

# STREET TREE AND SOIL VOLUME RESOLUTION SUMMARY AND RECOMMENDATIONS

May 8, 2014

## ***Introduction***

Street trees are an important community asset. The public right-of-way (ROW) serves a multitude of purposes: sidewalks to move pedestrians, roadways for vehicles and bicycles, overhead and underground utility services, outdoor seating, etc. Due to the myriad and competing needs in the ROW, above and below ground space for street trees can be limited. These limitations can negatively affect tree growth and longevity, resulting in diminished environmental services, such as shade value, and more frequent replacement of trees, respectively. The broad issue of street trees and their growing environment have been observed and discussed, by both internal and external stakeholders, over the past several years. So much so, the Urban Forestry Board identified a need to assess this issue further by recommending guidance to City Council in September 2013. On November 7, 2013, Austin City Council directed the City Manager via Resolution 20131107-41 to:

- (1) assess the adequacy of soil volume, soil quality, and root environment in existing streetscape tree plantings, taking into account underground and overhead infrastructure,
- (2) review city regulations, programs, and specifications used in streetscape tree planting projects regarding soil volume, soil quality, species characteristics, and root environment, and
- (3) identify opportunities for changes in city regulations, programs, and specifications to improve the growing conditions of street trees, minimize cost impacts to streetscape projects, and reduce future costs for replacement trees.

This report provides an overview of the process used to examine these issues and provides recommendations to improve the growing conditions for street trees.

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## ***Stakeholder Input***

After multiple interdepartmental working group meetings, a public meeting was held on February 12, 2014, to discuss factors that influence street tree growth and health, associated conflicts in the ROW, and identify opportunities to improve the condition of streetscape trees and their growing environment. Invitations were sent to City staff, private design professionals, neighborhood representatives, and private arborists. Meeting topics included reviewing scientific research on varying street tree growing conditions, the economic and social values of trees, existing street tree programs, and construction practices in the streetscape. The meeting schedule included:

- Introduction – Michael Embesi, City Arborist, Planning & Development Review Department
- Street Tree Research – Dr. Tom Smiley, Bartlett Tree Experts
- Tree Benefits – Patrick Brewer, Urban Forestry Board
- City of Austin Streetscape and Public Realm Programs – Jim Robertson, Manager of the Urban Design Division, Planning & Development Review Department
- Streetscape Project and Construction Realities – Randy Harvey, Project Manager, Public Works
- Survey Results – Angela Hanson, Urban Forester, Parks & Recreation Department.

After the presentations a brainstorming session occurred to identify values, expectations, and opportunities for improving street tree growing conditions. The participants supplied over 400 comments, such as suggestions to modify the Land Development Code, tree planting details, and increased funding for street tree maintenance. The following list identifies a summary of these comments (please note, the

term “utility” is used to capture a broad category which includes construction and maintenance requirements for items such as road, sidewalk, sewer, water, telecommunication, gas, electric):

<b>Stakeholder Topic</b>	<b>Concern and Suggestions</b>
Education & Training	<ul style="list-style-type: none"> <li>• Research best management practices associated with street tree planting</li> <li>• Provide greater training to staff, stakeholders and contractors</li> <li>• Increase public awareness of street tree benefits, requirements and associated challenges</li> </ul>
Codes & Ordinances	<ul style="list-style-type: none"> <li>• Provide a more flexible code</li> <li>• Ensure State franchised utilities are incorporated within any proposed code change process</li> <li>• Update details, standards and specifications to identify minimum requirements for soil volume and soil quality</li> <li>• Consider creating soil volume standards based on growth characteristics (e.g. mature height) for each tree species</li> <li>• Provide a context sensitive approach recognizing differences in streetscapes</li> </ul>
Care & Maintenance	<ul style="list-style-type: none"> <li>• Increase funding for ROW tree planting, monitoring and tree and irrigation maintenance</li> <li>• Provide closer oversight for tree planting and long-term recurring care and maintenance</li> <li>• Increase surface area of root zone to increase air exchange opportunities</li> </ul>
Installation & Construction	<ul style="list-style-type: none"> <li>• Consult with local tree nurseries to identify improved tree specifications</li> <li>• Specify soil volume and soil quality requirements</li> <li>• Consider transferring tree root barrier requirements from tree pit to utility trench</li> <li>• Consider tree planting timing requirements based upon seasonal characteristics</li> </ul>
Planning & Design	<ul style="list-style-type: none"> <li>• Improve tree planting standards to optimize tree health</li> <li>• Pursue an assessment to determine challenges and opportunities associated with creating common utility duct banks</li> <li>• Use street trees to maximize the opportunities to establish green infrastructure</li> <li>• Select the correct tree for the location based upon above and below ground limitations</li> <li>• Utilize continuous landscape beds and above grade sidewalks</li> <li>• Identify methods to protect and/or maintain underground utilities</li> </ul>
Policy & Budget	<ul style="list-style-type: none"> <li>• Differing expectations and values of tree benefits, longevity, and maintenance requirements</li> <li>• Assess funding opportunities to assist with resolving utility and tree planting conflicts</li> <li>• Expand tree planting program requirements to more streets</li> <li>• Utilize Austin’s Urban Forest Master Plan, Code Next, and Imagine Austin to improve tree growing standards including public/private partnerships</li> <li>• Provide public education to highlight the benefits of street trees</li> <li>• Consider alternative mitigation for tree impacts during required utility maintenance</li> <li>• Increase funding for research, maintenance, and tree purchasing</li> </ul>

