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LANDSCAPE ANALYSIS AND OPPORTUNITY REPORT

Florida Department of Transportation

Florida's Turnpike Enterprise

Poinciana Parkway Extension Connector Project Development and Environment (PD&E) Study

From CR 532 to North of I-4/SR 429 Interchange

Osceola and Polk Counties, Florida

Financial Management Number: 446581-1

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The environmental review, consultation, and other actions required by applicable Federal environmental laws for this project are being, or have been, carried out by the Florida Department of Transportation (FDOT) pursuant to 23 U.S.C. §327 and a Memorandum of Understanding dated May 26, 2022, and executed by the Federal Highway Administration and FDOT.

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1. Project Summary: Project Description

The project involves extending Poinciana Parkway (SR 538) from County Road 532 (CR 532) to the Interstate 4 (I-4)/State Road 429 (SR 429) interchange, modifying the I-4/SR 429 interchange to accommodate the Poinciana Parkway (SR 538) connection, and increasing capacity of the segment of SR 429 from the I-4/SR 429 interchange to the SR 429/Sinclair Road interchange. The total project length is 4.97 miles.

Poinciana Parkway (SR 538) is a section of a future, six lane limited access toll facility, often referred to as the "Southern Beltway". The Southern Beltway would provide a regional, limited access facility that connects I-4 on the west to the interchange of Boggy Creek Road/SR 417 on the east, a distance of approximately 50 miles. The westernmost portion of the Southern Beltway is referred to as the Poinciana Parkway.

The existing interchange at I-4 and SR 429 is a full access interchange with no connection to the south. Currently, I-4 provides six lanes (three lanes in each direction) and SR 429 provides four lanes (two lanes in each direction).

The study area (see **Figure 1**), which includes portions of unincorporated Osceola and Polk Counties, is comprised of residential land uses, the 2,226-acre Reunion Resort, and conservation lands under the jurisdiction of the Reedy Creek Improvement District (RCID). Although there are no municipalities in the study area, the project includes the unincorporated areas of Loughman and Poinciana. There are also numerous undeveloped parcels with residential and planned development future land use designations, wetland systems, and overhead and underground utility corridors. CR 532 follows the county line between Polk County on the south and Osceola County on the north.

2. Purpose

This report has been prepared to present an assessment of the existing landscape features and identify potential opportunities for improving the environmental and aesthetic qualities of the Poinciana Parkway Extension Connector project corridor based on the proposed preferred alternative.

This report will incorporate observations made during the driving survey. The intent is to identify the typical landscape features and to prepare guidelines for the enhancement of the environmental quality and visual appeal of the corridor. The report also includes the landscape opportunity area exhibits prepared for the interchanges and mainline areas. By incorporating sustainable landscape practices, negative impacts can be mitigated, and biodiversity can be promoted within the Florida's Turnpike Enterprise (FTE) right of way.

To meet all of the aesthetic goals of the FTE, opportunities for enhancing the landscape quality of the corridor must be accounted for. The recommendations and findings in this report can be

utilized for the development of a sustainable and aesthetically pleasing highway corridor that benefits the FTE, the traveling public, and nature.

