

DPD  
SPU

## Joint Ruling

### DPD Director's Rule 2-2006 SPU Director's Rule 01-06

<b>Applicant:</b>  CITY OF SEATTLE Department of Planning and Development Seattle Public Utilities	<b>Page</b>  1 of 26*  *plus exhibits	<b>Supersedes:</b>  DPD DR 7-2004 SPU DR 04-04
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	<b>Approved</b>	<b>Date</b>
<b>Index:</b>  Side Sewer Code; Stormwater, Grading, and Drainage Control Code	(signature on file) _____ Chuck Clarke, Director, SPU	8/9/06
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## I. BACKGROUND

DPD reviews permit applications for "private side sewers" that convey sewage, and promulgates rules for such systems. Connection of the private side sewer will be made to acceptable locations as determined by DPD in consultation with SPU. SPU owns, operates, and manages the City's public sewer systems in a manner that protects the environment, ensures public safety, and protects both private and public property from damage. This Director's Rule (DR) contains provisions that apply to the private conveyance connections served by these public sewer systems. See DPD Director's Rule 3-2006 for applicable provisions for the design and construction of service drains in relation to drainage discharges.

## II. EFFECTIVE DATE

The provisions of this DR shall take effect on September 1, 2006.

## III. SIDE SEWER DEFINITIONS

Words and phrases used in this DR, unless contrary to or inconsistent with the context, shall be given the same meaning as in the Seattle Municipal Code (SMC), Chapter 21.16 or as defined below. Unless otherwise defined, all technical or material terminology used in this DR is to be given meaning as commonly accepted in the sewer trade.

1. "**Applicant**" means an applicant for a master use permit, construction permit, or side sewer permit from the Seattle Department of Planning and Development (DPD).
2. "**Approved Material**" means a material approved by DPD and SPU.
3. "**As-built Drawings**" means an as-constructed side sewer plan that includes all changes made to a project during construction and submitted to DPD.
4. "**Buildover**" means constructing permanent buildings and/or structures over public owned pipes.
5. "**City**" means the City of Seattle.
6. "**Combined Side Sewer**" means a privately owned and maintained pipe system that serves both as a service drain and a sanitary side sewer.
7. "**Contractor**" means an applicant, owner, developer, registered side sewer contractor, or permittee, unless specifically noted otherwise.
8. "**Cover**" means the depth of material between the top of the side sewer or service drain and the finished grade immediately above it.
9. "**Director of DPD**" means the Director of the Seattle Department of Planning and Development and/or his or her designee, who may be an employee of that department or another City department.

10. **"Director of SPU"** means the Director of Seattle Public Utilities and/or his or her designee, who may be an employee of that department or another City department.
11. **"Emergency"** means there is a present danger or an imminent threat to human health, or that significant property damage is likely to occur if immediate action is not taken.
12. **"Environmentally Critical Area (ECA)"** means land that has been designated and to be protected as required by the Washington State Growth Management Act (GMA). The GMA requires the City to consider the "best available science" in developing codes and policies. It also requires cities to give special consideration to the habitat requirements of anadromous fish, such as salmon.
13. **"Grade Release"** means a legal document prepared by DPD as part of a Hold Harmless Agreement that must be recorded by the property owner before the contractor begins to backfill. It is required for a slope between 1 - 2%.
14. **"P-traps"** means a fitting or device to provide, when properly vented, a liquid seal which will prevent the back passage of air, without materially affecting the flow of sewage or waste water through it.
15. **"Pig Ports"** means a pressure sealed cleanout used for force-line piping.
16. **"Private Contract Permit"** and **"Utility Permit"** and **"Street Improvement Permit"** means a permit issued by SDOT to install street improvements or public/private utilities within the Public Place.
17. **"Public Place"** means and includes public streets, avenues, ways, boulevards, places, alleys, sidewalks, planting strips, and rights of way dedicated for the use of the public for utilities and similar improvements needed to serve the community.
18. **"Public Combined Sewer"** means a publicly owned and maintained sewage system, which carries drainage water and wastewater and flows to a publicly owned treatment works, and which is designated as such in City records.
19. **"Public Sanitary Sewer"** means a publicly owned and maintained sewage system which carries wastewater and flows to a publicly owned treatment works.
20. **"Pump System"** means a pumping station designed to lift sewerage flows. The pump is controlled by a standard control center and discharges through a single outlet connection.
21. **"Registered Side Sewer Contractor (RSSC)"** means a person or firm approved and registered by the DPD to construct or repair side sewers located within the Public Place a.k.a. Street Right-of-Way.
22. **"Seattle Department of Planning and Development (DPD)"** means the City department responsible for the developing, administering, and enforcing City

- standards of the building code and other applicable regulations and ordinances.
23. "**Seattle Department of Transportation (SDOT)**" means the City department responsible for the developing, administering, and enforcing City standards for construction within the Public Place (such as street and sidewalk restoration) and other applicable regulations and ordinances.
  24. "**Seattle Municipal Code**" means the legal regulations and ordinances intended to provide for and promote the health, safety, and welfare of the general public as established by chapter and implemented by the City of Seattle through action by City Council.
  25. "**Seattle Public Utilities (SPU)**" means the City department responsible for the developing, administering, and enforcing City standards for the construction of public sewers and storm mains and other applicable regulations and ordinances along with their other functions of providing potable water and solid waste functions.
  26. "**Side Sewer**" means a privately owned and maintained pipe system which is designed to carry sewage from a plumbing outlet or other approved facility, to the public sewer system or other approved discharge point.
  27. "**Side Sewer Permit**" means a permit that allows the construction of conveyance pipes and other associated facilities for collection, conveyance, and discharge of wastewater to an approved outlet.
  28. "**Side Sewer Permit for Temporary Dewatering**" means a permit that allows temporary discharge of on-site surface and subsurface water flows to existing public sewer main during construction activities.
  29. "**Site**" means the lot or parcel, or portion of street, highway or other public right-of-way, or contiguous combination thereof, where a permit for the addition or replacement of impervious surface or the undertaking of land disturbing activity has been issued or where any such work is proposed or performed. For development limited to a public street, each segment from mid-intersection to mid-intersection shall be considered a separate site.
  30. "**Site Inspector**" means the City DPD Site Inspector performing the inspection work required by the side sewer permit or as assigned by SPU.
  31. "**Street Improvement**" means grading, pavement, drainage devices, or other improvements made to the Public Place whether on, above, or below the ground surface.
  32. "**Wastewater**" is a comprehensive term including industrial waste, sewage, and other unpolluted waters, as determined by the Director of Health or Director of Seattle Public Utilities.

#### IV. CODES AND STANDARDS

All side sewer work shall comply with this DR and the following:

- ▶ City of Seattle Side Sewer Code (Seattle Municipal Code Chapter 21.16).
- ▶ City of Seattle Stormwater, Grading and Drainage Control Code (Seattle Municipal Code Chapter 22.800–808).
- ▶ City of Seattle Environmentally Critical Areas Ordinance (Seattle Municipal Code Chapter 25.09).
- ▶ Latest edition City of Seattle Standard Specifications for Road, Bridge and Municipal Construction and the latest edition Standard Plans **except as otherwise provided in this DR.**
- ▶ Latest edition Seattle-King County Public Health Code for plumbing work located within the building or structure.
- ▶ Latest technical manuals such as DPD's Director's Rules (DR).
- ▶ Latest edition SDOT Right Of Way Improvements Manual for work proposed in the Public Place.
- ▶ Latest edition SDOT Street and Sidewalk Pavement Opening and Restoration Rules.
- ▶ Latest edition SDOT Street Improvement Permit Procedures for Construction in Public Right-of-way.
- ▶ Latest edition SDOT Traffic Control Manual for In-Street Work
- ▶ Latest edition Department of Ecology Criteria for Sewage Works Design ("Orange Book").
- ▶ AASHTO Task Force 22 Report – Cross-Reference for Drainage Pipe Specifications for Waterways, Airports, Railroads, Transit and Highways.
- ▶ AASHTO Highway Drainage Guidelines, 3<sup>rd</sup> Edition, Volumes I-XIII.
- ▶ ASTM Volume 08.04 Plastic Pipe and Building Products.
- ▶ Other standards may apply to work in the Public Place.

## V. ATTACHMENTS

### **Exhibits** (pp. 27-41)

Exhibit 1 – Rigid Pipe Bedding & Backfill Under Pavement Located In A Public Place

Exhibit 2 – Flexible Pipe Bedding & Backfill Under Pavement Located In A Public Place

Exhibit 3 – DIP Pipe Bedding & Backfill Under Pavement Located In A Public Place

Exhibit 4 – Use Of Wye Branches and Cleanouts

Exhibit 5 – Side Sewer Installation Based On Standard Plan No. 283

Exhibit 6 – Side Sewer & Service Drain Connection To A Combined Sewer System

Exhibit 7 – Side Sewer & Service Drain Connection To Separated System

Exhibit 8 – Footing Drain Connection to Private Catch Basin Prior To Discharge Into Combined Sewer System

Exhibit 9 - Footing Drain Connection to Private Catch Basin Prior To Discharge Into Storm Drain System

Exhibit 10 – SDOT Backfill And Pavement Restoration Limits For Side Sewer Construction In A Public Place

Exhibit 11 – Force Main Connection Including Last 10 LF Gravity Side Sewers

Exhibit 12 -15 – Not Used

Exhibit 16A – Pipe Anchor Detail A

Exhibit 16B – Pipe Anchor Detail B

Exhibit 17-18 – Not Used

Exhibit 19 – Utility Tunnel For Existing Trees

Exhibit 20 – Not Used

Exhibit 21 – Maintenance Hole Lid using Locking Screws

## **VI. GENERAL REQUIREMENTS**

### **A. Allowable Materials**

1. This is a list of approved materials for use in service drain construction. It does not constitute a City engineering analysis for installation requirements or site specific factors that must be taken into account during design and construction. Materials listed for side sewer pipes only shall conform to the City of Seattle Standard Plans and Specifications and shall include:

- a. PVC Pipe – ASTM D 3034 SDR 35 (standard minimum wall thickness), 4-inch through 15-inch (See City of Seattle Standard Specification 9-05.3)
- b. PVC Pipe Schedule 40 and Schedule 80 – ASTM D 1785 with fittings per ASTM D 2466 and D 2467
- c. ABS Pipe –ASTM D 2661 with fittings per ASTM D 3311
- d. Concrete Pipe – Less than 12-inch diameter, ASTM C 14 Class 3; 12-inch or 15-inch in diameter, ASTM C 76 Class IV; 18-inch or larger in diameter, ASTM C 76 Class III (See City of Seattle Standard Specification 9-05.1(1))

- e. Ductile Iron Pipe – ANSI A21.51 Class 50 or AWWA C151 (minimum). Glands on mechanical joint pipe and fittings shall be ductile (See City of Seattle Standard Specification 9-05.2)
- f. Vitrified Clay Pipe – ASTM C 700 with joints per ASTM C 425 (See City of Seattle Standard Specification 9-05.4)
- g. Butt Heat Fusion Polyethylene (PE) Plastic Pipe – PE3408 Material per ASTM D 3350 and fittings per ASTM 3261, Minimum SDR 21, less than 12-inch diameter See City of Seattle Standard Specification 9-05.5(5)).

NOTE: Cellular-core (foam core) pipe is not allowed in the construction of side sewers.

## **B. Side Sewer Work Definition**

- 1. A **repair** of an existing side sewer means the repair, replacement, or any other work done on an existing side sewer that is still in service to serve existing facilities.
- 2. An **alteration** of an existing side sewer means the installation work done for a new side sewer, because of new structure construction associated with existing facilities. The installed side sewer connects to an existing side sewer that is still in service to serve existing facilities.
- 3. A **new** installation of a side sewer means the installation of a new side sewer because of new structure construction (e.g. The lot is currently vacant or the existing structure has been demolished). Connection may be made to the public main or an existing side sewer.

## **C. Pipe Bedding**

- 1. All pipes on private property and in the public area shall comply with the bedding requirements as listed in Table A, Bedding Requirements for Types of Pipe Material. See Exhibits 1 through 3 for examples for bedding and backfill associated with rigid, flexible, and ductile iron pipe materials used for construction within the Public Place.
- 2. All bedding materials and methods shall meet the criteria shown in the City's Standard Plan No. 285 and the City's Standard Specifications under Section 7-17.3(1)B and Section 9-03.16. Bedding materials are to be inspected for compliance and approved by the Site Inspector.
- 3. Approved material (such as pit run gravel, crush rock, or pea gravel) for side sewer foundation bedding is required where the DPD Site Inspector determines that soil conditions do not provide sufficient support for the side sewer, or where over excavation within the trench has occurred. The project's geotechnical engineer also can provide recommendations for the selection of material, with approval from the Site Inspector.



