Jacksonville Tree Commission

TASK FORCE ON URBAN TREE PLANTING BEST PRACTICES
May 14, 2025 11:00am - 2:00pm
Ed Ball Building, 10th Floor, Conference Room 5
and Zoom Webinar

Task Force Members:

Susan Fraser, Tree Commission Member, Chair
Nina Sickler Tree Commission Member, Vice-Chair
Curtis Hart, Tree Commission Member
William Burke, Tree Commission Member

Non-Member attendees:

Jeff Lucovsky, PDDS
Jonathan Johnston, Parks
Guy Parola, DIA
Nancy Powell, Scenic Jax
Lisa Grubba, Greenscape
Valerie Feinberg, Fuse Fellow, UFMP

Advisors:

Jonathan Colburn, Urban Forestry Manager
Justin Gearhart, City Arborist
Shannon MacGillis, Office of General Council

Staff:

Joe Rainey, Executive Assistant

AGENDA

Order of Agenda is Subject to Change

1. **Call to Order –** Chair

2. **Roll Call and Verification of Quorum** – Chair Submittal of Speaker's cards

3. **Public Comment: (up to 3 minutes, allotted at discretion of Chair)**

4. **Submittal of Speaker's Cards –** Chair
   - **a.** A raised hand icon will be acknowledged by the Chair.
   - **b.** For those attending in person, paper speakers' cards will be available.

5. **Approval of Minutes of April 28, 2025 Task Force Meeting**

6. **Approval of Proposed Urban Planting Standards**

OLD BUSINESS:

7. **ADJOURNMENT**

Task Force on Urban Tree Planting Best Practices

Minutes
Thursday March 20th, 2025, – 11:00am-2:00pm
Via Zoom Platform & In Person
[Recording of Meeting can be obtained by sending request to Joe Rainey JRainey@coj.net]

Commissioners:
Nina Sickler, Director of Public Works
Susan Fraser, Chair (Council Appointee; 2022-0063-A)

Non-Member attendees:
Jeff Lucovsky, PDDS
Jonathan Johnston, Parks
Guy Parola, DIA
Nancy Powell, Scenic Jax
Lisa Grubba, Greenscape
Joe Anderson JEA
Paul Davis, Planning
Valerie Feinberg, Fuse Fellow, UFMP
Tracy Arpen, Greenscape

Advisors:
Justin Gearhart - City Arborist
Carla Lopera - Office of General Counsel

Staff: Joe Rainey - Executive Assistant Mowing and Landscape

1. Call to Order
Conducted by Chair

2. Roll Call and Verification of Quorum
Conducted by Chair
Commissioners present:
Susan Fraser - Chair
Nina Sickler - Director of Public Works

Quorum present (2, in person): No

3. Call for Public Speakers (online & card): Speakers request to defer to respond within context of action items.

Action Items:

4. Submittal of speaker cards

5. March Minutes Vote Deferred to next meeting; Quorum not present

Subjects discussed out of order: See sections below for details

In-Depth open format discussion: Presentations: Fraser: Discussion of new application, How-to for use of matrix with detailed examples. Overview of specific problems relevant to current process, standards and new forms in relation to matrix and site conditions and Jacksonville processes.

Presentation materials discussed tree planting project applications. Contributing parties from the public, JEA, DIA, etc. provided questions, Problems, insight and guidance as to real world application of developing best practices guidelines. Requests for full Taskforce meeting recording can be sent to JRainey@coj.com for detailed discussion.

Presentations:

6.Existing Standards Review presentations

a. ANSI A300 - Susan Fraser *(see Item 6a, pgs. 4-6 of Agenda)* Overview of tree care standards based on ANSI recommendations provided in support document.

b. JEA Underground Utilities – Joe Anderson *(see Item 6b, pgs. 7-8 of Agenda)* Discussion of installation and development of tree projects in urban locals. Focus on the complications and dangers utilities may contain when planning and maintaining.

c. Minimum Planting Area Detail – Susan Fraser *(see Item 6c, pgs. 8-9 of supplement)* Documents provided day of meeting to be included in supplemental documents. Brief detail of documents and relation to Urban article.

d. Silva Cell Details – JTA Busway on Park Street - Anna Walling*(see Item 6d, pgs. 10-24 of Agenda)* Overview of drafts and documents for presentation on structural soils, silva cells and their applications in relation to tree planting projects. Discussion was included in presentation.

e. Vertical Constraints – Jonathan Colburn
Issue: *(see Item 6e, pgs. 25-27 of Agenda)*
Overview with discussion of vertical constraints related to tree selection, location, obstructions, limitations and maintenance. Details found on support documents.
f. Existing Tree Fund Projects' Irrigation Approach – Jonathan Colburn *(see Item 6f, pgs. 28-29 of Agenda)*
Review of current contracts for tree planting regarding tree watering. Types of irrigation, applications and follow-through after warranty ends.
Discussion: Fraser: Question about volume vs frequency, to be found in further contract documents not provided.

7. Downtown Investment Authority

a. Design Guidebook - Guy Parola
DIA has previously contracted consultants to study what the taskforce is exploring. The design guidebook describes the aesthetic applications of trees and plant installs related to how they work with surrounding banners and other design aspects of downtown. DIA is looking to gain insight into how to merge the aesthetics with best practice plant selection, install and maintenance technics.

> **State Street and DIA tree wells:** Discussion of FDOT's interest in having the tree wells planted on state street. Acknowledgement of limitations on State Street and other DIA tree wells conclude that Live Oaks are not a viable solution and expectations of shorter duration tree with remove and replace plan may be best practice for these locations. Discourse regarding shade requirement from landowners in how to plant to fit this parameter. Easements suggested were not seen to be a viable option per DIA.

b. Examples of Utility Conflicts Downtown – Guy Parola
DIA is finding unmarked or unmapped utilities when implementing designs, they are seeking standards or options that will help alleviate utility constraints or resolve when unexpected utilities are found on ROWs. **Fraser:** How about Raised Planters?

8. The Good, Bad and Ugly

9. Development of Constrained Planting Environment Standards

a. Overview "Bringing Order to the Technical Dysfunction within the Urban
Forest", Journal of Arboriculture Volume 18, issue 2, March 1992

Read through of article and their relation to and application to City of Jacksonville tree planting solutions.

b. Application of Approach and Matrix to Jacksonville

i. Matrix
ii. Mitigation by Degree of Urbanization
iii. Outline of Needed Specifications and Details
iv. Application Requirements Level 2 and 3 Check

10. Expand Approved Tree Planting List to Include:

i. Planting Zone
ii. Mature Height and Spread
iii. Root Characteristics (invasive?)
iv. Suitability as a street tree adjacent to pedestrians
v. Suitability as street tree without pedestrian adjacency
vi. Maintenance Score
vii. Wind Resistance
viii. Water requirements minimum and Optimum
ix. soil volume required
x. Lifespan
xi. Crown shape

11. Meeting Dates for March - May 2025

April 28th 11am -2pm
May 14th 11am -2pm

ADJOURNMENT

END OF MEETING 1:32PM

Filing an Application for Planting in an Urban Environment

Apply the established standards based on the condition of the planting environment (area within the root zone of all planted trees) **at time of planting**. Multiple conclusions may apply based on location within a project boundary.

1. Confirm Minimum Planting Area is Provided for each Proposed Tree

To provide sufficient area to accommodate mature trunk volume, flare and surface roots, an open space without surface encroachment shall be provided around the trunk of the tree; when located in an area of surface treatment, the open space is provided in the form of a cut out within the surface treatment.

The Minimum Open Surface / Cut Out (OSCO) is provided for each tree location. No compaction is permitted within OSCO. If installed, tree grates must have an opening (symmetrical around the truck) equal to 50% of the minimum OSCO dimensions and the long term maintenance plan must provide for tree grate replacement at 5 years and 10 years if inspection warrants.

Small Tree	6’ x 6’ min. OSCO; min. 3 feet to impervious surface
Medium Tree	6’ x 6’ min. OSCO; min. 3 feet to impervious surface
Large Tree (not live oak)	8’ x 8’ min. OSCO; min. 4 feet to impervious surface
Large Tree (live oak)	12’ x 12’ OSCO; min. 6 feet to impervious surface

Tree Grates may be included in a Level 2 or Level 3 Application for installation within an OSCO provided the grate is required to meet minimum sidewalk width for the adjacent sidewalk as defined in Section 654, Ordinance Code and the LDPM Volume 2. Design Standards (see ***Exhibit A***).

2. Soil Quantity Goal is met.

The Tree Commission’s Approved Tree List identifies each Approved Tree as small, medium or large. The planting area for each proposed tree shall meet the following standards.

Soil Quantity Goal:

Provide sufficient soil quantity to support the tree mass proposed.

	Required Soil Volume	
Small Tree:	300 cubic feet	Min. Planting Area: 150 sf - 100 sf Required Depth: 2’ – 3’ OSCO 6’ x 6’min.; 8’ x8’ prefer
Medium Tree:	1,200 cubic feet	Min. Planting Area: 480 sf - 300 sf Required Depth: 2.5’ – 4’ OSCO 6’ x 6’ min.; 8’x8’ prefer

Large Tree:	1,800 cubic feet	Min Planting Area:	600 sf – 450 sf
		Required Depth:	3’ – 4’
		OSCO	8’ x 8’ min.; 10’x10’ prefer
Live Oak:	1,800 cubic feet	Min. Planting Area	600 sf - 450 sf
		Required Depth	3’ – 4’
		OSCO	12’ x 12’ min.

Minimum planting areas may be combined to accommodate multiple trees; combined areas are eligible for a 25% reduction in the area required for an individual tree, however the minimum distance to impervious surface established for the OSCO cannot be reduced.

3. Suitable Planting Environment is Provided.

A Suitable Planting Environment requires the classification of NOT COMPACTED within each Required Soil Volume.

Assess the compaction within each Required Soil Volume at the tie of planting and apply the standards for the provision of a Suitable Planting Environment for each Project type:

- Existing Conditions Project
- Planting in a Public Right of Way
- Proposed Development Project
  - Not Compacted
  - Compacted without Surface Improvements
  - Compacted with Surface Improvements

A. Existing Conditions Project. Defined as a proposed Level 3 Project without associated development/construction or a Level 2 Project located within a Public Right of Way.

