

# Side Sewer Installation Handbook



**Spokane County**  
ENVIRONMENTAL SERVICES

# SPOKANE COUNTY

## SIDE SEWER INSTALLATION HANDBOOK

**This Handbook replaces the Brochure BP-07, published by the Department of Building & Planning.**

The Side Sewer Installation Handbook (“Handbook”) is Technical Reference E of the Spokane County Standards Manual for Road and Sewer Construction (the “Manual”). 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 Spokane County’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 Director of the Environmental Services Department if deemed necessary. In the event these regulations do not specifically or completely cover any given situation, the Director shall have the final decision making authority.

The specifications contained within shall not be construed as imposing upon Spokane County Environmental Services Department 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 Spokane County will exercise good judgment and workmanship. [Cross Reference: SSO 8.03.6220].

### **PLEASE NOTE:**

- **Working in a trench is inherently dangerous and trenches for sewer lines are usually deeper than other utilities. In addition, electrical 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 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](http://www.callbeforeyoudig.org)

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

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## 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. [ SCC 8.03.6040]

- **The permit application may be downloaded from the County's website at [www.spokanecounty.org](http://www.spokanecounty.org) or acquired at the Spokane County Public Works Building.**

The sewer connection permit may be issued to either the property owner or a contractor licensed to install building sewers by the State of Washington. The property owner may contact L&I at 1-800-647-0982 or visit their website at [www.LNI.wa.gov/tradelicensing](http://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.

Each tax parcel of land upon which work is being performed must have its own permit. A permit may include connection of multiple buildings or multiple permit categories occurring on a single tax parcel of land. Additional fees for the additional building connections or items of work will apply to the cost of the permit. Situations not specifically covered above shall be determined by the Director. [Cross Reference: SCC 8.03.6040]

- **A Sewer Connection Permit is valid for 12 months from the date of issuance.**
- **An administrative fee may be assessed for working without a valid permit. [Cross Reference: SCC 8.03.8500]**

In addition to the County's sewer connection permit, 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 Environmental Services Department at **(509) 477-3604** during normal business hours. Please be prepared to provide the jobsite address, the name of the installer and the permit number. **Requests which are left on the phone mailbox outside of normal business hours will not be honored.**

- **One working days' notice is required when scheduling inspections performed by the Division of Utilities.**

CANCELLING OR POSTPONING A SCHEDULED INSPECTION. The installer **MUST** call the Environmental Services Department at (509) 477-3604 a **minimum of one-half hour prior to the scheduled inspection time.** Failure to provide adequate notice may result in assessment of a call back inspection fee.

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 Public Works Building. The Director shall inform the installer if the sewer inspection is subject to overtime fees. [Cross Reference: SCC 8.03.8500]

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 Environmental Services Department at **(509) 477-3604** at least 24 hours in advance. **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 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 the two (2) hour time limit 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 Environmental Services 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.**

The sewer connection permit 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 permit 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 half (1/2) 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 half (1/2) 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

<b>Gravity Sewers installed by excavation method.</b>	PVC Pipe & Fittings	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.
<b>Gravity Sewers installed by excavation method.</b>	Ductile iron	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
<b>Gravity Sewers installed by excavation method.</b>	High Density Polyethylene (HDPE)	Min. wall thickness DR11. Manuf. In accordance with ANSI/AWWA C901, ASTM D3035. Joints shall be Standard Mechanical HDPE couplings or fusion welded conforming to ASTM D3261
<b>Gravity Sewers installed by excavation method.</b>	Vitrified Clay Sewer Pipe	Pipe conforming to ASTM C700. Joints shall be compression joints in accordance with ASTM C425.

<b>Gravity sewers installed by boring method</b>	PVC Pipe & Fittings	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.
<b>Pressurized Sewers</b>	<p>Ductile Iron</p> <p>PVC Pipe / Schedule 80</p> <p>High Density Polyethylene (HDPE) 1-1/4" – 3" 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 as approved by the Director.</p> <p>ASTM D 1785 meeting Class 200 with fittings per ASTM D 2466 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 SDR 11. Joints shall be Standard Mechanical HDPE couplings or fusion welding conforming to ASTM D3261. Joining of plain-end pipes shall be by butt fusion per PPI TR-33. Inserted Stiffeners are required when using mechanical couplings.</p>

## **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 with manufacturer's specifications and recommendations as specified by the following ASTM numbers:

- 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. Floor drains are not required to be connected to the public sewer if their sole purpose is to receive potable water which emanates from the buildings plumbing system. It is a violation of County Code to discharge or cause to be discharged any storm sewage or storm water into a sanitary sewer [Cross Reference SCC 8.03.3200].

BEDDING THE PIPE: (Ref. Drawing 7) Private sewers shall be laid on a firm bedding throughout the length of the pipe on material acceptable to the Director. Approved bedding material shall be 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. 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 practical alignment 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 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. 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. 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.

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. The pipe shall be installed with the bell end upstream (toward the structure). Pipe shall be installed with markings or letterings readily visible to the inspector.

Pressure side sewers shall have a minimum four feet (4') of cover over top of pipe. 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 pipe as a result of his 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 sewage container abandonment standards.
- The pipe must be a straight, continuous piece. No joints are permitted within the tank.

### **PIPE FITTINGS & CONNECTIONS**

**Refer to drawings 1, 2, 3, 4 and 6**

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 (22-1/2°), eleven and a quarter degree (11-1/4°) 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 (22-1/2°) fitting and a forty-five-degree (45°) fitting is ALLOWED (note: See Cleanouts).
- 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.
- 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 Drawings 2, 3 and 4**

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 Environmental Services Department to insure 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.

Pressure side sewer connections to a gravity or pressure sewer stub shall be made by a solvent weld adaptor. A clean-out of the same size as the downstream piping shall be installed at this junction.

### **CONNECTING TO THE BUILDING DRAIN**

**Refer to Drawing No. 1**

The gravity side sewer shall only connect to Cast Iron, ABS or D3034 SDR 35 PVC building drains.  
CONNECTION TO ANY OTHER PIPE TYPE MATERIAL REQUIRES PRIOR APPROVAL FROM

THE ENVIRONMENTAL SERVICES 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 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.

- Rubber fittings and donuts shall be Elastomeric Plastic 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 Fernco couplers are allowed.**
- For PVC to ABS connections, use PVC to ABS transition coupler with approved transition glue or a Fernco rubber coupler. **Fernco rubber couplers are allowed ONLY at the building drain connection.**

### **BACKFILLING THE TRENCH**

The trench shall not be backfilled until the pipe installation has passed inspection by the Spokane County Environmental Services 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 layers and each layer compacted with appropriate compacting equipment. The soil should be moist, not wet, to facilitate compaction.

### **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 Environmental Services 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.

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. 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 Drawing No. 5**

#### **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.
- When the cumulative change in direction exceeding one hundred thirty-five degrees (135°). This includes vertical step downs and horizontal piping to the entry point of the side sewer stub into the sewer main.
- 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.
- 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°) 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.

## **BACKWATER VALVES (BWV)**

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 backwater valve (BWV). Fixtures with rim elevations above this elevation shall not discharge through *this* backwater valve. If installation of the required BWV 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 BWVs 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.

The BWV must be readily surface accessible for inspection, maintenance and repair. A watertight housing shall surround the BWV 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 BWV for support. BWVs shall have cast iron, plastic, or brass bodies, non-corrosive bearings, seats and self-aligning discs, 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. (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 is 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.

The County reserves the right to require sewer pipe testing for non-typical installations.

