

Integrated Cost and Schedule Risk Assessment

Final Report



Official Project Title: SR 9/I-95 from South of Miami Gardens Drive to Broward County Line
FM No.: 414964-1

Project Location: SR 9/I-95 from South of Miami Gardens Drive to Broward County Line
Miami Dade County, Florida

Project Status: Project Development and Environment Study

FDOT Lead: Auraliz Benitez, P.E., FDOT District 6
Risk Leads: Richard Johnson, P.E., CVS-Life, PMA Consultants
Francisco Cruz, P.E., CCP, RMP, PMA Consultants

RISK WORKSHOP: October 25 and 26, 2023

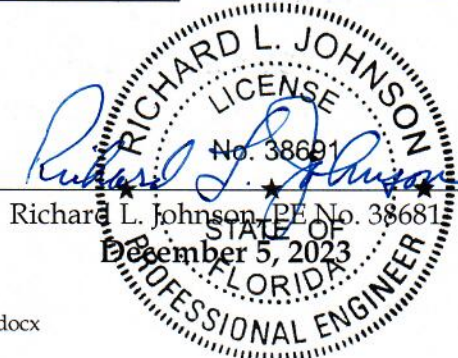


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Executive Summary

PMA Consultants LLC (PMA) was retained by Florida Department of Transportation (FDOT) to conduct an Integrated Cost and Schedule Risk Assessment (CSRA) and facilitate a Risk Analysis Workshop for the SR 9/I-95 from South of Miami Gardens Drive to Broward County Line (I-95 S MGD to BCL) Project. The CSRA study is intended to identify, qualify, and quantify project uncertainty, risks, and develop a draft mitigation plan for identified project risks. This was the first CSRA performed on the I-95 S MGD to BCL Project.

The I-95 S MGD to BCL project is located in North Miami Beach and unincorporated Miami-Dade County, Florida, and it is currently being evaluated during the Project Development and Environment (PD&E) Study phase. The project addresses the deficient operational capacity and relieves existing and future congestion along the I-95/SR 9 corridor. Other goals of the I-95 S MGD to BCL project are to:

- Preserve the operational integrity and regional functionality of I-95/SR 9 (therefore, the regional transportation network) by complementing similar corridor improvements throughout Miami-Dade, Broward, and Palm Beach Counties
- Enhance emergency evacuation and response times. Overall, the project will offer enhanced mobility options for motorists and transit users as it will provide additional capacity along the I-95/SR 9 corridor throughout northern Miami-Dade County.

Proposed improvements for the corridor include minimum 11-foot-wide travel lanes, 10-foot wide express lane inside shoulders, and 4-foot wide buffers with express lane markers between the express lanes and general purpose lanes; 12-foot lanes are generally provided in segments that include more extensive reconstruction/widening, and 11-foot lanes will be utilized in areas where modifications are less extensive or needed to match the existing right of way, programmed or planned improvements. It will significantly improve the level of service of the two arterials along the project corridor: SR 860 Miami Gardens Drive (i.e., Exit 14) and CR 854 Ives Dairy Road (i.e., Exit 16).

PMA conducts Cost and Schedule Risk Assessment (CRA/SRA) in accordance with Federal Highway Administration (FHWA) Major Project Program Cost Estimating Guidance, FHWA's Consultant-Led Cost Estimate Reviews Guidance, FHWA's Probabilistic Risk-Based Estimating (PRBE), AACE International's Total Cost Management framework, and FDOT's Project Management Handbook. Over the two days of workshop, the project team created and updated the risk register, and identified, qualified and quantified project risks as shown in the risk register included in Appendix A.

The objectives of this assessment were to:

- Confirm validity of the current project cost estimates and Critical Path Method (CPM) schedules
- Assess the effectiveness of the implemented and potential mitigation actions
- Understand variability of the current project cost estimates (e.g., costs are presented in escalated year-of-expenditure (YOE) dollars) and CPM schedules; and
- Define options for the project team to minimize the current and potential underlying risks to the project.

The information provided in this report is based on the updated and validated cost and schedule models, and the qualitative and quantitative sessions performed during the in-person workshop that was held under the guidance of FHWA and FDOT.

Integrated Cost and Schedule Risk Assessment

The integrated Cost and Schedule Risk Assessment effort consisted of reviewing the project documentation, the FDOT System Long Range Estimate (LRE), the CPM schedule, and the newly developed risk register. A risk identification exercise was performed to isolate new opportunities and threats, perform cost, duration and risk ranging sessions among key project participants, and identify potential mitigation strategies. It also covered the validation of the LREs and CPM schedules, preparation of the integrated Cost and Schedule Risk Assessment model, completion of the public private partnership assessment checklist, and the development and simulation of a pre-treatment scenario. This report documents the overall effort.

Cost Risk Results

The cost risk results for the I-95 S MGD to BCL project, which include the impact on escalated risk-adjusted cost, budget uncertainty and schedule risk, indicate with a 70 percent probability that the project will cost \$1.654 billion or less, based on a *pre-treatment scenario and including cost to date*. The 70th percentile yielded the need for a contingency reserve cost of approximately \$440.65 million or 26.70 percent to account for base cost variation and risk mitigation, and market conditions/escalation-related funds of approximately \$342.43 million. The total suggested contingency reserve is about \$783.08 million or 47.44 percent of the base cost estimate.

Table 1 identifies the cost items at 10th, 50th, 70th and 90th percentiles for the cost categories identified during the risk workshop. These are escalated costs and are the result of impacts related to risk drivers, budget uncertainty, schedule risk for time-dependent cost, and escalation. It shows the 10th, 50th, 70th and 90th percentile figures *including prior cost per cost category*.

Table 1 – Summary Results of Risk-Adjusted Cost Categories (Pre-Treatment)

Cost Category	Actual Cost	Base Estimate (Remaining Cost)		Risk-Adjusted YOE Cost (Escalated) Based on a Pre-Treatment Analysis (including Cost to Date)			
		(Non Escalated)	Base Estimate (Escalated)	10th Percentile	50th Percentile	70th Percentile	90th Percentile
I-95 S Miami Gardens Drive to Broward County Line							
PD&E	\$3,005,085	\$6,885,382	\$6,885,382	\$6,885,382	\$6,885,382	\$12,398,198	\$12,398,198
Design Support/Preliminary Engineering	\$2,041	\$20,127,959	\$20,421,583	\$20,421,583	\$20,421,583	\$20,421,583	\$20,421,583
Post-Design PE	\$0	\$1,830,000	\$1,951,120	\$2,326,960	\$2,614,661	\$2,666,589	\$2,726,431
Construction Contract	\$0	\$714,558,189	\$1,013,785,048	\$1,213,001,803	\$1,365,500,411	\$1,393,024,840	\$1,424,745,002
Toll Collection Equipment	\$0	\$5,075,000	\$7,200,196	\$8,587,153	\$9,648,855	\$9,840,482	\$10,061,319
Construction Engineering Inspection	\$0	\$60,000,000	\$85,125,472	\$101,522,988	\$114,075,137	\$116,340,671	\$118,951,555
Utility Costs	\$0	\$30,000,000	\$42,562,736	\$50,761,494	\$57,037,569	\$58,170,336	\$59,475,778
Railroad Costs	\$0	\$3,000,000	\$4,256,274	\$5,076,149	\$5,703,757	\$5,817,034	\$5,947,578
Right of Way Costs (total)	\$0	\$25,916,600	\$27,631,910	\$32,954,579	\$37,029,034	\$37,764,431	\$38,611,929
Environmental Mitigation (total)	\$0	\$50,000	\$50,729	\$60,501	\$67,982	\$69,332	\$70,888
Project Total	\$3,007,126	\$867,443,130	\$1,209,870,451	\$1,442,924,907	\$1,621,325,967	\$1,653,525,522	\$1,690,633,471

Note: The sum of the individual percentiles will not be sum of the total. Cost simulation results are shown escalated, in year-of-expenditure (YOE) dollars. Non-Escalated Base Estimate does not include the initial contingency line item as presented in the LRE.

The overall project cost accounts for Plan Development & Environment (PD&E), design support during and after Preliminary Engineering (PE), Post-Design PE, Construction, Toll Collection Equipment, Construction Engineering and Inspection (CEI), Utility, Right of Way, Railroad, and Environmental

Mitigation costs. The overall risk-adjusted project includes the LRE, base cost uncertainty, cost escalation, and risk events related to cost and schedule.

PMA also produced the cost risk analysis by segment as shown in **Table 2**, which presents cost items at 10th, 50th, 70th and 90th percentiles. It shows the 10th, 50th, 70th and 90th percentile figures *including prior cost*.

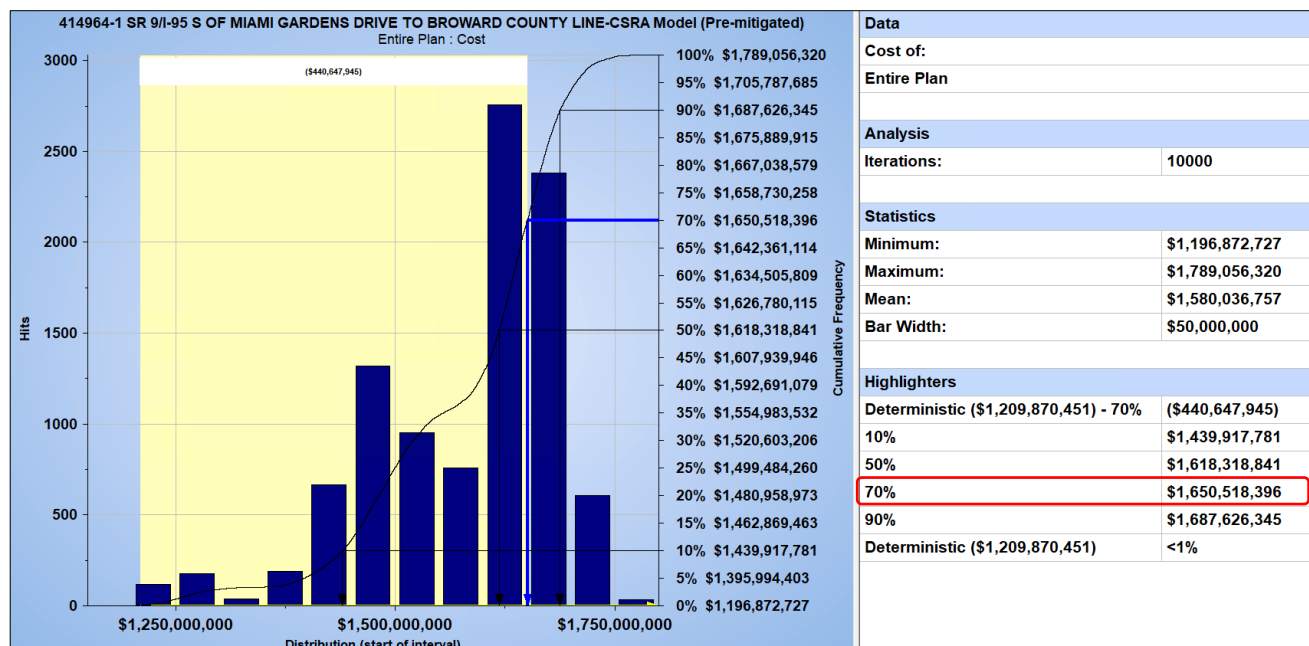
Table 2 – Summary Results of Risk-Adjusted Cost (Pre-treatment)

Description	Cost to Date	Base Estimate Remaining Cost (Escalated)	Risk-Adjusted YOE Cost (Escalated)			
			Based on a Pre-Treatment Analysis & Including Cost to Date			
			P10	P50	P70	P90
FPID No. 414964-1 (SR 9/I-95 from South of Miami Gardens Drive to Broward County Line)	\$3,007,126	\$1,209,870,451	\$1,442,924,907	\$1,621,325,967	\$1,653,525,522	\$1,690,633,471
I-95 S Miami Gardens Drive to Broward County Line	\$3,007,126	\$1,209,870,451	\$1,442,924,907	\$1,621,325,967	\$1,653,525,522	\$1,690,633,471

Note: The sum of the individual percentiles will not be sum of the total. Cost simulation results are shown escalated, in year-of-expenditure (YOE) dollars. Non-Escalated Base Estimate does not include the initial contingency line item as presented in the LREs.

Figure 1 depicts the escalated risk-adjusted cost estimate of the overall project in Year of Expenditure (YOE) dollars. The escalated base cost of the overall project is \$1.651 billion (excluding cost-to-date of \$3,007,126) that has approximately 1% chance of being achieved. Results at the 10th, 50th, 70th and 90th percentiles are shown along with the deterministic cost. The curve represents the cumulative probability distribution for the overall program cost. The yellow shaded area represents the suggested overall program contingency related to base cost variation and risk impacts; it is measured from the deterministic cost (i.e., 1st percentile) to the 70th percentile).

