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Chapter 18 DEVELOPMENT SERVICES

This chapter of the Design Standards and Guidelines (DSG) describes the plan review services provided by SPU for development projects. Plan review at the DSO primarily focuses on the review of plans for private development improvements in the right-of-way. The primary audience for this chapter is plan reviewers within DSO and engineers from other areas in SPU. DSG standards are shown as underlined text.

18.1 KEY TERMS

Abbreviations and definitions given here follow either common American usage or regulatory guidance.

18.1.1 Abbreviations

Abbreviation	Term
ADU	accessory dwelling unit
AADU	attached accessory dwelling unit
BMP	best management practice
CAM	client assistance memo
CC&Rs	covenants, conditions and restrictions
CCTV	closed-circuit television
CIP	Capital Improvement Program
CMD	Construction Management Division
CP	Corrosion Protection
DG	design guidance
DR	Director's Rule
DSO	Development Services Office
DSS	Development Services System
DWW	drainage and wastewater
ETSD	Engineering and Technical Services Division
FOMS	Field Operations Mapping System
ft	feet
GIS	Geographic Information System
GSI	Green Stormwater Infrastructure

Abbreviation	Term
HOA	homeowner's association
IT	Information Technology
KCIW	King County Industrial Waste
LOB	line of business
MH	maintenance hole
MIP	Major Interagency Project
MOA	memorandum of agreement
MUP	master use permit
O&M	operations and maintenance
OSM	on-site stormwater management
PAR	Preliminary Assessment Report
PAT	Preliminary Assessment Tool
PDEB	Project Delivery and Engineering Branch
PMCD	Project Management and Controls Division
PRD	Plan Review Database
ROW	right-of-way
RPS	Real Property Services
RSSC	Registered Side Sewer Contractor
SCL	Seattle City Light
SDCI	Seattle Department of Construction and Inspections
SDOT	Seattle Department of Transportation
SIP	Street Improvement Permit
SMC	Seattle Municipal Code
SMT	Seattle Municipal Tower
SPU	Seattle Public Utilities
SSPTD	side sewer permits for temporary discharge
WPPM	Water Planning and Program Management
WAC	Water Availability Certificate
WOSM	Water Operations and System Maintenance

18.1.2 Definitions

Term	Definition
consent agreement	A legal agreement that grants the land owner the right to construct private structures within an easement area.
customers	Parcel owners, developers, or their agents.
design guidelines	Advice for preparing an engineering design. They document suggested minimum requirements and analysis of design elements to produce a coordinated set of design drawings, specifications, or life-cycle cost estimates. Design guidelines answer what, why, when, and how to apply design standards and the level of quality assurance required.
design standards	<p>Drawings, technical or material specifications, and minimum requirements needed to design a particular improvement. A design standard is adopted by the department and generally meets the functional and operational requirements at the lowest life-cycle cost. It serves as a reference for evaluating proposals from developers and contractors.</p> <p>For a standard: the word must refer to a mandatory requirement. The word should is used to denote a flexible requirement that is mandatory only under certain conditions.</p>
developer	A property owner, or a property owner's designee, who is building a structure to be supplied with water service on at least one legal parcel and will oversee the project and communicate with SPU and other interested parties.
distribution water main	A water main that is not a feeder main or a transmission main and is defined as a standard distribution main, suitable distribution main, or obsolete distribution main.
domestic service	These services supply only potable or drinking water for domestic uses (i.e., not for fire flow).
utility easement	A clearly defined designated area of land that gives utility purveyors the right to access private property for the good of the community. SPU easements constrain property use, limits building and/or non-SPU utility encroachments, and typically recorded with King County.
zone of influence	The area of soil that is affected by an external load.

18.2 GENERAL INFORMATION

This section describes the authority for, and general organization of, the plan review function within DSO and other areas in SPU.

18.2.1 Authority

For the review of project plans, SPU relies on authority granted by the Seattle Municipal Code (SMC) and various Directors' Rules (DR). SPU has a service level agreement (SLA) with the Seattle Department of Construction and Inspections (SDCI) and the Seattle Department of Transportation (SDOT) granting those departments authority to review projects on behalf of SPU, through development permits and public works contracts. SPU documents roles, responsibilities, and financial agreements with SDOT and SDCI through SLAs.

The sections of the SMC that authorize DSO's role in plan review are described in client assistance memos (CAMs). These CAMs are detailed in DSG Section 18.11.3 and listed in Table 18-8.

DSO reviews plans to:

- Protect SPU's infrastructure from adverse construction impacts
- Preserve ability to make future system improvements
- Ensure projects by private developers, other City of Seattle (City) departments, and other agencies comply with the water, sewer, and stormwater requirements and design standards

18.2.2 Organization

Other SPU divisions/sections are involved in plan review and coordinate with DSO to protect SPU property, infrastructure, and related interests. Table 18-1 presents the plan review responsibilities of these divisions/sections.

Table 18-1
SPU Sections Involved with Plan Review

Section	Plans Reviewed
DSO Plan Review	<ul style="list-style-type: none"> • SDOT SIP for developer projects (Water and DWW mainline extensions) • Out-of-City water main extensions and other contractor-installed improvements • Large water service installations • Drainage and wastewater main build-overs and re-routes • SDOT over-the-counter permits (ditch filling, parklets, and streateries)
DSO Side Sewer	<ul style="list-style-type: none"> • Approved POD's for private development • Side Sewer review • Side Sewer Permit Applications
ETSD Plan Review	<ul style="list-style-type: none"> • SDOT SIP for developer projects (Water and DWW mainline extensions) • Small other agency projects • Other agency projects – stormwater code review • Utility major permits for franchise utilities • Street vacation requests
CIP Design	<ul style="list-style-type: none"> • SPU-led CIP projects • Large interagency projects
Engineering & Systems Support	<ul style="list-style-type: none"> • Projects outside of the City with the potential to affect SPU water transmission pipelines • Corrosion protection plans (for internal, other agency, and developer projects)
SPU Survey	<ul style="list-style-type: none"> • SPU-led CIP projects

Section	Plans Reviewed
	<ul style="list-style-type: none"> • Other City department CIP projects • Review of SIPs for compliance of survey with City standards
SPU CMD	<ul style="list-style-type: none"> • SPU-led CIP projects • Other agency projects with utility work • Developer Water and DWW extensions and other improvements
Field Crews Planning and Scheduling	<ul style="list-style-type: none"> • SPU-led CIP projects • Other agency projects with utility work • Developer Water and DWW extensions and other improvements
Water System Operations	<ul style="list-style-type: none"> • SPU-led CIP projects • Other agency projects with utility work • Developer Water and DWW extensions and other contractor-installed improvements
Water Transmission and Distribution	<ul style="list-style-type: none"> • Wholesale (purveyor) water services • Other agency projects with potential impacts to Water infrastructure or opportunities to replace Water infrastructure at a reduced cost • Developer water main extension projects and other improvements
DWW LOB	<ul style="list-style-type: none"> • Other agency projects with potential impacts/opportunities
Solid Waste Planning and Program Management	<ul style="list-style-type: none"> • Development plans (for placement of garbage, recycling, and food waste containers)
Utility Service Inspections	<ul style="list-style-type: none"> • Water service plans for backflow prevention

18.3 TYPES OF PLAN REVIEW

DSO performs plan review for development projects. Most of these projects are for private development but some are parcel-based projects constructed by public agencies.