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 Spokane County 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 five (5) to fifteen (15) minutes. NO LEAKAGE IS ALLOWED.

#### 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.

#### 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 psig pressure 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 section. 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.

### **SEPTIC TANK/WASTE WATER RECEPTACLE ABANDONMENT**

Septic tanks and other on-site wastewater receptacles removed from service as part of a connection to the Spokane County 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 Spokane County Environmental Services Department.

Spokane County Environmental Services 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 Environmental 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 REGIONAL SEWER SYSTEM.**

2. 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 or coarse sand. Native inorganic soil or clean fill material may be accepted, providing these materials are carefully placed and hand tamped to ensure all voids are reached. 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).
3. The time limit to complete abandonment is seven (7) days after final connection to sewer.
4. Improperly abandoned septic tank(s)/receptacle(s) are subject to a re-inspection fee. Spokane County Environmental Services 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**

### **Refer to Drawing No. 8**

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 sewer main, 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.

For systems where sewage is being pumped into a pressurized sewer main, 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. In some cases, the Director can require that the pump system installed shall be a duplex system.

## 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 (a.k.a BASIN)

The pump chamber, or 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 Environmental Services Department 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.

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 feet per second (2 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

THE FOLLOWING REGULATIONS PERTAIN TO THE INSTALLATION REQUIREMENTS OF GREASE INTERCEPTORS INSTALLED ON THE EXTERIOR OF THE BUILDING FOR COMMERCIAL APPLICATIONS. GREASE TRAPS INSTALLED WITHIN THE BUILDING(S) SHALL MEET THE REQUIREMENTS OF THE BUILDING DEPARTMENT OF THE JURISDICTION HAVING AUTHORITY.

GREASE INTERCEPTORS SHALL BE INSTALLED AND OPERATED AS REQUIRED BY ARTICLE 5000 OF CHAPTER 8.03 OF THE SPOKANE COUNTY SANITARY SEWER CODE. GREASE INTERCEPTORS SHALL COMPLY WITH THE FOLLOWING DESIGN AND CONSTRUCTION SPECIFICATIONS.

**GRAVITY GREASE INTERCEPTORS:** Any commercial food facility which generates 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 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. The grease interceptor shall be designed, constructed, and sized in accordance with the current edition of the Uniform Plumbing Code.
- e. Grease interceptor shall be maintained in operating condition by periodic removal of the accumulated grease and latent materials. Should Spokane County determine that a grease interceptor is not being properly maintained, a maintenance program shall be initiated.

**EXISTING GREASE INTERCEPTORS:** Existing grease interceptors shall be thoroughly pumped out and cleaned by a licensed septic tank pumper and inspected by County staff prior to the building's connection to the public sewer. The grease trap may have to be pumped out to allow for a proper inspection. A grease interceptor which does not meet County standards must be repaired or replaced prior to the building's connection to the public sewer.

**INDUSTRIAL INTERCEPTORS (CLARIFIERS) AND SEPARATORS:** Interceptors (clarifiers) (including grease, oil, and sand interceptors (clarifiers), etc.) shall be provided when, in the judgment of the Director or as required by the "SSO", they are 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 Director in accordance with Spokane County Sanitary Sewer Ordinance. 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 an interceptor (clarifier) of an approved design for this use.
- f. Access covers, lids and traffic rated interceptors (clarifiers) and separators shall conform to the grease trap requirements contained in these regulations.

## **ABANDONMENT OF SEWER SERVICE**

Abandonment of the sewer service requires a permit and inspection by the Environmental Services 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 the public sewer must be plugged or capped with fittings manufactured for this specific purpose.

## **SECTION II - ADMINISTRATIVE**

**AUTHORITY:** Pursuant to the authority of Spokane County Sanitary Sewer Ordinance No. 96-0752 adopted October 1, 1996, the Director of the Spokane County Environmental Services Department is authorized to prepare, revise and administer standards, as established by resolution by the Board of County Commissioners. The standards shall be printed in manual form as a "separate" section (or Appendix) of the "Spokane County Standards for Road and Sewer Construction" and shall be referred to as the "Sewer Standards Handbook". This handbook contains excerpts from the Sanitary Sewer Ordinance (referred to as "SSO" in these regulations) and these excerpts may be enhanced to provide comprehensive standards. [Cross References: SSO 8.03.1835, 8.03.6220]

**ENFORCEMENT:** Spokane County Environmental Services Director shall enforce these regulations and may refer violation cases to Spokane County Prosecuting Attorney Office, as appropriate. In the event of a violation, the Director and/or Spokane County Prosecutor's Office 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. [Cross Reference: SSO 8.03.6220 D].
- 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 SPOKANE COUNTY OR ITS EMPLOYEES:** This regulation shall not be construed as imposing upon Spokane County any liability or responsibility resulting from any defective portion of the side

sewer or the installation thereof; nor shall Spokane County 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 ordinance effective within Spokane County, 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 Spokane County Sanitary Sewer Ordinance and Spokane County Standards for Road and Sewer Construction. [Cross Reference: SCC 8.03.6005]

## DEFINITIONS

The definitions provided below are an excerpt from Article 1000 of the SSO 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 SSO but are deemed applicable to the design and construction of side sewers.

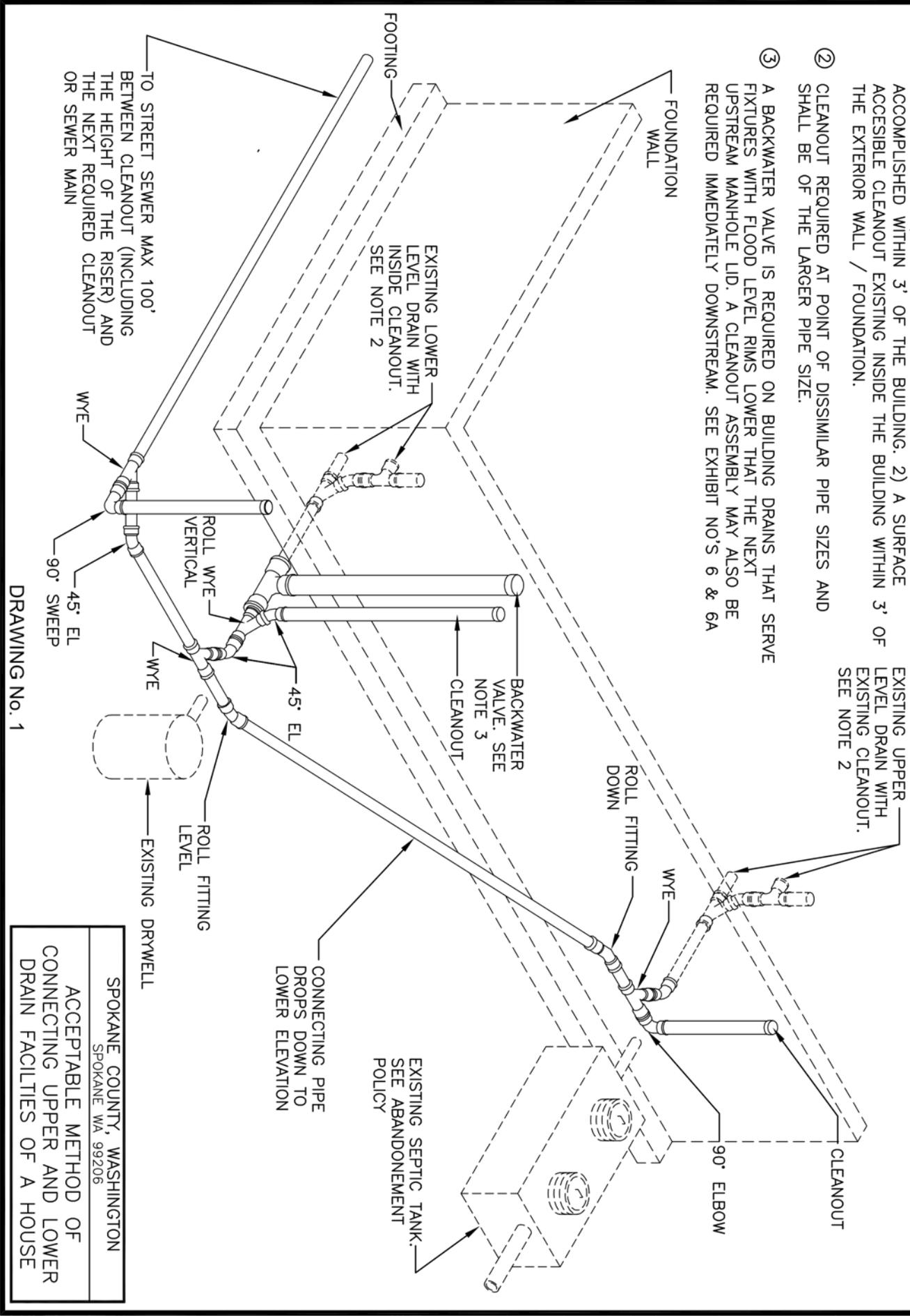
- a. "ABS" refers to Acrylonitrile-Butadiene pipe.
- b. "BUILDING DRAIN" is that part of the lowest piping of a drainage system which receives the wastewater discharge from a structure or building to a point two feet outside the outer face of a structure, wall or foundation and conveys it to the sewer 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 Spokane County Environmental Services Department, or his/her designee. [Cross Reference: SSO 8.03.4800}
- e. "DRY SIDE SEWER" (also referred to as "double plumbing") is a sewer service line installed on properties with on-site sewage disposal systems, not connected to the building drain, to facilitate future connection to a public sewer once the public sewer becomes available.
- f. "FLOOD-LEVEL RIM" is the top surface of a fixture 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. "SSO" The Sanitary Sewer Ordinance

