

Article X Landscape and Tree Conservation Ordinance



SUMMARY



February 26, 2016



Introduction

To the Committee:

This material is provided to assist you as you work your way through the proposed ordinance amendments. This summary covers over the past year of meetings and discussions we have completed to date. The document is a broad perspective view of the proposed ordinance. You may wish to use this as a source book which may answer some basic questions you may have, or help you find your answers in the text of the ordinance itself.


We encourage you to read through this document, and as you have any questions, write them down and we can work on answering them at the appropriate time. You may also wish to go back through the earlier presentations for more perspective.

This document is formatted to show each division and section in their given sequence.

Part 1 – Purpose (proposed) and supportive information of Council actions and comprehensive plans, and the general objectives of Article X, and information on the importance of soil volume and soil compaction on tree establishment and growth.

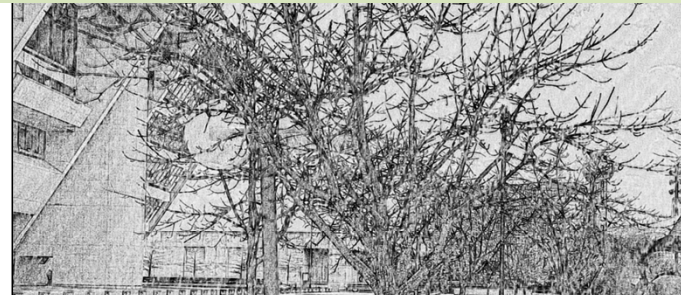
Part 2 – Ordinance sections are broken down to compare current and proposed ordinance layouts and then present each Division (General, Landscape, and Tree Conservation) in order within the ordinance. We have also made more comprehensive discussion of landscape mandatory provisions and design options. But for the most part, this is a summary of the material we have covered in a reduced format. We have included references at the end for you to help with your own further research. We hope you find this summary useful.

Phil Erwin, Chief Arborist



Article X

Landscape and Tree Conservation Ordinance



Part I: Basis of the ordinance



ARTICLE X – Purpose (proposed) - 10.102

The process of development with its alteration of the natural topography, vegetation, and creation of impervious cover can have a negative effect on the ecological balance of an area by causing increases in air temperatures and accelerating the processes of runoff, erosion, and sedimentation. The economic base of the city can and should be protected through the conservation [~~preservation~~] and enhancement of the unique natural beauty, environment, and vegetative space in this area. Recognizing that the general objectives of this article are to promote and protect the health, safety, and welfare of the public, the city council further declares that this article is adopted for the following specific purposes:

- (1) To aid in stabilizing the environment's ecological balance by contributing to the processes of air purification, oxygen regeneration, ground-water recharge, and storm water runoff retardation, while at the same time aiding in noise, glare, wind, and heat abatement.
- (2) To provide visual buffering between land uses of differing character to alleviate the harshness of urban life.
- (3) To enhance the beautification of the city.
- (4) To safeguard and enhance property values and to protect public and private investment.
- (5) To conserve energy.
- (6) To provide habitat for wildlife.
- (7) To encourage the preservation of large trees which, once removed, can be replaced only after generations.
- (8) To conserve water.
- (9) To recognize and conserve the urban forest as part of the city's green infrastructure.

Direction Given By Council

- Article X Landscape - 1986
- Council Resolution – 1990
- Article X Landscape and Tree- 1994
- Article X amendments - 2003
- Forward Dallas! - 2006
- Complete Streets - 2016

WHEREAS, the City of Dallas desires to recognize the 20th Anniversary of Earth Day; and

WHEREAS, the City recognizes that trees are valuable assets to the environmental character of all city properties; and

WHEREAS, significant individual trees and stands of trees are found throughout the city; and

WHEREAS, many citizens of Dallas have expressed concern for the protection and preservation of trees in the city; and

WHEREAS, existing ordinances which contain tree protection elements apply to geographically specific areas within the city; Now, Therefore,

BE IT RESOLVED BY THE CITY COUNCIL OF THE CITY OF DALLAS:

SECTION 1. That the City of Dallas shall support the protection and preservation of trees throughout the entire city.

SECTION 2. That the City Council directs the Park and Recreation Department, in cooperation with other appropriate departments, to design a mechanism to achieve this end.

SECTION 3. That this resolution shall take effect immediately from and after its passage in accordance with the provisions of the City of Dallas, and it is accordingly so resolved.

APPROVED BY
CITY COUNCIL

APR 25 1990

Robert S. Slone
City Secretary

forwardDallas! Comprehensive Plan

Core Value: Healthy Environment

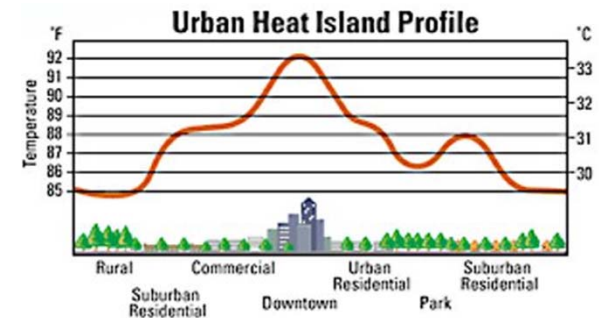
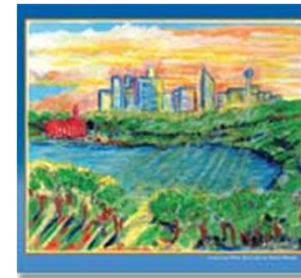
Ideal: The city's natural resources are conserved and protected for current and future generations.

Initiative: Ensure environmental sustainability.

Goals (partial list):

- Protect Dallas water quality and watersheds
 - 'Develop landscaping standards to appropriately manage run-off created by impervious surfaces.'
- Increase the urban tree canopy
 - Establish a tree canopy coverage enhancement program.
 - Develop additional regulatory tools to preserve tree canopy.
 - Implement tree planting requirements for new developments, including parking lots and building setback areas.
- Improve air quality
- Improve energy efficiency
- Protecting and enhancing open space
 - Identify and prioritize ecologically sensitive areas.
 - Develop a strategy and tools 'to restrict urban development in environmentally sensitive areas.'
- Provide access to parks, open spaces and recreation.

forwardDallas!
Let's build our future.



<http://dallascityhall.com/departments/pnv/strategic-planning/Pages/forward-dallas.aspx>

Benefits and Costs

Trees improve air quality and public physical and mental health conditions.

Trees save home and community energy.

Trees reduce stormwater runoff.

Trees improve water quality and reduce soil erosion.

Trees provide wildlife food and habitat.

Trees enhance property values and improve customer activity in commercial uses.

Trees enhance recreational activities.

Tree surveys and evaluations are costly.

Quality nursery stock is expensive.

Tree maintenance is needed regularly over time.

Removal of dead large trees is expensive.

Trees outgrow their spaces and can impact public safety.

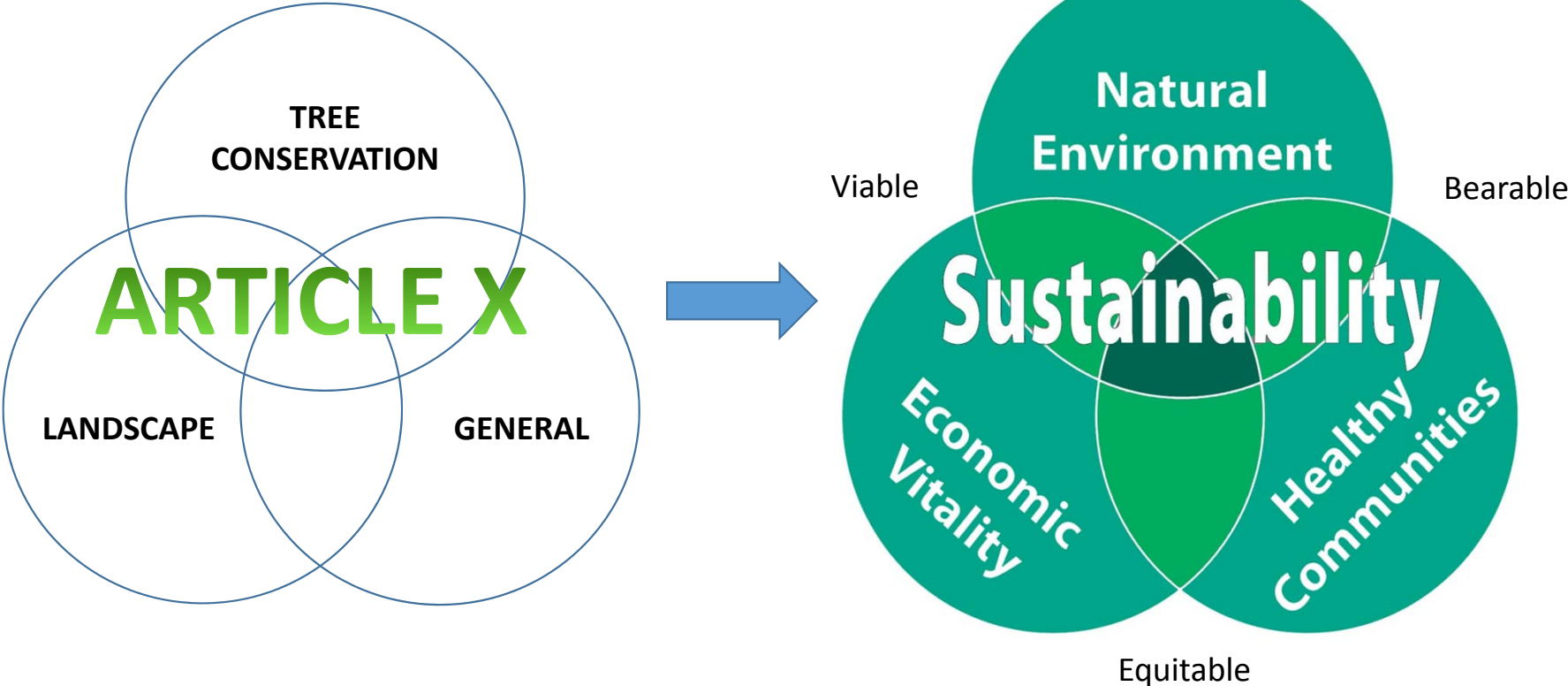
Trees can become hazardous.