18.3.1 Private Development Permitting in Seattle

Private development refers to projects constructed by private parties that modify, build, or affect public or private water, stormwater, wastewater, or solid waste systems. The SMC regulates permits for most private development. City development permitting is organized into two primary categories:

- **Private property.** SDCl manages permitting for all work within a parcel through master use permits (MUPs) and building construction permits. Private development plans are reviewed, approved, and inspected through the SDCl permit process. SDCl, Seattle City Light (SCL), SDOT, and SPU DSO staff provide preliminary information about requirements for private development on private property and any associated

improvements in the ROW, through the SDCI-managed Preliminary Assessment Report (PAR) process. Sections 18.4.1 and 18.1.1 detail this process further.

DSO staff review includes public infrastructure in the ROW, side sewers, and approved points of discharge. Additionally, DSO reviews DWW build-overs and SPU infrastructure that will be located in easements on private property, such as water meter vaults and water, sewer, or drainage main extensions.

- **Right-of-way (ROW).** SDOT manages ROW permits such as Street Improvement Permits (SIPs), utility major permits, and minor utility permits. DSO staff primarily review utility construction plans (main extensions, water services, and ROW drainage collection) installed by private developers under SIPs, while plans for other-agency projects are reviewed by the Engineering and Technical Services Division (ETSD). DSO also reviews plans to ensure protection of SPU infrastructure and maintenance of existing site drainage for over-the-counter street use permits, such as ditch filling, parklets, and “streateries.”

18.3.2 Private Development Permitting Outside of Seattle

The SPU water distribution area serves areas outside of the City, including portions of the cities of Shoreline, Burien, and Lake Forest Park and areas of unincorporated King County. DSO reviews plans for water main extensions and new water services in these areas.

18.4 PLAN REVIEWS FOR SDCI PERMITS

18.4.1 Preliminary Assessment

SDCI reviews permit applications and issues permits for several types of activities on privately-owned property and publicly-owned property not located in the City right-of-way. SDCI permitting processes cover construction, grading, land use / master use, and other permit types including trades such as electrical permits. SDCI administers a preliminary assessment process for permit applications that are expected to include ground disturbance or which will have other significant code impacts to be considered during design and plan review.

The preliminary assessment process provides permit applicants with a general outline of significant City code requirements prior to a project’s permit application. Upon request by an applicant and submission of a preliminary site plan through SDCI’s established procedure, SDCI will initiate the preliminary assessment process. Staff in SDCI, SCL, SDOT, and SPU review the preliminary application request. Review staff enter requirements into a web-based electronic tool called the Preliminary Assessment Tool (PAT). SDCI’s review includes onsite stormwater requirements. SPU’s review is responsible for designating public infrastructure ,drainage basins, side sewer requirements, sewer and storm drain mainline extensions, and build-over review requirements. SPU’s review also identifies stormwater control standards for proposed ROW improvements, including requirements for discharge point, receiving water, flow control and water quality treatment.

The PAT is designed for reviews to occur sequentially so that each successive reviewer will depend on information entered by a previous reviewer. Upon completion of all reviews, the applicant receives a Preliminary Assessment Report (PAR). The PAR alerts the applicant of City code requirements that could significantly affect a project.

18.4.2 Side Sewer Connections to Drainage and Wastewater Main Infrastructure

Side sewers are owned and maintained by the owner of the properties served. SPU owns the main infrastructure including wyes and tees at the main for side sewer connections. Side sewer permits authorize side sewer construction and the connections made to SPU-owned main infrastructure. SPU crews typically perform core taps to make connections to the main. The side sewer upstream of the SPU-owned tee or wye at the main is installed by the owner or owner's contractor and inspected by SPU inspection staff. Side sewer construction in the ROW must be conducted by a Registered Side Sewer Contractor (RSSC). SPU review staff approves standard core tap connections and reviews any non-standard connection review such as large pipe diameters or pipe conditions. The DSO may also receive requests from SPU's core tap crew if they encounter unexpected conditions or require a non-standard core tap. For more information, refer to [Core Tap Procedures for Storm and Sewer Mains](#).

18.4.3 Side Sewer Permit for Temporary Dewatering

SPU issues side sewer permits for temporary dewatering (SSPTD) of construction stormwater and groundwater. The review for this permit occurs during construction or grading permit review as part of review for stormwater code compliance by SDCI. The review of the SSPTD includes:

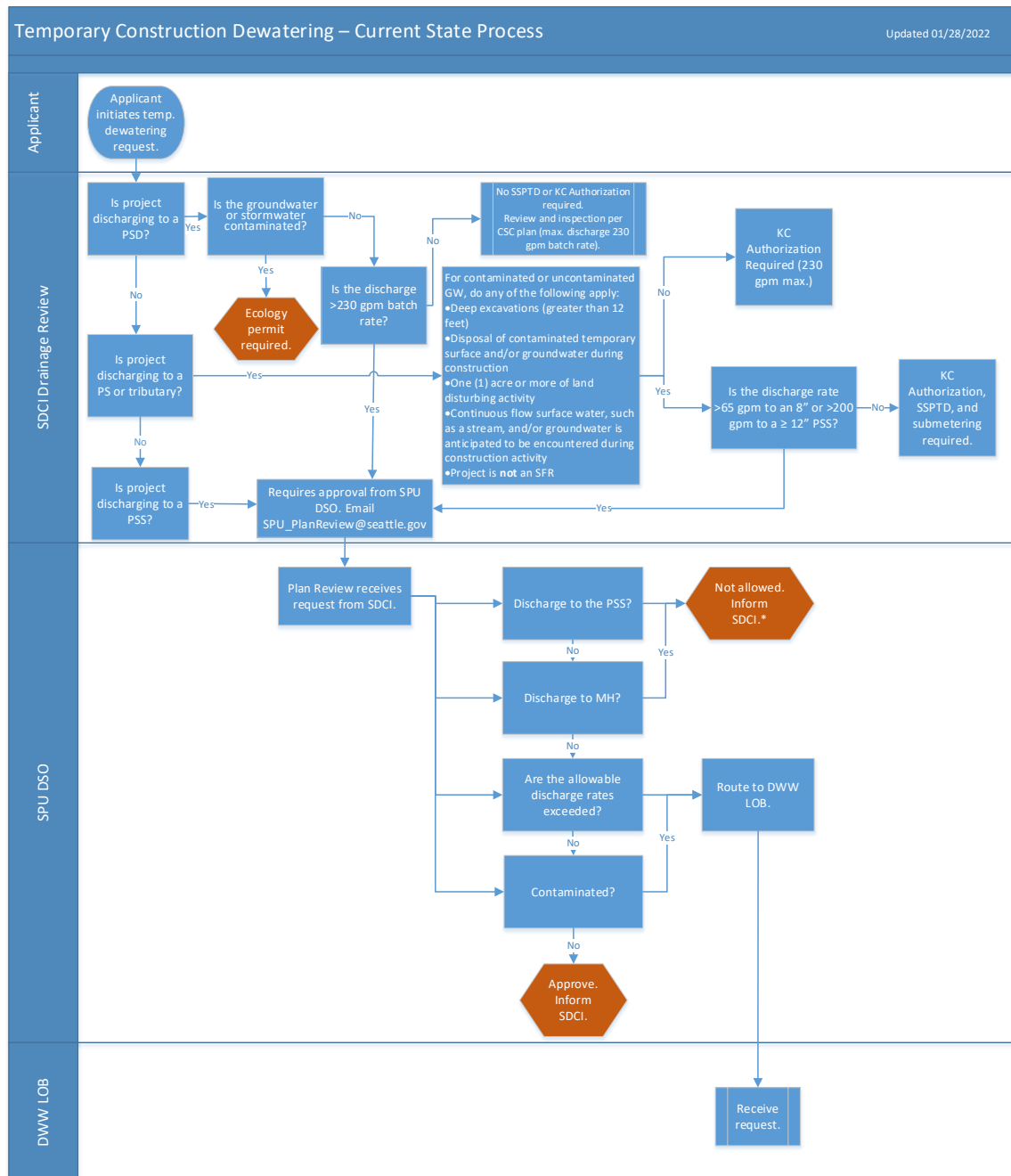
- Confirmation that the temporary dewatering is discharged to the approved point of discharge (pipe storm drain [PSD], pipe sewer sanitary [PSS], or pipe sewer combined [PS])
- Review that proposed discharge rate is within SPU's guidelines
- Confirmation that approval from King County Industrial Waste (KCIW) has been obtained for discharge authorization if discharge is connected to the sanitary or combined sewer systems
- Confirmation that a submeter billing account has been established with SPU if dewatering meets certain thresholds
- Confirmation of Department of Ecology permit if discharge is contaminated

SDCI consults with the DSO for private property projects which propose discharging to the sanitary sewer system or which discharge to any SPU system above prescriptive maximum rates.

The DSO may consult with DWW line of business for support when reviewing non-standard requests. Information to be provided to DWW LOB includes the requested discharge rate, duration of discharge, and point of connection. The DSO responds to SDCI with SPU's approval or denial of the request, and if approved, the allowable discharge rate, duration and point of connection.

For temporary dewatering requests related to major interagency projects (MIPs), SDOT, and Sound Transit, plan reviewers should forward inquiries to the SPU project manager in the Major Interagency Projects Section of the Project Management and Controls Division.

Refer to the Temporary Construction Dewatering job aid for a summary of SDCI and DSO responsibilities pertaining to temporary dewatering requests.



*DSO may occasionally route to DWW for complex issues.

18.4.4 Sewer Build-Overs and Reroutes

Build-over review and reroute projects are initiated through SDCI's building permit review process. SPU may allow a developer to construct a permanent structure over or adjacent to an existing combined, sanitary, or storm main located on private property or to reroute the main. If any or all of the requirements are not met, SPU reserves the right to reject the proposed build-over. An applicant is not entitled to a build-over or reroute, whether or not the criteria allowing approval of a build-over or reroute are met.

Real Property Services (RPS) works with the DSO plan reviewer to ensure that the City's rights and facilities are adequately protected. The developer must agree to pay the administrative costs plus excess future costs incurred during the project's construction. For detailed information on build-over review or the reroute process, refer to [Tip 507](#) for the drainage and wastewater public main build-over and reroute process.

Note: Build-overs are considered only for drainage or wastewater mains. Build-overs are not allowed for water mains.

18.4.4.1 Build-Over Process

Refer to [Tip 507](#) for the drainage and wastewater public main build-over and/or reroute review process.

18.4.4.2 Build-Over Design Requirements

SPU build-over review considers re-routing the pipe, building over the pipe, and removing and replacing the pipe within a utility easement. The review may involve a variety of design considerations as follows:

A. General

1. The submitted plan set should include a boundary survey to show the location of SPU's mains and easement area and a site plan showing the relative location of the proposed work.
2. An unobstructed 10 x 20-foot minimum access area located on both sides of the building is required.
3. Rerouting the DWW main around the proposed building in lieu of a build-over is typically preferable. This option only works if there is enough grade to maintain flows and if there will be additional access granted for change in direction vertically and horizontally. This will require any existing easement to be relinquished and a new easement (requiring action from City Council) to be recorded prior to permit issuance. If there is no existing easement, a new easement must be provided.
4. Additional maintenance holes (MHs) may be required, as necessary, to improve access. This decision should be made in consultation with the DWW System Maintenance staff.
5. The proposed pipe must be sized to convey the design flows for the entire basin under full build-out for the corresponding zoning.
6. If pipe will be re-routed, there must be upstream and downstream maintenance holes within the property, and they must be designed to allow SPU access (including vehicle access) to both end maintenance holes for future maintenance work.

7. To facilitate inspections, billing and recording documents, a DWW contract may be required.
8. Plans “as designed” and record drawings “as-constructed” shall be prepared for submittal to SPU’s Engineering Records Vault with a Vault Plan Index Number.

B. Trees

1. Provide a landscape plan for review that shows all the existing trees, which trees will be removed, and which trees will be planted on the property.
2. Existing trees within the easement area or over a pipe should be removed by hand (not heavy equipment).
3. New trees will not be allowed to be planted within the easement or over a pipe.