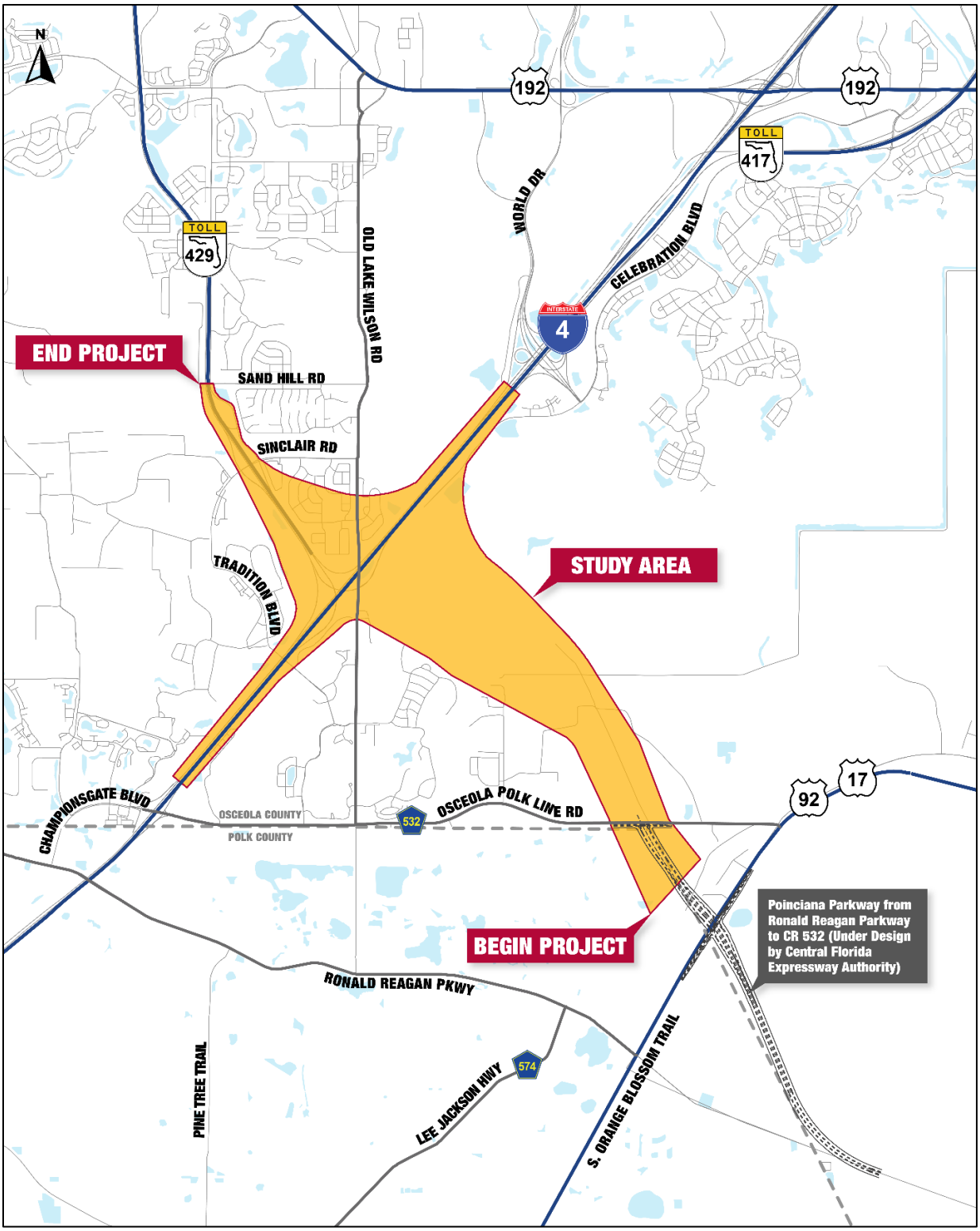

Figure 1: Project Location Map

3. Existing Conditions

The Poinciana Parkway Extension Connector will pass through, or adjacent to, a varying array of land uses and types. These include undeveloped natural areas, individual residential properties, residential communities, agricultural lands, commercial or industrial properties, public infrastructure or utility facilities, and the existing interchange at I-4 and SR 429.

The project will begin at CR 532, which is a 2-lane rural arterial. No connections currently exist to the north or south and a new interchange will be constructed at this location. A few commercial businesses, several residential properties, an RV park, and a Duke Energy Power Plant are located adjacent to this section of the project.

The undeveloped lands between CR 532 and I-4 contain several Florida ecosystems. This area includes high-quality Hardwood Forests, Pine Flatwoods, Scrub Forests, and swamps. These areas were observed with healthy, old growth, stands of Slash Pine, Live Oaks, Bald Cypress, and some Cabbage palms, along with other understory trees, palms, shrubs, and ground covers. Limited amounts of invasive exotic vegetation were noted; however, this was only reviewed from the adjacent roadways. The highest concentrations of exotics tended to be located along the roadside edges, which is typical of disturbed lands.

The I-4 and SR 429 interchange is a major gateway interchange consisting of multilevel fly-over ramps. The interchange is heavily landscaped with high-quality palms, trees, and shrubs, providing both aesthetic and environmental treatments to the interchange. Several ponds exist within the interchange with varying levels of aquatic vegetation present. In general, the existing landscape material was in good health and is being well maintained by the FTE maintenance contractor.

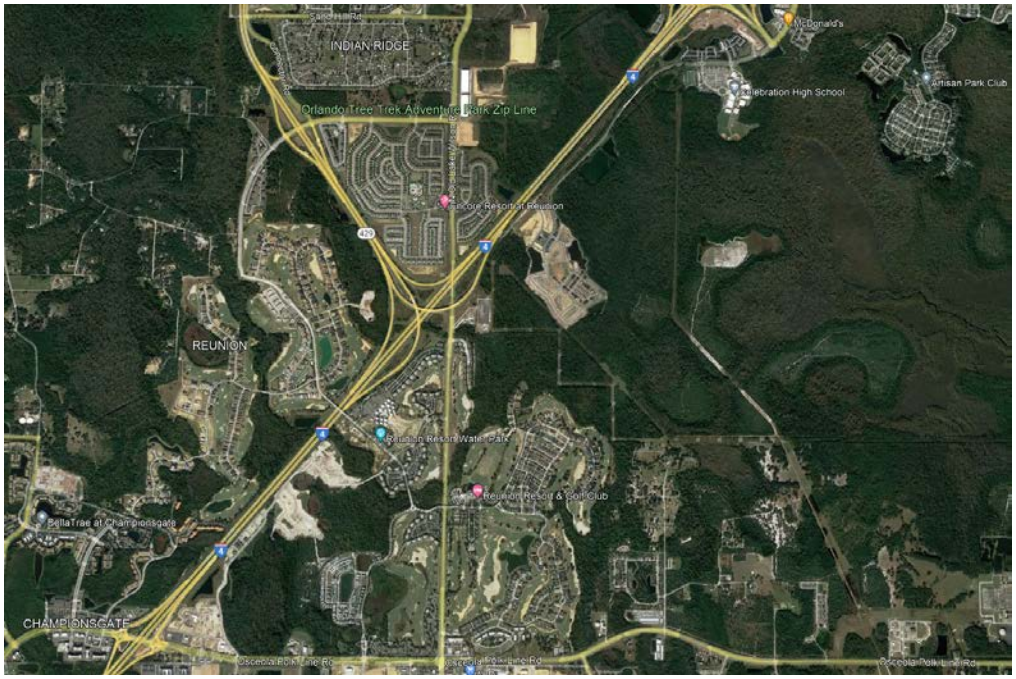

Figure 2: Project context map showing adjacent land use, development, and natural areas.

