Value Engineering
For Transportation Improvements

State Road 7 Extension from State Road 704 to Northlake Boulevard PD& E Study

Value Engineering Study Final Report

FM Number: 229664-2-22-01

Fed. Aid Project: Yes

Project Description: State Road 7 Extension from State Road 704 to Northlake Boulevard

Study Dates: October 4 – 8, 2010

Project Development Phase			Study Identification Number		
PD&E	Design	Other	VE Item No.		
Jacobs Engineering			Yr.	Dist.	No.
			11	004	03

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

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Date: September 6, 2011

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EXECUTIVE SUMMARY 1

1.1 INTRODUCTION

A Value Engineering (VE) Study was conducted, October 4 – 8, 2010, for the State Road (SR) 7 Extension from State Road 704 (Okeechobee Boulevard) to Northlake Boulevard project in Palm Beach County, Florida using the VE methodology to improve the Preliminary Design & Environment (PD&E) Study Phase for approximately 8.5 miles of roadway widening, intersections, and drainage improvements. The VE study analyzed value improvements for the preliminary design documents prepared by the Jacobs Engineering PD&E team. The documents reviewed during the study outlined the purpose and need for the project and identified the current alternative that is being coordinated with the stakeholders for the project.

This project has been identified as a priority within Palm Beach County's Metropolitan Planning Organization (MPO) 2030 Long Range Transportation Plan (LRTP). The purpose of the project is to improve system linkage within the western fringes of urbanized Palm Beach County and provide additional capacity to ease the congestion experienced within the area defined by the Village of Royal Palm Beach, the Acreage community, and future developments. This project is needed because: there is a clear necessity to improve system linkage between Okeechobee Boulevard and Northlake Boulevard; the Palm Beach MPO has identified this project as a critical priority; and travel demands within western Palm Beach County will continue to grow.

The proposed extension of SR 7 will improve the hurricane evacuation process by providing additional capacity and connectivity in this area. Okeechobee Boulevard is an east-west facility, classified as an Urban Principal Arterial, and provides a connection to Florida's Turnpike and Interstate 95 (I-95). Northlake Boulevard is also an east-west facility, classified as an Urban Minor Arterial, and provides access to SR 710 and I-95.

The area immediately west of the project study area is currently experiencing a surge in residential construction with approximately 14,325 residential units planned for development. These large-scale communities will also provide retail, commercial, and industrial spaces that will further strain the existing transportation network. Extending SR 7 is vital to regional mobility needs. The existing transportation network within and around the Village of Royal Palm Beach and the Acreage community does not currently satisfy the demands of today and will not provide adequate capacity for the demands of tomorrow. Providing an efficient link between Okeechobee Boulevard and Northlake Boulevard will alleviate existing traffic conditions on Royal Palm Beach Boulevard and within the Acreage community. The majority of the transportation facilities between the project study area and Seminole Pratt Whitney Road are operating at or below a level of service (LOS) D. Capacity improvements are necessary in order to respond to increasing demands.

The VE study focused on Alternative 3 that has been coordinated with the County and the local communities. On **Figure 1.1 - 1 Project Location Map** the project location is depicted. **Table 1.1-1 Preliminary Construction Cost Estimate** shows the PD&E Consultants Cost Estimate including construction and right of way for the project was estimated in 2010 dollars. This estimate is $71.2 million for the total construction scope. The estimate for Right of Way is $256,000 and equates to a total Project Cost of approximately $71.5 million. Construction may begin as early as 2017 and the roadway opening is scheduled for 2020.

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 improvements, improved constructability, and provide 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 design concepts.

Although several pre-existing conditions were stated during the initial briefing at the beginning of the VE study, some of the major project constraints identified were:

1. The project corridor is fixed
2. The roadway footprint is fixed between SR 704 and 60th Street

Figure 1.1 – 1 Project Location Map

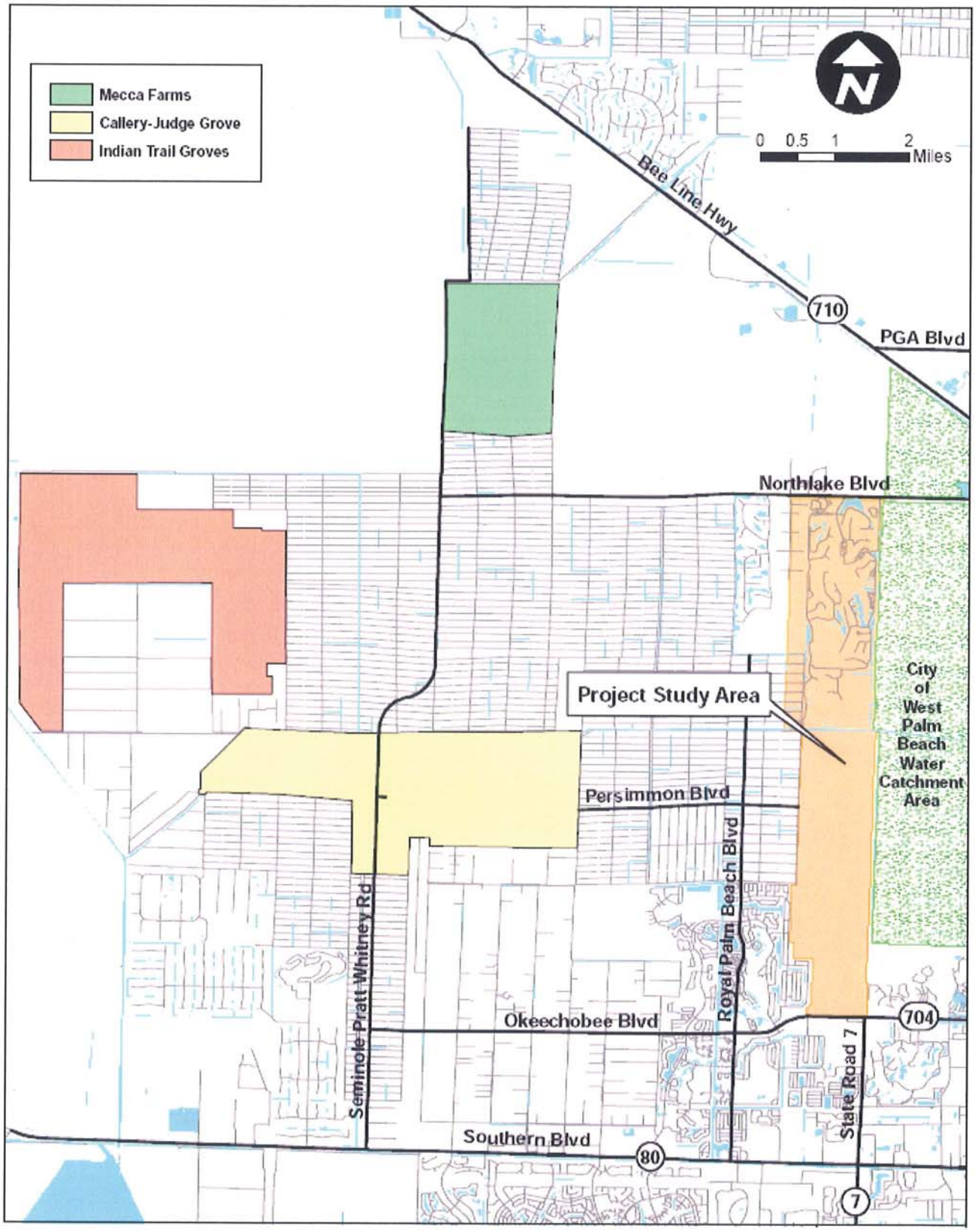


Table 1.1 – 1

Preliminary Construction Cost Estimates

Baseline Alignment 3

Construction Item	Total Costs
Earthwork	$12,109,930.64
Roadway	$13,547,986.86
Shoulder	$3,131,183.37
Median	$2,961,641.29
Drainage	$7,903,905.66
Intersection Components	$1,852,987.64
Bridges	$2,146,043.09
Signing	$200,581.47
Lighting	$2,488,524.27
Signalization	$888,471.12
Landscaping	$2,550,860.00
Total Construction	**$49,782,115.41**
MOT (10%)	$4,978,211.54
Subtotal	**$54,760,326.95**
Mobilization (8%)	$4,380,826.16
Project Unknowns (20%)	$11,828,230.62
Contingency	$150,000.00
Partnering	$6,000.00
Dispute Review Board	$39,600.00
Subtotal	**$71,164,983.73**
Right of Way	$257,001.00
Environ. Mitigation	$0.00
Total	**$71,421,984.73**

Reference: PD&E Cost Estimate prepared by Jacobs Engineering

The basic project functions are to improve mobility and move people within this regional transportation corridor. 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 initially generated 24 ideas of which six were determined to be design suggestions 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.

The team began the evaluation process of scoring the PD&E Alternative that was determined to be the basis of analysis alternative and the individual creative ideas. During this process it was agreed that we had various ideas for locations throughout the project, but certain ideas with the greatest potential for value improvement were carried forward for further development. The remaining ideas either became design suggestions (many specific to the overall process) or were eliminated as duplicate, not appropriate or improbable for acceptance.

The developed ideas maintain the required functions while improving overall costs, constructability, and future needs. 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 VE Team presented design suggestions for Florida Department of Transportation's (FDOT) consideration and they are shown in **Section 6**. No specific action is normally required to accept or not accept the suggestions. It is helpful, for documentation purposes, to list those suggestions that will be acted upon by the 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 2010 dollars. 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. Some of the recommendations can be taken with other ideas, while others may be mutually exclusive.

The recommendations developed by the 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 PD&E 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 ensure 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/Non Overlapped Savings**	
1	Between Persimmon and 60th Street provide funds for the County to build the four-lane section	NA		$2,188,000	$2,188,000
2	Have the County widen from SR 704 to 60th Street by providing funds	NA		$4,064,000	$4,064,000
3	Provide a pervious shared-use path instead of the standard sidewalk	A		($276,000)	
11	Construct roundabouts instead of T-intersections	NA		$566,000	$566,000
13	Build the east alignment on the northern leg with a swale and environmental berm on the east side of the roadway	NA		$100,000	$100,000
14	Consider a middle alignment on the northern leg between the east and west alignment with a swale and berm on the east side	A		$30,000	
18	Consider a separate pedestrian bridge with a shared use path	A		($104,000)	
DS-6	Adjust Maintenance of Traffic to the existing portions of roadway only, thus reducing the length of MOT by 52%	A		$2,925,000	$2,925,000

Management Action Legend: A=Approved, 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

During the five day 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 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 Design 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 PD&E Consultant Preliminary cost estimate, statewide 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 (FAST) Diagram 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 ensure 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 was 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 FDOT Management team should analyze each VE alternative/recommendation and prepare short responses recommending incorporating the recommendations into the project, offering modifications before implementation, or presenting reasons for rejection. 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

The FDOT Project Manager and the Jacobs Engineering consultant design team presented an overview of the project on October 4, 2010. The purpose of this meeting was to acquaint the study team with the overall project and outline the main VE study focus areas.

