

Streetscape Design Guidelines

6.1 Street Design Concept Plans

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6.1.1 Overview

Streetscape features, such as street lights, trees and landscaping, and street furniture can contribute to the unique character of a block or entire neighborhood. This chapter describes the process for developing a Street Design Concept Plan (Concept Plan) and the process for getting such a plan approved by the Seattle Department of Transportation (SDOT) and Department of Planning and Development (DPD). Refer to [Figure 6-1: Street Design Concept Plan Process](#).

Seattle has a growing number of areas where community groups, developers or property owners are interested in developing a design concept for a street or series of streets. Concept Plans solidify a vision for the street or streets included and can tie that vision back to other planning and design documents that the neighborhood or City may have developed. Concept Plans are also useful as a vehicle for discussion between the proponent and the City about appropriate streetscape elements given the adjacent land use and the street's operational characteristics. Refer to [Figure 6-2: Street Design Concept Plan Template-Plan](#) for a sample plan and to [Figure 6-3: Street Design Concept Plan Template-Context](#) for a sample plan within context.

Concept Plans are proposed by a project proponent, typically a property owner or developer seeking to create an enhanced streetscape treatment for their project. The proponent may also be a community group that is interested in enhancing or preserving certain street features that are unique to their neighborhood. The proponent will then work in consultation with SDOT and DPD to develop the Concept Plan.

Typically, the Concept Plan provisions are implemented over time by multiple property owners as parcels on the block re-develop. In order to make the submittal process as straightforward as possible for the proponent, and expedite the City review process, this chapter also includes a template for a Concept Plan submittal that can be adapted to suit the specific proposal.

6.1.2 Proposal Must Meet City Street Design Standards

Any project that is constructed in an area that has an adopted Concept Plan must still meet the currently adopted minimum requirements for the streetscape and roadway outlined in the Land Use Code, the design criteria in [Chapter 4 Design Criteria of the Right-of-Way Improvements Manual](#), and any applicable [City of Seattle Standard Plans and Specifications](#).

6.1.3 Implementation is Voluntary

The provisions in a Concept Plan are voluntary. However, property owners are encouraged to follow them in order to achieve their intent. Street Use Permit submittals that follow the provisions of the Concept Plan can be assured that the major design elements contained in their plans meet and exceed the requirements described in this Manual. The City strongly

encourages that the Concept Plan be followed especially for any proposals for curb alignment grade and utility locations.

6.1.4 Templates for Street Design Concept Plan Submittals



In order to simplify the process of preparing a Concept Plan for both the proponent and the City, the following template shall be used for submittals. Items in bold are required for all submittals:

6.1.4a Context

The context information should include the following:

- **Vision statement:** one or two paragraphs that describe the vision the proponent is trying to achieve through the Concept Plan. This should be supplemented with photos of existing conditions and illustrative sketches of the proposal.
- **Site map:** the purpose of this map is to locate the project and define its geographic scope.
- **Existing street section:** develop a scaled (1 inch=20 feet) is suggested), dimensioned street section that defines the existing street (e.g., number, width and typical purpose of travel lanes, location and width of sidewalks and planting strips).

Refer to [Figure 6-3: Street Design Concept Plan Template-Context](#).

6.1.4b Dimensioned Street Section of Proposal

Develop a scaled (1 inch=10 feet is suggested), dimensioned street section that defines the proposed street elements. This section should be accompanied by a short description of the features that are proposed to change if the Concept Plan is approved and implemented. Refer to [Figure 6-4: Street Design Concept Plan Template: Dimensioned Street Section](#) for an example. A plan section may be necessary to present the full concept. Scale for both the existing and proposal may change depending on the geographic size of the proposal.

6.1.4c Detailed Evaluation of Traffic Operations

Describe the proposed operations of the street(s) for traffic. Include, at a minimum, the following:

- One way or two way operations;
- Presence and configuration of parking;
- Sidewalk location and width;
- Presence of signals, regulatory signs or other roadway markings;
- Presence of traffic calming devices;
- Analysis of existing capacity, volumes and level of service on arterials and impact of proposal on future traffic operations along the street and adjacent arterial system;
- Impacts on non-motorized modes of travel (pedestrian, bicycle, people with mobility impairments); and
- Evaluation of freight mobility and local service deliveries.

6.1.4d Dimensioned, Plan View Sketch of Proposal

Develop a plan view sketch of the proposed street right-of-way features. The Concept Plan should define or illustrate all of the streetscape features proposed, as well as basic information about traffic operations and typical travel behaviors on the street or streets. Include, at a minimum, the following street right-of-way features:

Roadway

- Curblines (including curb bulbs if proposed) or roadway edge;
- Special curb space zones (e.g., loading zones, bus layover zones);
- Parking, on-street location and configuration;
- Traffic operations (as defined above);
- Transit routes (bus, light rail or streetcar);
- Service access and delivery needs; and
- Street classifications within a quarter mile of the proposed site (refer to [Section 4.2 Street Classifications and Types](#)).

Streetscape

- Sidewalks, walkways or other pedestrian space (location and dimensions);
- Bicycle parking;
- Paving material design;
- Trees and landscaping design, location and specimen type;
- Street furniture (e.g., benches, planters, waste receptacles), description and location;
- Weather protection (e.g., awnings);
- Signage, especially any non-standard or special signs;
- Public art or other unique features; and
- Transit stops or stations.

Utilities

- Lighting (roadway, pedestrian scaled or other);
- Utilities, type and location of water, power and drainage both above and below grade;
- Natural drainage proposals; (refer to [Figure 6-9: City of Seattle Creek Basin map](#) to determine if the location of your project is within a creek basin) and
- Private utility locations (refer to Chapter 5 Construction and Maintenance, [Section 5.3 Coordination Activities](#)).

6.1.4e Other Considerations or Unique Features Proposed

Include a description of streetscape features that are considered unique (e.g., special paving treatments or landscaping, special street and/or pedestrian lighting, non-standard stormwater or natural drainage treatments).

6.1.5 Approval Process



Concept Plans can be formally approved through a DPD/SDOT Joint Director's Rule. The

Proponent develops a [Street Design Concept Plan using the guidance provided in Section 6.1.4.](#)

6.1.5a Proposal of Preliminary Concept Plan

The Proponent proposes the preliminary concept to City.

6.1.5b Pre-Application Conference

Proponent attends a pre-application conference with staff from SDOT, DPD, Seattle Public Utilities and Dept of Neighborhoods (if appropriate) to describe the vision for the Concept Plan and get input as to whether the proposal is feasible. In some cases, staff from other departments may need to be involved in making the final decision as to whether the concept proposed is feasible. In these instances, a final determination of whether the applicant should develop the Concept Plan will be made in writing within 30 days of the pre-application conference.

6.1.5c Develop Concept Plan

The Proponent develops [Street Design Concept Plan using the guidance provided in Section 6.1.4.](#)

6.1.5d City Review of Concept Plan

SDOT, in consultation with DPD, reviews the Concept Plan and describes the modifications or conditions that need to be met for City approval.

6.1.5e Proponent Revises Concept Plan as Requested by City

The Proponent modifies Concept Plan and re-submits to SDOT for final review and approval. SDOT will consult with DPD before a decision is made.

6.1.5f Approval by DPD/SDOT Joint Director's Rule

SDOT and DPD approve the Concept Plan by Joint Director's Rule. The Joint Director's Rule process has requirements for completion including listing the proposed design concept Rule in the Daily Journal of Commerce (DJC) and providing a 14 day appeal period prior to approval. The Rule must also be approved by the DPD and SDOT Directors. Once approved, the Concept Plan is appended to this Manual and listed in [Section 6.1.8: List of Approved Street Design Concept Plans.](#)

6.1.6 Summary of Approval Conditions



If a Concept Plan is approved by the City through a Joint DPD/SDOT Director's Rule, then the following applies:

- SDOT has agreed that the proposals described are appropriate for the street or streets defined.
- SDOT and DPD have determined the vision for the streetscape and features described in the Concept Plan are consistent with a recognized community or City sponsored plan for the area.
- The Concept Plan has had an appropriate level of review by SDOT and DPD and by other interested stakeholders.

