FDOT Design Manual
January 1, 2025

274 Selective Clearing and Grubbing (portion)

274.1.3 Tree Protection Fencing
Tree protection fencing is to protect the tree in its entirety, including the root system, trunk, branches, and surrounding soils from damage, compaction, and contamination. Utilize tree protection fencing for trees “selected” to remain when:
(1) Individual or groups of trees require preservation, or
(2) Individual or groups of trees have been relocated within the project limits.

Place fencing around the root zone, or at minimum, around the dripline of trees. See FDOT ***Standard Plans***, Index 110-100 for fencing installation requirements.

274.1.4 Branch and Root Pruning
Branch pruning is the selective removal of unwanted tree branches and provides one or more of the following benefits:
- Reduces the risk of damage to people or property
- Manages tree health and direction of growth
- Provides horizontal and vertical clearances for pedestrians, cyclists, or vehicles
- Improves tree structure, restores shape, or improves aesthetics

Root pruning is the process of cutting roots prior to mechanical excavation near a tree. Root pruning is necessary to minimize damage to the tree's critical root system during construction, or in preparation for tree relocation. The roots are typically sliced at the drip line of an established tree.

274.3 Selective C&G Maintenance Report
A Selective C&G (clearing and grubbing) Maintenance Report is required when Selective C&G sheets are included in the Roadway Plans. This Selective C&G Maintenance Report details the care and maintenance of preservation and Selective C&G areas. This document describes the intent of the Selective S&G activities and arboricultural best practices. Deliver the Selective C&G Maintenance Report to the District Project Manager.

275 Tree and Palm Relocation (all)
275.1 General
This chapter provides the criteria and requirements for relocation of trees and palms. For Tree and Palm Relocation plan content, refer to ***FDM 944***.

Relocation of trees and palms requires the approval of the District Landscape Architect. Develop a root pruning and relocation plan tailored to the species being relocated. Time periods required between root pruning and relocation must be in accordance with industry standards and ***Supplemental Specification 581***.

275.2 Relocation Considerations
When deciding to relocate a tree or palm, consider the following:

(1) Protected tree or palm species (Florida Department of Agriculture Endangered Plant Species), or local jurisdictional regulations

(2) Cost effectiveness of relocation (i.e., cost and benefit of relocating existing trees versus purchasing new nursery material)

(3) Tree or palm condition (e.g., size, form, health, structure)

(4) Aesthetic, historical, cultural, community, and environmental value

(5) Functional characteristics and engineering (e.g., safety considerations)

(6) Negative public perceptions regarding removal of healthy trees

(7) Overall suitability for relocating:

(a) Desirable and disease-resistant species

(b) Survivability

(c) Required establishment period

(d) Impact to construction schedule

(e) Removal, transport, or installation issues

275.3 Relocation Site Selection

For construction projects, trees or palms must be relocated to a site that is within or near the project limits, which decreases transport costs and increases the survival rate.

For maintenance-let landscape projects, an off-site location may be considered when there is not sufficient space to relocate a tree on-site. Off-site relocations must meet the following requirements:

- Relocation site is within the district in which the contract is let
- Acceptable plan for care during establishment period
- A written agreement with the maintaining agency has been obtained

904 Landscape Opportunity Plan

904.1 General

This chapter provides the criteria and requirements for development of the Landscape Opportunity Plan. These sheets are used for coordination purposes between projects and between the various disciplines of a project. Do not place the Landscape Opportunity Plan sheets within the Contract Plans Set. Signing and sealing the Landscape Opportunity Plan is not required.

A Landscape Opportunity Plan is prepared when landscape is not part of a roadway construction project, but landscaping will be installed:

(1) Within a subsequent stand-alone landscape project.

(2) As part of a simultaneous JPA or LAP project.

(3) Within a future safety or roundabout project.

A Landscape Opportunity Plan is typically prepared during the roadway concept plan development, but when developed during the design phase, should be preliminary by the Phase II submittal, complete at Phase III, and final at Phase IV. Coordinate with other disciplines (e.g., Roadway, Utility, Drainage, Signage, ITS, R/W) when developing the Landscape Opportunity Plan.