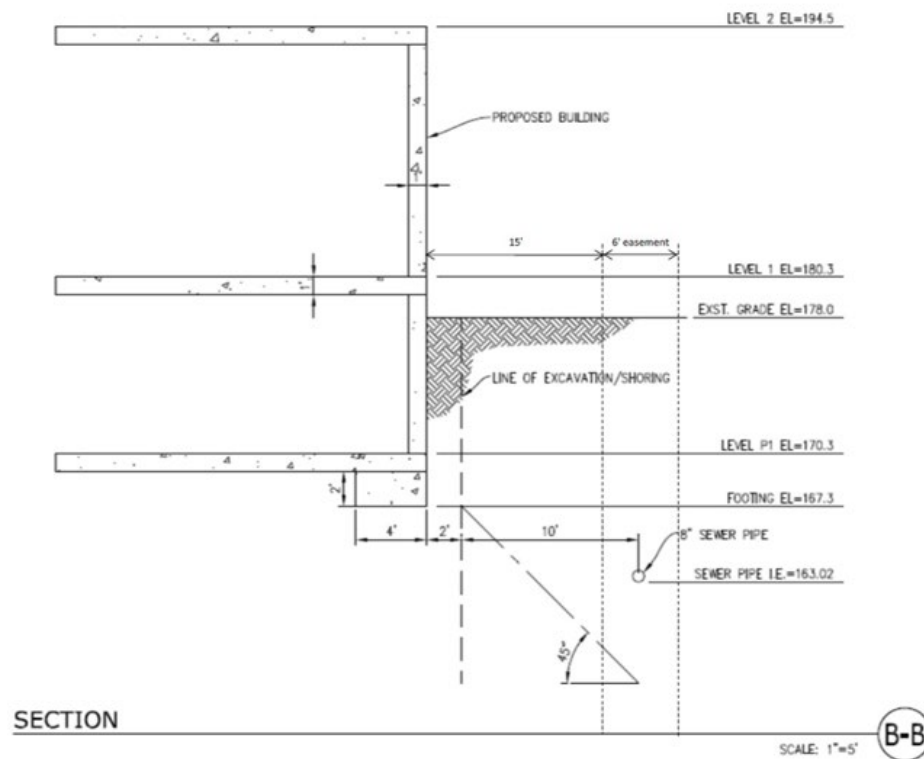
C. Casings

1. If required, a casing pipe is installed around the sewer/storm main (carrier pipe) and the inside diameter of the casing pipe must be larger than the outside diameter of the bell of the carrier pipe. Refer to [*DSG Chapter 4, General Design Considerations*](#).
2. The minimum thickness of the steel casing pipe must be ¼ inch. External loading may require thicker and stronger casing, such as with larger buildings or railroad crossings, which must be reviewed by a structural engineer. For simple spread footings, casing must extend at least 5 feet (ft) beyond the edge of the building foundation 1:1 influence line. For pile foundations, casings may extend to less than 5 ft. Steel casing pipe is preferred, although ductile iron pipe may be considered on a case-by-case basis.
3. The carrier pipe must be ductile iron pipe class 52 minimum restrained joint within the casing pipe. The carrier pipe must match or exceed existing capacity of the original design. For sewers, the velocity flowing within the pipe must be at least 3 ft/second. In instances where planning determines that upsizing a pipe is needed for either increased sewer loads or drainage basin conveyance, it is best to accomplish this during the build-over.
9. Private side sewer connections are not allowed within the casing pipe. Reroute existing connections downstream of the casing.
10. Casing spacers must be used to maintain the line and grade of the pipe and to prevent floatation. Use stainless-steel spacers for longevity. Place at bell ends with 9 ft of maximum spacing.
11. A removable end cap or a 1 ft deep concrete plug must be included to seal the annular space between the casing pipe and the carrier pipe.

D. Zone of Influence

1. Foundations must be outside the easement.
2. Plans must show a cross section that includes how far away the foundation is and where the zone of influence is.
3. If the foundation is 20 feet away that is considered a safe zone and zone of influence drawing is not needed.
4. Cross-sections provided must show the locations of the proposed foundations where they are parallel along SPU’s mains. Show the elevation points of the proposed

foundations, horizontal and vertical clearance, and the zone of influence. The zone of influence must project 1 foot below the existing utility mains. Here is an example drawing of how the zone of influence should be shown:



E. Cuts or fills

1. Cuts or fills within the easement area should be avoided. If there are any substantial cuts or fills it will need to be reviewed in relation to how deep the pipe is. Adequate protection must remain over the pipe.

F. Legal Agreements

1. Replacing the pipe within an existing easement may be proposed. Relinquishing an existing easement and obtaining a new and wider standard easement is easier to get City Council approval than obtaining an entirely new easement.
2. A public utility easement is issued for the utility main on private property. The City Council approves any easement legislation.
3. Any private improvements encroaching into SPU's easements will require a consent agreement.
4. Easement widths should follow the requirements of [Chapter 8 of the Design Standards and Guidelines](#).

18.5 PLAN REVIEWS FOR SDOT RIGHT-OF-WAY PERMITS

SDOT issues street use permits, which regulate the use of the public ROW, including construction of projects. Types of street use permits or activities that may affect SPU infrastructure include SIPs, utility permits, shoring and excavation review, and street tree permits.

18.5.1 Street Improvement Permit (SIP)

[SIPs](#) are submitted to SDOT for installation of major improvements, such as street paving, curbs, and sidewalks. SPU infrastructure is generally located within the ROW, and SIP projects are more likely to affect the infrastructure and to trigger the stormwater code thresholds. Most SIPs are initiated by the [Seattle Land Use Code](#) when adjacent private property development triggers street improvements. Sometimes, the work permitted by a SIP is related to a City department Capital Improvement Program (CIP), other agency, voluntary project, or public mainline extensions such as water, sewer, and storm main in the ROW. DSO reviews a SIP when water or drainage and wastewater infrastructure that SPU will own are constructed, when existing infrastructure is impacted, or if the project must meet any performance standards of the stormwater code.

The SIP process starts at the design guidance (DG) phase (typically 60% design) and moves to the formal review phase at 90% design and through project construction. The DG phase usually consists of meetings with the project proponent. During the DG meeting, staff from the relevant City departments respond to questions from the design team or provide other information. During the formal review process, paper or electronic plans are submitted to SDOT and SDOT distributes the plans to other City departments, including SPU.

The SIP plans are reviewed for:

- Conformance with water system improvements (water main extensions, new valves, and or new hydrants) identified in the Water Availability Certificate (WAC) for the parcel, if applicable.
- Compliance with the stormwater code requirements.
- Protection of SPU infrastructure. Review is done to identify immediate and long-term risks from construction and operation of the proposed projects. The risks could be due to proximity of proposed construction to SPU infrastructure, parallel deep excavations and excavations over or under water mains or drainage and wastewater pipes, construction methods, concrete pavement removal over or adjacent to cast iron water mains, soil nails, sheet piles, and tiebacks intersecting drainage and wastewater or water pipes and vibration and settlement of pipes due to construction activities.
- Compliance with City standards for SPU utility construction or approval of non-standard construction.
- Drainage collection and conveyance and conformance with [DWW-210](#).

