Cost Risk Assessment Final Report

Official Project Title:	State Road 826/Palmetto Expressway from SR 836/Dolphin Expressway to State Road 932/NW 103 St
Project Location:	Miami-Dade County, Department of Transportation, District 6

Judy Solaun-Gonzalez, P.E. **Project Manager:** Tarek Bahgat, PMA Consultants LLC



Risk Lead:

INITIAL RISK WORKSHOP: May 7th- May 9th 2012

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July 9, 2012



Table of Contents

Executive Summary	
Identification and Qualification:	3
Quantitative Analysis	
Contingency Management	
Mitigation Planning	
1. Background	
1.1. Project Overview	7
1.2. Risk Management Workshop Overview	
2. Risk Identification and Quantification	
2.1. Identification	8
2.2. Qualification	
2.2.1. Probability Scale	
2.2.2. Top Threats	
2.2.3. Top Opportunities	
3. Quantitative Analysis	
3.1. Risk Model	
3.1.1. Project Budget	
3.1.2. Line Item Ranging	
3.2. Results:	
3.2.1. Results for Scenario 1 - Threats Only Model:	
3.2.2. Results for Scenario 2 - Opportunities Only	
3.2.3. Results for Scenario 3- Overall Model	
4. Contingency Management	
4.1 Line Item contingency:	
4.2 Management Reserve	
5. Mitigation Planning	

Appendices

Qualitative Risk Register Quantitative Risk Impacts on Budget Presentation



Executive Summary

PMA Consultants LLC (PMA) was retained by FDOT to conduct a Cost Risk Assessment and facilitate a Risk Assessment Workshop in advance of a Value Engineering study for the SR 826 Managed Lanes Project. The study is intended to identify, qualify and quantify project risks and develop a draft mitigation plan for identified project risks. The project will provide two managed lanes in each direction of SR 826/Palmetto Expressway from SR 836/Dolphin Expressway to SR 932/NW 103rd Street, physically separated from the existing mainline travel lanes. The new managed lanes system along the median of SR 826 will be connecting to the I-75 managed lanes system under development in Miami-Dade and Broward Counties. PMA's Risk Management process follows the FTA methodology. Over three days of workshop, the workshop team reviewed the project, identified, qualified and quantified the project Risks. The team also developed project mitigation plans for the top risks identified.

Identification and Qualification:

The first session of the workshop the team had vibrant discussions and round robin brain storming that resulted in identifying 92 risks of which 81 were carried forward. Of the 81 risks identified, 69 were threats with negative impact on the project cost and 12 were opportunities with potential cost savings, if materialized. During the second session of the workshop the team qualified the risks as High, Medium, or Low based on a scoring matrix measuring probability of risk occurrence and the gravity of impact the risk has on the project.

	Impact					
Probability	Very Low	Low	Medium	High	Very High	
Very High			(2)	(8)	(6)	
High		(2)	(2)	(4)	(4)	
Medium		(2)	(4)	(4)	(6)	
Low	(3)	(1)	(2)	(6)	(3)	
Very Low	(2)	(3)		(3)	(2)	

Quantitative Analysis

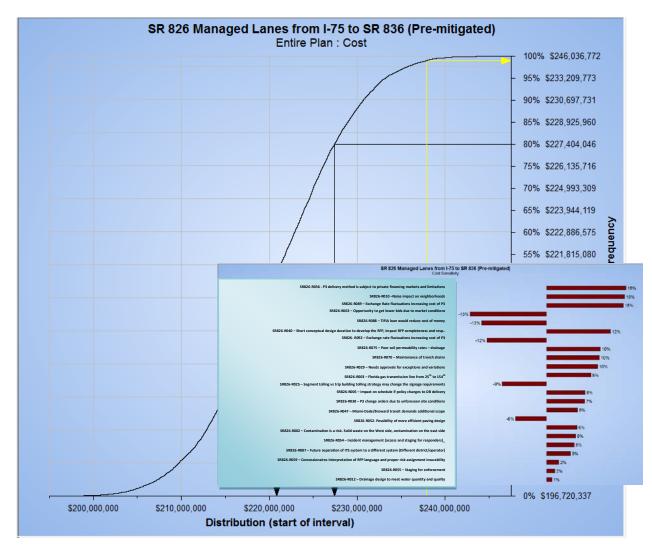
During the next session, the team began quantifying the risks and applying probabilistic cost ranges to the project budget and the identified risks. The risk model was then subjected to a Monte Carlo simulation of 10,000 randomized iterations. Based on the simulation, the baseline Budget of **\$200,692,496** (Project budget less contingency) has less than 5% probability of occurrence. On the other hand considering the potential savings from the opportunities the project has a 99% chance of completion within the overall budget of **\$237,876,127** (Industry practice is to use a 90% confidence level). The 90% percentile cost probability is **\$230,697,731** which indicates that at this level of confidence, **\$30,005,235** is needed for contingency compared to the **\$37,183,631** considered in the estimate.

The overall model scenario assumes that both threats and opportunities may materialize on the project and the total project cost distribution is shown below:



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The top ten risk threats are:

SR826-R036 P3 private financing markets and limitations

P3 delivery method is subject to private financing markets and limitations Impacts project costs and, in worst case, resulting in inability to fund project.

SR826-R010 Noise impact on neighborhoods

Increased noise level due to added traffic, adding noise walls would not reduce noise levels sufficient to warrant walls, resulting in increased noise level.

SR826-R089 Exchange rate fluctuations increasing cost of P3

P3 delivery methods will involve multinational firms and the currency market fluctuations may impact P3 pricing resulting in increased P3 Cost

SR826-R003 Florida Gas Transmission Line from 25th to 154th

20 inch Gas line: Widening may encroach closer to the gas line. Compensation for relocation for gas utility line resulting in increased project cost.

SR826-R029 Threat Needs Approvals for exceptions and variations

Exceptions and variation needed from FDOT &FHWA to avoid right of way acquisitions, risk of additional costs for acquiring right of way and schedule delay and negative impacts to the community.



SR826-R075 Poor Soil Permeability Rates - Drainage

Poor soil may require additional drainage treatment and right of way resulting in additional construction cost and right of way acquisition and increase maintenance cost.

SR826-R040 Short conceptual design duration to develop the RFP

Short conceptual design duration to develop the RFP will impact RFP completeness and response risks.

Short time to develop RFP may result in higher bids or additional change orders.

SR826-R070 Maintenance of trench drains

O&M cost of maintaining trench drains with overall increase in Life Cycle Cost and higher P3 bid price.

SR826-R038 P3 Change orders due to unforeseen site conditions

Conceptual investigations are limited and Concessionaire's design process may capture unforeseen site conditions resulting in longer and more costly change orders due to P3 delivery method.

SR826-R005 Impact on schedule if policy changes to DB delivery Department has to come up with entire project funding if DB is selected. Major schedule impact and high cost impact on this project

The top risk opportunities are:

SR826-R063 Opportunity to get lower bids due to market conditions

Current global market slowdown may increase competitive bidding from multinational firms which would result in lower bid prices for the project

SR826-R088 Transportation Infrastructure Finance and Innovation Act (TIFIA) loan would reduce cost of money

If the project qualifies for a TIFIA loan, the project will have access to lower cost of financing loans resulting in lower project cost.

SR826-R092 Exchange rate fluctuations reducing cost of P3

Exchange rates fluctuation provides global concessionaires the opportunity to take advantage of hedging on currency prices resulting in lower bids.

SR826-R025 Segment tolling versus trip building tolling Strategy may change for the signage requirements for the project. Basis of Estimate considers segment tolling, design may adopt trip building tolling which may reduce initial and maintenance costs for signals.

SR826-R052 Possibility of more efficient paving design

Concessionaire may develop a more efficient paving design resulting in project cost savings.

Contingency Management

The current project contingency is **\$37,183,631** and is consistent with a 95% confidence level (P95) in overall project budget. Since this value is higher than the P90 it is our recommendation to maintain the overall project contingency. The total probabilistic line item contingency for the project is **\$30,645,289.00**. This contingency is managed by the project team and is drawn-down if the risk expires.

Based on the fact the probabilistic contingency is less than the budgeted contingency, it is our recommendation that the project maintain the budget and allocate a management reserve to address the "Unknown Unknowns".

Management Reserve = \$37,183,631 - \$30,645,289 = \$6,538,342



Mitigation Planning

The last session of the risk workshop focused on developing mitigation plans for the identified risks. The facilitator of the workshop was impressed by the project team's awareness of many of the risks identified in the process, and by the fact that mitigations are already underway for some of the risks identified. It is our recommendation that the risk register and the mitigation plans developed during the workshop be maintained by the project team throughout the project duration to ensure adequate and satisfactory management of the project risks and budget.

The following table shows 10 of the mitigation actions developed, which could recognize cost savings if implemented

		Mitigat	ion Details
Action	Name	Risk ID	Description
1	Ongoing mitigations with utilities with a \$7.9M cost bucket in the estimate.	SR826- R003	Negotiation with utilities is ongoing.
2	Early coordination with the RRs to acquire an MOU on the aerial right	SR826- R018	Incorporate MOU criteria in the RFP for P3
3	Team already conducting percolation tests to investigate soil conditions	SR826- R075	Include in RFP all drainage calculations and investigation results
4	Egress and ingress is already provided in the current design	SR826- R047	Continue coordination with MDT and county managers
5	Educate public and garner support	SR826- R013	Independent PIO consultant is already hired to educate the public and garner the support
6	Additional conduit infrastructure for potential future ITS system to be specified in the RFP	SR826- R087	Specify additional conduits for future Communication runs in the RFP
7	Persistence and diligence in pursuing TIFIA loan	SR826- R088	Department to develop a strategy to have a better application
8	Pursue other funding sources	SR826- R030	Continue to pursue TIFIA loan
		SR826- R030	Seek funding through turnpike Bonds
		SR826- R030	Seek federal funding and Grants
9	Obtain conceptual approval for drainage	SR826- R012	More meetings with the agency to seek approval and expedite process
10	Design alternative	SR826- R070	RFP to specify No Trench drains



1. Background

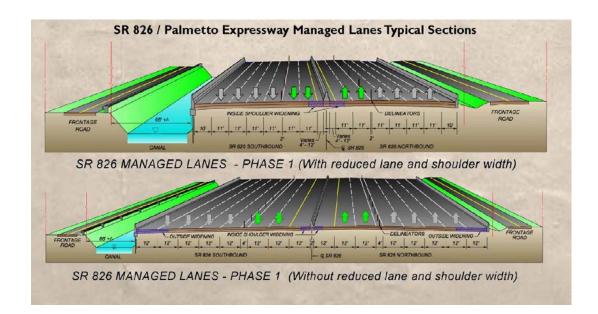
1.1. Project Overview

SR 826/Palmetto Expressway is one of the most traveled transportation corridors in Miami-Dade County. This multi-lane expressway extends from US-1 to the Golden Glades Interchange (GGI) for a distance of approximately 25 miles. Within the project study limits described above, the Palmetto Expressway corridor is an eight-lane divided limited access facility from SR 836 to NW 25th Street, and a ten-lane divided limited access facility from NW 25th Street to NW 103rd Street. The Palmetto Expressway provides system-level connections to SR 836, SR 924 and I-75. In addition, the Palmetto Expressway is designated as a Florida Intrastate Highway System (FIHS) and Strategic Intermodal System (SIS) facility.

The purpose of this project is to add two tolled managed lanes to the SR 826 corridor in each direction from SR 836 to NW 103rd Street, and then continue the tolled managed lanes system connection through I-75. Constrained right-of-way presents challenges for accommodating future traffic growth by widening the SR 826 mainline. However, managed lanes could be incorporated along the corridor with moderate widening of the mainline or by restriping existing general purpose lanes.

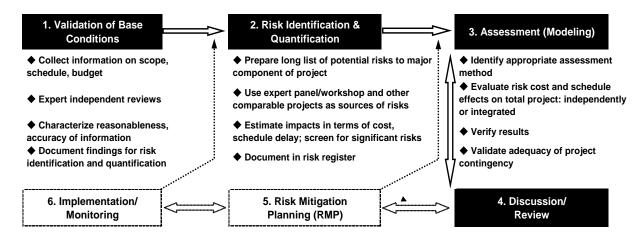






1.2 Risk Management Workshop overview

PMA was retained by FDOT to conduct a Cost Risk Assessment and facilitate a risk assessment workshop in advance of a ealue engineering study. The Risk Assessment is intended to identify, qualify and quantify project risks and develop a draft mitigation plan for identified project risks. The workshop was organized in the following stages consistent with the Federal Transit Administration (FTA) Risk Analysis methodology:



This report describes the process and results of the cost risk analysis for the SR- 826 Managed Lanes 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 assessment
- Section 5: Examines Risks Mitigation planning.

2. Risk Identification and Quantification

2.1. Identification

The FDOT project team, design consultants and FDOT subject matter experts (SMEs) convened for a facilitated three day risk workshop during the period of May 7th – May 9th. During the first session of the workshop 92 risks were identified of which 11 were subsequently dropped. Of the remaining 81 risks; 69 were identified as threats while 12 were considered opportunities. (*Usage of the term "risk" includes both threats and opportunities. "Threat risk" incidences 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 (6)¹
- Contracting and Procurement (6)
- Design and PS&E (7)
- Environmental and Hydraulics (7)
- Maintenance (1)
- Management Funding (1)

¹ Numbers in parentheses indicate the number of items in each category. SR 826 Managed Lanes Risk Assessment Final Report.docx

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- Permitting (2)
- Political Issues (7)
- Project Management (6)
- Right of Way (1)
- Structural and Geotechnical (2)
- Traffic Management (8)
- Utilities and Railroads (5)

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

- Construction (1)
- Contracting and Procurement (2)
- Design and PS&E (3)
- Environmental and Hydraulics (1)
- Management Funding (3)
- New Technologies (1)
- Traffic Management (2)



2.2. Qualification

During the second session of the workshop, risks were further ranked based on the probability of occurrence and magnitude of impact according to the following scoring scales:

2.2.1. Probability Scale

Very Low	Low	Medium	High	Very High
Up to 10%	10% to 30%	30% to 50%	50% to 70%	70% or higher

	Very Low	Low	Medium	High	Very High
Schedule*	Up to 30	30 to 60	60 to 120	120 to 180	180 or higher
Cost*	Up to \$250,000	\$250,000 to \$500,000	\$500,000 to \$1,000,000	\$1,000,000 to \$1,500,000	\$1,500,000 or higher
Performance*	Failure to meet a minor acceptance criteria	than one minor	Shortfall in meeting acceptance criteria	Significant shortfall in meeting acceptance criteria	Failure to meet acceptance criteria

Impact Scales and Types

* means impact is used in scoring

Probability and Impact Scoring Diagram (PID)

	Impact					
Probability	Very Low	Low	Medium	High	Very High	
Very High	6	12	18	36	72	
High	4	7	14	28	56	
Medium	3	5	10	20	40	
Low	2	3	6	12	24	
Very Low	1	1	2	4	8	
		Кеу				
		Up to 5	Up to 5 5 to 23 23 or hig			

The Probability and Impact scoring Diagram above represents the basis for the scoring scale used on the project risks and the following Project Risks Scores Matrix was developed to identify the counts of the risks on the project that fall into each of the groupings, i.e. six risks had very high probability of occurrence and a very high impact, while only two risks had very low probability and very low impact.

	Impact					
Probability	Very Low	Low	Medium	High	Very High	
Very High			(2)	(8)	(6)	
High		(2)	(2)	(4)	(4)	
Medium		(2)	(4)	(4)	(6)	
Low	(3)	(1)	(2)	(6)	(3)	
Very Low	(2)	(3)		(3)	(2)	

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Risks that scored 36 and higher were further considered for further evaluation, quantitative analysis, and mitigation planning. The following is a tabulation of the **Top Risks** (threats & Opportunities) that scored more than 36 on the above scale:

ID	Category	Туре	Title	Description	Effect	Pre- mitigation Score
SR826 -R003	Utilities and Rail Roads	Threat	Florida Gas Transmission Line from 25th to 154th	20 inch Gas line: Widening may encroach closer to the gas line	Compensation for relocation for gas utility line	72
SR826 -R013	Political Issues	Threat	Never ending construction, additional Tolls	Public perception of continuing construction impact after completion of (12 projects)	Public opposition to the project, driver confusion	72
SR826 -R012	Environ- mental & hydraulics	Threat	Drainage design to meet water quantity and quality	Design may have to meet the new permitting requirements, or meeting existing criteria. May result in added French drains or acquiring rights of way to build ponds.	Additional cost and right of way, and delayed schedule	72
SR826 -R070	Environ- mental & hydraulics	Threat	Maintenance of trench drains	O&M cost of maintaining trench drains	Overall increase in Life Cycle Cost	72
SR826 -R029	Design and PS&E	Threat	Needs Approvals for exceptions and variations	Exceptions and variation needed from FDOT &FHWA to avoid right of way acquisitions	Cost of acquiring right of way and schedule delay and negative impacts to the community	72
SR826 -R040	Design and PS&E	Threat	Short time to Develop RFP	Short conceptual design duration to develop the RFP, impact RFP completeness and response risks	Impact RFP completeness and response to risk, and additional change orders	72
SR826 -R036	Manage- ment Funding	Threat	P3 private financing markets and limitations	P3 delivery method is subject to private financing markets and limitations	Impacts project costs and, in worst case, inability to fund project	56
SR826 -R010	Environ- mental & hydraulics	Threat	Noise impact on neighborhoods	Increased noise level due to added traffic. Adding noise walls would not reduce noise levels sufficient to warrant walls	Increased noise level	56

2.2.2. Top Threats

Florida Department of Transportation



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ID	Category	Туре	Title	Description	Effect	Pre- mitigation Score
SR826 -R005	Design and PS&E	Threat	Impact on schedule if Policy Changes to DB delivery	Department has to come up with entire project funding if DB is selected	Major schedule impact and high cost impact on the projects	56
SR826 -R089	Manage- ment Funding	Threat	Exchange Rate fluctuations increasing cost of P3	P3 delivery methods will involve multinational firms and currency market fluctuations may impact P3 pricing	Increase P3 Cost	40
SR826 -R080	Contract- ing and Procure- ment	Threat	Procurement Process Protests	P3 Bidders contest procurement process	Delay the award	40
SR826 -R018	Utilities and Rail Roads	Threat	Crossing several railroads, Metro Rail, aerial rights and TCEs	Acquire aerial rights over RR tracks prior to issuance of RFP	Delay in RFP, increased construction costs	36
SR826 -R006	Traffic Manage- ment	Threat	Ramp signaling implementation	Queuing and backup on the arterials may be more than designed	Queuing, additional cost to ramp widening and may need to adjust signal phasing	36
SR826 -R055	Traffic Managem ent	Threat	Staging for Enforcement	Reduced shoulders does not allow sufficient room for Police enforcement	Cannot regulate speed on managed lanes	36
SR826 -R054	Traffic Manage- ment	Threat	Incident management (access and staging for responders)	Reduced shoulder does not allow for refuge to disabled vehicles and responders	Closed lanes and loss of revenue, and traffic congestion, life safety issue	36
SR826 -R030	Manage- ment Funding	Threat	Construction funds only \$5 M identified	By 2017, need to make available the shortfall in financing gap	Cannot move forward with the project without impact on capital program and support for it	36
SR826 -R002	Environ- mental & hydraulics	Threat	Contamination is a risk	Solid wastes on the west side, chemical contamination on the east side	High remediation and cleanup cost	36
SR826 -R059	Contract- ing and Procure- ment	Threat	Concessionaires interpretation of RFP	Concessionaires different interpretation of RFP language and proper risk assignment and insurability	Increased Project cost of the project	36



2.2.3. Top Opportunities

ID	Category	Туре	Title	Description	Effect	Pre- mitigation Score
SR826- R063	Contracting and Procurement	Opportunity	Opportunity to get lower bids due to market conditions		Lower Project Cost	56
SR826- R041	Traffic Management	Opportunity	Increase capacity for thru traffic at the interchange of 826 & 836		Improved Project Performance	40
SR826- R092	Management Funding	Opportunity	Exchange Rate fluctuations reducing cost of P3		Lower project cost	40
SR826- R088	Management Funding	Opportunity	TIFIA loan would reduce cost of money	Pursue TIFIA funding for the project	Lower project cost	40
SR826- R056	Design and PS&E	Opportunity	Reduce gantry locations			40
SR826- R052	Design and PS&E	Opportunity	Possibility of more efficient paving design			36



3. Quantitative Analysis

3.1. Risk Model

3.1.1. Project Budget

The risk cost model is based on the project budget as provided by the Project Team for the last session of the workshop. The total project budget of **\$237,876,127** included direct construction costs of **\$139,683,060**, and contingency of **\$37,183,631**. Initial budget was reviewed by PMA's risk analyst and estimator and the quantities appear to be consistent with the project scope and the pricing is within range of the low and high construction unit rates historic records by district 4 and in the state of Florida. Contingency represents 27% of construction costs and is consistent with the preliminary design stage contingency levels in the industry. Initial budget less contingency, **\$200,692,496**, was used as the basis of the risk model.

