HNTB Corporation
Engineers Architects Planners

610 Crescent Executive Court
Suite 400
Lake Mary, FL 32746

Telephone (407) 805-0355
Facsimile (407) 805-0227
www.hntb.com

HNTB

To: Staci Nester
Richard L. Johnson

From: Luis Diaz, PE

Date: July 28, 2014

Subject: SR 429 (Wekiva Parkway)/SR 417 and Interstate 4 Value Engineering Study Recommendation Dispositions.

FPID: 240200-4-52-01

Dear Mr. Johnson,

Please see below for our dispositions for the SR 429 (Wekiva Parkway)/SR 417 and I-4 Interchange Value Engineering Study recommendations found on Table 6.1-3.

Recommendation 2: Adopt the I-4 Ultimate typical used through downtown Orlando and proposed for use on the remainder of Segment 3 to the north and south of this project. This will keep consistency through the corridor and reduce the roadway footprint.

Accepted. I-4 typical will match the I-4 ultimate.

Recommendation 6: Shift the entrance to the C-D road north to begin approximately at station 2517+00. The C-D system continues over SR 46 where the bridge required was recently built for this condition. From SR 46 the C-D road continues under CR 46A and ties back into the westbound general use lanes.

Accepted. This recommendation was incorporated into the 4 alternatives developed. An operational analysis was performed for each of the alternatives and this did not create an issue.

Recommendation 9: Eliminate the right of way take on International Parkway in front the apartment complex (via variation).

Accepted. It appears that the right of way impacts can be eliminated. During the line an grade phase this recommendation will be fully evaluated. (Atkins)

Recommendation 16: Eliminate direct connections to I-4 express lane, going from SR 429 eastbound to I-4 westbound and from SR 429 eastbound to I-4 eastbound. An additional slip ramp could be constructed further north on I-4 to provide access to the express lanes going eastbound. There is already an existing slip ramp to I-4 express lanes going westbound just south of Lake Mary Boulevard proposed.
It's important to point out that traffic volume for the design year is expected to be below 200 vph at peak hour on these connections.

An additional suggestion to this alternative would be to eliminate direct connections to I-4 coming from SR 417 onto I-4 express lanes eastbound and westbound. Traffic volumes for the design year are below 300 vph at peak hour. Traffic would still have access to the express lanes utilizing the slip ramp farther west and east (if the slip ramp is constructed).

Accepted. The DDI alternative developed removes the direct connections from toll to express. The operations were analyzed and this alternative operates similar to the other three alternatives.

Recommendation 18: Salvage the existing connection from SR 417 northbound to International Parkway. Convert this connection from an off-ramp to an on-ramp for International Parkway to SR 417 southbound.

Accepted. Two concepts (Alt 3 & 4) utilize the existing connection to International Parkway.

Recommendation 19: Begin the entrance to the SR 417 northbound to I-4 ramp approximately at Station 62+00 where the bridge over Town Center Blvd begins. The alignment of the ramp will trend northward before breaking off to I-4 eastbound and westbound.

Accepted. The ramp entrance will be moved to approximately Sta. 62+00.

Recommendation 20: Construct a grade separated diverging diamond interchange (DDI) between Town Center Blvd. and International Parkway that allows salvaging the existing ramps and connections in southwest quadrant to I-4 and to and from International Parkway. Eliminates all flyovers and brings the proposed interchange down to a second level interchange except at the grade separated diverging points where a third level bridge would be needed. Corresponding changes and improvements to International Parkway interchange with ramp deletions and signal deletions. This VE alternative only adds one half-signal (for northbound to westbound lefts) to International Parkway corridor as opposed to two in the current proposed concept. Virtually no change in traffic flow for northbound direction on International Parkway compared to existing conditions.

Accepted. A DDI alternative was developed and will need to be evaluated as a viable option.

Recommendation 21: Reconfigure the interchange to a tight diamond urban interchange and move the bridged ramp connections to the outside.

Accepted. It appears that realigning this interchange to a tight diamond is a viable option and will be incorporated into the alternatives. If the interchange configuration is changed to a DDI then this option is not applicable. (Atkins)

Recommendation 23: Shrink the median width to 50 ft. starting at SR 417 at Towne Center Boulevard to International Parkway.

Accepted. The median can be reduced to 50' however double face guardrail will be required for median protection per PPM, Table 2.2.1. There will be an additional cost to construct the guardrail for the length of the project. Also if the interchange configuration is changed to a DDI then this option is not applicable.

(Atkins)

Resolution – Upon selection of an interchange alternative, this can be incorporated into the design.

Recommendation 24: SR 429 westbound on ramp reconfigure to one lane.

Accepted. It appears based upon the revised traffic numbers that dual left turn lanes are no longer required so this ramp could be reconfigured. During the line and grade phase this recommendation will be fully evaluated. (Atkins)

Recommendation 25: SR 429 westbound off ramp reconfigure to two lanes.

Accepted. It appears based upon the revised traffic numbers that this ramp could be reconfigured to two lanes. During the line an grade phase this recommendation will be fully evaluated. (Atkins)

Recommendation 28: As this section of I-4 profile will already be raised to get over SR 417 and SR 429, the VE team suggests that the SR 429 eastbound to I-4 westbound ramps pass under I-4 and connect in a similar manner as proposed by the design team. This concept maintains the SR 429 ramps at grade instead of requiring expensive steel structures while the I-4 bridges could be simple span concrete bridges.

Accepted. It appears that that passing SR 429 eastbound under I-4 westbound is a viable option. Additional analysis during the line and grade phase will be required to determine all the impacts.

Recommendation 29: The VE Alternative consists of rerouting the Cross Seminole Trail to the I-4/CR 46A Interchange. This would include providing enhanced pedestrian improvements on the Ultimate CR 46A Interchange Bridge configuration to accommodate a multi-use trail in addition to the standard pedestrian pathway. The Florida National Scenic Trail currently certifies the existing CR 46A crossing at I-4 as a northern extension of the Cross Seminole Trail at the intersection of International Parkway and CR 46A.

Rejected. The concept has been modified to not impact the pedestrian bridge crossing I-4 so rerouting the Cross Seminole Trail will not be necessary.

Recommendation 31: Shift the entrance of the C-D road from Sta. 2355+00 to 2389+00. The C-D road is then brought under the CR 46A on ramp as existing before continuing onto the SR 417/SR 429 Interchange. This proposal will be a cost savings in both not demolishing the Cross Seminole Trail and in roadway and bridge construction.

Accepted. The entrance of the C-D road will be shifted east so that it does not impact the Cross Seminole Trail pedestrian bridge.

Recommendation 32: The VE Team recommends that ramp profile grades are increased to bring traffic to at-grade quicker (less distance), allowing traffic to merge into the mainline quicker, resulting in a narrow footprint of I-4. By reducing the overall width of I-4, the CR 46A Bridge does not need to be replaced as proposed.

Accepted. Ramp profile grades will be increased where possible.

Recommendation 33: Cul-de-sacs for Wilson Road to allow for Wekiva Parkway to be at grade.

Rejected. Based upon discussion with Seminole County and the County Commissioner for this district they are not acceptable to constructing a cul-de-sac on this roadway. (Atkins)

Recommendation 34: Don't construct the International Parkway Interchange with SR 429.

Rejected. Based upon discussion with Seminole County they are not in agreement to eliminate the interchange at International Parkway. This interchange is valuable to the development in this area and they would be opposed to not building this and to removing the existing connection they now have. (Atkins)

Thank You,

Luis Diaz, P.E.
Project Manager

GMB ENGINEERS & PLANNERS, INC.

MEMORANDUM

TO: Steve D. McWilliams, P.E., Atkins

FROM: Dante A. Gabriel, P.E., PTOE

SUBJECT: SR 429 (Wekiva Parkway) at International Parkway Interchange
(GMB Project No. 11-076.01)

DATE: June 1, 2012

In response to your email dated May 30, 2012, we performed a traffic operations analysis at the subject interchange location. Specifically, we performed a queue length analysis of all movements projected to occur at the two ramp terminals along International Parkway. We used as basis of our analysis the traffic volume projections reported in the *Technical Memorandum Wekiva Parkway Line and Grade Queuing Analysis* prepared by HNTB and dated November 29, 2011. The HNTB study looked at one peak hour direction to form their queue length calculations; ours looked at the reverse peak hour direction and developed queue length recommendations based on the worst case condition (i.e., longer queue length). Table 1 provides a summary of our queue length analysis. The cells marked with amber shade indicate the higher of the queue lengths from either peak hour condition. These queue length estimates do not include the taper and deceleration distances described in the FDOT Design Standards Index 301.

We also noticed in HNTB's study that the Eastbound (or Southbound) Ramp intersection features dual left-turn lanes serving the southbound (International Parkway) to eastbound (Wekiva Parkway) movement. HNTB analyzed this movement with 332 vehicles per hour, but with the reverse peak hour movement, it will serve 616 vehicles per hour. Therefore, we agree with their analysis of justifying two southbound left turn lanes. This also means that the eastbound entrance ramp to SR 429 must be two lanes wide to receive this movement. The cells marked with red shade in Table 1 indicate the dual left-turn lane configuration.

We are in agreement with how you treated the right-turning movements in your exhibit. The eastbound exit ramp features dual right-turn lanes that are under signal control, while the westbound exit ramp features a single right-turn lane with a channelized island separating it from the left-turn lanes.

GMB Orlando
2602 E. Livingston St.
Orlando, FL 32803
Office: 407.898.5424
Fax: 407.898.5425

www.GMB.cc

Table 1
Queue Length Analysis
SR 429 (Wekiva Parkway) at International Parkway

AM Peak Hour - Design Year 2032

Turning Movement	Turning Volume (Veh/Hr)	G/C Ratio	Total Cycle Length (Sec)	Number of Turn Lanes	Per Lane Volume (VPHPL)	Percent Trucks	Adjust. Factor	Calc'd Queue Length (ft)	Rec'd Queue Length (ft)
INTERSECTION:		**SR 429 WB Ramps at International Parkway**							
WB Right	613	0.350	130	1	613	10.00%	1.25	495	**500**
WB Left	647	0.320	130	2	324	10.00%	1.25	273	275
NB Left	616	0.220	130	2	308	10.00%	1.25	298	**300**
NB Through	514	0.580	130	2	257	10.00%	1.25	134	**150**
SB Right	64	0.630	130	1	64	10.00%	1.25	29	50
SB Through	681	0.310	130	2	341	10.00%	1.25	292	300
INTERSECTION:		**SR 429 EB Ramps at International Parkway**							
EB Right	430	0.200	130	2	215	10.00%	1.25	214	225
EB Left	250	0.180	130	1	250	10.00%	1.25	254	**275**
NB Right	878	0.720	130	1	878	10.00%	1.25	305	**325**
NB Through	880	0.540	130	2	440	10.00%	1.25	251	275
SB Left	332	0.130	130	2	166	10.00%	1.25	179	200
SB Through	996	0.720	130	2	498	10.00%	1.25	173	175

PM Peak Hour - Design Year 2032

Turning Movement	Turning Volume (Veh/Hr)	G/C Ratio	Total Cycle Length (Sec)	Number of Turn Lanes	Per Lane Volume (VPHPL)	Percent Trucks	Adjust. Factor	Calc'd Queue Length (ft)	Rec'd Queue Length (ft)
WB Right	332	0.350	130	1	332	10.00%	1.25	268	275
WB Left	878	0.320	130	2	439	10.00%	1.25	371	**375**
NB Left	430	0.180	130	2	215	10.00%	1.25	219	225
NB Through	413	0.580	130	2	207	10.00%	1.25	108	125
SB Right	250	0.670	130	1	250	10.00%	1.25	102	**125**
SB Through	877	0.350	130	2	439	10.00%	1.25	354	**375**
EB Right	616	0.250	130	2	308	10.00%	1.25	287	**300**
EB Left	64	0.220	130	1	64	10.00%	1.25	62	75
NB Right	647	0.630	130	1	647	10.00%	1.25	297	300
NB Through	779	0.410	130	2	390	10.00%	1.25	285	**300**
SB Left	613	0.220	130	2	307	10.00%	1.25	297	**300**
SB Through	1,142	0.680	130	2	571	10.00%	1.25	227	**250**

1. Storage Lengths are calculated based on the f L = (A) (DHV) (1-G/C) (T+1) (F) / (3600/C) / (N)

where:

L = storage length
DHV = design hour volume, in vph
G/C = ratio of green time to cycle length
T = percent of heavy vehicles
F = adjustment factor (1.25 to 2)
C = cycle length
N = # of lanes
A = Assumed 25 feet for automobile

2. Recommended storage lengths are shown in shade and bold letters.

Value Engineering
For Transportation Improvements

SR 429 (Wekiva Parkway)/SR 417 and I-4 Interchange

Value Engineering Study Draft Report

FM Number:	240200-4-52-01
Fed. Aid Project:	Yes
Project Description:	Wekiva Parkway/SR 417 and I-4 Interchange
Study Dates:	May 12 – 20, 2014

Project Development Phase			Study Identification Number								
PD&E	Design	Other							VE Item No.		
HNTB, Inc.									Yr.	Dist.	No.
									14	005	07

This study has been performed in accordance with current applicable FDOT Value Engineering Procedures and Techniques

Richard L. Johnson, CVS No. 20030201, PE No. 38681

Date: May 30, 2014

TABLE OF CONTENTS

EXECUTIVE SUMMARY 1

1.1 INTRODUCTION

A Value Engineering (VE) Study was held, during May 12 – 20, 2014 using the VE methodology to improve the Interstate 4 (I-4)/State Road (SR) 417/Wekiva Parkway (SR 429) Interchange in Segment 3 of the Beyond I-4 Ultimate project. The VE study analyzed value improvements for improving the interchange and improving connectivity to and from the different systems. I-4 serves as the primary corridor in the movement of people and freight between major population, employment and activity centers in the Central Florida region. When the entire Interstate was fully opened in the early 1960's, it was designed to serve intrastate and interstate travel by providing a critical link between the east and west coasts of Central Florida. Although this role continues to be a crucial transportation function of I-4, the highway also serves large volumes of local and commuter traffic with shorter trip distances. Since I-4 is the only north-south limited access facility that is centrally located between the predominant employment centers and the major suburbs to the north, it has become the primary commuting corridor in the Central Florida metropolitan area. Wekiva Parkway and SR 417 serve as beltway relief for I-4 to the east and west and rejoin on I-4 south of the Walt Disney World and Celebration areas.

FDOT is proposing to reconstruct and widen I-4 as part of the I-4 Ultimate concept. This involves the build-out of I-4 to its ultimate condition through Central Florida, including segments in Polk, Osceola, Orange, Seminole, and Volusia Counties. The concept design proposes the addition of two (2) new express lanes in each direction, resulting in a total of ten (10) dedicated lanes. The study area in this section from east of County Road (CR) 46A to SR 46 and on SR 417 from Rhinehart Road to east of Orange Boulevard along the proposed alignment for SR 429 and provides for the required stormwater treatment with pond sites along the corridor. The typical section will ensure that the design will be contained within the existing right-of-way with the exception of the pond sites and interchange improvements except the portions on the west of the I-4 corridor.

The project limits are from approximately Station 2350+00 to Station 2480 along the I-4 corridor and east on SR 417 to approximately Rhinehart Road. The project limits for SR 429 are from the interchange connections west to Orange Boulevard to connect with Wekiva Parkway (Section 7A). Although, the interstate is a designated east-west corridor, the alignment follows a southwest to northeast orientation through the limits of Segment 3. The proposed improvements to I-4 include widening the existing six-lane divided urban interstate to a ten-lane divided highway. The existing roadway typical section generally has three 12-foot travel lanes with a 10-foot paved outside shoulder, and a 10-foot paved inside shoulder in each direction separated by a center median of variable width (40 ft. – 164 ft.). The existing right of way width varies, but is typically 300 feet. The typical section in the proposed condition will be three, 12-foot general use travel lanes with 12-foot inside shoulder and 12-foot outside shoulder, two 12-foot express lanes with 6-foot inside shoulder and 10-foot outside shoulder and a barrier wall separating the express lanes from the travel lanes. The proposed right of way width is 300 feet minimum.

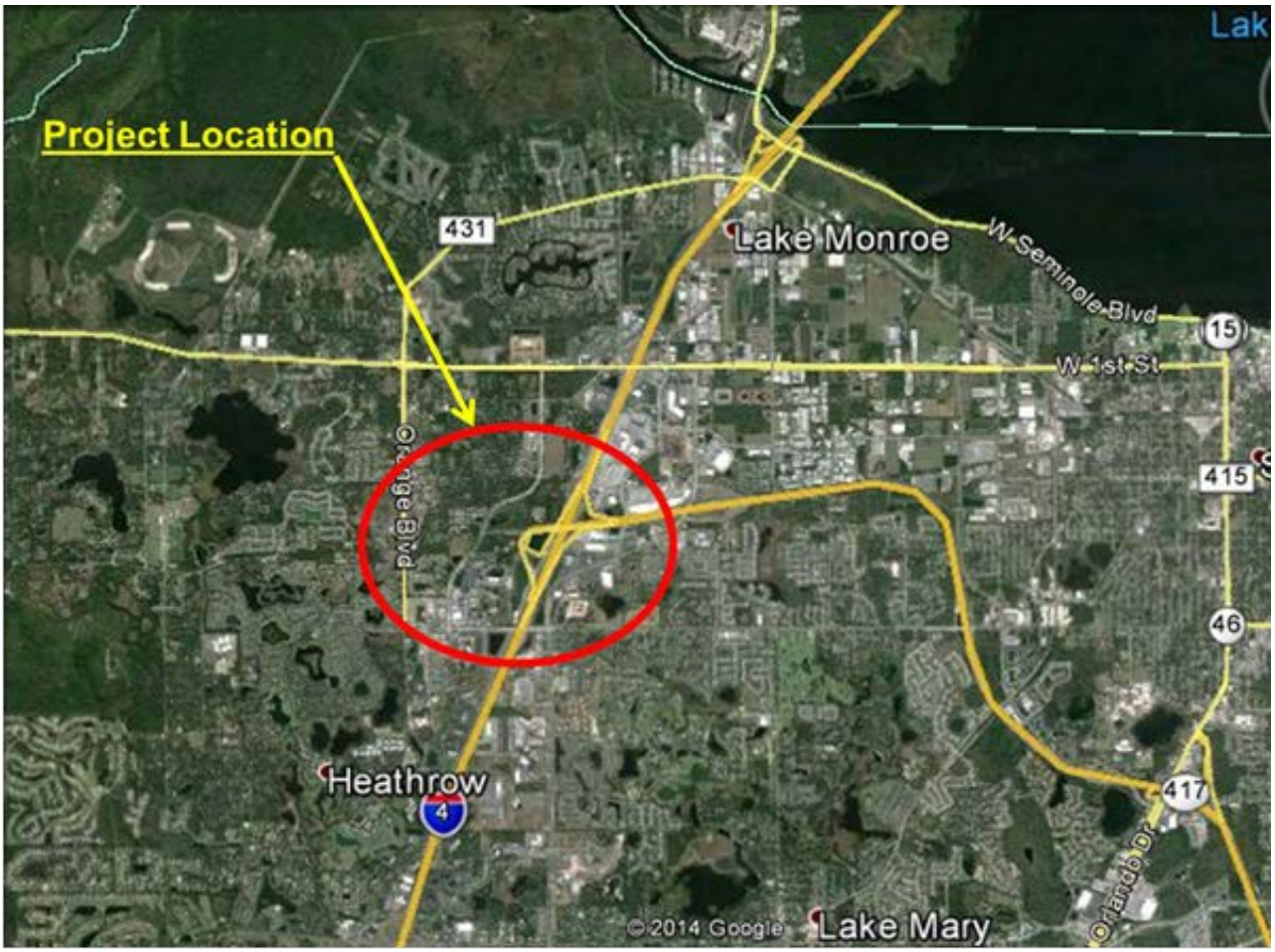
The project location may be found on the **Figure 1.1 - 1 Project Location Map**. The typical sections and proposed structures for the roadway improvements were shown on the concept drawings included in the PD&E documents. By building this project, the Florida Department of Transportation (FDOT) will improve connectivity and the level of service for the I-4 express lanes and general use lanes to and from the SR 417 and SR 429. The project will provide improved level of service and operations in the area.

Table 1.1-1 Preliminary Cost Estimate on page 3 shows the preliminary estimated construction costs for the improvements for the alternative being studied. The proposed improvements are to enhance regional connectivity and level of service in the design year.

1.2 GOALS AND OBJECTIVES

The objective of the study was to identify opportunities and recommend concepts that may improve value in terms of capital cost, constructability, maintenance of traffic, and the basic functional requirements of the project. This report documents the value engineering analysis performed to support decisions related to the planned project alternatives. Additionally, it summarizes existing conditions, documents the purpose and need for the project as well as documents other engineering, environmental, and social data related to preliminary Project Development & Environment (PD&E) concepts.

Figure 1.1 – 1
Project Location Map



Although several issues and pre-existing conditions were stated during the initial briefing at the beginning of the VE study, the VE team had one major project constraint:

1. Duke Energy high voltage transmission lines and towers

The basic project functions are to reconstruct the interchange, improve connectivity and improve traffic operations within the regional transportation system. As shown in **Section 5**, the Functional Analysis System Techniques (FAST) Diagram illustrates the functions as determined by the VE team.

1.3 RESULTS OF THE STUDY

The VE team generated 34 ideas and one was determined to be a design suggestion during the Creative Ideas phase of the VE Job Plan. The ideas were then evaluated based on the evaluation criteria for this project. The object of this evaluation was to identify ideas with the most promise to achieve savings while preserving functions or improving operations.

Table 1.1 – 1

Preliminary Cost Estimate
PD&E Alternate

Item	Description	Unit	Unit Cost	Quantity	Total Cost
0110 1 1	Clearing & Grubbing	AC	$ 7,724	386	$ 2,980,617
0110 3	Removal of Existing Structure	SF	$ 24	88,915	$ 2,094,837
160 4	Stabilization Type B LBR 40	SY	$ 2.90	390,763	$ 1,133,213
285 706	Base optional (base group 6) ML	SY	$ 13.69	114,250	$ 1,564,087
285 712	Base optional (base group 12) ML	SY	$ 14.02	276,513	$ 3,876,708
334 1 12	Superpave asphaltic concrete (Traff B)	TN	$ 87.28	12,568	$ 1,096,895
334 1 14	Superpave asphaltic concrete (Traff D)	TN	$ 87.21	45,625	$ 3,978,920
334 1 24	Superpave asphaltic concrete (Traff D-PG 76-22)	TN	$ 89.64	30,416	$ 2,726,525
337 7 22	Asphaltic Conc friction course (FC-5) (PG 76-22)	TN	$ 117.20	11,406	$ 1,336,800
521 1	Barrier Wall	LF	$ 113	102,118	$ 11,539,278
	Thermoplastic, White, Striping	NM	$ 3,178	63	$ 199,788
	Vehicle Impact Attenuator	EA	$ 18,327.63	15	$ 274,914
	Fencing	LF	$ 10.00	46,667	$ 466,670
	Embankment	CY	$ 5.94	1,172,289	$ 6,963,397
	MSE wall	SF	$ 34.00	65,112	$ 2,213,808
	Bridges	SF	$ 160.00	512,661	$ 82,025,760
	Subtotal Cost	LS			$ 124,472,218
	Compensable Utility Relocation	LS			$ 6,223,611
	Mobilization	LS			$ 12,447,222
	Maintenance of Traffic (MOT)	LS			$ 24,894,444
	Lighting	LS			$ 6,223,611
	Signage	LS			$ 6,223,611
	Drainage	LS			$ 24,894,444
	ITS	LS			$ 6,223,611
	Erosion Control	LS			$ 1,244,722
	Construction Subtotal	LS			$ 212,847,492
	Contingency	LS			$ 42,569,498
	Total Construction				**$ 255,416,990**
	Right of Way				$ 91,700,000
	Grand Total				**$ 347,116,990**

Reference: Preliminary Cost Estimate prepared by HNTB, dated April 16, 2014

The team began the evaluation process of scoring the PD&E documents concept and the individual creative ideas. During this process it was agreed that we had various ideas, but certain ideas having the greatest potential value improvement were carried forward for further development. The remaining ideas either became design suggestions (many specific to a particular component within the project) or were eliminated as duplicate, not appropriate or improbable for acceptance. The VE team ultimately categorized nine ideas as recommendations for the designers to consider. The developed ideas maintain the required functions while improving overall costs, constructability, minimizing time, minimizing utility conflicts and right-of-way issues, minimizing environmental impacts, as well as addressing regional connectivity issues, aesthetics and drainage. The ideas and how they rated on a weighted scoring evaluation are listed in the table in **Section 6**. Those ideas that were eliminated are shown with strikeout font.

The design suggestions identified by the VE team are shown in **Section 6**. The VE team presents design suggestions for FDOT's consideration. No specific action is normally required to accept or not accept the suggestions, though it is often helpful, for documentation purposes, to formally list those suggestions that will be acted upon by FDOT.

1.4 RECOMMENDED ALTERNATIVES

The recommendations for further consideration are shown in **Table 1.4-1**, **Summary of Highest Rated Recommendations.** Potential cost savings are shown in present day dollars.

The recommendations in the following table indicate the anticipated initial cost, operation and maintenance cost, future cost and Life Cycle Cost (costs shown indicate initial capital costs as the LCC are similar to the original design) of the proposed recommendations. The Present Worth (PW) Life Cycle Cost also includes the initial cost and the other above mentioned costs over the anticipated useful life of the facility. Acceptance of these recommendations would improve the value and be incorporated in the design of the facility. These recommendations appear to be the most cost effective way to provide the required functions. All of the recommendations can be taken with others; there are no mutually exclusive recommendations.

The recommendations developed by the VE study team will directly affect the existing project design. The recommended alternatives have been presented to FDOT, and no fatal flaws with the proposed recommendations were indicated at the presentation. It is understood that further analysis of these recommendations may be needed in order to make a final decision to accept them. FDOT will determine the acceptability of each recommendation. Each recommendation may be implemented individually or partially.

1.5 MANAGEMENT ACCEPTANCE & IMPLEMENTATION

Management action on each of the recommendations taken at the subsequent resolution meeting will be included in **Table 1.4 – 1** in the "Management Action" column. The FDOT Project Manager must ensure that all accepted recommendations are implemented and all pending actions are resolved for inclusion in the project design. Close coordination with the District Value Engineer is encouraged to insure timely resolution of management action.

