

Side Sewer Installation Handbook



City of Spokane Side Sewer Installation Handbook

Updated August (include Oct. rev.) 2025

The purpose of the Handbook is to provide regulations and specifications relative to materials, design, construction, and inspection policies for private side sewers constructed of pipe six inches (6") diameter or less within the City of Spokane's "Sewer Service Boundary". The Handbook applies to new installations as well as repairs, extensions, replacement and abandonment of existing sewers.

The specifications and regulations provided herein are not all-inclusive and additional requirements may be imposed by the City of Spokane Wastewater Department if deemed necessary. In the event these regulations do not specifically or completely cover any given situation, the City of Spokane Wastewater Department Director ("Director") shall have the final decision-making authority.

The specifications contained within shall not be construed as imposing upon the City of Spokane any liability or responsibility for the design, construction, operation or maintenance of any portion of the private sewer system. It is expected that all installers in the City of Spokane will exercise good judgment and workmanship.

PLEASE NOTE:

- **Working in a trench is inherently dangerous and trenches for sewer lines are usually deeper than other utilities. In addition, water, electrical, fiber optics, and natural gas service lines may be in close proximity to the work area. Homeowners performing the work themselves are advised to consider the risk and the cost to provide a safe work environment when evaluating their ability to install their own private sewer line.**

REQUIREMENT TO HAVE UNDERGROUND UTILITIES LOCATED PRIOR TO DIGGING

- At least 3 business days before any excavation, the installer is required to call for utility locate marks through any of the following methods:
 - Call 811
 - Call 1-800-424-5555
 - Go to www.callbeforeyoudig.org

More information about this service can be found at the website listed above. This service is free to homeowners.

TABLE OF CONTENTS

SIDE SEWER CONSTRUCTION

Contents

DEFINITIONS.....	1
PERMIT REQUIREMENTS	3
SCHEDULING AN INSPECTION	4
INSPECTION REQUIREMENTS	4
ACCEPTABLE MATERIALS FOR SIDE SEWERS.....	6
SOLVENT CEMENT (GLUE) POLICY & SPECIFICATIONS	7
SIDE SEWER INSTALLATION SPECIFICATIONS	8
PIPE FITTINGS & CONNECTIONS	10
CONNECTING TO THE SIDE SEWER STUB.....	11
CONNECTING TO THE BUILDING DRAIN.....	11
TRANSITION COUPLINGS & FITTINGS	12
BACKFILLING AND COMPACTING THE TRENCH.....	12
DRY SIDE SEWERS.....	12
CLEANOUTS.....	13
BACKWATER VALVES.....	14
INSTALLING SIDE SEWERS USING THE BORING METHOD.....	14
TESTING REQUIREMENTS AND PROCEDURE.....	15
SEPTIC TANK/WASTE WATER RECEPTACLE ABANDONMENT	16
PRIVATE LOW PRESSURE PUMP SYSTEMS.....	16
GREASE INTERCEPTORS.....	19
INDUSTRIAL INTERCEPTORS (CLARIFIERS) AND SEPARATORS:	20
OIL / WATER SEPARATORS	21
REUSING EXISTING SIDE SEWER SERVICES.....	22
BUILDING STRUCTURE CONFLICTS WITH EXISTING SIDE SEWERS.....	22
ABANDONMENT OF SEWER SERVICE.....	23
ADMINISTRATIVE	24
APPENDIX A - STANDARD PLANS	26
ATTACHMENT A: BELLY AGREEMENT.....	38

DEFINITIONS

The definitions provided below are a reference for Spokane Municipal Code (SMC) Chapter 13.03... also to provide clarification of terms relative to the design and construction of private side sewers and is not an all-inclusive list. Also, included in this section are definitions which are not from the Chapter 13.03 but are deemed applicable to the design and construction of side sewers.

- a. "ABS" refers to Acrylonitrile-Butadiene Styrene pipe.
- b. "BUILDING DRAIN" is that part of the lowest piping of a drainage system which receives the wastewater discharge from a structure or building to a point two feet outside the outer face of a structure, wall or foundation and conveys it to the sewer or an on-site sewage disposal system.
- c. "BUILDING SEWER" is that part of drainage piping from the building drain to a sewage container or public sewer.
- d. "DIRECTOR" means the Director of the City of Spokane Wastewater Department, or his/her designee. SMC 13.03.0121
- e. "DRY SIDE SEWER" (also referred to as "double plumbing") is a sewer service line installed on properties but not connected to the building drain to facilitate future connection to a public sewer once the public sewer becomes available. Typically these are properties with on-site sewage disposal systems (Septic Tanks).
- f. "FLOOD-LEVEL RIM" is the top surface of a fixture, such as a floor drain, shower or other drain, over which excess liquid would spill.
- g. "L & I". Washington State Department of Labor & Industries.
- h. "ON-SITE SEWAGE DISPOSAL SYSTEM" is any system or combination of piping, treatment, or other facilities that stores, treats and/or disposes of sewage and effluent on the property where it originates, or on adjacent or nearby property under the ownership of the user of the system or in which the user has a recorded interest for the purpose of maintaining the system on such other property. These systems include, but are not limited to, septic tank disposal systems and cesspools.
- i. "PRIVATE SEWER" is a sewer not owned or maintained by a public authority.
- j. "PVC" refers to Polyvinyl Chloride plastic pipe.
- k. "SIDE SEWER" is a sewer, not directly controlled or maintained by a public authority, which begins approximately two feet outside the outer face of a structure wall or foundation, conveying wastewater from the building(s) drain(s) to a public sewer or private sewer. The term side sewer also includes any double plumbing dry side sewer and temporary sewer connections. The property owner is responsible for the maintenance and repair of the entire side sewer, including the portions located within the public right-of-way.
- l. "SIDE SEWER STUB" is that portion of a side sewer, located between the public sewer line and a point near the property line of the premises to be served. After connection has been made to the premises, the

side sewer stub shall become part of a side sewer and shall be maintained by the property owner to the point of entry into the public sewer.

- m. “SRHD” The Spokane Regional Health District.
- n. “SMC” Spokane Municipal Code

PERMIT REQUIREMENTS

A Sewer Connection Permit is required to connect, construct, repair, alter, extend or abandon any sewer, dry side sewer, manhole tap, mainline tap and connection of inside and outside dry side sewer connections. A Sewer Connection Permit is required whenever wastewater is directed or redirected into the regional sewer system even if no construction is performed to accomplish this action. [SMC 17G.101.100]. In general, a sewer connection permit must be associated with an issued building permit for both commercial and residential applications whether in the City or outside City limits.

- **The permit application may be downloaded from the City's website at <https://my.spokanecity.org/sewer-water-permit-application-2024-04-29.pdf> or acquired at City Hall.**

The sewer connection permit may be issued to either the property owner or a contractor licensed by the State of Washington to install building sewers. The property owner may contact L&I at 1-800-647-0982 or visit their website at www.LNI.wa.gov/tradelicensing for license information about a contractor or general information about hiring a contractor. If the property owner is going to do the work themselves, they must agree to have an on-site consultation with one of our inspectors prior to doing the work. A property owner is not permitted to do work within the public right-of-way.

- **Sewer permits are valid for 12 months from the date of issuance.**
- **If work is done without first obtaining a permit a fee will be assessed as well as an administrative fee SMC 08.02.031**

In addition to the required sewer permits, the following permits issued by other departments or agencies may be required:

- **STREET OBSTRUCTION PERMIT** issued by the jurisdiction having authority over the public right-of-way. Required when the trench, materials, spoil pile or equipment is located in the public right-of-way.
- **PLUMBING PERMIT.** Changes to existing plumbing within the structure or the addition of new fixtures requires a Plumbing Permit issued by the appropriate department of the jurisdiction having authority.
- **ELECTRICAL PERMITS FOR PUMPING SYSTEMS:** Sewer installation work involving electric sewer pumps will require an Electrical Permit and inspection by the State of Washington Department of Labor and Industries.

A copy of these permits, if required, shall be on site at the time of the sewer connection inspection.

SCHEDULING AN INSPECTION

All side sewer construction, including new sewers, dry side sewers, repairs, replacements, alterations, extensions or abandonment of existing sewers **MUST BE INSPECTED**. The sewer connection permit allows for one (1) inspection not to exceed thirty minutes. Additional inspection time or additional inspection visits may result in the billing of additional fees. The Director reserves the right to set and/or change inspection times.

TO SCHEDULE A SEWER INSPECTION: Call the sewer inspector and number that is listed on the top of the sewer permit. If you are unable to reach the inspector listed on the permit, please contact the City of Spokane Wastewater Department at **(509) 625-7900** during normal business hours. Please be prepared to provide the jobsite address, the name of the installer and the permit number.

- a minimum of one working days' notice is required when scheduling inspections performed by the City of Spokane Wastewater Department.

CANCELLING OR POSTPONING A SCHEDULED INSPECTION. The installer **MUST** call the assigned inspector as shown on permit a **minimum of one hour prior to the scheduled inspection time**. Failure to provide adequate notice may result in assessment of a re-inspection fee. (SMC 08.02.037)

SAME DAY INSPECTIONS shall only be permitted in situations where a safety hazard or a public health issue exists. Inspection time is dependent upon inspector availability.

REQUESTS TO HAVE INSPECTIONS OCCUR BEFORE OR AFTER NORMAL BUSINESS HOURS are subject to the approval of the Director and inspector availability. An overtime-hourly rate will be assessed to the installer. There shall be a one (1) hour minimum charge, with additional one-half (1/2) hour increments assessed as appropriate. The time assessed shall include travel time to or from the City of Spokane Wastewater Management Building. On behalf of the Wastewater Director, through the side sewer inspector, shall inform the installer if the sewer inspection is subject to overtime fees.

WEEKEND OR HOLIDAY INSPECTIONS. Requests for weekend or holiday inspections are subject to the approval of the Director and inspector availability. To schedule a weekend or holiday inspection, the installer must contact the City of Spokane Wastewater Department at **(509) 625-7900** at least 24 hours in advance and on a normal work day. **WEEKEND OR HOLIDAY INSPECTIONS MAY NOT BE SCHEDULED DIRECTLY WITH THE INSPECTOR.** Additional fees for weekend or holiday inspections shall be paid at the time of permit issuance prior to the inspection date. The inspection will not be scheduled until the fee is paid. The installer may cancel the inspection before 5:00 p.m. of the preceding normal workday. The extra inspection fee is non-refundable if inspection is not canceled within this time frame. Any weekend or holiday inspections requiring multiple visits to the job site or exceeding four (4) hours shall be billed additional fees. Weekend or holiday inspection requests that cannot be made in advance are subject to the Director's approval and inspector availability.

EMERGENCY REPAIRS: In emergency situations where it is not feasible for an installer to obtain a permit in advance of the work, the installer shall obtain a permit for the work the next business day. If the work is being done during normal business hours, the installer must immediately contact the City of Spokane Wastewater Department and request an inspection. If the work is being performed outside of normal business hours, the installer must leave the work exposed, providing necessary safety precautions in accordance with Labor and Industries guidelines, and schedule for inspection the next business day.

INSPECTION REQUIREMENTS

- **All trenches must be shored, sloped or shielded as per Washington State Department of Labor and Industries (“L & I”) standards before the sewer inspector may enter the trench. The inspector may refuse to complete an inspection of work within an unsafe trench until a representative from "L & I" determines the trench meets their safety regulations.**

Sewer permits shall be available at the job site and readily accessible. The installer shall be present at the job site during the inspection. The inspector may refuse to perform the inspection if the permits and/or installer are not at the job site.

All costs incurred to remedy non-compliance of these regulations shall be borne entirely by the installer. Follow-up inspections shall be subject to call back inspection charges.

BEFORE THE TRENCH MAY BE BACKFILLED, the sewers must be inspected and accepted as non-deficient unless specifically authorized by the Director. The sewer line must be inspected from the point of connection to the building drain(s) to the connection point to the public sewer. Work performed at the connection points shall also be inspected. Sewers installed and covered without authorization may be subject to the following:

- Exposure and inspection of the sewer or portion thereof.
- Video inspection at the installer's expense.
- Pipe testing for grade, leakage and contamination at the installer's expense. The installer shall be responsible for payment of additional inspection time.

ADDITIONAL INSPECTION FEES MAY BE ASSESSED TO THE INSTALLER FOR:

- Re-inspection due to violations of the Sanitary Sewer Ordinance and/or these regulations.
- Multiple inspections.
- Follow-up inspections.
- Inspections exceeding the thirty-minute time allotment.
- Failure to notify the inspector at least one hour in advance of the scheduled inspection time that you won't be ready for the inspection.
- Failure to cancel or reschedule the inspection at least one hour in advance of scheduled time.
- Not having the approved plans on site and readily available to the inspector.
- The sewer connection permit and/or installer not present at the worksite during the inspection.
- Re-testing of work that has failed initial tests.

ACCEPTABLE MATERIALS FOR SIDE SEWERS

<p>Gravity Sewers installed by excavation method</p>	<p>PVC Pipe & Fittings</p>	<p>ASTM D 3034. Either SDR-26 or SDR 35, but fittings installed within the public right-of-way must be SDR-26. Integral-bell gasketed joints. Rubber gaskets shall be factory installed conforming to ASTM F 477. Pipe joints shall conform to ASTM D 3212.</p>
	<p>Ductile iron</p>	<p>Pipe conforming to ASTM A746. Cement-mortar lined. Bell and spigot type with push on joints conforming to ANSI A21.11. Exterior coating meeting ANSI A21.51</p>
	<p>Vitrified Clay Sewer Pipe & Concrete Pipe</p>	<p>Pipe conforming to ASTM C700. Joints shall be compression joints in accordance with ASTM C425. Pipe must conform to City of Spokane 2018 General Special Provisions for Private Contracts (updated 10-14-19)</p>
<p>Gravity sewers installed by boring method</p>	<p>PVC Pipe & Fittings</p>	<p>ASTM D 3034. Either SDR-26 or SDR 35. Solvent-weld Joints conforming to ASTM D-2855. Pipe solvent cement shall conform to ASTM D-2564. Solvent weld primer meeting ASTM F-656 is required when solvent weld PVC is used.</p>
<p>High Density Polyethylene (HDPE) 1-1/4" – 6" dia.</p>	<p>Must be manufactured in accordance with ANSI/AWWA C901 and meet ASTM D3035, ASTM F714 SDR 11.as a minimum. Joints shall be Standard Mechanical HDPE couplings or fusion welding conforming to ASTM D3261 and debanding of any extrusions into the pipe interior. HDPE is allowed on approval of the Director.</p> <p>Joining of plain-end pipes shall be by butt fusion per PPI TR-33. Inserted Stiffeners are required when using mechanical couplings. No inside extrusion of the welded joint is allowed that can cause flow restriction (debanding required). Min. wall thickness SDR11. Manufactured in accordance with ANSI/AWWA C901, ASTM D3035.</p>	

<p>Pressurized Sewers</p>	<p>Ductile Iron >3” dia.</p> <p>PVC Pipe / Schedule 80 1-1/4” to 3”</p> <p>High Density Polyethylene (HDPE) 1-1/4” – 6” dia.</p>	<p>D.I. Pipe for pressure sewers shall conform to ANSI/AWWA C150/A21.51. Joints and method of joint restraint shall be determined by anticipated pressure conditions must meet City of Spokane (CoS) Standard Specs Div. 7 (GSP) or as approved by the Director.</p> <p>ASTM D 1785 meeting Class 200 with fittings per ASTM D 2467 and D 2467 is acceptable. Pipe must be solid-wall. Cellular core pipe is not acceptable.</p> <p>Must be manufactured in accordance with ANSI/AWWA C901 and meet ASTM D3035, ASTM F714, DR 11 as a minimum. Joints shall be Standard Mechanical HDPE couplings or fusion welding conforming to ASTM D3261 and require debanding of any extrusions into the pipe interior. HDPE is allowed on approval of the Director Joining of plain-end pipes shall be by butt fusion per PPI TR-33. Inserted Stiffeners are required when using mechanical couplings. No inside extrusion of the welded joint is allowed that can cause flow restriction*. Min. wall thickness DR11. Manufactured in accordance with ANSI/AWWA C901, ASTM D3035.</p>
----------------------------------	---	---

* debanding is required as industry generally is accomplished on 3.5” and larger (as of 2023), but shall be done on all sizes as technology becomes commercially available.

