

Streetscape Guidelines -- Working Paper, Fifth Draft

Fifth draft discussed and revised at April 20, 2016 meeting

[Add photos throughout – Tesners]

Specifically for Washington Street, Broad Street, and Business Districts
[side streets to potentially be addressed in subsequent document]

Introduction:

The nation behaves well if it treats its natural resources as assets which it must turn over to the next generation increased, and not impaired, in value.

- Theodore Roosevelt

“While it may take mountains, hills, lakes, streams and trees to create a landscape, it takes the mind and hands of man – and the man-made structure to arrange a streetscape.”

--Martin Pegler, Streetscapes

Great streetscapes reveal great town character. They can function as central gathering places, convey and maintain a city’s links to its past, and attract more public and cultural activity. More specifically, healthy *trees* in these streetscapes help create visual continuity, define pedestrian spaces, provide canopy and a buffer for pedestrians, aid in water and heat control, contribute immensely to storm water and pollution management, and offer proven physical and mental health benefits to people. If a small city such as Falls Church takes time to plan a unified and vital streetscape on its main street corridors, these community and environmental benefits accrue and can ultimately give rise to strong town identity and civic pride.

1. Statement of purpose

In support of the City’s vision for a healthy, vibrant community, these guidelines lay out a coordinated approach to the design and management of street tree planting spaces in Falls Church City. The term “streetscape” generally encompasses both the visual and pedestrian environment of a street. Streetscapes may include urban design elements such as planter styles, planter walls, sidewalks, planter edging, specialty lighting, signage, storm water management features, parking features, and pedestrian seating. Every development project may have its own context and constraints, sometimes necessitating variations in the style of these design elements. However, healthy street trees are indispensable to streetscape, and there should be no variation in the citywide specifications necessary to their health and success. These guidelines therefore aim to address the technical parameters for healthy street trees on Falls Church’s main commercial corridors, providing direction for the construction of tree spaces, tree planting techniques, soils, storm water management, irrigation, tree maintenance, and tree spacing locations and species. The objective is to provide a set of standardized planting

guidelines that may be applied across all development projects along Broad and Washington Streets, ensuring proper, healthy and long-living tree life in the City. These guidelines align with components of the City's Comprehensive Plan, including Mobility for All Modes, and positively contribute to the vision outlined in the CIP.

While this document's primary purpose is to update the tree planting guidelines required for healthy trees, it is also important for the City to recognize the value of stylistic unity where possible. Stylistic uniformity has significance for *many* elements of the City streetscape, including tree protection, storm water management, edging, and mulching, all of which are discussed below. Seeking as much stylistic uniformity as possible is also important to creating and maintaining a streetscape identity in the City.

2. Specifications for healthy planting spaces

Introduction:

Street trees in many cities survive only seven to twelve years, and the major reasons for this short life span are inhospitable soils, inadequate soil volumes, poor drainage and air circulation, and poor species selection. These guidelines are meant to address some of these issues by setting minimum standards, encouraging innovative tree planting techniques and providing suggestions for tree maintenance and selection of viable tree species.

Retrofits and Remodels: The majority of new business district streetscape planters are being provided in conjunction with redevelopment projects. However, the City should also consider installing or rebuilding streetscape planters as part of storm water management or pedestrian improvement projects. Any retrofit triggered due to remodeling or development must follow the construction specifications herein [what threshold of remodeling should trigger new streetscape?]

a. Planter spacing, shape and surface dimensions

The long-term health of a street tree is profoundly affected by the volume of usable rooting space it is given, and that soil's ability to exchange air and water with the surrounding environment. In general, it is best to locate street trees in an open, curbed planter. This method lessens soil compaction and increases air circulation to the root system.

The size and shape of planter openings must be consistent with the design plan for the project area. Building projects on West Broad Street, and the downtown portion of East Broad, must comply with the 1987 West Broad Streetscape Plan in the surface design of its planters: the openings are 5 feet wide and no less than 15 feet long, with curved ends and a 4- to 6-inch high bullnose brick edging.