Tree roots can damage infrastructure.

Strategies for long term cost savings

- Provide and maintain suitable growing space and best available soil conditions.
- Select quality nursery stock.
- Plant trees correctly.
- Water new trees through at least a three year establishment period.
- Mulch trees annually.
- Prune new trees early to develop a healthy branch structure.
- Do not top trees.
- Establish and maintain soil and root health to maintain tree health.
- Protect the tree's roots, trunk, and crown throughout its life.
- Actively protect trees on building construction sites and during utility installation and repair.

OBJECTIVES



Article X is comprised of 3 Divisions:
General, Landscape, and Tree Conservation

COMPLETING OBJECTIVES OF ARTICLE X

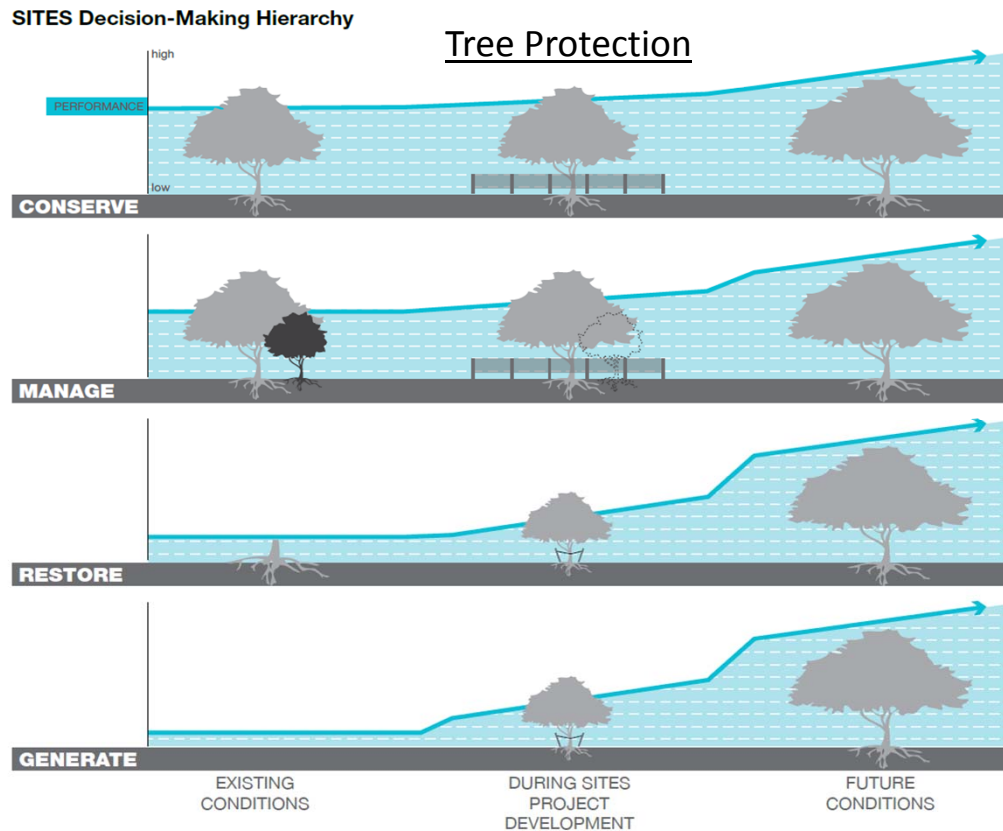


Image: SITES v. 2 Rating System

- 1. Conserve and manage existing trees for continued community benefit.**
- 2. Establish tree planting conditions for long-term successful growth.**

The framework for the SITES® Rating System is based on the concept of ecosystem services. By aligning land design and development practices with the functions of healthy ecosystems, development projects can contribute to maintaining, supporting, and enhancing natural systems and the essential services they provide.

We have attempted to mirror the objectives of sustainability in this ordinance with the same performance goals in SITES. Refer also to Sustainable Development Incentives for application of SITES in the code.

Trees – Vital Soil Conditions - VOLUME

There are two components to soil space:

- 1) the **total soil volume** needed to sustain a tree for a reasonable period of time, and
- 2) the **open soil area** needed immediately surrounding the trunk to accommodate trunk flare growth. Open soil space is soil that is not covered by a solid hard surface such as a sidewalk, pavement, or a building.

A typical design specification can call for a volume of 200 cubic feet of soil for trees, whereas **2,000 to 3,000 cubic feet would be an ideal amount.**

- E.F. Gilman

NOTE: Our minimum standard today is 75 cubic feet (25 sf). Our proposed minimum is 480 cubic feet (160 sf), or 240 cf in urban streetscapes. A Legacy tree would be a minimum of 1500 or 1200 cubic feet of dedicated soil environment.



Soil Volume = 1000 cubic feet

(340 square feet area x 3 feet depth)

Casey Trees

10

Ultimate tree size

Crown Spread DBH - Trunk Diameter

Sq Ft	Inch
M2	mm
1200	24
111.5	610
900	20
83.6	508
640	16
59.5	406
480	12
44.6	305
320	8
29.7	203
140	4
13.0	102

SOIL VOLUME to TREE SIZE

Example: A 16 inch/406 mm diameter tree requires 1000 cf/28.3 M3 of soil.

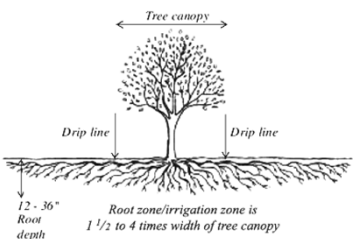
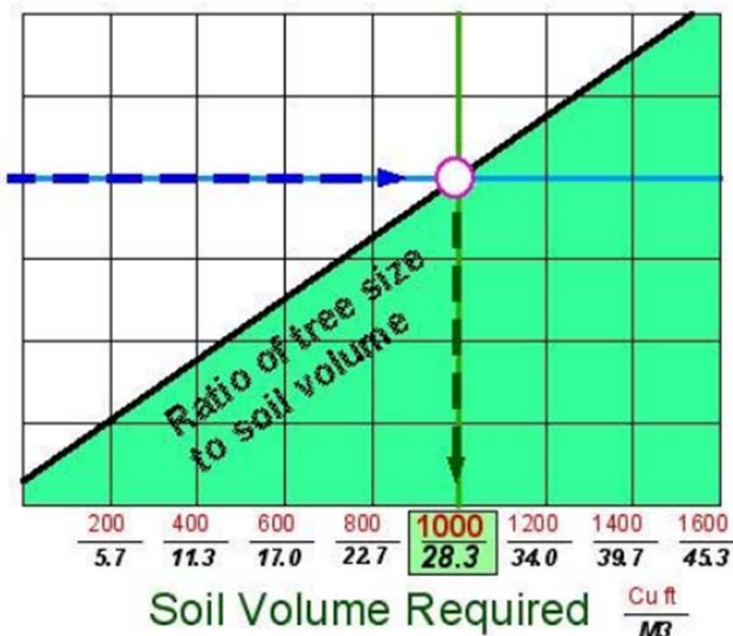


Chart: James Urban, (*Up By Roots*, ISA Press, 2008)

Soil for Urban Tree Planting

Soil Volume – ‘the amount of soil installed will in large part determine the maximum size that the tree will achieve during its usable life span.’

Soil Depth – topsoil and subsoil layers

Soil Specification – naturally occurring or mixed

Texture – sandy loam soil with 50-80% medium and coarse sand, 5-20% clay, and 5-35% silt.

Stones and Rocks – none over 1”, < 5% of volume

Debris Content – greater than 1” not allowed

Contaminants – no herbicides, metals, toxins, or hydrocarbons.

Clod Size – clods 1-3” should be <10% of soil volume; 3-6” should be < 5% of volume.


Organic Matter Content (OM) – the top soil should have 4-6% OM by weight. Compost may be added, but no more than 15% by volume.

Density – high enough to avoid settling, yet low enough to allow root growth. Top soil density: 1.0 to 1.4 g/cc, and subsoil: 1.2 to 1.5 g/cc.

Drainage – percolation rate 1-2” per hour.

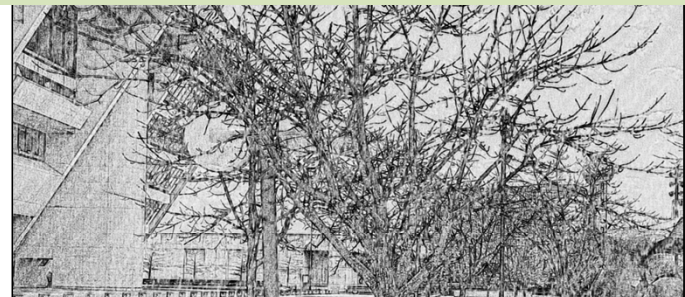
Soil pH, Nutrients, Soluble salt, and Water.