For a Level 3 Project, upon receipt of a Level 3 Project Scope Submittal, staff shall perform an initial site visit prior to the Project Scope Review Meeting to identify the Minimum Planting Area associated with each potential planting area as “COMPACTED”, “NOT COMPACTED” or “POTENTIALLY COMPACTED”. Staff may rely on visual inspection, history of the site, on-site testing results (penetrometer) or order a bulk density test (BDT) as required to make a final determination of “COMPACTED” or “NOT COMPACTED” for each Required Soil Volume. Staff shall identify each Required Soil Volume by number and note its classification in a table provided to the Applicant. Upon acceptance of the classification by the Applicant, the Planting Plan and Cost Estimate shall be based on the assigned classification; a classification of NOT COMPACTED shall be maintained by the Applicant/ Public Agency.

If a BDT is performed, a Bulk Density Score of 109 lb /cubic foot or above shall be classified as COMPACTED. Compacted of 85% or greater shall be classified as COMPACTED.

B. Tree Planting within a Public Right of Way. The following assumptions for Required Soil Volume within the public right of way may be applied; Staff may rebut the assumed classification with on-site testing or BDT.

- **a.** Required Soil Volume located within an existing median 10 feet in width or less (measured BOC to BOC) are assumed to be Compacted.
- **b.** Required Soil Volume located between the travel lane(s) and the right of way (Verge) is 8 feet in width or greater (exclusive of surface improvements - sidewalk, etc.) are assumed NOT COMPACTED; width less than 8 feet are assumed to be COMPACTED.

C. Proposed Development Project. Defined as tree planting proposed in conjunction with any development/construction within the proposed Level 2 or Level 3 Project. When applicable to a Level 2 Project, the Level 2 Project shall be subject to the Level 3 Application requirements.

The Level 3 Project Scope Submittal shall include a plan depicting the limits of construction within the Proposed Development Project (Limits of Construction Plan). Limit of construction includes but is not limited to areas for storage of equipment, laydown of materials or supplies, limits of work, construction access, construction parking and all areas that are or will be impervious. Areas within the project limits that have been previously developed or disturbed shall be included in the area identified as the limits of construction. Areas that are outside the limits of construction shall be delineated on the Limits of Construction Plan and protected as Soil Preservation Areas (SPAs).

To ensure maintenance of SPAs, the Applicant / Public Agency shall enforce the limit of construction through final inspection.

Individual Minimum Planting Areas are classified as COMPACTED if all or a portion is located within the construction limits.

The following design strategies shall be employed to limit designation of Required Soil Volumes as COMPACTED:

a. For Required Soil Volumes located outside an SPA, if Tree Mitigation Funding is requested for the installation of a Pavement Support System (silvacell, etc.) the following design review is required to minimize planting within a Compacted Planting Environment that requires a PSS:

i. Tree locations have been strictly reviewed to minimize or eliminate the need for installation of a PSS. *Staff may recommend the relocation of trees to achieve minimum need for a PSS.*
ii. Tree sizes (small, medium or large) have been strictly reviewed to minimize the need for installation of a PSS. *Staff may recommend changes to tree size to reduce the volume of PSS.*
iii. Proposed paved areas have been located so as to minimize the need for installation of a PSS. *Staff may recommend reduction or relocation of proposed paved areas to reduce the area of PSS.*

To facilitate the design review, the Level 3 Application shall include, with the Conceptual Plan, a plan that overlays the location of each Minimum Planting Area with the Limits of Construction Plan (Compacted Environment Assessment Plan). Each Required Soil Volume shall be identified by number and a table classifying each as COMPACTED or NOT COMPACTED provided. Staff shall verify the classification identified in the Application and may rebut the Applicant's classification. The Level 2 or Level 3 Project may not receive Conceptual Plan approval prior to approval of the Compacted Environment Assessment Plan (CEAP). Based on the CEAP, the Concept Plan shall reflect mitigation required to provide a Suitable Planting Environment for each Required Soil Volume. The Rough Estimate of Improvements shall include the costs associated with the provision of mitigation proposed to achieve Suitable Planting Environments that is requested to be funded from Tree Mitigation Funds.

Planting Plans must clearly identify the limits of construction and SPAs. SPAs shall be protected from all encroachment in the same manner as required for tree protection areas in Section 656.1207, Ordinance Code. Location of fencing shall be depicted on approved plans and maintained by the Applicant /Public Agency as depicted through final inspection.

To ensure compliance with SPA protection requirements, Staff may perform inspections at any time after approval of the Level 3 Project by the Tree Commission and enforce the maintenance of fencing through final acceptance. If a CEI is retained for the project, inspections shall be assigned to the CEI professional retained for the project. Failure to maintain required fencing and encroachments within the SPA shall cause the project to be subject to additional review by the Tree Commission.

Staff will work with the Applicant and Public Agency to develop a Conceptual Plan that meets the project goals and minimizes the need for Pavement Support System investment from the Tree Mitigation Fund.

The Staff Report to the Tree Commission for the Concept Plan for the Level 3 Project shall identify actions taken to reduce the need for Pavement Support Systems.

b. The following standards shall apply to the Required Soil Volume based on the classification of each planting area depicted on the CEAP.

i. Required Soil Volume is NOT COMPACTED
If the soil volume available within each Required Soil Volume is NOT COMPACTED, planting is subject to the standards of LDPM Section 601. No mitigation is required to provide a Suitable Planting Environment.

ii. Required Soil Volume is COMPACTED
If all or a portion of the soil volume available within each Required Soil Volume is COMPACTED, mitigation of the Compacted Environment is required. The following standards shall apply in addition to the LDPM requirements; if a conflict exists between the standards herein and the LDPM, the following standards shall prevail.

1. Minimum Planting Area is provided as Open Space Cut Out

The area within each Required Soil Volume shall be remediated to NOT COMPACTED utilizing Soil Replacement. When native soil is present and the opportunity to employ Soil Profile Rebuilding (SPR) is available, Staff may require SPR during the Project Scope Review Meeting. Soil Replacement shall meet the specifications of LDPM Volume 4, Section 2.3 Topsoil, and Section 2.6 Soil Conditioning. *See Exhibit B*. Soil Profile Rebuilding, when required, shall meet the specifications in *Exhibit C.* Implementation of Soil Replacement or SPR as specified shall result in a Suitable Planting Environment.

2. Minimum Planting Area includes surface improvements (existing or proposed).

Structural Support for Surface Improvements is Not Necessary

The area within each Required Soil Volume shall be remediated to NOT COMPACTED utilizing Soil Replacement. When native soil is present and the opportunity to employ Soil Profile Rebuilding (SPR) is available, Staff may require SPR during the Project Scope Review Meeting. Soil Replacement shall meet the specifications of LDPM Volume 4, Section 2.3 Topsoil, and Section 2.6 Soil Conditioning. *See Exhibit B*. Soil Profile Rebuilding, when required, shall meet the specifications in *Exhibit C.*

To maintain the classification of NOT COMPACTED after remediation, installation of the surface improvements (outside the OSCO) is limited to concrete sidewalks/ pavement that are installed without compaction above 85% or 109 lb. CF (BDT) within the Minimum Planting Area. Implementation of Soil Replacement or SPR as specified and construction of the surface improvements without compaction shall result in a Suitable Planting Environment.

Structural Support for Surface Improvements is Necessary

This standard applies when structural support of a proposed surface improvement within a Minimum Surface Area is required.

To achieve a classification of NOT COMPACTED, installation of a Pavement Support System consistent with manufacturers specifications is required. Soil installed within the area of the PSS (the Required Soil Volume) shall meet the Soil Replacement Standards (Approved Soil Mix). Installation of a PSS and Approved Soil Mix will result in a Suitable Planting Environment.

Conceptual Plan Approval by the Tree Commission is required if the cost associated with installation of a PSS is requested to be funded from the Tree Mitigation Fund.

4. Drainage Goal is met.

Drainage Goal:
Drainage adequate to obtain root growth in the soil.

1. In the absence of hydric soils or vegetative indicators of a higher water table, the application of a depth of ≤ 3 feet to the calculation of the Minimum Planting Area is assumed to provide adequate drainage to obtain root growth in the soil. The application of a depth of > 3 feet to the calculation of the Minimum Planting Area may require additional testing to confirm the depth of the water table is lower than the depth applied to calculate the Minimum Planting Area. Test results that indicate a water table at or above 3 feet will require the calculation of the Minimum Planting Area for those locations to utilize a depth above the identified water table.

2. Plans and specifications require and specify positive site drainage away from planting areas.

5. Soil Quality Goal is met.

Soil Quality Goal:
In situ or imported soil is of sufficient quality to support tree growth and long term health.

1. Proposed Soil Replacement meets the adopted specifications for Soil Replacement. ***See Exhibit B.***
2. If required, Proposed Soil Profile Rebuilding and specifications are consistent with adopted standards. ***See Exhibit C.***
3. If imported soil/topsoil is proposed, soil analysis for imported soil/topsoil within each Required Soil Volume meets the adopted specifications for Soil Replacement. ***See Exhibit B.***
4. Site History will be reviewed by Staff utilizing the City's GIS Ash Site and Brownfields Site Inventory. Based on historic sire use, Staff may require additional soil testing or environmental assessment to address potential contamination that would adversely affect tree health.

6. Maintenance Goal is met

Maintenance Goal:
Support long-term health and viability of mature canopy spread.

Short -term maintenance. Planting funded from Tree Mitigation Funds is supported with short term maintenance under the applicable contract warranty period.

Long-term maintenance. Additional long term maintenance is required to support long term health and viability of the planted tree. This includes regular pruning, and ongoing insect and disease control.

The Application includes a binding post warranty period maintenance plan that addresses long-term maintenance, including but not limited to regular inspections, pruning and ongoing insect and disease control. If tree grates are installed, the long term maintenance plan must provide for tree grate replacement at the Applicant or Public Agency's expense and the long term maintenance plan will include the requirement for submittal of a report to the Tree Commission upon each 5 year anniversary of the approval of the Level 3 Project certifying compliance with the tree grate inspection and replacement requirement.

7. Vertical Clearance Goal is met

Vertical Clearance Goal:
Provide sufficient vertical setback for mature canopy spread.

1. Shade trees other than Live Oaks that are planted adjacent to a vertical structure of two stories or greater must be located a minimum of 12 feet from the vertical constraint (building façade).
2. Live Oaks must be located a minimum of 20 feet from the vertical constraint.
3. Trees other than shade trees that are planted adjacent to vertical structures of 2 stories or greater are located a minimum of 0.75 times the radius of the mature canopy of the tree as such is identified on the Tree Commission Approved Tree Planting List.

