

# DRAFT STATE ENVIRONMENTAL IMPACT REPORT

PROJECT DEVELOPMENT AND ENVIRONMENT  
STUDY

SR 408 East Extension  
From SR 50 to SR 50/SR 520 Intersection  
Orange County, Florida

CFX Project Number: 408-254

Prepared for

CENTRAL  
FLORIDA  
EXPRESSWAY  
AUTHORITY



APRIL 2018

**CENTRAL FLORIDA EXPRESSWAY AUTHORITY  
FINAL STATE ENVIRONMENTAL IMPACT REPORT**

**1. PROJECT DESCRIPTION AND PURPOSE AND NEED**

**A. Project Information**

Project Name: SR 408 East Extension  
Project Limits: from SR 50 to SR 50/SR 520 Intersection  
County: Orange  
ETDM No.: N/A  
CFX Project No.: 408-254  
Project Manager: Will Sloup, P.E.

The Central Florida Expressway Authority (CFX) is presently evaluating the potential to extend State Road (SR) 408 from its current eastern terminus at SR 50, locally known as East Colonial Drive, to the vicinity of the SR 50 and SR 520 interchange in northeastern Orange County (**Figure 1**). This new, approximately seven-mile, eastern extension of SR 408 would constitute the first stage towards providing an east-west high-speed corridor with future connectivity to I-95, as well as enhance safety and increase capacity and mobility for the region and CFX's customers.

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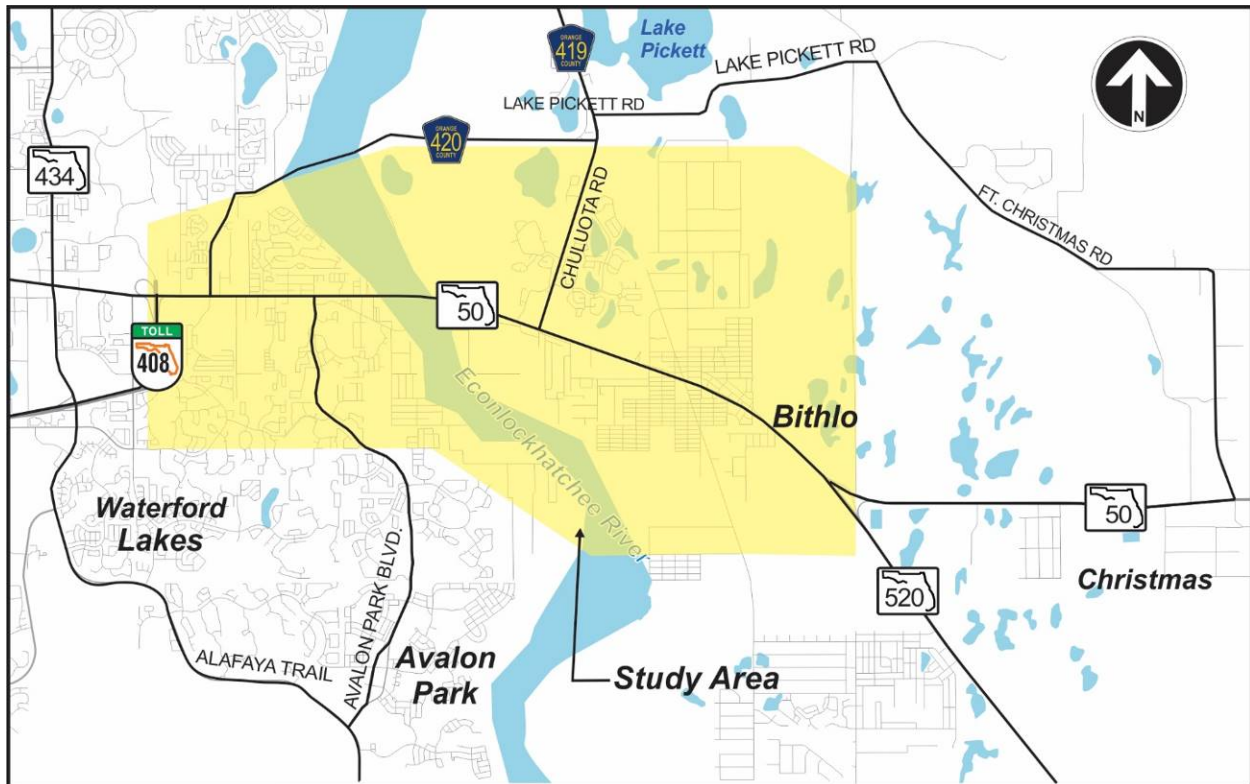