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

Participant Name	Role	Affiliation
James Poole, PE	Drainage	FDOT, District 4
Roberto Chavez	R/W Mapping	FDOT, District 4
Ryan Maroney	R/W	FDOT, District 4
Shi-Chang Li, AICP	PL&EM	FDOT, District 4
Tykus Holloway, PE, AICP	OMD	FDOT, District 4
Kathryn Colbert	PL&EM	ESciences
Marjorie Hilaire, EI	PE Trainee	FDOT, District 4
Betsy Jeffers, PE	Roadway Design	FDOT, District 4
Laurice Mayes, Esq.	Legal	FDOT, District 4
Jose Theiler, PE	Project Management	FDOT, District 4
Charlie Manganaro	Construction	FDOT, District 4
Ed Perry	Operations – Plans Review	FDOT, District 4
Tim Brock, PE	VE Coordinator	FDOT, District 4
Richard Johnson, PE, CVS	Team Leader	PMA Consultants LLC

3.2 PROJECT INFORMATION

The purpose of the project orientation meeting, on October 4, 2010, 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. Corridor Report, SR 7 from Okeechobee Boulevard (SR 704) to Northlake Boulevard Project Development &Environment (PD&E) Study, prepared by Jacobs Engineering, dated August 2007
2. PD&E Study Roadway Plans prepared by Jacobs Engineering, dated September 24, 2010
3. Preliminary Pond Siting Report SR 7 Extension Project Development & Environmental Study, prepared by Stanley Consultants, Inc., dated October 2009
4. District 4, 2010 Right of Way Cost Estimate, to Beatriz Caicedo, from Tom Stepp, dated July 30, 2010
5. Design Traffic Technical Memorandum for SR 7 Extension PD&E Study, prepared by Jocobs Engineering, dated September 2010
6. Persimmon Boulevard (S. Extension to Okeechobee Blvd.) Record Drawings, for County of Palm Beach, State of Florida, prepared by K-F Group, Inc. consulting Engineers, Received March 4, 2008
7. Long Range Estimate (LRE) Cost estimate SR 7 from SR 704/Okeechobee Rd to Northlake Blvd, prepared by FDOT and Jacobs Engineering, dated September 23, 2010

8. Display wall board aerial drawings for Roadway and Drainage Options, prepared by Jacobs Engineering, dated May 5, 2010
9. Display wall board aerial drawings for Roundabouts and T-Intersection Options, prepared by Jacobs Engineering, dated May 5, 2010

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. 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. Improve Mobility
2. Build Project
3. Bid Project
4. Design Project
5. Acquire Right of Way
6. Fund Project
7. Adopt Recommendations
8. Determine Needs
9. Relocate Utilities
10. Convey Runoff
11. Separate Traffic
12. Maintain Traffic
13. Provide Area
14. Communicate Information
15. Drain Roadway
16. Convey Water
17. Determine Alignment
18. Start Project
19. Identify Context Sensitive Solutions
20. Separate Traffic
21. Recommend Options
22. Analyze Options
23. Beautify Project
24. Illuminate Area
25. Analyze Date
26. Provide Refuge

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 Palm Beach County MPO, Long Range Transportation Plans and coordinate design with Stakeholder representatives for future development
3. Coordinate with other regional transportation projects

3.4.3 General Project Constraints: (unchangeable project restrictions)

1. The project corridor is fixed
2. The roadway footprint is fixed between SR 704 and 60th Street

3.4.4 General Project Conditions & Considerations:

Refer to the documents, report, and backup documentation prepared by the project team.

Site Review Comments and other observations:

- There is a lot of traffic currently using the roadway
- The natural areas are wetter than anticipated and will require a considerable amount of fill
- There are utilities at the north end of the project which should be avoided if possible
- The County has closed the connection to the Acreage at Orange Grove Boulevard

ECONOMIC DATA, COST MODELS AND ESTIMATES 4

ECONOMIC DATA

The Study Team developed economic criteria used for evaluation with information gathered from the FDOT Team. 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:	2010
Economic Planning Life:	20 years (75 years for bridge structures) starting after letting date
Discount Rate/Interest:	5.00%
Inflation/Escalation Rate:	3.00%

The PD&E Long Range Estimate (LRE) was used by the team for the construction items cost comparison. The LRE identifies 10% for Mobilization, 8% for Maintenance of Traffic, and 20% multiplier for project unknowns. The VE team used these same markups to recommendations that potentially save on the cost of work or that add value to the overall project. At the American Cell Towers site there is a small area where right of way taking is required for approximately $256,000. The current cost estimate does not include any costs for environmental mitigation.

Table 4.1 – 1
Preliminary Construction Cost Estimate

Construction Item	Sequence 1	Sequence 2	Sequence 3	Sequence 4	Total Costs	Function
Earthwork	$308,586.75		$2,719,553.98	$9,081,789.91	$12,109,930.64	Establish Grad
Roadway	$3,970,927.51	$1,971,983.01	$1,730,928.30	$5,874,148.04	$13,547,986.86	Carry Vehicles
Shoulder	$1,118,632.44	$5,925.00	$473,542.60	$1,533,083.33	$3,131,183.37	Provide Refuge
Median	$1,462,716.03		$350,625.79	$1,148,299.47	$2,961,641.29	Separate Traffic
Drainage	$4,102,008.54		$891,135.54	$2,910,761.58	$7,903,905.66	Convey Runoff
Intersection Components	$1,046,635.58			$806,352.06	$1,852,987.64	Regulate Traffic
Bridges			$2,146,043.09		$2,146,043.09	Span Obstacle
Signing	$101,350.15		$22,589.52	$76,641.80	$200,581.47	Communicate Information
Lighting	$1,290,371.70		$280,761.89	$917,390.68	$2,488,524.27	Illuminate Area
Signalization	$579,721.14			$308,749.98	$888,471.12	Control Traffic
Landscaping	$2,550,860.00				$2,550,860.00	Beautify Area
Total Construction	**$16,531,809.84**	**$1,977,908.01**	**$8,615,180.71**	**$22,657,216.85**	**$49,782,115.41**	
MOT (10%)	$1,653,180.98	$197,790.80	$861,518.07	$2,265,721.69	$4,978,211.54	Maintain Traffic
Subtotal	**$18,184,990.82**	**$2,175,698.81**	**$9,476,698.78**	**$24,922,938.54**	**$54,760,326.95**	
Mobilization (8%)	$1,454,799.27	$174,055.90	$758,135.90	$1,993,835.08	$4,380,826.16	Start Project
Project Unknowns (20%)	$3,927,958.018	$469,950.943	$2,046,966.937	$5,383,354.724	$11,828,230.62	Address Risk
Contingency	$37,500.00	$37,500.00	$37,500.00	$37,500.00	$150,000.00	Address Changes
Partnering					$6,000.00	Coordinate Project
Dispute Review Board					$39,600.00	Resolve Conflicts
Subtotal	**$23,605,248.11**	**$2,857,205.66**	**$12,319,301.62**	**$32,337,628.34**	**$71,164,983.73**	
Right of Way					$257,001.00	Provide Space
Environ. Mitigation					$0.00	Offset Impacts
Total	**$23,605,248.11**	**$2,857,205.66**	**$12,319,301.62**	**$32,337,628.34**	**$71,421,984.73**	

Reference: PD&E Cost Estimate prepared by Jacobs Engineering, dated September 23, 2010

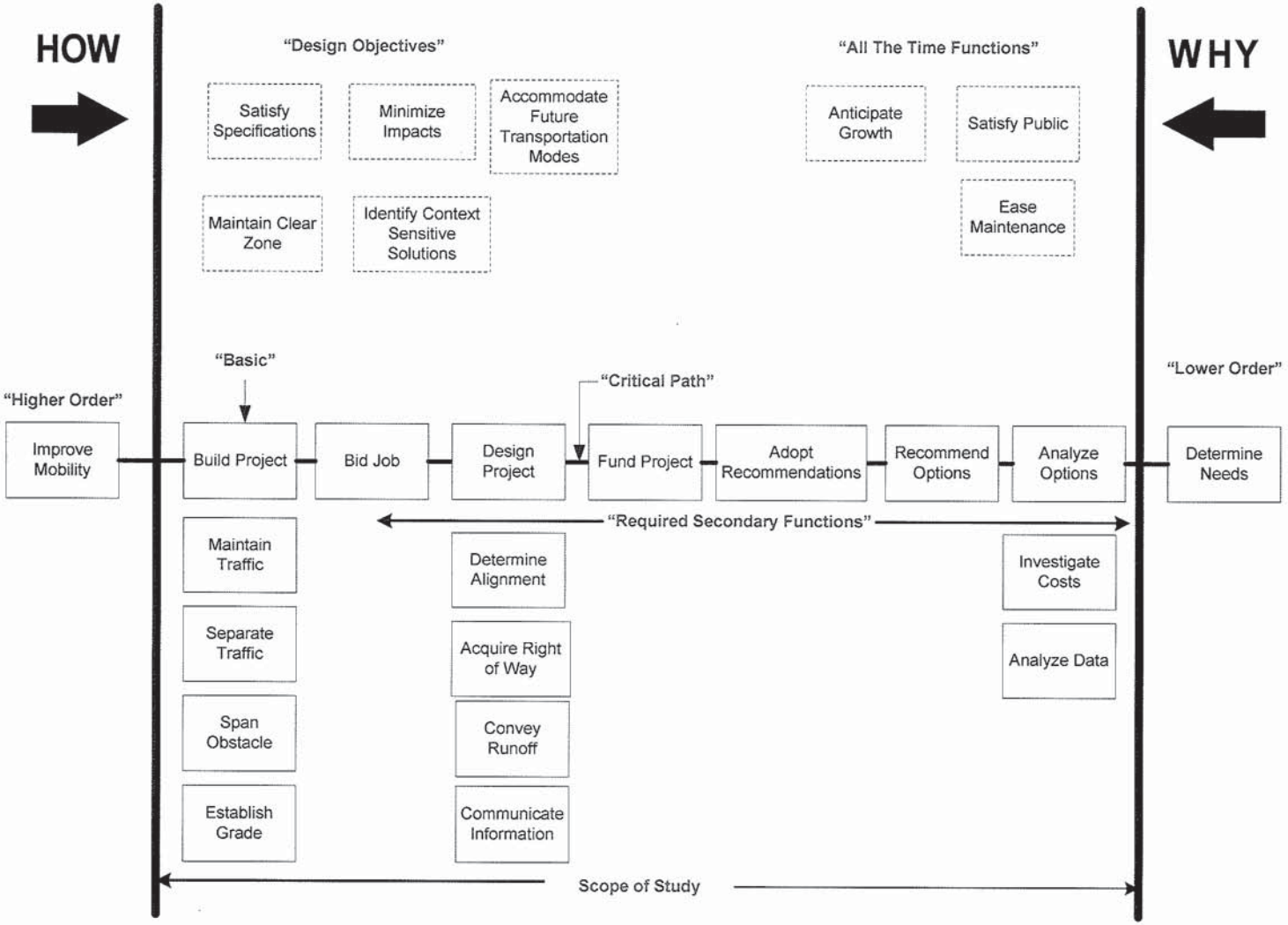
FUNCTION ANALYSIS AND F.A.S.T. DIAGRAM 5

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 Study 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 5.1-1 FAST Diagram
State Road 7 Extension from State Road 704 to Northlake Boulevard



EVALUATION 6

During the *Creative Phase* numerous ideas and 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 team identified seven weighted evaluation criteria that included Capital Costs, Environmental Impacts, Future Maintenance, Public Acceptance, Mobility Enhancement, Construction Phasing, and Constructability. The evaluation criteria were assigned a weighted value from one to seven based on a VE team's consensus on the importance of each item. Criteria with the most importance received a seven weight and the least important received a one weight. The ideas were then individually discussed and given a score, on a scale of one to five with one being the least beneficial and five the 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 contains a list of ideas that were generated during the Creative Phase and how each idea scored in the individual evaluation criteria. **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 concepts total score were sufficiently rated to warrant 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 24 creative ideas and 11 that were evaluated and scored. The VE Team discussed each of the evaluated ideas with the FDOT PD&E Project Manager during a mid-point review meeting on Wednesday, October 6, 2010. The VE team and the FDOT PD&E Project Manager and the PD&E Consultant discussed each idea during a midpoint review before developing the final group of ideas for final development and analysis.