[discuss if more detail needed here] Larger planters can allow more distance between street trees and buildings, provide greater stormwater management benefit, and may also be appropriate locations for seat walls and/or additional decorative planting. Additional space for planters can be provided by pushing the curb out into the street near street and driveway corners and between parking spaces. *(KR: This could result in inconsistent design from block to block if done by developers, unless someone retrofits other nearby streetscape at the same time. Can these be integrated with the W Broad streetscape design?)*

Spacing.

All streetscape designs should show the maximum number of trees along each block face at 30-foot spacing, with exceptions only for driveways and pedestrian facilities such as bus shelters. Tree/utility separations shall not be used as a means of avoiding the planting of required street trees. [explain maximum number]

Planter Location

The minimum clear sidewalk width in business districts is 8 feet. *(Check w/ Planning)*

Where there is no on-street parking, planters may be located at the inside edge of the curb to maximize sidewalk space unless site-specific conditions preclude it; a utility strip along the curb is not necessary.

Where there is on-street parking, there must be a 2-foot paved area between the curb and the planter to allow for car door opening and a place to step out of cars. *(Does this jive with keeping the street side of protective fencing open for car doors?)*

Mature shade trees will have branches that spread 20-30 feet from the trunk. When planted less than 20 feet from building faces, trees will tend to have off-center tops. Therefore, where building faces are taller than two stories, it is imperative that building setbacks be **30 feet** to allow trees centered within the streetscape planters to be planted at least 15 feet from building faces. [awnings, other reasons for setback?]

Planter obstructions

Where a construction project's frontage is not long enough to allow for the full required length of a planter, the installation of a partial planter is generally preferred. This should be coordinated through the site plan review process.

Utilities passing from the street to the building may go through multi-tree planters; see the tree spacing requirements below. Streetlights may be located inside multi-tree planters.

Other streetscape features such as dog areas, cafe space, benches, lights, bicycle racks, trash cans and sidewalk amenities must be sited between planters or at a minimum addressed in a manner that does not usurp tree space and impair tree health in the short or long term.

Surface openings.

Surface openings in the pavement must be a minimum of 5 feet wide and 10 feet long.

Building projects on West Broad Street, and the downtown portion of East Broad, must comply with the 1987 West Broad Streetscape Plan in the surface design of its planters: the openings are 5 feet wide and no less than 15 feet long, with curved ends and a 4- to 6-inch high bullnose brick edging.

Edging.

Edging around planters is of utmost importance in protecting trees and keeping them healthy. Effective planter edging prevents the loss of soil and mulch and discourages pedestrian traffic on tree root zones.

The 1987 Adopted Streetscape Plan for West Broad Street sets forth a standard streetscape design, including pedestrian elements, for West Broad Street in Falls Church. Under this plan, planters were to be protected by a four- to six-inch high curb of “bull nosed” brick [need picture]. To this day, the north side of West Broad Street largely exhibits this edging, while the south side has generally not shown implementation of this edging, except for the very recent 301 West Broad Street mixed-use development. Other new developments on the north side of West Broad Street such as the Hilton Garden Inn have not adopted this guideline for edging.

Tree planters in all business districts should have raised edges because it protects trees from pedestrian-caused compacting of the root space and from salt applied during the winter season. Edging can be designed to allow rainwater from the sidewalk (and from the street if part of a storm water management plan) to flow into the planted area. Openings in the edge treatment can allow for water to pass through. The bullnose brick edging on West Broad can be installed with gaps on the sides to allow water infiltration.

It is our recommendation that West Broad Street maintain the brick bull-nosed edging for its effectiveness in protecting root zones and for continued stylistic uniformity on this corridor.

[Discuss possible designs for N&S Washington Street]



Wilmington, DE (left) and Washington DC



[How to choose an edging design for N & S Washington?]

[add pictures of Pearson Square planters as examples of what has not worked]

[Give short list of proposed or acceptable edging types]

Protective grates and guards.

Tree Grates: Tree grates and other structural basin covers are not part of Falls Church's standard planting practices; they are expensive and block access for weed control, they cause tripping hazards, and over time they interfere with tree diameter growth and need to be removed. In limited locations, such as heavily traveled sidewalks where sidewalk width limits pedestrian movement, it may be necessary or desired to install tree grates to provide an adequate walking surface.