4. Potential Impacts

The extension of the Poinciana Parkway will provide a significant transportation infrastructure improvement for the area and will facilitate better connectivity and access for the local communities. It will also improve access to theme parks and local attractions from the south. While the project will provide immense transportation benefits to the region, the proposed alternative will have some adverse impacts on the current residents, the natural environment, and the landscape aesthetics of the area, which can be mitigated through careful planning and execution.

Several existing residential properties will be impacted as the right of way is acquired for the project. Though the highway route has been selectively chosen to minimize impacts by proposing the route through very low-density areas, several properties will need to be acquired and demolished. Adjacent residential communities will also experience some negative impacts. The undesirable visual from the community, noise pollution, and air pollution are some of the drawbacks of the project. Many of these issues can be offset through a comprehensive landscape approach. While sound walls can provide good noise abatement, vegetative buffering should be proposed to further mitigate these negative impacts.

The biggest impact will be to the existing natural areas along the corridor. Valuable Florida ecosystems will be impacted as the right of way is acquired for the highway. The construction of a new highway can have significant impacts on undeveloped natural lands. Some potential impacts may include:

1. Habitat fragmentation: The proposed highway will divide the natural areas into smaller fragments or patches, which can isolate populations of wildlife and plants, disrupt migration patterns or the local movement of wildlife, and reduce genetic diversity by allowing for native species to be outcompeted within the area.
2. Loss of habitat: The construction of this highway will involve the clearing of large areas of the existing natural vegetation. Valuable Florida native plant communities were noted within the project limits and it is expected that the construction will lead to some destruction of important plant and animal habitats.
3. Soil erosion and water pollution: The clearing of land for highway construction can lead to soil erosion due to the increased speed of conveyance of stormwater runoff, which can cause sedimentation in nearby water bodies, leading to water pollution.
4. Increased heat island: Removal of tree canopy reduces the cooling effects that existing vegetation can have on an area. That, combined with the increase of paving and hardscape materials can increase the temperature of an area, altering the historic microclimate of a site.
5. Increased noise and air pollution: Highways can generate significant noise and air pollution, which can negatively impact nearby ecosystems and wildlife, in addition to adjacent communities.
6. Introduction of invasive species: Highway construction can contribute to the introduction and spread of non-native plant and animal species, which can outcompete and displace native species. Many of these invasive species thrive on disturbed lands.

7. Disruption of hydrology: The construction of highways can alter the natural flow of water or require the filling of existing wetlands, leading to changes in hydrology. Existing water bodies and wetlands are replaced by proposed stormwater retention facilities.

To mitigate these potential impacts, all efforts should be made to minimize harm to sensitive natural lands and include measures such as habitat restoration, wildlife crossings, natural-looking water bodies with aquatic vegetation, dense vegetative buffering, and the use of native vegetation.

5. Existing Landscape Analysis

Existing vegetation within the natural areas predominantly included Slash Pine plant communities and Cypress swamp communities. Mixed hardwoods were noted throughout this area as well.

Figure 3: Existing Slash Pine located along CR 532. Pine Flatwood is the predominant ecosystem located within and adjacent to the project limits.

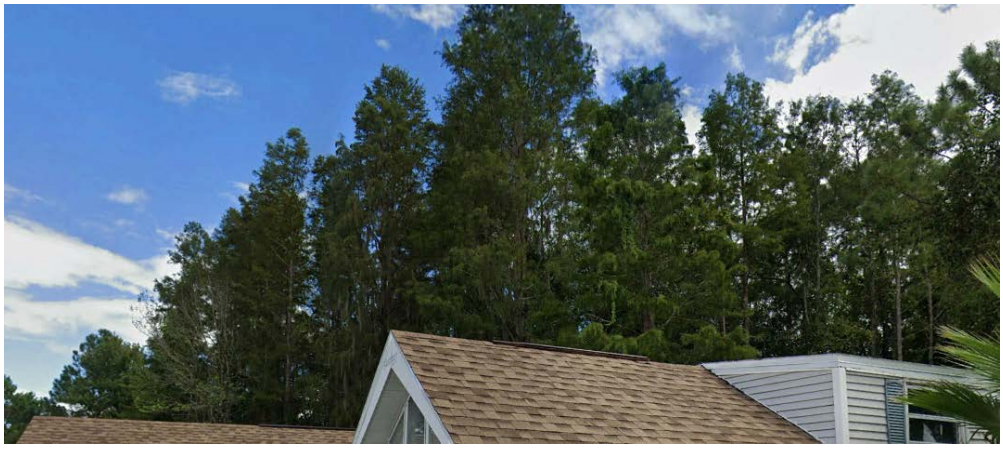

Figure 4: Existing Bald Cypress located adjacent to the 21 Palms R.V. Resort.

