

**CENTRAL
FLORIDA
EXPRESSWAY
AUTHORITY**

CFX Contract Number: 001844
CFX Project Number: 528-307



LEVEL 1 PEIR

SR 528 & DALLAS BLVD INTERCHANGE

Martin Andersen Beachline Expressway

PROJECT DEVELOPMENT & ENVIRONMENT STUDY

Submitted By:

Signature:

Gregory S. Seidel, P.E.
The Balmoral Group, LLC
July 25, 2023



Table of Contents

1.0 - Project Description and Purpose and Need	1
1.A - Project Information	1
1.B - Proposed Improvements	3
1.C - Purpose and Need	3
2.0 - Environmental Analysis	5
3.0 - Anticipated Permits.....	7
4.0 - Engineering Analysis.....	9
5.0 - Commitments	26
6.0 - Preferred Alternative.....	28
7.0 - Public Involvement.....	30
8.0 - Final Approval	32
9.0 - Support of Environmental Analysis	34

Attachments

- 1- Environmental Analysis**
 - A – Social and Economic Environment Analysis
 - B – Cultural Environment Analysis
 - C – Natural Environment Analysis
 - D – Physical Environment Analysis
- 2 – Refined Cost Estimate of Preferred Alternative**

1.0 - Project Description and Purpose and Need

1.A – PROJECT INFORMATION

Project Name: State Road (SR) 528 & Dallas Boulevard (Blvd) Interchange

Projects Limits: The project area covers SR 528 and the existing CFX right-of-way from the Econlockhatchee River bridge to approximately ¾ mile east of Dallas Boulevard. The project area also includes the interchange and the transition areas along Dallas Boulevard and Starry Street in the Wedgefield neighborhood, located within eastern Orange County.

County: Orange

Proposed Activity: This PD&E Study will analyze and evaluate the completion of the Dallas Boulevard interchange by adding a westbound off-ramp and eastbound on-ramp to SR 528 to provide enhanced access and mobility to the Wedgefield community and eastern Orange County.

Responsible Agency: Central Florida Expressway Authority (CFX)

Planning Organization: CFX

Phase: Project Development & Environment (PD&E) Study

Project Contact Information:

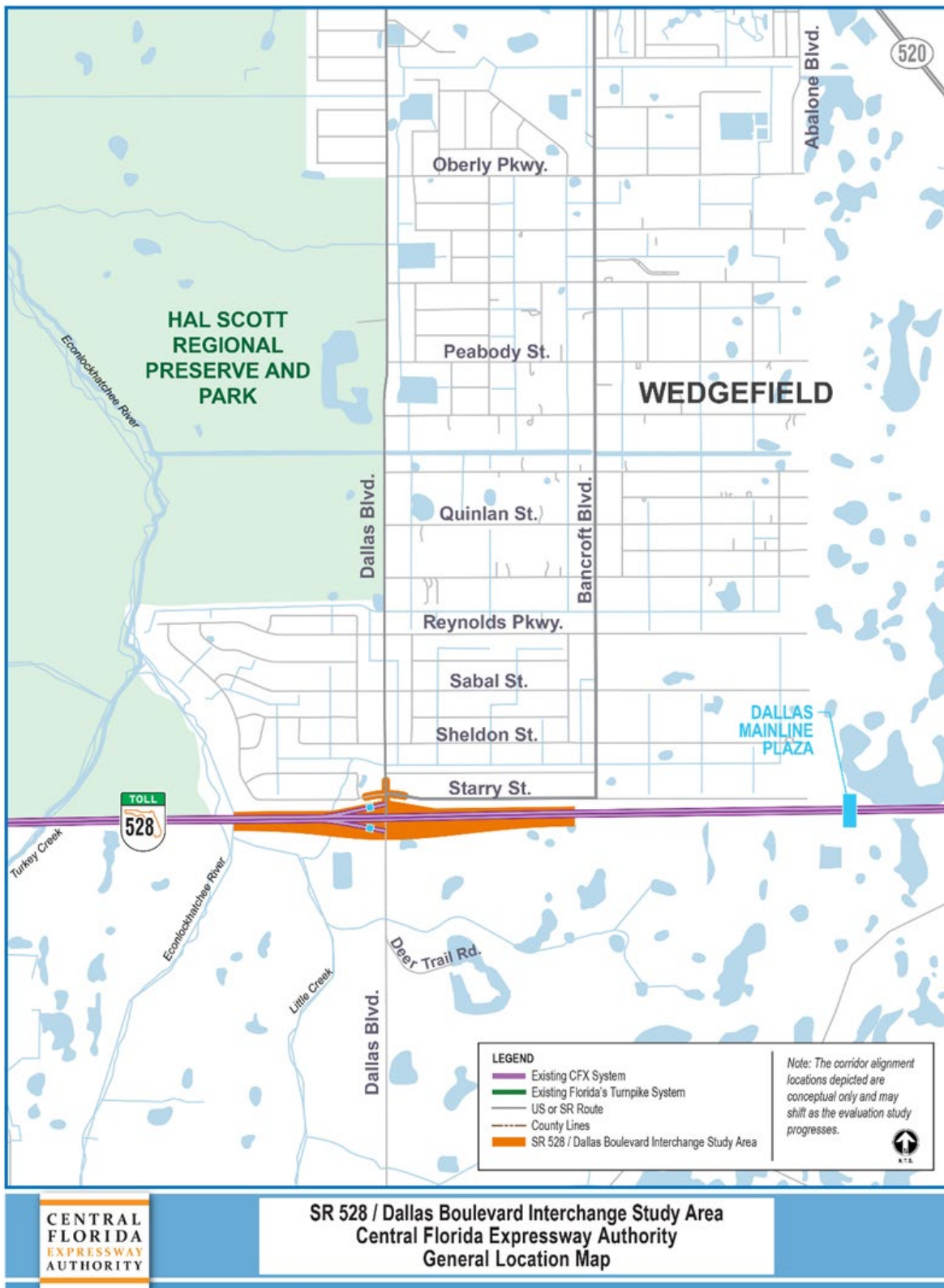
CFX Director of Engineering

Dana Chester, PE
Central Florida Expressway Authority
4974 ORL Tower Road
Orlando, FL 32807
Office: 407-690-5000
Email: Dana.Chester@cfxway.com

CFX Project Manager

David Falk, PE
Central Florida Expressway Authority
4974 ORL Tower Road
Orlando, FL 32807
Office: 407-690-5000
Email: David.Falk@cfxway.com

Figure 1 - Project Location



1.B - PROPOSED IMPROVEMENTS

Background

In December 2022, CFX began a Project Development and Environment (PD&E) Study of the SR 528 & Dallas Blvd Interchange. The study is evaluating the completion of the Dallas Blvd interchange by adding a westbound (WB) off-ramp and eastbound (EB) on-ramp to SR 528 to provide enhanced access and mobility to the Wedgefield community and eastern Orange County.

Study Description

Currently, the Dallas Blvd interchange (Exit 24) on State Road SR 528 (Martin B. Andersen Beachline Expressway) is a half interchange – consisting of a westbound on-ramp and an eastbound off-ramp. The completion to a full interchange, by adding a westbound off-ramp and eastbound on-ramp, has been identified as a need to provide enhanced access and mobility to the Wedgefield community and eastern Orange County. Currently, residents within Wedgefield must travel north in the subdivision to access SR 520 and then travel south to access SR 528 in the eastbound direction – a distance that can range from approximately seven to thirteen miles – and vice versa when travelling westbound on SR 528. Therefore, this PD&E Study will analyze and evaluate the completion of the Dallas Blvd interchange by adding a westbound off-ramp and eastbound on-ramp. See **Figure 1** for Project Location Map.

1.C - PURPOSE AND NEED

Purpose

The projected regional growth and corresponding traffic forecasts generated for the entire CFX Expressway System, as summarized in their 2040 Master Plan, has indicated that the Dallas Blvd interchange is located within the projected high growth areas of Orange County. The actual development and associated travel demand that has occurred at the Dallas Blvd interchange has greatly outpaced the original projections. It is anticipated that future traffic demand at this interchange will further exceed the design capacities as development continues to intensify. The purpose of this study is to provide enhanced access and mobility for the existing community bordering Dallas Blvd, and future developments. Additional purposes for the project include improved emergency vehicle access and response, and supporting economic development. Therefore, this PD&E Study will analyze and evaluate a proposed full interchange expressway connection from Dallas Blvd to SR 528.

Need

There are five (5) project needs that serve as justification for the proposed improvements. These needs are to:

- 1) **Provide System Linkage.** A full interchange has been identified as a need to provide enhanced access and mobility to the Wedgefield area of Orange County from SR 528. Currently, vehicles in the vicinity of SR 528 who need to travel east on SR 528 must detour up to 13 miles to SR 520 southbound. Vehicles traveling westbound on SR 528 wishing to access Dallas Blvd or the Wedgefield area are required to utilize northbound SR 520, then enter Wedgefield and perform a detour of up to 13 miles.

- 2) **Provide Regional Connectivity and Mobility** - This connection will improve mobility and future connectivity within the region, specifically to allow connection to and from the Space Coast and Cocoa Beach area to the east.
- 3) **Support Social and Economic Needs** - The proposed improvements will provide enhanced regional connectivity in the eastern Orlando Metro area within unincorporated Orange County, with anticipated development to the south of the project area. The project will assist in providing improved access to jobs, services, and recreation. The enhanced mobility will continue to drive economic development.
- 4) **Provide Consistency with Local and Regional Plans** - The Interchange is consistent with planned CFX capacity improvement projects and future development, along with consistency with regional transportation plans for the area.
- 5) **Design a Safe and Operational Interchange** – The interchange will provide safety improvements over existing conditions.

2.0 - Environmental Analysis

2.0 - Environmental Analysis

Issues/Resources

Substantial Impacts?*

	<u>Substantial Impacts?*</u>				Supporting Information**
	Yes	No	Enhance	No Inv	
A. Social and Economic					
1. Social		X			Attachment 1-A.1
2. Economic			X		Attachment 1-A.2
3. Land Use Changes		X			Attachment 1-A.3
4. Mobility			X		Attachment 1-A.4
5. Aesthetic Effects		X			Attachment 1-A.5
6. Relocation Potential		X			Attachment 1-A.6
B. Cultural					
1. Historic Sites/Districts		X			Attachment 1-B.1
2. Archaeological Sites		X			Attachment 1-B.2
3. Recreational Areas and Protected Lands		X			Attachment 1-B.3
C. Natural					
1. Wetlands and other Surface Waters		X			Attachment 1-C.1
2. Aquatic Preserves and Outstanding Florida Waters		X			Attachment 1-C.2
3. Water Resources		X			Attachment 1-C.3
4. Wild and Scenic Rivers				X	Attachment 1-C.4
5. Floodplains		X			Attachment 1-C.5
6. Coastal Barrier Resources				X	Attachment 1-C.6
7. Protected Species and Habitat		X			Attachment 1-C.7
8. Essential Fish Habitat				X	Attachment 1-C.8
D. Physical					
1. Highway Traffic Noise		X			Attachment 1-D.1
2. Air Quality		X			Attachment 1-D.2
3. Contamination		X			Attachment 1-D.3
4. Utilities and Railroads		X			Attachment 1-D.4
5. Construction		X			Attachment 1-D.5
6. Bicycles and Pedestrians			X		Attachment 1-D.6
7. Navigation				X	Attachment 1-D.7

<i>*Substantial Impacts - Quick Definitions</i>			
Yes:	<i>Substantial Impact</i>	Enhance:	<i>Enhancement</i>
No:	<i>No Substantial Impact</i>	No Inv:	<i>Issue absent, no involvement</i>

***Supporting information is documented in the referenced attachment(s).*

3.0 – Anticipated Permits

3.0 – Anticipated Permits

If the Preferred Alternative and the conceptual design are constructed, it is anticipated that the following permits will be required:

- Section 404 Clean Water Act Dredge and Fill Permit - (*USACE or FDEP 404*)
- Nationwide/General Permit- (*USACE or FDEP 404*)
- Bridge Permit- USCG
- Environmental Resource Permit (SJRWMD)
- National Pollutant Discharge Elimination System (FDEP)
- Listed Species Coordination (USFWS and FWC)
- Gopher Tortoise Conservation Permit (FWC)

4.0 – Engineering Analysis

4.0 – Engineering Analysis

4.A – Existing Roadway Analysis

SR 528 is a rural four lane divided, east-west expressway within the project limits. In general, SR 528 is a crucial roadway network connecting residents and visitors to the Orlando International Airport and the east coast beaches, cities, and Cape Canaveral. Within the project limits, SR 528 has a half diamond interchange at Dallas Blvd which provides regional connectivity to the Wedgefield neighborhood and eastern Orange County. The interchange consists of a westbound on-ramp and eastbound off-ramp. SR 528 is a designated Strategic Intermodal System (SIS) highway corridor. The mainline bridge substructure for SR 528 consists of piers partially embedded by a concrete slope pavement embankment. The embankment abuts the road. There is no eastbound re-entry onto SR 528, as well as no access from westbound SR 528. Outside of the existing interchange, access to and from this community is circumvented by the use of SR 520 which is seven miles east of the Dallas Blvd interchange, and then another seven miles north until you reach the entrance into Wedgefield. SR 528 is grade separated at this crossing.

The Brightline High-Speed Rail/All Aboard Florida (AAF) travels parallel to SR 528 and is also grade separated at Dallas Blvd. The crossing over Dallas Blvd is located approximately 600 feet south of the existing SR 528 crossing.

Dallas Blvd is a two-lane undivided, north-south roadway serving the Wedgefield neighborhood. Dallas Blvd crosses under SR 528 and the AAF railway. Within the project limits, Dallas Blvd intersects Starry Street approximately 300 feet north of the westbound on-ramp. These two roads intersect at an all way stop controlled intersection. Dallas Blvd to the south of the SR 528 eastbound off-ramp turns into a private, gated road.

Starry Street is a two-lane undivided, east-west roadway serving single residential homes in the Wedgefield neighborhood. Starry Street dead ends at both termini. In-depth analysis of the existing roadway conditions is available in the **Preliminary Engineering Report**, available under separate cover.

Access Classification

Under Florida Statutes 335.18 the legislature authorized FDOT to develop rules to administer the “State Highway System Access Management Act”. These rules regulate access to the state highway system in order to preserve the functional integrity of the system. FDOT uses seven access classifications numbered one thru seven as defined in Rule 14-97. In general, as the access classification increases so does the number of access points and connections to the facility. On the other hand, speed is inversely related, and as the access classification increases the speed on the facility decreases. **Table 1** lists the access classification as determined by the consultant using all available data and documentation.

Table 1 - Access Classification

<u>Roadway Name</u>	<u>Access Classification</u>
SR 528	Access Class 1, Area Type 4
Dallas Blvd	N/A
Starry Street	N/A

*FDOT Access Classification only applicable for SHS

N/A = not applicable

Crash Data Analysis

Crash data was reviewed for the primary roads identified. The 2017-2022 crash period was selected due to the irregularity of traffic during 2020 as a result of the pandemic. Crash data has been collected from the Signal4 Analytics database. Crash data was evaluated based on environmental conditions, lighting conditions, road surface conditions, severity and frequency, and weather.