NOTE: All non-metallic pipe shall be buried with 12 ga. copper insulated tracer wire taped to pipe at 10’ intervals and protruding to surface at foundations, cleanouts, end of pipe markers, force main markers and manholes for utility locating.

SOLVENT CEMENT (GLUE) POLICY & SPECIFICATIONS

Solvent welded pipe & Fittings are allowed only in the following circumstances:

- For cleanout risers.
- When connecting ABS pipe to PVC pipe with a solvent weld transition coupling.
- When connecting PVC pipe to ABS-type backwater valve.
- On straight-run bored sections of pipe.
- On pressure sewer lines.

Approved cements for specific material connections:

- PVC to PVC; Glue meeting ASTM D-2564, NSF and UPC approved. Must be applied with purple PVC Solvent Weld Primer meeting ASTM F-656. Must be installed in conformance with ASTM D-2855.
- ABS to ABS; Glue meeting ASTM D-2235, NSF and UPC approved. Must be installed in conformance with ASTM D-2661.
- ABS to PVC with glue transition coupler (for use with ABS to PVC glue-type transition couplers); Glue meeting ASTM D-3138 (green in color), NSF and UPC approved. Viscosity minimum 700 CPS. Must be installed in conformance with ASTM D-2661.

SIDE SEWER INSTALLATION SPECIFICATIONS

Installation of all acceptable pipe, whether gasket or solvent weld, shall be in strict accordance to the City of Spokane specifications and in strict accordance with manufacturer's specifications and recommendations as specified by the following ASTM numbers. Where discrepancies between specifications occur, the Director shall make a determination of which requirement to follow:

- D2321 Procedure for installation of PVC plastic pipe.
- D2855 Procedure for making solvent cement joints.
- D2235 ABS solvent cement specifications.
- D2321 Underground Installation for Sewers

The installer shall field locate the point of connection (sewer stub or dry side sewer) and confirm the elevation prior to any other excavation. The installer shall make a reasonable attempt to confirm that the sewer stub and/or dry side sewer is unobstructed and has appropriate grade.

The installer is responsible for connecting ALL wastewater drains to the sewer existing and newly installed. Floor drains may not be required to be connected to the public sewer if their sole purpose is to receive potable water which emanates from the buildings plumbing system, if allowed by the Uniform Plumbing Codes. It is a violation of the City of Spokane Municipal Code to discharge or cause to be discharged any storm sewage or storm water into a sanitary sewer. SMC 13.03A.0201

BEDDING THE PIPE: (Standard Plans A-1 – A-3) Side sewers and Private sewers shall be laid on a firm bedding throughout the length of the pipe on approved material. Approved bedding material shall be provided and compacted as specified for Pipe Zone in the Standard Plans except that a compacted layer two to six inches thick beneath the pipe, six inches each side of the pipe and six inches over the top of the pipe may be used. Additional bedding may be necessary to protect the pipe during installation and backfilling operations. Bedding material shall not be clay or silty soil or contain organic material such as sod or wood and shall not contain stone larger than 3/4". Because Pea Gravel does not provide stable support, it shall not be used for bedding material.

PIPE GRADE (SLOPE) AND ALIGNMENT: Side sewer pipe shall be installed in smooth alignment which maintains flow velocities and with uniform slope between approved fittings. The minimum slope for 4" & 6" diameter pipe is 1/4 inch/foot (2% grade). With the approval of the Director, gravity sewer pipe may be installed with a minimum slope of 1/8 inch/foot (1% grade) provided the pipe grade is set or checked by utilizing a surveyor's level.

MINIMUM PIPE SIZE: Gravity side sewers serving single family or duplex structures shall be minimum four- inch (4") inside diameter. Side sewers serving more than two (2) single family residential units and ALL commercial structures shall be minimum six-inch (6") inside diameter. Pressure side sewers shall be 1.25" inch minimum diameter if a grinder pump is used and 2" if typical ejector pump is used. Specific pipe diameter should be determined in conjunction with estimated flows and if applicable, the design of the pumping system.

THE TRENCH shall comply with Labor and Industries safety standards. Groundwater must be removed from the trench during the pipe laying process and disposed of on-site in accordance with the Spokane Regional Stormwater Manual Trench width shall be wide enough to insure proper bedding.

METHOD: Sewers may be installed by either open trench installation or by utilizing boring methods. The installer is required to have all appropriate tools and a grade-checking instrument on the job site. All pipes installed by open ditch or boring methods shall maintain proper pipe slopes as defined above.

Where practical, sewer pipe shall be installed in a manner that provides gravity drainage from the building to the public sewer. Gravity flow sewers shall have a minimum of two feet of cover over the top of pipe to surface level *except where* driveways, parking lots, public streets, or where vehicular travel passes over. Where vehicular travel passes over gravity sewers, the pipe shall have a minimum cover of 3.5 feet, unless otherwise provided in City Design Standards. The pipe shall be installed with the bell end upstream (toward the structure). Refer to City Design Standard 4.3 Side Sewers for additional requirements. Pipe shall be installed with markings or letterings readily visible to the inspector.

- Side sewers shall also be installed with a 12 ga. insulated copper tracer wire affixed every 10' along its full length and up to the ground surface, e.g. building foundation, at sewer cleanouts, and other related surface features.

Pressure side sewers shall have a minimum three feet (3') in all areas of cover over top of pipe, and must be installed below water lines. When laying pressure pipe, pipe deflection shall be accomplished in the pipe length, not at the joint. Maximum deflection shall be in accordance with the pipe manufactures recommendations.

Foreign material shall be kept out of pipe and joining surfaces. The installer is responsible for sewer line cleaning which includes cleaning the public sewer main if debris enters the public pipe as a result of their work.

Pipe may be installed through the existing openings of a septic tank in the following manner:

- The septic tank shall be completely pumped and filled and compacted as per State and local sewage container abandonment standards as per Spokane Regional Health District. Pipes placed in this manner must be bedded properly to prevent settlement.
- The pipe must be a straight, continuous piece. No joints are permitted within the tank and Schedule 80 used for this section of side sewer. Ductile Iron and Concrete can be used.

LOCATION: Due to limited accuracy of mapped property lines, provision for safe excavation trench, water main separation distances (Std. Plans A series), *continuation of sewer collector/mains to facilitate side sewers shall be installed in the right of way and extend at least 10 linear feet past the first property line of the last parcel to be served (unless longer distance required otherwise)* in order to accommodate MH installations per City Design Standard 4.3-4 and side sewer alignment. Horizontal alignment of side sewers from the property line to sewer main should generally be perpendicular to the main, when possible, to facilitate utility locates.

In compliance with SMC 13.03, when sewer is being installed adjacent to properties (even if not a part of the project) necessitating the extension of sewer, side sewer stubs must be provided to each of those properties. When parcel areas are greater than ½ acre, a 6" diameter stub shall be provided with the sewer main.

- The side sewer stubs shall be installed deep enough to permit a gravity connection of all sewage facilities on the property, if practicable.
- The property owners shall be contacted for their input regarding preferred side sewer stub locations and needs for future development. Documentation confirming this effort shall be provided to the Development Services Center (cc: Wastewater Management Department). The final location, size, and number of side sewer stubs are subject to approval by the Wastewater Management Department. If no response from the property owner is given within a reasonable time such as 1 month, a 6" diameter stub shall be stubbed within 10 horizontal feet of the downstream-most corner of the property.

Individual side sewers shall be provided separately to each sellable lot regardless of common ownership. Individual side sewers should avoid crossing other parcels to help avoid conflicts, claims, and ambiguities about owner responsibility for maintenance, repair and damages when problems occur on joint/shared side sewers.

Potential Exceptions or Factors to Consider for Individual Side Sewers, Joint Side Sewers and crossing property lines:

- a. Multi-family structures such as duplexes, triplexes, etc. and apartments that share a contiguous structure.
- b. Creation of new lots with inadequate frontage on a right-of-way, such as a Unit Lot Subdivision, subject to the following conditions:
 - a. Individual side sewers shall be located in an easement;
 - b. Joint private sewers shall be located in an easement or shared access/driveway owned and maintained by an Home Owners Association (H.O.A.) or Planned Unit Development (P.U.D.);
 - c. Joint private sewers require authorization from Wastewater Department.
 - d. Placement of a side sewer underneath a driveway is discouraged, but not prohibited.
- c. Lack of an accessible public sewer adjacent to the parcel where physical or geological obstructions exist, or in infill development where extension of the public sewer would be cost-prohibitive, subject to the following conditions:
 - a. Side sewers shall be located in an easement;
 - b. Long connections are subject to additional approvals and connection fees per SMC 13.03.0730.
- d. Extreme topography that makes a direct connection infeasible.
- e. Existing development and lot configurations that make a separate connection impractical or where crossing a property line is unavoidable.
- f. Prevention or correction of a health or safety hazard.

All exceptions shall be approved by the Director and be recorded with the Spokane County Auditor's Office.

PIPE FITTINGS & CONNECTIONS **Refer to the attached Standard Plans**

For gravity side sewers:

- Vertical drops and Angle-downs shall be accomplished using approved fittings and regulation standards.
- All changes of direction shall be made with twenty-two and one-half degree ($22\text{-}1/2^\circ$), eleven and a quarter degree ($11\text{-}1/4^\circ$) or forty-five-degree (45°) bends, wye branch or a combination of wye branch and bends. Ninety-degree (90°) bends are NOT ALLOWED in the flow line.
- Straight and sanitary tees are NOT ALLOWED.
- Stacking fittings in opposing directions (swinging joints) in the flow line are NOT ALLOWED.
- Stacking fittings on a horizontal plane in the flow line is NOT ALLOWED unless a twelve -inch (12") in length minimum spacer pipe is inserted between the fittings (note: a spacer pipe is not required for wye combination connections or for cleanout riser pipe assemblies).
- Stacking fittings on a vertical step not exceeding sixty-eight degrees (68°) utilizing a twenty-two and one half degree ($22\text{-}1/2^\circ$) fitting and a forty-five-degree (45°) fitting is ALLOWED (note: See Cleanouts).
- Connections to sewer main collectors that are Cured in Place Pipe (CIPP) must carefully remove enough of the host pipe to make a gasketed/sealed direct connect to the CIPP liner.

- Spacing of side sewer connections along the sewer main shall be minimum 5 feet on center for the same side to allow future repair without impacting adjacent/parallel services.
- Belly Agreement is required and must be signed by the property owner at the time of the inspection.
- The manufacturer's installation specifications and recommendations shall be followed.

For pressure side sewers (outside the pump chamber):

- Solvent Weld Pipe: Ninety degree (90°) fittings are not allowed. 45° fittings on horizontal runs need to have minimum 2' of straight pipe between bends.
- All fittings shall be of the same specifications as the pipe to which they are being connected. The manufacturer's installation specifications and recommendations shall be followed.

CONNECTING TO THE SIDE SEWER STUB

Refer to the attached Standard Plans

Prior to making connection to the side sewer stub, the installer shall:

- Confirm that connection will be made to the side sewer stub designated for the property. When multiple stubs are located in close proximity; the Installer shall coordinate with the City of Spokane Wastewater Department to ensure that the appropriate stub is used in the connection.
- Verify that the elevation of the stub is appropriate to provide gravity drainage from the building drain.
- Check that the stub has proper grade and that the piping is unobstructed and sound.

Pressure side sewer connection directly to a public main is NOT ALLOWED. Pressure side sewer connections to a gravity side sewer stub shall be made at the right-of-way/property line by a solvent weld adaptor with cleanout, dispersion box, or manhole. Clean-outs shall be of the same size as the downstream gravity pipe. A manhole may be preferred at this connection if appropriate as determined by Wastewater Department.

CONNECTING TO THE BUILDING DRAIN

The gravity side sewer shall only connect to Cast Iron, ABS or D3034 SDR 35 PVC building drains. If the building drain is by pressure, connection shall be made as required per building code and manufacturers recommendations.

CONNECTION TO ANY OTHER PIPE TYPE MATERIAL REQUIRES PRIOR APPROVAL FROM THE CITY OF SPOKANE WASTEWATER DEPARTMENT. It is the installer's responsibility to check that the building drain(s) piping is in good condition, has sufficient grade and that the piping is unobstructed. If the building drain(s) piping is defective and cannot be repaired or is made of unapproved pipe material, replacement with an approved pipe material is required prior to connecting to the side sewer.

Connection to existing gravity building drain(s) piping shall be made with a flexible clamp type coupling meeting ASTM C1173 and C564. Solvent weld adaptors for ABS to PVC pipe connections are acceptable, provided that the manufacturer's solvent cement and joint preparation specifications are followed. Adaptors which have gaskets designed for ABS to PVC pipe connections are acceptable. **PVC-to-PVC pipe connections must be made with PVC couplers or fittings with acceptable gaskets.**

If connecting to a dry side sewer, the installer shall check for allowable pipe material type, proper grade and that the dry side sewer is unobstructed and sound without cracks or missing pieces prior to making the building drain or sewer stub connection.

TRANSITION COUPLINGS & FITTINGS

All transition fittings, couplings and donuts must be factory manufactured and specifically designed for the specific situation. Such as “Strong Back” type with a stainless steel support ring

- Rubber fittings and donuts shall be Elastomeric type with series 300 stainless steel clamps install per the manufacturer’s specifications.
- For PVC-to-PVC connections, only PVC fittings and couplings are permitted. **No shielded rubber couplers are allowed.**
- For PVC to ABS connections, use PVC to ABS transition coupler with approved transition glue or a shielded rubber coupler. **Shielded rubber couplers are allowed ONLY at the building drain connection.**

BACKFILLING AND COMPACTING THE TRENCH

The trench shall not be backfilled until the pipe installation has passed inspection by the City of Spokane Wastewater Department. The installer shall take adequate precautions to protect the pipe from breakage or crushing from large rocks. If concrete or asphalt surfacing will be installed over the trench area, the backfill material must be placed in 6” thick lifts and each lift compacted with appropriate compacting equipment. The soil should be moist, not wet, to facilitate compaction. **Backfilling and compaction must be sufficient to prevent settling of the trench and or pipe from the approved grade.**

DRY SIDE SEWERS

Dry side sewers shall be installed under the same requirements as live gravity or pressure sewers.

The dry side sewer shall be installed to allow the future removal of existing wastewater pump(s) where possible. Dry side sewers terminating inside the structure may be installed into a pump chamber (basin).

When a dry side sewer is required by the City of Spokane Wastewater Department, it shall extend to the right-of-way. It may be necessary to install the sewer pipe beneath other utilities to meet this requirement. It is the responsibility of the installer to have the property line clearly identified. Dry side sewers with less than **six feet (6')** of cover installed in a utility easement shall include warning tape indicating buried sewer. The warning tape shall be placed **18" to 30"** above the dry side sewer pipe and extend from the end of the pipe to a point past the easement boundary. Dry side sewers shall also be installed with a 12 ga. insulated tracer wire affixed every 10’ along its full length and up the surface the building foundation and at cleanouts.

Both ends of the dry side sewer shall have approved removable caps or plugs installed. The downstream end of the dry side sewer shall be marked with a length of a treated two by four wood with galvanized wire or rebar attached to the top for locating. The two by four shall be set vertical at the end of the dry sewer with the top end terminating within **6” inches** of finished grade.

There shall be a minimum of three feet (3') horizontal separation between parallel building drain piping and the dry side sewer to allow for an approved future reversal type of connection. The dry side sewer must be installed at a depth that permits a minimum two percent (2%) slope from the building drain to the dry side sewer.