ID	Description	Budget
	Direct Construction Costs	Deterministic
30	Clearing and Grubbing	\$1,287,968
40	Roadwork	\$20,326,059
45	Bulkhead	\$2,378,247
130	Storm Drain Structures	\$2,235,156
120	Storm Drain Piping	\$1,329,668
50	French Drains	\$6,279,844
60	Concrete	\$1,985,096
70	Steel, Reinforcement & Sheet Piling	\$3,320,351
80	Traffic Barrier/Retaining Walls	\$22,788,347
90	Road Markings	\$389,214
100	Bridges	\$53,673,880
140	Lighting	\$240,200
160	Signing & Marking	\$3,117,036
170	Noise Wall	\$0
180	ITS & Tolling	\$13,199,988
190	Environmental Mitigation	\$300,000
200	Landscaping	\$1,000,000
210	Utilities	\$5,400,000
220	Fire Suppression Systems	\$432,006
	Direct Construction Costs Total	\$139,683,060
	Proforma Costs	
310	Contamination	\$1,200,000
320	Mobilization	\$15,365,137
330	Maintenance of Traffic	\$13,968,306
340	Contingency	\$37,183,631
350	CEI	\$14,776,239
360	DB Designing Fees	\$15,699,754
	Proforma Costs Total	\$98,193,067
	Total Project	\$237,876,127

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3.1.2. Line Item Ranging

The detailed project budget was ranged based on the historic records of the unit prices for projects performed by FDOT in District 4, District 6, and State-wide. Three values for each line item were assessed:

Low: Lowest possible unit price for the line item based on unit prices data bases **Most Likely**: Budget's estimated unit prices

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

During the workshop the team evaluated the ranges and accepted or modified the ranges. The following table represents the final ranging that was used for the risk model:

ID	Description	Budget		Ranging				lget
		Determiinistic	Low	Likely	High	Low %	Likely %	High %
A000	Direct Construction Costs							
30	Clearing and Grubbing	\$1,287,968	\$605,151	\$1,287,968	\$1,540,432	47%	100%	120%
40	Roadwork	\$20,326,059	\$14,800,802	\$20,326,059	\$24,067,264	73%	100%	118%
45	Bulkhead	\$2,378,247	\$2,376,098	\$2,378,247	\$4,158,514	100%	100%	175%
130	Storm Drain Str.	\$2,235,156	\$2,008,104	\$2,235,156	\$2,413,387	90%	100%	108%
120	Sorm Drain Piping	\$1,329,668	\$1,190,533	\$1,329,668	\$1,898,670	90%	100%	143%
50	French Drains	\$6,279,844	\$5,168,144	\$6,279,844	\$7,221,821	82%	100%	115%
60	Concrete	\$1,985,096	\$1,786,586	\$1,985,096	\$2,235,371	90%	100%	113%
70	Steel, Reinforcement & sheet Piling	\$3,320,351	\$1,936,084	\$3,320,351	\$4,515,234	58%	100%	136%
80	Traffic Barrier/Retaining Walls	\$22,788,347	\$18,945,941	\$22,788,347	\$28,485,434	83%	100%	125%
90	Road Markings	\$389,214	\$355,572	\$389,214	\$712,086	91%	100%	183%
100	Bridges	\$53,673,880	\$46,964,645	\$53,673,880	\$61,054,038	88%	100%	114%
140	Lighting	\$240,200	\$180,150	\$240,200	\$300,250	75%	100%	125%
160	Signing & Marking	\$3,117,036	\$2,805,332	\$3,117,036	\$3,428,740	90%	100%	110%
170	Noise Wall	\$0						
180	ITS & Tolling	\$13,199,988	\$11,879,989	\$13,199,988	\$14,519,987	90%	100%	110%
190	Environmental Mitigation	\$300,000	\$281,250	\$375,000	\$468,750	94%	125%	156%
200	Landscaping	\$1,000,000	\$750,000	\$1,000,000	\$2,127,870	75%	100%	213%
210	Utilities	\$5,400,000	\$5,625,000	\$7,500,000	\$9,375,000	104%	139%	174%
220	Fire Suppression Systems	\$432,006	\$324,005	\$432,006	\$540,008	75%	100%	125%
	Direct Construction Costs Total	\$139,683,060						
B000	Proforma Costs							
310	Contamination	\$1,200,000	\$1,125,000	\$1,200,000	\$1,875,000	94%	100%	156%
320	Mobilization	\$15,365,137	\$12,890,963	\$14,185,806	\$15,971,842	84%	92%	104%
330	Maintenance of Traffic	\$13,968,306	\$14,180,060	\$15,604,387	\$17,569,026	102%	112%	126%
340	Contingency	\$37,183,631	\$31,196,132	\$34,329,651	\$38,651,857	84%	92%	104%
350	CEI	\$14,776,239	\$13,839,738	\$15,229,882	\$17,147,369	94%	103%	116%
360	DB Desinging Fees	\$15,699,754	\$17,229,673	\$19,037,352	\$21,434,212	110%	121%	137%
	Proforma Costs Total	\$98,193,067						
	Total Project	\$237,876,127						

Please note that the probabilistic ranged items cannot be subtotaled. Randomization for analysis uses modified BetaPert distribution.

Risk Events impacts

The second component of the risk model is the impacts of the risk events identified during the qualitative sessions of the workshop. The risk events were introduced to the model in three different scenarios:



Scenario 1 - Threats Only Model: Simulates only threat risks that will impact the budget, i.e. assumes that no opportunities would materialize, and the project may not benefit of any potential savings due to these opportunities. This model will yield a more pessimistic outcome for the project.

Scenario 2 - Opportunities Only Model: Simulates a very optimistic model assumes that none of the threats will materialize. This simulation is also used to evaluate the effect on cost of the mitigation of project threats.

Scenario 3- Overall Model: This is the more realistic model which simulates the possibility of both threats and opportunities impacting the project costs.

Risk ID	Title	Probability		Minimum	Likely Impact	Maximum
			Impacted	Impact \$	\$	Impact \$
SR826-R002	Contamination is a risk. Solid waste on the west side,	85.00%	0310	1,000,000.00	1,250,000.00	1,500,000.00
	contamination on the east side					
SR826-R003	Florida Gas Transmission Line from 25th to 154th	85.00%		1,500,000.00	2,250,000.00	3,000,000.00
SR826-R005	Impact on schedule if Policy Changes to DB delivery	60.00%		1,000,000.00	1,250,000.00	1,500,000.00
SR826-R010	Noise impact on neibourhoods	60.00%		1,500,000.00	2,250,000.00	3,000,000.00
SR826-R012	Drainage design to meet water quantity and quality	85.00%	0050	-	41,666.67	83,333.33
			0130	-	41,666.67	83,333.33
			0120	-	41,666.67	83,333.33
SR826-R018	Crossing several rail roads, Metro Rail, aerial rights and TCEs	85.00%	0100	-	62,500.00	125,000.00
			0210	-	62,500.00	125,000.00
SR826-R025	Segment tolling vs trip buildingTolling strategy may change the signage requiriements for the projects	60.00%	0160	500,000.00	625,000.00	750,000.00
			0180	500,000.00	625,000.00	750,000.00
SR826-R029	Needs Approvals for exceptions and variations	85.00%	0010	1,500,000.00	2,250,000.00	3,000,000.00
SR826-R030	Construction funds only \$ 5 M identified	85.00%		-	125,000.00	250,000.00
SR826-R036	P3 delivery method is subject to private financing markets and limitiations	60.00%	0010	1,500,000.00	2,250,000.00	3,000,000.00
SR826-R038	P3 Change orders due to unforeseen site conditions	60.00%	0210	250,000.00	312,500.00	375,000.00
			0080	250,000.00	312,500.00	375,000.00
			0100	250,000.00	312,500.00	375,000.00
			0040	250,000.00	312,500.00	375,000.00
SR826-R040	Short conceptual design duration to develop the RFP, impact RFP completeness and response risks	85.00%	0010	1,500,000.00	2,250,000.00	3,000,000.00
SR826-R047	Miami-Dade/Broward transit demands additional scope	20.00%	0010	1,000,000.00	1,250,000.00	1,500,000.00
	Possibiliy of more efficient paving design	85.00%		1,000,000.00	1,250,000.00	1,500,000.00
	incident management (access and staging for responders)	85.00%		250,000.00	375,000.00	500,000.00
	······································		0180	250,000.00	375,000.00	500,000.00
SR826-R055	staging for Enforcement	85.00%	-	250,000.00	375,000.00	500,000.00
			0040	250,000.00	375,000.00	500,000.00
SR826-R059	Concessionaires interpretation of RFP language and proper risk assignment insurability	85.00%		1,000,000.00	1,250,000.00	1,500,000.00
SR826-R070	maintenance of trench drains	85.00%	0120	1,500,000.00	2,250,000.00	3,000,000.00
	Poor Soil Permeability Rates- Drainage	20.00%		500,000.00	750,000.00	1,000,000.00
2		_0.0070	0120	500,000.00	750,000.00	1,000,000.00
			0050	500,000.00	750,000.00	1,000,000.00
SR826-R087	Future Seperation of ITS sytem to a different system	60.00%		250,000.00	375,000.00	500,000.00
	(Different District/Operator)		0180	250,000.00	375,000.00	500,000.00
SB826-BU80	TIFIA loan would reduce cost of money	40.00%		1,500,000.00	2,250,000.00	3,000,000.00
	Exchange Rate fluctuations increasing cost of P3	40.00%		1,500,000.00	2,250,000.00	3,000,000.00
	Exchange Rate fluctuations increasing cost of P3	40.00%		1,500,000.00	2,250,000.00	3,000,000.00
511020-1092	LACHANGE NALE HULLUALIONS INCLEASING LOSE OF PS	40.00%	0010	1,500,000.00	2,230,000.00	5,000,000.00

The table below shows the ranging for the risk threats and opportunities impacting the project:

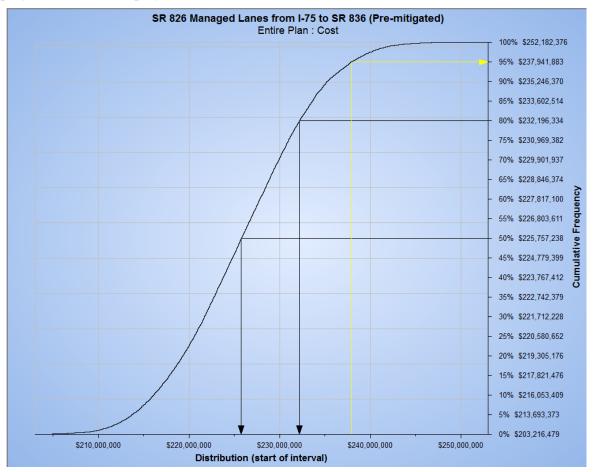


A Monte Carlo simulation of 10,000 iterations was performed on the risk model using Latin Hyperbole sampling method to generate randomized calculations of the project budget. This section details the results of the simulation on three different scenarios; Threats only, Opportunities only, and Overall model.

3.2.1. Results for Scenario 1 - Threats Only Model:

Based on the simulation, the baseline budget of **\$200,692,496** (less contingency) has 0% probability of occurrence. On the other hand the project has a 95% chance of completion within the overall budget of **\$237,876,127** (Industry practice is to use a 90% confidence level). The 90% percentile cost probability is **\$235,246,370** which indicates that at this level of confidence, **\$34,553,874** is needed for contingency compared to the **\$37,183,631** considered in the estimate.

The Threats Only scenario assumes that the risk opportunities may not materialized on the project and the total project cost distribution is shown below.



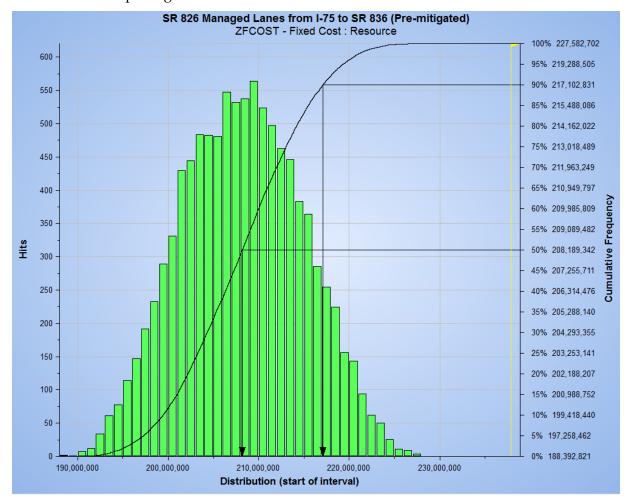
The total cost distribution shown above consists of two risk inputs: probabilistic ranging on the fixed costs, and the range of impact of risk incidents from the risk register.

The following curve shows the distribution for the ranging on the fixed costs only. The deterministic fixed costs excluding contingency is **\$200,692,496.** The 90% cost probability for the





fixed costs is **\$217,102,831** which indicates the need for **\$16,410,335** to offset the risks associated with the estimate pricing.

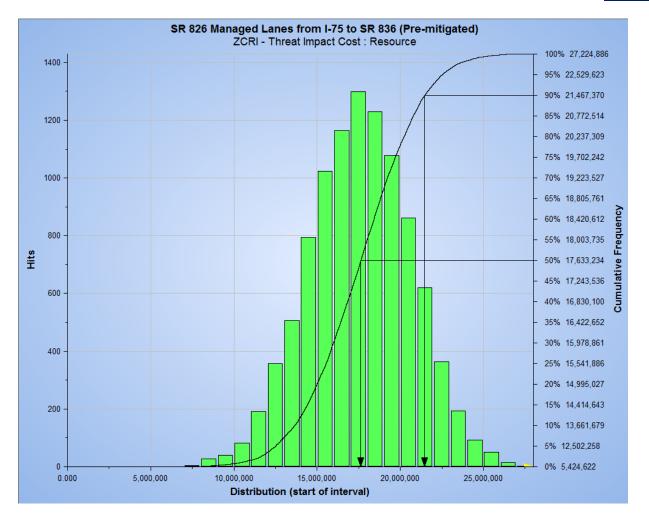


The following chart shows the cost distribution associated with the risks identified on the risk register and impacts the project. These risks have a **\$0** budget with a 90% probability of reaching **\$21,476,370**.



Florida Department of Transportation

Cost Risk Assessment SR 826/Palmetto Expwy from SR 836/Dolphin Expwy to SR 932/NW 103 St



Cost Sensitivity:

Cost sensitivity is key measure of the correlation between the occurrence of any risk and its impact on the project cost. Higher sensitivity factor for a risk indicates higher impact on the total project.

The top ten Risk threats are:

SR826-R036 P3 private financing markets and limitations

P3 delivery method is subject to private financing markets and limitations impacts project costs and in worst case resulting in inability to fund project.

SR826-R010 Noise impact on neighborhoods

Increased noise level due to added traffic, adding Noise walls would not reduce noise levels sufficient to warrant walls, resulting in increased noise level.

SR826-R089 Exchange Rate fluctuations increasing cost of P3

P3 delivery methods will involve multinational firms and the currency market fluctuations may impact P3 pricing resulting in increased P3 Cost.

SR826-R003 Florida Gas Transmission Line from 25th to 154th

inch gas line: Widening may encroach closer to the gas line. Compensation for relocation for gas utility line resulting in increased project cost.



SR826-R029 Threat needs approvals for exceptions and variations

Exceptions and variation needed from FDOT & FHWA to avoid right of way acquisitions, risk of additional costs for acquiring right of way and schedule delay and negative impacts to the community.

SR826-R075 Poor soil permeability rates-drainage

Poor soil may require additional drainage treatment and right of way resulting in additional construction cost and right of way acquisition and increase maintenance cost.

SR826-R040 Short conceptual design duration to develop the RFP

Short conceptual design duration to develop the RFP will impact RFP completeness and response risks . Short time to Develop RFP and may result higher bids or additional change orders.

SR826-R070 Maintenance of trench drains

O&M cost of maintaining trench drains with overall increase in Life Cycle Cost and higher P3 bid price.

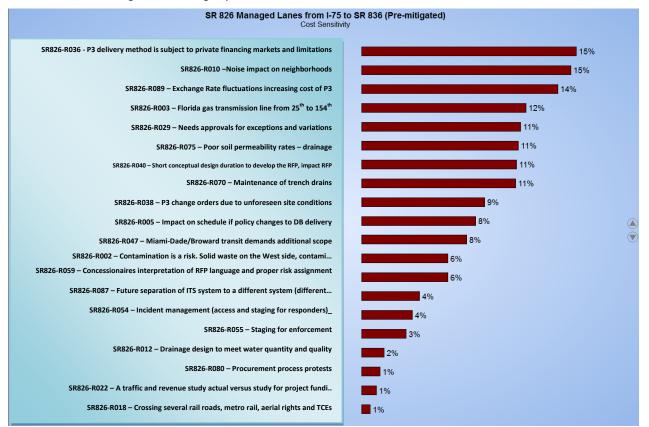
SR826-R038 P3 Change orders due to unforeseen site conditions

Conceptual investigations are limited and Concessionaire's design process may capture unforeseen site conditions resulting in longer and more costly change orders due to P3 delivery method.

