

# APPENDIX A

## BEST PRACTICES COMPILATION - CITY RESEARCH



## Healthy Trees and Safe Sidewalks Management Plan Best Practices Review

### Summary of City Research – Sidewalk and Tree Management

January 2014

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#### **Sidewalk and Tree Management**

The SvR Team performed research on a variety of cities throughout the country to identify best practices on how they address sidewalk and street tree management.

A complete list of the cities researched is attached to this document. The following list of actions that Seattle may want to complete to assist with the management of sidewalks and street trees:

- Clarify sidewalk maintenance (external and internal) program and policy based on Pedestrian Master Plan, Street Tree Ordinance, Climate Action Plan, Urban Forest Stewardship Plan and ADA Transition Plan
- Identify the method for valuing street trees in Seattle
- Update Street Tree Inventory
- Update Street Tree Planting List
- Identify funding needed to adequately maintain existing street trees, new street trees, sidewalks and necessary staff and crews to manage the maintenance
- Enforce the removal, replacement and/or relocation of recently planted street trees that do not comply with the Street Tree Ordinance including approved street tree list, Seattle Standard Plans and Specifications, or the design requirements in the SDOT Right-of-Way Improvement Manual.

#### **Sidewalk Maintenance Policy and Programs**

Most of the cities researched identified that healthy street trees would not be removed solely for the purpose of repairing a sidewalk. Many cities had a street tree policy similar to Seattle. Some went further and had a street tree plan that identified how new and existing street trees would be managed to reduce the potential for future damage of city infrastructure including sidewalks and utilities.

With the exception of Boston, MA, most cities require the property owners to maintain adjacent sidewalks. The City of Boston owns approximately 800 miles of paved streets and 1200 miles of sidewalks. The Construction Management Division of Public Works maintains the safety and security of these public right-of-ways. The three major functions of the Construction Management Division are roadway repair and restoration, sidewalk and pedestrian ramp repair, and utility compliance and coordination.

**San Francisco** requires that property owners maintain adjacent sidewalks, unless the sidewalk has been damaged by tree roots per [Guidelines for Inspection - DPW Order 178,884](http://www.sfdpw.org/Modules/ShowDocument.aspx?documentid=741). <http://www.sfdpw.org/Modules/ShowDocument.aspx?documentid=741>. For new street trees, the Better Streets Plan identifies street tree specification and maintenance requirements for adjacent property owners. <http://www.sfbetterstreets.org/find-project-types/greening-and-stormwater-management/greening-overview/street-trees/>. The Better Streets Plan identifies Sidewalk design requirements <http://www.sfbetterstreets.org/design-guidelines/constrained-sidewalks/> and maintenance requirements <http://www.sfbetterstreets.org/learn-the-process/maintenance/>.

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**Chicago** Department of Transportation builds and maintains hundreds of miles of sidewalks each year, working with local aldermen to determine locations for repair. CDOT also operates the [Shared Cost Sidewalk Program](#), in which property owners and the City share the cost of a new sidewalk. Property owners pay a fixed per-square-foot cost that is well below what a private contractor would charge. The Bureau of Forestry trims thousands of trees a year, plants new trees along the public right-of-way, addresses insect and disease problems, and otherwise promotes tree health throughout the City of Chicago. <http://www.cityofchicago.org/city/en/depts/streets/provdrs/forestry.html>. Chicago developed a brochure that identifies the reasons for sidewalk disruptions caused by tree roots.

[http://www.cityofchicago.org/content/dam/city/depts/streets/supp\\_info/TreeRootsSewersSidewalks.pdf](http://www.cityofchicago.org/content/dam/city/depts/streets/supp_info/TreeRootsSewersSidewalks.pdf)

**Minneapolis** has an Urban Forestry Policy that outlines the following actions around trees in sidewalk zones:

3.1 Avoid conflicts between trees and public sidewalks or rights-of-way

3.1.1. Public Works specifications will include removable sections of sidewalk to accommodate tree roots without having to replace an entire sidewalk panel.

3.1.2. According to Public Works specifications, no living trees shall be removed without written permission of the Minneapolis Park and Recreation Board (612) 370-4900. Root removal for the purpose of installing sidewalks at the proper grade is subject to inspection and approval by the Park Board forester. The contractor may remove all roots within the area defined as six and one half (6-1/2) inches below the top of the new finished sidewalk grade, by severing them off cleanly with a sharp axe, or by grinding them off using a root grinding machine, instead of breaking them off with a backhoe or similar equipment. .

[http://www.minneapolismn.gov/www/groups/public/@cped/documents/webcontent/convirt\\_282934.pdf](http://www.minneapolismn.gov/www/groups/public/@cped/documents/webcontent/convirt_282934.pdf)

The Forestry Division does not remove trees for the purpose of sidewalk repair. In situations where tree roots are lifting a sidewalk, it is the property owner's responsibility to repair the sidewalk. Enforcement of this procedure is the responsibility of the Department of Public Works Sidewalk Division. The procedure for [protection of the critical root zone](#) by Forestry governs the repair of sidewalks around trees.

**New York City** has an option for property owners to hire a certified contractor to construct or maintain the sidewalk. Under Section 19-152 of New York's Administrative Code, property owners are responsible for installing, repairing and maintaining sidewalks adjoining their properties. DOT staff inspects sidewalks and notifies the property owner of needed repairs. In the event timely repairs are not made by the property owner, the City may hire private construction firms to make the repairs. When this happens, the City bills the property owner for the costs of the repairs. Property owners must also keep their sidewalks clean and are responsible for snow removal. [Download the instructions and guidelines for sidewalk design](#). New York City has developed a methodology that is often

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used in the event of tree removal proposals or damage remediation incidents:

<http://www.nycgovparks.org/pagefiles/52/NYC-Tree-Valuation-2010.pdf>

**Portland, OR** has published a document detailing the Sidewalk Maintenance Repair Program identifying what is the property owner's responsibility.

Sidewalk Maintenance Repair Program

<http://www.portlandonline.com/auditor/index.cfm?c=27478&a=472303>

**Portland, OR** has recently published a sidewalk repair manual that identifies sidewalk repair methods and materials needed to maintain the adjacent sidewalk.

Sidewalk Repair Manual

<http://www.portlandoregon.gov/transportation/article/443054>

**Spokane, WA** has prepared Guidelines for Infilling Street Trees. This document identifies allowable sidewalk adjustments that can be made to accommodate trees.

[http://spokaneurbanforestry.org/uploads/forestry\\_page\\_content\\_body/Street%20Tree%20Infill\\_11\\_1\\_10\\_FINAL.pdf](http://spokaneurbanforestry.org/uploads/forestry_page_content_body/Street%20Tree%20Infill_11_1_10_FINAL.pdf)

### Financing

As part of the Urban Forest Plan, **San Francisco** identified key findings and recommendations for Financing of San Francisco's Urban Forest. [http://www.sf-planning.org/ftp/files/plans-and-programs/planning-for-the-city/urban-forest-plan/UFP\\_Financing\\_Study\\_Exec\\_Sum\\_131216.pdf](http://www.sf-planning.org/ftp/files/plans-and-programs/planning-for-the-city/urban-forest-plan/UFP_Financing_Study_Exec_Sum_131216.pdf) A key recommendation of the study found:

A comprehensive municipal program would provide net benefits to San Francisco residents. Property owners would save \$10-\$65 per tree annually compared to current costs (estimated at \$160-\$175 per year) incurred for maintenance, sidewalk repair, and claims associated with sidewalk falls. The program has the added benefit of growing the urban forest by 50 percent over 20 years, while the status quo is expected to result in a continuing decline of the street tree population.

**Atlanta, GA** currently does not have a sidewalk or street tree program. Georgia Institute of Technology reviewed sidewalk programs and policies of Boston, New York, Portland, San Diego and made recommendations for next steps in Atlanta in *The Cost of Owning and Operating Sidewalks: A Strategy for the City of Atlanta* document, see attached.