Tree guards: Tree guards around trunks are not part of Falls Church's standard planting practices but may receive special approval on heavily traveled sidewalks for the protection of newly planted trees adjacent to heavily used bus stops or adjacent to other land uses with associated activities that may be considered detrimental to tree health and safety. Tree guards should be of an attractive design, not possess any sharp edges, and be made of durable material. Tree guards should be a minimum of 18 inches wide to provide sufficient distance from the tree trunk at the time of planting. Tree guards are an opportunity to provide a special design and to incorporate artistic elements.

Edge Fencing: Edge fencing is not part of Falls Church's standard planting practices but may receive special approval in areas with moderate to low pedestrian traffic, to protect planters from pedestrians and pet use. Edge fencing should be decorative metal 18" high, with no sharp edges and treated to prevent rust. The fence must be open on the street side and kept back 18" from the curb to prevent damage to car doors. The fence should not have a bottom plate so water can flow easily into the planter. The base of the fencing must be solid for 4 inches to allow for cane detection. [need picture]

Raised Planters.



There are many good reasons to create planters that are taller. The planters are more visible and have better definition. They provide greater protection for

the plants than a lower planter. They also have a greater range of function and can be used as a place to sit, to put down packages, etc.



Single Tree in Raised Planter/Seat Wall

Planter dimensions will vary by location. Minimum interior planter dimensions will be the same as the planter dimensions given above.

Seat Wall/Planter

A seat wall/planter may be used in place of the standard curbed planter in locations that experience high pedestrian use and have sufficient sidewalk width to allow the wider planter edging without encroaching on other street and sidewalk uses.

- Planter Height – 18-24 inches.
- Seat Wall Width – Minimum 15 inches.
- Setback - Minimum 4 feet from back of street curb when adjacent to on-street parking lane. Minimum 3 feet from back of street curb when adjacent to traffic lane.

b. Construction of planters: underground elements

[Diagrams to be added]

Soil Volume/Planter Underground Dimensions.

In the City of Falls Church, street tree planters must be installed as continuous planting-soil trenches at least 4 feet deep, 6 feet wide and as long as possible; preferably the length of the block. Where the streetscape design calls for individual planters, or pedestrian access is required, reinforced pavement (see Appendix, as well as FC Public Works specifications) may be placed over the soil trench as needed, maintaining the minimum surface openings called for by in the area's streetscape design. [staking?]

Where a continuous soil trench is not possible due to underground interruptions, planter underground dimensions must be a minimum of 4 feet deep, 6 feet wide and 11 feet long.

Root Conductors – These are trenches cut between tree planters in soils difficult for roots to penetrate. Plastic drain core 12" x 1" may be wrapped in filter fabric and placed in the trenches, which are then backfilled with planting soil.

Construction.

The sides of street tree planters should not be lined; roots should be able to grow from the planter into the surrounding soil. If vertical supports for the pavement are used, they should have large (minimum 6" x 6") openings for roots to grow through. Root barriers that are no more than 12 inches deep may be installed at planter edges where adjacent underground features need protection.

The bottom of the planter must be sloped toward a drain line either along the center of the planter(s) or along the curb side. This drain line should be perforated plastic, laid in gravel of minimum ¾-inch particle size. Drain lines should connect to the City storm drain; if that is not possible, they must be drained to a dry well. This specification does not apply to planters designed as stormwater management practices.

Drain lines and drainage rock shall be installed below, not within, the planting soil depth. To allow for the minimum 4-foot planter depth, any utility lines under the planters must be installed at least 5 feet below grade.

Electric lines for outdoor outlets within tree planters: discouraged or forbidden? (*add spec if allowed*)

c. Stormwater management

Stormwater management functions should be included in streetscapes where feasible, particularly on North Washington Street, which drains into Four Mile Run, and South Washington Street, which drains into Tripps Run. Incorporating stormwater management into the streetscape allows natural infiltration of storm water to occur as close as possible to the original area, which reduces the need for enlarged storm sewer pipes and protects Chesapeake Bay by improving surface water quality. Falls Church's first attempt at streetscape stormwater management, at Northgate on North Washington Street, was not considered aesthetically successful, but streetscape stormwater systems have been both effective and attractive in other cities – see for example Portland, OR, and San Mateo, CA.

