to 27-inch, ductile iron pipe shall be Class 51 or greater unless otherwise noted., 12-inch

- through 30"-inch Polypropylene Pipe (PP) shall be dual walled, have a smooth interior and exterior corrugations and meet WSDOT 9-05.24(2). It shall meet or exceed ASTM F2736. 36-inch through 60-inch PP pipe shall be triple walled and meet WSDOT 9-05.24(2). It shall meet or exceed ASTM F2764. PP shall have a minimum pipe stiffness of 46 pii when tested in accordance with ASTM D2412. Testing shall be per ASTM F1417. Trenching, bedding, and backfill shall be in accordance with City Standard No. 06.01.01. Minimum cover on PVC and PP pipe shall be 3.0 feet. Minimum cover on ductile iron pipe shall be 1.0 foot.
11. Sanitary sewer manhole frames and covers shall conform to City Standard Nos. 06.01.02 and 06.01.03. Covers shall be marked "SEWER," with 2-inch raised letters. Minimum weight of the frame shall be 210 pounds. Minimum weight of the cover shall be 150 pounds.
 12. Sanitary sewer manholes shall conform to City Standard Nos. 04.01.01, 04.01.02, 04.01.03 and 04.01.04. All manholes shall be channeled for future lines as specified on these plans. Manhole steps and ladder shall conform to Standard No. 06.01.04.
 13. Sanitary sewer pipe and side sewers shall be 10 feet away from building foundations and/or roof lines.
 14. No side sewers shall be connected to any house or building until all manholes are adjusted to the finished grade of the completed asphalt roadway and the asphalt patch and seal around the ring are accepted.
 15. All public sanitary sewer mains shall be video inspected prior to acceptance by the City of Puyallup Water Collection Division.
 16. After all other utilities are installed and prior to asphalt work, all sanitary pipes shall pass a low pressure air test in accordance with Section 7-17 of the "Standard Specifications". Products used to seal the inside of the pipe are not to be used to obtain the air test.
 17. For commercial developments in which sources of grease and/or oils may be introduced to the City sanitary sewer system, a City approved grease interceptor shall be installed downstream from the source.
 18. All sanitary sewer mains shall be mandrelled.