This following table summarizes some demographics about the cities reviewed.

Statistics	Cities				
	Atlanta	New York City	Portland	San Diego	Boston
Population (Persons)	420,000	8,176,000	584,000	1,307,000	618,000
Land Area (Square Miles)	133	302	133	325	48
Density (Persons per Square Mile)	3,145	27,012	4,375	4,020	12,792
Walk to Work	4.4%	10.2%	5.4%	3.1%	14.9%
Transit to Work	12.7%	55.2%	12.0%	4.1%	32.9%
Population Under 18	19.4%	21.6%	19.1%	21.4%	16.8%
Population Over 65	9.8%	12.1%	10.4%	10.7%	10.1%

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The following references were used for the city best practices research.

### Chicago

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"Care of the Chicago Public Way." City Of Chicago. City of Chicago Bureau of Forestry, n.d. Web. Jan. 2014.

"Shared Cost Sidewalk Program." City of Chicago. City of Chicago Bureau of Forestry, n.d. Web. Jan. 2014.

"Vaulted Sidewalks in Chicago - SkyscraperPage Forum." SkyscraperPage Forum RSS. N.p., n.d. Web. Jan. 2014.

### Washington DC

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### New York

"Frequently Asked Forestry Questions." NYC Parks. N.p., n.d. Web. Jan. 2014.

### Kansas City

Horsley, Lynn. "Kansas City Searches for How to Pay for Its Crumbling Sidewalks." The Kansas City Star, 27 June 2012. Web. Jan. 2014.

"Sidewalk, Curb and Driveway Apron Repair Programs." City of Kansas City. N.p., n.d. Web. Jan. 2014.

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### Providence

"Links." Providence Neighborhood Planting Program. N.p., n.d. Web. Jan. 2014.

"Street Tree Planting." The City of Providence, Rhode Island. N.p., n.d. Web. Jan. 2014.

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#### **Anaheim, CA**

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#### **City Of Redlands**

"Sidewalks." City of Redlands. N.p., n.d. Web. Jan. 2014.

#### **Culver City**

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#### **Santa Barbara**

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#### **San Francisco**

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"Transit Stops." SF Better Streets. N.p., n.d. Web. Jan. 2014.

"Tree Maintenance Transfer Plan Factsheet." City and County of San Francisco. San Francisco Department of Public Works, n.d. Web. Jan. 2014.

Sanguinetti, Jerry. "Sidewalk Inspection & Repair Program." City and County of San Francisco. San Francisco Department of Public Works, 25 Apr. 2012. Web. Jan. 2014.

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Tulsa Sidewalk Stories. N.p., n.d. Web. Jan. 2014.

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"Safe Sidewalks Require Community Stewardship." City of Oregon City. N.p., 28 Oct. 2013. Web. Jan. 2014

### **Portland**

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"Sidewalk Repair Manual." City of Portland Bureau of Transportation, Apr. 2013. Web. Jan. 2014.

"City of Portland Approved Street Tree Planting List." Portland Parks & Recreation, Dec. 2013. Web. Jan. 2014.



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"Tree Removal Permits." City of Sunnyvale, CA. N.p., Apr. 2010. Web. Jan. 2014.

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#### **Minneapolis**

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#### **Atlanta**

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#### **Cincinnati**

"Sidewalk Safety Program - Transportation & Engineering." City of Cincinnati. N.p., n.d. Web. Jan. 2014.

# APPENDIX B

## BEST PRACTICES RESEARCH SUMMARY FOR IDT MEETING - TECHNICAL RESEARCH



Best Practice			
Topic	Research Statement	Current Seattle Practices / Regulations	Recommendation / Action
National and International. City Research on Tree/Sidewalk Programs and Policies			
	Jurisdictional program and policy research included the following locations: Seattle, Los Angeles, Boston, NYC, Southeastern USA, Montreal, London, Stockholm and Spokane. See individual research summaries for findings.		
Trees			
Type, Diversity, Size, Height, Species, Disease Proclivity	A reasonable strategy for most urban plantings is to limit any one species to between 5% and 10% of a total urban population. Consequently, if a disease or insect infestation should occur, 90-95% of the tree population would remain unaffected and intact. Unfortunately, in most urban areas perhaps only five or fewer species make up the great majority of trees planted. (Bassuk, Curtis, Marranca, et al)	Seattle's urban forest lacks age and species diversity. At this time, only 31% of the forest is made of evergreen trees, while 69% is made up of deciduous trees. (2013 Urban Forest Stewardship Plan)	Incorporate the following categories of information into the current street tree list: <ul style="list-style-type: none"><li>• Soil volume needed at maturity</li><li>• Rooting characteristics (aggressive, surface rooted, etc.)</li><li>• Trunk characteristics (especially base conditions)</li><li>• Availability</li></ul>
Clearance (Horizontal/ Vertical)	Trees should be maintained to provide both horizontal and vertical clearance for pedestrian and bicycle access as well as truck/freight access along the roadway.	<ul style="list-style-type: none"><li>• Vertical Clearance from sidewalk surfaces to any horizontal projection over named surface shall have a minimum clearance of 8 feet.</li><li>• Vertical Clearance from bicycle path surfaces to any horizontal projection over named surface shall have a minimum clearance of 10 feet.</li><li>• Vertical clearance from street to a horizontal projection is 14 feet.</li></ul>	Enforce the clearance requirements.  Identify funding opportunities to allocated enough staff and resources to manage the street trees.
Pruning	Proper and timely pruning is essential for successful street trees. Young trees are commonly ignored when they are small. This is actually the time when simple pruning can be most effective in keeping future management costs down.  Once trees are established pruning is mainly needed to maintain clearance heights, remove dead or damaged parts.  It is not uncommon to see tree pruning activity that is counterproductive.	The City of Seattle requires a street use permit for street tree pruning. The permit makes no reference to current Industry Standards for Tree Pruning – ANSI A-300, although the International Society of Arboriculture and Plant Amnesty are mentioned and links provided.	Establish Best Practices guidance that promotes: <ul style="list-style-type: none"><li>• Root pruning of new trees at planting as necessary</li><li>• Structural pruning of young trees</li><li>• Retention of interior live parts during maintenance pruning</li></ul>
Maintenance	Maintenance of street trees is best done on a regular schedule. With trees managed by the City this is feasible. It is less common with ROW trees that are the responsibility of the property owner.  Drive by inspections can alert the street tree manager to issues and help with planning necessary maintenance on an appropriate cycle.	Currently the City SDOT references the ANSI A-300 and ISA best Management Practices as the standard to which they maintain trees.  The SDOT website has a section Seasonal Tree Care with tips about tree care season by season.	Develop strategy (outreach, enforcement, etc) to ensure maintenance of ROW trees that are not maintained by the City.  Establish standards and best practices to be followed by tree care companies that have the required Street Use Permit for maintenance of ROW trees.
Street Edge / Hardscape			
Accessibility, Maintenance, Temporary Maintenance	Two key documents guide accessible design the Proposed Guidelines for Pedestrian Facilities in the Public Right-of-Way (PROWAG) and ADA Accessibility Guidelines (ADAAG) . Designing and maintaining pedestrian facilities within the City of Seattle rights-of-way can be complicated especially when retrofitting and maintaining existing conditions to meet changing requirements.	The Seattle Right-of-Way Improvement Manual identify minimum requirements for accessibility of sidewalks.	TBD
Paver Material Installation Depth	Pavers provide a more flexible surface than does asphalt or concrete. That does not mean that there will net be maintenance required as roots grow under the paving just that it is much easier to repair. With proper installation of compacted base and subgrade, combined with the right amount of sand leveling course, a long lasting paving profile can had.	The City of Seattle currently lists pavers as an alternative form of walkway.  <a href="http://www.seattle.gov/util/groups/public/@spu/@engineering/documents/webcontent/01_011346.pdf">http://www.seattle.gov/util/groups/public/@spu/@engineering/documents/webcontent/01_011346.pdf</a> Standard Plan # 425	Ensure that all paver installation adhere to the ICPI's recommendations.  Provide more information in the standard detail should be provided to reference correct paver installation within tree root zones.