Trees -- particularly mature trees -- play a vital role in the natural filtering and absorption of storm water runoff. At the very least, street tree planters on both Broad Street and Washington Street should have the largest exposed surface openings possible and gaps in the planter edging, to maximize their contribution to the City's stormwater management.

As noted above in the Edging section, there are some stylistic elements of storm water management planters that are important for safety reasons. Where the base of landscaping is not at grade with the surrounding sidewalk, such as on sloped streets where planting is terraced and in storm water infiltration planting areas, a 4 to 6 inch raised edging treatment should be installed around the planter to delineate the presence of landscaping and grade change to people with visual impairments. In addition, for both safety and attractiveness, the soil level in storm water planters must be no more than 4

inches below grade, with the expectation that mulch will then be added on top of such soil.



Best Practice: 12th Avenue Green Street. Portland, Oregon

This project, in downtown Portland and completed in 2005, involved converting the previously underutilized landscaped area between the sidewalk path of travel and the curb into a series of planters designed to slow, capture, cleanse and allow for infiltration of stormwater runoff. The project manages the street's stormwater runoff on site instead of discharging it into the storm drain system, which feeds directly into the Willamette River, creating environmental benefits and an urban amenity.

Runoff from 8,000 square feet of the street flows downhill along the curb until it reaches the first of four planters. The runoff is channeled into the planter through a 12 inch cut in the curb. In the planter, the water infiltrates into the soil. If the water in the planter reaches capacity, it exits through

another curb cut, flows back into the street and enters the second planter downstream.



d. Soil

The soil should be consistent throughout the planter bed. Do not add fertilizer, organic matter, sand or special planting mixes into the planting holes.

Native Soil – Where the existing soil on a site is a loam [define] with a pH between 6.0 and 7.2, no toxic contaminants, and at least 3% organic matter, it may be used as planting soil without amendment.

Amended Soil – If the existing soil does not meet the specifications above, it may be amended or replaced with imported topsoil to meet the specifications.

If the soil within individual planters must be amended or imported, the below-ground spaces between planters can be made more supportive of tree roots by using Structural Soil (below) or Root Conductors [see Underground Elements, above].

Structural Soil – Structural soils were developed to support pavement without fully compacting, thus allowing sufficient air and water spaces to support healthy tree root growth. These soils are used to provide sufficient rooting volume within areas that must be paved. The term Structural Soil generally refers to a mixture of about 50% rocks with tree soil, which supports pavement while maintaining many spaces of loose tree soil. At this time, Falls Church does not recommend this type of soil.

Tree Sand, sometimes called Amsterdam Tree Soil, is a more acceptable type of structural soil. This is a mixture of medium-coarse sand with 4% clay and 4% organic matter, compacted to 90% Proctor density. This supports pavement for pedestrians and light vehicles while allowing root space and good air and water exchange. [more detail or Appendix]

Stormwater Management Soils – Soil mixes designed for stormwater management planter systems may be used with the approval of the City Arborist to ensure that they are also conducive to healthy plant growth.

Amended or replaced soils shall be installed in layers or lifts of 12 inches, each lift settled with water.

As mentioned above, the final soil surface within planters shall be 4 inches below the top surface of the planter edging, to allow for mulch.

e. Irrigation

Proper watering systems help achieve City goals and citizen expectations for public spaces. Automatic irrigation systems are necessary to efficiently maintain a high quality appearance and long-term health of streetscape plantings.

All new streetscape planters and those adjacent to redevelopment must have irrigation systems. The design and materials in new planters should match the City's existing streetscape irrigation, including the City's standard components and installation specifications.

All streetscape planters must be served by a dedicated water meter for streetscape irrigation. In most cases, an entire city block or more can be served by a single irrigation meter. Development projects must install a new dedicated water meter (with an associated backflow preventer) for the streetscape if there is not one available on the block that they can tie in to.

The irrigation system shall be designed and installed so that it will not spray onto any streets, walkways, or any features or structures that could be damaged by water.

All streetscape irrigation systems shall use schedule __ PVC pipe, __ glue, _____ brand spray heads and _____ controllers. Include details for standard planter irrigation system, installation of controller and backflow preventer. [specifications to be detailed]

f. Plant materials and installation – Kate to elaborate and provide diagrams

3. Spacing and Location of Trees

Trees must be centered between the curb side and sidewalk side of the planter.