E. Thomas Smiley, Ph.D.
Bartlett Tree Experts



Article X

Landscape and Tree Conservation Ordinance



Part II: Ordinance Divisions



ARTICLE X – Current/Proposed* Sections

Division 10.100. In General

- .101 Definitions
- .102 Purpose
- .103 Acceptable Plant Material
- .104 Planting Area Requirements
- .105 Protection of Planting Areas
- .106 Irrigation Requirements
- .107 Planters allowed
- .108 General Maintenance
- .109 References
- .110 Special Exception

Division 10.100. General

- .101 Definitions
- .102 Purpose
- .103 Acceptable Plant Material
- .104 Soil And Planting Area Requirements
- .105 Protection of Planting Areas
- .106 Irrigation Requirements
- .107 Planters allowed
- .107.1 Pedestrian Pathways
- .108 General Maintenance
- .109 ~~References~~ Landscape and Tree Manual
- .110 Special Exceptions

* The amendments are designed to maintain existing divisions and sections of the current ordinance.

ARTICLE X – Current/Proposed Sections

Division 10.120. Landscaping

- .121 Application of Division
- .122 Artificial Lot Determination
- .123 Landscape Plan Submission
- .124 Landscape Plan Review
- .125 Mandatory Landscape Requirements
- .126 Design Standards
- .127 When landscape must be completed
- .128 Enforcement by Building Official

Division 10.120. Landscaping

- .121 Application of Division
- .122 Artificial Lot Determination
- .123 Landscape Plan Submission
- .124 Landscape Plan Review
- .125 Mandatory Landscape Requirements
- .126 Design ~~Standards~~ Options
- .127 When landscape must be completed
- .128 Enforcement by Building Official

ARTICLE X – Current/Proposed Sections

Division 10.130. Tree Preservation, Removal, and Replacement

- .131 Application of Division
- .132 Tree Removal Applications
- .133 Reserved
- .134 Replacement of Removed or Seriously Injured Trees
- .135 Alternative Methods of Compliance with Tree Replacement Requirements
- .136 Preservation of Protected Trees During Construction or Other Disturbance
- .137 Violation of this Division
- .138 Appeals
- .139 Fines
- .140 Criminal Responsibility and Defenses to Prosecution

Division 10.130. Tree Conservation ~~Preservation, Removal, and Replacement~~

- .131 Application of Division
- .132 Tree Removal Applications
- .133 ~~Reserved~~ Historic Trees
- .134 Replacement of Removed or Seriously Injured Trees
- .135 Alternative Methods of Compliance with Tree Replacement Requirements
- .136 ~~Preservation~~ Conservation and Maintenance of Protected Trees During Construction or Other Disturbance
- .137 Violation of this Division
- .138 Appeals
- .139 Fines
- .140 Criminal Responsibility and Defenses to Prosecution



Article X Landscape and Tree Conservation Ordinance



GENERAL



Listings in red are referenced on the page.

Proposals – General.

.101 Definitions

.102 Purpose

.103 Acceptable Plant Material

.104 Soil And Planting Area Requirements

.105 Protection of Planting Areas

.106 Irrigation Requirements

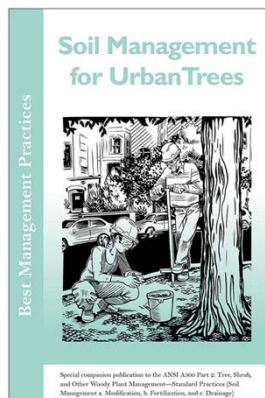
.107 Planters allowed

.107.1 Pedestrian Pathways

.108 General Maintenance

.109 Landscape and Tree Manual

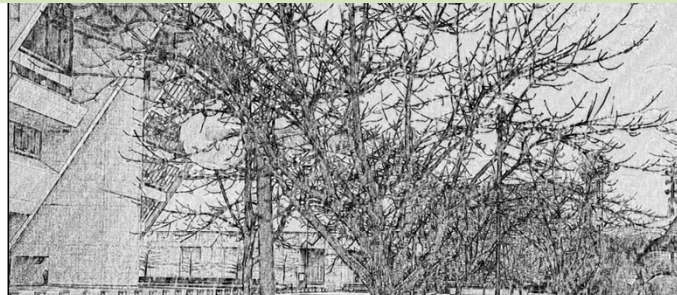
.110 Special Exceptions



- Thirty-two definitions were added or amended.
- The purpose statement was amended to focus on conservation, and address water conservation and green infrastructure.
- Restricted artificial and invasive plants from meeting landscape requirements, and associated acceptable plant materials will be listed separately in the Manual.
- **Soil and planting area requirements** were significantly amended to specify general and alternative soil conditions, and to establish planting distances and restrictions.
- Irrigation requirements were amended to require automatic irrigation systems based on the scale of landscape areas, and to still allow verifiable water supplies for renovations and small additions.
- Specified ‘pedestrian pathways’ as impervious surface for pedestrian purposes, to be distinguished from surfaces for other purposes, when determining the need for landscaping.
- Introduced the Landscape and Tree Manual as a technical guide to the ordinance.
- Amended the factors to be considered in tree conservation regulation special exceptions.



Article X Landscape and Tree Conservation Ordinance



LANDSCAPING



Proposals – Landscaping.

.121 Application of Division

.122 Artificial Lot Determination

.123 Landscape Plan Submission

.124 Landscape Plan Review

.125 Mandatory Landscape Requirements

a) Single family uses

b) Other uses

1) Street Buffer Zones

2) Residential Buffer Zones

3) Interior Zones

.126 Design Options

.127 When landscape must be completed

.128 Enforcement by Building Official

- Adjusted the terminology for the application of the division, and required imposed landscaping requirements to comply with the General Division requirements.
- Amended street buffer zone and pedestrian pathway requirements for artificial lots.
- Stated landscape submissions must identify utilities, and stated exceptions in Article X may require a professional design.
- Landscape (tree) requirements for single family construction was amended for builder tree installation to be based on lot size and restrict planting to be away from utilities.
- Shared Access Development landscaping was amended to provide one standard of landscaping for all scales of development for all zoning districts, with application of plant groups along the street front.

Proposals – Landscaping.

- .121 Application of Division
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- Amended ‘Other uses’ to provide more adjustable mandatory landscape requirements based on site and street restrictions.
- Created a **Street Buffer Zone (SBZ)** with an average (variable) depth buffer zone requirement (no longer a design standard) along street frontages, with a scale based on street types (highway, collector, arterial, and local).
- Provided for an urban streetscape alternative to the SBZ for Mixed Use development types.
- Provided for modification of the SBZ when using right-of-way, subject to conditions.
- Provided for a plant size modification when utilities prohibit planting large or medium trees.
- Provided for a reduced SBZ for lots smaller than 10,000 square feet.