- Once approved, the Concept Plan will be appended to this Manual and made available through this website. These actions will maintain a record of the proposed improvements, so that as new development proposals come forward within an area covered by a Concept Plan, the City can strongly encourage that the plan be followed.
- Improvements on streets that have an adopted Concept Plan may be implemented at one time, or over a longer period of time by multiple development or street right-of-way improvement projects.
- Preparation of a Concept Plan is encouraged for projects that are located on a designated Green Street or Neighborhood Green Street (refer to [Chapter 6.2 Green Streets](#)).
- Maintenance of any street right-of-way improvements that are beyond City standards is the responsibility of the property owners unless otherwise negotiated with SDOT. View more information about maintenance agreements related to streetscape improvements in [6.2.6f Maintenance](#).

6.1.7 Key SDOT Considerations In Review of Street Design Concept Plans



Enhancements to the streetscape such as special paving treatments and street furnishings can contribute to the experience for pedestrians and help define neighborhood character. Well-designed streetscapes can support activities in neighborhood business districts, and make walking an attractive choice for getting around the city. SDOT recognizes and supports the range of benefits a well-designed streetscape provides for all pedestrians, including people with disabilities. For these reasons, SDOT reviews streetscape design elements very carefully to ensure that all of the materials, dimensions and design elements meet safety and accessibility requirements.

In addition to the aesthetic and practical benefits of a well-designed streetscape, SDOT must meet state and national safety and access standards for streetscape design. It should be possible to carry out the creative intent of a design proposal and meet the safety and accessibility requirements. SDOT and the Department of Planning & Development (DPD) are working together to better coordinate SDOT's early involvement and guidance with the design review process. The information below describes the key issues that SDOT street use permit reviewers and engineers must consider when reviewing streetscape designs:

6.1.7a Use of Materials

Pavement materials that result in a slippery or uneven pavement surface will not comply with standards established by the [Americans with Disabilities Act \(ADA\)](#) and therefore should be avoided.

6.1.7b Minimum Sidewalk Width, Areas Free of Obstructions

ADA requires a minimum of five feet of clear sidewalk space for two wheel chair users to pass on another. SDOT prefers six feet of unobstructed, linear sidewalk space that is free of street furniture, street trees, planters, and other vertical elements. These minimum widths are required to provide access to people with mobility impairments.

6.1.7c Curbside Management

Curb space to accommodate bike lanes, parking, loading zones, transit zones, and other street elements is in very high demand in Seattle neighborhoods. While wide sidewalks and planting strips may meet many City and neighborhood goals, on-street parking spaces in business

districts may also meet multiple policies and goals. Trade-offs are often necessary among the numerous uses competing for limited amounts of curb space. Removing parking to add other street elements is possible in many locations and always requires careful consideration of business and neighborhood parking needs. Transit system needs, including bus zones, must be accommodated to support quick and reliable transit service throughout the city. Get more information about [curb space uses](#). Refer to the [City of Seattle's Comprehensive Plan priorities for curb space uses](#).

6.1.8 List of Approved Street Design Concept Plans



Title	Streets Included	Special Designation	Reference Number
The Street Element of the Ballard Municipal Center Plan	20th and 22nd Avenues NW NW Market Street NW 56 th-58 th Streets	None	Joint Director's Rule 30-90 & 91-4
Terry Avenue N. Street Design Guidelines	Terry Avenue North between Denny Way and Mercer Street	None	SDOT DR 2002-04 DPD DR 15-2002

6.2 Green Streets

[6.2.1 Background](#)

[6.2.2 Green Street Types](#)

[6.2.3 Green Street Locations](#)

[6.2.4 Basic Design Principles](#)

[6.2.5 Designating New Green Street and Neighborhood Green Streets](#)

[6.2.6 Green Street Design, Permit and Construction Process](#)

6.2.1 Background

A Green Street is a street right-of-way that, through a variety of design and operational treatments, gives priority to pedestrian circulation and open space over other transportation uses. The treatments may include sidewalk widening, landscaping, [traffic calming](#), and other pedestrian-oriented features. The purpose of a Green Street is to enhance and expand public open space, and to reinforce desired land use and transportation patterns on appropriate City street rights-of-way.

The original designation and mapping of Green Streets is in the City of Seattle 1985 Land Use and Transportation Plan for Downtown Seattle. Additional mapping of Neighborhood Green Streets occurred in the Northgate Area Comprehensive Plan (City of Seattle, 1993) and in a number of Neighborhood Plans affecting areas throughout Seattle.

While the Seattle Comprehensive Plan and Transportation Strategic Plan (TSP) contain the policy guidance for Green Streets, this Manual provides the design guidance and procedural information for an applicant who wishes to develop their project along a Green Street or Neighborhood Green Street. The information includes the planning and design process, the City approval process for Green Street and Neighborhood Green Street designs, and some information on construction and the maintenance of street features.

A key component of the design guidance relates to the classification of Street Types (refer to Chapter 4 Design Criteria, [Section 4.2 Street Classifications and Street Types](#)) including Green Streets and Neighborhood Green Streets. For the types of street features that are appropriate to include on both Green Street types, refer to Chapter 4 Design Criteria, [Section 4.2 Street Classifications and Street Types](#). For information on the bonus floor area for amenity features

allowed is described in [SMC 23.49.013](#).

6.2.2 Green Street Types



There are two types of Green Streets:

1. Green Streets located in Downtown Seattle and defined and mapped in the Land Use Code; and
2. Neighborhood Green Streets that are designated through neighborhood plans or other City adoption process (e.g., City Council Ordinance or Director's Rule).

The City's original Green Streets policy offered a developer bonus in exchange for construction of an approved Green Street streetscape, and the bonus was limited to Downtown Seattle, consisting of the Belltown, Denny Triangle, Urban Core, Denny Triangle, Pioneer Square, and International District neighborhoods (refer to [Figure 6-5 Green Street Locations](#)). Subsequently, the City has allowed Green Streets to be designated in Neighborhood Plans outside of Downtown Seattle, where no funding incentive exists. These are referred to as Neighborhood Green Streets. A more complete description of each with the policy intent and purpose for follows:

Green Street Definition and Purpose

Definition

As defined in the [City of Seattle Comprehensive Plan Transportation Element](#), "Green Streets are designated on a number of non-arterial streets within Downtown Seattle. Landscaping, historic character elements, traffic calming, and other unique features distinguish Green Streets from other Street Types. Green Streets are designed to emphasize pedestrian amenities and landscaping in areas that have dense, residential land uses. Each Green Street has its own unique character and design. The street right-of-way dimensions can vary significantly from street to street and from segment to segment."

Purpose

- Enhance pedestrian circulation and create open space opportunities in medium to high density residential areas lacking adequate public open space.
- Create a vibrant pedestrian environment in the street right-of-way that attracts pedestrians.
- Strengthen connections between residential enclaves and other Downtown amenities by improving the streetscape for pedestrians, bicycles and transit patrons.
- Support economic activity in Downtown neighborhoods by creating an attractive and welcoming "front door" for pedestrians.
- Maximize opportunities for trees and other landscaping to create a high quality open space.

Location

Designated streets in Downtown Seattle (refer to [Figure 6-5 Green Street Locations](#)).

Typical Adjacent Land Use

Residential or mixed use.

Typical Street Classification

Non-arterial.

Authority

Designated by City Council Ordinance and adopted and mapped in the

Land Use Code (SMC 23.49).

Implementation The design and construction of Green Street improvements can be funded by developers in exchange for increased floor-area-ratio (FAR) or other land use code departures, as specified in [Seattle’s Land Use Code \(SMC 23.49.013\)](#).

Neighborhood Green Streets

Definition As defined in the [City of Seattle Comprehensive Plan Transportation Element](#), Neighborhood Green Streets may be on any non-arterial street – and in some cases low volume arterial streets – outside of Downtown Seattle. Similar to Green Streets, Neighborhood Green Streets emphasize pedestrian amenities, landscaping, historic character elements, traffic calming, and other unique features. Neighborhood Green Streets were designated in Seattle’s neighborhood plans.

Purpose

- Reflect a local community’s desire to target specific streetscapes for a pedestrian or open space enhancement.
- Enhance the pedestrian environment and attract pedestrians.
- Create open space opportunities in residential neighborhoods.
- Retain unique street features (e.g., brick paving, mature landscaping that is adjacent to the roadway, curbless streets).

Location Designated streets in neighborhoods outside of Downtown Seattle (refer to [Figure 6-6: Neighborhood Green Street Locations in North Seattle](#) and [Figure 6-7: Neighborhood Green Street Locations in South Seattle](#)).

