

TRANSPORTATION SYMPOSIUM

Be Selective ...
Save our Living Assets

Cheryl Callender, Christopher Keller

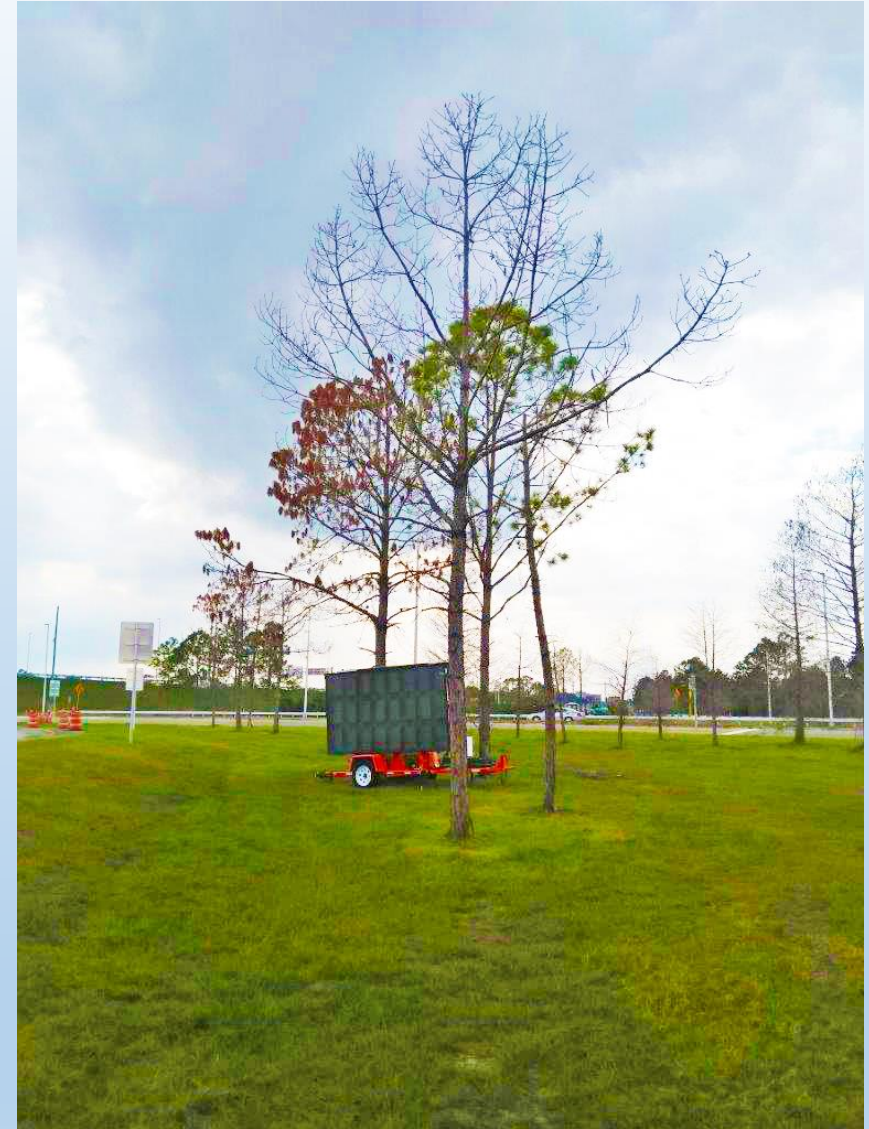
Why do we need tree protection...



To avoid this....



And this....



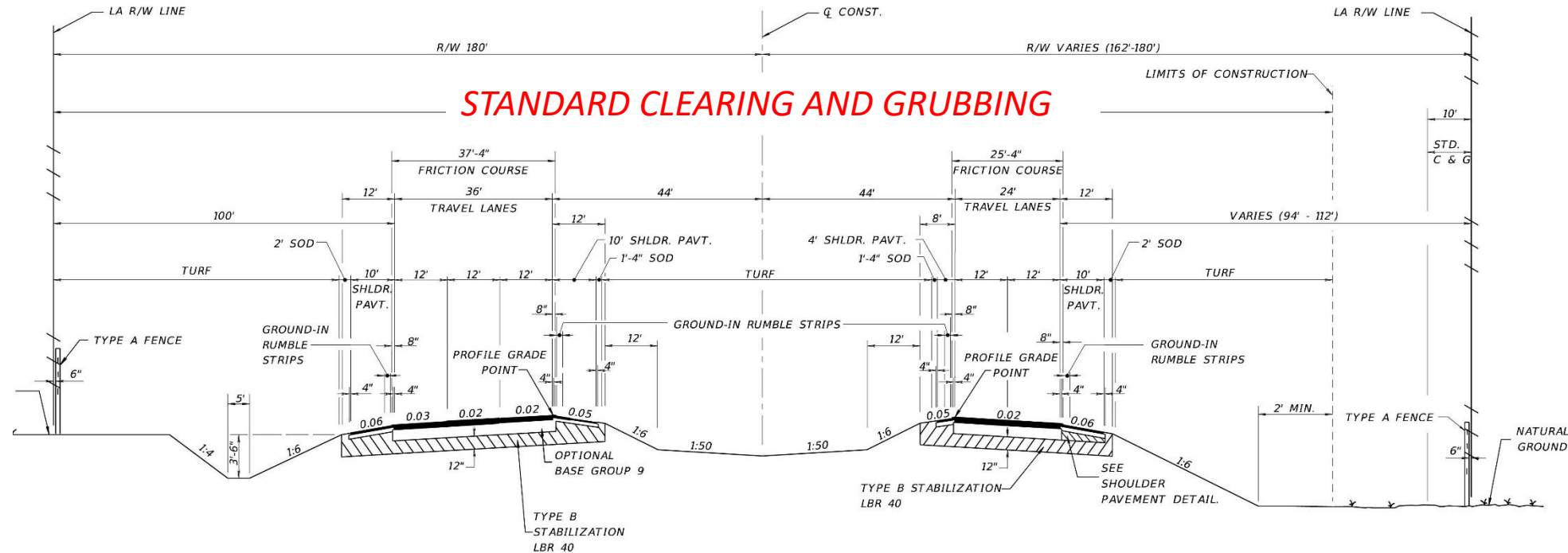
And also this....



It is also required under Federal Statute, The Florida Constitution, State Statute and Departmental Policies.



Current Practice: Standard Clearing and Grubbing



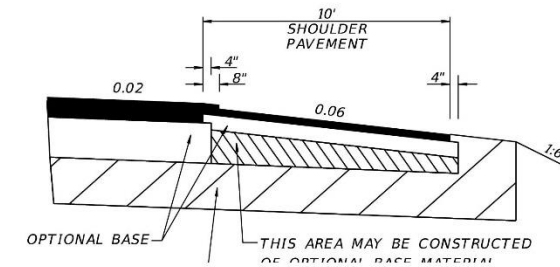
TYPICAL SECTION
I-10 (SR 8)
STA. 567+25.67 TO STA. 1056+84.35

TRAFFIC DATA

CURRENT YEAR = 2018 AADT = 22300
ESTIMATED OPENING YEAR = 2020 AADT = 23300
ESTIMATED DESIGN YEAR = 2040 AADT = 51500
 $K = 9\%$ $D = 56\%$ $T = 10\%$ (24 HOUR)
DESIGN HOUR $T = 5\%$

TRAVEL LANES

OPTIONAL BASE GROUP 9 WITH
TYPE SP STRUCTURAL COURSE (TRAFFIC D) (4") AND
FRICTION COURSE FC-5 ($\frac{3}{4}$ ") (PG 76-22)



6 Principal Documents You Need to Know

- PD&E Manual
 - Planning Stage (ETDM)
 - Preliminary Design Stage
- FDOT Design Manual
- Standard Scope of Services
- Staff Hour Estimates
- Basis of Estimates
- Standard Plans



PD&E Manual – Planning Stage Responsibilities



Office of Environmental Management

Office of Environmental Management / OEM Resources / PD&E Manual
PD&E Manual

Project Development and Environment Manual (PD&E Manual) Effective January 2019

Pursuant to **23 United States Code (U.S.C.) 327** and the implementing **Memorandum of Understanding (MOU)** December 14, 2016, the FDOT has assumed Federal Highway Administration's (FHWA's) responsibilities under NEPA for highway projects on the State Highway System (SHS) and Local Agency Program (LAP) projects off the SHS. In g FDOT's assumption includes all highway projects in Florida whose source of federal funding comes from FHWA or constitute a federal action through FHWA. This includes responsibilities for environmental review, interagency consultation activities pertaining to the review or approval of NEPA actions. Consistent with law and the MOU, FDOT will Federal Agency for highway projects with approval authority resting in the Office of Environmental Management (OEM). The process outlined in the **Project Development and Environment (PD&E) Manual** is the Florida Department of Transportation's (FDOT's) procedure for complying with the **National Environmental Policy Act (NEPA) of 1969, U.S.C. section 4321, et seq.**, and the MOU mentioned above and describes FDOT's environmental review process. To stay up-to-date on PD&E Manual updates and **training opportunities**, create an account on our **FDOT Contact Center** select **Environmental Management** and **Environmental Publications and Updates** under the **Publications and Updates** section. If training opportunities are available, we will send email notifications out through contact mailer. Existing PD&E Manual materials found on our **training website**.

Published January 14, 2019

Part 1: Processes and Documentation

Chapter Table of Contents

- 1: Introduction
- 2: Class of Action Determination for Highway Projects
- 3: Preliminary Environmental Discussion and Advance Notification (WBT)
- 4: Project Development Process (WBT)
- 5: Type 2 Categorical Exclusion

Part 2: Topics and Analysis

Chapter Table of Contents

- 1: Project Description and Purpose and Need
- 2: Traffic Analysis
- 3: Engineering Analysis (Training)
- 4: Sociocultural Effects Evaluation
- 5: Aesthetic Effects (WBT)

PART 1, CHAPTER 3

PRELIMINARY ENVIRONMENTAL DISCUSSION AND ADVANCE NOTIFICATION

3. **Preliminary Environmental Discussion** - The PED is part of the text associated with the AN during the programming screen. **This section is prepared by the District** and includes the identification of environmental issues/resources including community features, a description of potential involvement with issues/resources, and a discussion of anticipated technical reports and permits. Please consult the appropriate chapters in **Part 2** of this **Manual** for guidance on identifying and analyzing issues associated with the categories below.

a. Social and Economic

1. **Land Use Changes** - Describe existing and future land uses in the project area and how the project may affect these uses. See **Part 2, Chapter 4, Sociocultural Effects Evaluation.**

5. **Aesthetic Effects** - Describe the area's existing aesthetic features and summarize the project's potential involvement. See **Part 2, Chapter 5, Aesthetic Effects.**

PD&E Manual – Preliminary Design Stage Responsibilities

PART 2 CHAPTER 3 Environmental Assessment

- **3.2.3.4 Existing Conditions Analysis**
- **3.2.3.4.1 Existing Roadway Conditions**
 - 21. Aesthetic features (e.g., lighting, landscaping, vegetation, pavers)
- **3.2.5.10.1 Drainage and Landscaping**
 - The Project Manager should meet with the District Drainage Engineer and Landscape Architect to explore opportunities for integrating pond features with existing and proposed landscaping.