Figure 1 Project Location

## B. Proposed Improvements

The project was divided into three segments and improvements were proposed for the roadway, bridges, and drainage within each segment. Segment 1 includes the study area west of Avalon Park Boulevard. Segment 2 is from Avalon Park Boulevard to County Road 419 (Chuluota Road). Segment 3 stretches from Chuluota Road to the eastern project terminus. The proposed improvements are shown on **Figure 2** and described below.

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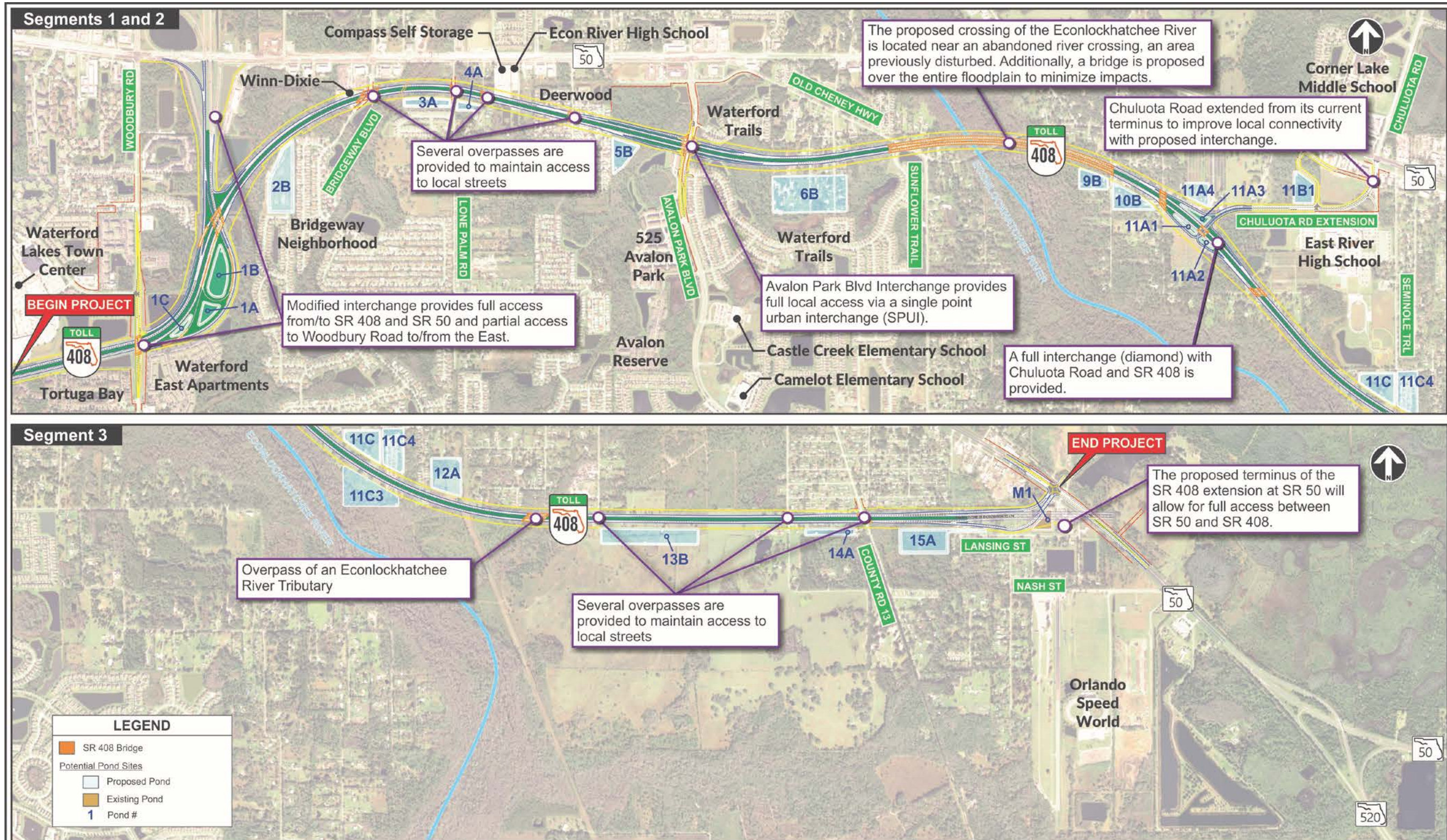