Typical Adjacent Land Use Residential or mixed use that includes residential uses.

Typical Street Classification Non-arterial.

Authority Various. Neighborhood Green Streets are typically recommended in Neighborhood Plans or other transportation plans, and may subsequently be adopted into the Land Use Code through City Council Ordinance, designated by joint DPD/SDOT Director’s Rule, or included in a city recognized subarea transportation plan.

Implementation Neighborhood Green Streets do not have a dedicated funding mechanism in most cases. Funding to design and build Neighborhood Green Streets may come from a Local Improvement District, [Neighborhood Matching Funds](#), partnerships with other agencies (e.g., transit agencies), through private development or as part of a Seattle Public Utilities [Natural Drainage Systems](#) Project.

6.2.3 Green Street Locations

There are 17 adopted Green Streets in Downtown Seattle (refer to [Figure 6-5: Green Street Locations](#)). With the exceptions of Harbor Steps (University St. between 1st Ave. and Western Avenue) and portions of Occidental Ave S (Occidental Square Park), all of the Green Streets allow motorized vehicular traffic.

There are 15 adopted Neighborhood Green Streets (refer to [Figure 6-6: Neighborhood Green Street Locations in North Seattle](#) and [Figure 6-7: Neighborhood Green Street Locations in South Seattle](#)). Another 41 Neighborhood Green Streets have been recommended in neighborhood plans in various neighborhoods, but have not yet been formally adopted and are indicated as either “neighborhood plan recommended” or “tentative” in the figures.

- **Neighborhood plan recommended:** defined in one of Seattle’s 37 adopted neighborhood plans as a Green Street improvement.
- **Tentative:** described in an [adopted neighborhood plan](#) as a street that should have some kind of pedestrian or open space improvement, but were not formally called Green Streets.

6.2.4 Basic Design Principles



The following design principles apply to both Green Streets and Neighborhood Green Streets:

- **Emphasize pedestrians and open space over other street functions.** Green Streets serve both as pedestrian gathering places, and as pedestrian corridors connecting activity areas. They are designed to provide an inviting, attractive, and safe streetscape for pedestrians, bicyclists, and transit patrons. In certain cases, Green Streets may be designed to reduce vehicular travel speeds to the point where it becomes reasonable for pedestrians and vehicles to “share” space in the street right-of-way. In Seattle, a well-known example of this type of “shared street” is Pike Place.
- **Design should complement and enhance adjacent land uses.** Buildings in much of Downtown Seattle are required to have pedestrian friendly features at the ground floor (e.g., transparency, weather protection, prominent entrances). Green Street design should complement these features with improvements in the street right-of-way that encourage pedestrian activity.
- **Keep traffic speeds and volumes low.** Green Streets are typically designated on non-arterial streets and are expected to have lower traffic volumes and speeds than other streets in the City. One of the key factors to making a street safe and inviting for pedestrian is maintaining slow vehicle speeds and relatively low vehicle volumes. This is why Green Streets are designated on streets that do not, or are not anticipated to, contribute significantly to vehicle capacity in the area. Often, Green Streets are designated on non-through streets or streets that are not a key part of the street grid (e.g., dead ends and short segments of street created by the collision of street grids) Design features that tend to reduce vehicular travel speeds are good choices for Green Street designs ([Chapter 4 Design Criteria, Section 4.2 Street Classifications and Street Types](#)). A Green Street or Neighborhood Green Street designated on an arterial street must provide for traffic speeds and volumes that can support appropriate arterial operations and the mobility needs of all users.
- **Respond to site specific conditions.** Generally, Green Streets are conceived around a unified design concept—one that reflects or embellishes the unique character of the site. Ideally, such a design concept would be applied to every block of the Green Street. Green streets offer the opportunity to reinforce unique conditions or respond to site specific opportunities (e.g., solar access, historic buildings or street features, topography, stormwater mitigation, views).

6.2.5 Designating New Green Street and Neighborhood Green Streets



It is possible to designate new locations for Green Streets and Neighborhood Green Streets. A proposal for a new designation can be made by private development proponents, community

groups, or any other organized local interest. A designation request may come through SDOT, DPD, or the [Department of Neighborhoods \(DON\)](#).

The City will assess the eligibility of the proposed Green Street or Neighborhood Green Street based on the criteria defined below in Section 6.2.5a Criteria for Designating New Green Streets and 6.2.5b Criteria for Designating New Neighborhood Green Streets.

6.2.5a Criteria for Designating New Green Streets

Designating a Green Street is a land use action that must be approved by the City through an Ordinance process. The Land Use Code (SMC Title 23) defines criteria for each type of land use and zoning designation to ensure that any change to land use or zoning is made according to a set of consistent criteria. The siting criteria for Green Streets are as follows:

1. Streets in medium and high-density areas where residents generally do not have access to private yards, existing open space is very limited, and land is not available for future open space development.
2. Streets within or providing connections to pedestrian-oriented neighborhood commercial areas where Green Street improvements could reinforce commercial and mixed use activity, and enhance the quality of the pedestrian environment without conflicting with the desired traffic circulation.
3. Streets at critical locations in redeveloping areas that could serve as a focus for new development and provide direction for desirable changes in land use patterns. Examples might include streets that, as Green Streets, could strengthen the residential character of areas where efforts are being made to promote residential development or stabilize an existing neighborhood.
4. Streets and street ends which provide safe pedestrian and bicycle connections with neighborhood attractions, such as schools, shopping areas, public facilities, institutions and public open spaces, or streets integrated with the City's urban trail network.
5. Streets that have a special character that is of interest to pedestrians, including streets providing shoreline access, streets with special views, and streets located in areas of unique historic or architectural interest.
6. Undeveloped streets within designated open spaces where it is desirable to retain the undeveloped conditions of the surroundings.

6.2.5b Criteria for Designating New Neighborhood Green Streets

There are no official criteria for Neighborhood Green Streets in the Seattle Municipal Code. This chapter identifies the following as appropriate criteria for Neighborhood Green Streets.

1. Neighborhood Green Streets shall support multiple functions in the street right-of-way, especially pedestrian access and landscaping. Streets that are good candidates for traffic calming are also appropriate, as streets with slower traffic enhance conditions for pedestrians and support the Neighborhood Green Street concept.
2. Streets that are direct links to major transit facilities and light rail stations.
3. Streets and street ends which provide safe pedestrian and bicycle connections with neighborhood attractions, such as schools, shopping areas, public facilities, institutions and public open spaces, or streets integrated with the City's Urban Trails Network.
4. Streets that have a special character that is of interest to pedestrians, including streets providing shoreline access, streets with special views, and streets located in areas of unique historic or architectural interest.
5. Undeveloped streets or streets that are not fully improved (e.g., sidewalk, curb and gutter) where it is desirable to retain the undeveloped conditions of the surroundings. In some cases, property access on undeveloped streets may necessitate that a minimum level of

improvements be completed, but not required at the full standard.

6.2.6 Green Street Design, Permit and Construction Process



Design and permit activities on designated Green Streets and Neighborhood Green Streets shall follow the following process, defined below and charted in [Figure 6-8: Green Street Design, Permit and Construction Process](#).

6.2.6a Initial Contact

The proponent (developer or community group representative) can start the Green Street design, permit and construction process by contacting either the [Seattle Department of Transportation \(SDOT\)](#) or [Department of Planning and Development Department \(DPD\)](#).

6.2.6b Prepare a Street Design Concept Plan

To assist in approval of a design along a Green Street or Neighborhood Green Street, applicants are encouraged to prepare a Concept Plan according to the guidelines and templates in [Section 6.1 Street Design Concept Plans](#). For Downtown Green Street projects seeking an increase in FAR (Floor Area Ratio) provide FAR calculations per [Seattle Municipal Code Section 23.49.013](#).

At this point, the project proponent can decide to have the Concept Plan adopted by Joint DPD/SDOT Director's Rule or prepare the Concept Plan at a level of detail suitable for Street Improvement Permit Review. Refer to [Chapter 2.4.1 Street Improvement Permits](#).

6.2.6c Existing Street Design Concept Plan Review

If an approved Concept Plan exists for the Green Street or Neighborhood Green Street, it is the responsibility of the applicant to determine if the design concept is still viable given conditions in the area or the design standards that may have changed since the approval of the original Concept Plan.