# NOTES

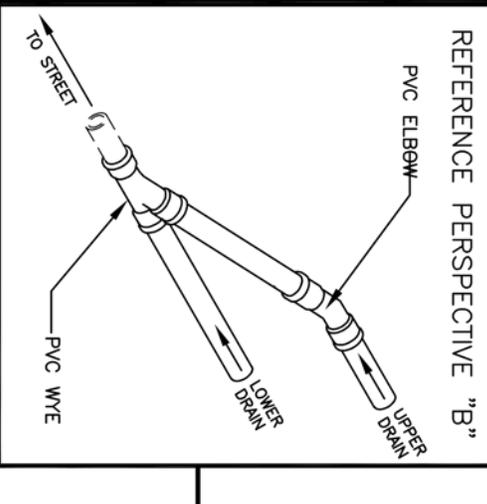
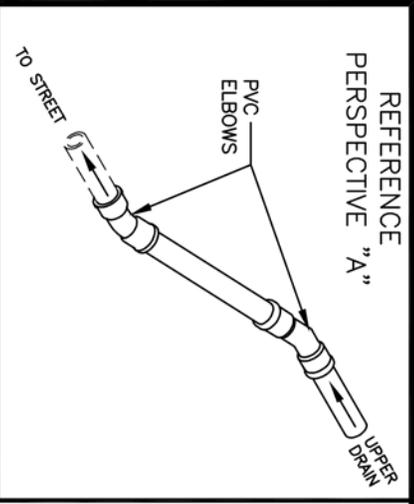
- ① CLEANOUT IS REQUIRED AT POINT OF CONNECTION TO THE BUILDING DRAIN UNLESS: 1) A 90° CHANGE OF DIRECTION CAN BE ACCOMPLISHED WITHIN 3' OF THE BUILDING. 2) A SURFACE ACCESSIBLE CLEANOUT EXISTING INSIDE THE BUILDING WITHIN 3' OF THE EXTERIOR WALL / FOUNDATION.
- ② CLEANOUT REQUIRED AT POINT OF DISSIMILAR PIPE SIZES AND SHALL BE OF THE LARGER PIPE SIZE.
- ③ A BACKWATER VALVE IS REQUIRED ON BUILDING DRAINS THAT SERVE FIXTURES WITH FLOOD LEVEL RIMS LOWER THAN THE NEXT UPSTREAM MANHOLE LID. A CLEANOUT ASSEMBLY MAY ALSO BE REQUIRED IMMEDIATELY DOWNSTREAM. SEE EXHIBIT NO'S 6 & 6A

