

Low Impact Development Code Update Findings and Recommendations Report

Submitted to:

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Acknowledgements

Low Impact Development Code Update LID Code Update Findings Report

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Section I—Introduction

The City of Tukwila is covered under the National Pollutant Discharge Elimination Systems (NPDES) Western Washington Phase II Municipal Stormwater Permit (Permit).

Permit condition S5.C.4.f requires permittees to incorporate and require Low Impact Development (LID) principles and Best Management Practices (BMP) in local development-related codes, rules, and standards by December 31, 2016. The Permit states:

The intent of the revisions shall be to make LID the preferred and commonly-used approach to site development. The revisions shall be designed to minimize impervious surfaces, native vegetation loss, and stormwater runoff in all types of development situations.

The Permit requires permittees to engage in a process of review and revision of local codes similar to the process outlined in *Integrating LID into Local Codes: A Guidebook for Local Governments* (Puget Sound Partnership, 2012). For the remainder of this report, we refer to this document as the Guidebook.

To facilitate this process, Otak reviewed Tukwila’s development codes and then hosted discussions with City staff from February to April, 2016. Staff from Community Development, Public Works, and the Fire Department attended discussions and were trained on LID concepts.

In consideration of the draft gap analysis and the ideas and feedback generated by staff, Otak proposes numerous changes to Tukwila’s codes and standards. Proposed changes have been developed to the conceptual level and are presented here for review by the City’s leadership.

Purpose

The purpose of this report is to provide City decision-makers with our findings, recommendations, and concepts for code updates related to LID and to obtain agreement for pursuing updates.

Low Impact Development Summary

LID is defined in numerous references, and LID best management practices have been allowed in various stormwater engineering manuals in Washington since at least 2005. Tukwila’s Permit states in Appendix 1:

Low-impact development (LID) is a stormwater and land use management strategy that strives to mimic pre-disturbance hydrologic processes of infiltration, filtration, storage, evaporation, and transpiration

Section I—Introduction

Continued

by emphasizing conservation, use of on-site natural features, site planning, and distributed stormwater management practices that are integrated into a project design.

Several references that also define LID are listed in Section 14 of this report.

LID techniques encourage the reduction of landscape cover such as roads, buildings, and parking lots, encourage restoration and retention of soils and native vegetation that effectively manage the rain that falls on them, and prioritize stormwater management practices that are small, vegetated, distributed throughout the landscape, and emphasize infiltration or dispersion.

Common LID stormwater management practices include bioretention (also commonly known as rain gardens), permeable pavement, and downspout infiltration drywells.

As a land use strategy, LID principles are applicable during land development and redevelopment and may be contradicted by a City's land use standards that require impervious cover and allow for removal of native vegetation, often in excess of absolute need. Thus, the City's Permit and Guidebook require a review of Tukwila's development codes and standards, including Zoning, Subdivision, and other enforceable documents that control land use.

Development Context

Tukwila is a small city of approximately 20,000 and 9.65 square miles in heavily-developed King County¹. The City's daytime population increases to 150,000². Tukwila's primary development pressures are expected to be infill and redevelopment³. There are few areas of the City with intact native forests and undisturbed soils⁴. Thus, the primary foci for the LID model of site development within the city will need to be 1) encouraging retrofit of existing impervious surfaces to permeable materials or reclaimed and restored landscaped areas, 2) managing stormwater close to its source, and 3) ensuring that there are no codified or procedural barriers to the use of LID techniques required in the *King County Surface Water Design Manual 2016* (2016 KCSWDM).

¹ City of Tukwila web page: <http://www.tukwilawa.gov/departments/economic-development/data-and-demographics/> (retrieved May 6, 2016)

² City of Tukwila web page: <http://www.tukwilawa.gov/departments/police/administration/> (retrieved May 6, 2016)

³ LID Team Meeting, February 23, 2016.

⁴ Ibid.

Section I— Introduction

Continued

General Support for LID

Tukwila’s policies as expressed through its Comprehensive Plan are frequently supportive of LID principles. Proposed updates to Tukwila’s development and stormwater codes to ensure that LID becomes the preferred and commonly used approach to site development would implement or otherwise support many of these policies.

Table I— Comprehensive Plan Policies Supportive of LID

Element	Goal	Policy	Summary
Community Image and Identity	1.8.1		Maintain and periodically revise parking standards to ensure typical daily demand is met and to encourage shared parking.
Natural Environment		4.1.5	Develop and implement programs encouraging residents to protect natural environment, including using LID techniques
Natural Environment		4.5.3	Develop best management practices for surface water drainage and street maintenance to avoid disturbing native vegetation
Natural Environment		4.8.3	Perform inspection programs to ensure proper maintenance of surface water management systems.
Natural Environment		4.13.1	Promote tree retention throughout the City.
Natural Environment		4.13.11	Evaluate current parking lot landscape requirements to identify opportunities to increase tree canopy.
Natural Environment	4.13		Increase overall citywide canopy to 29% by 2034.
Parks, Recreation and Open Space		6.2.1	Recognize that the City’s open space network will be made up of public and private lands that provide or have the potential to provide stormwater detention, water quality enhancement, and urban forest preservation.
Shorelines		5.3.1	Implement shoreline guidelines to encourage river views, multiple uses, and

Section I—Introduction

Continued

Element	Goal	Policy	Summary
			encourage native vegetation.
Southcenter		10.2.1	Promote use of indigenous plants, water-saving plants, and plants with wildlife habitat value.
Utilities		12.1.25	Require on-site detention for both development and redevelopment projects, unless another viable option exists.
Utilities		12.1.29	Encourage tree retention and plantings for their benefits to surface water quality and quantity.
Transportation		13.1.5	Incorporate features such as natural drainage and native plantings into the design of transportation facilities.
Transportation		13.2.2	Prioritize residential through streets, minimizing cul-de-sacs.
Transportation	13.2		Street Network Implementation Strategy: Develop methods to incentive shared driveways.

In addition, Title 14 – Waters & Sewers allows exceptions to Public Works standards and land use standards for the purpose of implementing LID principles with approval from the applicable department head. Under proposed updates, many codes and standards will already incorporate the principles of impervious surface reduction, vegetation and soils retention that are referenced in this title.

How to Use this Document

This document is organized by 12 topics that are cited in the Guidebook, and then further organized by sub-topic. Within each topic, we have provided a discussion of Tukwila’s current regulations and recommendations for updates at the conceptual level.

A full list of recommendations and justifications is given in Section 13-Summary.

Abbreviations

ADT	Average daily traffic
BMP	Best Management Practices

Section I— Introduction

Continued

HDR	High-density residential zone
IBC	International Building Code
IDCS	Infrastructure Design and Construction Standards
KCC	King County Code
KCSWDM	King County Surface Water Design Manual
MDR	Medium-density residential zone
PRD	Planned Residential Development
RCC	Residential Commercial Center
TMC	Tukwila Municipal Code
TUC	Tukwila Urban Center zone
TVS	Tukwila Valley South zone
ROW	Right-of-way

Section 2—Parking

Surface parking contributes significantly to impervious cover of the landscape. City regulations can encourage parking by establishing minimum parking ratios for uses or zones, setting minimum dimensions for stalls and aisles, and disallowing shared parking. Parking requirements that supply parking in excess of need would be contrary to LID principles.

Findings

Tukwila recently re-wrote its parking code for other purposes⁵. Our recommendations factor this in.

Minimum/Maximum Parking Ratios

Tukwila describes parking ratio requirements in Title 18 – Zoning. Minimum required parking is listed by use within each zone. Parking requirements between zones appear consistent. We compared parking ratios for two benchmark uses to ratios recommended in the James River Association’s publication, *Examples of Code and Ordinance Language for Better Site Design* (Better Site Design).

Table 2— Selected Parking Ratios

Tukwila Title 18		Better Site Design Recommendations	
Category	Minimum Parking	Category	Minimum Parking
Office	2.5 per 1,000 usable floor area	Professional Office	3 or less per 1,000 gross floor area
Retail	3 per 1,000 sf usable floor area	Shopping Center	4.5 or less per 1,000 sf GFA
Compact Spaces	Maximum number compact spaces is 30%	Compact Spaces	At least 30% at larger commercial/shopping centers

Since 100% demand is rarely needed, providing parking for the 100% demand situation in commercial development may be the activity in Tukwila that adds the most “unnecessary” impervious cover⁶. However, Tukwila’s current ratios for professional office and shopping center are similar to the ratios recommended by Better Site Design. Thus, we do not recommend a change at this time. Tukwila may want to continue to assess options for satisfying parking demand with less impervious cover.