Best Practice			
Topic	Research Statement	Current Seattle Practices / Regulations	Recommendation / Action
Rubber Sidewalks	Rubber sidewalks are being installed in various locations throughout North America as well as Australia. They have been installed in several areas in Seattle and the surrounding communities to varying degrees of success. There are several modular versions as well as a poured in place version similar to a running track installation.	The City of Seattle currently has no regulations or guidelines regarding rubber sidewalks.	Establish guidance or regulations regarding rubber sidewalks.  Create a list of approved types/manufacturers and situations in which they may be used.
Rails	Tree rails, or tree guards as they are referred to in other parts of the country, are a proven way to help protect trees in urban situations. Damage from car doors, pedestrian foot traffic, bicycles attached to trees, and pets leaving their waste, can be fatal to trees. Guards prevent direct contact with the trunks and adjacent soil area, protecting the tree and preventing compaction and exposure to pet excrement.	The City of Seattle currently has no regulations or guidelines regarding rails / tree guards.	Provide tree guard design details that provide various levels of protection from animals, bikes, people and vehicles.  Consider allowing installation of rails with involvement of community groups through fundraising and incentives.
Roots			
Volume/Mass, Tree Pit Size	Trees require a certain amount of cubic soil volume to sustain growth and a supporting root system. Depending on soil type, climate and tree species between one and three cubic feet of soil per will support one square foot of tree canopy.  This does not mean that trees will stop when the limits are exceeded however they will experience increasing stress as the soil volume available is exhausted.	The City SDOT has a Client Assistance Memo (CAM 2300) that details Street tree Planting Procedures. No requirements for soil volumes or soil amendments are given. Spacing for three sizes of tree are called out.  The ROWIM calls out a minimum of 24 square feet for a tree pit but does not reference soil volume.  Details for street tree planting pit construction- 400 Street Paving, Standard Plan 400 and Standard Plan 424a - Expandable Tree Pit Detail show construction details for tree pits.	Update the Standard Plans with new tree pit details to allow adequate soil volumes for the tree species to be planted.  Identify options for creating larger soil volumes beneath paved areas adjacent to trees and use of root paths to allow roots into adjacent landscape spoils where feasible.
Structural Integrity, Condition at Planting	The structural integrity of a tree has an above ground component that is dependent on the anatomy of the tree. Sometimes trees from nurseries come with anatomy that is essentially a defect.  The below ground component that is essential for structural integrity is the root system.  Poor quality root systems are common in nursery grown trees.  Tree pits that allow no roots to escape may set trees up for failure when large loads are encountered and the root system cannot resist due to the containment.	The City has A Standard Plan - Specification 1-07.16(2) Tree Vegetation and Soil Protection that includes planting details. This could use an update.  No current guidelines or advisory about how to ensure new trees become stable mature trees at present.  The City has experimented with bare root tree seedlings and this has been successful.	Update standard details to promote selection and planting of high quality trees, planted at the correct depth in adequate soils, to ensure stability at the roots.  Require that trees that will be large at maturity be planted where there is sufficient root below ground for adequate root development  Perform structural pruning as necessary when the tree is newly installed to help reduce long term defects in the canopy.
Stability	Basic monitoring programs or drive by inspections may not reveal trees with stability issues under high loads (storm events).  Basal and root decay at the root collar are common 'surprise' failure modes.	City has access to a micro-resistance recording drill.	Identify subsets of trees in the Street Tree Inventory that may be at higher risk of low stability.  Identify mature tree populations of specific tree species as targets for Level 3 Risk Assessment as part of the City's program.
Dynamic Loading (Pull Test)	When street trees are suspected of being unstable under environmental loads such as wind, or when root pruning has been carried out to allow repairs of pavement there are two methods of testing a tree for stability.  A costly science based test Static Integrated Method Pull Test is not commonly done in our region.  A simpler method referred to as a basic hand pull test. This test uses a line in the tree and pull and release to simulate the tree under a wind load. Observation of the base of the tree for movement allows an experienced person to determine if a tree is reasonably stable.	This method is not mentioned in SDOT documentation. We are not aware that the City's Field Operations Unit uses this method.	Incorporate both the advanced and the basic pull test as part of the City's tool kit for assessing existing street trees where stability is questioned.

Best Practice			
Topic	Research Statement	Current Seattle Practices / Regulations	Recommendation / Action
Shaving	<p>Root shaving is a method that allows a portion of an existing root to be removed to allow pavement repairs where the root projects into the finished grade.</p> <p>Decay is likely to ensue subsequent to this treatment, but will vary with species and location. The intent of the practice is to leave a functioning root, albeit with reduced capacity for support and nutrient transport.</p>	It does not appear the SDOT provides any guidelines for root shaving. This practice is used by the SDOT Field crew when appropriate.	Ensure that the amount of the root that is removed is less than one half of the cross section.
Air Blading	<p>Several tools that use high pressure air to clear soil and excavate around sensitive structures such as tree roots are currently in use. Air excavation can be messy but is very effective. Also referred to as pneumatic excavation. Air tools work better in more porous soils. Dust and debris must be contained during air excavation operations, which can be difficult.</p> <p>Hydro excavation using water is also common but has more limitations as the spoils are removed as a slurry. Soil that is wetted to field capacity allows easier use of these tools.</p> <p>Both methods can be used to locate roots to help with planning for tree retention, and for excavation of soils around trees that reduces the potential for damage.</p>	<p>The City has a set of standard plans and Standard Specification 8-02 Landscape Construction and 8-01.3(2) B Tree, Vegetation, and Soil Protection that reflects good practice.</p> <p>No specifications or recommendations for pneumatic air excavation exist at present.</p>	Develop City standards and/or recommendations for the use of air/hydro excavation tools for use in excavating around tree roots.
Training	<p>It is possible in many situations to “train” roots to grow into areas where conflicts with infrastructure will not occur. Various materials can be used to contain roots so that they follow a certain pathway. Also possible is the use of channels which direct root growth to areas where they can grow without damage to pavement.</p> <p>Root training requires advance planning and available volumes of appropriate soil. Root barriers are commonly used for this purpose. Depending on the soils situation, pavement (curbs or foundations) may be thickened to serve as a root barrier.</p>	The use of root barriers is shown in the Standard Plans, however the City has no specific recommendations or Plan details.	Develop further detail on the use of root barriers and develop construction details/ guidance on other methods of root training.
Nutrients / Subbase Soil			
Mulch and compost	A discussion of the role of organic matter in tree planting soils is integrally related to use of subbase and structural soils, as well as strategies that use soil coring, trenching or mulching as a way to prevent and correct compacted soils; and create alternatives to remediate problem areas. It is also critical to developing strategies for soil amendment where tree replacement is the only practical option.	The City of Seattle officially has a mix of specifications for amending soils for street tree plantings, and in practice custom specifications from department (SDOT, SPU, Parks) or contracted Landscape Architects are often substituted for the City of Seattle Standard Specifications.	<p>Specify the use of mulches to replace turf, or as infill to raise planter grades where sidewalks are raised to bridge root problem areas.</p> <p>Develop standard practices for use of mulch/compost to assure positive drainage in planting pits.</p>
Testing/Inspection	Urban soils are unique in being subjected to a number of factors that greatly affect root growth and tree longevity. Some of the factors in urban areas that impinge on root development and tree longevity include chemical pollutants, disposal of industrial wastes, buildup of de-icing chemicals (salts, etc) or materials (sand/gravel), and rubble (wood, glass, plastic, metal) from construction activities that may have been buried many decades ago.	There is no set protocol for regular testing or inspection of nutrients for SDOT street trees.	Develop and perform soil tests for tree planting areas, to include the following factors: Soil texture (sand/silt/clay composition); soil compaction (has impacts on bulk density, root growth and soil aeration); nutrient levels; soil pH; soil porosity (drainage/infiltration); and presence of pollutants harmful to tree roots.