**Table A, Bedding Requirements for Types of Pipe Material**

TYPE OF PIPE MATERIAL	BEDDING REQUIREMENT
Rigid (Concrete, Vitrified Clay)	Fill and compact to the springline of the pipe with Type 9 aggregate (pea gravel - 3/8" washed gravel). Above the springline of the pipe, native soils used for fill must be compacted per City of Seattle standards. <b>Class C Bedding per City Specifications 7-17.3(1)B2.3</b>
Flexible (Polyvinyl Chloride (PVC), Acrylonitrile butadiene styrene (ABS), Corrugated Metal, Spiral Rib, Polyethylene (PE))	Fill and compact to 6 inches above the top of the pipe with Type 22 aggregate (crushed gravel – 5/8"). See part 2 of this Section. <b>Class B Bedding per City Specifications 7-17.3(1)B2.2</b>
Force Main Rigid	Fill and compact to 6 inches above the top of the pipe with Type 9 aggregate (pea gravel – 3/8" washed gravel). <b>Class B Bedding per City Specifications 7-17.3(1)B2.2</b>
Force Main Flexible	Fill and compact to 6 inches above the top of the pipe with Type 22 aggregate (crushed gravel – 5/8"). See part 2 of this Section. <b>Class B Bedding per City Specifications 7-17.3(1)B2.2</b>
Ductile Iron	Native soils used for fill to the springline of the pipe shall be compacted to provide uniform support. Above the springline of the pipe, native soils used for fill must be compacted per City of Seattle standards. <b>Class D Bedding per City Specifications 7-17.3(1)B2.4 and 7.17.3(3)</b>

**D. Pipe Cover**

1. A minimum pipe cover of 1 foot 6 inches is required on private property for flexible and rigid pipes. If the minimum pipe cover cannot be achieved, either the pipe must be embedded in controlled density fill (CDF) or concrete, or ductile iron or Schedule 40 or 80 PVC pipe materials must be used, or as approved by the Site Inspector. See City of Seattle Standard Specifications Section 9-01.5 and 5-05.3(1) for CDF and concrete mix-design requirements.
2. A minimum pipe cover of 2 foot 6 inches at the property line and 5 foot at the curb is required when connecting to a public main. A side sewer may be allowed to have less cover at the curb if the site is permitted to connect to an existing lateral and that existing lateral has less than 5 foot cover at the curb.

## **E. Pipe Slope**

1. Pipe located in the Public Place shall have a slope of at least 2 percent (1 vertical:50 horizontal) unless a "Grade Release" is obtained from DPD. Pipe slopes exceeding 50 percent (1 vertical:2 horizontal) will require the use of restrained joint ductile iron or solvent-welded PVC Schedule 40 or 80 piping materials. A Grade Release will only be issued if the applicant can prove that a 2% minimum grade cannot be achieved to the main.
2. Pipe located on private property shall have a slope of at least 2 percent (1 vertical:50 horizontal) unless a "Grade Release" is obtained from DPD. Pipe slopes exceeding 100 percent (1 vertical:1 horizontal) will require the use of restrained joint ductile iron or solvent-welded PVC Schedule 40 or 80 piping. A Grade Release will only be issued if the applicant can prove that a 2 percent minimum grade cannot be achieved to the main.
3. Pipe located on private property being repaired, having an existing slope of less than 2 percent (1 vertical:50 horizontal) may have to be chased until a 2 percent minimum grade can be obtained. A Grade Release will only be issued if the applicant can prove to the Site Inspector that a 2 percent minimum grade cannot reasonably be achieved by further pipe reconstruction towards the main.
4. A side sewer pump may be required by DPD if the side sewer has less than one percent slope.

## **F. Pipe Clearances**

1. Ductile iron or solvent-welded PVC Schedule 40 or 80 pipe shall be used on installations that do not meet the following minimum clearances and shall extend at least five feet beyond the abutting utility line:
  - a. There shall be at least 6 inches vertical separation between an existing service drain and the new side sewer, except at the point of connection between the two lines, if they are designed to be connected.
  - b. There shall be at least 12 inches horizontal separation between an existing service drain and the new side sewer, except at the point of connection between the two lines, if they are designed to be connected.
  - c. Side sewers installed below or over an existing water main shall be at least 10 feet clear in the horizontal distance and 18 inches clear in the vertical distance. Per Washington State Department of Ecology guidelines, unusual site conditions may allow less separation provided that additional measures are taken.
2. Ductile iron pipe shall be used for all side sewers crossing over water mains, for a perpendicular distance of five feet from the center of the water main.
3. Whenever a new side sewer clears an existing or new utility service by 6 inches or less, polyethylene plastic foam shall be placed between the pipes for cushioning prior to backfilling.

## **G. Minimum Pipe Sizes**

1. Side sewers in the Public Place shall be a minimum of 6-inches in diameter.
2. Side sewers that serve one unit shall be a minimum of 4 inches in diameter on private property.
3. Side sewers that serve two or more units shall use pipe at least 6 inches in diameter on private property. Refer to Section AA (below) regarding Maximum Number of Units for added pipe diameters.
4. Side sewers that serve commercial or industrial sites shall be a minimum of 6 inches in diameter on private property.
5. Service drains and side sewers being merged together at the Public Place shall be a minimum of 6-inches in diameter downstream of the merged connection.

## **H. Fittings**

1. All fittings shall be factory-produced and designed for installation on the pipe to be used. All fittings must meet minimum standards per Part VI Section A (General Requirements – Allowable Materials).
2. The maximum deflection at any one fitting shall not exceed the manufacturer's recommendation.
3. All changes in grade or line shall be made with 45° or 22 ½ ° bends or wyes for side sewer pipe.
4. Double and triple wyes are not permitted if one of the branches normally ends up as a 90 degree bend.
5. The maximum deflection of any combination of 2 adjacent fittings shall not exceed 45 degrees (one-eighth bend) unless the following adjustment is made:
  - a. Adjacent fittings are spanned by a straight pipe of 2 feet or more in length;
  - b. Adjacent fittings are spanned by a straight pipe less than 2 feet in length (with Site inspector's approval) due to field construction restrictions (such as close proximity of service drain to structure foundations); or
  - c. The two fittings are wyes, and there are cleanouts installed (to grade) on the downstream straight legs of both fittings to allow cleaning between the fittings and downstream of the second fitting. See Exhibit 4. Also see Part VI, Section J, Cleanouts.
6. The maximum deflection of 90 degrees cannot be accomplished with the use of a 90 degree elbow (short 90° radius, long 90° radius or long sweep 90° radius).
7. If reverse wyes are used (e.g. for a temporary test tee), they must be brought to grade and finished as cleanouts.

## **I. Pipe installation**

1. Bell and spigot pipe shall be installed with the bell end up-grade.

2. Rigid pipe shall be installed in a straight line and at uniform grade between fittings.
3. Flexible pipe may be installed in a slight curve alignment per the manufacturer's recommendations and at uniform grade between fittings.
4. Pipe should be installed starting at the downstream connection whenever feasible.
5. Pipe shall be installed in a manner such that the Site Inspector can verify the pipe material (i.e. print-side up).
6. All changes in grade or line shall be made with 45° or 22 ½ ° bends or wyes for rigid pipe.
7. Connections shall be made with rubber gasket, mechanical joint, or compatible solvent, depending on pipe type and fitting design. All connections shall conform to the manufacturer's specifications.
8. Flexible connections shall be used for piping when the area is located in an area classified as liquefaction or in a settlement sensitive area classified as "peat."
9. Surface mounting of side sewers using ductile iron with restrained joints or PVC Schedule 40 or 80 pipe and anchoring may be allowed for those situations in which trenching and backfilling are inappropriate such as steep slopes or decks. Anchoring systems must be designed and stamped by a licensed professional engineer. See Exhibits 16A and 16B.

#### **J. Cleanouts**

1. At least one cleanout shall be provided for each total change of 90 degrees in grade or alignment; or every 100 feet of pipe length including the change in grade or alignment.
2. Cleanouts shall consist of a wye branch in the side sewer and/or upstream end.
3. All cleanouts located in the Public Place shall be extended to grade and shall be bolted down (drilled and tapped). Cleanouts may be located in the Public Place per Standard Plan No. 278 & 280 subject to approval by SDOT.
4. A cleanout is required to be installed adjacent to the building foundation on the upstream reach of the last wye branch in the side sewer if no more changes in grade or alignment occur and the reach of pipe is less than 100 feet (see Exhibit 4 of this DR).
5. In addition to paragraph 1 above, a cleanout is required to be installed on the upstream reach of the last wye branch in the side sewer if no more changes in grade or alignment occur and the reach of pipe is less than 100 feet (see exhibit 4 of this DR).
6. For situations where the site conditions preclude the normal placement of cleanouts, or preclude placement of a cleanout within close proximity to the structure, two cleanout assemblies may be constructed in close proximity to each other but in a reverse direction. This will facilitate both upstream and downstream pipe cleaning.

**K. Maintenance Holes**

1. **Note Maintenance Hole Construction Restriction:** Side sewers requiring new connections to public mains must utilize core tapping procedures shown in Table B below. If proposed side sewer pipes do not have diameters that will allow core-tapped connections to the existing public pipe system, side sewer pipes must be split into smaller pipe sizes (e.g. two 6-inch pipes) on the subject property. This may be accomplished by having separate connections, such as for different portions of the proposed structure. If the applicant demonstrates to SPU that flows cannot be split amongst several pipes and connected per the core tapping schedule in Table B, connection of the side sewer to the mainline shall require a maintenance hole or rolled tee at SPU's discretion.
2. Any gravity side sewer 300 feet or more in length, and having a minimum pipe diameter of 6 inches, shall, at a minimum, have a maintenance hole located every 300 feet.
3. Clearly label maintenance holes located on private property which are part of a private side sewer system as "Private."
4. Private maintenance holes are generally not allowed to be constructed in the Public Place.
5. On private property, use a 3-bolt locking maintenance hole ring and cover (See Exhibit 21 of this DR) in lieu of the "locking cam" maintenance hole ring and cover shown in Standard Plan 230.
6. Public maintenance hole construction shall be included with the side sewer permit but will require SPU coordination/inspection/approval during the installation of the maintenance hole onto the existing public main. The RSSC shall notify SPU 48 hours prior to beginning work on excavation and installation of the maintenance hole.

**Table B, Core Tap Connection Requirements for Lateral Connections to Existing Public Mains**

MAINLINE SIZE	LATERAL SIZE CONNECTION TO PUBLIC MAIN (New MHs or Tees Require SPU Approval)			
	6-Inch	8-Inch	10-Inch	12-Inch
8-inch	Core Tap Req'd	NA	NA	NA
10-inch	Core Tap Req'd	NA	NA	NA
12-inch	Core Tap Req'd	Core Tap Req'd	NA	NA
14-inch DIP	Core Tap Req'd	Core Tap Req'd	NA	NA
15-inch	Core Tap Req'd	Core Tap Req'd	NA	NA

16-inch DIP	Core Tap Req'd	Core Tap Req'd	NA	NA
18-inch	Core Tap Req'd	Core Tap Req'd	NA	NA
20-inch	Core Tap Req'd	Core Tap Req'd	Core Tap Req'd	NA
21-inch	Core Tap Req'd	Core Tap Req'd	Core Tap Req'd	NA
24-inch & Larger	Core Tap Req'd	Core Tap Req'd	Core Tap Req'd	Core Tap Req'd

NA – Not Allowed

### **L. Piping to Accessory Buildings**

1. If a side sewer line is connecting the plumbing in an accessory structure to the main single family structure, construction and inspection will adhere to the Seattle-King County Plumbing Code. Inspection of the line between the accessory building to the main single family structure will be performed by the Seattle-King County Plumbing Inspector. Piping extended from the main single family structure to the public main shall comply with the Side Sewer Code and this DR.
2. If a side sewer line is connecting the plumbing in an accessory structure to the site side sewer, construction and inspection will adhere to the Side Sewer Code and this DR. Inspection of the plumbing from the accessory building to the side sewer line will be done by the Site Inspector.
3. If there is a requirement by the Seattle-King County Plumbing Inspector for the Site Inspector to inspect the lateral line, then the installed line shall meet the minimum diameter pipe and use the proper bedding per this DR. Piping within the structure shall be inspected by the Seattle-King County Plumbing Inspector.

### **M. Pumps**

1. If a pump is required to connect the side sewer force-line to a side sewer or public main, the permittee shall attach a copy of the pump manufacturer's specifications to the side sewer permit. The pump specifications shall include gallons per minute (gpm) and the total system head (static head and dynamic head).
2. Pumps shall be standard manufacture and shall be specifically designed for the applicable use (e.g., sanitary discharges for a specific project) using the pump manufacturer's recommended operating guidelines. Pump sizing data and/or calculations shall be submitted to DPD during the review process of a routed plan set.
3. No more than one property shall be connected to any pump system, including the force-line, unless authorized by DPD and Seattle-King County Public Health.
4. An electrical permit is required for an electrical hookup of a pump if a new circuit is required for the pump.
5. A duplex pump system is required for non-residential structures such as factories, large business and office structures, restaurants, and processing plants.

Residential structures, including multi-unit residential structures, and small non-residential structures, such as warehouses or office structures with low volumes of wastewater discharges may not require the installation of duplex pumps.