Exhibit A. Sidewalk Width Standards

Applicable excerpts of Section 654, Ordinance Code and LDPM Volume 2. Design Standards.

Sec. 654.133. - Required improvements: streets; curbs and gutters; sidewalks; and bikeway requirements.

(a) Streets and public ways shall be cleared and graded, including side slopes to the specified grade. If required to prevent erosion or excessive washing of the shoulders, protective measures shall be taken by the developer as required by the Director.

(b) Streets shall be paved and standard curb and gutter installed to meet the specifications of the Land Development Procedures Manual.

(c) Sidewalks shall be provided for all developments, including residential or non-residential infill lots, and along all new, reconstructed, and existing streets, to provide safe pedestrian travel. The Land Development Procedures Manual outlines general sidewalk requirements based upon the Development Area of the proposed development, and the impacted roadway type identified on the City of Jacksonville Context Classification map. Also, the following shall be observed:

> (1) When standard sidewalk width cannot be attained due to demonstrated right-of-way constraints, provide the greatest sidewalk width possible, but not less than five feet.

Land Development Procedures Manual
Volume 2. Design Guidelines *Effective January 2025*

1.4 Pedestrian Considerations
All new development and redevelopment projects are required to provide adequate pedestrian access via the construction or reconstruction of sidewalk infrastructure. The goal of this policy is to ensure that all modes of transportation are taken into consideration when designing any new project, whether residential, commercial, industrial or recreational. Furthermore, it is ensuring that a complete sidewalk network is provided throughout the city, while also recognizing that sidewalks may not be feasible in all circumstances due to unforeseen or uncontrollable situations.

1.4.1 Sidewalk Design Requirements
City of Jacksonville Sec. 654.133, Ordinance Code

Sidewalks shall be provided for all developments, including residential or non-residential infill lots, and along all new, reconstructed, and existing streets, to provide for safe pedestrian travel. Sidewalks shall be provided as indicated in Table 2.2-2 and shall be constructed in accordance with these Land Development Procedures Manual, the City Standard Details and the City Standard Specifications:

Sidewalk Width

- Where buildings are located along-side of the right-of-way, minimum sidewalk width specified in Table 2.2-2 shall be increased by 3 feet.
- When the projected volume of pedestrians on a sidewalk is unusually high, the Transportation Planning Section may require an increase in sidewalk width.

Sidewalk Planting Strips and Clear Zones

- To provide proper pedestrian/vehicle separation and adequate space for traffic signs, poles, utilities, etc., planting strips shall be located between the edge of pavement and sidewalk.
- For urban, suburban, and rural development areas, the minimum width of a planting strip shall be 5 feet, which measures from the back of the curb to the edge of the sidewalk.
- When trees will be located within the planting strip, the minimum width shall be increased to 8 feet.

Special Overlay Sidewalk Design Criteria

Sidewalk construction must be consistent with design criteria established for special overlay zones. The following special overlay zones have been established with special sidewalk requirements.

Special Overlay Zone	References
Downtown Overlay Zone	City Ordinance Section 656.361 Downtown Design Guidelines Riverwalk Park Design Criteria
Riverside/Avondale Zoning Overlay	City Ordinance Section 656.399.28-30
Renew Arlington Community Redevelopment Agency Overlay	City Ordinance Section 656.399.62

1.4.3 Exemptions From Sidewalk Requirements

Required sidewalk widths shall be provided within existing city or state road rights-of-way for all proposed development and re-development of property fronting along city or state road rights- of-way except as follows:

1. A sidewalk will not be required where a sidewalk already exists as long as it meets ADA Standards and General Sidewalk Requirements. ADA standard curb ramps, curb cuts, and detectable warnings are required at all intersections where one or more of the rights-of-way of the intersecting streets contain sidewalks.

2.1.3 Development Area

Each roadway exists within a development area, which defines the desirable development characteristics to maintain community growth according to the City's Comprehensive Plan. Development Areas are established by the Planning and Development Department. The development area can be found on the City's Land Development Review Map using the Land Use - Zoning Layer Group, Development Areas and are defined in Table 2.1-3.

Table 2.1-3 Development Area Descriptions

Development Areas	Description
Downtown	This area encompasses Jacksonville's downtown urban core. Within this area, the City encourages revitalization and the use of existing infrastructure through redevelopment and infill development at high densities.
Urban Priority Area (UPA)	This area generally includes the historic core of the City and major connecting corridors. Within this area, the City encourages revitalization and the use of existing infrastructure through redevelopment and infill development at high densities. Development is expected to employ urban development characteristics.
Urban Area (UA)	This area generally corresponds with the densely developed portions of the City that have been in residential or employment generating uses since consolidation. It also includes major corridors which connect the other Development Areas. Similar to the UPA, the intent of the UA is to encourage revitalization and the use of existing infrastructure through redevelopment and infill development, but at moderate urban densities which are transit friendly. Also similar to the UPA, the UA is intended to support multimodal transportation and the reduction of per capita greenhouse gas emissions and vehicle miles traveled.
Suburban Area (SA)	This area generally corresponds with the urbanizing portions of the City in areas that have usually been developed after consolidation. Development should generally continue at low densities with medium density development at major corridor intersections and transit stations. Development at these locations should promote a compact and interconnected land development form.
Rural Area (RA)	This area consists of all lands outside of the SA and corresponds with predominantly undeveloped portions of the City with land uses such as Agriculture, Recreation, Conservation, or Public Buildings Facilities. Development should occur at very low densities which create little demand for new infrastructure and community serving supporting uses, unless development occurs under the Multi-Use Category or as a Master Planned Community as defined in this element. Development may occur within the RA provided that it is consistent with Operational Provisions and the Land Use category descriptions. Otherwise, development beyond such boundaries is considered urban sprawl and is to be discouraged.

** ITE *Manual of Transportation Engineering Studies* provides guidance in regard to travel speeds

Table 2.2-1 Roadway Design Criteria

For all Context Sensitive Design Classifications, Table 2.2-1 specifies the following sidewalk widths for the Development Areas described in Table 2.1-3 above:

Downtown	8 feet
Urban	6 feet
Urban Priority Area	8 feet
Suburban Area	6 feet
Rural Area	5 feet

Land Development Procedures Manual
Volume 4. Specifications *Effective January 2025*

Section 601. LANDSCAPING

2.3 TOPSOIL

A. Fine sand or loamy fine sand indigenous to the area suitable for plant growth that is free of weeds, roots, stumps, rocks larger than ½" diameter, organic muck, hard pan, toxic substances detrimental to plant growth, and construction debris such as limerock, concrete, and asphalt pieces. Deliver in a normally moist condition, neither muddy nor wet. Soil used for topsoil shall meet the following criteria measured in accordance with the appropriate AASHTO and ASTM standard:

1. USDA Texture: Fine Sand, Loamy Fine Sand
2. AASHTO Classification: A-3
3. pH 5.0-7.5
4. Deleterious Material 0-2% maximum by mass (rocks, roots, sod)
5. Organic Matter Content 1-10% by mass
6. Sand Content 80-96% by mass
7. Silt & Clay Content 3-10% by mass

B. Submit a one-quart sample of the topsoil to the Engineer before beginning planting and obtain approval. If requested by the Engineer, submit a soil test report from a commercial soil testing laboratory to verify compliance with the above criteria.

2.4 EXISTING SOIL

Use existing soil in plant pits if the soil complies with the standard for topsoil, unless the soil is contaminated with limerock, clay, brush, weeds, roots, stumps, stones larger than 1 1/2 inches in any dimension, litter and other extraneous or toxic matter harmful to plant growth. Remove contaminated soil and replace with acceptable stockpiled existing soil or new topsoil.

2.6 SOIL CONDITIONER

Provide 100% organic soil conditioner, free of limerock, clay, brush, weeds, roots, stumps, gravel, litter and other extraneous or toxic matter harmful to plant growth. Soil conditioner shall be one of the following:

A. Pine Bark Fines. 100% pine bark fines screened from other pine bark products in accordance with standards of the Mulch & Soil Council (Web: www.mulchandsoilcouncil.org) with a maximum of 15% pine wood content and at least 90% of particle size 1/4" or less.

B. Compost: A commercially blended and ground mixture of yard waste, tree trimmings, manure, and other biodegradable materials composted at a temperature and for the time necessary for the biological decomposition of the material, which significantly reduces the viability of pathogens and weed seeds, stabilizes carbon, produces high fungal material to benefit plant growth. Compost shall meet the following US Compost Council STA/MECC criteria.

Stability:	≤2 mg CO2-C per G OM per day
Maturity:	90-100% seed emergence and vigor
Moisture Content:	35-60% wet weight Organic Matter Content 35-60% dry
weight Particle Size:	3/8”-1/2” screen size to pass through
pH:	6.0-7.5
Soluble Salts:	Max. 5 dS/m (mmhos/cm) dry weight basis
Physical Contaminants:	≤0.5% dry weight basis
Chemical Contaminants:	meet or exceed US EPA Class A standard, 40CFR §503.13 Tables 1 and 3
Biological Contaminants:	meet or exceed US EPA Class A standard 40CFR § 503.32(a)

Exhibit C. Soil Profile Rebuilding Standards

Source:

This project was made possible in part by a grant from the Tree Research and Education Endowment Fund.

Additional support was provided by the Institute for Critical Technology and Applied Research.

https://sres.frec.vt.edu/

Soil Profile Rebuilding

Specification for Restoration of Graded and Compacted Soils that will be Vegetated

CSI Div 2

CSICode-02910-Plant Preparation-Soil Preparation

CONTENTS

1. PURPOSE AND DESCRIPTION

1.1 Purpose

Soil Profile Rebuilding is an appropriate soil restoration technique for sites where topsoil has been completely or partially removed and subsoil layers have been compacted (graded and/or trafficked by equipment). It may also be used with some modifications if topsoil is present. This is not an appropriate technique in sites with surface compaction only (6 inches or less), although this situation is rare on construction sites. This technique is not appropriate within the root zones of trees that are to be protected. Soil Profile Rebuilding can improve physical and biological characteristics of soil to allow for revegetation. Soil chemical problems, soil contamination from heavy metals, pathogens, or excessive debris or gravel shall be addressed separately.

1.2 Description of Procedure

The procedure includes a subsoiling procedure, addition of organic matter in the form of compost, replacement or addition of topsoil, and subsequent planting with woody plants. The soil preparation portion of Soil Profile Rebuilding puts the components in place for restoration to characteristics similar to undisturbed soils, however, the complete restoration process requires root activity and occurs over many years. This technique may be appropriate for restoration of disturbed soils as defined by SITES™.