Best Practice			
Topic	Research Statement	Current Seattle Practices / Regulations	Recommendation / Action
Long Term Tree Health - Maintenance/ Replenish	It has been assumed that watering and occasional fertilizing is all that street trees require. It is no surprise therefore, that street trees rarely last their full potential life spans. Poor tree maintenance also results in tree stress leading to greater susceptibility to disease problems.	There is no set protocol for long term maintenance for SDOT street trees.	Develop nutrient maintenance protocols for long-term tree health, including: <ul style="list-style-type: none"> <li>• At planting (apply mycorrhizae, humic acids, Trichoderma to prevent root infections and sea kelp).</li> <li>• Six months after planting (apply humic acids, beneficial microbes and sea kelp)</li> <li>• Established trees (once a year, apply mycorrhizae, humic acids, Trichoderma to prevent root infections, sea kelp and organic fertilizer containing very low levels of nitrogen, potassium and phosphorus – if required)</li> </ul>
Solutions in Paver Zone	<p>Several methods are promoted for adding organic matter to the root zones of established trees to relieve compacted conditions. Application methods include digging trenches and filling them with compost or amended soil, opening soil cores by opening holes in the soil around trees using augers, air or water pressure.</p> <p>Most reviewed studies found limited benefit from vertical mulching accomplished by augering cores or opening vertical channels using pressurized air or water, around established trees and filling them with compost, bark, sand and other media. Some saw evidence of dense rooting within the amended holes, but little or no improvement in soil density or rooting in surrounding soil.</p> <p>While there have been many demonstrations of structural and SBS soils, these are still “young” practices with few applications in place for over 15 years. Considering the natural pattern discussed previously of increased surfaced roots as trees age, evaluations of longer-term applications are necessary. Use of a porous gravel subbase to retrofit existing (raise) sidewalks has not been tested, and would not provide structural support to meet code requirements without additional engineering.</p>	The City of Seattle Standard Specification for Road, Bridge and Municipal Construction, Division 5.	<p>Develop guidance and details for implementation of the following:</p> <ol style="list-style-type: none"> <li>1. Use of uncompacted gravel, or compacted coarse gravel subbase system in limited areas to bridge problem areas, with protection from soil intrusion. This application would probably need some sort of pier supports to provide structural stability to meet City of Seattle sidewalk stability requirements.</li> <li>2. Use of structural soils to expand root zones in high use / visibility areas where development of community amenities or new commercial development makes such larger scale infrastructure investment feasible.</li> <li>3. Any mixes should only use a stable, mature compost to avoid, fine grade compost to minimize future changes in the physical or chemical parameters of the mix. US Composting Council STA Certified Compost at a Minimum, maybe a higher stability standard.</li> </ol>
Water / Air			
Aeration / Irrigation, Existing Tree Care	Even in uncompacted soils moisture saturation may be the limiting factor for root growth—rather than physical constraints. Although cultivation and amendment with organic matter or free draining mixes can improve drainage, groundwater or drainage conditions can be overriding factors. Many tree planting specifications require a percolation test of planting pits, and boring of drain holes if conditions warrant.	There is no set protocol for aeration and irrigation of SDOT street trees.	Develop guidance for aeration and irrigation of SDOT street trees.
Failures			
Construction	<p>Construction for new features or for repair of paved surfaces can cause damage that will result in a tree more likely to fail such as roots severed or damaged, or above ground parts damaged.</p> <p>The failure may occur many years after the event as the damage may not be visible, or it may take time for the damage to create a situation, such as decay, that may result in a failure.</p>	<p>The City has a set of standard plans and Standard Specification 8-02 Landscape Construction and 8-01.3(2) B Tree, Vegetation, and Soil Protection that reflects good practice.</p> <p>Typically street trees adjacent to construction sites are signed and required to be protected.</p>	<p>Provide education/outreach for prevention and reduction of this sort of damage and resulting problems.</p> <p>Require and review clear details on construction plans, which are important to successful tree retention.</p>

Best Practice			
Topic	Research Statement	Current Seattle Practices / Regulations	Recommendation / Action
Pruning / Stability	<p>Pruning tree to remove parts likely to fail or reduce crown dimensions to reduce peak loads can be successful in reducing unexpected tree failures of both tree parts and entire trees.</p> <p>Keeping to manageable pruning cycles with regular basic inspections in between is the best way to accomplish a reduction in failures.</p> <p>Root pruning should also be considered.</p>	The City has a comprehensive tree management program with well trained tree crews. There are approximately 40,000 trees under City management.	TBD
<b>Utilities</b>			
Construction, Setbacks, Separation/Depth, Material	Trees and utilities compete for space in the public rights-of-way. Identifying minimum separations required facilitates maintenance of utilities and health of trees.	<p>The ROWIM identifies minimum separation for trees and utilities.</p> <p>Seattle City Light Tree Trimming Program identifies required clearances between trees and SCL facilities.</p>	Continue to enforce minimum setbacks during design, construction and maintenance practices within the ROW.
<b>Transportation</b>			
Setback From Intersections and Crosswalks	Trees at planting do not cause the same sight limitations at intersections as they do as they mature.	CAM 2300 Revised 3/23/2010	<p>Clarify and enforce the setbacks listed in the CAM.</p> <p>Clarify if sight triangles diagram is required for higher speed/volume intersection redevelopment.</p>
Trees at Transit Stops	Transit stops should be located in front of the tree so that transit riders waiting at the bus stop can be seen by the bus drivers.	City of Seattle coordinates with King County Metro to locate bus stops within the public ROW.	Coordinate with Metro to locate and relocate bus stops that are in conflict with trees.
Trees Along Truck/Bus Corridors	Trees are pruned as needed to accommodate freight, buses and other city vehicles including garbage trucks along the street.	City of Seattle maintains trees for freight and bus clearances.	<p>Coordinate planting and maintenance of trees along freight and bus routes.</p> <p>Identify opportunities to confirm routes as part of Freight Master Plan.</p>
<b>Education / Outreach</b>			
Tree Value	The value of trees to a city has been well documented in numerous research publications. Trees are now recognized as a major asset to a city as a very economical method to improve the quality of life for the community.	Seattle ReLEAF website and outreach provides information about tree maintenance in the city.	Confirm approach to rating and evaluating trees.
Tree Maintenance	In Seattle, many people are responsible for maintaining trees. It can be confusing to identify who maintains which tree.	Currently the City of Seattle (Seattle Department of Transportation) maintains about 25% of the planted trees in the public right-of-way in the city. Only trees that have been planted by the City of Seattle are maintained by the City. Many of the street trees are the maintenance responsibility of the property owner — even if they are planted in the public right-of-way. While the City does not maintain all street trees, it does regulate all of them. Permits are needed to plant, prune or remove privately maintained street trees. SDOT will inspect the trees and schedule them for maintenance.	Continue to provide clear information for community to identify who owns the tree and how to maintain that tree.
Easements	Many cities obtain easements for construction and installation of sidewalks.	City of Seattle does not have a standard easement form for sidewalk construction and maintenance.	Develop a standard form for sidewalk easements.
<p>The following items were researched and limited applied best practices were found:</p> <ul style="list-style-type: none"> <li>- Water flowlines</li> <li>- Curbs</li> <li>- Platforms</li> <li>- Irrigation and Aeration of Existing Trees</li> </ul>			





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# APPENDIX C

## INITIAL ASSESSMENT FORM



# SDOT Trees and Sidewalks Operations Plan

## DRAFT - Initial Street Tree and Sidewalk Assessment



DRAFT FOR PUBLIC REVIEW – DECEMBER, 2014

Prepared by: SvR Design Company, Harrison Design, Tree Solutions, Olaf Ribeiro

The purpose of this document is to outline the **INITIAL ASSESSMENT** for locations where sidewalk work is located within the dripline of an existing street tree.