A total of 735 crashes were reported on SR 528 between Innovation Way and SR 520 from 2017 to 2022. There was an increase in the number of crashes from 2017 to 2019 and a reduction from 2020 to 2022. The reduction in crashes in 2020 is attributed to COVID-19 impacts which reduced traffic, especially along SR 528 that has a high proportion of tourist traffic. A review of historical data showed that traffic in 2021 was still lower than in 2019 in this section of SR 528. Nevertheless, on average, 123 crashes were reported per year from 2017 to 2022. A review of the hourly crash distribution showed that approximately 24 percent of the crashes occurred between 3 PM and 7 PM. The data indicated that crashes predominantly occurred in the westbound direction.

More comprehensive crash data and analysis is provided in the **Project Traffic Analysis Technical Memorandum**, prepared under separate cover.

4.B – Project Design Controls and Criteria

The design criteria used in the development of the interchange Alternatives is per the 2022 CFX Design Guidelines, the Florida Department of Transportation (FDOT) Design Manual January 2022 (FDM), and the 2018 Florida Greenbook. The criteria are detailed below in **Table 2**.

Table 2: Geometric Design Criteria

Design Element	Design Standard	Source
<u>Context Based Design</u> SR 528 Dallas Boulevard Starry Street	Limited Access, SIS (Interstate) Minor Collector (Non SHS) Local Road	CFX 200.1 FDM 200.2
<u>Design Year</u>	2045	CFX Master Plan 2040
<u>Design Vehicle</u>	WB-62FL	FDM 201.6
<u>Design Speed</u> Limited Access Ramps Loops and Semi-Direct Direct Connection Urban Collector Rural Local	70 mph 30 mph (min) 50 mph (min) 30 mph (min) to 50 mph (max) 30 mph (min) to 50 mph (max)	FDM Table 201.5.2 Greenbook Table 3-1
<u>Lane Widths</u> Limited Access Ramps One Lane Two Lane Turning Roadway Urban Collector Rural Local	12-ft 15-ft 24-ft Case Dependent 11-ft 11-ft	FDM 211.2 FDM 211.2.1 Greenbook Table 3-20
<u>Cross Slopes (one-way)</u> One Lane Two Lane Three Lane Four Lane Bridge Max Algebraic Diff. (Ramp Terminal)	0.02 0.02 (All) 0.02 (Inside & Middle), 0.03 (Outside) 0.02 (Inside & Middle) 0.03 (Middle & Outside) 0.02 (All) 5.0% (at crossover line)	FDM Figure 211.2.1 FDM Table 211.2.2
<u>Median Width</u> Interstate without barrier Interstate with barrier Arterial and Collectors (≤45 mph)	64-ft 26-ft 22-ft (min.)	FDM Table 211.3.1 Greenbook Table 3-23

Design Element	Design Standard	Source
<u>Shoulder Width</u>	Full Width, ft [Paved Width, ft]	FDM Table 211.4.1
<i>Limited Access:</i>		
Travel Lanes	<u>Outside</u> <u>Median</u>	CFX 211.4
2-Lane	12 [10] 8 [4]	<i>(CFX preference to provide wider usable shoulder for emergency use and to accommodate stopped or disabled vehicles; 14-ft full with 12-ft paved)</i>
3-Lane or more	12 [10] 12 [10]	
Ramps	<u>Outside</u> <u>Inside</u>	
1-Lane	6 [4] 6 [2]	
2-Lane	12 [10] 8 [4]	
Aux. Lanes (All)	12 [10] 8 [4]	
<i>Non SHS:</i>		
Two Lane Undivided	<u>Outside</u>	Greenbook Table 3-21
ADT (2-Way) 0 ≤ 400	2 [2]	
ADT (2-Way) 401 - 750	6 [6]	
ADT (2-Way) >750	8 [8]	
Multilane Divided	<u>Outside</u> <u>Median</u>	
2 Lanes	8 [8] 4 [4]	
3 or More Lanes	10 [10] 6 [6]	
<u>Shoulder Cross Slope</u>		
Limited Access	0.06 (Outside) 0.05 (Median)	FDM 211.4.2
Non SHS	Range 0.02 to 0.06	Greenbook Table 3-22
<u>Roadside Slopes</u>		FDM Table 215.2.3
Front Slope	1:6 (Fill height 0 – 5 ft) 1:6 to edge of clearzone, then 1:4 (Fill height 5 – 10 ft) 1:6 to edge of clearzone, then 1:3 (Fill height 10 – 20 ft)	CFX 215.2.6 <i>(1:3 maximum slopes preferred for maintenance purposes)</i>
Back Slope	1:4 (All fill heights) or 1:3 with standard trapezoidal ditch and 1:6 front slopes (All fill heights)	
Front Slope (Curbed)	1:2 or to suit property owner; 1:6 min. (Fill height 0 – 6 ft)	
Back Slope (Curbed)	1:3 or to suit property owner; 1:6 min. (Fill height > 6 ft)	
	1:2 or to suit property owner; 1:6 min. (All fill heights)	
<u>Border Width</u>		
Limited Access	94-ft (desirable)	FDM 211.6

Design Element	Design Standard	Source
<u>Horizontal Alignment</u> Max. Deflection	Design Speed ≤ 40 mph; 2°00'00 Design Speed ≥ 45 mph; 0°45'00	FDM 211.7.1
Curve Length Interstate High Speed Ramp Low Speed Ramp	V= Design Speed Length = 30V Length = 30V Length = 15V	FDM Table 211.7.1
Max Curvature (Degree of Curve) DS = 70 mph (Interstate) DS = 50 mph (High Speed Ramp) DS = 30 mph (Low Speed Ramp)	D=3°30' D=8°15' D=24°45'	FDM Table 210.9.1 ($e_{max} = 0.10$)
Normal Crown/ Reverse Crown Break Points (Radius in ft) DS = 70 mph (Interstate) DS = 50 mph (High Speed Ramp) DS = 30 mph (Low Speed Ramp)	Normal Crown [Reverse Crown] 14,714 [10,955] 8,337 [6,171] 3,349 [2,471]	FDM Table 210.9.1 ($e_{max} = 0.10$)
<u>Superelevation (SE)</u> SE Transition Tangent Curve Spirals SE Rates High Speed Roadways Design Speed 45-50 Design Speed 55-60 Design Speed 65-70 Low Speed Roadways Design Speed 40 Design Speed 45	80% (50% min.) 20% (50% min.) <i>Do not use on curves less than 1°30'00"</i> $e_{max} = 0.10$ (100-ft min transition length) <i>SE slope rate = 1:160</i> <i>SE slope rate = 1:180</i> <i>SE slope rate = 1:200</i> $e_{max} = 0.05$ (75-ft min transition length) <i>SE slope rate = 1:125</i> <i>SE slope rate = 1:150</i>	FDM 210.9.1 <i>CFX 211.7</i> FDM 210.9 FDM Table 210.9.3 <i>CFX 211.8 (Zero percent cross slopes are to be avoided with 150-ft of the high point or low point of crest and sag vertical curves)</i>

Design Element	Design Standard	Source								
<u>Vertical Curves</u> Min. K Values Interstate (70 mph) Ramps (50 mph) Ramps (30 mph) Min. Curve Length, ft Interstate (70 mph) Ramps (50 mph) Ramps (30 mph)	Length, $L = KA$ Sag = 206, Crest = 506 Sag = 96, Crest = 136 Sag = 37, Crest = 31 Sag = 800, Crest (open highway) = 1,000 Crest (Within Interchanges) = 1,800 Sag = 200, Crest = 300 Sag = 90, Crest = 90	FDM Table 211.9.2 FDM Table 211.9.3								
<u>Maximum Grades</u> LA Facilities Ramps DS = 50 mph DS = 30 mph	3% 5% 7%	FDM Table 211.9.1 For truck traffic 10% or greater, do not exceed 4%								
<u>Minimum Stopping Sight Distance (grade 2.0%)</u> DS =70 DS = 50	820-ft 495-ft	FDM Table 211.10.1								
<u>Decision Sight Distance</u> DS =70 DS = 50 DS = 30	780 – 1,445 ft 465 – 1,030 ft 220 – 620 ft	FDM Table 211.10.2 (AASHTO Exh. 3-3) <i>CFX 211.10 (Do not place decision points e.g. ingress or egress within the limits of reduced sight distance)</i>								
<u>Vertical Clearance</u> Over LA Roadway Over Arterial or Collector Roadway Over Railroad	16.5-ft 16.5-ft 23.5-ft	FDM Table 260.6.1								
<u>Clear Zone</u> Travel Lanes & Multilane Ramps DS ≥ 60 mph DS = 50 mph DS = 30 mph	Travel Lanes & Multilane Ramps [Auxiliary Lanes & Single Lane Ramps] 36-ft [24-ft] 30-ft [18-ft] 12-ft [10-ft]	FDM Table 215.2.1								
<u>Ramps</u> Ramp Terminals Length Taper	<table border="0"> <tr> <td><u>Entrance</u></td> <td><u>Exit</u></td> </tr> <tr> <td>“Parallel-Type”</td> <td>“Taper-Type”</td> </tr> <tr> <td>900 to 1,200 ft</td> <td>340-ft Min.</td> </tr> <tr> <td>300-ft</td> <td>2° to 5°</td> </tr> </table>	<u>Entrance</u>	<u>Exit</u>	“Parallel-Type”	“Taper-Type”	900 to 1,200 ft	340-ft Min.	300-ft	2° to 5°	CFX 211.13 (For Single lane ramp terminals, it is CFX’s preference to use the taper-type design for exit ramps, and parallel-type for entrance ramps. Acceleration lane length of at least 1,200 ft plus taper is desirable.)
<u>Entrance</u>	<u>Exit</u>									
“Parallel-Type”	“Taper-Type”									
900 to 1,200 ft	340-ft Min.									
300-ft	2° to 5°									

4.C – Alternatives Analysis

No-Build Alternative

The No-Build Alternative serves as a baseline against the proposed build Alternatives. The No-Build Alternative is defined as the Alternative in which the proposed project activity would not take place. However, the No-Build Alternative does include any on-going construction, and planned or programmed transportation improvements scheduled to be implemented by the 2045 Design Year of the project. These projects must be listed in either the CFX's Five-Year Work Program, CFX Master Plan 2040, FDOT's Five-Year Work Program, Orange County's 2030 LRTP, or MetroPlan Orlando's 2045 Cost Feasible Plan. The CFX 2040 Master Plan outlines six lane capacity improvements for SR 528 by the year 2040 in order to keep up with travel demand while also maintaining an adequate level of service for its users. A widening study (PD&E) is programmed for FY 25, as documented in the CFX Five-Year Work Plan FY 23-27, and the project limits are from Innovation Way to SR 520 which fall within this project's limits. There are no scheduled improvements for the Dallas Blvd corridor. The No-Build Alternative as well as the future improvements along SR 528 do not adequately address the need of this project.

Build Alternatives

Build Alternatives were developed along SR 528, Dallas Blvd, and Starry St to address the purpose and need of the project. The Build Alternatives evaluated as part of this study are a *Roundabout Interchange* and a *Signalized Braided Ramp Interchange*. These two build Alternatives were evaluated operationally to be synchronous with CFX's future improvements (i.e. six-lane capacity improvement along SR 528 from Innovation Way to SR 520) as well as Orange County's future transportation plans and goals. Traffic demand for the area was modeled using a 2050 design year. Expansive site development, and other significant changes to land use south of the project limits were factored into traffic modeling for each condition. The resulting traffic demand determined that capacity focused improvements along Dallas Blvd were not necessary for the interchange to operate optimally. However, future capacity related improvements for Dallas Blvd were considered as part of this project to account for rapid community growth, and to circumvent future construction staging and costs. It should be noted that the aforementioned traffic variables were assumed for traffic generation purposes only and are not based on any planned, programmed or documented sources from Orange County, nor any other regional planning authorities. The proposed build Alternatives developed were found to fit within the existing Limited Access (LA) right-of-way and would have minimal impact beyond the interchange. This approach also satisfies the purpose and need of the project while also being cognizant of the regional planning for community. It is recommended that traffic studies be performed within six months following construction and opening of the build Alternatives.

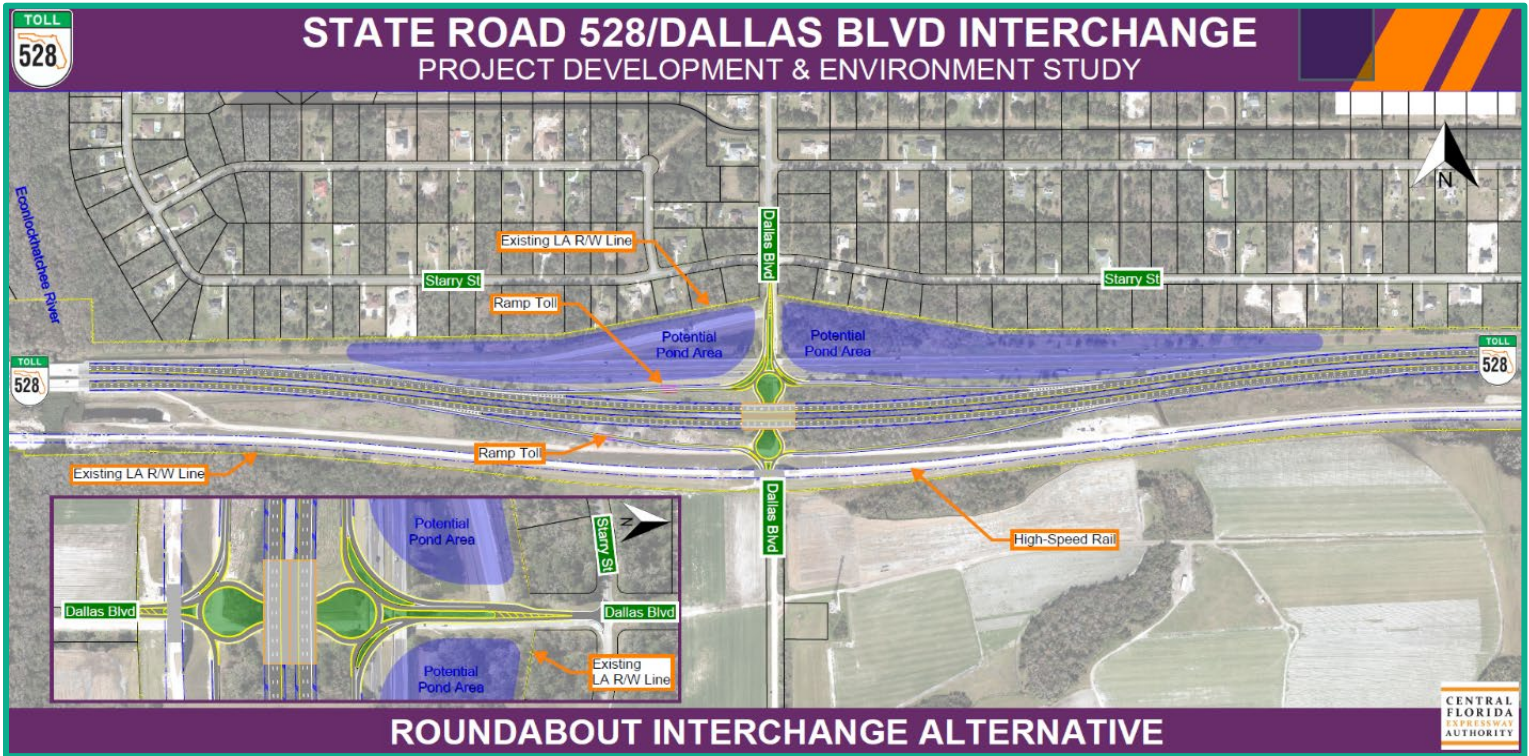
Both build Alternatives propose widening SR 528 using similar developed typicals, available in the **Typical Section Package**, available under separate cover. The on and off ramps will also use the same typicals for each Alternative. The proposed bridges will meet vertical clearance criteria. It is recommended to realign this segment of SR 528 in order to maintain through traffic during construction. The limits vary minimally for each Alternative but are roughly bounded by the SR 528 Econlockhatchee River Bridge to the west, the turning alignment of the AAF Railroad to the east, the AAF Railroad bridge over Dallas Blvd to the south, and the intersection of Dallas Blvd and Starry St to the north.