CLEANOUTS

Refer to attached Standard Plan Z-104a

REQUIRED LOCATIONS:

Cleanouts are required at the following locations along the pipeline:

- When there is a change in direction of ninety degrees (90°) or greater utilizing two or more fittings with less than 3 feet of connecting pipe between them.
- When the cumulative change in direction exceeding one hundred thirty-five degrees (135°) along any length of pipe without a cleanout. This includes vertical step downs and horizontal piping to the entry point of the side sewer stub into the sewer main.
- When a single 45 degree (45) is used
- At the building connection within three feet of the exterior face of the building foundation unless the required location would place the cleanout beneath a deck or patio, in which case the cleanout shall be installed within three (3') feet of the edge of the deck or patio.
- The distance between cleanouts in a straight run of pipe shall not exceed one hundred feet (100') including the height of the upstream cleanout riser.
 - If the overall distance is greater than 300', a standard CoS manhole is required.
- At the connection point of dissimilar pipe sizes and shall be of the larger pipe size.
- At the connection point of a pressure sewer into a gravity sewer. The cleanout access shall be the same size as the gravity sewer.
- Immediately downstream of an external backwater valve. An external backwater valve without the riser extension is acceptable as a limited range cleanout.
- At vertical drop type pipe connections

INSTALLATION REQUIREMENTS

- The connection of the cleanout riser to the building sewer shall be made with only wye or forty five degree (45°) or 22-1/2° fittings. Straight or sanitary tees are not allowed. Ninety degree (90°) elbows are not allowed.
- Reverse or Two-Way cleanouts may be required due to site constraints that prohibit standard cleanout placement.
- The top of the cleanout riser shall be within six inches (6") of the casting cover or ground surface.
- All cleanouts shall have approved removable caps or plugs manufactured specifically for connection to the approved pipe. Approved caps or plugs shall be easily removed and replaced inside the casting or cover.
- All cleanouts on commercial property are required to be surface accessible with approved castings or covers.
- All cleanouts located in driveways or other traveled areas (including but not limited to bare earth, gravel or paved) are required to be surface accessible within a traffic rated casting.
- Standard Plan Z-104 which has a standard manhole lid is appropriate for use in areas that have potential to have small lids (like Z-104a) get lost in tall grasses & weedy areas for easier locating.
- A monitoring port (double sweep tee, same size vertical pipe, and cleanout lid at the surface) may be required to be installed at property line in certain circumstances for visual inspection or monitoring of the side sewer flows as requested by Wastewater Management Department.

BACKWATER VALVES

When the flood-level rim of a fixture (see definitions) is below the rim elevation of the next upstream sewer manhole, the drainage pipe serving that fixture shall be protected from sewage backflow with an approved type of backwater valve. Fixtures with rim elevations above this elevation shall not discharge through *this* backwater valve. If installation of the required backwater valve in such a manner is not practical, the backwater valve may be installed downstream of the confluence of the upper and lower level drainage piping *with the approval* of the Director. For duplexes and Multi-family buildings, separate backwater valves must be installed as described above for each dwelling unit connected to a jointly-used building drain to prevent sewage from one dwelling unit from backing up into a separate dwelling unit.

- Backwater valves are required for
 - o parcels located within Areas of Drainage Concern (ref: Spokane Municipal Code and Comprehensive Plan) and
 - o in Combined Sewer basins, and
 - o for side sewers serving mobile homes or any house that does not have multiple roof vents. This will avoid impact plumbing fixtures from large air volumes during maintenance and jet rodding of sewer mains.

The backwater valve must be readily surface accessible for inspection, maintenance and repair. A watertight housing shall surround the backwater valve and have an adequately sized lid to provide access. The housing shall be supported by a concrete pad or blocks and installed in such a manner that it will not rest or settle on the sewer pipe. Installing the housing to one side of the backwater valve (offset) will facilitate better access. A traffic rated housing is required for installations in traveled areas.

A concrete block of adequate size shall be positioned under the backwater valve for support. Backwater valves shall have cast iron, plastic, or brass bodies, non-corrosive bearings, seats and self-aligning discs, that are serviceable from the access lid, and constructed to insure a positive mechanical seal which remains closed except when discharging wastewater.

INSTALLING SIDE SEWERS USING THE BORING METHOD

- Solvent weld pipe joints are allowed in the straight pipe run sections of the bored pipe.
- Bored pipe may be sleeved within Schedule 40 PVC casing pipe to reduce friction drag.
- Three feet (3') horizontal separation is required between the building drain and the bored portion of piping to allow for an acceptable smooth sweep connection.
- It is the responsibility of the installer to aim the boring tool at the sewer stub in such a fashion to allow connections as per these regulations to be made.
- The minimum grade allowed for bored side sewers is ¼ inch per foot or 2% grade. The installer will be required to excavate and relay to an acceptable slope any portion of bored sewer with insufficient grade. The relayed and connection points to buried sewer shall be left uncovered for inspection. If the connection point is within five-feet (5') of the structure the installer may be required to install an outside cleanout at this point.
- All bored side sewers shall be tested for acceptance. A Belly Agreement is required and must be signed by the property owner at the time of the inspection. Contractor must run water in the line and camera the line with the inspector present at the time of inspection. (See Testing Requirements and Procedure).

TESTING REQUIREMENTS AND PROCEDURE

Any segment of a side sewer installed by the boring method which has pipe joints within the bored portion is required to be tested. Multiple bored sections shall be tested independently.

Pressure sewer lines constructed with PVC pipe are required to be tested. Pressure sewer lines constructed with HDPE and have no pipe joints between the connection at the pump and the point of connection to the curb stop or gravity sewer stub are not required to be tested. Pressure pipes with fused butt joints must be tested.

The City of Spokane reserves the right to require sewer pipe testing for non-typical installations or in the opinion of the inspector it is warranted.

The Installer shall furnish all labor, materials, tools and equipment necessary to conduct the required test, clean the sewer lines and perform all incidental work. The installer is responsible for the repair of any damage which may be incurred from the testing process. All tests shall be made in the presence of the City of Spokane Wastewater inspector. The inspector may require the sewer to be tested after backfill.

EXFILTRATION METHOD FOR TESTING GRAVITY FLOW PIPE:

1. Sewers shall be cleaned prior to testing.
2. A riser pipe shall be installed six feet (6') above the crown at the upper end of the test section.
3. The length of sewer being tested shall be limited so that the pressure at the lower end of the test section does not exceed sixteen feet (16') of head above the invert at the lower end.
4. The lower end of the test section shall be plugged to withstand the test pressure and shall have a readily removable plug.
5. All wyes, tees, stubs and risers shall be plugged to withstand test pressure and shall have readily removable caps or plugs.
6. The test section shall be filled with clear water from the upper end only.
7. Test time is fifteen (15) minutes. NO LEAKAGE IS ALLOWED.
8. The inspector shall observe the release of the test water.
9. Test water shall drain quickly, completely and be free of any dirt or debris.

TESTING SEWERS INSTALLED BY THE BORING METHOD

1. Bored sections of the sewer shall be tested using the exfiltration method described above.
2. The inspector shall observe the release of the test water.
3. Test water shall drain quickly, completely and be free of any dirt or debris.
4. The bored sewer line may be required to be visually inspected to verify accuracy of alignment, standing water/grade problem, debris or obstructions. The full diameter of the bored section shall be visible when viewed from the upper or lower ends using lights and mirrors (lamping). A video inspection at the expense of the installer may be required in cases where lamping cannot provide an acceptable visual inspection. If bellies or low spots in the opinion of the inspector are observed, that portion of the line shall be excavated and relayed to provide proper grade of the pipe as defined above.

LOW PRESSURE AIR TEST METHOD

The Director may approve a low-pressure air test in lieu of the exfiltration method for gravity and pressure pipe. The tested section shall hold 3.5 psi pressure (gauge) for two (2) minutes minimum with NO leakage loss. The inspector shall witness the filling and discharge of air into the pipe. In addition, an empty container with a minimum volume of one gallon shall be placed at the lower end of the bored pipe to collect any water leaking out of the pipe. One (1) gallon of water shall be poured into the upper end of the test section. The full amount of water poured in must discharge into the container. The inspector shall observe the release of the test water. The test water shall drain quickly, completely and be free of any dirt or debris.

BELLY AGREEMENT: Agreements for existing sewers installed by boring or Cured in Place Pipe (CIPP): Belly Agreement is required and must be signed by the property owner at the time of the inspection. Contractor must run water in the line and camera the line with the inspector present at the time of inspection. Sample Belly Agreement format contained in [Attachment A](#).

SEPTIC TANK/WASTE WATER RECEPTACLE ABANDONMENT

Septic tanks and other on-site wastewater receptacles removed from service as part of a connection to the City of Spokane sewer system are required to be abandoned in accordance with the regulations set by the Spokane Regional Health District per the following standards:

1. When the connection to public sewer is accomplished with only work inside the structure (interior dry sewer connection), septic tank abandonment shall be inspected by City of Spokane Wastewater Department.

The City of Spokane Wastewater Department will perform septic tank/receptacle abandonment inspections if they are done at the same time as the sewer connection inspection. All other tank abandonment inspections shall be performed by the Spokane Regional Health District (SRHD). The Health Districts phone number is (509) 324-1560. The SRHD's permit and fees for septic tank / receptacle abandonment are in addition to the sewer connection permit fees charged by the City of Spokane Developer Services Department.

The contents of the tank/receptacle (wastewater and solids) shall be completely removed and hauled offsite by a commercial pumper licensed by SRHD.

➤ IN NO CASE SHALL THE CONTENTS OF THE SEPTIC TANK BE DISCHARGED INTO THE CITY OF SPOKANE WASTEWATER SYSTEM.

2. After removal of the contents, the septic tank(s)/receptacle(s) shall be abandoned under one (1) of the three (3) options below:
 - 1) Remove the tank(s)/receptacle(s) and transport it to an approved disposal site; or
 - 2) Thoroughly collapse/crush the tank(s)/receptacle(s) in place. The top and sides must be broken up into pieces, and the area shall be filled with compacted native soil or fill material; or
 - 3) Fill the chamber(s)/compartment(s) with pea gravel. All fill materials must be reasonably dry. Frozen material is not acceptable. Risers are to be removed prior to filling the tank(s)/receptacle(s). Holes must be placed in the bottom of the existing tank being abandoned to prevent water ponding.
3. The time limit to complete abandonment is seven (7) days after final connection to sewer and or in accordance with the Spokane County Department of Health. Improperly abandoned septic tank(s)/receptacle(s) are subject to a re-inspection fee. (SMC 08.02.037).
4. City of Spokane Wastewater Department has the right to defer the re-inspection to the SRHD, upon which applicable fees and permits required by the SRHD for re-inspection shall be due to the SRHD. If site conditions prevent proper septic tank/receptacle abandonment, the property owner may apply for a waiver from SRHD.

PRIVATE LOW PRESSURE PUMP SYSTEMS

THE FOLLOWING SPECIFICATIONS APPLY TO PRIVATELY-OWNED PUMP SYSTEMS INSTALLED OUTSIDE OF THE BUILDING(S) BEING SERVED. PUMP SYSTEMS INSTALLED

WITHIN THE BUILDING(S) SHALL MEET THE REQUIREMENTS OF THE BUILDING DEPARTMENT OF THE JURISDICTION HAVING AUTHORITY

Wherever practicable, plumbing fixtures shall be drained to the public sewer by gravity. If a building's upper-level floors can connect by gravity to the public sewer but lower levels cannot, wastewater from lower level fixtures shall be pumped and discharged into the upper level plumbing.

The Director shall make the final determination to allow the pump system. The installer and/or the pump supplier shall be responsible for the design and construction of the pump system. Requirements for various components of the pump system shall include the following:

1. SIZE AND TYPE OF PUMPS

For systems where sewage is being pumped from the building into a gravity side sewer, a sewage (ejector) pump may be used. The pump shall be capable of passing a one and one-half inch (1-1/2") diameter solid ball and the discharge piping of each pump shall have a backwater valve and gate valve and be not less than two inches (2") in diameter. If grinder style pumps used, minimum size is 1.25"

For systems where sewage is being pumped into a pressurized side sewer, a grinder pump shall be used. The discharge piping shall be sized in accordance with the manufacturer's instructions and shall not be less than one and one-fourth inches (1-1/4") in diameter. A check valve and full way-type shutoff valve shall be located within the discharge line.

All mechanical components of the pump(s) shall be rated for use with sewage. The inlet port of the pump(s) shall be at least two inches (2") above the bottom of the pump chamber (basin).

2. DUPLEX PUMP SYSTEMS – WHEN RECOMMENDED OR REQUIRED

For properties that will be pumping five hundred (500) gallons or more per day, the property owner should consider installing a duplex pump system for added reliability and protection. The pumps shall alternate with each pump cycle and in cases of high flow, both pumps can operate simultaneously. All duplex pump systems require an engineered design and stamped by a Professional Engineer Licensed in the State of Washington. In some cases, the Director can require that the pump system installed shall be a duplex system. These pumps must follow the City of Spokane Private pump station design standards, and the Department of Ecology State of Washington "Criteria for Sewage Works Design, (water Quality Program) "known as the "Orange Book."

3. PUMP CONTROLS and ALARMS

The automatic switching mechanisms shall be adjustable mercury-float type, mechanical type or ultrasonic-type. Control mechanisms and corresponding alarms shall include the following set points:

- "High Level" indicating a high liquid level in the pump chamber (basin). The high-level float switch shall be adjusted in the pump chamber (basin) such that it activates the alarm when the liquid level in the pump chamber (basin) is no less than one inch below the invert elevation of the inlet pipe.
- "Pump on" float switch shall be adjusted to activate the pump at a predetermined liquid level.
- "Pump Off" low-level float switch shall be adjusted to deactivate the pump at a predetermined liquid draw down level.
- "Redundant Pump Off" switch is a secondary pump off switch that should guarantee the pump is always submerged.
- Alarms must be on an electrical circuit separate from the pump power circuit.

4. PUMP CHAMBER

The pump chamber, or pump basin, is the vessel into which the sewage or ejector pump and various pipe and components are installed. Sewage from the buildings plumbing system is discharged into the pump chamber.

Pump chambers may be installed either inside or outside the building. Inside installations shall meet the requirements of the Building Department of the jurisdiction having authority. The City of Spokane Wastewater Department or the Engineering Field Office depending on size, shall inspect pump chambers and assemblies installed outside the structure. Pump assemblies and installations shall meet or exceed the requirements listed in this handbook.

The pump chamber, including its access cover or lid, shall be watertight construction of fiberglass, noncorrosive metals, reinforced concrete or other approved material. The access cover or lid shall be at least three inches (3") above the surrounding ground surface and secured in a manner to prevent unauthorized access. The cover or lid shall have a neoprene type seal or other approved material to prevent the infiltration of water into the chamber.

The pump chamber must be properly sized to ensure the pump does not short cycle and cause premature pump failure. The chamber must be vented to atmosphere with a minimum two-inch (2") diameter vent.

5. UTILIZING THE EXISTING SEPTIC TANK TO HOUSE THE PUMP

Under special circumstances *and with approval of the Director*, one chamber of the emptied and cleaned septic tank MAY be utilized to house the sewage pump assembly. However, in addition to other requirements of this section, the following modifications must be done to the septic tank:

- The pump must be installed within a watertight sump separate from the septic tank. The septic tank chamber shall not be used as the pump basin unless the Director determines that the anticipated sewage flow is large enough to require the larger volume of the septic tank chamber.
- The annular space around the pump chamber to the septic tank walls must be filled with concrete at least 10" deep to prevent movement of the pump.
- The septic tank chamber containing the pump must be sealed off from the other chambers of the septic tank with concrete or non-shrink grout.
- The tank must be accessible from the ground surface without digging.
- Holes must be drilled through the existing septic tank in unused portion of tank in areas where surface or groundwater could collect such that the intrusion water does not pool.

Consideration should be given to the cost of modifying the existing tank versus installation of a new pump structure.

6. PIPING and CONNECTIONS INSIDE THE PUMP CHAMBER

The pump shall be installed to allow for easy removal for repairs. An accessible gate valve or ball valve and quick disconnects for both electrical and discharge piping shall be provided to facilitate removal of the pump from the pump chamber. The valve or its control, shall be located above the high liquid level depth, or located outside the chamber in a secured valve box with above ground accessibility. The pump(s) may be tethered using a minimum quarter-inch (1/4") poly type rope (or an equivalent as approved by the Director) doubled and secured to the pump(s) and to a point above the high liquid level in the pump chamber (basin). The pump(s) shall be provided with an accessible check valve located above the "pump on" liquid level and shall be the type approved for the application and rated to withstand expected backpressure. All exposed fasteners shall be Series 300 stainless steel. Pump chamber piping shall be minimum schedule 40 PVC with a minimum pressure rating of one hundred fifty pounds per square inch (150 psi). All fittings shall be minimum schedule 40 PVC with the exception of the quick disconnect coupler (union) which shall be schedule 80. All pipe and fitting joining shall be in strict accordance with the manufacturer's specifications and recommendations.