Project Location/Address	
Tree Species/Diameter	
Street Classification/Type	
Tree Asset Inventory ID	
Sidewalk Segment #	
Is this assessment along a corridor project?	

An **ENGINEER** and **ARBORIST** will look at the site and assess the condition of both the sidewalk and the tree.

If the tree has the following characteristics, it should be removed/replaced pursuant to *SMC 15.43.030 (C)*: The City's policy is to retain and preserve street trees whenever possible. Accordingly, street tree removal shall not be permitted unless the Director determines that a street tree:

1. Is a hazardous tree;
2. Poses a public safety hazard;
3. Is in such a condition of poor health or poor vigor that removal is justified; or
4. Cannot be successfully retained, due to public or private construction or development conflicts.

### Initial Assessment:

1. Is this tree healthy and worthy of preservation?

Yes ☐ No - ☐

2. Poor Health—Is this tree in a condition of poor health or poor vigor that cannot be mitigated by any means other than removal?

- Is the tree in poor health or poor vigor or dead?
- Is there chronic trunk wounding due to inadequate street clearance?

Yes ☐ No - ☐

3. Hazardous Tree— Defined in 15.02.044.E any tree or tree part that poses a high risk of damage to persons using, or property located in the public place, as determined by the Director according to the tree hazard evaluation standards established by the International Society of Arboriculture.

Yes ☐ No - ☐

4. Minimum Standards—Is there enough space for a 6 foot wide sidewalk and a 5 foot wide planting strip? Yes ☐ No - ☐



**5. Public Safety Hazard—Does the tree present a public safety hazard that cannot be mitigated by any means other than removal?**

- Does the tree location obstruct the visibility for pedestrians, cyclists, and/or cars at an intersection?
- Is the tree impacting a curb ramp such that it no longer meets City of Seattle ADA requirements?
- Is the tree potentially impacting private property?

Yes ☐ No ☐

Use this space to draw a sketch of the location. Identify existing clearances from nearby infrastructure.

**Recommendation for this tree:**

☐ **—Remove Tree / Replace Sidewalk**

A tree is identified to be removed if it is not healthy or if it is hazardous as identified in the Street Tree Ordinance.

☐ **—Keep Tree and Maintain Sidewalk**

A tree will be kept and the sidewalk will be maintained if a sidewalk of standard width and a tree pit of standard width (at a minimum) can be installed or retained around a healthy tree.

☐ **—Evaluate Sidewalk and/or Tree Further**

SDOT views trees and sidewalks as important public infrastructure assets. SDOT intends to keep healthy trees and have accessible sidewalks. If standard widths cannot be met then SDOT will take the time and resources to evaluate if alternative approaches (such as sidewalk width reduction, alternative sidewalk materials, adjustments to the tree pit and/or tree root pruning) can be used to retain a tree and provide an accessible sidewalk at problem locations.

**NEXT STEPS**

**If Tree is REMOVED** —Replace the removed tree with the minimum 2:1 replacement ratio. Identify if the replacement trees can be located in the same location or on the same street as the removed tree. If not, replacements should be planted as close to the removal as geographically feasible. Identify the estimated cost to remove the tree(s), repair the sidewalk, and plant replacement trees.

**If Tree is KEPT** —Estimate the cost of the sidewalk repair that would achieve the desired lifecycle for the repair. Estimate sidewalk and tree maintenance needs/costs and any maintenance to the tree that is being retained (e.g., root pruning, branch pruning, soil amendments).

**If EVALUATE Further** — Use Tree and Sidewalk Evaluation Form (IN DEVELOPMENT) and/or the tree risk assessment should follow ISA TRAQ guidelines:

<http://www.isa-arbor.com/education/onlineresources/basicreeriskassessmentform.aspx>

<b>Arborist</b>	<b>Engineer</b>
<b>Title</b>	<b>Title</b>
<b>Date</b>	<b>Date</b>

# APPENDIX D

## MADRONA CASE STUDY CONCEPT PLAN



# Madrona Case Study

## Study Limits – 34<sup>th</sup> Avenue from East Union Street to East Cherry Street

### Existing Conditions

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34<sup>th</sup> Avenue and Union is a neighborhood business district within the Madrona neighborhood. Along the case study corridor, there are a variety of land uses including single family, multi-family, parks, and neighborhood commercial.

The mature canopy is predominantly Maple trees along 34<sup>th</sup> Ave. The trees have been routinely pruned around the wires on both sides of the street. The east side of the street received more frequent pruning due to the charged overhead wires serving the neighborhood.

Sidewalks on both sides of the street have been impacted by tree roots. The planting strip along the single family properties is approximately three feet wide and does not offer enough soil volume for the trees. Previous maintenance activities include sidewalk replacement, shim and beveling. There is a portion of the existing sidewalk that was temporarily replaced as asphalt.

This corridor is a transit route that requires overhead trolley wires. These wires require additional pruning of the tree canopy to provide clearance for the busses to connect to the wires.

### Recommendations

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Even though the trees along 34<sup>th</sup> Ave have limited soil volume and have been pruned, many of them can be retained. There are a few locations where the trees would need to be evaluated further to confirm that the sidewalk can be replaced.

There are 43 SDOT managed trees within the study area. The table below summarizes the results of the initial assessment performed.

Initial Assessment Results	Trees
Keep Tree, Repair Sidewalk	29
Remove Tree, Repair Sidewalk	2
Evaluate Further	12

34<sup>th</sup> Avenue is an arterial street where people walk to access transit. As such, it is recommended that the sidewalks be constructed of concrete. Extending tree wells along the sidewalk by removing existing pavement would increase the volume of soil available to the existing trees.

Phasing Recommendation Summary:

Phase 1 -

- Survey of 4 Blocks
- 800 Block Improvements
- Further Evaluation of Trees

Future Phase –

- Design completion
- Secure Additional Funding for Construction

The conceptual plans show the results of the initial assessment performed along the corridor and identify specific locations for improvements to the existing trees and sidewalks.



SDOT Trees & Sidewalks Operations Plan | SvR # 13040  
**Madrona - 34th Ave, 1000 Block (Union to Spring)**  
**Conceptual Recommendations - INITIAL ASSESSMENT RESULTS**  
 HAVE BEEN UPDATED TO BE CONSISTENT WITH REVISED RESULTING ACTION  
 DEFINITIONS IN THE DRAFT OPERATIONS PLAN  
 note: base map information is approximate, based on best available data (COS GIS)





SDOT Trees &amp; Sidewalks Operations Plan | SvR # 13040

## Madrona - 34th Ave, 900 Block (Spring to Marion)

## Conceptual Recommendations - INITIAL ASSESSMENT

RESULTS HAVE BEEN UPDATED TO BE CONSISTENT WITH REVISED RESULTING ACTION DEFINITIONS IN THE DRAFT OPERATIONS PLAN

note: base map information is approximate, based on best available data (COS GIS)