Existing landscape is heavily concentrated at the I-4 and SR 429 interchange. This is a critical gateway interchange, providing direct access to the Walt Disney World Resort, and was fully landscaped as a part of a previous FTE landscape project. The landscape aesthetics here are well

developed, including several priorities of landscape treatment and design utilizing specimen palm trees, accent trees and palms, aquatic vegetation, native buffer vegetation, and understory plantings consisting of the native Saw Palmetto and other shrub species. Plant species utilized at this interchange include but are not limited to:

- Phoenix dactylifera 'Medjool' (Medjool Date Palm)
- Bismarck Palms (Bismarckia nobilis)
- Mule Palms (X Butiagrus nabonnandii)
- Caranday Palm (Copernicia alba)
- Washington Fan Palms (Washingtonia robusta)
- Sabal Palms (Sabal palmetto)
- Slash Pine Trees (Pinus elliottii)
- Sycamore Trees (Platanus occidentalis)
- Bald Cypress Trees (Taxodium distichum)
- Red Maple Trees (Acer rubrum)
- Crape Myrtle Trees (Lagerstroemia indica)
- Saw palmetto (Serenoa Repens)

Design elements from this interchange should be considered for the development of future landscape projects to provide a consistent aesthetic throughout the FTE network. The materials noted at this location are tough, drought, and cold-tolerant species, that are well-suited for use on roadways and highways. Some of the palm material can require a higher degree of maintenance, including periodic fertilization, but when used in moderation in high-priority locations contribute to the improved quality of the aesthetics. Several example images have been provided on the following page documenting the existing character of the interchange and some of the species present on site. The current construction was observed impacting the existing vegetation. The use of tree protection barriers should be included in all FTE construction projects to help minimize impacts on the existing vegetation to remain.

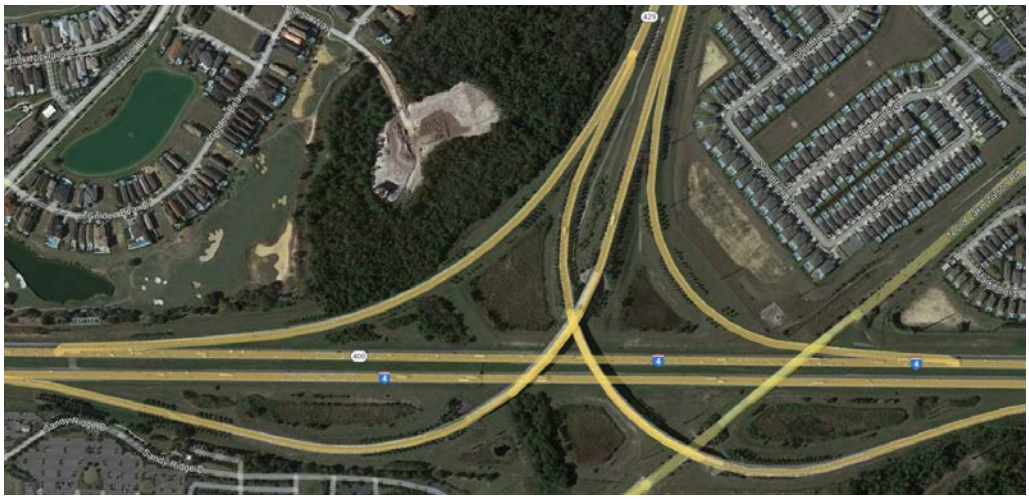

Figure 5: Google Earth image of the I-4 and SR 429 interchange showing the layout of the existing landscape design of the site. Materials are concentrated in priority areas with the most visibility and impact, around ponds, and within landscape buffers that serve to screen offsite land uses.

Figure 6: Photo of a ramp on the I-4 and SR 429 interchange showing the existing landscape and the current impacts of construction. Tree protection barriers should be utilized to protect the landscape to remain.

Figure 7: Example photos of the existing landscape at the I-4 and SR 429 interchange.

6. Landscape Opportunities

A site visit was conducted on 11/1/2022 for the purpose of completing a driving survey of the project limits. Site conditions, existing vegetation, and adjacent context were reviewed to identify opportunities and constraints.

Landscape opportunities can be organized based on the priority within a site's geometry. Four main priority areas have been defined and the different areas within the project limits identified under one of these classifications. The landscape opportunity categories include Low-Intensity through High-Intensity Priorities and a Supplemental Wetland Opportunity category. These priority areas are defined below in the Landscape Opportunity Legend. The two highest intensity/priority areas are mainly to be utilized within interchanges and adjacent to tolling facilities. The low-intensity category is mainly utilized along the mainline to provide preservation areas, reforestation, or buffering/screening, but can also fall along the edges of interchange ramps or in the center of in-fields. The Supplemental Wetland areas are typically located within the interchange infields adjacent to ponds or lakes, however, there are also times when water bodies may be proposed along the edge of the right of way.