The pipe from the building drain to the pump chamber shall be gasketed PVC meeting ASTM 3034 SDR 35 and a minimum diameter of four inch (4"). The pump chamber (basin) inlet pipe opening shall be sealed or gasketed. Mortar or concrete seals applied to PVC pipe to bond the inlet pipe to concrete pump chambers are **NOT** allowed; concrete pump chambers shall have cast in place gaskets or seals. All cleanout specifications shall apply.

Check valves shall be cast iron or brass body type. PVC ball check valves **NOT** allowed.

7. PRESSURE PIPE

This is the pipe operating under pressure extending from the pump to the sewer stub. The pipe shall be sized to pump between two and one-half feet per second (2.5 fps) and five feet per second (5 fps), but in no case be less than 1 ¼ inch inside diameter. A minimum of three feet (3') of cover is required over the top of force mains.

Force mains exceeding two hundred (200') feet in length shall require a flushing connection every one hundred (100') feet (See Flushing Connection Specifications). The Director may require an engineered design be submitted.

8. ELECTRICAL CONNECTIONS

The Washington State Department of Labor and Industries Electrical Division shall inspect all electrical components and wiring. Proof of the electrical installation approval must be submitted to the Director.

9. PUMP TESTS

A pump cycle test is required for commercial and residential installations. The following operational aspects of the pump shall be tested:

- The pump turns on when liquid meets the high set point.
- The pump turns off when liquid meets the low set point.
- The alarm is activated when the liquid exceeds the high set point and the pump does not turn on. The pump test shall be performed with clean water, not sewage.

GREASE INTERCEPTORS

TYPES OF Fats oils and Grease (F.O.G.)

- **Polar F.O.G.** comes from vegetables or animals. Polar FOG can be found in kitchen sink wash water from a food service business (FSB) that discharges to the sanitary sewer.
- **Non-polar F.O.G.** comes from petroleum or is of mineral origin. An example of non-polar FOG is vehicle oil mixed with wash water from an automated car wash that discharges to the sanitary sewer.

THE FOLLOWING REGULATIONS PERTAIN TO THE INSTALLATION REQUIREMENTS OF GREASE INTERCEPTORS INSTALLED ON THE EXTERIOR OF THE BUILDING OR WITHIN PARKING LEVELS FOR COMMERCIAL APPLICATIONS. GREASE TRAPS INSTALLED WITHIN THE BUILDING(S) SHALL MEET THE REQUIREMENTS OF THE BUILDING DEPARTMENT OF THE JURISDICTION HAVING AUTHORITY. *REFER TO BUILDING CODE FOR INTERIOR GREASE TRAP REQUIREMENTS.*

GREASE INTERCEPTORS SHALL BE INSTALLED AND OPERATED IN ACCORDANCE WITH SECTION 13.03 OF THE CITY OF SPOKANE MUNICIPAL CODE. GREASE INTERCEPTORS SHALL COMPLY WITH THE FOLLOWING DESIGN AND CONSTRUCTION SPECIFICATIONS.

GRAVITY GREASE INTERCEPTORS: Any commercial food facility which generates grease (e.g. (polar F.O.G. or brown grease) waste shall include a grease interceptor as part of their sewer. An approved type grease interceptor complying with the provisions of these regulations shall be installed in the waste line leading from sinks, drains, and other fixtures or equipment in any business or where grease is introduced into the drainage or sewer pipes in quantities sufficient to create blockage in said pipes. A grease interceptor is not required for individual dwelling units or private living quarters.

In addition to other design requirements, grease interceptors shall comply with the following:

- a. Shall be installed outside the structure, easily accessible in all weathers for inspection, cleaning, maintenance and repair of the interceptor.
- b. Only waste discharge from the kitchen and cleanup area shall drain into the grease trap. Toilets, urinals, and other similar fixtures shall not drain through the grease trap.
- c. Waste shall enter the interceptor only through the inlet pipe.
- d. Vents shall be Schedule 40 PVC (not ABS) outside the building.
- e. The grease interceptor shall be designed, constructed, and sized in accordance with the current edition of the Uniform Plumbing Code. Refer to: City of Spokane Grease Control Sizing and Installation Policy: [Grease Control Device \(GCD\) Sizing and Installation Policy \(spokanecity.org\)](https://static.spokanecity.org/documents/publicworks/wastewater/business/fats-oils-and-grease/grease-control-device-sizing-and-installation-policy.pdf) (<https://static.spokanecity.org/documents/publicworks/wastewater/business/fats-oils-and-grease/grease-control-device-sizing-and-installation-policy.pdf>)
- f. Grease interceptor shall be maintained in operating condition by periodic removal of the accumulated grease and latent materials, in accordance with [SMC 13.03.0508](#). Should the City of Spokane determine that a grease interceptor is not being properly maintained or if required by the Pretreatment program, a maintenance program shall be initiated.
- g. Access covers, lids and traffic rated interceptors shall conform to the requirements contained in these regulations.

EXISTING GREASE INTERCEPTORS: Existing grease interceptors shall be thoroughly pumped out and cleaned by a licensed septic tank pumper and inspected by City staff prior to the building's connection to the public sewer. A grease interceptor which does not meet City standards must be repaired or replaced prior to the building's connection to the public sewer.

INDUSTRIAL INTERCEPTORS (CLARIFIERS) AND SEPARATORS:

Interceptors (clarifiers) (Including non-polar grease, oil, and sand interceptors (clarifiers), etc.) shall be provided when, in the judgment of the Director or as required by SMC title 13.03 or the Uniform Building code as adopted at the time of construction, when determined necessary, for the proper handling of liquid wastes containing grease, flammable wastes, sand, solids, acid or alkaline substances, or other ingredients harmful to the building drainage system or the public or private sewer system. In addition to other requirements, industrial interceptors and clarifiers shall meet the following standards:

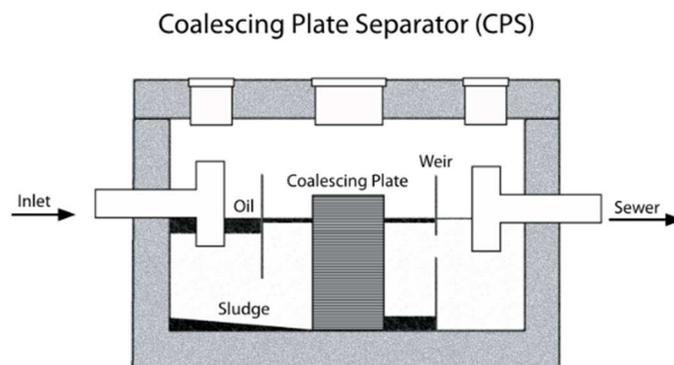
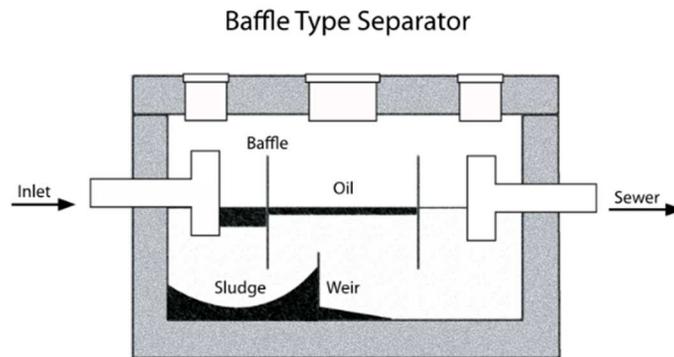
- a. The size, type, and location of each interceptor (clarifier) or separator shall be approved by the Wastewater Director in accordance with the City of Spokane Municipal Code. Except where otherwise specifically permitted, no wastes other than those requiring treatment or separation shall be discharged into any interceptor (clarifier).
- b. Interceptors (clarifiers) for sand and similar heavy solids shall be so designed and located as to be readily accessible for cleaning and shall have a water seal of not less than six-inches (6").
- c. Interceptors (clarifiers) shall be so designed that they will not become air bound if closed covers are used. Each interceptor (clarifier) shall be properly vented.
- d. Each interceptor (clarifier) cover shall be readily accessible for servicing and maintaining the interceptor (clarifier) in working and operating condition. The use of ladders or the removal of bulky equipment in order to service interceptors (clarifiers) shall constitute a violation of accessibility. Location of all interceptors (clarifiers) shall be shown on the approved building and sewer plans and the record drawings.
- e. Every private or public wash rack and/or floor or slab used for cleaning machinery, vehicles or machine parts shall be adequately protected against storm or surface water and shall drain or discharge into a interceptor (clarifier) of an approved design for this use.
- f. Access covers, lids and traffic rated interceptors (clarifiers) and separators shall conform to the requirements contained in these regulations.

OIL / WATER SEPARATORS

Petroleum based (non-polar) oils and grease that can get carried into drainage systems by stormwater runoff (or eventually ends up in a business's wastewater discharge to sewer through a special authorization) need to be routed into an Oil / Water Separator prior to discharge and shall conform to the requirements in [SMC 13.03.0508](#) and BMPs listed in the Pretreatment Program's City of Spokane Pretreatment [website](#) under "Documents for Businesses" > "Best Management Practices" > "Fats, Oils and Grease".

- a. Oil-Water Fact Sheet for basic Do's and Don'ts:
<https://static.spokanecity.org/documents/publicworks/wastewater/business/fats-oils-and-grease/oil-water-separator-fact-sheet.pdf>
- b. Design Sizing, American Petroleum Institute (API):
<https://static.spokanecity.org/documents/publicworks/wastewater/business/fats-oils-and-grease/oil-water-separator-sizing-reference.pdf>

Best Management Practices (BMPs) are described for baffle-type and coalescing-plate-type (CP-type) separators to manage these water insoluble hydrocarbons and settleable solids.



REUSING EXISTING SIDE SEWER SERVICES

Reuse of existing inactive side sewer services must be proven viable and approved by Wastewater Department and will require a Sewer Relay/Repair Permit in addition to the Building Permit:

- Reuse of “Orangeburg” or bituminous fiber pipe is not allowed, and the service must be replaced or lined if good condition and doesn’t have bellies in slope.
- Vitrified clay and concrete service pipes can be reused if viable and meet clearances in the building structure section below. Viable is meant to be not damaged or doesn’t contain bellies in slope.
- Cracked but straight pipes (no bellies) can be trenchless replaced, or lined.
- Otherwise must be replaced open-cut or other standard methods to achieve a sewer service meeting standards.
- Evidence that the existing side sewer has been CCTV inspected for viability and evaluated for condition by licensed contractor or plumber (e.g. copy of CCTV inspection report and recording) must be provided to the City prior to issuance of improvement plans acceptance. The City will not CCTV video the pipe for condition.

BUILDING STRUCTURE CONFLICTS WITH EXISTING SIDE SEWERS

Living units shall not be built over side sewers. Constructing a non-occupied buildings (e.g. car canopy, greenhouse or shed) footing or foundation over an existing sewer service is not recommended and strongly discouraged, and is at the owner’s risk. Existing side sewers must be re-routed around permanent occupiable structures (such as houses, auxiliary dwelling unit (ADU), or buildings such as garages that could be converted to living spaces), unless otherwise coordinated with Wastewater Department.

- If existing service is concrete or vitrified clay, the service may not be built over in its current condition. The sewer service shall be lined (e.g. cure-in-place pipe), slip lined, pipe bursting trenchless replacement, or replaced with an acceptable material via open cut excavation prior to footing/foundation construction if it has the required clearance. A sewer specialist (licensed plumbing company or sewer contractor, etc.) should CCTV the interior of service pipe to evaluate the line and provide a recommendation to the owner for lining/bursting, if viable.
- If existing service is cast iron or PVC but more than 15 years old, the service should be CCTV inspected by a sewer specialist (licensed plumbing company or sewer contractor, etc.) to evaluate the line and provide a recommendation to the owner for reuse if viable. Replacement or lining of the sewer service is required if the side sewer is not viable or if the service will not have the required clearance (see section below).
- Relocation of the sewer service may be an option if separation distances can be met (see below). A relocation plan would need to be submitted for review to verify if this option is acceptable.

The following will not require a sewer relay/repair permit and may be viable for reuse or as replacement options for the conditions listed above.

Foundation clearances:

- PVC sewer services in good condition (meeting side sewer installation guidelines) with at least 2 feet of clearance below the footing of the proposed structure may be reused.
- Ductile iron sewer service in good condition with at least 0.5 foot of clearance below the footing of the proposed structure meeting side sewer installation guidelines.

All other scenarios will be looked at on a case-by-case basis.

Separation distances for relocating sewer services and other items to consider:

- For spread/square/column footings, parallel sewer services shall be at least a horizontal distance equal to the *depth* of the service below the base of the footing or 5 feet from footing / outer foundation wall, whichever is greater.

- Water to sewer services clearance separation shall follow City Standard Plan A-Series.
- Sleeving with oversized pipe (similar to Std. Plan A-4) may be an option prior to the construction of the structure where separation distances cannot be achieved.

ABANDONMENT OF SEWER SERVICE

Abandonment of the sewer service requires a permit and inspection by the City of Spokane Wastewater Department. The Department will not discontinue billing of the monthly sewer service fee until the abandonment has been accomplished to the satisfaction of this Department as follows:

1. When a mobile or manufactured home is removed from the site for the purpose of replacement of a newer mobile or manufactured home, the sewer drain pipe within the footprint of the home shall be capped with a glue-on cap manufactured for this specific use.
2. For all other situations, the building sewer shall be cut at a point no more than fifteen feet from the property line where the sewer service line enters the property. The open end of the sewer pipe leading to the public sewer must be plugged or capped immediately with fittings manufactured for this specific purpose.
 - a An End Pipe Marker per spec 7-18.3(5) (or sewer cleanout Std. Plan Z-114a) shall be installed at the property line above the side sewer line for location reference.
 - b End Pipe Marker will consist of a 2 x 4 wooden stake buried in the ground from pipe invert to the ground surface elevation. The top of the 2 x 4 shall be covered in green weatherproof paint and the depth to the side sewer or tee to the tenths of a foot be indicated in black paint. A 1-foot section of #4 rebar shall be attached to the 2 x 4 with galvanized nails (top of the rebar shall be at ground elevation). In addition, a length of 12 gage galvanized wire shall be provided to extend from the plugged end of the side sewer or tee. The upper end shall emerge at the stake.

ADMINISTRATIVE

AUTHORITY: Pursuant to the authority of City of Spokane Municipal Code Ordinance ORD C34122 [Section 13.01.0302](#) effective date of Nov 12th 2007, the Director of the City of Spokane Wastewater Management Department and or the City of Spokane Engineer is authorized to prepare, revise and administer standards, as established by resolution by the City Council. The standards shall be printed in manual form as a "separate" section of the design standards and shall be referred to as the "Side Sewer Installation Handbook". This handbook contains excerpts from the Public Utilities and Services of the Municipal Code (referred to as "SMC" in these regulations) and these excerpts may be enhanced to provide comprehensive standards. [Cross References: SMC chapters 13.03)

ENFORCEMENT: The City of Spokane Wastewater Director shall enforce these regulations and may refer violation cases to the City of Spokane Prosecutor's Office which may initiate enforcement or disciplinary actions or any other legal proceeding authorized by law, including but not limited to any one or a combination of the following:

- Informal administrative conferences, convened at the request of the Director, installer or property owner, to explore facts and resolve problems.
- Formal Administration Hearings, convened at the request of the Director to determine the facts for possible issuance of a Conditional Probationary Order and/or a Cease and Desist Order and its duration. Denial, suspension, modification or revocation of permits, approvals or acceptance.
- Civil or criminal action.

Orders authorized under this section include the following:

- Orders requiring corrective measures necessary to effect compliance with these regulations which may include a compliance schedule.
- Orders to stop work and/or refrain from using any sewer or portion of the sewer or improvements to the sewer.