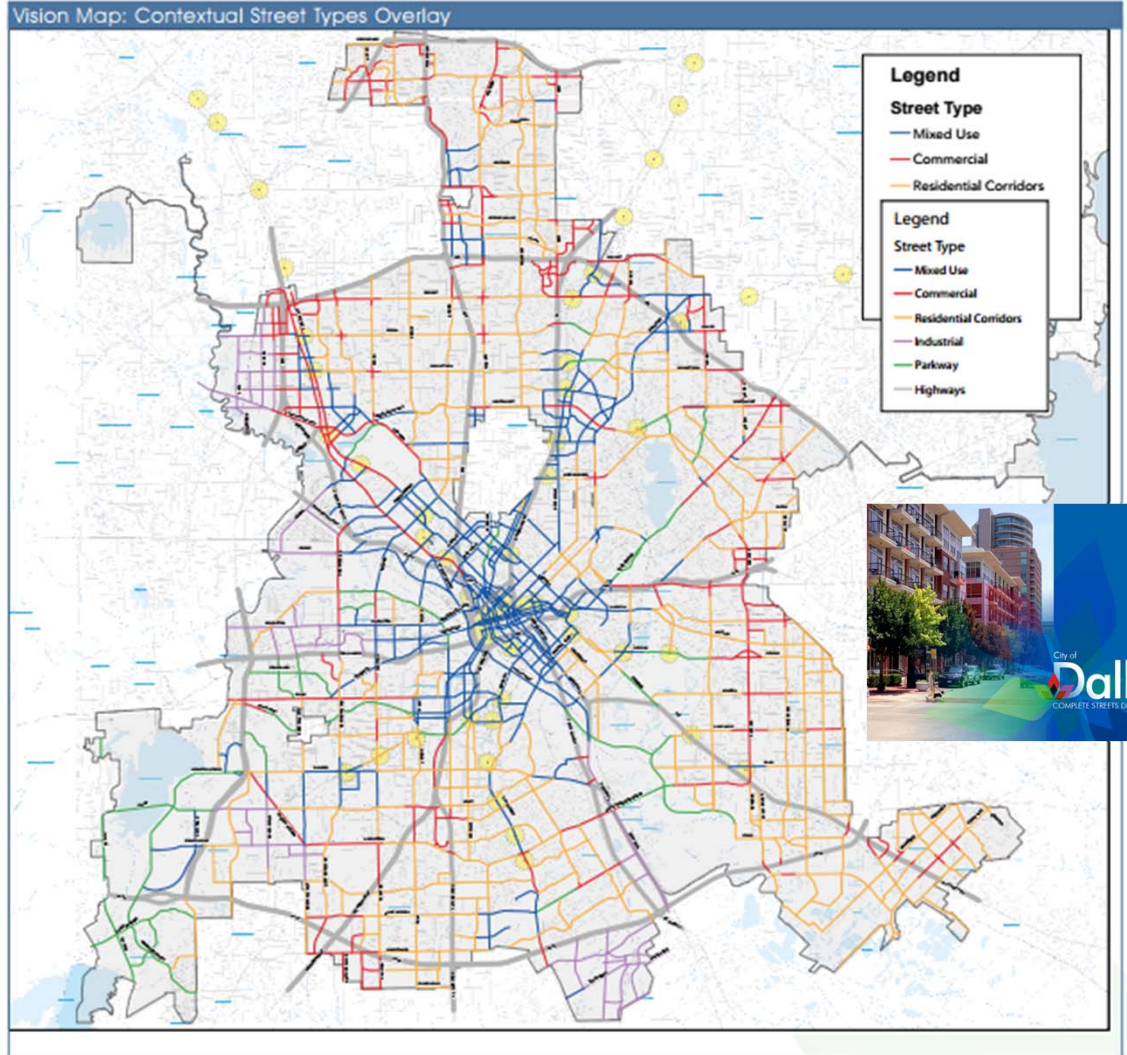
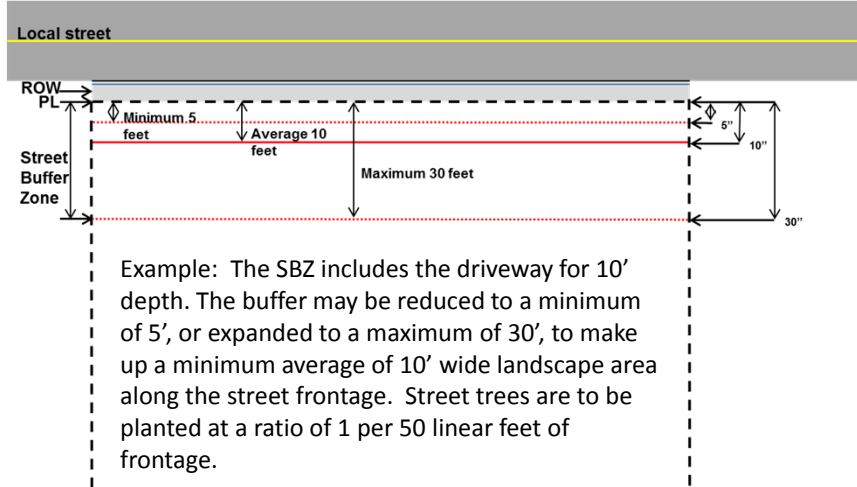
Complete Streets and the **Thoroughfare Plan** are utilized in Article X. In the Landscape Division, the **STREET BUFFER ZONE** is determined by adjacency to the Street Type (Arterial/Collector and Local) and Freeway.

10.125(b)(1) – Street Buffer Zone (SBZ)

<u>(A) Right-of-way</u>	<u>Average Depth</u>	<u>Minimum Depth</u>	<u>Maximum Depth</u>
Highways/Freeways	20 feet	5 feet	50 feet
Major Streets (Arterials)	15 feet	5 feet	40 feet
Local Streets	10 feet	5 feet	30 feet

Key Points:

- Each street depth requirement begins at the property line, not the curb.
- Parkways may be utilized to meet requirements if conditions allow.
- Proximity to overhead electric lines:
 - Large trees – 20 feet minimum; Medium trees – 15 feet minimum



This vision map is intended to be incorporated into the Thoroughfare Plan and periodically updated through the Thoroughfare Plan amendment process.

Proposals – Landscaping.

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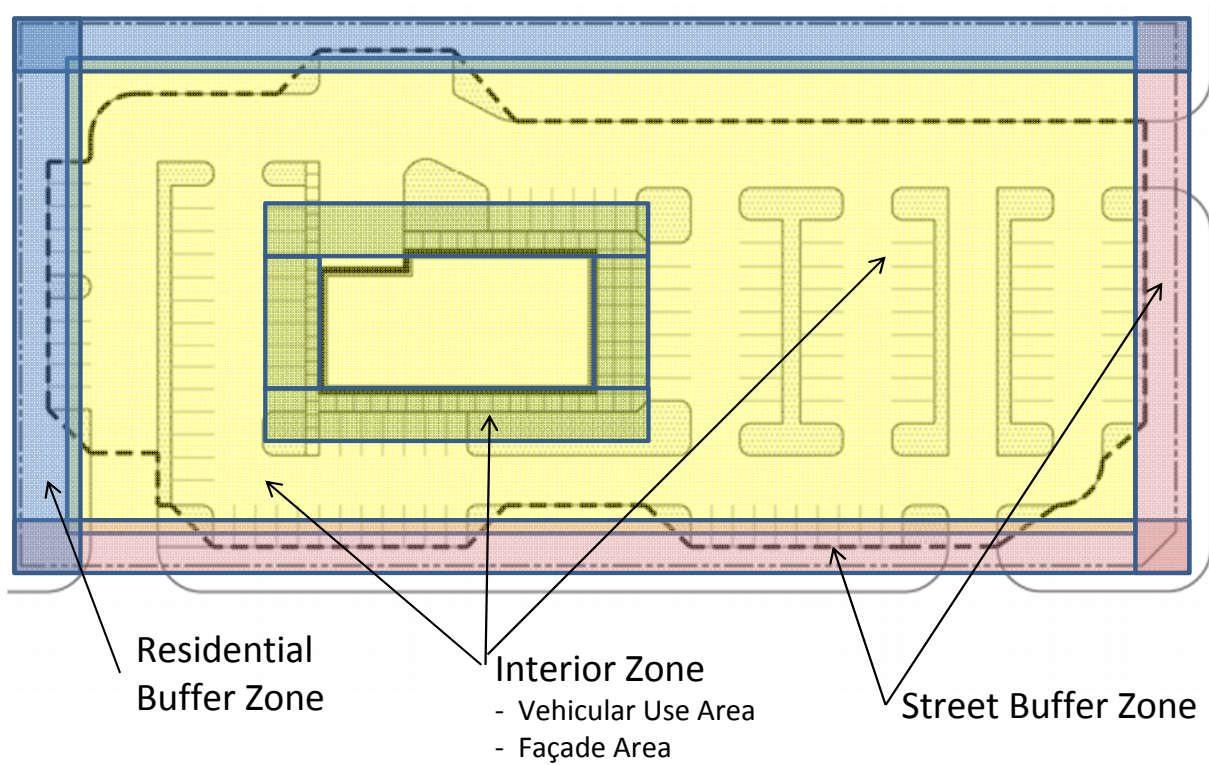
Residential buffer zone

- Amended the ‘perimeter landscape buffer strip’ requirement to allow for an averaged (variable) width **Residential Buffer Zone** where residential adjacency exists. The buffer must be at least 10 feet wide, but not less than 5 feet wide and no more than 30 feet at any point.
- Provided that plant groups are required with a prohibition of planting large or medium trees within close proximity to electric utility lines.
- Created an **Interior Zone** including a Façade Area and Parking Lots.
- Parking lot landscape areas must have at least 160 square feet soil area with 3” trees a minimum of four feet from pavement.
- Parking lot requirements were amended based on the number of parking spaces installed:
 - 21-100 spaces – no space located more than 70 feet from the trunk of a large or medium tree.
 - Greater than 100 spaces - A landscape area must be at the end of a single row of spaces with at least 1 tree, unless waived for tree preservation. Handicapped spaces do not require row end landscape areas. The maximum number of spaces between landscape areas is 12 spaces, except where a median landscape area or buffer adjoins the spaces.
 - The conditions for large parking lots may be amended for industrial uses in IM or IR districts.
- Additional Provisions - No significant changes (screening of off-street loading spaces, site trees, minimum tree sizes).

LANDSCAPING – Current Code vs Proposed

Current Code-Landscaping	Proposed Zone Landscaping
<ul style="list-style-type: none"> • Street Trees • Street Buffer (Design Standard - optional) 	<ul style="list-style-type: none"> • Street Buffer Zone (street trees and street buffer with average buffer width)
<ul style="list-style-type: none"> • Perimeter Landscape Buffer • Buffer Plant Material 	<ul style="list-style-type: none"> • Residential Buffer Zone
<ul style="list-style-type: none"> • Parking Lot Trees • Design Standards 	<ul style="list-style-type: none"> • Interior Zone
<ul style="list-style-type: none"> • <u>9 Design Standard Options</u> (many sites can comply with only a few, require a minimum of 2 on lot). 	<ul style="list-style-type: none"> • <u>Comprehensive Design Options</u> (rated by points - value and emphasis for design or conservation).

LANDSCAPING – Zone Landscape



* There may be some overlap of zones

Proposals – Landscaping.