EXISTING UPPER LEVEL DRAIN WITH EXISTING CLEANOUT. SEE NOTE 2

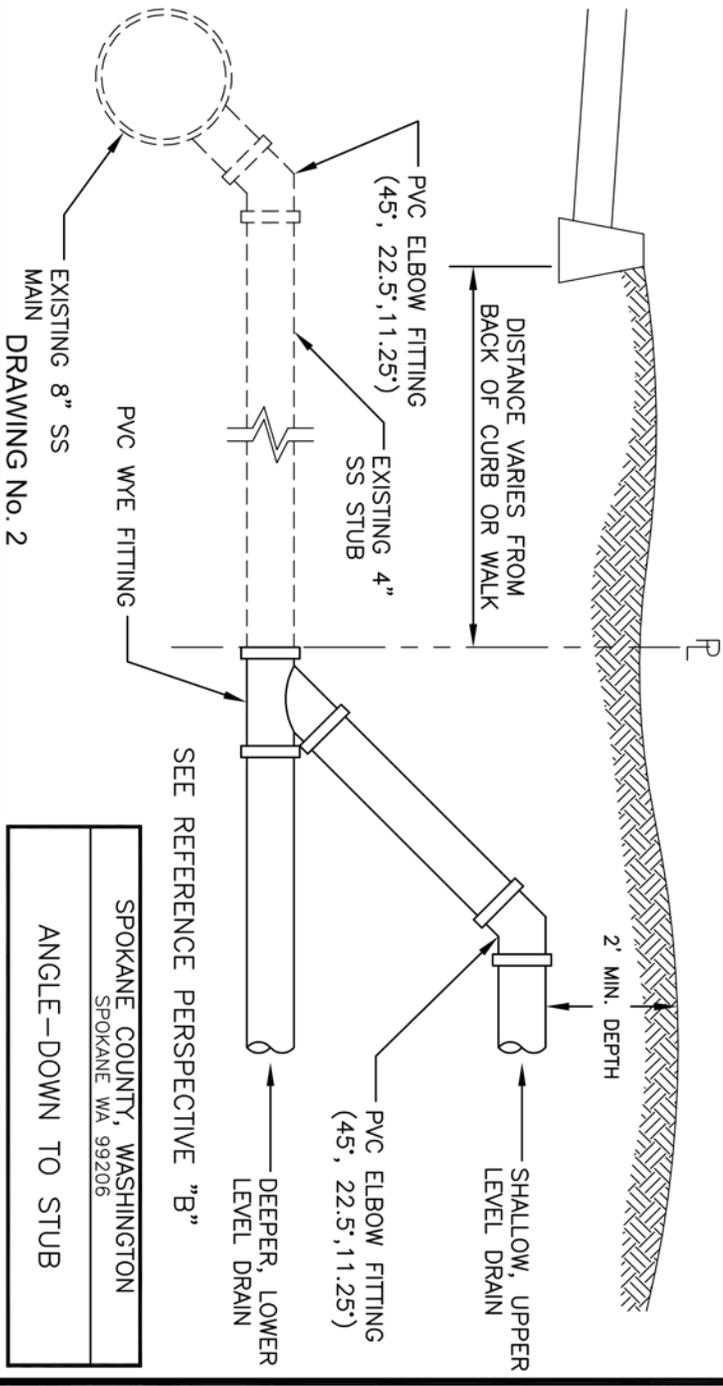
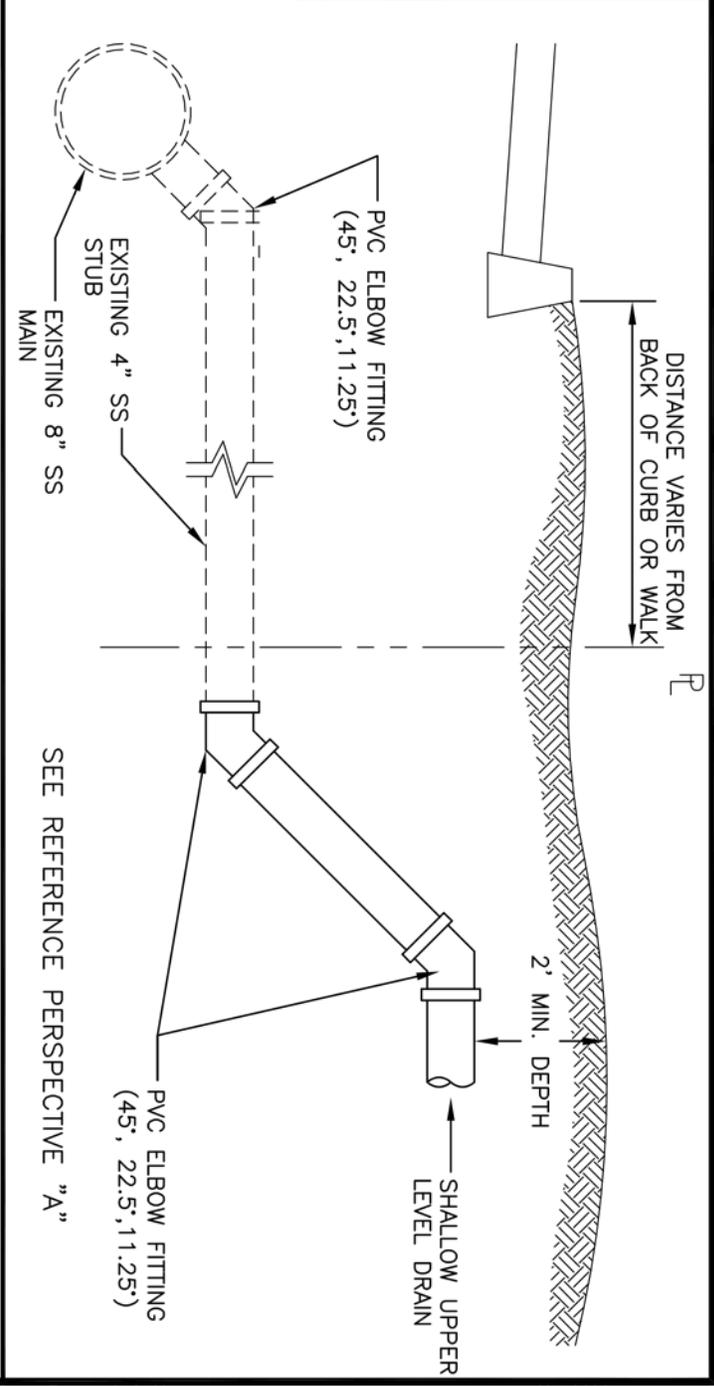


DRAWING No. 1

SPOKANE COUNTY, WASHINGTON  
 SPOKANE, WA 99206  
 ACCEPTABLE METHOD OF  
 CONNECTING UPPER AND LOWER  
 DRAIN FACILITIES OF A HOUSE

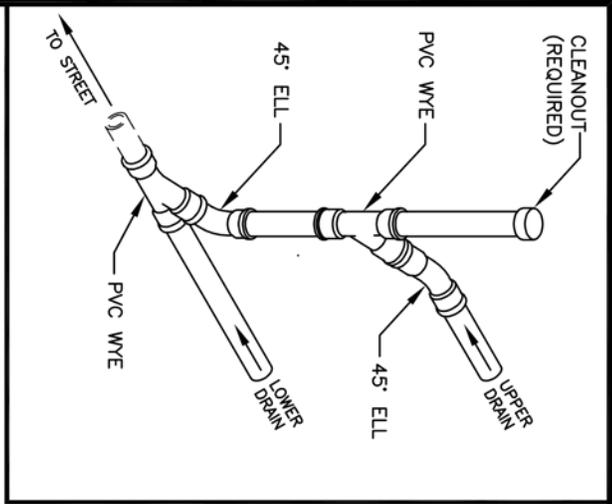


- NOTE:
- ALL PVC PIPE AND FITTINGS SHALL COMPLY WITH AND BE LABELED WITH THE "ASTM D-3034 SDR 35" OR ASTM F-789 WITH GASKETED JOINTS.
  - IF 2% GRADE CANNOT BE ACHIEVED DUE TO STUB DEPTH, SIDE SEWER MAYBE INSTALLED AT A MINIMUM SLOPE OF 1%. HOWEVER, THE INSTALLER MUST OBTAIN PRIOR APPROVAL FOR A REDUCED SLOPE INSTALLATION FROM THE DIVISION OF UTILITIES. A SURVEYOR LEVEL MUST BE USED TO VERIFY UNIFORM PIPE GRADES.
  - FOR ANGLE DOWN EXCEEDING 1:1 SLOPE, THE INSTALLER SHALL OBTAIN PRIOR TO APPROVAL FROM THE DIVISION OF UTILITIES. A CLEANOUT MAY BE REQUIRED AT A LOCATION DESIGNATED BY THE DIVISION OF UTILITIES.