Enforcement orders issued under this section shall be in writing and shall specify:

- The name of the person(s) to whom the order is directed;
- A description of each action or inaction constituting the violation;
- The required corrective action, if applicable;
- The effective date of the order, with time(s) of compliance;
- The consequences of failure to comply with said corrective action or repeated violations.
 - Such notices may include a statement that continued or repeated violation may result in:
 - Denial, suspension, or revocation of sewer connection permits.
 - Referral to the office of the County Prosecutor or Attorney General.
 - Other appropriate remedies.

Enforcement orders shall be personally served in the manner of service of a summons in a civil action or in a manner showing proof of receipt.

APPEAL PROCEDURE: The Director shall make available an administrative appeals process to consider procedural and technical conflicts arising from the administration of the regulations and establish rules for conducting hearings requested to contest the Director's actions. The Director shall provide notice of a denial, suspension, modification or revocation of a sewer connection permit. A person contesting the Director's decision regarding a sewer permit, approval, acceptance or applied penalties may file a written request for an adjudicative proceeding consistent with the regulations and the ordinance.

DEVIATION OF REGULATIONS WAIVER: Whenever a strict interpretation of these regulations would result in extreme hardship or there are other unusual factors to be considered; as determined by the Director, the Director may waive such regulation or portion thereof, provided that the waiver is consistent with the intent of these regulations and that no public health hazard will result. The Director may require a written waiver request be submitted with all the reasons for granting the waiver stated. Any waiver requests granted must be in writing with all the reasons for granting the waiver stated and shall be attached to the sewer connection report or the appropriate file.

LIABILITY OF THE CITY OF SPOKANE OR ITS EMPLOYEES: This regulation shall not be construed as imposing upon the City of Spokane any liability or responsibility resulting from any defective portion of the side sewer or the installation thereof; nor shall the City of Spokane or its employees be held as assuming any liability or responsibility by reason of the authorized inspection(s).

CONFLICTS: In any case where a provision of these regulations is in conflict with the provisions of any zoning, building, fire, safety, shoreline management or health regulations, law, or City of Spokane ordinance, the provision which established a higher standard or specification or which is more stringent in its requirements shall control.

SEVERABILITY: If any section, subsection, subdivision, sentence, clause or phrase of these regulations is determined by a court of competent jurisdiction to be invalid, unenforceable or unconstitutional, such determination shall not affect the validity of the remaining portions hereof. Further, if it is determined that some or all of these regulations cannot be enforced as to a particular set of circumstances or as to a particular person, the application of the provision to other persons or circumstances shall not be affected.

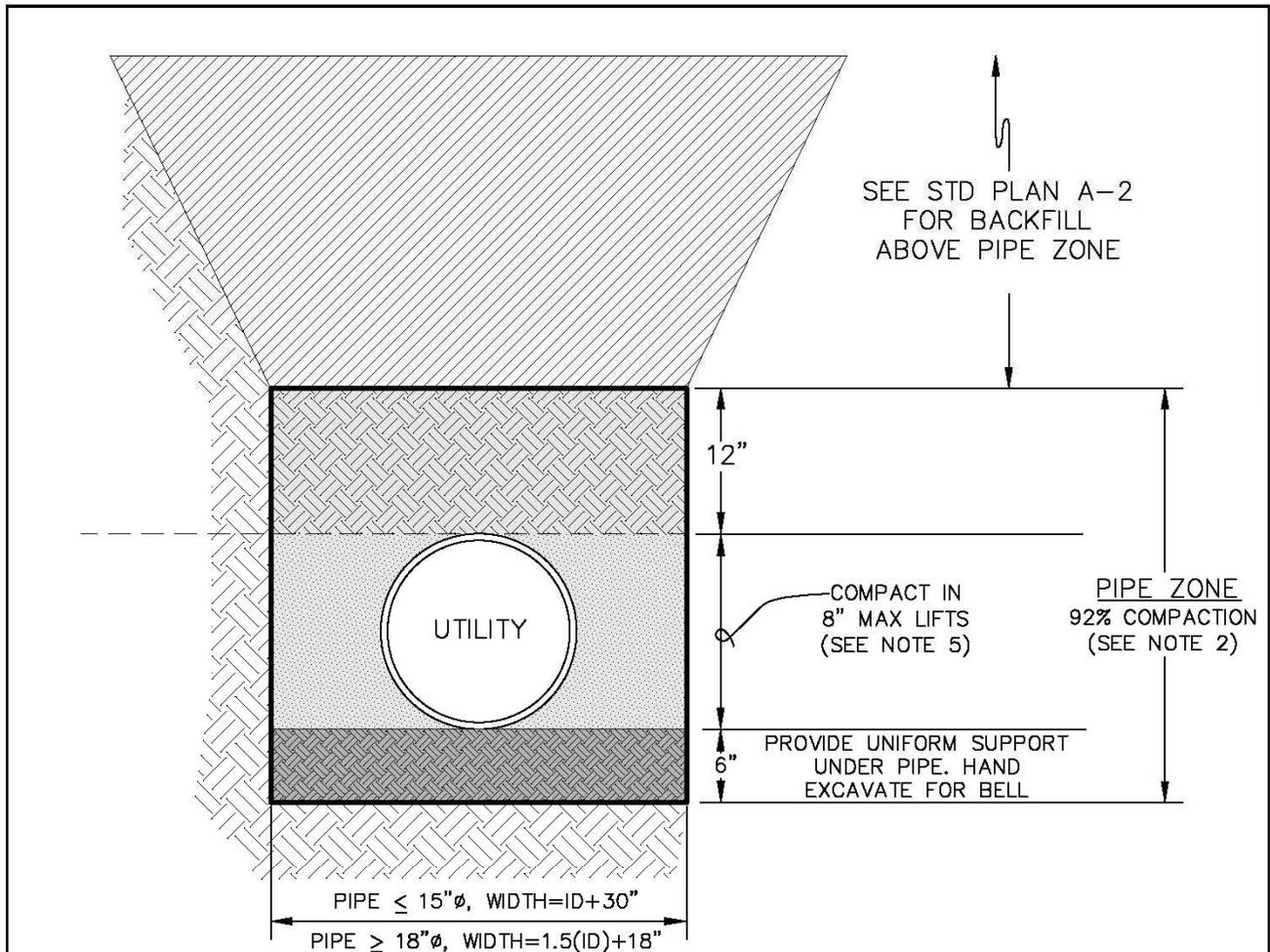
PUBLIC EMPLOYEES: Obstructing a public servant is a misdemeanor Title 9a.76.180 RCW: Washington Criminal Code. Intimidating a public servant is a Class B felony, Title 9a.76.180 RCW: Washington Criminal Code.

AUTHORIZED INSTALLERS: Construction of sewers shall only be performed by State of Washington licensed and bonded contractors. In the case of private sewers, sewers may also be constructed by the owner of the property to be served by the sewer. Owner installations are subject to the Director's approval. The installer shall be responsible for compliance with the City of Spokane Standards SMC 13.03.0622

APPENDIX A - STANDARD PLANS

Attached Standard Plans are for reference only; please verify that these are the most up to date prior to using them at the Website:

[Standard Plans - City of Spokane, Washington \(spokanecity.org\)](http://spokanecity.org)

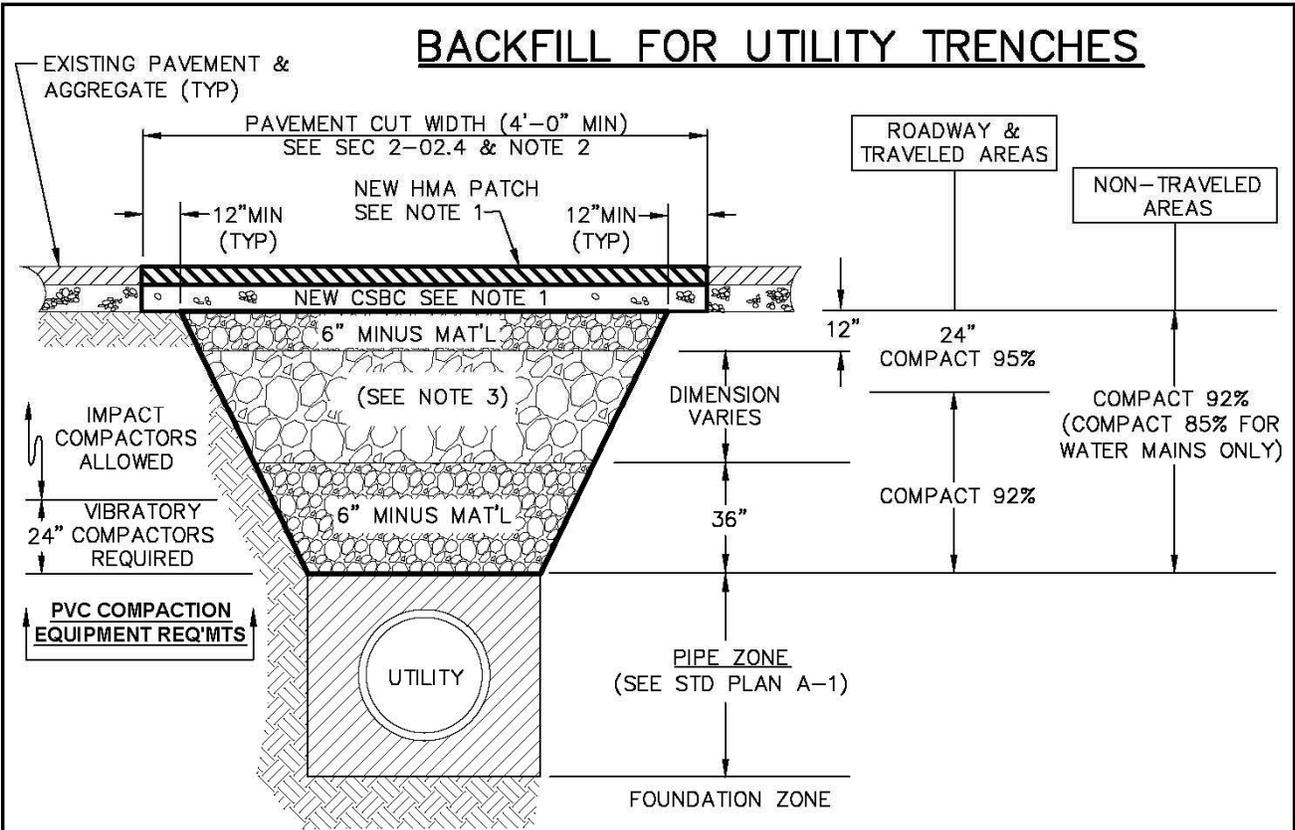


NOTES:

1. ALL MATERIAL IN PIPE ZONE INCLUDING 6" BENEATH THE PIPE SHALL CONFORM TO SEC 9-03.12(3) FOR SAND OR NATIVE MATERIAL EXCEPT AS FOLLOWS:
 - a) IF ROCK OR GROUND WATER IS PRESENT, PIPE ZONE MATERIAL SHALL BE CSTC PER SEC 9-03.9(3).
 - b) FOR RIGID SEWERS, PIPE ZONE MATERIAL ABOVE THE SPRING LINE MAY EITHER BE PER SEC 9-03.12(3), SAND OR NATIVE, OR 9-03.14(1), GRAVEL BORROW, EXCEPT THAT MAX MATERIAL SIZE SHALL BE 1-IN PER 1-FT OF PIPE DIAMETER UP TO A 2" MAX.
2. COMPACTION METHODS IN PIPE ZONE SHALL BE PER SECTION 7-09.3(9).
3. REFER TO 7-08.3(1)C FOR ADDITIONAL REQUIREMENTS.
4. WHERE TRENCH EXCAVATION IS PAID SEPARATELY, PAYMENT LIMITS SHALL BE PER SEC 2-09.4.
5. BEDDING TO BE INSTALLED PER SECTION 7-09.3(9). A LIFT LAYER UP TO A MAXIMUM OF 18 INCHES MAY BE APPROVED BY THE ENGINEER.

<p>APPROVED BY</p> <p>ENGINEERING OPERATIONS MANAGER KYLE TWOHIG</p> <p>CITY ENGINEER DANIEL ALBERT BULLER, P.E.</p>	<p>ADOPTED: 02/1986 REVISED: 02/2017 SUPERSEDES: 09/2010 CHECKED BY: JAG SCALE: NTS DWG/REV. BY: SRM/MLD</p>	<p>UTILITY TRENCH BACKFILL PIPE ZONE</p> <p>ENGINEERING SERVICES CITY OF SPOKANE, WASHINGTON</p>	<p>STANDARD PLAN No. A-1</p>
--	---	---	---

BACKFILL FOR UTILITY TRENCHES

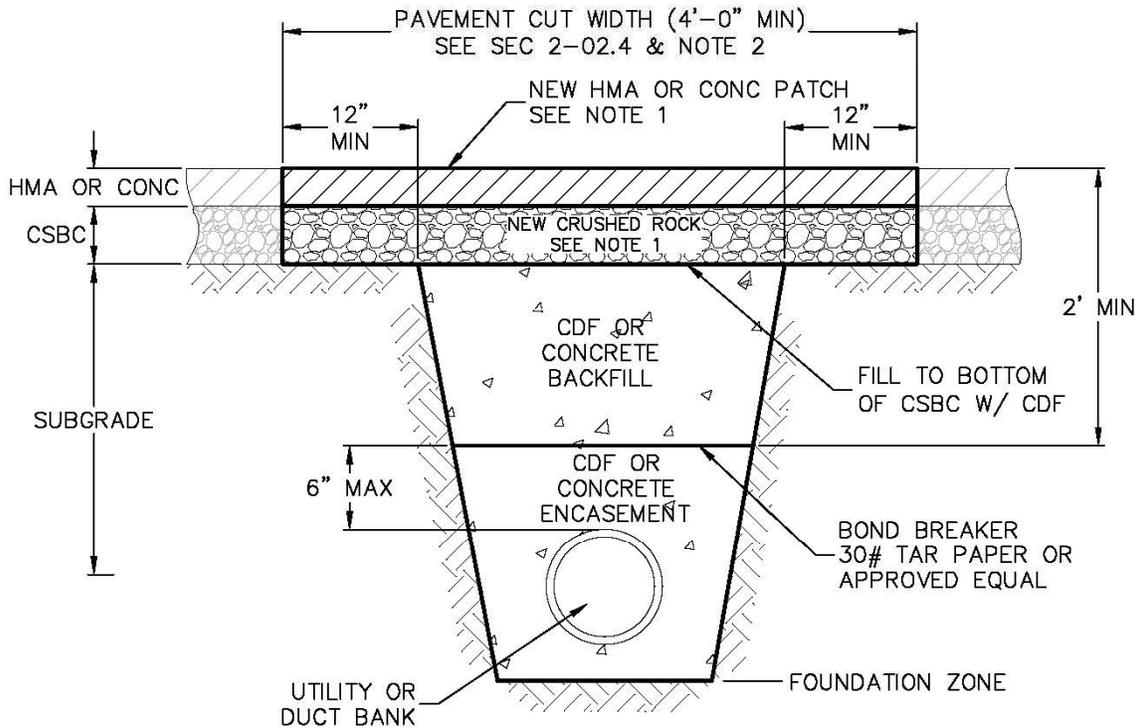


NOTES:

1. REPLACE HOT MIX ASPHALT (HMA) PAVEMENT & CRUSHED BASE PER STD PLANS W-108 & W-109.
2. SEE CITY OF SPOKANE (COS) PAVEMENT CUT POLICY IN THE COS DESIGN STDS, APPENDIX 'F' FOR ADD'NL REQ'MTS.
3. WATER LINES REQUIRE 6" MINUS MAT'L FOR THE ENTIRE BACKFILL. 12" MINUS MAT'L MAY BE USED FOR OTHER UTILITIES.
4. COMPACTION ABOVE THE PIPE ZONE SHALL BE MEASURED PER SEC 2-03.3(14)D. FOR ROADWAY & TRAVELED AREAS COMPACT TOP 2'-FT IN 4" MAX LIFTS. COMPACT BELOW TOP 2'-FT TO TOP OF PIPE ZONE IN 8" MAX LIFTS. FOR NON-TRAVELED AREAS COMPACT IN 8" MAX. LIFTS. ENGINEER MAY WAIVER THE 92% COMPACTION TO A LESSER VALUE FOR GRASS SWALES OR OTHER PLANTING AREAS.
5. FOR DEVIATION FROM LIFT THICKNESS, SEE SEC 7-08.3(3) FOR SEWER/STORM & SEC 7-09.3(11) FOR WATER UTILITIES.
6. TRENCH EXCAVATION MATERIALS SHALL BE USED FOR BACKFILL IF MATERIALS MEET GRADUATION REQ'MTS ABOVE. IMPORTED BACKFILL SHALL MEET THE REQ'MTS OF SEC 9-03.14(1), GRAVEL BORROW.
7. CONTROLLED DENSITY FILL (CDF) PER SEC 2-09.3(1)E, MAY BE USED IN LIEU OF NATIVE BACKFILL WHERE IT IS NOT PRACTICAL TO COMPACT BACKFILL TO THE REQ'D DENSITY. SUCH USE SHALL BE PRE-APPROVED BY THE ENGINEER. SEE STD PLAN A-3 FOR CDF BACKFILL REQ'MTS.