Alternative # 1 – Roundabout Interchange

A roundabout type interchange is proposed to meet the purpose and need of this project. This Alternative provides a complete interchange by an at grade hourglass shaped roundabout. One end will be located north of the realigned SR 528 mainline and will service the westbound (WB) ramps. The other end will be located south of the realigned SR 528 mainline and will service the eastbound (EB) ramps. In general, roundabouts operate by bringing in traffic at reduced speeds and allow for safer crossings between traffic streams. Signing and pavement markings will aid in these safe operations and will be evaluated as part of the design phase. The addition of pedestrian facilities will be coordinated with Orange County in the design phase as well. A single lane roundabout with a 180' inscribed circle diameter is proposed. The wider diameter is recommended to facilitate future capacity improvements, and accommodate a dual lane configuration. The circulatory roadway width will be 17'. A curb and gutter section is recommended. A 46' median will separate circulating traffic. The SR 528 off ramps will have an exclusive left turn lane that operates in the roundabout and a partial right turn bypass lane to Dallas Blvd. Southbound (SB) traffic approaching the interchange will have a full right turn bypass lane to enter the westbound on ramp, and will utilize the south portion of the roundabout to access the eastbound on ramp. Northbound (NB) traffic approaching the interchange will utilize the roundabout to access the eastbound on ramp, and will utilize the northern portion of the roundabout to access the westbound on ramp. Operationally, Dallas Blvd can remain as a two lane, two-way roadway. Dallas Blvd will be constructed with curb and gutter. Splitter islands will be utilized on approaches to the roundabout. As previously mentioned, the AAF bridge is located south of the realigned SR 528 bridge. The pier column supporting the AAF bridge will be bordered by a splitter island. The need for pier protection barrier should be evaluated as part of the design phase. In general, modern roundabouts do not have merging or weaving traffic streams and have a reduced number of conflict points as compared to other types of intersection controls. In addition, roundabouts have been shown to significantly reduce the number of serious injury and fatalities in relation to other types of intersection controls as well as reduce emissions from idling vehicles.

The estimated cost for Alternative # 1 – Roundabout Interchange is **\$80,885,612**.

Figure 2 - Alternative 1 - Roundabout Interchange

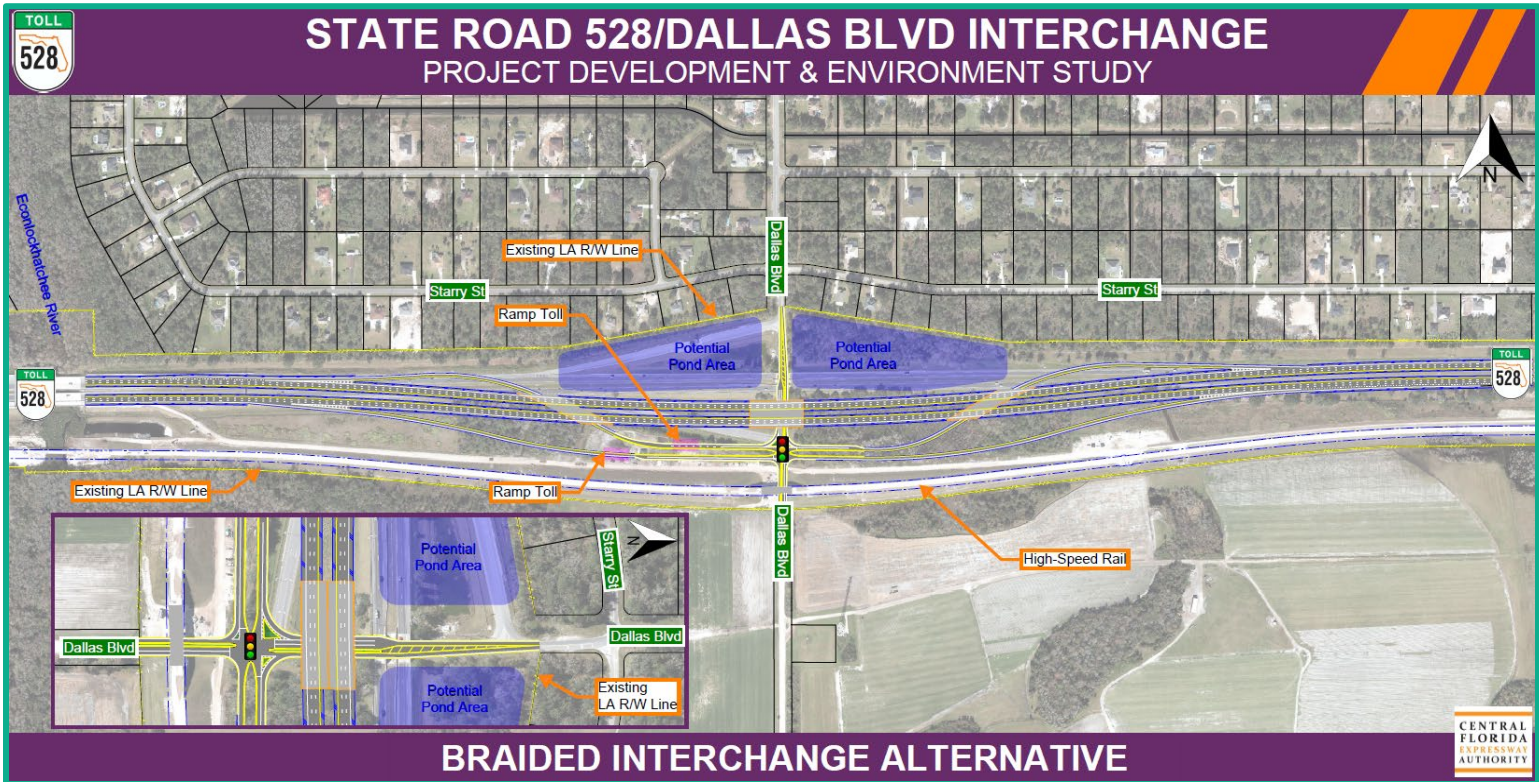


Alternative # 2 - Signalized Braided Interchange

A signalized braided ramp type interchange is proposed to meet the purpose and need of the project. This Alternative provides a complete interchange by converging all ramps to a single point just south of the realigned SR 528 mainline. All ramps will be at grade and the SR 528 mainline will cross over them. The eastbound ramps will be direct-connect ramps, while the westbound ramps will be semi-direct connect ramps. The intersecting ramps and Dallas Blvd will be controlled with a traffic signal. Pedestrian facilities and traffic signal equipment will be coordinated with Orange County in the design phase. Three bridges are required for this Alternative to span the ramps and crossroad: (1) WB On Ramp, (2) Dallas Blvd, and (3) WB Off Ramp. The bridges over the westbound ramps will be designed to accommodate future two-lane ramps. The newly constructed AAF bridge lies on the south end of the project, and will affect the geometry along Dallas Blvd. The AAF bridge was constructed for a future four lane divided highway with a wide median (approx. 60') to accommodate future auxiliary lanes at the interchange. A pier column is located midspan. The northbound direction has a wider span between pier column and the bridge abutment as compared to the southbound direction; 104'-1" and 84'-1" respectively. Operationally, Dallas Blvd can remain as a two lane, two-way roadway. Dallas Blvd will be constructed with curb and gutter. The Dallas Blvd alignment is shifted to the east so that the geometry can run between the wider span. Single left turn storage lanes will be provided at the new intersection to provide access onto the expressway. Channelized right turn lanes will be provided for each leg of the intersection except for the south leg. That approach will instead operate as a shared thru-right movement.

The estimated cost for Alternative # 2 – Braided Interchange is **\$106,015,107**.

Figure 3 - Alternative 2 - Braided Interchange Alternative



Right-Of-Way (R/W) Needs & Impacts

No right-of-way acquisition is anticipated for either Alternative. However, the interchange influence area for Alternative 2 is approximately 600' from the Starry Street intersection as compared to Alternative 1 which is 200'. This greater separation allows for future operational improvements at Starry Street with less encroachment into CFX's interchange influence area particularly for any future traffic signal improvements. The Mainline of SR 528 would move 240 ft (Alternative 2) to 375 ft (Alternative 1) south of the current SR 528 alignment.

Typical Sections

Both Alternatives share the same SR 528 mainline typical section and ramp typical sections with the exception of the Ramp A and Ramp D typical section's design speed. Alternative 1 utilizes direct connect ramps which can operate at a 50 mph design speed while Alternative 2 utilizes semi-direct connect ramps that can operate at 30 mph. The lower design speed for Alternative 2 better accommodates the tighter curves needed for the braided ramps to fit within the CFX R/W. The SR 528 mainline sections were developed to match future capacity improvement projects along SR 528. The Dallas Blvd typical sections are also similar between Alternatives with a center landscaped median with the exception of the roundabout typical section requiring a greater intersection footprint to accommodate the circulatory roadway. The bridge typical section over Dallas Blvd would also be the same amongst Alternatives and result in the same span. However, Alternative 2 would require two additional SR 528 mainline bridges over the braided westbound on and off ramps. A **Typical Section Package**, available under separate cover, has been prepared for both Alternatives.

Traffic

A **Project Traffic Analysis Technical Memorandum**, available under separate cover, was developed as part of this PD&E Study in order to evaluate the traffic operations along SR 528, Dallas Blvd, and the proposed ramp configuration. The study provides future traffic forecasts and operational analysis results for the 2022 existing year, 2030 opening year, and 2050 design year conditions. Traffic was generated for future planned developments in the area south of the interchange. The additional ramps also generated new trips resulting from the diversion of traffic from the SR 520 ramps to and from SR 528.

The 2030 opening year traffic demand determined that Dallas Blvd would operate acceptably as a two-lane roadway. Operationally, the analysis found that the roundabout would operate at a more acceptable level of service as compared to the traffic signal in the 2030 interim design year, LOS A and LOS C respectively.

Safety Assessment

Both Alternatives address the Purpose and Need of the project by completing the full interchange at Dallas Blvd. The risk of wrong way driving due to the partial connectivity within the region of the existing facility is greatly reduced with the addition of the eastbound on ramp. Each Alternatives' traffic control also provides a safer condition than the existing stop control particularly when factoring future traffic demand (design year 2050). However, the Alternative 1 intersection introduces fewer conflict points with lower severe type impacts as compared to Alternative 2. The Alternative 1 roundabout introduces 10 conflict points: 6 merging and 4 diverging. The signalized intersection for Alternative 2 introduces 32 conflict points: 8 merging, 8 diverging, and 16 crossing. The elimination of crossing movements drastically reduces the potential for high severity collisions. Therefore, Alternative 1 provides a significantly safer intersection design for the interchange.

Horizontal and Vertical Geometry

Both Alternatives and their respective horizontal alignments utilize the same design controls with the following exceptions listed below for Alternative 2. The recommended design speed for SR 528 is 70 mph. The design speed (minimum) along the ramps were based on FDM Table 201.5.2. All direct connect ramps were designed for 50 mph design speed while the semi-direct connect ramps (*Alternative 2, Ramps A & D*) were designed for 30 mph. The Dallas Blvd alignment was aligned tangentially with the center of the Starry Street intersection and the center of the AAF bridge pier column. The design speed for Dallas Blvd is 45 mph and should be coordinated with Orange County in the design phase. The braided ramps for Alternative 2 would require superelevated sections for both curvatures ranging from 0.058 ft/ft to 0.072 ft/ft with the lower rate being applied on approach to Dallas Blvd and the higher rate being applied near the ramp terminals. The required superelevation, and the subsequent transitions, result in higher material cost, drainage and ponding mitigation measures, and an overall more complex construction effort.

Both Alternatives generally follow the existing profile, where necessary, except when meeting CFX vertical clearance requirements. Alternative 1 would need to meet the vertical clearance requirements over Dallas Blvd, approximately 300 ft in length, as compared to Alternative 2 which would need to sustain the same vertical clearance over Dallas Blvd and the two westbound ramps, approximately 2,600 ft in length. Consequently, Alternative 2 would require more fill and a longer earth retention structure to be operational, again requiring greater design and construction costs.

Structures

Both Alternatives will utilize the same bridge structure over Dallas Blvd. SR 528 is on a curved alignment (radius of 14,714 ft for Alternative 1 & radius of 18,000 ft for Alternative 2) in this area and crosses Dallas Blvd approximately radially. The SR 528 mainline bridge over Dallas Blvd will provide a 300'-0" opening from the faces of the Mechanically Stabilized Earth (MSE) walls below to accommodate numerous current and future interchange conditions.

Alternative 2 would require two additional bridges, over the westbound on and off-ramps. SR 528 is on a curved alignment (radius of 22,918') and the westbound ramps are also skewed as they cross under SR 528. These two factors result in a longer bridge span. The bridge spans vary from 170' to 230'. The composition of the superstructure has not been determined at this time, and should be evaluated as part of the design phase. The addition of two (2) bridges to accommodate the Braided Interchange design would add significant construction and design costs to the project.

Lighting

Based on the data and the analysis performed, roadway lighting is automatically warranted for the proposed on/off ramps regardless of Alternative. A lighting plan will be developed in the design phase of the project.

Signing and Pavement Marking

The pavement striping for the SR 528 mainline, ramps, and interchanges will be installed per CFX design guidelines and per FDOT FDM and Standard Plans.

Access Management

SR 528 has an Access Classification 1, Area Type 3. Dallas Blvd is an off-system highway and does not follow the developed rules under the State's Highway System Access Management Act (Rule 14-96 and Rule 14-97). However, Orange County does regulate access to all of its facilities, and any modifications, additions, or removals, to access should be coordinated through Orange County outside of CFX's LA R/W.

Bicycle, Pedestrian & Connectivity

The project area is rural-residential to the north and agricultural to the south. The region is expected to grow rapidly in the near future. Both Alternatives do not directly address bicycle or pedestrian users in the current Alternatives as no demand currently exists, but will provide the space necessary on Dallas Blvd for the addition of these features during future buildout conditions. All new bike/ pedestrian facilities will be coordinated with Orange County. The Florida National Scenic Trail is located within the eastern Orange County Region, with the nearest trails located approximately 8 miles to the east, the Tosohatchee Trail located within the Tosohatchee Wildlife Management Area. With the project area located adjacent to the undeveloped Deseret Ranches land to the south and within close proximity to the Hal Scott Regional Preserve and Park, opportunities for future trail connectivity should be evaluated during final design. Coordination with the US Forest Service regarding future opportunities for expansion of the Florida National Scenic Trail should be explored during future phases of this project.