6. A duplex pump system is required for projects located within an ECA when the pump system is located at the top of a steep slope. The duplex pump design shall use a 25 year storm event provided there is a 100-year detention facility incorporated with the drainage design.
7. The discharge pipe (force-line) shall have a non-corrosive check-valve, a "quick-release" connector/fitting, and a non-corrosive gate-valve to facilitate pump removal. The pipe shall be PVC Schedule 40 or Schedule 80 or ductile iron, or as approved by the Site Inspector.
8. A force-line pipe may not connect directly to a public main. Prior to connecting to the public main, the force-line shall discharge into a standard, gravity-flow section of side sewer pipe that is at least 10 feet in length (see Exhibit 11).
9. Force-line sections of pipe are required to have "Pig ports" for each of the following two conditions: 1) A maximum of 100 foot intervals and 2) Wherever fitting bends total 135°.
10. If the force-line pipe needs to be covered and the pump(s) are not available for testing, or if testing of the discharge piping is impracticable, then the Site Inspector shall require the owner to be responsible for the water tightness of the force main pipe. The owner will be required to execute a Hold Harmless Agreement with King County if pressure testing of the discharge piping system is impracticable.
11. The inlet line to the pump receiving tank (wet well) shall meet standard side sewer specifications as outlined in this DR.
12. The pump shall be installed in a chamber that is readily serviceable. The tank shall be made of non-porous, non-corrosive, structurally sound material such as plastic, fiberglass, stainless steel, or concrete. If a concrete tank is used, a fiberglass reinforced plastic of polyurethane hybrid polymer resin or equivalent shall be installed in the concrete chamber. The liner may be cast integral with the precasting of the maintenance hole or field assembled and sealed in the precast concrete sections.
13. Pumps shall be installed and maintained to provide easy access from the ground surface to all mechanical and electrical devices.
14. The force main pipe located outside the building must withstand the line pressure per the testing requirements found in Section R of this DR. DPD also requires that the pump be operational prior to finalizing the permit.
15. An audible alarm system is recommended for pump systems.
16. Pumps located within a building are subject to Seattle - King County Public Health inspection.

## **N. Special Requirements**

1. No new building or structure or new building or structure addition may be constructed or relocated over an existing side sewer unless the pipe that will be covered

by the new or relocated structure meets the specifications of the Seattle-King County Plumbing Code and regulations of Seattle-King County Public Health.

2. Any survey monuments located within the block of the project area shall be surveyed by SPU surveyors before and after completion of the work if the construction activity threatens or may cause disturbance to the monuments. The owner and/or contractor shall coordinate the survey with the SPU Survey Section. Further, the owner and/or contractor shall be responsible for the expense of both surveys, including the resetting of the monument by SPU, if shifting has taken place.
3. The side sewer pipe invert at the Public Place (right-of-way) line shall be at least one foot higher than the crown elevation of the sewer main at the location of the side sewer connection. See Exhibit 10 of this DR. In instances where achieving this slope requirement reduces the pipe cover below 2 foot 6 inches (minimum standard) at the property line, ductile iron or PVC Schedule 40 or 80 pipe materials shall be used.
4. The contractor shall connect all outlets from plumbing fixtures unless specifically noted otherwise on the application, plat, and/or permit, and approved by the City.
5. Where the main sewer is a combined sewer, the new side sewer and new service drain line on private property shall be separated to the street property line and one connection to the public main shall be made. See Exhibits 6 and 8.
6. Where the main sewer is a combined sewer, the connection of the existing side sewer and service drain line can remain in the same configuration under a side sewer repair permit for side sewer and/or service drain repairs.
7. Where the main sewer is a combined sewer, the connection of a new side sewer to existing side sewer lines can occur provided that the new construction does not exceed 750 square feet. Building construction exceeding 750 square feet shall require the separation of the new side sewer and/or service drains to the Public Place and connection to occur at the Public Place depending on the availability of public mains located in the Public Place.
8. Any side sewer pipe laid in a steel casing shall be laid in minimum lengths of 8 feet, and the joints of the side sewer pipe shall be of watertight material. The casing shall be sealed at both ends using cement slurry or approved material.
9. The RSSC or permittee is responsible for locating any stub in the Public Place that was installed as part of a City sewer construction project or as part of a previous private development. If the public main is not located in the Public Place, a RSSC is not required to perform this work. The permittee shall coordinate with SPU any excavation work for the connection prior to encountering the main. In addition, the RSSC or permittee is responsible for determining that the stub is in an operative condition. Verification may include a flow test done in the presence of a Site Inspector. See the following section on Existing Stubs and Tees.
10. If a project proposes to connect to an existing, inactive side sewer stub on a public main, the permittee is required to complete a TV inspection of the existing stub before the permit is finalized by the Site Inspector. For the purposes of this DR, an inactive stub is a lateral connecting to a public main that is not in use by the project or



another property at the time of permitting (e.g. a capped side sewer). A copy of the TV inspection shall be submitted to the DPD Site Inspector with the project address, date of TV inspection, DPD permit number, and general location of the stub in relation to the project site. The inspection recording may be in VHS or DVD format. The tape will be used by SPU for data collection and will not affect the contractor's work or connection authorization. As stated above, the permittee is responsible for determining that the stub is in operative condition. See the following section on Existing Stubs and Tees for more information on connection requirements for existing stubs and tees.

11. Existing side sewer piping that serves the adjoining neighbor may exist on the permittee's property. If the existing side sewer is to be relocated outside the new structure footprint, side sewer materials and construction shall conform to this DR. If the existing side sewer will be covered by a new building or structure, the side sewer must be upgraded under a plumbing permit issued by Seattle-King County Public Health. Materials and construction shall conform to the Seattle-King County Plumbing Code.

12. Existing side sewer piping that is located on the adjoining neighbor's property without a recorded easement and serves the permittee's property is presumed by the City to be valid by prescriptive right for said side sewer piping for the permittee to repair and maintain. However, if the neighbor denies access to the permittee over the neighbor's property, the permittee will be required to provide a new service on the permittee's property or successfully resolve the issue with the neighbor in order to repair and maintain piping located on the adjoining neighbor's property.

13. The owner and/or contractor are responsible for demonstrating that the as-built improvements are located according to the property lines and/or Public Place. A survey prepared by a licensed surveyor may be required by the City if it is deemed unclear from the location of the existing improvements and the constructed side sewer improvements as they relate to private property and/or Public Place.

14. Side sewer permits are issued with specified minimum Site Inspector inspection hours. If the total number of inspection hours exceed the initial allotted permit inspection hours, the permittee will be charged for the additional hours. Inspection hours will include the time the Site Inspector has to spend on verification of the as-built side sewer plan and/or added research and investigation due to discovery of piping not previously identified on the City's side sewer mapping documents. One way travel time is included with the inspection hour(s).

#### **O. Existing Stubs and Tees**

1. The RSSC is responsible for notifying the Site Inspector **AND** SPU field crews if the RSSC discovers a broken stub or tee or breaks an existing stub or tee. The RSSC shall have a responsible person remain at the site until **BOTH** the Site Inspector **AND** SPU field crews arrive at the site. SPU and DPD will arrive on site within a reasonable amount of time after being contacted by the RSSC (usually in four hours or less).

2. It will be the responsibility of the RSSC to locate and use an existing stub or tee. SPU and DPD will not be held financially responsible for work associated with locating or connecting to an existing stub or tee.

3. If an existing stub or tee cannot be located in the field based upon dimensions from the engineering record drawings, the RSSC will still be responsible to have a new tee installed by SPU.

4. If a project proposes to connect to an existing, inactive stub or tee that is not being used by this or another project at the time of the connection, the RSSC or permittee is responsible for verifying that the tee or stub is in good condition and is functional. Prior to finalizing the permit for this connection, the RSSC or permittee must perform a TV inspection of the existing, inactive stub (e.g. a capped side sewer) from the point of connection to the public main. The RSSC must then present a copy of said TV inspection to the DPD Site Inspector before the permit associated with this connection is finalized. The copy of the TV inspection shall include the project address, date of TV inspection, DPD permit number, and general location of the stub in relation to the project site. The tape will be used by SPU for informational purposes only, and will not affect the project's connection authorization. If the stub is capped at the main or has been covered by a previous pipe relining process within the main, the permittee shall be financially responsible for having the cap or liner removed. If a connection is proposed to an existing tee, a visual inspection shall be done in the presence of the DPD Site Inspector prior to the connection being made. If an existing tee is found to be broken or inadequate for connection, SPU must be contacted to decide if the tee can be repaired or if a new connection to the main must be made.

5. It is the responsibility of the RSSC to complete trenching and shoring operations per Washington State Department of Labor and Industries (L&I) standards. SPU crews will not enter an excavation that is improperly shored or is considered inadequate to protect the health and safety of SPU workers. If SPU crews are unable to enter an excavation due to perceived shoring deficiencies or safety concerns, the RSSC's competent person must come to agreement with SPU crews on improvements or measures that must be taken to correct the situation. SPU will not be liable for shoring conditions or costs associated with shoring improvements due to safety concerns. See the Trench Shoring section of this DR for additional information. If disputes regarding shoring adequacy cannot be resolved, the issue may be referred to L&I staff for investigation.

## **P. Emergency Repairs**

1. Contractors may commence emergency repairs without a side sewer permit if the work starts after City business hours. Owners or contractors are required to apply for a side sewer permit on the next City business day after repairs have started. Contractors who have made financial arrangements with DPD may obtain side sewer repair permits on-line at the DPD Side Sewer Web site. Any emergency work in the Public Place must comply with SDOT's Traffic Control Manual regarding issues such as street use permits and traffic control.

2. Emergency repairs may include trenching, repairing pipe, installation of new pipe, and bedding. Trench backfilling may not begin until DPD has inspected and approved the pipe and installation.

3. If over 10 feet of new side sewer piping has been installed, then trench backfilling may not begin until DPD has inspected and approved of the pipe and installation and all pressure testing has been done in the presence of the Site Inspector. All new connections shall also be inspected and tested before the trench is backfilled.
4. The trench backfill can be done if the health, safety, and welfare of the general public are a concern **and** DPD has not done an inspection of the new piping. The contractor shall provide a video showing the inside of the newly installed piping and provide representative photos showing the pipe and the bedding material. The contractor must also have the property owner execute a Hold Harmless Agreement before the permit is finalized.
5. The process for pipe lining and pipe bursting will not be permitted as an emergency repair procedure.

### **Q. Pipe Lining and Pipe Bursting**

1. Pipe lining and pipe bursting are allowable methods for the repair of side sewers using materials compatible with the diameter and pipe type of the existing side sewer line. However, due to possible impacts to and required use of SPU utilities (e.g. public maintenance holes and mainline to access laterals) during the repair process, the registered side sewer contractor (RSSC) must contact SPU Utility Systems Management (USM) Division for approval. At a minimum, the contractor will be required to provide a copy of a TV inspection of the SPU main at the point of the rehabilitation work after work is completed. As such, the proposal as described below must be followed when pipe lining or bursting are proposed for the side sewer repair. There may be other pipe lining processes that require one access point, but SPU shall still be notified when this technology is being proposed to repair a side sewer.
2. The RSSC or subcontractor performing the proposed reline work shall have a current license agreement with the product manufacturer/assembler. Additionally, the individuals performing the reline work shall be certified by the product manufacturer/assembler.
3. Use of trenchless technologies to repair/upgrade a side sewer is allowed if there are no conflicts with other underground utilities. The contractor is responsible for identifying and protecting existing underground utilities, including contacting utility locating services and consulting with existing utility records as needed.
4. The contractor must notify SPU USM of the proposed pipe lining and pipe bursting work 48 hours prior to start of excavation or construction by the contractor if proposed work will be in the Public Place or will impact, be adjacent to, or require the use of SPU facilities.
5. No on-site inspection for pipe lining or pipe bursting will be performed by the City except as noted below.
6. Pipe lining and pipe bursting repair work must conform to current ASTM Standards for pipe lining and pipe bursting, including ASTM F1216. Pipe lining installation shall be in accordance with the requirements of the product manufacturer/assembler and as directed by their technical representatives. Prior to pipe reline work, the existing side sewer must be cleaned, root cut, jetted, rodded, and

otherwise cleaned to a condition that allows for reline work to be effective per the manufacturer's recommendations. The contractor shall provide information to DPD as requested during issuance of permit or site inspection.

7. If PE fuse-welded pipe is proposed for side sewer work, a design of the connection point to the existing pipe must be submitted to SPU by a licensed engineer or the pipe bursting contractor for SPU approval prior to permit issuance. Due to pipe-bursting strain and/or temperature affects on PE pipe during installation, the pipe will be required to rest for at least 24 hours (or as long as recommended by the manufacturer, whichever is longer) prior to the final pipe-cutting and the connection being made to the existing pipe to allow it to achieve equilibrium.

8. Repair of the existing side sewer piping in order to insert the pipe lining or pipe bursting material will require a side sewer permit and DPD inspection for installation of new pipe, liner, testing, and backfill.