TABLE 1.4 – 1 SUMMARY OF HIGHEST RATED RECOMMENDATIONS				
		PRESENT WORTH (PW) OF COST (FUTURE COST)		
Rec. No.	**Description**	**Management Action**	**Comments**	**Potential Cost Savings (Value Added)**
2	Adopt the I-4 Ultimate typical section			$1,770,000
6	Modify the entrance to the westbound C-D to Station 2515+00			$103,000
9	Eliminate the right of way take on International Parkway in front the apartment complex (via variation)			$110,000
16	Eliminate the direct connects from SR 429 to I-4 for express lanes			$21,419,000
18	Salvage the existing connection from International Parkway to SR 417 to provide access to SR 417 eastbound			($142,000)
19	Tighten up the separation between the westbound ramps to westbound I-4 general use and express lane ramps			$1,911,000
20	Create a grade separated Diverging Diamond Interchange			$162,542,000
21	Reconfigure the interchange to a tight diamond urban interchange and move the bridged ramp connections to the outside			$10,831,000
23	Shrink the median width to 50 ft. starting at SR 417 at Towne Center Boulevard to International Parkway			$3,227,000
24	SR 429 westbound on ramp reconfigure to one lane			$1,214,000
25	SR 429 westbound off ramp reconfigure to two lanes			$92,000
28	Modify the SR 429 eastbound to I-4 westbound ramps to go under I-4 and the C-D road			$1,472,000

TABLE 1.4 – 1 SUMMARY OF HIGHEST RATED RECOMMENDATIONS				
		PRESENT WORTH (PW) OF COST (FUTURE COST)		
Rec. No.	**Description**	**Management Action**	**Comments**	**Potential Cost Savings (Value Added)**
29	Not replacing the bridge and reroute the Cross Seminole Trail up to CR 46A and incorporate the Trail in to a nice pedestrian crossing at that location			$6,706,000
31	Eliminate the C-D road in the southeast corner of the interchange			$22,826,000
32	Increase the ramp profile to eliminate replacing the CR 46A Bridge			$11,583,000
33	Cul-de-sacs for Wilson Road to allow for Wekiva Parkway to be at grade			$7,938,000
34	Don't construct the International Parkway Interchange with SR 429			$16,239,000

Management Action Legend: A=Accepted, NA=Not Accepted, FS=Further Study

VALUE ENGINEERING METHODOLOGY 2

2.1 GENERAL

This section describes the value analysis procedure used during the VE study. A systematic approach was used in the VE study and the key procedures involved were organized into three distinct parts: 1) pre-study preparations, 2) VE workshop study, and 3) post-study.

2.2 PRE-STUDY PREPARATIONS

Pre-study preparations for the VE effort consisted of scheduling study participants and tasks; reviews of documents; gathering necessary background information on the project; and compiling project data into a cost model. Information relating to the design, construction, and operation of the facility is important as it forms the basis of comparison for the study effort. Information relating to funding, project planning, operating needs, systems evaluations, basis of cost, production scheduling, and construction of the facility was also a part of the analysis.

2.3 VE WORKSHOP STUDY

The VE workshop was a five-day effort. During the workshop, the VE job plan was followed. The job plan guided the search for high value areas in the project and included procedures for developing alternative solutions for consideration while at the same time considering efficiency. It includes these phases:

- Information Gathering Phase
- Function Identification and Cost Analysis Phase
- Creative Phase
- Evaluation Phase
- Development Phase
- Presentation and Reporting Phase

2.3.1 Information Phase

At the beginning of the study, the conditions and decisions that have influenced the development of the project must be reviewed and understood. For this reason, the PD&E Consultant Project Manager provided design information about the project to the VE team. Following the presentation, the VE team discussed the project using the documents listed in **Section 3.3**.

2.3.2 Function Identification and Cost Analysis Phase

Based on the preliminary cost estimate, historical and background data, a cost model was developed for this project organized by major construction elements. It was used to distribute costs by project element in order to serve as a basis for alternative functional categorization. The VE team identified the functions of the various project elements and subsystems and created a Function Analysis System Technique Diagram (FAST) to display the relationships of the functions.

2.3.3 Creative Phase

This VE study phase involved the creation and listing of ideas. During this phase, the VE team developed as many ideas as possible to provide a creative atmosphere and to help team members to "think outside the box." Judgment of the ideas was restricted at this point to insure vocal critics did not inhibit creativity. The VE team was looking for a large quantity of ideas and association of ideas.

The FDOT and the design team may wish to review the creative design suggestions that are listed in **Section 6**, because they may contain ideas, which can be further evaluated for potential use in the design.

2.3.4 Evaluation Phase

During this phase of the workshop, the VE team judged the ideas generated during the creative phase. Advantages and disadvantages of each idea were discussed and a matrix developed to help determine the highest-ranking ideas. Ideas found to be irrelevant or not worthy of additional study were discarded. Those that represented the greatest potential for cost savings or improvement to the project were "carried forward" for further development.

The creative listing was re-evaluated frequently during the process of developing ideas. As the relationship between creative ideas became more clearly defined, their importance and ratings may have changed, or they may have been combined into a single idea. For these reasons, some of the originally high-rated ideas may not have been developed.

2.3.5 Development Phase

During the development phase, each highly rated idea was expanded into a workable solution. The development consisted of a description of the idea, life cycle cost comparisons, where applicable, and a descriptive evaluation of the advantages and disadvantages of the proposed ideas. Each idea was written with a brief narrative to compare the original design to the proposed change. Sketches and design calculations, where appropriate, were also prepared in this part of the study. The developed VE ideas are summarized in the section entitled **Section 7 – Recommendations**.

2.4 POST STUDY

The post-study portion of the VE study includes the draft and final preparation of this Value Engineering study report and the discussions and resolution meetings with FDOT personnel. The PD&E team should analyze each alternative and prepare a short response, recommending incorporating the idea into the project, offering modifications before implementation, or presenting reasons for rejection and submit it to FDOT management for the resolution meeting. The VE team is available for consultation after the ideas are reviewed. Please do not hesitate to call on us for clarification or further information for considerations to implement any of the presented ideas.

2.4.1 Presentation and Reporting Phase

The final phase of the VE study began with the presentation of the ideas on the last day of the VE study. The VE team screened the VE ideas before draft copies of the report were prepared. The initial VE ideas were arranged in the order indicated to facilitate cross-referencing to the final recommendations for revision to the Contract Documents.

2.4.2 Final Report

The acceptance or rejection of ideas described in this report is subject to FDOT's review and approval. The VE team is available to address any final draft report comments for incorporation into the final report.

WORKSHOP PARTICIPANTS AND PROJECT INFORMATION 3

3.1 PARTICIPANTS

On May 12, 2014, representatives from HNTB Corporation (HNTB) presented an overview of the project in the PD&E Documents for the Interstate 4 and SR 429/SR 417 Interchange. The purpose of this meeting was to acquaint the study team with the overall project and what the main areas the VE team needed to focus on during this VE study.

The VE facilitator also reviewed and explained the Value Engineering improvement study agenda. He acquainted the team with the goals for the study based upon the study methodology that would be applied to improve the project. The study team included the following experts who participated in the study:

Participant Name	Role	Affiliation
Mark Robinson, PE	Roadway Design	FDOT, District 5
Steven Buck, EI	Roadway Design	FDOT, District 5
Michael Dollery	Right of Way	FDOT, District 5
Nick Truncone, MAI	Right of Way	FPC-Group
Karen Snyder, PE	Drainage	FDOT, District 5
Chris Dabson, PE	Structures	FDOT, District 5
Zach Sullivan, PE	Geotechnical	FDOT, District 5
Stan Mann	Construction/Operations/Maintenance	FDOT, District 5
Randell James, PE	Construction	FDOT, District 5
Jack Crahan, MAI	Right of Way	FPC-Group
Leston Ellis	Structures	FHWA
Mahmmud Yousef	Roadway	FHWA
Matthew Hodges, EI	PE Trainee	FDOT, District 5
Ty Garner	District VE Coordinator	FDOT, District 5
Rick Johnson, PE, CVS	VE Team Leader	PMA Consultants LLC

3.2 PROJECT INFORMATION

The purpose of the project orientation meeting, on May 12, 2014, in addition to being an integral part of the Information Gathering Phase of the VE study, was to bring the VE team "up-to-speed" regarding the overall project scope.

3.3 LIST OF VE STUDY MATERIAL REVIEWED

1. Preliminary Engineering Report, Segment 3: East of SR 434 to East of US 17/92 – Seminole County, FL, prepared by HNTB Corporation, dated March, 2014
2. Preliminary Cost Estimate, prepared by HNTB Corporation, provided April 16, 2014
3. Contract Plans, Financial Project ID 431081-4-32-01, State Road No. 429, Wekiva Parkway Project Section 8, prepared by ATKINS, dated December 28, 2012
4. Wekiva Parkway - Line & Grade, Utilities Summary Report - Section 8, State Road 429 / SR 46 Re-Alignment, prepared by ATKINS, undated
5. Wekiva Parkway –Section 8, FPID: 431081-4-32-01, Line & Grade, Final Submittal – Roadway Design Documentation, prepared by ATKINS, dated January 2013
6. Wekiva Parkway - Section 8, Seminole County, Line and Grade Bridge - Final Report, prepared by ATKINS, dated December 2012

7. Wekiva Parkway Line and Grade, FPID Nos. 431081-3-32-01 & 431081-4-32-01, Parcel Impacts
8. Aerial Plan Board of Segment 3 Improvements, Project Development & Environment (PD&E) Study, prepared by HNTB Corporation, undated
9. Cultural Resource Assessment Survey, Wekiva Parkway (SR 429)/SR 46 Realignment, Project Development and Environment (PD&E) Study, Orange, Lake And Seminole Counties, Florida, prepared by Archaeological Consultants, Inc., dated February 2007 (Revised April 2007), (Updated Final Report May 2010)
10. Wekiva Parkway –Section 8, Wetland and Other Surface Water Impacts Graphic, prepared by ATKINS, dated December 3, 2012
11. Draft Report, Lake Sten Alternative Impacts Study, prepared by ATKINS, dated July 2012
12. Environmental Resource Permit Application, Wekiva Parkway Section 8, prepared by ATKINS, dated August 2013

3.4 SUMMARY OF GENERAL PROJECT INPUT - OBJECTIVES, POLICIES, DIRECTIVES, CONSTRAINTS, CONDITIONS & CONSIDERATIONS

The following is a summary of general project input, including the goals, objectives, directives, policies, constraints, conditions and considerations presented to the study team. Any "element" specific input is indicated by parentheses around the elements, disciplines and interests (i.e., right-of-way, roadway, environmental). Representatives from the FDOT and the design team provided a project background, on the first day of the study.

*3.4.1 Project Functions, Goals & Objectives (what the project should do as determined at the kickoff meeting and subsequent Workshops)***:**

1. Connect Systems
2. Improve Interchange
3. Build Project
4. Establish Elevation
5. Maintain Traffic
6. Span Obstacle
7. Acquire Right of Way
8. Provide Space
9. Permit Project
10. Remove Water
11. Accommodate Pedestrians
12. Separate Traffic
13. Control Traffic
14. Inform Motorists
15. Meet Criteria
16. Design Project
17. Minimize Maintenance
18. Collect Data
19. Review Plans
20. Estimate Costs
21. Calculate Quantities
22. Recommend Solutions
23. Study Alternatives
24. Determine Needs
25. Ease Maintenance
26. Analyze Data
27. Treat Stormwater
28. Accommodate Utilities

These functions were used by the VE team to create/brainstorm new ideas for potential improvement to the project.

3.4.2 Project Policies & Directives: (documented things the project must or must not do)

1. The project shall meet economic, engineering design, environmental and social/cultural criteria requirements
2. Meet the goals of the Long Range Transportation Plans for future developments

3.4.3 General Project Constraints: (unchangeable project restrictions)

1. Duke Energy high voltage transmission lines and towers

3.4.4 General Project Conditions & Considerations:

1. Refer to the PD&E documents and backup documentation prepared by HNTB and ATKINS.

3.4.5 Site Review Comments and other observations:

1. Avoid replacing the pedestrian bridge if at all possible.
2. Can the pedestrian bridge be salvaged if it has to be removed?
3. Can the C-D road be modified (shortened toward SR 46A) to make things fit under the pedestrian bridge?
4. Can we also match the typical section of I-4 Ultimate through the entire Segment 3?
5. Possibly realign with a shift to the west to avoid the pedestrian bridge.
6. Can we reconstruct the east side part of the bridge to gain more room?
7. The P.O. maintenance building access road may be impacted?
8. On parcels 85 and 86 we will have drainage issues that will need to be addressed.
9. At the Town Center Mall the Duke Energy transmission lines and towers are major obstacles.
10. The Electric transmission towers also had cell transmitters mounted on them.
11. At the mall we need to avoid the drive aisle and drainage structures.
12. The drive aisle was three lanes, is that necessary?
13. Do we have bridge rights on the north side of SR 417 at the Town Center Drive?
14. Eliminate the maintenance issue of the extension of Oregon Avenue past the turn back to the east and make if a circuitous road.
15. On Orange Blvd. what is the cure for the drainage pond at the day care center?
16. Need to define the drainage agreements and the associated Sections.
17. Do we need the additional right of way on International Parkway at the entrance to the apartments?

ECONOMIC DATA, COST MODELS AND ESTIMATES 4

4.1 ECONOMIC DATA

The study team developed economic criteria used for evaluation with information gathered from the HNTB PD&E documents. To express costs in a meaningful manner, the cost comparisons associated with alternatives are presented on the basis of total Life Cycle Cost and discounted present worth. Project period interest rates are based on the following parameters:

Year of Analysis:	2014
Economic Planning Life:	20 years starting in 2019
Discount Rate/Interest:	5.00%
Inflation/Escalation Rate:	3.00%

The Preliminary PD&E Cost Estimate was used by the team for the major construction elements and right of way costs were developed by HNTB and the FDOT Right of Way Estimating team. The VE team had costs for the interchange improvements at Wekiva Parkway (SR 429) and at SR 417 provided by HNTB. The cost for the roadway and interchange improvements is based on Alternative 1 were a combined $255,216,990. The estimated cost to acquire all rights of way for the proposed Alternative 1 concept is $91,700,000.

Each of the recommendations is compared to the total project cost of $346,916,990.

Table 4.1 – 1
Preliminary Cost Estimate
PD&E Alternate

Item	Description	Unit	Unit Cost	Quantity	Total Cost	Function
0110 1 1	Clearing & Grubbing	AC	$ 7,724	386	$ 2,980,617	Clear land
0110 3	Removal of Existing Structure	SF	$ 24	88,915	$ 2,094,837	Prepare Site
160 4	Stabilization Type B LBR 40	SY	$ 2.90	390,763	$ 1,133,213	Stabilize Roadway
285 706	Base optional (base group 6) ML	SY	$ 13.69	114,250	$ 1,564,087	Support Shoulder
285 712	Base optional (base group 12) ML	SY	$ 14.02	276,513	$ 3,876,708	Support Roadway
334 1 12	Superpave asphaltic concrete (Traff B)	TN	$ 87.28	12,568	$ 1,096,895	Provide Refuge
334 1 14	Superpave asphaltic concrete (Traff D)	TN	$ 87.21	45,625	$ 3,978,920	Supports Traffic
334 1 24	Superpave asphaltic concrete (Traff D-PG 76-22)	TN	$ 89.64	30,416	$ 2,726,525	Supports Traffic
337 7 22	Asphaltic Conc friction course (FC-5) (PG 76-22)	TN	$ 117.20	11,406	$ 1,336,800	Provide Friction
521 1	Barrier Wall	LF	$ 113	102,118	$ 11,539,278	Partition Traffic
	Thermoplastic, White, Striping	NM	$ 3,178	63	$ 199,788	Guide Motorists
	Vehicle Impact Attenuator	EA	$ 18,327.63	15	$ 274,914	Absorbs Energy
	Fencing	LF	$ 10.00	46,667	$ 466,670	Restricts access
	Embankment	CY	$ 5.94	1,172,289	$ 6,963,397	Change Profile
	MSE wall	SF	$ 34.00	65,112	$ 2,213,808	Reduces Footpriint
	Bridges	SF	$ 160.00	512,661	$ 82,025,760	Span Obstacles
	Subtotal Cost	LS			$ 124,472,218	
	Compensable Utility Relocation	LS			$ 6,223,611	Remove Conflict
	Mobilization	LS			$ 12,447,222	Start Project
	Maintenance of Traffic (MOT)	LS			$ 24,894,444	Maintain Traffic
	Lighting	LS			$ 6,223,611	Enhanve Visability
	Signage	LS			$ 6,223,611	Inform Motorists
	Drainage	LS			$ 24,894,444	Direct Water
	ITS	LS			$ 6,223,611	Convey Informations
	Erosion Control	LS			$ 1,244,722	Protect Envirionment
	Construction Subtotal	LS			$ 212,847,492	
	Contingency	LS			$ 42,569,498	Address Unforeseen
	Total Construction				**$ 255,416,990**	
	Right of Way				$ 91,700,000	Provide Space
	Grand Total				**$ 347,116,990**	

Reference: Preliminary Cost Estimate, prepared by HNTB, provided April 16, 2014

FUNCTION ANALYSIS AND FAST DIAGRAM 5

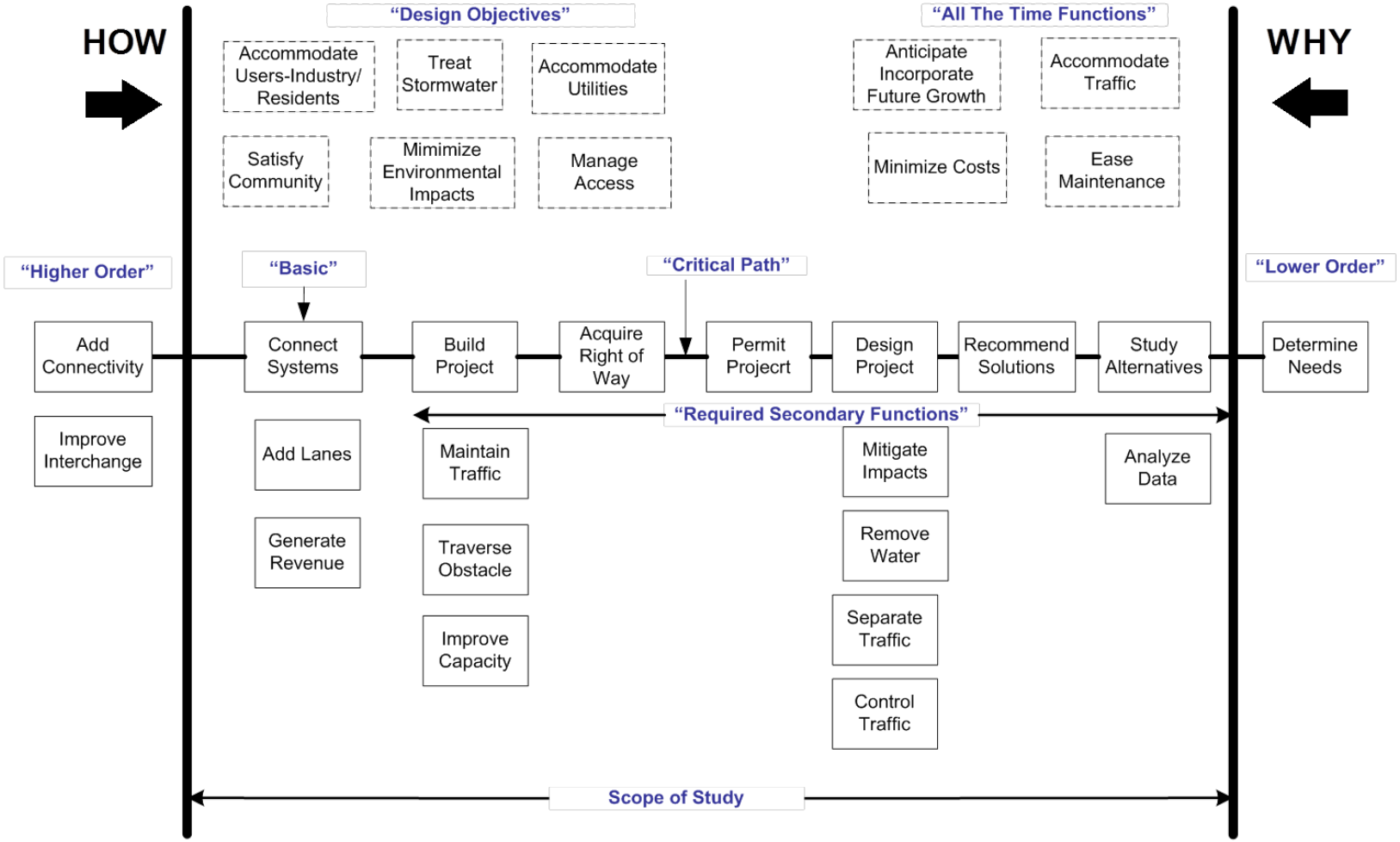
This project's Function Analysis was reviewed and developed by the team to define the requirements for the overall project (and each project element, if required) and to ensure that the VE team had a complete and thorough understanding of the functions (basic and others) needed to satisfy the project requirements. The primary Function Analysis System Technique (FAST) Diagram for the project is included. The development of FAST diagrams help stimulate team members to think in terms of required functions, not just normal solutions, to enhance their creative idea development. The project's primary tasks, the critical path functions, the project's primary basic functions and other required functions that must be satisfied were identified and are indicated in the report.

A Functional Analysis was prepared to determine the basic function of the overall project and each area shown in the cost model. Functional Analysis is a means of evaluating the functions of each element to see if the expenditures for each of those elements actually provide the requirements of the process, or if there are disproportionate amounts of money being proposed to be spent for support functions. These elements add cost to the final product, but have a relatively low worth to the basic function. This creates a high cost-to-worth ratio.

A FAST diagram was developed to identify and display the critical functions path for the overall project. The basic and supporting secondary functions are illustrated on the following FAST Diagram.

Figure 5.1 – FAST Diagram

SR 429 (Wekiva Parkway)/SR 417 and I-4 Interchange



EVALUATION 6

During the creative phase numerous ideas, alternative proposals and/or recommendations were generated for each required function using conventional brainstorming techniques and are recorded on the following pages. These ideas were discussed and evaluation criteria were determined. The VE team identified 10 weighted evaluation criteria that included Capital Cost, Right of Way Impacts, Level of Service, Environmental Impacts, Maintenance of Traffic, Pedestrian Bridge Impacts, Connectivity, Future Maintenance, Constructability, and Traffic Demand. The evaluation criteria were assigned a weighted value from 1 to 10 based on a VE team consensus on the importance of each item. Criteria with the most importance received an 10-weight and the least important received a 1-weight. The ideas were then individually discussed and given a score, on a scale of 1 to 5 with 1 being the least beneficial and 5 most beneficial. The score for each item is multiplied by the weighted criteria value and each multiplication product is added to obtain a total score for the idea.

Table 6.1 – 1 includes a list of ideas that were generated during the creative phase and each idea's score. **Table 6.1 – 2** illustrates the weighted values for the evaluation criteria and **Table 6.1 – 3** shows the evaluation matrix for idea ranking total scores for all ideas carried forward. The ideas that scored equal to or greater than the original design concept total score were sufficiently rated for further development. The ideas in the table with strike-throughs were not developed because they were combined with other ideas, not feasible, or were eliminated from consideration for other reasons.

There were a total of 34 creative ideas and 23 that were evaluated and scored. The VE team discussed each of the evaluated ideas with the PD&E Project Manager during a mid-point review meeting on Wednesday, May 14, 2014. The VE team and the Consultant Project Manager discussed each idea before developing the final group of ideas for final development and analysis.

The write-ups for the developed ideas are in **Section 7**. The tables that follow show the original 33 ideas and a 34th idea that emerged during development, with the ideas that survived the evaluation, analysis and development phases of the study becoming viable recommendations for value improvements. During the evaluation process the VE team redefined some of the creative ideas as questions for the designers or design suggestions. Ideas that became design suggestions or design questions for the mid-point review are designated as "DS" on the evaluation worksheets. The major design suggestion identified by the VE team is listed below:

DS-1 Use the rubble from the ramp demo to augment the County Reef programs

The VE team presents design suggestions for the design consultant and FDOT's consideration. No specific action is normally required to accept or not accept the suggestions, though it is often helpful, for documentation purposes, to formally list those suggestions that will be acted upon by the FDOT. Readers are encouraged to review the Creative Idea Listing and Evaluation Worksheets that follow, since they may suggest additional ideas that can be applied to the design or construction.