PD&E Manual – Preliminary Design Stage Responsibilities

PART 2, CHAPTER 4

SOCIOCULTURAL EFFECTS EVALUATION

Topic No. 650-000-001
Project Development and Environment Manual
Sociocultural Effects Evaluation

Effective: January 14, 2019

Aesthetic Effects

Assess the project's compatibility with the community's aesthetic values such as noise, vibration, and physical appearance. Examine the type and intensity of project impacts on noise sensitive sites (e.g., residential areas, hotels, nursing homes, and parks); vibration sensitive sites (e.g., residential uses, eye clinics, dentist offices, and hospitals); special viewsheds and vistas; community focal points; historic structures, districts, and landmarks; and community character (e.g., existing and planned streetscaping, highway beautification, canopy roads, and development patterns). See [Part 2, Chapter 5, Aesthetic Effects](#) for further guidance on evaluating aesthetic effects.

Land Use Changes

Verify that the project is consistent with local and regional land use and transportation plans. Evaluate the project's consistency with the physical character of the area and applicable community plans. Consider the project's compatibility with the community's land use vision and existing/planned land use patterns and urban form. Review the local government comprehensive plan(s) and any special area plans to assess the project's consistency with community goals. Evaluate the potential for changes in the acreage devoted to recreational/open space and rural lands. Assess the project's potential to facilitate or deter urban sprawl. Explore the potential for effects on unique community features (e.g., historic landmarks/structures, water features, parks, landscaping, and natural vegetation).

PD&E Manual – Preliminary Design Stage Responsibilities

PART 2, CHAPTER 5

AESTHETIC EFFECTS

Transportation actions can affect communities and influence aesthetic qualities. The FDOT [Highway Beautification Policy, Topic 000-650-011](#) was created to conserve, protect, restore and enhance Florida's natural resources and scenic beauty when constructing and maintaining the SHS. FDOT considers Aesthetic Effects (AE) during project development because it influences community cohesion, community values, and can affect the travel experience. As such, FDOT identifies practical and feasible opportunities to improve project aesthetics during project delivery.

5.2 PROCEDURE

An AE evaluation for a proposed transportation project should meet the following objectives:

1. Identify current aesthetic resources (e.g., Florida Scenic Highways, other special roadway designations, **existing forested areas, wildflower areas, trees, landscape**, community features, stormwater ponds and drainage features, bridge structures and other architectural features);
2. Analyze and categorize the aesthetic resources that could be affected;
3. Assess the value of the aesthetic resources to the community or study area;
4. Assess potential impacts; and,
5. Identify potential avoidance, minimization, mitigation and enhancement measures.

PD&E Manual – Preliminary Design Stage Responsibilities

PART 2, CHAPTER 5 AESTHETIC EFFECTS

5.2.2.1 Aesthetics Effects Evaluation

Step 1: Describe Existing Conditions

Step 2: Evaluate Effects

Step 3: Determine Impacts

Step 4: Recommend Measures to Resolve Issues.

TABLE 5-1 Typical Aesthetic Effects Considerations

CHARACTER	Used to understand the aesthetic resources unique to the studied community and its environment(s). Each of the following may be identified and described before any value and/or impact assessments begin: adjoining architectural styles; adjoining land uses; available transportation modes; corridor width and alignment; context classification; level of (historical) maintenance; lighting; common materials; visual rhythms, patterns, forms, lines, colors and textures; vegetation; and vehicle speed; sounds; odors; and vibrations.
COMPATIBILITY	These base considerations may be evaluated in the land use context proposed: access; community cohesiveness; existing design characteristics; planned growth and land use patterns; sense of ownership /public boundaries; traffic patterns/congestion; design compatibility with community setting; and color and materials coordination (with evident patterns).
COMMUNITY VALUES	To utilize in understanding how the transportation project can contribute to public perceptions, and will inform the determination of the intensity of potential AE impact. May include the following: community goals; cultural significance; gateways and focal points; local plan consistency; open space; quality of life; safety; and special community designations.
SENSITIVE AREAS	Many of these contribute subtly to a community's identity and may need to be considered in the broader Community Values context (level of sensitivity to each): areas of recognized beauty; bicycle routes; commercial centers; historic or other culturally-important resources; parks and recreation areas; pedestrian facilities; public facilities (hospitals, colleges, universities); public parking areas (and access to them); residential areas; specific historic or cultural features; transit facilities; and specially designated water bodies.
VISUAL FEATURES	These are usually rated as very important and highly valuable by communities. They should be considered in the context of potential for both short- and long-term impacts of the project. They may include: scenic spaces (views and vistas); tree cover; natural shade/shadow patterns; vegetation and screening; water bodies; light features and evident lighting levels; other natural green spaces; recognized safety features; visual clutter (if present); and, simplicity and attractiveness of signage.

PD&E Manual – Preliminary Design Stage Responsibilities



FDOT Design Manual

2018 FDOT Design Manual
Plans Preparation Manual (PPM)

2019 FDOT Design Manual

To view the Implementation Bulletin for the current FDM, please see RDB18-09

Development and Processes - Complete FDM Part 1 ([Link](#))

Chapter	Bulletin	Webinar	Description
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Introduction

110			Initial Engineering Design Process
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111			Final Engineering Design Process
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Design Criteria - Complete FDM Part 2 ([Link](#))

Chapter	Bulletin	Webinar	Description
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Context Based Design

229		Webinar	Selective Clearing and Grubbing Design <i>*NEW*</i>
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323			Selective Clearing and Grubbing
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FDOT Design Manual

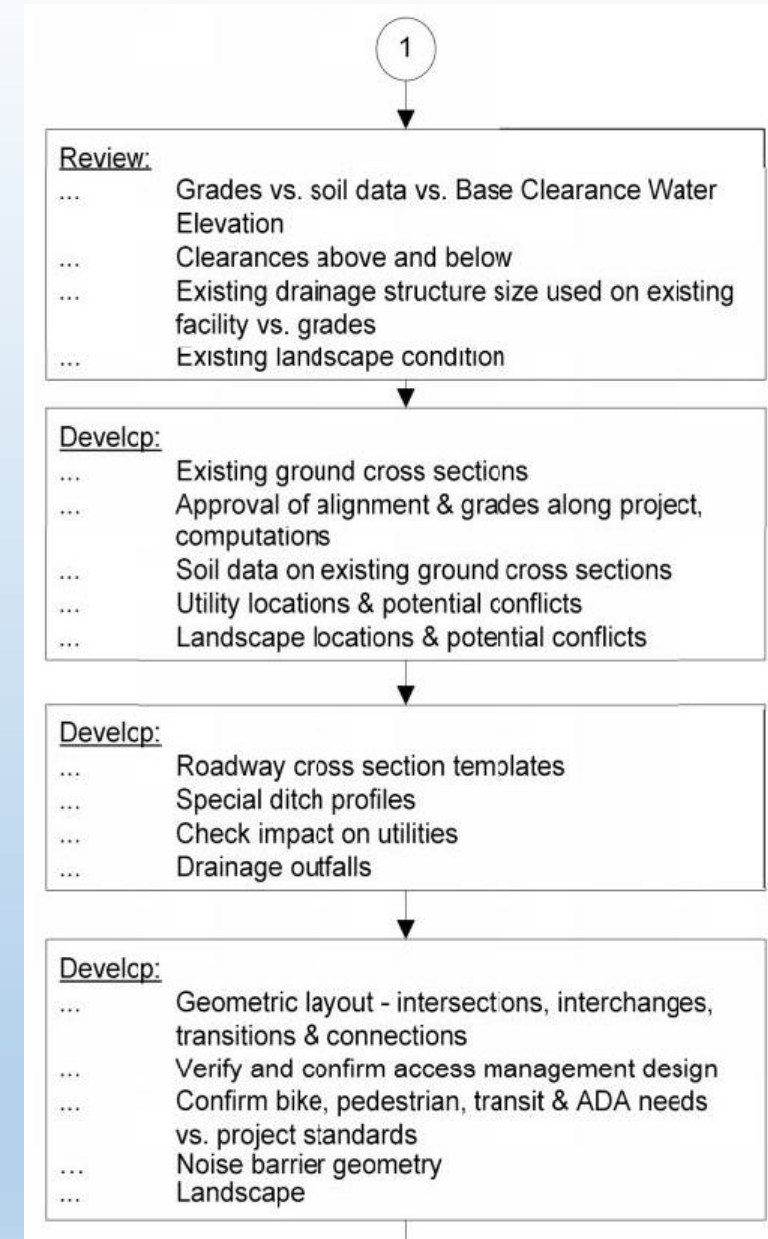
- Section 110 Initial Engineering Process

- Figure 110.1.1

- Existing Landscape Condition
 - Landscape Location & Potential Conflicts
 - Field Review and Verify Adequacy of Survey Data

- 110.5.9 Trees, Landscape, and Landscape Irrigation

- Consistent with Department policy, determine how the project can be designed to **accommodate existing desirable trees and proposed trees. Determine if any commitments have been made to preserve or provide trees**, landscape or landscape irrigation. Determine if a landscape project is programed or proposed as a component or standalone by the Department or a local agency.