The write-ups for those ideas are included in **Section 7**. The tables that follow show the original 24 ideas, 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 additional design suggestions identified by the VE Team are listed below:

DS-1	Leave the excess drainage capacity as is and open for future discussion
DS-2	Consider a bridge at the area where the Ibis impoundment outfall flows south to the Grassy Waters Preserve
DS-3	Bridge the canal with a single span versus multiple spans and columns in the canal
DS-4	Advance the Local Development Concept Acceptance (LDCA)
DS-5	Provide a viewing area for the Grassy Water Preserve or the Pond Cypress Natural Area

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	Environ. Impacts	Future Maintenance	Public Acceptance	Mobility Enhancement	Construction Phasing	Constructability
	Original Concept							
	PD&E Documents	3	4	3	4	3.5	3	3
	Roadwork							
1	Between Persimmon and 60th Street provide funds for the County to build the four-lane section	4	4	3	4.5	4	3.5	3
2	Have the County widen from SR 704 to 60th Street by providing funds	4.5	4	3	4.75	4.5	4	3.5
3	Provide a pervious shared-use path instead of the standard sidewalk	2.75	4.25	2.75	4.75	4	3	3
4	~~Instead of curbs and catch basins, etc. construct a rural typical section and collect in swales~~							
5	~~Provide pervious shoulder on a rural typical section~~							
DS-1	Leave the excess drainage capacity as is and open for future discussion							
7	Shift the northbound lanes from 60th and the M-Canal north to Northlake Blvd. inward to minimize the median and in the future add one lane to the outside for the northbound lanes (Eliminated because of need for an urban typical section with curb and gutter)							
	Intersections							
8	~~Reconfigure the T-intersection to provide a curve for SR 7~~							
9	Consider a T-intersection with a free flow right turn lane continuing north on SR 7 at 60th	2.5	4	2.5	3	2.5	3	3
10	~~Design a T-intersection or a roundabout at the eastern turn to the north at the M-Canal~~							
11	Construct roundabouts instead of T-intersections	3	4	3	4	3.5	3	3
12	Construct T-intersections instead of the roundabouts	2.5	4	2.5	3	2.5	3	3

TABLE 6.1 –1 Value Engineering Study Ideas

Idea No.	Ideas	Capital Costs	Environ. Impacts	Future Maintenance	Public Acceptance	Mobility Enhancement	Construction Phasing	Constructability
	Original Concept							
	PD&E Documents	3	4	3	4	3.5	3	3
	Alignment							
13	Build the east alignment on the northern leg with a swale and environmental berm on the east side of the roadway	3.5	4.25	3	4.5	3.5	4	4
14	Consider a middle alignment on the northern leg between the east and west alignment with a swale and berm on the east side	3	4.25	3	4.5	3.5	4	4
15	Build the west alignment on the northern leg	2	4.5	3	4	3.5	2.75	2.75
	Bridges							
16	On the bridge consider 6-foot sidewalks to maintain a consistent typical section throughout the project	2.75	3.75	3	4	3.75	3	3
DS-2	Consider a bridge at the area where the Ibis impoundment outfall flows south to the Grassy Waters Preserve							
18	Consider a separate pedestrian bridge with a shared use path	2.75	4	2.75	4.5	4	3	2.75
19	~~Bridge more of the roadway to minimize the footprint that has to be mitigated~~							
DS-3	Bridge the canal with a single span versus multiple spans and columns in the canal							
	Right of Way							
20	~~Swap FDOT right of way with the corner triangular piece north of the M-Canal~~							
21	Need the maps and easement documents to review							
	Drainage							
22	~~Install cross drains between the buffer area and the Pond Cypress Area under SR 7 between Persimmon and 60th Street~~							
	Other							
DS-4	Advance the Local Development Concept Acceptance (LDCA)							
DS-5	Provide a viewing area for the Grassy Water Preserve or the Pond Cypress Natural Area							
DS-6	Adjust Maintenance of Traffic to the existing portions of roadway only, thus reducing the length of MOT by 52%							

TABLE 6.1 –2 Value Engineering Study Weighted Values

Capital Costs	Environ. Impacts	Future Maintenance	Public Acceptance	Mobility Enhancement	Construction Phasing	Constructability
5	6	3	7	4	1	2

TABLE 6.1 –3 Value Engineering Study Evaluation Scores

Idea No.	Ideas	Capital Costs	Environ. Impacts	Future Maintenance	Public Acceptance	Mobility Enhancement	Construction Phasing	Constructability	TOTAL
	Original Concept								
	PD&E Documents	15	24	9	28	14	3	6	**99**
	Roadwork								
1	Between Persimmon and 60th Street provide funds for the County to build the four-lane section	20	24	9	31.5	16	3.5	6	**110**
2	Have the County widen from SR 704 to 60th Street by providing funds	22.5	24	9	33.25	18	4	7	**117.8**
3	Provide a pervious shared-use path instead of the standard sidewalk	13.75	25.5	8.25	33.25	16	3	6	**105.8**
	Intersections								
9	Consider a T-intersection with a free flow right turn lane continuing north on SR 7 at 60th	12.5	24	7.5	21	10	3	6	**84**
11	Construct roundabouts instead of T-intersections	15	24	9	28	14	3	6	**99**
12	Construct T-intersections instead of the roundabouts	12.5	24	7.5	21	10	3	6	**84**
	Alignment								
13	Build the east alignment on the northern leg with a swale and environmental berm on the east side of the roadway	17.5	25.5	9	31.5	14	4	8	**109.5**
14	Consider a middle alignment on the northern leg between the east and west alignment with a swale and berm on the east side	15	25.5	9	31.5	14	4	8	**107**
15	Build the west alignment on the northern leg	10	27	9	28	14	2.75	5.5	**96.25**
	Bridges								
16	On the bridge consider 6-foot sidewalks to maintain a consistent typical section throughout the project	13.75	22.5	9	28	15	3	6	**97.25**
18	Consider a separate pedestrian bridge with a shared use path	13.75	24	8.25	31.5	16	3	5.5	**102**

RECOMMENDATIONS 7

The results of this VE study are shown as individual alternatives developed for each area of the project. These alternatives 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 descriptive evaluation of the advantages and disadvantages of the proposed alternative. 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 consultants PD&E costs, FDOT Long Range Estimate (LRE), statewide average costs, and preliminary right of way cost estimates were used as the pricing basis.

7.1 EVALUATION OF ALTERNATIVES

Some of the VE alternatives' 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 presented in idea numerical order.

The FDOT and the design team should evaluate and determine whether to accept or not accept each alternative. The alternatives 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 non-acceptance. The design suggestions are for consideration by FDOT and the consultants. 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 FDOT and the designer, 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 alternatives 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 alternatives or the advisability of their implementation. It is solely the responsibility of the designer in accordance with the FDOT to explore the technical feasibility and make the determination for implementation.

RECOMMENDATION No. 1: Between Persimmon and 60th Street provide funds for the County to build the four-lane section

Proposed Alternative:
The PD&E Documents show that the Palm Beach County has completed construction of the north-bound lanes of SR-7 between Okeechobee Blvd. (SR-704) and Persimmon Blvd. and plans to construct the northbound section from Persimmon Blvd. to 60th Street in FY 2012. According to the PD&E documents, two additional (southbound) lanes are to be constructed by FDOT with planned construction in FY 2017 and open to traffic in 2020.

VE Alternative:
The VE Alternative is to provide the necessary funds for the County to construct the two additional (southbound) lanes between Persimmon Blvd. and 60th Street while the County is constructing the northbound lanes.

Advantages:

- Cost Saving due to cost avoidance of $1,013,000. The breakdown of this cost saving comes mainly from:
  - Planned MOT by the County is the same for the construction of 2 or 4 lanes, therefore there is no additional MOT, representing a cost savings of $423,000.
  - Planned Mobilization by the County is the same for the construction of 2 or 4 lanes, therefore there is no additional Mobilization, representing a cost savings of $340,000.
  - Since the County designed the new construction for a 2-lane divided roadway to accommodate 4 lanes, we could benefit from avoiding design costs estimated at half of the typical 10% of construction cost, totaling approximately $250,000.
- Soft costs (i.e., overhead) saving by not letting, awarding, and managing the contract.
- The public would be able to use the full capacity 5 years earlier, largely relieving the congestion and traffic demand in the region (user cost savings to the public).
- The public would not be impacted by a second construction phase if the southbound lanes are built at a later time.
- Provide for additional capacity to handle truck mobilization and access to the east-west portion of the new SR-7 between 60th Street and the M-Canal bridge. Minimizes impact to the public during the construction phase.
- The savings of the cost of money by advancing the project from 2017 to 2012 is $5,084,615 * (1.215-1.033) = $925,399

Disadvantages:

- Need funding 5 years earlier.

Potential Cost Savings: $1,262,700 + $925,400 = $2,188,100

The team took Sequence 1 of the LRE and split its length into two portions. The Southern portion is from Okeechobee Blvd. to South of Persimmon Blvd. and the Northern portion from Persimmon Blvd. to 60th Street. The Southern portion is 77% of the total length and has 3 intersections, while the Northern portion is 23% and has 2 intersections. We calculated proportional distribution of Earthwork, Roadway, Shoulder, Median, Drainage, Signing, Lighting and Landscaping; and separated intersection and their signalization costs to each portion.

The total cost of this sequence would be the same, while the cost savings are realized from not needing Maintenance of Traffic ($423,717) and Mobilization ($339,000) since it's a new roadway and the County's

RECOMMENDATION No. 1: Between Persimmon and 60th Street provide funds for the County to build the four-lane section

construction company would be at the site already. Additional non-bid items (Partnering, contingencies and dispute) would be saved since FDOT would not let the job, in the amount of $156,000. Finally, FDOT would not incur in the cost of design if the job is constructed 5 years after it was completed by the County.

Calculations:

Description	Total Sequence	South portion	North Portion	Cost Avoidance
		Ockechobee to S of Persimons	Persimons to 60th	Persimons to 60th
Project Length (in feet)	**23401**	**18091.57**	**5465.47**	
Percent of total length		**77%**	**23%**	
Earthwork	$308,586.75	$238,571.80	$72,072.63	
Roadway	$3,970,927.51	$3,069,967.65	$927,438.36	
Shoulder	$1,118,632.44	$864,827.02	$261,264.56	
Median	$1,462,716.03	$1,130,841.82	$341,627.73	
Drainage	$4,102,008.54	$3,171,307.83	$958,053.27	
Intersection 1 (Roebuck)		$219,514.53		
Intersection 2 (Porto Sol Devel.)		$220,515.93		
Intersection 3 (Orange Grove)		$220,515.93		
Intersection 4 (Persimons Blvd)			$220,515.93	
Intersection 5 (60th Street)			$162,571.85	
Signing	$101,350.15	$78,354.91	$23,671.05	
Signalization 3 (Orange Grove)		$193,240.38		
Signalization 4 (Persimons Blvd)			$193,240.38	
Signalization 5 (60th Street)			$193,240.38	
Lighting	$1,290,371.70	$997,600.53	$296,785.49	
Landscaping	$2,550,860.00	$1,964,162.20	$586,697.80	
Subtotal		$12,369,420.54	$4,237,179.44	
MOT		$1,236,942.05	$0.00	$423,717.94
Mobilization		$989,553.64	$0.00	$338,974.36
Subtotal		$14,595,916.24	$4,237,179.44	
Project unknowns		$2,919,183.25	$847,435.89	
Partnering (Do not bid)		$0.00	$0.00	$0.00
Initial Contingency		$0.00	$0.00	$0.00
Disputes Review Board		$0.00	$0.00	$0.00
Total Project Cost		**$17,515,099.49**	**$5,084,615.33**	
Construction Savings				$762,692.30
Design costs		$875,754.97	$500,000.00	$500,000.00
Total Savings				**$1,262,692.30**
Cost of Money (multiplier by WPA)				**$925,399.99**
Total				**$2,188,092.29**

RECOMMENDATION No. 1: Between Persimmon and 60th Street provide funds for the County to build the four-lane section

RECOMMENDATION No. 2: Have the County widen from Okeechobee (SR 704) to Persimmon Blvd. by providing necessary funds

Proposed Alternative:
The PD&E Documents show that the Palm Beach County has completed construction of the northbound lanes of SR-7 between Okeechobee Blvd. (SR-704) and Persimmon Blvd. According to the PD&E documents, two additional (southbound) lanes are to be constructed by FDOT with planned construction in FY 2017 and open to traffic in 2020.

VE Alternative:
The VE Alternative is to provide the necessary funds for the County to construct the two additional (southbound) lanes between Okeechobee Blvd. (SR 704) and Persimmon Blvd. during or subsequent to the construction of the portion between Persimmon Blvd. and 60th Street.

Advantages:

- Since the County already designed the new construction for a 2-lane divided roadway to accommodate for 4 lanes, we could benefit from avoiding half of the design costs estimated at the typical 10% of construction cost, totaling approximately $876,000.
- Soft costs (i.e., overhead) savings by not managing the contract.
- The public would be able to use the full capacity 5 years earlier, largely relieving the congestion and traffic demand in the region.
- The savings of cost of money by advancing the project from 2017 to 2012 is $17,515,000 * (1.215-1.033) = $3,188,000.

Disadvantages:

- Need funding 5 years earlier.

Potential Cost Savings: $876,000 + $3,188,000 = $4,064,000.

