



Final Value Study Report

I-95/SR-9 from S. of Miami Gardens Drive to Broward County Line Miami-Dade County, Florida District 6



Financial Project ID: 414964-1-22-05
VE Contract No: CAP39
VE Task Work Order: #1
VE Study No. 2400601
Workshop Dates: November 13 to 17, 2023
Final Report Date: July 11, 2024

Submitted By
Stanley Consultants, Inc

Deliverable: Value Engineering Study Report
Project: I-95/SR 9 from S. of Miami Gardens Drive to Broward County Line PD&E VE Study
Client: FDOT, District 6
Location: Miami-Dade County, Florida

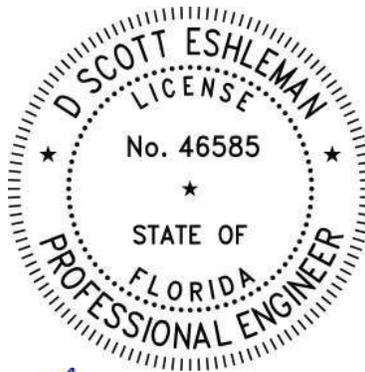
Financial Project ID: 414964-1-22-05
VE Contract No: CAP39
VE Task Order No: #1
VE Study No.: 2400601

Submittal: Final
Date: July 2024

Prepared by: Stanley Consultants

Certification Statement

The undersigned Certified Value Specialist (CVS) facilitator attests that the Value Study documented by this report meets FDOT's Value Engineering Procedure 625-030-002-i and was conducted in accordance with SAVE International's "Value Standard and Body of Knowledge". This Value Engineering Study is respectfully submitted by:



7/11/2024

D. Scott Eshleman, P.E., S.E., CVS
VE Facilitator
CVS: 201006514
PE 46585

Date

Table of Contents

Executive Summary	iii
General	iii
Value Engineering Proposals.....	iv
Cost Development.....	iv
Proposal Implementation	iv
Section 1 Introduction.....	1-1
1.1 General	1-1
1.2 Scope of Value Engineering.....	1-1
1.3 Value Engineering Team.....	1-2
Section 2 Value Engineering Study Procedure.....	2-1
2.1 General	2-1
2.2 Pre-Study Preparation.....	2-1
2.3 VE Workshop	2-2
2.3.1 Information Phase	2-2
2.3.2 Function Analysis Phase	2-3
2.3.3 Creative Phase.....	2-5
2.3.4 Evaluation Phase.....	2-5
2.3.5 Development Phase	2-6
2.3.6 Presentation Phase	2-6
2.4 Post-Study Procedures	2-6
Section 3 Project Description.....	3-1
3.1 Description of Project.....	3-1
3.1.1 Total Project	3-1
3.1.2 Project Cost.....	3-1
3.1.3 VE Cost Estimate	3-1
Section 4 VE Results and Proposals	4-1
4.1 General	4-1
4.2 Proposals	4-1
4.3 Summary.....	4-1
Appendix A Creative Ideas	A-1
General	A-1
Appendix B Evaluation of Ideas.....	B-1

General.....	B-1
Appendix C VE Proposals	C-1
Nomenclature.....	C-1
Value Engineering Proposal CO-1	C-2
Value Engineering Proposal RD-1	C-6
Value Engineering Proposal RD-2	C-11
Value Engineering Proposal RD-3	C-16
Value Engineering Proposal RD-4	C-22
Value Engineering Proposal RD-5	C-29
Value Engineering Proposal ST-1	C-34
Value Engineering Proposal ST-2.....	C-42
Value Engineering Proposal TR-1.....	C-46
Value Engineering Proposal TR-2.....	C-51
Appendix D Meeting Attendees and VE Agenda	D-1
General.....	D-1
Appendix E Criteria Weighting.....	E-1
General.....	E-1
Appendix F Analysis Matrix	F-1
General.....	F-1
Appendix G Recommendations – Resolution/FHWA Chart.....	G-1
General.....	G-1

Tables and Figures

Table ES-1: VE Proposal Descriptions, Function Scores, Cost and Acceptance Information and FHWA Category Impacts	vi
Figure 2-1: Cost Model.....	2-3
Figure 2-2: Function Diagram	2-4

Executive Summary

General

This report summarizes the Value Engineering (VE) study for the I-95/SR-9 from South of Miami Gardens Drive to Broward County Line in Miami-Dade County, Florida. This VE study is Task Work Order (TWO) #1 for Contract No. CAP39 with Stanley Consultants to supply statewide VE services for the Florida Department of Transportation (FDOT). This VE study is for Financial Project ID 414964-1-22-05 and was conducted in FDOT District Six (D6).

This interstate improvement project consists of increasing capacity, accessibility, and safety of an approximate four (4) mile section of I-95/SR-9 at the northern end of Miami-Dade County. This project includes access improvements at the Miami Gardens Drive (SR 806) Exit 14 Interchange and the Ives Dairy Road (CR 854) Exit 16 Interchange. The existing interstate typical section within this segment of I-95 currently consists of six (6) to eight (8) general use lanes and two (2) to four (4) express lanes. The proposed improvement includes a consistent section of eight (8) general use lanes and four (4) express lanes with braided ramps for the express lane ingress and egress at both interchanges. Interchange improvements at Miami Gardens Drive consist of consolidating access on Miami Gardens Drive with grade separated ramp movements. Interchange improvements at Ives Dairy Road consist of converting the tight diamond interchange into a diverging diamond interchange.

The VE workshop was facilitated by Scott Eshleman, Certified Value Specialist (CVS), and his facilitation assistant, Nick Cmiel, Value Methodology Associate (VMA), with Stanley Consultants, Inc. (SCI). The VE study team consisted of various subject matter experts (SMEs) from FDOT D6 staff, plus FDOT D6 Value Officer Dat Huynh, FDOT State Value Engineer, Bobby Bull, and FHWA Florida Division's Value Engineer Mark Clasgens. The consecutive 5-Day VE workshop was held in-person from Monday, November 13 through Friday, November 17, 2023, at FDOT, D6 Offices located at 1000 NW 111 Avenue, Miami, FL 33172, in the Executive Conference Room.

The VE workshop opened with welcome and introductions, followed by a project presentation by the Project Development and Environment (PD&E) consultant, AECOM on Monday morning. The presentation included an overview of the project by PD&E Project Manager Jenn King with additional comments from FDOT Project Manager Auraliz Benitez. Afterward, everyone was dismissed to travel to the project site for a guided van tour of the interchanges and select site viewing points of interest. The VE team then returned to the D6 office and resumed the VE workshop. A mid-point review with Jenn was conducted on the afternoon of Wednesday, Day 3, to determine the viability of prospective VE ideas prior to them being fully developed into official VE proposals. The VE team then continued the VE process through the remainder of the week. On Friday afternoon, Day 5, the VE team concluded the VE workshop by conducting an out-brief presentation to a large group of FDOT representatives along with AECOM PD&E representatives.

The Long Range Estimating (LRE) for this project is approximately \$715 million. From this cost estimate the VE team developed a cost model represented by a pie chart showing a breakdown of cost into major cost centers. This cost model was then used to identify and target high-cost items for value improvement idea generation. It should be noted that the project was still in the PD&E study phase at the time of this VE study, so cost estimates were generally at a macro level of development at this project stage.

Value Engineering Proposals

The VE team generated 61 ideas as shown in Appendix A. Of those 61 ideas, 17 ideas were evaluated as acceptable, 26 were designated as design suggestions, one (1) as already being done, two (2) as quality review comments, and the remaining 15 ideas rejected for various reasons as noted in the complete evaluation listing in Appendix B. The 17 accepted ideas were then combined into 10 VE proposals and carried forward for development.

During brainstorming sessions, the VE team found opportunities for value improvement in the categories of Construction (CO), Roadway (RD), Structures (ST) and Traffic (TR). A VE proposal template was filled out for each proposal. The template listed the VE proposal title, a description of the PD&E preferred alternative, the VE team's proposed idea, its implementation considerations, a listing of all the proposed idea's advantages over the PD&E's preferred alternative as well as its disadvantages, the proposal's calculated functional score and initial cost avoidance, the FHWA's functional benefit, an image of the proposed improvement, and finally cost calculation assumptions and calculation backup. The VE proposal write-ups can all be found in Appendix C.

Cost Development

Unit prices for the VE proposals were obtained from the LRE when applicable, from the FDOT Office of Right of Way, or from an historical database of unit costs. Since design is still at a PD&E level, the cost of engineering redesign was not included in these estimates but should be considered if and as warranted. Also, due to limited design detail at this time, life cycle costs could not be accurately quantified, but their advantage or disadvantage was captured as a benefit or deterrent for proposal acceptance consideration.

Proposal Implementation

Following the VE workshop a Draft VE Report was compiled and submitted to FDOT representatives for distribution and review. FDOT and the PD&E team representatives selected to review the VE proposals provided comments on each one of the proposals. Following the review period, the FDOT D6 Project Manager collected all comments and worked with reviewers to make recommended acceptance decisions along with justification comments and routed that to the FDOT Director for final review and authorization. The Director of Transportation's signed Recommendations – Resolution/FHWA Chart with final VE proposal incorporation decisions were provided to Stanley Consultants to include in this Final VE Report being submitted back to FDOT. This document is included as Appendix G. This submittal concludes Stanley Consultants' VE scope for this project.

A summary of the VE proposals and their associated functional score, cost avoidances and acceptance decision by FDOT along with FHWA category impact are shown in Table ES-1. It should be noted positive cost avoidance indicates that, if the VE proposal were to be accepted, it would result in positive savings and thereby reduce the LRE. Negative cost avoidance indicates that, if the VE proposal were to be accepted, it would result in negative savings and thereby increase the LRE. For functional scores, the higher the score the greater the perceived performance impact. Positive functional scores indicate that the VE team believes accepting the VE proposal will enhance overall project performance. Negative functional scores indicate just the opposite.

Six of the ten proposals were either accepted or partially accepted and four were rejected. Value was achieved as the design team in cooperation with FDOT approved design enhancement proposals that addressed some of the unique needs for this project. In addition, approved resource reduction proposals provided similar or slightly reduced functionality but avoided significant unnecessary cost. The project PD&E team will now incorporate or further investigate all VE proposals as so directed into their PD&E documents.

Table ES-1: VE Proposal Descriptions, Function Scores, Cost and Acceptance Information and FHWA Category Impacts

VE Proposal No.	Description	Functional Score	Initial Cost Avoidance	“Accept”, “Reject” or “Further Review Required”	Acceptance Comments	FHWA Categories				
						Safety	Env.	Ops.	Const.	Other
Construction										
CO-1	Target acquisition of former church property at 18500 NE 5th Ave for future use	2	(\$13,246,000)	Accept	The PD&E team will reconfigure the MGD interchange; R/W acquisition at the former church property will be needed to accommodate the SB off-ramp	X	X	X	X	
Roadway										
RD-1	Optimize EL access around Miami Gardens Drive (3NA)	-3	\$39,606,000	NB – Partially Accept SB – Reject	The PD&E team will conduct a traffic analysis to evaluate feasibility of eliminating one of the two proposed NB braided ramps; but will not for the SB direction	X	X	X	X	X
RD-2	SB I-95 exit to MGD use continuous single lane to provide more space for NB offramp curve to MGD, eliminate signalized merge, and eliminate 2-lane bottleneck by providing 3 lanes expanding to 4 at MGD	7	Negligible	Partially Accept	The PD&E team will reconfigure the MGD interchange and modify NB and SB off-ramps at MGD; R/W acquisition will be needed to accommodate this proposal; but will not implement the 3-lane configuration	X		X		
RD-3	WB MGD to NB I-95 use corner cut to provide 30mph design curve to eliminate design exception and create consistent buffer zone along north side of MSE wall at ramp WB MGD to SB I-95	10	(\$192,000)	Accept	The PD&E team will design the WB MGD on-ramp to NB/SB I-95 to provide a 30mph design curve to eliminate a design exception; R/W acquisition will be needed to accommodate this proposal	X		X		
RD-4	Move SB I-95 exit taper just south of Snake Creek Canal (C-9), provide flyover lane in lieu of loop to gain elevation (with Idea #8 and/or Idea #17)	0	\$0 or (\$13,246,000)	Partially Accept	The PD&E team will reconfigure the MGD interchange to modify the SB off-ramp; but will not move exit south of canal	X		X		
RD-5	Keep EL exit braided ramps, provide EL entrances from mainline (eliminate entrance braided ramps)	-6	\$18,989,000	Reject	The PD&E team will not implement this proposal as the traffic LOS fails with having at-grade express lane entrances		X		X	
Structural										
ST-1	Lower Snake Creek Trail vertical profile crossing beneath I-95 to reduce roadway impacts	0	\$2,221,000	Reject	The PD&E team will not implement this proposal as the profile of I-95 is influenced by other geometric criteria and constraints; lowering the profile of the trail did not reduce impacts	X			X	
ST-2	Reconfigure NE 5th Ave beneath SB I-95 ramp to reduce SB I-95 bridge length crossing MGD	-2	\$7,226,000	Reject	The PD&E team will not implement this proposal as it would result in R/W and access impacts to private property				X	
Traffic										
TR-1	Provide pedestrian signal at MGD at NE 9th Court, eliminate sidewalk on the north side between 6th Ave and 9th Court and extend south side sidewalk east to NE 10th Ave	2	(\$131,000)	Reject	The PD&E team will not implement this proposal as a midblock signal is already being proposed west of NE 9th Court closer to Milton Littman Park	X				
TR-2	Provide pedestrian signal at MGD at NE 9th Court, eliminate sidewalk on the north side between NE 2nd Court and NE 9th Court and extend south side sidewalk east to NE 10th Ave	2	\$11,000	Partially Accept	The PD&E team will extend the south MGD sidewalk to NE 10th Avenue; but will not eliminate the north MGD sidewalk between NE 2nd Court and NW 9th Court.	X				

Section 1 Introduction

1.1 General

This report summarizes the VE study for the I-95/SR-9 from South of Miami Gardens Drive to Broward County Line in Miami-Dade County, Florida. This VE study is TWO #1 for Contract No. CAP39 with Stanley Consultants to supply statewide VE services for the FDOT. This VE study is for Financial Project ID 414964-1-22-05 and was conducted in FDOT D6.

This interstate improvement project consists of increasing capacity, accessibility, and safety of an approximate four (4) mile section of I-95/SR-9 at the northern end of Miami-Dade County. This project includes access improvements at the Miami Gardens Drive (SR 806) Exit 14 Interchange and the Ives Dairy Road (CR 854) Exit 16 Interchange. The existing interstate typical section within this segment of I-95 currently consists of six (6) to eight (8) general use lanes and two (2) to four (4) express lanes. The proposed improvement includes a consistent section of eight (8) general use lanes and four (4) express lanes with braided ramps for the express lane access and egress at both interchanges. Interchange improvements at Miami Gardens Drive consist of consolidating access on Miami Gardens Drive with grade separated ramp movements. Interchange improvements at Ives Dairy Road consist of converting the tight diamond interchange into a diverging diamond interchange.

The VE workshop was facilitated by Scott Eshleman, CVS, and his facilitation assistant, Nick Cmiel, VMA, with SCI. The VE study team consisted of various SMEs from FDOT D6 staff, plus FDOT D6 Value Officer Dat Huynh, FDOT State Value Engineer, Bobby Bull, and FHWA Florida Division's Value Engineer Mark Clasgens. The consecutive 5-Day VE workshop was held in-person from Monday, November 13 through Friday, November 17, 2023, at FDOT, D6 Offices located at 1000 NW 111 Avenue, Miami, FL 33172, in the Executive Conference Room.

The VE workshop opened with welcome and introductions, followed by a project presentation by the PD&E consultant, AECOM on Monday morning. The presentation included an overview of the project by PD&E Project Manager Jenn King with additional comments from FDOT Project Manager Auraliz Benitez. Afterward, everyone was dismissed to travel to the project site for a guided van tour of the interchanges and select site viewing points of interest. The VE team then returned to the D6 office and resumed the VE workshop. A mid-point review with Jenn was conducted on the afternoon of Wednesday, Day 3, to determine the viability of prospective VE ideas prior to them being fully developed into official VE proposals. The VE team then continued the VE process through the remainder of the week. On Friday afternoon, Day 5, the VE team concluded the VE workshop by conducting an out-brief presentation to a large group of FDOT representatives along with AECOM PD&E representatives.

1.2 Scope of Value Engineering

The purpose of a VE study is to develop performance enhancing proposals that will increase project value. Project value is defined as the ratio of project performance to project costs. Thus, ideas that raise project performance to a greater degree than they raise project cost are of good value. Similarly, ideas that lower project cost to a greater degree than they lower project performance are also considered good value. Most desirable however, are project ideas that both raise project performance and lower cost, as they provide a win-win situation with no drawbacks.

The VE team followed a defined Job Plan as defined by SAVE International, the institution that regulates the Value Engineering methodology. This plan allowed the VE team to identify the project’s functions and then brainstorm alternative ways to perform identified functions at the lowest acceptable cost. The VE team vetted all their VE ideas with representatives from the PD&E consultant AECOM at a mid-point review meeting on Wednesday afternoon, November 15, 2023. Following that meeting the VE team selected the most promising ideas for VE proposal development. The full Job Plan is discussed in detail in Section 2.

1.3 Value Engineering Team

The success of a VE study is dependent on the quality and technical expertise of study participants. Members of a VE team were selected for their training and experience that best matched the project disciplines as well as for their personal attributes such as creativity and independence. This is important as each team member must be willing to challenge conformity and not be influenced by peer pressure. The VE team was multi-disciplined as new and creative ideas often come from members whose discipline is not directly related to the subject being studied.

The VE team participants and their areas of expertise in last name alphabetical order were as follows:

FDOT

- ▶ Mark Alvarez Drainage
- ▶ Christopher Bacallao Roadway
- ▶ Auraliz (Lola) Benitez PD&E PM
- ▶ James Beverly Tolls Design Administrator
- ▶ Bobby Bull State Value Engineer
- ▶ Gary Controneo Right of Way
- ▶ Yamilet Diaz TSM&O Engineer – Freeways
- ▶ Manny Espinal Construction
- ▶ Dat Huynh District Value Officer
- ▶ Jinyan Lu Traffic Operations
- ▶ Carlos H Perez Roadway
- ▶ Mario Perez Right of Way
- ▶ Xenia Rodriguez Utilities
- ▶ Leonard Salazar Maintenance
- ▶ Dongming White Structures

FDOT Consultant: Aluces Corporation

- ▶ Cesar Borges Drainage

FDOT Consultant: Ultra Engineering

- ▶ Gregg Letts Traffic Operations (ITS/TSM&O/Tolling)

FHWA

- ▶ Mark Clasgens Value Engineer

Stanley Consultants, Inc.

- ▶ Nick Cmiel VMA Facilitation Support
- ▶ Scott Eshleman CVS Facilitator

For a comprehensive listing of all attendees on this 5-Day VE study, including those in attendance at the Day 1 design presentation and Day 5 VE out-brief presentations, please see Appendix D. The detailed VE Agenda of all VE activities can also be found following the attendance sheets in Appendix D.

Section 2 Value Engineering Study Procedure

2.1 General

Value Engineering studies are conducted according to a prescribed procedure called the “Job Plan.” A VE study actually commences before assembly of the VE team and then continues beyond the submittal of the Value Engineering Study Report. The VE study is organized into three distinct parts:

1. Pre-Study Preparation
2. VE Study Workshop
3. Post-Study Procedures

2.2 Pre-Study Preparation

Prior to the VE study, concept drawings, renderings, traffic data, KMZ overlays, various reports, and the LRE documents were all made available to the VE team. The VE team members reviewed these documents and came prepared with questions for the design team and FDOT project representatives. The documents made available either prior to or during this VE study with dates when available were as follows:

- ▶ Roll Plot of Alt 3j dated Aug 31, 2023
- ▶ Alt 3j Ives Dairy Road Diverging Diamond Interchange Exhibit
- ▶ PowerPoint for Statewide IAR Coordinators Meeting on April 19, 2023
- ▶ Draft Risk Register dated October 26, 2023
- ▶ 414964-1 Project Schedule
- ▶ 414964-1 Typical Section Package
- ▶ 414964-1 PD&E Base Map
- ▶ 414964-1 Initial Utility Contact Form
- ▶ 414964-1-22-01 Scoping Report PD&E Study, dated May 2020
- ▶ Appendix B – Alternative 1A and 3 (1), dated February 2020
- ▶ Appendix C - Traffic Analysis, dated March 17, 2020
- ▶ Draft Alt 3 with agreed upon TSP cutlines, dated September 1, 2022
- ▶ Alt 3 LRE
- ▶ Preliminary Stormwater Management Report, dated October 2023
- ▶ FDOT Interchange Access Request (IAR) Methodology Letter of Understanding (MLOU)
- ▶ Contamination Screening Evaluation Report, dated October 2023
- ▶ PD&E Booklet, version 13
- ▶ Geotechnical Services Report, dated October 23, 2023
- ▶ Location Hydraulics Report, dated November 2023
- ▶ Refined Build Concept

From the LRE SCI developed an illustrative cost model consisting of the breakdown of project costs to show the VE team graphically where the major cost centers were for the project. Stanley VE facilitation representatives also worked with FDOT D6 representatives and the State Value Engineer to organize a Kick-Off meeting prior to the VE workshop on September 6, 2023. Logistical questions about the upcoming workshop agenda, project information, and meeting location logistical matters were addressed along with expectations for the study with follow-up reporting.

2.3 VE Workshop

The VE workshop followed the specified VE Job Plan that was conducted in accordance with SAVE International’s “Value Standard and Body of Knowledge” and FDOT’s Value Engineering Procedure 625-030-002-i. The VE Job Plan is an organized approach for searching out alternative ideas that add value by satisfying the needs of the driving project functions. The Job Plan for the VE workshop follows six key phases:

1. Information Phase
2. Function Analysis Phase
3. Creative Phase
4. Evaluation Phase
5. Development Phase
6. Proposal Phase

It should be noted since this VE study is being performed for FDOT, that FDOT’s VE Procedure 625-030-002-i specifies a seventh phase known as the Resolution Phase. This important phase has not been omitted but has rather been labeled Post-Study Procedures as it is the third part of our VE Job Plan and falls after the six phased VE workshop.

All six phases of the VE workshop are briefly described below:

2.3.1 Information Phase

At the beginning of the VE study, it is important to understand the background and decisions that have influenced the development of the conceptual design to date. The engineers conceptualizing this project have spent time and effort in the analysis of project objectives and developed what they felt will best facilitate those objectives for this project. It should be noted that our VE workshop was not intended to seek out the designers’ “mistakes” or even to be a review of the current design effort to date but was rather a process of developing new combinations of alternative ideas for review and consideration by the consultant designer, the owner FDOT and FDOT’s selected project stakeholders.