The listed impacts could require mitigation by the project owner in the form of utility protection plans, monitoring of construction by SPU staff, and vibration and settlement monitoring. The review engineer should refer to the resources listed below to review the plans uniformly and efficiently and to establish the level of protection:

- Settlement monitoring requirements for cast iron water mains ([Appendix 5A](#))
- Settlement monitoring requirements for ductile iron water mains ([Appendix 5B](#))
- Vibration monitoring ([DSG Chapter 5, Water Infrastructure](#), section 5.11.1.2)
- Requirements for earthquake-resistant water pipe ([DSG Chapter 5, Water Infrastructure](#))
- [DWW-210 - Public Drainage System Requirements](#)
- [Drainage CB and inlet notes](#)
- [Mainline conveyance and detention notes](#)
- [Proprietary stormwater treatment notes](#)
- [Rain garden notes](#)
- [Infiltrating bioretention notes](#)
- [Water service notes for street improvement plans](#)
- [Water main notes for street improvement plans](#)

18.5.1.1 60% Review

60% SIP approval is required for a project before they can submit for building permit intake. The plan reviewer should look at the following items at 60% review:

- An approved WAC must be acquired. If the project has a Not Approved WAC, they must initiate the utility system improvement contract process before SPU reviews any of the proposed water system improvements. (SPU will review DWW requirements for system improvements with a Not Approved WAC.)
- Alignment(s) for any mainline extension (water, sewer, or storm) should be finalized at 60% prior to the project's building permit intake.
- Water, storm, and sewer service locations should be finalized. This prevents issues with service connections to the new main(s) being inflexible due to their locations on the building plans.
- The project must submit documentation demonstrating Stormwater Code Compliance. Refer to 18.5.4 for details.

18.5.1.2 90% Review

Once a project receives 60% SIP approval, they move on to the 90% formal review. At this phase in the design the plans should be substantially complete. Few changes if any are needed at this phase as the major conflicts should have been addressed at 60%. If not already included in the 60% submittal, the plan reviewer should review the profiles of any water, sanitary sewer, or storm main extensions and large water services.

18.5.1.3 RAMS Reviews

SIPs that include SPU main extensions (Water, Sanitary, or Storm) will include a Request for Approved Material Sources (RAMS) submittal. SPU reviews these RAMS to ensure that all materials proposed to be installed are included in the submittal and that they meet requirements described in the standard specifications.

18.5.1.4 SIP Lites

SIP Lites are projects with smaller scale street improvements such as installing new or replacing curb ramps, new curb and sidewalk, or alley widening. The threshold for a project to be permitted as a SIP lite is to have less than 2,000 square feet of new plus replaced hard surfaces in the ROW.

The DSO does not review SIP Lites unless the SDOT Project Manager identifies SPU infrastructure that could be impacted. Most of these occurrences are when curb ramps are being constructed and drainage collection must be replaced or installed.

18.5.2 Utility Major Permits

SDOT issues utility major permits (UMPs) for the installation of underground utility mains, overhead wires, and services in the public ROW. They include public utilities such as electric power, water, sewer, and drainage mains; franchise utilities such as communications, gas, and steam; and privately owned facilities such as oil pipelines. UMPs are reviewed to protect SPU infrastructure. Review is done to identify short- and long-term risks from construction of proposed projects, as described above. The risks could be due to proximity of proposed construction to SPU water and drainage and wastewater infrastructure, deep excavations, construction methods, concrete pavement removal over or adjacent to cast iron water mains, soil nails and tiebacks intersecting drainage and wastewater or water pipes, and vibration and settlement of SPU pipes due to the impacts listed above. For details, refer to the resources listed under 18.5.1.

This permit is one that SPU both reviews as an approver and requests from SDOT as an applicant. Many SPU projects need to obtain this permit. See [*DSG Chapter 2, Design for Permitting and Environmental Review*](#).

SDOT distributes UMP applications to SPU and other stakeholders. The DSO engineer reviews the plan to check for impacts on SPU infrastructure. Comments are transmitted to SDOT via Bluebeam. Simple projects usually require one review, while complex projects may require several reviews. Refer to [*DSG Chapter 2, Design for Permitting and Environmental Review*](#).

18.5.3 Shoring and Excavation Review

Shoring is a means of supporting the earth in a trench or vertical cut for construction or other activity. There are many types of shoring techniques for earth reinforcement or support.

The shoring review is one of the review functions for SDCI. To become more customer friendly, SDCI and SDOT combined the shoring review as part of the building permit review process, to allow for a one-stop permit. The shoring review begins at SDCI. At the point of intake, the intake reviewer assigns all necessary review locations for a particular project. Street use shoring review

is initiated for any proposed excavation that would be greater than 3 ft deep immediately adjacent to any given public ROW.

DSO may review the shoring plans if the construction is likely to impact SPU utilities, but, typically, SDOT represents SPU in this review function. Projects that have deep excavations, soil nails, tiebacks, and sheet piles may trigger settlement monitoring for water mains and also pre- and post-closed-circuit television (CCTV) for sewer and drainage pipes.

SPU has an established protocol for protecting drainage and wastewater pipes and accessing them for the purpose of CCTV and maintenance. The protocol is described in notes attached as [Appendix 18B – Drainage and Wastewater \(DWW\) Utility Protection Notes](#). The notes should be included in the drawings for projects that have soil nails or tieback systems passing over or under drainage and wastewater pipes. Applicants must complete and submit a DWW Protection Plan and submit a completed Request to Enter a Maintenance Hole form before conducting any drilling, grouting, or concrete construction that may affect SPU pipes.

18.5.4 Stormwater Code Compliance

Property owners are responsible for properly conveying all stormwater, groundwater, and wastewater to an approved discharge location. Where no offsite point of discharge is available, onsite infiltration may be required. Detention, treatment, or on-site stormwater management (OSM) requirements may be imposed.

In the City, all proposed development is reviewed for its impact on the existing drainage and wastewater infrastructure. An MUP, building permit, or street use permit will not be issued until all concerns regarding drainage and wastewater have been addressed. Infrastructure improvements may be required as a condition of the permit when existing infrastructure is unavailable or inadequate.

DSO engineers use the stormwater code to review for stormwater code compliance for private development or redevelopment projects in the ROW. There are 14 minimum requirements for all projects (SMC 22.805.020). In addition to these 14 minimum requirements, other requirements may apply based on project type. The most common requirement is to implement On-site Stormwater Management (OSM). Two additional requirements (flow control and water quality) may apply, depending on project type and where the site ultimately drains. For assistance in interpreting the stormwater code, refer to [2021 City of Seattle Stormwater Manual](#)

Drainage and wastewater thresholds for improvements and extensions within the City are triggered by code (often a lack of available main in abutting ROW). If there is no existing infrastructure to extend, or if the existing infrastructure has known capacity issues, the DSO plan reviewer may need to coordinate with the DWW LOB to determine the following:

- Possible downstream hydraulic constraints
- Allowable point of discharge
- Evaluation of service alternatives
- Determination of benefit of new or upgraded main to SPU

The code and other extensive explanatory materials are in the [2021 Stormwater Manual](#), Volumes 1–4 and associated appendices.