Figure 1 – Distribution of Escalated Risk-adjusted Cost – Overall Project (Pre-Treatment)

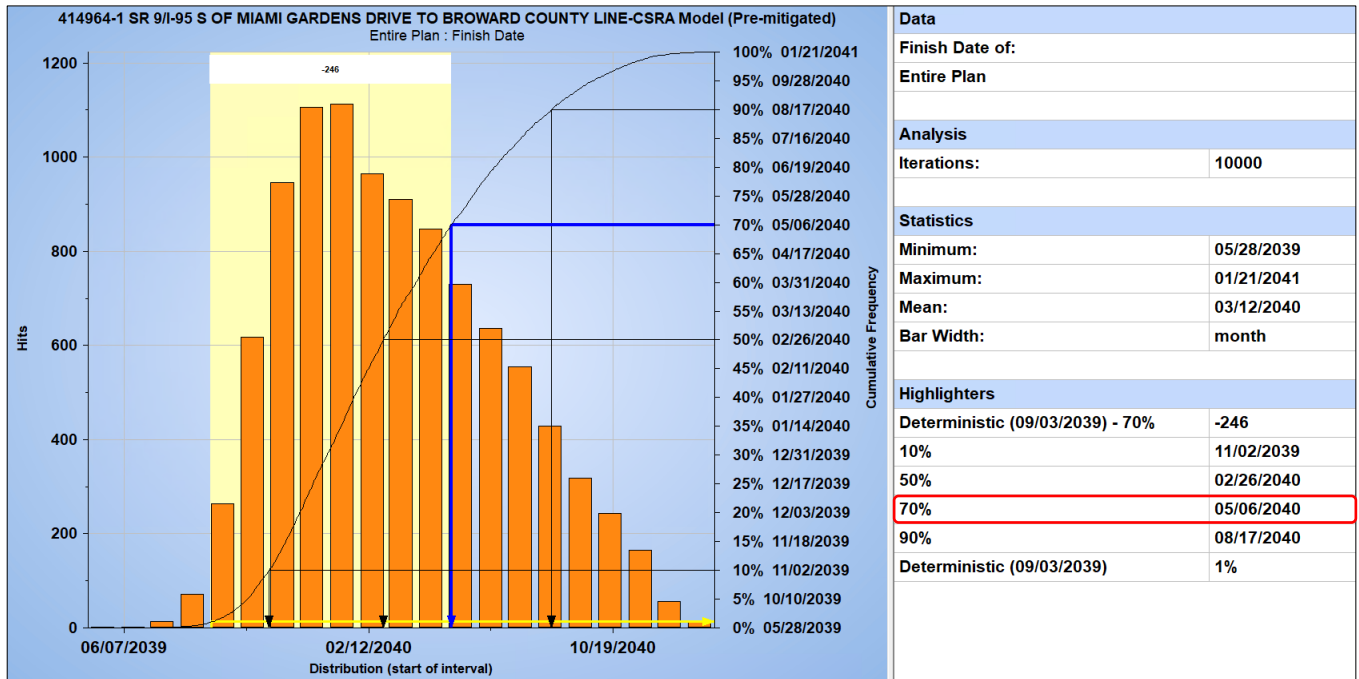


Note: The 70th percentile highlighted does not include cost to date (i.e., \$3,007,126).

Schedule Risk Results

The schedule risk analysis determined that there is 70 percent confidence that the overall program will be completed by May 6, 2040, based on a *pre-treatment scenario*, and about 1% chance of finishing the project by its current deterministic date (i.e., September 3, 2039). Therefore, PMA recommends that the Project Team use an overall contingency of 246 calendar days as depicted in **Figure 2**.

Figure 2 – Distribution of Risk-adjusted Schedule – Overall Project (Pre-Treatment)



Mitigation Planning

PMA recommends that the risk register created and updated during the workshop be maintained quarterly by the project management team (PMT) throughout the project duration to ensure adequate and satisfactory management of the project risks, budget, and schedule.

Table 3 shows the breakdown of the potential costs related to risk impacts, uncertainties, and escalation when compared with the base cost estimate. It was agreed during the workshop that the project management team would assess the results of this CSRA to identify and update mitigation actions for the top prime risks; the goal is to ensure that project cost and schedule overruns are minimized, and opportunities are maximized.

Table 3 – Breakdown of Cost Impacts from Sensitivity Analysis

Risk Description	Potential Cost Impacts
Cost Impact due to Cost Uncertainty	\$ 33,699,968
Cost Impact due to Risk Events	\$ 406,947,977
Cost Impact due to Market Conditions	\$ 342,427,321
Total Contingency Allocation	\$ 783,075,266

Based on the Cost and Schedule Risk Assessment presented in this report, PMA recommends:

1. PMA recommends that the project team adopt a programmatic risk management approach.

Given the significant capital investment and contracting strategies, FDOT D6 should implement risk management at the project level. Given that the project may potentially be broken down into separate projects to increase the pool of potential bidders, they should have an integrated risk management program enabling the project team to focus on managing design, permitting, and construction, and close out risks unique to each project. Additionally, the project team should monitor and mitigate risks including cumulative impact of risks, funding alternatives, escalation, external risks that could impact individual projects.

2. The project team should consider mitigation strategies during design to minimize impacts related to District 4 project's ROW and access issues.
3. The project team should consider reviewing the design and constructability of the more than 20 bridges and noise walls to minimize potential cost and schedule impacts.

1. Background

FDOT retained PMA to conduct an Integrated Cost and Schedule Risk Assessment and facilitate a Risk Analysis Workshop for the SR 9/I-95 from South of Miami Gardens Drive to Broward County Line (I-95 S MGD to BCL) Project. The CSRA study is intended to identify, qualify, and quantify project uncertainty, risks, and develop a draft mitigation plan for identified project risks. This was the first CSRA performed on the I-95 S MGD to BCL Project.

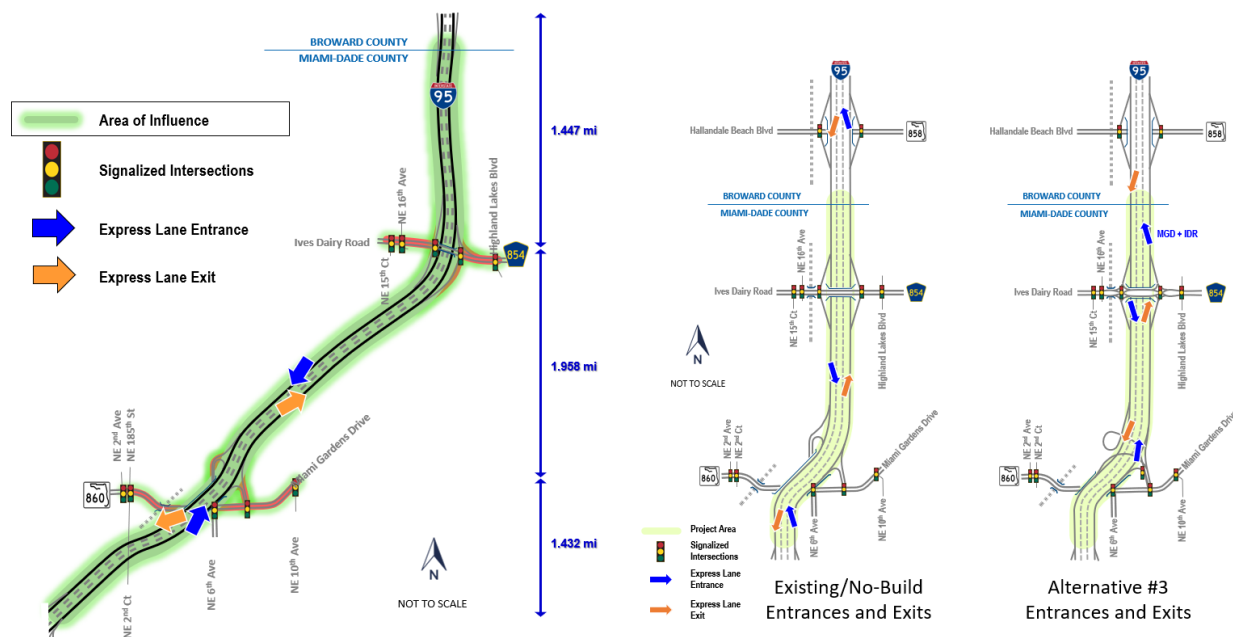
1.1. Project Overview

The I-95 S MGD to BCL project is located in North Miami Beach and unincorporated Miami-Dade County, Florida, and it is currently being evaluated during the PD&E Study phase. The project addresses the deficient operational capacity and relieves existing and future congestion along the I-95/SR 9 corridor. Other goals of the I-95 S MGD to BCL project are to:

- Preserve the operational integrity and regional functionality of I-95/SR 9 (therefore, the regional transportation network) by complementing similar corridor improvements throughout Miami-Dade, Broward, and Palm Beach Counties
- Enhance emergency evacuation and response times. Overall, the project will offer enhanced mobility options for motorists and transit users as it will provide additional capacity along the I-95/SR 9 corridor throughout northern Miami-Dade County.

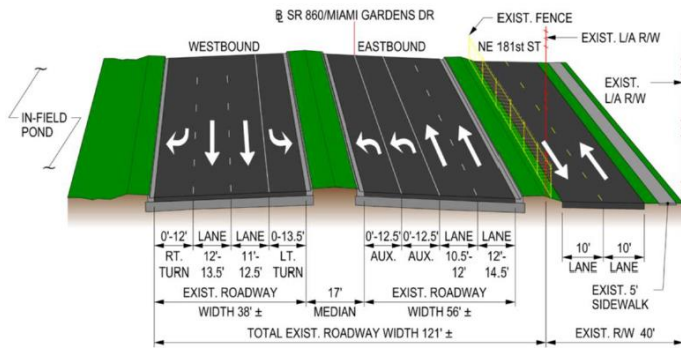
Figure 3 shows that the proposed improvements for the corridor, which are based on Alternative #3, and include minimum 11-foot-wide travel lanes, 10-foot-wide express lane inside shoulders, and 4-foot-wide buffers with express lane markers between the express lanes and general-purpose lanes. The I-95 S MGD to BCL project includes two interchanges at I-95 and Miami Gardens Drive, and I-95 and Ives Dairy Road. 12-foot lanes are generally provided in segments that include more extensive reconstruction/widening, and 11-foot lanes will be utilized in areas where modifications are less extensive or needed to match the existing, programmed, or planned improvements.

Figure 3 Project Location Map and Interchanges, I-95 S MGD to BCL

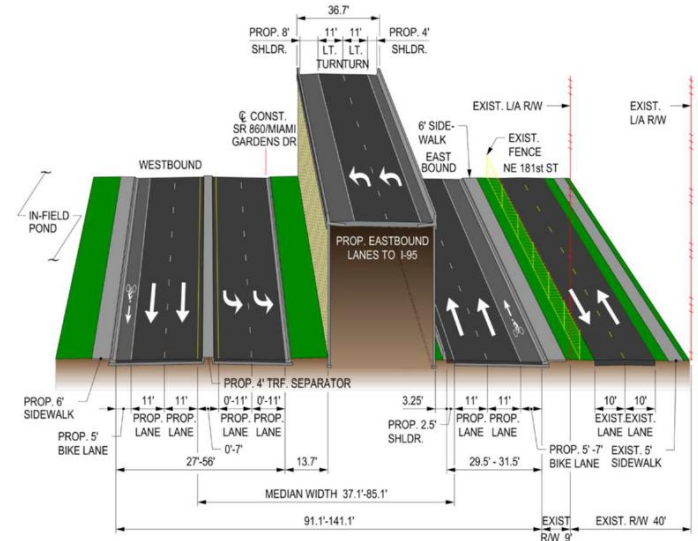


Miami Gardens Drive Interchange

EXISTING:

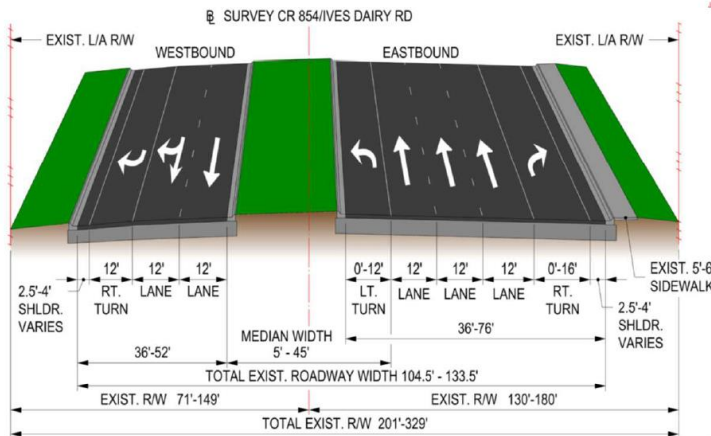


PROPOSED: Alternative #3 Grade-Separated

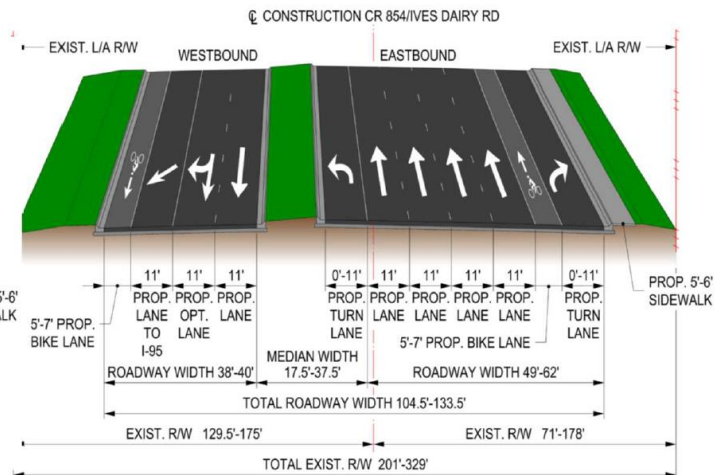


Ives Dairy Road Interchange

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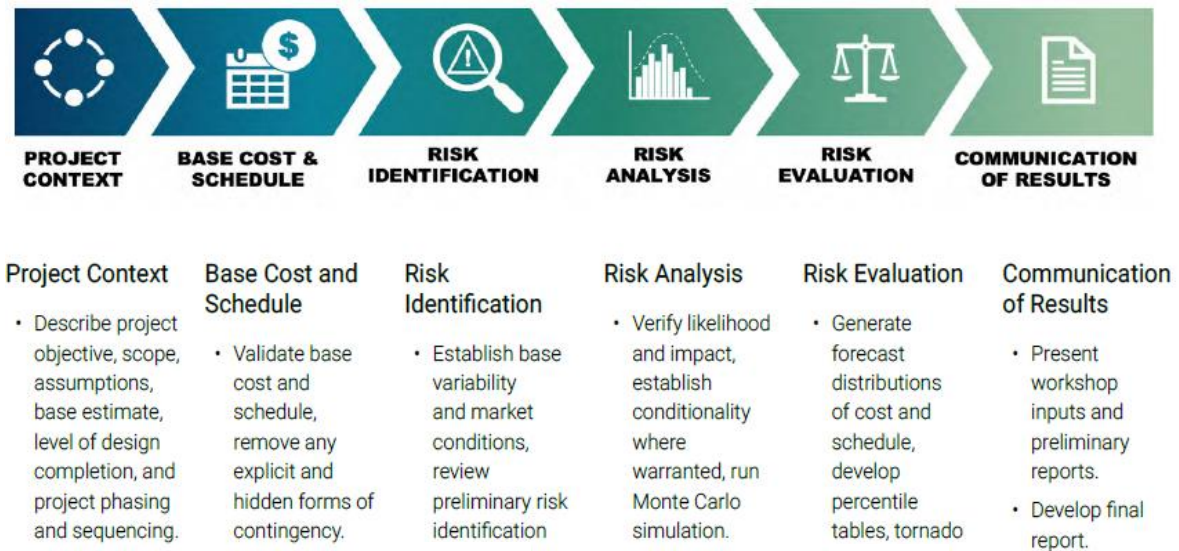
PROPOSED: Alternative #3 DDI



1.2 Risk Analysis Process Overview

PMA was retained by FDOT to conduct an Integrated Cost and Schedule Risk Assessment and facilitate a risk analysis workshop for the I-95 S MGD to BCL Project. The study is intended to identify, qualify, and quantify project uncertainty and risks, and develop a draft mitigation plan for identified project risks. PMA conducts Cost and Schedule Risk Assessment (CSRA) in accordance with Federal Highway Administration (FHWA) Major Project Program Cost Estimating Guidance, FHWA's Consultant-Led Cost Estimate Reviews Guidance, National Highway Institute (NHI)'s Probabilistic Risk-Based Estimating (PRBE) methodology, AACE International's Total Cost Management framework, and FDOT's Project Management Handbook. The risk workshop was organized as outlined in the NHI stages as noted in Figure 4:

Figure 4 – NHI’s Probabilistic Risk-Based Estimating Process



This report describes the process and results of the integrated Cost and Schedule Risk Assessment for the I-95 S MGD to BCL Project.