Intelligent Transportation Systems (ITS)

The existing ITS equipment within the project limits will be impacted by the proposed roadway design and will need to be replaced. The existing ITS devices include closed circuit television (CCTV) cameras, traffic monitoring stations (TMS), dynamic message signs (DMS) and data collection sensors (DCS). This includes fiber optic cable and conduit, electrical power service conductors, and load centers. In addition, wrong-way driving systems will be installed at the proposed exit ramps. The following is a description of the equipment expected to be included as part of the ITS design.

- **CCTV cameras**: The CCTV sites allow for real time monitoring of the roadway and also serve to confirm DMS message displays. The proposed CCTV locations should be in the same general area as the existing sites. Consideration should also be given to including a CCTV on the Dallas Blvd. alignment to provide clear sight lines under the bridges for the SR 528 westbound exit and entrance ramps.
- **DMS**: DMS are used to display messages such as expected travel time, crash notifications and traffic conditions. The full span structure supporting the two DMS will be impacted by the proposed roadway realignment. The design team will determine a location for the new span and new DMS will be installed for both eastbound and westbound directions.
- **TMS**: TMS provide vehicular traffic data that includes vehicle volume and speed. This allows CFX to collect data which can identify high traffic areas and driver behavior. Existing TMS that are impacted should be replaced at the same general location.
- **DCS**: DCS are used for travel time analysis by detecting transponders located in the travelling vehicles. The DCS are installed at entrance/exit ramps and collect travel time information which can then be displayed on the DMS.
- **Wrong-Way Driving**: The wrong-way driving equipment includes wrong-way LED warning system signing that give wrong-way drivers a visible indication that they are traveling the wrong direction. The system utilizes radar and cameras to detect vehicles that are entering SR 528 via the exit ramp. When activated, the LED signs flash and an alert notification is sent to the Regional Transportation Management Center (RTMC) so that they can deploy the necessary safety protocol.

Fiber and Power Connections: The existing backbone and feeder fiber optic cable will need to be replaced within the project limits. The proposed fiber will be installed under the outside shoulder per CFX standards. Drop cable connections will be provided to all device location and toll plazas. For this study it is assumed that there will be three load centers. The design team will verify proposed load center locations are acceptable and determine available power source locations. Disconnects, meters and a maintenance pad will be installed at all device locations. ITS plans will be prepared during final design.

Stormwater & Drainage

The **Preliminary Engineering Report** prepared under separate cover for this Level 1 PEIR contains a more detailed stormwater analysis. Additionally, a **Pond Sizing Technical Memorandum** was prepared under separate cover.

The proposed roadway improvements include 34.3 acres of impervious area which is 14.7 acres additional impervious area over the existing condition. The proposed improvements will impact the existing Pond 403-1B and include expansion of existing Pond 403-1A. The expanded Pond 403-1A will be renamed Pond 307-1A and a new pond, Pond 307-1B, will be located in the northeast corner of the interchange. Both proposed ponds will be wet detention.

Treatment Volume & Attenuation

The pond sizing approach included stacking the required treatment volume on top of the required attenuation volume. Treatment volume was governed by the 2.5-inches over the impervious area and includes the additional 50% OFW criteria. Together, Pond 307-1A and Pond 307-1B are sized to treat all proposed impervious area plus the required compensatory treatment from 528-131 (0.88 ac-ft, refer to Attachment 1 of the **Pond Sizing Technical Memorandum** for excerpt documentation from 528-131). For attenuation assumptions, the ponds are sized to attenuate the 25-year/24-hour storm event, which assumes to govern over the mean annual storm event, with a rainfall depth of 8.6 inches. The 8.6 inches rainfall depth was used for previous permits and is greater than the latest NOAA Point precipitation frequency estimate for this location; therefore, providing a more conservative estimate for attenuation volume. Attenuation was considered not only for the additional impervious but also for the normal water levels of the proposed ponds. Floodplain compensation was not required since the upstream contributing area is less than one square mile. Refer to **Table 3** for a summary of the required pond volume for the project.

Table 3 - Summary of Required Pond Volume

<u>Basin</u>	<u>Pond</u>	<u>Required Treatment Volume (ac-ft)</u>	<u>Required Roadway Attenuation Volume (ac-ft)</u>	<u>Required Pond Attenuation Volume (ac-ft)</u>	<u>Existing Pond Impacts (ac-ft)(1)</u>	<u>Total Floodplain Compensation Volume (ac-ft)</u>	<u>Total Required Pond Volume (ac-ft)</u>
Project Area	Pond Area	13.8	8.9	7.4	0.88	0.0	30.6

Conceptual layouts of the ponds were developed to determine if there was sufficient pond area north of the proposed interchanges to accommodate the stormwater water quality and quantity needs for the current study and for the ultimate buildout 8 lane proposed roadway improvements. With assumed normal water levels and top of berm elevations equal to the previously permitted Pond 403-1A of 60.90 feet NAVD and 63.4 feet NAVD, respectively, the combined provided storage volume is 32.43 Ac-ft which only provides 0.1 ft of freeboard for the 30.6 required Ac-ft. (See Pond Stage Area in Attachment 2 of the **Pond Sizing Technical Memorandum**). As there is additional area available, these calculations confirm that no additional R/W is needed for pond sites. The layout and optimization of these ponds will be finalized in design. At a minimum, a nutrient analysis for this project is expected which results in a post-development loading which does not exceed the pre-development loading. If additional nutrient removal is required during final design, there are two options available for this project –

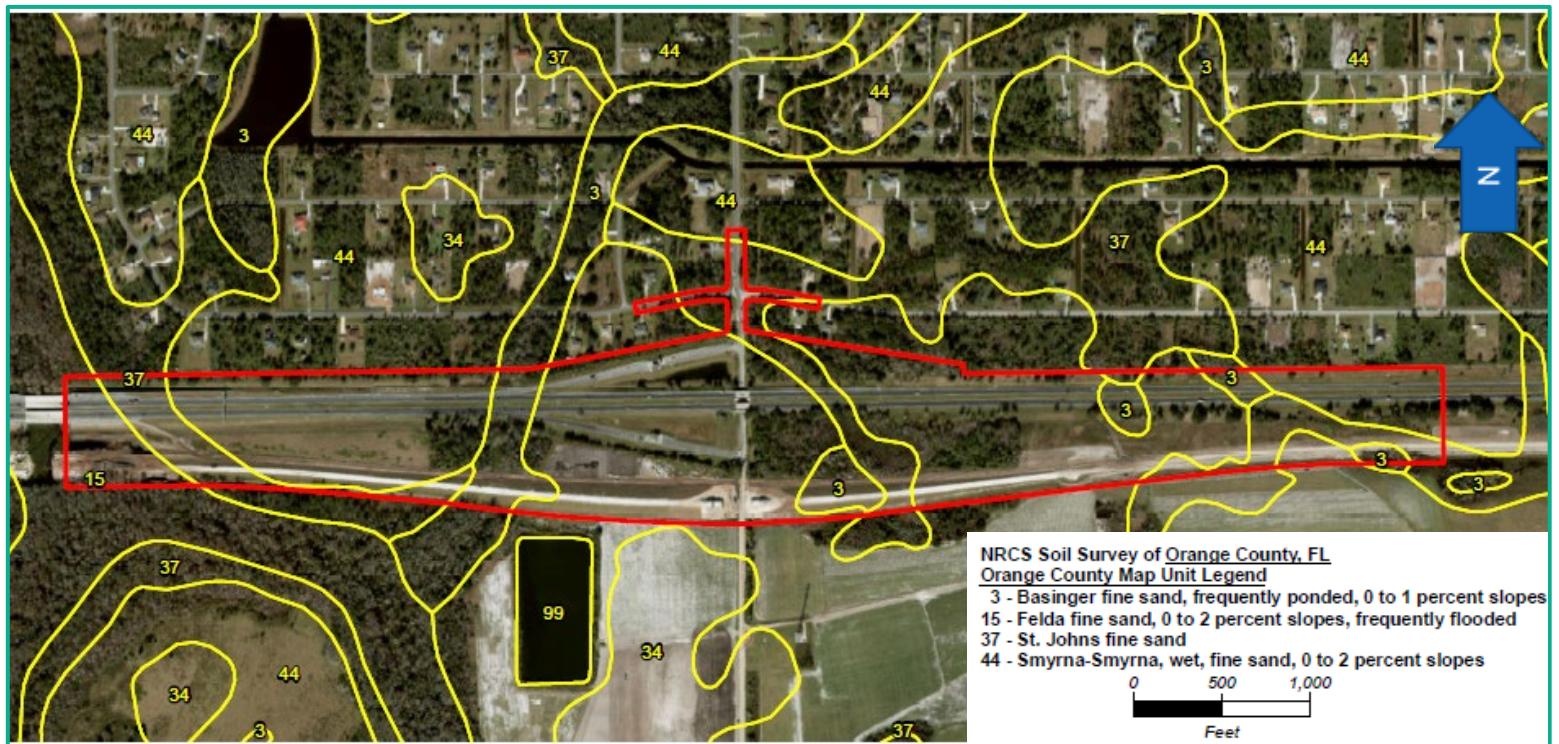
1. Utilize the approach of comparing the design condition to natural conditions and getting the full credit of reduction of the nutrients in the wet pond.
2. Utilize the approach of locating and providing dry retention pre-treatment swales/ponds from the mainline roadway which will have a much higher grade than natural ground.

The roadway profile will be finalized in design. To assist in profile development, the design high water elevation of the ponds should be considered to help set the profile since this will most likely govern the base clearance water elevation for the ramps and Dallas Blvd (which will control the SR 528 bridge low member elevation). Stacking the treatment volume on top of the attenuation volume results in a design high water stage of 63.4 feet NAVD. The lowest existing mainline elevation within the project area is estimated to be 62.4 feet NAVD at Station 1430+00, while the majority of the mainline is around 64.0 ft NAVD. Additionally, the profile should maintain at least 1 ½ feet between the bottom of roadside ditches and the seasonal high groundwater.

Soil Conditions

According to desktop geotechnical analysis utilizing the Natural Resources Conservation Service (NRCS) Orange County Soil Survey, as depicted on **Figure 14**, near surface soils are primarily poorly drained sand soils. Natural ground surface topography varies from +55 to +70 feet NGVD. Additionally, groundwater depth is generally within 1 to 3 feet of natural grade.

Figure 14 - NRCS Orange County Soil Survey



Utility Impacts & Relocation

AT&T (Distribution) and Sprint have indicated the need for relocation for both build Alternatives. Duke Energy (Distribution) and AT&T (Transmission) have indicated that they are within the project limits but will likely be unimpacted by the build Alternatives. The City of Cocoa has a waterline that will need to be evaluated in the design phase. Duke Energy has also expressed interest in relocating their facility as a result of the interchange reconfiguration. All other UAOs have responded with no facilities in the project area. Costs and scheduling as well as any UAO dispositions and agreements pertaining to the relocation of any facilities will be further investigated as part of the design phase for this project. A **Utility Assessment Technical Memorandum** was prepared under separate cover, and contains additional information.

5.0 - Commitments

5.0 – Commitments

The following commitments have been made for the project:

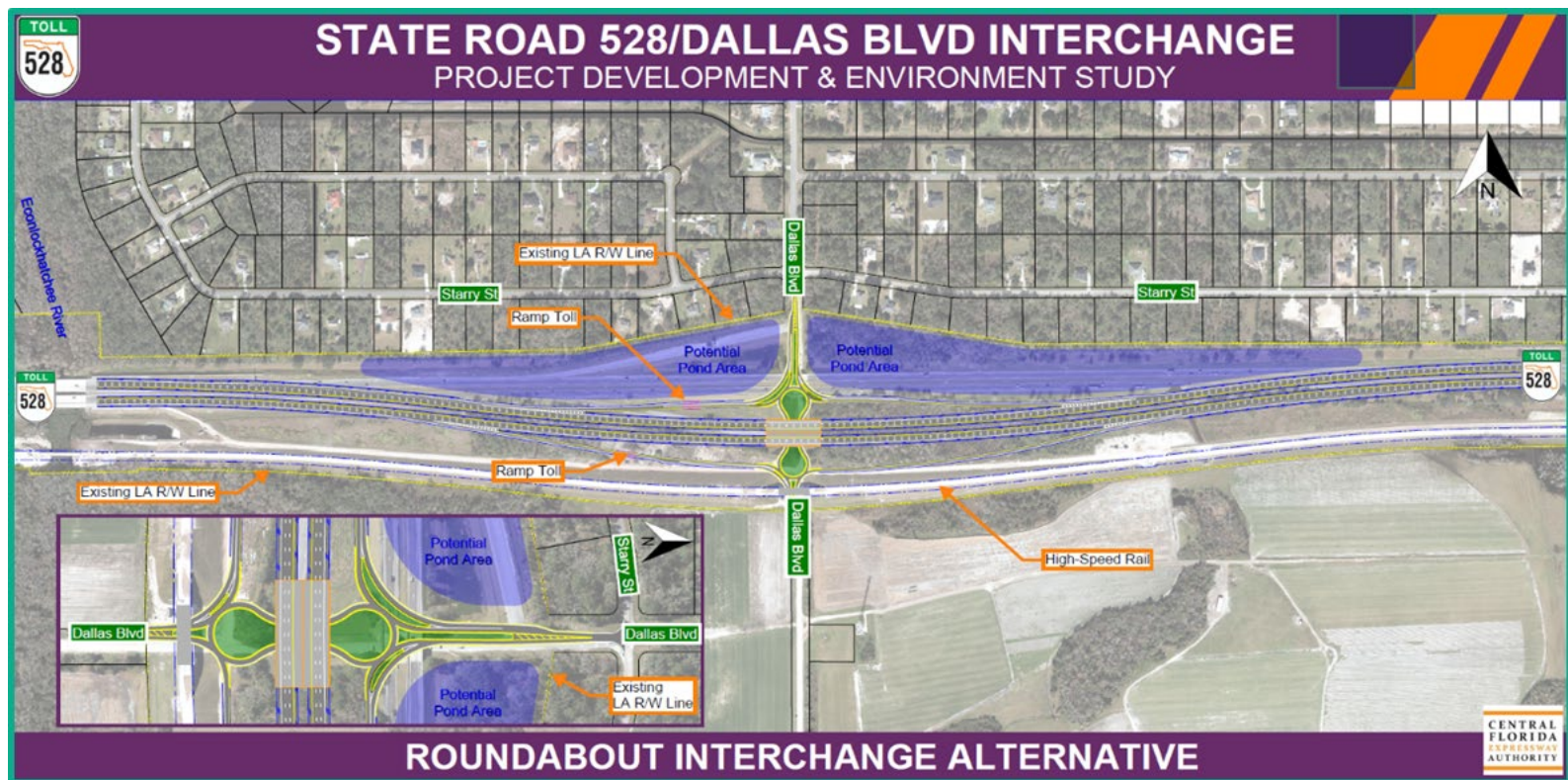
- Any species-specific surveys will first be coordinated with the United States Fish and Wildlife Service (USFWS) and Florida Fish and Wildlife Conservation Commission (FFWCC), then conducted as agreed to with USFWS and FFWCC during the permitting phase.
- CFX commits to re-evaluate the need for a Phase I Cultural Resource Assessment Survey(CRAS) during the Design Phase of the project.
- A storm water management system will be designed to maintain and support existing hydrologic flow patterns and regimes and avoid gradient drawdowns of the wetlands through a design that incorporates appropriate control elevations.
- Best Management Practices to control erosion and sedimentation in accordance with Standard Specifications for Road and Bridge Construction will be implemented.
- Wetland impacts which may result from the construction of this project will be mitigated pursuant to Section 373.4137, F.S., to satisfy all mitigation requirements of Part IV of Chapter 373, F.S., and 33 U.S.C. §1344.
- Avoidance and minimization of wetland and listed species impacts will continue to be evaluated and all possible and practicable measures to avoid or minimize these impacts will be incorporated.
- A pre-construction gopher tortoise burrow survey and any resultant permitting will be conducted in accordance with FWC protocols.
- CFX commits to re-evaluate the Traffic Noise Study during the Design Phase of the project.
- The project will implement the USFWS-approved Standard Protection Measures for the Eastern Indigo Snake (updated August 1, 2017) during the proposed roadway improvements.
- CFX commits to conducting an additional public meeting during the Design Phase of the project.
- The need for a Contamination Screening Evaluation Report will be re-evaluated during the design phase.