18.5.4.1 On-Site Stormwater Management

OSM best management practices (BMPs) are required under the 2021 Stormwater Code. BMPs limit the negative impacts of stormwater runoff by requiring the installation of plants, trees, and amended soils to clean and infiltrate runoff and manage stormwater flows. GSI BMPs such as shallow bioretention, permeable pavement, and landscaping allow soil to absorb water, slowing flows and filtering out many contaminants. Evaluation of specific BMPs is required in different drainage basins. OSM can be achieved by either using the (1) on-site performance standard or (2) on-site lists. OSM is required for the following thresholds and project types:

1. All roadway projects (SMC 22.805.060) or trail and sidewalk projects (SMC 22.805.040):
 - a. $\geq 2,000$ square feet (sq ft) new and replaced impervious surface, or
 - b. $\geq 7,000$ sq ft total land disturbing activity
2. All parcels-based projects (SMC 22.805.050) or single-family residential projects (SMC 22.805.030) (reviewed by SDCI):
 - a. $\geq 1,500$ sq ft new and replaced impervious surface or $\geq 7,000$ sq ft total land disturbing activity
 - b. For a project on a lot most recently created, adjusted, altered, or otherwise amended by a plat recorded with the King County Recorder on or after January 1, 2016, either ≥ 750 sq ft new plus replaced hard surface or $\geq 7,000$ sq ft land disturbing activity

For more information, refer to the 2021 Stormwater Manual, Volumes 1–4 and associated appendices. for projects in the ROW.

18.6 OTHER REVIEWS AND PERMITS

Other reviews include MIPs, utility system improvement disputes, and latecomer agreements.

18.6.1 Major Interagency Projects

DSO reviews plans for large water services for MIPs from internal and external agencies. Water and sewer extension plans for these projects are reviewed by ETSD.

18.6.2 Utility System Improvement Disputes

Projects requiring a utility system improvement for water, drainage, and or wastewater may dispute the requirement and request a [Determination Review](#).

18.6.3 Latecomer Agreements

Projects with utility system improvements required as a condition of new utility service or property development are eligible to apply for a [Latecomer Agreement](#). These utility system improvements are typically water, sewer, or drainage main extensions, valve installations on water mains and associated appurtenances.

18.6.4 Water Utility System Improvement Contracts

During Water Availability Certificate (WAC) review, DSO staff may determine that a parcel is not adequately served by the existing drinking water infrastructure. DSO may issue a Not Approved WAC listing water system improvements required to provide water service to the parcel. Improvements may consist of constructing a standard water main, upgrading a sub-standard main, adding valving, hydrants and other water system appurtenances. In order to receive an Approved with Contract WAC, the parcel owner is required to enter into a water system improvement contract and pay all fees specified in the contract. The cost of designing and constructing the water system improvement is borne by the parcel owner. For water main extensions, the parcel owner hires a contractor to design, construct, and commission the water main in accordance with SPU's design specifications and guidelines. After the water system improvements are installed and approved by SPU's Construction Management Division (CMD), the parcel owner donates the new asset to SPU. For the complete process, refer to [Installing Water Mains](#).

18.6.5 Plan Review and Approval of Water Main Extension Projects

The process of constructing a water main extension project follows the steps below:

1. The parcel owner enters into a water main extension contract with SPU and pays all associated fees. The parcel owner then receives an Approved with Contract WAC.
2. The parcel owner hires a registered professional civil engineer to design the water main extension and associated appurtenances.
3. The parcel owner submits the plans to SDOT as a SIP application. If the project does not have a SIP component, the plans are submitted as a UMP application.
4. SDOT submits the plans to DSO and other City departments for review. The DSO engineer combines review of the street improvement construction, which impacts SPU infrastructure with the review of the water main.
5. The water main is reviewed to ensure compliance with SPU design standards. The plans may require several reviews before final approval.
6. After approval, the final plan is signed, SDOT issues a permit, and the parcel owner hires a contractor to construct the project.
7. Water infrastructure construction is inspected by CMD.

To review a water main design, the engineer should check the listed items:

- **WAC.** To match the designed project with the WAC requirements for location, water main size, material, and length.
- **Standard notes.** The notes may be revised to suit project-specific requirements. Refer to 18.5.1. Ensure the water main and water service notes and SDOT links are included. For SPU projects, see [DSG Chapter 3, Design for Construction](#).
- **Pipe material and valves.** As specified in [DSG Chapter 5, Water Infrastructure](#).

- **Water services.** Existing water services are shown on the plans with comments stating whether they will be reconnected to the new main or retired. The size and location of new water services is shown on the plans.
- **Easements.** When required for new mains, hydrants, or water services, easements should be shown on the plans and described.
- **Cathodic protection.** The DSO reviewer consults the Corrosion & Asset Engineering, under ETSD, Engineering System support. The group recommends the appropriate corrosion protection for the pipe.
- **City Standard Plans.** To confirm that the submitted engineering exhibits include the standard location for the main, a plan and profile, details for standard cover, connection, and blocking details.

Complete guidelines for designing Water mains are described in [DSG Chapter 5, Water Infrastructure](#).

18.6.6 Water Service Installation Plans

After obtaining an approved WAC, an applicant is required to complete and submit a water service application and agreement form, pay for the cost of the water services and submit plans. For small water services (2 inches or smaller), an applicant submits a sketch showing the desired location of the water service. Refer to [Small Water Service](#) for more information.

For 4-inch and larger water services, an applicant submits a scaled drawing as described in [CAM 1202](#). For complete details, refer to [Large Water Service](#) and [DSG Chapter 17, Water Services](#).

The DSO engineer reviews the plans to confirm that the site has adequate space for the trench and a meter vault and there are no utility conflicts. If the plan meets standards, it is approved and transmitted to Water Operations and System Maintenance (WOSM) for construction. If the submitted information is inadequate, the application is returned to the applicant for revisions.

18.7 FIRE FLOW AVAILABILITY

DSO provides tested and modeled fire flow data to customers seeking building permits and/or information to help design on-site fire suppression systems. DSO provides three types of flow availability reports:

- Field hydrant flow test report
- Hydraulic modeling simulation report (when a field test is not feasible)
- Site-specific hydraulic modeling analysis of a developer-installed extension of the SPU water system

Standard charges for each type of report are listed on the online hydrant flow test report [form](#). SPU provides hydrant flow test data free of charge if the test was performed in the previous five years and the test hydrant is located within 500 ft of the subject parcel and in the same water pressure zone.

Field tests are only performed by SPU crews. SPU does not allow private contractors to perform hydrant flow tests. Once payment is received, the hydrant flow test will be schedule and a test report will be delivered once completed.