1.3 Expected Outcomes

Soil Profile Rebuilding may improve vegetation establishment, increase tree growth rates, increase soil permeability, enhance formation of aggregates in the subsoil, and enhance long-term soil carbon storage.

2. PROCEDURE

2.1 Location

Profile Rebuilding shall occur on all soil areas that are to be vegetated that have been disturbed by trafficking or grading during construction or prior to construction. Soil areas that are not to be treated should be protected by permanent fencing during the construction period and all access to these areas prohibited. A soil map delineating protected areas and areas to be treated shall be approved by the owner, arborist, or landscape architect before grading or construction begins.

2.2 Sequencing

Profile Rebuilding shall occur after site disturbance is complete, including all vehicle and equipment trafficking, but before replacement of topsoil. Once profile rebuilding is complete, all traffic and equipment or materials storage on treated areas is prohibited with the exception of foot traffic for the purposes of planting or mulching.

If topsoil is already present and is 4 inches or greater in depth, use the “modifications for pre-existing topsoil.”

2.3 Remove foreign materials

Remove all foreign materials resulting from construction operations, including oil drippings, stone, gravel, and other construction materials from the existing soil surface.

2.4 Application of Compost

Spread mature, stable compost (see Section 3. Definitions for definition of compost) to a 4 inch depth over compacted subsoil.

2.5 Subsoiling

Subsoiling may be performed when soil is neither wet nor dry. If a shovel cannot be forced into the soil, it is too dry. If the surface is sticky or muddy, it is too wet. Use a backhoe rearbucket or similar equipment with a tined bucket to break up the compacted soil and incorporate the compost. Work backwards away from excavated soils so that treated soil is not trafficked by the equipment. Insert the bucket through the compost layer and into the subsoil to a depth of 24 inches and raise a bucket of soil at least 24 inches above the soil surface. Tip the bucket and allow soil to fall. Repeat this procedure until no clumps of compacted soil larger than 12 inches in diameter remain. The tines of the bucket can be used to break apart larger clumps if necessary. 50% of the soil shall be in clumps 6 inches or smaller. No clumps shall be greater than 18” in diameter. The subsoiling is not intended to homogenize the compost and soil, but rather loosen the soil to a 24-inch depth and create veins of compost down to that depth as well. To ensure that subsoiling reached the appropriate depth, a push tube soil sampler shall be used to verify compost is present at 24 inch depth.

2.6 Replacement of topsoil

2.6.1 Standard procedure

Stockpiled topsoil, or additional topsoil if none is available from the site, shall be returned to the site to a 4 inch minimum depth (see *Section 3.3 Definitions* for definition of topsoil). If soil was severely disturbed (see definitions), a 6-8 inch minimum shall be replaced.

2.6.2 Modification if significant topsoil is already present before Profile Rebuilding is initiated

Case 1:

At least four inches of topsoil is present on the site after construction activities are completed AND soil **is not** severely disturbed (see *Section 3.3 Definitions* for description of severely disturbed).

Case 2:

Less than 4 inches of topsoil is present on site after construction activities were completed but before Profile Rebuilding is initiated, OR soil is severely disturbed (see *Section 3.3 Definitions* for description of severely disturbed).

For Case 1: A minimum of 3 inches additional topsoil shall be placed over the subsoiled layer before tilling.

For Case 2: Follow *Section 2.6.1 Standard procedure*, as if no topsoil had been present.

2.7 Tilling

Rototill topsoil to a depth of 6-8 inches when soil is neither dry nor very moist. Rototilling depth should cross the interface with the subsoiled layer by a minimum of 1 inch and can be verified with a random sampling with a push tube soil sampler.

2.8 Planting

Plant the site with woody plants, trees or shrubs, at a density that insure a minimum of 50% of the site will be occupied with roots within 10 years. Planting of at least one large stature tree (e.g., one that will mature at approximately 60-70 feet in height) or 20 medium stature shrubs per 5,000 sq. ft. shall be considered to achieve this.

3. DEFINITIONS

3.1 Topsoil

Soil can be considered topsoil if it originates from an A horizon of a natural soil or is a mineral soil with 3% or greater organic matter content and a NRCS textural class similar to pre-development A horizon soils for the site or as specified by the owner, arborist, or landscape architect. Blended soils shall not be used unless specified by the owner, arborist, or landscape architect. In addition topsoil shall:

1. Be friable and well drained

2. have a pH between 5.2 and 7.5 (a narrower range may be specified for particular plant material)
3. have an organic matter content not less than 3%
4. have low salinity as indicated by an electrical conductivity of less than 4.0 mmhos/cm
5. be free of debris, stones, gravel, trash, large sticks, heavy metals, and other deleterious contaminants, (if screening is used to remove debris, screen size must be ¾ inch or larger).
6. have a nutrient profile such that it is able to support plant growth
7. be free of noxious weed seeds

3.2 Compost

Compost feedstock shall be leaves, yardwaste, or foodwaste. Biosolid-based composts shall not be used. A compost sample with analysis shall be submitted for approval to the client before application.

Stability refers to the rate of biological breakdown, measured by carbon dioxide release. Maturity refers to completeness of the aerobic composting process and suitability (lack of plant toxicity) as a plant growth media, often measured by ammonia release and by plant growth tests. Compost manufacturers that subscribe to the US Composting Council's testing program may document stability as compost testing 7 or below in accordance with TMECC 05.08-B, "Carbon Dioxide Evolution Rate". Maturity (suitability for plant growth) may be documented as compost testing greater than 80% in accordance with TMECC 05.05-A, "Germination and Vigor". Compost is considered mature and stable if it tests at 6.0 or higher on the Solvita Compost Maturity Index Rating, which is a combination of Carbon Dioxide and Ammonia Maturity Tests (test information and equipment available at www.solvita.com).

Compost shall also:

1. Free of weed seeds
2. Free of heavy metals or other deleterious contaminants
3. Have an EC of less than 4.0 mmhos/cm

3.3 Severely Disturbed Soil

Soil shall be considered *severely disturbed* if grade was lowered more than 14 inches OR soil was compacted in lifts regardless of the final grade.

4. SUBMITTALS

4.1 Soil Map

A soil map indicating soil areas to be protected and those to be restored via Soil Profile Rebuilding shall be submitted by the contractor for approval by the owner, arborist, or landscape architect before construction begins.

4.2 Compost

A compost sample with analysis certifying it is stable, mature, from acceptable feedstocks and free of contaminants and weed seeds shall be submitted for approval to the landscape architect or owner before compost is applied to the soil.

4.3 Topsoil

A topsoil sample with analysis from a certified testing laboratory and verification of source shall be submitted for approval to the landscape architect or owner before application. Separate documentation is required for each 100 cubic yards of topsoil unless otherwise approved by the landscape architect or owner.

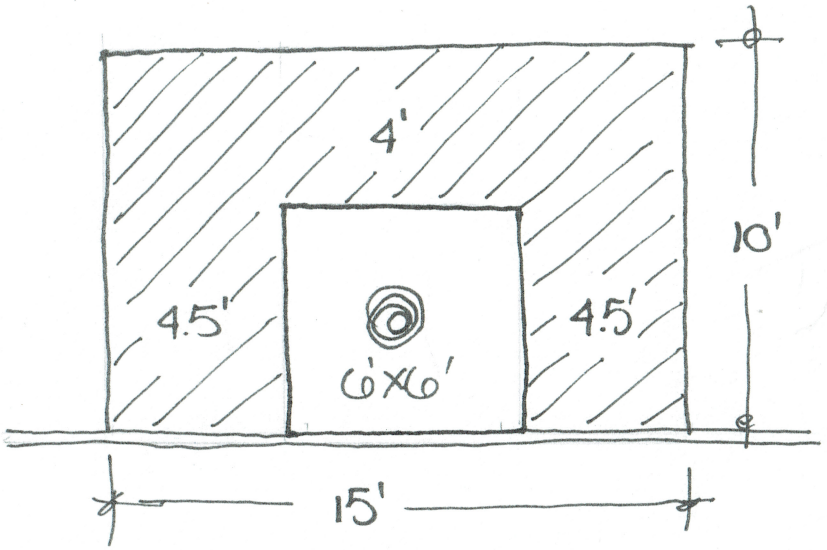
REFERENCES & PERMISSIONS

Use of this specification has been documented to increase tree canopy and soil carbon stores compared with typical practices. See www.urbanforestry.frec.vt.edu/SRES for more information.