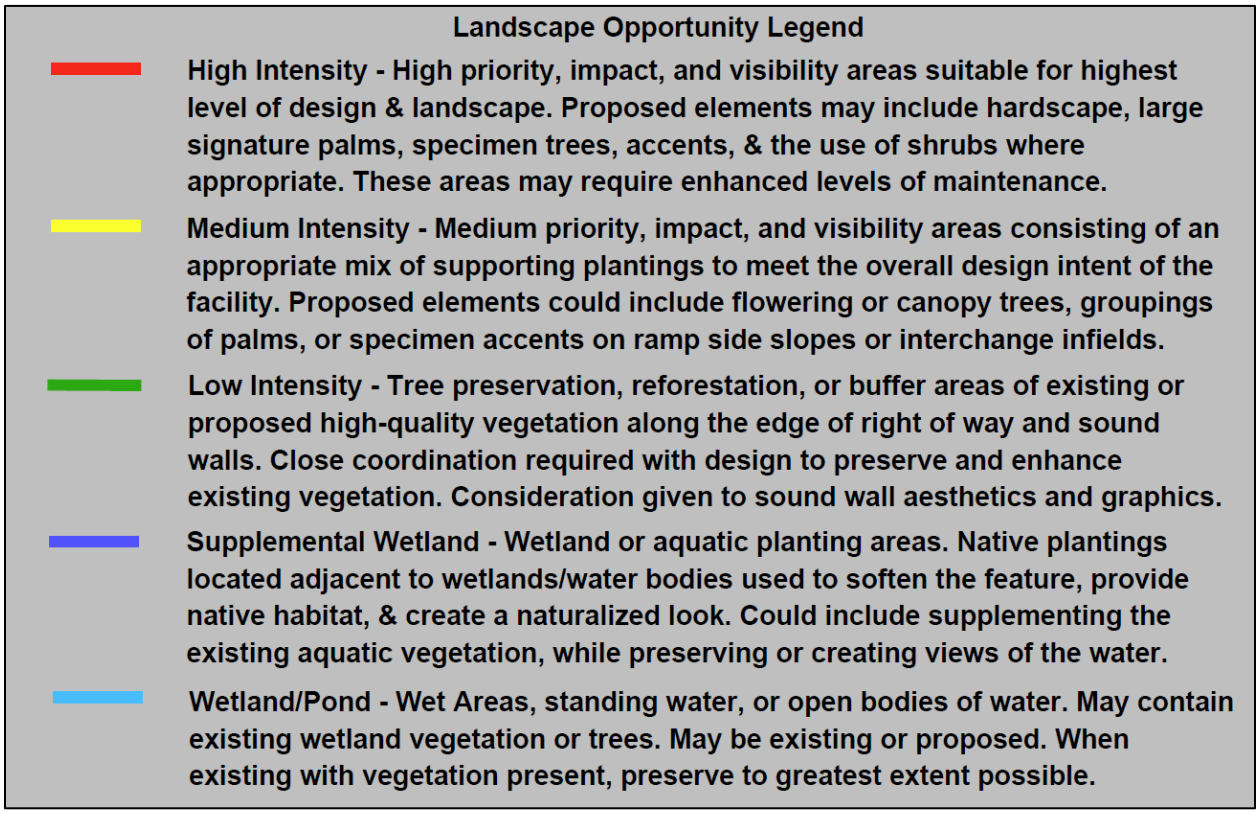

Figure 8: The Landscape Opportunity Legend utilized for the preparation of the landscape opportunity exhibits included on subsequent pages.

The project's interchanges provide critical points of connection and serve as gateways to cities, towns, or other transportation corridors. Interchanges offer a unique experience as vehicles

interact with the space from different perspectives and at varying speeds depending on their location within the site. Views and experiences change as the user moves along a ramp or across an overpass. Landscaping at interchanges provides different opportunities for the enhancement of the aesthetic quality of the highway system as compared to the mainline. Effective landscape design at interchanges can serve several purposes, including:

1. Providing aesthetic appeal: Landscape can enhance the visual appeal of the interchange, creating a sense of place for both the interchange and the highway system, and contributing to the character of adjacent communities. This is especially important for these interchanges, due to the proximity to Disney World and the world-class resorts the area is known for, which are the first impressions tourists and visitors get of the area.
2. Mitigating environmental impacts: Landscape can provide immense benefits to a site by helping to mitigate the negative impacts of new highway construction. Several benefits include reducing noise and air pollution, mitigating habitat fragmentation, providing erosion control, and treating stormwater runoff.
3. Enhancing safety: Landscape can improve safety at interchanges by providing much-needed traffic calming, focusing drivers' sight, reducing glare from headlights, and delineating pedestrian or bicycle paths. Landscape can also improve the microclimate for non-vehicular users at local cross streets, such as CR 532.
4. Promoting economic development: Landscaping can help to attract businesses and tourism to the area, enhancing the local economy.

To accomplish these goals, priority areas are established within an interchange to provide a hierarchy of design.