TABLE 6.1 –1
Value Engineering Study Ideas

Idea No.	Ideas	Capital Costs	R/W Impacts	LOS	Environmental Impacts	Maintenance of Traffic	Pedestrian Bridge Impacts	Connectivity	Future Maintenance	Constructability	Traffic Demand
	Original Concept										
	PD&E Documents for I-4 and Wekiva Parkway	3	3	3	3	3	3	3	3	3	3
	Drainage (Remove Water)										
1	Minimize flood plain impacts using MSE walls to reduce the footprint	1.75	3	3	4	3	3	3	4	2.5	3
	Mainline (Access Interstate)										
2	Adopt the I-4 Ultimate typical section	3.25	3.25	3	3	3	3	3	3.25	3.25	3
3	Lessen the separation distance between the express lanes and general use lanes where the slip ramps transition to and from the general use lanes.	3.75	3	3	3	3.5	5	3	3.5	3.25	3
4	Construct concrete ramps throughout the project	1.75	3	3	3	3	3	3	5	2.5	3
5	~~Eliminate the express lanes~~										
6	Modify the entrance to the westbound C-D to Station 2515+00	2.75	3	3.25	3	3.1	3	3	3	3.25	3
7	Modify the radius of the loop ramp in the northeast quadrant of SR 417 and modify the C-D to continue from the loop to SR 46	4	3	3	3	3.25	3	3	3.25	3.5	3
	Right of Way (Provide Space)										
9	Eliminate the right of way take on International Parkway in front the apartment complex (via variation)	3.25	5	3	3	3	3	3	3	3	3
10	Reduce the right of way requirement at the back of the mall to avoid the traffic lane impacts and drainage features (included in Idea No. 2)										
	Wekiva Parkway/SR 417 (Connect Systems)										
16	Eliminate the direct connects from SR 429 to I-4 for express lanes	4	3	2.9	3.25	3.75	3	2.5	3.5	4	3.5
17	Modify the southwest quadrant to reduce the radius of the loop, increase the length of SR 417 westbound to I-4 westbound bridge	2.75	3	3.5	3	3.25	3	3	2.5	2.5	3
18	Salvage the existing connection from International Parkway to SR 417 to provide access to SR 417 eastbound	3.5	3	3	3.5	3.25	3	3	3.25	3.25	3
19	Tighten up the separation between the westbound ramps to westbound I-4 general use and express lane ramps	3.25	3	3	3.25	3	3	3	3.25	3.5	3
20	Create a grade separated Diverging Diamond Interchange	4.5	3	3	3.25	3.25	3	3	3.5	3.5	3
	International Parkway/SR 429 (Connect Roadways)										
21	Reconfigure the interchange to a tight diamond urban interchange and move the bridged ramp connections to the outside	3.5	3	3	3.5	3	3	3	3.5	3	3
DS-1	Avoid embankment through and over any natural water body so bridge over Lake Sten										
23	Shrink the median width to 50 ft. starting at SR 417 at Towne Center Boulevard to International Parkway	3.25	3.25	3	3.25	3.1	3	3	3.25	3	3
24	SR 429 westbound on ramp reconfigure to one lane	3.25	3	3	3.1	3	3	3	3	3.25	3.5
25	SR 429 westbound off ramp reconfigure to two lanes	3.1	3	3	3	3	3	3	3	3	3.1
26	~~SR 429 eastbound on ramp move to existing road connection~~										
27	SR 429 westbound off ramp combine with the SR 417 westbound to I-4 westbound ramp	2.5	3	3	3.5	3	3	3	2.75	3	3
28	Modify the SR 429 eastbound to I-4 westbound ramps to go under I-4 and the C-D road	3.25	3	3	3	2.75	3	3	3.25	3	3

TABLE 6.1 –1
Value Engineering Study Ideas

Idea No.	Ideas	Capital Costs	R/W Impacts	LOS	Environmental Impacts	Maintenance of Traffic	Pedestrian Bridge Impacts	Connectivity	Future Maintenance	Constructability	Traffic Demand
	Original Concept										
	PD&E Documents for I-4 and Wekiva Parkway	3	3	3	3	3	3	3	3	3	3
	Seminole Trailway Bridge (Span Interstate)										
29	Not replacing the bridge and reroute the Cross Seminole Trail up to CR 46A and incorporate the Trail in to a nice pedestrian crossing at that location	3.5	2.5	3	2.75	3	2.5	3	2.75	3.5	3
30	~~Move the westbound slip ramp further south to lessen the impact to the Cross Seminole Trail Bridge~~	3.5	3.5	3	3	3	3.5	3	3	3	3
	CR 46A Interchange (Connect Roadways)										
31	Eliminate the C-D road in the southeast corner of the interchange	3.5	3.5	3	3	3.5	5	3	3.25	3.5	3.1
32	Increase the ramp profile to eliminate replacing the CR 46A Bridge	3.5	3	3	3	3.5	3	3	2.75	3.75	3.1
	Other										
33	Cul-de-sacs for Wilson Road to allow for Wekiva Parkway to be at grade	4.5	3.25	3	3	3.25	3	3	4	4.5	3
34	Don't construct the International Parkway Interchange with SR 429										

TABLE 6.1 –2
Value Engineering Study Weighted Values

Capital Costs	R/W Impacts	LOS	Environmental Impacts	Maintenance of Traffic	Pedestrian Bridge Impacts	Connectivity	Future Maintenance	Constructability	Traffic Demand
6	**5**	**9**	**2**	**3**	**1**	**8**	**4**	**7**	**10**

TABLE 6.1 –3
Value Engineering Study Evaluation Scores

Idea No.	Ideas	Capital Costs	R/W Impacts	LOS	Environmental Impacts	Maintenance of Traffic	Pedestrian Bridge Impacts	Connectivity	Future Maintenance	Constructability	Traffic Demand	TOTAL	FHWA CATEGORIES				
	Original Concept												Safety	Construction	Operations	Environment	Other
	PD&E Documents for I-4 and Wekiva Parkway	18	15	27	6	9	3	24	12	21	30	**165**					
	Drainage (Remove Water)																
1	Minimize flood plain impacts using MSE walls to reduce the footprint	10.5	15	27	8	9	3	24	16	17.5	30	**160**					
	Mainline (Access Interstate)																
2	Adopt the I-4 Ultimate typical section	19.5	16.25	27	6	9	3	24	13	22.75	30	**170.5**		X		X	
3	~~Lessen the separation distance between the express lanes and general use lanes where the slip ramps transition to and from the general use lanes.~~	22.5	15	27	6	10.5	5	24	14	22.75	30	**176.8**					
4	Construct concrete ramps throughout the project	10.5	15	27	6	9	3	24	20	17.5	30	**162**					
5	Eliminate the express lanes	0	0	0	0	0	0	0	0	0	0	**0**					
6	Modify the entrance to the westbound C-D to Station 2515+00	16.5	15	29.25	6	9.3	3	24	12	22.75	30	**167.8**	X	X	X	X	
7	~~Modify the radius of the loop ramp in the northeast quadrant of SR 417 and modify the C-D to continue from the loop to SR 46~~	24	15	27	6	9.75	3	24	13	24.5	30	**176.3**					
	Right of Way (Provide Space)																
9	Eliminate the right of way take on International Parkway in front the apartment complex (via variation)	19.5	25	27	6	9	3	24	12	21	30	**176.5**		X		X	
10	Reduce the right of way requirement at the back of the mall to avoid the traffic lane impacts and drainage features (included in Idea No. 2)	0	0	0	0	0	0	0	0	0	0	**0**					
	Wekiva Parkway/SR 417 (Connect Systems)																
16	Eliminate the direct connects from SR 429 to I-4 for express lanes	24	15	26.1	6.5	11.25	3	20	14	28	35	**182.9**		X		X	
17	Modify the southwest quadrant to reduce the radius of the loop, increase the length of SR 417 westbound to I-4 westbound bridge	16.5	15	31.5	6	9.75	3	24	10	17.5	30	**163.3**					
18	Salvage the existing connection from International Parkway to SR 417 to provide access to SR 417 eastbound	21	15	27	7	9.75	3	24	13	22.75	30	**172.5**		X		X	
19	Tighten up the separation between the westbound ramps to westbound I-4 general use and express lane ramps	19.5	15	27	6.5	9	3	24	13	24.5	30	**171.5**		X		X	
20	Create a grade separated Diverging Diamond Interchange	27	15	27	6.5	9.75	3	24	14	24.5	30	**180.8**	X	X	X	X	X
	International Parkway/SR 429 (Connect Roadways)																
21	Reconfigure the interchange to a tight diamond urban interchange and move the bridged ramp connections to the outside	21	15	27	7	9	3	24	14	21	30	**171**		X		X	
23	Shrink the median width to 50 ft. starting at SR 417 at Towne Center Boulevard to International Parkway	19.5	16.25	27	6.5	9.3	3	24	13	21	30	**169.6**		X		X	
24	SR 429 westbound on ramp reconfigure to one lane	19.5	15	27	6.2	9	3	24	12	22.75	35	**173.5**		X		X	
25	SR 429 westbound off ramp reconfigure to two lanes	18.6	15	27	6	9	3	24	12	21	31	**166.6**		X		X	
27	SR 429 westbound off ramp combine with the SR 417 westbound to I-4 westbound ramp	15	15	27	7	9	3	24	11	21	30	**162**					
28	Modify the SR 429 eastbound to I-4 westbound ramps to go under I-4 and the C-D road	19.5	15	27	6	8.25	3	24	13	21	30	**166.8**		X			
	Seminole Trailway Bridge (Span Interstate)																
29	Not replacing the bridge and reroute the Cross Seminole Trail up to CR 46A and incorporate the Trail in to a nice pedestrian crossing at that location	21	12.5	27	5.5	9	2.5	24	11	24.5	30	**167**		X			
30	~~Move the westbound slip ramp further south to lessen the impact to the Cross Seminole Trail Bridge~~	21	17.5	27	6	9	3.5	24	12	21	30	**171**					
	CR 46A Interchange (Connect Roadways)																
31	Eliminate the C-D road in the southeast corner of the interchange	21	17.5	27	6	10.5	5	24	13	24.5	31	**179.5**		X	X	X	
32	Increase the ramp profile to eliminate replacing the CR 46A Bridge	21	15	27	6	10.5	3	24	11	26.25	31	**174.8**		X		X	
	Other																
33	Cul-de-sacs for Wilson Road to allow for Wekiva Parkway to be at grade	27	16.25	27	6	9.75	3	24	16	31.5	30	**190.5**		X		X	
34	Don't construct the International Parkway Interchange with SR 429	0	0	0	0	0	0	0	0	0	0	**0**	X	X	X	X	

RECOMMENDATIONS 7

The results of this VE study are shown as individual recommendations developed for each area of the project. These recommendations include a comparison between the VE team's proposal and the designer's original concept. Each proposal consists of a summary of the original design, a description of the proposed change, and a descriptive evaluation of the advantages and disadvantages of the proposed recommendation. Sketches and calculations are shown, if appropriate. The estimated cost comparisons reflect unit prices and quantities on a comparative basis. Value improvement is the primary basis for comparison of competing ideas. To ensure that costs are comparable within the ideas proposed by the VE team, the FDOT Statewide average costs and HNTB's preliminary cost estimates were used as the pricing basis.

7.1 EVALUATION OF RECOMMENDATIONS

Some of the VE recommendations potential savings are interrelated, if one is accepted another one may or may not need to be added, or acceptance of one may mutually exclude another. The VE team identified potential savings as shown on **Table 1.4 – 1**, **Summary of Highest Rated Recommendations**. The write-ups for the individual developed ideas are included in this section and are shown in numerical order.

The FDOT and the design team should evaluate and determine whether to accept or not accept each recommendation. The recommendations that are accepted should be identified and listed for documentation purposes. For each idea that will not be accepted, the design team normally documents, in writing, the reason or reasons for the non-acceptance. The design suggestions are for consideration by FDOT and the designers. No specific action is normally required to accept or not accept the suggestions, though it is often helpful, for documentation purposes, to formally list those suggestions that will be incorporated by the designers.

7.2 CONSIDERATIONS AND ASSUMPTIONS

In the preparation of this report and the alternatives that follow, the study team made some assumptions with respect to conditions that may occur in the future. In addition, the study team reviewed the listed project documentation, relying solely upon the information provided by the designer and owner, and relying on that information as being true, complete and accurate. This value analysis and report are based on the following considerations, assumptions and conditions:

- The recommendations rendered herein are as of the date of this report. The study team or leaders assume no duty to monitor events after the date, or to advise or incorporate into any of the alternatives, any new, previously unknown technology.

- The study team or leaders assume that there are no material documents affecting the design or construction costs that the team has not seen. The existence of any such documents will necessarily alter the alternatives contained herein.

The study team or leaders do not warrant the feasibility of these recommendations or the advisability of their implementation. It is solely the responsibility of the designer in accordance with the owner, to explore the technical feasibility and make the determination for implementation.

RECOMMENDATION No. 2: Adopt the I-4 Ultimate typical section

Proposed Alternative:
The PD&E Documents show a typical cross section of six general use lanes and four express lanes with 12-ft. inside and outside shoulders on the general use lanes and 10-ft. outside and 6-ft. inside shoulders.

VE Alternative:
Adopt the I-4 Ultimate typical used through downtown Orlando and proposed for use on the remainder of Segment 3 to the north and south of this project. This will keep consistency through the corridor and reduce the roadway footprint.

The I-4 Ultimate typical section reduces the express lanes inside shoulder to 4 feet and general use inside and outside shoulders to 10 feet. The VE team suggests maintain the outside general use lane shoulders at 12 ft. The total reduction is 4 feet in each direction and a total reduction of 8 feet for the typical section.

Advantages:

- Less construction costs
- Less maintenance
- Less right-of-way
- Less impervious pavement
- Consistent with the I-4 Ultimate typical for improved driver expectation
- Lessens impact on Cross Seminole pedestrian cable-stay bridge
- Reduces flyover bridge width in interchange

Disadvantages:

- Smaller shoulders provide less space for disabled vehicles and emergency vehicles
- Requires a Design Variation

FHWA CATEGORIES

___Safety ___Operations _X_ Environment _X_ Construction ___Other

Potential Cost Savings: $1,770,000
.

RECOMMENDATION No. 2: Adopt the I-4 Ultimate typical section

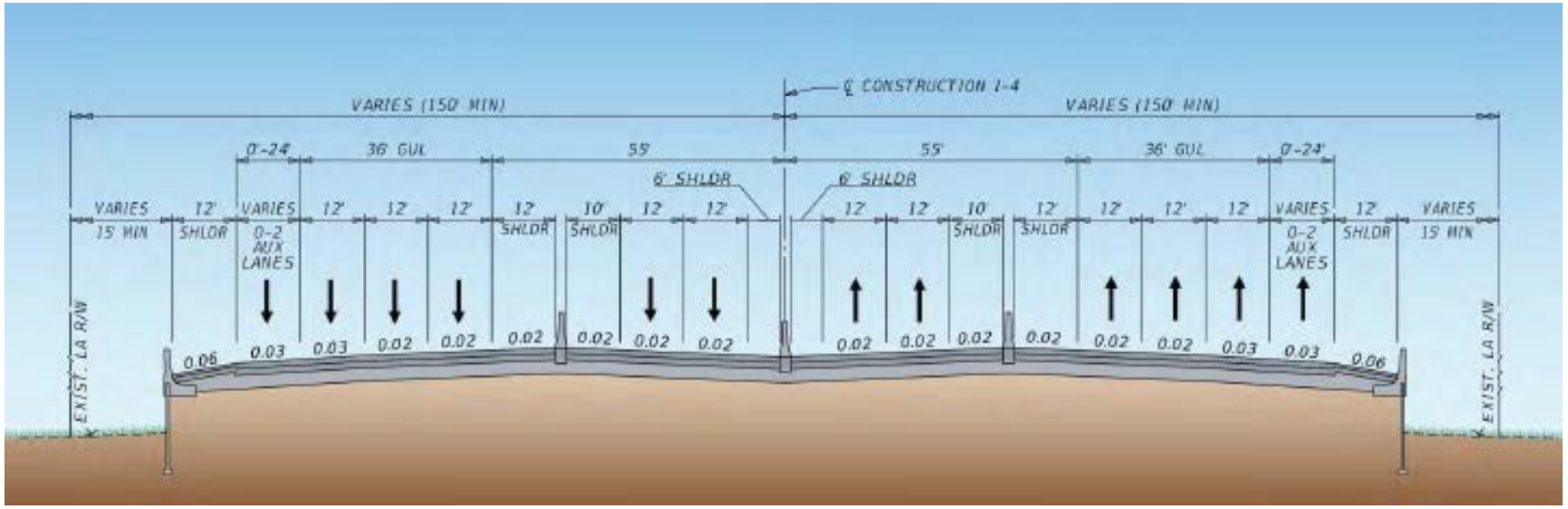
Calculations:

Description	Quantity	Unit	Unit Price	Extended Amount
Base	-17,333	SY	$14.00	($242,667)
Superpave	-1,907	TNS	$90.00	($171,630)
Stabilization	-17,333	SY	$2.90	($50,267)
Flyover SR-429 to I-4 WB	-96	SF	$160.00	($15,360)
Flyover I-4 EB to C/D	-96	SF	$160.00	($15,360)
Flyovers SR-417 to I-4 WB	-480	SF	$160.00	($76,800)
Flyover SR-429 to I-4 EB	-288	SF	$160.00	($46,080)
Flyover SR-417 to I-4 EB	-96	SF	$160.00	($15,360)
Flyover I-4 WB to C/D	-288	SF	$160.00	($46,080)
Subtotal				($679,603)
Compensable Utility Relocation (5%)	1	LS		($33,980)
Mobilization (10%)	1	LS		($67,960)
Maintenance of Traffic (20%)	1	LS		($135,921)
Lighting (5%)	1	LS		($33,980)
Signage (5%)	1	LS		($33,980)
Drainage (20%)	1	LS		($135,921)
ITS (5%)	1	LS		($33,980)
Erosion Control (1%)	1	LS		($6,796)
Subtotal				($1,162,122)
Contingency (20%)		LS		($232,424)
		CONSTRUCTION TOTAL		**($1,394,546)**

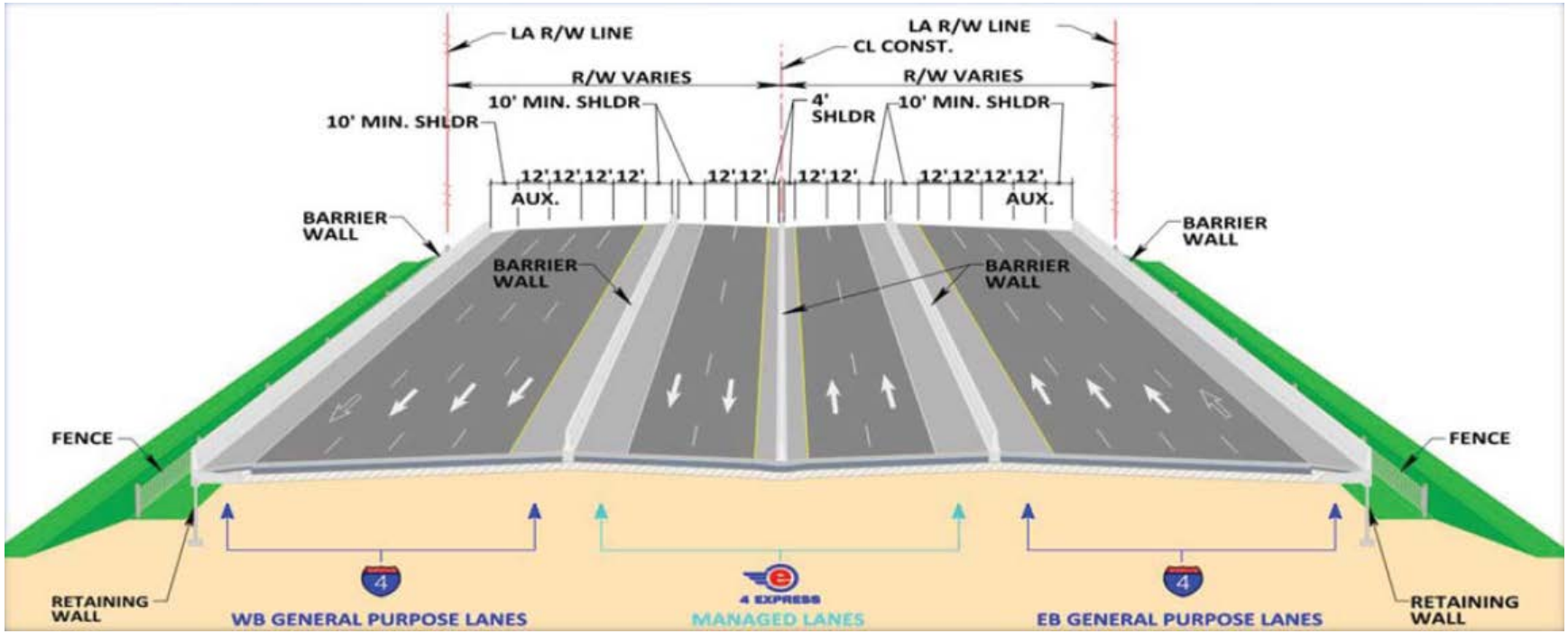
Right of Way Savings = $375,000

RECOMMENDATION No. 2: Adopt the I-4 Ultimate typical section

PROPOSED TYPICAL SECTION



VE TYPICAL SECTION (I-4 ULTIMATE)



RECOMMENDATION No. 6 Modify the entrance to the westbound C-D to Station 2515+00:

Proposed Alternative:
The PD&E Documents show the ramp entrance from the westbound general use lanes to the C-D road beginning approximately at station 2465+00. The C-D system continues under CR 46A and ties back into the westbound general use lanes.

VE Alternative:
Shift the entrance to the C-D road north to begin approximately at station 2517+00. The C-D system continues over SR 46 where the bridge required was recently built for this condition. From SR 46 the C-D road continues under CR 46A and ties back into the westbound general use lanes.

Advantages:

- Less cost
- Preserves existing bridge
- Meets AASHTO Criteria for horizontal alignment and weaving distance
- Provides more room for weaving movements
- Does not require Pond 312 to be rebuilt

Disadvantages:

- None Apparent

FHWA CATEGORIES

X Safety X Operations X Environment X Construction ___Other

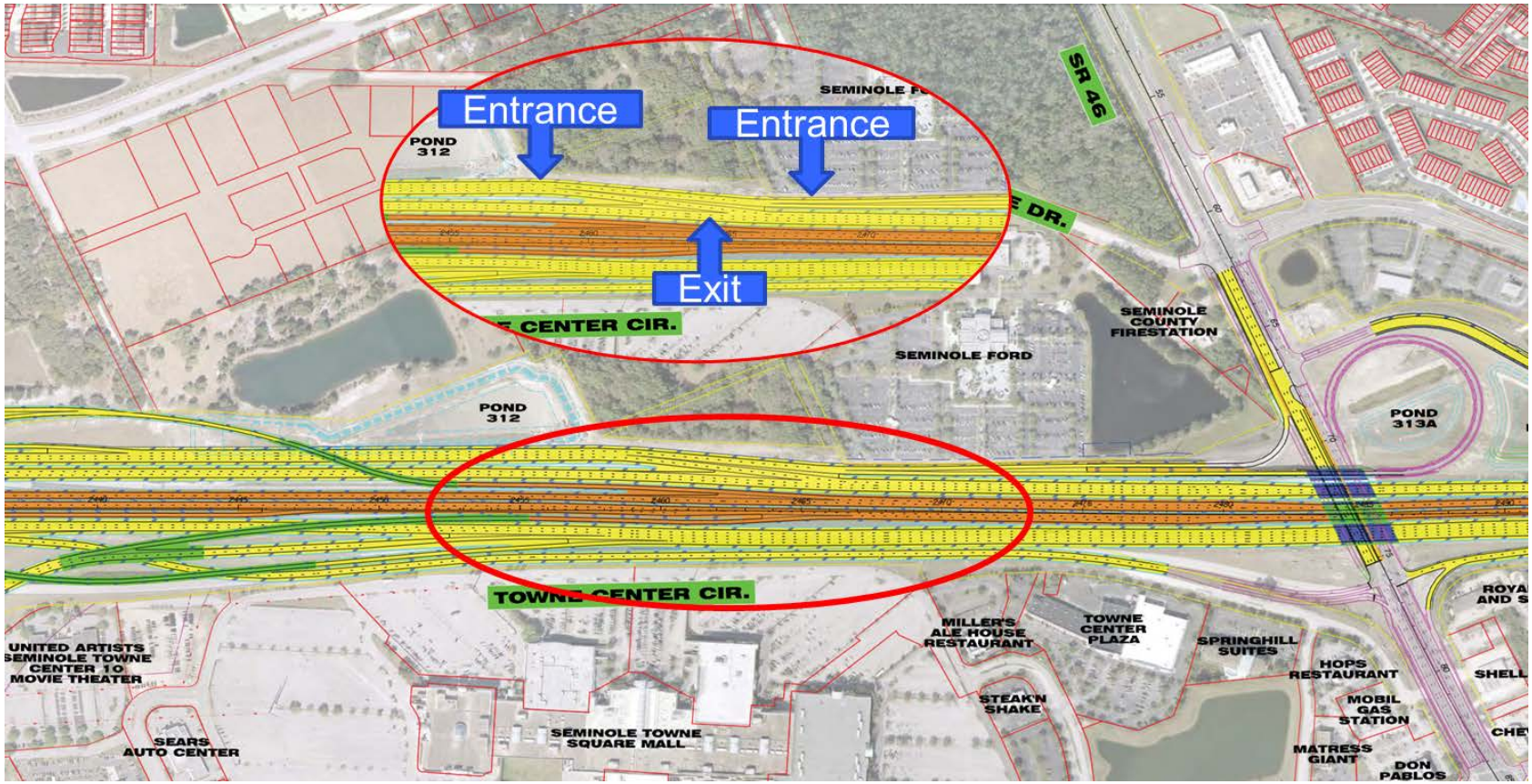
Potential Cost Savings: $103,000

RECOMMENDATION No. 6 Modify the entrance to the westbound C-D to Station 2515+00:

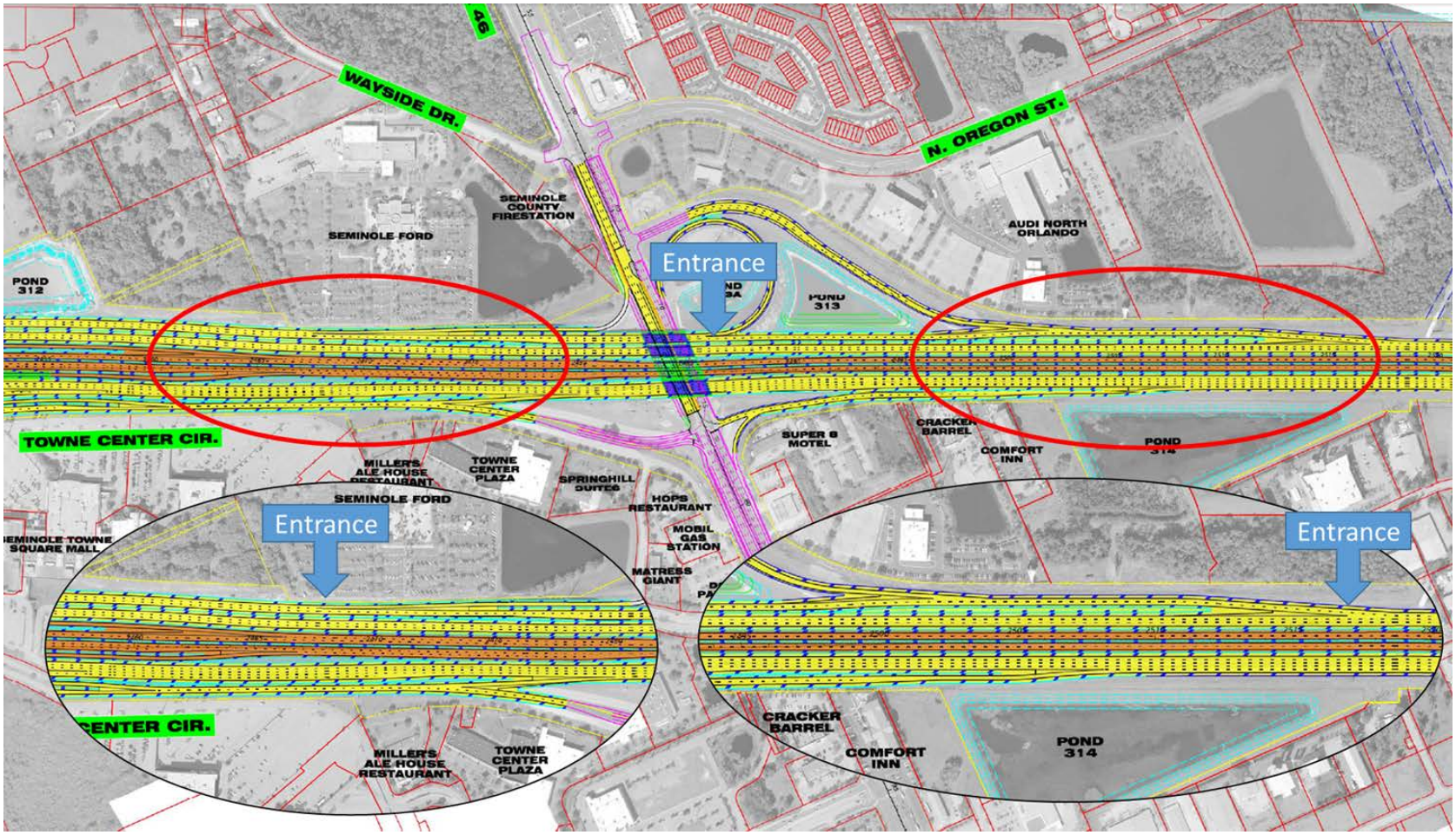
Calculations:

Description	Quantity	Unit	Unit Price	Extended Amount
Embankment	-1	LS	$50,000.00	($50,000)
Subtotal				($50,000)
Compensable Utility Relocation (5%)	1	LS		($2,500)
Mobilization (10%)	1	LS		($5,000)
Maintenance of Traffic (20%)	1	LS		($10,000)
Lighting (5%)	1	LS		($2,500)
Signage (5%)	1	LS		($2,500)
Drainage (20%)	1	LS		($10,000)
ITS (5%)	1	LS		($2,500)
Erosion Control (1%)	1	LS		($500)
Subtotal				($85,500)
Contingency (20%)		LS		($17,100)
		CONSTRUCTION TOTAL		**($102,600)**

RECOMMENDATION No. 6 Modify the entrance to the westbound C-D to Station 2515+00:



RECOMMENDATION No. 6 Modify the entrance to the westbound C-D to Station 2515+00:



RECOMMENDATION No. 9: Eliminate the right of way take on International Parkway in front the apartment complex (via variation)

Proposed Alternative:
The PD&E Documents show a fee taking and a proposed limited access line in front of a parent tract improved with an apartment complex (Project Parcel # 127W).