During the VE study the VE team members must become familiar with the project, concentrate their efforts on high-cost areas, and develop alternate concepts that address the immediate and long-term needs of the project owners/users/stakeholders. To assist in the development of alternative ideas the VE team must be cognizant of the designers’ rationale for the development of the current design and test that rationale against the expressed needs, desires, and constraints of all project stakeholders as it is not uncommon for previous project constraints to be lifted as additional project information becomes available.

To further assist the VE team in preparation for seeking out cost saving ideas, the cost model, shown below in Figure 2-1 was developed from the provided LRE. This model graphically illustrates where all the major cost centers for the project are located. This graphical cost information assisted the VE team in understanding project resource allocation in preparation for the functional analysis phase of the Job Plan.

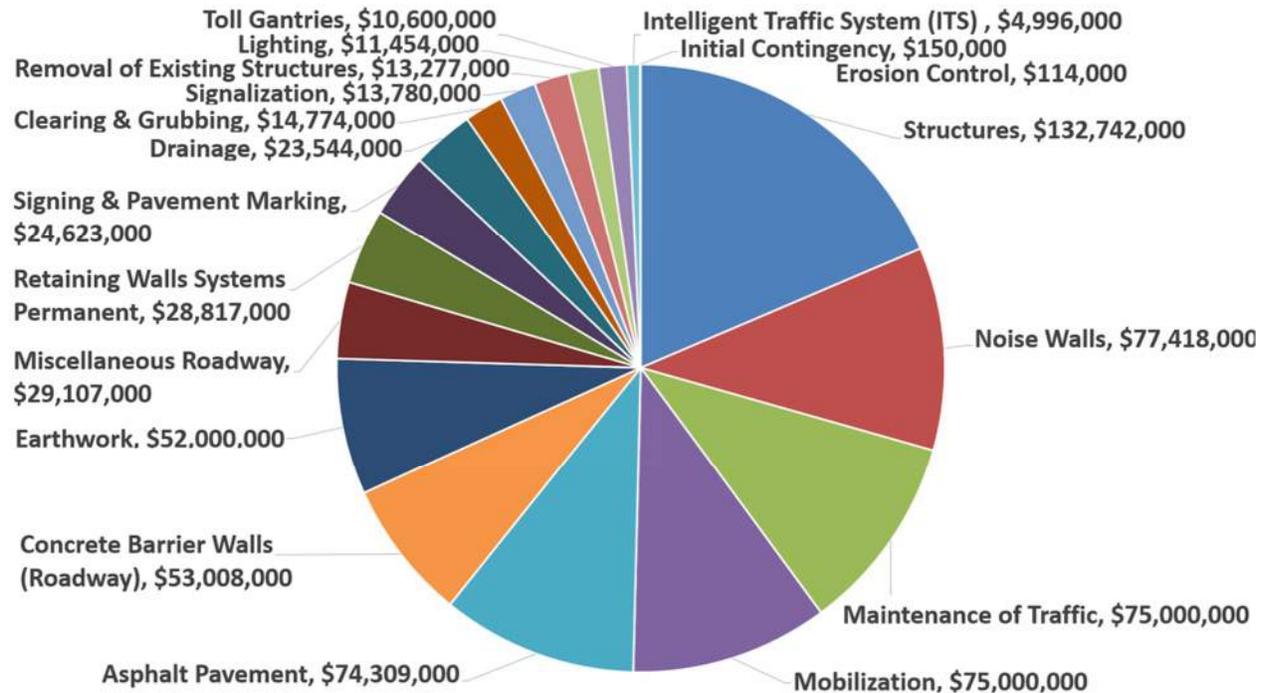


Figure 2-1: Cost Model

2.3.2 Function Analysis Phase

The intent of the Function Analysis Phase of the Job Plan is to change the viewpoint of the VE team members. Function Analysis forces the VE team members to get into the mindset of the project’s owners, users, and stakeholders to see the project from their perspective. Without the Function Analysis Phase, SMEs would naturally gravitate their concentration to just the project elements they are most familiar with and try to optimize those components. If all project disciplines were independent from one another, this would have some benefit, but since all project components are interrelated, the VE must focus on optimizing the functional performance of the whole project as an interrelated system with the users in mind.

To start things off the VE facilitator explained that a function, composed of an active verb and measurable noun, describes what the project must do to meet the needs of the project’s owners, users, and stakeholders. The VE team then identified and listed the required functions of all major components of the project. Breaking down a project into its functions is key to the VE process. The goal in this process is to identify each project function by its broadest possible terms. This will provide the greatest potential for divergent thinking because it gives the most freedom for creatively developing alternatives. A function is best identified by asking the question of what needs to be accomplished by a solution and not how it is to be accomplished. How each function is identified will set the range of solutions that can be considered.

Functional analysis was performed using a FAST (Functional Analysis System Technique) diagram to improve the VE team's understanding of the project. This technique organizes functions in logical How? – Why? sequence with functions to the right of adjacent functions answering the question of “How?” and functions to the left of adjacent functions answering the question of “Why?”. Function arrangement is as perceived by the VE team. The Function Diagram for this project is presented as Figure 2-2.

It should be noted from the FAST diagram that the VE team determined that the overall driver for this project was **Improve Mobility**. Therefore, that function was positioned in the **Higher Order Function** box at the far left of the diagram. Moving to the right of that function along the critical path line is the function: **Move Traffic**. The function in this position of the FAST diagram is known as the **Basic Function**. This means that the VE team determined that the success of this project is contingent on moving traffic on I-95 to improve overall mobility. Without this Basic Function being satisfied by the project, the project would be considered unsuccessful.

The functions to the right of the Basic Function address the question as to how the project will move traffic? These functions are known as **Secondary Functions** as they support the **Basic Function**. The function at the far right, **Establish Design**, is the **Lower Order Function**. All functions between the **Higher Order Function** and **Lower Order Function** support the functions listed in the **Goals and Objectives** box. All other remaining functions in the **All the Time Functions** box are important for this project but are not on the **Critical Path** indicated by the yellow lines as they do not define why the project needs to be done.

It should be noted that the main point of taking the time to develop a FAST diagram is not so much about the pretty picture at the end, even though that is important to show a solid understanding of the project. Instead, by wrestling with where to position all the identified project functions, each VE team member comes to a unified understanding of why the project exists, apart from their own engineering discipline interests, and can then rightly judge where to place their creative efforts in the upcoming Creative Phase. The FAST diagram therefore serves as a launching pad to direct brainstorming.

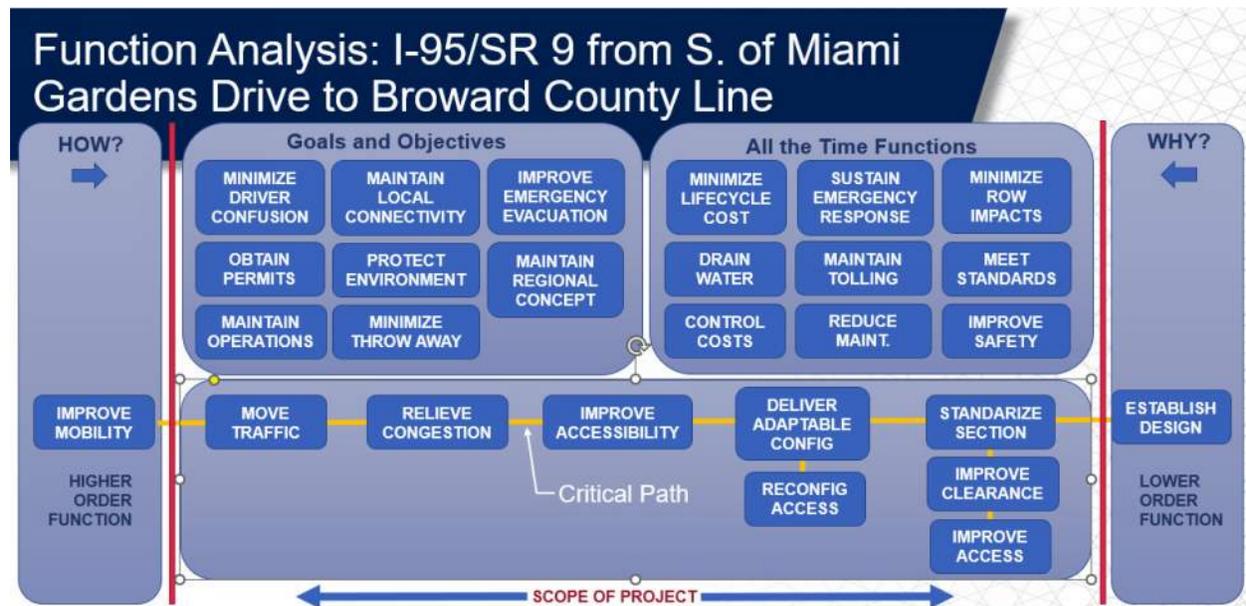


Figure 2-2: Function Diagram

2.3.3 Creative Phase

During the Creative Phase, the VE team brainstormed as many ways as possible to reduce the project cost and improve project performance. All creative ideas were listed, and the function diagram and project documents were referred to often to generate additional ideas. Judgment of ideas was suspended at this time to avoid inhibiting creative thought. The VE team looked for quantity and association of ideas that would then be screened in the next phase of the study. A list of 61 ideas were generated and can be found in Appendix A.

2.3.4 Evaluation Phase

In this phase of the job plan the VE team evaluated the previously generated idea list. During this process of evaluation some ideas were accepted for proposal development and were given a label (A) for Acceptance. Ideas not accepted for further development were rejected and labeled with an (R) followed by a number representing the reason for the rejection. Possible reasons for an idea being rejected include Outside of Scope (R1); Not Workable (R2); Does Not Add Value (R3); and Duplicate (R4). Otherwise, the idea was identified as either a Design Suggestion and given the label (DS), Already Being Done and given the label (ABD) or identified as a Quality Review Comment and given the label (QRC). See Appendix B for the complete evaluation of each one of the 61 creative ideas.

Once the VE proposals that the VE team wanted to carry forward were identified, evaluation criteria were then determined based on what the VE team felt were most important for achieving this project's goals as follows:

- ▶ Minimize Driver Confusion
- ▶ Relieve Congestion
- ▶ Improve Safety
- ▶ Maintain Regional Concept

The above evaluation criteria were then assigned a weight based on the VE team's assessment of how important each individual criterion was relative to the other evaluation criteria. The determination of the level of importance of each criterion was derived through a paired comparison exercise that used a matrix for ranking all evaluation criteria. See Appendix E for the completed matrix with individual scores and resulting weight from 1 to 5 assigned to each individual evaluative criterion. It should be noted that for the evaluation criteria "Improve Safety" that FDOT standards are presumed safe. Therefore, while safety in and of itself is paramount, the evaluation criteria of "improve safety" was meant to address either non-compliance with standards currently contained in the PD&E or enhanced safety over and above standards.

The VE team then ranked each proposal idea as well as the current preliminary design as to how well both satisfied the evaluative criteria. The rankings for the proposed ideas were then multiplied by the weighted values of each individual criterion and totaled to a final score. Similarly, the rankings for the original PD&E preferred alternative were multiplied by the weighted values of each individual criterion and totaled to a final score. All ranking numbers and scores for each proposal can be found in Appendix F. The functional score for each proposal was then calculated as the final score for the proposal minus the final score for the PD&E preferred alternative. These functional scores are shown in Table ES-1 in the Executive Summary.

2.3.5 Development Phase

During brainstorming sessions, the VE team found opportunities for value improvement in the categories of Construction (CO), Roadway (RD), Structures (ST) and Traffic (TR). A VE proposal template was filled out for each proposal. The template listed the VE proposal title, a description of the PD&E preferred alternative, the VE team's proposed idea, its implementation considerations, a listing of all the proposed idea's advantages over the PD&E's preferred alternative as well as its disadvantages, the proposal's calculated functional score and initial cost avoidance, the FHWA's functional benefit, an image of the proposed improvement, and finally cost calculation assumptions and calculation backup. The VE proposal write-ups can all be found in Appendix C.

It should be noted positive cost avoidance indicates that if the VE proposal were to be accepted, it would result in positive savings and thereby reduce the LRE. Negative cost avoidance indicates that if the VE proposal were to be accepted, it would result in negative savings and thereby increase the LRE. For functional scores, the higher the score the greater the perceived performance impact. Positive functional scores indicate that the VE team believes accepting the VE proposal will enhance overall project performance. Negative functional scores indicate just the opposite. For the proposal evaluation criteria and a paired comparison matrix showing how each criterion was weighted see Appendix E. For the evaluation of each VE proposal's performance relative to the PD&E preferred alternative and how each VE proposal's functional score was calculated see Appendix F.

2.3.6 Presentation Phase

The last phase of the VE workshop is the presentation of proposals. The purpose of the presentation was to allow the presentation reviewers the ability to hear proposal descriptions and ask clarifying questions about the VE proposals. Actual acceptance discussions were then made following review of the Draft VE Report. There were 25 participants in the presentation meeting. A complete list of all the participants for the entire week for each VE session can be found in Appendix D.

2.4 Post-Study Procedures

Following the VE workshop a Draft VE Report was compiled and submitted to FDOT representatives for distribution and review. FDOT and the PD&E team representatives selected to review the VE proposals provided comments on each one of the proposals. Following the review period, the FDOT D6 Project Manager collected all comments and worked with reviewers to make recommended acceptance decisions along with justification comments and routed that to the FDOT Director for final review and authorization. The Director of Transportation's signed Recommendations – Resolution/FHWA Chart with final VE proposal incorporation decisions were provided to Stanley Consultants to include in this Final VE Report being submitted back to FDOT. This document is included as Appendix G. This submittal concludes Stanley Consultants' VE scope for this project.

A summary of the VE proposals and their associated functional score, cost avoidances and acceptance decision by FDOT are shown in Table ES-1. Six of the ten proposals were either accepted or partially accepted and four were rejected. Value was achieved as the design team in cooperation with FDOT approved design enhancement proposals that addressed some of the unique needs for this project. In addition, approved resource reduction proposals provided similar or slightly reduced functionality but avoided significant unnecessary cost. The project PD&E team will now incorporate or further investigate

all VE proposals as so directed into their PD&E documents. The project PD&E team will then incorporate or further investigate all VE proposals as so directed into their PD&E documents.

Section 3 Project Description

3.1 Description of Project

3.1.1 Total Project

This interstate improvement project consists of increasing capacity, accessibility, and safety of an approximate four (4) mile section of I-95/SR-9 at the northern end of Miami-Dade County. This project includes access improvements at the Miami Gardens Drive (SR 806) Exit 14 Interchange and the Ives Dairy Road (CR 854) Exit 16 Interchange. The existing interstate typical section within this segment of I-95 currently consists of six (6) to eight (8) general use lanes and two (2) to four (4) express lanes. The proposed improvement includes a consistent section of eight (8) general use lanes and four (4) express lanes with braided ramps for the express lane access and egress at both interchanges. Interchange improvements at Miami Gardens Drive consist of consolidating access on Miami Gardens Drive with grade separated ramp movements. Interchange improvements at Ives Dairy Road consist of converting the tight diamond interchange into a diverging diamond interchange.

This PD&E project is part of the northern-most segment of a 17.3-mile-long Corridor Planning Study (CPS) of I-95 from US 1 to the Broward County Line. This segment of I-95 starts north of the Golden Glades Interchange (GGI) and must consider not only proposed planned improvements to the GGI, but the ultimate build-out of the GGI. To the north FDOT D4 also has on-going PD&E concepts for expanding I-95 that include braided ramp express lane access to and from the I-95 corridor access points. The challenge with this project is to provide needed capacity improvements without adding congestion. Braided ramps are one solution that the PD&E team has adopted for this project to be consistent with on-going PD&E concepts for I-95 in Broward County. The VE team reviewed this approach and has offered a couple ideas that challenge the extensive use of that methodology to not only save cost but enhance driver safety and make room for much needed drainage accommodation. Many other performance enhancement and cost saving ideas were investigated by the VE team.

3.1.2 Project Cost

The LRE for this project is approximately \$715 million. From this cost estimate the VE team developed a cost model represented by a pie chart showing a breakdown of cost into major cost centers. This cost model was then used to identify and target high-cost items for value improvement idea generation. It should be noted that the project was still in the PD&E study phase at the time of this VE study, so cost estimates were generally at a macro level of development at this project stage.

3.1.3 VE Cost Estimate

Unit prices for the VE proposals were obtained from the LRE when applicable, from the FDOT Office of Right of Way, or from an historical database of unit costs. Since design is still at a PD&E level, the cost of engineering redesign was not included in these estimates but should be considered if and as warranted. Also, due to limited design detail at this time, life cycle costs could not be accurately quantified, but their advantage or disadvantage was captured as a benefit or deterrent for proposal acceptance consideration.

Section 4 VE Results and Proposals

4.1 General

Each proposed idea has been formulated into a workable alternate solution with the goal to enhance the same function satisfied by the current PD&E preferred alternative at a lower cost. If a lower cost could not be achieved, the goal was to enhance the same function to such a degree that even at a slightly higher cost the idea still provided an overall value increase. This section of the report presents the ideas that have been developed and the proposals for implementing those ideas.

4.2 Proposals

Detailed proposal descriptions and estimated costs are presented in Appendix C. Each proposal write-up adheres to addressing the same evaluative criteria with appropriate description, assessment, and cost information. The VE team believes that each proposal should be further evaluated by FDOT and its designated PD&E team representatives. Some proposals may require a variance from existing regulations or a non-standard methodology. In such cases, the VE team recommends that the appropriate variance be pursued, or methodology be investigated if the cost savings and/or performance enhancements are judged to be advantageous.

4.3 Summary

A summary of the VE proposals and their associated functional score and cost avoidances to FDOT are shown in Table ES-1 in the Executive Summary. It should be noted that simply adding up all cost avoidances for each VE proposal may not accurately represent the total amount of cost avoidance as proposal ideas may not all be mutually exclusive. Total cost avoidance can only be calculated by adding up the mutually exclusive component of each selected proposal relative to the other proposals that were selected. In addition, cost impacts shown represent order of magnitude at a concept level as it was not the intention of the VE team to perform detailed design or detailed quantity estimates.

Each proposal should be evaluated on its own merit. Portions of each proposal may be mixed and matched with others to obtain a design that includes advantages from several. There may be a tendency to reject a proposal because of a small disagreement with one portion of the proposal. Objective consideration should be given to each proposal and those portions that are acceptable should be implemented.

It should be noted positive cost avoidance indicates that if the VE proposal were to be accepted, it would result in positive savings and thereby reduce the LRE. Negative cost avoidance indicates that if the VE proposal were to be accepted, it would result in negative savings and thereby increase the LRE. For functional scores, the higher the score the greater the perceived performance impact. Positive functional scores indicate that the VE team believes accepting the VE proposal will enhance overall project performance. Negative functional scores indicate just the opposite.

Appendix A Creative Ideas

General

The following pages contain a listing of creative ideas generated by the VE team.

Idea No.	Function	Description
1	CC	Implement project using phased or progressive design-build delivery
2	IS	Lower Snake Creek Trail vertical profile crossing beneath I-95 to reduce roadway impacts
3	IS	Elevate trail and provide pedestrian bridge crossing I-95
4	IM	Construct full pavement section depth along shoulders to enhance multimodal transit
5	MO	Apply Smart Work Zone (SWZ) management to monitor real-time traffic to allow the Transportation Management Center (TMC) to make adjustments
6	MDC	Remove braided ramps and maintain at-grade express lane entrance locations
7	RM	Use Portland Cement Concrete (PCC) pavement at intersections
8	DAC	Optimize EL access around Miami Gardens Drive (3NA)
9	DAC	Eliminate braided express lane ramps at Ives Dairy Road (3N)
10	MRC	Break the project design and construction into two segments to accelerate delivery
11	RC	Eliminate the Ives Dairy Road slip ramps
12	CC	Reduce the quantity of bridges along the project corridor
13	RC	Improve the flow on I-95 NB exit ramp at MGD
14	MDC	Remove 3NA just north of MGD to mitigate driver confusion
15	DW	Secure offsite property for stormwater attenuation and treatment
16	DW	Convert wet ponds into dry ponds to reduce water quality treatment requirements
17	DW, MO	Target acquisition of former church property at 18500 NE 5th Ave for future use
18	MDC	Eliminate express lanes to simplify traffic operations and system maintenance

LIST OF FUNCTIONS					
CC	Control Costs	MDC	Minimize Driver Confusion	MTo	Maintain Tolling
DAC	Deliver Adaptable Configuration	MLC	Maintain Local Connectivity	OP	Obtain Permits
DW	Drain Water	MLcc	Minimize Lifecycle Cost	PE	Protect Environment
IA	Improve Access	MO	Maintain Operations	RA	Reconfigure Access
IAb	Improve Accessibility	MRC	Maintain Regional Concept	RC	Relieve Congestion
IC	Improve Clearance	MRI	Minimize R/W Impacts	RM	Reduce Maintenance
IEE	Improve Emergency Evacuation	MS	Meet Standards	SER	Sustain Emergency Response
IM	Improve Mobility	MT	Move Traffic		
IS	Improve Safety	MTA	Minimize Throw Away		

Idea No.	Function	Description
19	DW, PE	Provide retaining wall with a cantilevered slab along West Lake to widen roadway and store water beneath
20	DAC	Incorporate connected vehicle infrastructure
21	IS	Evaluate the need and potential locations for incident management staging areas
22	IS	Incorporate lighted chevron signs to indicate curves and obstacles along elevated ramps
23	MT	Use roundabout at Ives Dairy Road or MGD
24	RM	Consider ultra-high performance concrete (UHPC) to increase service life of bridges
25	MDC	Consider using accelerated bridge construction (ABC) techniques
26	MO	Provide right turn lane EB MGD to 5th Ave
27	IS	Provide pedestrian signal at WB MGD to NB I-95 onramp
28	IS	Provide pedestrian signal at MGD at NE 9th Court, eliminate sidewalk on the north side between 6th Ave and 9th Court
29	IS	Provide pedestrian signal at MGD at NE 9th Court, eliminate sidewalk on the north side between NE 2nd Court and NE 9th Court
30	IS	Provide pedestrian signal at MGD at NE 9th Court or extend south side sidewalk east to NE 10th Ave
31	RM	Create consistent buffer zone along north side of MSE wall at ramp WB MGD to SB I-95
32	IS, RC	Start NB I-95 off ramp further south to increase queueing space and provide space to increase the right turn radius to MGD
33	RC, PE	Provide incentives and streamline the process for motorists to register as carpools and vanpools and expand network of park and rides to encourage commuters to travel together
34	RC, PE	Streamline High Occupancy Vehicles (HOV) registration process to reduce the number of commuting vehicles
35	RC, PE	Expand Tri Rail park and ride access to commuters along the corridor