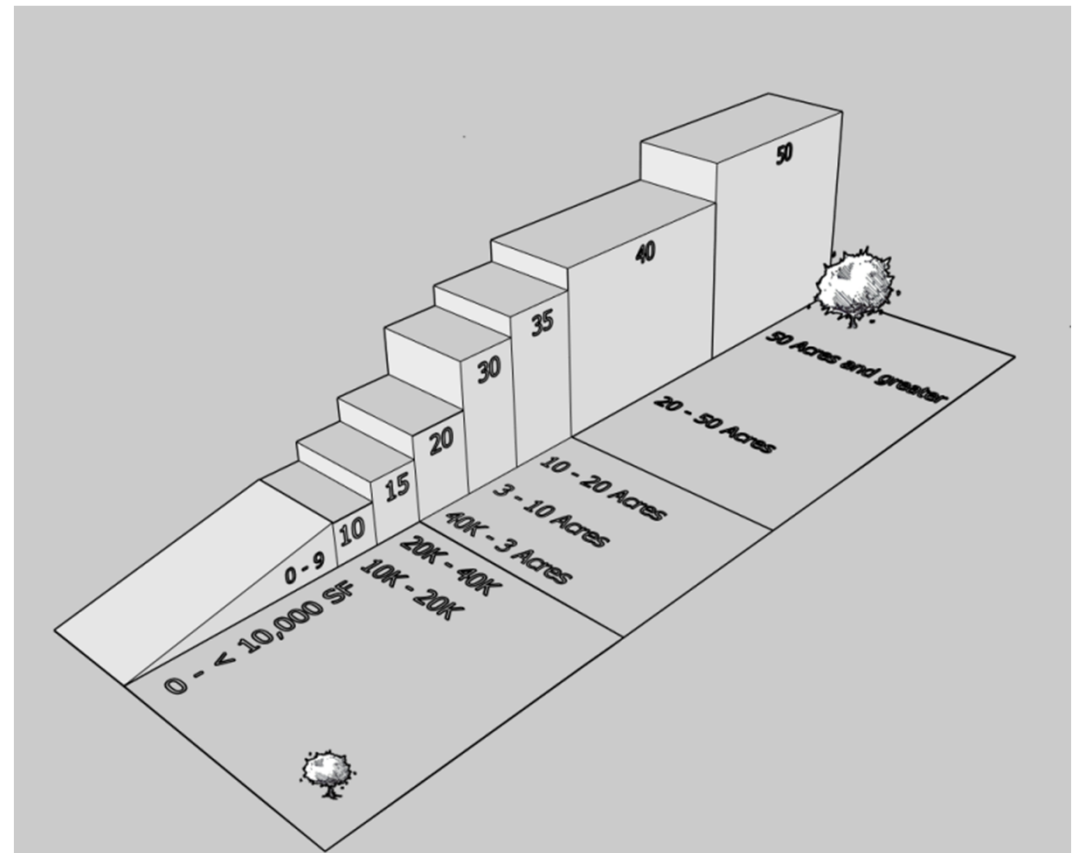
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- Design Standards were amended to create more **Design Options**, which are more adaptable and versatile, and to improve on existing Design Standards.
- A Design Option points system was created based on a scale from 0 to 50, and rated for increasing property size. Smaller properties must attain a minimum score which is lower than larger properties due to their limited lot area availability.
- A list of Design Options are provided to obtain the required number of points for the project to enhance site landscapes.

LANDSCAPING – Design Options - Points

Points for Design Options

<u>Development Lot Area</u>	<u>Points Required</u>
0 to <1,000 SF	0
1,000 SF to <2,000 SF	1
2,000 to <3,000 SF; and each increase of 1000 SF up to <10,000 SF	2-9
10,000 SF to 19,999 SF	10
20,000 SF to 39,999 SF	15
40,000 SF to <3 Acres	20
3 Acres to <10 Acres	30
10 Acres to <20 Acres	35
20 acres to <50 Acres	40
50 Acres and Greater	50



There are 11 Design Option Categories and *many* scoring combinations which may be available.

Suspended pavement system



Landscape – Design Options

- **Plant Material Upgrade (Max 5)**
 - Fill up to 5 points with additional small trees, shrubs and large or medium trees.
- **Zone Enhancements* (Max 20)**
 - Large enhanced buffer zone – 5
 - Small enhanced buffer zone - 2
- **Application of Engineered Solutions for Soil Volume**
 - Engineered soils in impervious environments above the minimum soil volume requirement, 5 to 10 points (i.e., suspended pavements)

* - Current ordinance design standard without landscape professional.

Pro – refers to landscape architect design requirement

- **Screening (Max 20)**
 - Standard option* – 5 points
 - Enhanced option (pro) – 10 points
 - Grouped beds added to option 1 or 2 – 5 points for complete frontage
 - Short screen wall added to option 1 or 2 – 5 points
 - Berm with groundcover – 5 points

NOTE: These pages identify the Design Option category, the maximum number of points which can be generated, and a brief statement of the individual option with available points for that option.

The designer has a broad palette with which to meet minimum requirements.

Landscape – Design Options

- **Building Façade (Max 15)**

- Standard design* – 5 points
- Enhanced design (pro) – 10 points
- Additional grouping of medium or small trees – 5 points
- Small tree per 30 feet – 5 points

- **Pedestrian Uses (Max 25)**

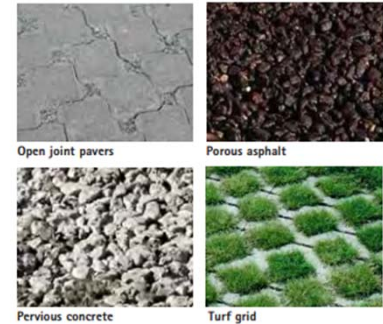
- Urban Streetscape – 10 points
- Special amenities* (similar to current standard) – 5 points private, 10 points publicly accessible
- Adjacent to habitat restoration areas – 10 points private, 15 points publicly accessible
- Athletic fields – 10 points, or 20 points on lots greater than 10 acres.

** - Current ordinance design standard without landscape professional.*

Pro – refers to landscape architect design requirement

Landscape – Design Options

Examples of permeable paving:



• Pavements* (Max 15)

- Minimum 25% of outdoor vehicular pavement.
- Enhanced vehicular pavement –
 - Enhanced texture – 3 points
 - Enhanced color – 3 points
- Permeable vehicular pavement – 5 points
- Enhanced pedestrian walkways –
 - Enhanced texture – 3 points
 - Enhanced color – 3 points

• Conservation (Max 25)

- Must occupy at least 5% of lot.
- Tree preservation in development area – 2 points for total of 10 points, Significant trees – 5 points
- Habitat preservation and restoration – preserved and passive management* – 5 points
- Habitat preservation and restoration – new design or restoration of site with active management – 10 points
- Habitat preservation and restoration – adjacent to sensitive land area – 15 points.

* - Current ordinance design standard without landscape professional.

Pro – refers to landscape architect design requirement

Landscape – Design Options

- **Low Impact Development** (Max 20)
 - Rain Garden – Max 6 points
 - 0-5,000 sf – 3 points
 - Each add'l 1,000 sf – 1 point
 - Bioswale – Max 10 points per bioswale
 - 50-100 feet long – 3 points
 - Each add'l 50 feet – 1 point
- **General** –
 - SITES attainment – 10 points
 - Landscape maintenance plan to minimum of 3 years – 3 points
 - Water-wise irrigation system throughout the property
 - Drip irrigation all beds – 4 points
 - Evapo-transpiration based controller – 3 points
 - Head with check valves and pressure regulation -3 points
- **Parking Lots** (Max 30, in DIA 10+ acres, Max 20 in DIA <10 acres)
 - Shaded pedestrian pathway – 5 points
 - Parking islands – Interior – Max 10 spaces between islands – 5 points
 - Parking islands – Interior – area 200 sf – 5 to 10 points
 - Parking islands – Interior – area 300 sf – 5 to 10 points
 - Additional parking islands – 3 points
 - Medians – 10' wide – 5 points
 - Medians – 12' wide – 10 points, to 20
 - Medians – 16' wide – 15 points, to 30
 - Large trees/500 sf – 2 points to max 20
 - Pocket Park – Interior – min. 2500 sf – 20 points

DIA – Development Impact Area

Bioswale in parking lot.



LANDSCAPING

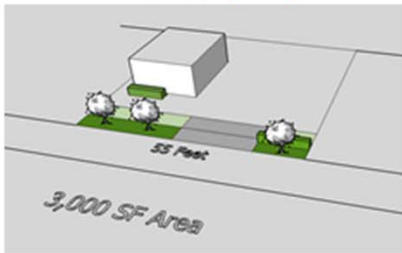
Example: 3,000 SF Area = 3 Points

Current Article X

4 site trees (minimum required)
2 street trees (minimum required)
Soil area: 25 sf per large tree;
16 sf per small tree.

2 Design Standards:

Screening/Parking, and
Foundation planting



Proposed Article X

1 site tree
1 street tree (1:50 feet) – or 3 small trees with utility, or reduced planting space.
Soil area: street buffer zone (greater of 5' min. width x length of lot frontage, or 5% lot area).

Choice of Design Options: 3 POINTS REQ.

Foundation planting – 5 pts., or
Screening/Parking – 5 pts., or
Additional Plants – min. 12 large shrubs (0.25 x 12 large shrubs) – must be along the front yard/street frontage. Option: add 3 large/medium trees (1 pt. each), or 6 small trees (0.5 pts. each), or a combination, for 3 total points.