<p style="text-align: center;">APPROVED BY</p> <p style="text-align: center;">DIRECTOR, ENGINEERING SERVICES P. MIKE TAYLOR, P.E.</p> <p style="text-align: center;">PRINCIPAL ENGINEER, DESIGN GARY S. NELSON, P.E.</p>	<p>ADOPTED: <u>2/1990</u> REVISED: <u>09/2010</u> SUPERSEDES: <u>01/2008</u> CHECKED BY: <u>JAG</u> SCALE: <u>NTS</u> DWG/REV. BY: <u>SRM/MBM</u></p>	<p>UTILITY TRENCH BACKFILL ABOVE PIPE ZONE</p> <p>ENGINEERING SERVICES CITY OF SPOKANE, WASHINGTON</p>	<p>STANDARD PLAN No. A-2</p>
--	--	---	---

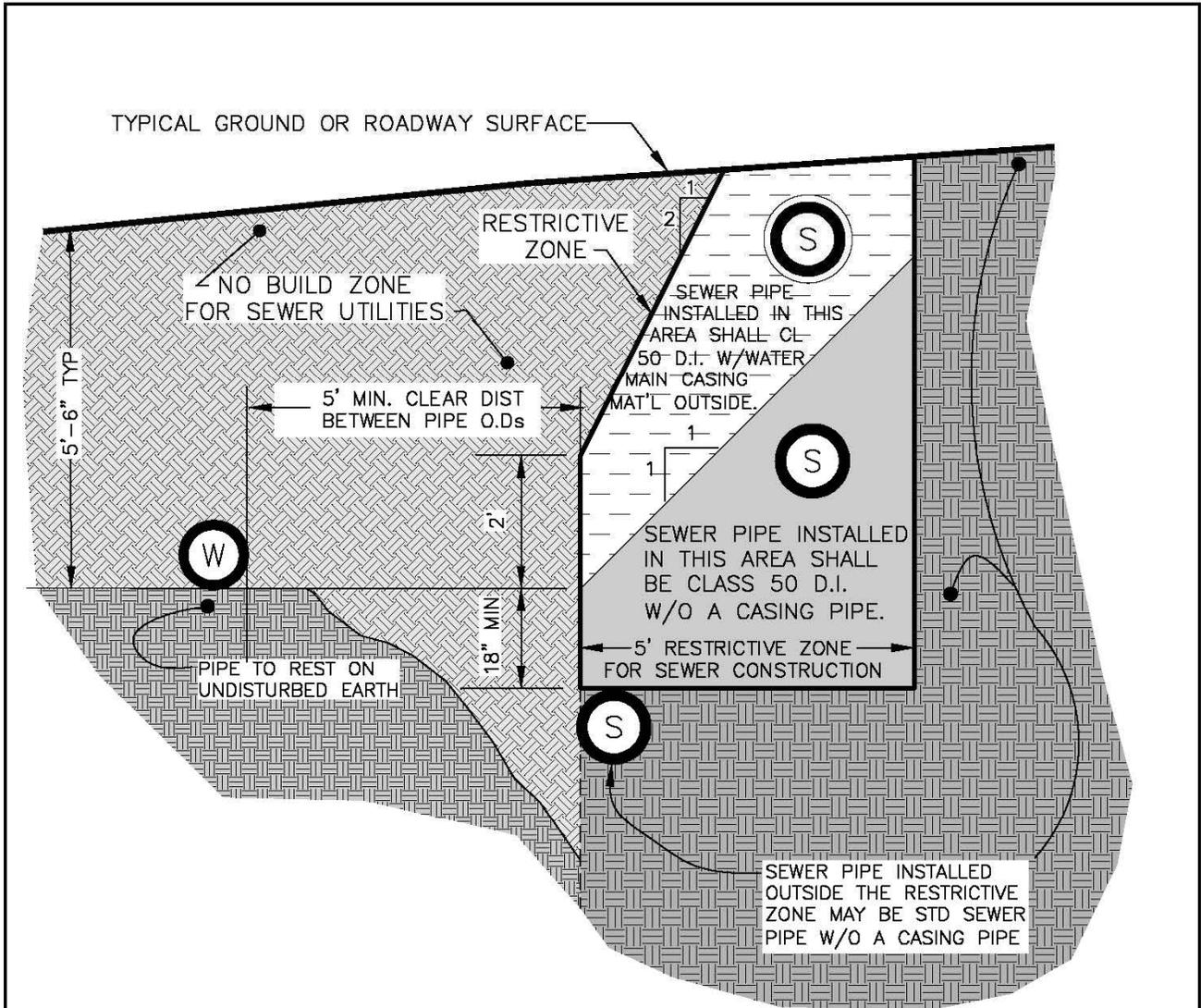
CDF BACKFILL FOR UTILITY TRENCHES



NOTES:

1. REPLACE HOT MIX ASPHALT (HMA) OR CONCRETE PAVEMENT PER CITY STANDARD PLANS W-102, W-108, & W-109.
2. SEE CITY OF SPOKANE (COS) PAVEMENT CUT POLICY IN THE COS DESIGN STANDARDS, APPENDIX 'F' FOR ADDITIONAL REQUIREMENTS.
3. BEDDING MATERIAL PER SEC 7-08.3(1)C MAY BE USED AS AN ALTERNATIVE TO CDF & CAPPED W/ CDF TO SERVE AS A LOCATION MARKER FOR THE UTILITY.
4. 30# TAR PAPER SHALL BE PLACED THE FULL LENGTH AND WIDTH OF A UTILITY TRENCH WHEN THE UTILITY IS ENCASED IN CDF OR CONCRETE AND THE REMAINDER OF THE TRENCH IS BACKFILLED WITH CDF OR CONCRETE.

<p style="text-align: center;">APPROVED BY</p> <p style="text-align: center; font-size: small;">ENGINEERING OPERATIONS MANAGER KYLE TWOHIG</p> <p style="text-align: center; font-size: small;">CITY ENGINEER DANIEL ALBERT BULLER, P.E.</p>	<p>ADOPTED: 04/2004 REVISED: 01/2017 SUPERSEDES: 04/2012 CHECKED BY: JAG SCALE: NTS DWG/REV. BY: TSS/MLD</p>	<p>UTILITY TRENCH BACKFILL REQUIREMENTS USING CDF OR CONCRETE</p> <p>ENGINEERING SERVICES CITY OF SPOKANE, WASHINGTON</p>
		<p>STANDARD PLAN No. A-3</p>

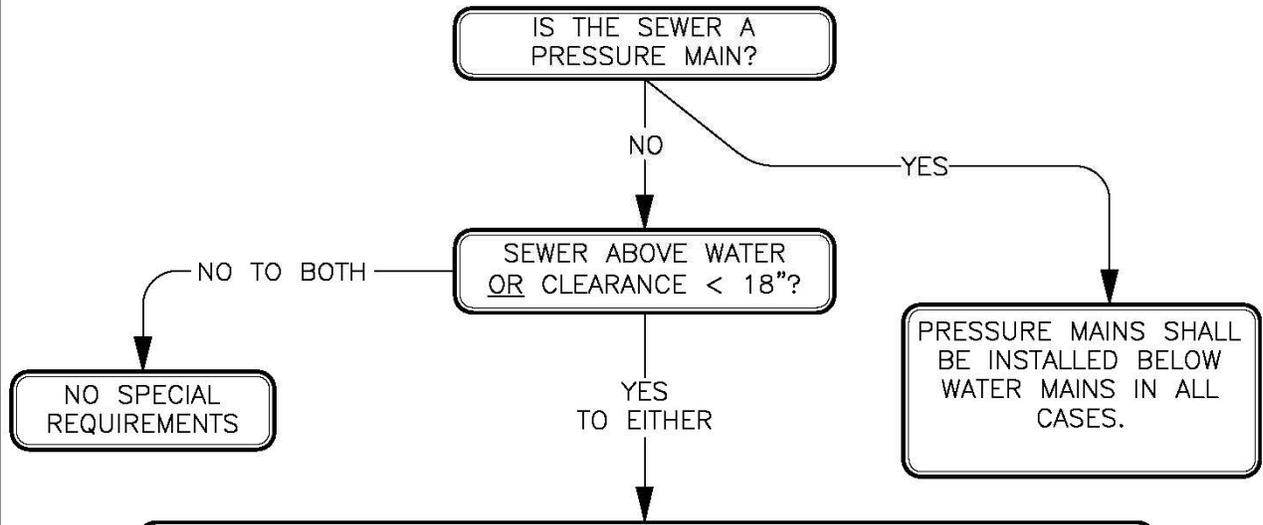


NOTES APPLY TO GRAVITY & PRESSURE SEWER MAINS INSTALLED W/IN THE RESTRICTIVE ZONE

1. SEWER MAINS 24" DIA & LARGER MAY REQUIRE MORE STRINGENT CONSTRUCTION STANDARDS.
2. SEWER MATERIALS & JOINTS SHALL MEET WATER MAIN STANDARDS.
3. SEWER MAINS SHALL BE INSTALLED & TESTED IN ACCORDANCE W/ SEC. 7-17.
4. THE RESTRICTIVE ZONE IS SYMMETRICAL ABOUT THE WATER LINE.

<p>APPROVED BY</p> <p><i>[Signature]</i> <small>DIRECTOR, ENGINEERING SERVICES</small> TOM L. ARNOLD, P.E.</p> <p><i>[Signature]</i> <small>PRINCIPAL ENGINEER, DESIGN</small> GARY S. NELSON, P.E.</p>	<p>ADOPTED: 3/1992 REVISED: 05/2007 SUPERSEDES: 12/1998 CHECKED BY: JAG SCALE: NTS DWG/REV. BY: REP/RLB</p>	<p>SEWER UTILITY LOCATION & CONSTRUCTION REQUIREMENTS</p> <p>ENGINEERING SERVICES CITY OF SPOKANE, WASHINGTON</p>	<p>STANDARD PLAN No. A-4</p>
---	--	--	---

WATER/SEWER CROSSINGS



CASE WATER OR WASTEWATER PIPE W/PIPE MEETING THE REQUIREMENTS FOR SANITARY SEWERS FOR A MIN. 10' MEASURED PERPENDICULAR ON EITHER SIDE OF CROSSING.

EXCEPTIONS:

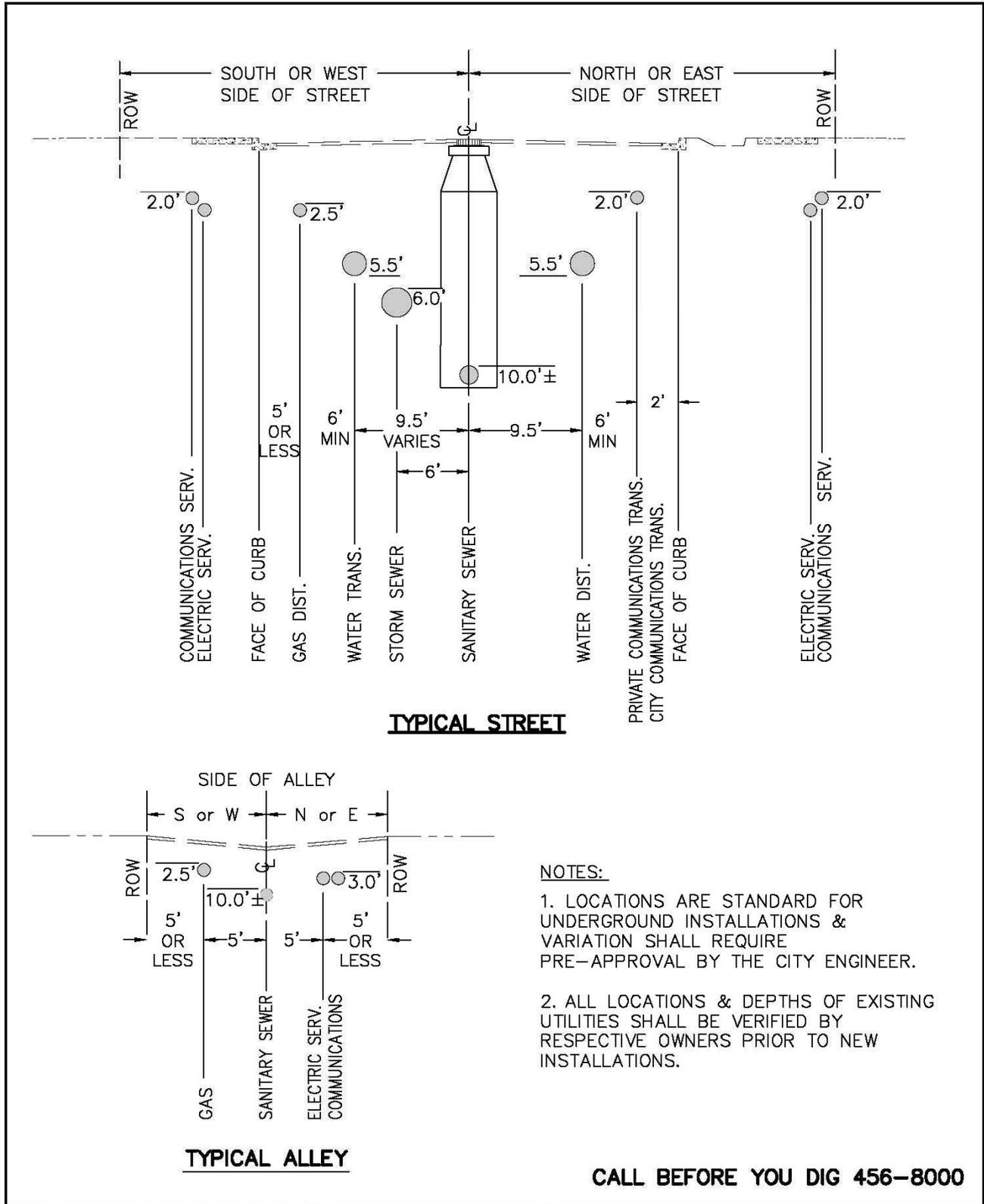
WHEN INSTALLING A WATER MAIN:

- THE CASING LENGTH FOR CROSSING SIDE SEWERS MAY BE REDUCED TO A MIN. 5' MEASURED PERPENDICULAR ON EITHER SIDE OF CROSSING PROVIDED THAT THE CASING IS PLUGGED AT BOTH ENDS WITH AN 18" LENGTH OF NON-SHRINK GROUT;
- STORM SEWER PIPE TO/FROM CATCH BASINS/INLETS NEED NOT BE CASED IF THE EXISTING PIPE IS DI FOR ENTIRE LENGTH OR, IF THE EXISTING STORM SEWER PIPE IS NOT DI, THEN AN 18' SEGMENT OF THE EXISTING STORM SEWER PIPE IS REPLACED WITH A SINGLE PIECE OF DI PIPE, CENTERED ON THE WATER MAIN.