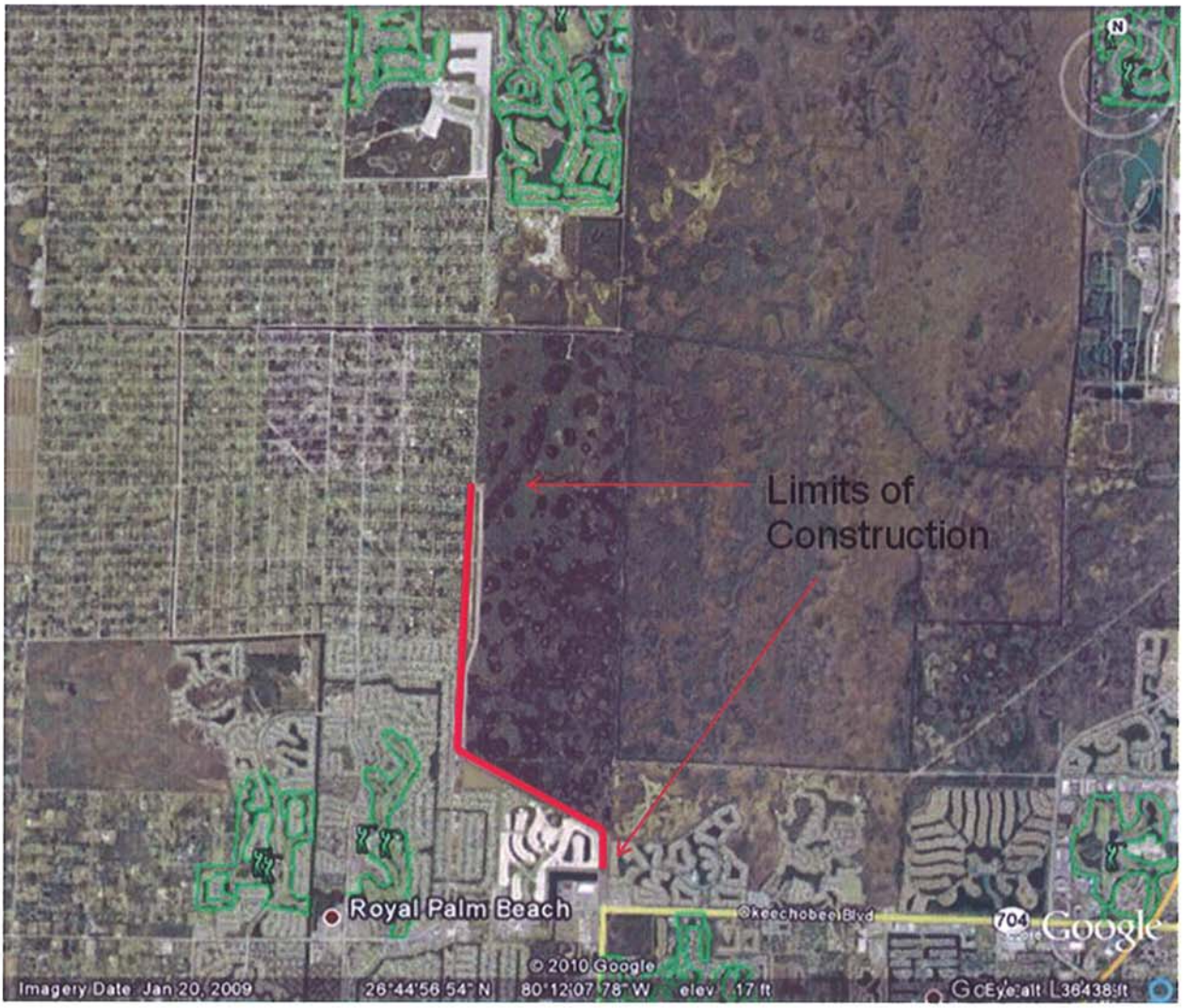
The team took Sequence 1 of the LRE and split its length into two portions. The Southern portion is from Okeechobee Blvd. to South of Persimmon Blvd. and the Northern portion from Persimmon Blvd. to 60th Street. The Southern portion is 77% of the total length and has 3 intersections, while the Northern portion is 23% and has 2 intersections. We calculated proportional distribution of Earthwork, Roadway, Shoulder, Median, Drainage, Signing, Lighting and Landscaping; and separated intersection and their signalization costs to each portion.

The total cost of this sequence would be the same, while the cost savings are realized from the avoidance of designing the project 5 years after it was constructed by using the existing design done by the County.

RECOMMENDATION No. 2: Have the County widen from Okeechobee (SR 704) to Persimmon Blvd. by providing necessary funds

Description	Total Sequence	South portion	North Portion	Cost Avoidance
		Ockechobee to S of Persimons	Persimons to 60th	Ockechobee to S of Persimons
Project Length (in feet)	**23401**	**18091.57**	**5465.47**	
Percent of total length		**77%**	**23%**	
Earthwork	$308,586.75	$238,571.80	$72,072.63	
Roadway	$3,970,927.51	$3,069,967.65	$927,438.36	
Shoulder	$1,118,632.44	$864,827.02	$261,264.56	
Median	$1,462,716.03	$1,130,841.82	$341,627.73	
Drainage	$4,102,008.54	$3,171,307.83	$958,053.27	
Intersection 1 (Roebuck)		$219,514.53		
Intersection 2 (Porto Sol Devel.)		$220,515.93		
Intersection 3 (Orange Grove)		$220,515.93		
Intersection 4 (Persimons Blvd)			$220,515.93	
Intersection 5 (60th Street)			$162,571.85	
Signing	$101,350.15	$78,354.91	$23,671.05	
Signalization 3 (Orange Grove)		$193,240.38		
Signalization 4 (Persimons Blvd)			$193,240.38	
Signalization 5 (60th Street)			$193,240.38	
Lighting	$1,290,371.70	$997,600.53	$296,785.49	
Landscaping	$2,550,860.00	$1,964,162.20	$586,697.80	
Subtotal		$12,369,420.54	$4,237,179.44	
MOT		$1,236,942.05	$0.00	
Mobilization		$989,553.64	$0.00	
Subtotal		$14,595,916.24	$4,237,179.44	
Project unknowns		$2,919,183.25	$847,435.89	
Partnering (Do not bid)		$0.00	$0.00	$0.00
Initial Contingency		$0.00	$0.00	$0.00
Disputes Review Board		$0.00	$0.00	$0.00
Total Project Cost		**$17,515,099.49**	**$5,084,615.33**	
Construction Savings				
Design costs		$875,754.97	$500,000.00	$875,754.97
Total Savings				**$875,754.97**
Cost of Money (multiplier by WPA)				**$3,187,748.11**
Total				**$4,063,503.08**

RECOMMENDATION No. 2: Have the County widen from Okeechobee (SR 704) to Persimmon Blvd. by providing necessary funds



RECOMMENDATION No. 3: Provide a pervious shared-use path on east side of roadway instead of the standard sidewalks from 60th St to Northlake Blvd.

Proposed Alternative:
The PD&E Documents show an urban 4-lane divided typical section with 4-foot bike lanes and 6-foot wide sidewalks on both sides of the roadway from Okeechobee Blvd to Northlake Blvd. The bike lanes and sidewalks are proposed along the entire corridor with the exception of the proposed bridge across the M-Canal. The bridge typical section includes a 10-foot wide shoulder and 5-foot wide sidewalk on both sides of the bridge.

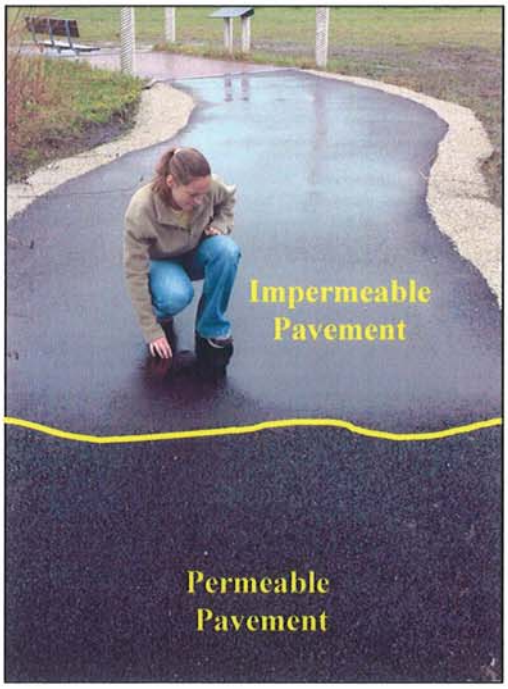
VE Alternative:
The VE Alternative is to provide a pervious shared-use path instead of the standard sidewalk on both sides of the roadway from 60th St to Northlake Blvd. It is also suggested that a sidewalk be provided on the west side of the roadway between the Ibis entrance (roundabout) and Northlake Blvd.

Bike lanes will still be provided as part of the typical section. The shared-use path would be a minimum of 12-feet wide and constructed with a pervious material. The type of material and the location (east of the roadway) of the shared-use path should be determined in coordination with the final roadway alignment. Access to the shared-use path will be provided at signalized/roundabout intersections along the corridor.

In addition, it is suggested that Palm Beach County consider using permeable material for the sidewalks between Persimmon Blvd and 60th St.

Advantages:

- Provides greater separation between vehicles and pedestrians/cyclists
- Provides more area for users to pass along the path
- Reduces the amount of untreated runoff discharging into storm sewers and the need for drainage
- Directly recharges groundwater to maintain aquifer levels
- Eliminates hydrocarbon pollution from asphalt pavements and sealers
- Provides improved recreational opportunities
- Permitting agencies may favor permeable pavement
- Life expectancy equal to that of regular concrete



Source: U.S. Dept. of Agriculture
www.ia.nrcs.usda.gov/features/urbanphotos.html

RECOMMENDATION No. 3: Provide a pervious shared-use path on east side of roadway instead of the standard sidewalks from 60th St to Northlake Blvd.

Disadvantages:

- Path has not been (previously) presented at the public meetings
- Reduces access/mobility. Removal of sidewalks on both sides limits the north-south access on one side of the roadway depending on which side the path is constructed.
- Initial capital cost is typically higher than conventional concrete or asphalt.
- Increases (potentially) the required maintenance, i.e., occasionally sweep, pressure wash, or vacuum the pavement to remove any debris that might clog the voids and inhibit water penetration.

Potential Value Added: ($276,000)

Calculations:

Description	Quantity	Unit	Unit Price	Extended Amount
Sidewalk 4" Thick (60th St to Northlake Blvd)	24,610	SY	$32.00	($787,516)
Permeable Shared Use Path*	24,610	SY	$36.00	$885,956
Permeable Sidewalk (Ibis to Northlake)	2,507	SY	$36.00	$90,240
Subtotal				$188,680
MOT (10%)				$18,868
Mobilization (8%)				$16,604
Subtotal				$224,151
Project Unknowns (20%)				$51,925
	CONSTRUCTION TOTAL			**$276,076**

*Note: It is assumed that the material used is porous concrete at a unit cost of $4.00 per square foot ($36.00 per square yard). Porous concrete can range from $2.00 to $6.00 per square foot
Source: http://www.toolbase.org/PDF/DesignGuides/PermeablePavement_TechSpec.pdf

RECOMMENDATION No. 11: Construct roundabouts instead of T-intersection

Proposed Alternative:

The PD&E Documents show two alternates at intersections for both alignments. One has T intersections with signals and one has roundabouts at 60th Avenue and at the entrance to Ibis Golf & Country Club community.

VE Alternative:

The VE Alternative recommends roundabouts instead of T intersections.

Advantages:

- Less cost
- Better vehicle mobility through the intersection.
- Less Maintenance

Disadvantages:

- Creates additional conflict points for pedestrians/cyclists and traffic.

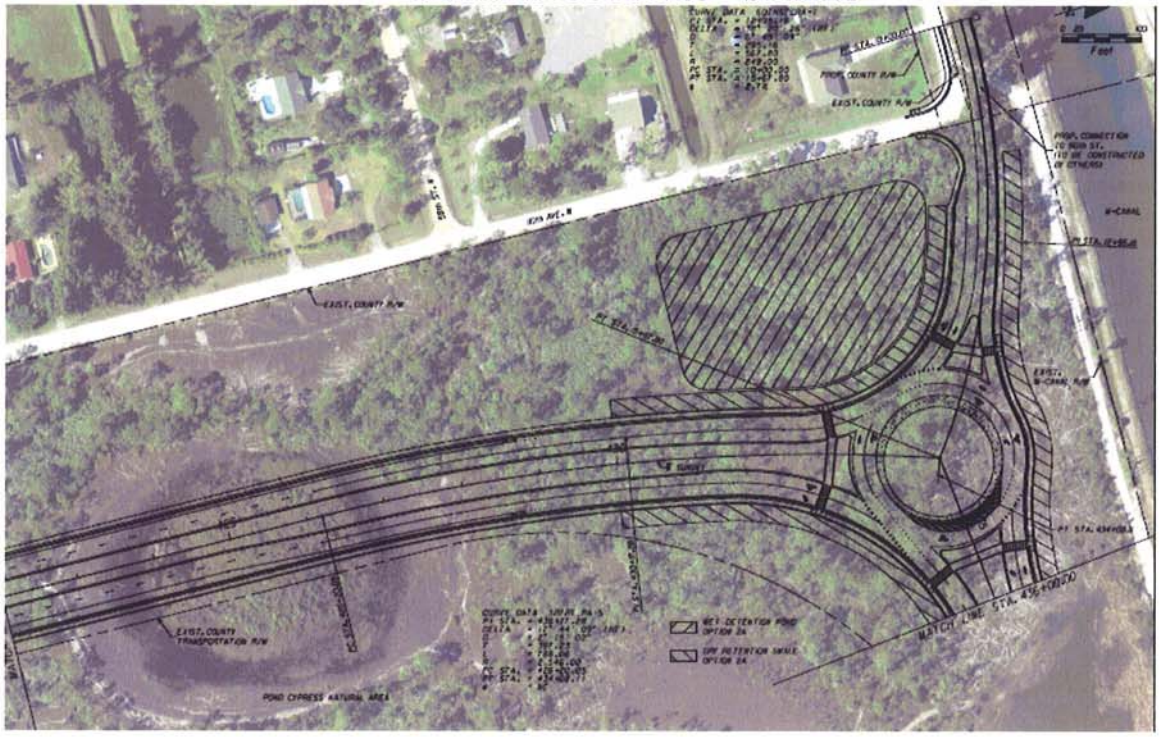
Potential Cost Savings: $565,500

Calculations:

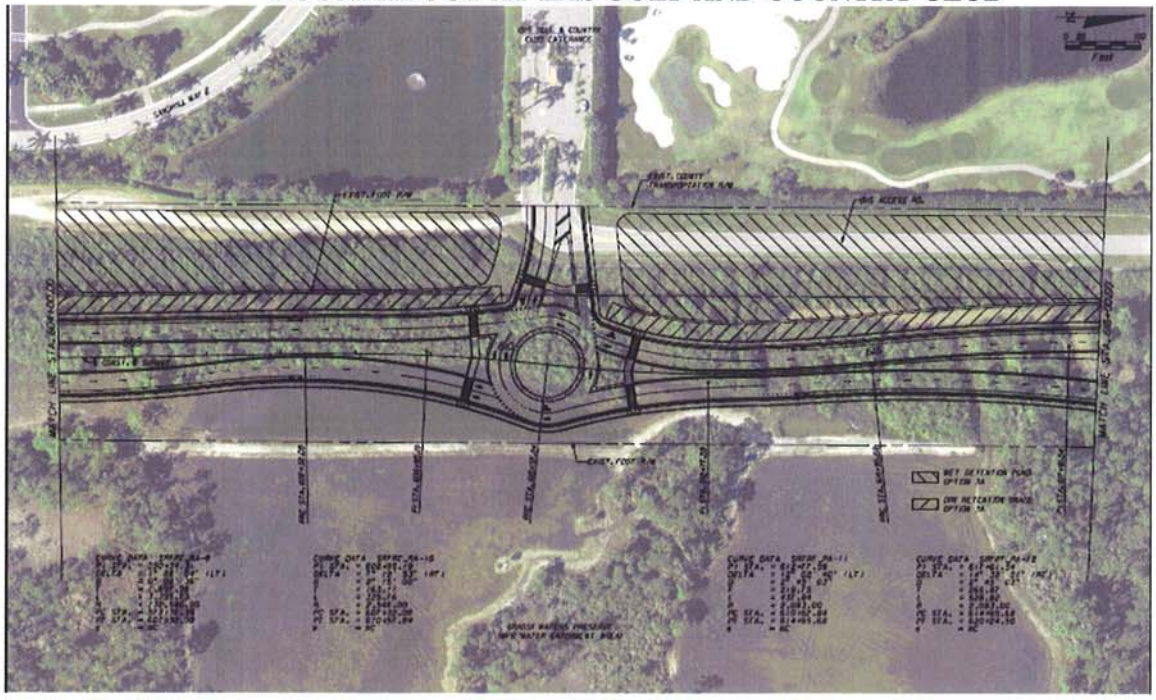
Description	Quantity	Unit	Unit Price	Extended Amount
4-Lane signals	-2	INT	$193,240.00	($386,480)
Subtotal				($386,480)
MOT (10%)				($38,648)
Mobilization (8%)				($34,010)
Subtotal				($459,138)
Project Unknowns (20%)				($106,359)
		CONSTRUCTION TOTAL		**($565,498)**

RECOMMENDATION No. 11: Construct roundabouts instead of T-intersection

ROUNDABOUT AT 60TH STREET



ROUNDABOUT AT IBIS GOLF AND COUNTRY CLUB



RECOMMENDATION No. 13: Build the east alignment on the northern leg with a swale and environmental berm on the east side of the roadway

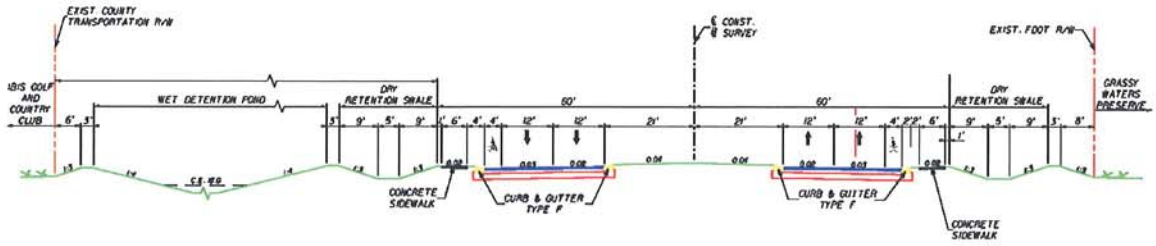
Proposed Alternative:

The PD&E documents currently do not indicate that there is a preferred alignment alternative for this section of the SR-7 extension, north of the "M" canal and north of the section of proposed north-south roadway parallel to the Ibis Preserve (which has to be mostly east because of geometric constraints). The PD&E exhibits currently show just two alignment options for this 2.65 mile segment of the corridor; we're simply calling them the "east" and "west" alignment alternatives. The "east" alignment alternative places the proposed roadway closer to the Grassy Waters Preserve and is considered the less environmentally sensitive option. The "west" alignment alternative places the proposed roadway closer to the Ibis Golf and Country Club community, which is currently ardently opposed to the construction of this SR-7 extension project altogether.

The segment limits for this VE recommendation are from Sta. 511+52.64 to Sta. 651+21.04; this exhibit highlights the segment on an aerial:

VE Alternative:

The VE Alternative basically proposes to shift the PD&E "east" alignment alternative 19 feet to the west, far enough to accommodate an additional dry treatment swale and berm between the roadway and the environmentally sensitive Grassy Waters Preserve.



STA. 511+52.64 TO STA. 651+21.04
SECTION PARALLEL TO IBIS GOLF & COUNTRY CLUB
DESIGN/POSTED SPEED = 45 MPH
VE RECOMMENDATION #13

N.T.S.

RECOMMENDATION No. 13: Build the east alignment on the northern leg with a swale and environmental berm on the east side of the roadway

Advantages:

- Less cost compared to the "west" alignment alternative because this VE alternative would avoid several potential utility relocations for utilities our team observed along the existing Ibis community east entrance access road. Gas, water, overhead power, and cable utilities were all observed during our October 4th, 2010 field review.
- Less risk of environmental impacts caused by spills and accidents along the future roadway because the additional swale width would provide a wider buffer between traffic on the roadway and the wetlands of the Grassy Waters Preserve. This benefit should make this option more desirable for the regulatory agencies than the PD&E "east" alignment alternative, which currently shows little to no buffer width between the roadway and the preserve wetlands.
- Potentially less "secondary impact" mitigation costs because the eastern edge of our proposed travel lanes would be farther from the Grassy Waters Preserve wetlands. If it becomes a regulatory agency judgment call, the VE alternative could possibly reduce the "secondary impact" buffer distance they apply to this segment of the project.
- Less construction costs related to the maintenance of traffic for the Ibis community eastern entrance access road. While the roadway for this VE alternative is under construction, the existing access road should be relatively easy to keep open for regular traffic.
- Less public controversy because the buffer distance between the homes in the Ibis community and roadway lanes for this VE alternative would be greater than the PD&E "west" alignment alternative. The roadway noise impacts to the Ibis community should be reduced by moving the alignment to the east.
- This VE recommendation would help provide a more uniform typical for the project; the proposed roadway is mostly adjacent to the eastern edge of our right-of-way.
- Drainage construction costs should be reduced because the runoff generated on the northbound lanes in the PD&E "east" alignment alternative will require regular curb inlets and stormwater pipe. This VE recommendation will enable the use of closed flumes that will convey the roadway runoff directly into our proposed dry swale areas.

Disadvantages:

- A loss of the proposed wet detention pond volume. Per the current stormwater treatment rules, the size of the PD&E proposed ponds exceed what's required by the regulatory agencies. The decrease in available wet pond capacity caused by shifting the east alignment 19 feet to the west is probably acceptable and the impact would likely be offset for surface water reviewers because of the new dry detention area adjacent to the proposed northbound lanes. This VE recommendation would cause a 13% decrease in the proposed wet detention pond width (from 150' to 131').
- Additional costs related to the fill and earthwork required to construct an additional swale and berm (but these additional embankment costs are less than the savings from the decrease in stormwater pipe required, according to our estimates).

Potential Cost Savings: $100,000

RECOMMENDATION No. 13: Build the east alignment on the northern leg with a swale and environmental berm on the east side of the roadway

Calculations:

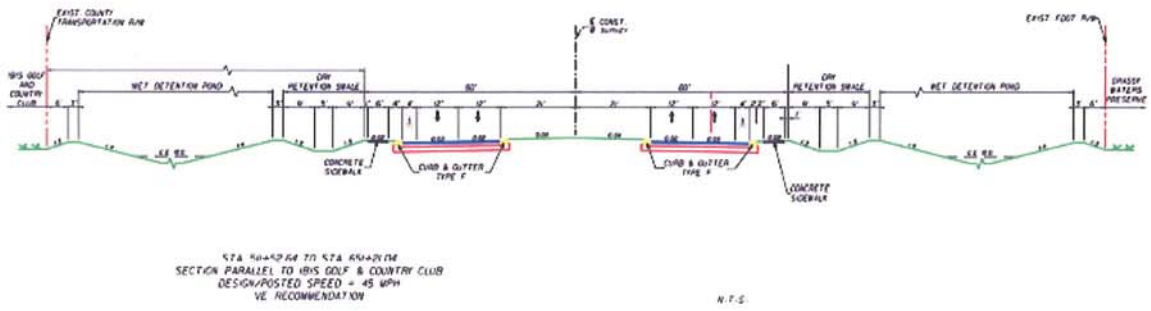
Description	Quantity	Unit	Unit Price	Extended Amount
Embankment	16,000	CY	$4.05	$64,800
P-6 inlets	-46	EA	$3,180.93	($146,323)
Closed flumes	46	EA	$3,663.83	$168,536
24-inch pipe	-4,030	LF	$34.68	($139,760)
Type C DBI's	15	EA	$1,700.24	$25,504
Subtotal				($27,243)
MOT (10%)				($2,724)
Mobilization (8%)				($2,397)
Subtotal				($32,365)
Project Unknowns (20%)				($7,497)
		CONSTRUCTION TOTAL		**($39,863)**

Right of Way Cost Savings	$ 60,000
Construction Savings	$ 40,000
Potential Savings	**$100,000**

RECOMMENDATION No. 14: Consider a middle alignment on the northern leg between the east and west alignment with drainage on both the east and west of the roadway and berm on the east side

Proposed Alternative:
The PD&E Documents shows two alternatives for roadway alignment along the northern section from north of the M Canal to Northlake Boulevard: one alignment to the west (road closer to Ibis Golf and Country Club) and one alignment to the east (road closer to Grassy Waters Preserve). The western alignment shows from east to west: a four-lane divided highway, a dry swale and a wet pond. The eastern alignment shows from east to west: a wet pond, a dry swale and a four-lane divided highway. If the western alignment is preferred a noise wall would be required along the Amli Apartment Complex south of Northlake Boulevard and the SR 7 intersection.

VE Alternative:
The VE Alternative suggests a centrally located roadway. This alternative would have equivalent drainage areas on each side of the road. This alternative is proposed to avoid the utilities on the west side of the northern portion of SR 7 near the Ibis Community and Amli Apartment Complex and possibly eliminates the need for a noise wall along the Amli Apartments.