Figure 2 Recommended Alternative

## *Roadway*

The proposed typical sections for the SR 408 mainline for the eastern extension are shown in **Figure 3** and are as follows:

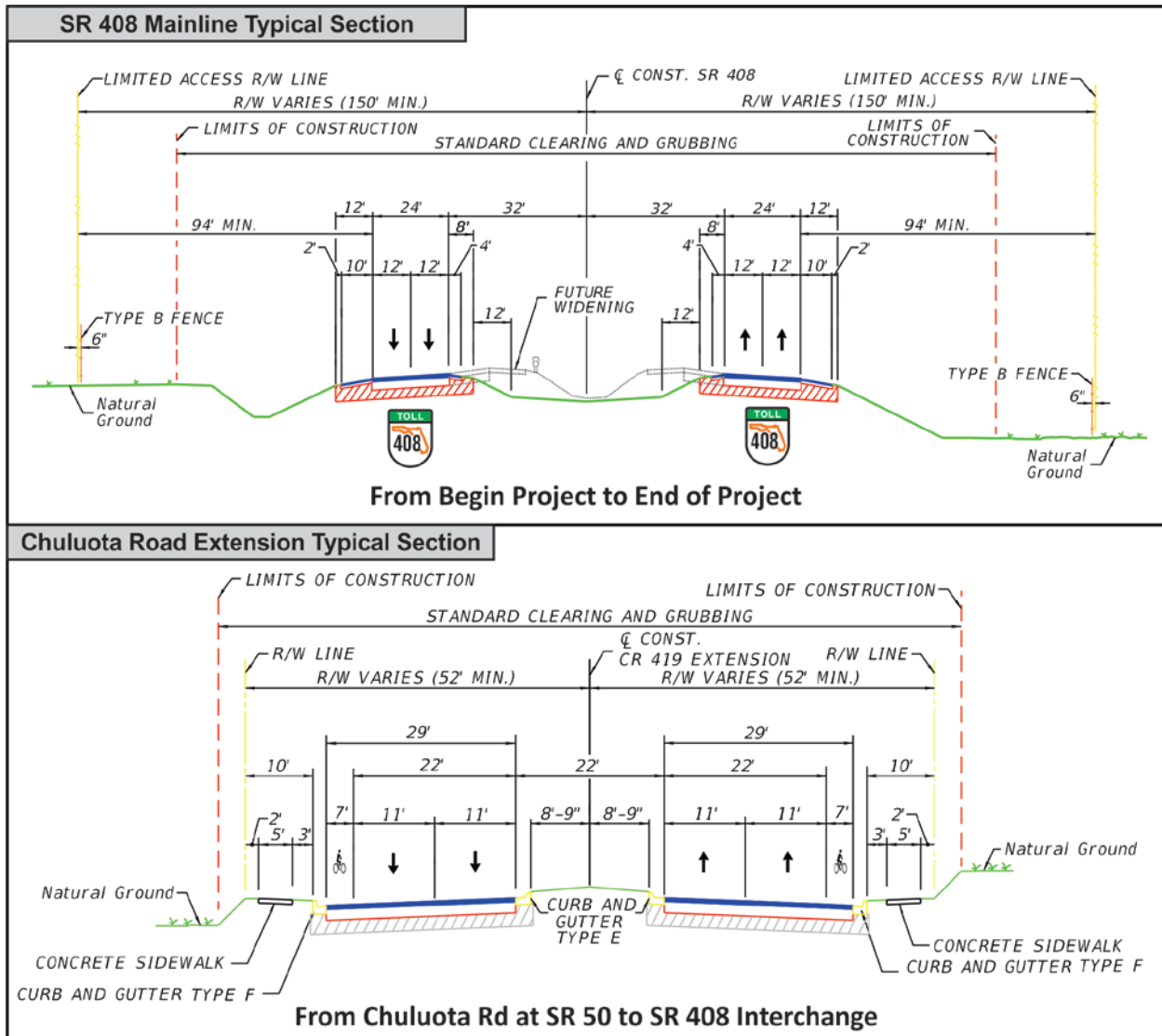
- Segment 1: Within Segment 1, the recommended alternative features a 4-lane rural expressway typical section with 12-foot travel lanes, 12-foot outside shoulders, a 64-foot divided median, and a 94-foot border width. The section will feature several grade separations in order to provide access to local streets.
- Segment 2: Within segment 2, the recommended alternative continues the same typical section previously described under Segment 1.
- Segment 3: Within Segment 3, the recommended alternative continues the same typical section previously described under Segments 1 and 2.