6.2.6d Permit Review and Issuance

After incorporating comments from the City review for the Concept Plan, the Green Street proponent refines the Concept Plan to an adequate level of design to commence a [Master Use Permit \(MUP\)](#) and/or [Building Construction Permit](#) process, or if the proposal impacts the street right-of-way and not private property, the proponent will want to initiate a Street Improvement Permit process. For information about how to prepare a Street Improvement Permit, including early design guidance, plan requirements, and City of Seattle CAD standards, refer to [Section 2.4.1 Street Improvement Permits](#), in particular SDOT Client Assistance Memo (CAM) #2200 and SDOT CAM #2201

6.2.6e Green Street and Neighborhood Green Street Construction

Construction of the Green Street that is part of a MUP or Building Construction Permit can commence once the DPD and SDOT reviews for the Street Improvement Permit and the MUP or Construction Permit are issued. The project is concluded by a final inspection and, where relevant, issuance of a Certificate of Occupancy.

For Neighborhood Green Street projects that are not part of a MUP or Construction Permit, construction can commence when the Street Improvement Permit is issued. The process is concluded with the approval of a final inspection of the work completed.

6.2.6f Maintenance

Sidewalks with special paving treatments (such as pavers or stamped, colored concrete) add a unique design element to the streetscape and can enhance the walking experience for pedestrians. It is important to design special paving so that it retains its integrity over time. This is becoming increasingly important as the number of utility cuts on sidewalks increases to respond to the demands of higher density development. Carefully selected colors can be mismatched as the original color fades and new sections are applied. A successful design solution will address safety, access, and aesthetics.

To assure that maintenance is considered when streetscape design features are being selected, SDOT requires a maintenance agreement for all streetscape treatments that go beyond City Standards. The following sections provide an overview of what is expected of the property owner and SDOT regarding maintenance of streetscape features:

Responsibility: With their consent, the abutting property owners shall be responsible for the maintenance of the completed Green Street section unless there is an agreement in writing, acceptable to SDOT, which provides for an alternative maintenance and repair program. Said agreement shall be a written condition on any street use permit for a Green Street project.

Joint agreements: Proponents may enter into an agreement with other property owners adjacent to their Green Street section for shared maintenance responsibility.

Maintenance, repair and replacement: Maintenance responsibilities for Green Streets shall include on-going sweeping, debris removal, landscape maintenance, and responsibility for the repair and replacement of all auxiliary street design elements of the Green Street (i.e. fixture replacement, replacing tree grates, paver repair, replacement or repair of special amenities such as fountains, benches, and planters).

6.3 Station Area Plans

Station Area Planning policies are currently being reviewed. This page will be updated when the process is further developed.

6.4 Natural Drainage Systems

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6.4.3 Benefits of Natural Drainage Systems	6.4.7 Maintenance Responsibilities
6.4.4 Where Natural Drainage Systems Work Best	

6.4.1 Chapter Purpose

The purpose of this chapter is to provide guidance to applicants that are interested in Green Stormwater Infrastructure (GSI) and/or Natural Drainage System (NDS) designs as part of their right-of-way improvement project. The project may incorporate such elements as swales or permeable pavement as a result of Stormwater Code compliance, Green Factor area requirements, or simply to improve the environment around them. The Information is intended to help encourage the use, and lower the barriers for implementation of Green Stormwater Infrastructure approaches in the street right-of-way.

Guidance is also provided for parcels wanting to modify existing ditches to accommodate parking areas.

6.4.2 Definition of Natural Drainage Systems

Natural Drainage Systems (NDS) are street rights of way designed to use planted swales adjacent to sidewalk or roadway



pavement to do the work of pipes, by capturing stormwater and letting it soak into the ground and/or be filtered by vegetation. NDS attempts to mimic the natural system that existed before development which has significantly increased runoff and its associated pollutants.

Green Stormwater Infrastructure components, such as bioretention and permeable pavements, are integral components to an NDS design. Seattle's [Stormwater and Drainage Control Code, Volume 3, Stormwater Flow Control and Water Quality Treatment Technical Requirements Manual \(Stormwater Manual\)](#) provides details on how to design the NDS systems components. Examples of NDS systems in Seattle can be found at the City's [Natural Drainage System Capital Program](#).

6.4.3 Benefits of Natural Drainage Systems

With urban growth, trees and vegetation have been replaced with impermeable or disturbed surfaces such as rooftops, roadways, and construction sites. Consequently, stormwater flows across these surfaces and collect pollutants generated by our urban activities, such as landscaping, transportation, and business. The increased stormwater flow and pollutants have the potential to negatively impact our environment.

The following concepts identify benefits associated with implementing NDS along the pavement edge instead of constructing traditional curb, gutter and storm drains:

- Stormwater flow control is provided by reducing impervious surfaces (using reduced roadway width and, permeable pavements) and bioretention and biofiltration swales which temporarily detain and infiltrate rainwater.
- In the bioretention and biofiltration swales, healthy plants and soils break down pollutants through natural processes. Water quality treatment is achieved through biofiltration from the plants and soils when they capture and break down pollutants flowing from the adjacent surfaces.
- Increased street-side landscaping beautifies and adds value to the neighborhood.
- Traffic calming from narrower and/or gradually curving roadways that still allow for sufficient emergency vehicle access.
- Increased community interaction from collaborative involvement with the NDS landscaping component, watershed stewardship, and pedestrian-friendly neighborhoods.

6.4.4 Where Natural Drainage Systems Work Best

Full Street Improvements

Low volume streets: The primary function of residential access streets is to provide access to neighborhood land uses and connections to higher level traffic streets, such as arterials. Residential access streets typically have lower traffic volumes, lower speeds and lower volumes of trucks and buses than arterial streets. At this time the City will only consider full street right-of-way NDS concepts on residential streets and low volume collector streets.

Sufficient Right of Way width: The right-of-way width must be at least 56 feet. If the right-of-way is narrower than 56 feet, Green Stormwater Infrastructure may be used for sidewalk drainage only.

Adjacent Land Use: Due to the competing space needs for high density areas, NDS designs are encouraged only in Single Family or L1 zoning areas. NDS Full Street concept (Figure 6-10) maybe feasible at different zoning density if project schedule can allow adequate time to develop design with City. Otherwise, consider Green Stormwater Infrastructure for sidewalk drainage only.

Locations with existing informal drainage: [Seattle's creek watersheds](#) are largely served by informal drainage (e.g., ditch and culvert systems, or no formal system at all) and NDS improvements provide an opportunity to enhance the existing informal system. The City [encourages](#) use of NDS as a means of providing transportation and pedestrian improvements to these areas as a way to protect our receiving water bodies.

If the above criteria are met and your project is considering proposing a full street NDS design the applicant is encouraged to participate in an early design guidance meeting. To assist in the design review process, we recommend the applicant consider using one or more of the design concepts in the NDS conceptual design details (Figures 6-11 through 6-13) the

City has used on previous projects.

Figure 6.10. Evaluation of Full Street Concept using NDS as a part of Full Street Improvements.

Sidewalk Improvements

The cumulative effective of new impervious area created by sidewalks and pathways across the City can have significant effects on our stormwater systems and receiving water bodies. Use of green stormwater infrastructure techniques such as bioretention and permeable pavements to the maximum extent feasible can help mitigate the impacts. See the Green Infrastructure BMP Flow Chart for Sidewalks [Figure 6-14](#) to help establish what alternatives are most suitable to your project site.

6.4.5 Design Guidance

It is sometimes challenging to construct surface stormwater elements while meeting the multiple other needs within the City's rights-of-way, including addressing public safety and public mobility needs. The information provided in this section is intended to provide applicants with designs that have undergone review from the various City departments involved in street improvement permitting. All sites are different so the project's engineer may need to modify the details provided to address local conditions.

There are a few guiding principles for the site engineer to consider when designing a Natural Drainage System (NDS) project in the street right-of-way:

Minimize impermeable surfaces: Avoid paving or compacting soils where it is not necessary. This could mean a narrower driveway, a smaller parking area, or use of alternative materials which reintroduce water back into the soil.