VE Alternative:
The VE team recommends the elimination of this fee taking, as well as, limited access taking. These takings are proposed to meet design standards regarding controlled access from a ramp. The team believes a variation to the standard may be possible, if needed. This conclusion was reached based upon a field inspection where it was discovered that an 8-ft metal fence and large water retention facility exist in the area of these takings. It is the team's opinion that these existing improvements can function to provide the necessary access controls intended by the standard.

Advantages:

- Less right of way cost
- Less construction costs

Disadvantages:

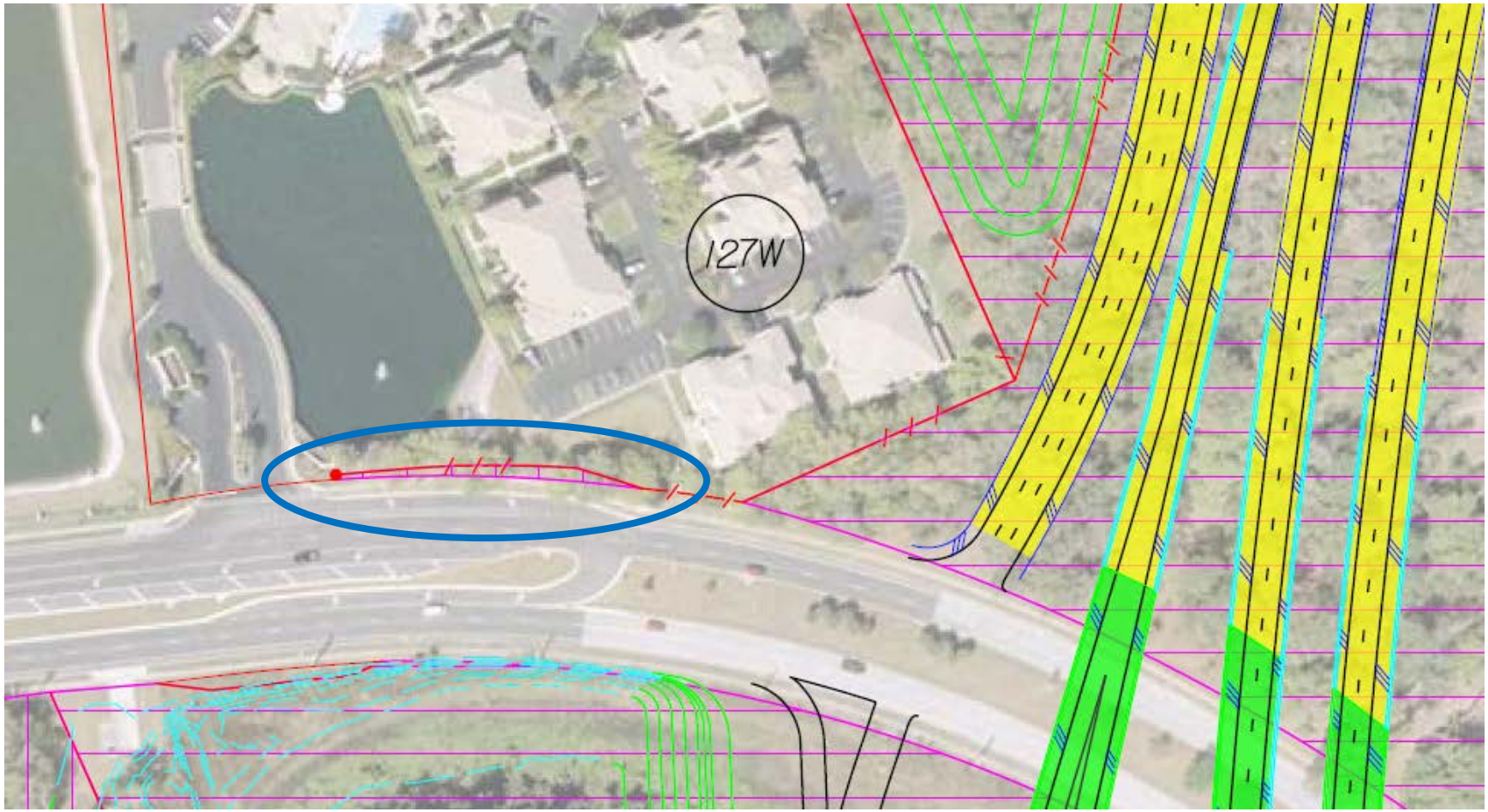
- May require Design Variation

FHWA CATEGORIES

___Safety ___Operations _X_ Environment _X_ Construction ___Other

Potential Cost Savings: $25,000 Construction, $85,000 Right of Way = $110,000.00

RECOMMENDATION No. 9: Eliminate the right of way take on International Parkway in front the apartment complex (via variation)



RECOMMENDATION No. 16: Eliminate the direct connects from SR 429 to I-4 for Express Lanes

Proposed Alternative:
The PD&E Document show direct connections to I-4 express lanes going from SR 429 eastbound to I-4 eastbound and westbound.

VE Alternative:
Eliminate direct connections to I-4 express lane, going from SR 429 eastbound to I-4 westbound and from SR 429 eastbound to I-4 eastbound. An additional slip ramp could be constructed further north on I-4 to provide access to the express lanes going eastbound. There is already an existing slip ramp to I-4 express lanes going westbound just south of Lake Mary Boulevard proposed.

It's important to point out that traffic volume for the design year is expected to be below 200 vph at peak hour on these connections.

An additional suggestion to this alternative would be to eliminate direct connections to I-4 coming from SR 417 onto I-4 express lanes eastbound and westbound. Traffic volumes for the design year are below 300 vph at peak hour. Traffic would still have access to the express lanes utilizing the slip ramp farther west and east (if the slip ramp is constructed).

Advantages:

- Cost savings
- Improves constructability
- Reduces construction time
- Improves maintenance of traffic
- Decreases future maintenance cost.

Disadvantages:

- Eliminates direct connection to I-4 express lanes coming from SR 429.

FHWA CATEGORIES

___Safety ___Operations _X_ Environment _X_ Construction ___Other

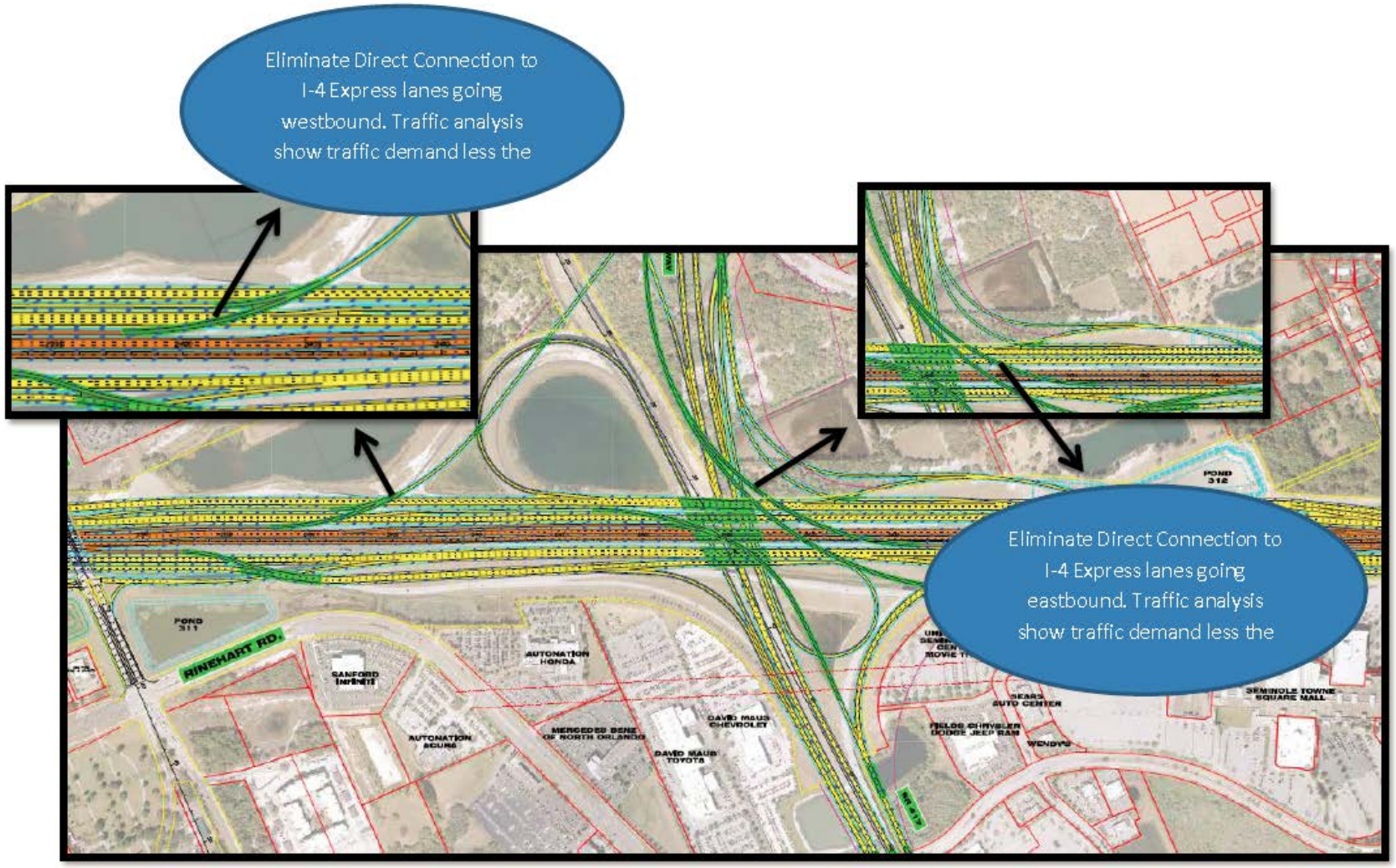
Potential Cost Savings: $21,419,000

RECOMMENDATION No. 16: Eliminate the direct connects from SR 429 to I-4 for Express Lanes

Calculations:

Description	Quantity	Unit	Unit Price	Extended Amount
Bridge SR-429 to I-4 WB (EL)	-19,200	SF	$160.00	($3,072,000)
Bridge SR-429 to I-4 EB (EL)	-41,600	SF	$160.00	($6,656,000)
Asphalt	-1,056	TN	$87.21	($92,094)
Asphalt FC	-264	TN	$117.20	($30,941)
Base Option (base group 12)	-6,400	SY	$14.02	($89,728)
Stabilization Type B LBR	-6,400	SY	$2.90	($18,560)
Thermoplastic, White, Striping	-0.91	NM	$3,178.00	($2,892)
MSE Wall	-14,000	SF	$34.00	($476,000)
Subtotal				($10,438,215)
Compensable Utility Relocation (5%)	1	LS		($521,911)
Mobilization (10%)	1	LS		($1,043,821)
Maintenance of Traffic (20%)	1	LS		($2,087,643)
Lighting (5%)	1	LS		($521,911)
Signage (5%)	1	LS		($521,911)
Drainage (20%)	1	LS		($2,087,643)
ITS (5%)	1	LS		($521,911)
Erosion Control (1%)	1	LS		($104,382)
Subtotal				($17,849,347)
Contingency (20%)		LS		($3,569,869)
			CONSTRUCTION TOTAL	**($21,419,216)**

RECOMMENDATION No. 16: Eliminate the direct connects from SR 429 to I-4 for Express Lanes



RECOMMENDATION No. 18: Salvage the existing connection from International Parkway to SR 417 to provide access to SR 417 southbound

Proposed Alternative:
The PD&E Documents show constructing a new ramp on International Parkway for traffic to take SR 417 southbound. This ramp aligns with the SR 429 southbound off ramp.

VE Alternative:
Salvage the existing connection from SR 417 northbound to International Parkway. Convert this connection from an off-ramp to an on-ramp for International Parkway to SR 417 southbound.

Advantages:

- Salvages existing alignment
- Reduces flood plain impacts
- Reduces wetland impacts
- Easier construction

Disadvantages:

- Adds Costs
- Adds a third signal

FHWA CATEGORIES

___Safety ___Operations _X_ Environment _X_ Construction ___Other

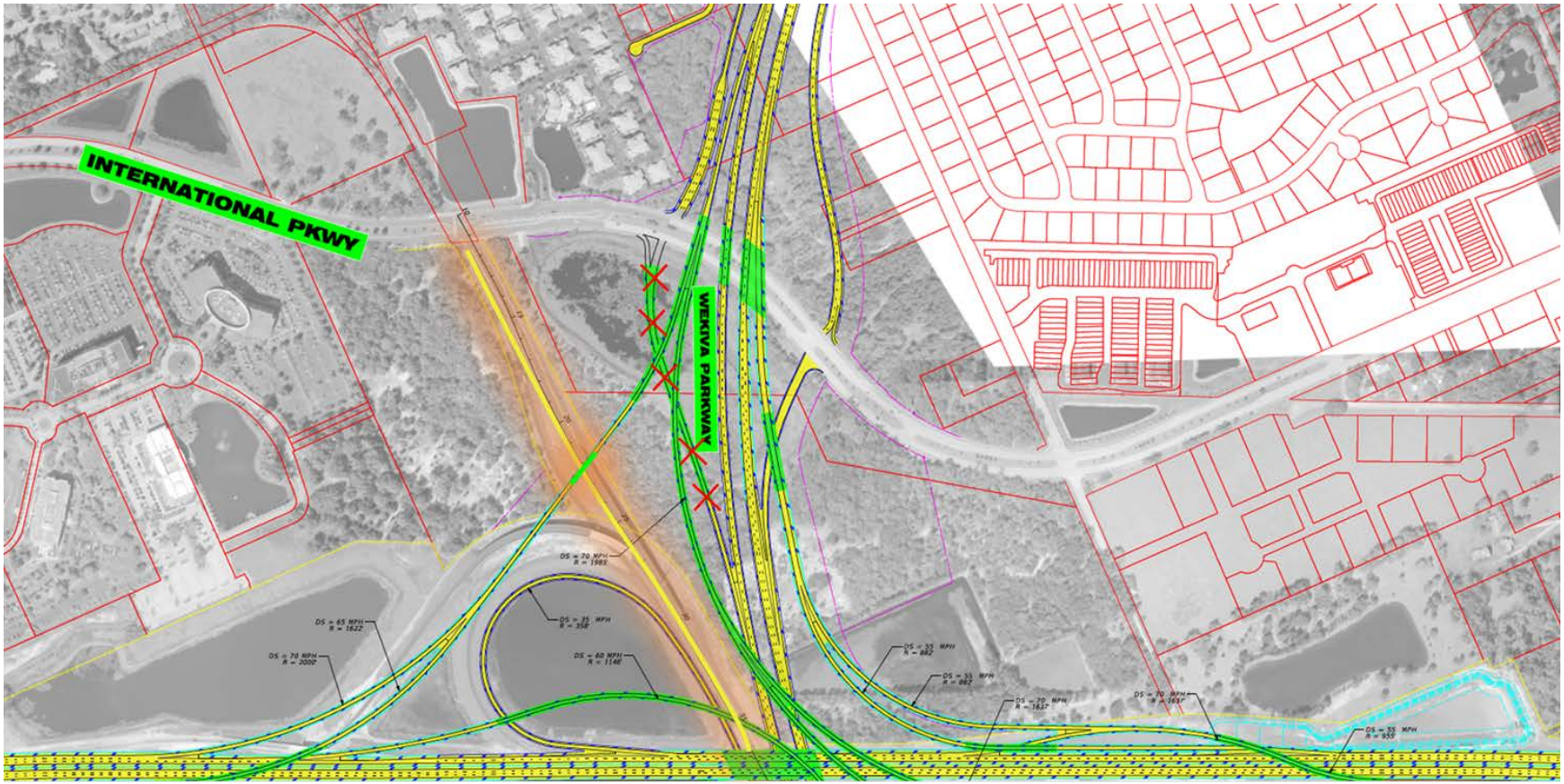
Potential Value Added: ($142,000)

RECOMMENDATION No. 18: Salvage the existing connection from International Parkway to SR 417 to provide access to SR 417 southbound

Calculations:

Description	Quantity	Unit	Unit Price	Extended Amount
Bridge Deck	1,860	SF	$145.00	$269,700
Embankment	-9,955	CY	$5.94	($59,133)
Clearing & grubbing	-1	AC	$7,724.00	($6,179)
Stabilization	-3,733	SY	$2.90	($10,826)
OBG 09	-3,733	SY	$14.02	($52,337)
Asphalt 3"	-617	TN	$87.21	($53,809)
FC-5	-154	TN	$117.20	($18,049)
Subtotal				$69,368
Compensable Utility Relocation (5%)	1	LS		$3,468
Mobilization (10%)	1	LS		$6,937
Maintenance of Traffic (20%)	1	LS		$13,874
Lighting (5%)	1	LS		$3,468
Signage (5%)	1	LS		$3,468
Drainage (20%)	1	LS		$13,874
ITS (5%)	1	LS		$3,468
Erosion Control (1%)	1	LS		$694
Subtotal				$118,620
Contingency (20%)		LS		$23,724
		CONSTRUCTION TOTAL		**$142,344**

RECOMMENDATION No. 18: Salvage the existing connection from International Parkway to SR 417 to provide access to SR 417 southbound



RECOMMENDATION No. 19: Tighten up the separation between the SR 417 westbound ramps to westbound I-4 general use and express lane ramps

Proposed Alternative:
The PD&E Documents show the entrance to the SR 417 northbound to I-4 ramp beginning approximately at Station 69+00. The alignment of the ramp then trends northward before breaking off to I-4 eastbound and westbound.

VE Alternative:
Begin the entrance to the SR 417 northbound to I-4 ramp approximately at Station 62+00 where the bridge over Town Center Blvd begins. The alignment of the ramp will trend northward before breaking off to I-4 eastbound and westbound.

Advantages:

- Less cost
- Decreases number of bridges from two to one
- Decrease in right of way impacts
- Easier construction

Disadvantages:

- None Apparent

FHWA CATEGORIES

___Safety ___Operations _X_ Environment _X_ Construction ___Other

Potential Cost Savings: $1,911,000

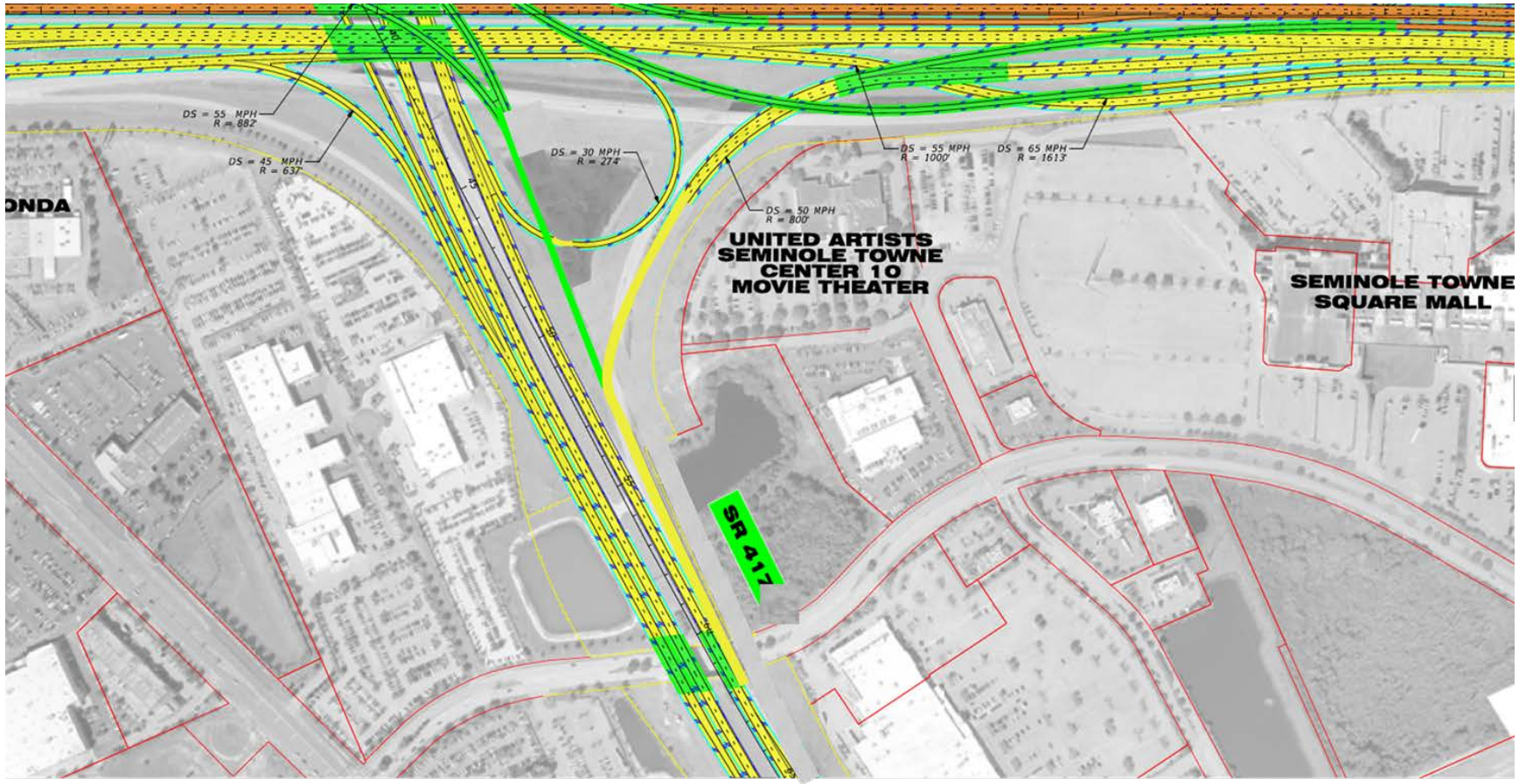
RECOMMENDATION No. 19: Tighten up the separation between the westbound ramps to westbound I-4 general use and express lane ramps

Calculations:

Description	Quantity	Unit	Unit Price	Extended Amount
Embankment	-9,955	CY	$5.94	($59,133)
Clearing & grubbing	-1	AC	$7,724.00	($6,179)
Stabilization	-3,733	SY	$2.90	($10,826)
OBG 09	-3,733	SY	$14.02	($52,337)
Asphalt 3"	-617	TN	$87.21	($53,809)
FC-5	-154	TN	$117.20	($18,049)
Subtotal				($200,332)
Compensable Utility Relocation (5%)	1	LS		($10,017)
Mobilization (10%)	1	LS		($20,033)
Maintenance of Traffic (20%)	1	LS		($40,066)
Lighting (5%)	1	LS		($10,017)
Signage (5%)	1	LS		($10,017)
Drainage (20%)	1	LS		($40,066)
ITS (5%)	1	LS		($10,017)
Erosion Control (1%)	1	LS		($2,003)
Subtotal				($342,568)
Contingency (20%)		LS		($68,514)
		CONSTRUCTION TOTAL		**($411,082)**

Potential right of way savings = $1,500,000

RECOMMENDATION No. 19: Tighten up the separation between the westbound ramps to westbound I-4 general use and express lane ramps



RECOMMENDATION No. 20: Create a grade separated Diverging Diamond Interchange

Proposed Alternative:
The PD&E Documents show a system to system multi-level direct connect interchange providing full connectivity, including major 3rd level flyover structures eastbound Wekiva Parkway to eastbound I-4 and westbound SR 417 to westbound I-4.