LIST OF FUNCTIONS					
CC	Control Costs	MDC	Minimize Driver Confusion	MTo	Maintain Tolling
DAC	Deliver Adaptable Configuration	MLC	Maintain Local Connectivity	OP	Obtain Permits
DW	Drain Water	MLcc	Minimize Lifecycle Cost	PE	Protect Environment
IA	Improve Access	MO	Maintain Operations	RA	Reconfigure Access
IAb	Improve Accessibility	MRC	Maintain Regional Concept	RC	Relieve Congestion
IC	Improve Clearance	MRI	Minimize R/W Impacts	RM	Reduce Maintenance
IEE	Improve Emergency Evacuation	MS	Meet Standards	SER	Sustain Emergency Response
IM	Improve Mobility	MT	Move Traffic		
IS	Improve Safety	MTA	Minimize Throw Away		

Idea No.	Function	Description
36	MDC	Provide express lane access from north of the GGI to Tri Rail park and ride facility
37	MT	Synchronize and optimize signal timing for Miami Garden Drive
38	MT	Provide adaptive signalization for Miami Garden Drive
39	RC	Separate the I-95 SB movement to WB Ives Dairy Road to mitigate storage concerns
40	RC	Separate the I-95 SB movement to EB Ives Dairy Road using flyover to mitigate storage concerns
41	CC	Reuse components of existing noise walls for future
42	CC	Revisit ITS costs in LRE
43	CC	Revisit drainage system costs in LRE, add contingencies to accommodate the complexity of the project including staged construction in a constrained corridor
44	MRC	Coordinate design through district PM's between adjacent projects to maintain regional corridor concept
45	CC	Swap location of MGD EB to I-95 SB to be west of ramp to NB reducing MSE wall and bridge length
46	MT	SB I-95 exit to MGD use continuous single lane to provide more space for NB offramp curve to MGD, eliminate signalized merge, and eliminate 2-lane bottleneck by providing 3 lanes expanding to 4 at MGD
47	MT, IS	WB MGD to NB I-95 use corner cut to provide 30mph design curve to eliminate design exception
48	MTo	Incorporate maintenance of tolling into MOT/mobilization which is not currently included in the design and cost estimate
49	MTo	Provide operational existing and new tolling systems at the time of each MOT transfer
50	PE	Utilize 'green walls' to enhance aesthetic of noise walls
51	DAC	Create autonomous vehicle parking at property acquired in Idea #17
52	MDC	Eliminate braided off ramps to MGD and Ives Dairy Road
53	MDC, MTo	Optimize access by removing SB I-95 EL ramp to SB I-95 right lane near MGD

LIST OF FUNCTIONS

CC	Control Costs	MDC	Minimize Driver Confusion	MTo	Maintain Tolling
DAC	Deliver Adaptable Configuration	MLC	Maintain Local Connectivity	OP	Obtain Permits
DW	Drain Water	MLcc	Minimize Lifecycle Cost	PE	Protect Environment
IA	Improve Access	MO	Maintain Operations	RA	Reconfigure Access
IAb	Improve Accessibility	MRC	Maintain Regional Concept	RC	Relieve Congestion
IC	Improve Clearance	MRI	Minimize R/W Impacts	RM	Reduce Maintenance
IEE	Improve Emergency Evacuation	MS	Meet Standards	SER	Sustain Emergency Response
IM	Improve Mobility	MT	Move Traffic		
IS	Improve Safety	MTA	Minimize Throw Away		

Idea No.	Function	Description
54	CC, RM	Reconfigure NE 5th Ave beneath SB I-95 ramp to reduce SB I-95 bridge length crossing MGD
55	RC	Create access from intersection from NE 18th Ave and NE 199th St over pond and connecting to NB I-95 ramp to EL
56	MT	Use flyover ramp SB I-95 exit to EB Ives Dairy Road to address heavy traffic movement
57	IS	Move SB I-95 exit taper just south of Snake Creek Canal (C-9), provide flyover lane in lieu of loop to gain elevation (with Idea #17 and/or Idea #53)
58	IS	Move SB I-95 exit taper just south of Snake Creek Canal (C-9), provide underpass in lieu of loop to lower elevation (with Idea #17 and/or Idea #53)
59	RC	Keep EL exit braided ramps, provide EL entrances from mainline (eliminate entrance braided ramps)
60	DAC	Deliver adaptable design that is flexible to implement operational improvements along corridor throughout design and construction
61	IS	Designate emergency stopping sites at various locations along EL

LIST OF FUNCTIONS					
CC	Control Costs	MDC	Minimize Driver Confusion	MTo	Maintain Tolling
DAC	Deliver Adaptable Configuration	MLC	Maintain Local Connectivity	OP	Obtain Permits
DW	Drain Water	MLcc	Minimize Lifecycle Cost	PE	Protect Environment
IA	Improve Access	MO	Maintain Operations	RA	Reconfigure Access
IAb	Improve Accessibility	MRC	Maintain Regional Concept	RC	Relieve Congestion
IC	Improve Clearance	MRI	Minimize R/W Impacts	RM	Reduce Maintenance
IEE	Improve Emergency Evacuation	MS	Meet Standards	SER	Sustain Emergency Response
IM	Improve Mobility	MT	Move Traffic		
IS	Improve Safety	MTA	Minimize Throw Away		

Appendix B Evaluation of Ideas

General

The following pages contain a listing of the evaluated creative ideas.

Idea No.	Function	Description	Accept Decision	Proposal No.
1	CC	Implement project using phased or progressive design-build delivery	DS	
2	IS	Lower Snake Creek Trail vertical profile crossing beneath I-95 to reduce roadway impacts	A	ST-1
3	IS	Elevate trail and provide pedestrian bridge crossing I-95	R2, R3	
4	IM	Construct full pavement section depth along shoulders to enhance multimodal transit	DS	
5	MO	Apply Smart Work Zone (SWZ) management to monitor real-time traffic to allow the Transportation Management Center (TMC) to make adjustments	DS	
6	MDC	Remove braided ramps and maintain at-grade express lane entrance locations	R4	
7	RM	Use Portland Cement Concrete (PCC) pavement at intersections	DS	
8	DAC	Optimize EL access around Miami Gardens Drive (3NA)	A	RD-1
9	DAC	Eliminate braided express lane ramps at Ives Dairy Road (3N)	R3	
10	MRC	Break the project design and construction into two segments to accelerate delivery	DS	
11	RC	Eliminate the Ives Dairy Road slip ramps	R3	
12	CC	Reduce the quantity of bridges along the project corridor	A, w/ 8 and 54	RD-1, ST-2
13	RC	Improve the flow on I-95 NB exit ramp at MGD	A, w/ 46	RD-2
14	MDC	Remove 3NA just north of MGD to mitigate driver confusion	R4	
15	DW	Secure offsite property for stormwater attenuation and treatment	DS	

Acceptance Evaluation	Reasons for Rejection	Idea Label
A Accept	R1 Reject as outside of scope	CO Construction
DS Design Suggestion	R2 Reject as not workable	RD Roadway
R Reject	R3 Reject as does not add value	ST Structural
ABD Already Being Done	R4 Reject as duplicate	TR Traffic
QRC Quality Review Comment		

Idea No.	Function	Description	Accept Decision	Proposal No.
16	DW	Convert wet ponds into dry ponds to reduce water quality treatment requirements	DS	
17	DW, MO	Target acquisition of former church property at 18500 NE 5th Ave for future use	A	CO-1
18	MDC	Eliminate express lanes to simplify traffic operations and system maintenance	R1	
19	DW, PE	Provide retaining wall with a cantilevered slab along West Lake to widen roadway and store water beneath	R3	
20	DAC	Incorporate connected vehicle infrastructure	DS	
21	IS	Evaluate the need and potential locations for incident management staging areas	DS	
22	IS	Incorporate lighted chevron signs to indicate curves and obstacles along elevated ramps	DS	
23	MT	Use roundabout at Ives Dairy Road or MGD	R2	
24	RM	Consider ultra-high performance concrete (UHPC) to increase service life of bridges	DS	
25	MDC	Consider using accelerated bridge construction (ABC) techniques	DS	
26	MO	Provide right turn lane EB MGD to 5th Ave	DS	
27	IS	Provide pedestrian signal at WB MGD to NB I-95 onramp	DS	
28	IS	Provide pedestrian signal at MGD at NE 9th Court, eliminate sidewalk on the north side between 6th Ave and 9th Court	A	TR-1
29	IS	Provide pedestrian signal at MGD at NE 9th Court, eliminate sidewalk on the north side between NE 2nd Court and NE 9th Court	A	TR-2
30	IS	Provide pedestrian signal at MGD at NE 9th Court or extend south side sidewalk east to NE 10th Ave	A, w/28 or w/29	TR-1
31	RM	Create consistent buffer zone along north side of MSE wall at ramp WB MGD to SB I-95	A or w/47	RD-3

Acceptance Evaluation	Reasons for Rejection	Idea Label
A Accept	R1 Reject as outside of scope	CO Construction
DS Design Suggestion	R2 Reject as not workable	RD Roadway
R Reject	R3 Reject as does not add value	ST Structural
ABD Already Being Done	R4 Reject as duplicate	TR Traffic
QRC Quality Review Comment		

Idea No.	Function	Description	Accept Decision	Proposal No.
32	IS, RC	Start NB I-95 off ramp further south to increase queueing space and provide space to increase the right turn radius to MGD	A or w/46	RD-2
33	RC, PE	Provide incentives and streamline the process for motorists to register as carpools and vanpools and expand network of park and rides to encourage commuters to travel together	R1	
34	RC, PE	Streamline High Occupancy Vehicles (HOV) registration process to reduce the number of commuting vehicles	R1	
35	RC, PE	Expand Tri Rail park and ride access to commuters along the corridor	R1	
36	MDC	Provide express lane access from north of the GGI to Tri Rail park and ride facility	DS	
37	MT	Synchronize and optimize signal timing for Miami Garden Drive	DS	
38	MT	Provide adaptive signalization for Miami Garden Drive	DS	
39	RC	Separate the I-95 SB movement to WB Ives Dairy Road to mitigate storage concerns	DS	
40	RC	Separate the I-95 SB movement to EB Ives Dairy Road using flyover to mitigate storage concerns	DS	
41	CC	Reuse components of existing noise walls for future	DS	
42	CC	Revisit ITS costs in LRE	QRC	
43	CC	Revisit drainage system costs in LRE, add contingencies to accommodate the complexity of the project including staged construction in a constrained corridor	QRC	
44	MRC	Coordinate design through district PM's between adjacent projects to maintain regional corridor concept	ABD	
45	CC	Swap location of MGD EB to I-95 SB to be west of ramp to NB reducing MSE wall and bridge length	R3	
46	MT	SB I-95 exit to MGD use continuous single lane to provide more space for NB offramp curve to MGD, eliminate signalized merge, and eliminate 2-lane bottleneck by providing 3 lanes expanding to 4 at MGD	A	RD-2

Acceptance Evaluation	Reasons for Rejection	Idea Label
A Accept	R1 Reject as outside of scope	CO Construction
DS Design Suggestion	R2 Reject as not workable	RD Roadway
R Reject	R3 Reject as does not add value	ST Structural
ABD Already Being Done	R4 Reject as duplicate	TR Traffic
QRC Quality Review Comment		

Idea No.	Function	Description	Accept Decision	Proposal No.
47	MT, IS	WB MGD to NB I-95 use corner cut to provide 30mph design curve to eliminate design exception	A	RD-3
48	MTO	Incorporate maintenance of tolling into MOT/mobilization which is not currently included in the design and cost estimate	DS	
49	MTO	Provide operational existing and new tolling systems at the time of each MOT transfer	DS	
50	PE	Utilize 'green walls' to enhance aesthetic of noise walls	DS	
51	DAC	Create autonomous vehicle parking at property acquired in Idea #17	DS	
52	MDC	Eliminate braided off ramps to MGD and Ives Dairy Road	R4	
53	MDC, MTO	Optimize access by removing SB I-95 EL ramp to SB I-95 right lane near MGD	A, w/8	RD-1
54	CC, RM	Reconfigure NE 5th Ave beneath SB I-95 ramp to reduce SB I-95 bridge length crossing MGD	A	ST-2
55	RC	Create access from intersection from NE 18th Ave and NE 199th St over pond and connecting to NB I-95 ramp to EL	R1, R2	
56	MT	Use flyover ramp SB I-95 exit to EB Ives Dairy Road to address heavy traffic movement	R4	
57	IS	Move SB I-95 exit taper just south of Snake Creek Canal (C-9), provide flyover lane in lieu of loop to gain elevation (with Idea #17 and/or Idea #53)	A	RD-4
58	IS	Move SB I-95 exit taper just south of Snake Creek Canal (C-9), provide underpass in lieu of loop to lower elevation (with Idea #17 and/or Idea #53)	A	RD-5
59	RC	Keep EL exit braided ramps, provide EL entrances from mainline (eliminate entrance braided ramps)	A	RD-6
60	DAC	Deliver adaptable design that is flexible to implement operational improvements along corridor throughout design and construction	DS	
61	IS	Designate emergency stopping sites at various locations along EL	DS	

Acceptance Evaluation	Reasons for Rejection	Idea Label
A Accept	R1 Reject as outside of scope	CO Construction
DS Design Suggestion	R2 Reject as not workable	RD Roadway
R Reject	R3 Reject as does not add value	ST Structural
ABD Already Being Done	R4 Reject as duplicate	TR Traffic
QRC Quality Review Comment		

Appendix C VE Proposals

Nomenclature

The following nomenclature was used in the development of the proposals.

Cost avoidances were considered positive if the VE proposal saved initial construction cost when compared to the PD&E preferred alternative. Cost avoidances were considered negative if the VE proposal had higher initial construction cost when compared to the PD&E preferred alternative.

Positive functional scores indicated that the VE team believed accepting the VE proposal would enhance overall project performance. Negative functional scores indicated that the VE team believed accepting the VE proposal would reduce project performance.

Appendix C VE Proposals

Nomenclature

The following nomenclature was used in the development of the proposals.

Cost avoidances were considered positive if the VE proposal saved initial construction cost when compared to the PD&E preferred alternative. Cost avoidances were considered negative if the VE proposal had higher initial construction cost when compared to the PD&E preferred alternative.

Positive functional scores indicated that the VE team believed accepting the VE proposal would enhance overall project performance. Negative functional scores indicated that the VE team believed accepting the VE proposal would reduce project performance.

Value Engineering Proposal CO-1

Title: Target acquisition of former church property at 18500 NE 5th Ave

PD&E PREFERRED ALTERNATIVE

The current PD&E Team's preferred alternative does not propose to acquire the subject property for this project.

VE TEAM PROPOSAL

The VE team proposes to include the subject property, a former church located at 18500 NE 5th Ave, as it imposes a few risk factors associated with this property. If the property is left abandoned, it will become a social issue, e.g., encampment etc. Bringing the highway closer to the property will distress the property further. Another risk of not acquiring the property is redevelopment of the property in the future, which could lead to the need of sound barrier wall. This has been considered as a risk factor for monetary consideration.

The VE team also recognizes the targeted acquisition property for the following benefits.

- Community building is at the center of the FDOT Compass. Avoiding the potential social issues brought by our project is FDOT's responsibility for stewardship.
- The property may be used as a staging area during construction.
- The property will also be beneficial to the overall project to provide real estate for realignment, access, and drainage improvements. See proposal RD-4.
- The acquisition of the property will also eliminate the risk factor associated with sound barrier wall.
- In line with the Resiliency, one of the five pillars of the FDOT Compass, this property may be used as a site for parking garage for connected vehicles and autonomous vehicles for future planning. Passing of state law CS/HB311 encourages Florida to attract more business to be interested in the property as well. This created another opportunity for the proper use of this property.
- For the time being, this property may serve as an extension to the FDOT District 6 North Dade maintenance yard after construction.

IMPLEMENTATION CONSIDERATIONS (agency approvals and actions outside design team's direct control)

- The structure on the property was constructed in the 1970s and it has been determined that the property is not eligible for National Registry. Thus, ROW acquisition has a higher chance of possibility.
- The acquisition process will go through the State Historic Preservation Office required processes. Result with or without mitigative actions may be expected.
- The current property already has marginal access between the structure and southbound I-95 features.
- The property is owned by NDW Porter LLC and is currently vacant.

Value Engineering Proposal CO-1

- Even though the Structure on the property served as church in the past, the property is currently designated as warehouse complex with multiple bay units, which can be advantageous for negotiation.

DISADVANTAGES (non-monetary)

- The existing structure does not provide immediate value to the Department after construction and may pose safety risks if it becomes derelict. Demolition may be needed during or after construction.

ADVANTAGES (non-monetary)

- Provide access and laydown for SB I-95 bridge reconstruction over Snake Creek Canal (C-9).
- Structure could be configured to serve as temporary field office during construction.
- Reduces noise abatement accommodation that may otherwise be needed at this property.
- Future use could include stormwater attenuation, treatment, and/or infiltration.
- Future use could include providing wider shoulder and clear zones, designated emergency stopping site, and/or crash investigation site.
- Location is not within residential neighborhood and could be used for autonomous vehicle parking or testing site in the immediate future.
- Reduces risk of schedule and budgetary impacts to the project if the property is redeveloped. Targeted early acquisition would mitigate this risk.

FUNCTIONAL SCORE AND COST AVOIDANCES

Functional Score:	2
Initial Cost Avoidance (nearest \$1,000):	(\$13,246,000)

FHWA FUNCTION BENEFIT

SAFETY	OPERATION	ENVIRONMENT	CONSTRUCTION	OTHER
Recommendations that mitigate or reduce hazards on the facility	Recommendations that improve real-time service and/or local corridor or regional levels of service	Recommendations that avoid or mitigate impacts to natural and/or cultural resources	Recommendations that improve work zone conditions or expedite the project delivery	Recommendations not readily categorized by above performance indicators
X	X	X	X	

Value Engineering Proposal CO-1

IMAGES

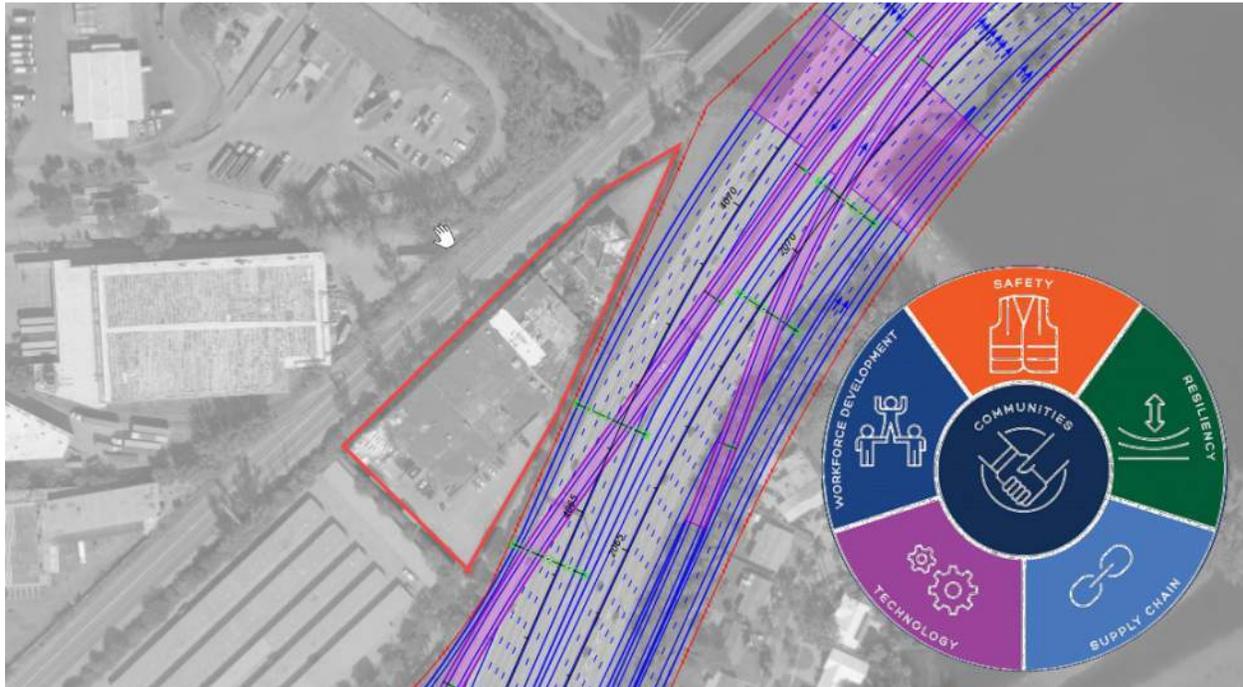


Figure CO-1-1: Bird Eye View of the Subject Property

COST SUMMARY

PD&E Preferred Alternative Cost

Description	Pay Item	Qty	Unit	\$/Unit	Subtotal
[none]					
PD&E Preferred Alternative Cost					\$0

VE Team's Proposal Cost

Description	Pay Item	Qty	Unit	\$/Unit	Subtotal
Property Acquisition		1	LS	Varies	\$13,245,900
VE Team Proposal Cost					\$13,245,900

Value Engineering Proposal CO-1

Cost Avoidance

\$ 0 PD&E Preferred Alternative Cost
\$ -13,245,900 VE Team Proposal Cost
\$ -13,245,900 Round to Nearest \$1,000, say (13,246,000) Cost Avoidance (Added Cost)

Value Engineering Proposal RD-1

Title: Optimize express lanes access around Miami Gardens Drive

PD&E PREFERRED ALTERNATIVE

The current PD&E Team’s preferred alternative replaces at-grade, left-most-lane express lanes (EL) access locations (i.e., ingress/egress) with grade-separated braided ramps in and out of the facility from/to the outside lane.

95 Express operates today, in the northbound direction within the project limits, a 1-mile toll zone from one (1) at-grade slip ramp ingress south of Miami Gardens Drive (MGD) to one (1) at-grade slip ramp egress south of Ives Dairy Road (IDR). The existing facility has the reciprocal movement southbound with one (1) at-grade slip ramp ingress south of IDR and one (1) at-grade slip ramp egress south of MGD. The 2-lane, 1-mile long toll zone has an electronic toll collection (ETC) gantry per direction, with both gantries supported by a single toll equipment building on the east side of the corridor. Today, northbound traffic from MGD and IDR travel to FDOT D4/Hallandale Beach Boulevard (HBB) for their first available at-grade slip ramp ingress.

For northbound, the PD&E preferred alternative is recommending two (2) braided ingress ramps and one (1) braided egress ramp. Southbound, the PD&E Team is proposing one (1) braided ingress ramp and one (1) braided egress ramp. Per the PD&E team, the braided ramps are being introduced to complement the proposed braided ramp concept in Broward County by FDOT D4, and to mitigate multi-lane weave conditions as traffic navigates between the local entrances/exits (outside lanes) and the at-grade slip ramp access locations on the left.