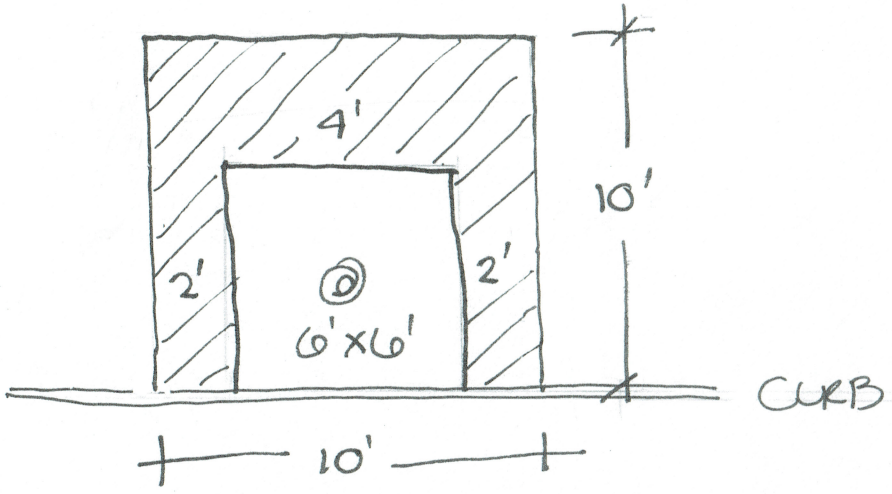
SMALL TREE - 300 CF

SILVACELL

OPEN SPACE / CUT OUT

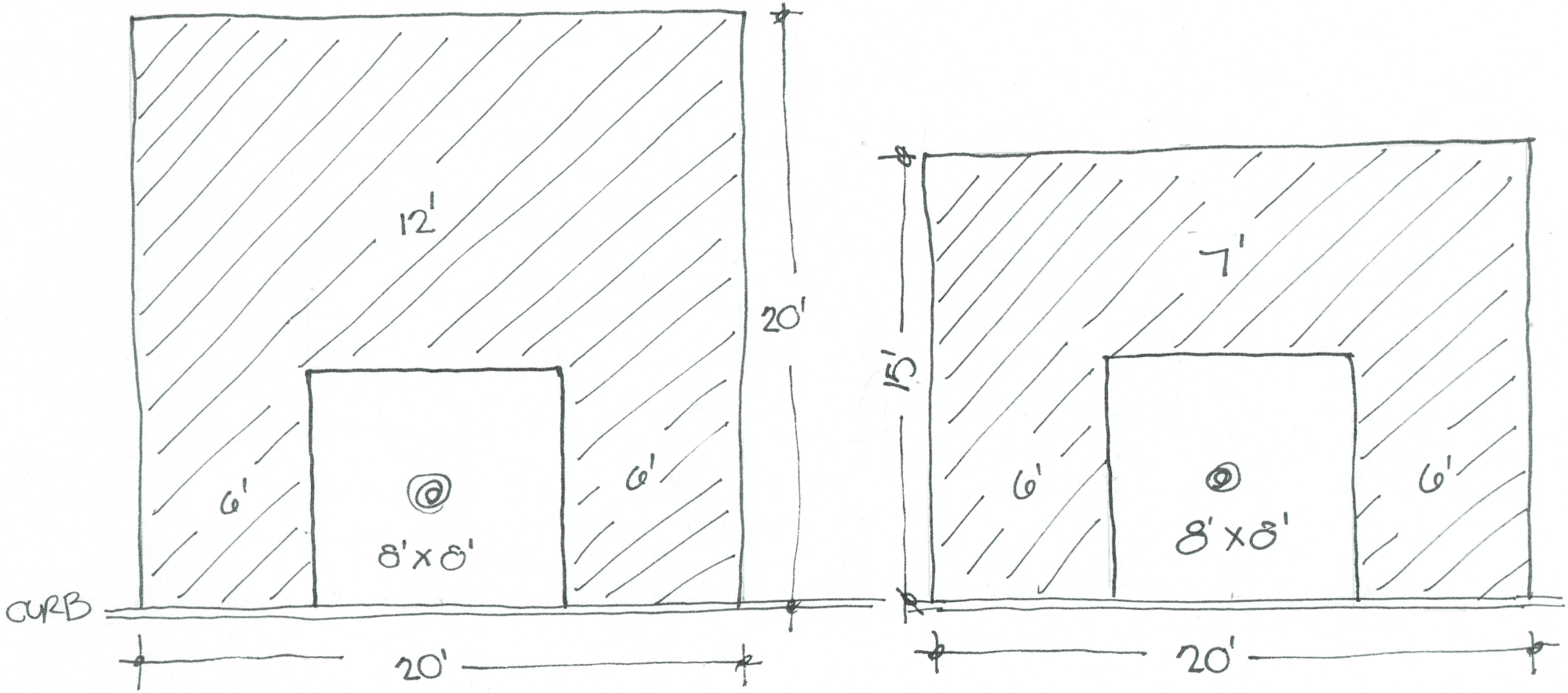


@ 2' DEPTH = 150 SF
15' X 10'



@ 3' DEPTH = 100 SF
10' X 10'

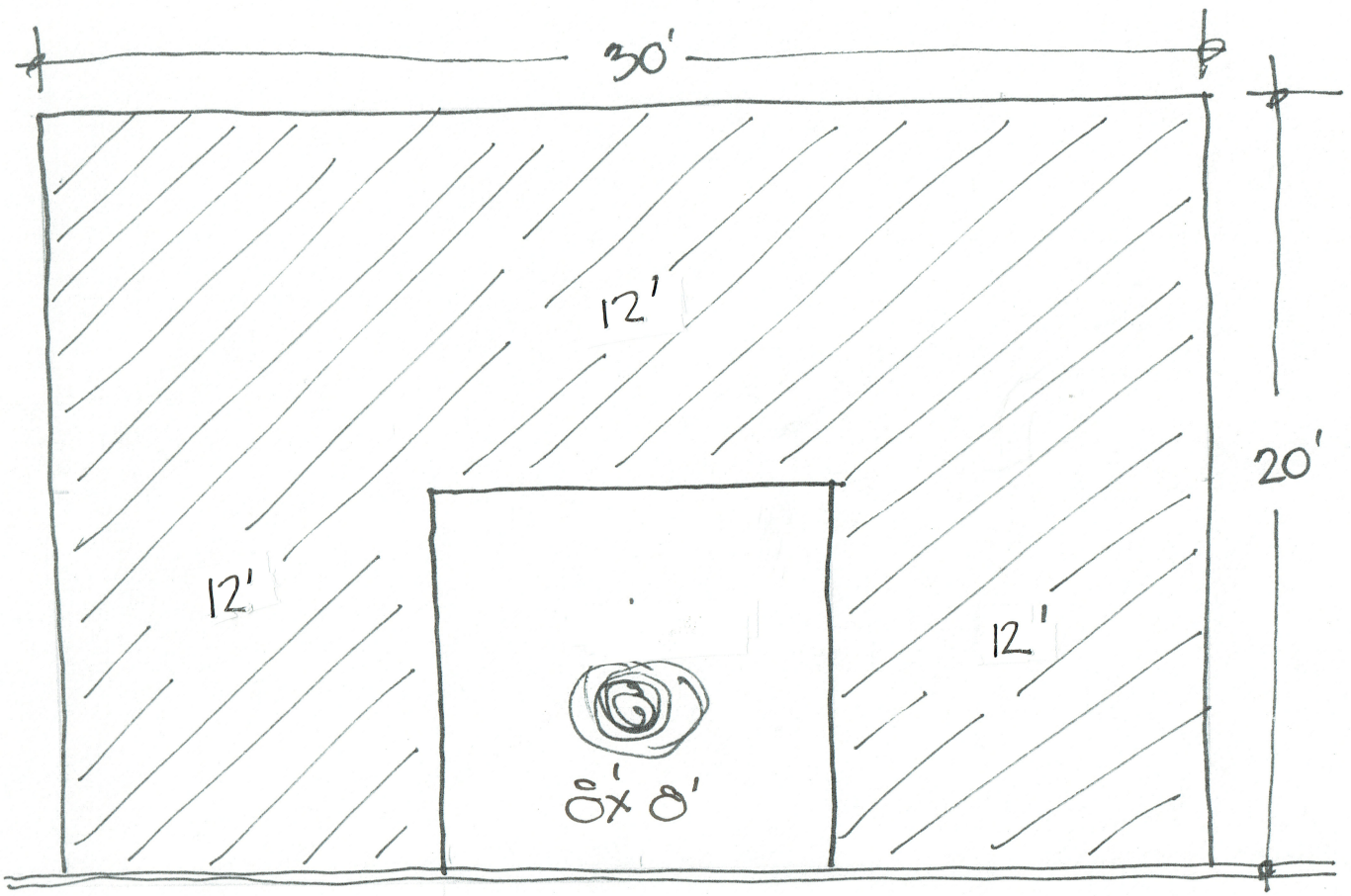
MEDIUM TREE - 1200 CF



- @ 3' DEPTH = 400 SF
  20' x 20'

- @ 4' DEPTH = 300 SF
  20' x 15'

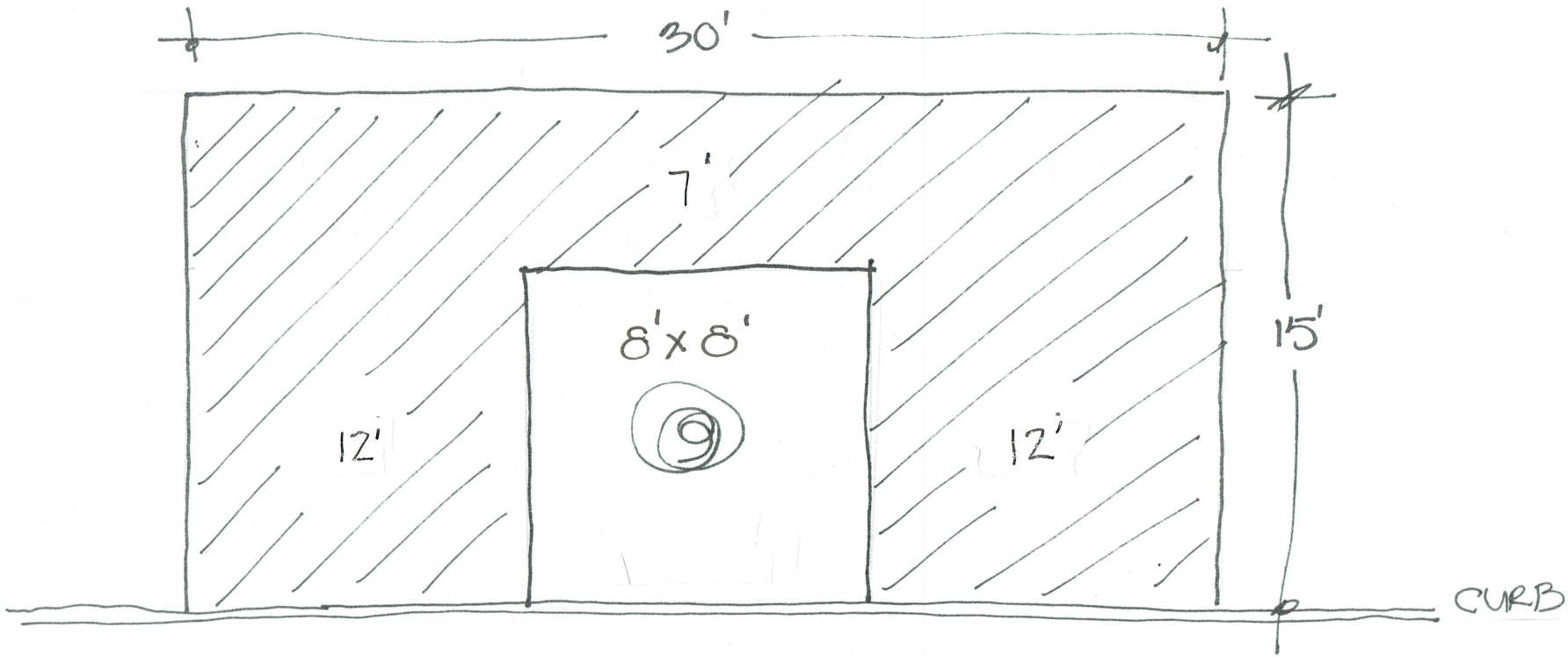
LARGE TREE = 1800 CF



@ 3' DEPTH = 600 SF

20' x 30'

LARGE TREE = 1800 CF



@ 4' DEPTH = 450 SF

15' x 30'

LDPM Volume 4, Section 503

C. Concrete Curb, Walkways, Gutters and Driveways

1. Where damaged or required to be cut by the Contractor's operations, walkways and driveways shall be repaired to conform to the existing type construction. Walkways and driveways other than concrete shall be restored by approved methods and materials, equal to or better than original condition.