Submit the completed Landscape Opportunity Plan to the Department Project Manager and District Landscape Architect. Place the completed Landscape Opportunity Plan in Project Suite Enterprise Edition (PSEE) within the Design Development Documentation Module (see ***FDM 111.7***).

270.3 Soil Enhancements

Highly disturbed soils (i.e., soils located in medians, embankments, and roundabouts) are often densely compacted, rocky, unsuitable pH levels, and infertile. These soil conditions may negatively impact plant establishment by inhibiting root growth, reducing water infiltration, and inhibiting nutrient uptake.

When possible, select plant species that can thrive in the existing or disturbed soil conditions. Soil enhancements become necessary for soil conditions that inhibit plant establishment and growth. Soil enhancements are typically limited to:

- Planting beds
- Tree or palm planting pits (typically 2-times the size of the root ball)

Excavation for amendments or replacement soil cannot occur within two feet from the back of any curb or from any structure.

270.3.1 Soil Analysis

Conduct a preliminary analysis of the existing soil conditions during the analysis phase or early in the design process to determine what plants will thrive. The preliminary analysis should include pH, soil fertility, and percolation tests. The Department may require an advanced soil analysis when preliminary analysis indicates the existing soils are not suitable for plant establishment and growth.

Provide documentation to the District Landscape Architect justifying the need for soil enhancements.

270.3.2 Soil Enhancement Selection

Select the appropriate soil enhancements based on the results of the soil analysis. There are three types of soil enhancements:

(1) Soil scarification (a.k.a., soil structural improvement) includes mechanically loosening the existing soils.

(2) Soil amendment includes mixing organic soils, inorganic soils, or minerals with the existing soils.

(3) Soil replacement with Landscape Soil. Landscape Soil material requirements are included in ***Standard Specification, Section 987***. Soil replacement is used only when either of the following conditions exist:

(a) Other soil enhancement types will not improve the quality of the existing soil to support establishment and vigorous growth of new or relocated plants.

(b) The District Design Engineer approves the use of Landscape Soil on a design project that has raised curbed medians, bulb-outs, sidewalk tree pits, and roundabout central islands to accommodate a subsequent landscape project.

273 Landscape Maintenance Guide

273.1 General

This chapter provides the criteria and requirements for the Landscape Maintenance Guide. See ***FDM 944.7*** for development of the Landscape Maintenance Guide sheet.

A Landscape Maintenance Guide is required for all landscape projects whether delivered as standalone or in a component set of plans. This plan sheet describes the long-term design intent, limits of landscape maintenance, and the necessary activities for maintaining the planting and irrigation designs.

273.2 Landscape Maintenance Guide Requirements

The Landscape Maintenance Guide provides guidance to the maintaining agency on the anticipated activities necessary to preserve the design intent, assure the vitality of the plant material, and optimize the performance of the irrigation system. Coordinate the methods for plant care and the watering frequency for irrigation systems with the maintaining agency. Include a draft Landscape Maintenance Guide with the Phase III submittal and submit the final guide with the Phase IV submittal. Place the final PDF of the Landscape Maintenance Guide in the:

- Maintenance agreement when maintained by a local agency or group.
- Maintenance contract when maintained by the Department.

273.2.1 Design Intent

Convey the design intent the landscape design is intended to provide.

(1) Functional characteristics of individual plants or groups of plants may:

(a) Screen adjoining land uses

(b) Provide shade to sidewalks or paths

(c) Reduce stormwater velocities (erosion control)

(d) Maintain full foliage, or naturally appearing forest

(e) Reestablish natural roadside edges

(f) Support economic development, or enhance the aesthetics of rest areas

(g) Provide safety enhancements (e.g., roundabout central island, midblock crossings, median treatment)

(h) Preserve required distances, such as:

(i) Stopping and intersection sight distances

(j) Horizontal and vertical clearances near pedestrian facilities

(k) Outdoor advertising sign view zones

(l) Lateral offsets and clear zones

273.2.2 Plant Vitality

Convey the maintenance activities and performance to assure continued plant vitality, such as:

(1) Plant pruning:

(a) Maintain clear trunk to X feet

(b) Maintain at height no less than X feet

(c) Maintain height no greater than X feet

(d) Maintain form and spread

(2) Fertilizer requirements (type and frequency)