The two proposed northbound braided ramp access locations, which introduce consecutive ingresses to the EL system, are less than one mile apart. The first ramp, just north of the MGD interchange, is meant to service vehicles [530 pvph] from south of the Golden Glades Interchange (GGI) who have not yet had the opportunity to access the EL system. The second northbound ingress services MGD and IDR traffic [610 pvph] to compensate for the future closure of the at-grade slip ramp ingress at HBB by FDOT D4. This second northbound braided ingress ramp is “fed” by a proposed 2-lane collector-distributor (C-D) road adjacent to the mainline.

The location of the proposed southbound braided egress ramp south of IDR creates a toll zone of maximum ½-mile (approximately, 2,800 LF). The proposed toll zone length, only half of existing toll operations today, does not “preserve the operational integrity” of the express lanes in this express lane segment.

VE TEAM PROPOSAL

The VE team proposes to eliminate the first northbound braided ingress ramp (i.e., just north of MGD). Secondly, the VE team proposes to eliminate the southbound braided egress ramp south of IDR, and to replace it with an at-grade slip ramp egress and increase the physical length of the toll zone to at least match existing conditions today.

IMPLEMENTATION CONSIDERATIONS

- Evaluate northbound traffic along C-D road, and EL merge condition at north end of project limits for the additional traffic combined to the remaining braided ingress ramp (i.e., MGD + IDR).

Value Engineering Proposal RD-1

- Evaluate location for at-grade slip ramp south of MGD creating 1-mile minimum toll zone between IDR and GGI.
- Evaluate southbound traffic for at-grade slip ramp location south of MGD for access to GGI local exits.

DISADVANTAGES (non-monetary)

- Northbound GGI traffic must drive an additional mile to access EL ingress.
- Existing southbound weave condition may not be fully mitigated.

ADVANTAGES (non-monetary)

- Reduces the scope of tolling infrastructure to operate the express lane facility (quantity of OH signs, dynamic message signs, CCTV cameras, , and one (1) toll building).
- Matches GGI Ultimate vision to remove both the 2N and 2S access points due to converting GGI Flyover from 1-lane to 2-lanes.
- Mitigates driver confusion at MGD NB.
- Creates typical section space for other required project disciplines (e.g., drainage).
- Eliminates need for ROW take at West Lake.
- Improves response time for incident management events.
- Mitigates operational EL closures due to accidents on the single lane braided ramps.
- Provides additional southbound MVDS sensors to support TMC operations (improving system resiliency).

FUNCTIONAL SCORE AND COST AVOIDANCES

Functional Score:	-3
Initial Cost Avoidance (nearest \$1,000):	\$39,606,000

FHWA FUNCTION BENEFIT

SAFETY	OPERATION	ENVIRONMENT	CONSTRUCTION	OTHER
Recommendations that mitigate or reduce hazards on the facility	Recommendations that improve real-time service and/or local corridor or regional levels of service	Recommendations that avoid or mitigate impacts to natural and/or cultural resources	Recommendations that improve work zone conditions or expedite the project delivery	Recommendations not readily categorized by above performance indicators.
X	X	X	X	X

Value Engineering Proposal RD-1

IMAGES



Figure RD-1-1: PD&E Preferred Alternative – NORTHBOUND Braided Ramp Access

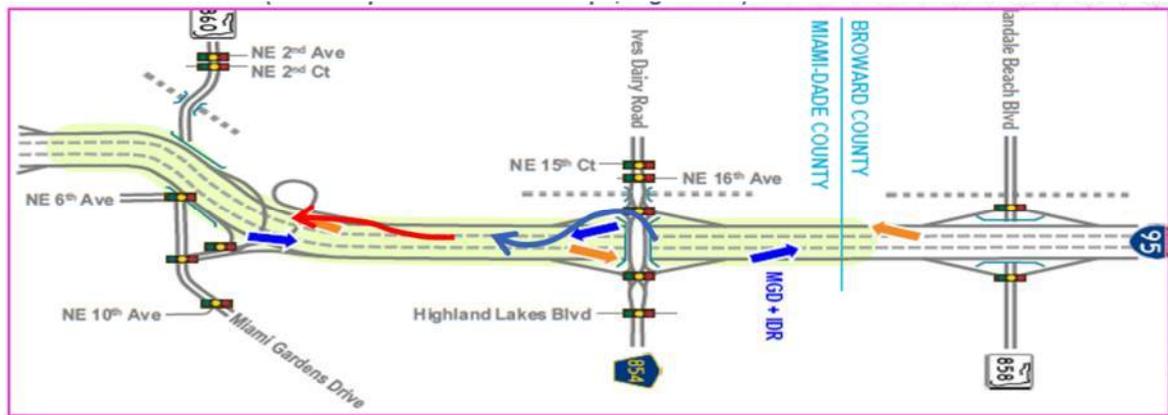


Figure RD-1-2: PD&E Preferred Alternative – SOUTHBOUND Braided Ramp Access



Figure RD-1-3: VE Proposal – NORTHBOUND Removal of 1st Braided Ramp Access

Value Engineering Proposal RD-1



Figure RD-1-4: VE Proposal – SOUTHBOUND Removal Egress Braided Ramp, Replace w/ At-Grade Slip Ramp

COST SUMMARY

Cost Assumptions

- Construction cost basis reflects the LRE estimate at the time of this VE Study.

PD&E Preferred Alternative Cost

Description	Pay Item	Qty	Unit	\$/Unit	Subtotal
Bridge 8 - NB I-95 GP Lane On Ramp to EP Lane Bridge Over NB I-95		30,000	SF	\$240.00	\$7,200,000
Bridge 9 - SB I-95 EP Lane Off Ramp to GP Lane Bridge Over SB I-95		48,000	SF	\$240.00	\$11,520,000
Bridge 13 - NB I-95 Express Lane Off Ramp Bridge Over NB I-95 EP On Ramp		18,000	LF	\$240.00	\$4,320,000
Toll Building		1	LS	\$1,000,000	\$1,000,000
Shldr Conc Barrier, 38" Or 44" Height	521-72-40	8,800	LF	\$425.00	\$3,740,000
Embankment	120-6	180,000	CY	\$45.00	\$8,100,000
Median Conc Barrier, 38" Height	521-1-11	3,900	LF	\$126.17	\$492,063
Type B Stabilization	160-4	4,082	SY	\$11.10	\$45,310
Optional Base, Base Group 9	285-709	3,062	SY	\$45.00	\$137,790
Superpave Asphaltic Conc, Traffic C	334-1-13	1,020	TN	\$200.00	\$204,000
Asph Conc FC, Traffic C, FC-12.5	337-7-83	640	TN	\$230.00	\$147,200
R/W Acquisition		3	EA	Varies	\$2,700,000
PD&E Preferred Alternative Cost					\$39,606,363

Value Engineering Proposal RD-1

VE Team's Proposal Cost

Description	Pay Item	Qty	Unit	\$/Unit	Subtotal
[components removed from project]					
VE Team Proposal Cost					\$0

Cost Avoidance

\$ 39,606,363 PD&E Preferred Alternative Cost
 \$ -0 VE Team Proposal Cost
 \$ 39,606,363 Round to nearest \$1,000, say \$39,606,000 Cost Avoidance

Value Engineering Proposal RD-2

Title: Adjust I-95 off ramp lane and traffic control configuration at Miami Gardens Drive

PD&E PREFERRED ALTERNATIVE

The current PD&E Team's preferred alternative proposes a 1-lane loop ramp for the SB I-95 exit to MGD widening to 2-lanes before the signalized merge. The NB I-95 exit to MGD is a consistent 2-lanes but has substandard curve radius and stopping sight distance. Then after the signalized 2-phase intersection the exit ramp widens to 4-lanes before connecting to MGD and providing access eastbound and westbound.

VE TEAM PROPOSAL

The VE team proposes the use of a single continuous lane for the SB I-95 off-ramp at MGD rather than widening from 1-lane to 2-lanes after the loop and before the signal. Then at the merge location between the SB and NB I-95 off ramps will equal the number of lanes leading to this off-ramp. This area should be either 2 (1-lane from NB exit, 1-lane from SB exit) or 3 (2-lane from NB exit, 1-lane from SB exit) lanes determined by the anticipated queue for the signal at MGD. This idea removes the signal on the exit ramp but creates a weave condition.

IMPLEMENTATION CONSIDERATIONS (agency approvals and actions outside design team's direct control)

- This design would have a lot of various configurations where some design criteria (curve radius, curve length, weave length, or SSD criteria) should be prioritized over others.

DISADVANTAGES (non-monetary)

- Creates a sub-standard weave condition where only about 250' would be given for drivers to switch lanes or weave before being forced to go EB or WB on MGD.
- A lower number of lanes are being provided at the MGD exit which may extend the length of queues onto I-95.

ADVANTAGES (non-monetary)

- This design removes the signal on the exit ramp and the substandard SSD issue. This signalized ramp creates a hazardous situation where drivers may not have adequate sight distance to stop or may attempt to take the red if they believe there are no oncoming vehicles, creating a substandard weaving situation.
- Since 1 or 2 exit lanes (1-lane from NB exit, 1-lane from SB exit) are being removed it should be easier to meet the required radius for a design speed of 30 mph for both exit ramps.
- This design can be combined with other recommendations (switching the MGD EB entrances for I-95 NB and SB entrances, purchasing the R/W corner to shift ramps further East) to create more space at this interchange. These other alternatives may not be deemed viable, but there is unused space within the R/W at the Northeast corner of the ramps which could be used to maximize space for the exit ramps.

Value Engineering Proposal RD-2

FUNCTIONAL SCORE AND COST AVOIDANCES

Functional Score:	7
Initial Cost Avoidance (nearest \$1,000):	Negligible

FHWA FUNCTION BENEFIT

SAFETY	OPERATION	ENVIRONMENT	CONSTRUCTION	OTHER
Recommendations that mitigate or reduce hazards on the facility	Recommendations that improve real-time service and/or local corridor or regional levels of service	Recommendations that avoid or mitigate impacts to natural and/or cultural resources	Recommendations that improve work zone conditions or expedite the project delivery	Recommendations not readily categorized by above performance indicators
X	X			

Value Engineering Proposal RD-2

IMAGES

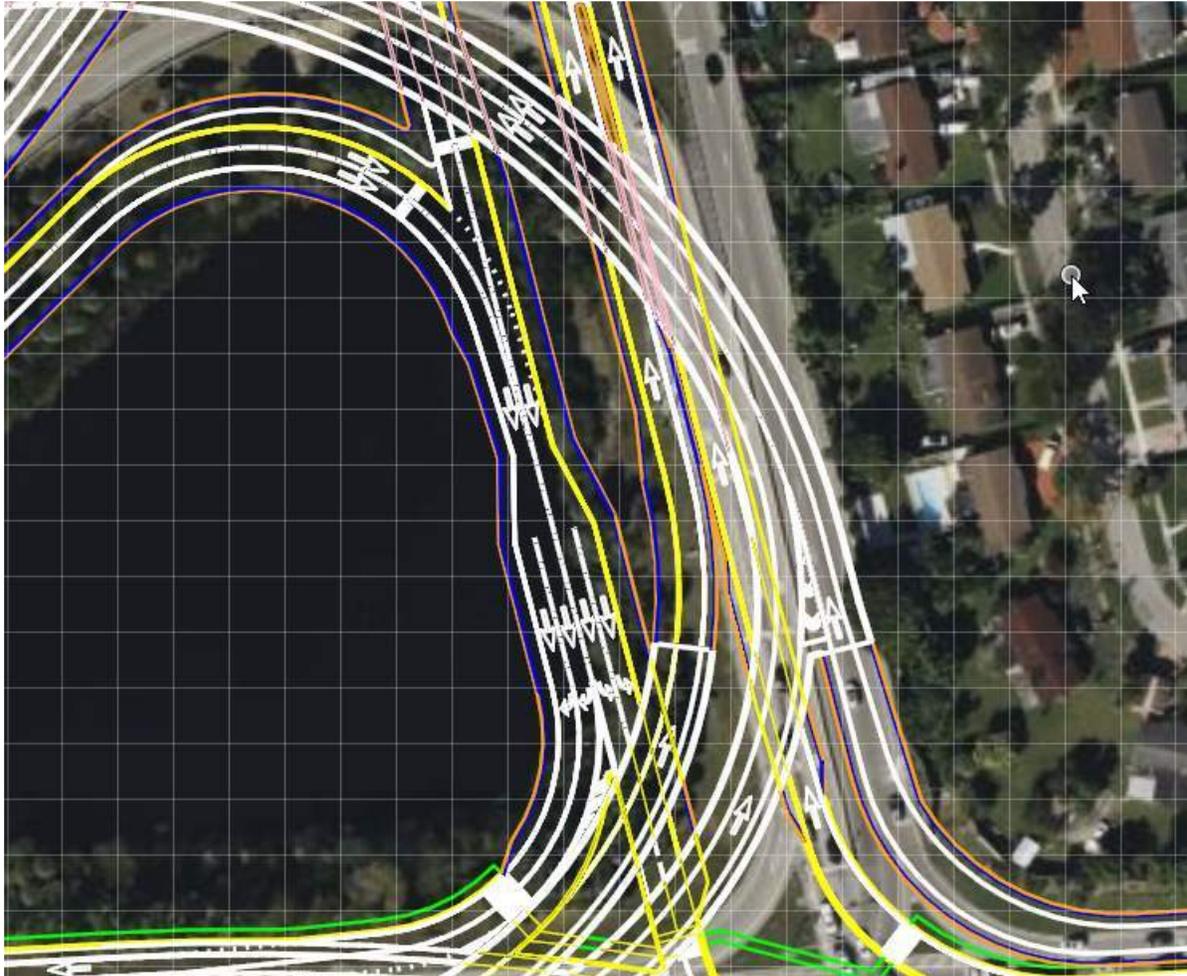


Figure RD-2-1: PD&E Preferred Alternative Exit Ramps at MGD

Value Engineering Proposal RD-2

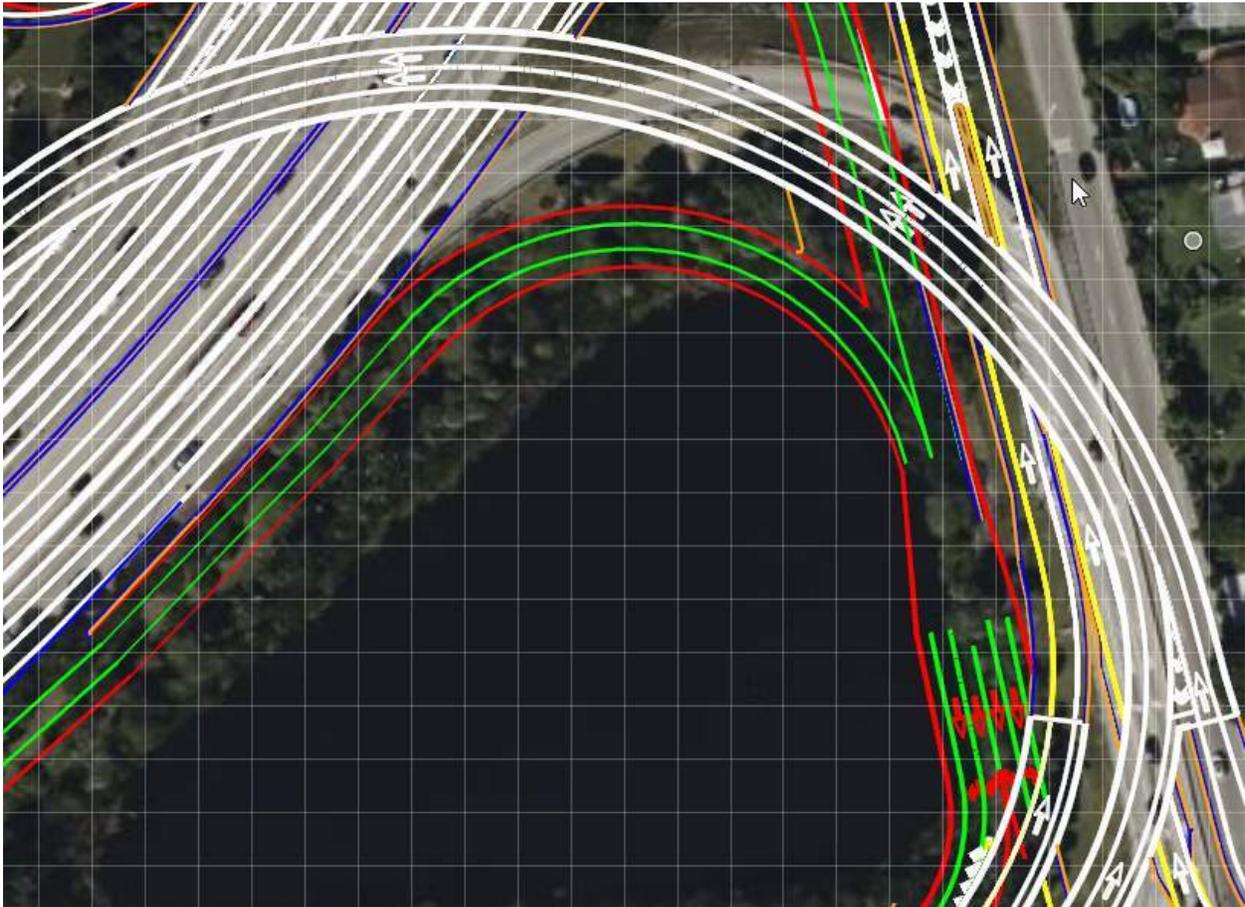


Figure RD-2-2: VE Team's Proposed Configuration of Exit Ramps

Value Engineering Proposal RD-2



MGD EB to I-95 SB	MGD EB to I-95 NB	I-95 SB to MGD Exit
MGD WB to I-95 SB	MGD WB to I-95 NB	I-95 NB to MGD Exit
	Exit Ramps to MGD	

Figure RD-2-3: New Potential Interchange Layout (may have Vertical Clearance issues)

COST SUMMARY

Cost Assumptions

- Construction costs for either alternative would be almost identical as the same number of ramps would be required and varying bridge lengths. Bridges may be slightly thinner now as they can be designed for 1-lane and a signal can be removed. However, these savings may be overshadowed by the lengthening of ramps for queues.
- Cost avoidance is considered negligible

Value Engineering Proposal RD-3

Title: Obtain right-of-way at corner of westbound Miami Gardens Drive on ramp to northbound/southbound I-95

PD&E PREFERRED ALTERNATIVE

The current PD&E Team’s preferred alternative implements NB/SB I-95 onramps for WB traffic on Miami Gardens Drive. The radius for these onramps are 150’ and 145’ respectfully, with design speeds of 25mph. This current design has R/W impacts and a design exception is also required.

VE TEAM PROPOSAL

The VE team proposes acquiring portions of the corner properties in the NE corner of Miami Gardens Drive at the entrance of the onramp. The use of this corner cut is to provide a 30mph design curve for these onramps, eliminating design exceptions and creating consistent buffer zones along the north side of the MSE wall along the ramp. The newly proposed radius of the onramp would be 300’, meeting design criteria for a 30mph horizontal curve. The R/W impact would be roughly 5815 square feet.

IMPLEMENTATION CONSIDERATIONS (agency approvals and actions outside design team’s direct control)

- Additional R/W impacts.

DISADVANTAGES (non-monetary)

- Homeowner impacts.

ADVANTAGES (non-monetary)

- The design team would have more R/W space to further improve the preliminary design.
- Eliminates design exceptions.
- Consistent buffer zone.
- Added space for future staging and/or bridge/roadway maintenance.
- Improved stopping sight distance.
- Improved safety.
- Provides a better consistency in traffic flow.

FUNCTIONAL SCORE AND COST AVOIDANCES

Functional Score:	10
Initial Cost Avoidance (nearest \$1,000):	(\$192,000)

Value Engineering Proposal RD-3

FHWA FUNCTION BENEFIT

SAFETY	OPERATION	ENVIRONMENT	CONSTRUCTION	OTHER
Recommendations that mitigate or reduce hazards on the facility	Recommendations that improve real-time service and/or local corridor or regional levels of service	Recommendations that avoid or mitigate impacts to natural and/or cultural resources	Recommendations that improve work zone conditions or expedite the project delivery	Recommendations not readily categorized by above performance indicators
X	X			

Value Engineering Proposal RD-3

IMAGES

Topic #625-000-002
 FDOT Design Manual

January 1, 2024

Table 210.8.2 Minimum Radius for Evaluation of Existing Horizontal Curves

Maximum Superelevation (e_{max})		Minimum Radius (feet)									
		Design Speed (mph)									
		25	30	35	40	45	50	55	60	65	70
0.10	SHS	160	231	323	432	559	694	881	1091	1348	1637
	RRR	120	188	276	388	521	674	849	1042	1273	1528
0.05	SHS	194	286	402	533	694	881	N/A	N/A	N/A	N/A
	RRR	140	223	332	468	637	849	N/A	N/A	N/A	N/A

Topic #625-000-002
 FDOT Design Manual

January 1, 2024

Table 201.5.2 Ramp Design Speeds

Ramp Connection Type	Minimum Design Speed (mph)
Loops and Semi-Direct	30
Outer Cloverleaf	35
Intermediate Portions of Long Ramps	40
Direct Connection	50

Express Lane Direct Connections:

- Design Speeds higher than the minimum shown above should be used when practical. A Design Speed of 60 mph is desirable.
- Design Variations for Design Speed will not be approved for Express Lane Direct Connections with a Design Speed below 40 mph.

Figure RD-3-1: FDOT Design Manual Horizontal Curve and Ramp Criteria

Value Engineering Proposal RD-3

Table 211.7.1 Length of Horizontal Curve

Length Of Horizontal Curve (ft.)										
Interstate, Freeway and Expressways based on Design Speed (mph)										
	25	30	35	40	45	50	55	60	65	70
Desirable	N/A	N/A	N/A	N/A	N/A	1500	1650	1800	1950	2100
Minimum	N/A	N/A	N/A	N/A	N/A	750	825	900	975	1050
Ramps based on Design Speed (mph)										
	25	30	35	40	45	50	55	60	65	70
Desirable	400	450	525	600	675	1500	1650	1800	1950	2100
Minimum	400	400	400	400	400	750	825	900	975	1050
Notes: Provide the desirable length; however, when desired length cannot be attained, provide the greatest length possible, but not less than the minimum.										