FDOT Design Manual

Key Sheet Set up Selective Clearing and Grubbing Plans

302.6 Index of Roadway Plans

Place an index of roadway sheets on the left side of the Key Sheet. Each component Key Sheet will have an index of sheets contained in that component. Assemble roadway plans in the following order:

- (27) Temporary Traffic Control Plans
- (28) Utility Adjustments
- (29) Selective Clearing and Grubbing
- (30) Tree Disposition Plan
- (31) Summary of Quantities⁽¹⁾

FDOT Design Manual

Topic #625-000-002
FDOT Design Manual

January 1, 2019

301 Sequence of Plans Preparation

Table 301.2.1 **Summary of Phase Submittals**

Provide the sheets listed as applicable

ITEM	PHASE I	PHASE II*	PHASE III	PHASE IV
Temporary Traffic Control Plans	P	P	C	F
Utility Adjustments		P	C	F
Selective Clearing and Grubbing		P	C	F
Mitigation Plans		P	C	F
Miscellaneous Structures Plans		P	C	F
Vegetation Disposition Plans	P	P	C	F
Utility Work by Highway Contractor Agreement Plans			C	F
Summary of Quantities			C	F
Developmental Standard Plans		C	C	F

FDOT Design Manual – Design/Analysis Tasks

Topic #625-000-002
FDOT Design Manual

January 1, 2019

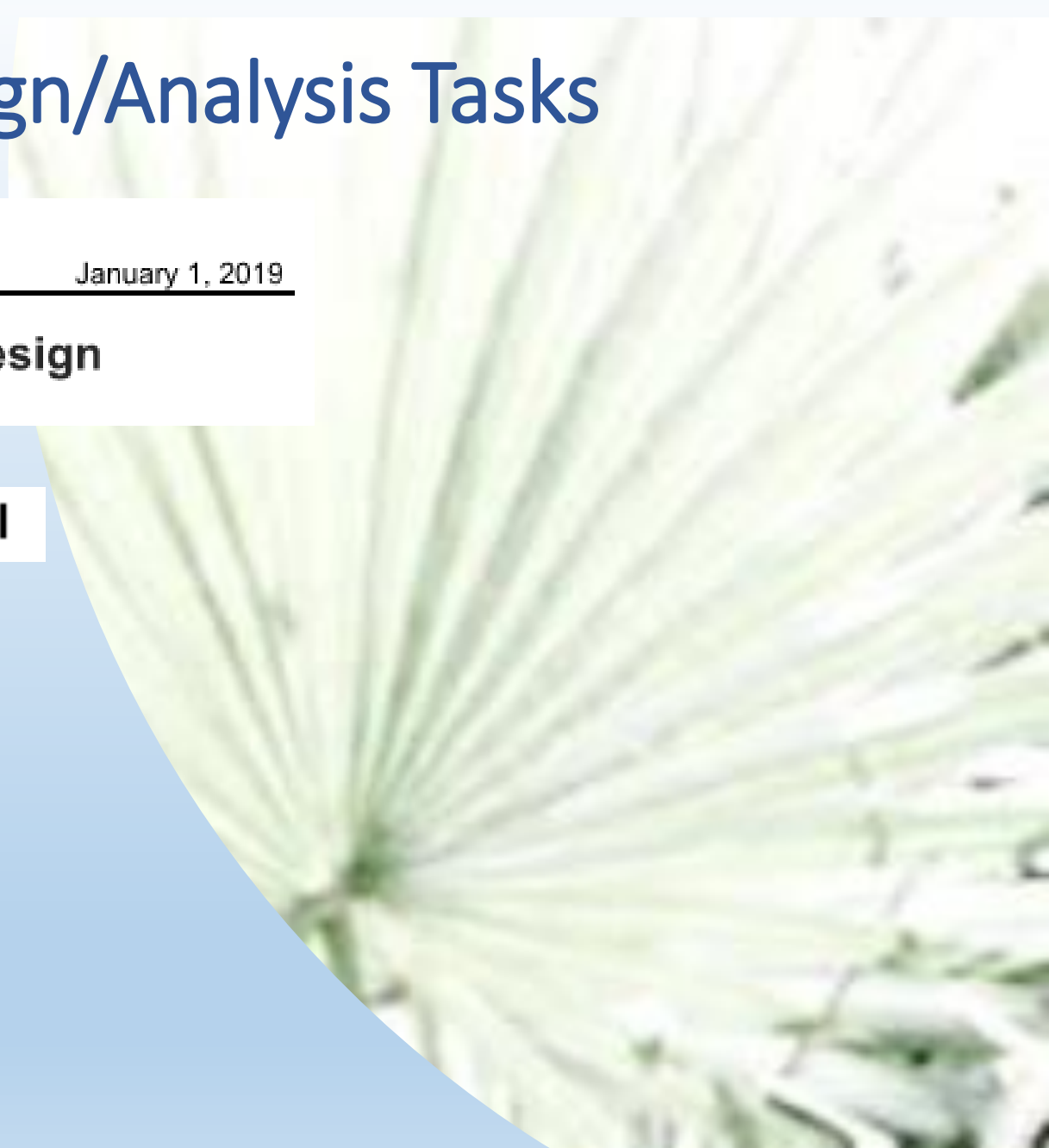
229 Selective Clearing and Grubbing Design

229.1.1 Undesirable Vegetation Removal

229.1.2 Tree Protection

229.1.3 Plant Preservation Areas

229.3 Tree and Palm Relocation



FDOT Design Manual – Design Scope

Topic #625-000-002
FDOT Design Manual

January 1, 2019

229 Selective Clearing and Grubbing Design

229.2 Selective Clearing and Grubbing Field Assessment

229.2.1 Site Inventory Analysis and Required Coordination

Prepare a site inventory and analysis of existing vegetation, opportunities for preservation and protection of existing vegetation, relocation options, and selective removal of vegetation.

Coordinate with roadway design to maximize areas of preservation of existing desirable vegetation. Coordinate with the surveyor to have trees tagged and surveyed, as necessary. Coordinate with utility companies, drainage engineers, and traffic engineers to ensure that preservation of existing vegetation is coordinated between all disciplines. Coordinate with the District Landscape Architect to verify Selective Clearing and Grubbing is conducted in alignment with the District's proposed landscape projects.

229.2.2 Maintenance Report

Prepare a written or graphic Maintenance Report for the care and maintenance of the tree preservation areas, and selective clearing and grubbing areas. Convey the intent of the

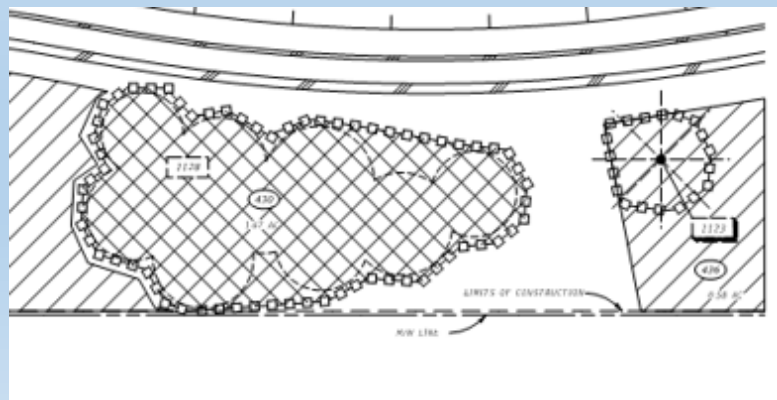
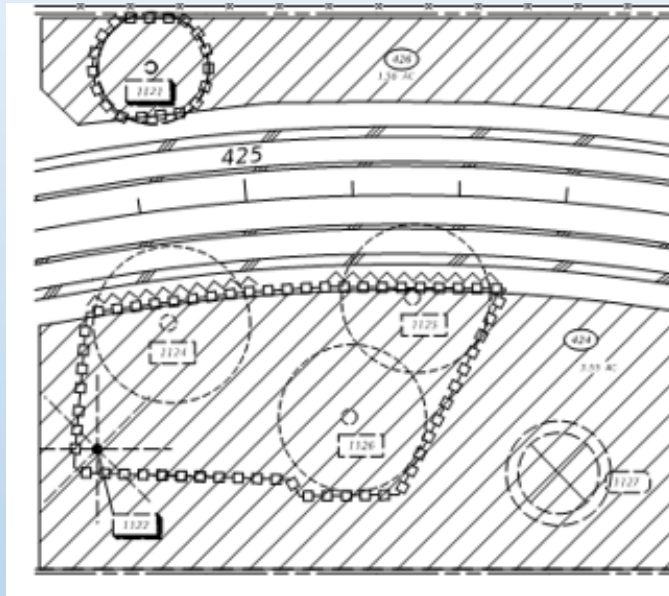


FDOT Design Manual - Plans

Topic #625-000-002
FDOT Design Manual

January 1, 2019

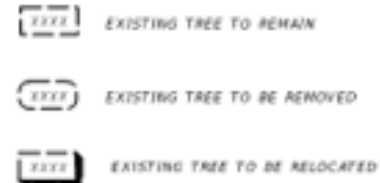
323 Selective Clearing and Grubbing Plans



229.1.1 Undesirable Vegetation Removal

229.1.2 Tree Protection

LEGEND



NOTES

1. TREE DESIGNATION (ID) NUMBERS ARE DETAILED ON THE TREE DISPOSITION SHEETS.

229.1.3 Plant Preservation Areas

229.3 Tree and Palm Relocation

FDOT Design Manual – Details and Notes

323.3 Selective Clearing and Grubbing Detail Sheet

The notes required for selective clearing and grubbing vary depending on the project. It may be desirable to provide a separate Selective Clearing and Grubbing Detail Sheet to display the notes, symbols, and details that are applicable to the project. For an example of a Selective Clearing and Grubbing Detail Sheet, see **Exhibit 323-2**.