The high-intensity priority areas are assigned to locations with the greatest visibility to the traveling public. These areas include the locations adjacent to the intersection of the roads or highways, interchange side slopes, or near the terminations of the ramps where vehicles are moving the slowest and interact with the landscape at a more intimate level. Ramps and ramp gore areas can provide great visibility and should be considered for a higher level of aesthetic treatment as well.

Medium-intensity areas make up most of the interchange composed of supplemental or supporting plantings necessary to complete the landscape design. These plantings help to accent or compliment the highest priority plantings and may be of a smaller scale or grouped masses of less showy or non-specimen materials, such as native species, flowing trees, or canopy trees.

A third level of priority, the Supplemental Wetland Opportunity Area, is located adjacent to ponds, lakes, or remnant stands of vegetation. These plantings are used to soften the pond edge and to improve the pond's aesthetic and environmental value. These plantings should be exclusively native species and used to improve the ecological benefits of these stormwater treatment facilities. Depending on the type of landscape project, or project scope, this type of planting can move up in importance or priority. These areas are often combined with the low-intensity buffer

areas when the ponds are located adjacent to the right of way. The front and sides of the ponds may be suitable for supplemental wetland plantings and should consider viewsheds to the water bodies, whereas the back of the ponds may require more density to provide buffering from adjacent development.

The low-intensity opportunity areas along the SR 538 mainline should focus on locations where it is possible to preserve some of the existing desirable vegetation and plant communities. Preservation of these areas can provide environmental benefits to help reduce the impacts of highway construction. Where preservation is not possible and sufficient space exists, reforestation may be considered and can provide increased aesthetics for the corridor, traffic calming, buffering, offset the impacts of construction, and reduce the future maintenance burden on the FTE. Landscape buffers can be provided along the mainline and around the perimeter of the interchanges to lessen the impact of the highway system on surrounding communities. Vegetative buffers can also be introduced in areas where screening is needed to soften the built environment, to obstruct views of undesirable offsite land uses, or to screen the highway from adjacent developments, especially where sound walls are not proposed. These buffers can be used in conjunction with sound walls to further reduce noise pollution.

Regarding the existing I-4 and SR 429 interchange, significant consideration should be given to preserving, relocating, and reusing the existing landscape materials located on site. Most of the existing species on site can easily be relocated to undisturbed areas of the interchange or reused in the proposed opportunity areas noted below. All of the palm species can be relocated and are a valuable resource that should be reused. The tree species would need individual assessment to determine the feasibility of relocation. Except for the Slash Pine trees, all the tree species can be relocated depending on the size and condition of the individual tree. The relocation work may require moving the materials in multiple steps, based on the phases of construction and the availability of undisturbed receptor locations.

The landscape opportunity areas are provided on the following pages for the two project interchanges and a section of the mainline. Refer to the legend on page 10 for area descriptions.