6.0 – Preferred Alternative

6.0 - PREFERRED ALTERNATIVE

Alternative 1 provides a conceptual design that meets the Purpose and Need of the Project. Additionally, the project has a significantly lower cost while providing a safer intersection for the on and off ramps of SR 528 and traffic on Dallas Blvd. A recommendation for Alternative 1 as the Preferred Alternative was provided to CFX. On June 9, 2023, correspondence confirmed that the Alternative Concept preferred by CFX was Alternative 1, the SR 528 & Dallas Blvd full interchange with the Roundabout alignment. The conceptual design of the Preferred Alternative is depicted on **Figure 15** and more detailed conceptual designs can be found in the **Conceptual Design Roadway Plan Set**, under separate cover.

Figure 15 - Preferred Alternative



PREFERRED ALTERNATIVE PRELIMINARY CONSTRUCTION COSTS

A refined preliminary cost estimate for the Preferred Alternative was created, totaling **\$80,885,612**. (See **Attachment 2** for **Refined Cost Estimate**).

7.0 – Public Involvement

7.0 – Public Involvement

Public Meeting

The hybrid Public Meeting was held in-person and virtually on Thursday, April 27, 2022 from 5:30 p.m. – 7:00 p.m. at the Wedgefield Golf Course Clubhouse. An estimated 140 people attended the in-person meeting and virtual meetings. Attendees were able to view a video describing the project and Alternatives and ask study team members questions and provide written comments.

Sixty-Five (65) total public comments were received during the public meeting's 10-day comment period. Most questions were from residents seeking clarification about what to expect regarding the construction timeline, noise mitigation and various safety precautions for homes, and a preference for a particular interchange.

Residents expressed a desire for a full interchange at this location and an 8-3 preference towards a Roundabout Interchange Alternative (Alternative 1) vs. a Braided Interchange Alternative (Alternative 2).

A full summary of public involvement activities can be found in the study's **Comments and Coordination Report**, under separate cover.

8.0 – Approval of Final Document

8.0 - Approval of Final Document

This project has been developed without regard to race, color, national origin, age, sex, religion, disability, or family status.

The final Level 1 PEIR reflects consideration of the Project Development and Environment Study and Public Involvement.



Date: July 25, 2023

Greg Seidel, PE

Project Manager & Principal in Charge

The Balmoral Group, LLC



Date: Jul 25, 2023

David Falk, PE

Project Manager

Central Florida Expressway Authority



Date: Jul 26, 2023

Glenn Pressimone, PE

Chief of Infrastructure

Central Florida Expressway Authority

9.0 – Support of Environmental Analysis

9.0 – Support of Environmental Analysis

For supporting information for each issue/resource, please see Attachment 1: Environmental Analysis.

Attachment 1- Environmental Analysis

A. Social & Economic Environment Analysis

A.1 - Social

Demographics

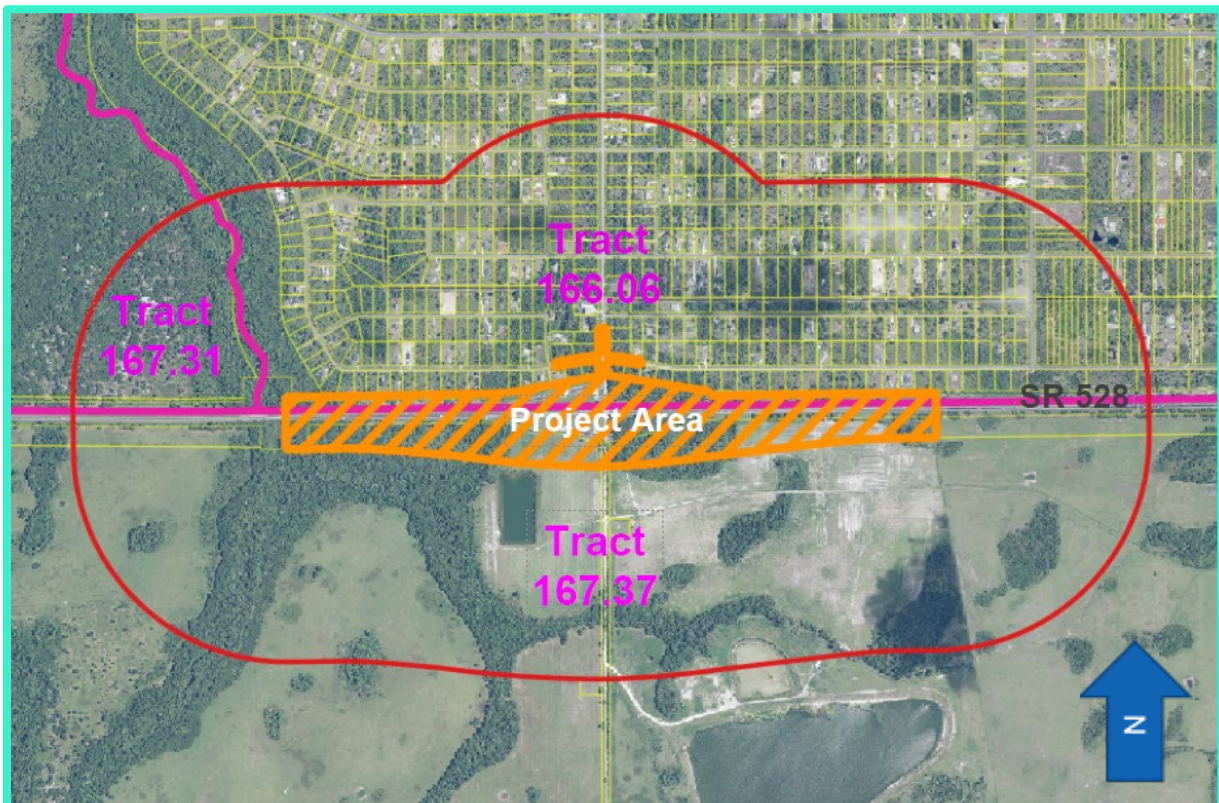
The study area was reviewed to identify minority and/or low-income populations as well as underrepresented population groups protected under *Title VI of the Civil Rights Act of 1964* and related nondiscrimination statutes and regulations. **Table 1** provides study area demographics based on the US Census Tracts in which the project is located. Construction of the Preferred Alternative is not anticipated to cause adverse impacts to the demographics of the Study Area. See **Figure 1** for the location of the tracts.

Table 1: Study Area Demographics by Census Tract

Census Tract	Total Population	Percent Minority Population	Percent Population Below Poverty Level	Percent Population Aged 65 and Over
167.37	5,809	28%	4%	18%
166.06	2,445	23%	3%	10%
167.31	7,246	38%	5%	5%
Orange County	1,340,469	56.0%	14.2%	12.0%

Source: 2020 U.S. Census (Total Population, Minority Population); 2020 ACS 5-Year Estimates (Poverty, 65 and Over)

Figure 1: Census Tracts near project area



Community Features

A desktop review of the study area indicates that there are limited community facilities within or near the study area: The closest community feature to the study area is Hal Scott Regional Park & Preserve, which is approximately 4,600 feet from the study area. Additionally, the Wedgefield neighborhood is partially within the study area. **Table 2** presents community facilities within or near the study area. Construction of the Preferred Alternative is not anticipated to cause adverse impact to Community Features.

Table 2: Community Features

Name	Type of Facility	Relative Location
Orange County Fire Station #86	Institutional	±3.5 Miles northeast of study area
Wedgefield Elementary School	Institutional	±2.84 Miles northeast of study area
Wedgefield Golf Club	Recreation	±3.68 Miles northeast of study area
Wedgefield Park	Recreation	±4.4 Miles northeast of study area
Hal Scott Regional Park & Preserve	Recreation	±4,600 feet northwest of study area
Wedgefield	Neighborhood	Partially within north of study area
John Deere Orlando Training Center	Industry	±2,650 feet south of study area



A.2 - Economic

The proposed improvements will provide enhanced regional connectivity in eastern Orange County, and the improvements were anticipated in long-range plans developed by CFX in 2012. The full interchange will improve mobility within the region, and provide better access to the Space Coast area, providing access to jobs, services, and recreation. The enhanced mobility will continue to drive economic development. These improvements will also serve as a component to support the infrastructure needed for the anticipated future development of the 50,000+ acres located at the southern terminus of Dallas Blvd. The enhanced mobility will continue to drive economic development, creating a positive impact to the area.

A.3 - Land Use Changes

Land uses within ½ mile of the project area were quantified using the Florida Department of Environmental Protection (FDEP) Florida Land Use Cover Classification System (FLUCCS). Construction of the Preferred Alternative is not anticipated to cause significant changes to the land use of the Study Area as the anticipated future development is not yet planned. **Table 3** summarizes the land uses and their areas within a ½ mile buffer of the project area as shown on **Figure 2**.

Table 3: FLUCCS Codes Within Project Area

FLUCCS Code	Landcover Description	Area (acres) within 1/2 mi of project area
1100	Low Density, <2 dwelling units/acre	311.6
1190	Low Density, Under Construction	2.7
2110	Improved Pastures	607.9
3100	Herbaceous (Dry Prairie)	2.1
3200	Shrub and Brushland	104.9
3300	Mixed Upland Nonforested	48.8
4110	Pine Flatwoods	153.0
4200	Upland Hardwood Forests	23.2
4340	Upland Mixed - Coniferous / Hardwood	45.5
5100	Streams and Waterways	22.2
5300	Reservoirs	20.0
6170	Mixed Wetland Hardwoods	195.3
6210	Cypress	35.7
6250	Hydric Pine Flatwoods	1.3
6300	Wetland Forested Mixed	20.4
6410	Freshwater Marshes	14.1
6430	Wet Prairies	25.7
6440	Emergent Aquatic Vegetation	0.6
6460	Mixed Scrub-shrub Wetland	42.4
7400	Disturbed Lands	3.5
8140	Roads and Highways	55.6
8200	Communications	2.2
8370	Surface Water Collection Features	4.6

Figure 2: FLUCCS Within Project Area



A.4 - Mobility

There are no existing transit routes or paratransit access in the immediate project vicinity. At the northeast of the Wedgefield area, LYNX Neighborhood Link Area 621-Bithlo, Neighborlink Service is in place. This area is 3.5+ miles from the Project Area. A review of the LYNX Transit Development Plan FY 2020–2029 indicates there are no proposed transit improvements within the Project Area or any nearby area within the “20-year Vision for All Routes and Service.”

There are limited sidewalks in the project area, located only in the northern portion of the Wedgefield area and along Bancroft Blvd. Both of the Alternatives being considered will provide pedestrian connection along the newly designed Dallas Blvd to provide future connectivity from the Wedgefield area to the undeveloped area to the south. Future Orange County mobility projects could address additional sidewalk in the Wedgefield area.

The MetroPlan Orlando Metropolitan Transportation Plan does not identify any 2045 Needs within the Project area or the Wedgefield area.

This project's proposed improvements will increase automobile access in the area and provide more efficient connections to places of employment, services, and recreation. Additionally, the intersection will include sidewalks and designated pedestrian crossings to support future mobility improvements in the area. Construction of the Preferred Alternative will positively impact the project area and surrounding area.

A.5 - Aesthetic Effects

Aesthetic impacts of the proposed improvements will include the construction of new roadway and bridges that are of a modern and more visually pleasing design. Additionally, the Mainline of SR 528 would move 240 feet (Alternative 2) to 375 feet (Alternative 1) south of the current SR 528 alignment, further from the residential properties in the Wedgefield neighborhood. Ponds are likely to be constructed in the areas formerly occupied by the SR 528 mainline and ramps. Additionally, the new AAF rail line was built upon elevated earthen berms for the rail lines and a bridge that is built at a height greater than 28 feet from the previously existing grade. The new SR 528 mainline will be built at a new height of approximately 21 – 23 feet, so SR 528 will not be visible from the south as it will be hidden behind the new AAF Rail.

There is potential that noise walls may be added. However, in the context of the existing limited-access facility of SR 528, it is not anticipated that the Alternatives will negatively impact the overall aesthetics of the area.

A.6 - Relocation Potential

The project area lies within existing CFX right-of-way. Construction of the Preferred Alternative is not anticipated to cause any impact.

B. Cultural Environment Analysis

B-1 & B-2 - Historic Sites/Districts & Archaeological Sites

A review was conducted to identify any previously recorded cultural resources within the project area. This project will not have significant impacts to cultural resources. Below is a summary of the evaluation performed:

The study area was defined as the parcels where the proposed interchange work will occur (the potential construction area) in addition to a 152-meter (500-foot) buffer to address any potential viewshed effects to historic resources (see Figure 5). This analysis is for information purposes only and does not satisfy requirements under the National Environmental Policy Act or Section 106 of the National Historic Preservation Act.