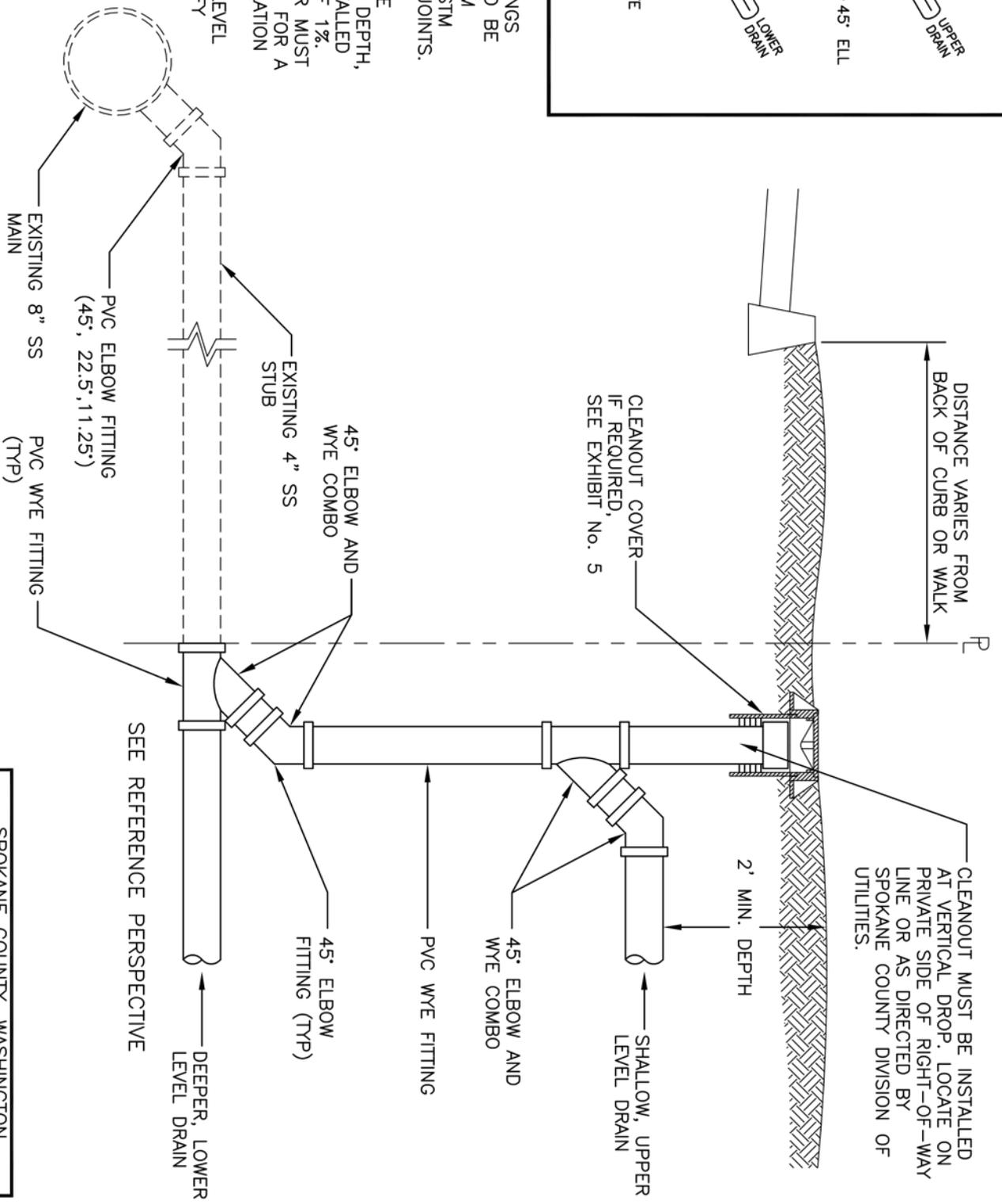


SPOKANE COUNTY, WASHINGTON  
 SPOKANE, WA 99206

ANGLE-DOWN TO STUB



- NOTE:
- ALL PVC PIPE AND FITTINGS SHALL COMPLY WITH AND BE LABELED WITH THE "ASTM D-3034 SDR 35" OR ASTM F-789 WITH GASKETED JOINTS.
  - IF 2% GRADE CANNOT BE ACHIEVED DUE TO STUB DEPTH, SIDE SEWER MAYBE INSTALLED AT A MINIMUM SLOPE OF 1%. HOWEVER, THE INSTALLER MUST OBTAIN PRIOR APPROVAL FOR A REDUCED SLOPE INSTALLATION FROM THE DIVISION OF UTILITIES. A SURVEYOR LEVEL MUST BE USED TO VERIFY UNIFORM PIPE GRADES.



DRAWING No. 3

SEE REFERENCE PERSPECTIVE

DEEPER, LOWER LEVEL DRAIN

SHALLOW, UPPER LEVEL DRAIN

2' MIN. DEPTH

CLEANOUT MUST BE INSTALLED AT VERTICAL DROP. LOCATE ON PRIVATE SIDE OF RIGHT-OF-WAY LINE OR AS DIRECTED BY SPOKANE COUNTY DIVISION OF UTILITIES.

CLEANOUT COVER IF REQUIRED, SEE EXHIBIT No. 5

DISTANCE VARIES FROM BACK OF CURB OR WALK

EXISTING 4" SS STUB

45° ELBOW AND WYE COMBO

45° ELBOW FITTING (TYP)

PVC WYE FITTING

PVC ELBOW FITTING (45°, 22.5°, 11.25°)

EXISTING 8" SS MAIN

45° ELBOW AND WYE COMBO

45° ELBOW FITTING (TYP)