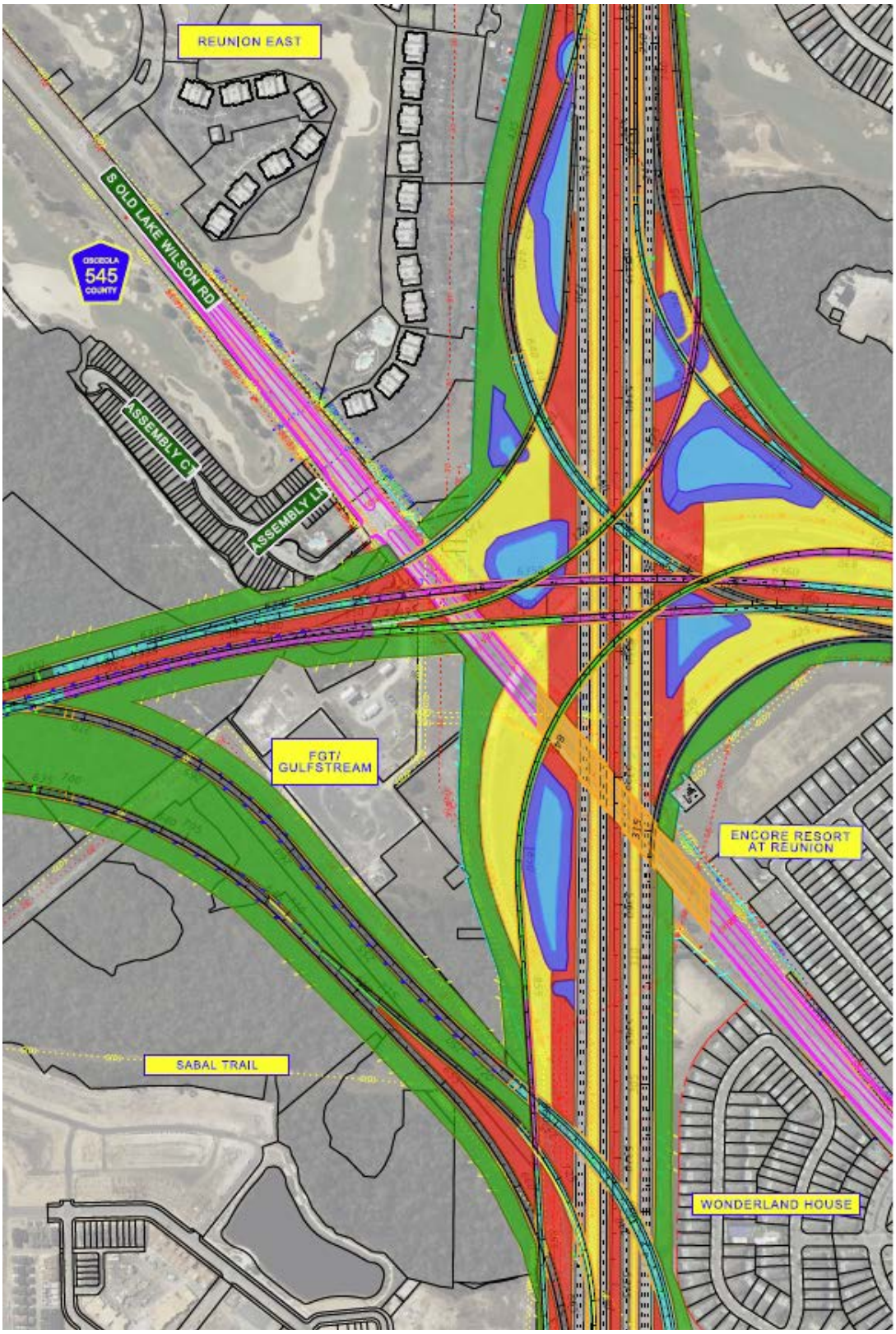

Figure 9: The Landscape Opportunity Exhibit prepared for the SR 538 Poinciana Parkway and I-4/SR429 interchange, which is a complex, multilevel interchange.

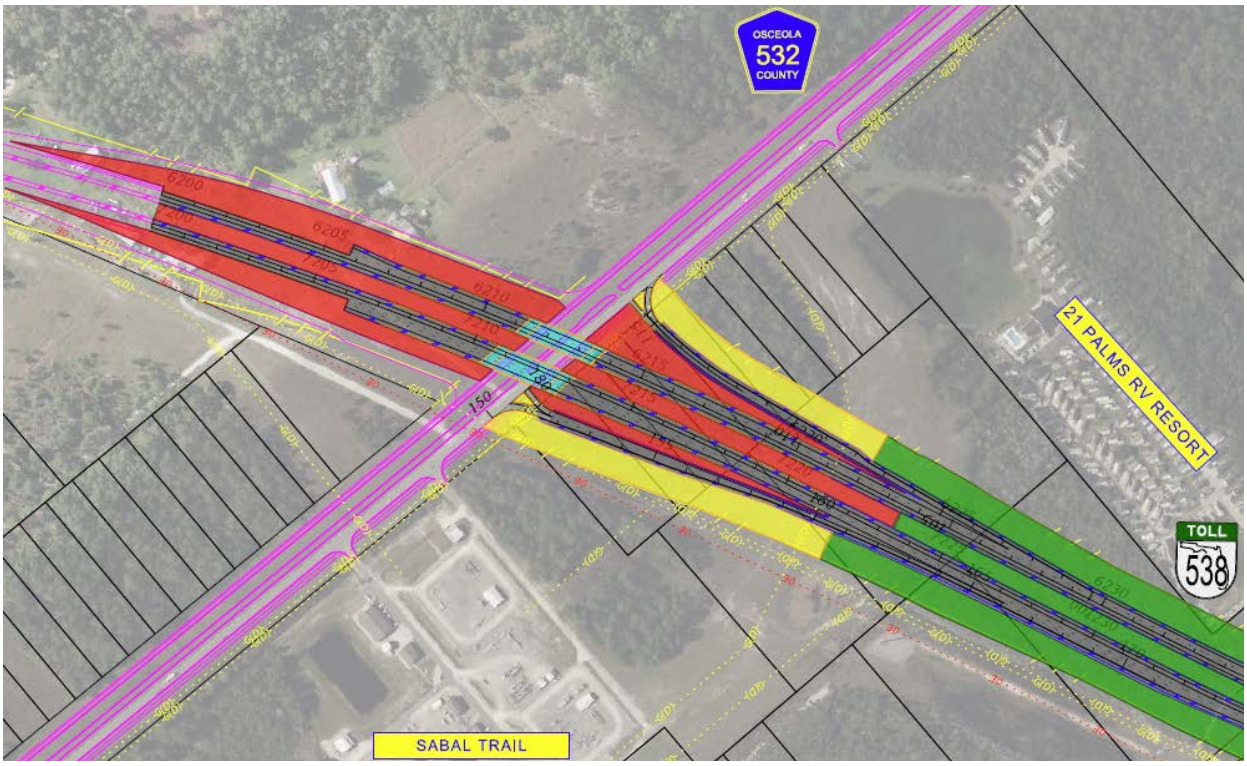

Figure 10: The Landscape Opportunity Exhibit prepared for the SR 538 Poinciana Parkway and CR 532 interchange. As a smaller, standard diamond interchange, most of the interchange is a high-intensity/priority, before transitioning to the low-intensity mainline.