Figure RD-3-2: FDOT Design Manual Curve and Ramp Criteria 2

Value Engineering Proposal RD-3

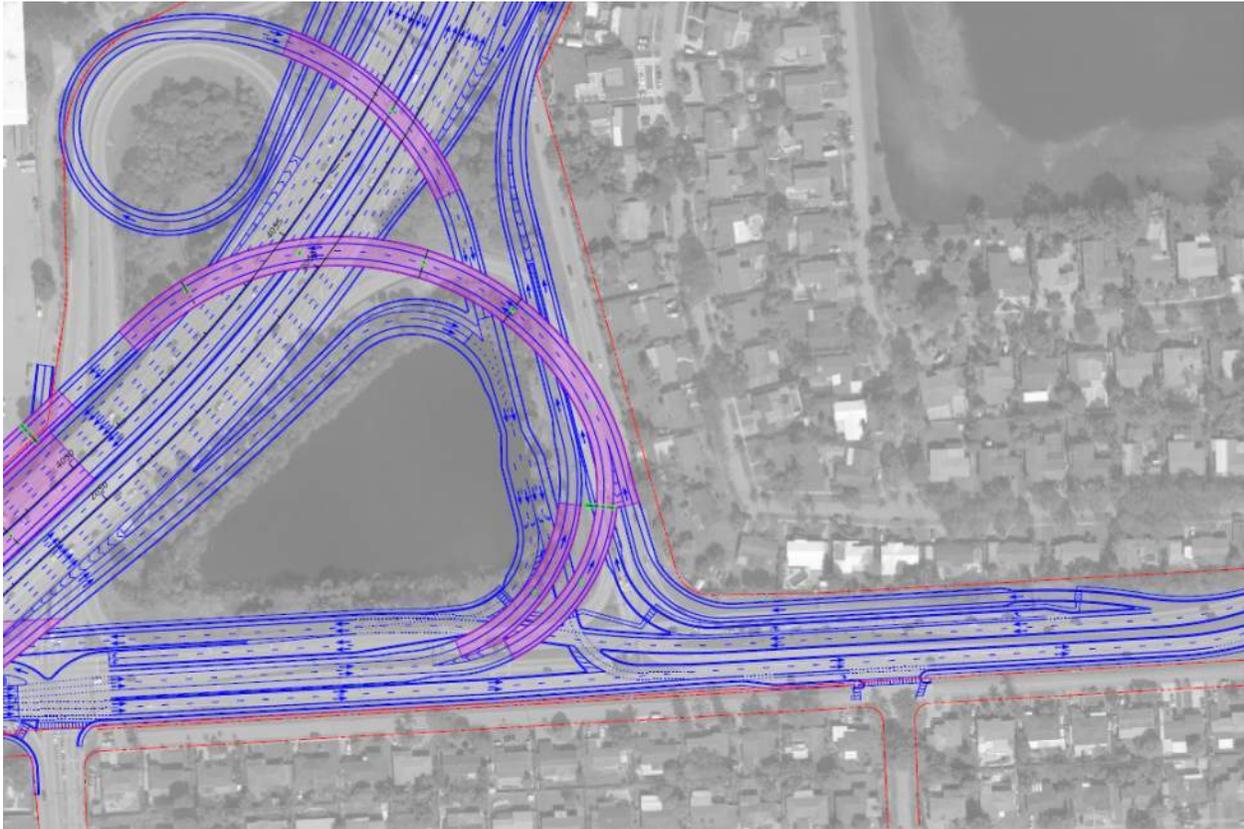


Figure RD-3-3: PD&E Preferred Alternative I-95 Ramp Configuration at MGD

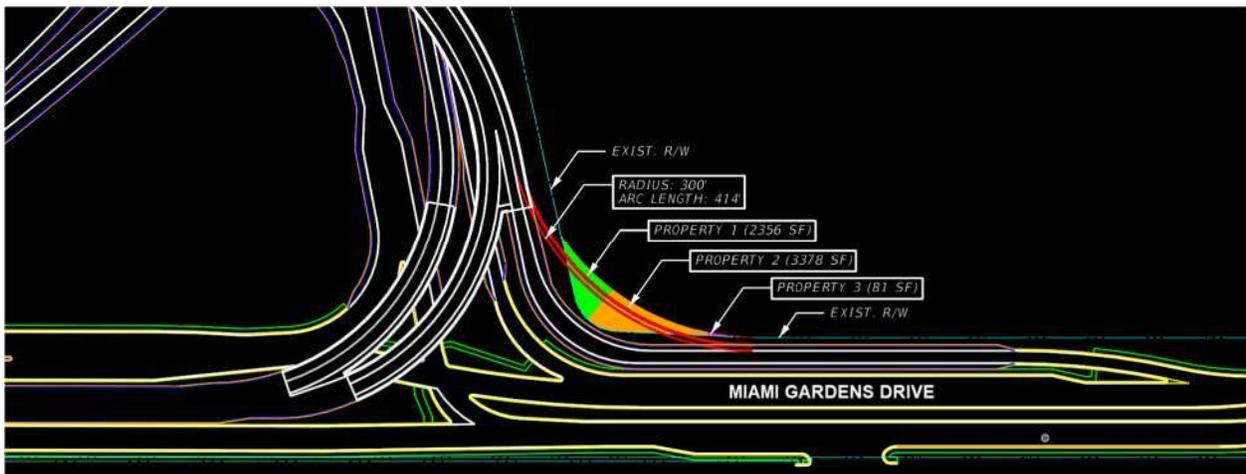


Figure RD-3-4: VE Team's Proposed R/W Impact to Obtain Corner Clip for 30mph Ramp

Value Engineering Proposal RD-3

COST SUMMARY

Cost Assumptions

- Construction cost basis reflects the LRE estimate at the time of this VE Study.

PD&E Preferred Alternative Cost

Description	Pay Item	Qty	Unit	\$/Unit	Subtotal
Property 1, 2, 3		1,057	SF	Varies	\$35,000
PD&E Preferred Alternative Cost					\$35,000

VE Team's Proposal Cost

Description	Pay Item	Qty	Unit	\$/Unit	Subtotal
Property 1, 2, 3		5,815	SF	Varies	\$227,000
VE Team Proposal Cost					\$227,000

Cost Added

- \$ 35,000 PD&E Preferred Alternative Cost
- \$ -227,000 VE Team Proposal Cost
- \$ -192,000 Round to Nearest \$1,000, say (\$192,000) Cost Avoidance (Added Cost)

Value Engineering Proposal RD-4

Title: Reconfigure I-95 southbound exit to Miami Gardens Drive

PD&E PREFERRED ALTERNATIVE

The current PD&E Team's preferred alternative implements a loop ramp for the SB I-95 exit ramp on Miami Gardens Drive. The offramp goes from a 15' lane, leaving the state highway system, and turns into two 12' lanes, before intersecting with Miami Gardens Drive. This exit ramp ties into a new NB I-95 exit ramp. A design variation would be needed for the 25mph loop ramp.

VE TEAM PROPOSAL

The VE team proposes to reconfigure the SB I-95 exit ramp by moving the exit taper further north to just south of the Snake Creek Canal (C-9). This would provide the space needed to create a flyover lane in lieu of the loop in the PD&E preferred alternative. One of the biggest considerations with this proposal is R/W space needed to implement this alternative arrangement. This proposal would best implemented in tandem with proposal RD-1 (optimize EL access at MGD) and/or proposal CO-1 (acquire sections of the church property to the west). Proposal RD-1 would save approximately 75 feet which could be used for this exit ramp to gain elevation for the flyover. Additionally, the property to the west detailed in proposal CO-1 would could be used provide the space needed for the exit ramp flyover. The VE Team has also calculated the worst-case scenario if both of these other proposals are rejected. Based on design criteria, the flyover would still meet requirements for a 30mph exit ramp. A design variation would be avoided if R/W space is acquired to the west. Additionally, the exit ramp is reduced roughly by 800 feet.

IMPLEMENTATION CONSIDERATIONS (agency approvals and actions outside design team's direct control)

- Potential R/W impacts if VE proposal RD-1 is not accepted.

DISADVANTAGES (non-monetary)

- Reduced queue space.

ADVANTAGES (non-monetary)

- Eliminates the southbound I-95 exit ramp loop and saves land space for other improvements (drainage/tolling)
- Avoids design variation for Curve BLRAMPF03
- Improves safety
- Ease of travel
- Preliminary exit ramp is reduced

Value Engineering Proposal RD-4

FUNCTIONAL SCORE AND COST AVOIDANCES

Functional Score:	0
Initial Cost Avoidance (nearest \$1,000):	\$0 to \$13,246,000

FHWA FUNCTION BENEFIT

SAFETY	OPERATION	ENVIRONMENT	CONSTRUCTION	OTHER
Recommendations that mitigate or reduce hazards on the facility	Recommendations that improve real-time service and/or local corridor or regional levels of service	Recommendations that avoid or mitigate impacts to natural and/or cultural resources	Recommendations that improve work zone conditions or expedite the project delivery	Recommendations not readily categorized by above performance indicators
X	X			

Value Engineering Proposal RD-4

IMAGES

Topic #625-000-002
 FDOT Design Manual

January 1, 2024

Table 210.8.2 Minimum Radius for Evaluation of Existing Horizontal Curves

Maximum Superelevation (e_{max})		Minimum Radius (feet)									
		Design Speed (mph)									
		25	30	35	40	45	50	55	60	65	70
0.10	SHS	160	231	323	432	559	694	881	1091	1348	1637
	RRR	120	188	276	388	521	674	849	1042	1273	1528
0.05	SHS	194	286	402	533	694	881	N/A	N/A	N/A	N/A
	RRR	140	223	332	468	637	849	N/A	N/A	N/A	N/A

Topic #625-000-002
 FDOT Design Manual

January 1, 2024

Table 201.5.2 Ramp Design Speeds

Ramp Connection Type	Minimum Design Speed (mph)
Loops and Semi-Direct	30
Outer Cloverleaf	35
Intermediate Portions of Long Ramps	40
Direct Connection	50

Express Lane Direct Connections:

- Design Speeds higher than the minimum shown above should be used when practical. A Design Speed of 60 mph is desirable.
- Design Variations for Design Speed will not be approved for Express Lane Direct Connections with a Design Speed below 40 mph.

Figure RD-4-1: FDOT Design Manual Horizontal Curve and Ramp Criteria

Value Engineering Proposal RD-4

Table 211.7.1 Length of Horizontal Curve

Length Of Horizontal Curve (ft.)										
Interstate, Freeway and Expressways based on Design Speed (mph)										
	25	30	35	40	45	50	55	60	65	70
Desirable	N/A	N/A	N/A	N/A	N/A	1500	1650	1800	1950	2100
Minimum	N/A	N/A	N/A	N/A	N/A	750	825	900	975	1050
Ramps based on Design Speed (mph)										
	25	30	35	40	45	50	55	60	65	70
Desirable	400	450	525	600	675	1500	1650	1800	1950	2100
Minimum	400	400	400	400	400	750	825	900	975	1050

Notes:
 Provide the desirable length; however, when desired length cannot be attained, provide the greatest length possible, but not less than the minimum.

Table 211.13.1 Minimum Deceleration Lengths (L) for Taper and Parallel Type Exit Terminals

Deceleration Length (ft.) for Design Speed of Exit Curve (mph)									
LA Mainline Design Speed	Stop Condition (0)	15	20	25	30	35	40	45	50
30	235	200	170	140	-	-	-	-	-
35	280	250	210	185	150	-	-	-	-
40	320	295	265	235	185	155	-	-	-
45	385	350	325	295	250	220	-	-	-
50	435	405	385	355	315	285	225	175	-
55	480	455	440	410	380	350	285	235	-
60	530	500	480	460	430	405	350	300	240
65	570	540	520	500	470	440	390	340	280
70	615	590	570	550	520	490	440	390	340

Source: 2018 AASHTO Green Book, Table 10-6

Figure RD-4-2: FDOT Design Manual Curve and Ramp Criteria 2

Value Engineering Proposal RD-4

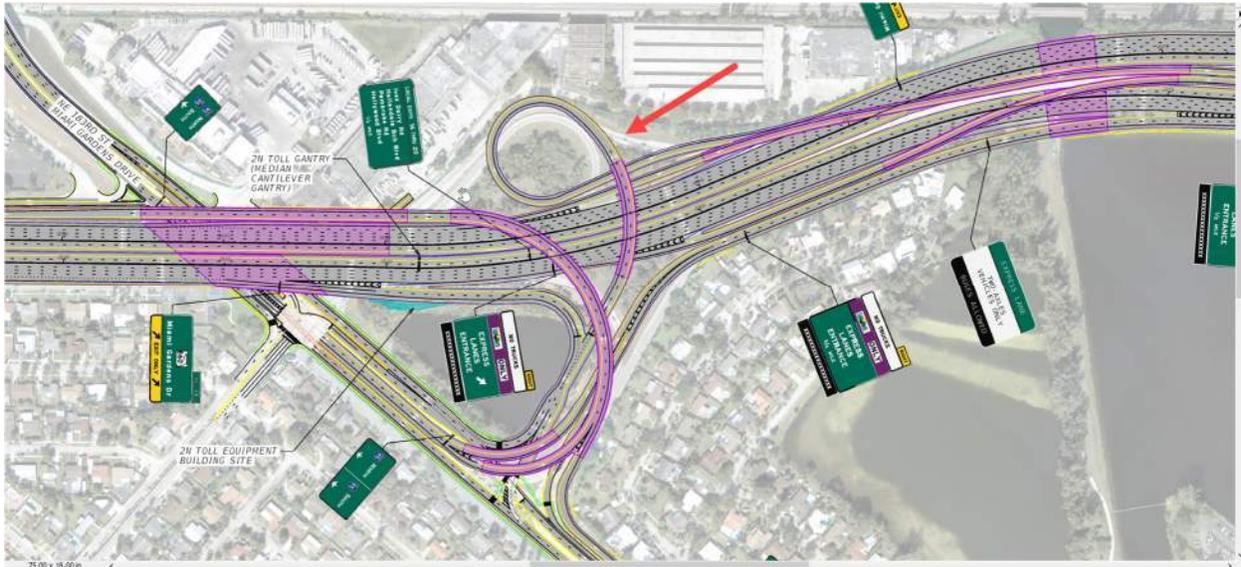


Figure RD-4-3: PD&E Preferred Alternative Loop Ramp / Flyover



Figure RD-4-4: VE Team's Proposed Flyover

Value Engineering Proposal RD-4



Figure RD-4-5: VE Team's Proposed I-95 Southbound Profile

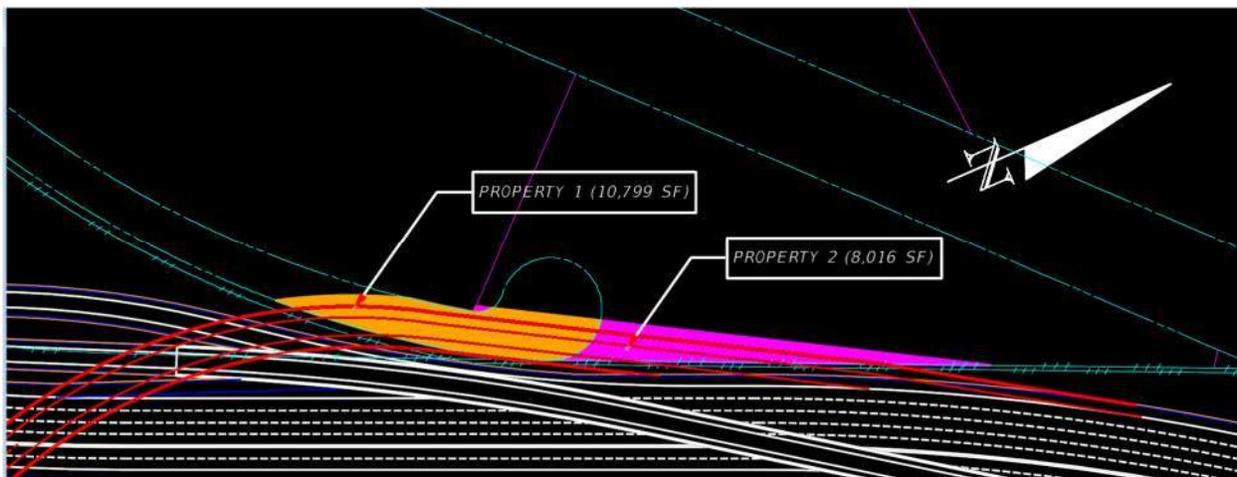


Figure RD-4-6: Potential R/W Impacts

Value Engineering Proposal RD-4

COST SUMMARY

Cost Assumptions

- RD-1 gets approved.

PD&E Preferred Alternative Cost

Description	Pay Item	Qty	Unit	\$/Unit	Subtotal
R/W Impact (property to the west)		1	LS	\$0	\$0
PD&E Preferred Alternative Cost					\$0

VE Team's Proposal Cost

Description	Pay Item	Qty	Unit	\$/Unit	Subtotal
R/W Impact (property to the west)		1	LS	Varies	\$13,246,000
VE Team Proposal Cost without RD-1					\$13,246,000

VE Team's Proposal Cost with RD-1 Approved

Description	Pay Item	Qty	Unit	\$/Unit	Subtotal
R/W Impact (property to the west)		1	LS	\$0	\$0
VE Team Proposal Cost with RD-1					\$0

Cost Avoidance

\$	0	Preliminary Design Cost
\$	<u>-13,246,000</u>	VE Team's Proposal Cost without RD-1
\$	-13,246,000	Round to Nearest \$1,000, say (\$13,246,000) Cost Avoidance (Added Cost)
\$	0	Preliminary Design Cost
\$	<u>-0</u>	VE Team's Proposal Cost with RD-1
\$	-0	Cost Avoidance

Value Engineering Proposal RD-5

Title: Reconfigure express lane access to use mainline entrances and braided exits

PRELIMINARY DESIGN

The current preliminary design provides braided express lane entrance and exit ramps. These braided ramps exist at:

- NB EL On-Ramp South of MGD 5,100 AADT (530)
- Near MGD SB EL Off-Ramp 8,900 AADT (740)
- NB EL Off-Ramp South of IDR 10,700 AADT (1,020)
- IDR NB EL Off-Ramp 1,900 AADT (180)
- NB EL C/D Road South of IDR 12,600 AADT (1,180)
- NB EL On-Ramp South of IDR 1,800 AADT (190)
- NB EL Slip On-Ramp North of IDR 3,500 AADT (420)
- IDR NB EL On-Ramp 5,300 AADT (610)
- IDR SB EL Slip On-Ramp 1,900 AADT (190)
- IDR SB EL On-Ramp 12,200 AADT (970)

Each of these ramps are fully controlled by District 6. All other braided ramps are dependent on District 4's plans.

VE TEAM PROPOSAL

The VE team proposes to remove the ramps that would provide the greatest design and construction challenges to the project. This recommendation suggests removing either all the express lane braided entrance ramps and provide only at-grade entrances or to removing all the braided exit ramps and providing exits that are only at-grade. The VE team recognizes that much of the weaving would occur when drivers exit the express lanes and attempt to cross 4 to 5 lanes of traffic to make their upcoming exit. The weaving that is reduced through the use of braided express way entrance ramps might not be necessary.

Weaving typically occurs when drivers that are driving in their lane of choice are forced to move across the express way to reach their desired destination whether that be an entrance or exit. Following that same approach drivers tend to accelerate as they are moving to the left in traffic and decelerate when they are moving to the right. The VE team suggests that, rather than looking at all the braided ramps as a group, each exit and entrance ramp could be treated individually and evaluated on its safety improvement, congestion reduction and anticipated cost. Several of the ramp's elongated designs are created because of the need to avoid other braided ramps that are creating conflict in their path. Removing some of these less effective ramps can improve the design of the remaining ramps.

The VE team suggests that some of these braided ramps and slip ramps could be removed, especially the ones with low projected volumes. While proposing another at-grade entrance may not be beneficial to the system, as it can cause congestion, a benefit-cost analysis for each individual braided ramp would identify whether more cost-effective alternatives that improve safety and improve system performance. The VE team also identified that adding braided express lane entrance ramps from an interchange entrance or from

Value Engineering Proposal RD-5

the right side of the expressway may be counterintuitive to human decision making. Generally, users on I-95 that desire to drive quickly are likely already driving on the left side of the corridor, but would be forced to weave to the right through slower-moving lanes in order to enter the express lanes.

IMPLEMENTATION CONSIDERATIONS (agency approvals and actions outside design team’s direct control)

- This VE proposal may require the department to approve more at-grade entrances to the express lanes if studies show they are needed in this corridor.

DISADVANTAGES (non-monetary)

- Removes braided ramp access to express lane entrances leading to more weaving across I-95, which creates a safety and congestion issue.
- May cause traffic models to indicate a LOS failure in certain areas. Alternative configurations may need to be introduced to relieve congestion in certain areas.

ADVANTAGES (non-monetary)

- May simplify other proposed braided ramps allowing for a more efficient design since this proposal removes potential conflicts.
- Creating an at-grade express lane entrance is more intuitive and convenient for drivers that are already in the left lane attempting to travel at greater speeds.
- The VE team recognizes that weaving to reach expressway exits generally causes greater congestion and safety issues than users attempting to weave to the left most lane to enter the EL system.
- Increases the space available within the R/W for stormwater and environmental protection features.