Gentle slopes to slow the flow: When stormwater moves slowly through a system more pollutants are filtered and more water infiltrates or evaporates. A pipe is designed to move water at top velocities. Re-grading a ditch with gentler side slopes and a moderately sloping, broad channel allows water to percolate into the soil. Channel bottoms slopes can be made gentler by adding "steps." Generally sites with longitudinal slopes greater than 8 percent are unlikely candidates for bioretention swale elements.

Stormwater quantity can be reduced by amending soils and adding vegetation:

- **Amended soils:** Adding organic compost or mulch to soil improves its ability to support plants and absorb stormwater. Healthy soil is the backbone of natural drainage systems. Refer to the Stormwater Manual for more information on compost amended soils.
- **Adding vegetation:** Trees and vegetation catch rainfall before it reaches the ground reducing the amount of stormwater runoff. Native shrubs, perennials and small trees planted in natural drainage systems slow the movement of stormwater, encourage infiltration and provide bio-remediation of pollutants. The planting palette used on previous NDS project is provided on [SPU's NDS website](#).

Not all NDS options are appropriate for all project types. NDS options may be the only alternatives available for some ditches in creek watersheds (see Section 6.4.5c below). Minimum requirements defined in the [Land Use Code](#), the design criteria in [Chapter 4 Design Criteria](#) of this Manual, and any applicable [City of Seattle Standard Plans and Specifications](#) apply to NDS improvements in the street right-of-way. Deviations from the design criteria presented in this Manual may be allowed in some cases, where minimum requirements can not be achieved due to site constraints.

If an NDS approach is being considered, the applicant is encouraged to participate in [early design guidance meeting with City staff to discuss possible site constraints, transportation needs, soil conditions, design and accessibility issues, and maintenance responsibilities.](#)

6.4.5a NDS Swales as part of Partial or Full Street Improvements

Swale designs vary based on design goals and site conditions. Swales may include bioretention swales, biofiltration swales or conveyance swales. Generally all the swales include surface grading, and soil and plant complexes to manage stormwater. Factors influencing the design include native soils, longitudinal and cross slopes, presence or absence of curbs, and space availability. Design information on the various types of swales is provided in the [Stormwater Manual](#). The information provided here is specific to placing swales within the street ROW. To aid the designer, the City has compiled the following Natural Drainage Swale details:

- 1. Bioretention Swale (Figure 6-15)
- 2. Bioretention Swale with Underdrain (Figure 6-16)
- 3. Conveyance Swale (Figure 6-17)
- 4. Drain Curb Cut Opening for Swale (Figure 6-18)
- 5. Concrete Inlet, Channel and Grate (Figure 6-19)
- 6. Log Weir (Figure 6-20)
- 7. Curb Extensions (Figure 6-21, 6-21A and 6-21B)
- 8. Tree Planting within Bioretention Swale (Figure 6-22)

Additional written guidance is provided in Natural Drainage System (NDS) guidance for Swales in the Right-of-Way to highlight design components that are not easily represented in the Natural Drainage Swale details.

The soils for use in bioretention systems should be designed for Stormwater Code compliance using the [City's Bioretention Soil Specification](#) must be used.

6.4.5b Permeable Pavements as part of Partial or Full Street Improvements

Permeable pavement is a paving system which allows the rainfall to percolate into an underlying soil or aggregate storage reservoir, where stormwater is stored and infiltrated to underlying subgrade, or removed by an overflow drainage system. Permeable pavements reduce impermeable surfaces and can be used to achieve City of Seattle water quality requirements and flow control requirements.

At this time, permeable pavements are limited to non-street surfaces, such as sidewalks and driveways.

The surface layer of a permeable pavement system is the wearing course. Categories of wearing courses include:

- **Permeable Asphalt Concrete:** Permeable asphalt concrete is open-graded asphalt with reduced fines and stable air pockets encased within it that allow water to drain to the base below. Aggregate binders and additives can be added to increase durability. Like conventional concrete it is laid with traditional asphalt paving equipment.
- **Permeable Cement Concrete:** Permeable cement concrete is similar to permeable concrete in that the mixture omits the fines to create stable air pockets encased within it. Depending upon the mix design, permeable cement concrete can have a rougher surface than conventional cement.
- **Interlocking Concrete Pavers:** Interlocking concrete paver blocks themselves are not always permeable, but they are typically installed with gaps between them to allow stormwater to infiltrate into the subsurface. The gaps, typically 10 percent of the surface area, are filled with a permeable material, usually small clean stone.
- **Open-Celled Paving Grid with Vegetation:** Open-celled paving grids consist of a rigid grid composed of concrete or a durable plastic that is filled with a mix of sand, gravel, and topsoil for planting vegetation. The cells can be planted with a variety of grasses or low-growing groundcovers. The support base and the ring walls prevent soil compaction and reduce rutting and erosion by supporting the weight of traffic and concentrated loads.
- **Open-Celled Paving Grid with Gravel:** The same open-celled grid structure is employed but the voids in the rings are filled with a mix of gravel.

Any permeable pavement wearing course proposed for use in the street ROW must be on the Permeable Pavement Wearing Course Approved list for City ROW Applications.

Permeable Cement Concrete, which has been approved for use in the right-of-way, must use the Standard Specification for Permeable Pavement Construction.

Permeable pavement systems for stormwater code compliance can be designed as a facility for 100 percent impervious area credit, or as a surface for 50 percent impervious area credit. Design information on these two types of permeable pavement systems are provided in the [Stormwater Manual](#). The information provided here is specific to placing permeable pavement within the street ROW. To aid the designer, the City has compiled the following Permeable Pavement Design details for project designers to evaluate, modify and incorporate into their Street Improvement Plans:

- Permeable Pavement Sidewalk (Figure 6-23)
- Permeable Pavement Facility, Sidewalk (Figure 6-24)
- Permeable Pavement Facility, Sidewalk, Check Dam, Interceptor (Figure 6-25)
- Permeable Pavement Facility in Planting Strip (Figure 6-26)

6.4.5c NDS Swales for Ditch Modifications

The City does not permit the filling of a ditch if that ditch functions as part of the City's informal drainage system in the street right-of-way and is located within a creek watershed. Creek watersheds are identified on the City GIS system, and on the [Seattle Creek Watersheds map](#). The City encourages use of NDS as a means of providing transportation and pedestrian improvement in these areas while also protect our receiving water bodies. If considering using NDS for modifying the ditches within the project area use the design guidance provided in the Natural Drainage System (NDS) guidance for ditch modifications. Capacity calculations will be required to show that the proposed system can, at a minimum, the level of service of the existing conditions. Exceptions to the ditch filling moratorium policy include culvert installations that are necessary to implement driveway permits, and required street improvements. .

The SDOT Director may approve a requested exception per the Street Use Code ([SMC 15.04.112](#)) if the Director determines that the modification is likely to be equally protective of public health, safety and welfare, the environment, or public and private property. If the proposed modification is not equally protective, the Director may approve a requested exception if substantial reasons are documented such as:

- an emergency situation necessitates approval of the exception;
- a reasonable use of the adjacent property is not possible unless the exception is approved; or harm or threat of harm to public health, safety and welfare, the environment, or public and private property is at risk unless the exception is approved.

6.4.6 Approval and Permit Procedures



If you are interested in using NDS for street improvements, you must get a Street Improvement Major permit:

- Apply for a permit at the SDOT Street Use Counter.
- Site plan that meets the Standard Drafting Requirements.
- Site plan must show the following features:
 - Existing structures in the street right-of-way such as culvert invert elevations, edges of any pavement including roads and driveways, and locations of manholes, fire hydrants, light poles, water main and meters, significant trees, etc.
 - Locations of new plant material, rocks, hardscaping, or other materials.
 - Indicate flow direction in the swale.
 - Cross-section drawn to scale (1 inch=5 feet or 1 inch=10 feet scale suggested) that shows maximum side slopes and maximum swale depth (as measured from the edge of the road).

6.4.7 Maintenance Responsibilities



As with other types of street improvements, adjacent property owners are responsible for maintaining sidewalks,

driveways and parking pads as well as landscaping in the street right-of-way. The following sections provide general maintenance guidelines specific to natural drainage landscaping and permeable pavements.

6.4.7a Maintenance for Swales

Establishment of plantings takes approximately 3 years.

Year 1: Plants are working very hard below the ground to develop new roots. Appropriate soil moisture will make the difference between success and failure during the first year. Plants need watering, a minimum of once per week for shady areas and twice per week for sunny areas, throughout the first summer. Pruning should be limited to the removal of damaged limbs, since plants and trees need maximum foliage to generate energy to develop new roots.