SR826-R005 Impact on schedule if policy changes to DB delivery

Department has to come up with entire project funding if DB is selected Major schedule impact and high cost impact on this project

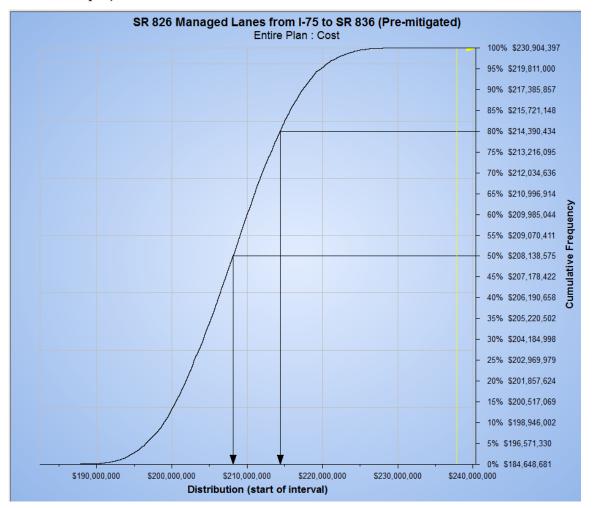
The following **Tornado diagram** shows a top down sorting of the risks based on their sensitivity factor and their impact on the project.



3.2.2. Results for Scenario 2 - Opportunities only

Based on the simulation, the baseline Budget of **\$200,692,496** (less contingency) has less than 5% probability of occurrence. On the other hand under this scenario and considering no threat impacts and the potential savings from the opportunities the project has a 100% chance of completion within the overall budget of **\$237,876,127** (Industry practice is to use a 90% confidence level). The 90% percentile cost probability is **\$217,385,857**, which indicates that at this level of confidence, **\$16,693,361** is needed for contingency compared to the **\$37,183,631** considered in the estimate.

The threats only scenario assumes that the risk opportunities may not materialized on the project and the total project cost distribution is shown below



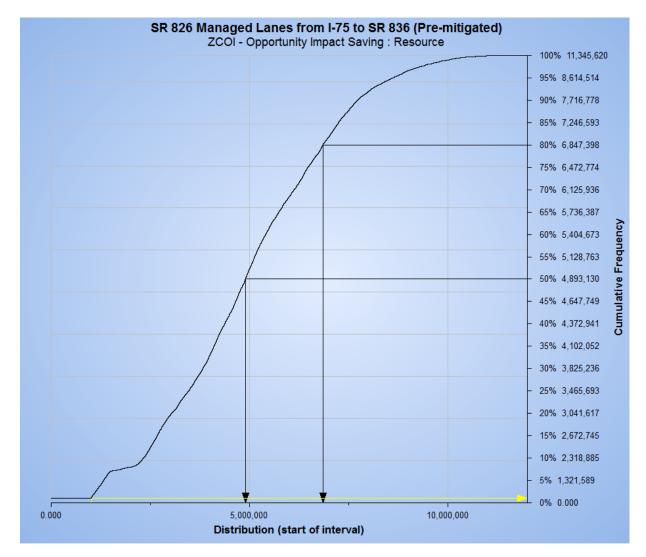
The distribution for the ranging on the fixed costs only is similar to the first scenario and indicates the need for **\$16,410,335** to offset the risks associated with the estimate pricing. The chart is not included in the report for brevity.

The cost distribution associated with the Risk Opportunities identified on the risk register and impacts the project are shown on the next page. These risks have a **\$0** budget with a 90% probability of reaching **\$7,716,778**.



Florida Department of Transportation

Cost Risk Assessment SR 826/Palmetto Expwy from SR 836/Dolphin Expwy to SR 932/NW 103 St



Cost Sensitivity:

The top risk opportunities are:

SR826-R063 Opportunity to get lower Bids due to market conditions

Current global market slowdown may increase competitive bidding from multinational firms which would result in lower bid prices for the project.

- SR826-R088 TIFIA loan would reduce cost of money If the project qualifies for a TIFIA loan, the project will have access to lower cost of financing loans resulting in lower project cost.
- **SR826-R092** Exchange Rate fluctuations reducing cost of P3 Exchange rates fluctuation provides global confectionaries the opportunity to take advantage of hedging on currency prices resulting in lower bids.

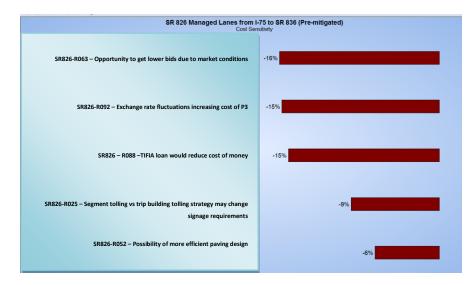
SR826-R025 Segment tolling versus trip building tolling

Strategy may change for the signage requirements for the project. Basis of Estimate considers segment tolling, design may adopt trip building tolling which may reduce initial and maintenance costs for signals.

SR826-R052 Possibility of more efficient paving design

Concessionaire may develop a more efficient paving design resulting in project cost savings.

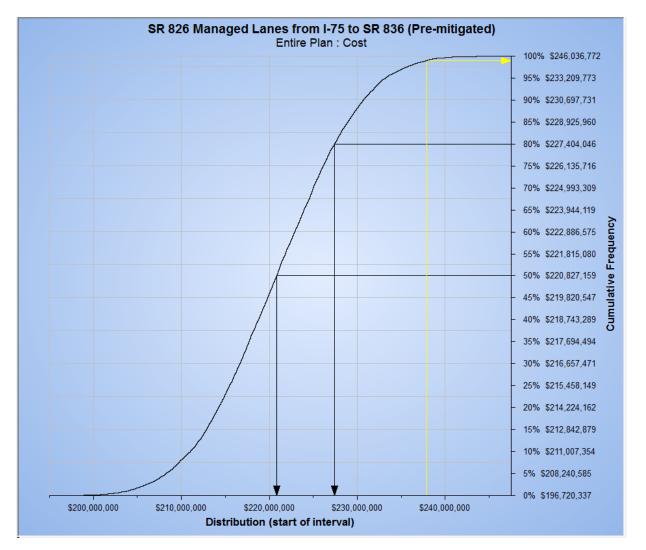
The following **Tornado diagram** shows a top down sorting of the risks based on their sensitivity factor and their impact on the project.



3.2.3. Results for Scenario 3- Overall Model

Based on the simulation, the baseline Budget of **\$200,692,496** (less contingency) has less than 5% probability of occurrence. On the other hand under this scenario and considering the potential savings from the opportunities the project has a 99% chance of completion within the overall budget of **\$237,876,127** (Industry practice is to use a 90% confidence level). The 90% percentile cost probability is **\$230,697,731** which indicates that at this level of confidence, **\$30,005,235** is needed for contingency compared to the **\$37,183,631** considered in the estimate.

The overall model scenario assumes that both threats and opportunities may materialize on the project and the total project cost distribution is shown below:



The distribution for the ranging on the fixed costs only is similar to the first scenario and indicates the need for **\$16,410,335** to offset the risks associated with the estimate pricing. The chart is not included in the report for brevity.

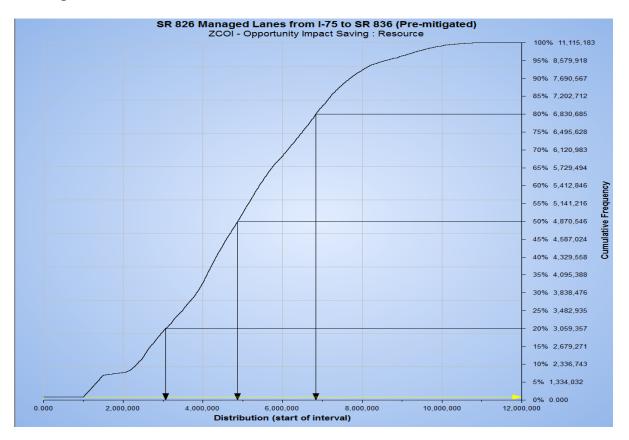


The cost distribution associated with the risk threats identified on the risk register and impacts the project is shown below. These risks have a **\$0** budget with a 90% probability of reaching **\$20,157,090**.





The cost distribution associated with the risk opportunities identified on the risk register and impacts the project is shown below. These risks have a **\$0** budget with a 90% probability of reaching **\$7,690,567**.

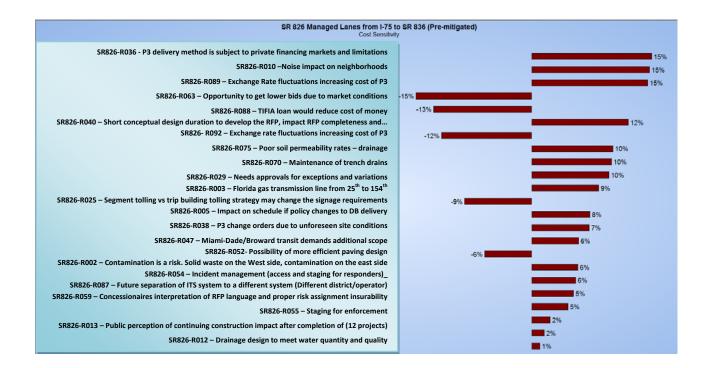




Cost Sensitivity:

In this scenario cost sensitivity for risk threats are similar to the first scenario. List of top risk threats is not included for brevity.

The following **Tornado diagram** shows a top down sorting of the risks based on their sensitivity factor and their impact on the project.





4. Contingency Management

One of the key results of the Cost Risk Analysis is the amount of contingency that is needed for the project cost baseline to guarantee that the budget is not exceeded at a certain confidence level (90% confidence). Good project risk management strategies must take this into account. The assessment of contingency is a two-step process:

Line Item contingency: The general practice is to allow for the individual budget line item baseline cost (BC) contingency (C) that equals the difference between the expected cost of the line item (P50). Or C = P50-BC. As the project advances and actual expenditures on the line item start, project contingencies could be drawn-down allowing the project team full control of the line item contingency.

Overall Project Contingency: or Management Reserve (MR), brings the total project cost to a certain confidence level (P90) or MR=P90-P50 at the overall project level. During the project execution this Management Reserve is held by management and could be allocated at management's discretion to line items or changes as needed.

4.1 Line Item contingency:

The total line item contingency for the project is **\$30,645,289.00**. The following table shows the contingency needed for each line item on the project:

Line Item/Risk	Description	Budget	P50	Contingency
380	Total Project	\$237,876,127		
A000	Direct Construction Costs	\$139,683,060		
10	Risk Impacts	\$0		
0010:SR826-R005	Impact on schedule if Policy Changes to DB delivery	\$0	1,152,139.00	\$1,152,139.0
0010:SR826-R029	Needs Approvals for exceptions and variations	\$0	2,179,768.00	\$2,179,768.0
0010:SR826-R030	Construction funds only \$ 5 M identified	\$0	112,871.00	\$112,871.0
0010:SR826-R036	P3 delivery method is subject to private financing markets and limitiations	\$0	1,951,125.00	\$1,951,125.0
0010:SR826-R040	Short conceptual design duration to develop the RFP, impact RFP completeness and response risks	\$0	2,179,384.00	\$2,179,384.0
0010:SR826-R047	Miami-Dade/Broward transit demands additional scope	\$0	0	\$0.0
0010:SR826-R059	Concessionaires interpretation of RFP language and proper risk assignment insurability	\$0	1,226,556.00	\$1,226,556.0
0010:SR826-R089	Exchange Rate fluctuations increasing cost of P3	\$0	0	\$0.0
30	Clearing and Grubbing	\$1,287,968	1,233,987.00	\$0.
40	Roadwork	\$20,326,059	20,934,390.00	\$608,331.0
45	Bulkhead	\$2,378,247	2,611,637.00	\$233,390.0
50	French Drains	\$6,279,844	6,412,509.00	\$132,665.0
60	Concrete	\$1,985,096	1,992,132.00	\$7,036.0
70	Steel, Reinforcement & sheet Piling	\$3,320,351	3,298,776.00	\$0.
80	Traffic Barrier/Retaining Walls	\$22,788,347	23,231,193.00	\$442,846.
90	Road Markings	\$389,214	426,731.00	\$37,517.
	Bridges	\$53,673,880	54,023,427.00	\$349,547.
	Sorm Drain Piping	\$1,329,668	3,702,661.00	\$2,372,993.
130	Storm Drain Str.	\$2,235,156	2,290,294.00	\$55,138.
	Lighting	\$240,200	240,320.00	\$120.
	Signing & Marking	\$3,117,036		
	ITS & Tolling		14,059,881.00	
	Environmental Mitigation	\$300,000		
	Landscaping	\$1,000,000		
	Utilities+B35	\$432,006		
	Fire Suppression Systems	\$432,006		\$216.
B000	Proforma Costs	\$96,993,067		
	Contamination	\$1,200,000		
	Mobilization	\$15,365,137		
	Maintenance of Traffic		15,676,450.00	\$1,708,144.
	Contingency	\$37,183,631		
	CEI		15,300,298.00	
360	DB Desinging Fees	\$15,699,754	19,116,397.00	\$3,416,643.0
				\$30,645,289.0



4.2 Management Reserve

The current project contingency is **\$37,183,631** and is consistent with a 95% confidence level (P95) in overall project budget. Since this value is higher than the P90 it is our recommendation to maintain the overall project contingency. In this case the management reserve will calculate as follows:

Management Reserve = \$37,183,631 - \$30,645,289 = \$6,538,342.00



5. Mitigation Planning

The last session of the risk workshop focused on developing mitigation plans for the identified risks. The facilitator of the workshop was impressed by the project team's awareness of many of the risks identified in the process and by the fact that mitigations are already underway for some of the risks identified. It is our recommendation that the risk register and the mitigation plans developed during the workshop be maintained by the project team throughout the project duration to ensure adequate and satisfactory management of the project risks and budget. The following table lists the mitigation plans developed to address the risks identified during the workshop:

	Mitigation Details		
Action	Name	Risk ID	Description
1	Ongoing mitigations with Utilities with a \$7.9M cost bucket in the estimate.	SR826- R003	Negotiation with Utilities is ongoing.
2	Early coordination with the RRs to acquire an MOU on the aerial right	SR826- R018	Incorporate MOU criteria in the RFP for P3
3	Team already conducting percolation tests to investigate soil conditions	SR826- R075	Include in RFP all drainage calculations and investigation results
4	Egress and ingress is already provided in the current design	SR826- R047	Continue coordination with MDT and county managers
5	Educate public and garner support	SR826- R013	Independent PIO consultant is already hired to educate the public and garner the support
6	Additional conduit infrastructure for potential future ITS system to be specified in the RFP	SR826- R087	Specify additional conduits for future Communication runs in the RFP
7	Persistence and diligence in pursuing TIFIA loan	SR826- R088	Department to develop a strategy to have a better application
8	Pursue other funding sources	SR826- R030	Continue to Pursue TIFIA loan
		SR826- R030	Seek funding through turnpike Bonds
		SR826- R030	Seek federal funding and Grants
9	Obtain conceptual approval for drainage	SR826- R012	More meetings with the agency to seek approval and expedite process



Florida Department of Transportation

Cost Risk Assessment SR 826/Palmetto Expwy from SR 836/Dolphin Expwy to SR 932/NW 103 St

Action	Name	Risk ID	Description			
10	Design alternative	SR826-	RFP to specify no trench drains			
10	_	R070				
		SR826-	Develop a design concept alternative			
		R070				
11	Incorporate investigation	SR826-	Investigation of contamination conditions is			
	information in RFP	R002	in progress			
		SR826-	Incorporate investigation information into			
		R002	RFP			
		SR826-	Design around contamination to minimize			
	Control Office opproval	R002	Cost			
12	Central Office approval	SR826-	Feds have been briefed and awaiting			
		R029	approval at central office			
		SR826-	Central Office is currently reviewing,			
		R029	approval pending			
		SR826-	Already garnered the support of the local			
	Short RFP duration	R029	district Clear delineation of discipline responsibility			
13	Short RFP duration	SR826- R040	Clear delineation of discipline responsibility			
		SR826-	Rely on expertise of people familiar with the			
		R040	P3 delivery process			
		SR826-				
		R040	Strong legal team involved			
		SR826-	Close Coordination with District 4 on the			
		R040	RFP development,			
			•			
		SR826- R040	Tight QA QC process			
	Transparent process and	SR826-	Transparent procurement process			
14	clear RFP language	R080				
		SR826-	Clear language & specifications on the RFP			
		R080				
45	Continue investigations	SR826-	Coordination with Utilities			
15		R038				
		SR826-	Avoidance of contamination areas			
		R038				
		SR826-	Additional exploratory Geotech			
		R038	investigations			
		SR826-	Provide in the RFP all as-built information			
		R038				



Florida Department of Transportation Cost Risk Assessment SR 826/Palmetto Expwy from SR 836/Dolphin Expwy to SR 932/NW 103 St