NOTES:

1. CROSSING WATER/SEWER LINES OR THEIR CASINGS SHALL HAVE A 6" MIN VERTICAL SEPARATION.
2. FLOW CHART APPLIES TO BOTH EXISTING & NEW SERVICES & MAINS.
3. DISTANCES GIVEN ABOVE ARE MEASURED FROM OUTSIDE OF PIPES OR OTHER CASINGS.
4. DESIGNER/INSTALLER SHALL MAKE ALL REASONABLE ATTEMPTS TO MEET THE FOLLOWING:
 - SEWER BENEATH WATER BY AT LEAST 18"
 - CROSSINGS AS CLOSE TO 90° AS POSSIBLE

<p>APPROVED BY</p> <p>_____ DIRECTOR, ENGINEERING SERVICES P. MIKE TAYLOR, P.E.</p> <p>_____ PRINCIPAL ENGINEER, DESIGN GARY S. NELSON, P.E.</p>	<p>ADOPTED: <u>3/92</u> REVISED: <u>01/2009</u> SUPERSEDES: <u>01/2008</u> CHECKED BY: <u>JAG</u> SCALE: <u>NTS</u> DWG/REV. BY: <u>MDH/TSS</u></p>	<p>WATER AND SEWER CROSSINGS</p> <p>ENGINEERING SERVICES CITY OF SPOKANE, WASHINGTON</p>	<p>STANDARD PLAN No. A-5</p>
--	--	---	---



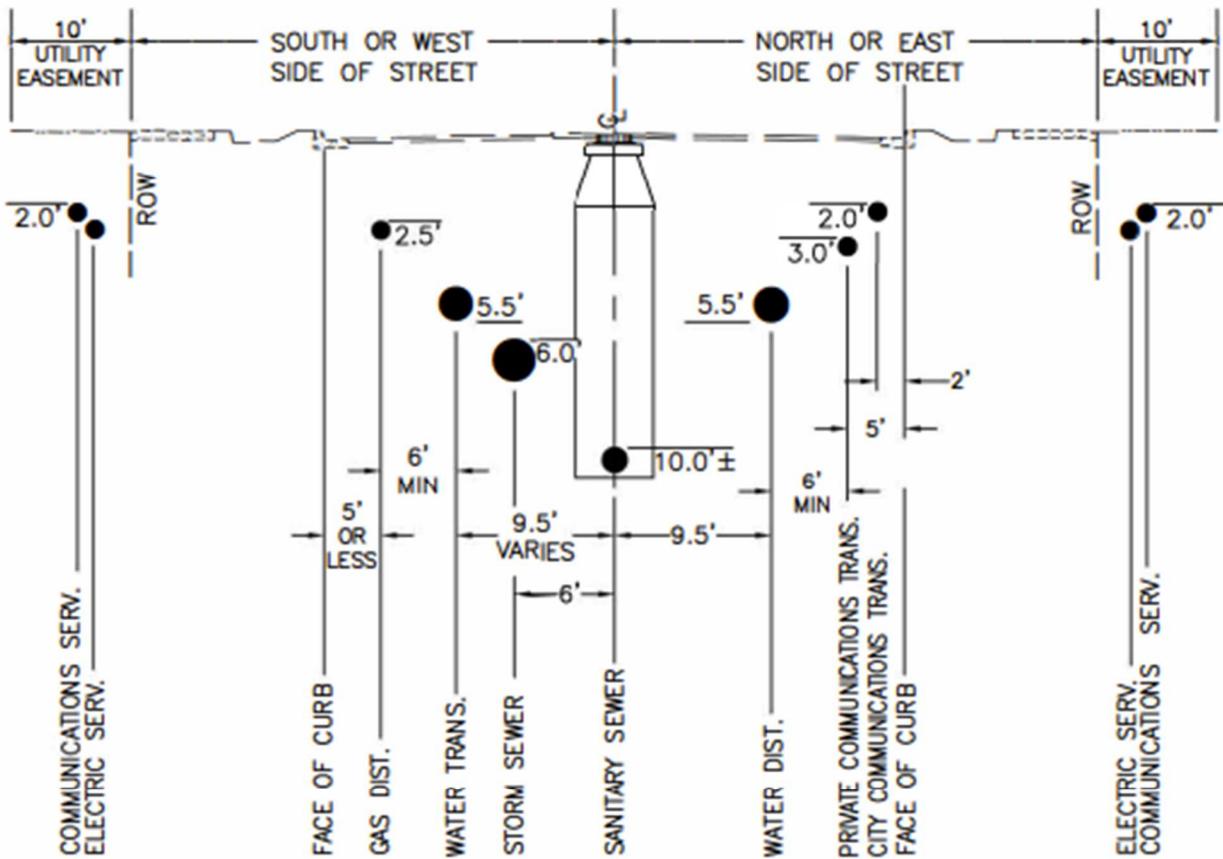
TYPICAL STREET

TYPICAL ALLEY

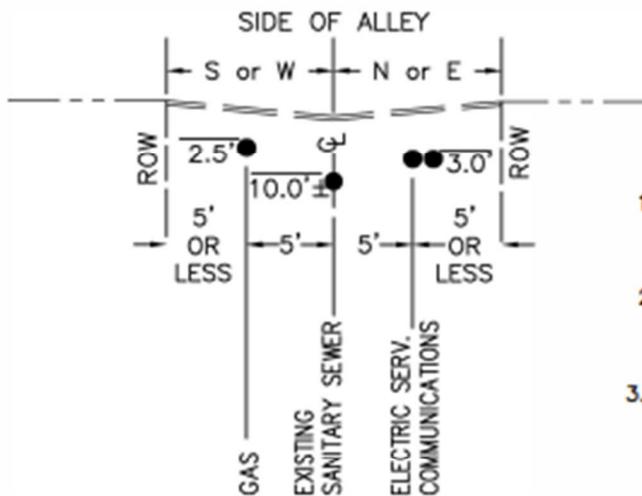
- NOTES:**
1. LOCATIONS ARE STANDARD FOR UNDERGROUND INSTALLATIONS & VARIATION SHALL REQUIRE PRE-APPROVAL BY THE CITY ENGINEER.
 2. ALL LOCATIONS & DEPTHS OF EXISTING UTILITIES SHALL BE VERIFIED BY RESPECTIVE OWNERS PRIOR TO NEW INSTALLATIONS.

CALL BEFORE YOU DIG 456-8000

<p>APPROVED BY</p>  <p>ENGINEERING OPERATIONS MANAGER KYLE TWOHIG</p>  <p>CITY ENGINEER DANIEL ALBERT BULLER, P.E.</p>	<p>ADOPTED: 02/1986 REVISED: 11/2018 SUPERSEDES: W-109A, 12/98 CHECKED BY: JAG NTS DWG/REV. BY: JHM</p>	<p>UNDERGROUND UTILITY LOCATION FOR EXISTING STREETS</p>  <p>ENGINEERING SERVICES CITY OF SPOKANE, WASHINGTON</p> <p>STANDARD PLAN No. A-6</p>
--	--	--



TYPICAL STREET



TYPICAL ALLEY

NOTES:

1. LOCATIONS ARE STANDARD FOR UNDERGROUND INSTALLATIONS & VARIATION SHALL REQUIRE PRE-APPROVAL BY THE CITY ENGINEER.
2. ALL LOCATIONS & DEPTHS OF EXISTING UTILITIES SHALL BE VERIFIED BY RESPECTIVE OWNERS PRIOR TO NEW INSTALLATIONS.
3. PUBLIC SEWERS IN ALLEYS ARE GENERALLY NOT ALLOWED, AND PROHIBITED IN RIGHT-OF-WAY WIDTHS OR EASEMENTS THAT ARE LESS THAN TWO TIMES THE SEWER INVERT BURIAL DEPTH.

CALL BEFORE YOU DIG 456-8000

APPROVED BY

 DIRECTOR OF ENGINEERING SERVICES DAN BULLER, P.E.

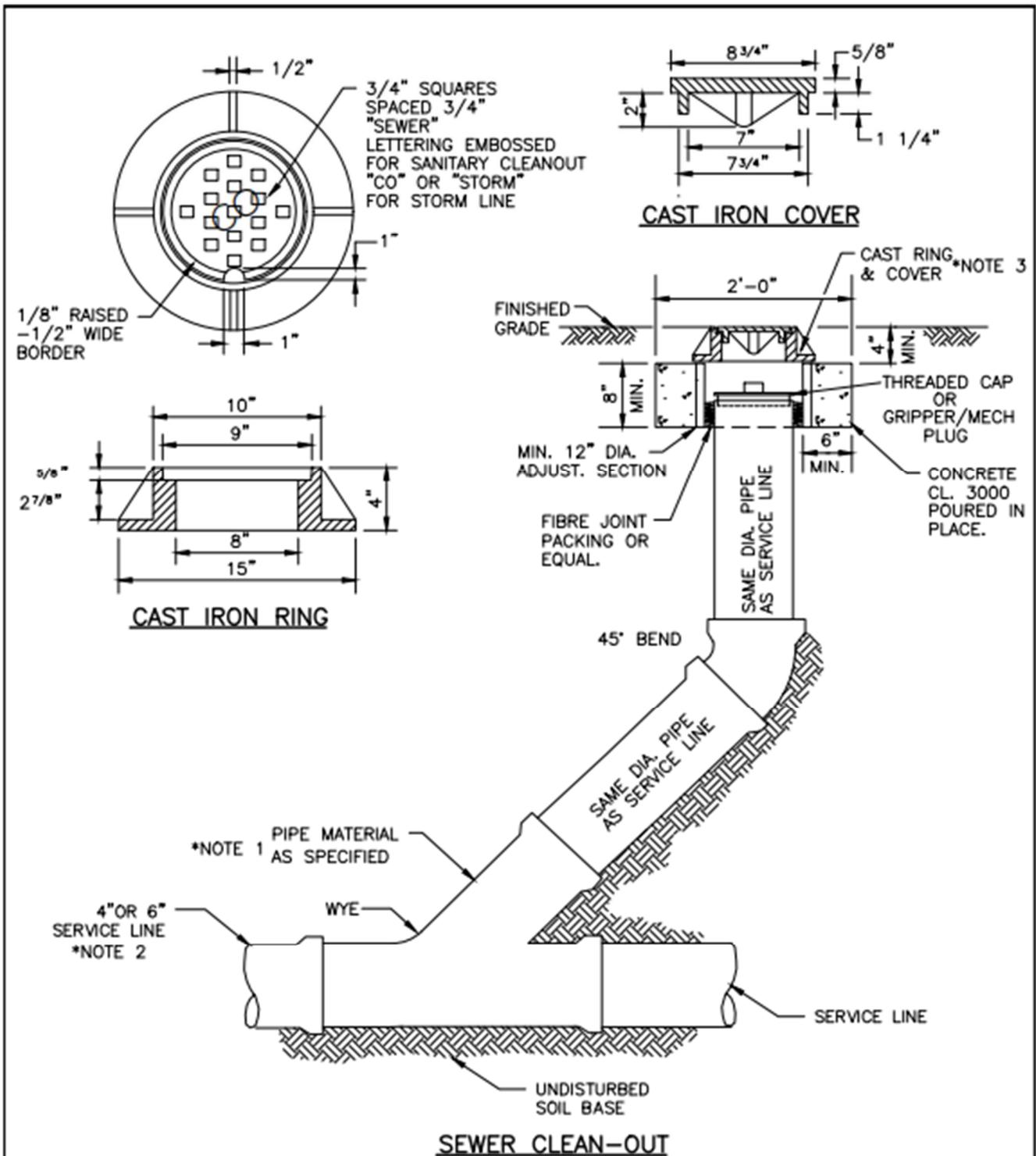
ADOPTED: _____
 REVISED: 04/2024
 SUPERSEDES: 11/2018
 CHECKED BY: JAG
 SCALE: NTS
 DWG/REV. BY: MLD

UNDERGROUND UTILITY LOCATION FOR NEW DEVELOPMENTS



ENGINEERING SERVICES
 CITY OF SPOKANE, WASHINGTON

STANDARD PLAN No.
A-7

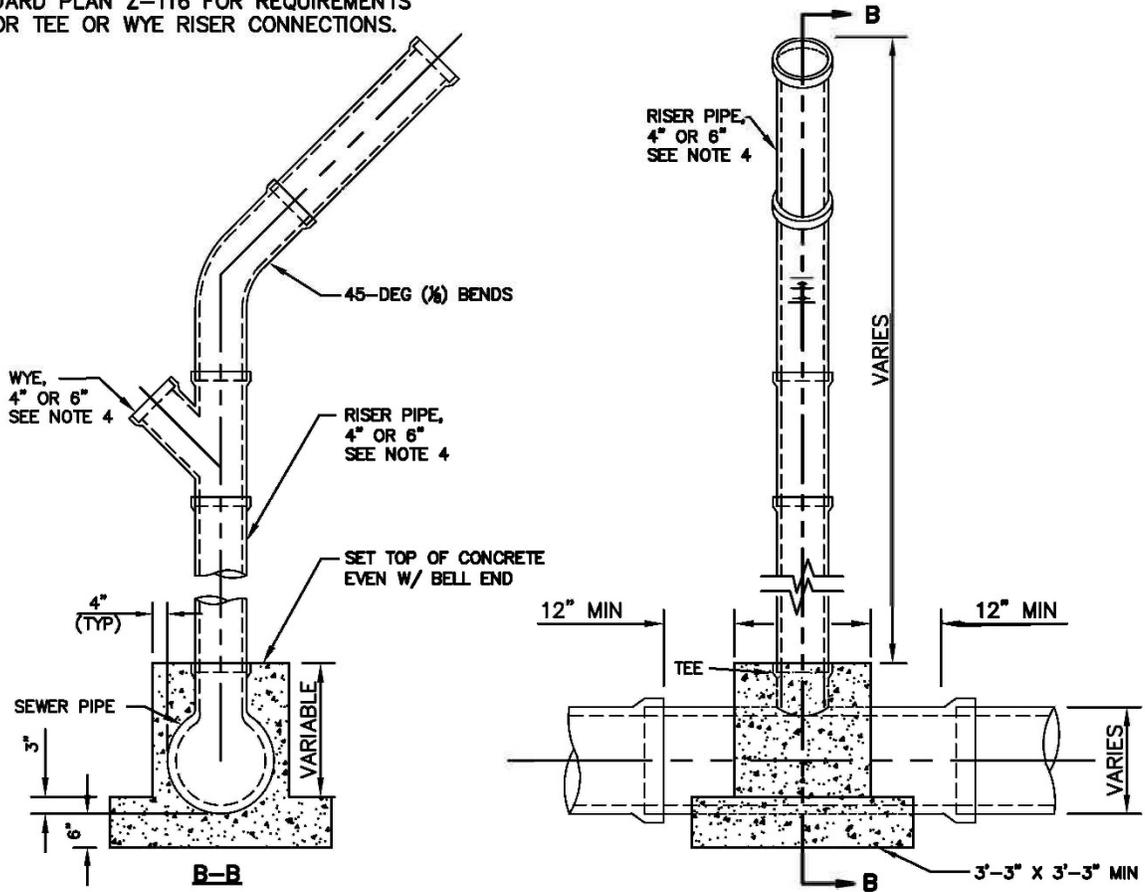


NOTES:

1. FOR SERVICE AND CLEANOUT CONSTRUCTION REQUIREMENTS, REFER TO THE CITY OF SPOKANE SIDE SEWER INSTALLATION HANDBOOK.
2. 8" OR LARGER SERVICE LINES/LATERALS REQUIRE A MANHOLE.
3. CLEANOUT TO BE INSTALLED OUTSIDE OF BUILDING FOOTPRINT. HDPE RING AND COVER WITH "SEWER" ALLOWED IN NON-TRAFFIC AREAS.