- **Section 2:** Discusses the Risk Identification and Quantification
- **Section 3:** Presents the results of the risk assessment
- **Section 4:** Presents an evaluation of the project contingencies in light of the risk analysis
- **Section 5:** Examines Risks Mitigation Planning

2. Risk Identification and Qualification

2.1. Identification

The I-95 S MGD to BCL Project team, design consultants, and subject matter experts (SMEs) convened for a facilitated two-day risk workshop on October 25 and 26, 2023. See Appendix B for attendees list. During the workshop, every identified risk was reviewed and updated. At the end of the workshop, the project team identified 21 new risks, of which 10 risks were placed on the watch list. 10 risks were closed. The team identified 11 risks as critical risks and recommended their inclusion in the quantitative risk analysis. These risks were documented and evaluated for probability and impact. (*Usage of the term “risk” includes both threats and opportunities. “Threats” have a negative impact on the project while “opportunities” have a positive outcome.*)

The threats were grouped into the following categories identified by the workshop team:

- Construction (3)¹
- Design/Criteria (1)
- Design /Plans, Specifications and Estimates (PS&E) (3)
- Partnerships and Stakeholders (2)
- PD&E/Tolling (1)
- Procurement (1)
- Public Involvement (1)
- Right of Way (4)
- Schedule/Construction/Tolling (1)
- Stormwater and Drainage (2)

¹ Numbers in parentheses indicate the number of items in each category.

- Tolling (1)

The Opportunity belonged to the following category identified by the workshop team:

- Construction (1)

2.2. Qualification

During the second session of the workshop, risks were further ranked based on the probability of occurrence and magnitude of impact; the following scoring scales were developed with the project team:

2.2.1. Probability and Impact (Pxl) Scales

The probability and impact scales were developed in collaboration with the risk workshop attendees; they were tailored for this project and helped with the qualification of the potential threats and opportunities based in their potential impacts on the cost and schedule objectives. See Figure 5. The Pxl scales identify the range values of the probability and impacts, and they were used to qualify both threats and opportunities.

Figure 5: Probability and Impact Scales

Defined Conditions for Probability Scales of a Risk					
	Very Low	Low	Medium	High	Very High
Probability	0 - 0.10	0.11 - 0.30	0.31 - 0.50	0.51 - 0.89	>0.90

Defined Conditions for Impact Scales of a Risk on Major Project Objectives					
Project Objective	Very Low	Low	Medium	High	Very High
Cost	< \$1M	\$ (1M - 4M) Cost Increase	\$ (5M - 9M) Cost Increase	\$ (10M - 15M) Cost Increase	> \$15M Cost Increase
Schedule	< 1 Month Time Increase	(1 - 2) Month Time Increase	(3 - 4) Month Time Increase	(5 - 6) Month Time Increase	> 6 Months Time Increase

The Probability and Impact Matrix shown below represents the basis for the scoring scale used on the project risks, and the Risk Rating Value Threshold was developed to identify what risks were deemed as Low, Medium or High on the objectives of cost and schedule; these objectives were assessed separately to identify their individual ratings. Please refer to **Figure 6**.

Figure 6 – Probability and Impact Matrix and Risk Rating Value

Probability	VH	0.9	1.8	2.7	3.6	4.5
	H	0.7	1.4	2.1	2.8	3.5
	M	0.5	1	1.5	2	2.5
	L	0.3	0.6	0.9	1.2	1.5
	VL	0.1	0.2	0.3	0.4	0.5
		VL	L	M	H	VH
Impact						

Risk Rating Value		
<1	Green	Low Risk
1-1.99	Yellow	Medium Risk
≥2.0	Red	High Risk

Risks that scored 1 and higher were analyzed during the quantitative risk analysis and mitigation planning. Risks that scored less than 1 were placed in the Watch List, which means that no mitigation or contingency will be allocated for them, but they should be constantly monitored to evaluate their trends. Of the 21 risks in the Risk Register, only 11 were assessed in the quantitative risk analysis; the details are presented in **Section 3.1.5**. Please refer to Appendix A - Risk Register to see the list of risks with their respective ratings.

3. Quantitative Analysis

3.1. Cost and Schedule Risk Models

The platform for the integrated Cost and Schedule Risk Assessment is a resource and cost-loaded schedule, which means that resources are assigned to activities and costs are allocated to those resources. To this end, a schedule model was created from the detailed schedules provided by FDOT D6. The base cost estimate is a basic input, and it was obtained for the I-95 S MGD to BCL Project. The cost and schedule risk models were used to assess the potential impact on the overall project.

3.1.1. Base Cost Estimate

The risk cost model is based on the project base cost estimate of the I-95 S MGD to BCL project as provided by the project team during a base cost review session held on October 12, 2023; the project base cost estimate was later validated and updated on *November 1, 2023*. The total base cost estimate in 2023 dollars for the I-95 S MGD to BCL project was **\$870,450,256** which included engineering, construction, toll collection equipment, right of way (ROW), utility, environmental, and Construction, Engineering and Inspection costs. The cost to date for the project is \$3,007,126. The base estimate excludes all contingency typically allocated within the construction discipline.

The first base cost review and validation meeting was held on October 12, 2023, to discuss and assess the cost line items in the base cost estimate, identify items with higher sensitivity to variations, and determine if all scope of work was captured in the cost estimate. It was reviewed by PMA's risk analysts and FDOT D6 project team leads, and the quantities appear to be consistent with the project scope; the pricing was within range of the low and high construction unit rates historic records by FDOT D6. Subsequent cost validation exercises refined the base cost estimate; PMA used the November 1, 2023, validated base estimate as the basis of this CSRA.

Based on the remaining costs of the LRE and project disciplines, the initial total base cost estimate of **\$867,443,130**, without any project contingency, was used as the basis of the cost risk model as shown in **Table 4**. The project base cost estimate did not include escalation costs. See Appendix C.

3.1.2. Base Cost Estimate Uncertainty

The detailed base cost estimate for the I-95 S MGD to BCL Project was ranged based on the historic records of the unit prices for projects performed by FDOT D6 in Miami-Dade County, and Statewide. For each project component, the project management team assessed three values for each cost line item of the base cost estimate. These were identified as:

Low: Lowest possible unit price for the line item based on unit prices data bases

Base: Most likely estimated unit prices

High: Highest possible rates for the line item based on the unit prices data base

The ranges represent uncertainty in estimating of cost due to the Project's current stage, design complexity, capable management, uncertainty in raw material prices, and in labor productivity. During the workshop, the team evaluated the ranges and accepted or modified them. These ranges are used as inputs for the integrated Cost and Schedule Risk Assessment model. The following table represents the final ranging that was used for the cost risk model:

**Table 4 – Remaining Base Cost Estimate (Non-Escalated) and Cost Uncertainty Ranges
For the Project and its Components**

Cost Categories	Cost to Date	Remaining Base Cost Estimate (Non-Escalated)		
		Low	Base	High
I-95 S Miami Gardens Drive to Broward County Line				
PD&E	\$3,005,085	\$6,885,382	\$6,885,382	\$6,885,382
Design Support/Preliminary Engineering	\$2,041	\$20,127,959	\$20,127,959	\$22,127,959
Post-Design PE	\$0	\$1,830,000	\$1,830,000	\$1,830,000
Construction Contract	\$0	\$703,166,263	\$714,558,189	\$819,636,093
Toll Collection Equipment	\$0	\$5,075,000	\$5,075,000	\$5,075,000
Construction Engineering Inspection	\$0	\$60,000,000	\$60,000,000	\$60,000,000
Utility Costs	\$0	\$15,000,000	\$30,000,000	\$40,000,000
Railroad Costs	\$0	\$2,500,000	\$3,000,000	\$3,500,000
Right of Way Costs (total)	\$0	\$25,916,600	\$25,916,600	\$25,916,600
Environmental Mitigation (total)	\$0	\$50,000	\$50,000	\$50,000
Project Total Cost	\$3,007,126	\$840,551,204	\$867,443,130	\$985,021,034

Note: Figures represent remaining cost values and do not include the initial contingency line item as presented in the LREs. The Base Cost figures are based on the remaining cost and 2023 dollars.

3.1.3. Base Schedule

The base schedules utilized for this report were developed by the FDOT D6. The detailed schedules captured all major work within the project. PMA created construction activities and their relationships to drive the milestones with the goal to have a schedule that was driven by logic as opposed to constraints. PMA used one integrated master schedule capturing all project phases of the project, with the goal that a single contractor will build the project.

The CPM-based schedule contains 134 activities that include normal tasks, milestones and level-of-effort (LOE) activities; its status date was set to be October 1, 2023, and it shows an overall project completion date of September 3, 2039.

The integrated program schedule was used as the starting point for the development of the schedule risk analysis model. PMA developed a risk model schedule capturing all project scope to assist performing quantitative schedule risk analysis. The model represents the longest path of activities needed to complete the Project and analyzes the impact of risks on the schedule based on the probabilities and impacts identified during the risk workshop. The risk model deterministic completion date was set to be September 3, 2039.

A CPM schedule model was developed using Oracle's Primavera Risk Analysis (OPRA) software, a Monte Carlo-based analysis tool, which includes duration; Appendix F shows the Schedule Risk Model with activities and their sequence; please note that OPRA shows regular activities in blue, finish milestones and

critical activities in red, and constraints in green. The outcome of this risk analysis is a P70 completion date, which gives a 70 percent confidence that the project will be completed by that date or sooner.

3.1.4. Schedule Uncertainty (Duration Ranging)

The activity durations in the I-95 S MGD to BCL Project were assessed three values for each activity duration as agreed upon at the Risk Workshop. These were identified as:

Low: 92 percent of the base activity duration

Base: Most likely duration, which is typically the base activity duration

High: 110 percent of the base activity duration

3.1.5. Risk Event Impacts

An important step in the risk analysis process is to assess the impact of the risk events identified during the qualitative sessions of the workshop. Risk events were assigned to activities in the integrated risk model to simulate their impact in terms of cost (i.e., using resources) and in terms of schedule. PMA collected pre-treatment impact ranges from the risk workshop attendees for the 11 risks that were rated as *medium* and *high* during the qualitative risk analysis. Cost and schedule rating values shown as green were not ranged, and the Project Management Team was advised to place them in the Watch List. **Appendix A** shows the risk ranging values for the 11 risks used for the Quantitative Risk Analysis. PMA simulated the more realistic model, which reproduces the possibility of both threats and opportunities impacting the overall program.

3.1.6. Modeling Assumptions

The following assumptions were used while developing the integrated cost and schedule risk model.

- Funding will be available to support the current project execution plan.
- Resources required to support the project will be always on hand to complete the work.
- The durations provided by the Project Management Team are assumed to be realistic to achieve project objectives.
- The Contractor will adhere to all Contract Requirements (e.g., shift limitations, lane closures, operational requirements, etc.). This document also assumes that all requirements discussed during the risk workshop will be incorporated into the Bid Documents.
- Cost escalation forecasts were developed for the duration of the overall project to escalate the project cost estimates from 2023 dollars to YOE dollars, which were assumed to be until mid-point of construction.

PMA typically uses historical price movements for each cost component to determine the escalation rates; the sources of these historical process were the Engineering News Record's (ENR's) - Construction Cost Index, FDOT Office of Policy Planning - Inflation Factors, U.S. Bureau of Labor Statistics (BLS) - Product Price Index, and Moody's/REAL - Commercial Property Price Index. For this CSRA, PMA used the FDOT escalation rates as shown in Appendix D.

3.1.7. Modeling Exclusions/Limitations

The following items were excluded from this risk analysis but could potentially be addressed at a later date.

- Inefficiencies due to severe weather were not included in the durations since they will be granted to the Contractor as they occur
- Force majeure
- Scope changes

The project team employed the Public-Private Partnership Screen Checklist to evaluate the feasibility of a public-private partnership (P3) approach. This Excel-based tool, with 17 qualitative criteria across seven categories, guided the assessment through a series of "Yes/No/Other" responses and detailed comments, focusing on aspects such as legal authority, public support, financial capacity, and risk allocation. This allowed us to add detailed comments to explain our responses or to describe planned mitigations for any concerns raised by the questions. The checklist did not have an underlying algorithm to calculate a conclusive answer; instead, it required us to assess the relevance and priority of each criterion for our specific project context.