Appendices

<u>Risks</u>

<u>ID</u>	Type	Title	Pre-mitigation Probability	Description	Cause	Effect	RBS	Mitigation Actions	Impacted Tasks
SR826-R012	Threat	Drainage design to meet water quantity and quality	VH	Design may have to meet the new permiting requirements, or meeting existing criteria. may result in added french drains or aquiring right of way to build ponds,	Potential change to permitting Criteria, or not meeting existing criteria	Additional cost and right of way, and delayed schedule	Environmental & hydraulics	1	3
\$R826-R040	Threat	Short conceptual design duration to develop the RFP, impact RFP completeness and response risks	νн	Short time to Develop RFP	Comitment to get the project as early as possible to stimulate the economy	Impact RFP completeness and response to risk, and additional change orders	Design and PS&E	5	1
SR826-R013	Threat	Public perception of continuing construction impact after completion of (12 projects)	νн	Never ending construction, Toll rates	New tolls continuing construction different traffic patrterns	public opposition to the project driver confusion	Political Issues	1	1
SR826-R029	Threat	Needs Approvals for exceptions and variations	νн	exceptions and variation needed from FDOT &FHWA to avoid right of way acquistions	Inability to meet criteria	cost of aquiring right of way and schedule delay and negtive impacts to the community	Design and PS&E	3	1
SR826-R003	Threat	Florida Gas Transmission Line from 25th to 154th	νн	20 inch Gas line:Widening may encroach closer to the gas line	Road widening	Compensation for relocation for gas utility line	Utilities and Rail Roads	1	1
SR826-R070	Threat	maintenance of trench drains	VH	O&M cost of maintaing trench drains	Inherent design of drains clogging	overall increase in Life Cycle Cost	Environmental & hydraulics	2	1
SR826-R010	Threat	Noise impact on neibourhoods	н	Increased noise level due to added traffic., Adding Noise walls would not reduce noise levels sufficient to warrent walls	Added Traffic	Increased noise level	Environmental & hydraulics		1
SR826-R063	Opportunity	Opportunity to get lower Bids due to market conditions	н				Contracting and Procurement		1
SR826-R036	Threat	P3 delivery method is subject to private financing markets and limitiations	н				Management Funding		1
SR826-R005	Threat	Impact on schedule if Policy Changes to DB delivery	н	Department has to come up with entire project funding if DB is selected	CHange in delivery method	Major schedule impact and high cost impact on this projects	Design and PS&E		1
SR826-R088	Opportunity	TIFIA loan would reduce cost of money	м					1	1
SR826-R089	Threat	Exchange Rate fluctuations increasing cost of P3	м						1
SR826-R080	Threat	Procurement Process Protests	м	P3 Bidders contest procurement process		Delay the award	Contracting and Procurement	2	1
SR826-R041	Opportunity	Increase Capacity for thru traffic at the interchage of 826 & 836	м				Traffic Management		1
SR826-R092	Opportunity	Exchange Rate fluctuations increasing cost of P3	м						1
SR826-R056	Opportunity	Reduce gantry locations	м				Design and PS&E		1
SR826-R055	Threat	staging for Enforcement	νн	Reduced shoulders does not allow sufficient room for Police enforcement		Cannot regulate speed on managed lanes	Traffic Management		2
SR826-R054	Threat	incident management (access and staging for responders)_	VH	Reduced shoulder does not allow for refuge to disabled vehicles and responders		closed lanes and loss of revenue, and traffic congestion, life safety issue	Traffic Management		2
SR826-R030	Threat	Construction funds only \$ 5 M identified	νн	By 2017 Need to make available the shortfall in financing gap		Cannot move forward with the project or impact capital program and support for it.	Management Funding	<u>3</u>	1
SR826-R059	Threat	Concessionaires interpretation of RFP language and proper risk assignment insurability	νн				Contracting and Procurement		1
SR826-R018	Threat	Crossing several rail roads, Metro Rail, aerial rights and TCEs	νн	aquire aerial rights over RR tracks prior to issuance of RFP		Delay in RFP, increased construction costs	Utilities and Rail Roads	1	2
SR826-R002	Threat	Contamination is a risk. Solid waste on the west side, contamination on the east side	VH	Solid waste on the west side, Chemical contamination on the east side	new unknown environmental issues	High remediation and cleanup cost	Environmental & hydraulics	3	1
SR826-R052	Opportunity	Possibiliy of more efficient paving design	νн				Design and PS&E		1
SR826-R047	Threat	Miami-Dade/Broward transit demands additional scope	L	Requested a directed connection to the train station on 74th st, and additional parking area in htat facility without providing any funding	MDT request for direct access to the train station on 74th st.	New ramp and additional parking space, Additional cost to project, Superfund site Aquistion.	Project Management	1	1
SR826-R038	Threat	P3 Change orders due to unforeseen site conditions	н	Conceptual investigations are limited and Conseccionaire's design process may capture unforseen site conditions	Level of investigations in conceptual design	Longer and more costly change orders due to P3 delivery	Contracting and Procurement	4	4
SR826-R087	Threat	Future Seperation of ITS sytem to a different system (Different District/Operator)	н	Accommodating future separation of the 1-75 and SR 826 ITS systems	Concession agreements may ressign consession of 826 to another consssionare in 15 -30 years	rebuild additional infrastructures and update and change technology		1	2
SR826-R025	Opportunity	Segment tolling vs trip buildingTolling strategy may change the signage requiriements for the projects	н	basis of Estimate considers Segment tolling, design may adopt trip building tolling		may reduce initial and maintenance costs for signals	Design and PS&E		2

SR826-R035	Opportunity	to SunPass	н	ready for managed lane facility		reduced revenue, more traffic in managed lanes.	New Technologies		1
SR826-R022	Threat	A traffic and revenue study actual versus study for project funding	L	Greater than anticipated funding short fall due to lower than expected revenues	inaccuracy in traffic and revenue study due to speculative projections	FDOT have to fund the gap	Management Funding		1
SR826-R090	Threat	RFP language and proper risk assignment /insurability	L						1
SR826-R075	Threat	Poor Soil Permeability Rates- Drainage	L	Poor soil may require additional drainage treatment and right of way	Soil conditions	additional cost for construction and rightr of way Increase maintenance cost	Structural and Geotechnical	1	3
SR826-R077	Threat	Changes in drainage design criteria may require additional right of way	М				Environmental & hydraulics		
SR826-R014	Threat	Permiting Issues	м				Permitting		
SR826-R004	Threat	Current Unit Prices are in Historical Lows will we see fluctuations.	м				Contracting and Procurement		
SR826-R021	Threat	Permits from the county and move limited access line.	м	County may not provide approvals on time		May delay schedule,or workarounds and add cost	Permitting		
SR826-R026	Threat	Delays due to interagency coordination Turnpike MDX county, Central office, District 4	VH				Design and PS&E		
SR826-R051	Threat	last minute scope change	VH				Design and PS&E		
SR826-R039	Threat	Theft and Vandalism during and after construction	Н				Mainenance		
SR826-R020	Threat	Easments and right of way with RR	Н				Utilities and Rail Roads		
SR826-R057	Threat	increased cost of Petroleum products to market conditions	L				Contracting and Procurement		
SR826-R016	Threat	impacting bitumenous Public opposition to	L				Political Issues		
		additional tolls Political opposition of							
SR826-R032	Threat	converting a free lane into a managed lane	L			queuing, additional	Political Issues		
SR826-R006	Threat	Ramp signaling implementtion	VH	Queuing and backup on the arterials may be more than designed	backup to arterials on ramps	cost to ramp widening and may need to adjust signal phasing	Traffic Management		
SR826-R015	Threat	Political push back to the 2+4 alternative	L				Political Issues		
SR826-R076	Threat	Changing Geotechnical Conditions (Due to New Information) MSE Walls	L				Structural and Geotechnical		
SR826-R046	Threat	clear RFP requirements and coordination with I-75 for network wide communication system (ITS)	м				Contracting and Procurement		
SR826-R071	Threat	Maintenance and operations funding	м				Management Funding		
SR826-R048	Threat	MPO board approval for the project (Funding)	м				Management Funding		
SR826-R009	Threat	Delays in the Right of way aquisition (2+4)	м				Right of Way		
SR826-R074	Threat	Major Hurricane that would change all traffic pattern	VL				Traffic Management		
SR826-R073	Threat	Maintain political support to the project during an election year	VL				Political Issues		
SR826-R042	Threat	Challenge of educating the public for new traffic patterns	н				Traffic Management		
SR826-R019	Threat	Shortage of Flag men for RR	Н				Utilities and Rail Roads		
SR826-R007	Threat	Other Major Construction projects are going on at the same time	L				Project Management		
SR826-R060	Threat	Availability of Laydown and staging areas	L				Construction		
SR826-R082	Threat	Concessionaire doesnot have skin in the game on quality and maintenance	м				Project Management		
SR826-R045	Threat	Interchange opperations may affect managed lanes operations (25th, 74th,)	м				Traffic Management		
SR826-R091	Threat	Labor & Material price fluctuation risk	VL						
SR826-R028	Threat	Competition from other toll facilities may impact revenues	VL				Management Funding		
SR826-R084	Threat	Design External review delays project schedule	VL				Design and PS&E		
SR826-R083	Threat	Scope Creep	L				Project Management		
SR826-R061	Threat	Vehicle exemptions (HOV, Motorcycles, Buses, Hybrids etc.) may reduce revenue	L				Management Funding		
SR826-R086	Threat	Public revolt on Tolling	L				Political Issues		
SR826-R066	Opportunity	variable speed limits to maximize through put	L				Traffic Management		
SR826-R043	Threat	Threatening endangered species	VL				Environmental & hydraulics		
		If projects north do not							

SR826-R033	Threat	go forward this project does not make sense and vice versa	VL		Project Management	
SR826-R011	Threat	MOT conflicts w/ ongoing construction on 25th street	VL		Construction	
SR826-R053	Threat	Survey results do not match existing plans	VL		Construction	
SR826-R024	Threat	Public demand may change the egress and ingress	VL		Traffic Management	
SR826-R008	Opportunity	Excavation for the Port Tunnel can be used to backfill and low cost embankment	Ν		Contracting and Procurement	
SR826-R027	Threat	Retrofitting systems to systems connections at 826, 836 interchage	Ν		Design and PS&E	
SR826-R017	Threat	Design coordination with concurrent and future local projects	N		Project Management	
SR826-R058	Threat	potential parallel facility by MDX	N		Management Funding	
SR826-R069	Threat	Environmental justice on FHWA Funded project.	Н		Environmental & hydraulics	
SR826-R050	Threat	Possibility of segmental bridges not being allowed on new projects (Not Applicable to this project)	N		Construction	
SR826-R062	Opportunity	Opportunity for additional tolling if truck are allowed	Ν		Management Funding	
SR826-R078	Threat	Conflict between ITS and Landscaping full coverage for ITS cameras	N		Traffic Management	
SR826-R023	Threat	FPL Oil filled High transmission conduits	Ν		Utilities and Rail Roads	
SR826-R031	Threat	Construction challenges relating to FAA glide path regulations	N		Construction	
SR826-R049	Threat	Managed lanes may became obsolete by policy change	N		Political Issues	
SR826-R034	Opportunity	Convert Canal to culvert and use right of way for widening (Does not Apply to this project)	N		Environmental & hydraulics	

Standard Layout - Risk Impacts on tasks

PRIMAVERA RISK ANALYSIS

SR-826 Managed Lanes ProgramAll TO.plan

F	Project Data
File Name	SR-826 Managed Lanes ProgramAll TO.plan
Plan Title	SR-826 Managed Lanes ProgramAll TO.plan
Total Tasks	29
Completed	0
In Progress	0
Plan TimeNow	07 May 2012
Deterministic Finish	07 May 2012
Total Deterministic Cost	\$237,876,127
Actual Cost to Date	\$0
Deterministic Remaining Cost	\$237,876,127

Report S	ummary
Report Name	Standard Layout - Risk Impacts on tasks
Date Printed	07 Jul 2012
Total Risks	81
Proposed Risks	73
Open Risks	6
High	30
Medium	23
Low	14
Negligible	14
Impacted (Closed) Risks	0
Managed (Closed) Risks	0
Rejected (Closed) Risks	2
Threats	69
Opportunities	12

Filter Options	
Sections included in report	
Include in depth risk information	No
Include risk assessment information	Yes
Include risk response information	No
Include task impacted information	Yes

SR826-R01 Status Open	2	Owner	ge design (to meet water quan	tity and quality				
		Owner		•					
		URS							
Pre-mitigati	on Score		72	High					
Post-mitigat			72	High					
ost miliga			12			Qualitative			
	Qualitative	Quantitative		Schedule	Pre-mitigation Post-mitigation	VL VL			
Pre-	VH	85%		Cost	Pre-mitigation	VL			
mitigation Post-		050/		0031	Post-mitigation	VH			
mitigation	VH	85%		Performance	Pre-mitigation	VH			
				renormance	Post-mitigation	VH			
Risk Plan: F	Pre-mitigatio	'n							
		Sorm Drain F	Piping						
Schedule				niform	0		10		
Cost			Be	etaPert	\$0	\$41,667	\$83,333		
mpacting T	ask: 0130 - 3	Storm Drain	Str.						
Schedule				niform	0		10		
Cost			Be	etaPert	\$0	\$41,667	\$83,333		
mpacting T Schedule	ask: 0050 - I	French Drain		niform	0		10		
Schedule Cost				etaPert	0 \$0	\$41,667	\$83,333		
					Ψ.				
Risk Plan: F	Post-mitigati	ion							
	-	Sorm Drain F	Piping						
Schedule				niform	0		10		
Cost			Ur	hiform	\$500,000		\$1,000,000		
mpacting T	ask: 0130 - 3	Storm Drain	Str.						
Schedule			Ur	niform	0		10		
Cost			Ur	hiform	\$500,000		\$1,000,000		
	ask: 0050 - I	French Drain							
Schedule				niform	0		10		
Cost			Ur	niform	\$500,000		\$1,000,000		

ID	Title		
SR826-R040	Short conceptual design duration to	develop the RFP, impact RFP completeness and re	sponse risks
Status	Owner		
Open	FDOT- PM		
Pre-mitigation Score Post-mitigation Score Qualitative Q Pre- mitigation VH	72High72High72HighSchedule85%Cost85%	QualitativePre-mitigationHPost-mitigationHPre-mitigationVHPost-mitigationVH	
Risk Plan: Pre-mitigation Impacting Task: 0010 - Ri	sk Impacted Activity	Pre-mitigation H Post-mitigation H	
Schedule Cost	Uniform BetaPert	120	180
Risk Plan: Post-mitigatio Impacting Task: 0010 - Ri Schedule Cost	n	\$1,500,000 \$2,250,000 120 \$1,500,000 \$2,250,000	\$3,000,000 180 \$3,000,000

ID		Title					
SR826-R01	3	Public p	perceptio	n of continuing con	struction impact after c	ompletion of (12 projects)	
Status		Owner					
Open		B&A					
Pre-mitigati Post-mitigat	tion Score		72 72	High High Schedule	Pre-mitigation	Qualitative VH	
	Qualitative	Quantitative			Post-mitigation	VH	
Pre- mitigation	VH	85%		Cost	Pre-mitigation	N	
Post-	VH	85%			Post-mitigation	Ν	
mitigation				Performance	Pre-mitigation	Ν	
Risk Plan: F Impacting T		on Risk Impacted	l Activity		Post-mitigation	Ν	
Schedule		•		Iniform	180		360
Cost			В	etaPert	\$0	\$0	\$0
Risk Plan: F Impacting T Schedule Cost		ion Risk Impacted	Ŭ	Iniform Iniform	180 \$0		360 \$0

ID		Title					
SR826-R02	9	Needs	Approvals	for exceptions and	I variations		
Status		Owner					
Proposed		Unassi	gned				
Pre-mitigati Post-mitigat			72	High High			
i ost-mitiga			12	ingn		Qualitative	
				Schedule	Pre-mitigation	VH	
	Qualitative	Quantitative		Schedule	Post-mitigation	VH	
Pre- mitigation	VH	85%		Cost	Pre-mitigation	VH	
Post-	VH	85%			Post-mitigation	VH	
mitigation	VII	05 /8		Performance	Pre-mitigation	VL	
					Post-mitigation	VL	
	Pre-mitigatio ⁻ ask: 0010 - I	n Risk Impacted	Ui	niform etaPert	180 \$1,500,000	\$2,250,000	360 \$3,000,000
	Post-mitigati ask: 0010 - I	on Risk Impacted	Ŭ	niform niform	180 \$1,500,000	,	360 \$3,000,000

ID		Title					
SR826-R00	3	Florida	Gas Tra	nsmission Line from	25th to 154th		
Status		Owner					
Proposed Ur		Unassi	gned				
Pre-mitigation	on Score		72	High			
Post-mitigat			72	High			
Ū						Qualitative	
		_ .		Schedule	Pre-mitigation	VH	
	Qualitative	Quantitative			Post-mitigation	VH	
Pre- mitigation	VH	85%		Cost	Pre-mitigation	VH	
Post-	VH	85%			Post-mitigation	VH	
mitigation				Performance	Pre-mitigation	Ν	
					Post-mitigation	Ν	
Risk Plan: P Impacting T Schedule Cost				Jniform 3etaPert	180 \$1,500,000	\$2,250,000	360 \$3,000,000
Risk Plan: P Impacting T Schedule Cost				Jniform Jniform	180 \$1,500,000		360 \$3,000,000

ID	Title		
SR826-R070	maintenance of trench drains		
Status	Owner		
Proposed	Unassigned		
mitigation	72High72High72HighSchedule85%Cost85%Performance	QualitativePre-mitigationNPost-mitigationVHPost-mitigationVHPre-mitigationLPost-mitigationL	
Risk Plan: Pre-mitigation Impacting Task: 0120 - Sor Schedule Cost Risk Plan: Post-mitigation Impacting Task: 0120 - Sor Schedule Cost	Uniform BetaPert	0 \$1,500,000 \$2,250,000 0 \$1,500,000	0 \$3,000,000 0 \$3,000,000

ID	Title		
SR826-R010	Noise impact on neibourhoods		
Status	Owner		
Proposed	Unassigned		
Post	60% Cost	QualitativePre-mitigationLPost-mitigationVHPre-mitigationVHPre-mitigationNPost-mitigationN	
Risk Plan: Pre-mitigation Impacting Task: 0170 - Noi Schedule Cost Risk Plan: Post-mitigation Impacting Task: 0170 - Noi Schedule Cost	Uniform BetaPert	30	60 250,000 \$3,000,000 60 250,000 \$3,000,000

ID	Title		
SR826-R063	Opportunity to get lower Bids due to	market conditions	
Status	Owner		
Proposed	Unassigned		
Pre-mitigation Score Post-mitigation Score Qualitative Q Pre- mitigation H Post- mitigation H	56 High 56 High Schedule 60% Cost 60% Performance	QualitativePre-mitigationLPost-mitigationVHPost-mitigationVHPre-mitigationNPres-mitigationN	
Risk Plan: Pre-mitigation Impacting Task: 0010 - Ri Schedule Cost Risk Plan: Post-mitigatio Impacting Task: 0010 - Ri	sk Impacted Activity Uniform BetaPert	30 \$1,500,000 \$2,250,000	60 \$3,000,000
Schedule		30	60 \$3,000,000
Cost	Uniform	\$1,500,000	\$3,000,000

ID	Title		
SR826-R036	P3 delivery method is subject to priva	te financing markets and limitiations	
Status	Owner		
Proposed	Unassigned		
Post-	0% Cost 0% Performance	QualitativePre-mitigationHPost-mitigationVHPost-mitigationVHPre-mitigationNPost-mitigationN	
Risk Plan: Pre-mitigation Impacting Task: 0010 - Risk I Schedule Cost	Impacted Activity Uniform BetaPert	120 \$1,500,000 \$2,250,000	180 \$3,000,000
Risk Plan: Post-mitigation Impacting Task: 0010 - Risk I Schedule Cost	Impacted Activity Uniform BetaPert	120 \$1,500,000 \$2,250,000	180 \$3,000,000