9. Any pipe reline material protruding into the main must be trimmed flush with the inside wall of the main. SPU will not approve any reline work that adversely impacts SPU facilities, and DPD will not finalize any side sewer permit involving reline work near the main without SPU approval.

10. A pressure test shall be required for pipe lining and pipe bursting work that has two access points.

11. If site conditions change, and if pipe bursting or relining is proposed after a permit has been issued, the applicant must update the Side Sewer Permit to reflect the new work accordingly.

## **R. Testing**

1. When using water for testing, leakage shall be no more than 0.28 gallons per hour per inch inside diameter per 100 linear feet of pipe, with a hydrostatic head of 6 feet above the crown at the upper end of the test section, or above the natural groundwater table at the time of test, whichever is higher.

2. Testing may also be done by air pressure according to the Standard Specifications 7-17.3(4) B, Exfiltration Test, with low pressure air by the pressure drop method.

3. If a pipe joint fails to pass the water or air pressure test, it shall be repaired in a manner acceptable to the Site Inspector. If not repairable, the damaged pipe section shall be replaced with a new one and the joints retested as specified above.

4. If the existing downstream side sewer pipe fails to pass water flows adequately in a manner to indicate there are no downstream blockage, impairment, and/or restriction, the Site Inspector will notify the contractor and the owner of the apparent blockage or restriction and will also note the downstream flow problem in their field report.

## **S. Capping**

1. At each end of a pipe designated to be permanently capped, the pipe end shall be completely filled with concrete for a minimum length of 12 inches.

2. A side sewer permit for capping shall be required for projects having a demolition permit only.
3. A side sewer permit for capping will **not** be required for projects having a demolition permit and a construction permit since the temporary capping is considered incidental to construction.

#### **T. Connections to Mains**

1. New side sewer connections to the public mainline shall be installed at a 90-degree angle to the main line sewer (in plan view). Refer to Exhibit 10 for the connection detail for a 30 to 45 degree angle to the main line (in section view) for a new core tap.
2. Side sewers connecting to mains shall be at least one standard pipe diameter size less than the main (i.e. 6-inch side sewer connection to 8-inch or larger sewer main). New connections must be sized or split as appropriate to allow SPU to core tap a new connection without requiring a new MH or tee for the proposed connection. Refer to Section K and Table B, Core Tap Connection Requirements for Lateral Connections to Existing Public Mains.
3. Before excavating for side sewer work, the Contractor shall review information available from the City to verify elevations and locations of the sewer infrastructure. The contractor shall also check the information made available by the City to ensure that field conditions match the data noted on the side sewer card.
4. Rolled tees (if allowed by SPU) and core taps will be done by SPU staff, and must be scheduled and coordinated by the RSSC or permittee. If allowed by SPU, maintenance hole construction shall be done by the RSSC and shall require SPU inspection and material approval.
5. Connections to existing public mains via new public maintenance holes are not allowed unless it falls under Section K, Maintenance Holes, of this DR. Connections to existing public maintenance holes are allowed only under special circumstances, and must receive permission from SPU prior to being permitted. If a side sewer is allowed to connect to an existing public maintenance hole, it must be constructed to match crowns of the existing pipe(s) in the maintenance hole. The maintenance hole shall be rechanneled by the RSSC as required by SPU. Maintenance hole connections shall be done by the RSSC and require SPU inspection and material approval. The RSSC must notify SPU at least 48 hours prior to beginning work on excavation and connection to a public maintenance hole.

#### **U. Trench Shoring**

1. Trenching and shoring considerations shall be the responsibility of the contractor's competent person who has the training, the experience, the knowledge, the ability to detect deficiencies and hazards, the authority to take prompt corrective measures to eliminate existing and predictable hazards, and the authority to stop work when required.
2. If the Site Inspector believes that working conditions are hazardous or that the competent person is unavailable during construction, the inspector may defer the matter

to Washington Department of Labor and Industries (L&I) for further investigation. Trenching and shoring shall comply with L&I requirements.

#### **V. Plan required at Issuance of Side Sewer Permit**

1. The applicant for a side sewer permit that includes a new side sewer serving an existing building shall submit to DPD a drawing of the intended side sewer work, and said drawing will become a reference document for the side sewer permit.
2. The applicant for a side sewer permit that includes a repair to the existing side sewer is not required to submit a drawing of the intended side sewer repair work.

#### **W. Side Sewer Construction in an Environmental Critical Area (ECA)**

1. Repairs of existing side sewers located in a designated ECA can receive a side sewer permit per SMC 25.09.040 A, Permits and Approvals Required.
2. Construction of new side sewers, if located outside the ECA, may receive a side sewer permit per SMC 25.09.045D.
3. New side sewer construction proposed within a designated ECA (with the exception of the ECA 5, Liquefaction and ECA 7, Landfill) will require a DPD geotechnical and/or environmental approval. DPD Drainage Q-drain review will note the following as a requirement during the structure plan review for a permit:
  - a. Side sewers for construction are to be detailed and reviewed in conjunction with the building permit. The side sewer permit shall include the approved structure permit plans showing the side sewer and its construction.
  - b. The private geotechnical engineer and/or environmental consultant will address the proposed side sewer and its construction and provide the inspection to ensure compliance with the ECA requirements.

#### **X. Existing Trees and Pipe Trenching**

All side sewer construction shall avoid digging the trench within the dripline of existing trees in the Public Place. See City of Seattle Standard Plan 133 and Section 1-07.16(2) of the City's Standard Specifications. Exhibit 19 provides an alternate method for tunneling near tree roots on private property. However, if there is no alternative, certain conditions shall apply including:

1. Trenches shall be constructed no closer than half the distance from the tree trunk to the dripline.
2. Roots shall be cut with sharp instruments to reduce the potential damage to the tree.
3. The trench shall be backfilled within the shortest amount of time possible, and the soil shall not be compacted, unless directed by the Site Inspector.

## Y. As-Built Drawing

1. Before a permit will be finalized, an as-built drawing shall be prepared and submitted by the contractor or property owner that includes all changes made to a side sewer project and submitted to DPD for review and approval.
2. A side sewer site plan template at a scale of 1" = 20' feet will be issued at the time the side sewer permit is obtained from DPD. The template will contain the following information:
  - ◆ Existing side sewer and mainline infrastructure
  - ◆ Property lines
  - ◆ Site address
  - ◆ Structure roof outlines
  - ◆ Structure foundation lines or "footprints" where available
  - ◆ Edge of pavement (within the right-of-way only)
  - ◆ North arrow
3. At the time of the side sewer inspection, the Site Inspector will check the template to ensure that the as-built side sewer information prepared by the permit holder is accurate and complete. All efforts should be made by the permittee to provide a clean, accurate, readable, and precise as-built document to the Site Inspector.
4. Arrangements should be made between the permittee and the Site Inspector with respect to showing references of newly constructed facilities located in the Public Place as the as-built plans for Private Contracts may not be completed and filed with SPU during the time that the side sewer as-built plan is being prepared by the RSSC and verified by the Site Inspector.
5. Time spent by the Site Inspector to review, verify, and/or correct the side sewer as-built plan shall be charged to the side sewer permit per SMC 21.24, Permit Fees and Connection Charges. The Site Inspector will note on the Site Inspection Report that added review will be required and that possible corrections may be the result of the review.
6. An architectural site plan or engineering drainage/utility plan may be used as the side sewer site plan template. It is recognized that the structure outline and other features represent a more accurate picture of the new construction. The permit holder may use these plans provided the following information has been furnished:
  - ◆ Site Inspector has been notified of the use of the site and/or drainage/utility plan;
  - ◆ Full-size sheet used. (No partial sheets shall be used for the as-built.);
  - ◆ Existing side sewer and mainline infrastructure accurately transferred from the side sewer site plan template;
  - ◆ If the architectural site plan or engineering drainage/utility plan has not been prepared as a Computer Aided Drafting (CAD) drawing, all lettering shall be in upper case and the lines, fonts, leaders, and other graphical presentation shall be clear and precise;

- ♦ The as-constructed side sewer information has been accurately and clearly delineated onto the site plan. The plan will not be accepted if the as-built information cannot be read due to the poor quality of the as-built information or the fact that the site plan contains so much information that it makes the side sewer data difficult to read;
- ♦ Measurements in the Public Place shall be noted on the site plan if construction has occurred in the Public Place; and
- ♦ Street address and permittee/permit (A/P) number are noted onto the plan.

The site plan or drainage/utility plan sheet shall be reviewed with the Site Inspector before proceeding to use these plans as the service drain as-built template.

## **Z. Video Summary**

Video or TV inspection work is required for various side sewer work discussed in this DR. To assist contractors and other users of this document, this section provides a summary of areas in the DR that require video inspection. Details for each inspection and procedure must still be followed, and the contractor is responsible for identifying the requirements in the City's respective Codes and the related Rules for their work. TV inspections and recordings must generally meet the requirements listed in Section 17-17.3(4)I of the City of Seattle Specifications regarding parameters such as quality of work and lighting.

1. Special Requirements section; provide a video inspection of existing, inactive stub to DPD Site Inspector prior to finalizing the permit.
2. Emergency Repairs section; provide video inspection of inside of side sewer pipe to DPD if backfill occurs prior to inspection and testing.
3. Existing Stubs and Tees section; as above, provide video inspection of existing inactive stub to DPD Site Inspector prior to finalizing the permit.
4. Pipe Lining and Pipe Bursting section; provide video inspection of public main to SPU after reline work for review and approval.

## **AA. Maximum Number of Units**

1. No more than seven (7) single family units shall use a single private side sewer pipe of 6 inches in diameter.
2. Two or more multi-unit **structures** shall use a single private side sewer pipe one size larger in diameter than the largest pipe diameter exiting from the **structure**.
3. More than seven (7) single family units may use a single private side sewer pipe of 8 inches or larger in diameter. In cases where the existing sewer main will not allow a core tap of side sewers larger than six inches, flows may also be separated in the building to allow for smaller diameter side sewers.
4. An engineering calculation shall be required from a licensed engineer to demonstrate the carrying capacity of the proposed pipe with more than seven (7) single



family units. The calculation shall include the verification of capacity of other single family units in the future (if applicable) that can connect to the new side sewer line.

## **VII. WASTEWATER DISCHARGE AND SIDE SEWER DETAILS**

### **A. Applicability**

The provisions of Section VII of this DR apply to side sewers and the details associated with wastewater discharges.