**KEEP**



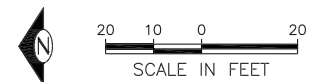
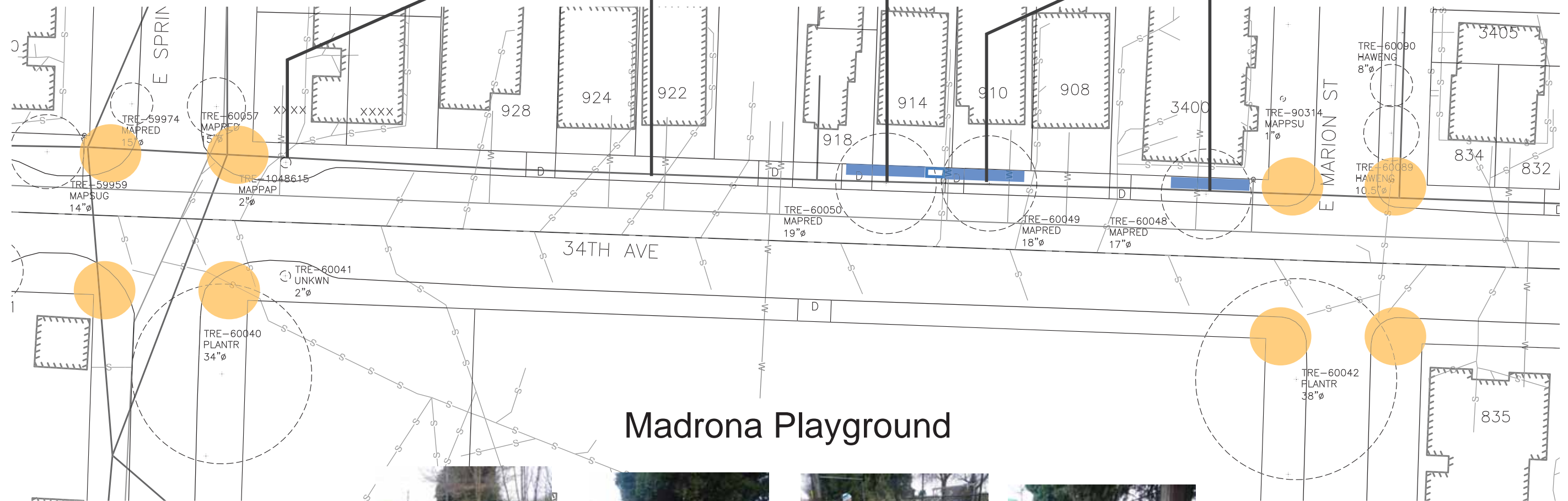
**KEEP**



**KEEP**



**KEEP**





## Madrona - 34th Ave, 800 Block (Marion to Columbia)

**Conceptual Recommendations - INITIAL ASSESSMENT RESULTS**  
 HAVE BEEN UPDATED TO BE CONSISTENT WITH REVISED RESULTING ACTION  
 DEFINITIONS IN THE DRAFT OPERATIONS PLAN

note: base map information is approximate, based on best available data (COS GIS)





Madrona - 34th Ave, 700 Block (Columbia to Cherry)

## Conceptual Recommendations - Initial Assessment Results Have Been Updated To Be Consistent With Revised Resulting Action Definitions In The Draft Operations Plan

note: base map information is approximate, based on best available data (COS GIS)



# APPENDIX E

## LAKE CITY CASE STUDY CONCEPT PLAN



# Lake City Case Study

Study Limits – 35<sup>th</sup> Avenue Northeast from Northeast 125<sup>th</sup> Street to Northeast 130<sup>th</sup> Street and Northeast 130<sup>th</sup> Street from 35<sup>th</sup> Avenue Northeast to 33<sup>rd</sup> Avenue Northeast

## Existing Conditions

---

Lake City is a hub urban village. 35<sup>th</sup> Ave NE and NE 130<sup>th</sup> Street are arterials that are served by transit. The land use along this corridor is predominantly multi-family and single family. There is also a daycare, a church and a school within the study area. This street is part of the walking route to Cedar Park elementary school.

The mature canopy is predominantly Ash trees along 35<sup>th</sup> Ave NE. Replacement trees planted in the last ten years add some diversity to the corridor; these trees include *Ginkgo*, *Zelkova* and *Quercus* genera. The absence of overhead wires allowed the trees to develop extensive canopies without needing pruning for line clearance.

The sidewalk damage was moderate in some areas and minor in others along 35<sup>th</sup> Ave NE. Mulch in the tree wells varied, including wood chips, concrete tiles, river rock, grass/ weeds and bare soil. The biggest issue found in this corridor was substandard sidewalk clearance, often due to adjacent conditions constraining one side.

Along 130th, *Quercus rubra* trees on the north side require structural pruning for clearance over the street while the trees to the south are effected by poor planting along with girdling roots causing suppression of most of the trees.

The sidewalk on the north side has been repaired with asphalt over minor cracks. There is a transit stop at the west end of the road. This corridor provides a critical walking connection for the neighborhood and larger community.

## Recommendations

---

Since the mature trees along 35<sup>th</sup> Ave NE are in good condition and not creating many sidewalk issues, it is recommended that a majority of the Ash be retained with only a few specimens requiring further evaluation. Some corrective pruning to provide clearance and to improve structure would help overall health of the corridor.

There are 65 SDOT managed trees within the study area. The table below summarizes the results of the initial assessment performed.

Initial Assessment Results	Trees
Keep Tree, Repair Sidewalk	52
Remove Tree, Repair Sidewalk	1
Evaluate Further	12

Along the length of 35<sup>th</sup> Ave NE, a majority of the current sidewalk cracking and uplift issues could be resolved through the use of shims and beveling. Extending tree wells and eliminating nonfunctional driveways would allow for the planting of new trees and would increase the volume of soil available to the existing trees.

A major step would be the negotiation of easements along the corridor where sidewalk issues and adjacent conditions create width and clearance issues. Through agreements with property owners, full sidewalk widths could be reached for the length of the street.

In looking at the long term future of the 35<sup>th</sup> Ave NE corridor there is an opportunity to realign the curb if the road is reconstructed. This would allow for more planting areas, shifting the sidewalk and providing adequate clearance, expanding the planter and redefining parking.

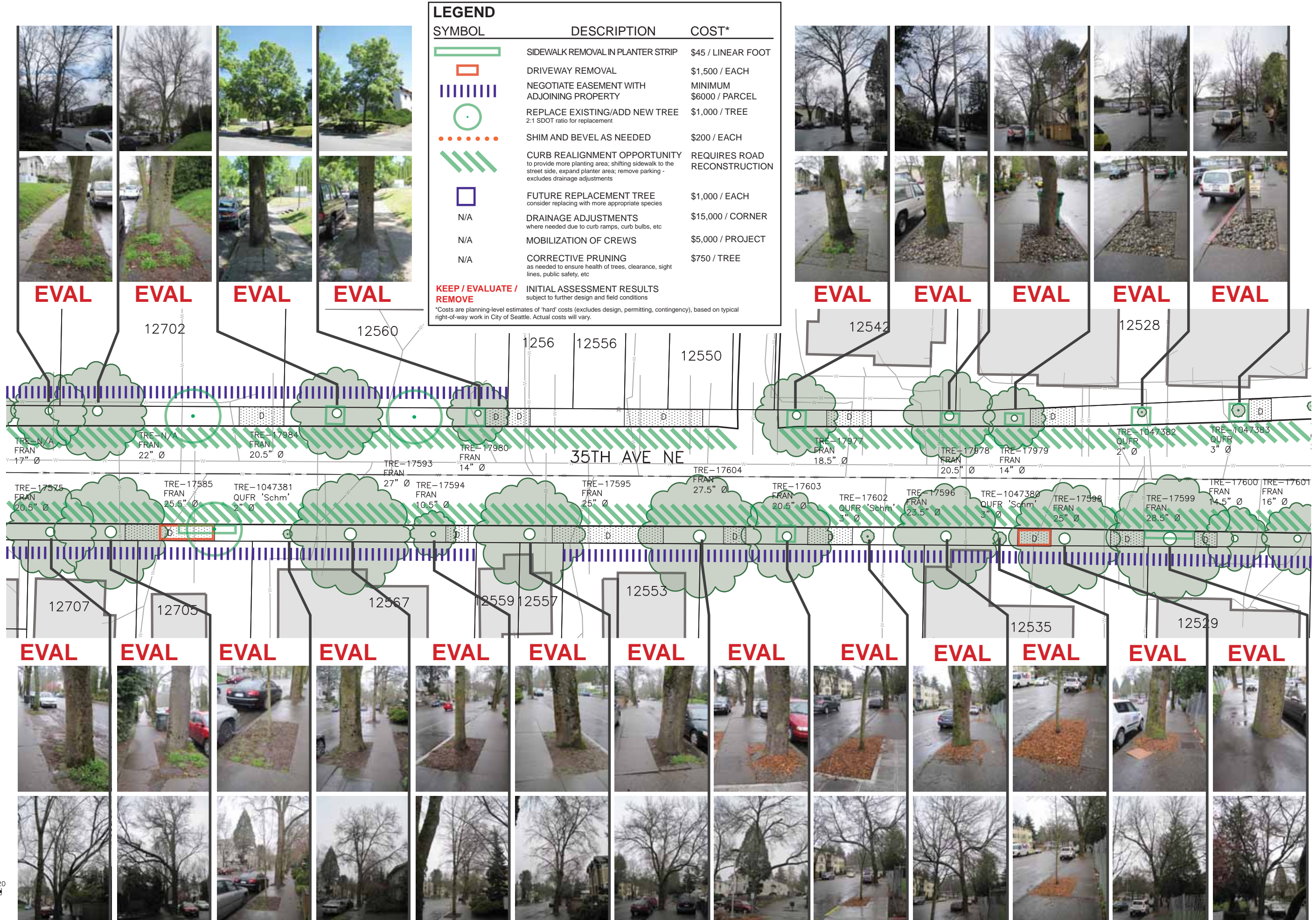
The conditions on NE 130<sup>th</sup> require a different set of solutions. The trees along the north side of the street are in better condition and could be retained while the trees on the south side require more evaluation due to their poor performance. It is possible that, in the future, a more appropriate tree species might be selected to replant in those locations.