PVC WYE FITTING

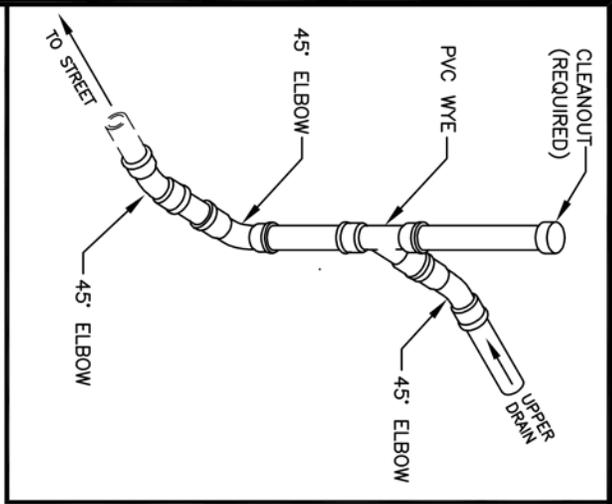
SHALLOW, UPPER LEVEL DRAIN

DEEPER, LOWER LEVEL DRAIN

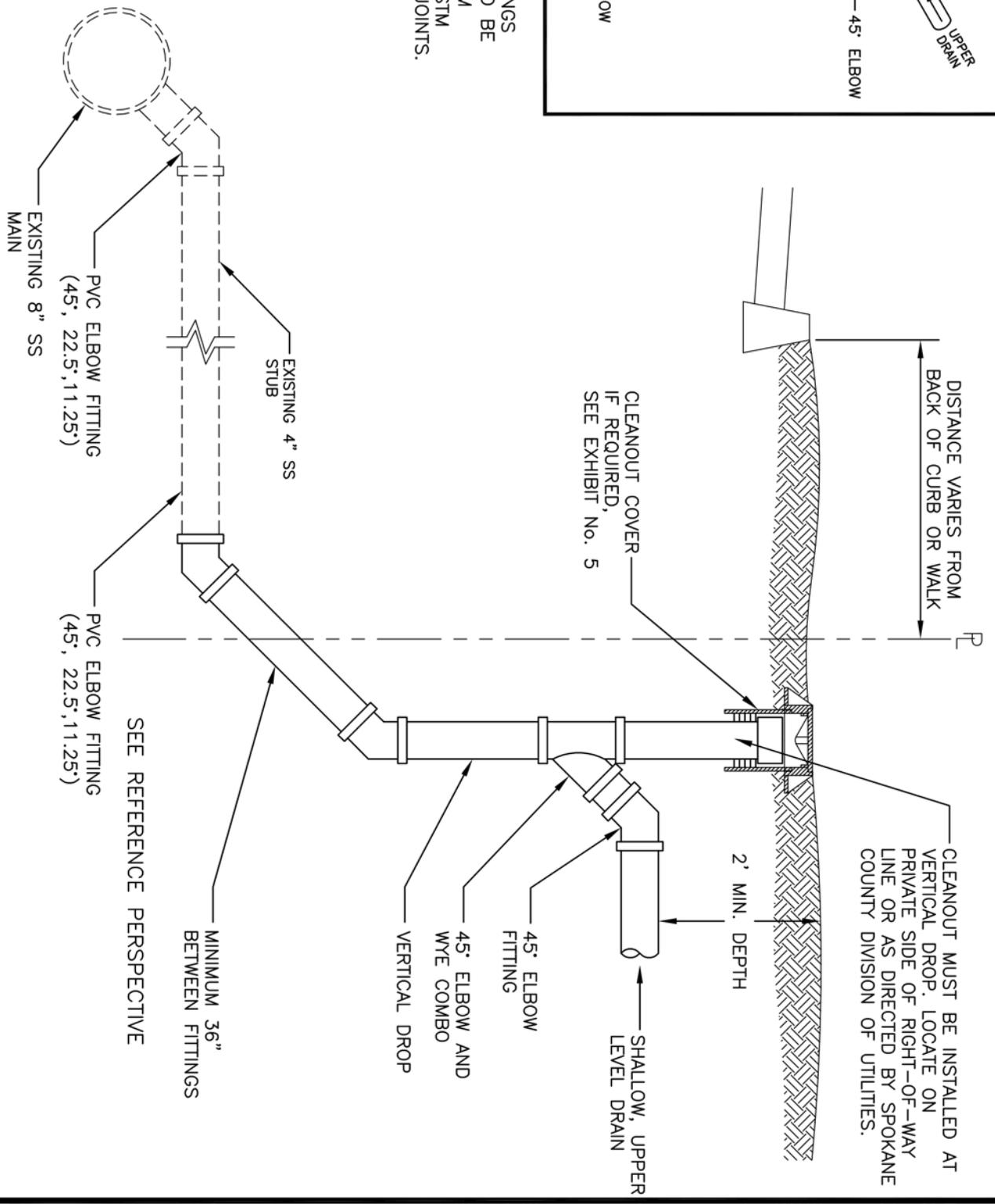
SEE REFERENCE PERSPECTIVE

SPOKANE COUNTY, WASHINGTON  
SPOKANE WA 99206

CONNECTING DEEP & SHALLOW SEWER LINES TO CLEANOUT

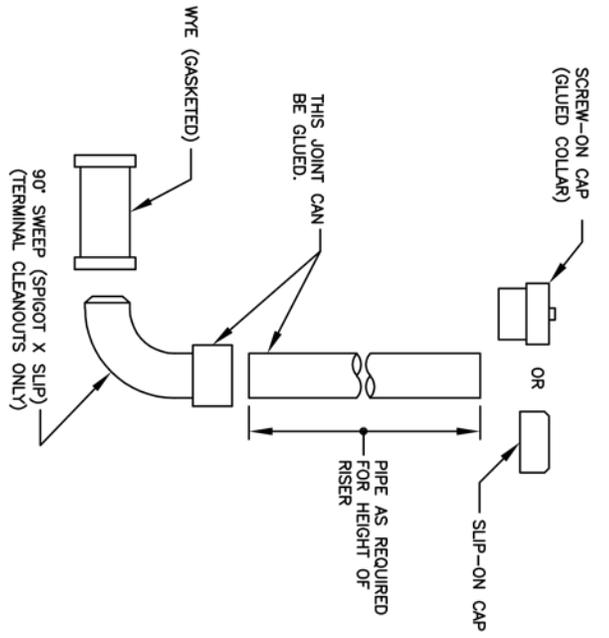


NOTE:  
 • ALL PVC PIPE AND FITTINGS SHALL COMPLY WITH AND BE LABELED WITH THE "ASTM D-3034 SDR 35" OR ASTM F-789 WITH GASKETED JOINTS.