LANDSCAPING

Example: 15,000 SF Area = 10 Points

Current Article X

4 site trees (minimum required)
2 street trees (minimum required)
Parking lot (120' tree/parking space)
Soil Area: 25 sf min./large tree; 16 sf min. Small tree

Design Standards:

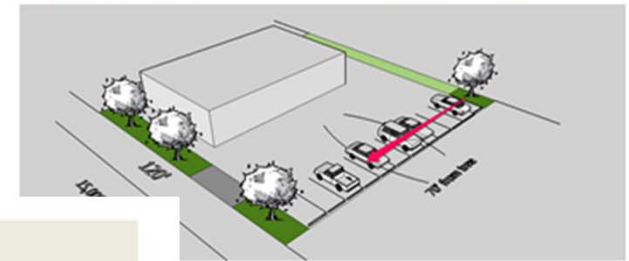
Street buffer (10' wide x length of lot)
Screening/Parking (3' wide min.)
Foundation Planting (3' wide min.)
Enhanced Pavements, etc.

Proposed Article X

4 site trees
2 street trees
Parking lot (70' tree/parking space)
Soil Area: 10' wide SBZ x length of lot + 160 sf soil area for parking lot tree.

Design Standards:

Screening/Parking – 5 Pts./10 Pts.
Foundation Planting – 5 Pts./10 Pts.
Enhanced Buffer Zone – 2-5 Pts.
Pedestrian Uses – 5-10 Pts.



LANDSCAPING

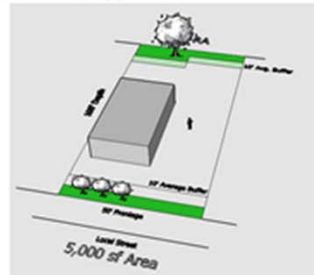
Example: 5,000 SF Area = 5 Points

Current Article X

4 site trees (minimum required)
2 street trees (minimum required)
Soil area: 25 sf per large tree;
16 sf per small tree.

2 Design Standards:

Street buffer (?)
Screening/Parking (?)
Foundation planting (?)
Enhanced perimeter buffer (?)



Proposed Article X

1 site tree
1 street tree
Soil area: Street Buffer Zone (5' or 5% of lot) and Residential Buffer Zone (10' average x width of the lot).

Choice of Design Options: 5 POINTS REQ.

Foundation Planting – 5 Pts.
Screening/Parking – 5 Pts.
Pedestrian Uses – 5-10 Pts.
Enhanced Buffer Zones – 2-5 Pts.
Additional Plants – 1-5 Pts.
Conservation – 2-5 Pts.
Or, Combination of above and others.

Landscape architect design – Properties may attain the required points without professional design, but higher scores are provided with some options that must be produced by a landscape architect or other professional designer. Some options will require a landscape architect, or other professional, design, including bioswales or active habitat restoration.

Examples of current and proposed conditions was produced for the July 23, 2015 meeting.

Proposals – Landscaping.


- .121 Application of Division
- .122 Artificial Lot Determination
- .123 Landscape Plan Submission
- .124 Landscape Plan Review
- .125 Mandatory Landscape Requirements
 - a) Single family uses
 - b) Other uses
 - 1) Street Buffer Zone
 - 2) Residential Buffer Zones
 - 3) Interior Zones
- .126 Design Options
- .127 When landscape must be completed**
- .128 Enforcement by Building Official**

- No amendments were made for when landscaping must be completed and in the enforcement by the Building Official (referring to Stop Work Orders).



Photo: German parking lot, *Trees In Hard Landscapes*, p. 89

In parking lots, **soil compaction and soil volume** impact the growth conditions of trees over time. Trees with restricted available soil will be replaced sooner.



Article X Landscape and Tree Conservation Ordinance



TREE CONSERVATION



Proposals – Tree Conservation.

.131 Application of Division

.132 Tree Removal Applications

.133 Historic Trees

.134 Replacement of Removed or Seriously Injured Trees

.135 Alternative Methods of Compliance with Tree Replacement Requirements

.136 Conservation and Maintenance of Protected Trees During Construction or Other Disturbance

.137 Violation of this Division

.138 Appeals

.139 Fines

.140 Criminal Responsibility and Defenses to Prosecution

- Amended the application of division to state that overlay districts may vary the regulations. This addresses both current (i.e., conservation districts) and potential future conditions.
- Amended the conditions which state specifically when an exception for a single family or duplex use on a lot less than 2 acres is removed with the submission of a demolition permit for the property. The exception is restored with a Certificate of Completion or a completed demolition permit by the building official with the original structure remaining (unused permit).

Proposals – Tree Conservation.

.131 Application of Division

.132 Tree Removal Applications

.133 Historic Trees

.134 Replacement of Removed or Seriously Injured Trees

.135 Alternative Methods of Compliance with Tree Replacement Requirements

.136 Conservation and Maintenance of Protected Trees During Construction or Other Disturbance

.137 Violation of this Division

.138 Appeals

.139 Fines

.140 Criminal Responsibility and Defenses to Prosecution

- Amended the conditions when a tree removal application or building permit must be posted on a tree removal property.
- Amended the application requirements to include **Forest Stand Delineation** to provide an ecological assessment of the property and measure tree canopy coverage, when applicable. Occurs with:
 - Tree canopy cover assessment for upland stands of young age class juniper /mesquite /Class 3 tree mixed stands.
 - Tree canopy cover credit for single family and duplex construction.
 - Sustainable Development Incentives.
 - Tree canopy cover assessment where trees are removed without authorization.
 - Tree canopy cover assessment on properties five acres or larger with institutional, community service, and recreation uses, when applicable.
 - Forest analysis for baseline documentation to create a conservation easement.
 - Forest analysis for establishment of a community management plan.

TREE SURVEY and FOREST STAND DELINEATION (FSD) PROCESS IN DEVELOPMENT

The tree survey (and/or the FSD) is among the first activities to occur on a property, in order to give the developer and others the knowledge of what natural resources are on the property and provide support for the developer in determining what can, and should, be protected. The use of the FSD is based on the options provided in this ordinance for building sustainably.

1. Tree Survey (shows the location, caliper, common name and scientific name of all trees on the lot or tract)

Forest Stand Delineation (FSD) may be utilized if site meets certain criteria

2. Conceptual Site Planning
 - Use Tree Survey or FSD as a base for optimum location of structures, parking, etc.
 - Option: Use Sustainable Development Incentives (SDI) and Tree Canopy Coverage to lessen the number of caliper inches to be replaced.

TREE SURVEY and FOREST STAND DELINEATION (FSD) PROCESS IN DEVELOPMENT

3. Calculate the number of diameter inches being removed to be replaced.
 - Optimum site planning based on Tree Survey or FSD and credits gained through use of **SDI** and **Tree Canopy Coverage incentive** (10.135)
4. Complete Landscape Design
 - Mandatory requirements (standard landscaping with nursery stock trees contributes to tree replacement)
 - Choosing options where tree credits can be gained (i.e., Design Options and Legacy Trees can work to provide multiple incentives through both LANDSCAPE and TREE CONSERVATION benefits).
5. Now, recalculate number of diameter inches to be replaced (if there are any)
6. If there are a number of diameter inches left to be replaced, choose an **“alternative method of compliance with the tree replacement requirements”**:
 - Plant on Park property
 - Plant within 5 miles of the development
 - Pay into the Reforestation Fund
 - Conservation Easement

Proposals – Tree Conservation.

- .131 Application of Division
- .132 Tree Removal Applications
- .133 Historic Trees
- .134 Replacement of Removed or Seriously Injured Trees
- .135 Alternative Methods of Compliance with Tree Replacement Requirements
- .136 Conservation and Maintenance of Protected Trees During Construction or Other Disturbance
- .137 Violation of this Division
- .138 Appeals
- .139 Fines
- .140 Criminal Responsibility and Defenses to Prosecution

- Added Historic Trees nomination procedures to the City Council.
- Specified requirements for which trees must be replaced under building permits, tree removal permits, unauthorized removals, or in removal from a public right-of-way.
- **Proposed Classification of Trees**
 - **Historic – 3x base of 1:1 replacement**
 - **Significant – 1.5x base of 1:1 replacement**
 - **Class 1 trees – 1:1 replacement (100%)**
 - **Class 2 trees – 0.7:1 replacement (70%)**
 - **Class 3 trees – 0.4:1 replacement (40%)**

Proposals – Tree Conservation.

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- .132 Tree Removal Applications
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PROPOSED

Tree Classification for Mitigation

Historic	By volunteered deed restrictions
Significant	12" or larger: post oak 24" or larger: oaks (other than post oak), pecan, cedar elm, American elm, chittamwood, (valued for significant size or species that can not be readily replaced)
Class 1	Trees in a floodplain, escarpment zone, wetlands or a 50' wetland buffer, within 50' of the centerline of a creek (valued for location)
Class 2	All species unless otherwise classified (valued for providing the greatest benefits to the urban environment)
Class 3	Hackberry/sugarberry, mulberry, ornamentals, silver maple, mimosa, Arizona ash, Siberian elm, black willow (valued for providing habitat and food sources for wildlife and benefits to the urban environment but are short-lived and/or have small canopies at maturity)
Invasive	Trees that are designated invasive in North Texas by State, Municipal or National entities

Proposals – Tree Conservation.