323.3.1 Work Table

SELECTIVE CLEARING & GRUBBING WORK TABLE					
AREA ID	WORK DESCRIPTION	EST. % OF PRIMARY SPECIES TO TARGET	PRIMARY SPECIES TO TARGET	SPECIES TO REMAIN	ADDITIONAL INFORMATION
424	DESIGNATES AREAS WHERE CATEGORY #1 INVASIVE, EXOTIC VEGETATION AND NATIVE UNDERSTORY WILL BE SELECTIVELY REMOVED. LARGE DESIREABLE TREES TO REMAIN. ALL TREES UNDER 4" DBH TO BE REMOVED.	75%	JP, ST, LY, AA	PE, QV, SP	RAISE CANOPY OF QV BY PRUNING. REMOVE LARGE TREE DEBRIS OR GRIND ON SITE AND SPREAD IN UPLAND (NON-GRASSED) AREAS.
426	DESIGNATES AREAS WHERE ALL NATIVE VEGETATION WILL BE MOWED FLUSH WITH THE GROUND AND ALL CATEGORY #1 INVASIVE, EXOTIC VEGETATION WILL BE TREATED WITH HERBICIDES AND ALLOWED TO DIE IN PLACE.	100%	TS, ST, CW	NONE	INCLUDES REMOVAL OR MOWING OF WILLOWS AND WAX MYRTLE.
436	DESIGNATES AREAS WHERE CATEGORY #1 INVASIVE, EXOTIC VEGETATION WILL BE SELECTIVELY REMOVED FROM DESIREABLE VEGETATION TO REMAIN.	50%	JP, ST, LY	PE, QV, SP	

WORK TABLE NOTES

1. "PRIMARY" SPECIES TO TARGET (REMOVE) OR PRESERVE ARE THOSE THAT WERE DETERMINED TO BE MOST PREVALENT IN THAT AREA, AND ARE NOT INTENDED TO BE THE ONLY SPECIES THAT OCCUR.

THE FOLLOWING ADDITIONAL UNDESIREABLE NATIVE SPECIES WILL BE TARGETED FOR REMOVAL IN ALL AREAS LISTED IN THE WORK TABLE:

BOTANICAL NAME (COMMON NAME)

MYRICA CERIFERA (SOUTHERN WAX MYRTLE)
TYPHA SPP. (CATTAILS)

2. ESTIMATED PERCENTAGES OF INVASIVE EXOTIC VEGETATION ARE BASED ON FIELD OBSERVATIONS AND ARE SUBJECT TO CHANGE.
3. THE FOLLOWING CATEGORY #1 INVASIVE SPECIES WILL NOT BE TARGETED FOR REMOVAL:

BOTANICAL NAME (COMMON NAME)

SOLANUM TAMPICENSE (WETLAND NIGHTSHADE)
PANICUM REPENS (TORPEDO GRASS)

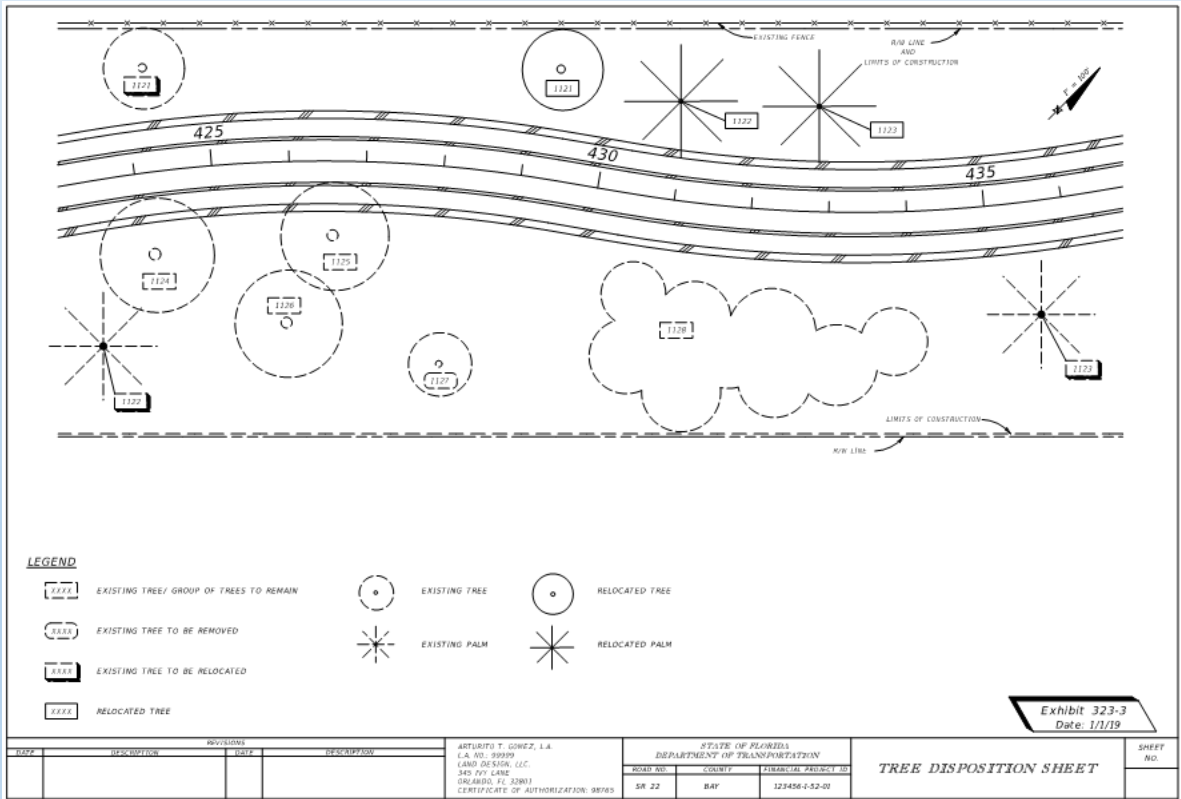
SPECIES LEGEND

(SYM)	BOTANICAL NAME (COMMON NAME)
(AA)	ACACIA AURICULIFORMIS (EARLEAF ACACIA)
(ST)	SCHINUS TEREBINTHIFOLIUS (BRAZILIAN PEPPER)
(TS)	TYPHA SPP. (CATTAILS)
(JP)	SYZYGIUM CUMINI (JAVA PLUM)
(LY)	LYGODIUM SPP. (JAPANESE/OLD WORLD CLIMBING FERN)
(MC)	MYRICA CERIFERA (SOUTHERN WAX MYRTLE)
(PE)	PINUS ELLIOTTII (SLASH PINE)
(SP)	SABAL PALMETTO (SABAL PALM)
(QV)	QUERCUS VIRGINIANA (LIVE OAK)
(CW)	SALIX CAROLINIANA (COASTAL PLAIN WILLOW)

FDOT Design Manual – Tree Relocation

323.4 Tree Disposition Sheets

Tree Disposition Sheets are used when there are trees to be relocated. For an example of a Tree Disposition Sheet, see **Exhibit 323-3**.



323.5 Tree Disposition Chart

A plan sheet titled "Tree Disposition Chart" should accompany the Tree Disposition Sheets, and include the following in table format:

SHEET NUMBER	TREE NO.	SYMBOL	BOTANICAL NAME	COMMON NAME	DBH (INCHES) (DIAMETER AT BREAST HEIGHT)	HEIGHT (FEET) (APPROX.)	SPREAD (FEET) (APPROX.)	LOCATION		CONDITION	DISPOSITION	NOTES
								STA.	OFFSET/SIDE			
TD-1	1121	QV	QUERCUS VIRGINIANA	LIVE OAK	4	16	7	424+30	130' LT	ABOVE AVERAGE	RELOCATE TO STA. 429+30, 130' LT	NURSERY MATERIAL PLANTED IN 2017 AS PART OF A LANDSCAPE PROJECT
TD-1	1122	RR	ROYSTONIA REGIA	ROYAL PALM	19	19	OW	423+60	210' RT	ABOVE AVERAGE	RELOCATE TO STA. 430+90, 130' LT	
TD-1	1123	RR	ROYSTONIA REGIA	ROYAL PALM	23	13	OW	435+70	140' RT	EXCELLENT	RELOCATE TO STA. 432+85, 130' LT	
TD-1	1124	QV	QUERCUS VIRGINIANA	LIVE OAK	16	30	35	424+25	108' RT	AVERAGE	REMAIN	
TD-1	1125	QV	QUERCUS VIRGINIANA	LIVE OAK	14	30	30	426+57	97' RT	ABOVE AVERAGE	REMAIN	
TD-1	1126	QV	QUERCUS VIRGINIANA	LIVE OAK	25	40	50	425+99	210' RT	ABOVE AVERAGE	REMAIN	LOCATED INSIDE PLANT PRESERVATION AREA #430, BOUNDED BY TREE PROTECTION BARRIER
TD-1	1127	QV	QUERCUS VIRGINIANA	LIVE OAK	6	20	25	427+95	300' RT	POOR	REMOVE	SEE SELECTIVE CLEARING AND GRUBBING SHEET
TD-1	1128	PC	PINUS CLAUUSA	SAND PINE				430+70 - 434+95	RT	AVERAGE	REMAIN	GROUP OF PINES

PROVISIONS				ARTURIO T. GOMEZ, L.A. L.A. NO. 99999 LAND DESIGN, LLC 340 IVY LANE ORLANDO, FL 32803 CERTIFICATE OF AUTHORIZATION: 98765	STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION			SHEET NO.
CODE	DEFINITION	DATE	DESCRIPTION		ROAD NO.	COUNTY	FINANCIAL PROJECT ID	
					SR 22	BAY	123456-1-52-01	

Exhibit 323-4
Date: 1/1/19

TREE DISPOSITION CHART

PD&E Scope and Fees

• 4.15 LANDSCAPING ANALYSIS

Note to scope developer: Modify activities for this task if the PD&E project overlaps with the Design and merged with Roadway Design Scope. Coordinate with the Project Manager for Design Phase before finalizing this task.

The CONSULTANT will research and collect data necessary to complete initial landscaping design and analysis of the preferred alternative. The research and data collection must include identification of opportunities and constraints of the proposed Project based on existing site conditions.

List Landscape Analysis Specific Activities

Tab 4 Eng Analysis & Considerations

Task No.	Task	Units	Staff Hour Range	Basis for Staff Hour Range		
				Staff Hour Estimation Guidance	Field Time and Meeting Time are included in "Field Reviews" & "Meetings and Presentations" tasks respectively. Hours associated with managing and supervising staff are included in each task.	
					Low-Range	Mid-Range
NOTE: * denotes that the task is subject to QC,						
4.15	Landscaping Analysis*	LS	4 to 16	This include research required to collect data necessary to complete initial evaluation of landscaping requirements for the project. It also includes identifying local ordinances and collection of data such as lighting, utilities, ITS, signage/pavement markings, drainage maintenance.	Contact District Landscape Architect	

PD&E Scope and Fees

5.1.5 Aesthetics

The CONSULTANT will evaluate and summarize the Project's effect on viewshed and vista, community focal points, historic structures, landmarks, and community character, in accordance with the PD&E Manual.