SR826.R005 Impact on schedule if Policy Changes to DB delivery Status Owner Proposed Unassigned Pre-mitigation Score 56 Pre-mitigation Score 60% Post-mitigation H Post-mitigation H Post-mitigation H Post-mitigation H Post-mitigation H Pre-mitigation H C	ID		Title					
Proposed Unassigned Pre-mitigation Score 56 High Post-mitigation Score 56 High Qualitative Qualitative Oualitative Pre-mitigation H 60% Cost Post-mitigation H 60% Cost Post-mitigation H 60% Post-mitigation Post-mitigation H 60% Post-mitigation Post-mitigation H 60% Post-mitigation Pre-mitigation H 60% Post-mitigation Pre-mitigation H 60% Post-mitigation Pre-mitigation H Post-mitigation H Post-mitigation H Post-mitigation H Post-mitigation H Post-mitigation H Post-mitigation H Stool 000 \$1,250,000 \$1,500,000 Risk Plan: Post-mitigation H Stool 000 \$1,250,000 \$1,500,000 Risk Plan: Post-mitigation H Job 000 \$1,250,000 \$1,500,000 Risk Plan: Post-mitigation H Job 000 <th>SR826-R00</th> <th>)5</th> <th>Impact</th> <th>on sched</th> <th>lule if Policy Change</th> <th>es to DB delivery</th> <th></th> <th></th>	SR826-R00)5	Impact	on sched	lule if Policy Change	es to DB delivery		
Pre-mitigation Score 56 High Post-mitigation Score 56 High Qualitative Qualitative Pre-mitigation VH Pre-mitigation H 60% Cost Pre-mitigation Past-mitigation H 60% Cost Pre-mitigation H Post-mitigation H 60% Performance Pre-mitigation H Post-mitigation H 90% Performance Pre-mitigation H Post-mitigation H 90% Performance Pre-mitigation H Post-mitigation H 90% 180 360 Risk Plan: Pre-mitigation H 90% \$1,250,000 \$1,500,000 Risk Plan: Post-mitigation 180 \$60 \$1,500,000 \$1,250,000 \$1,500,000 Risk Plan: Post-mitigation H 180 \$60 \$1,500,000 \$1,250,000 \$1,500,000 \$1,500,000 \$1,500,000 \$1,250,000 \$1,500,000 \$1,500,000 \$1,250,000 \$1,500,000 \$1,250,000 \$1,500,000 \$1,250,000 \$1,500,000	Status Owner							
Post-mitigation Score 56 High Qualitative Qualitative Schedule Pre-mitigation VH Pre-mitigation H 60% Cost Pre-mitigation VH Post-mitigation H 60% Cost Pre-mitigation H Post-mitigation H 60% Post-mitigation H Post-mitigation H Post-mitigation H Risk Plan: Pre-mitigation H Schedule	Proposed		Unassi	gned				
Qualitative Qualitative Qualitative Pre- mitigation H 60% Pre-mitigation VH Post- mitigation H 60% Cost Pre-mitigation H Post- mitigation H 60% Post-mitigation H H Risk Plan: Pre-mitigation H Post-mitigation H H Post-mitigation H Risk Plan: Pre-mitigation H Post-mitigation H H Post-mitigation H Risk Plan: Pre-mitigation H Post-mitigation H H Post-mitigation H Risk Plan: Post-mitigation H Post-mitigation H Post-post-post-post-post-post-post-post-p								
Qualitative Quantitative Schedule Pre-mitigation VH Pre-mitigation H 60% Cost Pre-mitigation H Post-mitigation H 60% Cost Pre-mitigation H Post-mitigation H 60% Pre-mitigation H Post-mitigation H Post-mitigation H Performance Pre-mitigation H Post-mitigation H Post-mitigation H Risk Plan: Pre-mitigation H Schedule 360 Cost BetaPert \$1,000,000 \$1,250,000 \$1,500,000 Risk Plan: Post-mitigation Impacting Task: 0010 - Risk Impacted Activity Schedule Jacoba Schedule Jacoba Schedule Risk Plan: Post-mitigation Impacting Task: 0010 - Risk Impacted Activity Schedule Jacoba Schedule Jacoba Schedule	Post-miliga	lion Score		90	пign			
mitigation H 60% Cost Pre-mitigation H Post- mitigation H Post-mitigation H Performance Pre-mitigation H Post-mitigation H Post-mitigation H Risk Plan: Pre-mitigation Cost BetaPert \$1,000,000 \$1,250,000					Schedule		VH	
mitigation H Build of the mitigation Performance Pre-mitigation Impacting Task: 0010 - Risk Impacted Activity Schedule Uniform 180 Cost BetaPert \$1,000,000 \$1,250,000		н	60%		Cost	Pre-mitigation	Н	
Performance Pre-mitigation H Post-mitigation H Risk Plan: Pre-mitigation Impacting Task: 0010 - Risk Impacted Activity Schedule Uniform Cost BetaPert \$1,000,000 \$1,250,000 Risk Plan: Post-mitigation Impacting Task: 0010 - Risk Impacted Activity Schedule Uniform 180 \$1,250,000 \$1,500,000 \$1,500,000 \$1,500,000 \$1,500,000 \$1,500,000 \$1,500,000		н	60%			Post-mitigation	Н	
Risk Plan: Pre-mitigation Impacting Task: 0010 - Risk Impacted Activity Schedule Uniform 180 360 Cost BetaPert \$1,000,000 \$1,250,000 Risk Plan: Post-mitigation Impacting Task: 0010 - Risk Impacted Activity Schedule Uniform 180 360	miligation				Performance	Pre-mitigation	Н	
Risk Plan: Post-mitigation Impacting Task: 0010 - Risk Impacted Activity Schedule Uniform 180 360	Impacting T Schedule			U	Iniform		0 \$1.250.000	
	Risk Plan: I Impacting T Schedule			d Activity U	Iniform	180		360

D		Title					
SR826-R088	;	TIFIA lo	oan would	reduce cost of mor	ney		
Status	Owner						
Open		FDOT-	PM				
Pre-mitigatior	n Score		40	High			
Post-mitigatio			40	High			
0						Qualitative	
				Schedule	Pre-mitigation	N	
	Qualitative	Quantitative			Post-mitigation	Ν	
Pre- mitigation	м	40%		Cost	Pre-mitigation	VH	
Post-	м	40%			Post-mitigation	VH	
mitigation	IAI	40 /0		Performance	Pre-mitigation	N	
					Post-mitigation	Ν	
Risk Plan: Pr o Impacting Ta Schedule Cost		on Risk Impacted	Un	iform taPert	0 \$1,500,000	\$2,250,000	0 \$3,000,000
Risk Plan: Po Impacting Ta: Schedule Cost		ion Risk Impacted	Un	iform iform	0 \$1,500,000		0 \$3,000,000

ID		Title					
SR826-R08	39	Exchar	nge Rate f	luctuations increasi	ing cost of P3		
Status		Owner					
Proposed Unass			gned				
Pre-mitigati	on Score		40	High			
Post-mitigat			40	High			
						Qualitative	
				Schedule	Pre-mitigation	L	
	Qualitative	Quantitative		Ochedule	Post-mitigation		
Pre-	м	40%		Cont			
mitigation Post-				Cost	Pre-mitigation	VH	
mitigation	м	40%		- /	Post-mitigation	VH	
5				Performance	Pre-mitigation Post-mitigation	N	
Risk Plan: P		on Risk Impacte					
Schedule	ask. 0010 -	KISK Impacted		niform	30		60
Cost			-	etaPert	\$1,500,00	0 \$2,250,000	\$3,000,000
			_		÷,,,.		
Risk Plan: F Impacting T Schedule Cost		tion Risk Impacted	Ŭ	niform etaPert	30 \$1,500,00	0 \$2,250,000	60 \$3,000,000

ID		Title					
SR826-R08	0	Procure	ement Pro	cess Protests			
Status		Owner					
Proposed		FDOT-	FDOT- PM				
Pre-mitigation	on Score		40	High			
Post-mitigat	Post-mitigation Score		40	High			
						Qualitative	
Qualitative Q		Quantitative		Schedule	Pre-mitigation	VH	
Pre-	м	40%		Cost	Post-mitigation Pre-mitigation	VH N	
mitigation Post-	м	40%		0031	Post-mitigation	N	
mitigation	IAI	40 %		Performance	Pre-mitigation	N	
					Post-mitigation N		
Risk Plan: P Impacting Ta Schedule Cost		ion - Risk Impacted	U	niform etaPert	180 \$0	\$0	360 \$0
Risk Plan: P Impacting Ta Schedule Cost		tion - Risk Impacted	U	niform niform	180 \$0		360 \$0

ID		Title					
SR826-R04	1		e Capac	ity for thru traffic at t	he interchage of 826 &	836	
Status		Owner					
Proposed		Unassi	gned				
Pre-mitigatio			40	High			
Post-mitigat	tion Score		40	High			
	Qualitative	Quantitative		Schedule	Pre-mitigation Post-mitigation	Qualitative N N	
Pre- mitigation	м	40%		Cost	Pre-mitigation	N	
Post- mitigation	м	40%			Post-mitigation	Ν	
migation				Performance	Pre-mitigation Post-mitigation	VH VH	
Risk Plan: P Impacting T Schedule Cost	-			Jniform SetaPert	0 \$0	\$0	0 \$0
Risk Plan: P Impacting T Schedule Cost				Jniform Jniform	0 \$0		0 \$0

ID		Title					
SR826-R09	2	Exchar	ige Rate	fluctuations increasi	ng cost of P3		
Status		Owner					
Proposed		Unassi	Unassigned				
Pre-mitigation	on Score		40	High			
Post-mitigat	tion Score		40	High			
						Qualitative	
				Schedule	Pre-mitigation	L	
	Qualitative	Quantitative		Conodulo	Post-mitigation		
Pre- mitigation	м	40%		Cost	Pre-mitigation	VH	
Post-	м	40%			Post-mitigation	VH	
mitigation	IAI	40 /8		Performance	Pre-mitigation	N	
					Post-mitigation	N	
Risk Plan: P Impacting T Schedule Cost		on Risk Impacted	i	/ Jniform 3etaPert	30 \$1,500,000	0 \$2,250,000	60 \$3,000,000
Risk Plan: P Impacting T Schedule Cost		tion Risk Impacter	i	r Jniform Jniform	30 \$1,500,000	0	60 \$3,000,000

ID	Title			
SR826-R056	Reduce gantry locations			
Status	Owner			
Proposed	Unassigned			
Pre-mitigation Score Post-mitigation Score Qualitative C	40 High 40 High Schedule	Pre-mitigation Post-mitigation	Qualitative	
Pre- M	40%			
mitigation	Cost	Pre-mitigation	N	
mitigation M	40%	Post-mitigation	VH	
	Performance	Pre-mitigation Post-mitigation	VH	
Risk Plan: Pre-mitigation Impacting Task: 0180 - IT Schedule Cost		0 \$0	\$0	0 \$0
Risk Plan: Post-mitigatic Impacting Task: 0180 - IT Schedule Cost		0 \$0		0 \$0

ID		Title						
SR826-R0	55	staging	for Enford	ement				
Status		Owner						
Proposed		Unassi	Unassigned					
Pre-mitigat Post-mitiga	ation Score	Quantitative	36 36	High High Schedule	Pre-mitigation	Qualitative		
Pre-	VH	85%		_	Post-mitigation	N		
mitigation	ΥΠ	05 %		Cost	Pre-mitigation	M		
Post- mitigation	VH	85%			Post-mitigation	Μ		
				Performance	Pre-mitigation	Н		
					Post-mitigation	Н		
Schedule Cost	Task: 0040 - Task: 0180 -	Roadwork	Be	iform taPert iform taPert	0 \$250,000 0 \$250,000	\$375,000 \$375,000	0 \$500,000 0 \$500,000	
Impacting Schedule Cost	Post-mitiga t Task: 0040 -	Roadwork	-	iform taPert	0 \$250,000	\$375,000	0 \$500,000	
	Task: 0180 -	ITS & Tolling	11	iform	0		0	
Schedule Cost				iform taPert	0 \$250,000	\$375,000	0 \$500,000	
0051			De		φ230,000	<i>4313,000</i>	φουυ,υυυ	

ID	Title						
SR826-R054		ment (access and s	taging for responders)_				
Status	Owner	ner					
Proposed	Unassigned						
•							
Pre-mitigation Score	36	High					
Post-mitigation Score	36	High					
				Qualitative			
		Schedule	Pre-mitigation	Ν			
Qualitative Qu	uantitative		Post-mitigation	N			
Pre- mitigation VH	85%	Cost	Pre-mitigation	Μ			
Post- VH	85%		Post-mitigation	Μ			
mitigation VH	0J 70	Performance	Pre-mitigation	H			
		i chomanoe	Post-mitigation	H			
			1 03t-miligation				
Schedule Cost Impacting Task: 0040 - Rc Schedule	Beadwork	niform etaPert niform	0 \$250,000	\$375,000	0 \$500,000 0		
Schedule Cost	-	etaPert	0 \$250,000	\$375,000	0 \$500,000		
			<i>4250,000</i>	φ373,000	φ υ υυ,υυυ		
Risk Plan: Post-mitigatio r Impacting Task: 0180 - ITS Schedule Cost	S & Tolling U	niform etaPert	0 \$250,000	\$375,000	0 \$500,000		
Impacting Task: 0040 - Ro							
Schedule	-	niform	0		0		
Cost	Be	etaPert	\$250,000	\$375,000	\$500,000		

ID		Title					
SR826-R03	80	Constru	uction fun	ds only \$ 5 M ident	ified		
Status		Owner					
Proposed		Unassi	Unassigned				
Pre-mitigati	on Score		36	High			
Post-mitiga			36	High			
Ū						Qualitative	
				Schedule	Pre-mitigation	N	
	Qualitative			20.104410	Post-mitigation	N	
Pre- mitigation	VH	85%		Cost	Pre-mitigation	VL	
Post-	VH	85%			Post-mitigation	VL	
mitigation				Performance	Pre-mitigation	Н	
				Post-mitigation	н		
Risk Plan: F Impacting T Schedule Cost		ion · Risk Impacted	U	niform etaPert	0 \$0	\$125,000	0 \$250,000
Risk Plan: F Impacting T Schedule Cost		tion · Risk Impacted	U	niform etaPert	0 \$0	\$125,000	0 \$250,000

ID	Title		
SR826-R059	Concessionaires interpretation of RF	P language and proper risk assignment insurability	ty .
Status	Owner		
Proposed	Unassigned		
Pre-mitigation Score Post-mitigation Score Qualitative Qualitative		Qualitative Pre-mitigation M Post-mitigation M	
mitigation VH	85% Cost	Pre-mitigation H	
Post- mitigation VH	85% Performance	Post-mitigationHPre-mitigationVLPost-mitigationVL	
Risk Plan: Pre-mitigation Impacting Task: 0010 - Ri s Schedule Cost		60 \$1,000,000 \$1,250,000	120 \$1,500,000
Risk Plan: Post-mitigation Impacting Task: 0010 - Ri s Schedule Cost		60 \$1,000,000 \$1,250,000	120 \$1,500,000

SR826-R018	Crossi	a covoral			'Ee					
	010331	Crossing several rail roads, Metro Rail, aerial rights and TCEs								
Status	Owner									
Proposed	Unassigned									
Pre-mitigation Score		36	High							
Post-mitigation Score						36				
					Qualitative					
Qualitative Q	uantitative		Schedule	Pre-mitigation	Н					
Pre- VH	85%		Cast	Post-mitigation	H					
mitigation			Cost	Pre-mitigation	VL					
mitigation VH	85%		Derformerer	Post-mitigation	VL					
			Performance	Pre-mitigation	N					
				Post-mitigation	Ν					
Impacting Task: 0210 - Ut Schedule			liform	60		90				
Impacting Task: 0210 - Ut Schedule Cost Impacting Task: 0100 - Br	tilities	Be	hiform etaPert	60 \$0 60	\$62,500	90 \$125,000 90				
Impacting Task: 0210 - Ut Schedule Cost Impacting Task: 0100 - Bu Schedule	tilities	Be Un	etaPert	\$0	\$62,500 \$62,500	\$125,000				
Impacting Task: 0210 - U Schedule Cost Impacting Task: 0100 - B Schedule Cost	tilities ridges	Be Un	etaPert niform	\$0 60		\$125,000 90				
Impacting Task: 0210 - U Schedule Cost Impacting Task: 0100 - B Schedule Cost Risk Plan: Post-mitigatio	tilities ridges	Be Un	etaPert niform	\$0 60		\$125,000 90				
Impacting Task: 0210 - Ut Schedule Cost Impacting Task: 0100 - Bu Schedule Cost Risk Plan: Post-mitigatio Impacting Task: 0210 - Ut	tilities ridges	Be Un Be	ataPert hiform ataPert	\$0 60 \$0		\$125,000 90 \$125,000				
Impacting Task: 0210 - Ut Schedule Cost Impacting Task: 0100 - Bu Schedule Cost Risk Plan: Post-mitigatio Impacting Task: 0210 - Ut Schedule	tilities ridges	Be Un Be	etaPert niform	\$0 60		\$125,000 90 \$125,000 90				
Impacting Task: 0210 - U Schedule Cost Impacting Task: 0100 - B Schedule Cost Risk Plan: Post-mitigatio Impacting Task: 0210 - U	tilities ridges	Be Un Be	etaPert hiform etaPert	\$0 60 \$0 60		\$125,000 90 \$125,000				
Impacting Task: 0210 - Ut Schedule Cost Impacting Task: 0100 - Bu Schedule Cost Risk Plan: Post-mitigatio Impacting Task: 0210 - Ut Schedule Cost Impacting Task: 0100 - Bu	tilities ridges n tilities	Be Un Be	etaPert hiform etaPert	\$0 60 \$0 60		\$125,000 90 \$125,000 90 \$125,000				
Risk Plan: Pre-mitigation Impacting Task: 0210 - U Schedule Cost Impacting Task: 0100 - B Schedule Cost Risk Plan: Post-mitigatio Impacting Task: 0210 - U Schedule Cost Impacting Task: 0210 - B Schedule	tilities ridges n tilities	Be Un Be Un Un	etaPert hiform etaPert	\$0 60 \$0 60		\$125,000 90 \$125,000 90				

ID 1	Title		
SR826-R002	Contamination is a risk. Solid waste	on the west side, contamination on the east side	
Status	Owner		
Proposed	Unassigned		
Pre-mitigation Score Post-mitigation Score Qualitative Quanti Pre- mitigation Post- mitigation VH 859	% Cost	QualitativePre-mitigationMPost-mitigationMPre-mitigationHPost-mitigationHPre-mitigationN	
Risk Plan: Pre-mitigation Impacting Task: 0310 - Contar Schedule Cost	nination Uniform BetaPert	60 \$1,000,000 \$1,250,000	120 \$1,500,000
Risk Plan: Post-mitigation Impacting Task: 0310 - Contar Schedule Cost	nination Uniform Uniform	60 \$1,000,000	120 \$1,500,000