The SR 408 Eastern Extension typical section has been designed to accommodate a possible 6-lane expansion if needed in the future. At the SR 408 and SR 50 interchange north of SR 520 the recommended alternative proposes to modify SR 50 by adding left turn lanes at the proposed intersection with SR 408. At Woodbury Road the recommended alternative features a four-lane urban typical section with 12-foot travel lanes, 6-foot sidewalks, and a 22-foot divided raised median. The section will feature a new grade separation over the SR 408 mainline.

## *Bridges*

A total of 14 new bridges are proposed within Segment 1. Six of those bridges have long spans and are recommended to be composed of steel plate or steel tub girder type superstructures. The remaining 8 bridges have medium length spans and are recommended to be composed of prestressed concrete Florida I beam type superstructures. Unless otherwise noted, bridge superstructures are recommended to be supported by pile bent piers.

A total of 8 new bridges are proposed within Segment 2. Four of the proposed bridges are single span bridges composed of prestressed concrete Florida I beam type



**Figure 3 Recommended Alternative Typical Sections**

superstructures founded on pile end bents. The bridges over the Econlockhatchee River are two-lane structures carrying east-bound and west-bound mainline SR 408 traffic over the Econlockhatchee River. The east-bound and west-bound bridges have an approximate required overall length of 3,835 and 3,808 feet, respectively, and each have 30 spans. The first two spans are designed to span over the intersection of Perdido Drive and Old Cheney Highway and the remaining spans are designed to go over the wetlands of the Econlockhatchee River.

A total of 12 new bridges are proposed within Segment 3. With the exception of two bridges, all of the bridges are single span bridges composed of prestressed concrete Florida I beam-type superstructures founded on pile end bents. The other two are span bridges over a tributary of the Econlockhatchee River and are recommended to be constructed of prestressed concrete Florida I beams. For all segments possible foundation types for the bridges in this segment include 18-inch and 24-inch square prestressed concrete piles, steel H-piles, steel pipe piles, and drilled shafts.

#### Drainage

The Pond Siting Report prepared for this project divided the corridor into fifteen drainage basins and identified recommended pond sites for each (**Table 1, Figure 2**). Scuppers may be used to collect runoff on the proposed bridges when the spread cannot be contained within the shoulder. Shoulder gutter inlets will be used to collect runoff from segments of the bridge with Mechanically Stabilized Earth (MSE) walls and at high-fill areas. Offsite runoff will be conveyed through proposed cross drains and bypass swales. A bypass swale will be required to provide flow connectivity from CD-5 to CD-6. The existing drainage system at Deerwood Mobile Home Park will be severed by the proposed project. Avalon and University Meadows neighborhoods will not be impacted by the proposed project.

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**Table 1 Recommended Ponds**

<b>Segment</b>	<b>Basin</b>	<b>Pond Name</b>	<b>Preliminary Pond Site (ac)</b>	<b>Remarks</b>
1	Basin 1	Pond 1A	1.98	Existing CFX Pond expanded
		Pond 1B	5.06	Existing CFX Pond expanded
		Pond 1C	1.10	CFX Property
	Basin 2	Pond 2B	10.23	Orange County School Board
	Basin 3-4	Pond 3A	3.06	Private Property
		Pond 4A	1.80	Private Property
	Basin 5	Pond 5B	4.10	Private Property
	Basin 6-8	Pond 6B	19.73	Private Property
2	Basin 9-10	Pond 9B	3.38	Private Property
		Pond 10B	5.00	Private Property
	Basin 11A	Pond 11A1	0.92	Private Property
		Pond 11A2	0.45	Private Property
		Pond 11A3	1.16	Private Property
		Pond 11A4	3.24	Private Property
	Basin 11B	Pond 11B1	3.98	FDOT Property
	3	Basin 11C	Pond 11C	5.70
Pond 11C3			8.85	Private Property
Pond 11C4			5.50	Private Property
Basin 12		Pond 12A	6.88	Private Property
Basin 13		Pond 13B	10.45	Private Property
Basin 14		Pond 14A	2.57	Private Property
Basin 15		Pond 15A	8.92	Private Property