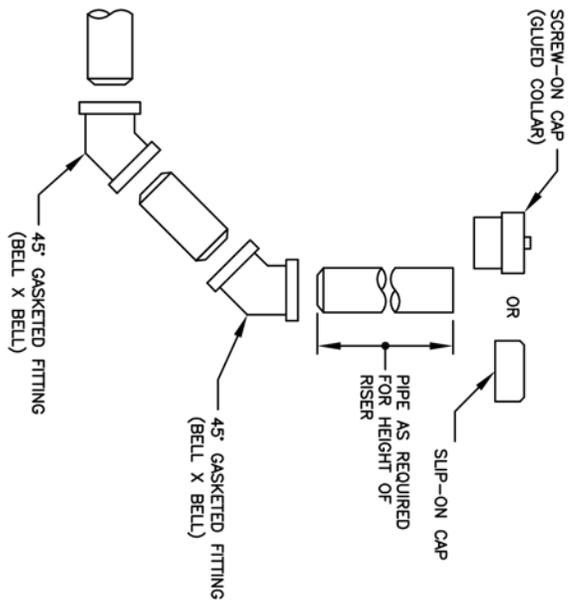


DRAWING No. 4

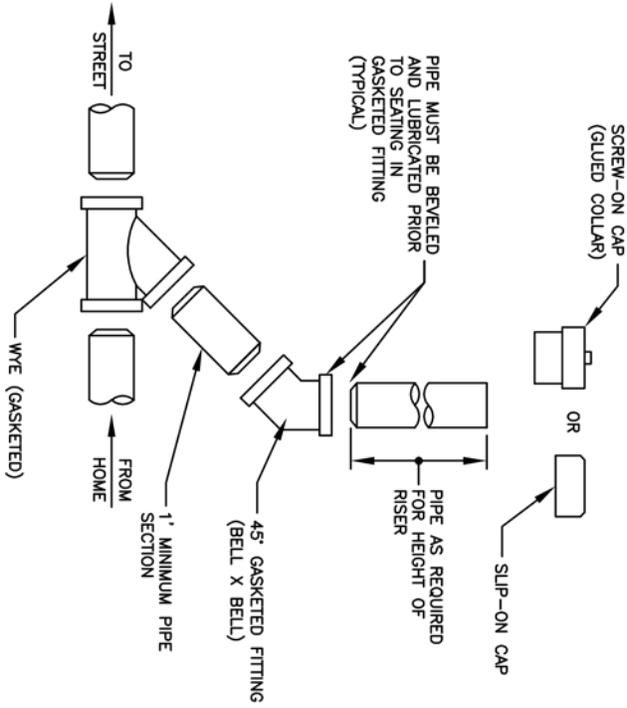
SPOKANE COUNTY, WASHINGTON SPOKANE, WA 99206
VERTICAL DROP TO STUB



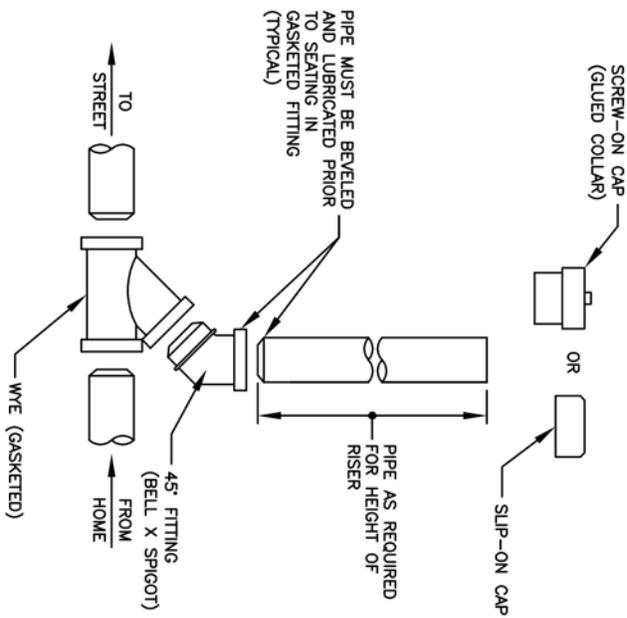
TERMINAL CLEANOUT - OPTION 1



TERMINAL CLEANOUT - OPTION 2

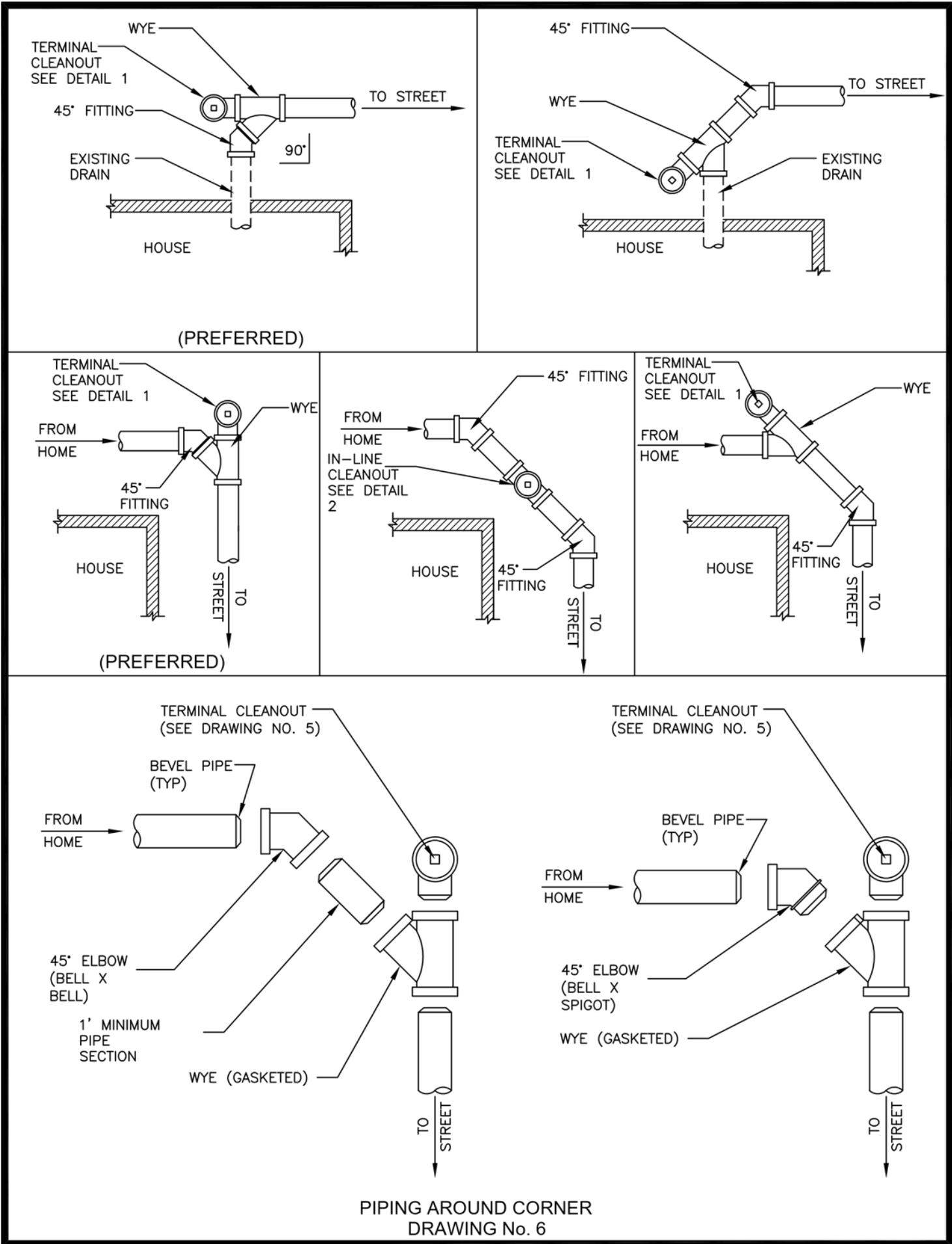


IN-LINE CLEANOUT - OPTION 1

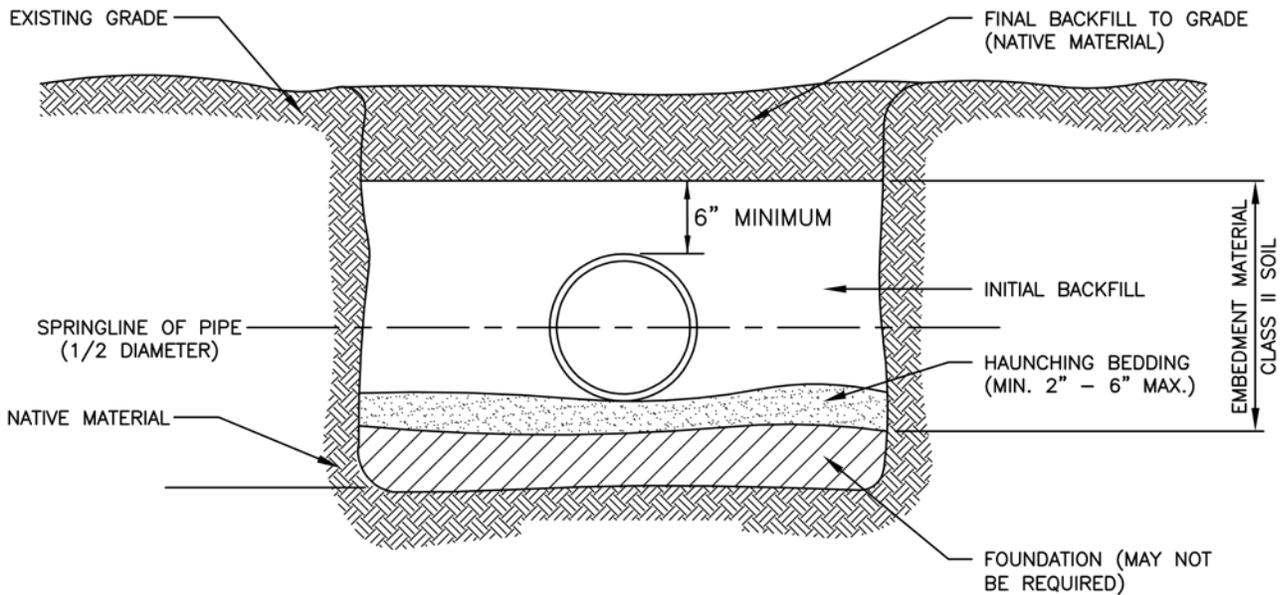


IN-LINE CLEANOUT - OPTION 2

CLEANOUT ASSEMBLY  
DRAWING No. 5



## SIDE SEWER INSTALLATION & BEDDING DETAIL



SPOKANE COUNTY UTILITIES DIVISION REQUIRES ASTM D-2321 BE FOLLOWED FOR INSTALLATION OF SIDE SEWERS. THE CONTRACTOR/INSTALLER AND/OR ENGINEER SHOULD BE FAMILIAR WITH SOIL CLASSES AND THE STEPS REQUIRED IN HANDLING THE DIFFERENT TYPES. ASTM D-2321 LISTS FIVE BASIC CLASSES DIVIDED AS FOLLOWS:

### SOILS RECOMMENDED FOR BACKFILL

- CLASS I ANGULAR (1/4" TO 3/4" PARTICLE SIZE) GRADED STONE AND CRUSHED STONE.
- CLASS II COARSE SANDS AND GRAVELS WITH A MAXIMUM PARTICLE SIZE OF 3/4".
- CLASS III FINE SANDS AND CLAY GRAVELS.