- .131 Application of Division
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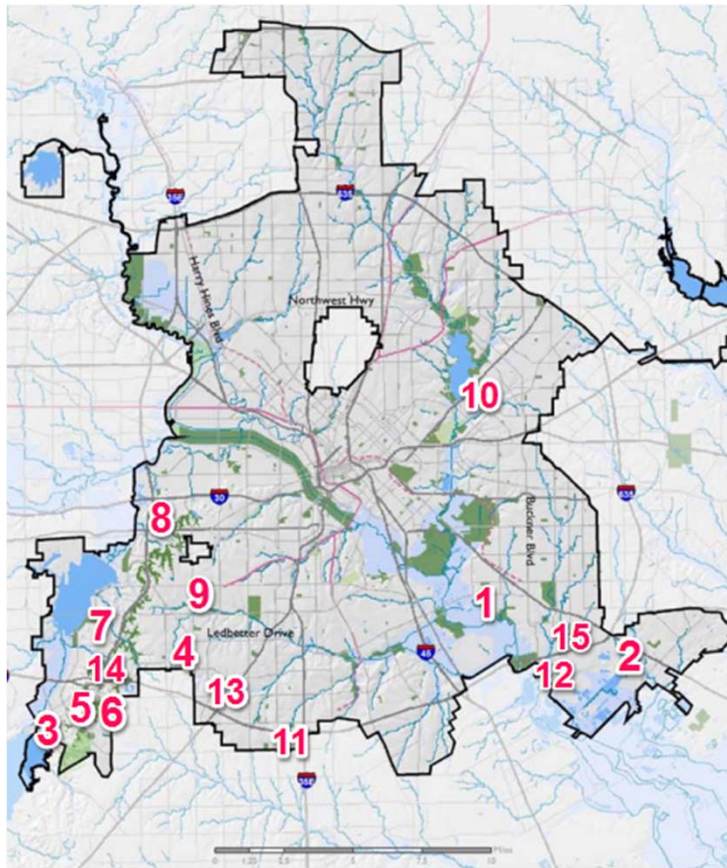
- Amended ordinance to place **Approved Trees** list in a separate document and referenced in the **Landscape and Tree Manual**. The list will be comprehensive and provide further planting options for tree replacement and single family landscape requirements. The list will also make recommendations for best options for certain planting conditions (i.e., urban streetscape).
- Trees to be measured as **LARGE, MEDIUM, and SMALL** trees based on tree height and canopy width.
- Amended the **Timing** provisions:
 - Mitigate within 30 days
 - Allow for up to 6 months with affidavit
 - If a building permit is submitted within the period, the replacement requirements may be attached to the building permit.
 - If a permit is not submitted, the replacement must occur within one month (30 days) of the initial 6-month expiration date.
 - Multi-phased residential subdivisions and commercial developments may submit a professionally designed comprehensive tree replacement plan for the subdivision. Replacement subject to future planting in the subdivision may be delayed, but additional replacement methods must be applied immediately.

Proposals – Tree Conservation.

- .131 Application of Division
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- .135 Alternative Methods of Compliance with Tree Replacement Requirements**
 - a) Mitigation for conditions/space**
 - b) Legacy trees
 - c) Sustainable Development Incentives
 - d) Tree canopy cover / SF and Duplex
- .136 Conservation and Maintenance of Protected Trees During Construction or Other Disturbance
- .137 Violation of this Division
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- .139 Fines
- .140 Criminal Responsibility and Defenses to Prosecution

- Amended mitigation due to soil conditions and inadequate space to modify:
 - Donate trees to Park and Recreation (amended conditions to not be initial method).
 - Plant trees within five miles of the tree removal property, with agreement (amended conditions).
 - Make payment into the Reforestation Fund (amended rate based on tree classification, and maintained the source publications).
 - Create a conservation easement (amended conditions that area must be at least 25% of the development impact area on the tree removal property, and replacement at inch for inch).

CONSERVATION EASEMENTS



1	Murdeaux	16.17 acres	2004
2	CMC South Oak	3.4044 / 0.97 a.	2004
3	Mountain Ridge Estates	2.92 acres	2005
4	Paraiso Escondido CUD	2.952 acres	2005
5	Forest View #1	6.0299 acres	2005
6	Forest View #2	3.8704 acres	2006
7	Capella Park	7.176 /32.898 a.	2006
8	DISD Arcadia Park	3.896 acres	2008
9	JNR Development	3.833 acres	2008
10	Ash Creek/Casa Linda	1.7894 acres	2009
11	Glendale Park CJW	1.193 acres	2009
12	Dowdy Ferry (Timbercreek)	22.1 acres	2010
13	Concord Church	6.250 acres	2013
14	Courtland Farms	106.32 acres	2014
15	Sandyland	1.311 acres	2015

223.08 acres total

Conservation easements are created under deed restrictions with conditions based on the number of inches removed from the tree removal property and the size of the easement property as compared to the tree removal property.

Proposals – Tree Conservation.

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- .140 Criminal Responsibility and Defenses to Prosecution

- Created a method of replacement which applies to investment and increase and improvement of landscape soil volume and condition on a property when planting Legacy Trees.
- Conditions for the Legacy Trees include
 - Soil conditions, volume, density, and area must meet the standard soil conditions for Legacy Trees, as applied in SDI.
 - Legacy trees planted according to plan are credited for 12 inches of diameter per tree toward the replacement of removed inches.

Proposals – Tree Conservation.

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- .139 Fines
- .140 Criminal Responsibility and Defenses to Prosecution

- Created a method of replacement involving 1) sustainable development practices, and 2) optimum tree growing conditions in the landscape, which favor significant tree growth over time. The preservation of existing trees, and the installation of nursery stock Legacy trees can reduce the tree replacement requirements for removed trees through the preservation, and increase, of **tree canopy coverage** over the property, as compared to an established canopy goal.
- The tree canopy goal is based on **Complete Streets** typology for the streets adjacent to the development. The percentage canopy goal for each typology is represented:

Street Typology	Goal Canopy Cover
Residential	40%
Mixed Use	35%
Commercial & Freeways	30%
Industrial	25%
Parkways	45%

Proposals – Tree Conservation.

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- .140 Criminal Responsibility and Defenses to Prosecution

- A development which can demonstrate the ability to achieve a SITES (Sustainable Sites Initiative) Certified-rating or greater may use the option to achieve additional credit based on the percentage of the achieved score as compared to a SITES Platinum rating. The percentage increase would be applied to each tree cover area.
 - *65 pts. of 135 pts. = 48% allows 1200 sf + (48%) 576 sf = 1776 sf per large legacy tree.*
- An additional amendment was added to allow for the provision of a protected habitat area with credit for no more than 5% of the canopy goal of the property.

10.135(c) – Sustainable Development Incentives

Street Typology	Goal Canopy Cover
Residential	40%
Mixed Use	35%
Commercial & Freeways	30%
Industrial	25%
Parkways	45%

Qualified developments must meet the following conditions:

1. Properties with no residential uses other than multifamily.
2. FSD and conceptual landscape plan prior to a building permit.
3. Soil management plan for the landscape areas on the site.
4. Retention or replacement of healthy soil conditions for tree growth.
5. Grading and clearing limited to the development impact area being outside of ecological sensitive land areas (floodplain, wetlands, escarpment) with priority least disturbance possible.
6. Utility easement planning for least intrusion.
7. Full tree protection requirements for existing and legacy trees.
8. A consulting arborist must work with the design team.
9. Water conservation irrigation standards must be best practices for optimum water savings.
10. A sustainable site maintenance plan for at least 5 years is required.

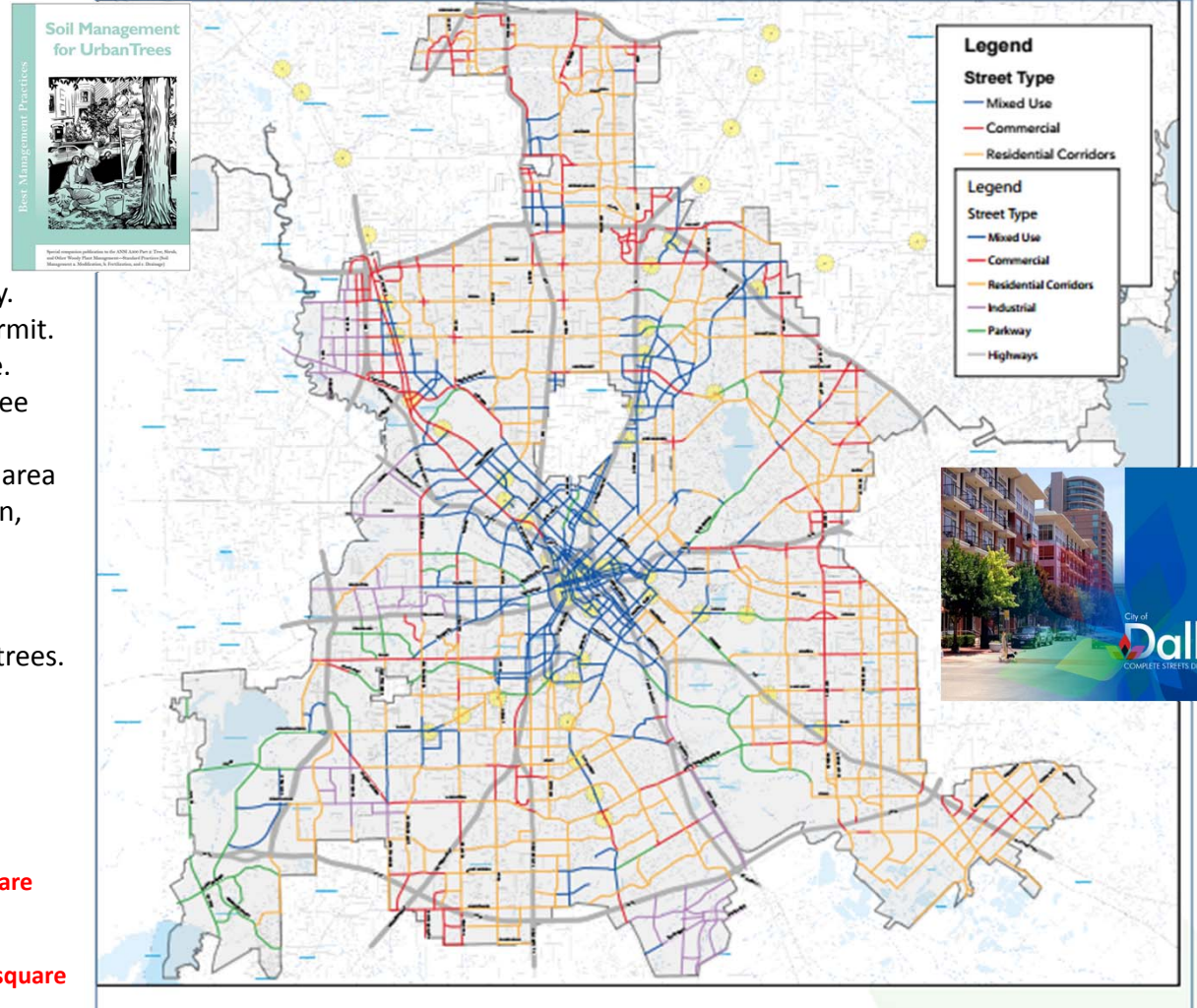
Large Legacy Tree – 1500 cubic feet soil volume or greater and 500 square feet open soil area or greater, per tree