Note: the Office requirement may slightly exceed the Better Site Design recommendation; it is difficult to compare because Tukwila uses usable floor area while the recommendation

⁵ Ibid.

⁶ Bradshaw, M. Personal Communication. April 6, 2016.

Section 2—Parking

Continued

uses gross floor area to base calculations. Usable floor area excludes common corridors, restrooms, elevator shafts, stairwells, mechanical rooms, attics, and exterior covered loading docks (TMC 18.06.863).

Better Site Design recommends at least 30% of spaces be required to be compact sized. Staff expressed that the current allowance of 30% is adequate because most developers use as many compact spaces as are allowed⁷.

Comprehensive Plan policies 1.8.1 and 8.5.1 recognize that parking should not be supplied in excess of demand.

Use of Permeable Paving for Parking

This topic is not discussed in Tukwila’s codes and standards.

With adoption of the 2016 KCSWDM, permeable paving will be an option to meet Core Requirement #9. TMC 18.56 Off-Street Parking and Loading could be updated with a preference for use of permeable pavements. Staff supports the idea of requiring any stalls provided in excess of the minimum to use permeable pavements where feasible.

We found that TMC 8.25 requires vehicle storage and parking on single family residential property to be on an “approved durable uniform surface.” The definition of this surface would include permeable pavements and does not need to be updated.

Parking Stall Dimensions

Larger-than-necessary parking stall dimensions increase impervious cover.

Stall and aisle dimensions are given in TMC 18.56 Off-Street Parking and Loading, Figure 18-6. For angle spaces, Tukwila gives three options for dimensions for each angle of regular size parking stall. The largest set of dimensions for each angle exceeds the dimensions recommended for Better Site Design.

Supportive language in TMC 18.56 includes allowing a 2-foot landscaping overhang to count toward stall length and allowing tandem parking spaces in the medium-density residential (MDR) and high-density residential (HDR) zones.

⁷ LID Team Meeting, February 23, 2016.

Section 2—Parking

Continued

Off-Street Parking Regulations

Impervious surface cover can be reduced by providing parking in structures rather than in lots and allowing shared parking.

Structured parking could be incentivized in the Tukwila Urban Center (TUC) zone through a height incentive. However, structured parking is not necessarily feasible underground given high groundwater throughout much of the commercial district, so a provision like this may be infrequently used.

Complementary shared parking is already allowed in all zones in Title 18 but is not promoted.

Recommendations

1. Add a new section in TMC 18.56 Off-Street Parking and Loading to require any parking spaces provided above the minimum in a parking lot to use pervious materials, if feasible in accordance with the stormwater manual.
2. Add a preference within 18.56 Off-Street Parking and Loading for use of permeable pavements for off-street parking, if feasible in accordance with the stormwater manual.
3. Delete the largest set of parking stall dimensions for each angle from Figure 18-6.
4. Add structured parking to the list of items in 18.28.070 Tukwila Urban Center allowed for height bonus to 70 feet or 115 feet.

Section 3—Landscaping and Native Vegetation

Using vegetation and retained or enhanced soils to help slow, infiltrate, transpire, and treat precipitation and runoff is a principle of LID. Retention of native vegetation and soils is given as one of three performance measures for the LID code update in the City's Permit.

The City's existing landscaping, screening, and tree preservation codes can be strengthened to support this important goal more fully. Municipal landscaping and native vegetation codes often compete with other needs on the landscape. With appropriate flexibility in municipal codes, some LID BMPs can be integrated into landscaping and screening areas, allowing stormwater management to be integrated throughout a site, and reducing costs and competing needs for space.

The Guidebook notes that:

Native vegetation and soils are also the most cost-effective and efficient tools for managing stormwater quantity and quality.

Findings

Tree Preservation

Tukwila promotes preservation of trees on development sites in the Comprehensive Plan, Title 17 – Subdivisions, Title 18 – Zoning, and the Infrastructure Design and Construction Standards (IDCS). In particular the Comprehensive Plan describes goal 4.13 to create a comprehensive list of measures to increase overall citywide canopy to 29% by 2034. The City is already working on an update to its tree regulations in TMC 18.54 – Tree Regulations and intends to incorporate recommendations developed through the LID code update process⁸.

Title 17's general standards require reasonable efforts to retain trees and vegetation during land division. This language could be strengthened by calling out and defining native vegetation. The 2016 KCSWDM defines a native vegetated surface as:

Native vegetated surface means a surface in which the soil conditions, ground cover, and species of vegetation are like those of the original native condition for the site. More specifically, this means (1) the soil is either undisturbed or has been treated according to the "native vegetated landscape" specifications in Appendix C, Section C.2.1.8; (2) the ground is either naturally covered with vegetation litter or has been top-dressed between plants with 4 inches of mulch consistent with the native vegetated landscape specifications in Appendix C; and (3) the vegetation is either (a) comprised predominantly of plant species, other

⁸ LID Shorelines and Tree Code Review Meeting, March 15, 2016.

Section 3—Landscaping and Native Vegetation

Continued

than noxious weeds, that are indigenous to the coastal region of the Pacific Northwest and that reasonably could have been expected to occur naturally on the site or (b) comprised of plant species specified for a native vegetated landscape in Appendix C. Examples of these plant species include trees such as Douglas fir, western hemlock, western red cedar, alder, bigleaf maple and vine maple; shrubs such as willow, elderberry, salmonberry and salal; and herbaceous plants such as sword fern, foam flower, and fireweed.

Tree preservation is discussed at length in 18.44 – Shorelines. Short plats and small lots often are exempt from the tree preservation requirements⁹. With future adoption of the 2016 KCSWDM, small lot and single large-lot developments will be allowed a native growth retention credit for retained trees and native vegetation toward meeting Core Requirement #9, so it may not be necessary to reconsider these exemptions.

TMC 18.54 exempts from regulation clearing vegetation on any site unless the site is located in a sensitive area or buffer or the Shoreline zone (18.54.050). This exemption is not supportive of LID principles to retain native vegetation in the development process.

TMC 18.54 gives priority to retaining stands of trees over retention of individual trees. The *LID Technical Guidance Manual* is more specific and prioritizes native vegetation and soil protection in the order shown below:

- Large tracts of riparian areas that connect and create contiguous riparian protection areas.
- Large tracts of critical and wildlife habitat areas that connect and create contiguous protection areas.
- Tracts that create common open space areas among and/or within developed sites.
- Protection areas on individual lots that connect to areas on adjacent lots or common protection areas.
- Protection areas on individual lots.

Tree protection measures are given in TMC 18.54. These are not specific. The *LID Technical Guidance Manual* proposes specific tree protection measures for use during construction in Section 4.1.1. Doing more to ensure health of retained trees would be more supportive of LID principles.

Tree replacement specifications are also given. No tree list is cited. Replaced trees should ideally be native trees to be in full support of LID principles.

⁹ Ibid.

Section 3—Landscaping and Native Vegetation

Continued

In 4.0.4 Frontage Improvements in the IDCS, existing vegetation should be retained or replanted in the frontage when disturbed during development. This is supportive, although replaced vegetation should ideally be native vegetation suited for use in the ROW.

Screening

Screening codes provide an opportunity to integrate vegetated LID BMPs, making selection of LID BMPs more desirable compared to traditional stormwater management BMPs.

Screening is discussed in Title 17 – Subdivisions and Title 18 – Zoning. Use of LID could be promoted by allowing bioretention facilities to serve as screening, thus reducing space needed in a development for stormwater management.

Required screening types and depths are summarized for all districts for front yard, side yard, and rear yard in a table shown in 18.52 – Landscape, Recreation, Recycling/Solid Waste Space Requirement. Requirements are established separately for each zone within the title.

Good candidates for making clear that bioretention can serve as screening in some situations are listed below.

- Bioretention could serve as up to 20% of the front yard landscaping of MDR and HDR, which already allow pedestrian and transit facilities under a Type 2 decision.
- Bioretention could serve as part of required landscaping in RCC, TVS, and TSO districts.
- Bioretention could serve as Types I and II landscape perimeters in 18.52.030.