Tab 5 Environmental Analysis

Task No.	Task	Units	Staff Hour Range	Staff Hour Estimation Guidance	Basis for Staff Hour Range		
					Field Time and Meeting Time are included in "Field Reviews" & "Meetings and Presentations" tasks respectively. Hours associated with managing and supervising staff are included in each task.		
					Low-Range	Mid-Range	High-Range
5.1.3	Land Use Changes *	LS	4 to 24	This task consists of reviewing existing and future land use and analyzing the compatibility of the project with the identified land use in accordance with Part 2, Chapter 4 of the PD&E Manual. The criteria for estimating the hours needed for this task are the number of jurisdictions, potential and ongoing growth along the corridor.	If the ETDM is recently completed, only 4 hours for updates will be required		
					Low number of jurisdictions, low potential for growth along corridor (7 to 12 hrs)	Several jurisdictions or medium potential for growth along corridor (12 to 18 hrs)	Numerous jurisdictions or high potential for growth along corridor (19 to 24 hrs) . For project with specific high land use analysis may require hours higher than the maximum
5.1.5	Aesthetics*	LS	4 to 24	This task includes all efforts necessary to analyze visual impacts of the project, and the development of aesthetic treatments as per Part 2, Chapter 5 of the PD&E Manual. The criteria for estimating the hours needed for this task are historic or scenic potential of corridor, and/or the potential for controversy.	Low potential for historic/scenic impacts in corridor or low potential for controversy related to aesthetics (4 to 12 hrs)	Medium potential for historic/scenic impacts in corridor or medium potential for controversy related to aesthetics (12 to 18 hrs)	High or known potential for historic/scenic impacts in corridor or highly anticipated potential for controversy related to aesthetics (18 to 24 hrs)

Design Scope of Services and Fee Estimating

December 28, 2018

EXHIBIT A



SCOPE OF SERVICES

FOR

FINANCIAL PROJECT ID(S). 999999-1-52-01

DISTRICT *[Enter District]*

[Enter County Name] COUNTY

[illegible]

3 PROJECT COMMON AND PROJECT GENERAL TASKS

- 3.12 Landscape and Existing Vegetation Coordination

Coordinate to ensure preservation and protection of existing vegetation. Relocation of existing vegetation may be necessary in some cases. Space for proposed landscape should be preserved and conflicts with drainage, utilities, ITS, and signage should be minimized. Coordination with the District Landscape Architect may be necessary as defined in 4.12. Additionally, coordination with the Florida Scenic Highways program should be included to ensure any requirements of the FSH program are met.

2	3. Project General Tasks				
3					
4	Task No.	Task	Units	Staff Hour Range	Basis for Staff Hour Range
29	3.12	Landscape and Existing Vegetation Coordination	LS	See Basis for Staff Hour Calculation	Refer to the Selective Clearing and Grubbing Guidelines. To be determined on a case by case basis.
<div><div></div><div>Title Sheet</div><div>TOC</div><div>Introduction</div><div>Disclaimer</div><div>Project Information</div><div>3. Project General Tasks</div><div>Selective C&G Guidelines</div><div>Tr</div></div>					

4.13 Tree Disposition Plan

▶	Title Sheet	TOC	Introduction	Disclaimer	Project Information	3. Project General Tasks	Selective C&G Guidelines	Tree Disposition Guidelines	Roadway Guidelines	4. Roadway Analysis	5.
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[illegible]

5. Roadway Plans					
Task No.	Task	Units	Staff Hour Range	Basis for Staff Hour Range	
5.23	Selective Clearing and Grubbing Sheet(s)	Sheet			
5.23.1	Selective Clearing and Grubbing Sheet(s)	Sheet	4 to 12	Refer to the Selective Clearing and Grubbing Guidelines to determine range.	
5.23.2	Selective Clearing and Grubbing Detail Sheets	Sheet	4 to 12	Refer to the Selective Clearing and Grubbing Guidelines to determine range.	
5.24	Tree Disposition Plan Sheets				
5.24.1	Tree Disposition Plan Sheet(s)	Sheet	4 to 12	Refer to the Selective Clearing and Grubbing Guidelines to determine range.	
5.24.2	Tree Disposition Plan Tables and Schedules	Sheet	4 to 12	Refer to the Selective Clearing and Grubbing Guidelines to determine range.	
5.23	Selective Clearing and Grubbing Sheet(s)			furnished by survey.	
5.	5.23.1 Selective Clearing and Grubbing			use by case basis. Coordination with	
5.	5.23.2 Selective Clearing and Grubbing Details			off where applicable.	
5.24	Tree Disposition Plan Sheet(s)			Surface Utility Exploration (SUE) Data in summary tables.	
5.	5.24.1 Tree Disposition Plan Sheet(s)			the master design files are included in the roadway master	
5.	Vegetation Relocation Plan Sheets will be signed and sealed drawings showing the location and vertical/horizontal landscape design of the vegetation to be relocated. The Vegetation Disposition Plans will be produced at the scale of the roadway drawings or at a scale that best depicts the information. Interchange and details will be shown at no larger than a 1" = 50' scale			Implementation of QA/QC plan. Also includes Sub-	
5.	5.24.2 Tree Disposition Plan Tables and Schedules			se to comments and any resolution meetings if required, mittals for reviews, etc. (LS based on 5-10% of technical	
				d to supervise and coordinate plans production and Sub-	
				LS based on 5-10% of technical subtotal.)	

LANDSCAPE ARCH ANALYSIS

2	Landscape Architecture Analysis				
3	Task No.	Task	Units	Staff Hour Range	Basis for Staff Hour Range
4	25.1	Data Collection	LS	8 to 40	All research required to collect data necessary to complete initial design analysis for standalone landscape projects. Includes identifying local ordinances and collection of data which may include, but not be limited to acquiring additional information (lighting, utilities, ITS, signage/pavement markings, drainage maintenance, etc.). LS. 8-40 hours.
5	25.2 Site Inventory and Analysis				
6	25.2a	Selective Clearing and Grubbing Site Inventory	LS	See Basis for Staff Hour Range	Conduct site inventory and analysis of existing vegetation to be removed, protected or relocated. Refer to the Selective Clearing and Grubbing Guidelines to determine range. 12-40 hours per project. Do not use if Activities 4 and 5 are used.
7	25.2b	Site Inventory and Analysis	LS	See Basis for Staff Hour Range	Includes identification of opportunities and constraints for the proposed project based on existing site conditions. Summary of analysis, if required, is included in conceptual design. This task does not include field reviews. Field reviews should be identified in task 25.11 LS. 8-56 hours per mile.
8	25.2c1	Mainline Vegetation Disposition	Per mainline mile	8-12 hours	Includes preparation of the design plan outlining the requirements for the removal, relocation, and protection of remaining trees located within the project boundaries. Will utilize the information collected under task 4.12 Selective Clearing and Grubbing and 4.13 Tree Disposition. If standalone project, utilize Activity 27 Survey. Refer to the Selective Clearing and Grubbing Guidelines to determine range. 8-12 hours per mile, 2-24 hours per interchange.
9	25.2c2	Interchange Vegetation Disposition	Per interchange	2-24 hours	Includes preparation of the design plan outlining the requirements for the removal, relocation, and protection of remaining trees located within the project boundaries. Will utilize the information collected under task 4.12 Selective Clearing and Grubbing and 4.13 Tree Disposition. If standalone project, utilize Activity 27 Survey. Refer to the Selective Clearing and Grubbing Guidelines to determine range. 8-12 hours per mile, 2-24 hours per interchange.
10	25.3	Planting Design			
53					
54					

25. Landscape Arch. Analysis

LANDSCAPE ARCH PLANS

1	26. Landscape Architecture Plans				
	Task No.	Task	Units	Staff Hour Range	Basis for Staff Hour Range
2					
3	26.1	Key Sheet	Sheet	4 to 8	
4	26.2	Tabulation of Quantities	Sheet	8 to 24	
5	26.3	General Notes	Sheet	8 to 16	
6	26.4	Tree and Vegetation Inventory, Protection, and Relocation Plans and Tree Disposition Plans	Sheet	8 to 32	Provide Plans, Details, and Notes with information necessary to remove , protect and/or relocate existing vegetation from damage during project construction. Range based on number of sheets based on CADD standards. Do not use if Activities 4 and 5 are used.
7	26.5	Planting Plans For Linear Roadway Projects	Sheet	8 to 20	Planting Plans refers to the production of planting plan sheets as part of a landscape architecture component plans set. Scale 1" = 40' or 50'. This task transfers the planting design to construction drawing format. This task includes all work necessary to prepare planting plan sheets in accordance with the FDOT Design Manual and FDOT Standard Plans.
8	26.6	Planting Plans (Interchanges & Toll Plazas)	Sheet	8 to 40	Range based on number of sheets based on CADD standards. Scale 1" = 40' or 50' for interchanges, and 1" = 20' or 40' for toll plazas.
9	26.7	Planting Details and Notes	Sheet	4 to 16	This task includes production of planting details and note sheets as part of a landscape architectural component plans set. The planting details and notes shall be relevant to the specific project, and shall be coordinated with any technical special provisions. Sheets for planting details and notes shall be prepared in accordance with the FDOT Design Manual.
10	26.8	Irrigation Plans for Linear Roadway Project	Sheet	8 to 20	Irrigation Plans refers to the production of irrigation plan sheets as part of a landscape architecture component plans set. This task transfers the irrigation design to construction drawing format. This task includes all work necessary to prepare irrigation plan sheets in accordance with the FDOT Design Manual. Scale 1" = 40' or 50'.
11	26.9	Irrigation Plans for Interchange and Toll Plazas	Sheet	8 to 40	Scale 1" = 40' or 50' for interchanges, and 1" = 20' or 40' for toll plazas.
12	26.10	Irrigation Details and Notes	Sheet	4 to 16	This task includes production of irrigation detail and note sheets as part of a landscape architectural component plans set. The irrigation details and notes shall be relevant to the specific project, and shall be coordinated with any technical special provisions. Sheets for irrigation details and notes shall be prepared in accordance with the FDOT Design Manual. Included Elements: Equipment installation details; Nozzle designations; Warranty Requirements; System requirements; Limits of irrigation; Power supply details; Water source details; References to other disciplines (to avoid potential conflicts)

26. Landscape Arch. Plans

SURVEY

27.28 Vegetation Survey

Location of the horizontal boundary of an area occupied by a species or category of species.