= 1200 square feet canopy

Medium Legacy Tree – 1200 cubic feet soil volume or greater and 400 square feet open soil area or greater, per tree

= 750 square feet canopy

Vision Map: Contextual Street Types Overlay



This vision map is intended to be incorporated into the Thoroughfare Plan and periodically updated through the Thoroughfare Plan amendment process.

Proposals – Tree Conservation.

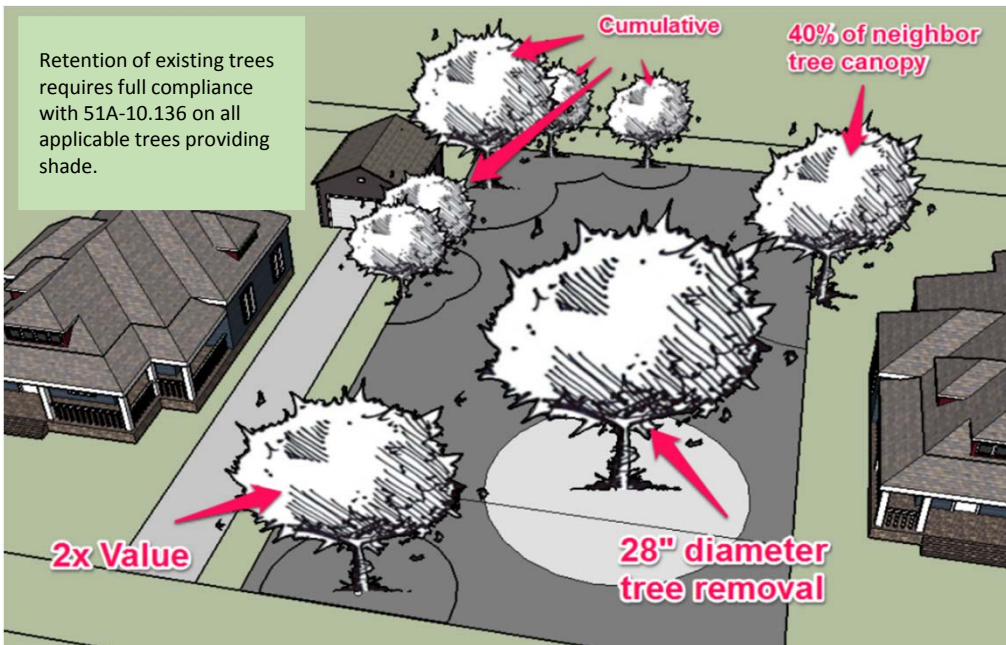
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- .137 Violation of this Division
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- .139 Fines
- .140 Criminal Responsibility and Defenses to Prosecution

- Created an amendment for optional tree canopy cover credit for tree canopies retained above single family and duplex construction sites. The reduction of tree replacement requirements apply:
 - The tree canopy cover goal for each property is 40% of the lot.
 - All healthy existing large and medium trees preserved on the site, and boundary trees, may be measured for total square footage (except invasives and trees within 20 feet of a electric distribution line).
 - Nursery stock large and medium trees may be attributed 100 sf per tree.
 - Large and medium trees in the front yard setback can attain two times the canopy cover of the tree.
 - All trees must be provided full protection in accordance with Section 51A-10.136.
 - Inches of all trees planted will count toward the mitigation as is standard.
 - All inches and canopy cover reduction may be assessed against the canopy goal to seek to attain full tree replacement. There is no penalty for non-attainment, but full tree replacement must be completed.

Tree Canopy Cover Credit - OPTION

EXAMPLE:

Retention of existing trees requires full compliance with 51A-10.136 on all applicable trees providing shade.



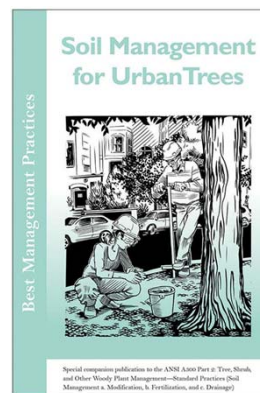
Tree protection requirements are imposed on the property. Mitigation reduction credits require compliance with protection standards.

- 10,000 sf property has a 40% (4,000 sf) tree canopy goal.
- 28\" protected tree (not Significant species) is removed for construction.
- Retained protected canopy tree in front yard receives 2x canopy area credit added to total.
- Eligible remaining canopy coverage is 2,800 square feet, or 28% applicable tree canopy (70% of goal coverage).
- Property receives 70% reduction on diameter inch mitigation by protecting tree areas on the lot ($28 - 19.6 = 8.4$ in. remain to be mitigated).
- Add 1 additional large tree (caliper inches and 100 sf added to canopy credit) + 3(2\" ornamental trees can complete mitigation.

Proposals – Tree Conservation.

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- .136 Conservation and Maintenance of Protected Trees During Construction or Other Disturbance**
- .137 Violation of this Division
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- .139 Fines
- .140 Criminal Responsibility and Defenses to Prosecution

- Amended the section to do the following:
 - Created minimum standards for the establishment and maintenance based on industry-consensus standards for trees on City property.
 - Improved minimum standards for the establishment and implementation of the protection of trees on construction sites.



Proposals – Tree Conservation.

- .131 Application of Division
- .132 Tree Removal Applications
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- Amended the section on violations of the division to establish a procedure for applying tree replacement requirements on properties where tree evidence has been removed. The section will allow the building official to take additional steps to ascertain the level of illegal tree removal from a property by the use of aerial photos and other technologies using a **forest stand delineation** to calculate the loss of canopy coverage by the square feet.
- Additional methods of enforcement are still applicable to the property, as necessary.

Proposals – Tree Conservation.

- .131 Application of Division
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- The sections on Appeals, Fines, and Criminal Responsibility, and Defenses to Prosecution, were amended only slightly.
- The director of aviation would have the authority to determine the removal of trees under the defenses to prosecution on matters of public health and safety.
- Tree removals for private development are specifically identified for defenses to prosecution, where public streets, easements, and water retention, etc., is required under an engineering review.

Resources

DallasTrees.net

Article X Proposed Amendment Reference Page

Article X

Forward Dallas

City of Dallas Complete Streets

Tree Space Design

Sustainable Sites Initiative (SITES)

American Standards for Nursery Stock (2014)

ANSI A300 Standards for Tree Care Operations

State of the Dallas Urban Forest – Texas Trees Foundation (2015)

Planting Details and Specifications (ISA)

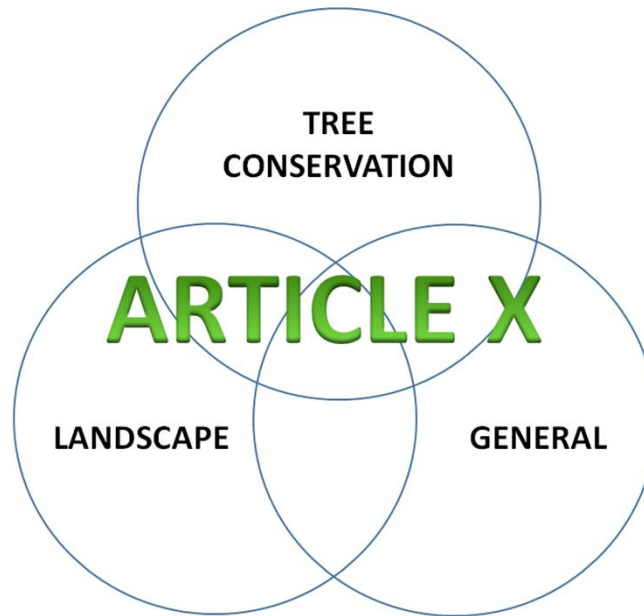
Soil Compaction Stress and Trees (Coder)

Dallas Arborist web page -

<http://dallascityhall.com/departments/sustainabledevelopment/arborist/Pages/default.aspx>

Article XIII: Form Districts

<http://dallascityhall.com/departments/sustainabledevelopment/arborist/Pages/default.aspx>



Source: Morton Arboretum