2. For the restoration of concrete walkways and driveways, the existing adjacent concrete shall be cut back with a masonry saw or removed to the nearest dummy expansion joint, to remove undermined concrete and provide square edges, per Paragraph 3.3.C, this Section.

3. The area over which the concrete is to be placed shall be filled with Class A-3 Sand to the proper grading and width. The bed shall be thoroughly compacted by approved mechanical compaction equipment to 100 percent of maximum density as determined by the Laboratory Standard Compaction Test (AASHTO T99). In all cases where fill is required to bring the subgrade to the required elevation, the filling shall be made in layers not to exceed six inches in depth before tamping and each layer shall be thoroughly compacted. Filling shall be at +/- 2 percent of optimum moisture content at the time of compaction. A tolerance of minus 2 percent will be allowed in the compaction effort.

4. An approved type of expansion joint shall be inserted across walkways at intervals not exceeding 18 feet with dummy groove joints at 6-foot intervals. Where walkways and driveways must be replaced where they intersect, expansion joints shall be provided on all four sides of the repair.

5. The thickness of concrete walkways and driveways shall be equal to or greater than existing, but not less than 4 inches for walkways and 5 inches for driveways.

6. Concrete walkways and driveways shall be monolithic construction and shall be 3,000 psi Concrete as specified under Section 412, Portland Cement Concrete

Figure 2.2-2 Roadway Design Matrix Based on Design Classification Designations

			Context Sensitive Design Classification[1]								
		Thoroughfare	Boulevard	Avenue	Limited Avenue	Industrial	Neighborhood Commercial Street	Business Park	Neighborhood Residential Street	Residential Local Subdivision Street	Alley
			Development Areas[2]								
		- Downtown - Urban - Urban Priority - Suburban - Rural	- Downtown - Urban - Urban Priority - Suburban - Rural	- Downtown - Urban - Urban Priority - Suburban - Rural	- Downtown - Urban - Urban Priority - Suburban - Rural	- Downtown - Urban - Urban Priority - Suburban - Rural	- Downtown - Urban - Urban Priority - Suburban - Rural	- Downtown - Urban - Urban Priority - Suburban - Rural	- Downtown - Urban - Urban Priority - Suburban - Rural	- Downtown - Urban - Urban Priority - Suburban - Rural	- Downtown - Urban - Urban Priority - Suburban - Rural
Roadway Functional Classification[3,4]	Major Arterial	A	B								
	Minor Arterial		C	D	E	F					
	Collector			G	H	I	J	K	L		
	Local[5]					M	N	O	P	Q	R

Notes:

Context Sensitive Design Classification - COJ GIS, Land Development Review Map Set, Design Classification Layer

Development Area - COJ GIS, Land Development Review Map Set, Land Use - Zoning Group, Development Areas Layer

Roadway Functional Classification - COJ GIS, Land Development Review Map Set, Transportation Group, Roadway Functional Classification Layer

Truck Route - COJ GIS, Land Development Review Map Set, Transportation Group, Truck Routes Layer

Any road not classified is considered a Local Road.

Table 2.2-1 Roadway Design Criteria

See Fig 2.2-1	Design/Posted Speed (mph)	Minimum R/W Width (ft.)[1]	Lane Width (ft.)[2]	Typical Section Detail	Design Vehicle	Effective Intersection Curb Radius (ft.)	Maximum Superelevation Rate (ft/ft)	Sidewalk Width (both sides) (ft)	Bike Lanes	Roadway Lighting
A										
Downtown	≤ 30	150	11	P-119	WB-40	30 See Section 2.2.2	0.05	8	See Section 2.4.1	See Section 1.5
Urban								6		
Urban Priority	≥ 30							8		
Suburban	≥ 35							6		
Rural								5		
B										
Downtown	≤ 30	150	11	P-120	SU-30	30 See Section 2.2.2	0.05	8	See Section 2.4.1	See Section 1.5
Urban								6		
Urban Priority	≥ 30				WB-40			8		
Suburban	≥ 35							6		
Rural								5		
C										
Downtown	≤ 30	120	11	P-120	SU-30	30 See Section 2.2.2	0.05	8	See Section 2.4.1	See Section 1.5
Urban								6		
Urban Priority	≥ 30				WB-40			8		
Suburban	≥ 35							6		
Rural								5		
D										
Downtown	≤ 30	120	11	P-122	SU-30	30 See Section 2.2.2	0.05	8	See Section 2.4.1	See Section 1.5
Urban								6		
Urban Priority	≥ 30							8		
Suburban	≥ 35							6		
Rural								5		
E										
Downtown	≤ 30	120	11	P-124	SU-30	30 See Section 2.2.2	0.05	6	See Section 2.4.1	See Section 1.5
Urban										
Urban Priority	≥ 30									
Suburban	≥ 35									
Rural										

See Fig 2.2-1	Design/Posted Speed (mph)	Minimum R/W Width (ft.)[1]	Lane Width (ft.)[2]	Typical Section Detail	Design Vehicle	Effective Intersection Curb Radius (ft.)	Maximum Superelevation Rate (ft/ft)	Sidewalk Width (both sides) (ft)	Bike Lanes	Roadway Lighting
F										
Downtown	≤ 30	120	12	P-128	WB-40	35 See Section 2.2.2	0.05	6	See Section 2.4.1	See Section 1.5
Urban										
Urban Priority	≥ 30									
Suburban	≥ 35									
Rural										
G										
Downtown	≤ 30	80	11	P-122	SU-30	30 See Section 2.2.2	0.04	8	See Section 2.4.1	See Section 1.5
Urban								6		
Urban Priority	≥ 30							8		
Suburban	≥ 35							6		
Rural		100					0.08	5		
H										
Downtown	≤ 30	80	11	P-124	SU-30	30 See Section 2.2.2	0.04	6	See Section 2.4.1	See Section 1.5
Urban										
Urban Priority	≥ 30									
Suburban	≥ 35									
Rural		100					0.08			
I										
Downtown	≤ 30	80	12	P-128	WB-40	35 See Section 2.2.2	0.04	6	See Section 2.4.1	See Section 1.5
Urban										
Urban Priority	≥ 30									
Suburban	≥ 35									
Rural		100					0.08			
J										
Downtown	≤ 30	100	11	P-125	WB-40	30 See Section 2.2.2	0.04	8	See Section 2.4.1	See Section 1.5
Urban								6		
Urban Priority	≥ 30							8		
Suburban								6		
Rural	≥ 25	120					0.08	5		

See Fig 2.2-1	Design/Posted Speed (mph)	Minimum R/W Width (ft.)[1]	Lane Width (ft.)[2]	Typical Section Detail	Design Vehicle	Effective Intersection Curb Radius (ft.)	Maximum Superelevation Rate (ft/ft)	Sidewalk Width (both sides) (ft)	Bike Lanes	Roadway Lighting
K										
Downtown	≤ 30	80	11	P-129	WB-40	30	0.04	6	See Section 2.4.1	See Section 1.5
Urban										
Urban Priority	≥ 30					See Section 2.2.2				
Suburban										
Rural	< 35	100					0.08			
L										
Downtown	≤ 25	80	11	P-126	DL-23	20	0.04	8	See Section 2.4.1	See Section 1.5
Urban								6		
Urban Priority								8		
Suburban						See Section 2.2.2		6		
Rural		100					0.08	5		
M										
Downtown	≤ 35	60	12	P-128	WB-40	35	0.04	6	See Section 2.4.1	See Section 1.5
Urban										
Urban Priority										
Suburban						See Section 2.2.2				
Rural		80					0.08			
N										
Downtown	≥ 25	80	11	P-125	DL-23	30	0.04	8	See Section 2.4.1	See Section 1.5
Urban								6		
Urban Priority								8		
Suburban						See Section 2.2.2		6		
Rural		100					0.08	5		
O										
Downtown	≤ 35	60	11	P-129	WB-40	30	0.04	6	See Section 2.4.1	See Section 1.5
Urban										
Urban Priority										
Suburban						See Section 2.2.2				
Rural		80					0.08			

See Fig 2.2-1	Design/Posted Speed (mph)	Minimum R/W Width (ft.)[1]	Lane Width (ft.)[2]	Typical Section Detail	Design Vehicle	Effective Intersection Curb Radius (ft.)	Maximum Superelevation Rate (ft/ft)	Sidewalk Width (both sides) (ft)	Bike Lanes	Roadway Lighting
P										
Downtown	≤ 25	60	11	P-126	DL-23	15 See Section 2.2.2	0.04	8	See Section 2.4.1	See Section 1.5
Urban								6		
Urban Priority								8		
Suburban								6		
Rural		80					0.08	5		
Q										
Downtown	≤ 25	50	12	P-127	DL-23	15 See Section 2.2.2	0.04	5	See Section 2.4.1	See Section 1.5
Urban										
Urban Priority										
Suburban										
Rural							0.08			
R										
Downtown	≤ 25	24	Single 12' lane w/ 6' pavers on each side	P-130	P	15 See Section 2.2.2	0.04	Not Applicable	Not Applicable	See Section 1.5
Urban										
Urban Priority										
Suburban										
Rural							0.08			

1. Minimum ROW widths established by Code of Ordinance Section 654.113
2. Minimum lane width may be reduced to 10 feet in specific low-speed situations at the discretion of Traffic Engineering

Table 2.2-2 Preferred Truck Route Design Criteria

See Fig 2.2-1	Design/Posted Speed (mph)	Minimum R/W Width (ft.)[1]	Minimum Lane Width (ft.)[2]	Typical Section Detail	Design Vehicle	Effective Intersection Curb Radius (ft.)[3]	Maximum Superelevation Rate (ft/ft)	Sidewalk Width Both Sides ft	Bike Lanes	Roadway Lighting
Major Arterial										
Downtown	≥ 35	150	11	See Table 2.2-1 based on Context Classification	WB-62	See FDOT Design Manual Section 212	0.05	8	See Section 2.4.1	See Section 1.5
Urban								6		
Urban Priority								8		
Suburban								6		
Rural								5		
Minor Arterial										
Downtown	≥ 35	120	11	See Table 2.2-1 based on Context Classification	WB-62	See FDOT Design Manual Section 212	0.05	8	See Section 2.4.1	See Section 1.5
Urban								6		
Urban Priority								8		
Suburban								6		
Rural								5		
Collector										
Downtown	≥ 35	80	11	See Table 2.2-1 based on Context Classification	WB-62	See FDOT Design Manual Section 212	0.04	See Table 2.2-1 based on Context Classification	See Section 2.4.1	See Section 1.5
Urban										
Urban Priority										
Suburban										
Rural							0.08			
Local										
Downtown	≤ 35	50	11	See Table 2.2-1 based on Context Classification	WB-62	See FDOT Design Manual Section 212	0.04	See Table 2.2-1 based on Context Classification	See Section 2.4.1	See Section 1.5
Urban	≥ 35									
Urban Priority										
Suburban										
Rural							0.08			

1. Minimum ROW widths established by Code of Ordinance Section 654.113
2. Minimum lane width may be reduced to 10 feet in specific low-speed situations at the discretion of Traffic Engineering
3. Consider implementing mountable aprons for intersections in downtown, urban, and urban priority truck routes.