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### **C. Purpose and Need**

The purpose of the proposed SR 408 Eastern Extension is to provide an east-west high-speed corridor with future connectivity to I-95, enhance safety, and increase capacity and mobility for the region and CFX's customers. There are five existing/projected corridor needs that serve as the main justification for the proposed improvements. These needs are: 1) providing *additional capacity* in the west-east direction to mitigate or eliminate capacity deficiencies; 2) providing *additional emergency evacuation service* to supplement the limited number of evacuation routes in this area of Central Florida; 3) providing *improved transportation connectivity/linkage* necessitated by the continued population growth and land use development reflected in various local comprehensive plans; 4) providing *transit support*; and 5) providing *planning consistency*.

### **D. Project Planning Consistency**

All proposed improvements are consistent with the CFX 2040 Master Plan, CFX Five-Year Work Plan, and MetroPlan Orlando 2040 Long Range Transportation Plan (**Table 2**). CFX programmed funding is shown in **Table 3**.

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**Table 2 Local Transportation Plans**

<b>Plan</b>	<b>Improvement</b>
<b>CFX 2040 Master Plan</b>	SR 408 Eastern Extension PD&E Study
<b>CFX 2018-2022 Five-Year Work Plan</b>	Project Development & Environmental Study – Funded 2017-2018  15% Line & Grade – Design Funded 2019-2021
<b>MetroPlan Orlando 2040 Long Range Transportation Plan</b>	Central Florida Expressway Authority (formerly Orlando-Orange County Expressway Authority) - Unfunded Needs SR 408 Eastern Extension Challenger Pkwy SR 520 New 4 Lane Expressway

**Table 3 CFX Programmed Funding**

<b>PHASE</b>	<b>FISCAL YEAR</b>	<b>AMOUNT</b>
<b>PD&amp;E</b>	<b>2017-2018</b>	<b>\$1,000,000</b>
<b>Line and Grade</b>	<b>2019-2020</b>	<b>\$1,675,000</b>
<b>Line and Grade</b>	<b>2020-2021</b>	<b>\$1,664,000</b>
<b>2040 CFX Master Plan</b>	<b>2040</b>	<b>\$630,000,000- \$800,000,000</b>

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## 2. ENVIRONMENTAL ANALYSIS

Issues/Resources	*Substantial Impacts?				**Supporting Information
	Yes	No	Enhance	No Inv	
<b>A. SOCIAL and ECONOMIC</b>					
1. Social	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<u>Attachment 1.A.1</u>
2. Economic	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<u>Attachment 1.A.2</u>
3. Land Use Changes	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<u>Attachment 1.A.3</u>
4. Mobility	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<u>Attachment 1.A.4</u>
5. Aesthetic Effects	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<u>Attachment 1.A.5</u>
6. Relocation Potential	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<u>Attachment 1.A.6</u>
<b>B. CULTURAL</b>					
1. Historic Sites/District	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<u>Attachment 1.B.1</u>
2. Archaeological Sites	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<u>Attachment 1.B.2</u>
3. Recreation Areas	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<u>Attachment 1.B.3</u>
<b>C. NATURAL</b>					
1. Wetlands and OSW	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<u>Attachment 1.C.1</u>
2. Aquatic Preserves and Outstanding Florida Waters	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<u>Attachment 1.C.2</u>
3. Water Quality/Quantity	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<u>Attachment 1.C.3</u>
4. Wild and Scenic Rivers	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<u>Not Present</u>
5. Floodplains	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<u>Attachment 1.C.5</u>
6. Coastal Barrier Resources	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<u>Not Present</u>
7. Protected Species and Habitat	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<u>Attachment 1.C.7</u>
8. Essential Fish Habitat	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<u>Not Present</u>
<b>D. PHYSICAL IMPACTS</b>					
1. Highway Traffic Noise	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<u>Attachment 1.D.1</u>
2. Air Quality	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<u>Attachment 1.D.2</u>
3. Contamination	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<u>Attachment 1.D.3</u>
4. Utilities and Railroads	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<u>Attachment 1.D.4</u>
5. Construction	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<u>Attachment 1.D.5</u>
6. Bicycles and Pedestrians	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<u>Attachment 1.D.6</u>
7. Navigation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<u>Not Present</u>