Section 3—Landscaping and Native Vegetation

Continued



Figure 1— Artistic stormwater conveyance and vegetated LID facilities provide screening at Estacada Library (Source: *Low Impact Development Approaches Handbook*)

Staff requested a plant list that is suitable for bioretention to be cited in 18.52.030.D to support LID implementation.

Staff also noted that when bioretention is proposed to serve as required screening, then plant selection and placement must be reviewed both by Planning and by Public Works and must meet the intent of both purposes. To facilitate use of bioretention, ensure landscaping review allows flexibility for plant selection and placement as long as public safety is not compromised.

Landscaping for Street Frontages

Allowing bioretention into landscaped areas in street frontages is an effective way to integrate stormwater management in urban infill and redevelopment settings where land is constrained.

Section 3—Landscaping and Native Vegetation

Continued



Figure 2 — Bioretention integrated into urban landscape strip, Beaumont Village, Portland, OR (Source: *Low Impact Development Approaches Handbook*)

Landscaping for street frontages is discussed in the Comprehensive Plan, Title 11 – Right-of-Way Use, Title 17 – Subdivision, Title 18 – Zoning, and the IDCS. Like screening, allowing bioretention and other native vegetation in landscaping area of street frontages supports the goal of making LID more common. In addition street trees often required in street frontages are supportive of LID.

MDR (18.12) and residential commercial (18.20) zones both have street frontage landscaping requirements but do not mention bioretention. TUC (18.28) already encourages landscaped areas within the street ROW and elsewhere to contain or act as functional stormwater facilities.

Where bioretention is allowed to serve as landscaping, exceptions should be made when soil preparation requirements are given in zoning code, since soil preparation for bioretention should follow requirements in the 2016 KCSWDM.

IDCS discusses timing, responsibilities, specifications, and maintenance of street frontage improvements. These are supportive and do not require any changes to support implementation of LID.

Section 3—Landscaping and Native Vegetation

Continued

Staff expressed concern for health of street trees in the City, which appear to suffer from insufficient space, poor planting methods, and pollution¹⁰.

Landscaping in Parking Lots

Interior and perimeter landscaping areas in parking lots are a popular location to integrate bioretention stormwater management, allowing stormwater to be managed for the parking lot within its own footprint.

Parking lot landscaping requirements are discussed in Title 18 – Zoning and in the Comprehensive Plan.

General landscaping for parking lots is set in 18.52 – Landscape, Recreation, Recycling/Solid Waste Requirements, while separate standards are set for the Shoreline zone (18.44) and TUC (18.28).

In the Shoreline District, native trees and shrubs are required, which is supportive of LID practices. TUC encourages and gives flexibility to integrate stormwater management into parking lot landscaping, except where a heavy perimeter screen is required. The same flexibility could be added to 18.52 to support integration of LID.

Staff expressed concern that shade still be provided in parking lots, so flexibility to use bioretention should still require use of trees that are appropriate for the facility. Staff also expressed general concern over health of trees in parking lots¹¹.

¹⁰ LID Team Meeting, February 23, 2016.

¹¹ Ibid.

Section 3—Landscaping and Native Vegetation

Continued



Figure 3 — Bioretention swale as parking lot landscaping

(Source: University of Florida, <http://hort.ufl.edu/woody/parking-island-examples.shtml>)

Landscaping Site Preparation

Tukwila discusses landscaping site preparation in 18.52 – Landscape, Recreation, Recycling / Solid Waste Space Requirements for general landscape and screening requirements. Since all developed pervious areas on sites that trigger stormwater management requirements will need to follow King County Code 16.82.100.G for preserving the soil moisture capacity, which entails amending site soils, the requirement for site preparation should reference these requirements.

Trees and Bioretention

To support use of bioretention in landscaped areas where trees are required, Tukwila could provide applicants with a resource list of trees suitable for use in bioretention. This list could further indicate categories for street trees and parking lot trees.

Recommendations

Tree Preservation

5. Update general standards in 17.20.030 to prioritize retention of native vegetation.

Section 3—Landscaping and Native Vegetation

Continued

6. Define native vegetation in Title 17 using a definition similar to the definition of native vegetated surface in the 2016 KCSWDM.
7. Remove the exemption in TMC 18.54 for clearing vegetation on sites that are not located in a critical area or buffer. *This recommendation is provided to the City for use in its ongoing update of TMC 18.54.*
8. Prioritize tree retention following guidelines in the *LID Technical Guidance Manual*, section 4.1, page 76. *This recommendation is provided to the City for use in its ongoing update of TMC 18.54.*
9. Specify tree protection measures during construction following guidelines in the *LID Technical Guidance Manual*, section 4.1.1, pages 77-79. *This recommendation is provided to the City for use in its ongoing update of TMC 18.54.*
10. Develop a tree list for 18.54 that focuses on native species, and considers suitability for use in the right of way.

Screening

11. Update footnote 1 in 18.52 to explicitly allow bioretention to serve as up to 20% of the front yard landscaping of MDR and HDR, which already allow pedestrian and transit facilities under a Type 2 decision.
12. Update footnote 3 in 18.52 to explicitly allow bioretention to serve as part of required landscaping in RCC, TVS, and TSO districts.
13. Update 18.52.030.A to explicitly allow bioretention to serve as Types I landscape perimeters provided that equal mitigation of visual impacts is achieved.
14. Update 18.52.030.B to explicitly allow bioretention to serve as Types II landscape perimeters provided that equal mitigation of visual impacts is achieved.
15. Develop and require use of a plant list suitable for bioretention that will also contain plants suitable for screening and aesthetic purposes, such as ornamentals.
16. Add statements allowing flexibility in plant selection and placement in Types I and II landscape perimeter when incorporating bioretention as long as public safety is not compromised and the intent of the screening is met.
17. When bioretention is proposed to serve as required screening, plant selection and placement must be reviewed both by Planning and by Public Works. Require submittal of preliminary plant selection and placement in the landscaping plan

Section 3—Landscaping and Native Vegetation

Continued

during land use review; engineering review should determine that plant selection and placement is appropriate for facility function.

Landscaping in Street Frontages

18. Update 18.12 MDR and 18.20 residential commercial to allow bioretention in the street frontage to meet landscaping requirements.
19. Update soil preparation requirements in 18.28.240 TUC to create a category for bioretention soil preparation. Include avoidance of compaction and refer to the 2016 KCSWDM for specific soil amendments.
20. For IDCS, develop a planting standard detail for street trees, including minimum soil volume and an option for tree pits in non-residential districts.

Landscaping in Parking Lots

21. Add flexibility in 18.52 to allow bioretention to serve or meet setback and perimeter landscaping requirements except where a heavy screen is required.
22. Add flexibility in 18.52 to integrate bioretention into interior parking lot landscaping, similar to existing language in 18.28.
23. Insert a minimum soil volume for parking lot trees into 18.52.

Trees and Bioretention

24. To support use of bioretention in landscaped areas where trees are required, develop a resource list of trees suitable for use in bioretention. Further indicate categories for street trees and parking lot trees.

Section 4—Design Guidelines and Standards

Design guidelines for buildings, site design, and street design may increase impervious cover or specify vegetation that is incompatible for use in LID BMPs. Removing these impediments where reasonable supports the goal of making LID the preferred and commonly used approach to site development.

Findings

Continuous Curb Requirements

Curb and gutter are required in Title 17 – Design Standards for Land Division and the IDCS contains several details for curb and gutter. Continuous curb is not explicitly required in any standard we reviewed. However, there is no standard detail for a curb cut or for sheet flow entry of flows into bioretention or dispersion trenches. While not prohibited, use of curb cuts to allow surface flows into ROW and parking lot bioretention facilities could be supported by inclusion of standard details showing the entrances.

Curb Radii

Smaller curb radii can leave more room in the streetscape and ROW for inclusion of landscaping and stormwater management features that are appropriate for use in the ROW. The IDCS does not list curb radii. The IDCS does reference curb radii in the Comprehensive Plan; however we did not find a discussion of curb radii in the Comprehensive Plan.