After thoroughly addressing each criterion, the project team evaluated the responses collectively to determine whether a more comprehensive evaluation of P3 delivery options was warranted for the project. The tool included a section for a qualitative summary analysis of the evaluation, helping the project team to draw a non-binding conclusion that at this time a P3 delivery may not be appropriate for the project. See Appendix E.

3.2. Results

A simulation of 10,000 iterations was performed on the integrated risk model using the Monte Carlo sampling method to generate randomized calculations of the project cost and schedule. Cost results are shown in escalated, YOE dollars. This section details the results of the simulation based on a Pre-Treatment analysis.

3.2.1. Pre-Treatment Analysis Results

3.2.1.1. Cost Risk Results

The cost risk results for the I-95 S MGD to BCL project, which include the impact on escalated risk-adjusted cost, budget uncertainty and schedule risk, indicate with a 70 percent probability that the project will cost \$1.654 billion or less, based on a *pre-treatment scenario and including cost to date*. The 70th percentile yielded the need for a contingency reserve cost of approximately \$440.65 million or 26.70 percent to account for base cost variation and risk mitigation, and market conditions/escalation-related funds of approximately \$342.43 million. The total suggested contingency reserve is about \$783.08 million or 47.44 percent of the base cost estimate.

The overall project cost accounts for PD&E, design support during and after Preliminary Engineering (PE), Post-Design PE, Construction, Toll Collection Equipment, Construction Engineering and Inspection, Utility, Right of Way, and Environmental Mitigation costs. The overall risk-adjusted project includes the LRE, base cost uncertainty, cost escalation, and risk events related to cost and schedule. Table 5 identifies the cost items at 10th, 50th, 70th and 90th percentiles for the cost categories identified during the risk workshop. These are escalated costs and are the result of impacts related to risk drivers, budget

uncertainty, schedule risk for time-dependent cost, and escalation. It shows the 10th, 50th, 70th and 90th percentile figures *including prior cost* per cost category.

Table 5 – Summary Results of Risk-Adjusted Cost Categories (Pre-Treatment)

Cost Category	Actual Cost	Base Estimate (Remaining Cost)		Risk-Adjusted YOE Cost (Escalated) Based on a Pre-Treatment Analysis (including Cost to Date)			
		(Non Escalated)	Base Estimate (Escalated)	10th Percentile	50th Percentile	70th Percentile	90th Percentile
I-95 S Miami Gardens Drive to Broward County Line							
PD&E	\$3,005,085	\$6,885,382	\$6,885,382	\$6,885,382	\$6,885,382	\$12,398,198	\$12,398,198
Design Support/Preliminary Engineering	\$2,041	\$20,127,959	\$20,421,583	\$20,421,583	\$20,421,583	\$20,421,583	\$20,421,583
Post-Design PE	\$0	\$1,830,000	\$1,951,120	\$2,326,960	\$2,614,661	\$2,666,589	\$2,726,431
Construction Contract	\$0	\$714,558,189	\$1,013,785,048	\$1,213,001,803	\$1,365,500,411	\$1,393,024,840	\$1,424,745,002
Toll Collection Equipment	\$0	\$5,075,000	\$7,200,196	\$8,587,153	\$9,648,855	\$9,840,482	\$10,061,319
Construction Engineering Inspection	\$0	\$60,000,000	\$85,125,472	\$101,522,988	\$114,075,137	\$116,340,671	\$118,951,555
Utility Costs	\$0	\$30,000,000	\$42,562,736	\$50,761,494	\$57,037,569	\$58,170,336	\$59,475,778
Railroad Costs	\$0	\$3,000,000	\$4,256,274	\$5,076,149	\$5,703,757	\$5,817,034	\$5,947,578
Right of Way Costs (total)	\$0	\$25,916,600	\$27,631,910	\$32,954,579	\$37,029,034	\$37,764,431	\$38,611,929
Environmental Mitigation (total)	\$0	\$50,000	\$50,729	\$60,501	\$67,982	\$69,332	\$70,888
Project Total	\$3,007,126	\$867,443,130	\$1,209,870,451	\$1,442,924,907	\$1,621,325,967	\$1,653,525,522	\$1,690,633,471

Note: The sum of the individual percentiles will not be sum of the total. Cost simulation results are shown escalated, in year-of-expenditure (YOE) dollars. Non-Escalated Base Estimate does not include the initial contingency line item as presented in the LRE.

PMA also conducted the cost risk analysis by segment as shown in **Table 6** that presents cost items at 10th, 50th, 70th and 90th percentiles.

Table 6 – Summary Results of Risk-Adjusted Cost by Segment Including Cost to Date (Pre-treatment)

Description	Cost to Date	Base Estimate Remaining Cost (Escalated)	Risk-Adjusted YOE Cost (Escalated) Based on a Pre-Treatment Analysis & Including Cost to Date			
			P10	P50	P70	P90
FPID No. 414964-1 (SR 9/I-95 from South of Miami Gardens Drive to Broward County Line)	\$3,007,126	\$1,209,870,451	\$1,442,924,907	\$1,621,325,967	\$1,653,525,522	\$1,690,633,471
I-95 S Miami Gardens Drive to Broward County Line	\$3,007,126	\$1,209,870,451	\$1,442,924,907	\$1,621,325,967	\$1,653,525,522	\$1,690,633,471

Note: The sum of the individual percentiles will not be sum of the total. Cost simulation results are shown escalated, in year-of-expenditure (YOE) dollars. Non-Escalated Base Estimate does not include the initial contingency line item as presented in the LRE.

Figure 7 depicts the escalated risk-adjusted cost estimate of the overall project in YOE dollars. The escalated base cost of the overall project is \$1.651 billion (excluding cost-to-date of \$ \$3,007,126), which has approximately 1% chance of being achieved. Results at the 10th, 50th, 70th and 90th percentiles are shown along with the deterministic cost. The curve represents the cumulative probability distribution for the overall program cost. The yellow shaded area represents the suggested overall program contingency related to base cost variation and risk impacts; it is measured from the deterministic cost (i.e., 1st percentile) to the 70th percentile.

Figure 7 – Distribution of Escalated Risk-adjusted Cost – Overall Project (Pre-Treatment)

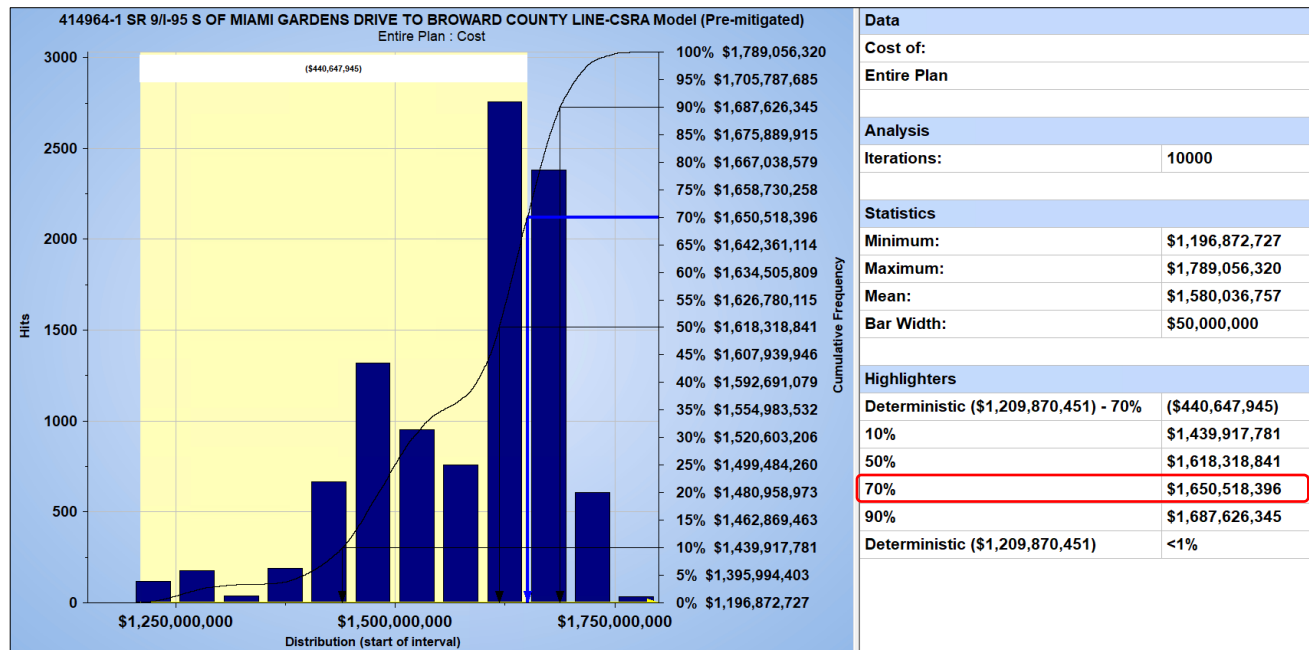
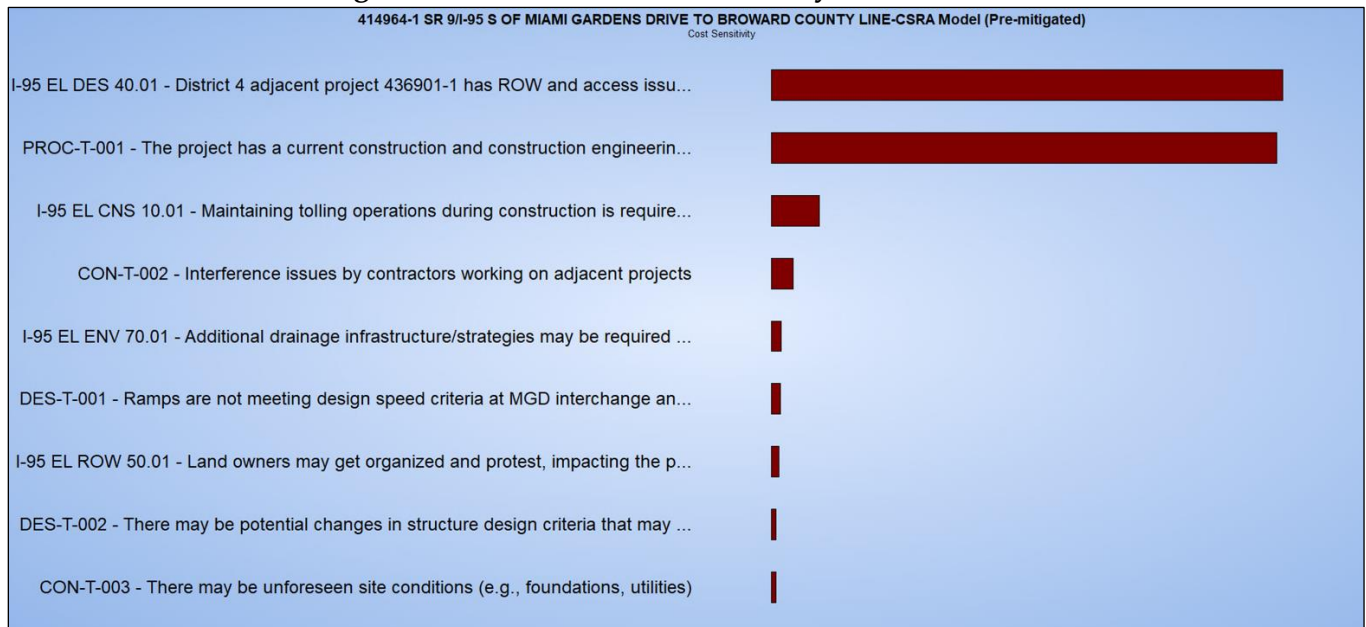


Figure 8 and Figure 9 demonstrate the results of sensitivity analysis of the most significant risks on the integrated cost and schedule risk model:

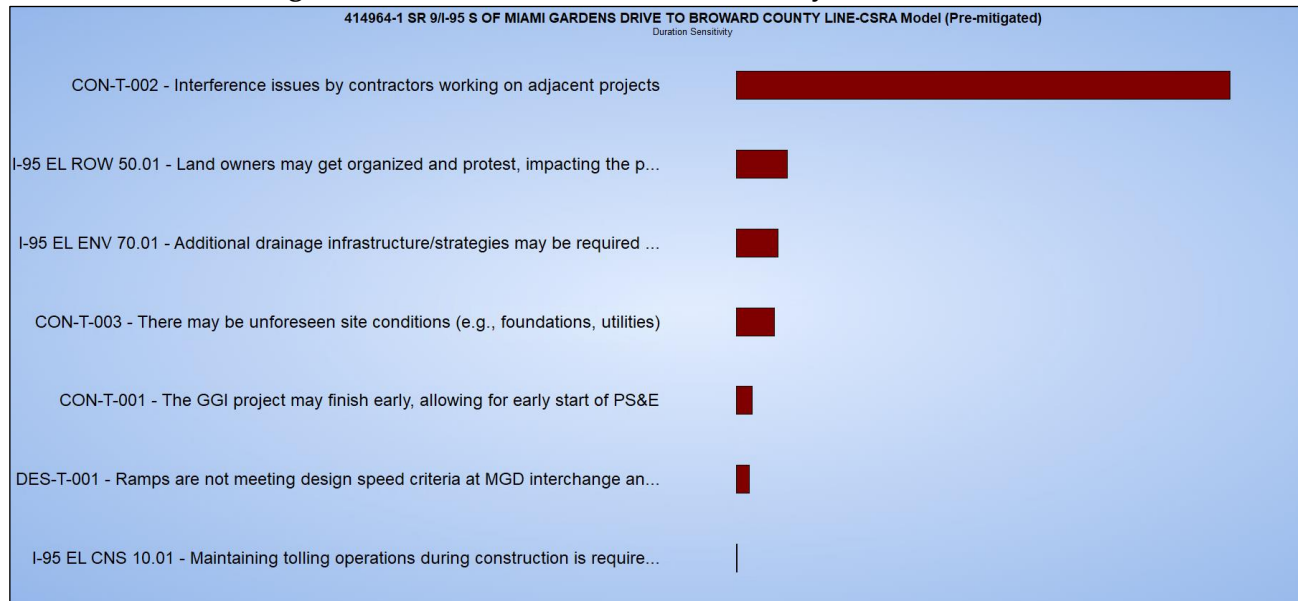
Figure 8 – Cost Risk Event Sensitivity (Pre-Treatment)



The project cost estimate is currently most sensitive to the impacts of District 4 adjacent project 436901-1, which could prompt District 6 to complete the design of 2 miles Southbound. The I-95 S MGD to BCL project may be too big for contractors to let, which may reduce the pool of potential bidders and increase construction costs.