Year 2: Plants will begin to put on new growth and continue to develop root systems. Soil moisture is less critical than during the first year, so watering can be done less frequently. Weeding will be necessary. Pruning is still discouraged, except to remove damaged or dead limbs.

Year 3: Successfully established plantings will flourish in the third year. Expect larger shrubs to require some pruning for clearance along the sidewalk. Pruning should be limited to encourage the natural growth habit of the plant.

Natural lawn and garden care only: Pesticide use is not allowed in the City's drainage system including natural drainage systems. Refer to the City's Natural Lawn and Garden Care website for tips regarding smart water and pesticide use.

Plant replacement during establishment: Adequate plant coverage is necessary to guard against soil erosion. Ideally the original planting will include a wide selection of species spaced to provide more than adequate coverage. If there is adequate coverage of the swale soils, not all plants that fail to thrive will need to be replaced. If patches of bare soil emerge, plantings should be replaced. If groups of plants are lost, a different species may need to be considered.

Maintenance of the mulch layer: is important for both moisture retention and weed control. Spring and Fall are excellent times to mulch and prune trees and shrubs where needed.

Trimming, thinning and pruning: Once plants are established and thriving, periodic trimming, thinning and pruning of plantings and trees may be necessary to ensure that the swale edge is not completely obscured. This is particularly important on narrow rights-of-way so that pedestrians, bicyclists and drivers are aware of the change in elevation between the roadway and the swale.

6.4.7b. Maintenance for Permeable Pavements

Permeable pavements and pavers require some additional maintenance to keep them functioning properly:

Inspect for surface material that may clog the pavement: Inspect the project upon completion to remove any fine material that has accumulated on the surface. Conduct periodic visual inspections to determine if surfaces are clogged with vegetation or fine soils. Clogged surfaces should be corrected immediately.

Periodic vacuum sweeping or pressure washing: Permeable concrete and permeable asphalt surfaces should be swept with a high-efficiency or vacuum sweeper twice per year, preferably, once in the autumn after leaf fall, and again in early spring. High pressure hosing could substitute for sweeping or supplement sweeping if material appears clogged. For gravel pave or unit pavers, replace gravel if clogging occurs.

Surface sealing is NOT allowed: Permeable paving or pavers will no longer function if the surface is sealed with a sealant application or other uncontrolled use.

Replenish aggregate: Replenish paver aggregate material as needed.

Maintain public safety: With NDS systems that have highly technical designs, it is critical to identify responsibility for utility providers, SPU and property owners on how the pavement or area will be maintained and re-established to assure public safety.

These maintenance responsibilities are critical to the successful functioning of an NDS and will be included as a project permit condition.

6.4.7c. Utility Cut Repair

Utility cuts need to be properly repaired to restore the function of the swale or permeable pavement. Detailed guidance is provided in the NDS Utility Restoration Protocol.

Streetscape Design Guidelines

6.5 Traffic Calming

[6.5.1 Overview](#)

[6.5.2 Policy Guidance for SDOT's Neighborhood Traffic Control Program \(NTCP\)](#)

[6.5.3 Neighborhood Traffic Control Program Goals](#)

[6.5.4 Considerations for Traffic Calming on All Streets](#)

[6.5.5 Additional Considerations for Traffic Calming on Arterial Streets](#)

[6.5.6 Typical Traffic Calming Devices in Seattle](#)

[6.5.7 Process for Installing Traffic Calming](#)

[6.5.8 Point Criteria for Traffic Calming](#)

[Project Ranking](#)

[6.5.9 Trials and Temporary Installations for](#)

[Traffic Calming](#)

[6.5.10 Landscaping for Traffic Calming](#)

[Devices](#)

6.5.1 Overview

Traffic calming is a way to design streets to improve safety, reduce the amount of cut-through traffic traveling on residential streets, and generally encourage people to drive more slowly. Along with education and enforcement, traffic calming has been used in many Seattle neighborhoods to slow speeds on residential streets and improve neighborhood livability by reducing cut-through traffic and improving the environment for pedestrians.

Traffic calming relies on physical and visual cues in, and adjacent to, the roadway to induce drivers to travel at slower speeds. Traffic calming is self-enforcing. The design of the roadway results in the desired effect, without relying on compliance with traffic control devices such as signals, signs, and without enforcement. Street trees and lighting complement traffic calming devices and are often used to provide the visual cues that encourage people to drive more slowly.

Traffic calming is such a powerful tool because it is effective. Some of the effects of traffic calming, such as fewer and less severe crashes, are clearly measurable. Others, such as supporting community livability, are less tangible, but equally important. Experience throughout Europe, Australia, and North America has shown that traffic calming, if done correctly, reduces traffic speeds, the number and severity of crashes, and noise level. Research on traffic-calming projects in the United States supports their effectiveness at decreasing automobile speeds, reducing the numbers of crashes, and reducing noise levels in certain locations.

This section defines the Seattle Department of Transportation's (SDOT) traffic calming policy, including appropriate tools for use on residential and arterial streets. Also included is a description of the steps that community members must take to get SDOT to evaluate traffic calming requests and prioritize them for design and construction.

6.5.2 Policy Guidance for SDOT's Neighborhood Traffic Control Program (NTCP)



Seattle's [Neighborhood Traffic Control Program \(NTCP\)](#) was established in 1978 as part of the City's annual Capital Improvement Program (CIP). Since then, Seattle's residents, in partnership with the City, have been involved in the installation of over 800 traffic circles and other traffic calming devices on neighborhood streets. View the 2004 map of new traffic circle locations. This map is updated annually.

The purpose of the NTCP has been to reduce accidents and speeds on residential streets, thereby creating safer, more pleasant neighborhoods. Traffic circles are the most common tool used and can be seen in most residential neighborhoods throughout the City. SDOT's NTCP is

guided by specific goals and policies in the [City of Seattle Comprehensive Plan \(2008\)](#) and the [Transportation Strategic Plan \(2005\)](#) as follows:

Comp. Plan Goal TG2	Manage the street system safely and efficiently for all modes and users and seek to balance limited street capacity among competing uses.
Comp. Plan Goal TG7	Protect neighborhood streets from through traffic.
Comp. Plan Policy T17	Use neighborhood traffic control devices and strategies to protect local streets from through traffic, high volumes, high speeds, and pedestrian/vehicle conflicts. Use these devices and strategies on collector arterials where they are compatible with the basic function of collector arterials.
TSP Strategy S2	Continue Seattle's Neighborhood Traffic Control Program. Consider requests from neighborhood organizations and citizens and consequently design and implement traffic circles and other neighborhood traffic control devices. These devices can be very effective to slow speeds and reduce collisions on neighborhood streets. In fact, to date, Seattle's traffic circles have resulted in a substantial reduction in accidents and speeds in neighborhoods. They can also encourage through traffic to stay on arterial streets, reducing the impact of cut through traffic on neighborhoods.

6.5.3 Neighborhood Traffic Control Program Goals



Consistent with the direction in the Comprehensive Plan and Transportation Strategic Plan, the Neighborhood Traffic Control Program (NTCP) has established the following program goals:

- Traffic calming projects shall improve neighborhood livability in balance with transportation efficiency and the safety needs of the communities.
- The NTCP shall take a holistic approach to traffic management, resulting in streets that provide access to neighborhood destinations for all modes, including walking, bicycling, transit and automobiles.
- Traffic calming devices shall complement the overall transportation network and not result in shifting the problem to an adjacent street.
- Traffic calming is not designed to address dangerous intersections, mitigate traffic noise, redesign the overall transportation and street classification system or effect a modal shift.

6.5.4 Considerations for Traffic Calming on All Streets



Although traffic calming is typically used on residential streets, there are certain tools that are appropriate for use on some arterial roadways. When a traffic calming approach is considered for any street, SDOT applies the following guidance:

- **Vehicle speed** is more critical than volume in terms of safety and should be addressed first where there are constraints.
- **Neighborhood involvement** is important to successful implementation. Rationale for traffic-calming and management measures should be explained clearly to community residents and installation of these treatments should incorporate public input.
- Traffic-calming and management measures should fit into, and preferably **enhance, the street environment**.