Recommendations

Continuous Curb Requirements

25. For IDCS, Develop standard details for various entrances to bioretention similar to Figures 4 and 5, below.

Curb Radii

26. Add a statement in IDCS Chapter 4 encouraging use of the smallest curb radius necessary to achieve the goals at each intersection.

Section 4—Design Guidelines

Continued

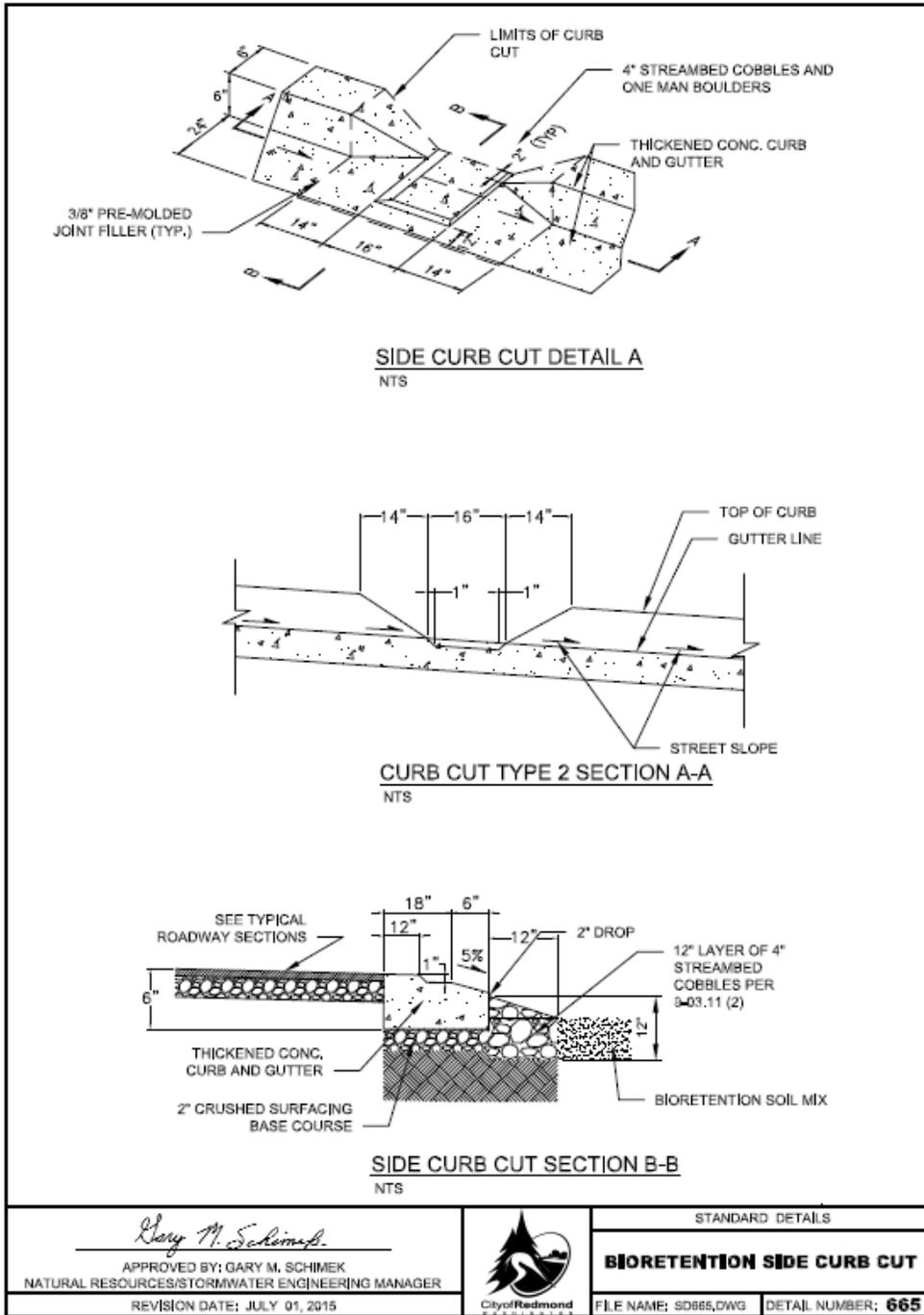


Figure 4 — City of Redmond side curb cut to bioretention detail

Section 4—Design Guidelines

Continued

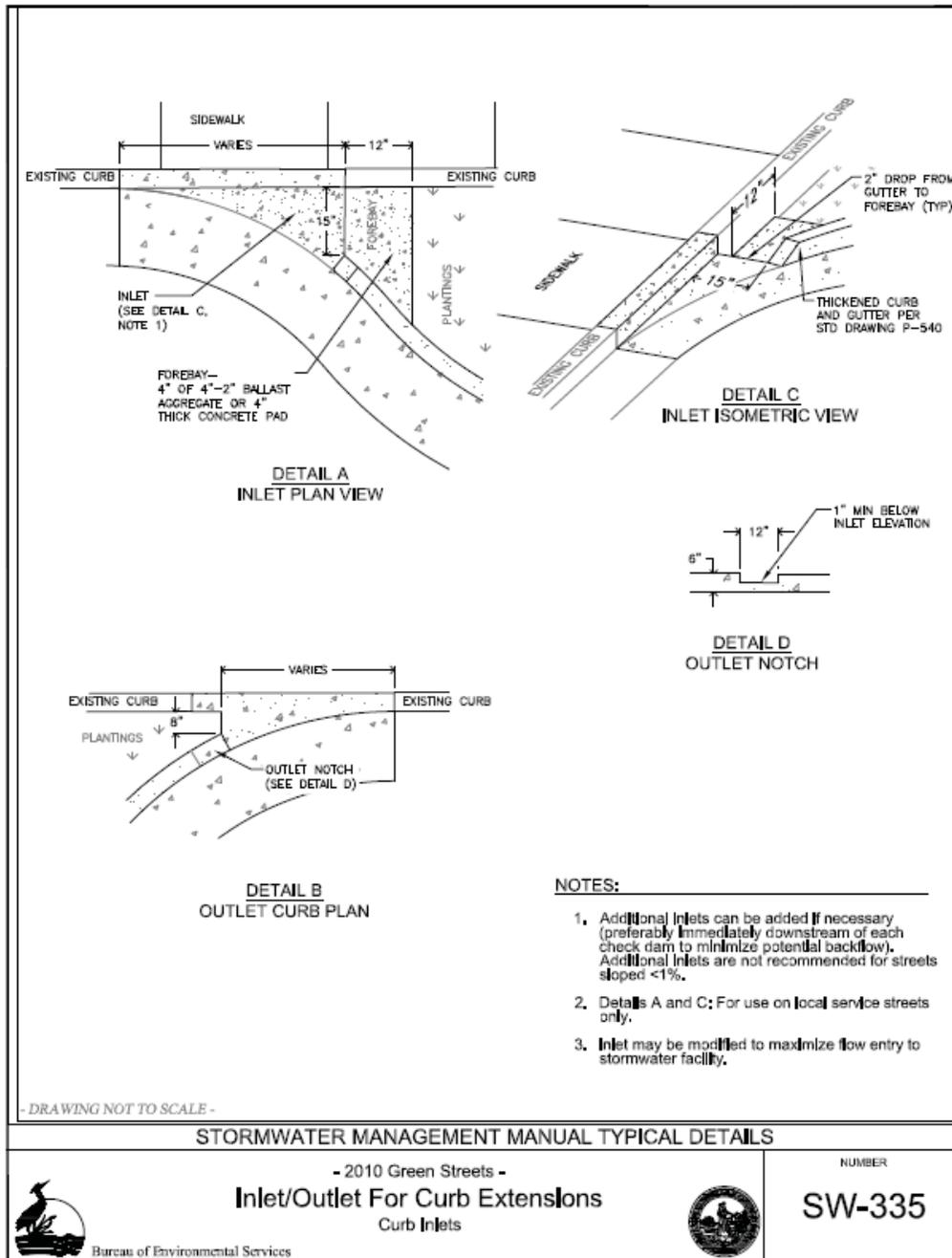


Figure 5 — City of Portland inlet/outlet to bioretention curb extension

Section 5—Hard and Impervious Surfaces

Coverage of land with hard and impervious surfaces can be regulated through limitations on impervious cover by zone or by use, minimizing space taken up by driveways, and encouraging use of permeable materials where reasonable.