### **B. Side Sewer Agreements**

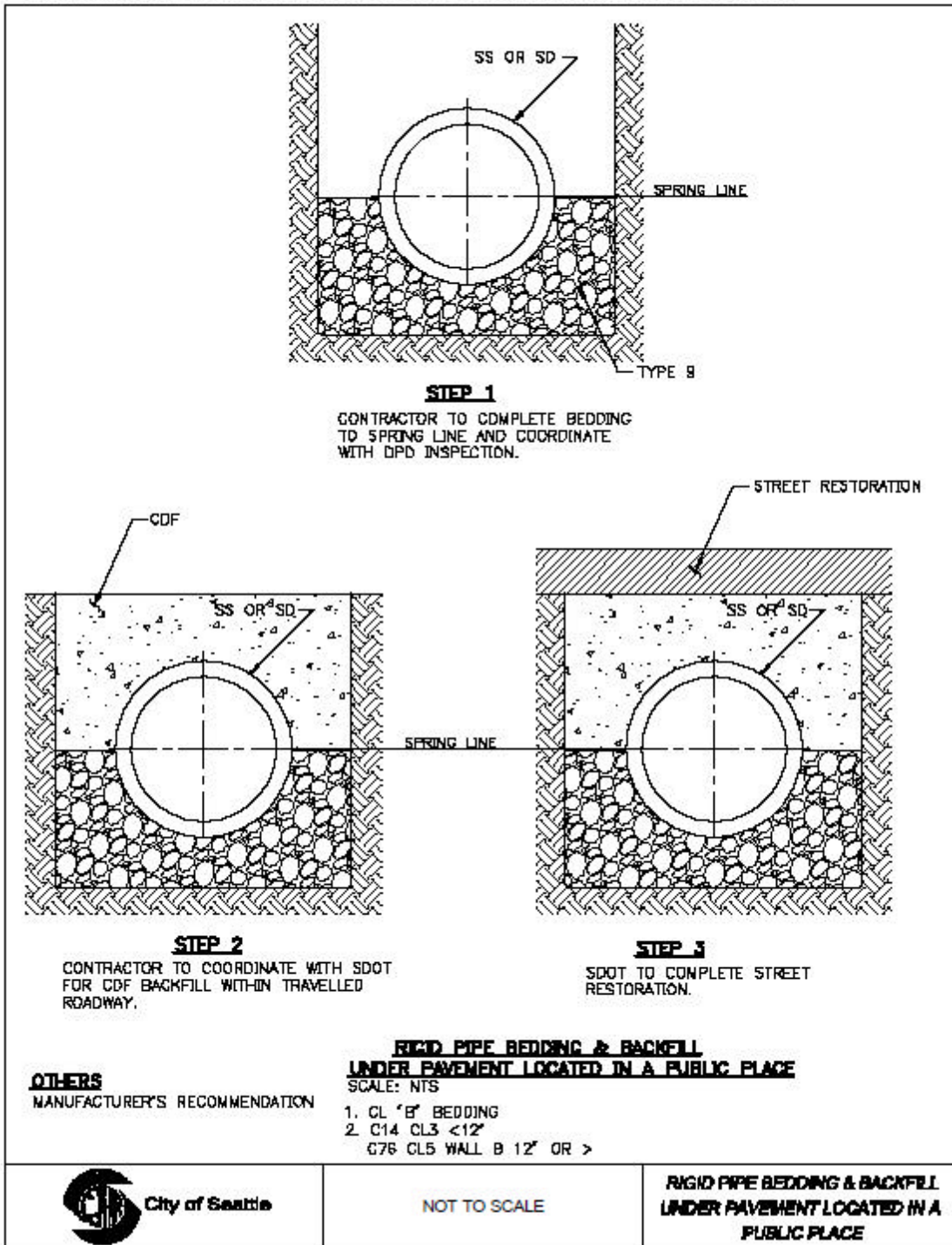
1. A new or existing building may connect a new side sewer to an existing side sewer serving one or more other parcels. This can only be done if the affected parties served by the existing side sewer execute with King County a Connection, Hold Harmless, and Indemnification Agreement **prior** to issuance of the side sewer permit.
2. A new building located on a new lot of a short plat which had, as part of the original lot, an existing connection, and the existing connection has already been utilized by a lot of the short plat, may connect a new side sewer to an existing side sewer serving one or more other parcels. This can only be done if the affected parties served by the existing side sewer execute with King County a Connection, Hold Harmless, and Indemnification Agreement **prior** to issuance of the side sewer permit.
3. A new or existing building may have their new side sewer cross another property without making a connection to an existing side sewer serving one or more other parcels. This can only be done if the affected parties execute with King County an Easement, Hold Harmless, and Indemnification Agreement **prior** to issuance of the side sewer permit.
4. A new or existing building may be connected to an existing side sewer serving one or more homes that in turn is connected to an over-sized private sewer main serving multiple homes. A Connection, Hold Harmless, and Indemnification Agreement, required by DPD, must be executed with King County by the property owners of the existing side sewer to allow the connection of the new side sewer to said existing side sewer **AND** to show that the original Side Sewer Easement and Connection agreement for the over-sized private sewer main allows for additional connection(s) in the future prior to issuance of the side sewer permit. Permittee shall provide the supporting documents to DPD including any recorded agreements for review and approval by DPD **prior** to issuance of the side sewer permit.
5. DPD will deny issuance of a side sewer permit when the proposal is for a new residence to connect to an existing side sewer located on the abutting property and there is an existing executed but **unrecorded** Easement and Connection agreement which is more than three (3) months old at the date of the application for a new side sewer permit from DPD.
6. A developer required to connect their structure plumbing to a public sewer should build a main line extension, rather than a side sewer, when three or more properties (single family, multi family, commercial and/or industrial) could be served by the sewer main extension. The number of structure sites to be served by the main line extension

will be determined by using the current zoning of the property and by assuming the property will be developed to the maximum allowed by that zoning or by recent approval with a short plat. An engineering plan showing the sewer main extensions shall be prepared by the contractor and approved by SDOT and SPU before work is started. An Easement agreement between any affected parties may be required if the main line extension is located on private property.

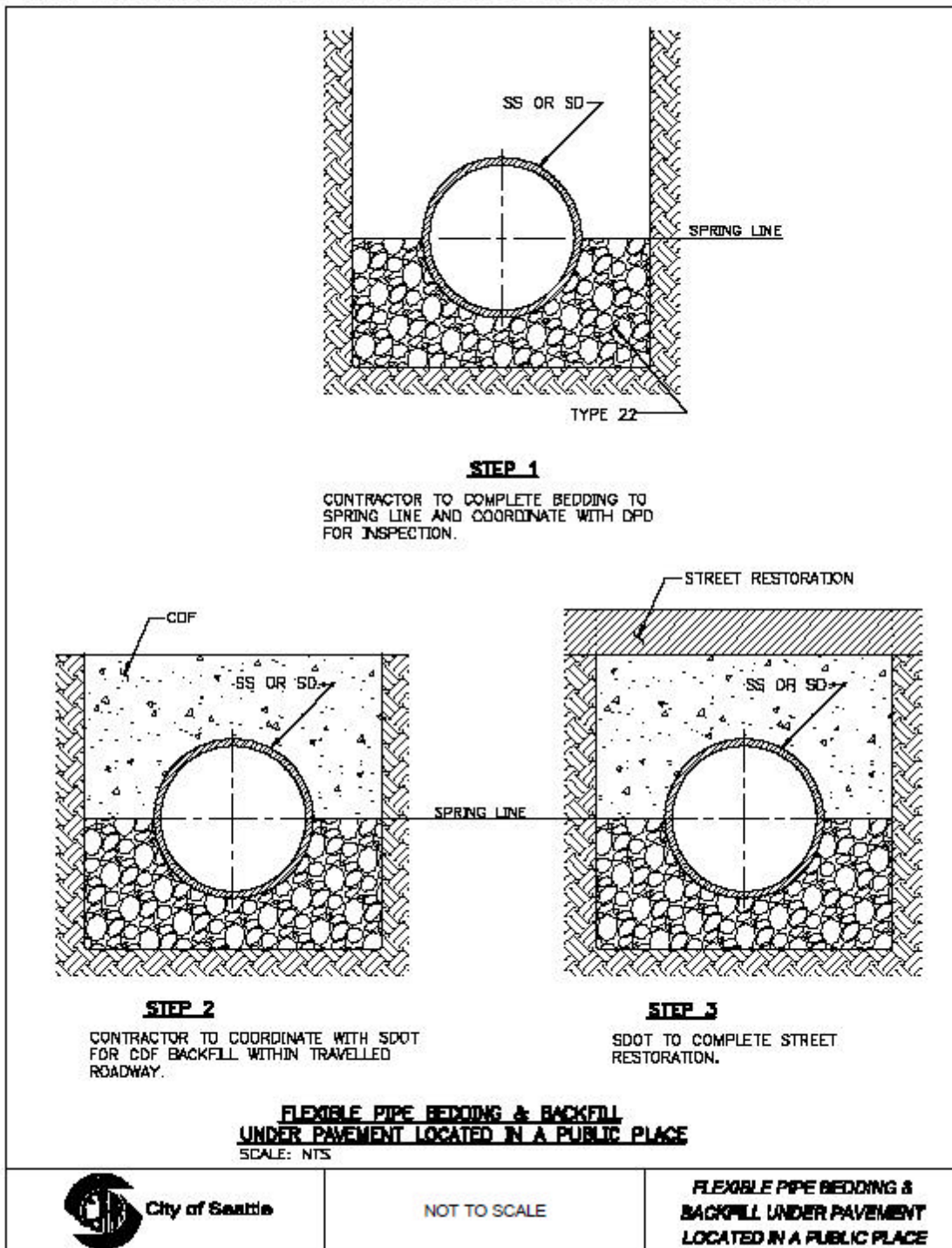
**C. Side Sewer Details**

1. Septic tanks and similar installations shall not be connected to the public sewer system.
2. Downspouts, storm drainage facilities, or service drains for new construction are only permitted to connect to the side sewer at the property line or right-of-way line or via the junction where the separate storm and sanitary lines transition into a combined side sewer which conveys the combined flow to the existing combined public sewer main.
3. Side sewer piping shall be at least 6 inches in diameter at the junction between the service drain and side sewer and at least 6 inches in diameter downstream from the junction.
4. Build-over agreements (construction over public facilities) must be secured from SPU prior to new construction. Applicant shall be responsible to check their legal documents and available maps and records in order to identify existing utility easements or existing public structures that are located on private property.

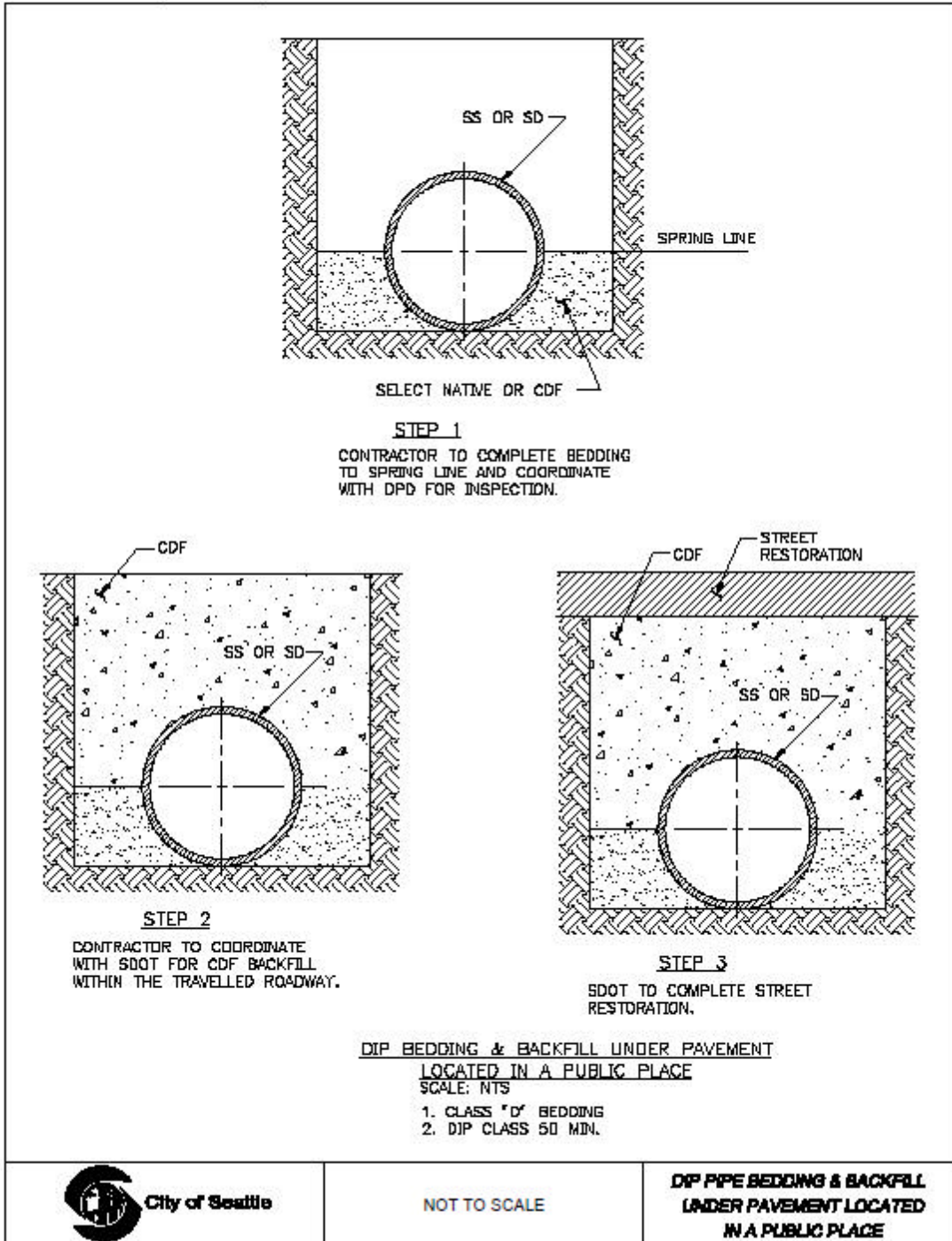
**Exhibit 1. Rigid Pipe Bedding & Backfill Under Pavement Located In A Public Place**