ID		Title					
SR826-R05	2	Possib	iliy of mo	ore efficient paving d	esign		
Status		Owner					
Proposed Unas		Unassi	gned				
Pre-mitigati Post-mitigat	tion Score	Quantitative	36 36	High High Schedule	Pre-mitigation Post-mitigation	Qualitative	
mitigation	Vn	63%		Cost	Pre-mitigation	Н	
Post- mitigation	VH	85%		Performance	Post-mitigation	H	
Risk Plan: F Impacting T Schedule Cost	-			Uniform BetaPert	Pre-mitigation Post-mitigation 0 \$1,000,000	H \$1,250,000	0 \$1,500,000
Risk Plan: F Impacting T Schedule Cost				Uniform BetaPert	0 \$1,000,000	\$1,250,000	0 \$1,500,000

ID		Title				
SR826-R04	47	Miami-I	-Dade/Broward transit demands	additional scope		
Status		Owner				
Proposed		Unassi	igned			
	ion Sooro		12 Medium			
	Pre-mitigation Score					
Post-mitiga	ation Score		12 Medium			
					Qualitative	
	Qualitative			Pre-mitigation Post-mitigation	M	
Pre- mitigation	L	20%		Pre-mitigation	H	
Post-	L	20%		Post-mitigation	Н	
mitigation			Performance			
Impacting 1	Pre-mitigati	on Risk Impacter	ed Activity	Post-mitigation	N	
Schedule			Uniform	60	• • • • • • • • •	120
	Post-mitigat Fask: 0010 -	tion Risk Impacted	BetaPert ed Activity	\$1,000,000	\$1,250,000	\$1,500,000
Schedule			Uniform	60		120
Cost			Uniform	\$1,000,000		\$1,500,000

ID	Title				
SR826-R038	-	ers due to unforeseer	n site conditions		
Status	Owner				
Proposed	Unassigned				
Pre-mitigation Score	28	High			
Post-mitigation Score	28	High		Qualitative	
Qualitative Qu		Schedule	Pre-mitigation Post-mitigation	L	
mitigation H	60%	Cost	Pre-mitigation	Н	
Post- mitigation H	60%		Post-mitigation	Н	
		Performance	Pre-mitigation	N	
			Post-mitigation	N	
Risk Plan: Pre-mitigation Impacting Task: 0040 - Ro	adwork				
Schedule Cost		Uniform BetaPert	7 \$250,000	\$312,500	15 \$375,000
Impacting Task: 0100 - Br	idges				
Schedule		Uniform	7		15
Cost		BetaPert	\$250,000	\$312,500	\$375,000
Impacting Task: 0080 - Tra Schedule Cost		ing Walls Uniform BetaPert	7 \$250,000	\$312,500	15 \$375,000
Impacting Task: 0210 - Uti Schedule Cost		Uniform BetaPert	7 \$250,000	\$312,500	15 \$375,000
Risk Plan: Post-mitigatior Impacting Task: 0040 - Ro Schedule	oadwork	Uniform	7		15
Cost		Uniform	\$250,000		\$375,000
Impacting Task: 0100 - Br i Schedule Cost	-	Uniform Uniform	7 \$250,000		15 \$375,000
Impacting Task: 0080 - Tra Schedule Cost		ing Walls Uniform Uniform	7 \$250,000		15 \$375,000
Impacting Task: 0210 - Uti Schedule Cost		Uniform Uniform	7 \$250,000		15 \$375,000

ID	Title					
SR826-R087	Future Seperation of ITS sytem to a	different system (Different I	District/Operator)			
Status	Owner					
Proposed	Unassigned					
Dro mitigation Score						
Pre-mitigation Score	28 High					
Post-mitigation Score	28 High					
			Qualitative			
	Schedule	Pre-mitigation	VL			
Qualitative Qua	Intitative	Post-mitigation	VL			
mitigation H 6	60% Cost	Pre-mitigation	Μ			
Post-	60%	Post-mitigation	Μ			
mitigation n	Performance	Pre-mitigation	H			
	r onormanoo	Post-mitigation	H			
		r oor mugauon				
Risk Plan: Pre-mitigation Impacting Task: 0180 - ITS 8	& Tolling					
Schedule	Uniform	0		15		
Cost	BetaPert	\$250,000	\$375,000	\$500,000		
Impacting Task: 0160 - Sign	ing & Marking					
Schedule	Uniform	0		15		
Cost	BetaPert	\$250,000	\$375,000	\$500,000		
Risk Plan: Post-mitigation Impacting Task: 0180 - ITS &	& Tolling					
Schedule	Uniform	0		15		
Cost	BetaPert	\$250,000	\$375,000	\$500,000		
		· · ·	· · ·			
Impacting Task: 0160 - Sign						
Schedule	Uniform	0		15		
Cost	BetaPert	\$250,000	\$375,000	\$500,000		

ID Title						
	ent tolling vs trip buildingTolli	ng strategy may change the	e signage requiriements f	for the projects		
	Owner Unassigned					
Proposed Unass	igned					
Pre-mitigation Score Post-mitigation Score Qualitative Pre- mitigation Post- mitigation H 60%	28High28HighScheduleCostPerformance	Pre-mitigation Post-mitigation Pre-mitigation Post-mitigation Pre-mitigation Post-mitigation	Qualitative N H H VL VL			
Risk Plan: Pre-mitigation Impacting Task: 0180 - ITS & Tolling Schedule Cost Impacting Task: 0160 - Signing & Ma Schedule Cost	Uniform BetaPert	0 \$500,000 0 \$500,000	\$625,000 \$625,000	0 \$750,000 0 \$750,000		
Risk Plan: Post-mitigation Impacting Task: 0180 - ITS & Tolling Schedule Cost Impacting Task: 0160 - Signing & M	Uniform Uniform	0 \$500,000 0		0 \$750,000 0		
Cost	Uniform	\$500,000		\$750,000		

ID	_	Title						
SR826-R03	5		plate in a	addition to SunPass				
Status Owner								
Proposed		Unassi	gned					
Des selfacti	0							
Pre-mitigati			28	High				
Post-mitigat	tion Score		28	High				
	Qualitative	Quantitative		Schedule	Pre-mitigation Post-mitigation	Qualitative		
Pre- mitigation	н	60%		Cost	Pre-mitigation	N		
Post-	Н	60%			Post-mitigation	Ν		
mitigation		0070		Performance	Pre-mitigation	Н		
					Post-mitigation	Н		
Risk Plan: F Impacting T Schedule Cost		on ITS & Tolling		Uniform BetaPert	30 \$0	\$0	60 \$0	
Risk Plan: F Impacting T Schedule Cost		tion ITS & Tolling		Uniform Uniform	30 \$0		60 \$0	

ID		Title					
SR826-R02	22	A traffi	c and reven	ue study actual ve	ersus study for project	funding	
Status Own		Owner					
Proposed		Unassi	gned				
Pre-mitigati Post-mitiga			24 24	High High		Qualitative	
	Qualitative	Quantitative		Schedule	Pre-mitigation	Ν	
Pre-	L	20%		Cost	Post-mitigation Pre-mitigation	N	
mitigation Post-	L	20%		0031	Post-mitigation	N	
mitigation	_			Performance	Pre-mitigation	VH	
		on Risk Impacted					
Schedule			-	iform	0		0
Cost			Bet	taPert	\$0	\$0	\$0
Risk Plan: F Impacting T Schedule Cost	-	tion Risk Impacted	Uni	iform taPert	0 \$0	\$0	0 \$0

ID	Title		
SR826-R090	RFP language and proper risk assig	gnment /insurability	
Status	Owner		
Rejected(Closed)	Unassigned		
Pre-mitigation Score Post-mitigation Score Qualitative Pre- mitigation Post- mitigation	0 Negligible 0 Negligible 0 Schedule 20% Cost 20% Performance	QualitativePre-mitigationNPost-mitigationVHPost-mitigationVHPre-mitigationN	
Risk Plan: Pre-mitigatio Impacting Task: 0010 - F Schedule		Post-mitigation N	0
Cost	Uniform	0 \$1,500,000	0 \$3,000,000
Risk Plan: Post-mitigati Impacting Task: 0010 - F Schedule Cost	n	0 \$1,500,000	0 \$3,000,000

ID		Title					
SR826-R07	' 5	Poor S	oil Perm	eability Rates- Draina	age		
Status		Owner					
Open		Unassi	gned				
	_						
Pre-mitigati			24	High			
Post-mitigat	tion Score		24	High			
						Qualitative	
				Schedule	Pre-mitigation	Ν	
	Qualitative	Quantitative			Post-mitigation	Ν	
Pre- mitigation	L	20%		Cost	Pre-mitigation	VH	
Post-					Post-mitigation	VH	
mitigation	L	20%		Performance	Pre-mitigation	H	
				Fellolillance	-		
					Post-mitigation	Н	
Risk Plan: F	Pre-mitigati	on					
		French Drain	s				
Schedule				Uniform	0		0
Cost				BetaPert	\$500,000	\$750,000	\$1,000,000
					. ,	· · ·	
Impacting T		Storm Drain	Str				
Schedule	ask. 0150 -			Uniform	0		0
Cost				BetaPert	\$500,000	\$750,000	\$1,000,000
					+,	÷·••,•••	··,···
Impositing T	ook: 0120	Sorm Drain B	lining				
Schedule	ask. 0120 -	Sorm Drain P		Uniform	0		0
Cost				BetaPert	\$500,000	\$750,000	\$1,000,000
0031					φ000,000	<i>ψ1 50,000</i>	\$1,000,000
Risk Plan: F	Post-mitiga	tion					
	-	French Drain	s				
Schedule				Uniform	0		0
Cost			1	BetaPert	\$500,000	\$750,000	\$1,000,000
					• ,• • •		
Impacting T	ask: 0130 -	Storm Drain	Str				
Schedule	uon. 0100-			Uniform	0		0
Cost				BetaPert	\$500,000	\$750,000	\$1,000,000
0001					φυσυ,000	ψι 30,000	ψι,σσο,σσο
		•••••					
	ask: 0120 -	Sorm Drain P			-		•
Schedule				Uniform Data Dart	0	A750 000	0
Cost			I	BetaPert	\$500,000	\$750,000	\$1,000,000

ID Title SR826-R077 Changes in drainage design criteria may require additional right of way Status Owner					
Proposed	Unassigned				
Pre-mitigation Score	20 Medium				
Post-mitigation Score	20 Medium				
Rest.	Antitative Schedule Pre-mitigation M 40% Cost Pre-mitigation M 40% Post-mitigation H 40% Performance Pre-mitigation Post-mitigation N Post-mitigation N				

ID Title SR826-R014 Permit Status Owner Proposed Unass			5				
Pre-mitiga Post-mitiga	tion Score ation Score		20 20	Medium Medium		Qualitative	
Pre- mitigation Post- mitigation	M	Quantitative 40% 40%		Schedule Cost Performance	Pre-mitigation Post-mitigation Pre-mitigation Post-mitigation Pre-mitigation Post-mitigation	M M H H N	

Status Owner			torical Lows will we see f	fluctuations.		
Pre-mitiga Post-mitig	tion Score ation Score		20Medium20Medium		Qualitative	
Pre- mitigation	м	Quantitative	Schedi	Post-mitigation Pre-mitigation	N N H	
Post- mitigation	М	40%	Perforr	Post-mitigation mance Pre-mitigation Post-mitigation	H N N	

ID SR826-R0 Status Open	021	Title Permits from Owner FDOT- PM	Permits from the county and move limited access line. Owner					
Pre-mitiga	tion Score ation Score	20 20						
Pre- mitigation Post- mitigation	M	Intitative 40% 40%	Schedule Cost Performance	Pre-mitigation Post-mitigation Pre-mitigation Post-mitigation Pre-mitigation Post-mitigation	Qualitative M H H N N			

Status Owne			r coordinat	ion Turnpike MDX o	county, Central office, District 4		
Pre-mitiga Post-mitig	tion Score ation Score		18 Medi 18 Medi	ium	Dec mitigation	Qualitative	
Pre- mitigation Post- mitigation	VH	Quantitative 85% 85%	Cos	nedule st	Pre-mitigation Post-mitigation Pre-mitigation Post-mitigation	M M N N	
			Per	rformance	Pre-mitigation Post-mitigation	N N	

ID Title SR826-R051 last mi Status Owner Proposed Unassi			e change				
Pre-mitiga Post-mitiga	tion Score ation Score		18 18	Medium Medium Schedule	Pre-mitigation	Qualitative	
Pre- mitigation Post- mitigation	VH	Quantitative 85% 85%		Cost Performance	Pre-mitigation Post-mitigation Pre-mitigation Pre-mitigation Post-mitigation	VL M N N	

ID Title SR826-R039 Status Owner			sm during and afte	er construcftion]	
Proposed		Unass	igned				
Pre-mitiga			14	Medium			
Post-mitiga	ation Score		14	Medium			
Pre- mitigation Post- mitigation	H	Quantitative 60% 60%		Schedule Cost Performance	Pre-mitigation Post-mitigation Pre-mitigation Post-mitigation Pre-mitigation Post-mitigation	Qualitative VL VL M L L	

ID Title SR826-R020 Easme Status Owner Proposed Unass		f way with RR				
Pre-mitigat Post-mitiga	ion Score ation Score		Medium Medium		Qualitative	
	Qualitative	Quantitative	Schedule	Pre-mitigation	М	
Pre-	H	60%	Cost	Post-mitigation Pre-mitigation	L	
mitigation Post-	н	60%	Cost	Post-mitigation	L	
mitigation			Performance	Pre-mitigation Post-mitigation	N N	

ID Title SR826-R057 increa Status Owner Proposed Unass			f Petroleum produc	ts to market conditio	ons impacting bitumenous	
-	tion Score ation Score		12 12	Medium Medium		Qualitative
Pre- mitigation Post- mitigation	L	Quantitative 20% 20%		Schedule Cost Performance	Pre-mitigation Post-mitigation Pre-mitigation Post-mitigation Pre-mitigation Post-mitigation	N N H H N N N

ID Title SR826-R016 Public Status Owner Proposed Unassi				to additional tolls			
Pre-mitiga Post-mitiga	tion Score ation Score		12 12	Medium Medium		Qualitative	
Pre- mitigation Post- mitigation	Qualitative Q	Quantitative		Schedule	Pre-mitigation Post-mitigation	H	
		20%		Cost Performance	Pre-mitigation Post-mitigation Pre-mitigation Post-mitigation	N N N	

		al opposition of converting a free lane into a managed lane						
Status		Owner	iner					
Proposed	Proposed Unass							
Pre-mitiga Post-mitiga	tion Score ation Score		12 12	Medium Medium		Qualitative		
Dee	Qualitative	Quantitative		Schedule	Pre-mitigation Post-mitigation	H		
Pre- mitigation	L	20%		Cost	Pre-mitigation	Ν		
Post- mitigation		20%		Performance	Post-mitigation Pre-mitigation	N N		
					Post-mitigation	N		

ID Title SR826-R006 Ramp Status Owner Proposed Unassi			mplementtion				
Pre-mitiga Post-mitiga Pre- mitigation Post- mitigation	Qualitative	Quantitative 85% 85%	36 36	High High Schedule Cost Performance	Pre-mitigation Post-mitigation Pre-mitigation Post-mitigation Pre-mitigation Post-mitigation	Qualitative L H H L L	
					Post-mitigation	L	

ID Title SR826-R015 Politic Status Owner Proposed Unassi			ck to the 2+4 altern	ative		
-	tion Score ation Score		12 12	Medium Medium		Qualitative
Pre- mitigation Post- mitigation	L	Quantitative 20% 20%		Schedule Cost Performance	Pre-mitigation Post-mitigation Pre-mitigation Post-mitigation Pre-mitigation Post-mitigation	H H N N N

ID Title SR826-R076 Chang Status Owner Proposed Unass		-	hnical Conditions	(Due to New Informa	ation) MSE Walls	
Pre-mitiga Post-mitiga	tion Score ation Score		12 12	Medium Medium		Qualitative
Pro-	L	Quantitative		Schedule	Pre-mitigation Post-mitigation	N N
Pre- mitigation Post- mitigation		20% 20%		Cost	Pre-mitigation Post-mitigation	H H
				Performance	Pre-mitigation Post-mitigation	VL VL

Status Owner		•	dination with I-75 for n	network wide communication system (ITS)		
Pre-mitiga Post-mitiga	tion Score ation Score		10Medium10Medium		Qualitative	
	Qualitative	Quantitative	Schedule	Pre-mitigation Post-mitigation	M	
Pre- mitigation Post-		40%	Cost	Pre-mitigation Post-mitigation	M	
mitigation	М	40%	Performant		M	

ID Title SR826-R071 Mainte Status Owner Proposed Unassi			operations funding	9]	
	ation Score Qualitative	Quantitative	10 10	Medium Medium Schedule Cost	Pre-mitigation Post-mitigation Pre-mitigation	Qualitative N N M	_
Post- mitigation	Μ	40%		Performance	Post-mitigation Pre-mitigation Post-mitigation	M M M	

ID Title SR826-R048 MPO b Status Owner Proposed Unass			the project (Funding)			
Pre-mitiga Post-mitiga	tion Score ation Score			edium edium		Qualitative	
Pre-	Qualitative	Quantitative	S	Schedule	Pre-mitigation Post-mitigation	M	
mitigation Post-	м	40% 40%	С	Cost	Pre-mitigation Post-mitigation	M	
mitigation			P	Performance	Pre-mitigation Post-mitigation	N N	

SR826-R009DelStatusOw		Owner	Delays in the Right of way aquisition (2+4)						
Pre-mitiga			0 Negligible 0 Negligible		Qualitative				
Pre- mitigation Post- mitigation	м	Quantitative 40% 40%	Schedule Cost Performance	Pre-mitigation Post-mitigation Pre-mitigation Post-mitigation Pre-mitigation Post-mitigation	M M M M N N				

ID SR826-R074 Status Proposed	Owner	Major Hurricane that would change all traffic pattern Owner							
Pre-mitigation So Post-mitigation So	core	8 Medium 8 Medium							
Pre- mitigation	itative Quantitative /L 5% /L 5%	Schedule Cost Performance	Pre-mitigation Post-mitigation Pre-mitigation Post-mitigation Pre-mitigation Post-mitigation	Qualitative N N N VH VH					

ID SR826-R0 Status	Owner	•	support to the pro	ject during an electi	tion year		
Proposed		Unass	igned				
Pre-mitiga	tion Score		8	Medium			
Post-mitig	ation Score		8	Medium			
Pre- mitigation Post- mitigation	VI	Quantitative 5% 5%		Schedule Cost Performance	Pre-mitigation Post-mitigation Pre-mitigation Post-mitigation Pre-mitigation Post-mitigation	Qualitative VH N N VH VH	