Hydraulic modeling is performed by engineers in the SPU Water Planning and Program Management (WPPM) Division, Transmission and Distribution Section. Modeling is performed under maximum day demand conditions with a residual pressure of 20 pounds per square inch (psi) at the test hydrant and a minimum 5 psi pressure throughout the rest of the system.

18.8 SURVEY REQUIREMENTS AND MONUMENTS

The City survey and monument requirements are described in [Survey Requirements](#) and [Survey Monument Protection](#).

SDOT Street Use has an agreement with ETSD, which allows ETSD to review the SIP for survey compliance on behalf of Street Use. The plans are submitted directly to the Land Survey Technical Resources group, under ETSD. Through this review, street alignments, ROWs, and horizontal and vertical survey control data for projects are reviewed and verified. These review checks and verifications include, but are not limited to:

- Vertical datum
- Horizontal datum
- Review the control for ROW alignments
- ROW width along project frontage

The survey plan reviewer uses City survey records, City quarter section (engineering) maps, City ordinance records, county records, superior court case documents, state and county survey control databases, and occasionally field verification to confirm that the submitted plan or base map is a reasonable representation and interpretation of survey control.

The survey reviewer may also be asked to review new plats, short plats, and lot boundary adjustments submitted to SDOT. For new plats, geometry, ROW, and control of realigned streets are checked and ties to control outside of the plat are reviewed.

18.9 SOLID WASTE

DSO is responsible for establishing the solid waste utility service points through the setup of an SPU account for a property's water meter. The type of solid waste service and number of water meters on site is coordinated with SPU Solid Waste during solid waste site plan review. SPU review of solid waste storage and service plans is required for projects that:

- Are multifamily, mixed-use, townhouse/rowhouse or live-work with 5+ units; or
- Are new commercial or industrial buildings, or existing commercial or industrial buildings adding 5,000 square feet or more; or
- Seek variance from any element of Land Use Code SMC 23.54.040; or
- Plan to use compactors; or

- Have no curb cut; or
- Propose staging containers (carts or dumpsters) for collection in the public right-of-way – alleys, streets, or planting strips.

The standard solid waste service setup is one solid waste account per water meter. However, some projects that require special attention include:

- **Hybrid Townhome Projects** – Hybrid services typically include individual garbage carts with individual billing. Recycle and food & yard waste carts are shared among the units and placed on the accounts of one or two owners. Recycle service is included in the cost of garbage, and food & yard waste charges vary by the size of container(s) required to service all units. SPU recommends including information about solid waste services in CC&Rs to clarify the responsibilities of each owner/tenant.
- **Fully-Shared Homeowners Association (HOA) Projects** – Under fully-shared HOA service, all units share solid waste service under one SPU account. HOA shared services require a shared water meter in order to set up SPU solid waste billing.
- **Projects that include Accessory Dwelling Units** – ADUs, AADUs, DADUs, and single-family homes (including townhomes and rowhouses) that share a water meter must share solid waste services and billing. Additional service points may be required.

For more information, refer to [CAM 1301 - Solid Waste Information for Developers](#).

Applicants should submit a completed [SPU Solid Waste Storage and Access Checklist for Designers](#) to SPU_SolidWastePlanReview@seattle.gov.

18.10 PLAN REVIEW ROLES AND RESPONSIBILITIES

Plan review at SPU is performed by different groups, as shown in Table 18-2, which provides a detailed matrix of overall plan review responsibilities at SPU. Depending on the scope of work and the project type, different groups may be involved in the review.

Other City departments and groups within SPU share responsibilities for plan review. Table 18-2 shows an overview of the role of City departments and SPU sections in plan review.

Table 18-2
Plan Review Roles and Responsibilities

Organization	Group	Role	Responsibilities
SDCI	Multiple	Issue permits	<ul style="list-style-type: none"> • Issues MUP, building, and grading permits. • Review to ensure compliance with the stormwater code on private property. • Involve SPU as needed in the permitting process.
SCL	Plan Review Team	Review	<ul style="list-style-type: none"> • Similar to SPU.

Organization	Group	Role	Responsibilities
			<ul style="list-style-type: none"> Review plans as needed to assure SCL infrastructure is protected.
SDOT	Street Use Operations	Issue permits; review	<ul style="list-style-type: none"> Administers the Street Use process. Protect SPU interests when issuing permits. Protect SDOT interests when reviewing plans. Involve SPU as needed or agreed in permitting process.
SPU	DSO	Review WACs, SIPs, and build-over projects affecting DWW infrastructure.	<ul style="list-style-type: none"> Plan review to verify compliance with codes and standards and protection of SPU infrastructure. Accept plans from developers for water service review. Design Review for new water, sewer & drainage infrastructure. Issues side sewer permits.
SPU	ETSD	Review smaller interagency projects Review franchise utility UMPs	<ul style="list-style-type: none"> Review smaller interagency projects from other City agencies or external agencies. Review Utility Minor Permits (UMPs) from non-City franchise utilities.
SPU	MIPS	Review major interagency projects	<ul style="list-style-type: none"> Review major interagency projects from SDOT, WSDOT, Sound Transit, King County and others.
SPU	DWW or Water LOB	Conditional review	<ul style="list-style-type: none"> Review for projects with complex policy issues.
SPU	Solid Waste	Conditional review	<ul style="list-style-type: none"> Review building permit plans to assure code-compliance storage and access to dumpsters and carts for residents and garbage trucks.
SPU	Survey	Conditional review	<ul style="list-style-type: none"> Assure plans reviewed meet City survey standards. Assure planned projects meet City ROW monumentation and future grade requirements.
SPU	Materials Lab	Conditional review; Accela Ad Hoc review	<ul style="list-style-type: none"> Assure appropriate products and materials are used in construction projects involving SPU infrastructure.
SPU	Real Property Services	Conditional review	<ul style="list-style-type: none"> Assure SPU and City property are protected Assure easements and other legal documents protect City property and interests.
SPU	WOSM	Conditional review	<ul style="list-style-type: none"> Assure proposed projects do not negatively impact Operations' ability to operate or maintain SPU infrastructure. Verifies that proposed projects are constructible.
King County	Dept. of Natural Resources (Wastewater Treatment Division)	Review	<ul style="list-style-type: none"> Protect King County wastewater interests. Review plans for wastewater concerns as requested by SPU; Industrial Waste, Construction, and Real Property are sections where coordination takes place.

18.10.0 Coordination

Coordination with other branches, divisions, and departments is critical to successful projects. Table 18-3 lists examples of when coordination is needed with other SPU groups and SDCI. The list is not exhaustive.