**Exhibit 2. Flexible Pipe Bedding & Backfill Under Pavement Located in A Public Place**



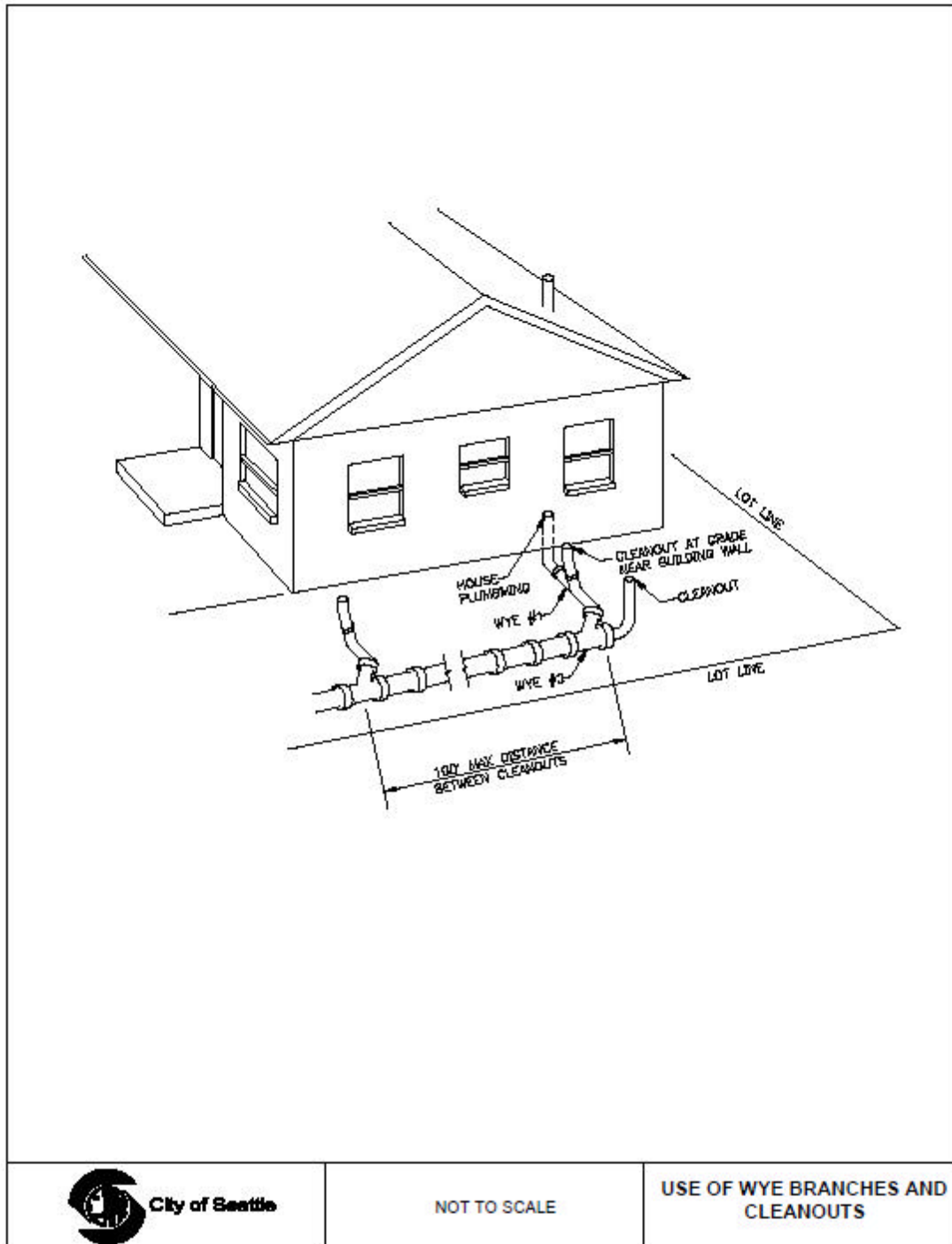
**Exhibit 3. DIP Pipe Bedding & Backfill Under Pavement Located in A Public Place**



NOT TO SCALE

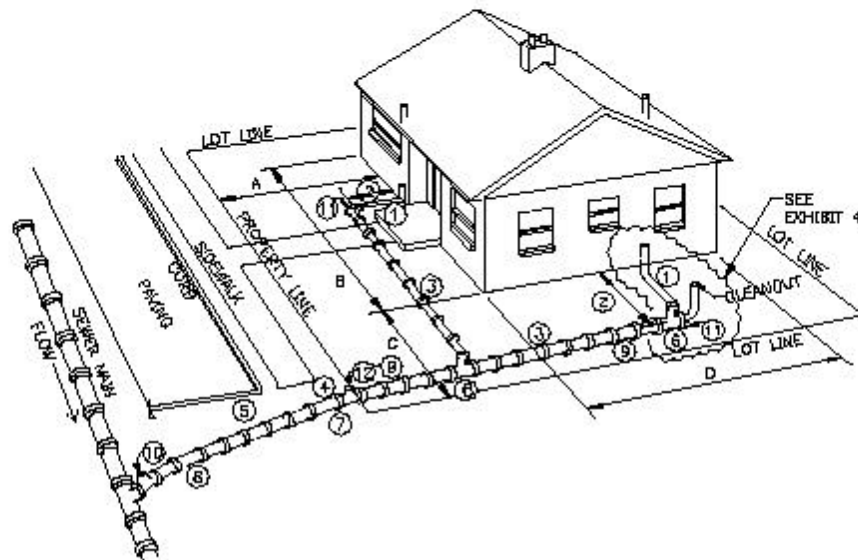
**DIP PIPE BEDDING & BACKFILL UNDER PAVEMENT LOCATED IN A PUBLIC PLACE**

*Exhibit 4. Use of Wye Branches and Cleanouts*





**Exhibit 5. Side Sewer Installation Based On Standard Plan No. 283**



**NOTES:**

1. ALL HOUSE PLUMBING OUTLETS MUST BE CONNECTED TO THE SEWER. NO DOWNSPOUTS OR STORM DRAINAGE MAY BE CONNECTED, EXCEPT TO A SEPARATE STORM DRAINAGE SYSTEM.
2. 2'-8" MIN DISTANCE FROM HOUSE, EXCEPT FOR SOIL PIPE CONNECTION.
3. 1'-8" MIN COVER OF PIPE.
4. 2'-8" MIN COVER AT PROPERTY LINE.
5. 9'-0" MIN COVER AT CURB LINE.
6. LAY PIPE IN STRAIGHT LINE BETWEEN BENDS. MAKE ALL CHANGES IN GRADE OR LINE WITH BENDS OR WYES.
7. STANDARD 4" TO 6" INCREASER.
8. 6" SEWER PIPE: MIN SIZE IN STREET, AND ELSEWHERE AS DIRECTED. 2% MIN GRADE, 10% MAX.
9. 4" SEWER PIPE: MIN SIZE ON PROPERTY. 2% MIN GRADE, 100% (45") MAX.
10. TEST "T" WITH PLUG.
11. REMOVABLE PLUG OR CLEANOUT.
12. TEST "T" WITH PLUG AT UPSTREAM SIDE OF SIDE SEWER AS REQUIRED.
13. ALL CONSTRUCTION REQUIRES A PERMIT AND PAYMENT OF FEE. COMPLETE LEGAL DESCRIPTIONS OF PROPERTY AND DIMENSIONS A, B, C AND D THAT SHOW THE SIZE AND LOCATION OF THE HOUSE ARE REQUIRED FOR ISSUANCE OF THE PERMIT.
14. CONSTRUCTION IN PUBLIC PLACE MUST BE DONE BY A REGISTERED SIDE SEWER CONTRACTOR.
15. ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH CURRENT SIDE SEWER ORDINANCES.
16. ORDINANCE 97018 APPLIES TO INSTALLATION OF SIDE SEWERS.

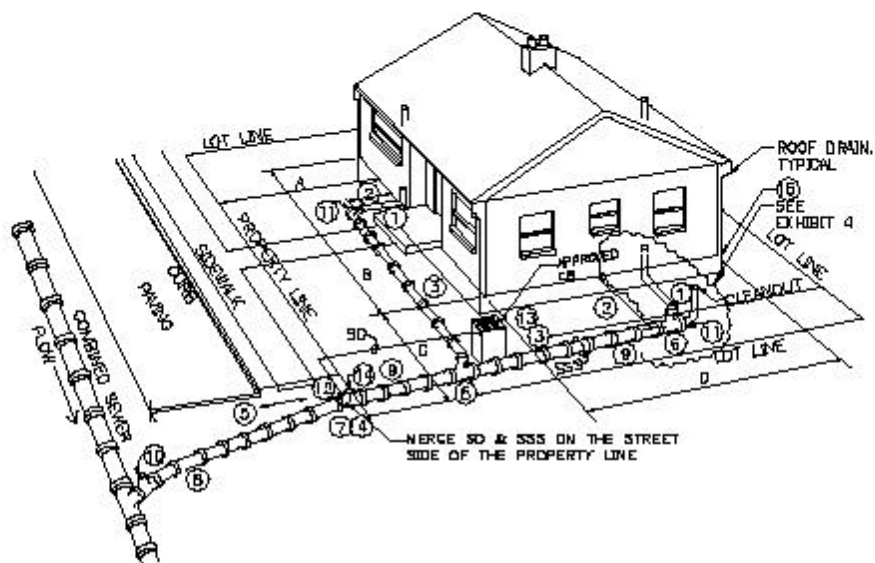


City of Seattle

NOT TO SCALE

**SIDE SEWER  
 INSTALLATION BASED ON  
 STANDARD PLAN NO. 283**

**Exhibit 6. Side Sewer & Service Drain Connection To A Combined Sewer System**



**NOTES:**

1. ALL HOUSE PLUMBING OUTLETS MUST BE CONNECTED TO THE SEWER. NO DOWNSPOUTS OR STORM DRAINAGE MAY BE CONNECTED, EXCEPT TO A SEPARATE STORM DRAINAGE SYSTEM.
2. 2'-0" MIN DISTANCE FROM HOUSE, EXCEPT FOR SOIL PIPE CONNECTION.
3. 1'-0" MIN COVER OF PIPE.
4. 2'-0" MIN COVER AT PROPERTY LINE.
5. 5'-0" MIN COVER AT CURB LINE.
6. LAY PIPE IN STRAIGHT LINE BETWEEN BENDS. MAKE ALL CHANGES IN GRADE OR LINE WITH BENDS OR WYES.
7. STANDARD 4" TO 6" INCREASER.
8. 6" SEWER PIPE: MIN SIZE IN STREET, AND ELSEWHERE AS DIRECTED. 2% MIN GRADE, 100% MAX.
9. 4" SEWER PIPE: MIN SIZE ON PROPERTY. 2% MIN GRADE, 100% (45°) MAX.
10. TEST "T" WITH PLUG.
11. REMOVABLE PLUG OR CLEANOUT.
12. CONNECTION TO SIDE SEWER REQUIRES SIDE SEWER TO BE 6".
13. TYPE OO CATCH BASIN OR P-TRAP AT EACH DOWNSPOUT.
14. TEST "T" WITH PLUG AT UPSTREAM SIDE OF SIDE SEWER AS REQUIRED.
15. P-TRAP AT ALL DOWNSPOUTS IF CB IS NOT USED.
16. ALL CONSTRUCTION REQUIRES A PERMIT AND PAYMENT OF FEE. COMPLETE LEGAL DESCRIPTIONS OF PROPERTY AND DIMENSIONS A, B, C AND D THAT SHOW THE SIZE AND LOCATION OF THE HOUSE ARE REQUIRED FOR ISSUANCE OF THE PERMIT.
17. CONSTRUCTION IN PUBLIC PLACE MUST BE DONE BY A REGISTERED SIDE SEWER CONTRACTOR.
18. ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH CURRENT SIDE SEWER ORDINANCES.
19. ORDINANCE 97018 APPLIES TO INSTALLATION OF SIDE SEWERS.



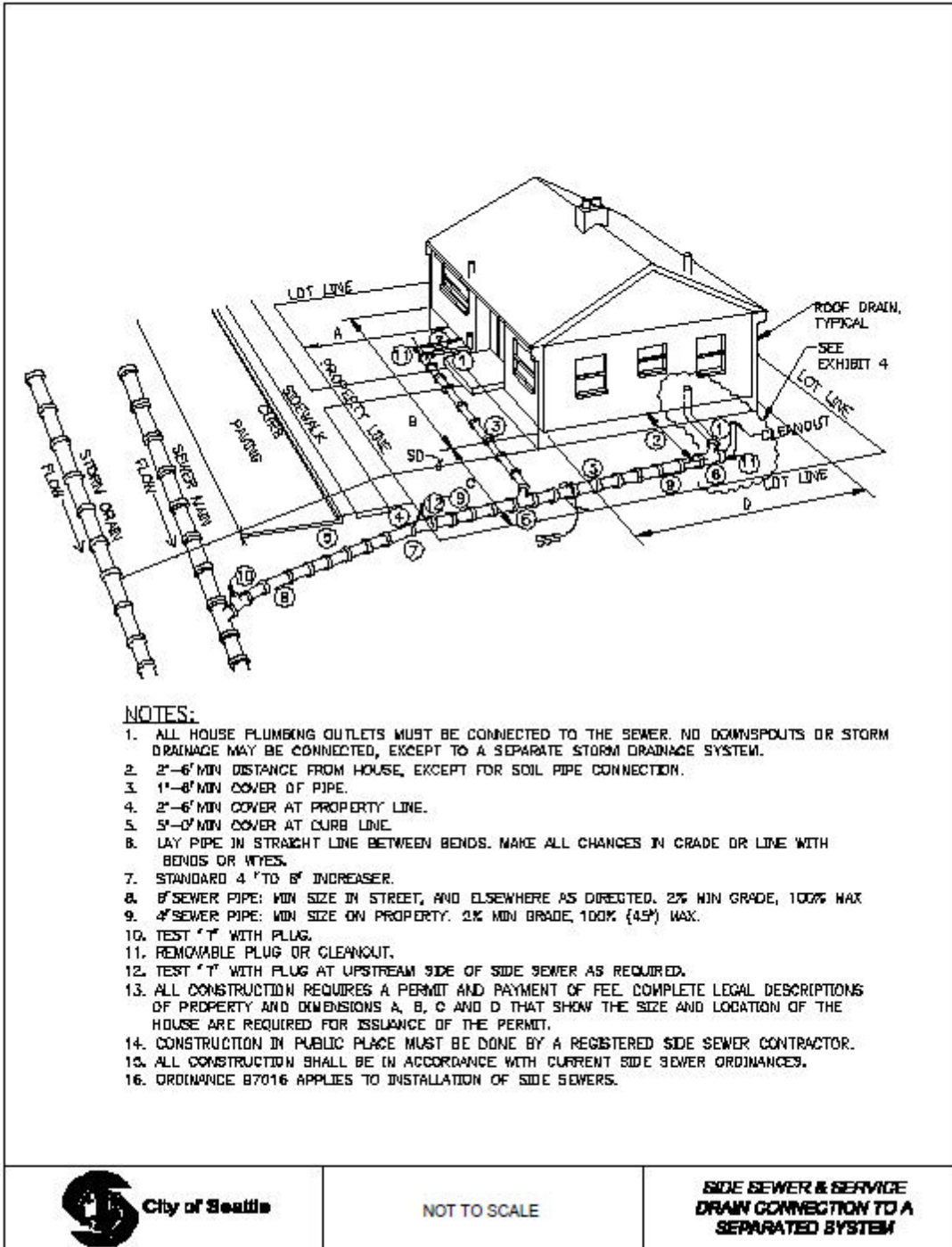
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NOT TO SCALE