- Traffic-calming designs should be **predictable and easy to understand** by drivers and other users.
- **Devices that meet multiple goals** are usually more acceptable. For example, a raised crosswalk may be more understandable to motorists than a speed hump. The former has a clear goal, whereas the latter may be perceived as a nuisance.
- **Treatments need to be well designed** and based on current available information on their applications and effects. Information on U.S. experiences with various traffic-calming measures can be found in [ITE's *Traffic Calming: State of the Practice*](#).
- Devices should **accommodate emergency vehicles**. Emergency response times shall be considered.
- Traffic-calming areas or facilities should be **adequately signed, marked, and lit** to be visible to motorists.
- **Treatments need to be spaced appropriately to have the desired effect on speed**—too far apart and they will have a limited effect, too close and they will be an unnecessary cost and annoyance. Devices usually need to be spaced about 300 to 500 feet apart. If they are spaced too far apart, motorists may speed up between them. This is particularly the case where the devices are added onto the street (e.g., speed humps).
- **Whole street designs** are usually able to create an environment that supports slower speeds for the entire length.
- **Facilities should not be under-designed or they will not work**. Keeping the slopes too gradual for a speed table or curves too gentle for a chicane will not solve the problem and will appear as a waste of money and may ruin chances for future projects.
- Traffic-calming measures should **accommodate bicyclists, pedestrians and people with disabilities**.
- If a measure is likely to divert traffic onto another local street, **the area-wide street system should be considered** so as not to shift the problem from one place to another.
- Devices should be thought of as **elements of a traffic calming system** and be placed to improve pedestrian conditions throughout an area.

6.5.5 Additional Considerations for Traffic Calming on Arterial Streets



Seattle has streets within the arterial network that are primarily residential and are optimally used as routes to “collect” local traffic to move it to higher capacity arterial streets. Since Seattle’s street grid is largely built and congestion continues to increase, collector arterials are being used as cut-through routes by motorists trying to avoid congestion. Communities are concerned about higher traffic speeds and volumes on the collector arterials in their residential neighborhoods and are requesting traffic calming solutions. In order to balance the demands placed on the arterial network, including use by large vehicles such as buses, trucks and emergency responders, with neighborhood concerns, the City needs clear policy direction about traffic calming practices appropriate on arterial roadways.

1. Traffic calming on arterials is most successful when applied on arterial streets where adjacent land uses are primarily residential.
2. SDOT will attempt to resolve the issue using the following approaches: 1) education; 2) enforcement, and if education and enforcement do not solve the problem; and 3) engineering methods. If traffic calming devices are an appropriate solution, they shall be planned and designed in keeping with sound engineering and planning practices appropriate to the particular functions of the arterial street.
3. Through traffic should be encouraged to use higher-classification arterials (principal and minor arterials), as designated in Seattle’s Street Classifications.
4. Emergency vehicle access shall be maintained and traffic calming devices should not

- unreasonably degrade emergency vehicle response times.
- 5. Arterial traffic calming projects should not significantly impact transit service access, safety, and scheduling.
- 6. Pedestrian and bicycle movement should be given equal consideration with vehicle movement in the design and implementation of arterial traffic calming projects.
- 7. Parking issues should be considered on a project-by-project basis. Parking needs of residents should be balanced with the equally important functions of traffic, emergency vehicle access, transit, bicycle, and pedestrian movement.
- 8. Traffic calming on arterials should not divert traffic to non-arterial roadways through the use of traffic diversion devices.
- 9. When arterial traffic calming is being considered, certain procedures should be followed by SDOT in processing traffic management proposals in accordance with applicable codes and related policies and within the limits of available resources. At a minimum, the procedures should provide for project selection and evaluation; citizen participation in plan development and evaluation; public and life safety review, and communication of any test results and specific findings to area residents and affected neighborhood organizations.

6.5.6 Typical Traffic Calming Devices in Seattle



The City of Seattle has used the following traffic calming devices in locations deemed appropriate by the SDOT in consultation with neighborhoods. Refer to the City of Seattle [Making Streets that Work](#) guide.

Not all traffic calming devices are appropriate for use on every type of street or in every location. Traffic Calming Device and Applications (table below) describes the name of the device, they type of issue it is typically used to resolve, and the street classification(s) where the device could be applied. The “typical use” category describes, in general, what kind of change each device can affect: managing traffic, conditions along streets, or pedestrian crossing conditions:

Managing traffic: Concerns about traffic speed and volume can be addressed through effective traffic management. The following devices are used to help manage traffic. Many of these devices restrict the movement of traffic on streets. In most cases the least restrictive method of solving a traffic management problem is the most cost effective, and the easiest for all to agree on.

Conditions along streets: Conditions along streets affect pedestrian travel, comfort, orientation, safety, and affect the aesthetic quality of our streets. This group of traffic calming devices includes on-street parking, lighting, street furniture, and plantings and trees.

Pedestrian crossing conditions: Crossing a street shouldn’t be unreasonably difficult, and there are devices that can help improve pedestrian safety, including pedestrian crossings.

Traffic Calming Devices and Applications

Traffic Calming Device	Typical Use	Residential Streets (non-arterial)	Collector Arterials	Minor Arterials	Principal Arterials
Curb bulbs	Pedestrian Crossing Conditions	•	•	•	•
On-street parking (parallel and angle)	Conditions Along Streets	•	•	•	•

Streetscape improvements (street trees, lighting, street furniture, special paving treatments)	Conditions Along Streets	•	•	•	•
Signs	Managing Traffic	•	•	•	•
Crossing islands or short medians	Pedestrian Crossing Conditions		•	•	•
Medians	Managing Traffic		•	•	•
“Road Diets” (reducing number of travel lanes)	Managing Traffic		•	•	••
Speed cushions (for 25 mph or below)	Managing Traffic	••	•	••	
Gateway treatments	Pedestrian Crossing Conditions	•	•		
Neighborhood speed watch program	Managing Traffic	•	•		
Limited access	Managing Traffic	•	•		
All-way stop	Managing Traffic	•	•		
Raised crosswalks	Pedestrian Crossing Conditions		•		
Raised intersections	Managing Traffic		•		
Speed limit reduction	Managing Traffic		•		
Chicanes	Managing Traffic	•			
Chokers	Managing Traffic	•			
Diverters	Managing Traffic	•			
Partial street closure	Managing Traffic	•			
Pedestrian districts (woonerfs)	Pedestrian Crossing Conditions	•			
Speed humps	Managing Traffic	•			
Traffic circles	Managing Traffic	•			

Legend

Appropriate for Consideration (•)

May be Applicable (••)

6.5.7 Process for Installing Traffic Calming



SDOT has an evaluation process for all traffic calming proposals. Refer to [Figure 6-12: Traffic Calming Evaluation Process](#). This process is necessary due to the high demand and limited resources available for traffic calming projects. This section outlines the steps that must be completed before a location may be considered eligible for traffic calming. Note: locations with physical characteristics that do not allow the feasible placement of traffic calming will not be considered.

Step 1: Community Contacts SDOT with Traffic Calming Proposal

SDOT requires support from the residents of the affected area before constructing traffic calming devices. Responsibility for demonstrating community support for a traffic calming completion of this step lies with the community. To initiate the NTCP process, a community group must contact SDOT NTCP to request inclusion in the annual NTCP evaluation period. Refer to [Section 6.6 Contact Information](#) for more information. All requests should be made prior to July 15; any request received after this date will be considered for funding in June of the following year.

Step 2: SDOT Evaluation of Community Request and Initial Action

SDOT staff will work with NTCP applicants to determine conditions on the street that the community believes need to change. After initial evaluation, the SDOT Traffic Engineer may authorize actions be taken within the scope of his or her authority to address the applicant's concern and solve the problem. If problem persists, SDOT may initiate education and enforcement activities to resolve the problem. The SDOT NTCP staff, in consultation with the Fire Department and King County/Metro Transit, may also deem the project to be infeasible at this point and recommend another course of action that does not involve traffic calming.

SDOT will evaluate the safety record of each location which can include collision history, speed data emergency response implications, and traffic volume counts. The data will be used to prioritize the locations for construction on residential streets using the point criteria described in [Section 6.5.8. Point Criteria for Traffic Calming Project Ranking](#).