Table 5.3-2 Tree Commission Level 2 Tree Planting Approved List

Tree	ROW	Parks	DCPS[14]	Height/ Spread	Plan Canopy Diameter[1]	Foilage[2]	Light Required[3]	Soil Drainage[4]	Drought Tolerance[5]	Growth Rate[6]	Soil Tolerance (pH)	IFAS FL Friendly[13]
SMALL TREES												
American Hornbeam *Carpinus caroliniana*	Y	Y		30-35'/ 25-30'	20'	DECID	FS/PS	WD	HIGH	SLOW	(4.2-7.6)	Y
Ashe Magnolia *Magnolia macrophylla ssp. ashei*		Y		20'	20'	DECID	PSH, SH	OW	MOD	MOD	(4.8-7.5)	
Eastern Redbud *Cercis canadensis*	Y	Y		15-30'/ 15-25'	20'	DECID	FS, PSH	WD	HIGH	RAPID	(4.2-7.6)	Y
Flatwoods Plum *Prunus umbellata*	Y	Y		12 – 20'	20'	DECID	FS, PSH	WD	MOD	MOD	(4.8-7.5)	Y
Crape Myrtle *Lagestroemia indica var. Natchez, Muskogee, or Tuskegee), Standard or Multi- trunk*	Y	Y	Y	15-20'/ 15-25'	18'	DECID	FS	WD	HIGH	MOD	(5.0-7.5)	Y
Hawthorn *Crataegus spp.*		Y	Y	25'	25'	DECID	FS, PSH	WD	HIGH	MOD	(4.8-7.5)	Y
Fringe Tree *Chionanthus virginicus*	Y	Y		12-20'/ 10-15'	10'	DECID	FS, PSH, SH	WD	MOD	SLOW	(6.0-6.5)	Y
Little Gem Magnolia *Magnolia grandiflora 'Little Gem'*	Y	Y		25-35'/ 8-10'	15'	E'GRN	FS, PSH, SH	AW, WD	MOD	SLOW	(4.5-5.0) tolerant to 7.5	Y
Yaupon Holly *Ilex vomitoria*	Y	Y	Y	15-25'/ 15-20'	15'	E'GRN	FS, PSH, SH	AW, WD	HIGH	SLOW	(4.5- 8.2)	Y
Wax-Leaf Ligustrum *Ligustrum japonicum*	Y	Y	Y	8-12'/ 15-25'	12'	E'GRN	FS, PSH	WD	MOD	MOD	(5.5-7.5)	Y
Wax Myrtle[9] *Myrica cerifiera*	Y	Y	Y	15-25'/ 20-25'	20'	E'GRN	FS, PSH, SH	W, WD	HIGH	RAPID	(5.5 -7.0) tolerant to 8.2	
Walters Viburnum *Viburnum obovatum*	Y	Y		8-25'/ 6-12'	10'	SEMI-E'GRN	FS, SH	W, OW	HIGH	MOD	(5.0-7.5)	Y

LEGEND

1 *Draw each tree symbol on the landscape plan to the diameter shown above to match the normal mature (20 year) canopy of each tree species. Do not overlap tree canopies of different species (ie,do not show the canopy circle of a sun loving crape myrtle overlapping the mature canopy circle of a live oak). However, tree canopy circles of the same species can overlap to create tree clusters or to create a solid, closely spaced row of trees. Also, new understory trees can be shown under existing shade trees if existing trees have high branching.*

2 *Foilage: DECID = Deciduous, E'GRN = Evergreen*

3 *Light Requirement: FS = Full Sun, PSH = Partial Shade (2-5 hrs. of sun or filtered sun), SH = Full Shade (<2 hrs. sun)*

4 *Soil Drainage: W=Always Wet (soil saturated for more than several days during growing season), OW=occasionally Wet (Soil saturated for several days during several days of growing season), WD=Well Drained*

5 *Drought Tolerance: HIGH=High (no watering required once well established), MOD= Moderate (occasional watering required during dry periods in growing season), LOW= Low (frequent watering required during dry periods of growing season)*

6 *Growth Rate: SLOW=Slow (<1ft/ yr.), MOD=Moderate (1-2 ft/ yr.), FAST=Fast (>2ft/ yr.)*

7 *Use Live Oak cultivars (Q. v. 'SDLN' ('Cathedral' Live Oak) or Q. v. 'QVTIA ('Highrise' Live Oak)) in medians when a single row of oaks with uniform spacing is desired. Use 'Highrise' Oak where oaks are near overhead power lines. Use common live oak for informal groupings.*

8 *Limit use of River Birch, Red Maple, and Weeping Willow to clusters around retention ponds and in areas of R.O.W. undisturbed by construction. Do not use in medians or within 20' of pavement. These trees don't do well in alkaline conditions generally found near pavement. Because River Birch and Willows have a short life span, use these tree sparingly. Generally, cluster with longer lived tree types.*

9 *Use Wax Myrtle only in mass planting for visual screening and transition into natural areas.*

10 *Provide 6'-8' minimum between Large Trees and pavement, curbs and other structures.*

11 *Trees not on the above approved list may be considered for approval by the Tree Commission. (www.coj.net/departments/public-works/tree-commission)*

12 *Because of weeping nature of Drake Elm, limit use to medians 30' wide or greater, measured from the edge of travel lane (i.e. two 1.5' curb & gutter & 27' grassed median) and where the tree can be set back 15' from the travel lane, if planted on the side of the street.*

13 *The definition of Florida-Friendly Landscaping™ in Florida Statutes section 373.185 (adopted in 2009 in Senate Bill 2080) addresses "quality landscapes that conserve water, protect the environment, are adaptable to local conditions, and are drought tolerant. The principles of such landscaping include planting the right plant in the right place, efficient watering, appropriate fertilization, mulching, attraction of wildlife, responsible management of yard pests, recycling yard waste, reduction of stormwater runoff, and waterfront protection. Additional components include practices such as landscape planning and design, soil analysis, the appropriate use of solid waste compost, minimizing the use of irrigation, and proper maintenance."*

14 *DCPS=Duval County Public Schools. When landscaping on Public Educational Facilities in Florida (including colleges and universities), please refer to State Requirements for Educational Facilities manual for a comprehensive description of planting standards at www.flrules.org.*

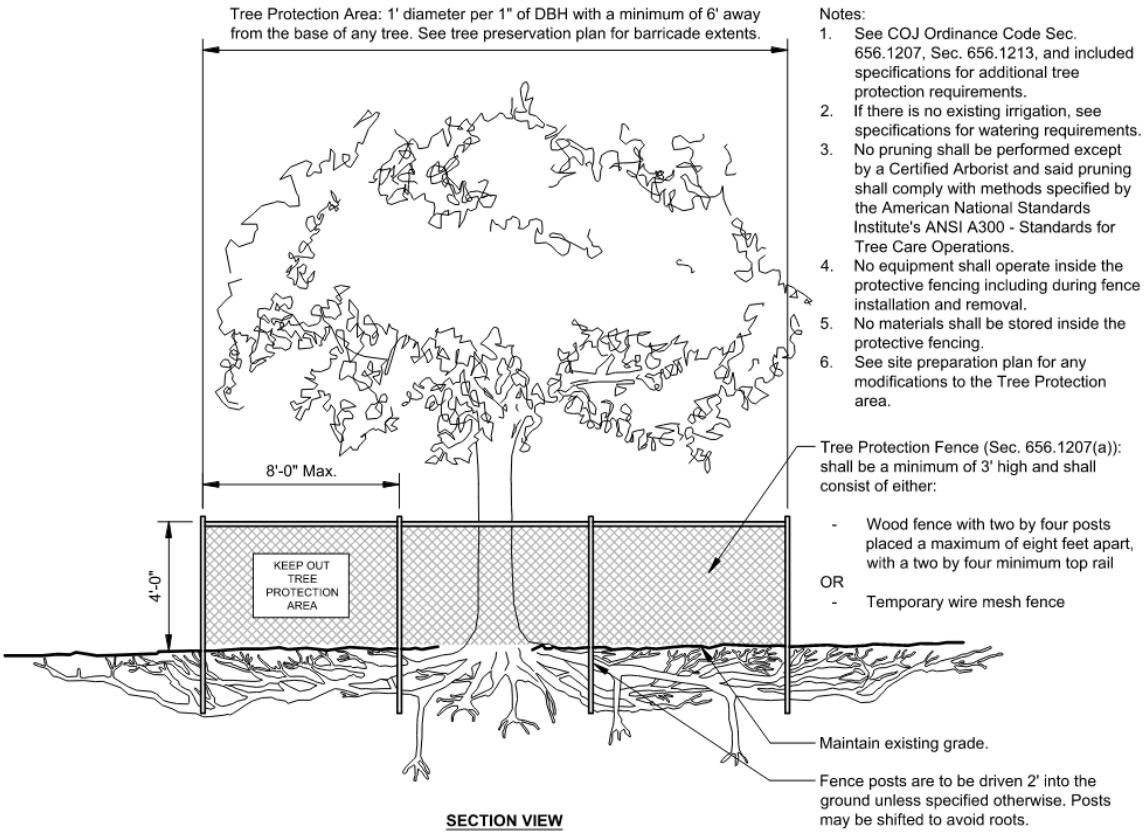


Figure 5.1-1 Tree Protection Procedures for Preservation of Trees

5.2.2 Relocation

Code of Ordinance, Section 656.1206 (f)

Relocation of trees shall be performed in accordance with ANSI A300 guidelines for transplanting and accepted industry practices, including watering to insure survival of transplanted stock.