Advantages:

- Agencies may favor this alternative over the eastern alignment because of a greater buffer area between the roadway and the preserve and the addition of a berm to protect the preserve from possible accidents or spills
- Residents of Ibis Community may favor this alternative over the western alignment because it gives them a greater buffer between the road and their properties
- This alternative would eliminate the need for utility relocation
- This alternative may eliminate the need for the sound wall along the Amli Apartment Complex
- Can use the existing roadway during construction to minimize MOT

Disadvantages:

- Possible reduction in drainage storage area
- Additional cost

Potential Cost Saving: $30,000

RECOMMENDATION No. 14: Consider a middle alignment on the northern leg between the east and west alignment with drainage on both the east and west of the roadway and berm on the east side

Calculations:

Description	Quantity	Unit	Unit Price	Extended Amount
Embankment	16,000	CY	$4.05	$64,800
P-6 inlets	-46	EA	$3,180.93	($146,323)
Closed flumes	46	EA	$3,663.83	$168,536
24-inch pipe	-4,030	LF	$34.68	($139,760)
Type C DBI's	15	EA	$1,700.24	$25,504
36-inch pipe	900	LF	$53.06	$47,754
Subtotal				$20,511
MOT (10%)				$2,051
Mobilization (8%)				$1,805
Subtotal				$24,367
Project Unknowns (20%)				$5,645
		CONSTRUCTION TOTAL		**$30,011**

Right of Way Cost Savings	$60,000
Potential Value Added	-$30,000
Potential Savings	**$30,000**

RECOMMENDATION No. 18: Consider a separate pedestrian bridge with a shared use path

Proposed Alternative:
The PD&E Documents show a single bridge structure over the M-Canal for both pedestrian and vehicular traffic. The current design has 5-feet wide sidewalk on both sides of the road. The sidewalks are currently separated from traffic by a 10-feet wide paved shoulder and a 1.5-feet wide concrete barrier.

VE Alternative:
The VE Alternative is to eliminate the two 5-feet sidewalks and create a separate pedestrian bridge structure. In place of the two sidewalks a single shared use path would be constructed. The pedestrian and bicycle traffic would be separated from vehicular traffic and could be used as a viewing platform of the Grassy Waters Preserve. This alternative would have to be used in conjunction with the construction of a shared use path along the entire corridor.

Advantages:

- Greater public acceptance
- Enhanced Mobility

Disadvantages:

- Higher capital costs
- Future Maintenance of an additional bridge

Potential Value Added: **($104,000)**

Calculations:

Description	Quantity	Unit	Unit Price	Extended Amount
10 feet of bridge/2 feet of railing	-1,800	SF	$114.46	($206,028)
12 foot shared use path bridge	1,800	SF	$154.00	$277,200
Subtotal				$71,172
MOT (10%)				$7,117
Mobilization (8%)				$6,263
Subtotal				$84,552
Project Unknowns (20%)				$19,587
		CONSTRUCTION TOTAL		**$104,139**

RECOMMENDATION No. 18: Consider a separate pedestrian bridge with a shared use path

DESIGN SUGGESTION No. 6: Adjust Maintenance of Traffic markup to the existing portions of roadway only, thus reducing the length of MOT by 52%

Proposed Alternative:
The LRE presented for the PD&E show maintenance of traffic (MOT) of 10% over the entire length of the project (44,000 ft).

Design Suggestion / Alternative:
Apply MOT to the existing portions of the proposed roadway, from Okeechobee Blvd to Persimmon Blvd, and from Ibis Golf & Country Club Entrance to Northlake Blvd (21,200 feet).

Advantages:

- Cost Saving by reducing the length of MOT to the applicable portions only, in the amount of $2,924,798.85.

Disadvantages:

- None apparent

Potential Estimate Reduction: $2,924,800

Calculations:

	Full Length	MOT Required only (56%)	Savings
Total cost of construction	$49,782,115.41	$49,782,115.41	
MOT (10%)	$4,978,211.54	$2,787,798.46	$2,190,413.08
Mobilization (8%)	$4,380,826.16	$4,205,593.11	$175,233.05
Subtotal	$59,141,153.11	$56,775,506.98	
Project Unknowns (20%)	$11,828,230.62	$11,269,077.90	$559,152.72
Total	$70,969,383.73	$68,044,584.88	$2,924,798.85

APPENDICES

Agenda
Sign In Sheets
Presentation Slides
Director of Transportation Development Memorandum

Tentative Agenda
October 4 – 8, 2010

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

FLORIDA DEPARTMENT OF TRANSPORTATION

VALUE ENGINEERING KICKOFF MEETING

State Road-7 Extension from State Road-704 North Lake Boulevard

October 4, 2010

SIGN IN SHEET

Name	Representing	Phone Number	Email Address	FDOT User ID
James Poole	FDOT Drainage	954 777-4204	james.poole@dot.state.fl.us	RD453JP
Shi-Chiang Li	FDOT PL+EM	954 777-4655	Shi-Chiang.Li@dot.state.fl.us	PL430SL
Tykus Holloway	FDOT OMD	954-717-2253	tykus.holloway@dot.state.fl.us	PL429TH
Kathryn Colbert	FDOT PLEM (Sciences)	954-777-4338 954-484-8500	kcolbert@dot.state.fl.us	
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Betsy Jeffers	FDOT - "	4061		
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FLORIDA DEPARTMENT OF TRANSPORTATION

VALUE ENGINEERING STUDY MID-POINT REVIEW

State Road-7 Extension from State Road-704 North Lake Boulevard

October 6, 2010

SIGN IN SHEET

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Rick Johnson	PMA	(407) 351-7016	rjohnson@pma-e2.com

FLORIDA DEPARTMENT OF TRANSPORTATION

VALUE ENGINEERING STUDY PRESENTATION

State Road-7 Extension from State Road-704 North Lake Boulevard

October 8, 2010

SIGN IN SHEET

Name	Representing	Phone Number	Email Address	FDOT User ID
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MAJHAR ALAM	C3TS	561-487-3379	MAJHARA@C3TS.COM	

VALUE ENGINEERING STUDY PRESENTATION

State Road-7 Extension from State Road-704 North Lake Boulevard

October 8, 2010

SIGN IN SHEET

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VICTOR RAMOS	FDOT R/W	954 777 4257	VICTOR.RAMOS@DOT.STATE.FL.US	RW451VR
Jose Theiler	FDOT - PM	x 4402	jose.Theil...@DOT.state.FL.us	PM404YTJ
BILL TAYLOR	" R/W	4247	william.taylor@ . .	RW451WT
Teo Baez	URS	954-739-1881	teofilo_baez@urscorp.com	

FLORIDA DEPARTMENT OF TRANSPORTATION

VALUE ENGINEERING STUDY PRESENTATION

State Road-7 Extension from State Road-704 North Lake Boulevard

October 8, 2010

SIGN IN SHEET

Name	Representing	Phone Number	Email Address	FDOT User ID
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Tim Brock	FDOT - UE	954-777-~~4485~~ 4125	Tim.Brock@DOT.STATE.FL.US	RD446TB
Ellen Daniel	FDOT - Drainage	-4480	ellen.daniel@ —	rd1453ed
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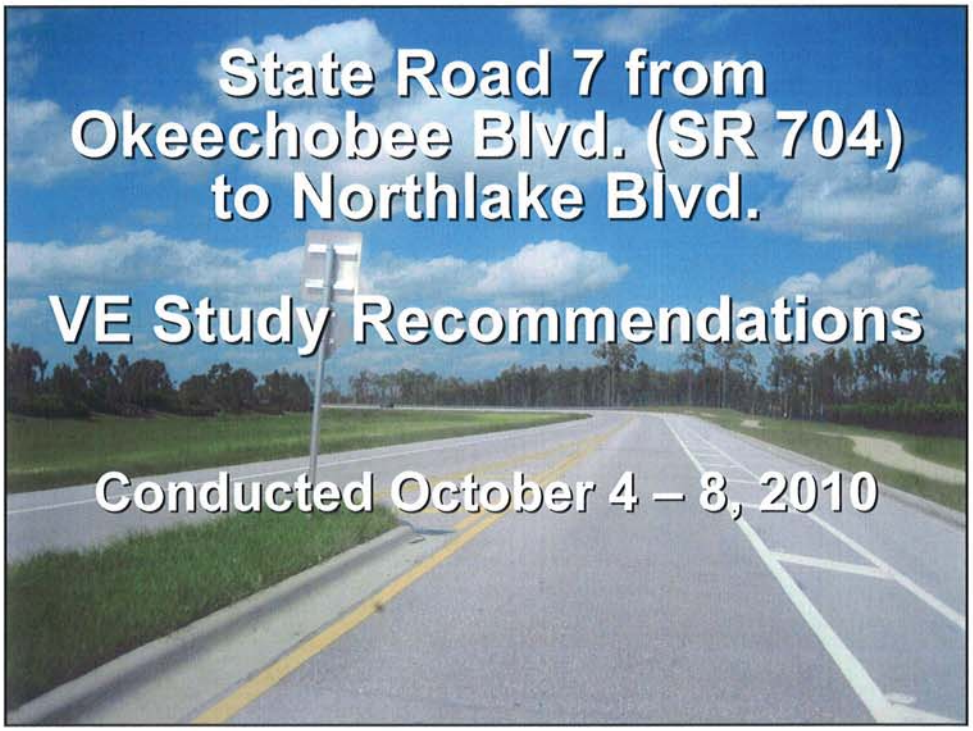
Rick Johnson	PMA	(407)351-7016	rjohnson@pma-a2.com	

SLIDE PRESENTATION



State Road 7 from Okeechobee Blvd. (SR 704) to Northlake Blvd.

Team Members:

- James Poole, PE, Drainage
- Shi-Chiang Li, AICP, PL&EM
- Tykus Holloway, PE, AICP, OMD
- Kathryn Colbert, PL&EM, ESciences
- Marjorie Hilaire, EI, PE Trainee
- Roberto Chavez, Right of Way Mapping
- Ed Perry, Construction Plan Review

State Road 7 from Okeechobee Blvd. (SR 704) to Northlake Blvd.

Team Members:

- Charlie Manganaro, Construction
- Betsy Jeffers, PE, Roadway Design
- Laurice Mayes, Legal
- Ryan Maroney, Right of Way
- Jose Theiler, PE, Project Management
- Tim Brock, PE, VE Coordinator
- Rick Johnson, PE, CVS, Co-Team Leader

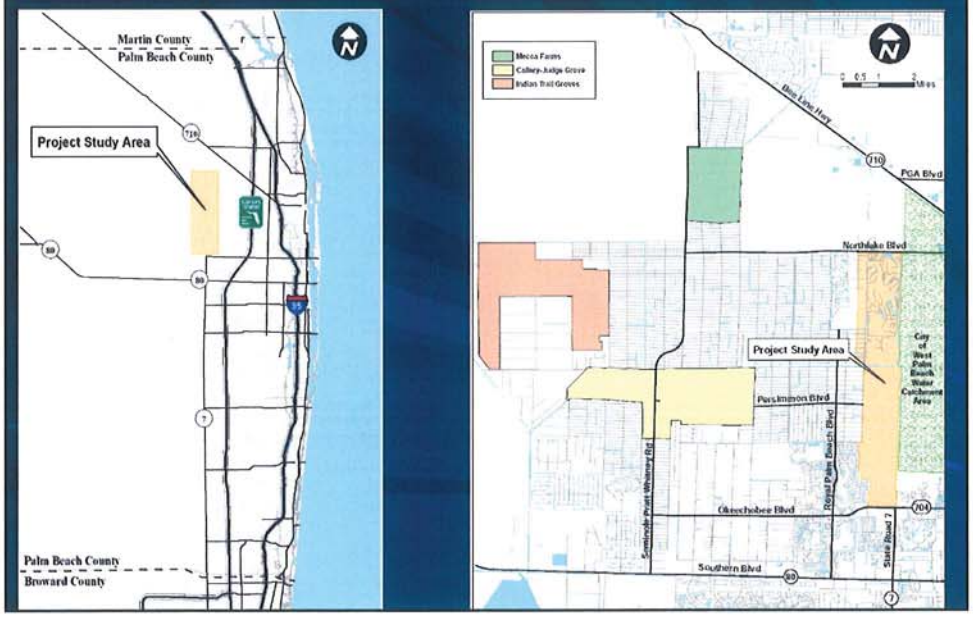
SAVE International and FDOT Job Plan

- Information
- Function
- Creative Brainstorming
- Evaluation/Development
- Recommendation/Presentation/
- Report

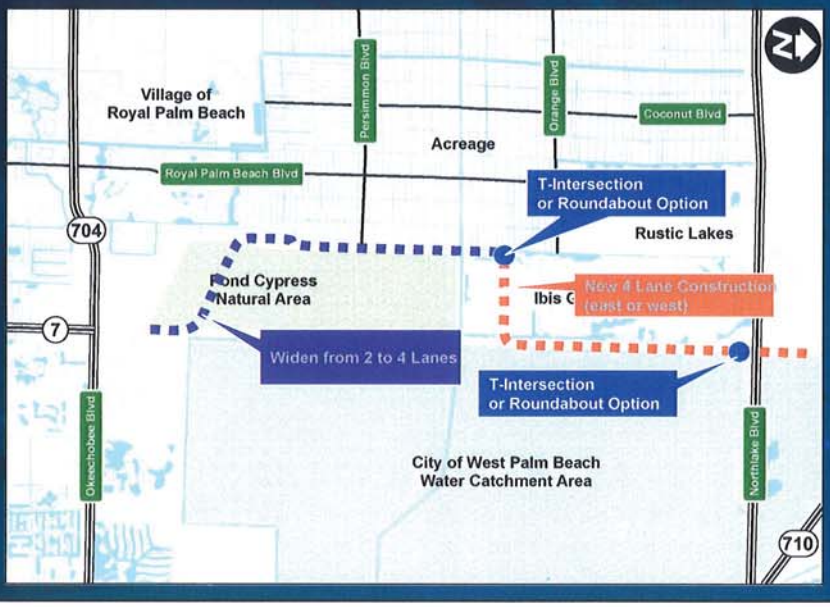
Information

- Information Gathering
- Reviewed Project Information
- Site Visit
- Verified Constraints
- Identified Functions

Project Location



Proposed Improvements



Project Scope

Construct a four-lane divided urban typical section with an 36- to 42-ft median, 4-ft bike lanes, and 6-ft sidewalks on each side. Construct a new bridge over the M Canal. Match the County project typical section between SR 704 and 60th Street.