Table 18-3
Plan Review Coordination and Conditional Reviewers

Department/Branch	Issues for Coordination
DWW and Water Operations	<ul style="list-style-type: none"> • Provide support for accessing SPU infrastructure • Safety platforms for deep MHs • Inside drop vs. outside drop for MHs • Access to public facilities in difficult to reach locations • Confirm access locations in drive aisles, roads, and private property with SPU facilities • Bend required in-lines • Backwater valves • Pipe slopes less than or greater than allowable standards • Project with limited overhead or horizontal clearance due to trees, overhead utilities, underground utilities, walls, etc. • Utility infrastructure to be decommissioned • Other unique issue creating non-standard installation • Non-standard location or complex/non-standard work by crews • Connections and maintenance of water quality facilities, such as storm filters or wet vaults • Utility conflicts • Proposed trees over/near mainline • Opportunistic replacement of plastic or galvanized water services
Real Property Services	<ul style="list-style-type: none"> • RPS initiates review for projects requiring an easement or build-over agreement • SPU coordinates with RPS easement issues with a build-over • RPS coordinates with outside jurisdictions and SPU facility's needs
Materials Lab	<ul style="list-style-type: none"> • Point load on pipes due to proposed adjacent improvements • Use of epoxy for water proofing utilidor • Casing pipe inspections • Pipe bedding/support • Trenchless installations • Mix designs for porous pavements and structural inspections • Review of non-standard products or materials • Soil compaction tests
ETSD Corrosion Protection Unit	<ul style="list-style-type: none"> • Testing for soil corrosivity

Department/Branch	Issues for Coordination
	<ul style="list-style-type: none"> Requirements for corrosion protection for new water mains
DWW LOB Planning and Program Management	<ul style="list-style-type: none"> Areas with no downstream drainage and wastewater infrastructure Areas with known downstream capacity issues
Water LOB Planning and Program Management	<ul style="list-style-type: none"> Valve configuration Hydrant placement
Construction Management	<ul style="list-style-type: none"> Constructability review Inspection services
SDCI	<ul style="list-style-type: none"> DSO and SDCI have a joint Service Level Agreement outlining areas of coordination; this Service Level Agreement includes a triggers list that shows SDCI site reviewers what types of project issues require coordination with DSO plan reviews. Coordination includes: <ul style="list-style-type: none"> Interpretation of the stormwater code for private property drainage review Drainage and/or wastewater main build over or relocation review Temporary construction discharge Projects that may have significant impacts on SPU system capacity
Utility Account Services	<ul style="list-style-type: none"> Managing customer billing services Resource conservation Managing and resolving customer service issues Cross connection control Sewer sub-meters
Solid Waste	<ul style="list-style-type: none"> Review for truck access to large waste containers
Survey	<ul style="list-style-type: none"> Professional survey issues that are elevated by the developer

18.11 RESOURCES

This section contains information available to SPU plan reviewers.

18.11.1 Codes and Authority

Table 18-4 describes relevant codes and authority that DSO staff relies on to perform plan review.

Table 18-4
Relevant Codes and Authority for Plan Review Staff

Code	Authority
Side Sewer Code (2010) SMC Chapter 21.16	Regulates construction/use of service drains and side sewers in Seattle.

Code	Authority
Stormwater Code (2021) SMC Chapter 22.800	Regulates stormwater, flow control, water quality, temporarily during construction, and permanently after construction.
Water Code SMC Chapter 21.04	Regulates current and future water demands, ensures high quality drinking water, and establishes rates for purveyors and customers.
King County Code KCC Title 28	Regulates the disposal of industrial waste into the sewerage system and establishment of fees and rules.

Acronyms and Abbreviations
SMC: Seattle Municipal Code

18.11.2 Director's Rules

Table 18-5 describes relevant Director's Rules (DR) for plan review staff. DRs are administratively approved and signed by City department directors. They are legally binding rules that clarify how SMC will be implemented and enforced. Most DRs related to plan review are joint SDCI and SPU DRs and can be located in Table 18-5 or on SDCI's website.

Table 18-5
Relevant Director's Rules for Plan Review Staff

DR Number	Description
2011-004	Requirements for Design and Construction of Side Sewers (Drainage and Wastewater Discharges)
2011-005	Side Sewer Code Enforcement
2021 City of Seattle Stormwater Manual	
Vol. 1	Project Minimum Requirements
Vol. 2	Construction Stormwater Control
Vol. 3	Project Stormwater Control
Vol. 4	Source Control
Vol. 5	Enforcement
Appendix A	Definitions
DWW-160	Restrictions on Use of Easements in Lieu of Drainage and Wastewater Main Extensions
DWW-420.1	Yesler Terrace Allowable Stormwater, Groundwater, and Sewer Release Rates to the Combined Sewer System and Infiltration Zones
DWW-430.1	Flow Control Requirements for Projects in Identified Public Combined Sewer Basins
WTR-440	Requirements for Water Service

18.11.2.0 Memoranda of Agreement and Understanding

MOAs and memoranda of understanding (MOUs) are binding documents between a minimum of two parties. Often two or more departments or branches/divisions within a department will have an MOA or MOU. See the [Agreements Library](#) for more information.

18.11.3 Client Assistance Memos

Table 18-6 describes relevant client assistance memos (CAMs) for plan review staff. CAMs are general in nature and aid the public in applying regulations.

Table 18-6
Relevant Client Assistance Memos for Plan Review Staff

Client Assistance Memo	Description
SDCI Tips	
Tip 502	Grading Regulations in Seattle
Tip 503	Side Sewer Permits in Seattle
Tip 504	Side Sewer As-Built Plan Requirements
Tip 507	Build-over and/or Re-route Review and Approval Process
Tip 520	Rainwater Harvesting for Beneficial Use - Green Building CAM
SPU CAMS	
CAM 1102	Sewer Sub-meter Program
CAM 1180	Design Guidelines for Public Storm Drain Facilities
CAM 1201	Water Availability Certificate
CAM 1202	Water Service
CAM 1301	Solid Waste Storage and Access for New or Remodeled Buildings
CAM 1302	Construction and Demolition Waste Management
CAM 1401	Survey Requirements
CAM 1402	Survey Monument Protection
SDOT CAMS	
CAM 2200	SDOT SIP Process
CAM 2201	90% Complete Street Improvement Plan Requirements
CAM 2213	60% Street Improvement Plan (SIP) Approval Process
CAM 2214	90% Street Improvement Plan (SIP) Intake Appointment and 90% Complete SIP Acceptance Processes

18.11.3.1 DSO Library and File Storage

The SPU Library is located on the 47th floor of the Seattle Municipal Tower (SMT). The library contains copies of industry standards to which SPU adheres. It also contains engineering textbooks, City standards, and other technical engineering publications.

DSO has transitioned to entirely electronic plan reviews. Reviewed plans are stored in Accela and in the WS437 public J drive.

Removed for Security