Several sub-topics are discussed below. As a general rule, it may be beneficial to develop a common understanding that discussion of the terms pavement, paved, concrete pavement, asphalt pavement, and similar terms are construed to mean the permeable versions of these surfaces where allowed or required by the 2016 KCSWDM, unless explicitly prohibited by Tukwila. Given that none of these terms are currently defined in either Title 18 or the IDCS, this understanding may best be served by inserting a new section in IDCS Chapter 4 – Streets.

Findings

Maximum Impervious Surface Allowances

Tukwila regulates impervious surface coverage for Planned Residential Developments (PRD) (18.46) and for medium and high density residential zones in 18.50. The PRD limitation is 50% coverage on sites with sensitive areas. Coverage of single-family lots is not regulated.

The term Tukwila uses for this standard is “development area coverage.” Currently, “development area” refers exclusively to impervious surfaces and exempts some surfaces such as “sidewalks, paths, and other pedestrian/recreation facilities clearly designed to enhance the pedestrian environment” (18.06.215). The intent of regulating coverage would also be to regulate placement of pervious hard surfaces, such as a permeable pavement driveway, equally with their impervious counterparts. Also, the large list of exemptions could be creatively applied to still achieve almost total coverage of a single-family lot.

The limitation for MDR and HDR is 50%, with an allowed increase up to 75% for townhome development when LID techniques are used. Staff has indicated that these code provisions are not widely used and are not a priority for update¹².

However, staff has expressed concern that some single-family lots are paved over completely when new homes are built in existing neighborhoods, contrary to LID practices¹³. Therefore, regulating development area coverage on single-family lots could support LID and address an existing concern.

¹² Ibid.

¹³ Ibid.

Section 5—Hard and Impervious Surfaces

Continued

Shared Driveways

Tukwila’s 2015 Comprehensive Plan includes an implementation strategy in the Transportation Element to develop methods to incentivize shared driveways. Staff indicated that they will work on developing the response to this policy outside of this process of LID code updates.

Minimum Driveway Width

Establishing a narrower minimum driveway width can support the goal of reducing impervious surfaces in development.

Tukwila standard details in the IDCS include three residential and one commercial driveway options, which show driveway width between 10’ and 20’ for residential and 25’ to 35’ for commercial. Staff indicated that the local interpretation of International Fire Code Appendix D’s requirement for fire apparatus access roads of 0’-150’ in length to be a minimum width of 20’ includes all driveways¹⁴. Roads that require access for aerial apparatus are a minimum of 26’. Staff also indicated that plentiful residential parking on single family residential lots is popular with residents. Thus decreasing minimum driveway width likely would not result in on-the-ground decreases in impervious surfaces due to customer demand.

TMC 18.28.260 General Parking Requirements for TUC limits commercial driveway width to 15’ for one lane and 30’ for two lanes. It also limits maximum driveway width in the Workplace District to 35’. Driveway width is not regulated for other districts.

Permeable Paving for Driveways

Use of permeable paving for driveways is not discussed in Tukwila’s codes and standards. Staff expressed concern about strength when used for fire access. Permeable paving will need to be allowed for driveways for Permit compliance; however it may not be necessary to specifically call it out. Submitted engineered designs will need to demonstrate ability to handle loading requirements.

Two-Track Driveway Design

Two-track driveways, also called ribbon driveways or wheel strip driveways, can reduce impervious cover of driveways by allowing a permeable area between ribbons of concrete. Tukwila’s codes and standards are silent on this option. These driveways will become an option under the 2016 KCSWDM. Staff indicated support for allowing this option for residential applications¹⁵.

¹⁴ Ibid.

¹⁵ Ibid.

Section 5—Hard and Impervious Surfaces

Continued

Recommendations

General

27. Insert a new sub-section 4.0.16 in IDCS Section 4.0 Streets General Standards construing the uses of the words pavement, paved, concrete pavement, and asphalt concrete, and asphalt pavement to include the permeable versions of pavement materials, with appropriate and approved designs, unless specifically prohibited.

Maximum Impervious Surface

28. Add language in 18.50.085 to limit development area coverage on single-family lots to 75%.
29. Amend the definition of developed area in 18.06.215 to include pervious hard surfaces. For single-family residences, the term should not include sidewalks, paths, and other pedestrian/recreation facilities clearly designed to enhance the pedestrian environment.

Two-Track Driveway

30. Add new standard plan in IDCS for residential driveway alternate 4, showing a two-track design.

Section 6—Clearing and Grading and Healthy Soils

Grading codes can be used to protect areas of existing infiltration, encourage conservation of native vegetation and soils, and control construction sequencing to limit disturbance. Importantly, they can assist in ensuring that areas of a site planned for use to manage stormwater with LID BMPs remain free from imported sediment and compaction. Other standards can control compost amendments to soils in landscaped areas and compaction where LID BMPs are planned.

Findings

Tukwila regulates clearing and grading in Title 17 – Subdivisions and Title 16 – Building and Construction through the adoption of International Building Code Appendix J. The Shoreline district also describes standards for land altering activities in 18.44.070.J. Staff indicated support for the language in 18.44¹⁶.

Standards for restoring soil quality and depth after clearing and grading activities are given in IDCS Section 5.6.B, which is equivalent to King County’s provision for retaining and restoring soil moisture capacity in KCC 16.82.G. The Comprehensive Plan encourages minimizing disturbance to vegetation and land in geologically hazardous areas.

Generally, Tukwila’s regulations regarding grading refer to steep topography (17.20.030) and do not address grading standards for all sites, conservation of soils, limitation on extent or timing of grading, or control of erosion and sedimentation. Staff indicated a concern about lack of regulation on location of stockpiles of fill for development¹⁷.

The ability of soil to absorb precipitation can be compromised during the development process. Standards to amend soils with compost and avoid compacting areas designated for LID BMPs will be regulated under clearing and grading and under 2016 KCSWDM.

Recommendations

31. Develop a new grading ordinance replacing IBC Appendix J modeled after King County code 16.82 – Clearing and Grading, focusing on erosion and sediment control standards, seasonal limitations on grading activities, and grading standards, including a provision to protect or restore soil moisture capacity and regulation of location of stockpiles for development. Also incorporate language inspired by TMC 18.44 to limit clearing, grading and filling to the minimum necessary to accomplish the use and minimizing impacts to the natural environment.

¹⁶ LID Team Meeting #2, March 21, 2016.

¹⁷ Ibid.

Section 7—Bulk and Dimensional Considerations

Rigid regulation of setbacks, height limitations, and placement of structures on a site can limit the flexibility needed to minimize site disturbance and locate LID BMPs in the best possible locations.

Findings

Building Setbacks

Tukwila regulates setbacks in Title 18 – Zoning. A representative sample is shown in Table 2 below. We found that Tukwila’s building setbacks are not excessive compared to neighboring cities. We have seen a low density residential front setback in a Washington city as low as 10’. Tukwila could consider reducing the front setback for residential areas to 10’.

Table 3 — Selected Setbacks

	Front	Rear	Side
Low Density Residential	20	10	5
Medium Density Residential	15	10	10
High Density Residential	15	10	10
Office/Mixed Use Office	25	10	10
Regional Commercial	20	10	10
Commercial/Light Industrial	25	5	5
Heavy Industrial	25	5	5

Height Limitations

Tukwila regulates building height in each zoning district. Using a Planned Residential Development (18.46), an applicant can increase building height in order to maintain significant vegetation and enhance views as long as a commensurate decrease in impervious surface is proposed. This provision is supportive of LID; however staff has indicated that the PRD codes are not frequently used¹⁸. Other developments are not afforded the opportunity to reduce lot coverage in exchange for a height bonus. In addition, height bonuses can be used to incentivize structured parking to reduce lot coverage.

These bonuses may be most beneficial for non-residential and mixed used districts. Currently lot coverage is not regulated in these districts, except for TUC, so height incentives would need to be paired with a new limitation on lot coverage.

¹⁸ Ibid.

Section 7—Bulk and Dimensional Considerations

Continued

Clustering

Clustering is a land use technique that provides flexibility for lot size and shape on a given site in exchange for preservation of critical areas and open space without increasing the overall density allowed on the site. Clustering is supported in the Comprehensive Plan for the Shoreline district and is allowed under the PRD in Title 18.