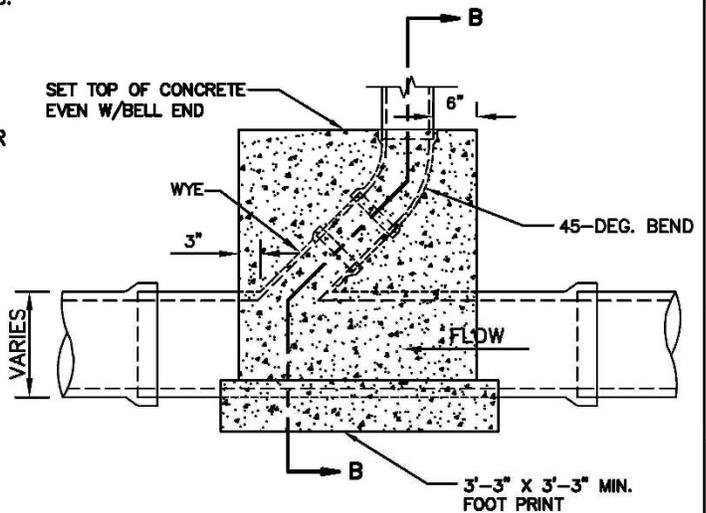
<p>APPROVED BY</p> <p style="text-align: center; font-size: small;">DIRECTOR OF ENGINEERING SERVICES DAN BULLER, P.E.</p>	<p>ADOPTED: <u>04/2023</u></p> <p>REVISED: _____</p> <p>SUPERSEDES: _____</p> <p>CHECKED BY: <u>DCS</u></p> <p>SCALE: <u>NTS</u></p> <p>DWG/REV. BY: <u>/EWS</u></p>	<p>SIDE SEWER CLEAN-OUT</p> <p>ENGINEERING SERVICES CITY OF SPOKANE, WASHINGTON</p>	<p>STANDARD PLAN No. Z-114A</p>
--	--	--	--

SEE STANDARD PLAN Z-116 FOR REQUIREMENTS FOR USE OR TEE OR WYE RISER CONNECTIONS.

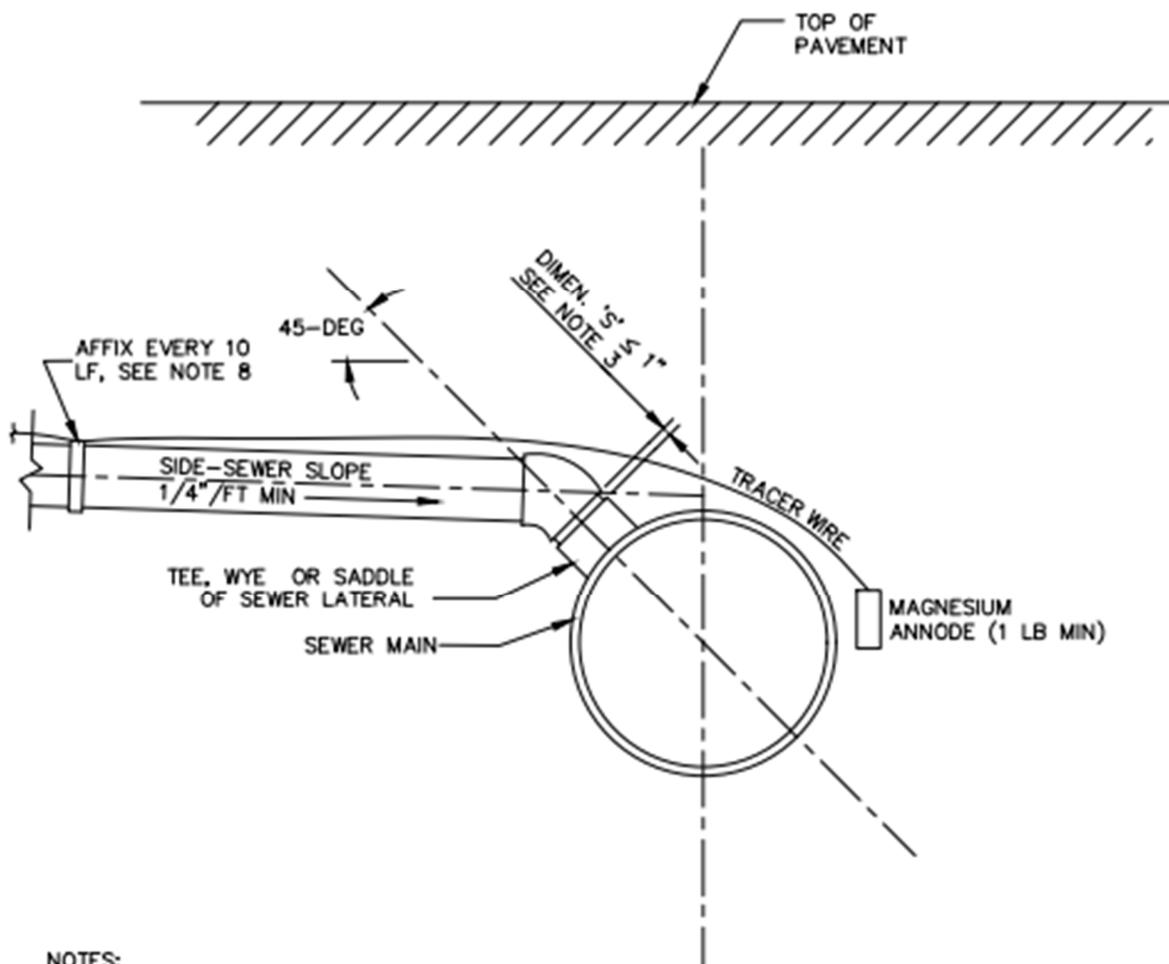


NOTES:

1. SEE SEC 7-17 FOR SANITARY SEWER PIPE.
2. SEE DESIGN STANDARD 4.3 FOR SIDE-SEWERS.
3. CONCRETE SHALL BE CLASS 3000 PER SEC 6-02.
4. A MAX OF (2) SIDE-SEWER BRANCHES ARE ALLOWED OFF A VERTICAL RISER. SIDE-SEWER BRANCHES SHALL BE NO LARGER THAN THE SIZE OF THE VERTICAL RISER. VERTICAL RISER SHALL BE MAX 6" DIAMETER PIPE.
5. USE OF THIS RISER CONNECTION IS FOR SPECIAL CONDITIONS ONLY AND REQUIRES PRIOR APPROVAL OF THE CITY ENGINEER.



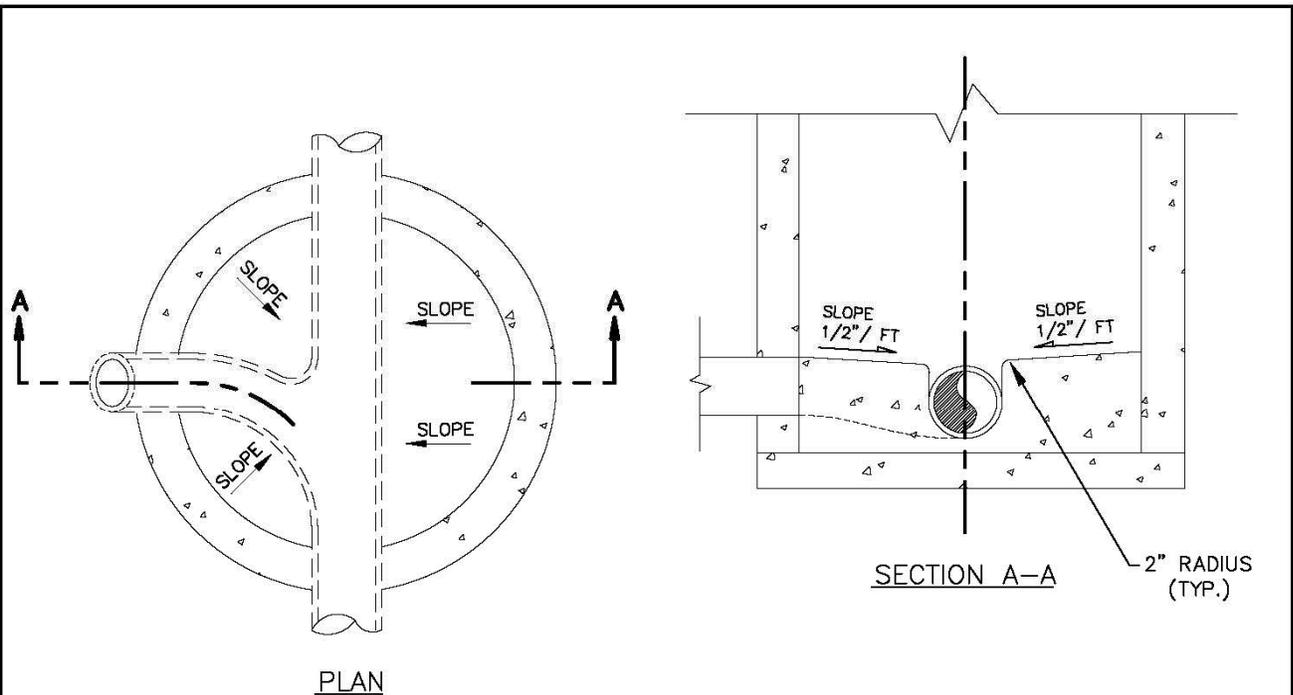
<p>APPROVED BY</p>  <p>ENGINEERING OPERATIONS MANAGER KYLE TWOHIG</p>  <p>CITY ENGINEER DANIEL ALBERT BULLER, P.E.</p>	<p>ADOPTED: 4/2004</p> <p>REVISED: 02/2018</p> <p>SUPERSEDES: 04/2013</p> <p>SCALE: NTS</p> <p>REVISED BY: MDH/MLD</p>	<p>SIDE-SEWER RISER CONNECTION</p> <p>ENGINEERING SERVICES CITY OF SPOKANE, WASHINGTON</p>	<p>STANDARD PLAN No. Z-115</p>
--	--	---	--------------------------------



NOTES:

1. SEE DESIGN STANDARD 4.3 FOR SIDE-SEWERS.
2. RESIDENTIAL AREAS REQUIRE A 4" MIN SIDE-SEWER STUB. COMMERCIAL AREAS REQUIRE A 6" MIN SIDE-SEWER STUB.
3. DIMENSION 'S' MAY BE INCREASED TO PROVIDE A DESIRED SIDE-SEWER DEPTH @ PROPERTY LINE, IF APPROVED BY THE CITY ENGINEER.
4. THE FIRST SIDE SEWER CONNECTION OF ANY SIZE (4" OR 6") DOWNSTREAM OF AN END OF RUN MANHOLE SHALL BE A WYE CONNECTION.
5. FOR OTHER 4" SIDE SEWER CONNECTIONS, TEES OR WYES MAY BE USED TO CONSTRUCT SIDE SEWER CONNECTIONS.
6. ONLY WYE CONNECTIONS SHALL BE USED FOR 6" SIDE SEWERS CONNECTING TO SEWER MAINS UP TO AND INCLUDING 21" DIAMETER.
7. TEES OR WYES ARE ALLOWED FOR 6" SIDE SEWER CONNECTIONS TO SEWER MAINS LARGER THAN 21" DIAMETER.
8. ON NON-METALLIC PIPE, SIDE SEWERS SHALL HAVE A 12 GA. COPPER WIRE AFFIXED EVERY 10' ALONG ITS FULL LENGTH AND TERMINATE AT THE SURFACE WITH WEATHER PROOF EXTERIOR TAPE TO EACH CLEANOUT OUTSIDE THE BUILDING.

APPROVED BY  DIRECTOR OF ENGINEERING SERVICES DAN BULLER, P.E.	ADOPTED: _____ REVISED: 04/2025 SUPERSEDES: 01/2017	SIDE-SEWER TYPICAL CONNECTION	
	SCALE: _____ NTS DWG/REV. BY: PCE/MLD		ENGINEERING SERVICES CITY OF SPOKANE, WASHINGTON

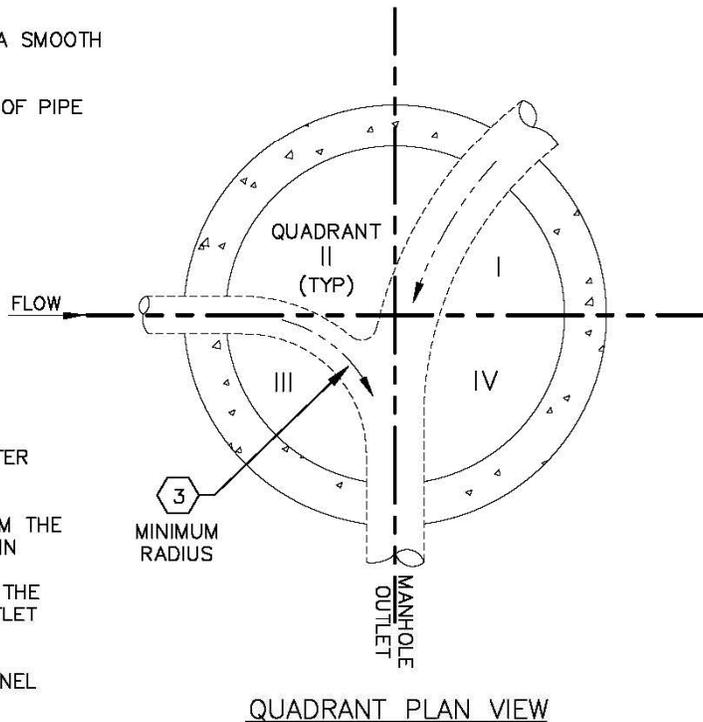


GENERAL NOTES:

1. THE SHELF AND CHANNEL SHALL HAVE A SMOOTH FINISH
2. CONSTRUCT SHELF TO THE CROWN LINE OF PIPE
3. SLOPE BENCHES 1:24

QUADRANT NOTES:

- ① NO SEWER PIPE (CENTERLINE) SHALL ENTER MANHOLE IN QUADRANT III & IV
- ② EXCEPT FOR A MANHOLE INLET 180° FROM THE CENTERLINE OF ANY CHANNEL ENTERING IN QUADRANT I OR II SHALL BE A SMOOTH, CONTINUOUS ARC THAT IS A TANGENT TO THE CENTERLINE OF THE OUTLET PIPE AT OUTLET MANHOLE WALL
- ③ MINIMUM RADIUS OF ANY MANHOLE CHANNEL CENTERLINE SHALL BE EQUAL TO THE MANHOLE INSIDE DIAMETER



<p style="text-align: center;">APPROVED BY</p> <p style="text-align: center; font-size: small;">ENGINEERING SERVICES DIRECTOR KYLE TWOHIG</p> <hr/> <p style="text-align: center; font-size: small;">ENGINEER DAN BULLER, P.E.</p>	<p>ADOPTED: <u>02/2019</u></p> <p>REVISED: _____</p> <p>SUPERSEDES: _____</p> <p>CHECKED BY: _____ WRP</p> <p>SCALE: _____ NTS</p> <p>REVISED BY: _____ CDJ</p>	<p>MANHOLE CHANNEL DETAIL – TYPICAL</p> <p>ENGINEERING SERVICES CITY OF SPOKANE, WASHINGTON</p>	<p>STANDARD PLAN No. Z-117</p>
--	---	--	---

ATTACHMENT A: BELLY AGREEMENT

Attached Belly Agreement, on the following page, should be signed by the property owner by the time of inspection. See the [Testing Requirements and Procedure Section](#) under Belly Agreement.



Belly Agreement

Permit Number:	Company:
Property Address:	Spokane County Parcel Number:

Sewer pipe bellies are sags or low spots in sewer pipes where the pipe has settled. A belly in a sewer line is an area where liquids can pool, solids can settle and can cause blockage or back up of the sewer line.

Lining a sewer pipe fixes problems such as root intrusion but may not fix bellies. That is, the liner or burst pipe follows the path of the existing pipe, which means it will not correct or remove existing bellies in the pipe. For pipe bursting, it is also possible for gravel or debris to cause the burst pipe to go off grade which can result in a belly in the line. There is no guarantee that the line will not back up if a belly is severe. In accordance with the Spokane Municipal Code Chapter 13.03, it is the property owner's responsibility to maintain side sewer pipes and proper connection to the public sewer system.

The only way to fully repair a belly is to excavate. Excavation to repair a belly may be expensive and challenging. While repair is recommended, it may not be required so long as the property owner/homeowner agrees and assumes to take full responsibility for the bellies and any consequences.

By signing this document, I, the undersigned property owner, agree and acknowledge that the City of Spokane is not responsible for any and all bellies located within my side sewer line.

I further agree and acknowledge that any and all responsibility for any costs and/or damages as a result of any and all consequences from bellies that remain or are created in the line after pipe bursting or relining of the side sewer up to the City sewer main remain the responsibility of me as the property owner and/or my successors in interest.

I further acknowledge that I understand that lining/pipe bursting does not repair bellies and that approval of the work by the City of Spokane inspector is not to be understood that bellies have been repaired.

Property Owner – Print Name: _____

Property Owner – Signature: _____

Date _____