Step 3: Petition Process

If the problem is not successfully resolved in Step 2, SDOT will request a demonstration of community support for traffic calming. SDOT will provide the applicant with an NTCP petition and signatures must be gathered as follows:

- **Traffic Calming on a Residential Street:** Signatures are required from at least 60% of the households (owners or renters) and businesses (property or business owner) typically within one block of the proposed traffic calming device. For more restrictive traffic calming devices (e.g., diverters or partial closures) SDOT may specify a petition area beyond one block.
- **Traffic Calming on an Arterial Street:** Arterial roadways play a major role in moving people and goods within neighborhoods as well as throughout the city. For this reason, any traffic calming proposal on an arterial street must be supported by adjacent neighborhoods. In addition to the petition process defined above, additional letters of support will be requested from the community councils adjacent to arterial locations being considered for traffic calming, as well as the appropriate district council.

Only one signature per household or business is needed. Signed petitions must be submitted by July 15, to be considered for the following year's construction. Completed petitions can be mailed or delivered to the [Seattle Department of Transportation](#). Projects that meet the required support rate will be considered for funding through an SDOT annual program.

Step 4: SDOT and Community Seek Funding for Project

If the location does not qualify for funding through SDOT's NTCP program, the contact person listed on the petition will be notified by mail. Information about other potential funding sources may be provided. If the location ranks sufficiently high on SDOT's prioritization list for Neighborhood Traffic Control Program (NTCP) funding, the contact person will be notified.

At this point in the process, SDOT staff will determine if it is necessary to hold a meeting in the neighborhood to discuss the project, including results of the traffic analysis, the design concept,

and the procedures leading up to construction. Maintenance of landscaping in traffic calming devices, an important component of this project, and identification of a landscape volunteer will also be discussed during the meeting. For traffic calming on arterial streets, meeting notices will be sent to the community councils in adjacent neighborhoods as well as the appropriate district council.

Step 5: Project Funded

Project funding is identified and SDOT proceeds with the design and construction process.

Step 6: Design & Construction Overview

Traffic calming devices are designed according to the existing geometry of each intersection and sized to accommodate the passage of emergency vehicles. The Fire Department, Metro/King County Transit and other agencies review locations for new calming and may conduct a field test to check for maneuverability. Then, final plans are made and sent to construction crews with specifications. If a volunteer signs up to maintain plantings, soil and plants will be supplied; otherwise, the device will be covered in asphalt.

Step 7: Construction

The first visible evidence that traffic calming devices will be built is typically an outline of the device drawn in on the street. Construction will follow, including any landscaping and signs (e.g., reflector or directional signs).

Step 8: Post Construction Monitoring

After construction of speed humps, speed cushions and chicanes, the traffic calming device will be monitored for a period of six months to one year. During this time, traffic speeds and volumes are measured to help determine the effectiveness of the device.

6.5.8 Point Criteria for Traffic Calming Project Ranking



SDOT ranks locations for traffic calming based on a number of criteria. For traffic circles, a point criteria is used to assign points to an intersection for accident history, traffic volumes and traffic speeds refer to point values in tables below include in Section 6.5.8a Accident History, 6.5.8b Traffic Volumes and 6.5.8c Traffic Speeds. The points assigned for accident history, traffic speeds and traffic volumes are then added together to prioritize the location based on need.

To address traffic calming requests at mid-block locations, SDOT evaluates each corridor based on number and type of mid-block collisions, speeds and volumes.

6.5.8a Accident History

Accident history is determined based on the average number of accidents per year over the most recent 3 year period. The annual accident rate is determined by the number of accidents/number of years over which they occurred. For example if a location has had 6 collisions in the last 3 years, the average annual rate per year is 2.000. As a result, 4 points would be assigned to this location for accident history.

Points	Annual Accident Rate (accidents/year) at Intersection
1	0.5 - 0.875
2	0.876 - 1.250
3	1.251 - 1.625

4	1.626 - 2.000
5	2.001 - 2.375
6	2.376 - 2.750

For midblock locations, a score of .5 is assigned if the accidents on the midblock section of street exceed two accidents per year over the last three years.

6.5.8b Traffic Volumes

Points for traffic volumes are assigned according to the number of vehicles per day on an average weekday.

Traffic Volumes (Vehicles per Day—Average Weekday Traffic)

Points	Residential Streets
0	< 600
0.5	600-999
1	1000-1499
1.5	1500-2000

6.5.8c Traffic Speeds

Points for traffic speeds are allocated based on the 85th percentile speed in miles per hour. The 85th percentile speed is the speed at which 85% of the vehicles are traveling at or below. Speed limits for residential streets are 25 miles per hour, unless otherwise marked. Speed limits for arterial streets are 30 miles per hour unless otherwise marked.

Traffic Speeds (85th Percentile Speed—miles per hour)

Points	Residential Streets
0	< 26.1
0.5	26.1-29.9
1	30-31.9
1.5	32-34

6.5.9 Trials and Temporary Installations for Traffic Calming



In neighborhoods trying traffic calming for the first time, it may be useful to lay out a new design with cones or temporary markings to test it. This provides emergency vehicle drivers, residents, and others with an opportunity to test the design. Some communities have constructed elaborate temporary devices with concrete or plastic (“jersey”) barriers. These can instill a negative reaction in the community due to their unaesthetic appearance and they do not generally have any significant benefits over the simpler test devices.

6.5.10 Landscaping for Traffic Calming Devices



Neighbors are responsible for the planting and maintenance of traffic calming devices after they are built. Landscaping is installed during the planting season (spring or fall). [SDOT's Urban Forestry Division](#) staff, takes input from residents about plant material selection during the months of January and June, depending on the season when construction is completed. Plants are chosen based on their drought tolerance, resistance to occasional car traffic and street right-of-way landscaping guidelines, which promote visibility. The [recommended street right-of-way plant list](#) contains a variety of suitable plants that have performed well in the past. Plants are delivered to the home of the landscape coordinator in the spring or fall and a planting party usually follows.

Residents are responsible for the [maintenance](#) of traffic circle plantings. Replacement plants are not typically available through the NTCP if the originals die due to neglect or automobile run-overs. Funding for vegetation rehabilitation is available through the [Department of Neighborhoods](#). View more information on traffic calming and landscaping through the on-line version of [The Neighbors' Gardening Circular \(Traffic Circle Newsletter\)](#). Also view resource information on [Salmon Friendly Gardening Tips from Seattle Public Utilities](#).

6.5.10a Plants Provided at the Time of Installation

Each year SDOT provides plants for between 60 to 120 new traffic circles, chicanes, triangles and medians. Purchases are made in bulk to keep costs down, so this requires selecting a common plant pallet that accommodates the needs of everyone. Although every effort is made to get the plants neighborhood groups request we sometimes need to make substitutions. As always, purchasing depends upon plant availability. So, we ask for flexibility and patience as we are serving a considerable number of neighborhood groups.

Groups may purchase their own plant material if they would like to plant sooner or have specialty plants in mind that we might not be able to get. SDOT can not reimburse groups for these expenses, but your planting plan should be sent to SDOT Urban Forestry staff for permitting before plant purchases are made. Flower bulbs are not provided, but they are a lovely addition and we encourage you to plant them! Daffodils, in particular, grow really well. They need little care and will increase in number as they bloom each spring!

A traffic circle must be at least 14 feet in diameter to qualify for a tree. For a typical 16 foot diameter device we usually provide:

Type of Landscaping	Amount
Trees	1
Shrubs (no more than two different types)	4-5
Perennials (no more than three different types)	12
Flats of groundcover (one type)	2

All plant material and trees must be maintained consistent with SMC 15.42.050: Planting Trees and Shrubs. Multi-stemmed trees and shrubs that can grow tall, such as roses and lilacs are not acceptable. It is also advisable not to plant shrubs that require shearing. Usually the plants remain long after the person willing to consistently maintain them has left.

6.6 Contact Information

Organization Name/Website	Phone
Department of Planning and Development (DPD) General Information	
DPD City Design	(206) 684-0763
SDOT Major Projects Division: Link Light Rail Team	(206) 615-1224
SDOT Neighborhood Traffic Control Program: Traffic Calming	(206) 684 0353
SDOT Street Use Division	(206) 684-5283
Seattle Public Utilities (SPU) General Information	
SPU Resource Planning Division, Natural Drainage Systems	(206) 615-0866
<p>Additional contact information and resources are located in the City of Seattle Staff Directory, which is searchable by Department, Division and individual staff.</p>	