Since clustering is most applicable to new development on large pieces of undeveloped land, which is lacking in Tukwila, we recommend no change to Tukwila's standards in this area.

Recommendations

Height Limitations

32. Develop a 90% lot coverage limitation for Tukwila's non-residential and mixed-use districts, with the exception of TUC.
33. Develop a two-tiered height bonus in the non-residential and mixed-use districts. Allow one story additional for structured parking that contains at least 50% of the required spaces. Allow one story additional for reduction in lot coverage to maintain/restore at least 15% of the site in native vegetation (in addition to any required landscaping and setbacks).

Section 8—Streets and Roads

According to the Guidebook, streets and roads comprise a significant portion of impervious cover in urban areas. There are numerous opportunities to change municipal standards in order to reduce impervious cover and manage stormwater within the ROW.

Findings

Pavement Width

Paved widths are established for various street types in Title 17 – Subdivisions. Widths are also given in IDCS detail RS-01 Typical Roadway Section.

Reducing pavement width could be a consideration for new residential access roads, but is not well-supported by staff and fire safety officials¹⁹. Most new streets in Tukwila are private streets developed as part of short plat land divisions. Private streets are allowed 20' pavement width.

Standards for residential retrofits could be considered. Currently Tukwila is retrofitting neighborhood streets with vertical curb and 5' sidewalks, sometimes as part of the Safe Routes to Schools program. Standards for City-sponsored retrofits will not be considered as part of this code update.

Right-of-Way

ROW width generally fluctuates with street pavement width and is designed to accommodate drainage, sidewalks, planting strips, and utilities.

Wide ROW can encourage excessive pavement width. Since new public streets are rare in Tukwila, ROW width is not an issue we are considering.

Use of curb extensions for bioretention in the ROW is a popular LID technique for managing stormwater on lower-volume streets. Although Tukwila anticipates few new public streets to result from private development activities, this technique could be used for City retrofits.

¹⁹ Ibid.

Section 8—Streets and Roads

Continued

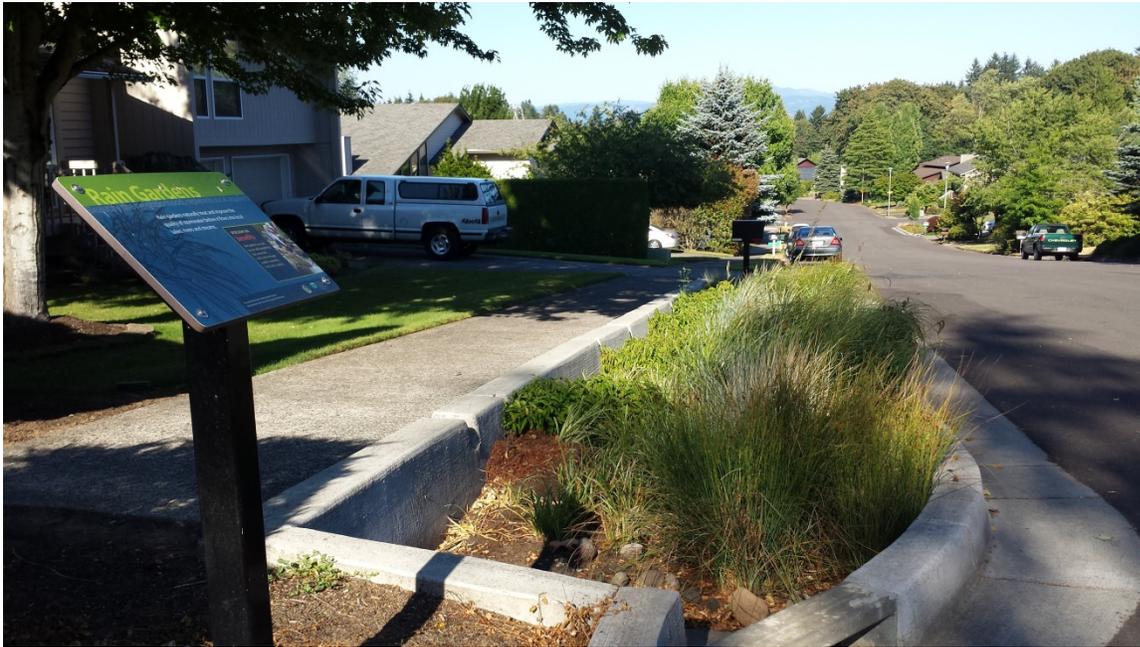


Figure 6 — Curb extension in the parking lane containing bioretention, Clark County, WA (Source: Otak, Inc.)

Use of Permeable Paving for Streets and Roads

The 2016 KCSWDM will, under certain circumstances, require use of permeable pavement or a functional equivalent on roads up to 400 average daily traffic (ADT). Many other limitations will apply.

Tukwila’s standards are silent on the use of permeable pavements on streets and roads. Washington State Department of Transportation (WSDOT) recently added specifications for porous asphalt and pervious concrete to its Local Agency General Special Provisions (GSPs) developed by American Public Works Association (APWA). Tukwila recognizes and uses the APWA/WSDOT Standard Specifications, but not the APWA/WSDOT Local Agency General Special Provisions.

Since few new public roads are constructed in Tukwila, and with addition of policy statement in IDCS 4.0.16 (see Recommendation 27), remaining otherwise silent on this issue should be acceptable, as long as use of permeable pavements on roads less than 400 ADT is not prohibited.

Section 8—Streets and Roads

Continued

Placement of Utilities Under Paved Section

Placing underground utilities under the paved section of the roadway or sidewalks helps leave room in the ROW for managing stormwater using bioretention. Several sections of the IDCS discuss utility placement underground, but none emphasize placement under the paved area.

Buried utilities can also pose a conflict with permeable pavements. Tukwila’s standards are silent on resolving potential conflicts.

Required Turnarounds and Radii

The common cul-de-sac turnaround required for dead-end streets covers a great deal of land compared to other options. Tukwila’s code allows both cul-de-sacs and alternatives to cul-de-sacs; however staff indicated that in practice most turnarounds installed in the City are hammerheads²⁰. These are far more efficient in impervious cover than cul-de-sacs. The Fire Marshal allows reduction of one leg of the hammerhead from 45’ to 30’ with an exception²¹. Advertising the ability to reduce the hammerhead dimension would be supportive of reducing impervious cover.

Finally, City policy expressed in Comprehensive Plan Policy 13.2.2 in the Transportation Element prioritizes residential access through-streets, minimizing need for turnarounds.

Sidewalk Width

Sidewalk widths are regulated in Title 17 and described in IDCS detail RS-11, Sidewalk Widths and RS-08A,B,C – Residential Driveways. Widths shown in details are:

Table 4 — Sidewalk Widths

Minor arterial	5’
Principal arterial	6’
TUC	6’ generally; 8’ at bus stops and pullouts
Residential	5’ – 6’ (typical, not required)

Staff expressed reluctance to change sidewalk widths as compliance with Americans with Disability Act circulation requirements is paramount²².

²⁰ Ibid.

²¹ Ibid.

²² Ibid.

Section 8—Streets and Roads

Continued

Sidewalk Slope

Requirements for sidewalks to slope toward the street and gutter can create a barrier for use of LID techniques to manage runoff from sidewalks in the ROW. IDCS detail RS-011 shows maximum 2% sidewalk slope sloping toward the gutter. Allowing sidewalks to slope toward bioretention, if provided, supports the LID goal of managing stormwater close to its source.

Permeable Pavement for Sidewalks

The 2016 KCSWDM will, under certain circumstances, require use of permeable pavement or a functional equivalent on sidewalks and other pedestrian pathways. Many other limitations will apply.

Tukwila’s standards are silent on the use of permeable pavements on sidewalks. With addition of policy statement in IDCS 4.0.16 (see Recommendation 27), remaining otherwise silent on this issue should be acceptable, as long as use of permeable pavements is not prohibited where feasible.

Staff expressed concern that pervious concrete be prohibited for use in luminaire foundations²³.

Recommendations

Permeable Pavement for Streets and Roads

See Recommendation 27.

Placement of Utilities Under Paved Section

34. Add preference for buried utilities to be placed under the paved section of roadway in IDCS 4.2.4 Underground Utilities and 7.2 Water Mains.
35. In IDCS 4.2.4 insert a clause requiring installation of a new permeable pavement road surface to protect existing underground utilities and, conversely, a clause requiring new underground utility installations to take steps to protect the utility trench from infiltration when located under an existing permeable pavement.