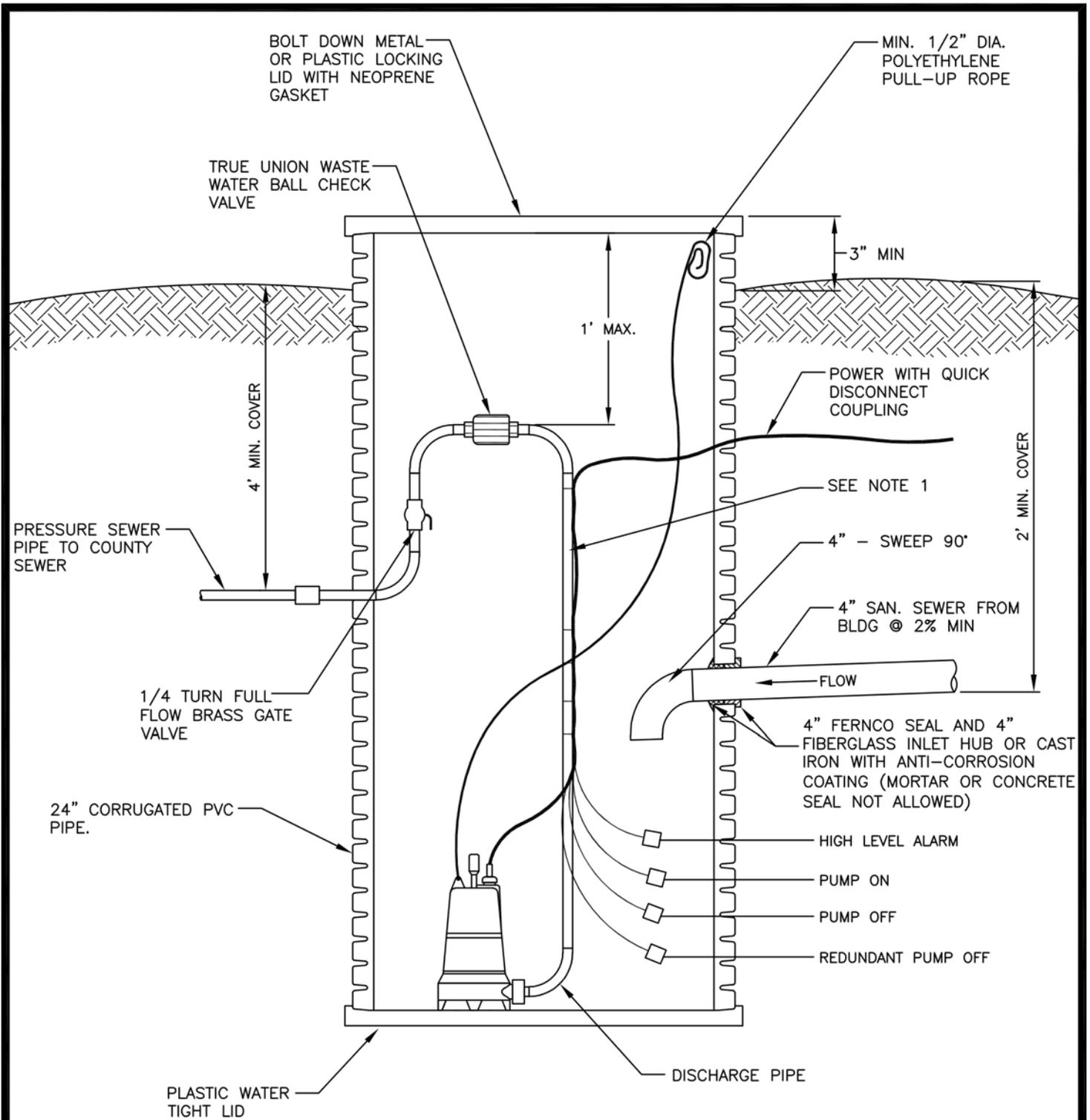
### SOILS NOT RECOMMENDED FOR BACKFILL NEAR THE PIPE

- CLASS IV SILT, SILTY CLAYS AND CLAYS.
- CLASS V ORGANIC SOILS CONTAINING FROZEN EARTH DEBRIS, ROCKS LARGER THAN 3/4" AND OTHER FOREIGN MATERIALS.

### TRENCHING AND BACKFILLING

- KEEP THE TRENCHING WIDTH AS NARROW AS IS PRACTICAL. THE TRENCH IS MODERATELY OVER-EXCAVATED AND BACKFILL MATERIAL IS PLACED TO GRADE (APPROXIMATELY 6" DEEP).
- CLASS I MATERIAL REQUIRES NO COMPACTION. CLASSES II AND III MATERIALS SHOULD BE COMPACTED TO 85 AND 90 PERCENT STANDARD PROCTOR DENSITY.
- WITH BEDDING LAYER TO GRADE AND COMPACTED, THE PIPE IS PLACED AND JOINED. BLOCKING SHALL NOT BE USED TO OBTAIN SLOPE. THE BEDDING LAYER MAY BE EXCAVATED IN THE VICINITY OF THE JOINT. THE PIPE IS THEN PLACED AND THE MATERIAL REPLACED AND RE-COMPACTED TO SUPPORT THE JOINT. THE HAUNCHING LAYERS ARE ADDED CAREFULLY TO THE SPRING-LINE OF THE PIPE AND COMPACTED IN LAYERS, IF NECESSARY.
- PERFORM INITIAL BACKFILLING IN TWO STAGES; THE FIRST LIFT TO THE TOP OF THE PIPE AND THE NEXT LIFT TO ABOUT 6" OVER THE TOP OF THE PIPE. THE DITCH MAY THEN BE FILLED WITH ANY AVAILABLE BACKFILL PROVIDED THAT LARGE PARTICLES ARE NOT IN DIRECT CONTACT WITH THE PIPE.
- SHOULD THE TRENCH-CUT GO THROUGH ROCK, THE DEPTH OF THE CUT SHOULD BE 4" TO 6" BELOW THE GRADE OF THE PIPE AND FOUNDATION MATERIAL PLACED TO SUPPORT THE BEDDING MATERIAL.
- SPECIAL STEPS MAY BE NECESSARY TO CONTROL GROUND WATER IN HIGH WATER TABLE AREAS OR TO COMBAT UNSTABLE SOIL CONDITIONS. THIS IS USUALLY ACCOMPLISHED BY LOWERING THE WATER TABLE ABOUT 12" BELOW THE TRENCH BOTTOM AND/OR OVER-EXCAVATING THE TRENCH BOTTOM AND BRING IT TO GRADE WITH A STABLE MATERIAL BEFORE LAYING THE PIPE.

DRAWING No. 7



NOTE:

- 1) DRILL A 3/16" HOLE IN THE DISCHARGE PIPE BETWEEN THE PUMP AND THE CHECK VALVE FOR VACUUM RELEASE. THIS HOLE NEEDS DRILLED ABOVE THE SEWAGE HIGH LEVEL ALARM DEPTH.
- 2) IN PLACE OF USING A COMBINED UNION/CHECK VALVE ASSEMBLY, SEPARATE UNION AND CHECK VALVE FITTINGS MAY BE USED. PLACE THE CHECK VALVE BETWEEN THE UNION AND THE PUMP. SEE NOTE 1

SPOKANE COUNTY, WASHINGTON SPOKANE WA 99206
<b>TYPICAL PUMP CHAMBER          INSTALLATION</b>

DRAWING No. 8