The sidewalk conditions on the north side of the street require that it be replaced. Negotiating an easement with the adjacent property owner would allow for the expanded sidewalk and transit stop area. On the south side, the repair work needed is minor and could be achieved through shimming and beveling as needed. On both sides of the streets it is recommended that the tree wells are extended and continuous planter strips be created.

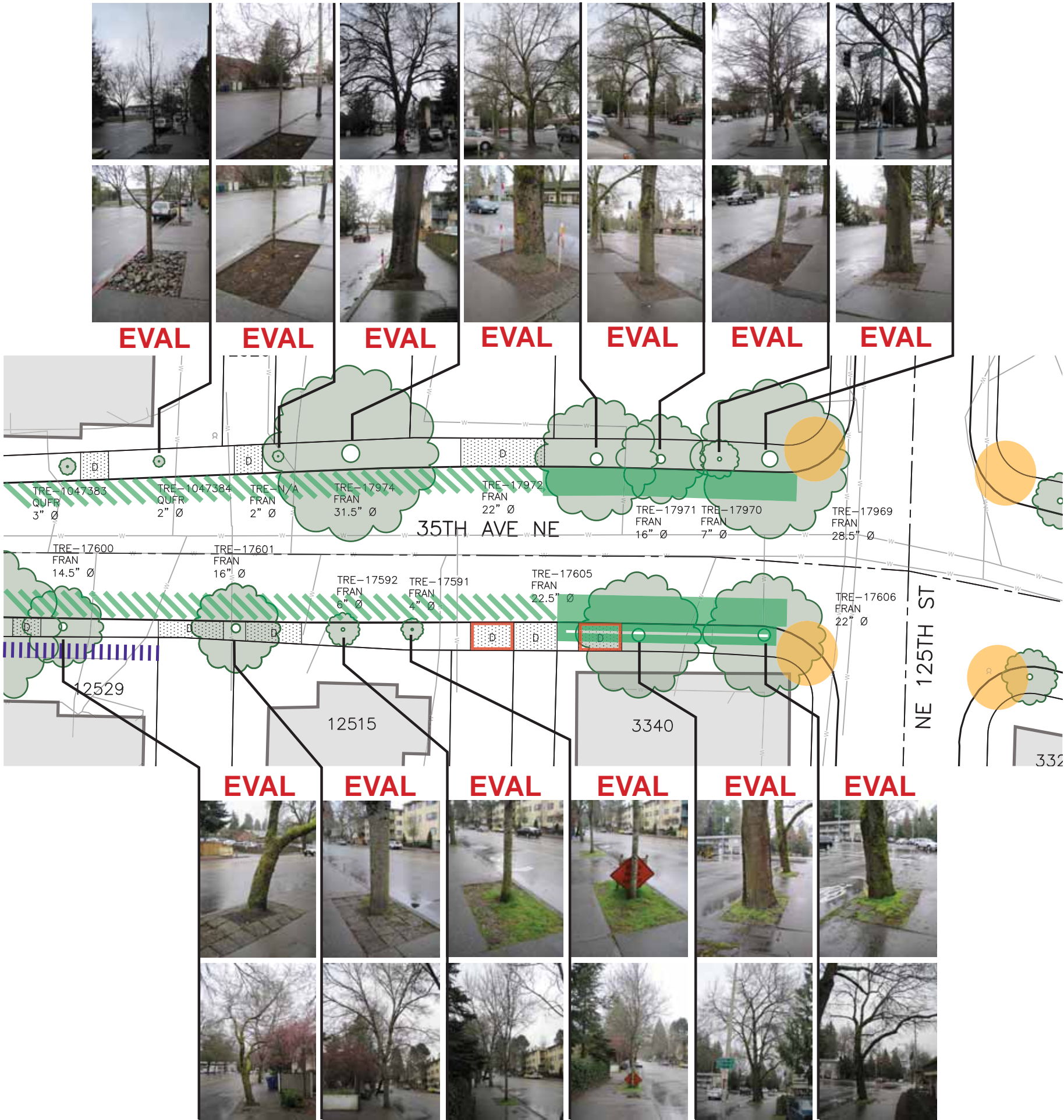






















SYMBOL	DESCRIPTION	COST*
	SIDEWALK REPLACEMENT @ TREE assume 30' (15' either side of tree); includes air spade, tree pit increase, root pruning, soil amendment, gravel	\$2,500 / TREE
	SIDEWALK REMOVAL IN PLANTER STRIP	\$45 / LINEAR FOOT
	DRIVEWAY REMOVAL	\$1,500 / EACH
	CURB BULB OPPORTUNITY at intersections to improve crossings and provide more planting area; along street to expand planter area; excludes drainage adjustments	\$100 / LINEAR FOOT
	CURB RAMP UPGRADES 2 at each corner, as required	\$20,000 / CORNER
	NEGOTIATE EASEMENT WITH ADJOINING PROPERTY	MINIMUM \$6000 / PARCEL
	REPLACE EXISTING/ADD NEW TREE 2:1 SDOT ratio for replacement	\$1,000 / TREE
	SHIM AND BEVEL AS NEEDED	\$200 / EACH
	CURB REALIGNMENT OPPORTUNITY to provide more planting area; shifting sidewalk to the street side, expand planter area; remove parking - excludes drainage adjustments	REQUIRES ROAD RECONSTRUCTION
	FUTURE REPLACEMENT TREE consider replacing with more appropriate species	\$1,000 / EACH
N/A	DRAINAGE ADJUSTMENTS where needed due to curb ramps, curb bulbs, etc	\$15,000 / CORNER
N/A	MOBILIZATION OF CREWS	\$5,000 / PROJECT
N/A	CORRECTIVE PRUNING as needed to ensure health of trees, clearance, sight lines, public safety, etc	\$750 / TREE
KEEP / EVALUATE / REMOVE	INITIAL ASSESSMENT RESULTS subject to further design and field conditions	
*Costs are planning-level estimates of 'hard' costs (excludes design, permitting, contingency), based on typical right-of-way work in City of Seattle. Actual costs will vary.		