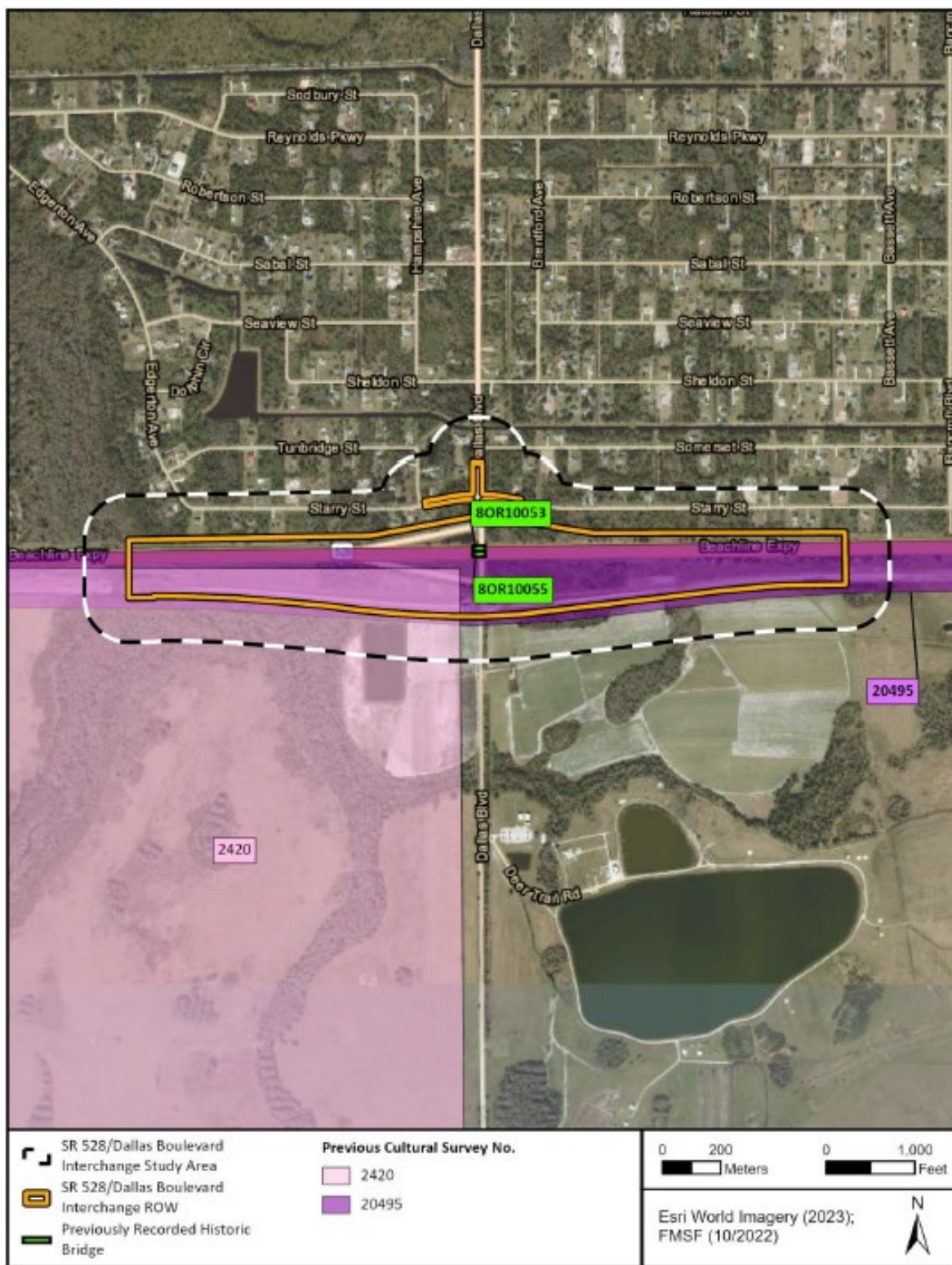
Review of the Florida Master Site File (FMSF) database indicates that two historic bridges (8OR10053 and 8OR10055) are located within the study area (see Figure 5). Neither bridge has been evaluated by the State Historic Preservation Office (SHPO) for eligibility on the National Register of Historic Places (NRHP). Both were constructed in 1967 and are girder-floorbeam bridges. The nearest archaeological sites are two precontact archaeological sites (8OR02192 and 8OR03127), which are located less than 500 meters (1,640 feet) south of the study area near Little Creek. Site 8OR02192 has been recommended potentially eligible for the NRHP by the SHPO, while 8OR03127 has been recommended ineligible.

Review of the FMSF database indicates that the current study area has been partially surveyed by prior studies that meet the current Module Three standards for cultural resource surveys (**Table 4**). Typically, portions of the study area that have been subjected previously to Module Three-compliant survey will not need additional archaeological survey, but they may need an updated architectural history survey. Given that some of the project corridor has not yet been surveyed for cultural resources and the presence of nearby NRHP-eligible resources, the need for a Phase I Cultural Resource Assessment Survey (CRAS) will be re-evaluated as part of the design phase for this project. The full **Cultural Resources Desktop Analysis Technical Memorandum** is available under separate cover.

Table 4 - Cultural Resource Surveys Conducted Within Study Area

FMSF No.	Title	Year	Consultant
2420	<i>Cultural Resource Assessment Survey of the Proposed Magnolia Ranch Development Site, Orange County, Florida</i>	1990	Austin, Robert J. and Howard F. Hansen
20495	<i>Cultural Resource Assessment report for the All Aboard Florida Passenger Rail Project from Orlando to West Palm Beach</i>	2013	Janus Research

Figure 3 - Previously Recorded Resources & Surveys Within Study Area



B.3 - Recreational Areas and Protected Lands

The project area lies entirely within existing CFX right-of-way. No Recreational Areas or Protected Lands are located within the project area or any areas anticipated to be impacted by construction activities. The proposed project would have no impact on Recreational Areas or Protected Lands, but recreational (Hal Scott Regional Park & Preserve – Managed by St. Johns River Water Management District) and protected lands (Econlockhatchee River – Managed by Orange County) are located adjacent to the project area. Additional coordination and permitting during Final Design are recommended.

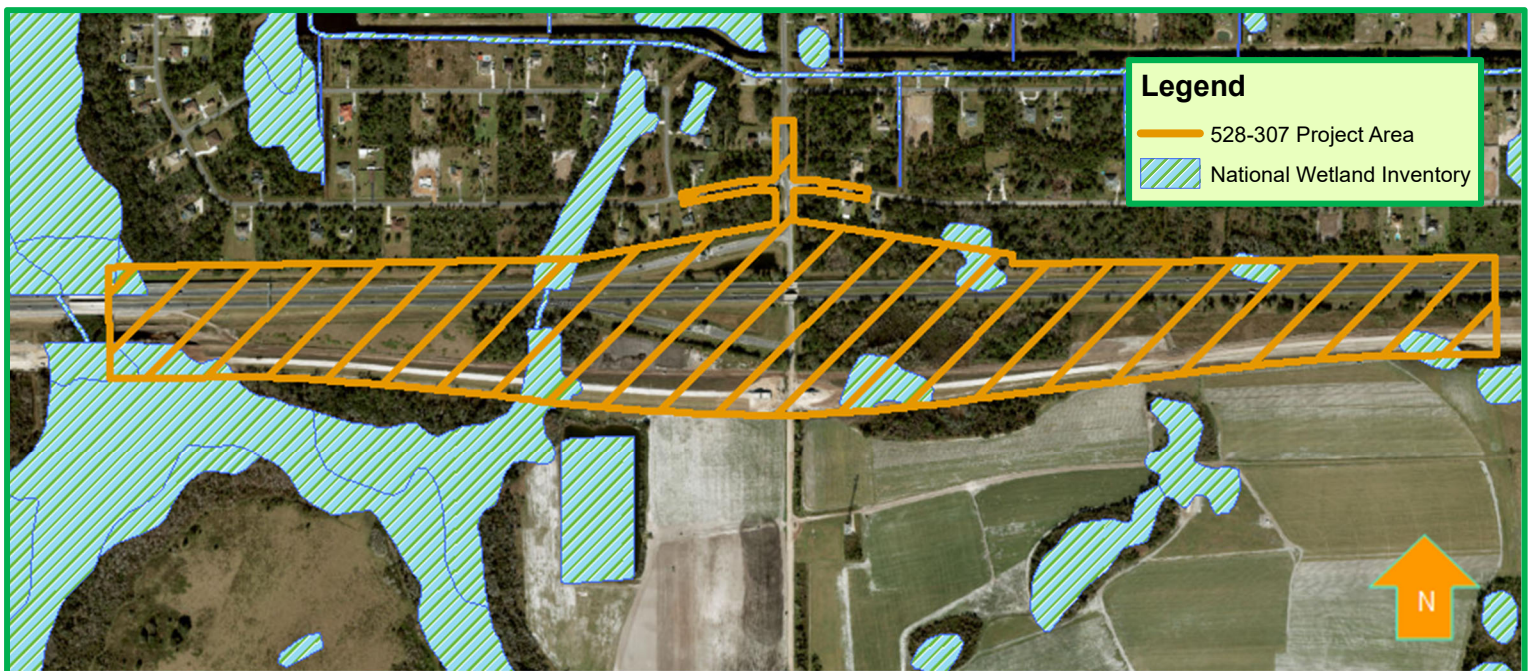
C. Analysis of Impacts to Natural Resources

The project will not have significant impacts to natural resources. Below is a summary of the evaluation performed.

C.1 & C.2 - Wetlands and Other Surface Waters & Aquatic Preserves and Outstanding Florida Waters

An assessment of wetlands and surface waters was conducted within the project study area utilizing the National Wetland Inventory (NWI) data (see **Figure 4**). Three wetland types were identified to overlap with some portion of the project area: freshwater emergent wetland, freshwater forested/shrub wetland, and riverine wetland. The riverine wetlands near the western limits of the project area are part of the Econlockhatchee River System, which is designated as an Outstanding Florida Waters. Any unavoidable wetlands will be mitigated to achieve no net loss of wetland function.

Figure 4: National Wetlands Inventory

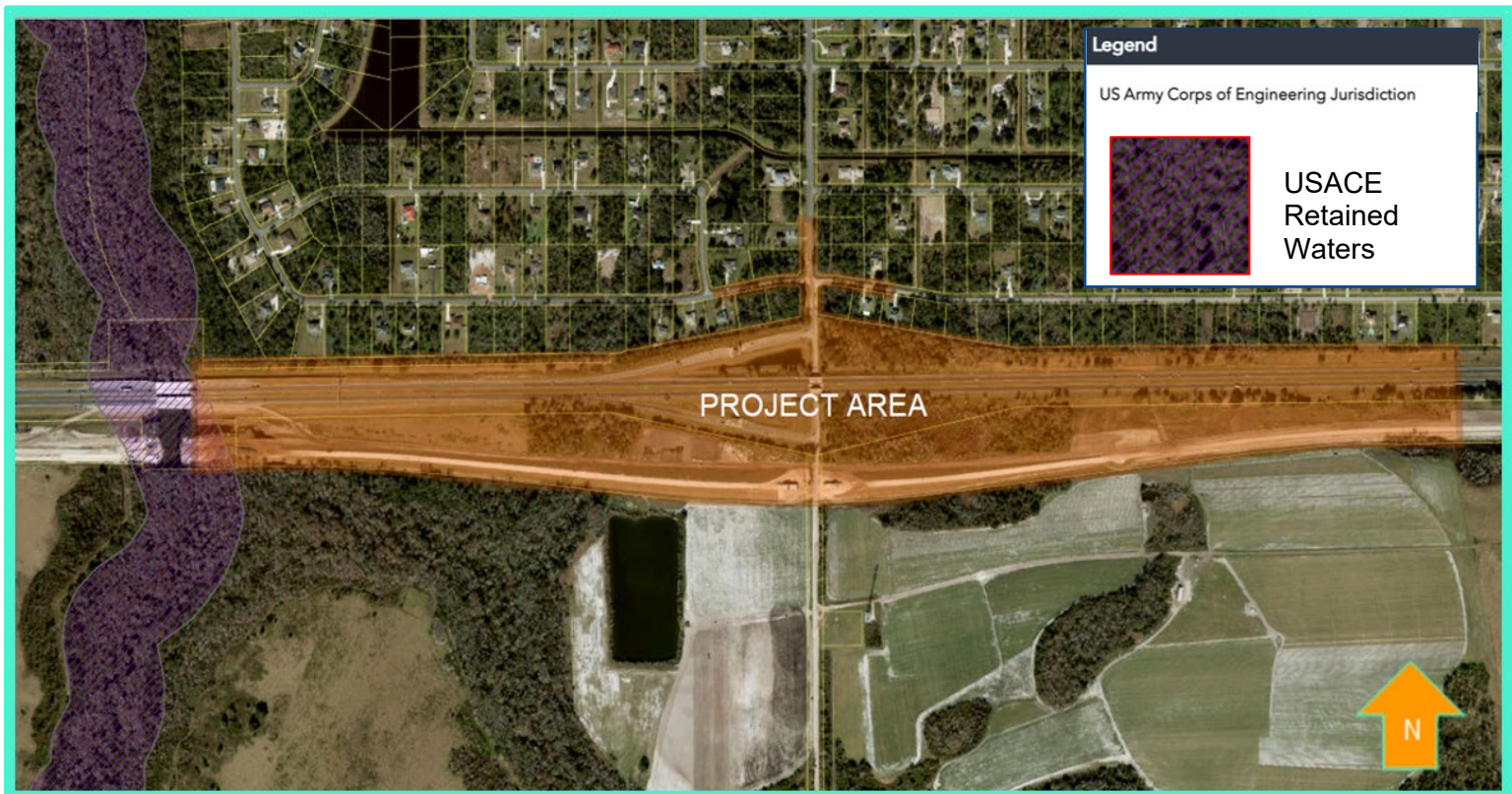


C.3 - Water Resources

The riverine wetlands near the western limits of the project area are part of the Econlockhatchee River System, which is designated as an Outstanding Florida Water. Design of the project will ensure that coordination with and proper permitting through FDEP is performed. A review was conducted of existing conditions related to natural resources for the project. The project will meet all applicable St. Johns River Water Management District (SJRWMD) criteria related to water quality. The project is currently a non-federal action receiving no federal monies; therefore, concurrence from the EPA is not required according to the Safe Drinking Water Act. Best Management Practices (BMPs) to control erosion, sediment release, and storm water runoff to minimize adverse impacts on surface water resources will be implemented during design, permitting and construction. Determination has been made that the US Army Corps of Engineers (USACE) retained waters associated with the Econlockhatchee River at the western project area limits are within 300' of the project, therefore the Project will be subject to FDEP State 404 Program Permitting (**Figure 5**).

A **Water Quality Impact Evaluation (WQIE)** was conducted for the project to comply with the Clean Water Act, and is available under separate cover. The results of the WQIE indicate that the project will not result in significant impacts to water quality.