VE Alternative:
Construct a grade separated diverging diamond interchange (DDI) between Town Center Blvd. and International Parkway that allows salvaging the existing ramps and connections in southwest quadrant to I-4 and to and from International Parkway. Eliminates all flyovers and brings the proposed interchange down to a second level interchange except at the grade separated diverging points where a third level bridge would be needed. Corresponding changes and improvements to International Parkway interchange with ramp deletions and signal deletions. This VE alternative only adds one half-signal (for northbound to westbound lefts) to International Parkway corridor as opposed to two in the current proposed concept. Virtually no change in traffic flow for northbound direction on International Parkway compared to existing conditions.

Advantages:

- Significantly Less cost (3rd level fly-overs deleted, new ramp construction reduced)
- Makes use of recently constructed infrastructure
- Less construction time
- Simplified construction – shorter bridge lengths and bridge spans. Fewer curved bridges
- Less construction/MOT phases and traffic shifts.
- Less proposed impervious area
- Reduced wetland impacts
- Reduced floodplain impacts
- Improved LOS on International Parkway with fewer traffic signals introduced
- Improved design speed for loop ramp coming from I-4 eastbound C-D road.
- Connections from Toll Roads to I-4 combined creating less entrances and friction at entrance points.

Disadvantages:

- Two left handed exits introduced but this is expected with a DDI setup – good sight distance and major system to system junction should not create too many issues. (This only occurs for westbound SR 417 and eastbound Wekiva Parkway. No left handed exits created for I-4).
- One system to system, system to service connection is mixed – however this is also an existing condition for the SR 417 westbound to westbound I-4 movement that exists today.

FHWA CATEGORIES

X Safety **X Operations** **X Environment** **X Construction** **X Other**

Potential Cost Savings: $162,542,000

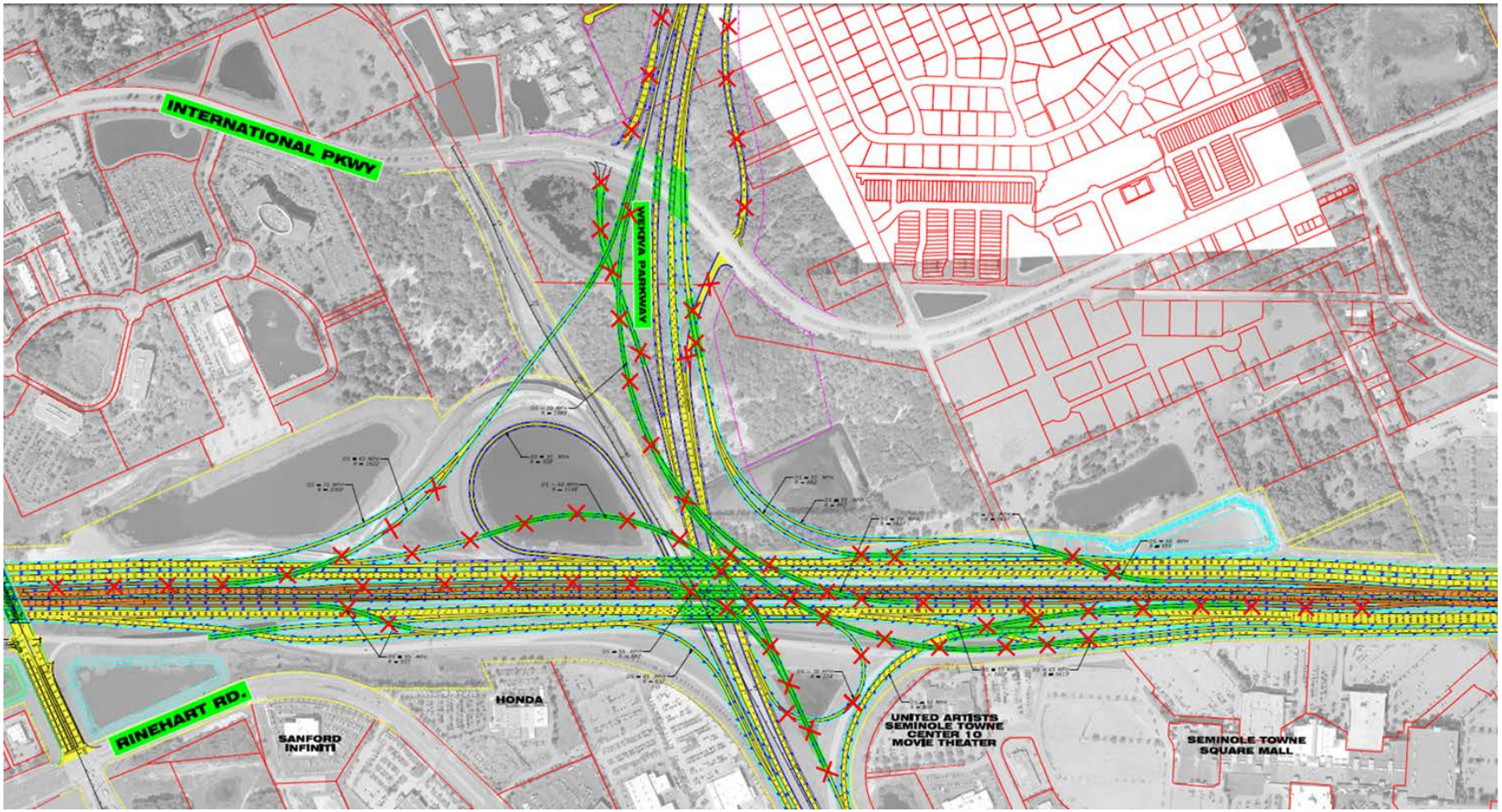
RECOMMENDATION No. 20: Create a grade separated Diverging Diamond Interchange

Calculations:

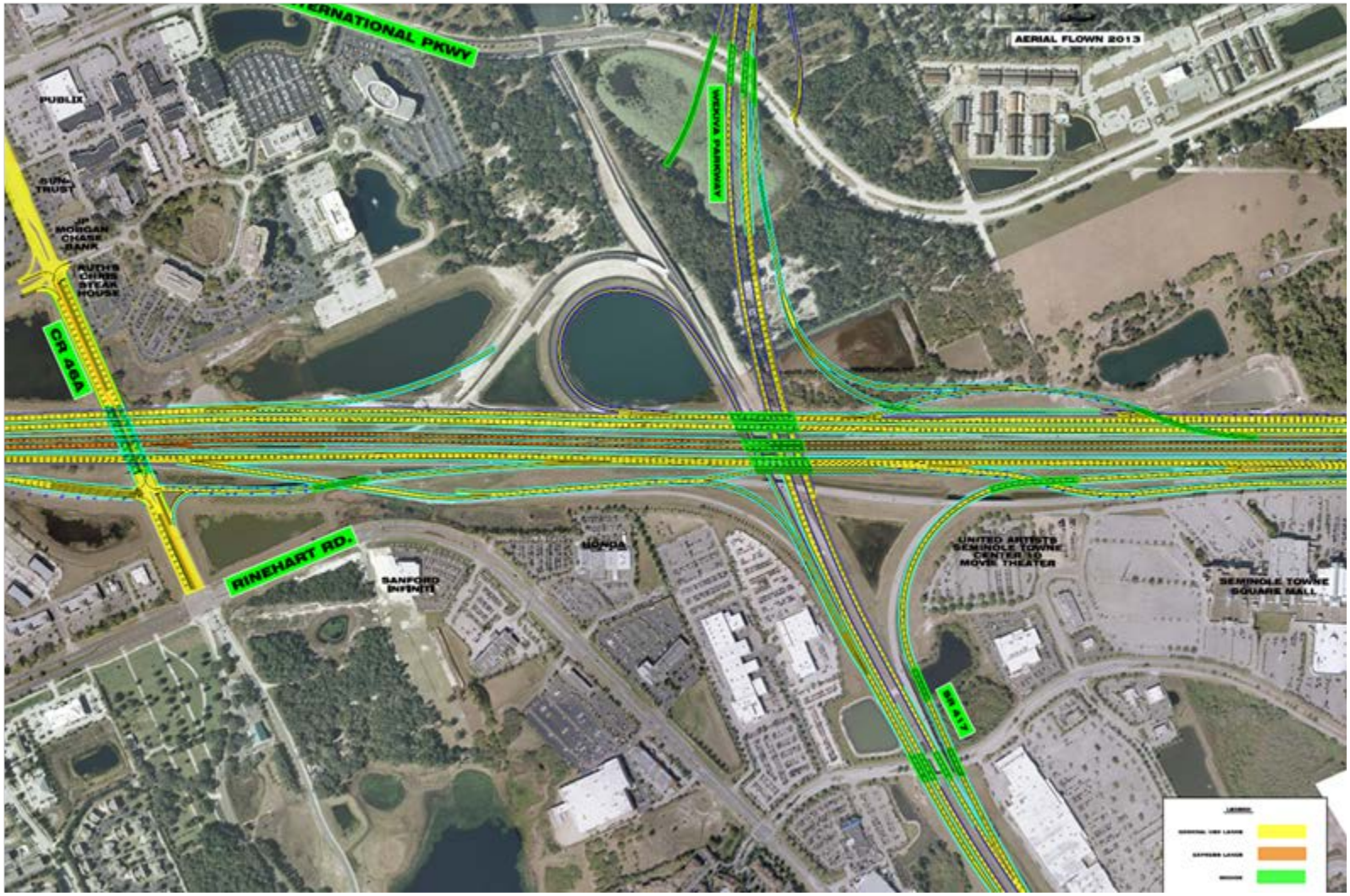
Clearing & Grubbing	-7.07	AC	$7,724.00	($54,609)
Removal of Required Signalization	-1.50	LS	$100,000.00	($150,000)
Pedestrian Bridge Remaining	-1.00	LS	$4,500,000.00	($4,500,000)
Optional Base Group 9	-22833.00	SY	$14.02	($320,119)
Superpave (3" Level C)	-3767.50	TN	$87.21	($328,564)
FC-5	-913.00	TN	$117.20	($107,004)
Relocation of EB CD (See Rec No 31)	-1.00	LS	$3,407,486.00	($3,407,486)
MSE Wall (No net change)	0.00	SF	$25.00	$0
New Concept Bridges	41300.00	SF	$160.00	$6,608,000
New Concept Ramp Pavt.	7000.00	SY	$33.54	$234,780
Subtotal				($74,557,491)
Compensable Utility Relocation (5%)	1.00	LS		($3,727,875)
Mobilization (10%)	1.00	LS		($7,455,749)
Maintenance of Traffic (20%)	1.00	LS		($14,911,498)
Lighting (5%)	1.00	LS		($3,727,875)
Signage (5%)	1.00	LS		($3,727,875)
Drainage (20%)	1.00	LS		($14,911,498)
ITS (5%)	1.00	LS		($3,727,875)
Erosion Control (1%)	1.00	LS		($745,575)
Subtotal				($127,493,310)
Contingency (20%)		LS		($25,498,662)
		CONSTRUCTION TOTAL		**($152,991,972)**

Potential R/W Savings: 1. (Relocation of CD Road entrance moved to the East): $6,600,000
Potential R/W Savings: 2. (R/W Reduction at Reconfigured International Parkway Interchange): $2,950,000.
Total Potential R/W Savings: $ 9,550,000

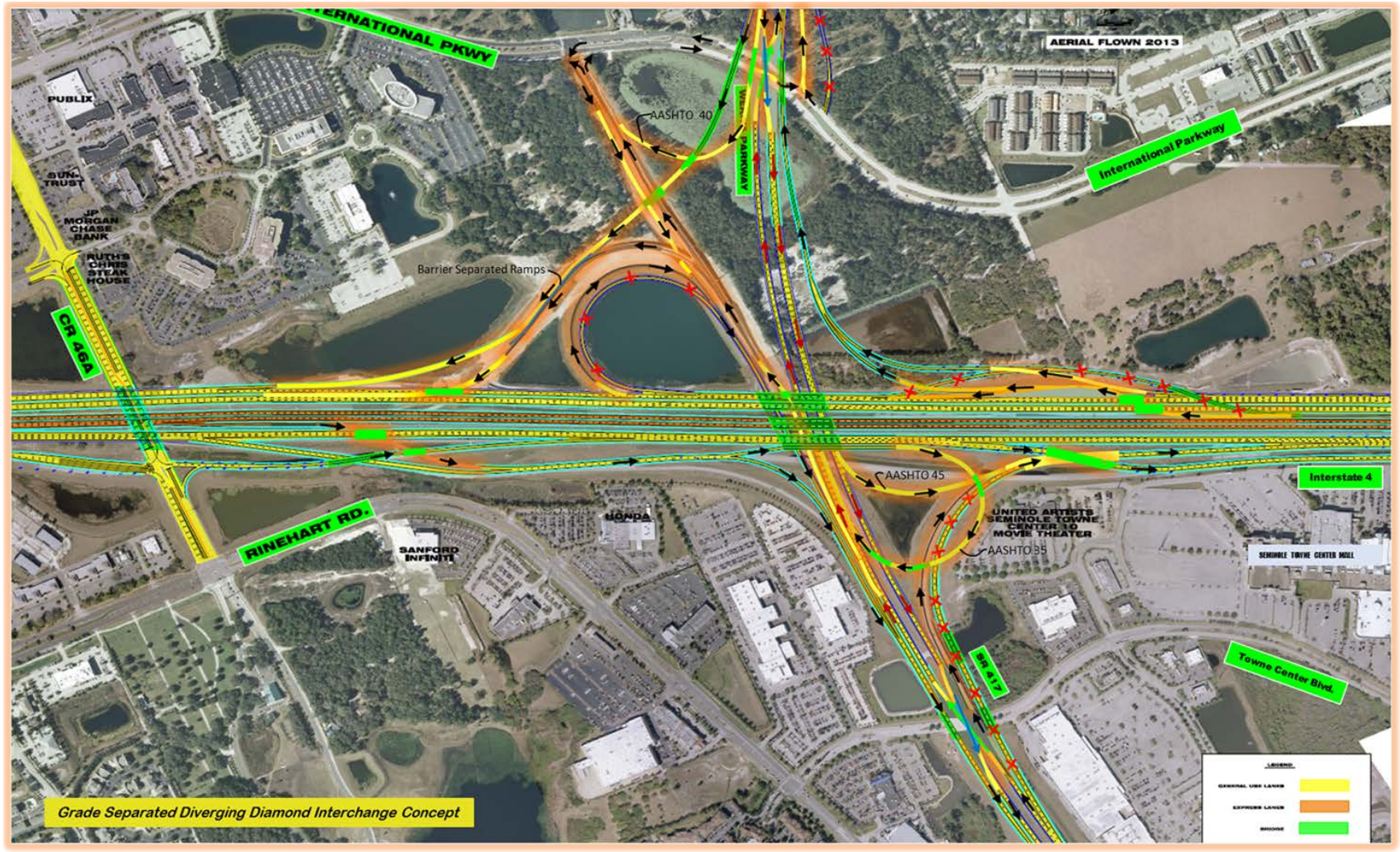
RECOMMENDATION No. 20: Create a grade separated Diverging Diamond Interchange



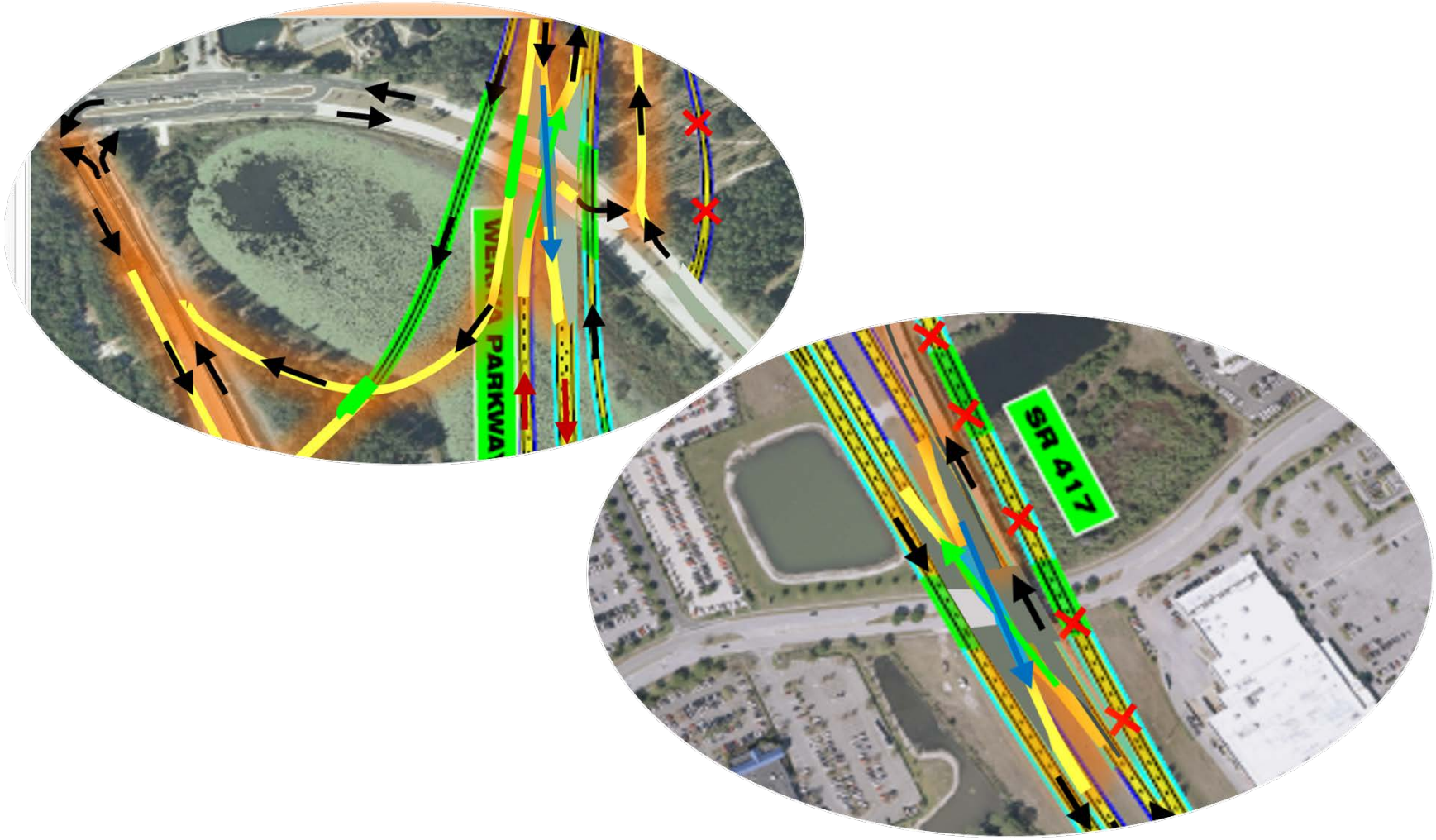
RECOMMENDATION No. 20: Create a grade separated Diverging Diamond Interchange



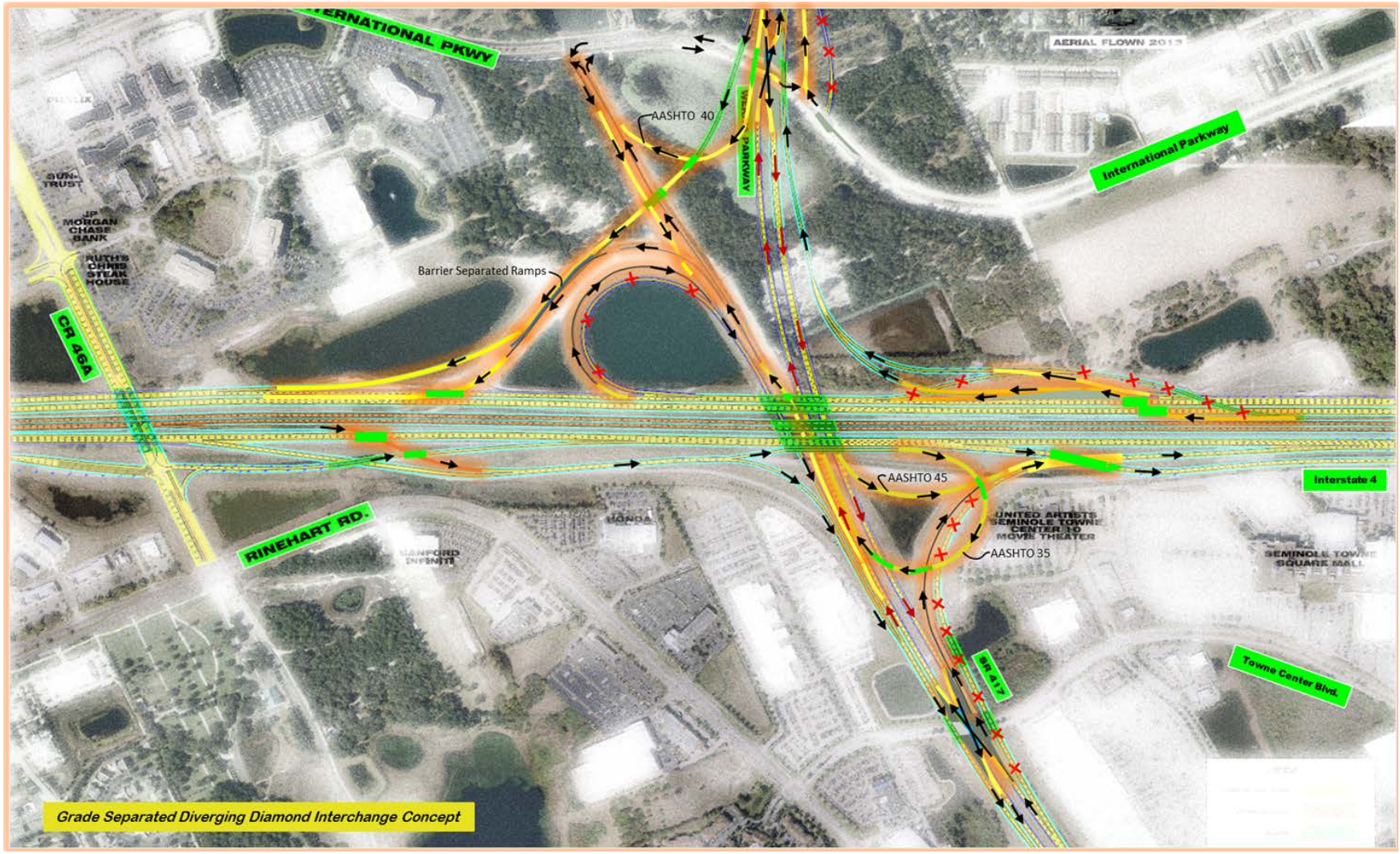
RECOMMENDATION No. 20: Create a grade separated Diverging Diamond Interchange



RECOMMENDATION No. 20: Create a grade separated Diverging Diamond Interchange



RECOMMENDATION No. 20: Create a grade separated Diverging Diamond Interchange



RECOMMENDATION No. 21: Reconfigure the International Parkway and Wekiva Parkway interchange to a tight diamond interchange and move the bridged ramp connections to the outside.

Proposed Alternative:
The PD&E Documents show the bridge ramps that intersect with International Parkway as being spread out over the general area impacting the wetlands and requiring additional right-of-way near International Parkway.

VE Alternative:
Construct the intersection of International Parkway and Wekiva Parkway as a tight diamond interchange, thereby reducing the footprint of the roadway and bridge ramps right-of-way required, and reducing wetland impacts as well. The outside off and on ramps off of the Wekiva Parkway to International Parkway are to be shifted to the inside of the east and westbound I-4 on and off ramps at the International Parkway interchange. By doing this, a tight diamond interchange can be constructed, and the bridge that carries the I-4 westbound general use lane ramps and express lane ramps can be reduced in length by approximately 550 ft.

Advantages:

- Less bridge costs (approx. 550 ft. less bridge length on the I-4 westbound bridge that carries the general use and express lanes – this amount based on latest schematic scale used in VE Study 05-14-14). Cost savings comes (550 ft. x 56.5 avg. width = 31,075 sq. ft. x $ 140/sq. ft. = $4,350,500).

- The eastbound I-4 ramp off of the Wekiva Parkway to go onto I-4 westbound will most likely have more space to be slightly realigned to have a better alignment to miss the SR 417 cloverleaf ramp and water body pond 4A, and therefore two bridges can be potentially eliminated that go over the SR 417 cloverleaf ramp. The two bridge measure approximately 100 ft. long and 30 ft. wide each (100 ft. x 30 ft.)x 2 ea. = 6,000 sq. ft. x $ 140/sq. ft. = $ 840,000).

- Opportunity to reconfigure ponds SJ2-S2 and SJ2-S3 to combine both ponds for more capacity since the westbound on ramp from International Parkway is being pulled into the inside of the I-4 westbound ramp to create the tight diamond interchange.

Disadvantages:

- None apparent.