ID SR826-R042 Status Proposed		Owner	Title Challenge of educating the public f Owner Unassigned		or new traffic pattern	ns	
	ation Score	Quantitative	7	Medium Medium Schedule	Pre-mitigation Post-mitigation	Qualitative	
Pre- mitigation Post- mitigation	н	60% 60%		Cost Performance	Pre-mitigation Post-mitigation Pre-mitigation Post-mitigation	L L VL VL	

SR826-R019ShStatusOw		Title Shorta Owner Unass		I men for RR			
Pre-mitiga Post-mitiga Pre- mitigation Post- mitigation	Qualitative	Quantitative 60% 60%	7	Medium Medium Schedule Cost Performance	Pre-mitigation Post-mitigation Pre-mitigation Post-mitigation Pre-mitigation	Qualitative L L N N N	
					Post-mitigation	<u>N</u>	

ID SR826-R0 Status	07	Title Other Major Construction projects are going on at the same time Owner							
Proposed		Unassigned							
Pre-mitiga Post-mitiga	tion Score ation Score	6 6	Medium Medium	Dro mitigation	Qualitative				
Pre-	Qualitative Qu		Schedule	Pre-mitigation Post-mitigation	VL VL				
mitigation Post- mitigation		20% 20%	Cost	Pre-mitigation Post-mitigation	M				
			Performance	Pre-mitigation Post-mitigation	N N				

ID Title SR826-R060 Ava Status Own	ilability of Laydown and staging areas
Proposed Una	ssigned
Pre-mitigation Score	6 Medium
Post-mitigation Score Qualitative Quantitatin Pre- mitigation Post- mitigation L 20%	6 Medium Qualitative Schedule Pre-mitigation Post-mitigation N Cost Pre-mitigation Post-mitigation M Post-mitigation M Post-mitigation M Post-mitigation M Performance Pre-mitigation Post-mitigation N Post-mitigation N

Status Ov	essionaire doesnot have skin in the game on quality and maintenance r signed
Pre-mitigation Score Post-mitigation Score Qualitative Quantita Pre- mitigation M 40% Post- mitigation M 40%	5 Low 5 Low Schedule Pre-mitigation Post-mitigation N Cost Pre-mitigation Post-mitigation N Post-mitigation N Post-mitigation N Post-mitigation N Performance Pre-mitigation Post-mitigation L

Status Owne	change opperations may affect r signed	managed lanes operati	ions (25th, 74th,)	
Pre-mitigation Score Post-mitigation Score Qualitative Quantitative Pre- mitigation Post- mitigation M 40%	5 Low 5 Low Schedule Cost Performance	Pre-mitigation Post-mitigation Pre-mitigation Post-mitigation Pre-mitigation Post-mitigation	Qualitative L N N VL VL	

SR826-R091 Lai Status Ow		Title Labor & Mar Owner Unassigned	terial price fluctuation ris	sk]
	tion Score ation Score Qualitative Qua	4 4 antitative		Pre-mitigation Post-mitigation	Qualitative	_
Pre- mitigation Post- mitigation	VI	5% 5%	Cost Performance	Pre-mitigation Post-mitigation Pre-mitigation Post-mitigation	H H N N	

SR826-R028 C Status O		Title Compe Owner Unassi		n other toll facilities	s may impact revenu	95	
Pre-mitiga Post-mitiga Pre- mitigation Post- mitigation	Qualitative	Quantitative 5% 5%	4	Low Low Schedule Cost Performance	Pre-mitigation Post-mitigation Pre-mitigation Post-mitigation Pre-mitigation	Qualitative N N N N H	
					Post-mitigation	Н	

			Title Design External review delays project schedule							
Status		Owner								
Proposed		Unass	igned							
Pre-mitiga Post-mitiga	tion Score ation Score		4	Low Low		Qualitative				
	Qualitative	Quantitative		Schedule	Pre-mitigation	Н				
Pre-	VL	5%		Cost	Post-mitigation Pre-mitigation	Н				
mitigation Post-	VL	5%		COSt	Post-mitigation					
mitigation	VL	578		Performance	Pre-mitigation	N				
					Post-mitigation	N				

Status Owner		Scope Cr	-			
Pre-mitiga Post-mitiga	tion Score ation Score		3	Low Low		Qualitative
	Qualitative Qua	intitative		Schedule	Pre-mitigation Post-mitigation	N N
Pre- mitigation Post-	L 20	20% 20%		Cost	Pre-mitigation Post-mitigation	L
mitigation				Performance	Pre-mitigation Post-mitigation	N N

Status Owner			-	(HOV, Motorcyc	les, Buses, Hybrids e	etc.) may reduce revenue
Pre-mitigat Post-mitiga	tion Score ation Score		2	Low Low		Qualitative
Pre-	Qualitative Qua			Schedule	Pre-mitigation Post-mitigation	N N
mitigation Post- mitigation		20% 20%		Cost	Pre-mitigation Post-mitigation	N N
				Performance	Pre-mitigation Post-mitigation	VL VL

ID Title SR826-R086 Public Status Owner Proposed Unassi		revolt on	Tolling				
Post-mitig: Pre- mitigation Post-		20%	2	Low Low Schedule Cost	Pre-mitigation Post-mitigation Pre-mitigation Post-mitigation	Qualitative N N N N N N	
mitigation		20,0		Performance	Pre-mitigation Post-mitigation	VL VL	

Status Owne			_	mits to maximize th	rough put		
Pre-mitiga Post-mitig Pre- mitigation Post- mitigation	Qualitative	Quantitative 20% 20%	2	Low Low Schedule Cost Performance	Pre-mitigation Post-mitigation Pre-mitigation Post-mitigation Pre-mitigation	Qualitative N VL VL N	
					Post-mitigation	Ν	

Status Owner				ngered species		
Pre-mitiga Post-mitiga	tion Score ation Score		1	Low Low		Qualitative
Pre-	Qualitative Qu			Schedule	Pre-mitigation Post-mitigation	N N
mitigation Post- mitigation		5% 5%		Cost	Pre-mitigation Post-mitigation	
				Performance	Pre-mitigation Post-mitigation	N

SR826-R033 If p Status Own		Title If proj Owner Unass		do not go forward t	his project does not	t make sense and vice versa	
Pre-mitiga			1	Low Low		Qualitative	
Pre- mitigation Post- mitigation	VL VI	Quantitative 5% 5%		Schedule Cost Performance	Pre-mitigation Post-mitigation Pre-mitigation Post-mitigation Pre-mitigation Post-mitigation	N N N VL VL	

SR826-R011 M Status O		Owner	MOT conflicts w/ ongoing construction on 25th street						
Pre-mitiga			1	Low Negligible					
Pre- mitigation Post- mitigation	N	uantitative 5% 0%		Schedule Cost Performance	Pre-mitigation Post-mitigation Pre-mitigation Post-mitigation Pre-mitigation Post-mitigation	Qualitative L VL L VH VH			

Status Owner		Survey res Owner	rvey results do not match existing plans					
Proposed		Unassigne	d					
Pre-mitigati		· · ·	1	Low				
Post-mitiga	tion Score	-	1	Low				
Pre- mitigation Post- mitigation		ntitative 5% 5%		Schedule Cost Performance	Pre-mitigation Post-mitigation Pre-mitigation Post-mitigation Pre-mitigation Post-mitigation	Qualitative VL VL VL N N		

SR826-R024 Put Status Own		Owner	ublic demand may change the egress and ingress					
Pre-mitiga Post-mitig	tion Score ation Score		1	Low Low		Qualitative	_	
Pre- mitigation Post- mitigation	VI	Quantitative 5% 5%		Schedule Cost Performance	Pre-mitigation Post-mitigation Pre-mitigation Post-mitigation Pre-mitigation Post-mitigation	N N N L L		

ID	Title					
SR826-R008	Excavation for the Port Tunnel can be used to backfill and low cost embankment					
Status	Owner					
Proposed	Unassigned					
mitigation	0 Negligible 0 Negligible ntitative Schedule Post-mitigation L 0% Cost Pre-mitigation L p% Post-mitigation Performance Pre-mitigation Post-mitigation L Post-mitigation L Post-mitigation L Post-mitigation L Post-mitigation L Post-mitigation L					

SR826-R027ReStatusOw		Owner	Retrofitting systems to systems connections at 826, 836 interchage						
U U	tion Score ation Score		0 Negligible 0 Negligible		Qualitative				
Pre- mitigation Post- mitigation	N	Quantitative 0% 0%	Schedule Cost Performance	Pre-mitigation Post-mitigation Pre-mitigation Post-mitigation Pre-mitigation Post-mitigation	N N N N N				

ID SR826-R017 Status Proposed		Owner	Title Design coordination with concurrent and future local projects Owner Unassigned							
-	tion Score ation Score		0 Negligible 0 Negligible		Qualitative					
Pre- mitigation Post- mitigation	N	Quantitative 0% 0%	Schedul Cost Performa	Post-mitigation Pre-mitigation Post-mitigation	N N N N N					

SR826-R058 I Status		Owner	tial parallel facility by N r signed	IDX		
Pre-mitiga Post-mitiga	tion Score ation Score Qualitative	Quantitative	0 Negligibl 0 Negligibl Sched	e ule Pre-mitigation	Qualitative	
Pre- mitigation Post- mitigation	N	0% 0%	Cost Perfor	Post-mitigation Pre-mitigation Post-mitigation mance Pre-mitigation Post-mitigation	N N N N	

SR826-R069		Title Enviro Owner	-	stice on FHWA Fur	ided project.		
Proposed		Unass	igned				
Pre-mitigatio Post-mitigati			0	Negligible Negligible			
Pre- mitigation Post- mitigation	Qualitative H H	Quantitative 60% 60%		Schedule Cost Performance	Pre-mitigation Post-mitigation Pre-mitigation Post-mitigation Pre-mitigation Post-mitigation	Qualitative N N N N N N N N N N	

ID SR826-R050 Status Proposed		Owner	Title Possibility of segmental bridges not being allowed on new projects (Not Applicable to this project) Owner Unassigned					
Pre- mitigation	ation Score Qualitative	Quantitative	0 Negligible 0 Negligible Schedul Cost	e Pre-mitigation Post-mitigation Pre-mitigation	Qualitative N N N N			
Post- mitigation	N	0%	Perform	Post-mitigation ance Pre-mitigation Post-mitigation	N N N			

ID SR826-R062 Status Proposed		Owner	Title Opportunity for additional tolling if truck are allowed Owner Unassigned					
Pre-mitiga Post-mitiga	tion Score ation Score		0 Negligible 0 Negligible		Qualitative			
	Qualitative	Quantitative	Schedu	le Pre-mitigation Post-mitigation	N N			
Pre- mitigation Post-	N	0% 0%	Cost	Pre-mitigation Post-mitigation	N N			
mitigation			Perform	nance Pre-mitigation Post-mitigation	N N			

Status Owne	ct between ITS and Landscaping full coverage for ITS cameras
Pre-mitigation Score Post-mitigation Score Qualitative Quantitative Pre- mitigation Post- mitigation N 0%	0Negligible0Negligible0NegligibleSchedulePre-mitigationPost-mitigationNPost-mitigationNCostPre-mitigationPost-mitigationNPost-mitigationNPost-mitigationNPost-mitigationNPost-mitigationNPost-mitigationNPost-mitigationNPost-mitigationN

ID SR826-R0 Status Proposed		Title FPL O Owner Unass		duits	
Pre-mitigat Post-mitiga	tion Score ation Score		0 Negligible 0 Negligible		Qualitative
	Qualitative	Quantitative	Schedule	Pre-mitigation	N
Pre- mitigation Post- mitigation	N N	0%	Cost Performance	Post-mitigation Pre-mitigation Post-mitigation Pre-mitigation Post-mitigation	N N N N

ID SR826-R031 Status Proposed		Owner	truction challenges relating to r signed	FAA glide path regu	ulations	
Pre-mitiga	tion Score ation Score		0 Negligible 0 Negligible			
Pre- mitigation Post- mitigation	N	Quantitative 0% 0%	Schedule Cost Performance	Pre-mitigation Post-mitigation Pre-mitigation Post-mitigation Pre-mitigation Post-mitigation	Qualitative N N N N N N N N	

ID SR826-R049 Status Proposed		Owner	Title Managed lanes may became obsolete by policy change Owner Unassigned					
Pre-mitiga Post-mitig	tion Score ation Score		0 Negligible 0 Negligible	Pro mitigation	Qualitative			
Pre- mitigation Post-	N	Quantitative	Schedule	Pre-mitigation Post-mitigation Pre-mitigation Post-mitigation	N N N			
mitigation	Ν	0%	Performance	Pre-mitigation Post-mitigation	N N			

ID SR826-R034 Status Proposed		Owner		ht of way for widenin	ing (Does not Apply to this project)
Pre-mitiga Post-mitiga Pre- mitigation Post- mitigation	Qualitative	Quantitative 0% 0%	0 Negligible 0 Negligible Schedule Cost Performance	Pre-mitigation Post-mitigation Pre-mitigation Post-mitigation Pre-mitigation	Qualitative N N N N N N N N
				Post-mitigation	Ν



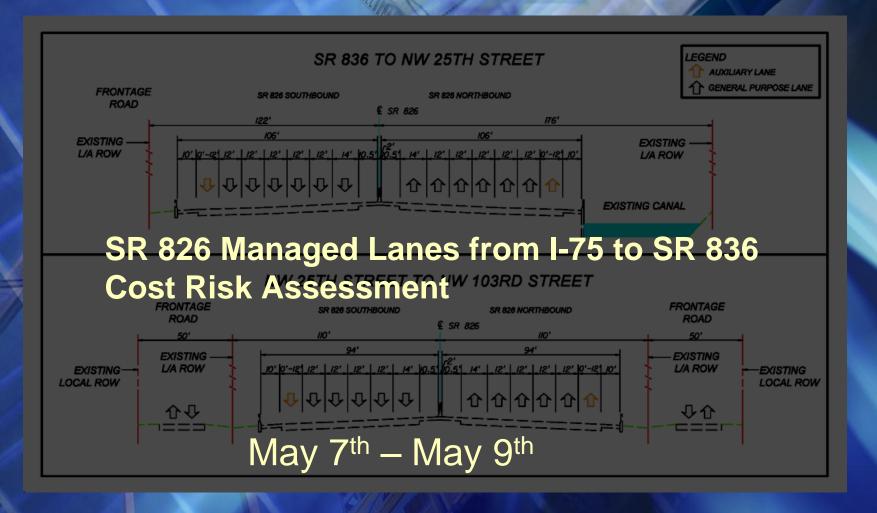
Florida Department of Transportation Cost Risk Assessment SR 826/Palmetto Expwy from SR 836/Dolphin Expwy to SR 932/NW 103 St

Presentation











Agenda

- Process
- Workshop Agenda
- Ground Rules



Process

Qualitative Identification of Risks Ranking of Risks Mitigation Plans

Quantitative

Definition of Risk Model Ranging Session Team input Simulations and statistical Analysis Results, Identification of Probable completion dates Report/Presentation



Workshop Agenda

Tentative Risk Analysis Agenda May 7 – 9, 2012

Day One	Kickoff and introduction of RA team	8:00 am – 8:15 am
	Steering Committee Meeting	8:15 am – 12:00 pm
	Lunch	12:00 pm – 1:00 pm
	Identify threats and Opportunities	1:00 pm – 3:00 pm
	Risk Ranking and Grouping	3:00 pm – 5:00 pm
Day Two	Risk Model, begin ranging	8:00 am – 12:00 pm
	Lunch	12:00 pm – 1:00 pm
	Ranging (run analysis after session)	1:00 pm – 5:00 pm
Day Three	Summarize Results	8:00 am – 9:00 am
	Risk Mitigation Plan	9:00 am – 12:00 pm
	Lunch	12:00 pm – 1:00 pm
	Refine Risk Mitigation Plan	1:00 pm – 5:00 pm



Ground Rules

- Creative Ideas; No Idea is a bad idea
- One discussion at a time
- Respect others ideas,
- Active Participation from everyone
- No hierarchy, no intimidation no inhibitions



Qualitative Analysis Risk Martix

- 92 Risk Identified ٠
- 81 Risks carried ۲ forward
 - 69 Risks
 - 12 Opportunities •
- 30 High Risks
- 23 Medium Risks
- 14 Low Risks
- 14 negligible Risks

Risk Matrix		1000					
	Impacts						
	Very Low	Low	Medium	High	Very High		
Very High %			2	8	6		
High %		2	2	4	4		
Medium %		2	4	4	6		
Low %	3	1	2	6	3		
Very Low %	2	3		3	2		



High Very High SR826-R030 - Construction funds only \$ 5 M SR826-R059 - Concessionaires interpretation of RFP response risks SR826-R052 - Possibiliy of more efficient paving SR826-R077 - Changes in drainage design criteria SR826-R089 - Exchange Rate fluctuations increasing may require additional right of way. SR826-R014 - Permiting Issues, SR826-R004 - Current Unit Prices are in Historical ows will we see fluctuations... nterchage of 826 & 836. SR826-R021 - Permits from the county and move imited access line. SR826-R015 - Political push back to the 2+4 alternative.