Figure 5 – USACE Retained Waters – 404 Permitting



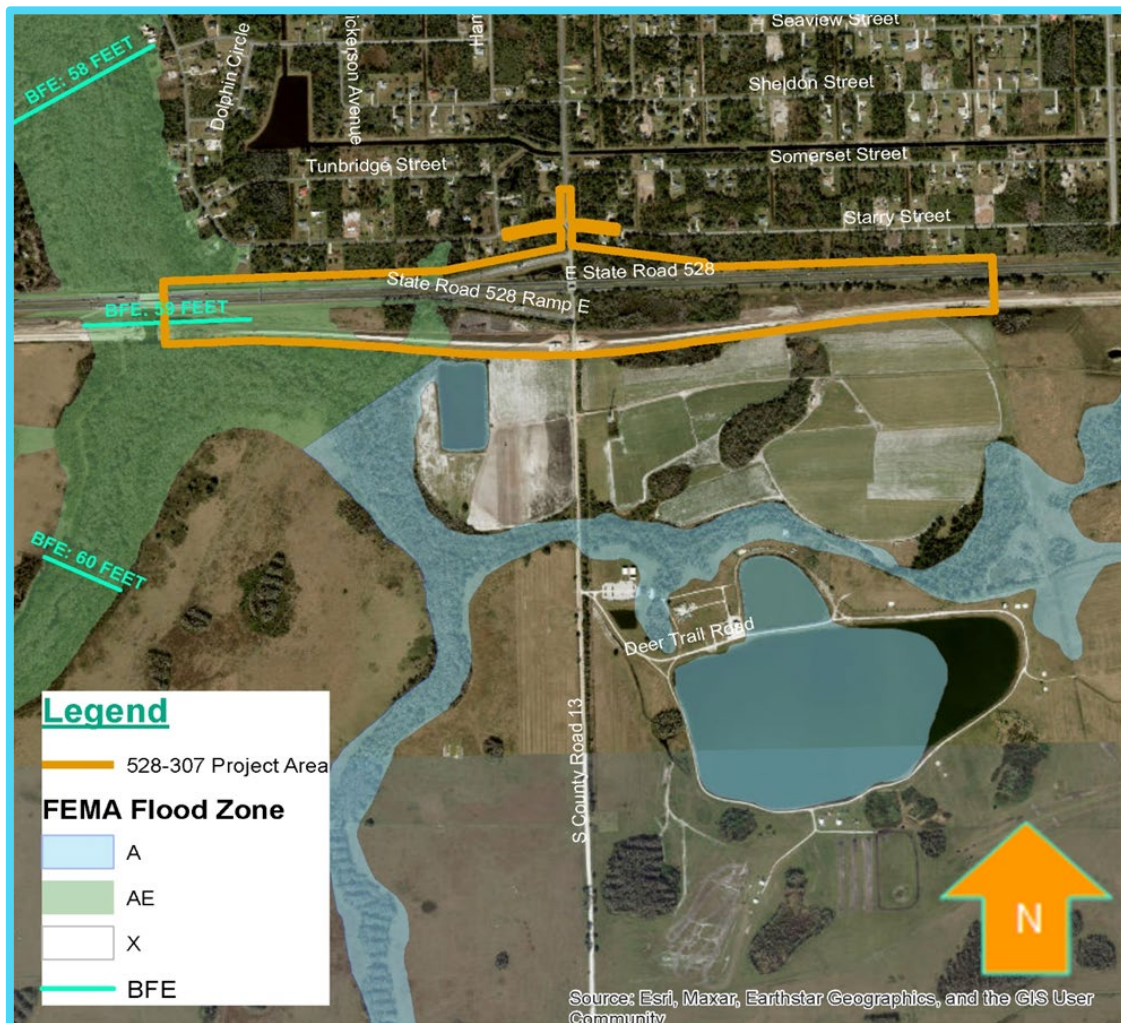
C.4 - Wild and Scenic Rivers

The Econlockhatchee River is not designated as a Wild or Scenic River; therefore, there is no involvement with this resource.

C.5 - Floodplains

Approximately 27 acres of the ±145-acre project site (18.6%) are classified as being within the Federal Emergency Management Agency (FEMA) Flood Zone AE, within the Special Flood Hazard Areas, where an established Base Flood Elevation (BFE) has been determined (**Figure 6**). The remaining approximately 133 acres of the project site are classified as being within FEMA Flood Zone X, areas of minimal flood hazard. There are no FEMA Regulatory Floodway within the project study area (**Figure 6**). This new interchange project will have encroachments into the floodplain. Floodplain encroachments will either be mitigated for in floodplain compensation sites and treatment/attenuation pond sites or calculations will be provided showing no increase to the floodplain elevations. These changes will not result in any adverse impacts on the natural and beneficial floodplain values or any changes in flood risk or damage. Therefore, it has been determined that the encroachment type for this project is classified as "minimal".

Figure 6 – FEMA Floodplain Map



C.6 - Coastal Barrier Resources

There are no Coastal Barrier Resources in the project area and therefore, there is no involvement with this resource.

C.7 - Protected Species and Habitat

A database review of potential species occurring within the project study area and immediate vicinity was conducted. Results of the database review are summarized below. For more information on protected species and habitat, refer to the **Environmental Assessment Technical Memorandum**, available under separate cover.

Based on a review of the U.S. Fish and Wildlife Service (USFWS) Critical Habitat Mapper, there is no USFWS designated critical habitat within the project study area. Areas identified by Florida Fish and Wildlife Conservation Commission (FFWCC) as Strategic Habitat Conservation Areas (SHCA) are located within the project study area. SHCA's are undeveloped natural areas identified by FFWCC as areas that could provide potential habitat to native plant and wildlife species and, therefore, may be considered for acquisition as conservation lands. However, these areas have no regulatory implications and have not been and may never be acquired for conservation.

Based on Florida Natural Areas Inventory (FNAI) Biodiversity Matrix and USFWS IPaC (Information for Planning and Consultation) data, no listed plant or wildlife species have been documented in the project area.

Listed species with the potential to occur based on analysis using USFWS IPaC tool included Audubon's Crested Caracara (*Polyborus plancusaudubonii*), Eastern Black Rail (*Laterallus jamaicensis*), Everglade Snail Kite (*Rostrhamus sociabilis plumbeus*), Red-cockaded Woodpecker (*Picoides borealis*), Wood Stork (*Mycteria Americana*), and Eastern Indigo Snake (*Drymarchon couperi*). The project site lies within the Core Foraging Area (CFA) for Florida wood storks. There are no known wading bird rookeries or bald eagle nests within the project study area or within one (1) mile of the project site, based on spatial datasets from FFWCC.

Table 5 below lists species that may occur and their likelihood of occurrence. Likelihood of occurrence is based on potential habitat presence and documented occurrences of the species within various databases. A Low ranking indicates that suitable habitat is not likely within the proposed project site (based on USFWS habitat range spatial coverage) and the species has not been documented within one (1) mile of the proposed project site. A Moderate ranking indicates that either suitable habitat is within the proposed project site, or the species has been documented within 1 mile of the proposed project site. A High ranking indicates suitable habitat exists within the proposed project site and the species has been documented within 1 mile of the proposed project site. Any species-specific surveys will first be coordinated with the USFWS and FFWCC, then conducted as agreed to with USFWS and FFWCC during the permitting phase.

Table 5: Listed Species with the Potential to Occur Within the Project Site

Common Name	Scientific Name	Status	Documented (<1 mile)	Habitat Present	Likelihood of Occurrence
Avian					
Audubon's Crested Caracara	<i>Polyborus plancus audubonii</i>	FT, ST	No	Yes	Moderate
American Kestrel	<i>Falco sparverius paulus</i>	ST	No	No	Low
Eastern Black Rail	<i>Laterallus jamaicensis</i>	FT, ST	No	Yes	Moderate
Everglade Snail Kite	<i>Rostrhamus sociabilis plumbeus</i>	FE, SE	No	Yes	Moderate
Florida Burrowing Owl	<i>Athene cunicularia</i>	ST	No	No	Low
Florida Sandhill Crane	<i>Grus canadensis</i>	ST	No	No	Low
Florida Scrub Jay	<i>Aphelocoma coerulescens</i>	FT	No	No	Low
Red-cockaded Woodpecker	<i>Picoides borealis</i>	FE, SE	No	Yes	Moderate
Wood Stork	<i>Mycteria americana</i>	FT, ST	No	Yes	Moderate
Reptilian					
Bluetail Mole Skink	<i>Eumeces egregius lividus</i>	FT, ST	No	No	Low
Eastern Indigo Snake	<i>Drymarchon couperi</i>	FT, ST	No	Yes	Moderate
Florida Pine Snake	<i>Pituophis melanoleucus mugitus</i>	ST	No	No	Low
Gopher Tortoise	<i>Gopherus polyphemus</i>	ST	No	No	Low
Sand Skink	<i>Neoseps reynoldsi</i>	FT, ST	No	No	Low
Short-tailed Snake	<i>Lampropeltis extenuate</i>	ST	No	No	Low
Striped Newt	<i>Notophthalmus perstriatus</i>	ST	No	No	Low
Legend: FE - Federally Endangered; FT - Federally Threatened SE - State Endangered; ST - State Threatened Note: Coordination is not required with FWC for federally listed species					

C.8 - Essential Fish Habitat

There is no Essential Fish Habitat in the project area and therefore, there is no involvement with this resource.

D. Physical Environment Analysis

D.1 - Highway Traffic Noise

A traffic noise analysis was performed in accordance with the FDOT PD&E Manual. A Traffic Noise Model was used to evaluate existing conditions, the No-Build Alternative and the Build Alternative Concepts for the Noise Sensitive Areas (NSAs) potentially impacted by traffic noise within 400 feet of the project corridor. While the various options meet acoustic criteria, Barriers WB-S1 and WB-S2 cannot meet the required FDOT and CFX cost reasonableness criteria. Consequently, WB-S1 and WB-S2 are not proposed for further consideration in the final design process. Based on the noise analyses performed to date, there are no feasible and reasonable solutions to mitigate the noise impacts at the locations. The Traffic Noise Study will be re-evaluated during the Design Phase of the project.

Additional information is available in the **Traffic Noise Study Report** available under separate cover.

D.2 - Air Quality

As part of this project study, an air quality evaluation has been performed consistent with the FDOT PD&E Manual, Part 2, Chapter 19. Based on this initial evaluation, a detailed Air Quality analysis is not needed because the project does not meet the two qualifying criteria per Section 19.2.2.1, Part 2, Chapter 19 of the PD&E Manual. It does not require an Environmental Impact Statement, and it is not expected to have community impact regarding air quality.

This project is not expected to create adverse impacts on air quality because the project area is in attainment for all National Ambient Air Quality Standards (NAAQS) and because the project is expected to improve the Level of Service (LOS) and not change delay and congestion on all facilities within the study area.

Construction activities may cause short-term air quality impacts in the form of dust from earthwork and unpaved roads. These impacts will be minimized by adherence to applicable state regulations and to applicable FDOT Standard Specifications for Road and Bridge Construction. An **Air Quality Technical Memorandum** is available under separate cover.

D.3 - Contamination Screening

A Contamination Screening Evaluation was prepared per the project scope as a part of the Evaluation of Physical Resources. The **Contamination Screening Evaluation Technical Memorandum** is available under separate cover and includes a site figure indicating the location of potential contamination sites, brief summaries of the most recent assessment information available through Map Direct, and recommendations on necessity for additional evaluation. The need for a Contamination Screening Evaluation Report will be re-evaluated during the design phase.

D.4 - Utilities & Railroads

A Utilities Analysis was prepared per the project scope as a part of the Evaluation of Physical Resources. For the Preferred Alternative, utility relocation is anticipated. Cost and scheduling as well as any Utility Agency Owner dispositions and agreements pertaining to the relocation of any

facilities will be further investigated as part of the design phase for this project. Additional information on utilities in the study area is contained in the **Utility Assessment Technical Memorandum**, available under separate cover.

The construction of the Preferred Alternative is not anticipated to have any adverse impact on the Railroad Facilities present within the project area.

D.5 - Construction

Construction activities may cause short-term air quality impacts in the form of dust from earthwork and unpaved roads. These impacts will be minimized by adherence to applicable state regulations and to applicable FDOT Standard Specifications for Road and Bridge Construction.

Based on the existing land use within the limits of this project, construction of the proposed roadway improvements will not have any noise or vibration impact. If noise-sensitive land uses develop adjacent to the roadway prior to construction, additional impacts could result. It is anticipated that the application of the FDOT Standard Specifications for Road and Bridge Construction will minimize or eliminate most of the potential construction noise and vibration impacts. However, should unanticipated noise or vibration issues arise during the construction process, CFX and the Contractor will investigate additional methods of controlling these impacts. Further, construction will likely temporarily impact existing traffic patterns, but as with all construction impacts, will be temporary in nature and efforts will be made to minimize negative impacts by adhering to applicable state regulations and to applicable FDOT Standard Specifications for Road and Bridge Construction.

Because no federally listed species are likely to be present in the action area and no critical habitat was identified, the construction of this project is not anticipated to impact any proposed threatened or endangered species, any threatened or endangered species, or affect or modify any critical habitat. Further, construction will likely temporarily impact existing traffic patterns, but as with all construction impacts, will be temporary in nature and efforts will be made to minimize negative impacts by adhering to applicable state regulations and to applicable FDOT Standard Specifications for Road and Bridge Construction.

D.6 - Bicycles & Pedestrians

Both of the Alternatives being considered will provide bicycle and pedestrian connection on the newly designed Dallas Blvd to provide connectivity in future buildout conditions from the Wedgefield area to the undeveloped area to the south for future development. Dallas Blvd has an entrance to the Hal Scott Regional Preserve and Park, and has a narrow bike lane/shared-use path alongside the north and southbound lanes, which would provide non-vehicular access to this cultural facility and connect to trails to the north. Additionally, the Wedgefield area has the Wedgefield Golf Club, Wedgefield Elementary School and Wedgefield Park. The sidewalk facilities throughout the Wedgefield area are limited only to Bancroft Blvd and the most northern portion of the neighborhood. The MetroPlan Orlando Metropolitan Transportation Plan does not identify any 2045 Needs within the Project area or the Wedgefield area. The Preferred Alternative will provide bicycle and pedestrian facilities in coordination with Orange County within the project area, improving the current conditions.

D.7 - Navigation

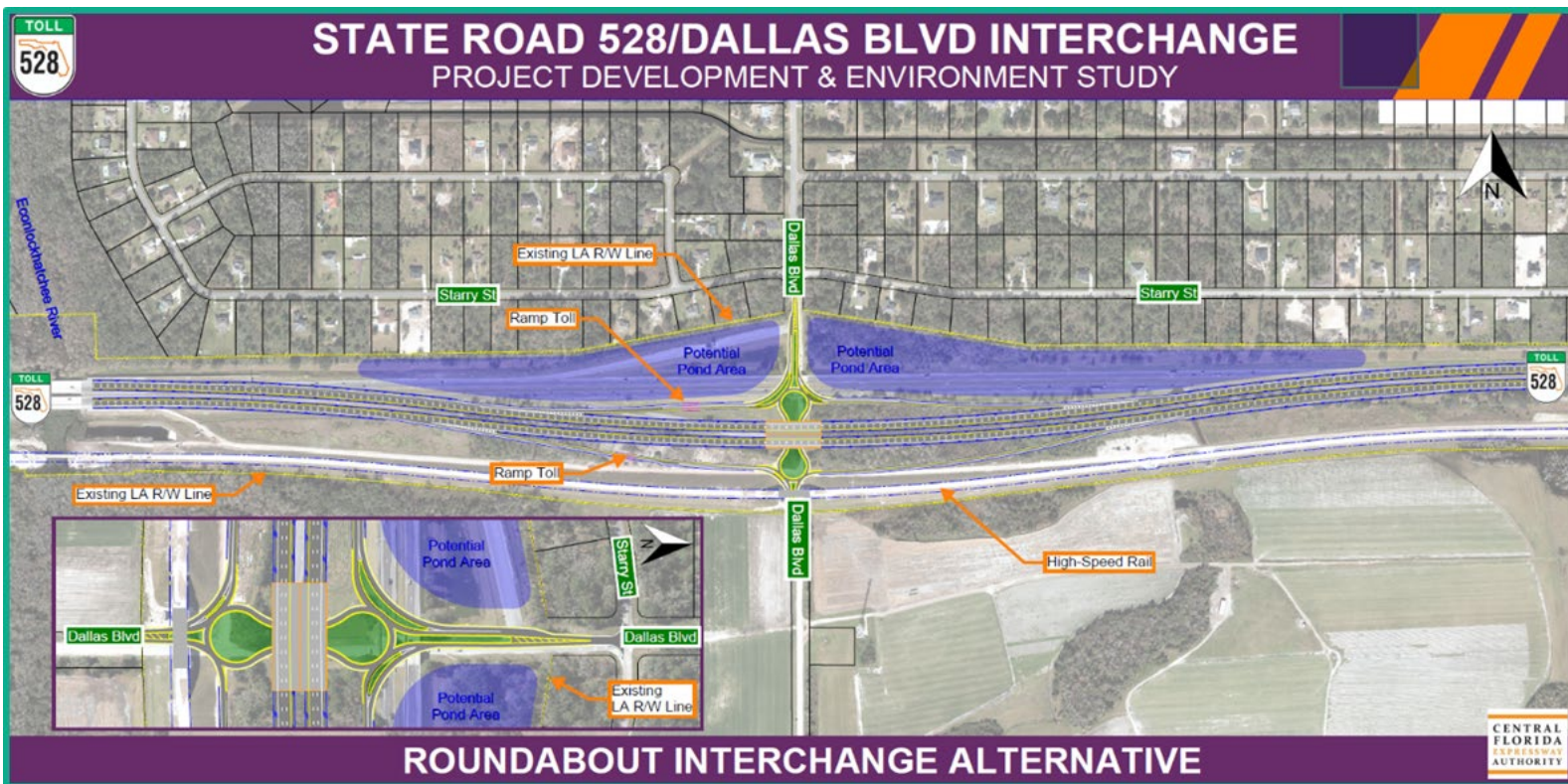
There are no navigable waterways located within the study area and therefore, there is no involvement with this resource.