Required Turnarounds and Radii

36. Update application materials to note that an exception is available with approval from the Fire Marshal to shorten one leg of a hammerhead.

²³ Villanueva, G. Personal Communication. April 4, 2016.

Section 8—Streets and Roads

Continued

Sidewalk Slope

37. Update detail RS-011 with a note that sidewalk should slope to gutter or to adjacent LID BMP per design. Remove arrow from slope indicator.

Permeable Pavement for Sidewalks

See Recommendation 27.

38. Add a note to IDCS detail RS-25 for luminaire foundation that prohibits use of pervious concrete for the foundation.

Section 9—Site Planning & Assessment Findings

The LID approach to site design includes a careful assessment of existing conditions, allowing topography, hydrology, and soils to influence placement of buildings, parking, and stormwater facilities.

Findings

Tukwila does not anticipate new development on any large tracts of land since large tracts of unconstrained and undeveloped land are lacking within the City's boundaries²⁴. Most residential development is in the form of the four-lot short plat on 6,500 sf lots²⁵, providing few alternatives for placing structures and parking.

For streets, IDCS 4.2.2 – Alignment and Connections for public streets encourages alignments to relate to natural topography and discourages excessive grading and excessive runoff. This is supportive of LID site planning.

We found that Tukwila's policy direction is supportive of LID site planning, open space retention, and vegetation preservation. The Comprehensive Plan includes several policies supporting LID site planning for development, redevelopment, and transportation projects as shown in Table 1 in Section 1, above.

Recommendations

None.

²⁴ LID Team Meeting #2, March 21, 2016.

²⁵ Bradshaw, M. Personal Communication. April 6, 2016.

Section 10—Subdivision and Planned Unit Development

Land divisions codes present opportunities to require open space and provide flexibility in curb and gutter style development. Undeveloped vegetated open space helps reduce effective impervious cover and manage stormwater naturally.

Findings

Tukwila regulates subdivisions, short subdivisions, and binding site plans in Title 17 – Subdivisions and Plats and provides development standards in Title 18 – Zoning. Generally there are no requirements to preserve native soils and vegetation in open space tracts, except in PRD where sensitive areas are on the site (18.46). Staff indicated that the PRD provisions are not used because short plats are the vast majority of residential development projects in the City²⁶.

In the MDR and HDR districts, minimum recreation space requirements are given in Title 18. These requirements appear intended primarily to provide play areas for children; they allow, but do not emphasize, natural areas and passive recreation to meet the requirement.

For standard plats and short plats in the MDR and HDR districts, limitations on development area coverage serve to protect open space to some degree. In LDR districts, we have proposed a recommendation to limit development area coverage, see Recommendation 28.

Recommendations

None.

²⁶ LID Team Meeting, February 23, 2016.

Section II—Stormwater Management and Maintenance

Requirements for maintenance specifications for LID facilities are necessary to maintain facility function over time.

Findings

Maintenance criteria, instructions, and access and easement requirements are given in the 2016 KCSWDM for LID BMPs. With adoption of the updated manual, Tukwila will meet these requirements. Tukwila also regulates stormwater drainage system maintenance and inspection in Title 14 – Waters and Sewers.

Maintenance Provisions

Tukwila adopts the 2009 KCSWDM in Title 14 – Waters and Sewers and plans to adopt the 2016 KCSWDM by December 31, 2016²⁷. The 2016 manual contains maintenance requirements for LID BMPs.

The City also adopts maintenance timelines in 14.30.080 – Stormwater Drainage System Maintenance and Inspection Requirements in accordance with NPDES 2007-2012 Permit requirements S5.C.4.c.iii and vi. If Tukwila updates these provisions to incorporate inspection requirements and timelines for LID BMPs by December 31, 2016 to comply with the 2013-2018 permit in, then maintenance provisions should be sufficient.

TMC 14.30.080.A(6) establishes maintenance responsibility for private drainage facilities.

Inspection Access

Access for inspection of facilities on private property is necessary to ensure adequate maintenance of LID BMPs.

Tukwila provides for inspection access in several sections of Title 14. TMC 14.30.080.A(4) establishes unlimited access to existing facilities when the Director has reason to believe that violations of 14.30 exist. TMC 14.30.080.B(2) requires a monitoring and maintenance schedule for new private facilities that grants unlimited access by the Public Works Department to the drainage system. These access provisions appear adequate to allow needed inspections of LID facilities.

Enforcement

Tukwila describes enforcement procedures for violations of stormwater drainage system maintenance and inspection requirements in TMC 14.30.080.A(5) and (7). Penalties are established in TMC 14.30.150.

²⁷ Ibid.

Section II—Stormwater Management and Maintenance

Continued

Recommendations

Maintenance Provisions

39. Adopt the 2016 KCSWDM by December 31, 2016. *This recommendation is provided to the City for use in its process to adopt the 2016 KCSWDM and comply with the Permit.*

40. Update TMC 14.30.080.A in accordance with NPDES permit requirement S5.C.4.c.iii and vi by December 31, 2016. *This recommendation is provided to the City for use in its process to adopt the 2016 KCSWDM and comply with the Permit.*

Section 12—Critical Areas & Shoreline Management

When compatible with a critical area, LID BMPs may be allowed in critical area buffers where traditional stormwater BMPs such as ponds and filters are already allowed.

Findings

Tukwila regulates critical areas as sensitive areas in TMC 18.45. Subject to administrative review, new surface water discharges to sensitive areas or their buffers from various surface water management structures are allowed if water quality standards are met and flow does not adversely affect water level fluctuations, habitat or flow rate. Bioswales and dispersion outfalls are specifically allowed in wetland and watercourse buffers. Dispersion is an LID BMP.

Given the general nature of the term “surface water management structure” these provisions appears adequate to allowing LID BMPs in critical area buffers where appropriate and when supported by a sensitive areas study prepared by a qualified professional.

Tukwila regulates state-classified Shorelines in TMC 18.44. Development standards in the Shoreline Overlay District specifically call for the use of LID techniques for surface water control unless infeasible. Staff indicated that lack of guidance on the definition of “infeasible” have prevented adequate enforcement of this provision²⁸.

Adoption of the 2016 KCSWDM will provide a definition and use of the term “infeasibility” and will also prioritize use of LID techniques for permanent stormwater management on all development sites. Permanent stormwater management will be required for most construction sites under the new manual. Thus, use of LID in the Shoreline district should increase when the City adopts the 2016 KCSWDM with no further action needed by the City.

Recommendations

None.

²⁸ LID Shoreline and Tree Code Review Meeting, March 15, 2016.

Section 13—Summary

The purpose of this report is to provide City decision-makers with concepts for code updates and to obtain approval to begin drafting updates pursuant to the recommended concepts.

We propose to update the following sections or chapters of Tukwila’s standards using concepts described above:

- TMC 14.30 Surface Water Management
- TMC 17.20 Design and Improvement Standards for the Subdivision of Land
- TMC 18.06 Definitions
- TMC 18.12 Medium Density Residential
- TMC 18.20 Residential Commercial
- TMC 18.28 Tukwila Urban Center
- TMC 18.50 Supplemental Development Standards
- TMC 18.52 Landscape, Recreation, Recycling/Solid Waste Space Requirements
- TMC 18.54 Tree Code
- TMC 18.56 Off-Street Parking and Loading
- Infrastructure Design and Construction Standards

We also provided recommendations for the City’s consideration in its update of: TMC 18.54 Tree Code and adoption of the 2016 KCSWDM.

Our recommendations focus primarily on supporting tree preservation and canopy; improving standards for grading; ensuring that standards for vegetation retention and restoration focus on native species; and encouraging integration of bioretention in areas already set aside for landscaping, screening, and road ROW.

We summarize our justification for each recommendation using six categories:

1. The recommendation removes a conflict with or barrier to implementation of required LID BMPs in the 2016 KCSWDM.
2. The recommendation makes designing and implementing LID BMPs easier, by providing a standard details or guidance, for example.
3. The recommendation makes a sweeping change emphasizing LID principles and techniques in a variety of common development circumstances in Tukwila.
4. The recommendation makes implementation of LID principles and techniques easier in a common development circumstance in Tukwila.
5. The recommendation supports a specific Comprehensive Plan policy.
6. The recommendation is requested by staff.