### ***Opportunities to Improve Growing Conditions for Street Trees***

The stakeholder comments identified multiple opportunities to improve current practices. The following list identifies these potential opportunities along with evaluating the expected improvement in growing conditions, anticipated costs for improvement, and the estimated time period for implementation:

<b>Solutions to Improve Tree Growing Conditions</b>	<b>Improvement in Growing Conditions</b>	<b>Anticipated Cost</b>	<b>Implementation Period</b>
	(High/Medium/Low)	(High/Medium/Low)	(Long/Medium/Short)
Consolidated utility duct bank	High	High	Long
Revise ROW tree planting detail	Medium	Low	Short
Soil standard specification (e.g. water holding capacity, nutrients)	High	Low	Medium
Soil nutrient replacement	Medium	Medium	Medium
Combined volume tree bed	High	Low	Medium
Tree planting plan devised by road classification	High	Medium	Medium
Interdepartmental coordination	Medium	Medium	Medium
Neighboring property incentive/requirements	High	Medium	Long
Conduct contact herbicide research	Medium	Medium	Medium
Define new planning processes	High	Medium	Long
Create a more sensitive utility maintenance and repair process	High	High	Medium
Standardize root barrier specifications and installation for each utility	Medium	Medium	Medium
Shift root barrier requirements from tree pits to utility locations	High	Medium	Long
Context-sensitive decision-making	High	Low	Long
Back of curb options (e.g. slurry wall)	High	High	Medium
Improve maintenance and care of street trees	Medium	Medium	Medium
Improve inspection of street tree, soil, and irrigation installation	Medium	Medium	Medium
Improved quality of planting stock	High	Medium	Short

### ***Implementation Items***

In addition to the above items, the following tasks are associated with improvements identified during the resolution process and have been completed or are being readily accomplished:

1. Street tree survey results and stakeholder comments incorporated within Austin's Urban Forest Master Plan process
2. Soil volume requirements estimated for each tree species
3. Complete tree inventory in the Central Business District's ROW
4. Greater understanding amongst stakeholders pertaining to requirements for gray (e.g. electric, wastewater lines) and green (e.g. trees, rain gardens) infrastructure
5. Utilize ROW tree management software
6. Better coordination between multiple departments pertaining to planning, development review, construction, inspection, repair, and tree planting, maintenance, and care
7. Draft a tree purchasing master agreement
8. University of Texas engineering student soil volume research

*Draft Street Tree and Soil Volume Resolution Summary and Recommendations*

### ***Associated Items***

The stakeholder process also exposed related items not associated with the scope of the resolution. The following items are pertinent to tree plantings within the streetscape but were not addressed due to their lack of applicability to the specifics within this resolution:

- Due to the varying characteristics within the ROW, ensure that a “no tree planting option” is included within the set of choices when reviewing development plans (only implemented in rare and uncompromising situations);
- produce a database and GIS Layer to provide quick and reliable License Agreement information; and,
- consider code modification to allow utility maintenance and repair with less tree mitigation requirements.

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### ***Summary***

Resolution 20131107-41 identified the need to assess the adequacy of soil volume, review associated city regulations, and ultimately identify opportunities for improvement. This process recognized that there is not one solution for improvement, but rather identified a context-sensitive approach to determine how street trees and their growing conditions can be improved. The preceding report summarizes the resolution response activities and provides a menu of options to consider for improvements.

This assessment was performed with the understanding of the importance that trees provide the community, the multiple requirements and limited area within the ROW, and with respect to City fiscal and budgetary considerations. The process of responding to the resolution resulted in a deeper understanding of these current issues and expedited improvements to planning, construction, and maintenance processes. In addition, continual incremental improvements are necessary to achieve better conditions for street trees, thus maximizing the benefits that trees provide the community. In addition to the multiple Implementation Items (above), the Planning & Development Review Department is working to capture the relevant improvements without fiscally impacting the budget or workload. City staff will work interdepartmentally and with external stakeholders to implement low cost/high improvement items in the near-term and will assess a possible action plan for the other items (which may require upper management guidance due to limited resources). If you have any questions, please contact Michael Embesi, City Arborist, Planning and Development Review Department. His contact information is [michael.embesi@austintexas.gov](mailto:michael.embesi@austintexas.gov) and (512) 974-1876.