FUNCTIONAL SCORE AND COST AVOIDANCES

Functional Score:	-6
Initial Cost Avoidance (nearest \$1,000):	\$18,989,000

FHWA FUNCTION BENEFIT

SAFETY	OPERATION	ENVIRONMENT	CONSTRUCTION	OTHER
Recommendations that mitigate or reduce hazards on the facility	Recommendations that improve real-time service and/or local corridor or regional levels of service	Recommendations that avoid or mitigate impacts to natural and/or cultural resources	Recommendations that improve work zone conditions or expedite the project delivery	Recommendations not readily categorized by above performance indicators
		X	X	

Value Engineering Proposal RD-5

IMAGES

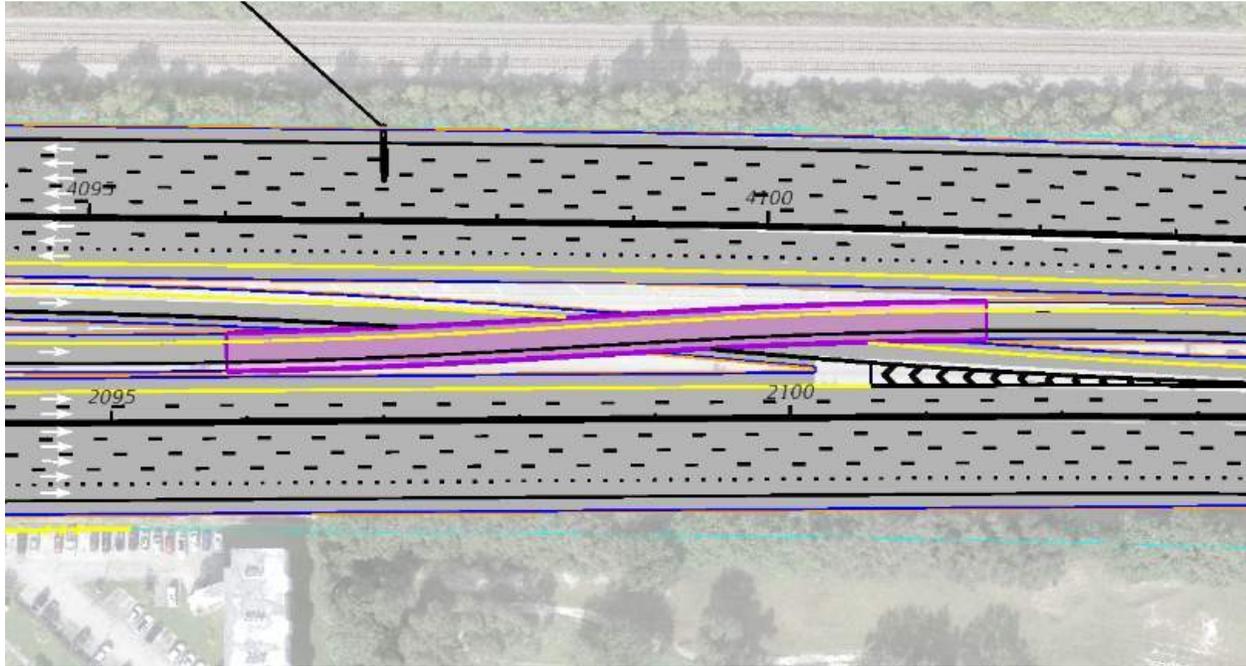


Figure RD-5-1: PD&E Preferred Alt., EL Exit & Entrance Ramps Crossing Between MGD and IDR

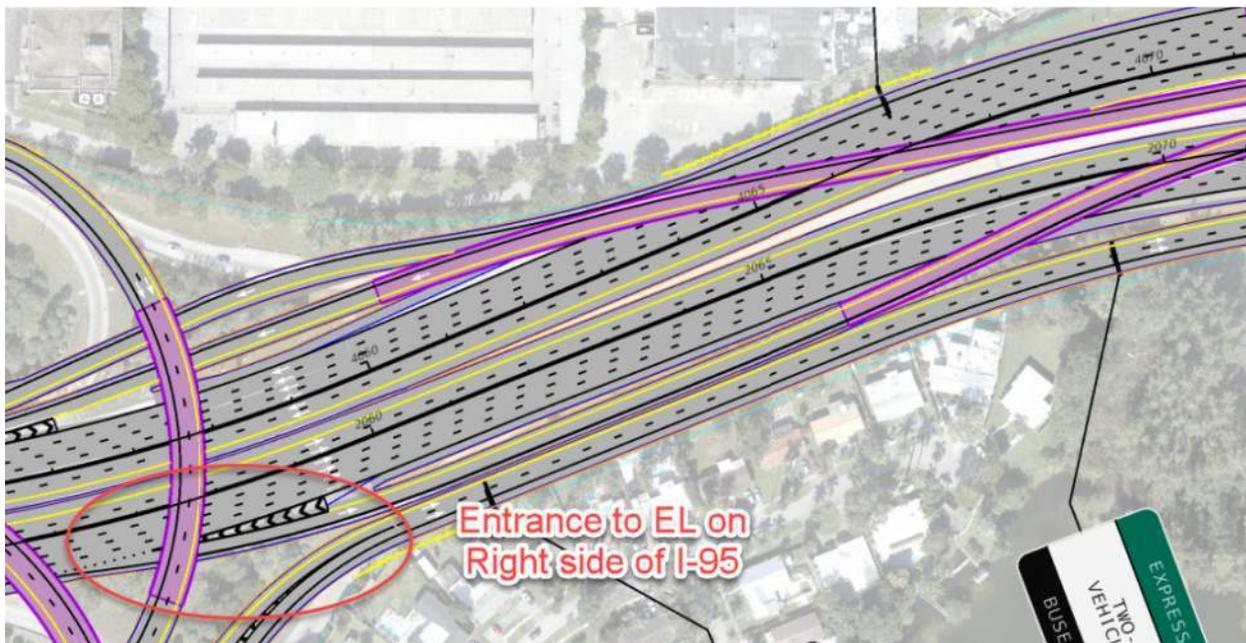


Figure RD-5-2: PD&E Preferred Alt. Forces EL Users to Right Lane of I-95

Value Engineering Proposal RD-5

COST SUMMARY

Cost Assumptions

- Construction cost basis reflects the LRE estimate at the time of this VE Study.
- All On-ramp express lane bridges will be fully removed from the corridor so their entire cost will be subtracted.
- For the remaining off-ramps a 20% cost reduction will be applied since they no longer need to be extended to work around the proposed EL on-ramps.
- Slip-ramps and other work that is in turn removed is considered negligible at this scale and cost estimate.

PD&E Preferred Alternative Cost

Description	Subtotal
BRIDGE -8 NB I-95 GP LANE ON RAMP TO EP LANE BRIDGE OVER NB I-95 (B-8)	\$6,824,160
BRIDGE -9 SB I-95 EP LANE OFF RAMP TO GP LANE BRIDGE OVER SB I-95 (B-9)	\$10,862,880
BRIDGE -13 NB I-95 EXPRESS LANE OFF RAMP BRIDGE OVER NB I-95 EP ON RAMP (B-13)	\$3,988,560
BRIDGE -14 NB I-95 EP OFF RAMP BRIDGE OVER NB I-95 (B-14)	\$5,754,720
BRIDGE -15 SB I-95 EXPRESS LANE ON RAMP BRIDGE OVER SB I-95 (B-15)	\$8,043,120
Preliminary Design Cost	\$35,473,440

VE Team's Proposal Cost

Description	Subtotal
BRIDGE -8 NB I-95 GP LANE ON RAMP TO EP LANE BRIDGE OVER NB I-95 (B-8)	\$0.00
BRIDGE -9 SB I-95 EP LANE OFF RAMP TO GP LANE BRIDGE OVER SB I-95 (B-9)	\$8,690,304
BRIDGE -13 NB I-95 EXPRESS LANE OFF RAMP BRIDGE OVER NB I-95 EP ON RAMP (B-13)	\$3,190,848
BRIDGE -14 NB I-95 EP OFF RAMP BRIDGE OVER NB I-95 (B-14)	\$4,603,776
BRIDGE -15 SB I-95 EXPRESS LANE ON RAMP BRIDGE OVER SB I-95 (B-15)	\$0.00
Preliminary Design Cost	\$16,484,928

Value Engineering Proposal RD-5

Cost Avoidance

\$	35,473,440	Preliminary Design Cost
\$	<u>-16,484,928</u>	VE Team Proposal Cost
\$	18,988,512	Round to Nearest \$1,000, say \$18,989,000 Cost Avoidance

Value Engineering Proposal ST-1

Title: Lower Snake Creek Trail vertical profile crossing beneath I-95 to reduce roadway impacts

PD&E PREFERRED ALTERNATIVE

The current PD&E's Team's preferred alternative proposes raising the profile along I-95 by approximately 8 to 10-ft in order to accommodate raising the profile of the pedestrian trail currently running underneath I-95 and parallel to the C-9 Canal (Snake Creek). This would provide the minimum 10-ft vertical clearance required along the entirety of the trail underneath the bridge, would add additional path elevation to address freeboard requirement of 1-ft above future design water surface elevation of the C-9 Canal, and would address ponding issues that occur at the lowest point of the trail underneath I-95.

VE TEAM PROPOSAL

The VE team proposes constructing a depressed trail/pathway parallel to the canal with the intent of minimizing vertical profile impacts by lowering the proposed profile of I-95, as needed, to meet the required 10-ft minimum vertical clearance for the pathway. The depressed pathway must be waterproofed due to the trail elevation of the pathway being below the water table elevation and the close proximity of the trail to the C-9 Canal. Additionally, the pathway will require an inlet and associated 100-150 GPM (estimated) pump station to drain runoff that will find its way to the lowest point in the pathway during rainfall events.

IMPLEMENTATION CONSIDERATIONS (agency approvals and actions outside design team's direct control)

- Coordination with Miami-Dade County Parks
- South Florida Water Management District for work adjacent to the C-9 Canal

DISADVANTAGES (non-monetary)

- Introduces a depressed section under the roadway susceptible to ponding/flooding during extreme rainfall events
- Operation and Maintenance of the pump station will be required for the life of the trail
- Public perception of the depressed pathway running below grade and adjacent to the canal

ADVANTAGES (non-monetary)

- Reduction in construction schedule due to:
 - Lowering of the proposed profile of I-95 for approximately 2,900-ft
 - Lowering and shortening of braided ramp bridges merging into the I-95 mainline
 - Lowering and shortening of access ramps merging onto northbound I-95 northbound from Miami Gardens Drive
 - Eliminate MSE walls in this area
- Improves constructability of roadway and bridges in the area
 - Less MOT impacts during construction

Value Engineering Proposal ST-1

- Reduction in temporary structures for MOT
- Minimizes localized increases and decrease in grade elevation for drivers

FUNCTIONAL SCORE AND COST AVOIDANCES

Functional Score:	0
Initial Cost Avoidance (nearest \$1,000):	\$2,221,000

FHWA FUNCTION BENEFIT

SAFETY	OPERATION	ENVIRONMENT	CONSTRUCTION	OTHER
Recommendations that mitigate or reduce hazards on the facility	Recommendations that improve real-time service and/or local corridor or regional levels of service	Recommendations that avoid or mitigate impacts to natural and/or cultural resources	Recommendations that improve work zone conditions or expedite the project delivery	Recommendations not readily categorized by above performance indicators
X			X	

Value Engineering Proposal ST-1

IMAGES



Figure ST-1-1: Trail Entrance Showing Substandard Vertical Clearance



Figure ST-1-2: Ponding Water on Trail Beneath I-95

Value Engineering Proposal ST-1

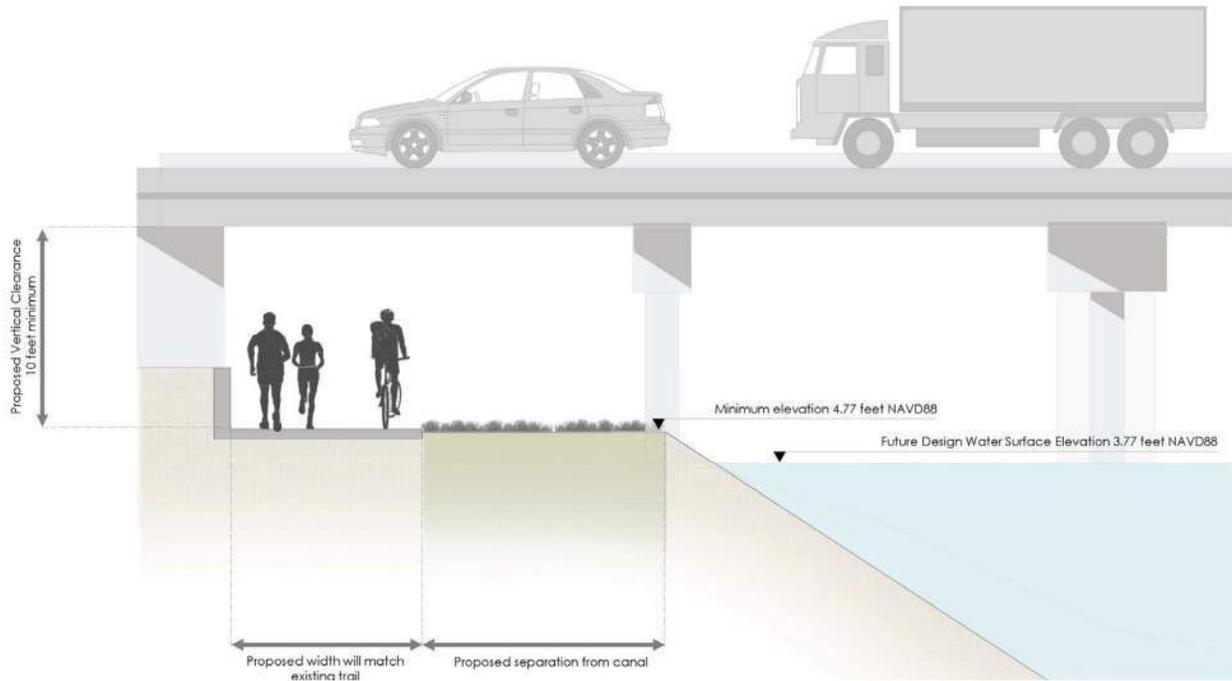


Figure ST-1-3: PD&E Preferred Alternative Trail Section Beneath I-95

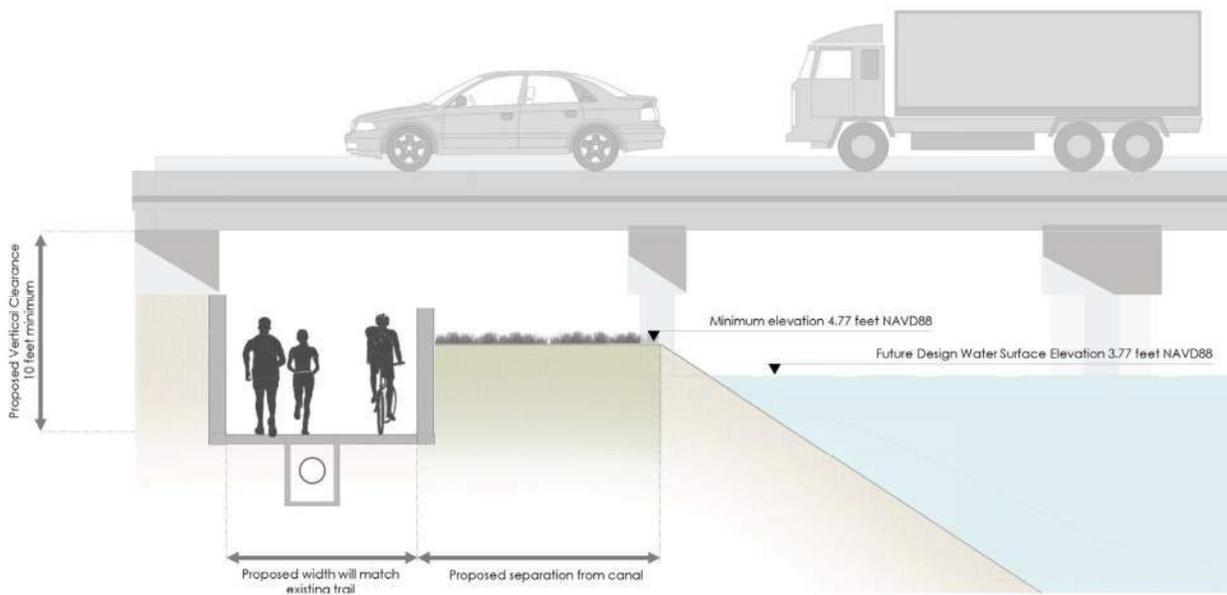


Figure ST-1-4: VE Proposed Depressed Trail Section Beneath I-95

Value Engineering Proposal ST-1

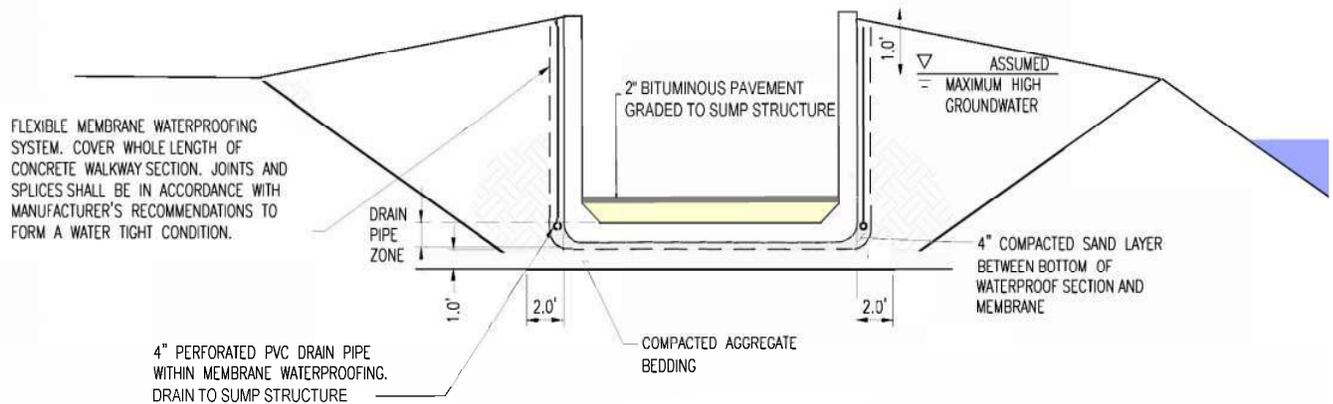


Figure ST-1-5: VE Proposed Depressed Trail Section Beneath I-95 with Waterproofing and Underdrainage System



Figure ST-1-6: Example of Submersible Pump for Pump Station

Value Engineering Proposal ST-1

COST SUMMARY

Cost Assumptions

- Construction cost basis reflects the LRE estimate at the time of this VE Study.
- PD&E study raises I-95 crossing at C-9 Canal (Snake Creek), therefore lowering of the profile will result in earthwork savings. MOT cost savings are anticipated, but are not included in this estimate.
- Structures quantities for spans of bridge should remain roughly the same, bridge spans should not change significantly.

PD&E Preferred Alternative Cost

Description	Pay Item	Qty	Unit	\$/Unit	Subtotal
Embankment	120-6	47,344	CY	\$45.00	\$2,130,480
Retaining Wall System (MSE Walls)	548-12	10,226	SF	\$45.00	\$460,170
Waterproofed Depressed Concrete Walkway		0	LF	\$1,500	0
Pump Station and associated drainage system		0	LS	\$30,000	0
Operation & Maintenance of Pump Station (over 20 year)		0	LS	\$2,000	0
VE Team Proposal Cost					\$2,590,650

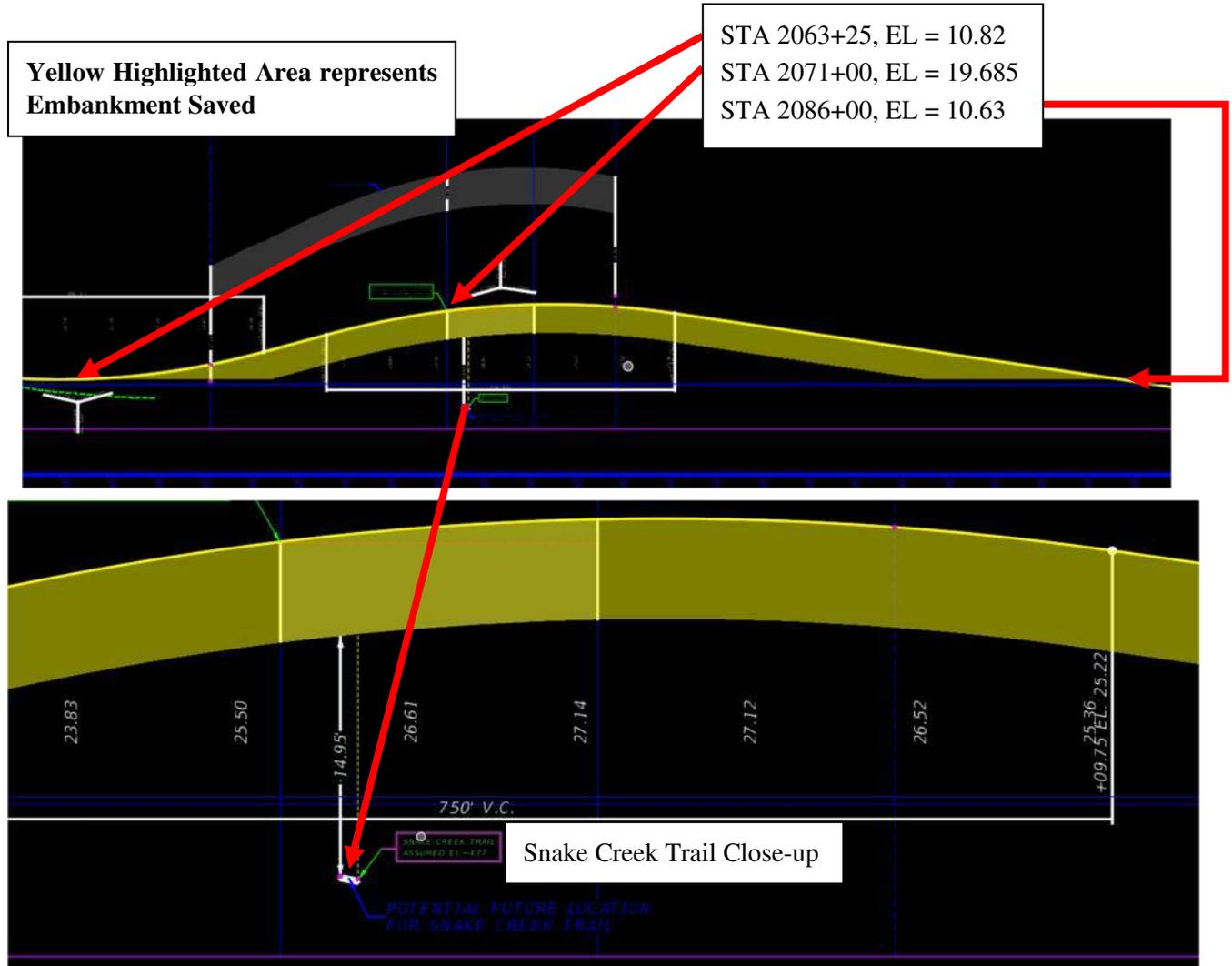
VE Team's Proposal Cost

Description	Pay Item	Qty	Unit	\$/Unit	Subtotal
Embankment	120-6	0	CY	\$45.00	\$0
Retaining Wall System (MSE Walls)	548-12	0	SF	\$45.00	\$0
Waterproofed Depressed Concrete Walkway		200	LF	\$1,500	\$300,000
Pump Station and associated drainage system		1	LS	\$30,000	\$30,000
Operation & Maintenance of Pump Station (over 20 year)		20	LS	\$2,000	\$40,000
VE Team Proposal Cost					\$370,000