\*Substantial Impacts?: Yes = Substantial Impact; No = No Substantial Impact; Enhance = Enhancement; NoInv = Issue absent, no involvement

\*\* Supporting information is documented in the referenced attachments

### 3. ANTICIPATED PERMITS

- Individual Dredge and Fill Permit- USACE
- Nationwide Permit- USACE
- Bridge Permit- USCG
- Environmental Resource Permit SJRWMD (including special basin criteria and Riparian Habitat Protection Zone requirements) and potential dewatering permit
- FDEP Authorization to use State-Owned Submerged Lands; FDEP NPDES permit

### 4. ENGINEERING ANALYSIS

A multi-phase alternative development, evaluation and selection process was employed to properly assess all alternatives considered for the proposed improvements. Three different phases comprised the alternative selection process for the proposed project:

#### **Phase 1 - Initial Evaluation**

##### ***No Build Alternative***

The only existing major east-west arterial facility (SR 50) within the project confines is inadequate not only in terms of future projected capacity needs but, more importantly, it would not provide the desirable redundancy in evacuation and emergency response potential nor the required additional regional connectivity to I-95 on the east. Adoption of the "No Build" Alternative would not solve many of the existing needs associated with the goals of this project. However, the "No Build" alternative was maintained as a viable option providing an effective baseline condition by which other project alternatives could be compared throughout the project alternative selection process.

##### ***Build Alternatives***

Build Alternative options need to consider various major components of providing a new, multilane facility which includes the selection of a preferred corridor in conjunction with the most efficient typical section and alignment options as well as access point locations and configurations. The following sections provide a detailed discussion concerning critical system components of the Build Alternative options.

## **Phase 2 - Preliminary Conceptual Expressway Evaluation**

This phase entailed the generation and evaluation of alternatives for the extension of SR 408 within the previously selected corridor. Alternatives were generated for two distinct system components: typical section options for the SR 408 Extension mainline and interchange configuration options.

### ***Segmental Determination and Generation***

The first step in the evaluation was to divide the project area into distinct segments. The segmental breakdown methodology ensures that alternatives are more responsive to the needs of each segment rather than only to the generalized project's needs. Each segment has rather unique characteristics as well as potential differences in environmental, engineering and socio-economic features. In general terms, for example, Segment 1 (from the begin project to Avalon Park Boulevard) is generally more urbanized and exhibits a higher traffic demand than Segments 2 and 3. Segment 2 (Avalon Park Boulevard to Chuluota Road) is more rural in nature and generally serves a lower density area with higher expected development growth while Segment 3 (from Chuluota Road to the eastern project terminus) has mostly industrial and low density residential development with a lower traffic demand.

### ***Expressway Extension Typical Sections***

This task entailed the generation and preliminary evaluation of various mainline typical section options. In view of the fact that traffic projections indicate a significant drop in the traffic demand within Segment 3, the potential use of 2-lane options were also initially considered within that segment. However, the two-lane option would not fulfill the intended project needs, thus it was eliminated from further consideration.

Next, four distinct 4-lane typical sections were developed covering both urban and rural options.

### ***Conceptual Interchange Configuration Evaluation***

The main objective of this task was to screen out all non-viable (inferior) interchange configurations and thus identify at an early stage what configuration(s) would work best

at each interchange location. Several additional interchange options were conceptually developed and preliminarily evaluated for fatal flaws from a traffic and geometric standpoint. Several options were eliminated due to serious operational and/or constructability concerns.