Long Range Estimate: $71.2M
Right of Way Estimate: $ 0.3M

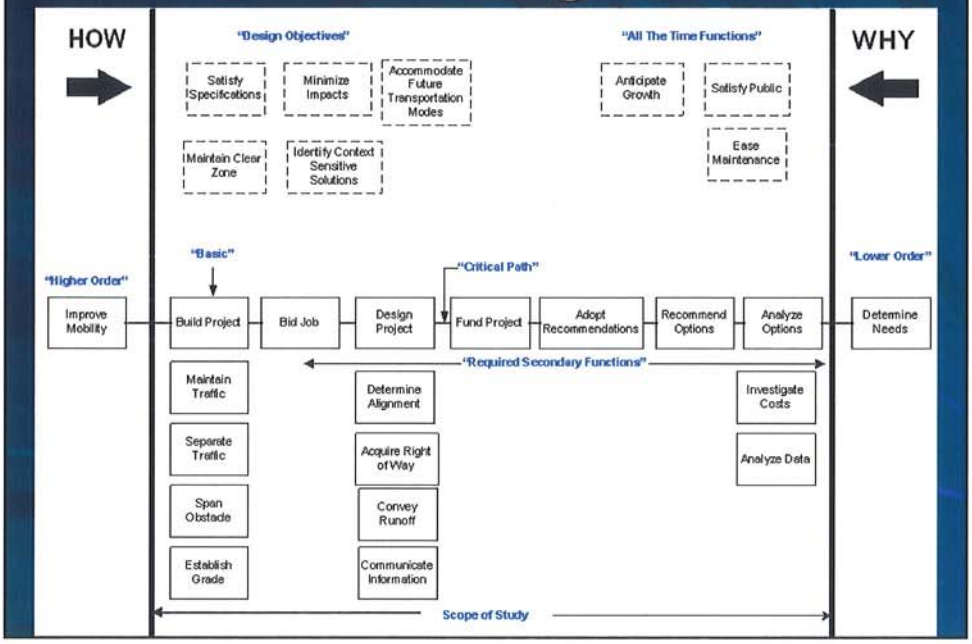
Constraints

- The corridor is fixed due to the Corridor Study that was completed
- Footprint from SR 704 to 60th Street is fixed

Function Analysis

- Improve Mobility
- Build Project
- Bid Job
- Design Project
- Fund Project
- Recommend Options
- Analyze Options
- Determine Needs

FAST Diagram



Creative Brainstorming

- Generated Ideas in Major Disciplines and for Each Function
- Ideas Were Consolidated by the VE Team for Further Development

Evaluation/Development

- Generated 24 Ideas and Identified Weighted Criteria
- Ideas That Improved the PD&E Alternative Were Developed
- Compare the Proposed Alternative to the VE Alternative
- List Advantages and Disadvantages

Between Persimmon and 60th Street Fund Construction

- Proposed Alternative:
  - Palm Beach County has completed construction of the north-bound lanes of SR-7 between Okeechobee Blvd. (SR-704) and Persimmon Blvd.
  - Plans to construct the northbound section from Persimmon Blvd. and 60th Street in FY 2012.
  - Southbound lanes are to be constructed by FDOT with planned construction in FY 2017 and open to traffic in 2020.

Between Persimmon and 60th Street Fund Construction

- **VE Alternative:**
  - Provide the necessary funds for the County to construct the southbound lanes between Persimmon Blvd. and 60th Street while the County is constructing the northbound lanes.

Between Persimmon and 60th Street Fund Construction

Between Persimmon and 60th Street Fund Construction

- **Advantages:**
  - Less cost
  - Advances 4-lane roadway
  - One construction period instead of two
- **Disadvantages:**
  - Need to figure out how to advance funding
- **Potential Savings: $2,038,000**

Have the County widen from Okeechobee (SR 704) to Persimmon Blvd.

- **Proposed Alternative:**
  - Palm Beach County has completed construction of the north-bound lanes of SR-7 between Okeechobee Blvd. (SR-704) and Persimmon Blvd.
  - Plans to construct the northbound section from Persimmon Blvd. and 60th Street in FY 2012.
  - Southbound lanes are to be constructed by FDOT with planned construction in FY 2017 and open to traffic in 2020.

Have the County widen from Okeechobee (SR 704) to Persimmon Blvd.

- **VE Alternative:**
- Provide the necessary funds for the County to construct the southbound lanes between Okeechobee Blvd. (SR 704) and Persimmon Blvd. during or subsequent to the construction of the portion between Persimmon Blvd. and 60th Street.

Have the County widen from Okeechobee (SR 704) to

Have the County widen from Okeechobee (SR 704) to Persimmon Blvd.

- **Advantages:**
  - Less design cost
  - Less soft costs
  - Delivers project five years earlier
  - Less impact to the public
- **Disadvantages:**
  - Need to figure out how to advance funding
- **Potential Savings: $4,064,000**

Provide a pervious shared-use path

- **Proposed Alternative:**
  - Urban 4-lane divided typical section with 4-foot bike lanes and 6-foot wide sidewalks on both sides of the roadway from Okeechobee Blvd to Northlake Blvd.
  - The bike lanes and sidewalks are proposed along the entire corridor

Provide a pervious shared-use path

- **VE Alternative:**
- Provide a pervious shared-use path instead of the standard sidewalk on both sides of the roadway from 60th St to Northlake Blvd.
- It is also suggested that a sidewalk be provided on the west side of the roadway between the Ibis entrance (roundabout) and Northlake Blvd.

Provide a pervious shared-use path

Provide a pervious shared-use path

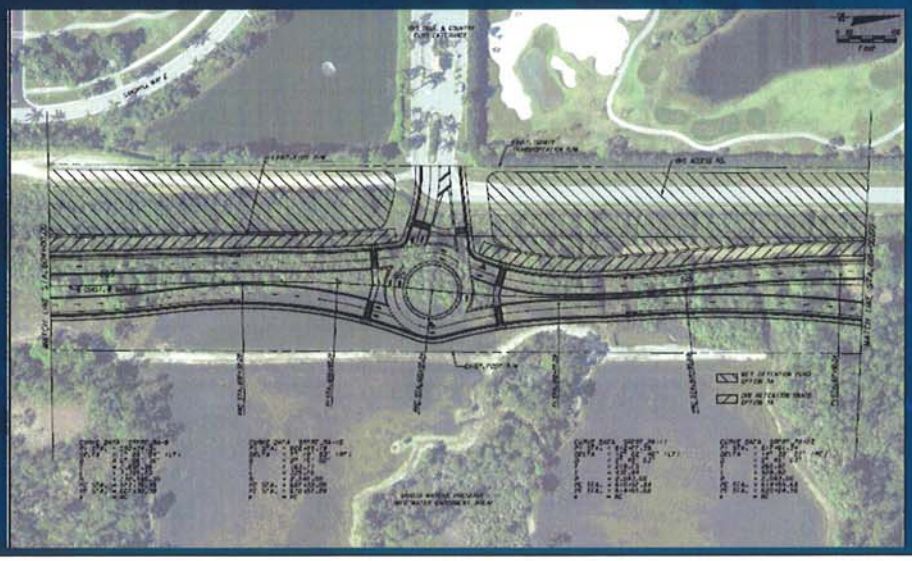
- **Advantages:**
  - Separation between vehicles and pedestrians/cyclists
  - Less runoff
  - Environmentally friendly
- **Disadvantages:**
  - Adds cost
  - Unknown maintenance
- **Potential Value Added: ($276,000)**

Construct roundabouts instead of T-intersection

- **Proposed Alternative:** Two alternates at intersections for both alignments.
- **VE Alternative:** The VE Alternative recommends roundabouts instead of T intersections.

Construct roundabouts instead of T-intersection

Construct roundabouts instead of T-intersection



Construct roundabouts instead of T-intersection

- **Advantages:**
  - Less cost
  - Better mobility thru the intersection
  - Less Maintenance
- **Disadvantages:**
  - Creates additional conflict points for pedestrians/cyclists and traffic
- **Potential Savings: $566,000**

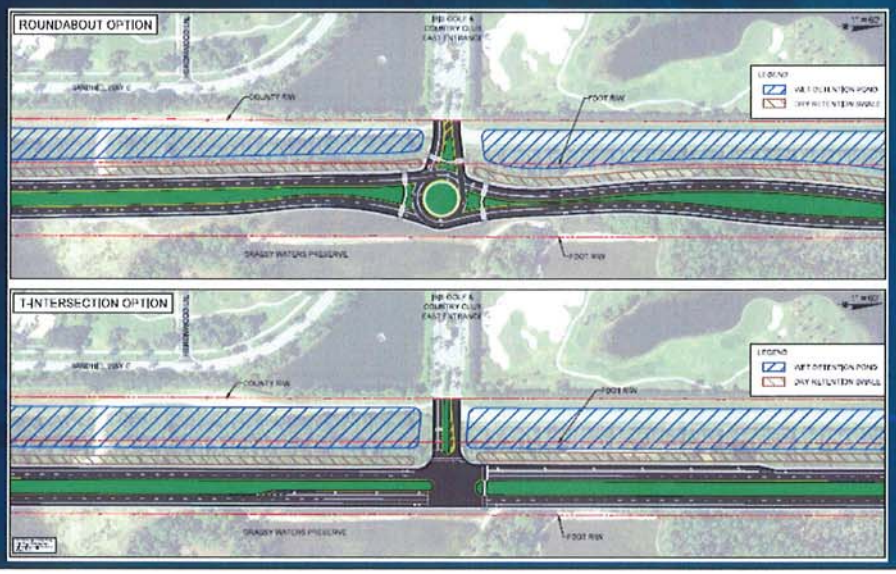
Build the east alignment on the northern leg

- **Proposed Alternative:**
  - No preferred alignment alternative for this section of the SR-7 extension, north of the "M" canal and north of the section of proposed north-south roadway parallel with Ibis Preserve
  - The PD&E exhibits currently show just two alignment options for this 2.65 mile segment of the corridor; we're simply calling them the "east" and "west" alignment alternatives.

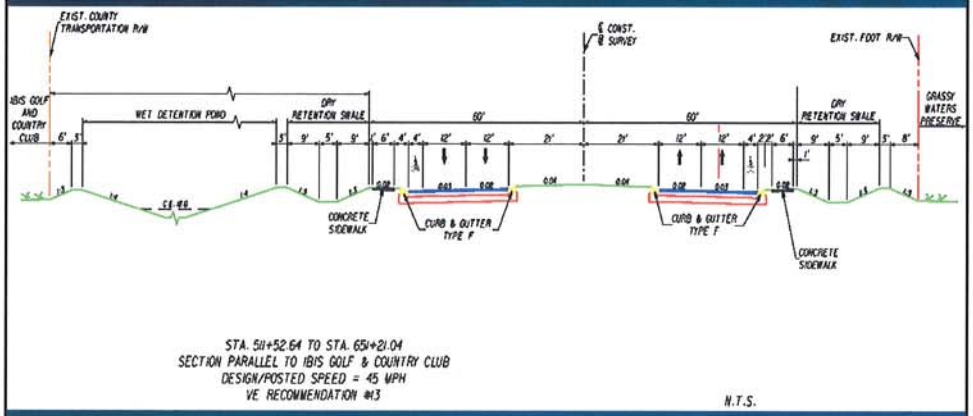
Build the east alignment on the northern leg

- **VE Alternative:**
- Shift the PD&E "east" alignment alternative 19 feet to the west, far enough to accommodate an additional dry treatment swale and berm between the roadway and the environmentally sensitive Grassy Waters Preserve.