Cost Avoidance

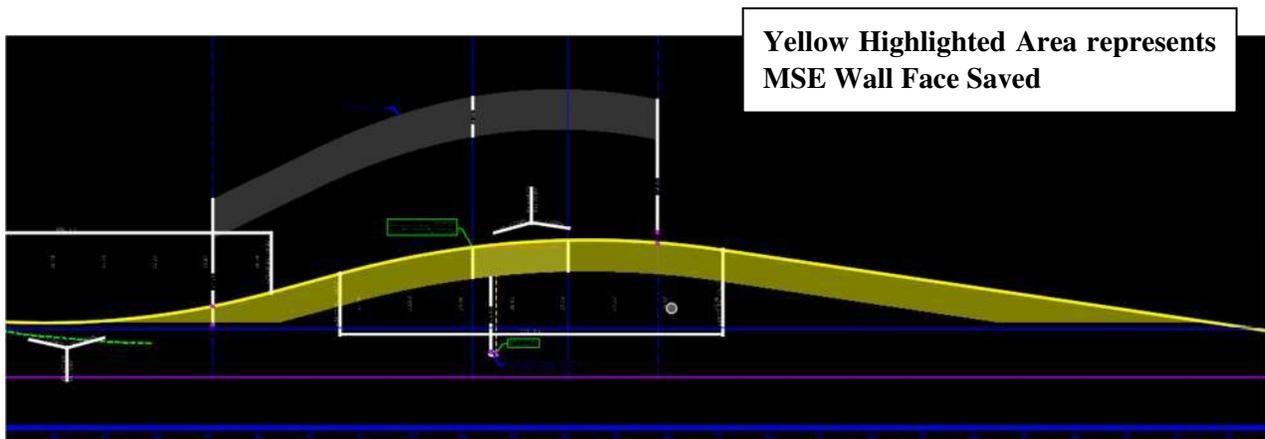
\$ 2,590,650	PD&E Preferred Alternative Cost
\$ -370,000	VE Team Proposal Cost
\$ 2,220,650	Round to Nearest \$1,000, say \$2,221,000 Cost Avoidance

Value Engineering Proposal ST-1



Begin @ STA 2063+25 - EL 10.82
 MSE wall Peak @ STA 2071+00 - EL 19.685
 End @ STA 2086+00 - EL = 10.63
 Area / Volume Calculations = $0.5 \times (19.685 - 10.82) \times (2071+00 - 2063+25) + 0.5 \times (19.685 - 10.63) \times (2086+00 - 2071+00) = 10226.4375$ SF Saved x 125 LF (Typical Section width) = 1,278,304.688 / (27) = 47,344.62 CY Embankment Saved
47,344.62 CY x \$45 / CY = \$2,130,507.82 total for Embankment

Value Engineering Proposal ST-1



MSE Wall Quantities – Pay Item 548-12 Retaining Wall System, Permanent

Begin @ STA 2063+25 - EL 10.82

MSE wall Peak @ STA 2071+00 - EL 19.685

End @ STA 2086+00 - EL = 10.63

Area Calculation = $0.5 \times (19.685 - 10.82) \times (2071+00 - 2063+25) + 0.5 \times (19.685 - 10.63) \times (2086+00 - 2071+00)$ = 10226.4375 SF of MSE Wall saved per face

4 total faces (2 NB and 2 SB) = 40,905.75 SF of MSE Wall saved per face

40,905.75 SF x \$51.75 / SF (From Area 13 Historical Unit Cost) = \$2,116,872.56 total for MSE Wall

Value Engineering Proposal ST-2

Title: Reconfigure NE 5th Ave to reduce southbound I-95 bridge length at Miami Gardens Drive

PD&E PREFERRED ALTERNATIVE

The current PD&E Team's preferred alternative has both SB I-95 mainline lanes and the SB I-95 onramp elevated to level one bridges, while at-grade traffic is on NE 5th Ave is routed beneath these bridges. The I-95 SB bridge is of 101 feet wide and carries 7 traffic and 2 shoulder lanes.

VE TEAM PROPOSAL

The VE team proposes reconfiguring NE 5th Ave alignment to be under the SB I-95 ramp bridge only. This proposal holds SB I-95 profile but shortens the 101-foot wide bridge length by approximately 400 feet.

IMPLEMENTATION CONSIDERATIONS (agency approvals and actions outside design team's direct control)

- This proposal does not add additional ROW acquisition, but requires close coordinate with nearby businesses (as would be needed for the PD&E preferred alternative).
- NE 5th Ave alignment would require curvature adjustments.

DISADVANTAGES (non-monetary)

- Routes NE 5th Avenue closer to the existing structure, potentially complicating access.
- Increases the quantity of embankment needed behind the MSE wall.

ADVANTAGES (non-monetary)

- Significantly reduces SB I-95 bridge length.
- Allows greater flexibility in toll structure layout since they cannot be attached to bridges.

FUNCTIONAL SCORE AND COST AVOIDANCES

Functional Score:	-2
Initial Cost Avoidance (nearest \$1,000):	\$7,226,000

Value Engineering Proposal ST-2

FHWA FUNCTION BENEFIT

SAFETY	OPERATION	ENVIRONMENT	CONSTRUCTION	OTHER
Recommendations that mitigate or reduce hazards on the facility	Recommendations that improve real-time service and/or local corridor or regional levels of service	Recommendations that avoid or mitigate impacts to natural and/or cultural resources	Recommendations that improve work zone conditions or expedite the project delivery	Recommendations not readily categorized by above performance indicators
			X	

IMAGES

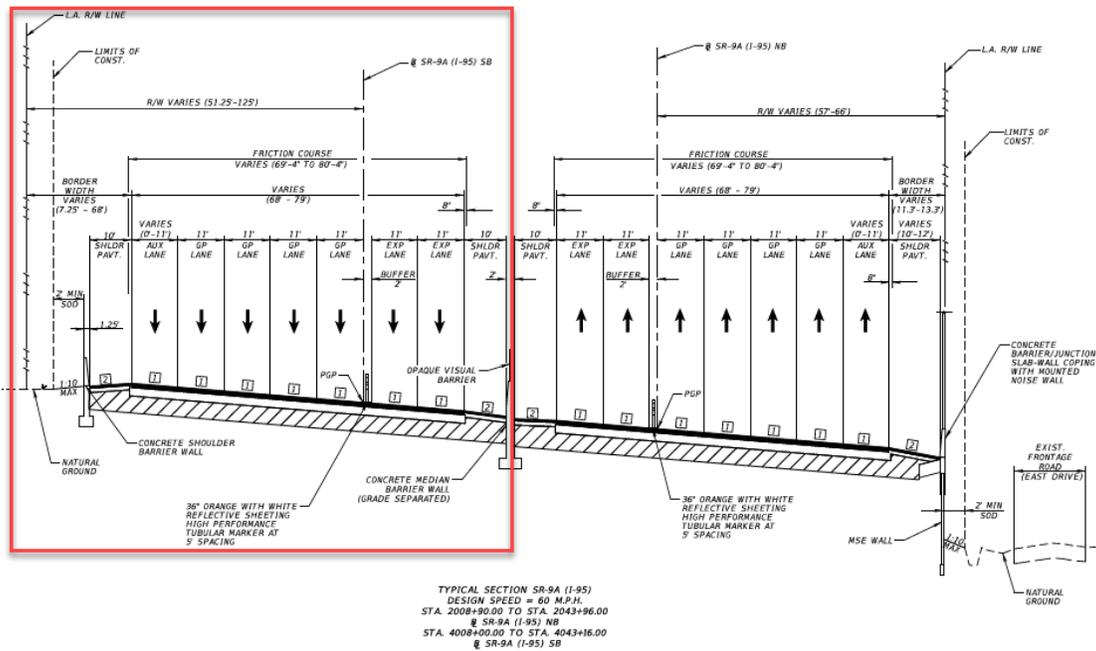


Figure ST-2-1: Typical Section of I-95 with SB Highlighted for both PD&E and Proposed

Value Engineering Proposal ST-2

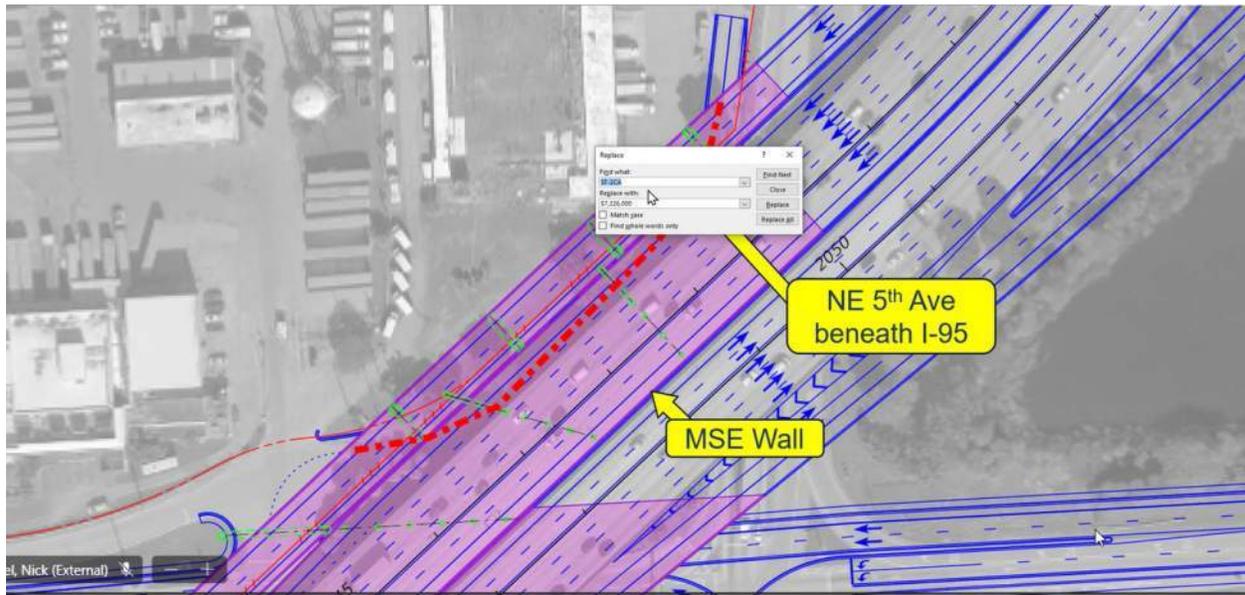


Figure ST-2-2: PD&E Preferred Alt. Bridge Configuration at MGD and I-95 Intersection

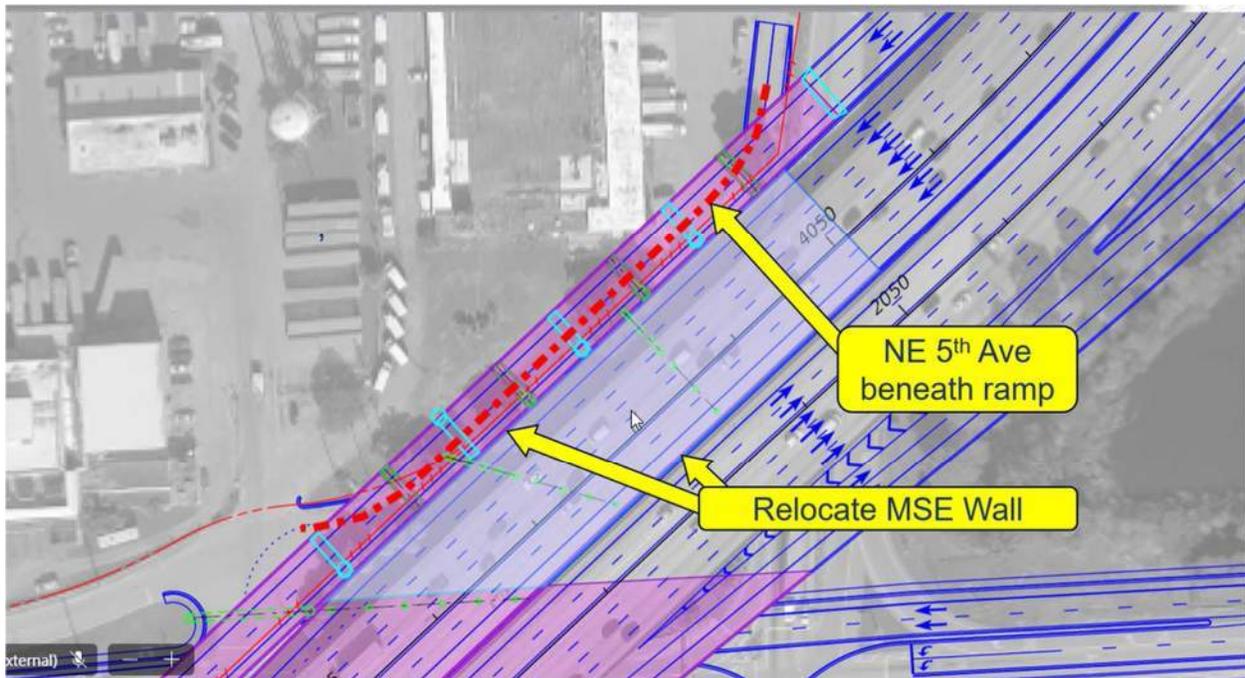


Figure ST-2-3: VE Proposed Bridge Configuration at MGD and I-95 Intersection

Value Engineering Proposal ST-2

COST SUMMARY

Cost Assumptions

- Construction cost basis reflects the LRE estimate at the time of this VE Study.

PD&E Preferred Alternative Cost

Description	Pay Item	Qty	Unit	\$/Unit	Subtotal
Bridge 2 - SB I-95 OVERPASS BRIDGE AT MIAMI GARDENS DR.		70,593	SF	\$190.00	\$13,412,670
Embankment	120-6	1,000,000	CY	\$45.00	\$45,000,000
PD&E Preferred Alternative Cost					\$58,412,670

VE Team's Proposal Cost

Description	Pay Item	Qty	Unit	\$/Unit Material	Subtotal
Bridge 2 - SB I-95 OVERPASS BRIDGE AT MIAMI GARDENS DR.		31,093	SF	\$190.00	\$5,907,670
Embankment	120-6	1,006,200	CY	\$45.00	\$45,279,000
VE Team Proposal Cost					\$51,186,670

Cost Avoidance

- \$ 58,412,670 PD&E Preferred Alternative Cost
- \$ -51,186,670 VE Team Proposal Cost
- \$ 7,226,000 Round to Nearest \$1,000, say \$7,226,000 Cost Avoidance

Value Engineering Proposal TR-1

Title: Add Pedestrian Signal Crossing at NE 9th Court on Miami Gardens Drive

PD&E PREFERRED ALTERNATIVE

The current PD&E Team's preferred alternative introduces sidewalks on both the north and south sides of Miami Gardens Drive (MGD). On the north side, the sidewalk crosses the westbound MGD entrance ramp to I-95 northbound and the westbound MGD entrance ramp to I-95 southbound, causing two uncontrolled pedestrian crossings as shown in Figure 1.

VE TEAM PROPOSAL

The VE team proposes to eliminate the sidewalk on the north side of MGD between 6th Ave and 9th Court and introducing a mid-block crossing pedestrian signal on MGD at NE 9th Court as shown in Figure TR-1-2. In response to concerns raised by the PD&E Team during the Mid-week Review Meeting, the VE Team acknowledges the recommendation to avoid a sidewalk crossing at 5th Ave due to the presence of "turbo lanes" at that location. Instead, a crosswalk at the eastbound ramp entrance onto I-95 with an existing signal is suggested to guide pedestrians from the south side of MGD to the north side.

IMPLEMENTATION CONSIDERATIONS (agency approvals and actions outside design team's direct control)

- The introduction of a pedestrian signal may cause signal delays at 9th Court, potentially extending travel time. However, the VE team prioritizes the enhanced safety for both pedestrians and vehicles over potential signal delays.
- Coordination with maintaining agency is required.

DISADVANTAGES (non-monetary)

- Sight distance challenges may arise for eastbound traffic on MGD at the mid-block pedestrian signal due to a horizontal curve. Advanced signage or warning devices may be necessary to address this issue.
- Pedestrians on the north side of MGD will need to cross MGD and use the south side sidewalk, then cross back to the north sidewalk to reach their destination, resulting in a longer walking distance.
- Potential signal delay

ADVANTAGES (non-monetary)

- Improved safety for pedestrians, eliminating the need to cross I-95 entrance ramps to access the sidewalk.
- Enhanced mobility for drivers on entrance ramps, avoiding interruptions from crosswalks and potential pedestrian crossings on the ramp.
- The signal will provide westbound drivers with an opportunity to stop, read signs, and make informed decisions given the complex configuration of the ramps.

Value Engineering Proposal TR-1

FUNCTIONAL SCORE AND COST AVOIDANCES

Functional Score:	2
Initial Cost Avoidance (nearest \$1,000):	(\$131,000)

FHWA FUNCTION BENEFIT

SAFETY	OPERATION	ENVIRONMENT	CONSTRUCTION	OTHER
Recommendations that mitigate or reduce hazards on the facility	Recommendations that improve real-time service and/or local corridor or regional levels of service	Recommendations that avoid or mitigate impacts to natural and/or cultural resources	Recommendations that improve work zone conditions or expedite the project delivery	Recommendations not readily categorized by above performance indicators
X				

Value Engineering Proposal TR-1

IMAGES



Figure TR-1-1: PD&E Team's Preferred Alternative Sidewalks along Miami Gardens Drive

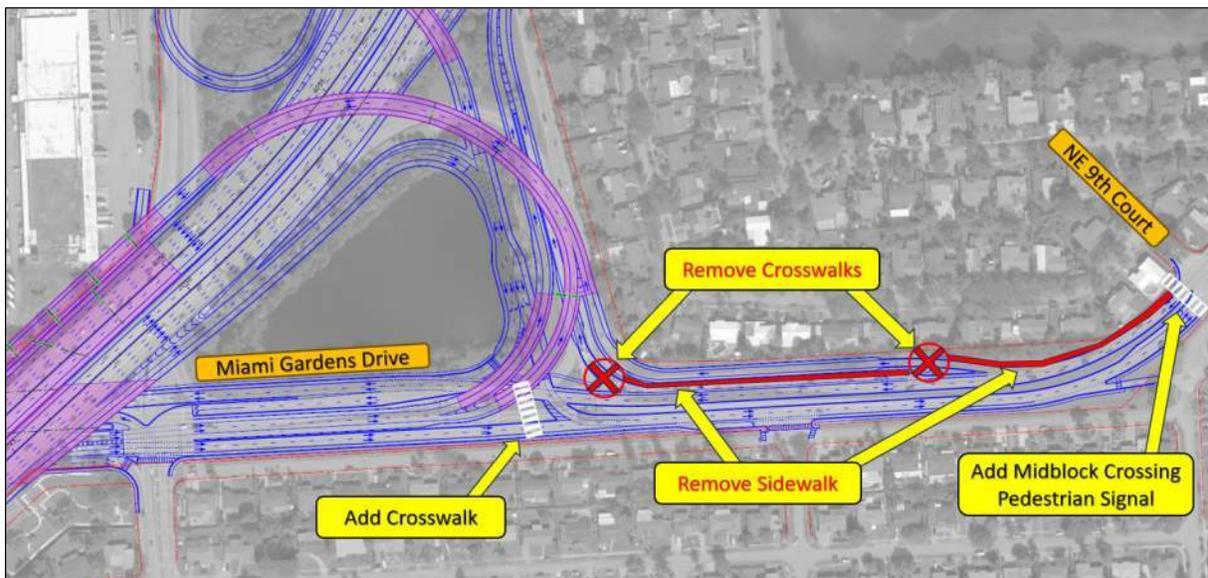


Figure TR-1-2: VE Team's Proposed Pedestrian Route Connection along Miami Gardens Drive

Value Engineering Proposal TR-1

COST SUMMARY

Cost Assumptions

- Construction cost basis reflects the LRE estimate at the time of this VE Study.
- A pedestrian signal and crossing markings are not currently included in the LRE crossing MGD at the I-95 ramps
- Nominal sidewalk width is 6’-0”
- The sidewalk length removed between the SB I-95 off ramp signal and NE 9th Court is:
 - $110 + 675 + 570 = 1,355$ feet
- The area of sidewalk removed is $(6 \text{ feet}) * (1,355 \text{ feet}) / 27 = 301.11$ SY
- The length of the north-south pedestrian crossing markings at the MGD and I-95 ramp signal is:
 - $33 + 33 = 66$ feet
- The length of the north-south pedestrian crossing markings at MGD and NE 9th Court is:
 - 75 feet
- The length reduction at the two removed crosswalks is:
 - $15 + 22 = 37$ feet

PD&E Preferred Alternative Cost

Description	Pay Item	Qty	Unit	\$/Unit	Subtotal
Mobilization – 10%	101-1	1	LS	\$59,228.43	\$59,228
Concrete Sidewalk and Driveways, 4”	522-1	9,526.85	SY	\$62.17	\$592,284
Pedestrian Signal F&I LED Count, One Way	653-1-11	0	AS	\$675.00	\$0
Painted Pavement Markings, Standard, White, Solid for Diagonal or Chevron, 18”	710-1-11	0	LF	\$1.52	\$0
Steel Mast Arm Assembly, F&I, 40’- 30’	649-21-4	0	EA	\$0.00	\$0
PD&E Preferred Alternative Cost					\$651,512

VE Team’s Proposal Cost

Description	Pay Item	Qty	Unit	\$/Unit	Subtotal
Mobilization – 10%	101-1	1	LS	\$71,127.63	\$71,128
Concrete Sidewalk and Driveways, 4”	522-1	9,225.74	SY	\$62.17	\$573,564
Pedestrian Signal F&I LED Count, One Way	653-1-11	4	AS	\$675.00	\$2,700
Painted Pavement Markings, Standard, White, Solid for Diagonal or Chevron, 18”	710-1-11	104	LF	\$1.52	\$158
Steel Mast Arm Assembly, F&I, 40’- 30’	649-21-4	2	EA	\$67,427.00	\$134,854
VE Team Proposal Cost					\$782,404

Value Engineering Proposal TR-1

Cost Avoidance

\$ 651,512 PD&E Preferred Alternative Cost

\$ -782,404 VE Team's Proposal Cost

\$ -130,891 Round to Nearest \$1,000, say (\$131,000) Cost Avoidance (Added Cost)

Value Engineering Proposal TR-2

Title: Extend Miami Gardens Drive South Side Sidewalk East to NE 10th Avenue

PD&E PREFERRED ALTERNATIVE

The current PD&E Team’s preferred alternative introduces sidewalks on both the north and south sides of Miami Gardens Drive (MGD). On the north side, the sidewalk crosses the westbound MGD entrance ramp to I-95 northbound and the westbound MGD entrance ramp to I-95 southbound, causing two uncontrolled pedestrian crossings as shown in Figure 1.

VE TEAM PROPOSAL

The VE team to eliminate the sidewalk on the north side of MGD between 6th Ave and 9th Court and extending the south side sidewalk east to NE 10th Avenue as shown in Figure TR-2-2. In response to concerns raised by the PD&E Team during the Mid-week Review Meeting, the VE Team acknowledges the recommendation to avoid a sidewalk crossing at 5th Ave due to the presence of “turbo lanes” at that location. Instead, a crosswalk at the eastbound ramp entrance onto I-95 with an existing signal is suggested to guide pedestrians from the south side of MGD to the north side.