SYMBOL	DESCRIPTION	COST*
	SIDEWALK REPLACEMENT @ TREE assume 30' (15' either side of tree); includes air spade, tree pit increase, root pruning, soil amendment, gravel	\$2,500 / TREE
	SIDEWALK REMOVAL IN PLANTER STRIP	\$45 / LINEAR FOOT
	DRIVEWAY REMOVAL	\$1,500 / EACH
	CURB BULB OPPORTUNITY at intersections to improve crossings and provide more planting area; along street to expand planter area; excludes drainage adjustments	\$100 / LINEAR FOOT
	CURB RAMP UPGRADES 2 at each corner, as required	\$20,000 / CORNER
	NEGOTIATE EASEMENT WITH ADJOINING PROPERTY	MINIMUM \$6000 / PARCEL
	REPLACE EXISTING/ADD NEW TREE 2:1 SDOT ratio for replacement	\$1,000 / TREE
	SHIM AND BEVEL AS NEEDED	\$200 / EACH
	CURB REALIGNMENT OPPORTUNITY to provide more planting area; shifting sidewalk to the street side, expand planter area; remove parking - excludes drainage adjustments	REQUIRES ROAD RECONSTRUCTION
	FUTURE REPLACEMENT TREE consider replacing with more appropriate species	\$1,000 / EACH
N/A	DRAINAGE ADJUSTMENTS where needed due to curb ramps, curb bulbs, etc	\$15,000 / CORNER
N/A	MOBILIZATION OF CREWS	\$5,000 / PROJECT
N/A	CORRECTIVE PRUNING as needed to ensure health of trees, clearance, sight lines, public safety, etc	\$750 / TREE
<b>KEEP / EVALUATE / REMOVE</b>		<b>INITIAL ASSESSMENT RESULTS</b> subject to further design and field conditions
*Costs are planning-level estimates of 'hard' costs (excludes design, permitting, contingency), based on typical right-of-way work in City of Seattle. Actual costs will vary.		

# APPENDIX F

## RAINIER BEACH CASE STUDY CONCEPT PLAN



# Rainier Beach Case Study

## Study Limits – Rainier Avenue South from South Henderson Street to Seward Park Avenue South

### Existing Conditions

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Rainier Beach is a residential urban village with Rainier Avenue South cutting through the center. The Rainier corridor is an important north-south transportation corridor that serves all modes of travel. It is a principal arterial with high traffic volumes. The recent Southeast Transportation Study and the update to the Rainier Beach Neighborhood Plan identify the importance of this corridor and confirm that the community supports trees and sidewalks.

The majority of trees along Rainier Ave S are *Quercus robur* (English oak) with a small group of *Acer* spp. (maples) planted north of 51<sup>st</sup> Ave S. Overhead wires along both sides of the corridor required somewhat extensive pruning to many of the trees, especially along the eastern end of the corridor, causing severe disfiguration.

Almost all trees show some signs of damage from vehicles, with several recently planted trees being totally destroyed. Planting conditions along this corridor also vary between tree wells and continuous planter strips.

The sidewalk damage was minor in most areas along Rainier Ave S with only a few locations requiring more intensive repair. Several tree pits on the north end of Rainier Ave S have recently been improved with larger tree wells and sidewalk articulation to allow for a clear path of travel.

This section of Rainier Ave S goes through a neighborhood business district and by the Rainier Beach Library. It also provides a connection to several schools and the community center north of South Henderson St. Several transit stops line the corridor and provide connections for the neighborhood and larger community.

### Recommendations

---

Many of the trees along the Rainier Ave S are recommended to be retained. The majority of the trees with the recommendation to be evaluated are exhibiting signs of stress, failure to thrive or issues related to previous pruning. Corrective pruning to improve structure would help overall health of many trees within this corridor.

There are 80 trees within the study area. The table below summarizes the results of the initial assessment performed.

Initial Assessment Results	Trees
Keep Tree, Repair Sidewalk	69
Remove Tree, Repair Sidewalk	2
Evaluate Further	9

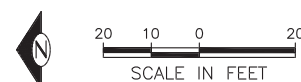
Sidewalk damage along Rainier Ave S is minor and does not require intensive repair. Shimming and beveling as needed is recommended to deal with the minor issues. The east end of the corridor has a few locations that require sidewalk reconstruction, allowing for extended planters and greater soil volume for the tree as well as improving the pedestrian experience. There are many opportunities to remove concrete in the planting strip, allowing for greater soil volume and additional tree plantings.

Connectivity across Rainier Ave S can be greatly improved through upgrades to the curb ramps along the street. These would serve to improve the connection to the larger neighborhood pedestrian walkway system.

In looking at the long term future of Rainier Ave S, there is an opportunity to reconstruct the curb when the road is reconstructed. This would allow for more planting areas, expanding the planter, redefining parking and improving pedestrian experience and safety.

The attached conceptual plans show the results of the initial assessment performed along the corridor and identify specific locations for improvements to the existing trees and sidewalks. The conceptual plans also make recommendations on locations where there may be opportunities to increase the tree canopy along Rainier Avenue S.











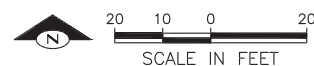








\*Costs are planning-level estimates of 'hard' costs (excludes design, permitting, contingency), based on typical right-of-way work in City of Seattle. Actual costs will vary.





# APPENDIX G

## PUBLIC OUTREACH LEAD





**City of Seattle**  
**Seattle Department of Transportation**  
**Trees and Sidewalks Operations Plan**  
**Public Involvement Summary**

**Overview**

The Seattle Department of Transportation initiated the process for the Trees and Sidewalks Operations Plan in January 2014, with the plan finalized in July 2014. Over the course of the seven month process, a number of discussions and meetings were held with key stakeholders and the general public. This document summarizes the public involvement program that supported the development of the Operations Plan.

**Public Involvement Plan**

A public involvement plan was established for the Trees and Sidewalks Operations Plan. This plan was drafted by the consultant team, reviewed by SDOT, and finalized in February 2014. The plan provided detail on the overall Trees and Sidewalks Operations Plan, as well as the events and techniques that would be used to inform and engage the public in the process.

**Corridor Case Studies**

Three areas of the city were selected for corridor case studies. These areas offered a representative sampling of various tree and sidewalk conditions, providing a wide-ranging framework within which to test a new tree/sidewalk assessment process, as well as a palette of possible tools to address tree and sidewalk conflicts. The corridors were located in the Madrona, Lake City, and Rainier Beach neighborhoods.

Communication with the leadership of these communities began in January. Jennifer Wieland, SDOT project manager, contacted the community councils in each location and offered to present information at their regular meetings. Jennifer briefed the Madrona Community Council, and also presented to both the Lake City and Rainier Beach Community Council meetings. These presentations provided meeting attendees with the opportunity to learn more about the project, the role of the case studies in the overall Operations Plan, and upcoming public meeting opportunities to participate in the development of the Corridor Plan for each community.

Seven public meetings were held in support of the Corridor Plans; three in Madrona and two each in Lake City and Rainier Beach. Each series of meetings began with an overall introduction to the need and purpose for the Operations Plan, the goals for the Corridor Plans, and the schedule/key milestones for the process going forward. At subsequent meetings, attendees were able to review the assessment process that will be used to evaluate tree health and sidewalk conditions, as well as the “toolkit” of available options to both protect trees and repair

sidewalks. Attendees were also asked to review and comment on the draft Corridor Plans before they were finalized.

The meetings were advertised via postcards, email notifications, and posters placed in neighborhood business establishments. Some 1600 postcards were initially mailed in Madrona, over 700 in Lake City, and over 1000 in Rainier Beach. Email notifications were sent via the Madrona, Lake City, and Rainier Beach Community Councils, in addition to other email lists managed by SDOT and varying neighborhood groups.

Attendance at these meetings ranged from 3 to 20. The smaller group size allowed for in-depth discussion and interaction between the SDOT/SvR team and community members. As noted in each meeting report, the discussions were both positive and productive, enabling all involved to learn from each other. The feedback provided by meeting attendees significantly informed the development of the Corridor Plans and greatly benefited the contents of the overall Operations Plan.

#### **Website Presence and On-Line Surveys**

In addition to the public meetings and presentations at the community councils, SDOT maintained a website for the project throughout the duration of the planning process.

#### **Presentations with Organized Groups**

In addition to the community meetings held for each corridor plan, the SDOT/SvR team kept a number of other groups regularly apprised of the planning process. Seattle's Urban Forestry Commission was briefed on the project.

#### **Stakeholder Engagement Related to the Citywide Operations Plan**

***This will be added for the final Operations Plan.***