Very Low

Top Risks

traffic pattern

Very Low	Low	Medium	High	Very High
		BR25-R025 - Delaye due to interspency contensition Turgelle MDX county, Central office, Dietoct 4. SR825-R051 - last minute scope change	BELS AND: Adapting for Characteristic BELS AND: Adapting for Characteristic Adapting for researchers), and the second second second second second and the second second second second second second second and the second second second second second second second and the second se	EXE[23:4512 - Drawings design to mean verse: Drawing and call. Drawing the SM. Drawing t
	SR825-R019 - Shortage of Flag men for RR . SR825-R042 - Challenge of educating the public for new traffic patterns	9R826-R039 - Theft and Vandalism during and after construction. 9R826-R020 - Easments and right of way with RR	SR825-R036 - P3 Change anders due to untoreseen site conductors Re26-R036 - Schure Dependion of ITS sylects to a officered system (Different District/Operator)	5822-8910 - None impedian netrostrocha. 19825-8903 - Opportunity logit Invest Bioles dus to native (produced as URB25-8035 - P3-generative and interfactorial productional provides and interfactorial college-8006 - Impact in schedule IP Policy Changes to D3 de divery.
	SR825-R082 - Concessionaire doesnot have sith in the game on quality and maintenance. SR826-R083 - Interchange oppendictions may affect managed lanes operations (259, 740,)	SR25-R045 - clear RFP requirements and coordination with 175 for reshort wide communication system (TS). SR26-P071 - Mariterance and operations hundre SR26-P080 - HUP to bard approval for the project (Funding). SR26-P009 - Delays in the Right of way aquisition (2+4)	SR825-R077 - Changes in drainage design orderia may require additional right of way. SR825-R014 - Permitting Issues, SR825-R014 - Current Unit Prices are in Historical Lows will we see fluctuations SR825-R021 - Remits from the county and move imited access line.	DR22-FADIa - TERA Instrumentary reduces cost of conference of the contrast of the cost of the conference of the cost of the cost of the cost of the restorance of the A #30. Instrumentary of the A #30. Instrumentary of the A #30. Instrumentary of the A #30. Instrumentary of the A #30.
Public revolt on Tolling, ariable speed limits to maximize rehicle exemptions 040V, less, Hybrids etc.) may reduce	SRI25-R083 - Scope Creep	SR825-R060 - Availability of Laydown and stagleg wreas. 98825-R067 - Other Major Construction projects at going on at the same time	Lane into a managed tane, SR825-R047 - Miami-DadeBroward transit demands additional scope, SR825-R075 - Changing Geotechnical Conditions (Due to New Information) MISE Walls.	Unanope. SRI20-RODO - RFP language and proper hak assignment Answaorith
Survey results do not match existing Enrolects north do not do forward this	SR825-R024 - Public demand may change the egress and ingress . SR825-R043 - Threatening endangered species,		SR826-R028 - Competition from other foil facilities may impact revenues. SR826-R084 - Design External review delays project	SR826-R073 - Maintain political support to the project during an election year, SR826-R074 - Maior Hurricane that would change all



Risk Register

ID	Туре	RBS	Title	Description	Effect	Pre- mitigation Score	Mitigation Actions	Impacted Tasks
SR826- R012	Threat	Environmental & hydraulics	Drainage design to meet water quantity and quality	Design may have to meet the new permiting requirements, or meeting existing criteria. may result in added french drains or aquiring right of way to build ponds,	Additional cost and right of way, and delayed schedule	72	1	3
SR826- R040	Threat	Design and PS&E	Short conceptual design duration to develop the RFP, impact RFP completeness and response risks	Short time to Develop RFP	Impact RFP completeness and response to risk, and additional change orders	72	5	1
SR826- R013	Threat	Political Issues	Public perception of continuing construction impact after completion of (12 projects)	Never ending construction, Toll rates	public opposition to the project driver confusion	72	1	1
SR826- R029	Threat	Design and PS&E	Needs Approvals for exceptions and variations	exceptions and variation needed from FDOT &FHWA to avoid right of way acquistions	cost of aquiring right of way and schedule delay and negtive impacts to the community	72	3	1
SR826- R003	Threat	Utilities and Rail Roads	Florida Gas Transmission Line from 25th to 154th	20 inch Gas line:Widening may encroach closer to the gas line	Compensation for relocation for gas utility line	72	1	1
SR826- R070	Threat	Environmental & hydraulics	maintenance of trench drains	O&M cost of maintaing trench drains	overall increase in Life Cycle Cost	72	2	1
SR826- R010	Threat	Environmental & hydraulics	Noise impact on neibourhoods	Increased noise level due to added traffic., Adding Noise walls would not reduce noise levels sufficient to warrent walls	Increased noise level	56		1



Risk Model Ranging

Budget

\$237,876,127

Contingency

<u>\$37,183,631</u>

Risk Model Net

\$200,692,496

SR 826 Managed Lanes from I-75 to SR 836

				Costs						
ID	Description	Probability of occurence	Deterministic cost	Remaining Cost	Min Fixed Cost	Likely Fixed Cost	Max Fixed Cost	Minimum %	Likely %	Maximum %
380	Total Project		\$237,876,127	\$237,876,127						
A000	Direct Construction Costs		\$139,683,060	\$139,683,060						
0010	Risk Impacted Activity	100%	\$0	\$0						4-
0030	Clearing and Grubbing	100%	\$1,287,968	\$1,287,968	\$605,151	\$1,287,968	\$1,540,432	47%	100%	1209
0040	Roadwork	100%	\$20,326,059	\$20,326,059	\$14,800,802	\$20,326,059	\$24,067,264	73%	100%	1189
0045	Bulkhead	100%	\$2,378,247	\$2,378,247	\$2,376,098	\$2,378,247	\$4,158,514	100%	100%	1759
0130	Storm Drain Str.	100%	\$2,235,156	\$2,235,156	\$2,008,104	\$2,235,156	\$2,413,387	90%	100%	1089
0120	Sorm Drain Piping	100%	\$1,329,668	\$1,329,668	\$1,190,533	\$1,329,668	\$1,898,670	90%	100%	1439
0050	French Drains	100%	\$6,279,844	\$6,279,844	\$5,168,144	\$6,279,844	\$7,221,821	82%	100%	1159
0060	Concrete	100%	\$1,985,096	\$1,985,096	\$1,786,586	\$1,985,096	\$2,235,371	90%	100%	1139
0070	Steel, Reinforcement & sheet Piling	100%	\$3,320,351	\$3,320,351	\$1,936,084	\$3,320,351	\$4,515,234	58%	100%	1369
0080	Traffic Barrier/Retaining Walls	100%	\$22,788,347	\$22,788,347	\$18,945,941	\$22,788,347	\$28,485,434	83%	100%	125
0090	Road Markings	100%	\$389,214	\$389,214	\$355,572	\$389,214	\$712,086	91%	100%	183
0100	Bridges	100%	\$53,673,880	\$53,673,880	\$46,964,645	\$53,673,880	\$61,054,038	88%	100%	1149
0140	Lighting	100%	\$240,200	\$240,200	\$180,150	\$240,200	\$300,250	75%	100%	125
0160	Signing & Marking	100%	\$3,117,036	\$3,117,036	\$2,805,332	\$3,117,036	\$3,428,740	90%	100%	110
0170	Noise Wall	100%	\$0	\$0						
0180	ITS & Tolling	100%	\$13,199,988	\$13,199,988	\$11,879,989	\$13,199,988	\$14,519,987	90%	100%	110
0190	Environmental Mitigation	100%	\$300,000	\$300,000	\$281,250	\$375,000	\$468,750	94%	125%	156
0200	Landscaping	100%	\$1,000,000	\$1,000,000	\$750,000	\$1,000,000	\$2,127,870	75%	100%	213
0210	Utilities	100%	\$5,400,000	\$5,400,000	\$5,625,000	\$7,500,000	\$9,375,000	104%	139%	174
0220	Fire Suppression Systems	100%	\$432,006	\$432,006	\$324,005	\$432,006	\$540,008	75%	100%	125
B000	Proforma Costs		\$98,193,067	\$98,193,067						
0310	Contamination	100%	\$1,200,000	\$1,200,000	\$1,125,000	\$1,200,000	\$1,875,000	94%	100%	1569
0320	Mobilization	100%	\$15,365,137	\$15,365,137	\$12,890,963	\$14,185,806	\$15,971,842	84%	92%	104
0330	Maintenance of Traffic	100%	\$13,968,306	\$13,968,306	\$14,180,060	\$15,604,387	\$17,569,026	102%	112%	126
0340	Contingency	0%	\$37,183,631	\$37,183,631	\$31,196,132	\$34,329,651	\$38,651,857	84%	92%	1049
0350	CEI	100%	\$14,776,239	\$14,776,239	\$13,839,738	\$15,229,882	\$17,147,369	94%	103%	116
0360	DB Desinging Fees	100%	\$15,699,754	\$15,699,754	\$17,229,673	\$19,037,352	\$21,434,212	110%	121%	1379



Risk Analysis Risk Impacts

								Risk Out	outs	
5	Description	Remaining Cost	P10 Cost	P50 Cost	P80 Cost	P90 Cost	Cost Sensitivity			
	Total Project	\$237,876,127	\$216,251,753	\$225,731,040			100%			
00	Direct Construction Costs	\$139,683,060		\$158,918,510		\$167,190,833	99%			
10	Risk Impacted Activity	\$0	\$5,439,590	\$8,325,056	\$10,086,274	\$11,052,307	30%			
0010	Risk Impacted Activity	\$0	\$0	\$0	\$0	\$0	0%			
0010	Impact on schedule if Policy Changes to DB deliver,	\$0	\$0	\$1,151,265	\$1,295,701	\$1,349,862	9%			
010	Public perception of continuing construction impact	\$0	\$0	\$0	\$0	\$0	0%			
1000	A traffic and revenue study actual versus study for	\$0	\$0	\$0	\$0	\$0	0%		<u> </u>	ontingoncy
	Needs Approvals for exceptions and variations	\$0	\$0	\$2,181,235	\$2,477,303	\$2,608,981	12%			ontingency
and the first states	Construction funds only \$ 5 M identified	\$0	\$0	\$112,936	\$162,727	\$184,458	1%		N	eeded
20.55	P3 delivery method is subject to private financing m	\$0	\$0	\$1,954,897	\$2,387,621	\$2,549,332	16%			ccaca
1 Strategies	Short conceptual design duration to develop the RF	\$0	\$0	\$2,180,897	\$2,475,517	\$2,606,754	10%	Det. Net	\$200,692,496	
	Miami-Dade/Broward transit demands additional so	\$0 \$0	\$0	\$0	\$0	\$1,251,033	5% 7%	Dett Het	<i>\</i> 200,052,450	
The Alberta State	Concessionaires interpretation of RFP language an- Procurement Process Protests	\$0	\$0 \$0	\$1,226,440	\$1,325,035	\$1,369,380 \$0	0%	P50	\$225,731,040	\$25,038,5
10 A	Exchange Rate fluctuations increasing cost of P3	\$0	\$0	\$0	\$2,243,565	\$2,452,575	17%	1 30		
30	Clearing and Grubbing	\$1,287,968	\$981.321	\$1,233,987	\$1,372,786	\$1,427,582	3%	P80	\$232,171,346	\$31,478,8
40	Roadwork	\$20,326,059	\$18,453,717	\$20,933,320	\$22,473,182	\$23,141,706	76%			
	Roadwork	\$0	\$0	\$0	\$0	\$0	0%	P90	\$235,305,848	\$34,613,3
Section 1	P3 Change orders due to unforeseen site conditions	\$0	\$0	\$288,060	\$324,079	\$337,339	8%		+///-	+,,-
040	incident management (access and staging for rest	\$0	\$0	\$353,299	\$441,700	\$470,795	3%			
040	staging for Enforcement	\$0	\$0	\$363,742	\$412,906	\$434,452	4%			
45	Bulkhead	\$2,378,247	\$2,417,268	\$2,611,637	\$2,871,649	\$3,038,849	3%	Project Contir	igency	\$37,183,6
50	French Drains	\$6,279,844	\$5,809,316	\$6,412,509	\$6,842,568	\$7,077,233	12%		01	1 - 77 -
050	French Drains	\$0	\$0	\$0	\$0	\$0	0%			
050	Drainage design to meet water quantity and quality	\$0	\$0	\$35,309	\$53,010	\$60,629	1%			
1. A.	Poor Soil Permeability Rates- Drainage	\$0	\$0	\$0	\$0	\$747,200	11%			
60	Concrete	\$1,985,096	\$1,882,365	\$1,992,132	\$2,071,271	\$2,108,975	1%			
70	Steel, Reinforcement & sheet Piling	\$3,320,351	\$2,633,147	\$3,298,776	\$3,739,371	\$3,938,041	7%			
80	Traffic Barrier/Retaining Walls	\$22,788,347	\$20,953,904	\$23,233,906	\$24,911,895	\$25,754,612	77%			
and states in	Traffic Barrier/Retaining Walls P3 Change orders due to unforeseen site condition:	\$0 \$0	\$0 \$0	\$288,529	\$0 \$323,867	\$337,226	0% 8%			
90	P3 Change orders due to unforeseen site conditions Road Markings	\$389,214	\$373,396	\$288,529	\$323,867	\$337,226	8%			
	Bridges	\$389,214	\$50,485,331	\$426,731	\$484,770	\$57,629,061	81%			
200	Bridges	\$53,673,880	\$50,485,331	\$54,006,162	\$36,478,022	\$57,629,061	81% 0%			
	Crossing several rail roads, Metro Rail, aerial rights	\$0	\$0	\$56,794	\$81,372	\$92,290	3%			
1000	P3 Change orders due to unforeseen site condition:	\$0	\$0	\$288,189	\$323,717	\$337,326	8%			
	Sorm Drain Piping	\$1,329,668	\$1,563,783	\$3,694,449	\$4,118,871	\$4,385,067	14%			
	Sorm Drain Piping	\$0	\$0	\$0	\$0	\$0	0%			



Probabilistic Distribution

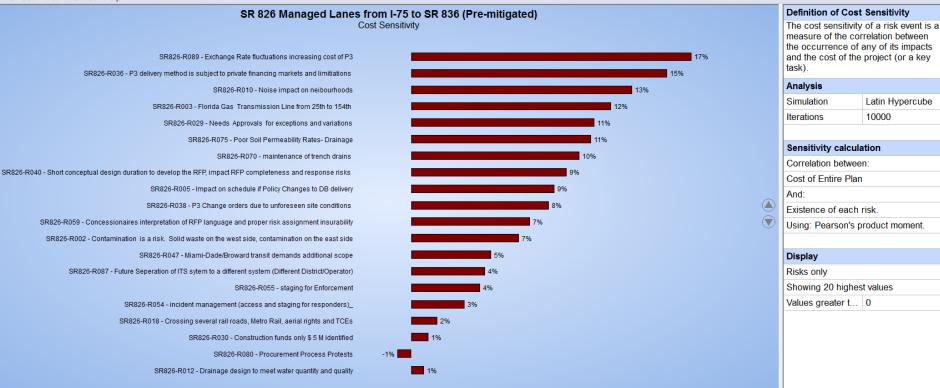
Distribution Graph ----File Edit View Format Tools Help 皆日本二マー家 Data SR 826 Managed Lanes from I-75 to SR 836 (Pre-mitigated) 0380 - Total Project : Cost Cost of Search 100% \$251,299,759 1400 -0380 - Total Project 🖃 📑 <EntirePlan> 95% \$237,866,527 🖨 🥅 0380 - Total Project A000 - Direct Construction Costs 90% \$235,305,848 Analysis 🖶 🔜 0010 - Risk Impacted Activity 85% \$233,599,927 1200 Iterations 10000 0010: B - Risk Impacted Activity 0010:SR826-R005 - Impact on schedule if Policy Changes to DB delivery 80% \$232,171,346 0010:SR826-R013 - Public perception of continuing construction impact after complet • 0010:SR826-R022 - A traffic and revenue study actual versus study for project fundir 75% \$231,006,297 Statistics 0010:SR826-R029 - Needs Approvals for exceptions and variations 1000 70% \$229.837.538 Minimum: \$202.601.417 0010:SR826-R030 - Construction funds only \$ 5 M identified 0010:SR826-R036 - P3 delivery method is subject to private financing markets and line Maximum: \$251,299,759 65% \$228,748,042 2 0010:SR826-R040 - Short conceptual design duration to develop the RFP, impact RFF Mean: \$225,785,829 0010:SR826-R047 - Miami-Dade/Broward transit demands additional scope 60% \$227,686,879 0010:SR826-R059 - Concessionaires interpretation of RFP language and proper risk 800 Bar Width: \$2,500,000 55% \$226,640,495 0010:SR826-R080 - Procurement Process Protests Hits 0010:SR826-R089 - Exchange Rate fluctuations increasing cost of P3 50% \$225,731,040 0030 - Clearing and Grubbing Highlighters 🖮 🛤 0040 - Roadwork 45% \$224,761,119 95% 600 · Deterministic ... 40% \$223,779,664 E 0040:SR826-R038 - P3 Change orders due to unforeseen site conditions 50% \$225,731,040 • 0040:SR826-R054 - incident management (access and staging for responders) Ö 35% \$222,776,798 0040:SR826-R055 - staging for Enforcement 80% \$232,171,346 💷 0045 - Bulkhead 30% \$221,754,543 400 📥 🛤 0050 - French Drains 25% \$220,638,341 0050: B - French Drains 0050:SR826-R012 - Drainage design to meet water quantity and quality 20% \$219,410,424 • 0050:SR826-R075 - Poor Soil Permeability Rates- Drainage - 0060 - Concrete 15% \$217 943 062 200 0070 - Steel, Reinforcement & sheet Piling 10% \$216,251,753 🖮 💷 0080 - Traffic Barrier/Retaining Walls 0080: B - Traffic Barrier/Retaining Walls 5% \$213,855,505 0080:SR826-R038 - P3 Change orders due to unforeseen site conditions 📼 0090 - Road Markings 0% \$202.601.417 🖮 🛤 0100 - Bridges \$220.000.000 \$240,000,000 - 0100: B - Bridges Distribution (start of interval) • 111 Þ Tasks Resources/ Finish Date / Start Date / Duration / Float / Cost / NPV / IRR / Highlighters Histogram Add to Distribution Analyzer Selected: 50% Bar Width: Automatic (\$2,500,000) -Deterministic (\$237,876,127) Show Distribution Analyzer... ▼ 50% Color: **V 80%** Cancel OK Use as default for new projects

Sensitivity of Risks Impacts

Tornado

File Edit View Format Help

PMA Consultants



Duration Sensitivity Cost Sensitivity Display mode Task types to display Filter Normal tasks Risk summary tasks 20 🚔 Show top Tasks Summary tasks Base tasks ✓ Ignore values smaller than +/-0 🔶 % Milestone tasks Risk impacts Risks Monitor tasks Ignore negative values

Bookmark Visible Tasks

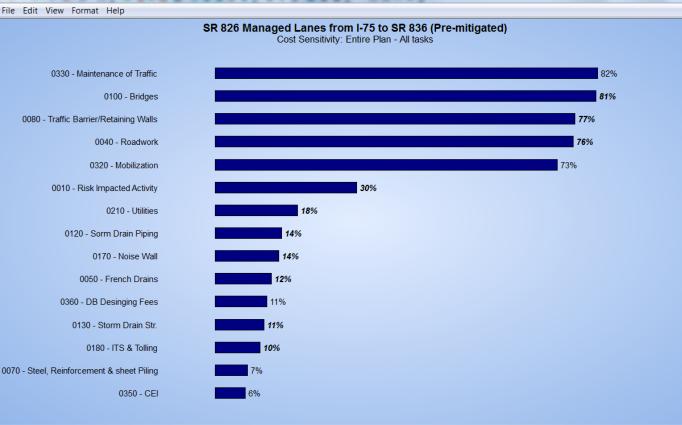
Use as default for new projects

Hammock task



Sensitivity of Cost Items

Tornado



Definition of Cost Sensitivity

The cost sensitivity of a task is a measure of the correlation between its cost and the cost of the project (or a key task or summary).

Analysis Simulation Latin Hypercube Iterations 10000

Sensitivity calculation

Correlation between:

Cost of Entire Plan

And: Cost of each task in the plan

Using: Pearson's product moment.

Display

Normal tasks only Showing 15 highest values 0 Values greater than:

Duration Sensitivity Cost Sensitivity Criticality Index Duration Cruciality Schedule Sensitivity Index								
Display mode	Task types to display		Filter					
Tasks		Risk summary tasks Base tasks Risk impacts	 ✓ Show top 15 → ✓ Ignore values smaller than +/- 0 → % 					
C Risks	Monitor tasks		Ignore negative values					

ОК



Opportunities