FHWA CATEGORIES

___Safety ___Operations _X_ Environment _X_ Construction ___Other

Potential Cost Savings: $10,831,000

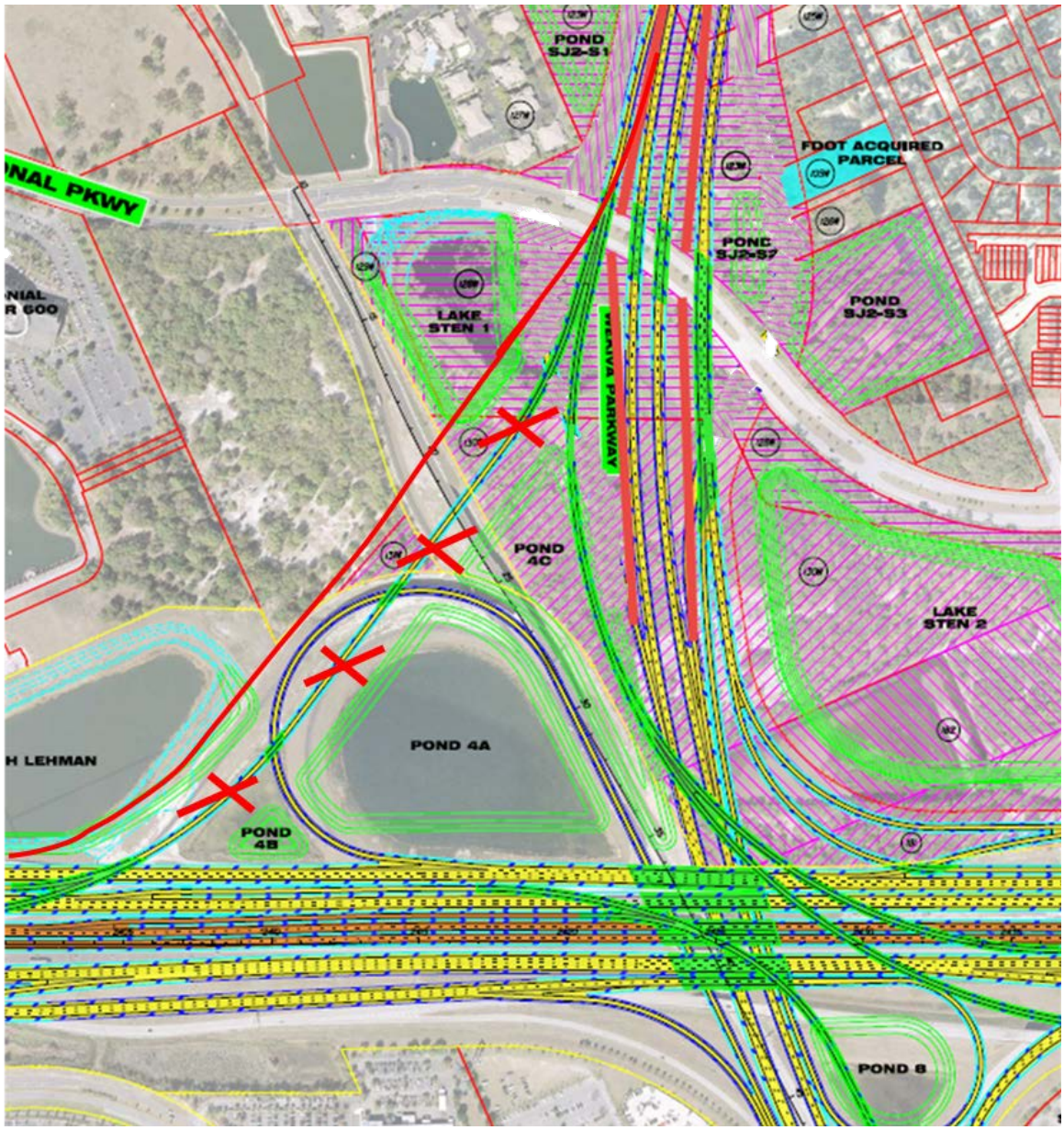
RECOMMENDATION No. 21: Reconfigure the International Parkway and Wekiva Parkway interchange to a tight diamond interchange and move the bridged ramp connections to the outside.

Calculations:

Description	Quantity	Unit	Unit Price	Extended Amount
I-4 westbound Bridge Ramp	-31,075	SF	$140.00	($4,350,500)
SR 417 overhead cloverleaf Bridges	-6,000	SF	$140.00	($840,000)
				$0
				$0
Subtotal				($5,190,500)
Compensable Utility Relocation (5%)	1	LS		($259,525)
Mobilization (10%)	1	LS		($519,050)
Maintenance of Traffic (20%)	1	LS		($1,038,100)
Lighting (5%)	1	LS		($259,525)
Signage (5%)	1	LS		($259,525)
Drainage (20%)	1	LS		($1,038,100)
ITS (5%)	1	LS		($259,525)
Erosion Control (1%)	1	LS		($51,905)
Subtotal				($8,875,755)
Contingency (20%)		LS		($1,775,151)
		CONSTRUCTION TOTAL		**($10,650,906)**

Potential right of way savings = $180,000

RECOMMENDATION No. 21: Reconfigure the International Parkway and Wekiva Parkway interchange to a tight diamond interchange and move the bridged ramp connections to the outside.



RECOMMENDATION No. 23: Shrink the median width to 50 ft. starting at SR 417 at Towne Center Boulevard to International Parkway

Proposed Alternative:
The PD&E Documents show a 64-ft. median width on SR 417 that is carried through the I-4 interchange and is maintained on SR 429 to Orange Boulevard.

VE Alternative:
The VE team recommends constructing a 50-ft. median width from the connection of Wekiva 7A to Rhinehart Road. This will match the typical section of Wekiva 7A.

Advantages:

- Less capital costs
- Less right of way impacts
- Less impact on environment
- Less future maintenance
- Slight improvement of maintenance of traffic

Disadvantages:

- None apparent

FHWA CATEGORIES

___Safety ___Operations _X_ Environment _X_ Construction ___Other

Potential Cost Savings: $3,227,000

RECOMMENDATION No. 23: Shrink the median width to 50 ft. starting at SR 417 at Towne Center Boulevard to International Parkway

Calculations:

Description	Quantity	Unit	Unit Price	Extended Amount
Clearing and Grubbing	-1.3	AC	$7,724.00	($10,041)
Embankment	-27,000	CY	$5.94	($160,380)
Bridges	-4,200	SF	$160.00	($672,000)
Subtotal				($842,421)
Compensable Utility Relocation (5%)	1	LS		($42,121)
Mobilization (10%)	1	LS		($84,242)
Maintenance of Traffic (20%)	1	LS		($168,484)
Lighting (5%)	1	LS		($42,121)
Signage (5%)	1	LS		($42,121)
Drainage (20%)	1	LS		($168,484)
ITS (5%)	1	LS		($42,121)
Erosion Control (1%)	1	LS		($8,424)
Subtotal				($1,440,540)
Contingency (20%)		LS		($288,108)
		CONSTRUCTION TOTAL		**($1,728,648)**

Potential right of way savings = $1,500,000

RECOMMENDATION No. 24: SR 429 westbound on ramp reconfigure to one lane

Proposed Alternative:
The PD&E Documents show a 2-lane SR 429 westbound on ramp at the proposed interchange at International Boulevard.

VE Alternative:
Design and construct a one lane ramp for SR 429 westbound from International Boulevard.

Advantages:

- Less capital costs
- Less impacts of right of way
- Less environmental impacts
- Improves constructability

Disadvantages:

- None apparent

FHWA CATEGORIES

___Safety ___Operations _X_ Environment _X_ Construction ___Other

Potential Cost Savings: $1,214,000

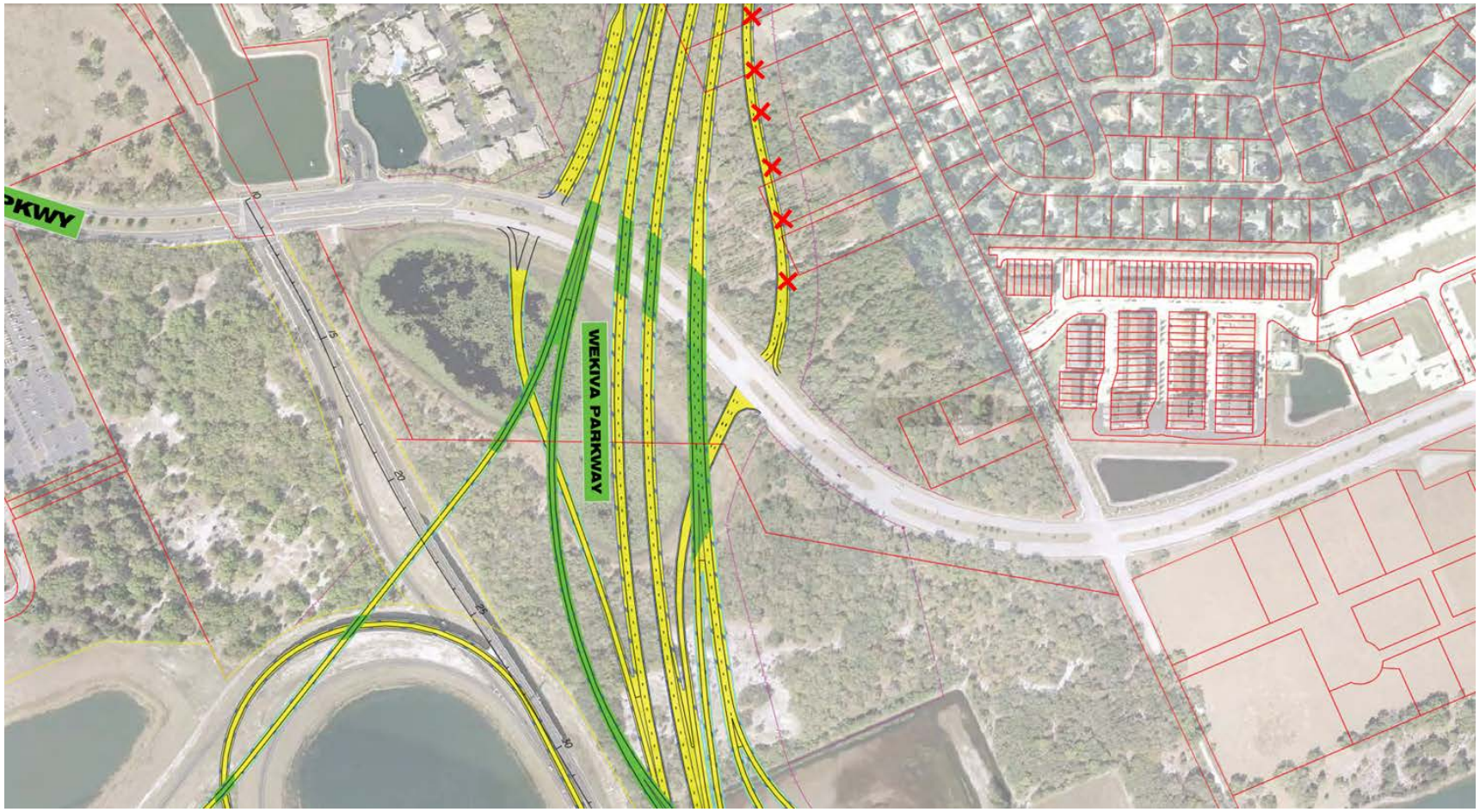
RECOMMENDATION No. 24: SR 429 westbound on ramp reconfigure to one lane

Calculations:

Description	Quantity	Unit	Unit Price	Extended Amount
Clearing and Grubbing	-0.5	AC	$7,724.00	**($3,862.00)**
Stabilization Type B LBR 40	-2,000	SY	$2.90	($5,800.00)
Base Optional (base group 12) ML	-2,000	SY	$14.02	($28,040.00)
Superpave asphaltic Concrete (Traff D)	-330	TN	$87.21	($28,779.30)
Asphaltic Concrete Friction Course (FC	-83	TN	$117.20	($9,669.00)
Embankment	-7,333	CY	$5.94	($43,558.02)
Bridges	-2,400	SF	$160.00	($384,000.00)
Subtotal				($503,708)
Compensable Utility Relocation (5%)	1	LS		($25,185)
Mobilization (10%)	1	LS		($50,371)
Maintenance of Traffic (20%)	1	LS		($100,742)
Lighting (5%)	1	LS		($25,185)
Signage (5%)	1	LS		($25,185)
Drainage (20%)	1	LS		($100,742)
ITS (5%)	1	LS		($25,185)
Erosion Control (1%)	1	LS		($5,037)
Subtotal				($861,341)
Contingency (20%)		LS		($172,268)
		CONSTRUCTION TOTAL		**($1,033,609)**

Potential right of way savings = $180,000

RECOMMENDATION No. 24: SR 429 westbound on ramp reconfigure to one lane



RECOMMENDATION No. 24: SR 429 westbound on ramp reconfigure to one lane

RECOMMENDATION No. 25: SR 429 westbound off ramp reconfigure to two lanes

Proposed Alternative:
The PD&E Documents show the SR 429 westbound off ramp to International Parkway with three lanes, two left-turn lanes and one right-turn lane.

VE Alternative:
Design year traffic demand does not warrant a three-lane off ramp with a peak demand of only 236 vehicles per hour. Instead, a two-lane off ramp is suggested which still accommodates all proposed movements while reducing capital costs, maintenance, impervious area, and right-of-way take. Additionally, the off-ramp queue distance will be reduced from 500 feet to 300 feet. The overall length of the off-ramp will remain unchanged.

Advantages:

- Less capital cost
- Less maintenance
- Reduced stormwater impacts

Disadvantages:

- Decreased storage queue

FHWA CATEGORIES

___Safety ___Operations _X_ Environment _X_ Construction ___Other

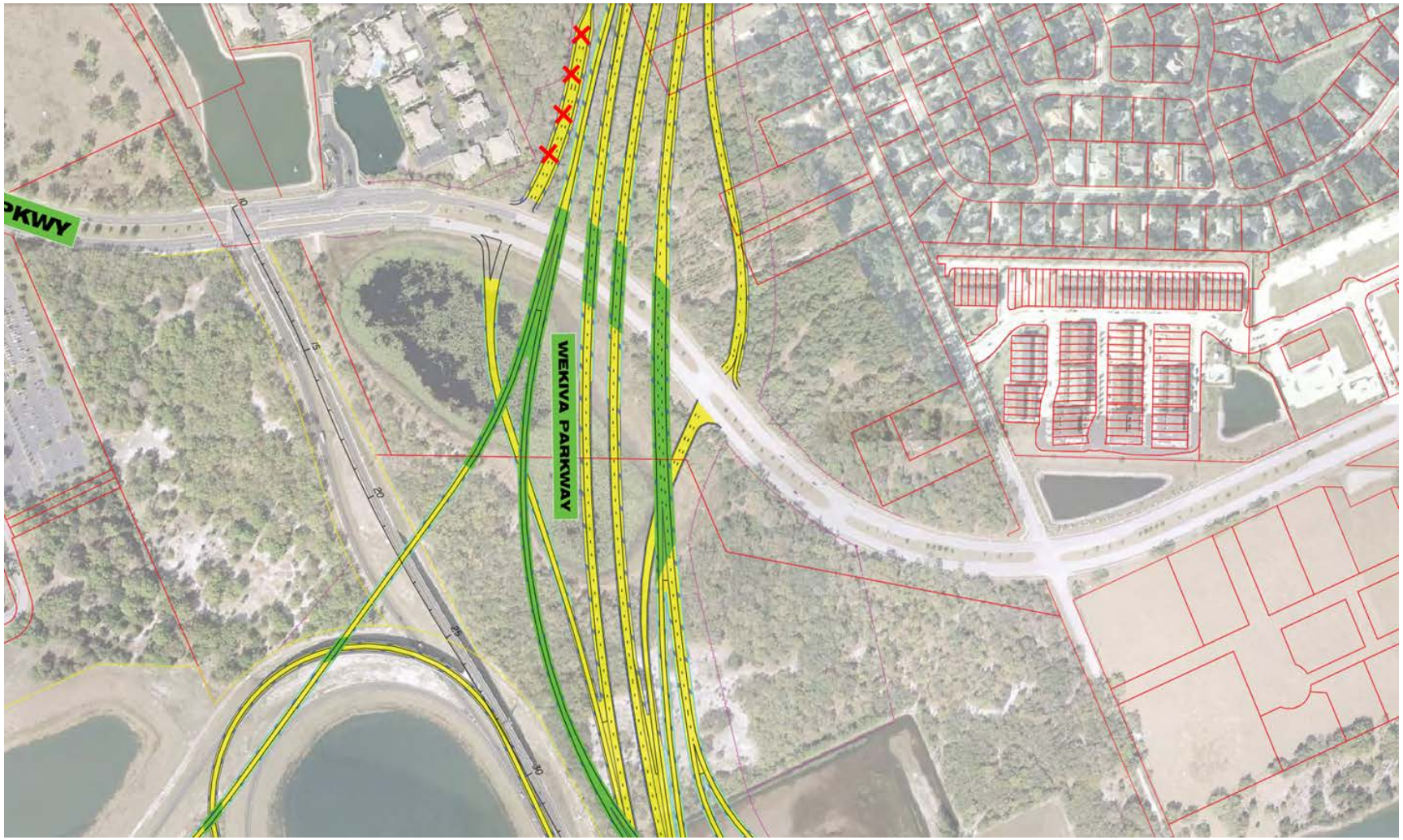
Potential Cost Savings: $92,000

RECOMMENDATION No. 25: SR 429 westbound off ramp reconfigure to two lanes

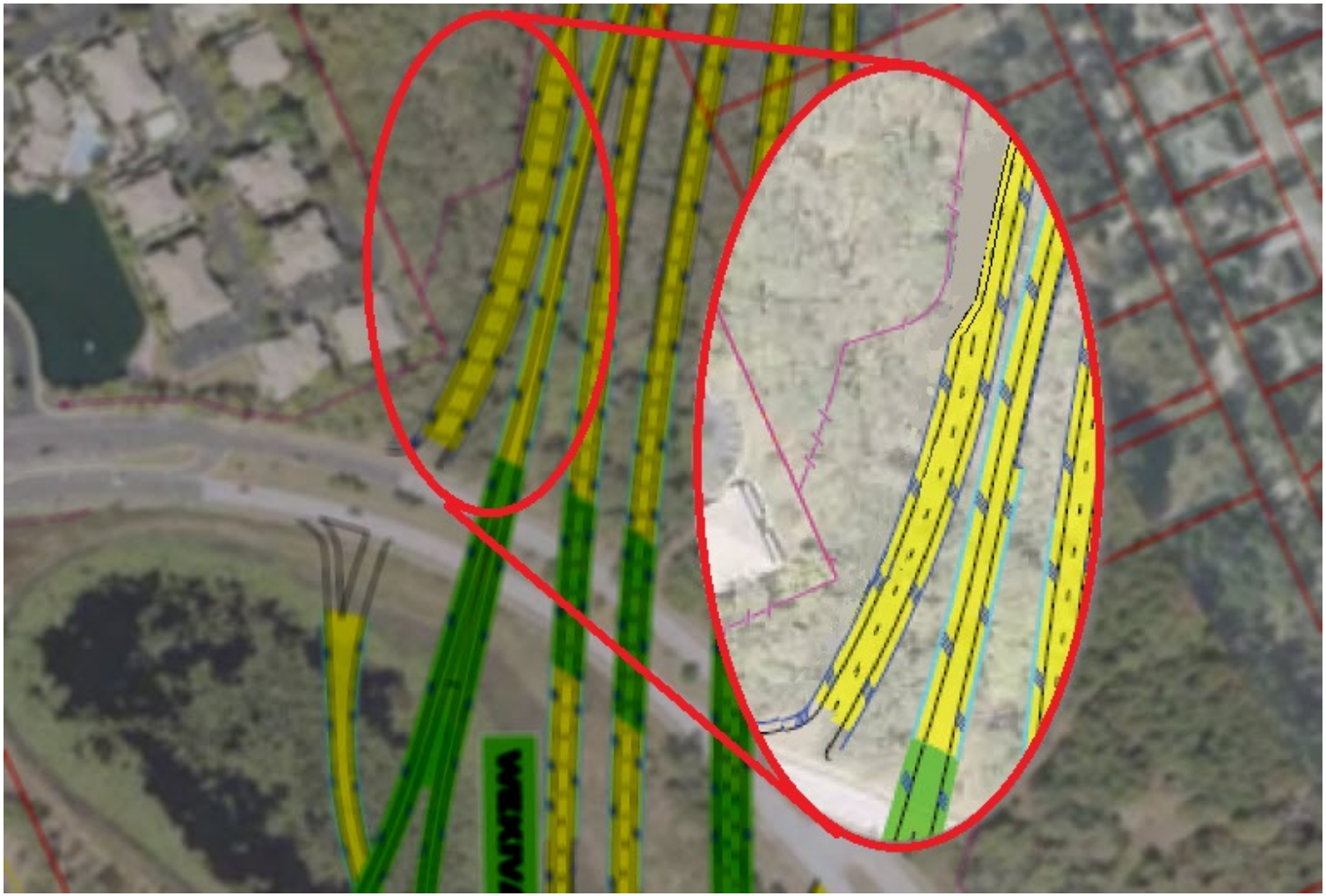
Calculations:

Description	Quantity	Unit	Unit Price	Extended Amount
Stabilization	-1,200	SY	$2.90	($3,480)
Base	-1,200	SY	$14.02	($16,824)
Superpave	-99	TN	$89.64	($8,874)
FC-5 Friction Course	-132	TN	$117.20	($15,470)
Subtotal				($44,649)
Compensable Utility Relocation (5%)	1	LS		($2,232)
Mobilization (10%)	1	LS		($4,465)
Maintenance of Traffic (20%)	1	LS		($8,930)
Lighting (5%)	1	LS		($2,232)
Signage (5%)	1	LS		($2,232)
Drainage (20%)	1	LS		($8,930)
ITS (5%)	1	LS		($2,232)
Erosion Control (1%)	1	LS		($446)
Subtotal				($76,349)
Contingency (20%)		LS		($15,270)
		CONSTRUCTION TOTAL		**($91,619)**

RECOMMENDATION No. 25: SR 429 westbound off ramp reconfigure to two lanes



RECOMMENDATION No. 25: SR 429 westbound off ramp reconfigure to two lanes



RECOMMENDATION No. 28: Modify the SR 429 eastbound to I-4 westbound ramps to go under I-4 and the C-D road

Proposed Alternative:
The PD&E Documents propose the ramps from SR-429 Wekiva Parkway eastbound to I-4 westbound (both to the general use lanes and the express lanes) passing over I-4 using flyover bridges. These flyover bridges are anticipated to be steel box girders and require the use of cantilever beams which would be costly.

VE Alternative:
As this section of I-4 profile will already be raised to get over SR 417 and SR 429, the VE team suggests that the SR 429 eastbound to I-4 westbound ramps pass under I-4 and connect in a similar manner as proposed by the design team. This concept maintains the SR 429 ramps at grade instead of requiring expensive steel structures while the I-4 bridges could be simple span concrete bridges.

Advantages:

- Less capital cost
- Less inspection and maintenance

Disadvantages:

- None apparent

FHWA CATEGORIES

___Safety ___Operations ___Environment _X_Construction ___Other

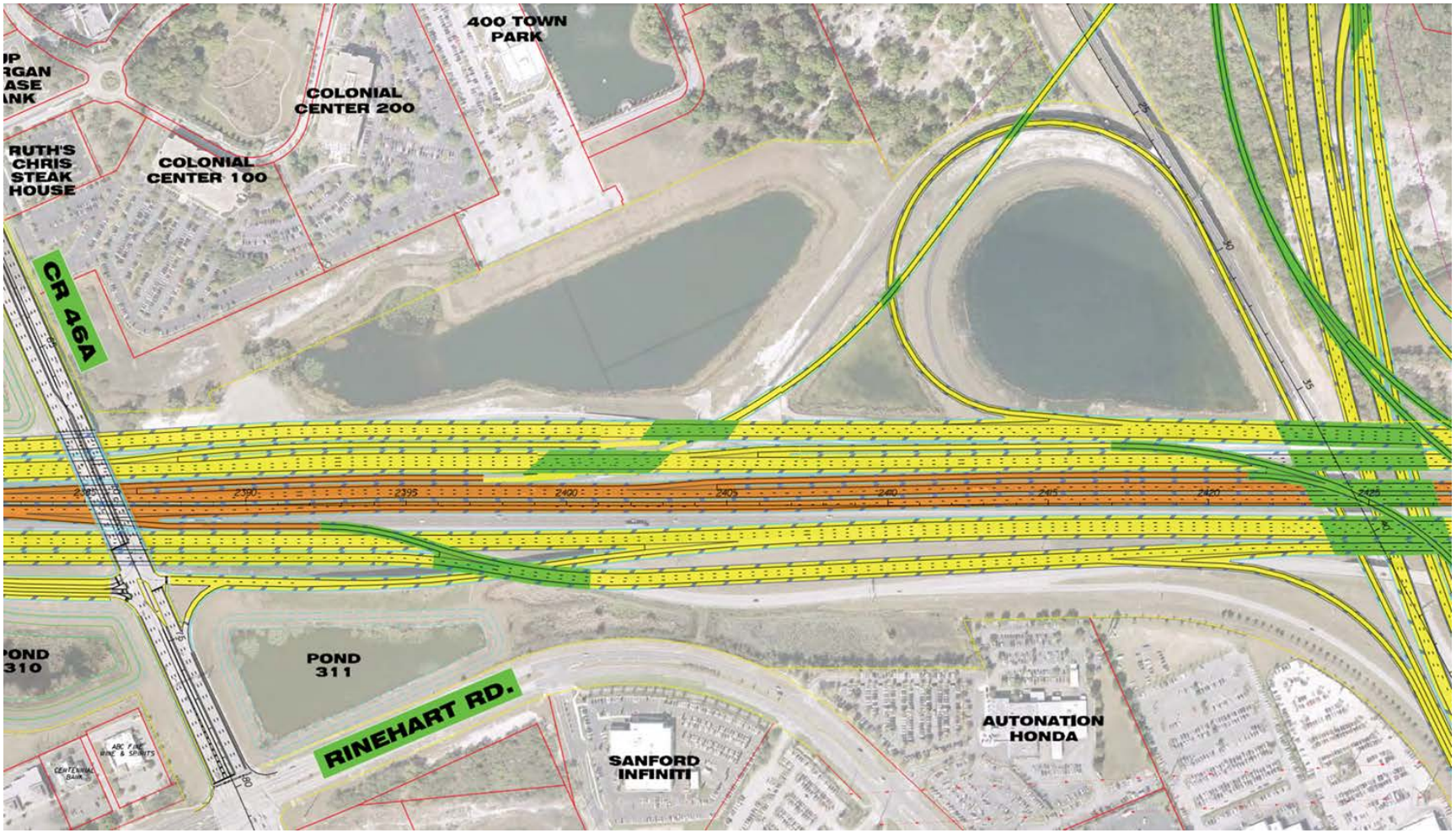
Potential Cost Savings: $1,472,000

RECOMMENDATION No. 28: Modify the SR 429 eastbound to I-4 westbound ramps to go under I-4 and the C-D road

Calculations:

Description	Quantity	Unit	Unit Price	Extended Amount
Ramps Steel-Box Bridge	-34,500	SF	$170.00	($5,865,000)
MSE Wall	-11,700	SF	$34.00	($397,800)
Embankment	-13,867	CY	$5.94	($82,368)
Barrier Wall	-2,300	LF	$113.00	($259,900)
MSE Wall	13,136	SF	$34.00	$446,624
Embankment	29,819	CY	$5.94	$177,126
Bridge I-4 WB Mainline (concrete)	24,000	SF	$140.00	$3,360,000
Bridge I-4 WB C/D (conrete)	13,600	SF	$140.00	$1,904,000
Barrier Wall	240	LF	$113.00	$27,120
Subtotal				($717,318)
Compensable Utility Relocation (5%)	1	LS		($35,866)
Mobilization (10%)	1	LS		($71,732)
Maintenance of Traffic (20%)	1	LS		($143,464)
Lighting (5%)	1	LS		($35,866)
Signage (5%)	1	LS		($35,866)
Drainage (20%)	1	LS		($143,464)
ITS (5%)	1	LS		($35,866)
Erosion Control (1%)	1	LS		($7,173)
Subtotal				($1,226,613)
Contingency (20%)		LS		($245,323)
		CONSTRUCTION TOTAL		**($1,471,936)**

RECOMMENDATION No. 28: Modify the SR 429 eastbound to I-4 westbound ramps to go under I-4 and the C-D road



RECOMMENDATION No. 29: Not replacing the bridge and reroute the Cross Seminole Trail up to CR 46A and incorporate the Trail in to a nice pedestrian crossing at that location

Proposed Alternative:
The I-4 Re-evaluation Segment 3 PD&E proposes to impact and replace the existing Cross Seminole Trail Pedestrian Bridge.