Section 13—Summary

Continued

Table 5 — Recommendation Categories

No.	Recommendation	Removes Barrier/Conflict	Supports LID BMP Use	Sweeping Change	Common Circumstance	Supports Comp Plan	Staff Request
1	Add a new section in 18.56 Off-Street Parking and Loading to require any parking spaces provided above the minimum in a parking lot to use pervious materials, if feasible in accordance with the stormwater manual.				x		
2	Add a preference within 18.56 Off-Street Parking and Loading for use of permeable pavements for off-street parking, if feasible in accordance with the stormwater manual.				x		
3	Delete the largest set of parking stall dimensions for each angle from Figure 18-6.				x		
4	Add structured parking to the list of items in 18.28.070 Tukwila Urban Center allowed for height bonus to 70 feet or 115 feet.				x		
5	Update general standards in 17.20.030 to prioritize retention of native vegetation.			x		x	x
6	Define native vegetation in Title 17 using a definition similar to the definition of native vegetated surface in the 2016 KCSWDM.	x		x		x	x
7	Remove the exemption in TMC 18.54 for clearing vegetation on sites that are not located in a critical area or buffer. <i>This recommendation is provided to the City for use in its ongoing update of TMC 18.54.</i>			x	x	x	x
8	Prioritize tree retention following guidelines in the <i>LID Technical Guidance Manual</i> , section 4.1, page 76. <i>This recommendation is provided to the City for use in its ongoing update of TMC 18.54.</i>				x		

Section 13—Summary

Continued

No.	Recommendation	Removes Barrier/Conflict	Supports LID BMP Use	Sweeping Change	Common Circumstance	Supports Comp Plan	Staff Request
9	Specify tree protection measures during construction following guidelines in the <i>LID Technical Guidance Manual</i> , section 4.1.1, pages 77-79. <i>This recommendation is provided to the City for use in its ongoing update of TMC 18.54.</i>				x		
10	Develop a tree list for 18.54 that focuses on native species, and considers suitability for use in the right of way.			x	x	x	
11	Update footnote 1 in 18.52 to explicitly allow bioretention to serve as up to 20% of the front yard landscaping of MDR and HDR, which already allow pedestrian and transit facilities under a Type 2 decision.		x		x		
12	Update footnote 3 in 18.52 to explicitly allow bioretention to serve as part of required landscaping in RCC, TVS, and TSO districts.		x		x		
13	Update 18.52.030.A to explicitly allow bioretention to serve as Types I landscape perimeters provided that equal mitigation of visual impacts is achieved.		x		x		
14	Update 18.52.030.B to explicitly allow bioretention to serve as Types II landscape perimeters provided that equal mitigation of visual impacts is achieved.		x		x		
15	Develop and require use of a plant list suitable for bioretention that will also contain plants suitable for screening and aesthetic purposes, such as ornamentals.		x		x		x

Section 13—Summary

Continued

No.	Recommendation	Removes Barrier/Conflict	Supports LID BMP Use	Sweeping Change	Common Circumstance	Supports Comp Plan	Staff Request
16	Add statements allowing flexibility in plant selection and placement in Types I and II landscape perimeter when incorporating bioretention as long as public safety is not compromised and the intent of the screening is met.	x	x		x		
17	When bioretention is proposed to serve as required screening, plant selection and placement must be reviewed both by Planning and by Public Works. Require submittal of preliminary plant selection and placement in the landscaping plan during land use review; engineering review should determine that plant selection and placement is appropriate for facility function.	x					x
18	Update 18.12 MDR and 18.20 residential commercial to allow bioretention in the street frontage to meet landscaping requirements.		x		x		
19	Update soil preparation requirements in 18.28.240 TUC to create a category for bioretention soil preparation. Include avoidance of compaction and refer to the 2016 KCSWDM for specific soil amendments.				x		
20	For IDCS, develop a planting standard detail for street trees, including minimum soil volume and an option for tree pits in non-residential districts.		x	x	x	x	x
21	Add flexibility in 18.52 to allow bioretention to serve or meet setback and perimeter landscaping requirements except where a heavy screen is required.		x	x	x		
22	Add flexibility in 18.52 to integrate bioretention into interior parking lot landscaping, similar to existing language in 18.28.		x	x	x		

Section 13—Summary

Continued

No.	Recommendation	Removes Barrier/Conflict	Supports LID BMP Use	Sweeping Change	Common Circumstance	Supports Comp Plan	Staff Request
23	Insert a minimum soil volume for parking lot trees into 18.52.				x	x	x
24	To support use of bioretention in landscaped areas where trees are required, develop a resource list of trees suitable for use in bioretention. Further indicate categories for street trees and parking lot trees.		x	x	x		x
25	For IDCS, Develop standard details for various entrances to bioretention similar to Figures 4 and 5, below.	x	x		x		
26	Add a statement in IDCS Chapter 4 encouraging use of the smallest curb radius necessary to achieve the goals at each intersection.				x		
27	Insert a new sub-section 4.0.16 in IDCS Section 4.0 Streets General Standards construing the uses of the words pavement, paved, concrete pavement, and asphalt concrete, and asphalt pavement to include the permeable versions of pavement materials, with appropriate and approved designs, unless specifically prohibited.	x		x	x		
28	Add language in 18.50.085 to limit development area coverage on single-family lots to 75%.			x			x
29	Amend the definition of developed area in 18.06.215 to include pervious hard surfaces. For single-family residences, the term should not include sidewalks, paths, and other pedestrian/recreation facilities clearly designed to enhance the pedestrian environment.			x			
30	Add new standard plan in IDCS for residential driveway alternate 4, showing a two-track design.		x		x		

Section 13—Summary

Continued

No.	Recommendation	Removes Barrier/Conflict	Supports LID BMP Use	Sweeping Change	Common Circumstance	Supports Comp Plan	Staff Request
31	Develop a new grading ordinance replacing IBC Appendix J modeled after King County code 16.82 – Clearing and Grading, focusing on erosion and sediment control standards, seasonal limitations on grading activities, and grading standards, including a provision to protect or restore soil moisture capacity and regulation of location of stockpiles for development. Also incorporate language inspired by 18.44 to limit clearing, grading and filling to the minimum necessary to accomplish the use and minimizing impacts to the natural environment.			x	x		
32	Develop a 90% lot coverage limitation for Tukwila’s non-residential and mixed-use districts, with the exception of TUC.			x			
33	Develop a two-tiered height bonus in the non-residential and mixed-use districts. Allow 1 story additional for structured parking that contains at least 50% of the required spaces. Allow 1 story additional for reduction in lot coverage to maintain/restore at least 15% of the site in native vegetation (in addition to any required landscaping and setbacks).			x			
34	Add preference for buried utilities to be placed under the paved section of roadway in IDCS 4.2.4 Underground Utilities and 7.2 Water Mains.		x				

Section 13—Summary

Continued

No.	Recommendation	Removes Barrier/Conflict	Supports LID BMP Use	Sweeping Change	Common Circumstance	Supports Comp Plan	Staff Request
35	In IDCS 4.2.4 insert a clause requiring installation of a new permeable pavement road surface to protect existing underground utilities and, conversely, a clause requiring new underground utility installations to take steps to protect the utility trench from infiltration when located under an existing permeable pavement.	x	x	x			
36	Update application materials to note that an exception is available with approval from the Fire Marshal to shorten one leg of a hammerhead.				x		
37	Update detail RS-011 with a note that sidewalk should slope to gutter or to adjacent LID BMP per design. Remove arrow from slope indicator.	x	x				
38	Add a note to IDCS detail RS-25 for luminaire foundation that prohibits use of pervious concrete for the foundation.				x		x
39	Adopt the 2016 KCSWDM by December 31, 2016. <i>This recommendation is provided to the City for use in its process to adopt the 2016 KCSWDM and comply with the Permit.</i>				x		
40	Update TMC 14.30.080.A in accordance with NPDES permit requirement S5.C.4.c.iii and vi by December 31, 2016. <i>This recommendation is provided to the City for use in its process to adopt the 2016 KCSWDM and comply with the Permit.</i>				x		

Section 14—References

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