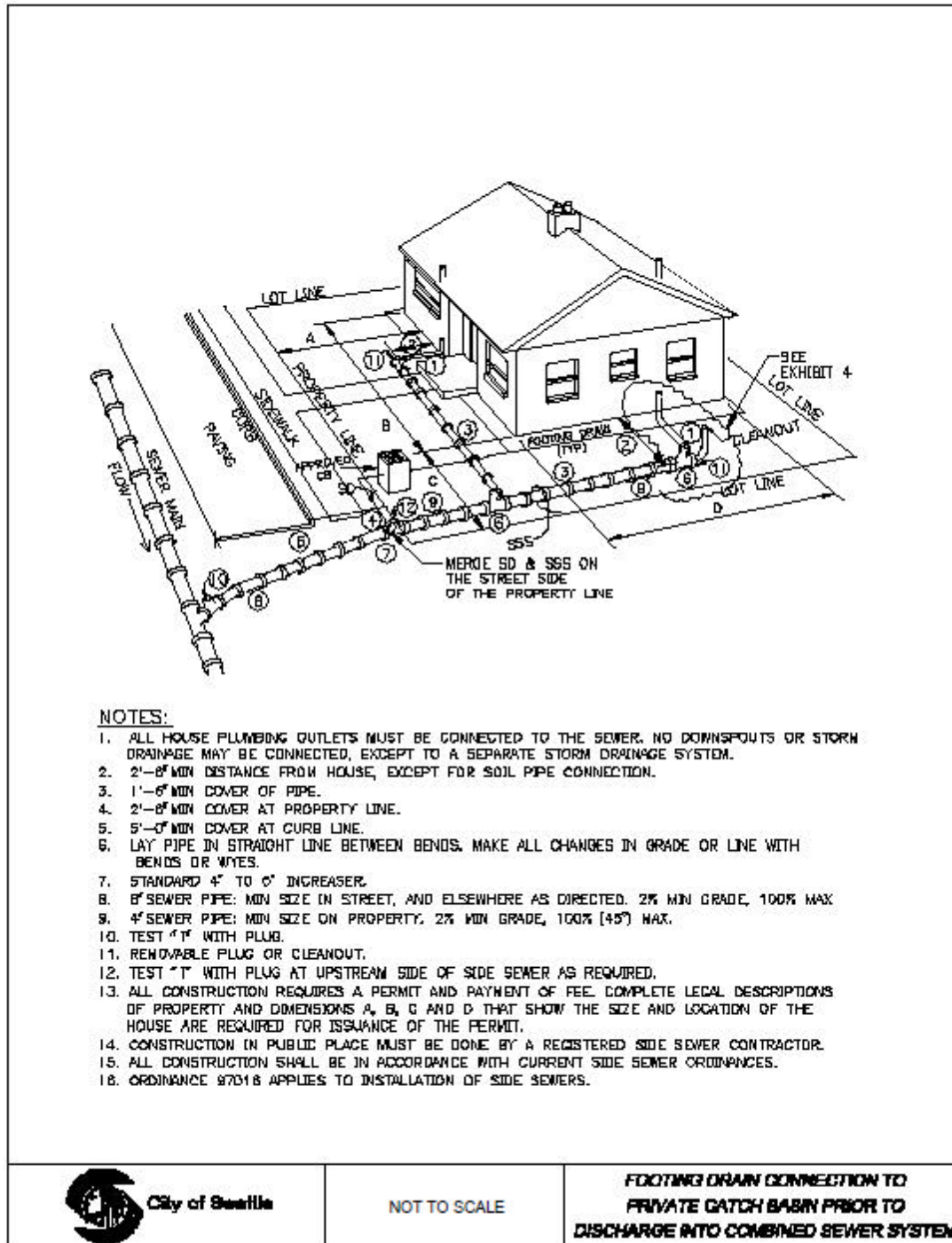
**SIDE SEWER & SERVICE DRAIN  
 CONNECTION TO A  
 COMBINED SEWER SYSTEM**



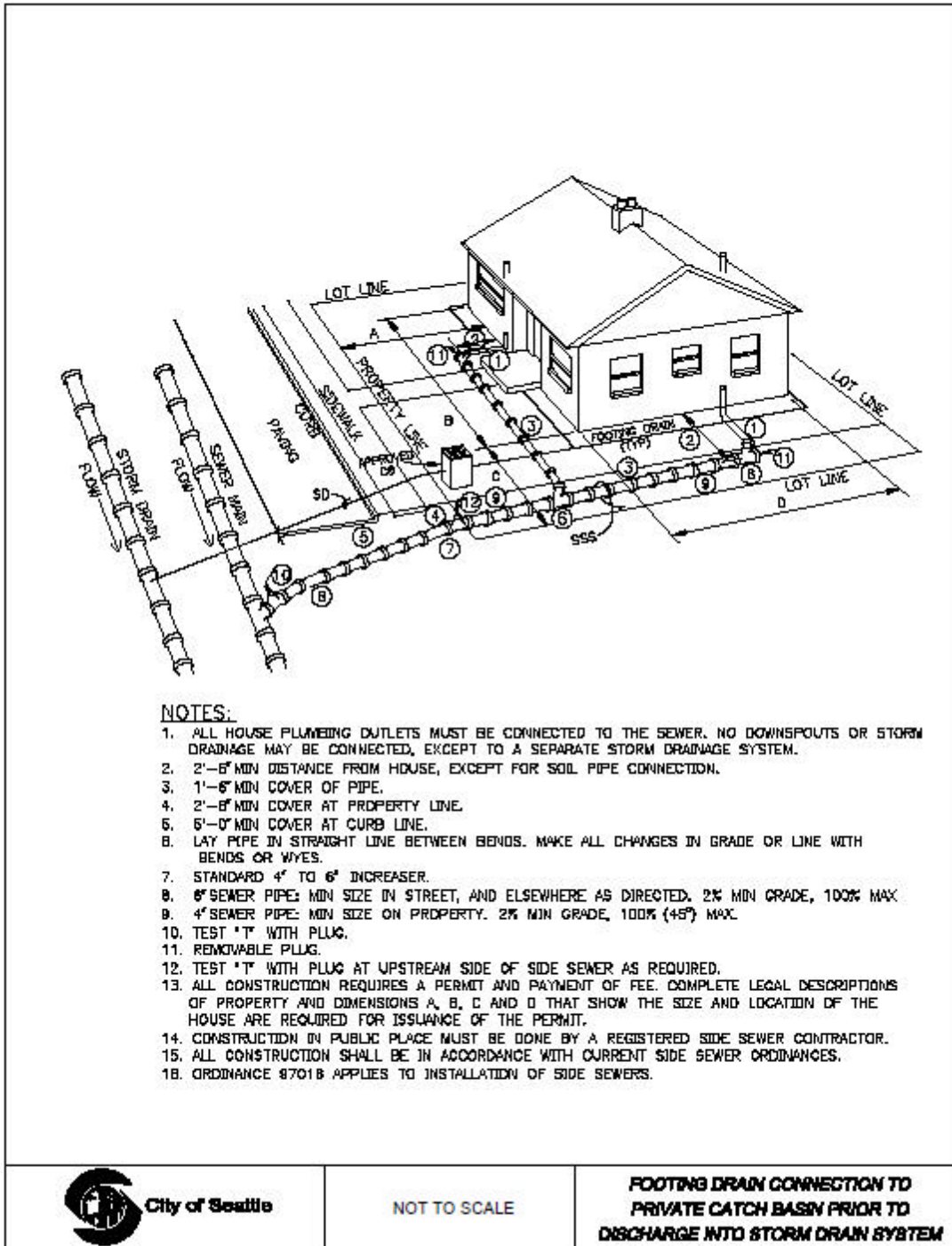
**Exhibit 7. Side Sewer & Service Drain Connection To A Separated System**



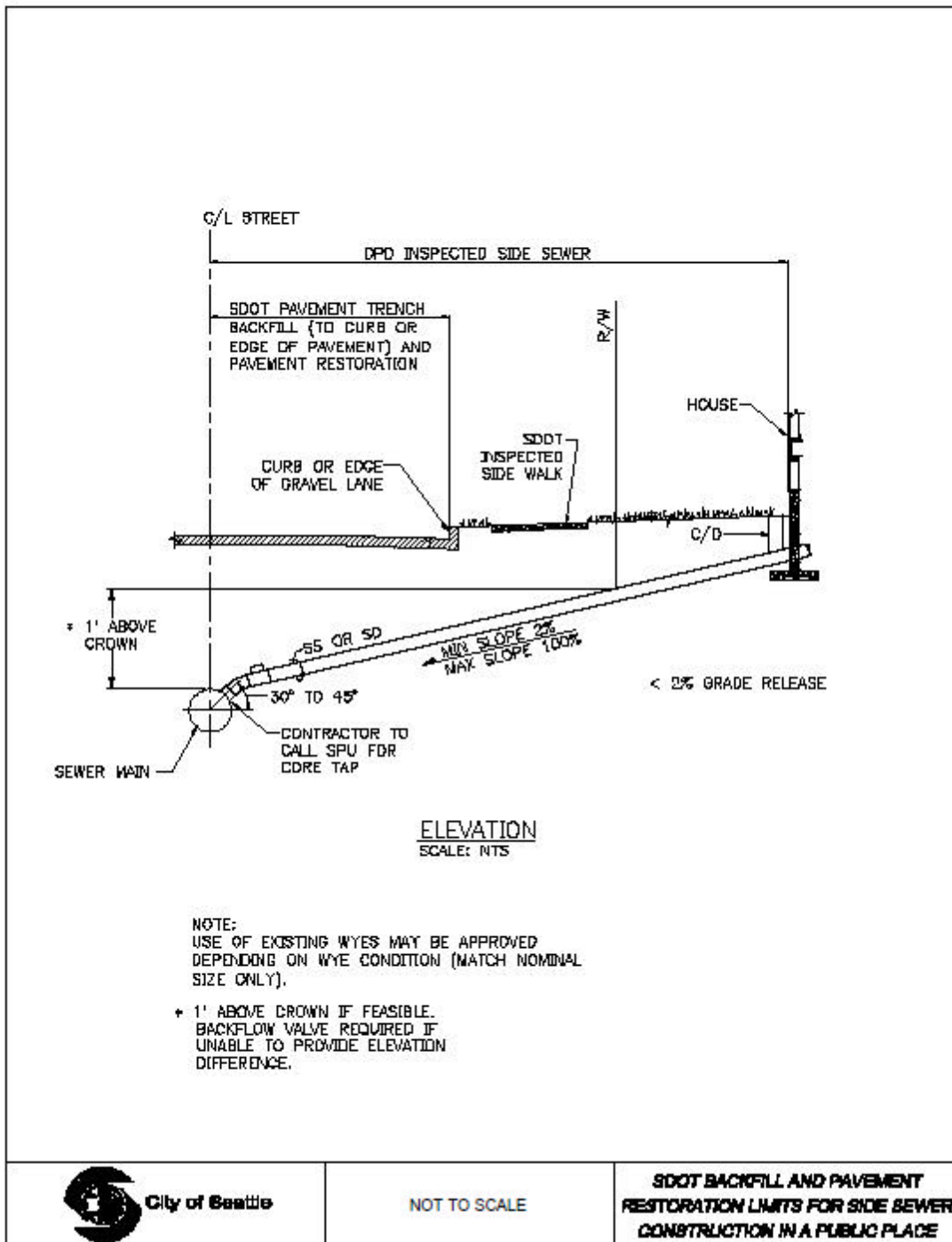
**Exhibit A. Footing Drain Connection To Private Catch Basin Prior To Discharge Into Combined Sewer**