VE Alternative:

The VE Alternative consists of rerouting the Cross Seminole Trail to the I-4/CR 46A Interchange. This would include providing enhanced pedestrian improvements on the Ultimate CR 46A Interchange Bridge configuration to accommodate a multi-use trail in addition to the standard pedestrian pathway. The Florida National Scenic Trail currently certifies the existing CR 46A crossing at I-4 as a northern extension of the Cross Seminole Trail at the intersection of International Parkway and CR 46A.

Advantages:

- Not replacing the existing I-4 Pedestrian Seminole Cross Trail Bridge which cost approximately $3.6 Million in 2003.
- The Wekiva Seminole Trail is utilizing the International Parkway corridor and CR 46A corridors further west.

Disadvantages:

- Connectivity for the two existing trail systems will be revised but maintained utilizing the CR 46A corridor. Will not maintain a separate dedicated trail system.
- Additional right-of-way may be required along CR 46A corridor between International Parkway and Rinehart Road to accommodate a multi-use trail than the traditional pedestrian features with sidewalk.
- It is anticipated the I-4 Pedestrian Trail Bridge will require an in-kind bridge replacement

FHWA CATEGORIES

___Safety ___Operations ___Environment _X_ Construction ___Other

Potential Cost Savings: $6,706,000 based on the in-kind replacement of the I-4 Pedestrian Bridge for Seminole Cross Trail construction cost is estimated at $4,500,000.00 present day value.

RECOMMENDATION No. 29: Not replacing the bridge and reroute the Cross Seminole Trail up to CR 46A and incorporate the Trail in to a nice pedestrian crossing at that location

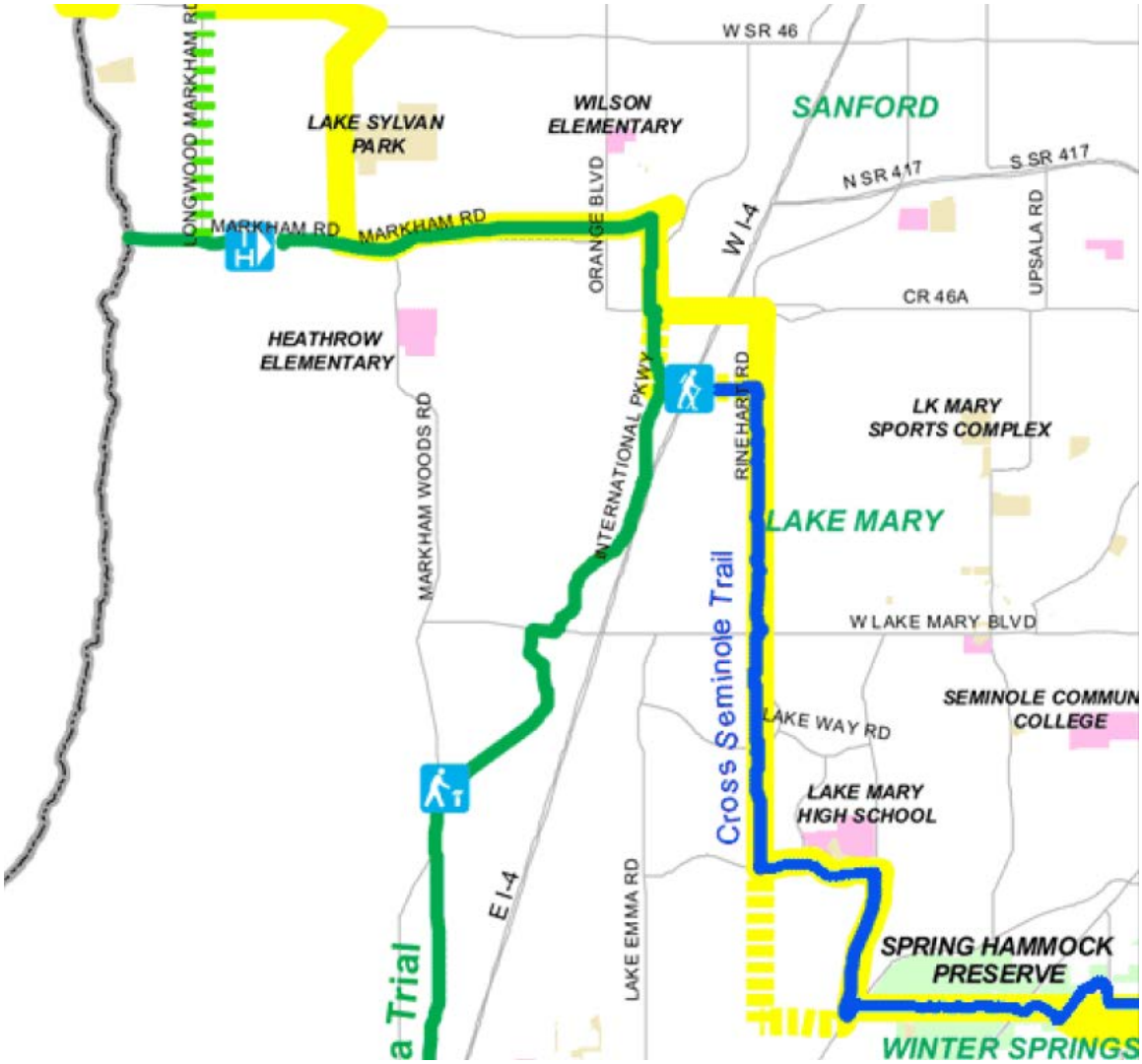
Calculations:

Description	Quantity	Unit	Unit Price	Extended Amount
Pedestrian Bridge (replaced in-kind)	-1	LS	$4,500,000.00	($4,500,000)
Additional Bridge Width	4,500	SF	$160.00	$720,000
160 4 Stabalization Type B LBR	11,060	SF	$2.90	$32,074
285 706 Base Optional(base group 6)	1,229	SY	$13.69	$16,823
334 1 1 Superpave Traffic B Shoulder	101	TN	$87.28	$8,849
337 722 Asphaltic Friction Course FC-5 Shoulder	135	TN	$117.20	$15,843
Subtotal				($3,706,411)
Compensable Utility Relocation (5%)	1	LS		($185,321)
Mobilization (10%)	1	LS		($370,641)
Maintenance of Traffic (20%)	1	LS		($741,282)
Lighting (5%)	1	LS		($185,321)
Signage (5%)	1	LS		($185,321)
Drainage (20%)	1	LS		($741,282)
ITS (5%)	1	LS		($185,321)
Erosion Control (1%)	1	LS		($37,064)
Subtotal				($6,337,963)
Contingency (20%)		LS		($1,267,593)
		CONSTRUCTION TOTAL		**($7,605,555)**

Potential right of way costs = $900,000 for CR 46A from I-4 to International Parkway.

Total Cost Savings - $6,705,555

RECOMMENDATION No. 29: Not replacing the bridge and reroute the Cross Seminole Trail up to CR 46A and incorporate the Trail in to a nice pedestrian crossing at that location



RECOMMENDATION No. 31: Eliminate the C-D road in the southeast corner of the interchange

Proposed Alternative:
The PD&E Documents show the use of a C-D road starting at the Cross Seminole Trail connecting the main line of I-4 south of CR 46A. The C-D road is then brought over the CR 46A on ramp before continuing on to the SR 417/SR 429 Interchange.

VE Alternative:
Shift the entrance of the C-D road from Sta. 2355+00 to 2389+00. The C-D road is then brought under the CR 46A on ramp as existing before continuing onto the SR 417/SR 429 Interchange. This proposal will be a cost savings in both not demolishing the Cross Seminole Trail and in roadway and bridge construction.

Advantages:

- Less right of way
- Eliminate need to demolish the Cross Seminole Trail pedestrian bridge
- Less cost
- Preserves existing CR 46A infrastructure

Disadvantages:

- None apparent

FHWA CATEGORIES

___Safety _X_ Operations _X_ Environment _X_ Construction ___Other

Potential Cost Savings: $22,826,000

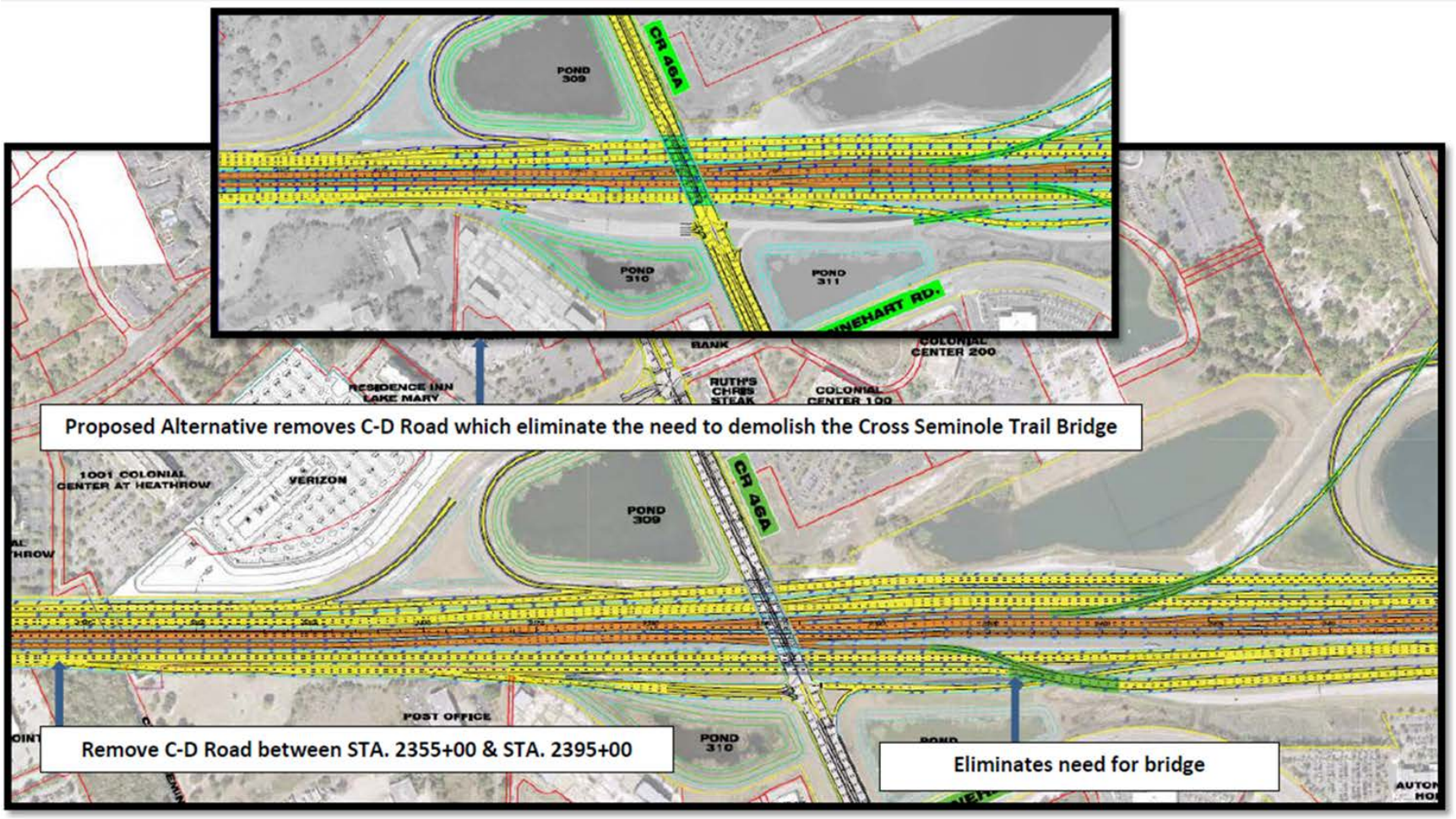
RECOMMENDATION No. 31: Eliminate the C-D road in the southeast corner of the interchange

Calculations:

Description	Quantity	Unit	Unit Price	Extended Amount
Pedestrian Bridge	-1	LS	4500000	($4,500,000)
Shoulder Pavement	-978	Ton	$87.28	($85,341)
Friction Course	-1,760	Ton	$117.20	($206,272)
Lane Pavement	-1,760	Ton	$87.21	($153,490)
Barrier Wall	-8,000	LF	$113.00	($904,000)
Bridge	-12,000	SF	$160.00	($1,920,000)
Pavement Marking	-0.75	NM	$3,178.00	($2,384)
MSE Wall	-4,000.00	SF	$34.00	($136,000)
Vehicular Impact Attenuator	-1.00	EA	$18,327.00	($18,327)
Stabilization	-10,666.67	SF	$2.90	($30,933)
Base Option - Shoulder	-10,667.00	SY	$13.69	($146,031)
Base Option - Section area	-10,667	SY	$14.02	($149,547)
Subtotal				($7,907,486)
Compensable Utility Relocation (5%)	1	LS		($395,374)
Mobilization (10%)	1	LS		($790,749)
Maintenance of Traffic (20%)	1	LS		($1,581,497)
Lighting (5%)	1	LS		($395,374)
Signage (5%)	1	LS		($395,374)
Drainage (20%)	1	LS		($1,581,497)
ITS (5%)	1	LS		($395,374)
Erosion Control (1%)	1	LS		($79,075)
Subtotal				($13,521,801)
Contingency (20%)		LS		($2,704,360)
		CONSTRUCTION TOTAL		**($16,226,161)**

Potential right of way cost savings = $6,600,000

RECOMMENDATION No. 31: Eliminate the C-D road in the southeast corner of the interchange



RECOMMENDATION No. 32: Increase the ramp profile to eliminate replacing the CR 46A Bridge

Proposed Alternative:
The PD&E Documents show long ramp profiles near the CR 46A bridge including the ramp from I-4 eastbound to SR 417/SR 429 and the ramps from SR 429 to I-4 westbound.

VE Alternative:
The VE Team recommends that ramp profile grades are increased to bring traffic to at-grade quicker (less distance), allowing traffic to merge into the mainline quicker, resulting in a narrow footprint of I-4. By reducing the overall width of I-4, the CR 46A bridge does not need to be replaced as proposed.

Advantages:

- Less capital cost
- Improved MOT/less phases

Disadvantages:

- More maintenance on older CR 46A newly-widened bridge

FHWA CATEGORIES

___Safety ___Operations _X_ Environment _X_ Construction ___Other

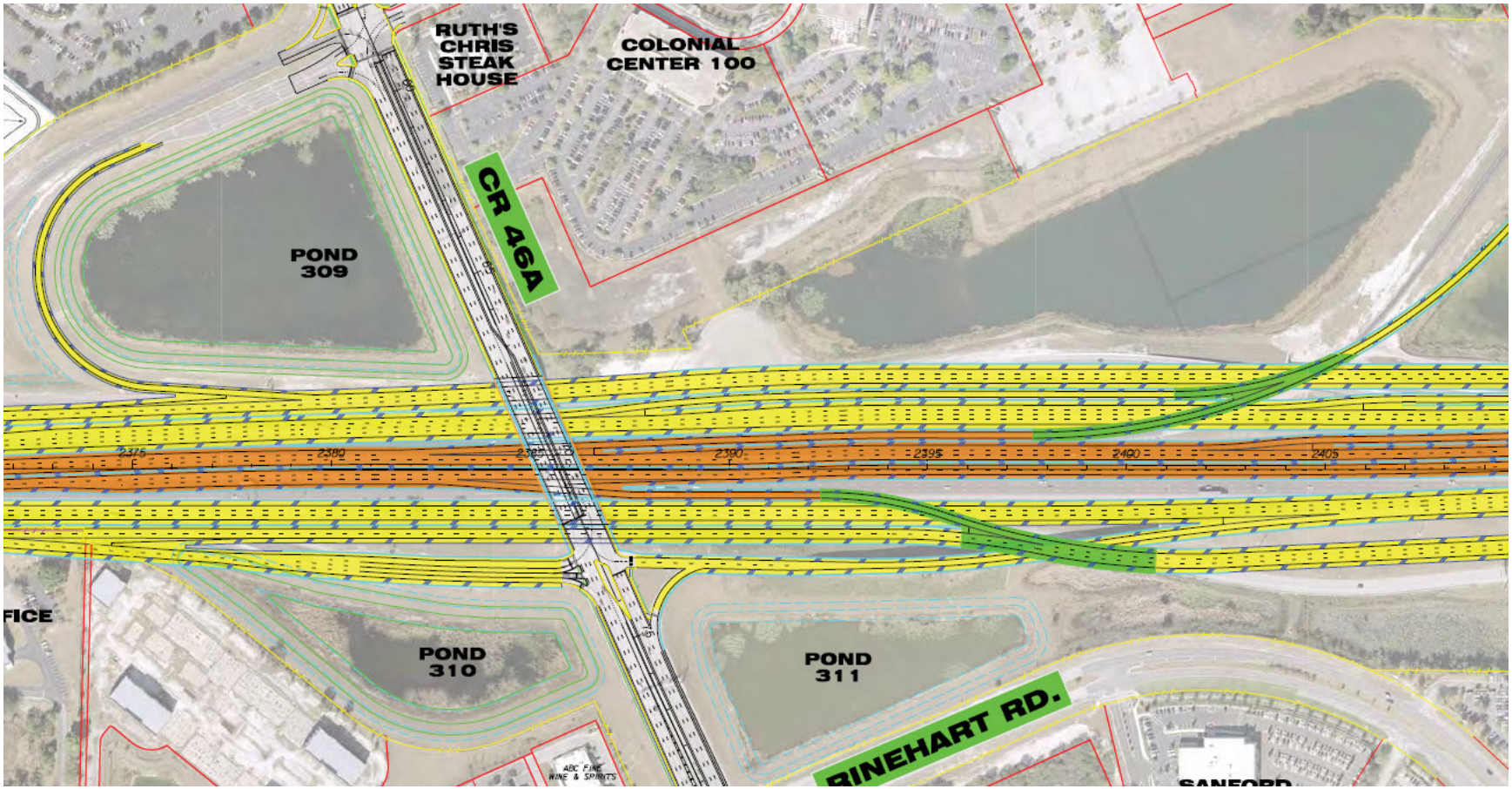
Potential Cost Savings: $11,583,000

RECOMMENDATION No. 32: Increase the ramp profile to eliminate replacing the CR 46A Bridge

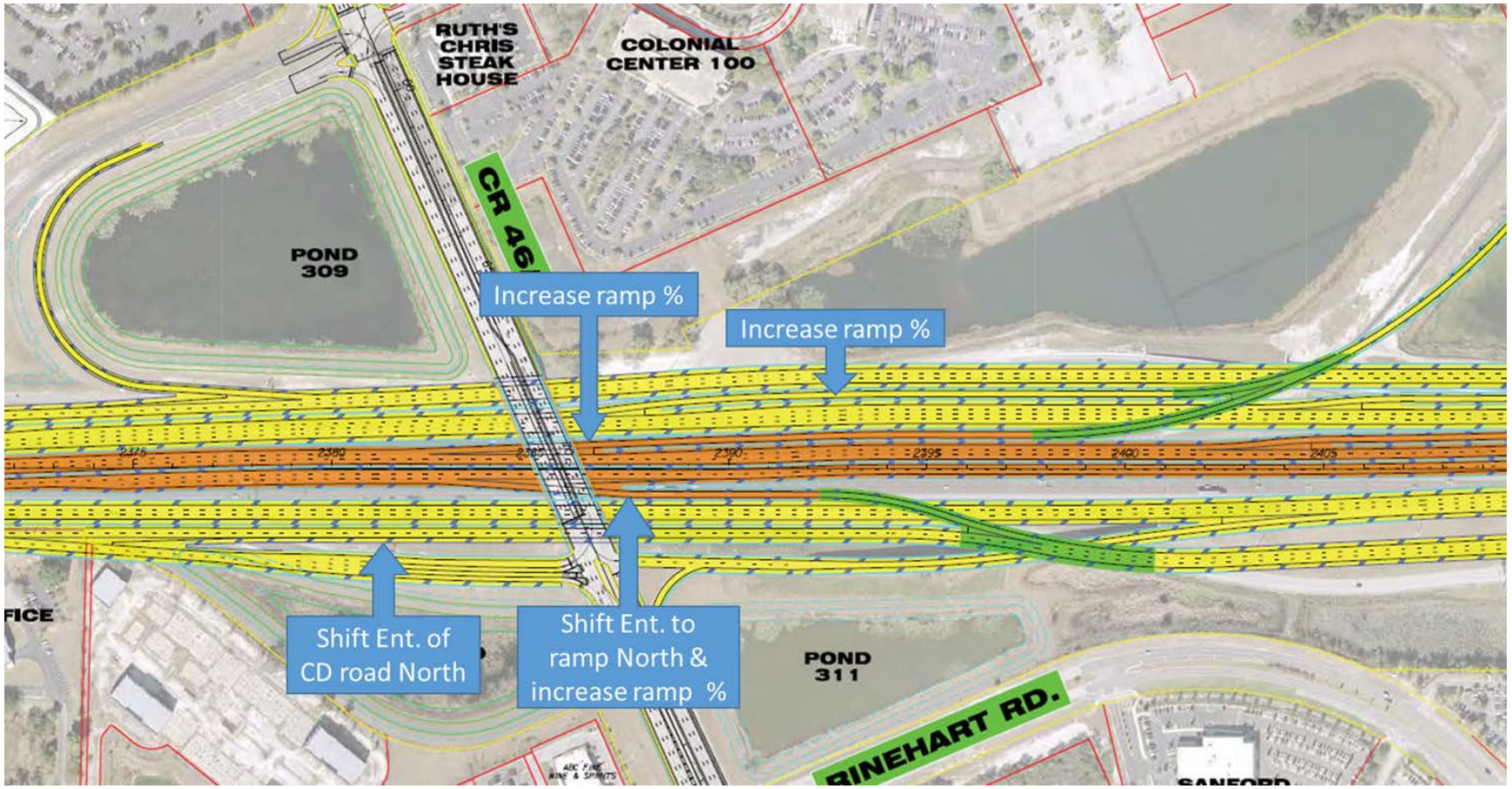
Calculations:

Description	Quantity	Unit	Unit Price	Extended Amount
CR-46A Bridge Replacement	-50,600	SF	$140.00	($7,084,000)
CR-46A Bridge Widening	10,080	SF	$160.00	$1,612,800
Stabilization	-4,667	SY	$2.90	($13,533)
Base	-4,667	SY	$14.02	($65,427)
Superpave	-385	TN	$89.64	($34,511)
FC-5 Friction Course	-513	TN	$117.20	($60,163)
Subtotal				($5,644,834)
Compensable Utility Relocation (5%)	1	LS		($282,242)
Mobilization (10%)	1	LS		($564,483)
Maintenance of Traffic (20%)	1	LS		($1,128,967)
Lighting (5%)	1	LS		($282,242)
Signage (5%)	1	LS		($282,242)
Drainage (20%)	1	LS		($1,128,967)
ITS (5%)	1	LS		($282,242)
Erosion Control (1%)	1	LS		($56,448)
Subtotal				($9,652,666)
Contingency (20%)		LS		($1,930,533)
		CONSTRUCTION TOTAL		**($11,583,200)**

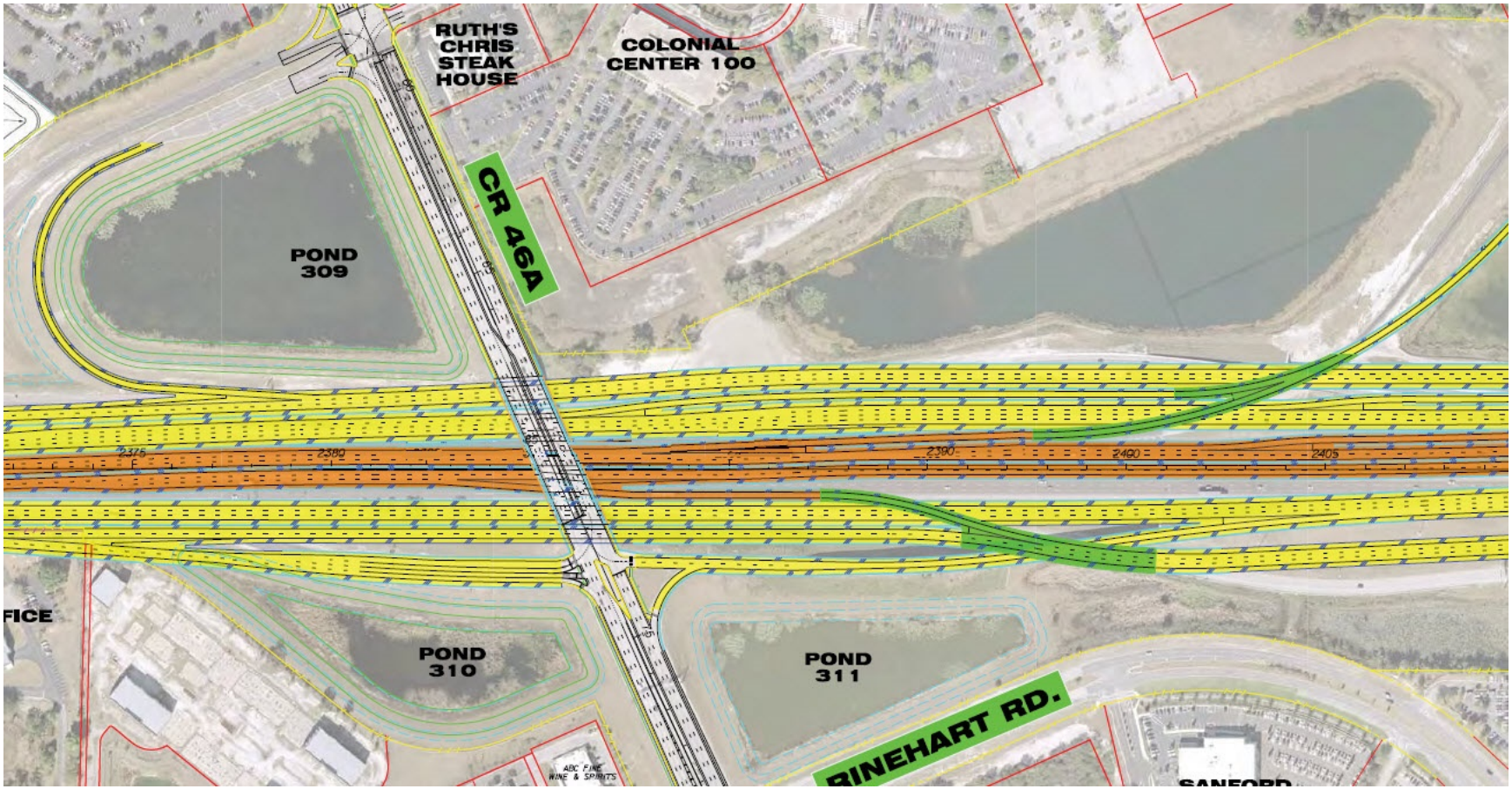
RECOMMENDATION No. 32: Increase the ramp profile to eliminate replacing the CR 46A Bridge



RECOMMENDATION No. 32: Increase the ramp profile to eliminate replacing the CR 46A Bridge



RECOMMENDATION No. 32: Increase the ramp profile to eliminate replacing the CR 46A Bridge



RECOMMENDATION No. 33: Cul-de-sacs for Wilson Road to allow for Wekiva Parkway to be at grade

Proposed Alternative:
The PD&E Documents show two eastbound and two westbound bridges on SR 429 to span Wilson Road. Each bridge is approximately 160 feet in length.