5.2.3 Replacement

Code of Ordinance, Section 656.1206 (g)

When protected trees must be removed, they must be replaced based on the total caliper inches of the of protected trees removed. Code of Ordinance, Section 656.1206 (g) includes specific guidance on calculation of replacement inches dependent on protected tree type. In some instances, relocation of protected trees may be eligible to offset the inches of replacement trees required.

5.4 Streetside Landscaping

5.4.1 Streetside Landscaping Definition

Streetside landscaping shall include the installation of any tree, bush, shrubbery, groundcover (except sod or grass), irrigation system or any fixed object such as rocks, boulders, planters, fountains or soil mounds which are installed or planted in a median strip, utility strip or landscape island within the right-of-way of a city-owned and maintained roadway. This section shall not apply to existing natural vegetation within existing rights-of-way or to any protected trees or other items covered by the Landscape Ordinance in Part 12 of the Charter of the City of Jacksonville.

5.4.2 Streetside Landscaping Maintenance and Permits

Except under special arrangements or in certain designated districts, the City does not maintain streetside landscaping. Maintenance shall be the responsibility of the developer, property owner, Homeowners' Association or others as indicated in the permit. Prior to installing or planting any streetside landscaping, a plan shall be submitted for approval and permitting showing the location, size, and type of plants, as well as any other landscaping features.

5.4.3 Streetside Landscaping Design Criteria

All streetside landscaping shall be designed to provide adequate site distance for pedestrians, bicyclists, and vehicular drivers entering, exiting, or traveling within the right-of-way.

Trees or other landscaping shall be no closer than 4 feet from the face of the curb, or outside the critical root zone of the tree , whichever is further. For roadways containing no curb and gutter, landscaping shall not be placed within the recovery zone as specified in the FDOT Florida Greenbook Standard for Design.

All shrubbery, bushes, groundcover and landscape berms located within a median or landscape island shall not be higher than 2 feet from the pavement surface. Landscaping items located within the utility strip or adjacent to the outside edge of pavement shall not be greater than 2.5 feet in height when located within the line of sight required to maintain adequate sight distance at all intersections, horizontal curves, driveways and pedestrian crossings.

All trees used in streetside landscaping shall have a minimum trunk diameter of 4 inches and shall have an unobstructed clear height of 7 feet from the sidewalk or roadway surface to the bottom of the branches. Trees that have a drip line which protrudes over the roadway surface shall have an unobstructed clear height of 18 feet from the roadway surface to the bottom of the branches.

5.4.4 Guidelines For Planting Trees in City of Jacksonville ROW

PREPARING A STREET TREE PLAN

As part of the Site Engineering Plan Preliminary Submittal Package (LDPM Volume 1, Section 2.0), submit a tree planting plan drawn to scale that clearly shows the proposed locations of new trees and any existing structures such as sidewalks, light poles, driveways and existing trees found in the right-of-way grass strip. Before a plan is developed, the particular site conditions must be known to choose a proper tree species and to select a suitable location for the street trees.

HOW TO CHOOSE THE RIGHT TREE FOR THE RIGHT LOCATION

- Trees must be located to avoid damage to shallow underground utilities when holes are dug for new trees.

- Choose tree size based upon width of planting strip between the street and the sidewalk and height of overhead power lines:

Table 5.4-1 Tree Minimum Planting Widths

Tree Size	Minimum Planting Width
Small	4-6 ft.
Medium	6-8 ft.
Large	8+ ft.

Use upright growing tree.

- Where the entire strip between the street and the property line is sidewalk, tree planting areas can be created by the removal of section of sidewalk to the following dimensions.

Table 5.4-2 Tree minimum Planter Size

Tree Size	Minimum Planter Size
Small	5 x 5 ft
Medium	5 x 5 ft
Large	5 x 7 ft

- If the street is currently lined with trees all of the same type or of one dominate type, select a new tree of the same type to maintain the existing harmonious street canopy.
- Keep trees away from power poles, street lights, street warning signs, water meters, driveways, and street intersections the following distances to minimize conflicts with existing physical improvements in the right of way and to insure that safe traffic visibility is maintained:

Table 5.4-3 Minimum Distance Between Trees (and/or Structures)

Structure	Minimum Distance Between Trees (and/or Structures) (ft)		
	SMALL TREE	MEDIUM TREE	LARGE TREE
Power Pole	10	15	25
Street Light	10	15	25
Water Meter	5	10	15
Driveways, House Entry Walks	10	15	20
Street Intersections (measured to curb edge)	30	30	3

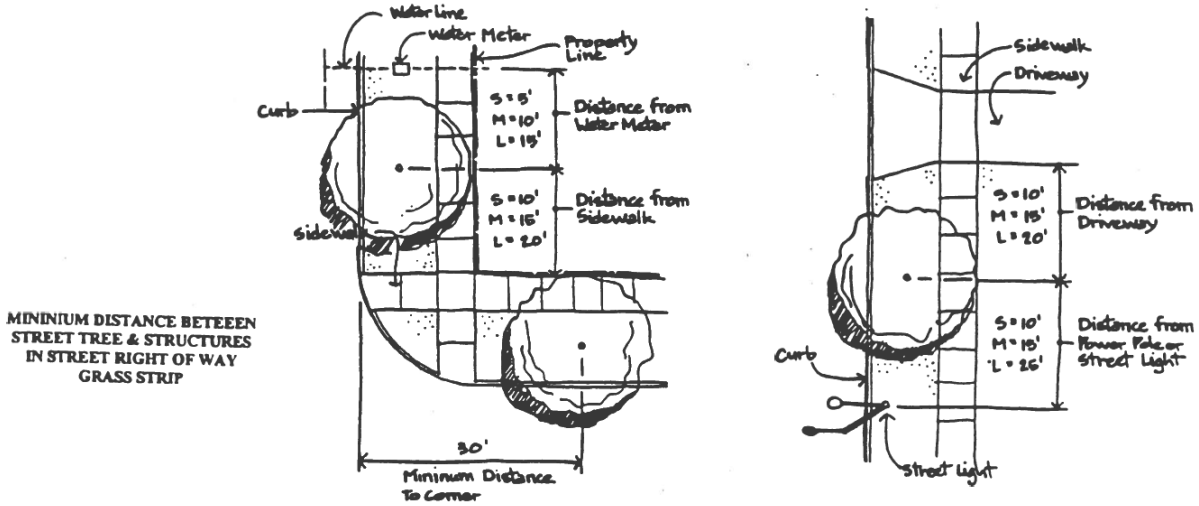


Figure 5.4-1 Minimum distance between street trees and structures in street ROW grass strip

- Check the soil. There are generally two broad soil conditions in Jacksonville. Very sandy, well drained soils occur on broad sand ridges; sandy loam, poorly drained soils occur in the flat lands. The remaining native vegetation is a good indication of the soil conditions. If you see numerous scrub oaks, pines, laurel oaks and live oaks in the area, the soil is well drained; if you see red maples, sweet gums and wax myrtles, the soil is poorly drained. Choose a tree that can handle the soil type. See the following table of recommended tree species that are suitable for your soil conditions.
- When incorporating trees along roadways with significant bicycle and pedestrian traffic or shared use paths, consider the use of trees that will provide shade for facility users.

USE RECOMMENDED TREE SPECIES:

Use the tree planting guide listed in Section 5.3.3 to select recommended trees for planting within the street right-of ways in Jacksonville.

- The following trees are attractive street side accents, but because of their irregular growth habits, lower limbs, and short life they should be planted in the front yards near the right-of-way line.

Table 5.4-4 Recommended Front Yard Trees

Tree Name	Height/ Spread	Plant Type	Soil Type	Location	Notes
Golden Rain Tree	30-40ft/ 20-30ft	D	Varied, not wet	Sun	Yellow fall flowers followed by pink fruit. Poor shape when young
Redbud	20-30ft/ 15-20ft	D	Varied	Sun, PS	Early pink flowers, short live
Fringe Tree	10-20ft/ 0-15ft	D	Organic	Sun, PS	Avoid hot dry sites
Chickasaw Plumb	15-25ft/ 15-25ft	D	Varied	Sun	Native, white spring flowers, drought tolerant

- Trees to avoid using as street trees:

Table 5.4-5 Trees to Avoid Using as Street Trees

Tree Name	Remarks
Weening Willow	Weak wood, invasive roots, weening low branches
Mimosa	Weak wood, sucker growth
Paper mulberry	Weak wood, suckers
Pecan	Weak wood, fruit drop
Chinaberry	Weak wood, sucker growth
Silver Maple	Weal wood, short lived, shallow roots
Southern Magnolia	Dense surface roots, messy leaves and fruit

- Tree Spacing will vary according to the street tree height class and generally should be the following:

Table 5.4-6 Tree Spacing Guidelines

Tree Size	Minimum Planter Size
Small	20-30 ft
Medium	30-40 ft
Large	40-60 ft

5.4.5 Grassing and Mulching Requirements

All roadway rights-of-way within the development, except those listed below, shall be grassed prior to final acceptance using one of the following methods.

1. One row of sod shall be placed behind the curb.
2. The disturbed areas from the back of the curb to the right-of-way line shall be seeded and/or mulched; or
3. Alternate stabilization measures may be installed subject to the approval of the Director of Public Works. Requests for deviation shall follow the procedures outlined in LDPM Volume 1, Section 5.0.

All areas disturbed by the Developer along the roadway rights-of-way outside of the development, except those listed below, shall be sodded, seeded and/or mulched prior to final acceptance.

Medians, landscape areas around entrance features and all other areas for which enhanced landscaping is proposed are not required to be grassed prior to final acceptance. In lieu thereof, such areas shall be delineated and included in the Developer's Warranty, Section I. GRASS AND SOD AGREEMENT (**Form LDPM-DWI**).

The owner of a lot (Developer, Builder or Homeowner) shall be responsible for maintaining stabilization on all lots/property owned by that party after final acceptance so as to ensure that the curb and streets remain free of silt and erosion.