Build the east alignment on the northern leg



Build the east alignment o the northern leg



STA. 511+52.64 TO STA. 651+21.04
SECTION PARALLEL TO IBIS GOLF & COUNTRY CLUB
DESIGN/POSTED SPEED = 45 MPH
VE RECOMMENDATION #13

N.T.S.

Build the east alignment on the northern leg

- **Advantages:**
  - Less cost
  - Less risk
  - Increased buffer
  - Avoids temporary construction easement at Ibis
- **Disadvantages:**
  - Loss of the proposed wet detention pond volume
- **Potential Cost Savings: $100,000**

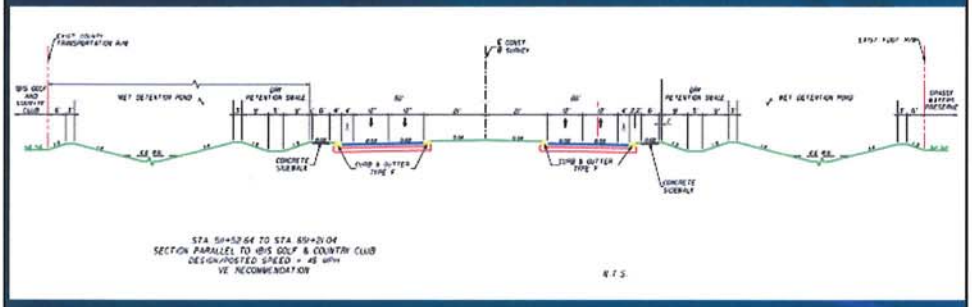
Consider a middle alignment on the northern leg

- **Proposed Alternative:**
- No preferred alignment alternative for this section of the SR-7 extension, north of the "M" canal and north of the section of proposed north-south roadway parallel with Ibis Preserve
- The PD&E exhibits currently show just two alignment options for this 2.65 mile segment of the corridor; we're simply calling them the "east" and "west" alignment alternatives.

Consider a middle alignment on the northern leg

- **VE Alternative:**
- A centrally located roadway with equivalent drainage areas on each side of the road.
- Avoids the utilities on the west side of the northern portion of the SR 7 near the Ibis Community and Amli Apartment Complex
- Possibly eliminate the need for a noise wall along the Amli Apartments.

Consider a middle alignment on the northern leg



Consider a middle alignment on the northern leg

- **Advantages:**
  - Avoids utilities
  - Buffer area and berm provide protection to the Grassy Waters Preserve
  - Ibis may be in favor of this option
  - Avoids temporary construction easement at Ibis
- **Disadvantages:**
  - May reduce drainage storage area
- **Potential Cost Savings: $30,000**

Consider a separate pedestrian bridge with a shared use path

- **Proposed Alternative:**
- A single bridge structure over the M-Canal for both pedestrian and vehicular traffic.
- 5-feet wide sidewalk on both sides of the road. The sidewalks are currently separated from traffic by a 10-feet wide paved shoulder and a 1.5-feet wide concrete barrier.

Consider a separate pedestrian bridge with a shared use path

- **VE Alternative:**
- Eliminate the two 5-feet sidewalks and create a separate pedestrian bridge structure.
- In place of the two sidewalks a single shared use path would be constructed.
- The pedestrian and bicycle traffic would be separated from vehicular traffic and could be used as a viewing platform of the Grassy Waters Preserve

Consider a separate pedestrian bridge with a shared use path

Consider a separate pedestrian bridge with a shared use path

- **Advantages:**
  - Enhanced mobility
  - Potential greater public acceptance
- **Disadvantages:**
  - Adds cost
  - Increased maintenance
- **Potential Value Added: ($104,000)**

Adjust Maintenance of Traffic markup

- **Proposed Alternative:** The LRE presented for the PD&E show maintenance of traffic (MOT) of 10% over the entire length of the project (44,000 ft).
- **VE Alternative:** Apply MOT to the existing portions of the proposed roadway, from Okeechobee Blvd to Persimmon Blvd, and from Ibis Golf & Country Club Entrance to Northlake Blvd (21,200 feet)

Adjust Maintenance of Traffic markup

- **Advantages:**
  - Reduces project cost within the Work Program
- **Disadvantages:**
  - None apparent
- **Potential Savings:** $2,925,000

Design Suggestions

- Review the development and annexation agreement between Ibis and the City
- Leave the excess drainage capacity as is for future discussion
- Consider a bridge at the area where the Ibis impoundment outfall flows east to the Grassy Waters Preserve
- Bridge the canal with a single span versus multiple spans and columns in the canal
- Advance LDCA
- Provide a viewing area for the Grassy Water Preserve or the Pond Cypress Natural Area

Savings Summary

Recommendation	Savings	Maximum Savings
Between Persimmon and 60th Street Fund Construction	$2,038,000	$2,038,000
Have the County widen from Okeechobee (SR 704) to Persimmon Blvd.	$4,064,000	$4,064,000
Provide a pervious shared-use path	($276,000)	
Construct roundabouts instead of T-intersection	$566,000	$566,000
Build the east alignment on the northern leg	$100,000	$100,000
Consider a middle alignment on the northern leg	$30,000	
Consider a separate pedestrian bridge with a shared use path	($104,000)	
Adjust Maintenance of Traffic markup	$2,925,000	$2,925,000
	Total	$9,693,000

Action Plan

- Receive Draft VE Report 10/22/10
- Draft Report Routed for Comments
- Receive and Incorporate D4 Comments and Revisions 11/12/10
- Issue Final VE Report 11/26/10

Florida Department of Transportation

RICK SCOTT
GOVERNOR

605 Suwannee Street
Tallahassee, FL 32399-0450

ANANTH PRASAD, P.E.
SECRETARY

August 31, 2011

MEMORANDUM

TO: Tim Brock, District Value Engineer

FROM: Gerry O'Reilly, Director of Transportation Development

COPY TO: Howard Webb, Morteza Alian, Gustavo Schmidt, Beatriz Caicedo-Maddison, VE Team members, Aniruddha Gotmare, Michael Garau

SUBJECT: Value Engineering Response
Project: SR 7 Extension PD&E Study from Okeechobee Blvd to Northlake Blvd
Financial Management Number: 229664-2-22-01
Palm Beach County

The VE Team should be commended for their excellent effort. They developed a good understanding of the purpose of this project and accomplished this work in a timely manner. The team proposed eight (8) recommendations and five (5) design suggestions. Four of these recommendations have been accepted which results in potential project savings of $2,575,000.

Value Engineering Recommendations

1. VE Alternative 1: Provide the necessary funds to Palm Beach County for the construction of the additional two-lanes (southbound lanes of the SR-7 ultimate section) between Persimmon Blvd and 60th St while the County is constructing the northbound lanes (Potential savings of $2,188,000).

> Response: ***Disagree*** – Palm Beach County has procured design plans and holds the necessary funding required to construct the two-lane roadway (northbound lanes of the SR-7 ultimate section) from Persimmon Blvd. to 60th St. in FY 2012. While the implementation of this recommendation would lead to reduced costs resulting from the avoidance of additional Maintenance of Traffic (MOT), mobilization, and other soft (overhead) costs, this would require the FDOT to advance construction funds earlier than currently programmed.

2. VE Alternative 2: Provide the necessary funds to Palm Beach County for the construction of the additional two-lanes (southbound) between Okeechobee Blvd and Persimmon Blvd during or subsequent to the construction of the portion between Persimmon Blvd and 60th St (Potential savings of $4,064,000).

Response: ***Disagree*** – Similar to the response for VE Alternative 1, the implementation of this recommendation would require the FDOT to advance construction funds earlier than currently programmed.

3. VE Alternative 3: Construct a pervious shared-use path on the east side instead of a standard sidewalk on both sides of the roadway from 60th St to Northlake Blvd. This alternative also recommends adding a sidewalk on the west side of the roadway between the Ibis entrance and Northlake Blvd (Potential added value of $276,000).

Response: ***Agree*** – A shared use path will be included in the project along the east side of the roadway from 60th Street to Northlake Boulevard. In addition, sidewalk will be provided along the west side from the Ibis entrance to Northlake Boulevard.

The Plans Preparation Manual (PPM) allows sidewalk on one side only under the condition that the road parallels a drainage canal and pedestrians are not expected. In the case of the SR 7 project, a portion of the project would parallel the M-Canal and the area between 60th Street to the Ibis entrance will remain undeveloped due to adjacent natural preserves. A shared use path would be able to accommodate the number of expected pedestrians and recreational bicyclists within this segment since as it would provide a linkage between the network of trails planned by Palm Beach County.

The use of pervious material for the path may require additional maintenance effort and cost and should be evaluated during the design phase.

4. VE Alternative 11: Construct a roundabout instead of a T-intersection at 60th Street and at the entrance to Ibis Golf & Country Club community (Potential savings of $566,000).

Response: ***Disagree*** – The option of a roundabout is already being considered as a part of the PD&E study. Both the roundabout and T-intersection option will be carried through the Public Hearing. Afterwards, the preferred alternative will be selected.

5. VE Alternative 13: Build the east alignment of the northern leg of the roadway (north of the M-Canal to Northlake Blvd) with a swale and an environmental berm on the east side of the roadway (Potential savings of $100,000).

Response: ***Disagree*** – The VE recommendation of shifting the east alignment 19 feet to the west would provide a greater separation between the Grassy Waters Preserve and the roadway. While this recommendation provides several advantages as outlined in the VE Study Report, the ultimate location of the roadway will be determined through public involvement and agency coordination. The PD&E team is currently working with the South Florida Water Management District (SFWMD), the US Army Corps of Engineers (USACE), and other permitting agencies to determine the conditions necessary to meet all permit requirements for the construction of the roadway. An east, west, and middle alignment option will be carried through the Public Hearing for final consideration.

6. VE Alternative 14: Consider a middle alignment on the northern leg (north of M-Canal to Northlake Blvd) with a swale and berm on both sides (Potential savings of $30,000).

Response: ***Agree*** – This recommendation suggests a centrally located roadway with drainage on both sides that may eliminate the requirement of a noise wall along the Amli Apartments, may draw a favorable response from the Ibis community and avoid potential

utility conflicts on the west side of the proposed roadway. The project team agrees to consider a middle alignment that will potentially address some of the challenges presented by the east and west alignments.

7. VE Alternative 18: Eliminate the two 5-foot wide sidewalks and replace them with a single separate pedestrian bridge over the M-Canal (Potential added value of $104,000).

Response: ***Agree*** – As discussed under the response for VE Alternative 3, a shared use path will be included within the segment between 60th Street and Northlake Boulevard along the east side of the roadway. The bridge over the M-Canal is located within this segment and providing a single pedestrian bridge provides continuity of the proposed shared use path system.

8. VE Alternative DS-6: Adjust the MOT plan to address only the existing portion of the roadway which will reduce the length of MOT by 52% (Potential savings of $2,925,000).

Response: **Agree** – The cost estimate for MOT on this project has been determined using the Long Range Estimate (LRE) methodology. In the LRE system, it is standard practice to apply a 10% factor to the total construction cost for MOT. The MOT cost will be significantly reduced during the design phase as detailed construction cost estimates are developed through Trns*port. The PD&E team acknowledges that the MOT plan should be applicable only to the existing portions of the roadway.

Value Engineering Design Suggestions

1. ***VE Alternative DS-1***: Leave the excess drainage capacity as-is and open for future discussion.

   Response: The proposed drainage system is designed for maximum water quality treatment. This approach can be further evaluated during the design and permitting phases.

2. ***VE Alternative DS-2***: Consider a bridge at the area where the Ibis impoundment outfall flows south to the Grassy Waters Preserve.

   Response: The PD&E team has proposed a culvert crossing at the outfall. A bridge option can be considered during the design phase.

3. ***VE Alternative DS-3***: Bridge the canal with a single span versus multiple spans and columns in the canal.

   Response: Specific features of the bridge will be developed during the design phase.

4. ***VE Alternative DS-4***: Advance the Local Development Concept Acceptance (LDCA)

   Response: LDCA has currently been scheduled for 2012 under the PD&E phase and any opportunities for advancing the schedule will be pursued.

5. ***VE Alternative DS-5***: Provide a viewing area for the Grassy Water Preserve or the Pond Cypress Natural Area.

Response: Provisions for aesthetic enhancements and community features will be evaluated through public involvement coordination.