VE Alternative:
Eliminate proposed bridges, and construct SR 429 at-grade across Wilson Rd. Construct cul-de-sacs at ends of Wilson Rd. at northern and southern right-of-way limits of SR 429. Construct a pedestrian bridge to span SR 429 at Wilson Rd if warranted.

Advantages:

- Less cost
- Less time to construct
- Easier Construction
- Less roadway traffic noise impacts
- Improves MOT

Disadvantages:

- Decrease in connectivity
- Right-of-Way concerns

FHWA CATEGORIES

___Safety ___Operations _X_ Environment _X_ Construction ___Other

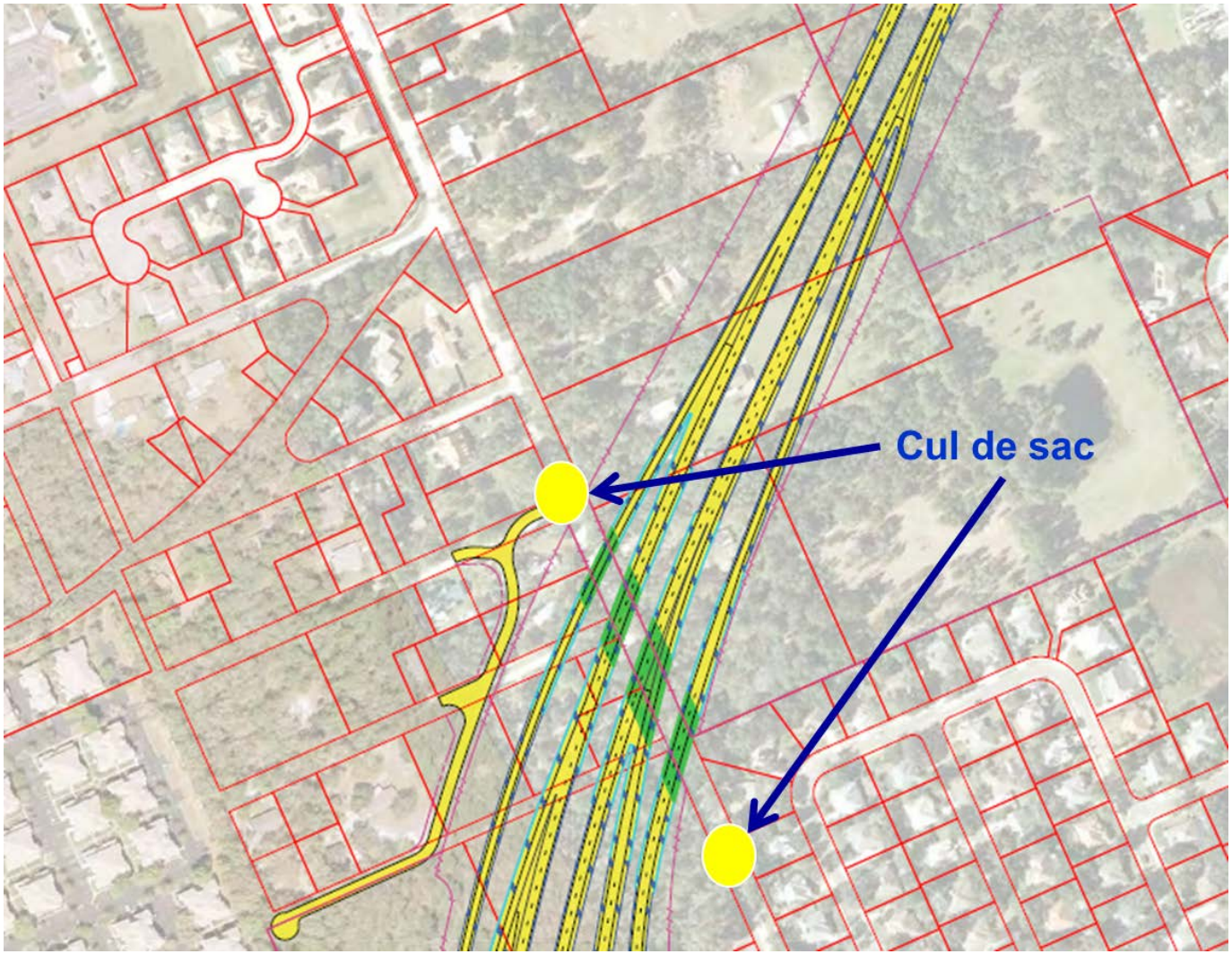
Potential Cost Savings: $7,938,000

RECOMMENDATION No. 33: Cul-de-sacs for Wilson Road to allow for Wekiva Parkway to be at grade

Calculations:

Description	Quantity	Unit	Unit Price	Extended Amount
Type B Stabilization	2,512	SY	$3.69	$9,269
Optional Base, Base Group 11	2,512	SY	$12.87	$32,329
Structural Asphalt (3")	414	TN	$87.31	$36,146
Sidewalk	222	SY	$26.94	$5,981
Sod	444	SY	$2.87	$1,274
Pedestrian Bridge	7,200	SF	$112.00	$806,400
Embankment	-160,000	CY	$3.24	($518,400)
MSE Wall	1,800	SF	$34.00	$61,200
Type B Fencing	800	LF	$22.00	$17,600
Proposed Bridge Cost	-27000	SF	$ 160.00	($4,320,000)
Subtotal				($3,868,200)
Compensable Utility Relocation (5%)	1	LS		($193,410)
Mobilization (10%)	1	LS		($386,820)
Maintenance of Traffic (20%)	1	LS		($773,640)
Lighting (5%)	1	LS		($193,410)
Signage (5%)	1	LS		($193,410)
Drainage (20%)	1	LS		($773,640)
ITS (5%)	1	LS		($193,410)
Erosion Control (1%)	1	LS		($38,682)
Subtotal				($6,614,622)
Contingency (20%)		LS		($1,322,924)
		CONSTRUCTION TOTAL		**($7,937,546)**

RECOMMENDATION No. 33: Cul-de-sacs for Wilson Road to allow for Wekiva Parkway to be at grade



RECOMMENDATION No. 34: Don't construct the International Parkway Interchange with SR 429

Proposed Alternative:
The PD&E Documents show a full Interchange at International Parkway and SR 429.

VE Alternative:
Do not construct a full Interchange at International Parkway and SR 429.

Advantages:

- Less cost
- Decreased wetland impacts
- Decreased noise impacts
- Decreased flood plain impacts
- Easier to construct
- Less Right of Way

Disadvantages:

- Less connectivity

FHWA CATEGORIES

X Safety X Operations X Environment X Construction ___Other

Potential Cost Savings: $16,239,000

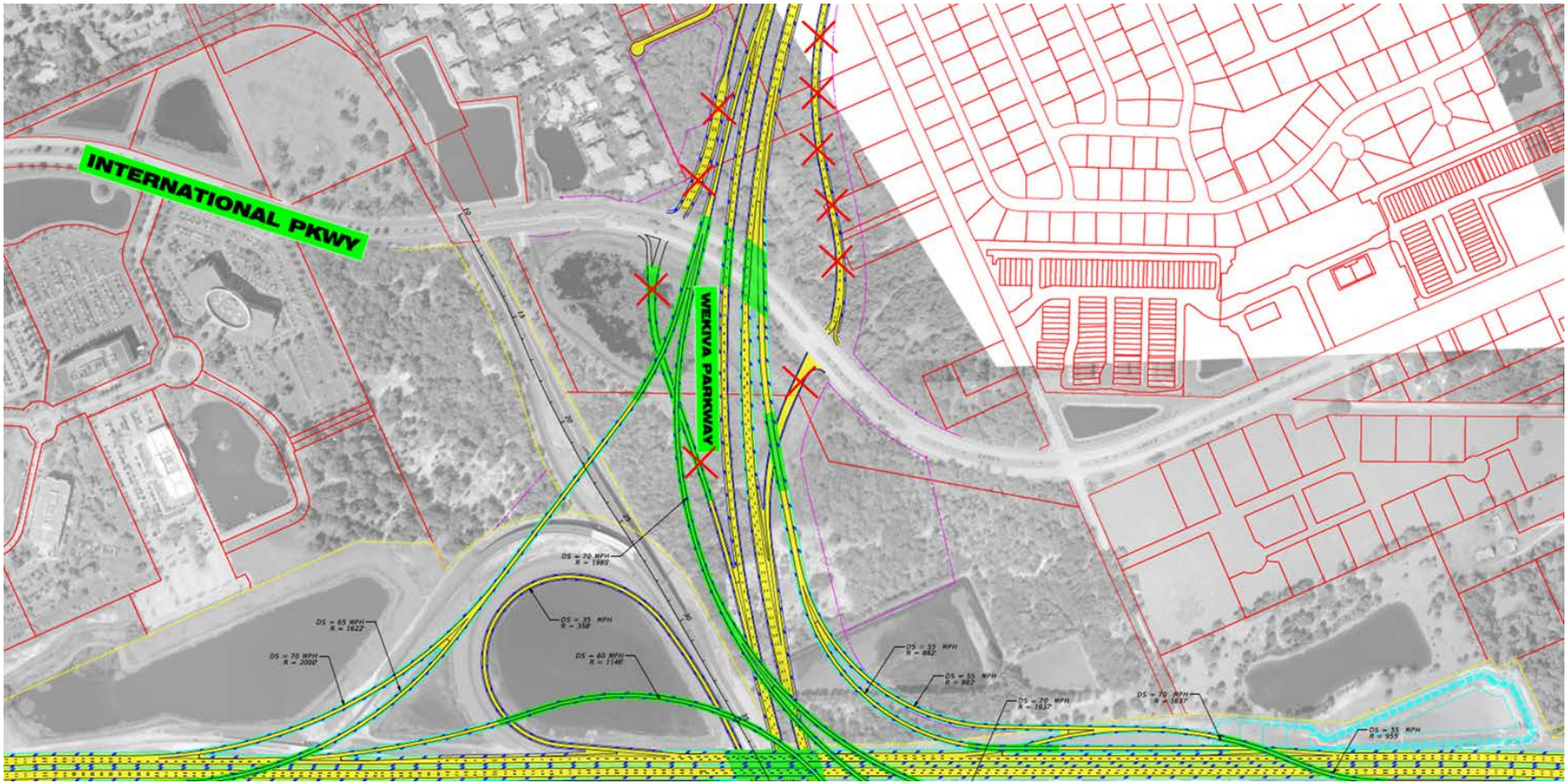
RECOMMENDATION No. 34: Don't construct the International Parkway Interchange with SR 429

Calculations:

Description	Quantity	Unit	Unit Price	Extended Amount
Bridge Deck	-4,800	SF	$145.00	($696,000)
Embankment	-58,667	CY	$5.94	($348,482)
Clearing & grubbing	-3	AC	$7,724.00	($25,489)
Stabilization	-16,000	SY	$2.90	($46,400)
OBG 09	-16,000	SY	$14.02	($224,320)
Asphalt 3"	-2,640	TN	$87.21	($230,234)
FC-5	-660	TN	$117.20	($77,352)
i-4 Westbound Bridge Ramps	-31,075	SF	$140.00	($4,350,500)
				$0
Subtotal				($5,998,778)
Compensable Utility Relocation (5%)	1	LS		($299,939)
Mobilization (10%)	1	LS		($599,878)
Maintenance of Traffic (20%)	1	LS		($1,199,756)
Lighting (5%)	1	LS		($299,939)
Signage (5%)	1	LS		($299,939)
Drainage (20%)	1	LS		($1,199,756)
ITS (5%)	1	LS		($299,939)
Erosion Control (1%)	1	LS		($59,988)
Subtotal				($10,257,910)
Contingency (20%)		LS		($2,051,582)
		CONSTRUCTION TOTAL		**($12,309,492)**

Potential Right of Way Savings = $3,930,000

RECOMMENDATION No. 34: Don't construct the International Parkway Interchange with SR 429



APPENDICES

Agenda
Sign In Sheets
Presentation Slides

Agenda
May 12 – 20, 2014

Day One (May 12th)	Kickoff Intro by VE Team Leader	8:00 am – 8:15 am
	Team Review and Discussions of Documents	8:15 am – 9:30 am
	Designer Orientation	9:30 am – 10:00 am
	Questions for Designers	10:00 am – 11:00 am
	Travel to Site	11:00 am – 12:00 pm
	Lunch	12:00 pm – 1:00 pm
	Site Review	1:00 pm – 3:30 pm
	Return to Lake Mary	3:30 pm – 4:30 pm
	Summarize Site Review & Constraints	4:30 pm – 5:00 pm
Day Two (May 13th)	Cost Model & Function Analysis	8:00 am –9:00 am
	FAST Diagram	9:00 am – 9:30 am
	Intro to Creative Thinking	10:00 am – 10:15 am
	Creative Idea Listing/Function	10:15 am – 12:00 pm
	Lunch	12:00 pm – 1:00 pm
	Creative/Evaluation/Function	1:00 pm – 5:00 pm
Day Three (May 14th)	Evaluation Phase	8:00 am – 10:00 am
	Mid-point review and determine economic factors	10:00 am – 12:00 pm
	Lunch	12:00 pm – 1:00 pm
	Begin Development Phase	1:00 pm – 5:00 pm
Day Four (May 15th)	Continue Development	8:00 am – 5:00 pm
Day Five (May 20th)	Finish Development/Prepare Oral Presentation	8:00 am – 12:00 pm
	Lunch	12:00 pm – 1:00 pm
	Oral Presentation to FDOT/others	1:00 pm – 2:30 pm
	Begin Draft Value Engineering Report	2:30 pm – 5:00 pm

FLORIDA DEPARTMENT OF TRANSPORTATION

VALUE ENGINEERING KICKOFF

Wekiva Parkway (SR 429/46) From East of Wekiva River to East of Orange Avenue

May 12, 2014

SIGN IN SHEET

Name	Representing	Phone Number	Email Address
JACK CRAHAN	FPC-Group.	386-738-1105	JACK @ FPC-Group .com
CHRIS DABSON	FDOT- STRUCTURES	386-943-5227	CHRIS.dabson@dot.State.fl.us
STAN MANN	FDOT- OVIEDO	407-977-6530	STAN.MANN@DOT.STATE.FL.US
Michael Dollery	FDOT - R/W	386-943-5093	michael.dollery@dot.state.fl.us
Mike Sanders	FDOT - T.O.	386-943-5339	Michael.sanders@dot.state.fl.us
Randall James	FDOT - Construction	407-482-7817	randall.james@dot.state.fl.us
LESTON T. ELLIS	FHWA - Civil - Intern	~~352-317-0682~~	Leston.Ellis@dot.gov
Mahmmud Yousef	FHWA	407-~~654~~ 847-6433	mahmmud.yousef@dot.gov
Zach Sullivan	FDOT-Geotech	386-740-3522	Zachary.Sullivan@dot.state.fl.us
Matthew Hodges	FDOT-PE Trainee	—	matthew.hodges@dot.state.fl.us
Karen Snyder	FDOT - Drainage	386-943-5434	Karen.snyder@dot.state.fl.us
NICK TRUNCONE	FPC - GROUP	(850) 906-9994	NICK @ FPC-GROUP.COM
STEVEN BUCK	FDOT	386 9435423	STEVEN.Buck@DOT...
Staci Nester	FDOT	386 943-5250	Staci.nester@dot.State.fl.us

FLORIDA DEPARTMENT OF TRANSPORTATION

VALUE ENGINEERING KICKOFF

Wekiva Parkway (SR 429/46) From East of Wekiva River to East of Orange Avenue

May 12, 2014

SIGN IN SHEET

Name	Representing	Phone Number	Email Address
Mark Robinson	FDOT D5 Design	386-943-5727	mark.robinson@dot.state.fl.us
Ty Garner	FDOT VE	386-943-5254	ty.garner@ " " "
Staci Nester	FDOT VE	386-943-5250	Staci.nester@ " " "
KEVIN MOOD	FDOT P.M.	386-943-5255	KEVIN.MOOD@ " " "
Heather Johnstone	FDOT		
Bill Terwillegar	AtKins	407 806-4131	Bill.Terwillegar@atkinsglobal.com
Barbara Shyp-Palasz	PM	386-943-5418	
Rick Johnson	PMA	321-419-8187	rjohnson@pmaconsultants.com

FLORIDA DEPARTMENT OF TRANSPORTATION

VALUE ENGINEERING MID-POINT REVIEW

Wekiva Parkway (SR 429/46) From East of Wekiva River to East of Orange Avenue

May 14, 2014

SIGN IN SHEET

Name	Representing	Phone Number	Email Address
Mahmmud Yousef	FHWA	407-867-6433	mahmmud.yousef@dot.gov
LESTON T. ELLIS	FHWA	850-553-2247	leston.ellis@dot.gov
Randall James	FDOT	407-482-7817	randall.james@dot.state.fl.us
Karen Snyder	FDOT	386-943-5434	Karen.Snyder@dot.state.fl.us
Zach Sullivan	FDOT	386-740-3522	Zachary.Sullivan@dot.state.fl.us
Matthew Hodges	FDOT	386 740-3437	matthew.hodges@dot.state.fl.us
Nick Trumbower	FPCG	850-906-9997	Nick@FPCGroup.com
Michael Dollery	FDOT	386-943-5093	michael.dollery@dot.state.fl.us
CHRIS DABSON	FDOT	" -5227	chris.dabson@dot.state.fl.us
Mark Robinson	FDOT	5727	mark.robinson@ " " " "
STEVEN Buck	FDOT	" 5423	STEVEN.Buck@DOT..
Staci Nester	FDOT	" " 5250	Staci.nester@dot.state.fl.us
Marlon Bates	FDOT	" " 3249	Marlon.bates@dot.state.Fl.us
Ty Garner	"	" " 5254	ty.garner@dot.state.fl.us

FLORIDA DEPARTMENT OF TRANSPORTATION

VALUE ENGINEERING MID-POINT REVIEW

Wekiva Parkway (SR 429/46) From East of Wekiva River to East of Orange Avenue

May 14, 2014

SIGN IN SHEET

Name	Representing	Phone Number	Email Address
MATT TAYLOR	ATKINS	407 647 7275	Matthew.Taylor@Atkinsglobal.com
Heather Johnstone	FDOT	3869435540	Heather.Johnstone@dot.state.fl.us
Katherine Kluetzow	HNTB	407-547-3056	Kluetzow@hntb.com
Beata Skye Polcyn	FDOT	386-943-5418	
ROBERT DENNEY	HNTB	407-805-0355	rdenney@hntb.com
LUIS DIAZ	HNTB	407-805-0355	LDIAZ@HNTB.COM
RICK JOHNSON	PMA	321-418-8187	rjohnson@pmaconsultants.com

FLORIDA DEPARTMENT OF TRANSPORTATION

VALUE ENGINEERING STUDY PRESENTATION

Wekiva Parkway (SR 429/46) From East of Wekiva River to East of Orange Avenue

May 20, 2014

SIGN IN SHEET

Name	Representing	Phone Number	Email Address
Tyler Malmberg	FDOT-Roadway	x5158	Tyler.Malmberg@dot.state.fl.us
Ty Garner	FDOT Utilities	5259	ty.garner@dot.state.fl.us
Staci Nester	FDOT Utilities	5250	staci.nester@dot.state.fl.us
Randall James	FDOT-Const	407-482-7817	randall.james@dot.state.fl.us
Michael Dollery	FDOT-R/W	x5093	michael.dollery@dot.state.fl.us
JACK CRAHAN	FPC-Group R/W	386-738-1165	JACK@FPC-Group.com
Zach Sullivan	FDOT-Geotech	386-740-3522	Zachary.Sullivan@dot.state.fl.us
CHRIS DABSON	FDOT STRUCTURES	386-943-5227	chris.dabson@dot.state.fl.us
Matthew Hodges	FDOT-PE Trainee	-	matthew.hodges@dot.state.fl.us
Karen Snyder	FDOT Drainage	386-943-5434	Karen.Snyder@dot.state.fl.us
Richard Bell	" "	386 943 5548	richard.w.bell@dot.state.fl.us
NICK TRUNCONE	FPC G	(850) 906-9997	NICK@FPC-GROUP.COM
NICK FINCH	FHWA	(407) 867-6410	NICK.FINCH@DOT.GOV
STEVE NICHOLS	TURNPIKE	407 264 3005	STEPHEN.NICHOLS@DOT...

FLORIDA DEPARTMENT OF TRANSPORTATION

VALUE ENGINEERING STUDY PRESENTATION

Wekiva Parkway (SR 429/46) From East of Wekiva River to East of Orange Avenue

May 20, 2014

SIGN IN SHEET

Name	Representing	Phone Number	Email Address
Mahmoud Yousef	FHWA	407-867-6433	mahmoud.Yousef@dot.gov
KEVIN MAYLONE	FDOT S&M	386 943 5115	KEVIN.M.MAYLONE@DOT.STATE.FL.US
NEIL KENIS	"	5419	NEIL.KENIS " "
Jonathan Jastrzemsky	" "	386-943-5159	jonathan.jastrzemsky@ —
MARK TREBITZ	FDOT STRUCTURES	386-943-5157	mark.trebitz@dot.state.fl.us
Dwight Gube	FDOT	386-740-3462	Dwight.Gube@dot.state.fl.us
Ferrell Hickson	" Drainage	" 943 5433	ferrell.hickson →
Katherine Wetzow	HNTB	407-547-3056	Kwetzow@hntb.com
Marvin L. Williams	FHWA	850-553-2241	Marvin.Williams@dot.gov
Bill Terwilleg	Atkins	407-806-4131	Bill.Terwilleg@atkinsglobal.com
Kevin Moss	FDOT P.M.	386-943-5255	KEVIN.MOSS@DOT.STATE.FL.US
Heather Johnstone	FDOT	386-943-5540	Heather.Johnstone@dot.state.fl.us
Matt Hassan	FDOT	386 943 5542	midhat.hassan@dot.state.fl.us
Beata Stys-Palasz	FDOT	386-943-5418	beata.stys-palasz@dot.state.fl.us

FLORIDA DEPARTMENT OF TRANSPORTATION

VALUE ENGINEERING STUDY PRESENTATION

Wekiva Parkway (SR 429/46) From East of Wekiva River to East of Orange Avenue

May 20, 2014

SIGN IN SHEET

Name	Representing	Phone Number	Email Address
Ashraf Elmaghraby	FDOT PM	386-943-5645	Ashraf.Elmaghraby@dot...
GREGG A. BORCHIK	FDOT - DESIGN	" " 5463	GREGG.BORCHIK@DOT...
Frank O'Dea	FDOT Development	5476	frank.odea@
STEVEN BUCK	FDOT DESIGN	*5423	STEVEN.BUCK@...
MARK GARCIA	FDOT Maint.	5277	mark.garcia@dot
ALAN HYMAN	FDOT Operations	5477	alan.hyman@dot.m.
Annette Brennan	FDOT Design	5543	annette.brennan@
Suzanne Phillips	FDOT / PM	5141	suzanne.phillips@dot...
Mark Robinson	FDOT Design	5727	mark.robinson@
LUIS DIAZ	HNTB	407-805-0357	LDIAZ@HNTB.COM
ROBERT DEANEY	HNTB	"	RDEANEY@HNTB.COM
RICK JOHNSON	PMA	321-418-8187	rjohnson@pma-a2.com

Resolution Memo

SLIDE PRESENTATION