Attachment 2 - Refined Engineer's Estimate of Preferred Alternative

Preferred Alternative - Refined Cost Estimate

The conceptual design of the Roundabout Interchange Preferred Alternative is depicted below. The Refined Cost Estimate is **\$80,885,612**.

Preferred Alternative



SUMMARY

ESTIMATED PROBABLE PROJECT COST

SR 528/ Dallas Blvd Interchange (Dual Roundabout)_REFINED

PREPARED BY THE BALMORAL GROUP
LAST UPDATED 06/21/2023

PROJECT CENTERLINE MILES: 1.534
NUMBER OF BRIDGES: 1

SR 528 (Sta. 108+50 to Sta. 189+50)	\$50,569,572
Dallas Blvd (Sta. 10+00 to 25+00)	\$3,180,026
Ramp A (Sta. 1000+00 to Sta. 1018+59.57)	\$3,568,005
Ramp B (Sta. 2000+00 to Sta. 2022+67.65)	\$3,641,710
Ramp C (Sta. 3000+00 to Sta. 3021+95.70)	\$1,991,607
Ramp D (Sta. 4000+00 to Sta. 4021+45.45)	\$1,835,863
TOTAL (2023 CONSTRUCTION COST)	\$64,786,784
ENGINEERING / ADMINISTRATION / LEGAL (24%)	\$15,548,828
RIGHT - OF - WAY 0.0 ACRES	\$0
MITIGATION (WETLAND IMPACT ACERAGE x 0.7 = CREDI' 0.0 CREDITS @ \$ 145,000	\$0
TOLL COLLECTION EQUIPMENT 2 LANES @ \$275,000	\$550,000
GRAND TOTAL PROJECT COST	\$80,885,612

ESTIMATED PROBABLE CONSTRUCTION COST
SR 528 (Sta. 108+50 to Sta. 189+50)

PREPARED BY *The Balmoral Group*

ITEM	QUANTITY	UNIT	UNIT PRICE	TOTAL
** EXPRESSWAYS **				
MAINLINE ROADWAY TYPICAL (6 LANE DIVIDED, 9' AVG FILL)	1.477	MI	\$15,197,114	\$22,450,282
EXTRA COST FOR ADDED 12' LANE (MAINLINE) 3.5' FILL (PARALLEL ACCEL)	0.568	MI	\$686,046	\$389,799
** BRIDGES **				
<u>BRIDGE 1 (OVER DALLAS BLVD) (REFINED ESTIMATE)</u>				
MAINLINE ROADWAY BRIDGE OVER SIDESTREET (300 FT SPAN)	46,688	SF	\$155	\$7,236,640
RETAINED EARTH WALL (MSE)	4,400	SF	\$50	\$220,000
APPROACH SLAB (CONCRETE)	331	CY	\$515	\$170,208
APPROACH SLAB (REBAR)	66,100	LB	\$1.57	\$103,777
BRIDGE DEMOLITION	7,560	SF	\$60	\$453,600
** ADDITIONAL ITEMS **				
OVERHEAD TRUSS SIGNS	2	EA	\$250,000	\$500,000
OVERHEAD CANTILEVER SIGNS	4	EA	\$80,000	\$320,000
RETENTION POND CONSTRUCTION (ASSUME 15% OF TOTAL ACERAGE)	4.64	AC	\$305,632	\$1,416,603
OVERHEAD LIGHTING (INCLUDES WIRING) (2 SIDES, 200' SPACING)	1.534	MI	\$849,200	\$1,302,750
ITS (REFINED ESTIMATE)			See ITS Estimate	\$2,509,250
SUB-TOTAL				\$37,072,908
EROSION CONTROL / TEMPORARY DRAINAGE (0.5%)				\$185,365
MAINTENANCE OF TRAFFIC (1%)				\$370,729
MOBILIZATION (9.5%)				\$3,521,926
SUB-TOTAL ROADWAY				\$32,966,704
ROADWAY CONTINGENCY (20%)				\$6,593,341
SUB-TOTAL BRIDGES				\$8,184,225
BRIDGE CONTINGENCY (10%)				\$818,422
SUB-TOTAL				\$48,562,692
AESTHETICS CONTINGENCY (3%)				\$1,456,881
ALLOWANCE FOR DISPUTES REVIEW BOARD				\$50,000
WORK ORDER ALLOWANCE				\$500,000
TOTAL (2023 CONSTRUCTION COST)				\$50,569,572

ESTIMATED PROBABLE CONSTRUCTION COST

Dallas Blvd (Sta. 10+00 to 25+00)

PREPARED BY *The Balmoral Group*

ITEM	QUANTITY	UNIT	UNIT PRICE	TOTAL
** ARTERIAL ROADS **				
CLOSED DRAINAGE 4 LANE DIVIDED (ASSUMED FOR ROUNDABOUT*) *46 ft median, 17' circulatory width (34' bidirectional), curb and gutter, wider r/w	0.284	MI	\$7,554,474	\$2,146,157
** ADDITIONAL ITEMS **				
OVERHEAD LIGHTING (INCLUDES WIRING) (2 SIDES, 200' SPACING) (ROUNDABOUT)	0.284	MI	\$849,200	\$241,250
OVERHEAD TRUSS SIGNS	0	EA	\$250,000	\$0
OVERHEAD CANTILEVER SIGNS	0	EA	\$80,000	\$0
MULTIPOST SIGNS	0	EA	\$5,500	\$0
ITS EQUIPMENT / DEVICES PER INTERCHANGE (CCTV, TMS, ETC.)	0	INT	\$330,000	\$0
RETENTION POND CONSTRUCTION	0.00	AC	\$305,632	\$0
SUB-TOTAL				\$2,387,407
EROSION CONTROL / TEMPORARY DRAINAGE (0.5%)				\$11,937
MAINTENANCE OF TRAFFIC (1%)				\$23,874
MOBILIZATION (9.5%)				\$226,804
SUB-TOTAL				\$2,650,022
ROADWAY CONTINGENCY (20%)				\$530,004
TOTAL (2023 CONSTRUCTION COST)				\$3,180,026

ESTIMATED PROBABLE CONSTRUCTION COST
Ramp A (Sta. 1000+00 to Sta. 1018+59.57)

PREPARED BY *The Balmoral Group*

ITEM	QUANTITY	UNIT	UNIT PRICE	TOTAL
** RAMPS **				
ONE LANE RAMPS (OPEN DRAINAGE)	0.352	MI	\$2,322,931	\$818,116
TYPICAL 1 LANE ON-RAMP TAPER W/GORE - MAINLINE UNCHANGED	1	EA	\$352,633	\$352,633
ADD TURN LANES (RAMP) 3.5' FILL - NEW CONSTRUCTION (OPEN DRAINAGE)	0.170	MI	\$635,902	\$108,392
** ADDITIONAL ITEMS **				
OVERHEAD LIGHTING (INCLUDES WIRING) (1 SIDE, 200' SPACING) (RAMPS ONLY)	0.352	MI	\$424,600	\$149,540
OVERHEAD TRUSS SIGNS	0	EA	\$250,000	\$0
OVERHEAD CANTILEVER SIGNS	0	EA	\$80,000	\$0
MULTIPOST SIGNS	0	EA	\$5,500	\$0
ITS EQUIPMENT / DEVICES PER INTERCHANGE (CCTV, TMS, ETC.)	0	INT	\$330,000	\$0
RETENTION POND CONSTRUCTION	0.00	AC	\$305,632	\$0
RAMP TOLL GANTRY (1 TRUSS AND EQUIP. BLDG)*	1	EA	\$1,250,000	\$1,250,000
SUB-TOTAL				\$2,678,682
EROSION CONTROL / TEMPORARY DRAINAGE (0.5%)				\$13,393
MAINTENANCE OF TRAFFIC (1%)				\$26,787
MOBILIZATION (9.5%)				\$254,475
SUB-TOTAL				\$2,973,337
ROADWAY CONTINGENCY (20%)				\$594,667
TOTAL (2023 CONSTRUCTION COST)				\$3,568,005

ESTIMATED PROBABLE CONSTRUCTION COST
Ramp B (Sta. 2000+00 to Sta. 2022+67.65)

PREPARED BY *The Balmoral Group*

ITEM	QUANTITY	UNIT	UNIT PRICE	TOTAL
** RAMPS **				
ONE LANE RAMPS (OPEN DRAINAGE)	0.429	MI	\$2,322,931	\$997,651
TYPICAL 1 LANE OFF-RAMP TAPER W/GORE - MAINLINE UNCHANGED	1	EA	\$207,661	\$207,661
ADD TURN LANES (RAMP) 3.5' FILL - NEW CONSTRUCTION (OPEN DRAINAGE)	0.152	MI	\$635,902	\$96,349
** ADDITIONAL ITEMS **				
OVERHEAD LIGHTING (INCLUDES WIRING) (1 SIDE, 200' SPACING) (RAMPS ONLY)	0.429	MI	\$424,600	\$182,357
OVERHEAD TRUSS SIGNS	0	EA	\$250,000	\$0
OVERHEAD CANTILEVER SIGNS	0	EA	\$80,000	\$0
MULTIPOST SIGNS	0	EA	\$5,500	\$0
ITS EQUIPMENT / DEVICES PER INTERCHANGE (CCTV, TMS, ETC.)	0	INT	\$330,000	\$0
RETENTION POND CONSTRUCTION	0.00	AC	\$305,632	\$0
RAMP TOLL GANTRY (1 TRUSS AND EQUIP. BLDG)*	1	EA	\$1,250,000	\$1,250,000
SUB-TOTAL				\$2,734,017
EROSION CONTROL / TEMPORARY DRAINAGE (0.5%)				\$13,670
MAINTENANCE OF TRAFFIC (1%)				\$27,340
MOBILIZATION (9.5%)				\$259,732
SUB-TOTAL				\$3,034,759
ROADWAY CONTINGENCY (20%)				\$606,952
TOTAL (2023 CONSTRUCTION COST)				\$3,641,710

ESTIMATED PROBABLE CONSTRUCTION COST
Ramp C (Sta. 3000+00 to Sta. 3021+95.70)

PREPARED BY *The Balmoral Group*

ITEM	QUANTITY	UNIT	UNIT PRICE	TOTAL
** RAMPS **				
ONE LANE RAMPS (OPEN DRAINAGE)	0.416	MI	\$2,322,931	\$965,996
TYPICAL 1 LANE ON-RAMP TAPER W/GORE - MAINLINE UNCHANGED	1	EA	\$352,633	\$352,633
ADD TURN LANES (RAMP) 3.5' FILL - NEW CONSTRUCTION (OPEN DRAINAGE)	0	MI	\$635,902	\$0
** ADDITIONAL ITEMS **				
OVERHEAD LIGHTING (INCLUDES WIRING) (1 SIDE, 200' SPACING) (RAMPS ONLY)	0.416	MI	\$424,600	\$176,571
OVERHEAD TRUSS SIGNS	0	EA	\$250,000	\$0
OVERHEAD CANTILEVER SIGNS	0	EA	\$80,000	\$0
MULTIPOST SIGNS	0	EA	\$5,500	\$0
ITS EQUIPMENT / DEVICES PER INTERCHANGE (CCTV, TMS, ETC.)	0	INT	\$330,000	\$0
RETENTION POND CONSTRUCTION	0.00	AC	\$305,632	\$0
SUB-TOTAL				\$1,495,200
EROSION CONTROL / TEMPORARY DRAINAGE (0.5%)				\$7,476
MAINTENANCE OF TRAFFIC (1%)				\$14,952
MOBILIZATION (9.5%)				\$142,044
SUB-TOTAL				\$1,659,673
ROADWAY CONTINGENCY (20%)				\$331,935
TOTAL (2023 CONSTRUCTION COST)				\$1,991,607

ESTIMATED PROBABLE CONSTRUCTION COST
Ramp D (Sta. 4000+00 to Sta. 4021+45.45)

PREPARED BY *The Balmoral Group*

ITEM	QUANTITY	UNIT	UNIT PRICE	TOTAL
** RAMPS **				
ONE LANE RAMPS (OPEN DRAINAGE)	0.406	MI	\$2,322,931	\$943,889
TYPICAL 1 LANE OFF-RAMP TAPER W/GORE - MAINLINE UNCHANGED	1	EA	\$207,661	\$207,661
ADD TURN LANES (RAMP) 3.5' FILL - NEW CONSTRUCTION (OPEN DRAINAGE)	0.085	MI	\$635,902	\$54,196
** ADDITIONAL ITEMS **				
OVERHEAD LIGHTING (INCLUDES WIRING) (1 SIDE, 200' SPACING) (RAMPS ONLY)	0.406	MI	\$424,600	\$172,530
OVERHEAD TRUSS SIGNS	0	EA	\$250,000	\$0
OVERHEAD CANTILEVER SIGNS	0	EA	\$80,000	\$0
MULTIPOST SIGNS	0	EA	\$5,500	\$0
ITS EQUIPMENT / DEVICES PER INTERCHANGE (CCTV, TMS, ETC.)	0	INT	\$330,000	\$0
RETENTION POND CONSTRUCTION	0.00	AC	\$305,632	\$0
SUB-TOTAL				\$1,378,275
EROSION CONTROL / TEMPORARY DRAINAGE (0.5%)				\$6,891
MAINTENANCE OF TRAFFIC (1%)				\$13,783
MOBILIZATION (9.5%)				\$130,936
SUB-TOTAL				\$1,529,886
ROADWAY CONTINGENCY (20%)				\$305,977
TOTAL (2023 CONSTRUCTION COST)				\$1,835,863