Tree Spacing.

Corner visibility....develop further

Separation from utilities.

Following are the minimum dimension requirements for the most common tree/utility separations.

- 15 feet between canopy shade trees and streetlights.
- 40 feet between understory trees and streetlights.
- 10 feet between trees and water or sewer lines.
- 5 feet between trees and gas or electric lines.

Exceptions to these requirements may occur, as approved by the Arborist.

Overhead power line conflicts.

Understory trees may be planted in place of canopy shade trees where overhead lines and fixtures prevent normal growth and maturity.

Adjustment of tree spacing intervals.

The City Arborist may approve or require larger or smaller spacing intervals to better fit the growth habits of different street tree species, for safe use of the street or sidewalk, and to better fit with existing trees or other existing conditions unique to the location.

Washington and Broad Streets have specific planting palettes (see below), in order to create a consistent streetscape design.

Minimum size of shade trees at planting is 3.5-inch caliper. Minimum size of understory trees is 2.5-inch caliper. Minimum size of evergreen trees is 6 feet tall. All trees must be balled and burlapped. Minimum size of shrubs is 2 feet tall and #3 container (or balled and burlapped). Minimum size of herbaceous plants is #1 container; 4” pots are acceptable for groundcover plants.

All trees, plants and planting methods shall conform to the City of Falls Church’s Planting Specifications (Appendix, can be updated separately?).

4. Species

[NEEDS MORE WORK]

Typically, the average tree in an urban environment survives seven to twelve years. The major reasons for this short life span are inhospitable soils, inadequate soil volumes, poor drainage and air circulation, and poor species selection. Street trees planted in poor conditions have stunted growth resulting in a poor foliage canopy and small root mass which causes them to die prematurely. *The appropriate selection of plant species is critical to the health and longevity of the urban forest* Trees should be selected in consideration of the following:

- Provide enough variety in the plantings yet create and maintain cohesiveness through repetition of plant material; a massive monoculture is discouraged because a single blight / disease can exterminate an entire block of trees.
- Install primary street trees of the same species on each block or series of blocks along the same street
- Vary selection of street trees
- **Selection of a tree species with a mature height of X feet**
- Integrate smaller ornamental trees into the overall planting scheme.

Variety – Plant a mix of tree species downtown to avoid a landscape monoculture. Not only does this provide more visual interest but also avoids mass removal of the downtown tree canopy if a one species is affected by a disease or exotic pests.

[this section to be further developed with short list of acceptable trees, their recommended locations, and their size at maturity]

[Note Baltimore Streetscape Plan (Chapter 6, pages 6.5 - 6.7) The appropriate selection of plant species is critical to the health and longevity of the urban forest. The following list of urban tolerant plantings should be used to establish individual identities in certain “neighborhoods” within the districts....]

The following list (or Attachment) of urban tolerant plantings should be used ...]

5. Maintenance obligations.

Falls Church is evolving a two-component maintenance approach, having recently negotiated agreements with developers to maintain the adjacent streetscape planters. Public trees have so far been excluded from such private maintenance, consistent with City Code Section 44-24(a), which states that all street tree plantings and maintenance are to be under the direction of the City arborist:

“Sec. 44-24. - *Plantings along streets and public use easements.* The planting, pruning or other treatment of trees upon the streets and public use easements shall be under the direction of the arborist. No tree upon any street or public use easement in the city shall be destroyed, cut down or otherwise removed without the consent of the arborist. No trees or plants of any kind shall be planted upon any street, public use easement or public property except with the consent of the arborist.”

This legal framework will continue to allow Falls Church City to prioritize and uniformly address, throughout the Broad Street and Washington Street corridors, ongoing street tree health and maintenance. All elements of streetscape plantings in the business districts are the City’s responsibility, except where such has been specifically transferred to the adjacent development. Roles and responsibilities distinguishing tree maintenance from maintenance of other vegetation must be clearly documented in all streetscape maintenance agreements.

[Kate to describe three options for when trees reach their functional maturity (Broad Street example)]

[Business district pruning standards?]