When evaluating the potential interchanges along the SR 408 Eastern Extension Corridor one parameter that was considered was that the future interchanges should be at least 600 feet away from the existing/future SR 50 in order to minimize potential detrimental traffic operational interfaces. Interchange locations have been analyzed based on the traffic models with areas of higher congestion and demand to alleviate the traffic from the neighboring local streets. The proposed interchange locations are as follows:

- Segment 1: The existing SR 50/Challenger Parkway and Avalon Park Boulevard
- Segment 2: Chuluota Road Extension
- Segment 3: End terminus at SR 50

### **Phase 3 - Horizontal Alignment Considerations**

In order to evaluate different alternative roadway concepts, it is also necessary to take into account their horizontal alignment or relative position within the chosen corridor. The alignment through Segment 1 strives to avoid, or at least minimize, most detrimental impacts resulting from the proposed facility. It is important to note that the ample geometric requirements associated with high design speed facilities (e.g. – smooth long curves, etc.) limits the ability to entirely avoid some impacts. In addition, the location of the proposed interchanges requires that certain minimum distances to major arterial facilities (e.g. – SR 50) be maintained to ensure appropriate vehicular flow associated with proper merging, weaving and queueing distances.

Segments 2 and 3 are less dense in terms of urban development. The alignment through these areas strives to maintain a delicate balance to possibly avoid urban encroachment while minimizing impacts to the existing environmental conservation easements.

Closer inspection of the selected corridor revealed that a slight deviation to the south from just west of Avalon Park Boulevard to just east of the Econlockhatchee River would be beneficial. This deviation is necessary in order to reduce residential impacts and provide sufficient spacing between SR 50 and the SR 408 extension interchange at Avalon Park Boulevard. The results of a preliminary traffic analysis determined that a new interchange at Avalon Park Boulevard needs to be located more than 600 feet south of SR 50 in order to provide adequate operations at both the new 408 interchanges and the SR 50/Avalon Park Boulevard intersection.

## **5. COMMITMENTS**

This section will be completed for the Final State Environmental Impact Report .

## **6. CFX SELECTED ALTERNATIVE**

The No Build alternative was considered but it was determined that the No Build alternative would not address the project needs. After a comprehensive evaluation process, one build alternative was selected as being the most effective option within each of the project's segments. This alternative was selected by CFX and is illustrated on **Figure 2**. In general, the selected alternative was the result of the generation of various typical sections and horizontal and vertical alignment combinations along the three project segments as well as various interchange configurations at each access point.

The CFX selected alternative features a four-lane divided facility with a 60-foot median width, 12-foot lanes, and a design speed of 65 to 70 mph within a 300-foot right-of-way. **Figure 3** shows the typical sections of the CFX selected alternative. A partial interchange will be provided at Woodbury Road and full interchanges will be provided at SR 50/408, Avalon Park Boulevard, CR 419/Chuluota Road Extension and at the eastern project terminus with SR 50/SR 520.

Based on constructability and financial considerations, the project has been divided into three distinct construction segments. Construction Segment 1 is from the begin project

to Avalon Park Boulevard. This segment includes the construction of the SR 408 eastern extension from the begin project (just west of Woodbury Road) to Avalon Park Boulevard. It would thus provide an initial effective connection through the study area with the highest traffic demand. Construction Segment 2 is from Avalon Park Boulevard to Chuluota Road. This segment would extend SR 408 from Avalon Park Boulevard to Chuluota Road. It would provide a new Econlockhatchee River crossing, an interchange at Chuluota Road and the proposed Chuluota Road Extension connection to SR 50. Lastly, Construction Segment 3 from Chuluota Road to the eastern project terminus including the terminal interchange at SR 50.

## 7. APPROVED FOR PUBLIC AVAILABILITY

\_\_\_\_\_  
**Environmental or Project Development  
Manager or Administrator**

\_\_\_\_/\_\_\_\_/\_\_\_\_  
**Date**

## 8. PUBLIC INVOLVEMENT

A public hearing will be held on April 26, 2018. This draft document is publicly available and comment can be submitted to CFX until May 7, 2018. Comments can be addressed to:

Glenn M. Pressimone, P.E.  
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glenn.pressimone@cfxway.com

## 9. 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 SEIR reflects consideration of the PD&E Study and the public hearing.



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**CFX Designee**

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**Date**

## **10. SUPPORTING INFORMATION**

For Supporting Information for each issue/resource please see Attachment 1, Environmental Analysis as well as the Preliminary Engineering Report.

## **ATTACHMENT 1: ENVIRONMENTAL ANALYSIS**