In choosing a strategy to mitigate the potential cost increase and delay due to risks, it is important to understand to what degree each risk affects the model. Since schedules are dynamic and shift each time a risk is mitigated, the order in which the team mitigates risks influences the subsequent risks effects. To obtain an order of significance, the initial risk model is run showing impacts from all risks and the performance is captured.

Figure 9 – Schedule Risk Event Sensitivity (Pre-Treatment)



The project schedule is currently most sensitive to the impacts of interference issues by contractors working on adjacent projects, landowners getting organized to protest, additional drainage may be required, and unforeseen site conditions.

The most severe risk is then removed, and the model is run again, obtaining the variance in calendar days and cost between the initial model and the most recent trial. This provides the net effect of the risk that was removed in the integrated cost and schedule risk model. The next highest risk, based on the current model with (1) one risk removed, is then determined and this process is repeated.

Each risk is systematically removed based on the highest priority risk of the previous iteration until all risks are eliminated, and the risk model yields the deterministic base cost estimate and completion date of the program.

There is a typical point during the risk removal process where several risks fall within the same impacted probabilistic cost; their individual net impact is not affecting the risk model beyond the cost uncertainty impact. The same situation applies for the schedule risk events where, during the risk removal process, several risks fall within the same impacted probabilistic date; their individual net impact is not affecting the risk model beyond the duration uncertainty impact.

3.2.1.2. Schedule Risk Result

The schedule risk analysis determined that there is 70 percent confidence that the overall program will be completed by May 6, 2040, based on a *pre-treatment scenario*, and about 1% chance of finishing the project by its current deterministic date (i.e., September 3, 2039). Therefore, PMA recommends that the Project Team use an overall contingency of 246 calendar days as depicted in **Figure 10**.

Figure 10 – Distribution of Risk-adjusted Schedule – Overall Project (Pre-Treatment)

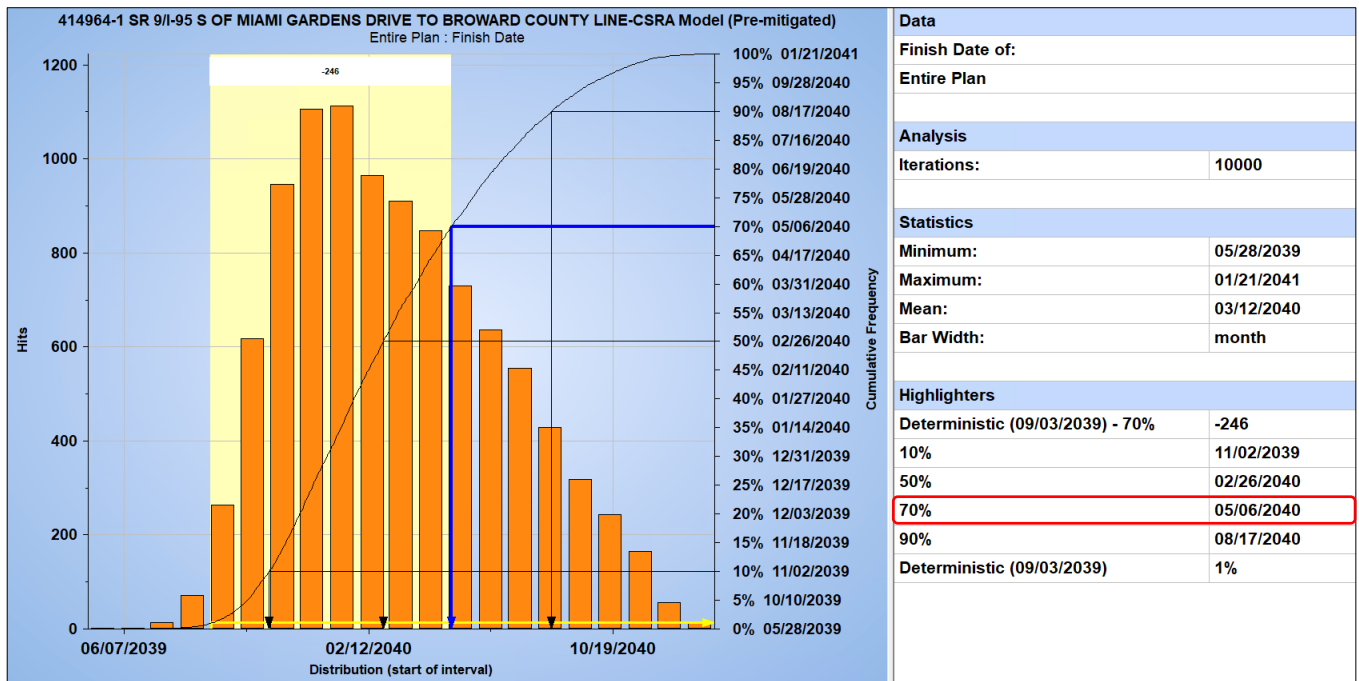


Table t identifies the projected completion dates at P10, P50, P70 and P90 reliability for the I-95 S MGD to BCL Project within the probabilistic model and shows the variance in calendar days between the deterministic dates and the probabilistic.

Table 7 – Probabilistic Completion Dates

Description	Current Finish	P10	P50	P70	P90
FPID No. 414964-1 (SR 9/I-95 from South of Miami Gardens Drive to Broward County Line)	9/3/2039	11/2/2039	2/26/2040	5/6/2040	8/17/2040
		60	176	246	349

5. Mitigation Planning

PMA recommends that the risk register created and updated during the workshop be maintained by the project management team (PMT) throughout the project duration to ensure adequate and satisfactory management of the project risks, budget, and schedule.

Table 8 shows a breakdown of the potential costs related to risk impacts, uncertainties, and escalation when compared with the base cost estimate. It was agreed during the workshop that the PMT would assess the results of this CSRA to identify mitigation actions for the top prime risks; the goal is to ensure that project cost and schedule overruns are minimized, and opportunities are maximized.

Table 8 – Breakdown of Cost Impacts from Sensitivity Analysis

Risk Description	Potential Cost Impacts
Cost Impact due to Cost Uncertainty	\$ 33,699,968
Cost Impact due to Risk Events	\$ 406,947,977
Cost Impact due to Market Conditions	\$ 342,427,321
Total Contingency Allocation	\$ 783,075,266

Based on the Cost and Schedule Risk Assessment presented in this report, PMA recommends the following:

1. PMA recommends that the project team adopt a programmatic risk management approach.

Given the significant capital investment and contracting strategies, FDOT D6 should implement risk management at the project level. Given that the project may potentially be broken down into separate projects to increase the pool of potential bidders, they should have an integrated risk management program enabling the project team to focus on managing design, permitting, and construction, and close out risks unique to each project. Additionally, the project team should monitor and mitigate risks including cumulative impact of risks, funding alternatives, escalation, external risks that could impact individual projects.

2. The project team should consider mitigation strategies during design to minimize impacts related to District 4 project's ROW and access issues.
3. The project team should consider reviewing the design and constructability of the more than 20 bridges and noise walls to minimize potential cost and schedule impacts.

6. Disclaimer

The purpose of this Cost and Schedule Risk Assessment is to identify potential cost and schedule risks to help create a comprehensive risk mitigation plan. The results of this CSRA will help FDOT focus on reducing or eliminating critical project risks. Cost or schedule risks identified in this report may not happen or reflect actual costs incurred.

Determining cost and schedule risk is an iterative process. Early in the process, there may be many "moving parts" in a project. A single decision could have a cascading effect on many different components of a project. Preliminary cost and schedule estimates at the point in time are based on certain assumptions and the best available information. Example of variables that can affect cost estimates include, but are not limited to:

- Stakeholder input and desires of the community
- Scope changes
- Opportunities and efficiencies of scale created by combining projects
- Segment staging – the order in which segments of the Project are built (traffic flow from one segment to the next, work in an adjacent area)
- Amount of re-work required (i.e., temporary bridges or ramps)

- Schedule changes
- Potential Design-Build innovator or alternative technical concepts savings
- Project delivery method (i.e., P3, Design-Bid-Build, Design-Build)
- Choosing between various technical solutions (i.e., bridge type, concrete vs. asphalt, drainage pond placement)
- Timing of approvals such as NEPA
- Right-of-way solutions (i.e., willing sellers vs. eminent domain)
- Changes in market conditions, inflation, cost of material, availability of labor force
- Timing of funding available
- Actions of partners (local governments, expressway authorities, permitting agencies)
- Types of financing availability (if applicable)
- Force majeure events (floods, hurricanes)
- Future legislation or policy changes made by Congress, the Florida Legislature, FHWA, or FDOT management

This report should be used with caution for determining financial feasibility or funding decisions and may not reflect the actual costs of the project.

Appendices

APPENDIX A: Risk Register

Active Risks: 21																		Pre-Treatment Analysis						
Risk ID	Functional Assignment	Risk Description	Date Identified	Probability		Cost Risk Impact		Schedule Risk Impact		Cost Risk Rating		Schedule Risk Rating		Combined Rating	Risk Response Description	Threat / Opportunity	Risk Status	% Prob Quant Pre	Cost Risk Range (Million)			Schedule Risk Range (Months)		
				VH/H/M/L/VL	%	VH/H/M/L/VL		VH/H/M/L/VL		VH/H/M/L/VL	Value	VH/H/M/L/VL	Value						O	ML	P	O	ML	P
FPID No. 414964-1 (SR 9/I-95 from South of Miami Gardens Drive to Broward County Line)											0.61		0.61											
CON-T-001	Construction	There is a chance that the GGI project may finish early, allowing for early start of PS&E	25-Oct-23	H	70%	H	4	H	4	High	2.8	High	2.8	2.8	Accept. Need to monitor and have action plan for project segmentation.	Opportunity	Open	70%	\$50	\$30	\$10	4	5	6
CON-T-002	Construction	There may be several contractors working on several adjacent projects, which could create coordination and interference issues and impact the construction schedule.	26-Oct-23	VH	90%	VL	1	M	3	Low	0.9	High	2.7	1.8	Mitigate. Monitor adjacent projects and have an action plan for project segmentation.	Threat	Open	90%	-	-	-	2	3	4
I-95 EL CNS 10.02	Construction	Incident Management during construction is not currently included in the base estimate and is a separate item from MOT and mobilization.	26-Jan-23	VH	90%	VL	1	VL	1	Low	0.9	Low	0.9	0.9	Design will treat this risk.	Threat	Open	90%	-	-	-	-	-	-
CON-T-003	Construction	There may be unforeseen site conditions (e.g., foundations, utilities) that may be uncovered during construction, which may impact the project cost and schedule.	26-Oct-23	VH	90%	L	2	L	2	Medium	1.8	Medium	1.8	1.8	Mitigate. Monitor utilities on the corridor and design to avoid impacts.	Threat	Open	90%	\$2	\$3	\$5	1	1.5	2
I-95 EL DES 20.01	Design / PS&E	There is a risk that all design variations/exceptions may not be approved which may lead to right of way (\$1-2 million) and/or construction (\$1-3 million) (embankment, additional asphalt) costs.	26-Jan-23	VL	10%	L	2	VL	1	Low	0.2	Low	0.1	0.15	Identify long lead items early during construction or identify alternative materials.	Threat	Open	10%	\$2	\$4	\$5	-	-	-
DES-T-001	Design/PS&E	Ramps are not meeting design speed criteria at MGD interchange and as designed present safety concerns, redesigning could trigger R/W acquisition and maybe raising I-95 bridges or extending resulting in higher construction cost.	26-Oct-23	VH	90%	M	3	L	2	High	2.7	Medium	1.8	2.25	Mitigate. PD&E team should strive to design per standard.	Threat	Open	90%	\$5	\$7	\$9	-	-	-
DES-T-002	Design/Criteria	There may be potential changes in structure design criteria that may affect cost and schedule.	26-Oct-23	VH	90%	L	2	VL	1	Medium	1.8	Low	0.9	1.35	Accept. Need to include percentage of contingency for this potential increase in cost.	Threat	Open	90%	\$1	\$2	\$4	-	-	-
DRN-T-001	Stormwater and Drainage	Along the West Lake additional Right of Way may be required outside the 10-ft buffer for additional fill.	26-Oct-23	M	50%	L	2	VL	1	Medium	1	Low	0.5	0.75	Mitigate. PD&E team should account for additional R/W needed for drainage.	Threat	Open	50%	\$1	\$2	\$2	-	-	-
I-95 EL CNS 10.01	Tolling	Maintaining tolling operations during construction is required as a separate line item from MOT/Mobilization which is currently not included in the design and cost estimate.	26-Jan-23	VH	90%	H	4	VL	1	High	3.6	Low	0.9	2.25	Mitigate. Coordinate multiple meetings to prepare a traffic opening plan that includes all projects in the corridor.	Threat	Open	90%	\$15	\$18	\$20	-	-	-

Legend:

Risk Rating Value

<1

1-1.99

≥2.0

Green

Yellow

Red

Low Risk

Medium Risk

High Risk

Active Risks: 21																		Pre-Treatment Analysis						
Risk ID	Functional Assignment	Risk Description	Date Identified	Probability		Cost Risk Impact		Schedule Risk Impact		Cost Risk Rating		Schedule Risk Rating		Combined Rating	Risk Response Description	Threat / Opportunity	Risk Status	% Prob Quant Pre	Cost Risk Range (Million)			Schedule Risk Range (Months)		
				VH/H/M/L/VL	%	VH/H/M/L/VL		VH/H/M/L/VL		VH/H/M/L/VL	Value	VH/H/M/L/VL	Value						O	ML	P	O	ML	P
I-95 EL PSP 900.01	Partnerships and Stakeholders	There is a risk that additional noise walls will be required based on existing resident preference. Requests have already been made but the risk that FDOT will have to build additional walls (based on existing FDOT criteria such as cost limit per benefited site) is 10%. The most vocal residents are on the east side of I-95 north of Miami Gardens Drive, in the SE quadrant of Ives Dairy Road interchange - the existing land use is a golf course privately owned (not Section 4(f)). The current LRE includes \$660/LF for shoulder-mounted (\$30/SF); assume 5000 LF and approximately 22-ft is approximately \$3.5 million.	25-Jan-23	VL	10%	VL	2	VL	2	Low	0.2	Low	0.2	0.2		Threat	Open	10%	-	-	-	-	-	-
I-95 EL PSP 900.02	Partnerships and Stakeholders	In the SE quadrant of Ives Dairy Road interchange the existing land use is privately owned (golf course, not Section 4(f)). There is a risk that a developer may get a building permit before LDCA (February 2024) that will replace existing golf course and homes with development that may meet FDOT thresholds for additional noise walls. The current LRE includes \$660/LF for shoulder-mounted (\$30/SF) Assume 5000 LF and approximately 22-ft is approximately \$3.5 million but developer needs a building permit before LDCA.	25-Jan-23	VL	10%	VL	4	VL	1	Low	0.4	Low	0.1	0.25	The project team will accept this risk.	Threat	Open	10%	-	-	-	-	-	-
TOLL-T-001	PD&E/Tolling	NB Ingress Braided ramp north of Ives Dairy Rd might be too close to the NB Ingress Braided Ramp at Miami Gardens Drive and could present operational issues. The ramp might need to be moved to D4 project.	26-Oct-23	VL	10%	VL	1	VL	1	Low	0.1	Low	0.1	0.1		Threat	Open	10%	-	-	-	-	-	-
PUB-T-001	Public Involvement	For the signs and wall encroachment. These signs are huge and have not been presented to the public, Public around Ives Dairy Rd is very vocal.	25-Oct-23	M	50%	VL	1	VL	1	Low	0.5	Low	0.5	0.5		Threat	Open	50%	-	-	-	-	-	-
ROW-T-001	Right of Way/Structures /Signs	The risk is for the huge signs that are needed for Tolling, Tolling structures might not fit and might need additional R/W. Also the signs won't fit and will need a special design for the structure increasing both design and construction cost.	26-Oct-23	H	70%	VL	1	VL	1	Low	0.7	Low	0.7	0.7		Threat	Open	70%	-	-	-	-	-	-
I-95 EL DES 40.01	Design/PS&E	There is a risk that the District 4 adjacent project 436901-1 has ROW and access issues and design is, therefore, not yet finalized. District 6 may need to complete the design of 2 miles Southbound (incl. ramps, bridge, etc.)	26-Jan-23	H	70%	VH	5	VH	5	High	3.5	High	3.5	3.5	Mitigate. Monitor D4 project and define potential paths of impacts.	Threat	Open	70%	\$140	\$150	\$175	6	8	12
I-95 EL ENV 70.01	Stormwater and Drainage	It is assumed that the nearby GGI project (south of the canal) had similar percolation rates which had several additional drainage considerations. The risk is that additional drainage infrastructure/strategies will be required to accommodate environmental requirements. Minimizing right of way was the priority through design. Adding impervious pavement to the area has increased the drainage needs. The base estimate includes \$12 million for drainage infrastructure.	26-Jan-23	M	50%	M	3	VL	1	Medium	1.5	Low	0.5	1	Mitigate. PD&E team should propose appropriate drainage infrastructure for the project.	Threat	Open	50%	\$1	\$3	\$5	-	-	-
CON-T-004	Schedule/Const ruction/Tolling	Project Segmentation will be tricky. Lots of Adjacent Projects with different schedules. Projects need to be constructed in a logistic way for the Express lane system to work or interim phases will need to be designed and constructed; including incident management. (high risk for design changes)	26-Oct-23	VL	10%	VL	1	VL	1	Low	0.1	Low	0.1	0.1	Add this risk to the Design risk related to FDOT D4.	Threat	Open	10%	-	-	-	-	-	-
I-95 EL ROW 20.01	Right-of-Way	There is chance that ROW will increase at a rate (5-10%) above FDOT's inflation factor.	26-Jan-23	M	50%	L	2	VL	1	Medium	1	Low	0.5	0.75	Accept. Need to include percentage increase in cost estimate.	Threat	Open	50%	\$1	\$3	\$4	-	-	-

Legend:

Risk Rating Value

<1

1-1.99

≥2.0

Green

Yellow

Red

Low Risk

Medium Risk

High Risk

Active Risks: 21																		Pre-Treatment Analysis						
Risk ID	Functional Assignment	Risk Description	Date Identified	Probability		Cost Risk Impact		Schedule Risk Impact		Cost Risk Rating		Schedule Risk Rating		Combined Rating	Risk Response Description	Threat / Opportunity	Risk Status	% Prob Quant Pre	Cost Risk Range (Million)			Schedule Risk Range (Months)		
				VH/H/M/L/VL	%	VH/H/M/L/VL		VH/H/M/L/VL		VH/H/M/L/VL	Value	VH/H/M/L/VL	Value						O	ML	P	O	ML	P
I-95 EL ROW 50.01	Right-of-Way & Public and Stakeholders	There is a risk that if land owners get organized and protest, therefore, delay the project. It is unlikely that land owners will organize but likely that single residents may argue. This cost accounts for lawyers' fees.	25-Oct-23	VH	90%	L	2	VL	1	Medium	1.8	Low	0.9	1.35	Mitigate. Investigate and report on findings. Encroachments letters need to be sent out to the property owners.	Threat	Open	90%	\$1	\$2	\$3	-	-	-
I-95 EL ROW 60.02	Right-of-Way	Additional right of way will most likely be required for two locations for toll buildings.	25-Oct-23	VH	90%	L	2	VL	1	Medium	1.8	Low	0.9	1.35	Mitigate. R/W acquisition needs to be identified during PD&E.	Threat	Open	90%	\$1	\$3	\$4	-	-	-
PROC-T-001	Procurement	The project has a current construction and construction engineering and inspection (CEI) cost estimate of ~\$775M. There is a risk that the project may be too big for contractors to let, which may reduce the pool of potential bidders and increase the construction cost.	26-Oct-23	VH	90%	VH	5	L	2	High	4.5	Medium	1.8	3.15	Mitigate. Project could be segmented during the Design phase.	Threat	Open	90%	\$200	\$200	\$300	1	1.5	2

Legend:

Risk Rating Value

<1

1-1.99

≥2.0

Green

Yellow

Red

Low Risk

Medium Risk

High Risk

APPENDIX B: Workshop Attendees

SR 9/I-95 from S of Miami Gardens Dr. to Broward County Line
 Project Manager: Auraliz Benitez, PE
 State Risk and Value Engineer: Bobby Bull, PE

11/16/2023

Risk Workshop Attendees

Name	Email	Participated in the session related to		
		RI ⁽¹⁾	QL CSRA ⁽²⁾	QT CSRA ⁽³⁾
Auraliz Benitez	Auraliz.Benitez@dot.state.fl.us	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Antonette Adams	Antonette.Adams@dot.state.fl.us	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Tish Burgher	Tish.Burgher@dot.state.fl.us	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Maurilio Reyes	Maurilio.Reyes@dot.state.fl.us	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Victoria Vogt	Victoria.Vogt@dot.state.fl.us	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Kylie Shivers	Kylie.Shivers@dot.state.fl.us	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Jacquelyn DeAngelo	Jacquelyn.DeAngelo@dot.state.fl.us	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Xenia Rodriguez	Xenia.Rodriguez@dot.state.fl.us	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Hector Hartmann	Hector.Hartmann@dot.state.fl.us	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Marceau Michel	Marceau.Michel@dot.state.fl.us	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Kevin Lopez	KevinA.Lopez@dot.state.fl.us	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
James E Beverly	JamesE.Beverly@dot.state.fl.us	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Javier Rodriguez	Javier.Rodriguez2@dot.state.fl.us	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Dongming White	Dongming.White@dot.state.fl.us	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Jean Boursiquot	Jean.Boursiquot@dot.state.fl.us	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Leonard Salazar	Leonard.Salazar@dot.state.fl.us	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Mario Perez	Mario.Perez@dot.state.fl.us	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Jorge Rivera	Jorge.Rivera@dot.gov	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Andrew DeTizio	DeTizio@dot.gov	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Jenn King	jenn.king@aecom.com	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Dat Huynh	Dat.Huynh@dot.state.fl.us	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Diane Flowers	Diane.Flowers@dot.state.fl.us	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Bobby Bull	Bobby.Bull@dot.state.fl.us	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Cavanaugh Ian	Ian.Cavanaugh@dot.gov	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Tia Parnell	Tia.Parnell@dot.state.fl.us	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Nitin Dave	Nitin.Dave@dot.state.fl.us	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Megan Moore	Megan.Moore@dot.state.fl.us	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Mary Jane Hayden	MaryJane.Hayden@dot.state.fl.us	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Suraj Pamulapati	Suraj.Pamulapati@dot.state.fl.us	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Malini Swaminathan	Malini.Swaminathan@dot.state.fl.us	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Rick Johnson	rjohnson@pmaconsultants.com	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Francisco Cruz	fcruz@pmaconsultants.com	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

(1) Risk Identification; (2) Qualitative Cost Schedule Risk Analysis; (3) Quantitative Cost Schedule Risk Analysis

APPENDIX C: Base Cost Estimate

Summary

FPID No. 414964-1 (SR 9/I-95 from South of Miami Gardens Drive to Broward County Line)

The table below presents the project base cost uncertainty ranges by components.

Component	Base Cost Estimate			Variability		Cost to Date	Remaining Cost			Comments
	Low	Base	High	From	To		Low	Base	High	
PD&E	\$9,890,467	\$9,890,467	\$9,890,467	0%	0%	\$3,005,085	\$6,885,382	\$6,885,382	\$6,885,382	
PD&E In-House	\$500,338	\$500,338	\$500,338	0%	0%	\$92,815	\$407,523	\$407,523	\$407,523	
PD&E Consultant	\$9,390,129	\$9,390,129	\$9,390,129	0%	0%	\$2,912,270	\$6,477,859	\$6,477,859	\$6,477,859	
Design Support/Preliminary Engineering	\$20,130,000	\$20,130,000	\$22,130,000	0%	10%	\$2,041	\$20,127,959	\$20,127,959	\$22,127,959	
PE In-House	\$1,830,000	\$1,830,000	\$1,830,000	0%	0%	\$2,041	\$1,827,959	\$1,827,959	\$1,827,959	
PE Consultant	\$18,300,000	\$18,300,000	\$20,300,000	0%	11%	\$0	\$18,300,000	\$18,300,000	\$20,300,000	
Post-Design PE	\$1,830,000	\$1,830,000	\$1,830,000	0%	0%	\$0	\$1,830,000	\$1,830,000	\$1,830,000	
Construction Contract	\$703,166,263	\$714,558,189	\$819,636,093	-2%	15%	\$0	\$703,166,263	\$714,558,189	\$819,636,093	
Structures	\$132,738,360	\$132,738,850	\$152,651,393	0%	15%	\$0	\$132,738,360	\$132,738,850	\$152,651,393	
Concrete Barrier Walls (Roadway)	\$51,501,452	\$53,007,014	\$60,937,879	-3%	15%	\$0	\$51,501,452	\$53,007,014	\$60,937,879	
Retaining Walls Systems Permanent	\$28,816,742	\$28,816,742	\$33,139,254	0%	15%	\$0	\$28,816,742	\$28,816,742	\$33,139,254	
Maintenance of Traffic	\$75,000,000	\$75,000,000	\$86,250,000	0%	15%	\$0	\$75,000,000	\$75,000,000	\$86,250,000	
Earthwork	\$49,750,000	\$52,000,000	\$59,800,000	-4%	15%	\$0	\$49,750,000	\$52,000,000	\$59,800,000	
Mobilization	\$75,000,000	\$75,000,000	\$86,250,000	0%	15%	\$0	\$75,000,000	\$75,000,000	\$86,250,000	
Asphalt Pavement	\$70,594,235	\$74,309,721	\$85,456,179	-5%	15%	\$0	\$70,594,235	\$74,309,721	\$85,456,179	
Concrete Pavement	\$0	\$0	\$0			\$0	\$0	\$0	\$0	
Drainage	\$22,719,065	\$23,544,065	\$28,581,812	-4%	21%	\$0	\$22,719,065	\$23,544,065	\$28,581,812	
Signing & Pavement Marking	\$24,527,670	\$24,624,010	\$28,429,172	0%	15%	\$0	\$24,527,670	\$24,624,010	\$28,429,172	
Temporary-Critical Sheet Piling	\$0	\$0	\$0			\$0	\$0	\$0	\$0	
Intelligent Traffic System (ITS)	\$4,993,878	\$4,993,878	\$5,742,959	0%	15%	\$0	\$4,993,878	\$4,993,878	\$5,742,959	
Signalization	\$13,091,202	\$13,780,212	\$15,158,233	-5%	10%	\$0	\$13,091,202	\$13,780,212	\$15,158,233	
Lighting	\$10,880,776	\$11,453,448	\$12,645,193	-5%	10%	\$0	\$10,880,776	\$11,453,448	\$12,645,193	
Miscellaneous Roadway	\$29,016,994	\$29,108,676	\$32,711,744	0%	12%	\$0	\$29,016,994	\$29,108,676	\$32,711,744	
Clearing & Grubbing	\$14,773,500	\$14,773,500	\$16,989,525	0%	15%	\$0	\$14,773,500	\$14,773,500	\$16,989,525	
Removal of Existing Structures	\$13,277,400	\$13,277,400	\$15,269,010	0%	15%	\$0	\$13,277,400	\$13,277,400	\$15,269,010	
Erosion Control	\$107,989	\$113,673	\$125,040	-5%	10%	\$0	\$107,989	\$113,673	\$125,040	
Landscaping & Architectural Features	\$0	\$0	\$0			\$0	\$0	\$0	\$0	
Design Cost	\$0	\$0	\$0			\$0	\$0	\$0	\$0	

Summary

FPID No. 414964-1 (SR 9/I-95 from South of Miami Gardens Drive to Broward County Line)

The table below presents the project base cost uncertainty ranges by components.