27.29 Tree Survey

The CONSULTANT shall coordinate with the surveyor to identify the individual horizontal location of trees within an identified boundary meeting the specified requirements of size and species. Size may include trunk diameter at the specified height above grade (usually at breast height- DBH) and the perimeter of its drip line or horizontal extent of its branch/limb structure. Located trees should be labeled by common name and trunk diameter.

96	27.28	Vegetation Survey	LS		Locate vegetation within the project limits.
97	27.29	Tree Survey	EA		Locate individual trees or palms within the project limits.

98				5%	0
99	27.34	Supervision	LS	27. Survey	
100					
101	27.35	Coordination	LS		
102				3%	0

25. Landscape Arch. Analysis | 26. Landscape Arch. Plans | Survey Guidelines | 27. Survey | 28. Photogrammetry | 29. Mapping | 30. Terrestrial Mobile LiDAR | Architecture Guidelines | 31. Arch ...

Scope of Services

- Section 25 Landscape Analysis
 - Landscape Soils Analysis

25.10 Soil Samples

25.10a Mainline

25.10b Interchanges, Intersections, and Rest Areas

9	25.10	Soil Samples			
0	25.10a	Mainline	EA- Per boring	2-3 per 1000 LF of planted area	Includes all efforts to collect soil borings for plant material selections. If additional travel time is needed, this is not currently included and will need to be added.
1	25.10b	Interchanges/Intesections/Rest Areas	EA- Per boring	4-6 per interchange quadrant	Includes all efforts to collect soil borings for plant material selections. If additional travel time is needed, this is not currently included and will need to be added.

Basis of Estimates

- Selective clearing and Grubbing Pay items

- 110-2-A – Unit = AC

- 110-2-2 Areas with Trees to Remain
 - 110-2-3 Plant preservation Areas

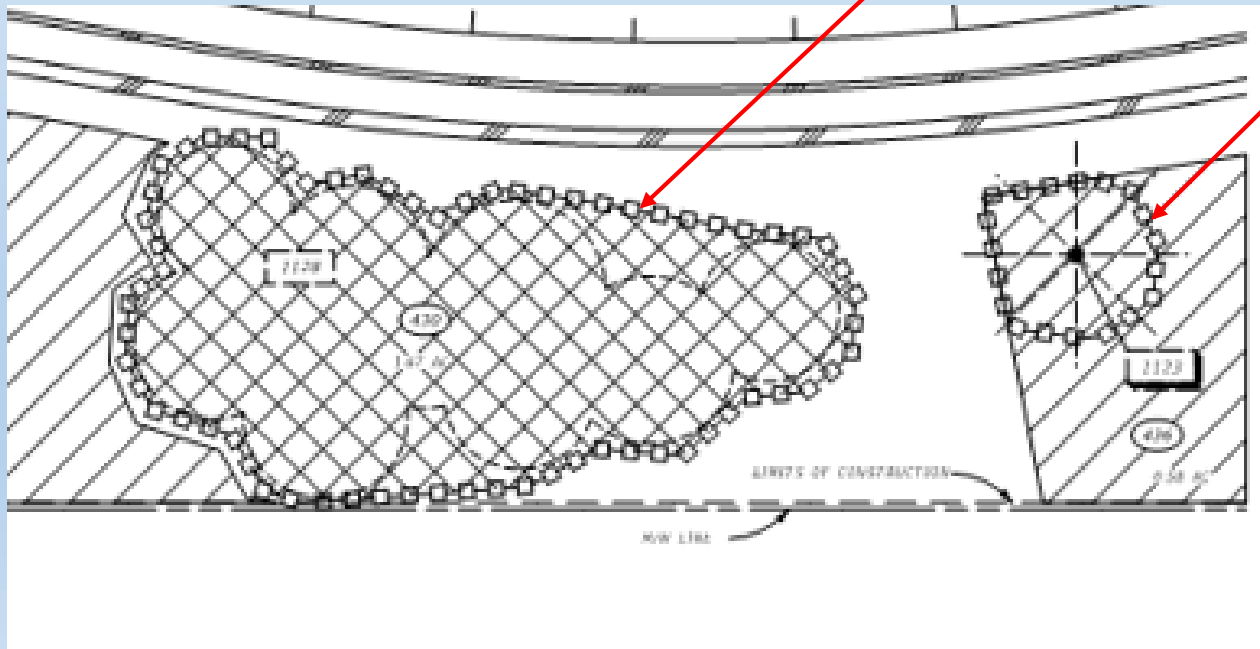
- 110-2-3 (Plant Preservation Area)

tree barriers, no further construction within this area.

- 110-2-2 (Areas with Trees to Remain) may include **tree barriers** and some **vegetation removal** and **root pruning**



Credit: arboristaustin.com



Credit: preservationtree.com

Basis of Estimates

- **Trees & Palms Relocation Pay items – PENDING (Proposed for July 2019 lettings)**

- 581-1-A – Unit = EA (valid date 1/1/2019)

- 581-1-1 (Palms, <14' CT)

- 581-1-2 (Palms, >=14' CT)

- 581-1-3 (Multi-trunk or Clustering)

- 581-1-4 (Trees, < 5' DBH)

- 581-1-5 (Trees, >= 5' DBH)

- 581-1-7 (Palms, < 14' CT, Sabal Palm only)

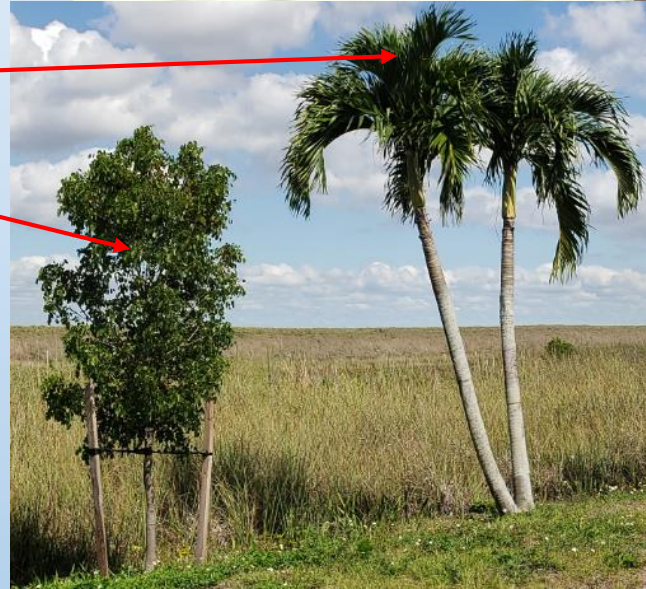
- 581-1-8 (Palms, >= 14' CT , Sabal Palm only)

- Resetting – no relocation, align vertically and stake/guy as needed

- 581-1-20 (Reset existing tree in place with Staking and Guying- Palms < 14' clear trunk)

- 581-1-21 (Reset existing tree in place with Staking and Guying- Palms = 14' clear trunk)

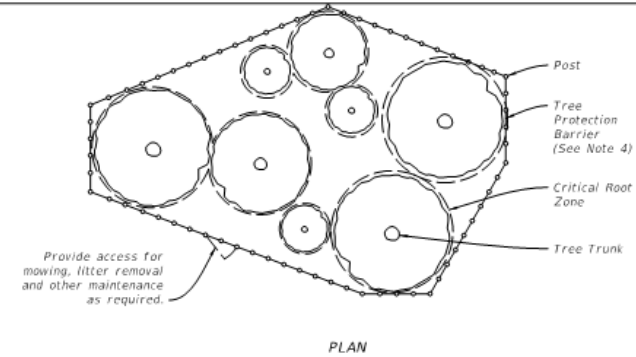
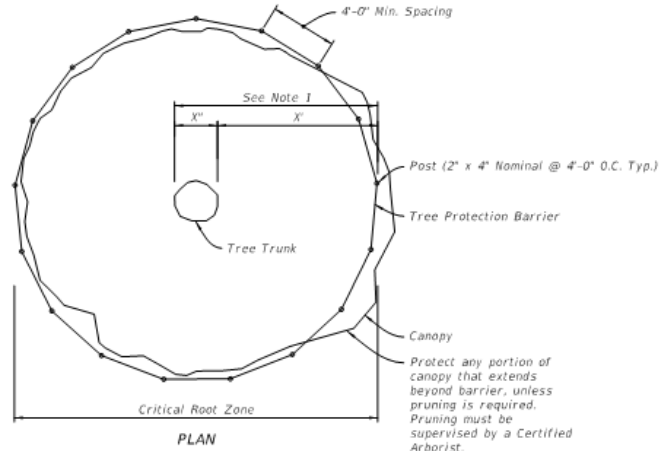
- 581-1-22 (Reset existing tree in place with Staking and Guying- Trees < 5' DBH)



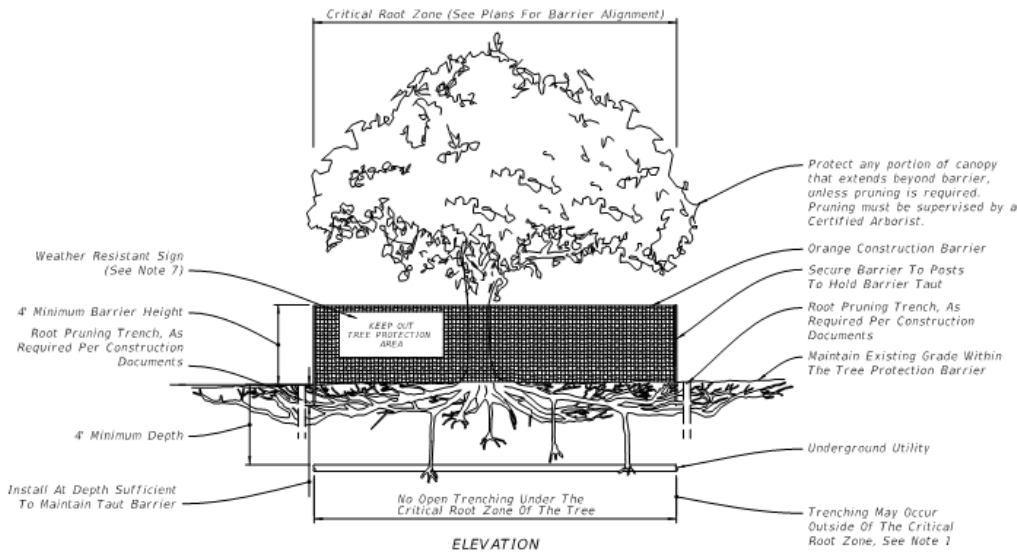
Standard Plans – 110 -100

NOTES:

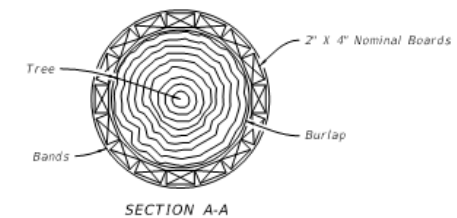
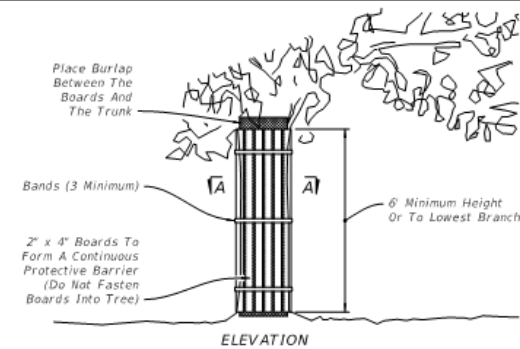
1. Critical Root Zone: Extends in all directions from trunk of tree to a distance equal to one foot per inch of trunk diameter at breast height.
2. Staging, storage, dumping, washing and operation of equipment is not permitted within the limits of the tree protection barrier, including during barrier installation.
3. Install all tree protection prior to commencement of construction and remove when directed by the Engineer. Maintain protection at all times.
4. For closely spaced groups of trees, place the tree protection barrier around the entire group.
5. Inspect trunk protection and tree quarterly to prevent girdling. Adjust bands to allow tree growth as needed.
6. See plans for any additional requirements or modifications within the tree protection area.
7. Place weather resistant sign every 50' along the barrier, with 6" minimum text height and provide text in English and Spanish. Sign should read "Keep Out Tree Protection Area".
8. Alternate tree protection systems approved by the Engineer may be used in lieu of the tree protection barrier detailed on this Index as long as the critical root zone is protected.
9. The Critical Root Zone may be reduced, in the field, by a certified Arborist or Landscape Architect.



PROTECTION BARRIER FOR TREE GROUPINGS



TREE PROTECTION BARRIER



NOTES:

1. Trunk protection may be used when Tree Protection Barrier can not be reasonably erected, when approved by Engineer.
2. See Selective Clearing and Grubbing Plan for location of trunk protection, when applicable.
3. Adjust bands to allow tree growth (inspect quarterly to prevent girdling).

TRUNK PROTECTION



Case Studies...

PD&E Assessment

Existing Context

- The southernmost section of the project resides near the cities of Miami Gardens, North Miami, Miramar and Pembroke Pines and the Lake Lucerne and Andover neighborhoods. The Golden Glades interchange represents a gateway into these communities. District 6 and local agencies have invested in the aesthetics of the area including landscape plantings and painting of the second and third level overpasses. Local Roadway landscape improvements and gateway sculpture demonstrate community pride and an appreciation for aesthetics. The roadway provides scenic views of Downtown Miami. FTE has invested in significant amounts of landscape plantings at the southernmost extents of this project.
- In addition to local agency and FDOT emphasis on aesthetics, the Miami Dade TPO promotes aesthetic enhancements for transportation projects through their Transportation Aesthetics Review Committee (TARC).



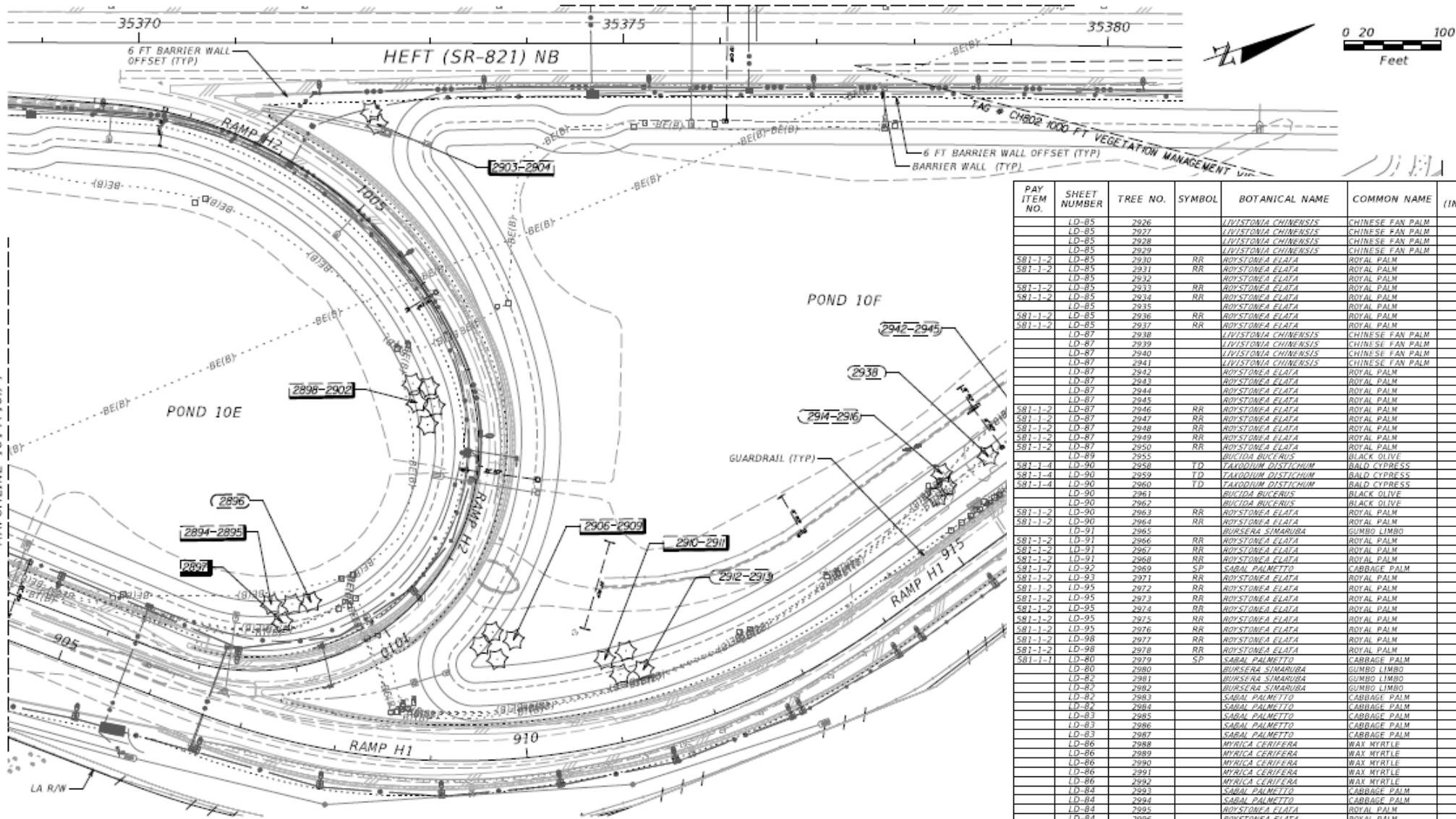
PD&E Assessment

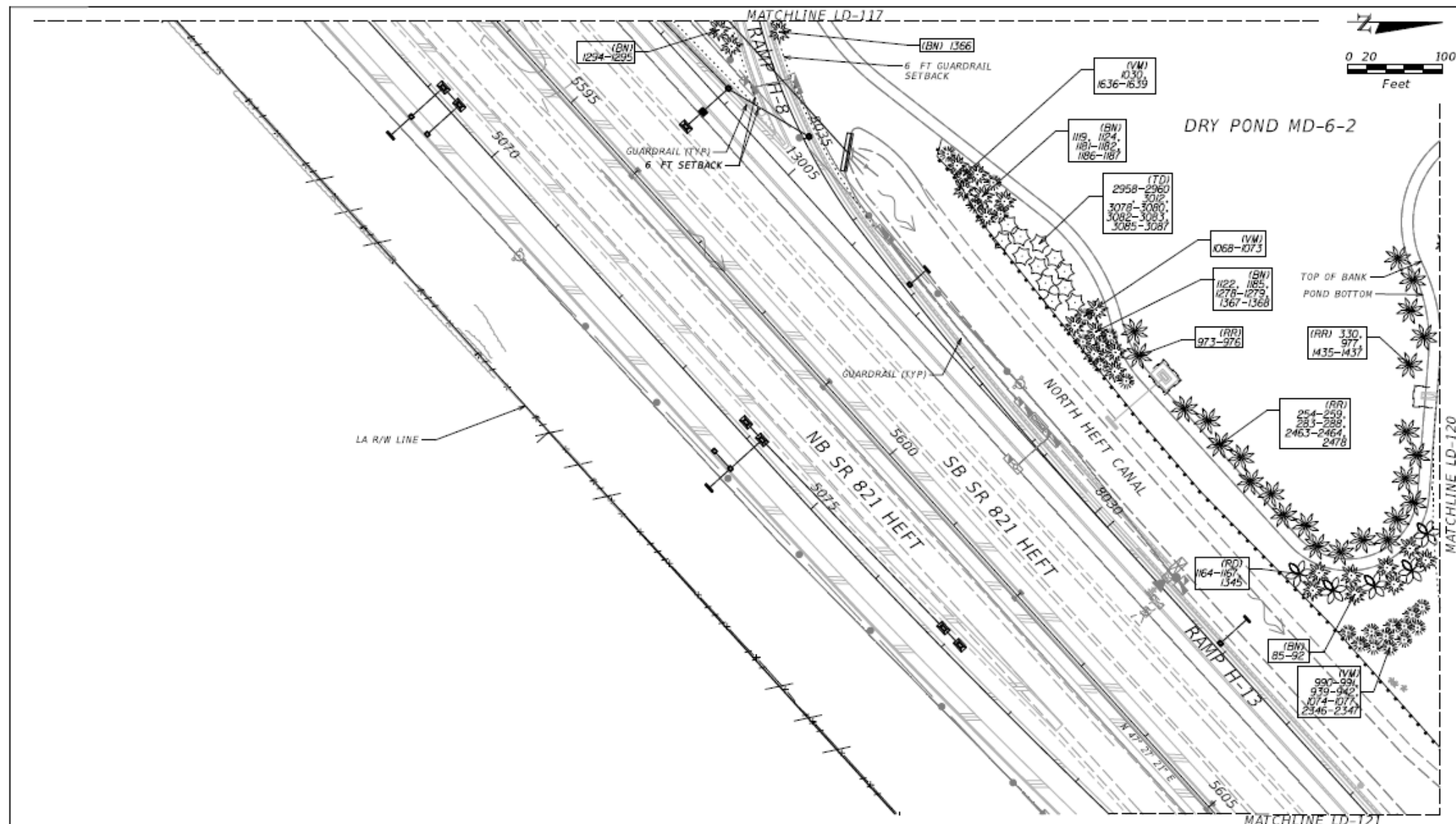
Existing Context

- The Northernmost section of the HEFT is bounded by the cities of Miramar, Pembroke Pines and the Lake Lucerne, Andover and West Park communities. All place significant emphasis on aesthetics as is evidenced by gateway and landscape improvements in and around the transportation system. In addition, this segment of the project includes Hardrock Stadium and Calder Racetrack, significant recreation venues and tourist attractions.
- The project has the potential to affect existing aesthetic resources as well as provide opportunities for additional aesthetic enhancements. Opportunities for aesthetic enhancements as well as mitigation of potential impacts to existing aesthetic resources need to be considered throughout the design process.
- Opportunities for aesthetic enhancements include graphics for noise walls, aesthetic enhancements to structural elements, nighttime lighting of structural enhancements, enhanced landscape plantings, etc.