(3) Watering requirements

(4) Weeding, mulch replenishment, and planting bed edging

(5) Pest and disease control

(6) Hardscape and site amenities preservation

273.2.3 Irrigation System Performance

Convey the maintenance activities for optimal performance of the irrigation system, such as:

(1) Frequency of scheduled inspections and testing requirements

(2) Requirements associated with the original design parameters, including manufacturer specifications and user manuals

(3) Zone run times based on system efficiency, precipitation rate, seasonal adjustments, and local jurisdictional restrictions

(4) Inspection and maintenance of the following:

(a) Backflow preventers and points of connection

(b) Water sources and pressure requirements

(c) Filters and filtration requirements

(d) Operations of controllers and sensors

(e) Valve flow and operations

(f) Head adjustments and spray patterns, including necessary adjustments as the landscape matures

(5) Winterization requirements (if applicable)

(6) Future audit requirements

273.3 Limits of Landscape Maintenance

Provide an illustration that defines the boundaries of maintenance activities. The illustration is typically not-to-scale and is oriented west to east or south to north (increasing stationing or mile post). The illustration should include the following:

(1) Use the planting plan sheets, “gray-screened” and devoid of unnecessary text and labeling, in the background.

(2) Display and label the limits of maintenance shown as shaded or hatched areas.

(3) Provide a north arrow with NTS, typically placed in the top right corner of the sheet.

(4) Label the following:

(a) Begin and end project limits

(b) R/W and easements

(c) Roadway names

(d) Outside edges of sidewalks, pavements, and other elements that define the boundary of maintenance activities

Include the limits of landscape maintenance as an exhibit in the Landscape Maintenance Guide.

273.4 Landscape Maintenance Cost Estimate

Estimate the annual cost for proposed landscape maintenance activities, including the irrigation system. Consult with the District Landscape Architect and District Maintenance staff when developing the cost estimate. During design, a preliminary cost estimate allows the maintaining agency to evaluate the landscape plan and determine if revisions are necessary.

Include the cost estimate as an exhibit in the Landscape Maintenance Guide.

GENERAL LANDSCAPE NOTES (portion)

PLANT SUPPLEMENTS

- All plant material and palms shall be fertilized with a 12 month slow release top dressing fertilizer with a minor element package to include (but not limited to) calcium, magnesium, sulfur, iron, copper, manganese, molybdenum, zinc and boron.
- All plant materials shall be fertilized at the time of planting and 30 days prior to completion of the establishment period. Notify the Engineer in writing 48 hours in advance of all fertilizer applications.

B & B PLANTING MEDIUM

- Balled and burlapped materials are to be rooted and grown in similar planting medium as the proposed location soil conditions. Clay soil root balls will not be accepted as suitable material in balled and burlapped plant material.
- All balled and burlapped materials shall exhibit white feeder roots protruding from the burlap at the time of delivery.

PLANT CONDITIONS

- Plants that call out for a central leader shall not have presence or past evidence of a central leader being pruned larger than a standard pencil diameter.
- All plants shall not demonstrate significant evidence of previous container confinement. Any indication of root development restriction or excessive roots exposed above the soil surface shall be grounds for rejection.
- All plant materials shall have no lichens, algae or fungi attached on more than 10% of plant.
- All plant materials shall have no Spanish moss (*Tillandsia usneoides*) on or within plant canopy.

TRIMMING

- Trim all trees as indicated on the contract documents. Trim lower branches only. All trimming shall be performed to raise existing tree canopy to minimum of 5’ from ground level. Trimming shall be performed per International Society of Arboriculture (ISA) standards. A final trimming cycle shall be executed prior to end of the establishment period.
- Trim all palms as indicated on the contract documents. Trim dead fronds, fruit and seed stalks as necessary or as otherwise directed by the Engineer. Every 12 months perform aesthetic trimming on all palms up to a “9 to 3” horizontal level. Trimming shall be performed per University of Florida IFAS Extension EDIS standards (http://edis.ifas.ufl.edu/ep443). A final trimming cycle shall be executed prior to end of the establishment period.