IMPLEMENTATION CONSIDERATIONS (agency approvals and actions outside design team’s direct control)

- It may be necessary to extend project limits to accommodate the proposed modifications adequately.
- Public education campaign may be needed to inform pedestrians of the new traffic patterns and encourage safe crossing behavior.

DISADVANTAGES (non-monetary)

- Pedestrians on the north side of MGD will need to reach NE 10th Avenue to cross MGD, then use the south side sidewalk, and finally cross back to the north sidewalk, resulting in a longer walking distance.

ADVANTAGES (non-monetary)

- Minimal construction needed effort to address pedestrian safety issues presented in the PD&E preferred alternative when compared against alternative solutions.
- Eliminating uncontrolled pedestrian crossings enhances pedestrian safety.

FUNCTIONAL SCORE AND COST AVOIDANCES

Functional Score:	2
Initial Cost Avoidance (nearest \$1,000):	\$11,000

Value Engineering Proposal TR-2

FHWA FUNCTION BENEFIT

SAFETY	OPERATION	ENVIRONMENT	CONSTRUCTION	OTHER
Recommendations that mitigate or reduce hazards on the facility	Recommendations that improve real-time service and/or local corridor or regional levels of service	Recommendations that avoid or mitigate impacts to natural and/or cultural resources	Recommendations that improve work zone conditions or expedite the project delivery	Recommendations not readily categorized by above performance indicators
X				

Value Engineering Proposal TR-2

IMAGES



Figure TR-2-1: PD&E Team's Preferred Alternative North Side Sidewalks along Miami Gardens Drive



Figure TR-2-2: VE Team's Proposed North Side Pedestrian Route along Miami Gardens Drive

Value Engineering Proposal TR-2

COST SUMMARY

Cost Assumptions

- Construction cost basis reflects the LRE estimate at the time of this VE Study A pedestrian signal and crossing markings are not currently included in the LRE crossing MGD at the I-95 ramps
- Nominal sidewalk width is 6’-0”
- The sidewalk length removed between the SB I-95 off ramp signal and NE 9th Court is:
 - $110 + 675 + 570 = 1,355$ feet
- The length of the east-west pedestrian sidewalk added along MGD from NE 9th Court to NE 10th Ave is:
 - 515 feet
- The area of sidewalk removed is $(6 \text{ feet}) * (1,355 - 515 \text{ feet}) / 27 = 186.67 \text{ SY}$
- The length of the north-south pedestrian crossing markings at the MGD and I-95 ramp signal is:
 - $33 + 33 = 66$ feet

PD&E Preferred Alternative Cost

Description	Pay Item	Qty	Unit	\$/Unit	Subtotal
Mobilization – 10%	101-1	1	LS	\$59,228.43	\$59,228
Concrete Sidewalk and Driveways, 4”	522-1	9,526.85	SY	\$62.17	\$592,284
Pedestrian Signal F&I LED Count, One Way	653-1-11	0	AS	\$675.00	\$0
Painted Pavement Markings, Standard, White, Solid for Diagonal or Chevron, 18”	710-1-11	0	LF	\$1.52	\$0
PD&E Preferred Alternative Cost					\$651,512

VE Team’s Proposal Cost

Description	Pay Item	Qty	Unit	\$/Unit	Subtotal
Mobilization – 10%	101-1	1	LS	\$58,212.93	\$58,213
Concrete Sidewalk and Driveways, 4”	522-1	9,340.18	SY	\$62.17	\$580,679
Pedestrian Signal F&I LED Count, One Way	653-1-11	2	AS	\$675.00	\$1,350
Painted Pavement Markings, Standard, White, Solid for Diagonal or Chevron, 18”	710-1-11	66	LF	\$1.52	\$100
VE Team Proposal Cost					\$640,342

Cost Avoidance

- \$ 651,512 PD&E Preferred Alternative Cost
- \$ -640,342 VE Team Proposal Cost
- \$ 11,170 Round to Nearest \$1,000, say \$11,000 Cost Avoidance

Appendix D Meeting Attendees and VE Agenda

General

The following pages contain daily sign-in sheets showing all VE Workshop participants followed by the VE Agenda.

ATTENDEES:

Name	Organization/ Role	Email	11/13	11/14	11/15	11/16	11/17
Mark Alvarez	FDOT/ Drainage	Mark.Alvarez@dot.state.fl.us	X	X	X	X	X
Christopher Bacallao	FDOT/ Roadway	Christopher.Bacallao@dot.state.fl.us		X	X		X
Auraliz (Lola) Benitez	FDOT/ PD&E PM	Auraliz.Benitez@dot.state.fl.us	X	X	X	X	X
Andres Berisiartu	FDOT/ Construction	Andres.Berisiartu @dot.state.fl.us			X		X
James Beverly	FDOT/ Tolls Design Admin	JamesE.Beverly@dot.state.fl.us	X	X	X		
Catherine Bradley	FDOT/ Environmental Management Office (EMO)	Catherine.Bradley@dot.state.fl.us	X				
Bobby Bull	FDOT/ State Value Officer	Bobby.Bull@dot.state.fl.us	X	X	X	X	X
Mario Cabrera	FDOT / Construction	Mario.Cabrera@dot.state.fl.us			X		
Gary Controneo	FDOT/ Right of Way	Gary.Controneo@dot.state.fl.us	X	X	X	X	
Yamilet Diaz	FDOT/ TSM&O	Yamilet.Diaz@dot.state.fl.us	X	X	X	X	X
Manny Espinal	FDOT/ Construction	Enmanuel.Espinal@dot.state.fl.us	X	X	X	X	X
Karina Fuentes	FDOT/ Design	Karina.Fuentes@dot.state.fl.us					X
Dat Huynh	FDOT/ District Value Officer	Dat.Huynh@dot.state.fl.us	X	X	X	X	X
Daniel Iglesias	FDOT/ Director of Development	Daniel.Iglesias@dot.state.fl.us					X
Jinyan Lu	FDOT/ Traffic Operations	Jinyan.Lu@dot.state.fl.us	X	X	X	X	X
Renato Marreo	FDOT Maintenance	Renato.Marreo@dot.state.fl.us			X		X

Name	Organization/ Role	Email	11/13	11/14	11/15	11/16	11/17
Omar Meitin	FDOT/ Traffic Operations	Omar.Meitin@dot.state.fl.us					
Stacy Miller	FDOT / Secretary	Stacy.Miller@dot.state.fl.us					X
Carlos H Perez	FDOT/ Roadway	CarlosH.Perez@dot.state.fl.us	X	X	X	X	
Mario Perez	FDOT/ Right of Way	Mario.Perez@dot.state.fl.us	X	X	X	X	
Javier Rodriguez	FDOT/ TSM&O	Javier.Rodriguez2@dot.state.fl.us			X		X
Xenia Rodriguez	FDOT/ Utilities	Xenia.Rodriguez@dot.state.fl.us	X	X	X	X	
Leonard Salazar	FDOT/ Maintenance	Leonard.Salazar@dot.state.fl.us	X	X	X	X	
Heidi Solaun	FDOT/ Right of Way	Heidi.Solaun@dot.state.fl.us					X
Judy Solaun-Gonzalez	FDOT/ Construction Management	Judy.Solaun@dot.state.fl.us			X		X
Raymond Valido	FDOT/ Design	Raymond.Valido@dot.state.fl.us			X		X
Dongming White	FDOT/ Structures	Dongming.White@dot.state.fl.us	X	X	X	X	X
Cesar Borges	FDOT Consultant (Aluces)/ Drainage	CBorges@alucescorp.com	X	X	X	X	X
Gregg Letts	FDOT Consultant (Ultra)/ Traffic Operations (ITS/TSM&O/Tolling)	gregg@ultra-engineering.com	X	X	X	X	X
Mark Clasgens	FHWA/ Value Engineer	Mark.Clasgens@dot.gov	X	X			
John Arrieta	Colliers Eng/PD&E Traffic Lead	John.Arrieta@collierseng.com			X		
Hanna Bishoy	FDOT/-Environmental Management Office (EMO)	bishoy.hanna@dot.state.fl.us	X				
Neil Campbell	FDOT/-Environmental Management Office (EMO)	neil.campbell@dot.state.fl.us	X				
James Ford	HNTB / PD&E Roadway Lead	jeford@HNTB.com			X		

Name	Organization/ Role	Email	11/13	11/14	11/15	11/16	11/17
Thuraia Sully	FDOT/ Systems Implementation Office	thuraia.sully@dot.state.fl.us		X			
Jenn King	AECOM/ PD&E Design PM	Jenn.King@aecom.com	X		X		X
Amin Ahmed	Stanley/ VE PM	AhmedAmin@stanleygroup.com	X				X
Nick Cmiel	Stanley/ VMA Facilitation Support	CmielNick@stanleygroup.com	X	X	X	X	X
Scott Eshleman	Stanley/ CVS Facilitator	EshlemanScott@stanleygroup.com	X	X	X	X	X
Liliana Perez	Stanley/ Admin Support	PerezLiliana@stanleygroup.com	X				X



Value Engineering Study Agenda
I-95/SR 9 from S. of Miami Gardens Drive to Broward County Line PD&E Study
Miami-Dade County, Florida
Financial Project ID: 414964-1-22-05
Task Work Order No. 1; Contract No. CAP39
FDOT, District 6

VE Workshop: Monday to Friday, Nov 13-17, 2023
Location: FDOT D6-DO, Executive Conference Room
 at 1000 NW 111 Avenue, Miami, FL 33172.

Design

Presentation PD&E Study Team (AECOM) presents: 9:00 am, Monday Nov 13, 2023
Mid-Study Rev VE Team (Stanley Consultants) presents: 10:30 am, Wednesday Nov 15, 2023
VE Presentation: VE Team (Stanley Consultants) presents: 1:00 pm, Friday, Nov 17, 2023

Mon, Nov 13, 2023

8:30 am	Welcome & Sign-In	Scott Eshleman, PE, CVS
	Introduction & Overview of Value Engineering Agenda	Scott
	Information Phase	
	Overall Project Goals and Objectives from FDOT	Auraliz Benitez, PE
9:00 am	Presentation of Project Data (What was done and why?)	Jenn King, PE (AECOM)
11:30 am	Dismiss PD&E Study Team	
11:45 am	PD&E representative/CSV provide instructions & lead VE team on site visit... Lunch on your own following site visit. VE Team returns to District Office	Jenn/Scott
4:00 pm	Return from site visit/lunch and record site observations	Scott/VE Team
	List Owners/Users/Stakeholders & Desires/Needs/Constraints	Scott/VE Team
	Risk register, record project goals, review cost model(s).....	Scott/VE Team
4:30 pm	Functional Analysis Phase	
	Define what a Function is, give example and identify Project Functions	Scott/VE Team
5:00 pm	Adjourn for Day 1	

Tues, Nov 14, 2023

8:30 am	Complete FAST Diagram and review progress to date.....	Scott/VE Team
9:30 am	Creative Phase	
	Brainstorm creative ideas that satisfy the project's functions/objectives	Scott/VE Team
10:00 am	Break	
10:15 am	Continue brainstorming ideas through contract document review.....	Scott/VE Team
12:00 pm	Lunch	
1:00 pm	Continue brainstorming ideas through O/U/S & D/N/C listing review	Scott/VE Team
3:00 pm	Break	
3:15 pm	Perform Risk Analysis and use mitigation strategies as creative ideas Identify Criteria for Evaluation	Scott/VE Team
5:00 pm	Adjourn for Day 2	



Wed, Nov 15, 2023

8:30 am	Review creative ideas and add to list	Scott/VE Team
9:00 am	Evaluation Phase	
	Remove ideas with fatal flaws, un-feasible or highly improbable	Scott/VE Team
	Combine ideas into VE proposals and label for Evaluation	Scott/VE Team
10:15 am	Break	
10:30 am	Rank Evaluation Criteria	Scott/VE Team
11:00 am	Prep for meeting with Design Team.....	Scott/VE Team
12:00 pm	Lunch	
1:00 pm	Mid-week review meeting with Design Team	Scott/PD&E PM
2:00 pm	Rank VE Proposals against Base Design	Scott/VE Team
3:30 pm	Break	
3:45 pm	Development Phase	
	Assign proposal write-ups	Scott/VE Team
	Quantities, descriptions, pro's/con's, graphics, write-ups	
5:00 pm	Adjourn for Day 3	

Thurs, Nov 16, 2023

8:30 am	Review each VE Proposal – Pro's/Con's, Implementation Decisions	Scott/VE Team
10:00 am	Break	
10:15 am	Break up into block-out groups to work on proposals	Scott/VE Team
	Edit proposals as a team	
	Compute cost savings	
	Create illustrative exhibits	
12:00 pm	Lunch	
1:00 pm	Review in-progress proposal write-ups	Scott/VE Team
2:30 pm	Break	
2:45 pm	Presentation Phase	
	Develop Presentation Slides	Scott/VE Team
5:00 pm	Adjourn for Day 4	

Fri, Nov 17, 2023

8:30 am	VE team reviews presentation procedure.....	Scott/VE Team
9:00 am	Dry Run of Presentation Slides	Scott/VE Team
	Review and correct as needed	
1:00 pm	VE Team presents VE Proposals	Scott/VE Team
3:00 pm	VE Workshop Complete	

Appendix E Criteria Weighting

General

This is a paired comparison matrix of evaluative criteria. The evaluative criteria are selected based on criteria that are deemed the most important to the owner/user/stakeholders. Cost is generally not included as a criterion as it will be tracked separately. After the top criteria are selected, each criterion is compared to the other criterion. If Criterion A is deemed more important than Criterion B, then Criterion A is written into the box in Row A, Column B. Following that "letter" the VE Team then votes on a number from 0 to 5 as indicated below in "Preference Weighting" according to how much more important Criterion A is than Criterion B. The same procedure should be carried out for each box below the listed Criteria. The Raw Score for A is then computed by adding up all the numbers following the letter A in all boxes. The same is then done for letter B, C, etc. The final Weighted Rating for each Criterion is then placed on a scale from 1 to 5, with the highest scored Criterion receiving a 5 and the lowest scored Criterion receiving a 1. All other Criteria are then prorated accordingly.

A	B	C	D			RAW SCORE	*RATING
A	B3	C2	A0		A	0	1
	B	B1	B2		B	6	5
		C	C0		C	2	2
			D		D	0	1

Preference Weighting

- 0 - No Difference
- 1 - Minor Difference
- 2 -
- 3 - Medium Difference
- 4 -
- 5 - Major Difference

Appendix F Analysis Matrix

General

The following pages contain the analysis matrix sheets. On these sheets the VE proposal was compared to the PD&E preferred alternative, and both were ranked on how well they satisfied the evaluation criteria. Once the evaluation score was completed for each evaluation criterion, that score was multiplied by the weight of that criterion and added up to a total score. The VE proposals functional score was then the VE proposal score minus the PD&E preferred alternative score. The higher the score the greater the perceived performance impact. Positive functional scores indicate that the VE team believes accepting the VE proposal will enhance overall project performance. Negative functional scores indicate that the VE team believes accepting the VE proposal will reduce project performance. The magnitude of the functional score indicates the relative impact the improvement or reduction will have on the PD&E preferred alternative.

		Evaluative Criteria	Minimize Driver Confusion	Relieve Congestion	Improve Safety	Maintain Regional Concept	Total Scores	Functional Improvement Score
			A	B	C	D		
			Wt. from criteria matrix	1	5	2		
CO-1	Target acquisition of former church property at 18500 NE 5th Ave for future use	3	3	4	3	29	2	
	The property remains private and could be redeveloped in the future	3	15	8	3			
RD-1	Optimize EL access around Miami Gardens Drive (3NA)	3	3	3	3	27	-3	
	Braided EL access ramps throughout corridor north of GGI	3	15	6	3			
RD-2	SB I-95 exit to MGD use continuous single lane to provide more space for NB offramp curve to MGD, eliminate signalized merge, and eliminate 2-lane bottleneck by providing 3 lanes expanding to 4 at MGD	2	5	2	3	34	7	
	Exit ramp uses signalized combination of NB and SB I-95 exits into two dedicated lines for EB and WB MGD	2	25	4	3			
RD-3	WB MGD to NB I-95 use corner cut to provide 30mph design curve to eliminate design exception and create consistent buffer zone along north side of MSE wall at ramp WB MGD to SB I-95	3	3	3	3	37	10	
	Design exception is needed for 25mph curve, currently avoiding R/W impacts	3	15	8	4			
		3	3	3	3	27		

Rating Key: Excellent – 5 Very Good – 4 Good – 3 Fair – 2 Poor – 1		Evaluative Criteria	Minimize Driver Confusion	Relieve Congestion	Improve Safety	Maintain Regional Concept	Total Scores	Functional Improvement Score
			A	B	C	D		
			1	5	2	1		
RD-4	Move SB I-95 exit taper just south of Snake Creek Canal (C-9), provide flyover lane in lieu of loop to gain elevation (with Idea #8 and/or Idea #17)	3	3	3	3		27	0
	Looped ramp is provided for SB I-95 exit at MGD	3	3	3	3			
		3	15	6	3		27	
RD-5	Keep EL exit braided ramps, provide EL entrances from mainline (eliminate entrance braided ramps)	4	2	2	3		21	-6
	Braded EL entrance and exit ramps	4	10	4	3			
		3	3	3	3		27	
		3	15	6	3		27	
ST-1	Lower Snake Creek Trail vertical profile crossing beneath I-95 to reduce roadway impacts	3	3	3	3		27	0
	I-95 profile is raised 8-10' to raise trail and provide 10' vertical clearance	3	3	3	3			
		3	15	6	3		27	
ST-2	Reconfigure NE 5th Ave beneath SB I-95 ramp to reduce SB I-95 bridge length crossing MGD	3	3	2	3		25	-2
	NE 5th Ave is routed beneath I-95 mainline bridge	3	3	3	3			
		3	15	6	3		27	

Rating Key: Excellent – 5 Very Good – 4 Good – 3 Fair – 2 Poor – 1	Evaluative Criteria	Minimize Driver Confusion	Relieve Congestion	Improve Safety	Maintain Regional Concept	Total Scores	Functional Improvement Score
		A	B	C	D		
		1	5	2	1		
TR-1 Add Pedestrian Signal Crossing at NE 9th Court on Miami Gardens Drive		4	3	4	2	29	2
		4	15	8	2		
EB MGD entrance ramps to I-95 has two unsignalized pedestrian crossings		3	3	3	3	27	
		3	15	6	3		
TR-2 Extend Miami Gardens Drive South Side Sidewalk East to NE 10th Avenue		4	3	4	2	29	2
		4	15	8	2		
EB MGD entrance ramps to I-95 has two unsignalized pedestrian crossings		3	3	3	3	27	
		3	15	6	3		

Appendix G Recommendations – Resolution/FHWA Chart

General

Following is the VE Recommendations – Resolution/FHWA Chart signed by the FDOT District Six Secretary

Recommendations – Resolution / FHWA Chart

Proposal No.	Abbreviated Description	Functional Score	Initial Cost Avoidance	“Accept”, “Reject”, or “Further Review Required”	Acceptance Comments	FHWA Categories				
						Safety	Env.	Ops.	Const.	Other
Construction										
CO-1	Target acquisition of former church property at 18500 NE 5th Ave	2	(\$13,246,000)	Accept	The PD&E team will reconfigure the MGD interchange; R/W acquisition at the former church property will be needed to accommodate the SB off-ramp	X	X	X	X	
Roadway										
RD-1	Optimize EL access NB and SB around Miami Gardens Drive	-3	\$39,606,000	NB – Partially Accept SB – Reject	The PD&E team will conduct a traffic analysis to evaluate feasibility of eliminating one of the two proposed NB braided ramps; but will not for the SB direction	X	X	X	X	X
RD-2	Adjust I-95 SB off-ramp lane and traffic control configuration and provide a 3-lane configuration at Miami Gardens Drive	7	Negligible	Partially Accept	The PD&E team will reconfigure the MGD interchange and modify NB and SB off-ramps at MGD; R/W acquisition will be needed to accommodate this proposal; but will not implement the 3-lane configuration	X		X		
RD-3	Obtain R/W at corner of WB Miami Gardens Drive on-ramp to NB/SB I-95	10	(\$192,000)	Accept	The PD&E team will design the WB MGD on-ramp to NB/SB I-95 to provide a 30mph design curve to eliminate a design exception; R/W acquisition will be needed to accommodate this proposal	X		X		
RD-4	Reconfigure I-95 SB exit to Miami Gardens Drive and move SB exit to be south of Snake Creek Canal	0	\$0 or (\$13,246,000)	Partially Accept	The PD&E team will reconfigure the MGD interchange to modify the SB off-ramp; but will not move exit south of canal	X		X		
RD-5	Reconfigure express lane access to use at-grade entrances and braided exits	-6	\$18,989,000	Reject	The PD&E team will not implement this proposal as the traffic LOS fails with having at-grade express lane entrances		X		X	
Structural										
ST-1	Lower Snake Creek Trail vertical profile crossing beneath I-95 to reduce roadway impacts	0	\$2,221,000	Reject	The PD&E team will not implement this proposal as the profile of I-95 is influenced by other geometric criteria and constraints; lowering the profile of the trail did not reduce impacts	X			X	
ST-2	Reconfigure NE 5th Ave beneath SB I-95 ramp to reduce SB I-95 bridge length crossing Miami Gardens Drive	-2	\$7,226,000	Reject	The PD&E team will not implement this proposal as it would result in R/W and access impacts to private property				X	
Traffic										
TR-1	Add signalized pedestrian crossing at NE 9th Court on Miami Gardens Drive	2	(\$131,000)	Reject	The PD&E team will not implement this proposal as a midblock signal is already being proposed west of NE 9th Court closer to Milton Littman Park	X				
TR-2	Extend Miami Gardens Drive south side sidewalk east to NE 10th Avenue and eliminate sidewalk on the north side between NE 2nd Court and NW 9th Court	2	\$11,000	Partially Accept	The PD&E team will extend the south MGD sidewalk to NE 10th Avenue; but will not eliminate the north MGD sidewalk between NE 2nd Court and NW 9th Court.	X				

DocuSigned by:

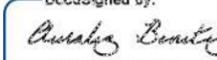
 9A89F25A78144F3...
 Signature – FDOT District Six Secretary

Stacy Miller

06/21/2024 | 11:38 AM EDT

Name

Date

DocuSigned by:

 AC1428330D49439...
 Signature – FDOT Project Manager

Auraliz Benitez

06/21/2024 | 11:36 AM EDT

Name

Date