MATCHLINE SEE SHEET LD-85





RELOCATED TREES FROM 435542-I-52-01 AND 435543-I-52-01 PROJECT LIMITS

BN BISMARCK PALM	PD MEDJOOl DATE PALM	RR ROYAL PALM	TD BALD CYPRESS	TURBIDITY BARRIER	SEDIMENT BARRIER	INLET PROTECTION
CN COCONUT PALM	PE SOLITAIRE PALM	SP CABBAGE PALM				
LL BLUE LATAN PALM	PS SYLVESTER PALM	VM MONTGOMERY PALM				

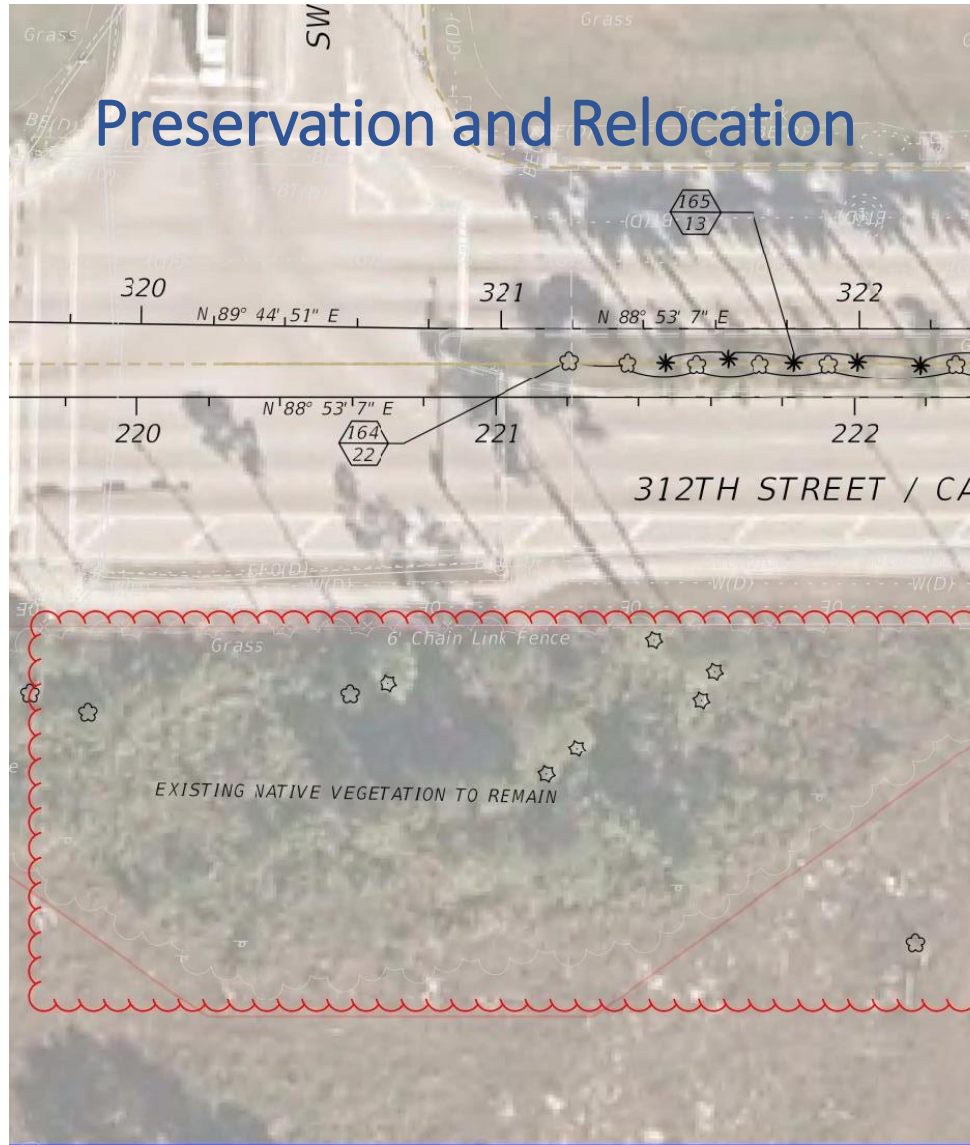
REVISIONS				STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION			SHEET NO.
DATE	DESCRIPTION	DATE	DESCRIPTION	ROAD NO.	COUNTY	FINANCIAL PROJECT ID	
				SR 821	MIAMI-DADE	435543-3-52-01	LD-118

CHERYL C. CALLENDER, R.L.A.
R.L.A. LICENSE NUMBER 6867177
WANTMAN GROUP, INC.
3230 W. COMMERCIAL BLVD, SUITE 300
FORT LAUDERDALE, FL 33309
CERTIFICATE OF AUTHORIZATION NO. 6091

TREE RELOCATION PLAN

THE OFFICIAL RECORD OF THIS SHEET IS THE ELECTRONIC FILE DIGITALLY SIGNED AND SEALED UNDER RULE 68G0-04.01, F.A.C.

Preservation and Relocation



DESCRIPTION	ARCHITECT OF RECORD CHRISTOPHER KELLER R.L.A. LICENSE NUMBER 0001352 HNTB CORPORATION 610 CRESCENT EXECUTIVE CT LAKE MARY, FL 32746 CERTIFICATE OF AUTHORIZATION 6500
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ROAD NO.	COUNTY	FINANCIAL PROJECT ID
821	MIAMI-DADE	435462-1-52-01

PLAN

V

435462-1 Campbell Drive Vegetation Disposition continued

Sheet No.	ID Number	Quantity	Common Name	Botanical Name		Condition	Disposition
VD 26		88	1 Gumbo Limbo	Bersera simaruba	12" CAL	Good	Remain
		89	1 Mahogany	Swietenia sp.	15" DBH	Good	Remain
		90	1 Royal Ponciana	Delonix regia	15" CAL	Good	Remain
		91	1 Live Oak	Quercus virginiana	8" CAL	Good	Remain
		92	1 Royal Ponciana	Delonix regia	12" CAL	Fair	Remain
		93	1 Live Oak	Quercus virginiana	6" CAL	Poor	Remove
		94	1 Mahogany	Swietenia sp.	9" DBH	Poor	Remove
		95	1 Royal Ponciana	Delonix regia	24" CAL	Good	Remain
		96	1 Mahogany	Swietenia sp.	18" DBH	Good	Remain
		97	2 Royal Ponciana	Delonix regia	9-12" CAL	Poor	Remain
		98	1 Mahogany	Swietenia sp.	9" DBH	Good	Remain
		99	1 Royal Ponciana	Delonix regia	24" CAL	Good	Remain
		100	1 Royal Ponciana	Delonix regia	24" CAL	Good	Remain
		149	3 Green Buttonwood	Conocarpus sp.	5" DBH	Good	Remain
		150	3 Queen Palm	Saguaris Romanzofiana	18" CT	Poor	Remain
		151	8 Royal Palm	Roystonea sp.	5" DBH	Good	Remain
		152	1 Royal Ponciana	Delonix regia	12" CAL	Good	Remain
VD 29		153	1 Royal Palm	Roystonea sp.	25-30' CT	Good	Relocate
		154	1 Cassia	Cassia sp.	5" CAL	Good	Relocate
		155	2 Live Oak	Quercus virginiana	12" DBH	Good	Remain
		156	4 Live Oak	Quercus virginiana	12" DBH	Good	Relocate
		157	4 Royal Palm	Roystonea sp.	20' CT	Good	Remain
VD 30		158	4 Green Buttonwood	Conocarpus sp.	4-5" CAL	Good	Remain
		159	11 Live Oak	Quercus virginiana	5-8" CAL	Good	Relocate
		160	4 Royal Palm	Roystonea sp.	20-30' CT	Good	Relocate
		161	1 Royal Palm	Roystonea sp.	18' CT	Good	Relocate
		162	19 Royal Palm	Roystonea sp.	18-30' CT	Good	Relocate
		163	10 Live Oak	Quercus virginiana	6-12" CAL	Good	Remain
VD 31		164	22 Live Oak	Quercus virginiana	5" CAL	Good	RELOCATE
		165	13 Royal Palm	Roystonea sp.	20-30' CT	Good	RELOCATE
VD 32		166	5 Live Oak	Quercus virginiana	4-5" CAL	Good	Remain
VD 33		167	9 Royal Palm	Roystonea sp.	20-30' CT	Good	Remain
		168	7 Live Oak	Quercus virginiana	6-8" cal	Good	Remain
		169	7 Live Oak	Quercus virginiana	10" CAL	Good	Remain
VD 34		170	1 Washingtonia Palm	Washingtonia robusta	30' CT	Good	Remain
		171	5 Sea Grape	Coccoloba uvifera	25' HT	Good	Remove
		172	8 Live Oak	Quercus virginiana	9" CAL	Good	Remain
		173	4 Royal Palm	Roystonea sp.	20-30' CT	Good	Remain
		174	1 Christmas Palm	Veitchia merrillii	15' CT	Good	Remain
VD 35	Nothing for this sheet						
VD 36	Native plantings in this area are to be removed						

Questions/Comments