Component	Base Cost Estimate			Variability		Cost to Date	Remaining Cost			Comments
	Low	Base	High	From	To		Low	Base	High	
Noise Walls	\$75,777,000	\$77,417,000	\$86,798,700	-2%	12%	\$0	\$75,777,000	\$77,417,000	\$86,798,700	
Toll Gantries	\$10,600,000	\$10,600,000	\$12,700,000	0%	20%	\$0	\$10,600,000	\$10,600,000	\$12,700,000	
Initial Contingency Allowance	\$0	\$0	\$0			\$0	\$0	\$0	\$0	phase 52
Toll Collection Equipment	\$5,075,000	\$5,075,000	\$5,075,000	0%	0%	\$0	\$5,075,000	\$5,075,000	\$5,075,000	phase 53
Construction Engineering Inspection	\$60,000,000	\$60,000,000	\$60,000,000	0%	0%	\$0	\$60,000,000	\$60,000,000	\$60,000,000	
CEI In-House	\$10,000,000	\$10,000,000	\$10,000,000	0%	0%	\$0	\$10,000,000	\$10,000,000	\$10,000,000	
CEI Consultant	\$50,000,000	\$50,000,000	\$50,000,000	0%	0%	\$0	\$50,000,000	\$50,000,000	\$50,000,000	
Utility Costs	\$15,000,000	\$30,000,000	\$40,000,000	-50%	33%	\$0	\$15,000,000	\$30,000,000	\$40,000,000	10M for relocation MGD, 8M Transmission x 2 - total reimbursesable cost
Railroad Costs	\$2,500,000	\$3,000,000	\$3,500,000	-17%	17%	\$0	\$2,500,000	\$3,000,000	\$3,500,000	
Right of Way Costs (total)	\$25,916,600	\$25,916,600	\$25,916,600	0%	0%	\$0	\$25,916,600	\$25,916,600	\$25,916,600	
ROW Support	\$0	\$0	\$0			\$0	\$0	\$0	\$0	
ROW In-house	\$470,000	\$470,000	\$470,000	0%	0%	\$0	\$470,000	\$470,000	\$470,000	
ROW Purchase	\$24,022,100	\$24,022,100	\$24,022,100	0%	0%	\$0	\$24,022,100	\$24,022,100	\$24,022,100	
ROW Relocation	\$0	\$0	\$0			\$0	\$0	\$0	\$0	
ROW Services	\$1,424,500	\$1,424,500	\$1,424,500	0%	0%	\$0	\$1,424,500	\$1,424,500	\$1,424,500	
Environmental Mitigation (total)	\$50,000	\$50,000	\$50,000	0%	0%	\$0	\$50,000	\$50,000	\$50,000	
Wetland	\$0	\$0	\$0			\$0	\$0	\$0	\$0	
Wildlife	\$0	\$0	\$0			\$0	\$0	\$0	\$0	
Miscellaneous Environmental	\$50,000	\$50,000	\$50,000	0%	0%	\$0	\$50,000	\$50,000	\$50,000	
Project Total	\$843,558,330	\$870,450,256	\$988,028,160	-3%	14%	\$3,007,126	\$840,551,204	\$867,443,130	\$985,021,034	

APPENDIX D: Escalation Rates

12) Turnpike Enterprise Programs

The turnpike enterprise analysis should include all turnpike funds and transportation system 02 (intrastate turnpike). Contingencies are determined by reports with turnpike funds only, and program level is determined as transportation system 02 (intrastate turnpike) excluding statewide funds (bridge and SIS described above).

d. General Assumptions

- Amounts included for contingency analyses only address contract class 8.
- 30% of district projects programmed using statewide funds for SIS and/or bridge will be considered as part of the district programmed level for contingency analysis.
- RBRP, SCOP, SCED, SCRC, SCWR, ARSC, SCRA, ARSR, GRSC, CIGP, CIGR, and TRIP will not be included in the box analysis.
- Earmark funds will be excluded if programmed as a contract class 5 or if programmed as a transportation system 06 or 16.
- SE funds will be excluded if programmed as a contract class 5.
- Boxed items for the Miami Intermodal Center (MIC) are not included in the box analysis, regardless of the funds programmed.
- LF funds on a contract class 8 will be included as a reserve account, regardless of box code.

e. Construction Cost Inflation Factors

Inflation factors for construction costs will be utilized in the development of the tentative work program as indicated below. These inflation factors will automatically generate the new estimates for anything gamed in WPA by applying these factors to the present day costs (PDC's) in WPA. All estimate changes must be made in the adopted file; do not make estimate changes in the proposed file (tentative work program development cycle). Shaded areas beginning in fiscal year 29/30 cover the 10-year period for the SIS program.

FISCAL YEAR	INFLATION FACTOR	MULTIPLIER	FISCAL YEAR	INFLATION FACTOR	MULTIPLIER
24/25	2.9%	1.029	29/30	3.3%	1.203
25/26	3.0%	1.060	30/31	3.3%	1.243
26/27	3.1%	1.093	31/32	3.3%	1.284
27/28	3.2%	1.128	32/33	3.3%	1.326
28/29	3.3%	1.165	33/34	3.3%	1.370

Note: Base year is 23/24.

APPENDIX E: Public Private Partnership (P3) Assessment Checklist

P3-SCREEN



Public-Private Partnerships (P3) Delivery Options Screening Checklist



Project Name SR 9/I-95 FROM SOUTH OF MIAMI GARDENS DRIVE TO BROWARD COUNTY LINE ("I-95 Northern Segment")

Date: October 26, 2023

Name of Assessor: Diane Flowers & District 6 Project Team

Title of Assessor: Major Projects Financial Plan Coordinator

Criteria	Evaluation Question		Response (drop-down menu)	Comment/Mitigation
<div></div>	Legal			
	Sponsor Authority	Does the project sponsor have legal authority to pursue delivery of the project as a P3?	Yes	Yes, s. 334.30 F.S. gives FDOT authority to deliver the project as a P3.
	Planning and Environmental			
	Long Range Planning	Is the project consistent with the project sponsor's and regional long-term transportation goals?	Yes	This Project is included in the <i>Miami-Dade MPO</i> Cost Feasible Long Range Transportation Plan.
	Environmental Review	Will the required NEPA decision document be completed within 2 - 3 years?	Yes	The NEPA decision is expected next year. The environmental decision is a Categorical Exclusion Type II.
	Public Support			
	Local Support	Is there consensus among local and regional stakeholders to pursue the project?	Yes	Project commitments are documented in the NEPA documents. A public hearing is anticipated for February 2024. The Project is a high priority as it is in the Five-Year Work Program/STIP/TIP. There is no organized local opposition.
	Political Support	Is there political support for delivering the project?	Yes	The project has been presented to Elected Official, general public, business and local government and have not expressed any opposition to the project.
	Organizational Capacity			
	Technical Capacity	Does the sponsor have access to sufficient internal and external technical resources to successfully manage all phases of the P3 delivery option (development, procurement, negotiation and long-term contract oversight) in the public interest?	Yes	Yes, FDOT has executed 16 P3 contracts, 13 are Design-Build-Finance or Build-Finance, and 3 are long-term Design-Build-Finance-Operate-Maintain contracts. District 6 P3 projects include: PortMiami Tunnel (DBFOM), I-395 (DBF), Palmetto 2 (DBF), Palmetto 5 (DBF), I-95 Express Lanes Phase 1 (DBF), and US 1/SR (DBF).
	Policy Guidelines	Has the project sponsor established guidelines and regulations for procuring and managing P3 projects?	Yes	Yes, FDOT is guided by several P3-related statutes including: s. 334.30 F.S. FDOT's overall P3 law (including a 15% debt cap on P3s), s. 339.2825 F.S. approval of contractor-financed projects which requires Governor, House, Senate, Division of Bond Finance approval, and s. 339.139 F.S. which addresses FDOT's 20% overall debt cap.
	Project Scope & Complexity			
	Size	Is the project size and scope suitable for delivery via P3 (generally costing more than \$100 million) ?	Yes	Perhaps. With an estimated cost of \$700M for construction, this Project would be a very large Design-Build-Finance (DBF). It may be difficult for a DBF of that size to obtain financing. The project is not being considered as a long-term Design-Build-Finance-Operate-Maintain (DBFOM).
	Risk	Have project risks been identified?	Yes	Yes, a Cost and Schedule Risk Assessment was conducted October 25-26, 2023.
	Risk Allocation	Is there potential to allocate risks to the party more capable of managing those risks by delivering the project as a P3?	No	The Project may be procured as a Design-Bid-Build, but that could change in the future. For traditionally-procured projects such as DBB, the risk allocation would be typical for those types of projects. For example, FDOT would likely retain environmental and right-of-way risk and the contractor(s) would typically retain design and construction risk.
	Innovation	Is there potential to derive benefits from technological or other types of innovation through private sector delivery of the project?	No	If delivered as a Design-Bid-Build project, there is not as much opportunity for innovation as a Design-Build or a Phased Design-Build project. However, FDOT is very early in the process and the procurement methodology could change.
	Efficiency	Is there potential to achieve cost/schedule savings by delivering the project as a P3?	Yes	There is potential that inflation savings from advancing the project could outweigh the cost of finance. However, the Project is not being considered as a P3, so a financial feasibility analysis will not be conducted at this time. This could change in the future.
	Quality	Is there potential for higher quality product/service delivery with a P3?	Yes	Opportunities for higher quality/service delivery would be similar to a traditional Design-Bid-Build project.
	Life-Cycle Costs	Have the life-cycle costs of the proposed project been determined?	Other	An O&M component will not be included in this contract.
	Affordability			
	Near and Long Term Financial Capacity	Does the project sponsor have the financial capacity to meet the project's lifecycle costs using conventional public funding and financing sources?	Yes	The project is anticipated to be Design-Bid-Build and that there will be adequate public funding by the time the Project starts construction. This could change as the project progresses.
	Revenue Potential	Does the project have the revenue generation potential to repay any or all of the project costs?	Yes	The project is tolled, however, FDOT is not reliant upon toll revenues to build this project.
	Industry Interest			
	Industry Capacity	Do three or more private sector firms have the capability to deliver the project as a P3?	Yes	FDOT has always had multiple firms capable and interested in their P3 projects. FDOT is not considering this Project as a P3 at this time, but is open to re-assessing in the future.
	Industry Interest	Have three or more private entities demonstrated interest in the project to suggest the opportunity exists for a competitive process?	No	Not at this time.
	Other			
	<i>Land Acquisition</i> (example)	<i>Are land acquisition issues likely to threaten the project?</i>	No	FDOT is actively pursuing needed right-of-way.
	Summary Analysis:			

Conclusion	Based on the responses and comments in the above assessment, it appears at this time that a P3 delivery may not be appropriate for the project.
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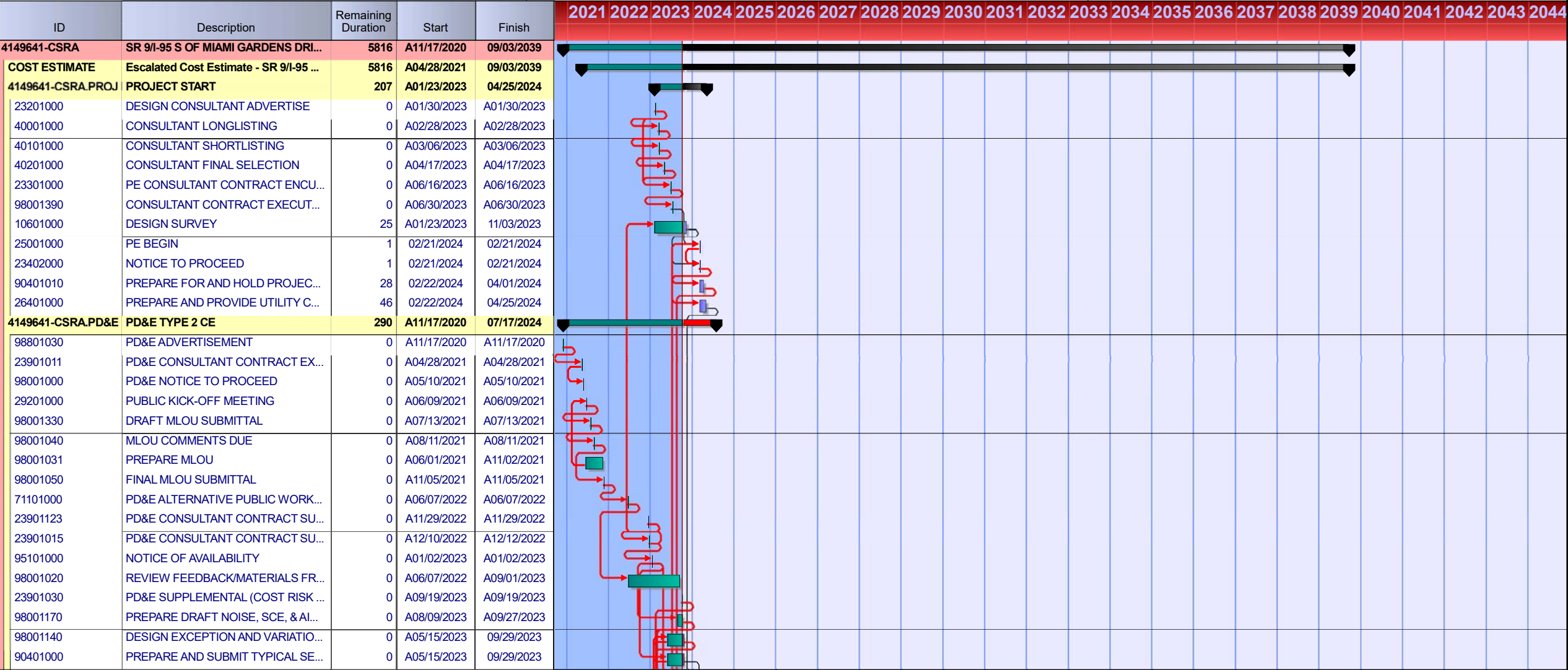
APPENDIX F:

Integrated Cost and Schedule Risk Model

414964-1 SR 9/I-95 S OF MIAMI GARDENS DRIVE TO BROWARD COUNTY LINE - CSRA Model

Integrated Cost and Schedule Risk Model

Primavera Gantt



Normal Task

Normal, Actual

Summary Task

Summary, Critical

Summary, Actual

Summary, Start

Summary, Finish



Florida Department of Transportation - District 6

Auraliz Benitez, PE

Risk Leads: Rick Johnson, PE; Francisco Cruz, PE

Page 1 of 5




Plan Finish: 09/03/2039

October 2023 CSRA Model FPID 4149641-1

Sort: Ascending by multiple columns

Filter: None

ID	Description	Remaining Duration	Start	Finish	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044
98001350	PREPARE FIRST DRAFT NRE AND C...	0	A08/23/2023	09/29/2023																								
23901020	PD&E SUPPLEMENTAL (VALUE ENG...	0	10/03/2023	10/02/2023																								
98001340	SUBMITTAL OF DRAFT NRE AND CO...	0	10/03/2023	10/02/2023																								
98001120	SUBMITTAL OF DRAFT NOISE, SCE,...	0	10/03/2023	10/02/2023																								
98001220	APPROVAL OF DESIGN EXCEPTION...	12	10/02/2023	10/17/2023																								
26000100	TYPICAL SECTION PACKAGE REVIE...	23	10/02/2023	11/01/2023																								
98001130	COMMENTS DUE FOR DRAFT NOIS...	1	11/02/2023	11/02/2023																								
98001360	FDOT REVIEW OF DRAFT NRE AND ...	23	10/03/2023	11/02/2023																								
98001280	FDOT REVIEW OF DRAFT NOISE, S...	23	10/03/2023	11/02/2023																								
98001090	COMMENTS DUE FOR DRAFT NRE ...	1	11/03/2023	11/03/2023																								
98001100	SUBMITTAL OF CONCEPT PLANS	1	11/09/2023	11/09/2023																								
98001060	SUBMITTAL OF PROJECT TRAFFIC ...	0	11/10/2023	11/09/2023																								
98001150	FINALIZE DEVLEOPMENT OF CONC...	29	A09/04/2023	11/09/2023																								
98001080	PREPARE PROJECT TRAFFIC FORE...	0	A09/28/2023	11/09/2023																								
33901000	VALUE ENGINEERING	5	*11/13/2023	11/17/2023																								
97601000	PREPARE DRAFT PER/ENVIRONME...	34	10/13/2023	11/29/2023																								
98001160	FDOT REVIEW OF DRAFT CONCEP...	15	11/09/2023	11/29/2023																								
98001110	COMMENTS DUE FOR CONCEPT P...	1	11/30/2023	11/30/2023																								
27601000	DRAFT PER AND SUPPORTING DO...	1	11/30/2023	11/30/2023																								
98001070	COMMENTS DUE FOR PROJECT TR...	1	12/19/2023	12/19/2023																								
98001320	FDOT REVIEW OF PROJECT TRAFF...	28	11/10/2023	12/19/2023																								
98001190	COMMENTS DUE FOR DRAFT PER ...	1	12/27/2023	12/27/2023																								
98001370	FDOT REVIEW OF DRAFT PER AND ...	20	11/30/2023	12/27/2023																								
98001240	SECOND DRAFT ENVIRONMENTAL ...	9	12/20/2023	01/01/2024																								
98001270	FINAL TRAFFIC REPORTS PREPAR...	19	12/20/2023	01/15/2024																								
C8001170	SUBMITTAL OF DRAFT TATM, SIMR, ...	1	01/16/2024	01/16/2024																								
C8001370	PREPARE DRAFT TATM, SIMR, AND ...	34	11/30/2023	01/16/2024																								
98001380	PREPARE CAT X AND FINAL ENV. S...	15	01/02/2024	01/22/2024																								
26201000	PUBLIC HEARING DATE	1	01/23/2024	01/23/2024																								
98001180	SUBMITTAL OF DRAFT CAT X & FIN...	1	01/23/2024	01/23/2024																								
98001290	SECOND DRAFT ENVIRONMENTAL ...	1	01/31/2024	01/31/2024																								
98001260	SECOND DRAFT ENVIRONMENTAL ...	22	01/02/2024	01/31/2024																								
98001300	FINAL ENVIRONMENTAL REPORTS ...	1	02/01/2024	02/01/2024																								
98001230	PREPARE AND SUBMIT SECOND D...	31	12/28/2023	02/08/2024																								
98001400	FDOT REVIEW OF CAT X AND FINAL...	20	01/23/2024	02/19/2024																								
C8001200	COMMENTS DUE FOR DRAFT TATM...	1	02/26/2024	02/26/2024																								
98001200	FDOT REVIEW OF DRAFT TATM, SI...	24	01/24/2024	02/26/2024																								

 Normal Task  Normal, Critical  Normal, Actual



ID	Description	Remaining Duration	Start	Finish	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044
98001250	REVIEW AND PROVIDE COMMENTS...	20	02/09/2024	03/07/2024																								
98001282	D6 REVEIW OF FINAL ENVIRONME...	14	03/08/2024	03/27/2024																								
98001310	OEMAND OGC REVIEW OF CAT X (...)	45	03/28/2024	05/29/2024																								
26301010	FDOT OEM ADMINISTRATOR REVIE...	20	05/30/2024	06/26/2024																								
26301000	REVIEW FOR LOCATION DESIGN C...	10	06/27/2024	07/10/2024																								
73601000	PUBLIC NOTICE	5	07/11/2024	07/17/2024																								
4149641-CSRA.PHAS	PHASE I 30%	207	04/02/2024	10/25/2024																								
30101005	DEVELOPMENT OF 30% PLANS AN...	65	04/02/2024	07/01/2024																								
30101000	30% PLANS SUBMITTAL	1	07/02/2024	07/02/2024																								
90001020	TYPICAL SECTION SUBMITTAL	1	07/18/2024	07/18/2024																								
30101010	30% PLANS REVIEW AND COMMEN...	41	07/19/2024	09/13/2024																								
30101020	RIGHT OF WAY COORDINATION PE...	30	09/16/2024	10/25/2024																								
4149641-CSRA.PHAS	PHASE II 60%	384	08/01/2024	08/19/2025																								
26001000	TYPICAL SECTION REVIEW AND AP...	102	08/01/2024	12/20/2024																								
39401000	PREPARATION AND SUBMITTAL OF ...	40	10/28/2024	12/20/2024																								
90501000	PERMITTING AGENCIES COORDINA...	5	12/23/2024	12/27/2024																								
90901030	PREPARATION AND SUBMITTAL OF ...	15	12/30/2024	01/17/2025																								
30201000	60% PLANS SUBMITTAL	1	03/21/2025	03/21/2025																								
26001010	DEVELOPMENT OF 60% PLANS	105	10/28/2024	03/21/2025																								
30201010	60% PLANS REVIEW AND COMMEN...	26	03/24/2025	04/28/2025																								
27201000	FILE PERMITS	1	04/29/2025	04/29/2025																								
24701000	DETERMINATION OF OFF SYSTEM ...	1	06/06/2025	06/06/2025																								
30201020	RIGHT OF WAY COORDINATION PE...	28	04/30/2025	06/06/2025																								
16301000	COORDINATION AND REVIEW OF O...	52	06/09/2025	08/19/2025																								
4149641-CSRA.PHAS	PHASE III 90%	390	06/09/2025	07/03/2026																								
16301010	PREPARE AND TRANSMIT FINAL OF...	30	08/20/2025	09/30/2025																								
30301000	90% PLANS SUBMITTAL	1	03/27/2026	03/27/2026																								
16301030	DEVELOPMENT OF 90% PLANS	210	06/09/2025	03/27/2026																								
30301010	90% PLANS REVIEW AND COMMEN...	40	03/30/2026	05/22/2026																								
30301020	RIGHT OF WAY COORDINATION PE...	30	05/25/2026	07/03/2026																								
4149641-CSRA.PHAS	PHASE IV 100%	295	07/06/2026	04/26/2027																								
16301020	FINALIZATION AND EXECUTION OF ...	30	07/06/2026	08/14/2026																								
31001020	DEVELOPMENT OF 100% PLANS	170	07/06/2026	02/26/2027																								
31001000	100% PLANS SUBMITTAL	1	03/01/2027	03/01/2027																								
31001010	100% PLANS REVIEW AND COMME...	40	03/02/2027	04/26/2027																								
4149641-CSRA.PLAN	PLANS COMPLETE	56	04/27/2027	06/21/2027																								
20101000	PLANS COMPLETED	40	04/27/2027	06/21/2027																								

Normal Task

Summary Task

Summary, Start

Summary, Finish

ID	Description	Remaining Duration	Start	Finish	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044
4149641-CSRA.ENVIF	ENVIRONMENT	1234	07/03/2024	11/18/2027																								
93601000	USFWS/ NMFS COORDINATION	180	03/30/2026	12/04/2026																								
76201000	SHPO CONCURRENCE - CRAS UPD...	180	03/30/2026	12/04/2026																								
93701000	PREPARE 106 DETERMINATION OF ...	15	12/07/2026	12/25/2026																								
75001000	WETLAND/EFH UPDATE	665	07/03/2024	01/19/2027																								
93401000	SPECIES/ HABITAT REVIEW/ SURVEY	665	07/03/2024	01/19/2027																								
93301000	SOCIOCULTURAL EFFECTS UPDATE	665	07/03/2024	01/19/2027																								
75101000	SECTION 4(F) REVIEW	665	07/03/2024	01/19/2027																								
93201000	NOISE STUDY UPDATE	665	07/03/2024	01/19/2027																								
93001000	CULTURAL RESOURCE UPDATE	665	07/03/2024	01/19/2027																								
93801000	SHPO CONCURRENCE DETERMINA...	40	12/28/2026	02/19/2027																								
74801000	ENV DOC REEVAL - CONST ADVER...	1	03/02/2027	03/02/2027																								
93101000	CONTAMINATION SCREENING UPD...	694	03/24/2025	11/18/2027																								
4149641-CSRA.ROW	ROW 36 MONTHS	1244	06/09/2025	11/03/2028																								
32201000	GATHER ROW REQUIREMENTS AN...	25	06/09/2025	07/11/2025																								
13901000	DEVELOPMENT OF ROW MAP/SKE...	80	07/14/2025	10/31/2025																								
26801000	PREPARE AND PROVIDE DOCUMEN...	26	11/03/2025	12/08/2025																								
12001000	APPRAISALS	350	12/09/2025	04/12/2027																								
14301000	APPRAISALS REVIEW	340	04/14/2026	08/02/2027																								
12901000	RELOCATION WORK	430	08/04/2026	03/27/2028																								
12101000	NEGOTIATIONS	370	10/27/2026	03/27/2028																								
12201000	CONDEMNATION	320	04/20/2027	07/10/2028																								
27301000	FINAL RW ORDER OF TAKING	5	07/11/2028	07/17/2028																								
12501000	ROW DEMO & CLEAR WORK	409	04/13/2027	11/03/2028																								
4149641-CSRA.PROC	PRODUCTION	3	11/04/2028	11/06/2028																								
25501000	RIGHT OF WAY CERTIFICATION	0	11/06/2028	11/03/2028																								
98801000	PE CERTIFICATION DUE	1	11/06/2028	11/06/2028																								
20401000	PRODUCTION DATE	1	11/06/2028	11/06/2028																								
22201000	ALL PERMITS CLEAR	1	11/06/2028	11/06/2028																								
37501000	CONSTRUCTION CLEAR	1	11/06/2028	11/06/2028																								
37601000	ENVIRONMENTAL CLEAR	1	11/06/2028	11/06/2028																								
26901000	ALL UTILITIES CLEAR	1	11/06/2028	11/06/2028																								
27901000	RAILROAD CLEAR	1	11/06/2028	11/06/2028																								
4149641-CSRA.CENT	CENTRAL OFFICE LETTING	125	09/26/2031	01/28/2032																								
22601000	PS&E SUBMITTAL(S)	1	*09/26/2031	09/26/2031																								
24201000	PS&E REVIEW(S)	21	09/26/2031	10/24/2031																								
21201000	TRANSMIT PS&E PACKAGE TO CEN...	1	10/24/2031	10/24/2031																								

						2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044			
ID	Description	Remaining Duration	Start	Finish																												
L212-280	CENTRAL OFFICE REVIEW ADVERT...	67	10/27/2031	01/27/2032																												
28001000	LETTING DATE	1	01/28/2032	01/28/2032																												
4149641-CSRA.1CON	CONSTRUCTION	2775	01/29/2032	09/03/2039																												
31201010	CONTRACT EXECUTION AND CONT...	125	01/29/2032	07/21/2032																												
31201000	ESITMATED CONSTRUCTION DURA...	2600	07/22/2032	09/03/2039																												