**Exhibit 9. Footing Drain Connection To Private Catch Basin Prior To Discharge Into Storm Drain System**



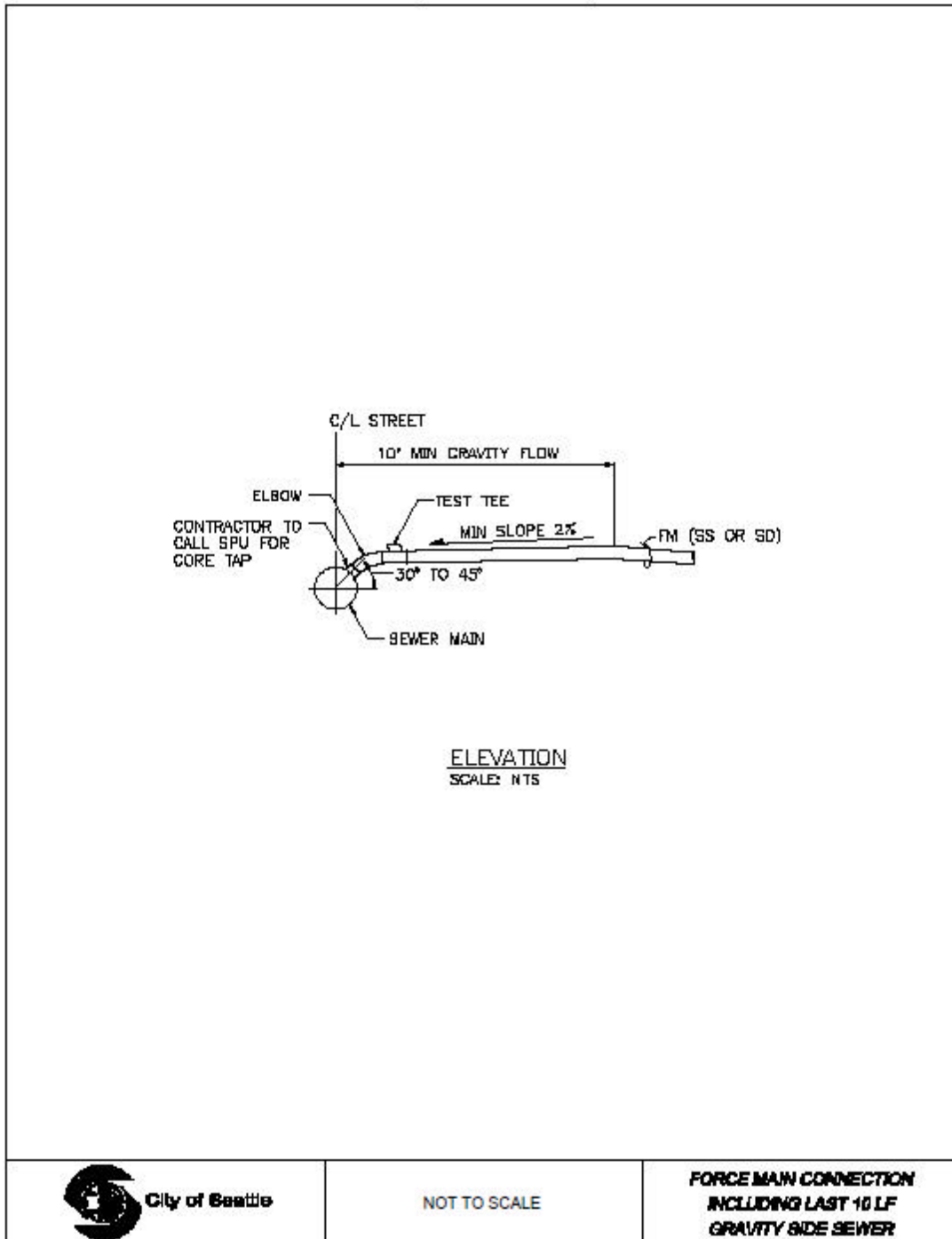
**Exhibit 10. SDOT Backfill And Pavement Restoration Limits For Side Sewer Construction In A Public Place**



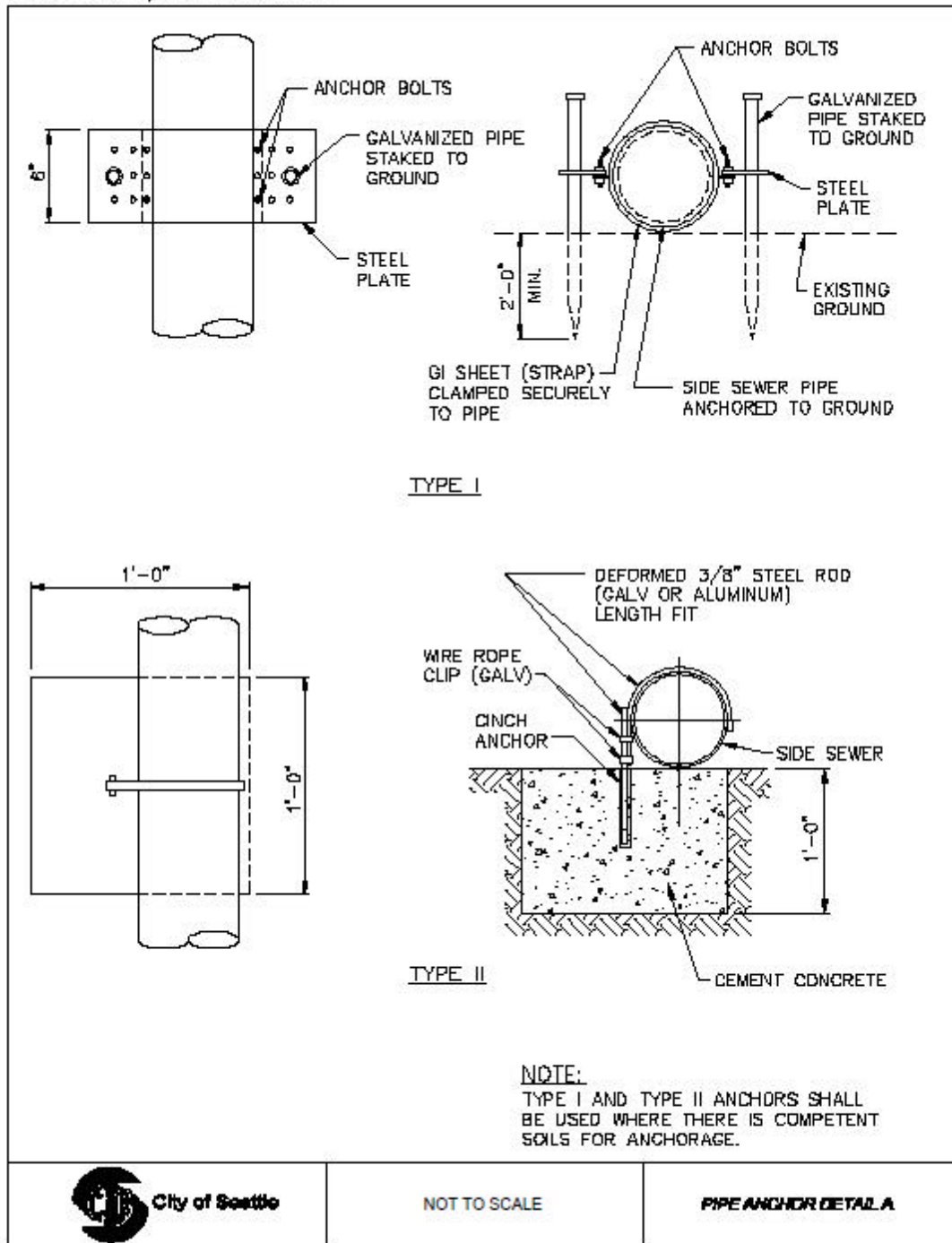
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**SDOT BACKFILL AND PAVEMENT RESTORATION LIMITS FOR SIDE SEWER CONSTRUCTION IN A PUBLIC PLACE**

**Exhibit 11. Force Main Connection Including Last 10 LF Gravity Side Sewer**

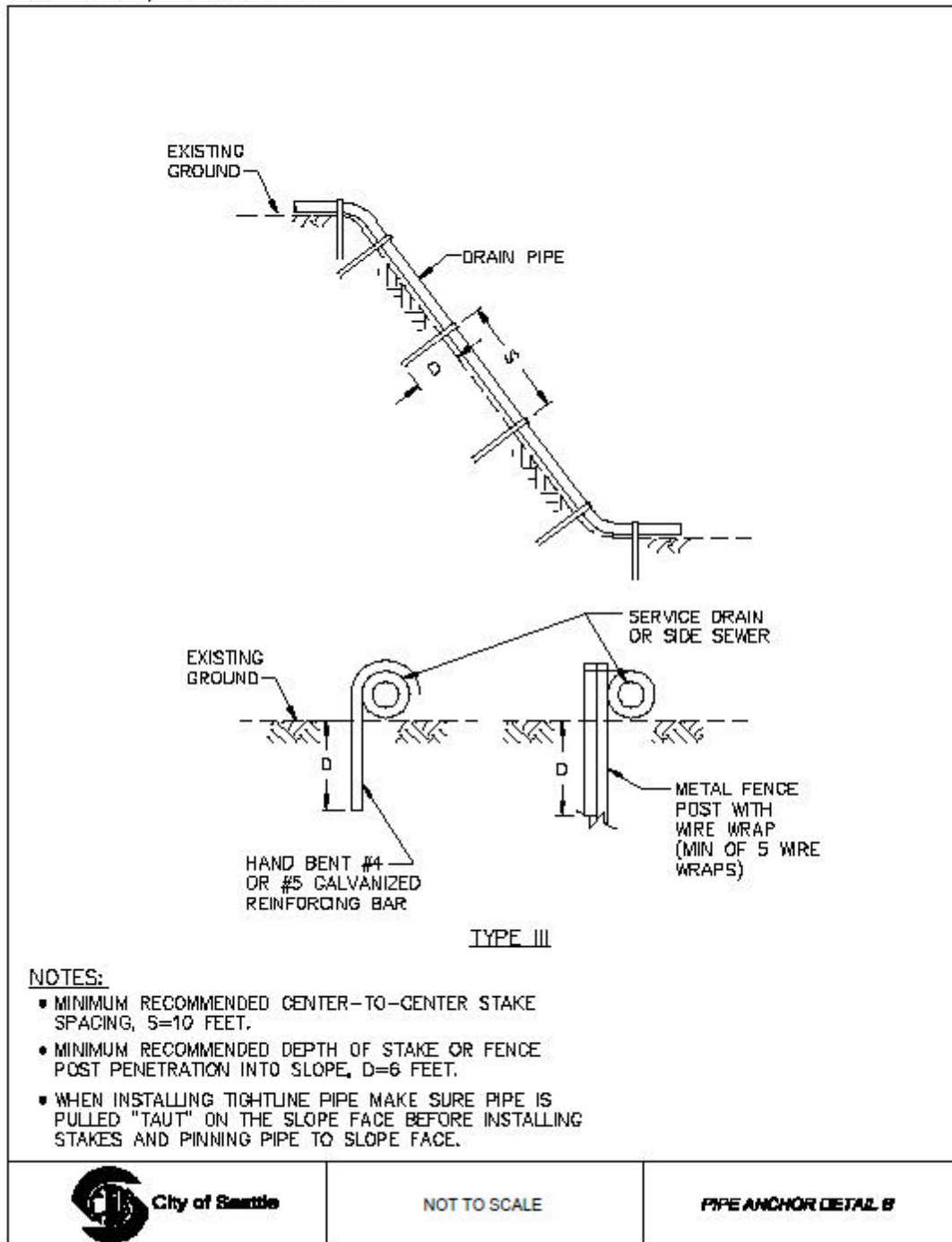


**Exhibit 15A. Pipe Anchor Detail A**





**Exhibit 16B. Pipe Anchor Detail B**



**Exhibit 19. Utility Tunnel For Existing Trees**

The diagram illustrates two methods for installing utility lines near trees. On the left, a trench is shown, which causes 40% root damage to the tree's root system. On the right, a tunnel is shown, which causes no root damage. The plan views below show the trench cutting through the root system, while the tunnel passes underneath it.

IF A TREE'S DIAMETER IS:	THE DISTANCE OF TUNNELING FROM ANY SIDE OF THE TREE SHOULD BE AT LEAST:
6 TO 9 INCHES	5 FEET
10 TO 14 INCHES	10 FEET
15 TO 19 INCHES	12 FEET
OVER 19 INCHES	15 FEET

**NOTE:**  
 FOR TREES UNDER 6 INCHES IN DIAMETER, TUNNELING SHOULD BEGIN AT LEAST 5 FEET FROM THE TREE, OR NO CLOSER THAN THE ROOT BALL IF NEWLY PLANTED. ANOTHER OPTION FOR SMALL TREES IS TO USE A TREE SPADE TO TEMPORARILY MOVE TREES OUT OF THE WAY OF UNDERGROUND WORK.

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**UTILITY TUNNEL FOR EXISTING TREES**



Exhibit 21. Maintenance Hole Lid Using Locking Screws