The mainline stretches may at times be punctuated by tolling facilities, which should receive a high-intensity level of landscape treatment. These locations provide an excellent opportunity to break up the low-intensity plantings and provide additional interest at the toll gantries. The FTE highways are also known for the enhanced aesthetic treatment of their sound walls. The custom graphics should be accentuated and highlighted by the landscape. The combination of the hardscape and landscape features can provide a higher level of interest to travelers.

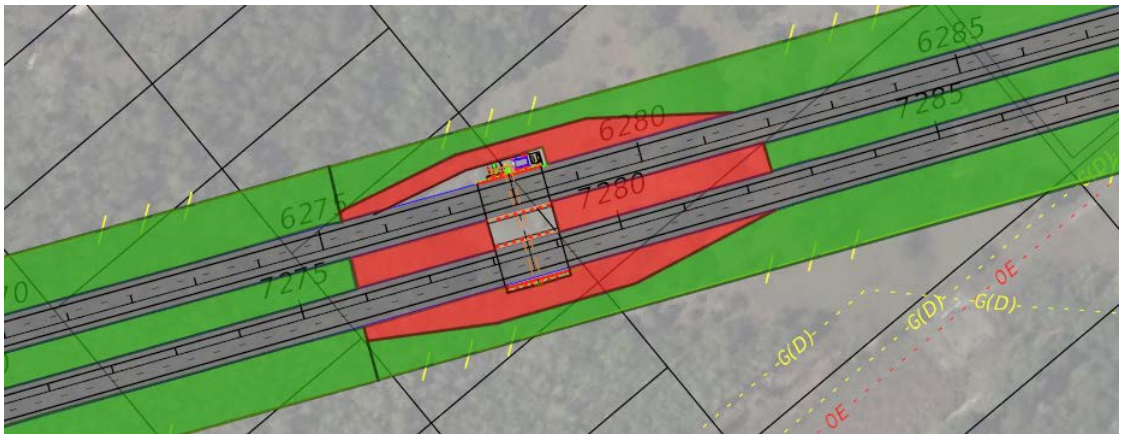

Figure 11: The Landscape Opportunity Exhibit prepared for a typical stretch of mainline including a toll facility. Opportunities exist at the toll gantries for increased levels of landscaping.

7. Landscape Constraints

Several constraints were noted during the driving survey of the corridor. The presence of a major utility corridor was observed and presents challenges in design to meet all setback requirements for the overhead electric transmission lines. This requires greater care and coordination in species selection for any material proposed under, or adjacent to the power lines. In addition to these electric facilities, ITS and CCTV camera view zones can provide significant constraints on a site.

In addition, the design should consider the maintenance needs of the proposed landscaping to ensure an appropriate level of maintenance can be provided by the FTE. The current emphasis on controlling maintenance budgets has been communicated by the Central Office, requiring designers to take a more sustainable approach to species selection and proposed arrangements. Several existing species at the I-4 and SR 429 interchange have high maintenance requirements and should be used sparingly. For example, the Medjool Date Palms require heavy fertilization, periodic inoculation, and frond trimming due to the fact that the species is not a self-shedding palm and holds the dead fronds for long periods of time. Utilizing lower maintenance species can drastically reduce the FTE's landscape maintenance expenditures.

While all safety requirements must be met to ensure the health, safety, and well-being of the traveling public, those criteria can introduce significant constraints on a site. Some of the typical requirements include clear zone setbacks, lateral offsets, clear sight lines, and areas limited to ground cover. The 'Turnpike Landscape Setback Guide' for FTE-specific setbacks for landscape materials. These safety restrictions, combined with utility offsets (specifically gas and buried fiber optics) and ODA view zones, can drastically reduce the areas available for landscaping. Major concentrations of utilities should not be proposed within the Highest priority areas to maximize the opportunities for meaningful landscaping at the interchanges.

8. Landscape Design Guidelines References

FDOT and the FTE provide numerous guidelines and manuals that can be utilized by designers in the preparation of Landscape Plans. These guides aid in the execution of the FDOT Landscape policy to provide:

1. Safe, attractive, and high-quality transportation facilities that reflect and recognize the beauty and nature of Florida.
2. Corridors with landscapes that improve air and water quality, benefit ecosystems, and enhance communities.
3. A transportation system that attracts and supports diverse economic opportunities and tourism.

These guidelines and resources include the FDOT Design Manual (Landscape Design Chapters), the FTE Landscape Program Master Plan, and the FTE Design Guideline web portal. Specific attention should be given to FTE's Landscape Program Master Plan for design criteria.

In addition to these guidelines and manuals, consideration should be given to the CFX Aesthetic Guide, prepared for the Central Florida Expressway Authority, the I-4 Ultimate Improvement

Project: Special Features – Aesthetics website, and the I-4 FDOT District 5 I-4 Ultimate Project I-4 Volume II – Technical Requirements Report, specifically Section 3 – Design and Construction Criteria, Sub-section P – Aesthetics & Landscape. These documents should be utilized during design to provide a unified aesthetic amongst the regional highway systems.