

# VALUE ENGINEERING REPORT

I-575 @ Ridgewalk Parkway  
Project No. CSNHS-0006-00(043)  
PI No. 0006043  
Cherokee County

November 19, 2008

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## OWNER AND DESIGN TEAM:



Georgia Department of Transportation  
600 North Peachtree Street  
Atlanta, GA 30338

## VALUE ENGINEERING CONSULTANT:



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## **EXECUTIVE SUMMARY**

# Executive Summary

## VALUE ENGINEERING STUDY

### I-575 @ Ridgewalk Parkway State Project No. 0006043

#### Introduction

This report summarizes the results of a value engineering (VE) study conducted on the proposed design for a new I-575 / Ridgewalk Parkway Interchange in Cherokee County near the City of Woodstock, Georgia. The project consists of constructing a parallel post tensioned concrete box bridge across I-575, tying it to the existing post tensioned concrete box bridge (carrying Ridgewalk Parkway over I-575), and constructing on and off ramps to complete a new diamond interchange. This project will also add a southbound auxiliary lane to I-575 between the new Ridgewalk Parkway Interchange and the Town Lake Parkway Interchange. The new interchange will provide additional Interstate access to the City of Woodstock and relieve congestion at the existing I-575 / Town Lake Parkway Interchange located approximately one-mile to the south.

The new Interchange will provide additional connectivity to I-575 to meet overall regional travel needs. Major contract work items include bridge construction, roadway embankment, drainage, pavement, retaining walls, traffic signals, noise walls, curb and gutter, sidewalk, and utility relocation. The total estimated project cost including right-of-way (R/W) is \$20.8 million. The design is currently in the concept stage. The study was conducted on October 27-30, 2008, at the Georgia DOT General Office in Atlanta, using a four person VE team that also included a full time representative from FHWA.

This report presents the Team's recommendations and all back-up information, for consideration by the decision-makers. This **Executive Summary** includes a brief description of each recommendation. The **Study Identification** section contains information about the project and the team. The **Recommendations** section presents a more detailed description and support information about each recommendation. Lastly, the **Appendix** includes a complete record of the Team's activities and findings. The reader is encouraged to review all sections of the report in order to obtain a complete understanding of the VE process.

#### Considerations

The project being evaluated under this study has an estimated construction cost of \$17.7 million (not including R/W). Project funding will come from the Federal, State and the City of Woodstock. The Project Concept Report has been approved. This project is being considered as a Design / Build contract. The VE team was constrained as to the type of Interchange that could be constructed, the requirement to minimize potential R/W needed to construct the project, and the requirement to maintain crossroad grades (the existing post tensioned concrete box bridge was to be incorporated into the Interchange).

## **Results Obtained**

The VE team focused their efforts on the high cost items of the project. Through the use of functional analysis and “brain storming” techniques, the team generated 52 ideas with 27 being identified for additional evaluation as possible recommendations or design suggestions. The VE team developed nine independent recommendations, two alternative recommendation, and one design suggestion. The implementation of the independent recommendations has the potential to reduce the project cost by approximately \$ 3.9 million. A detailed write-up of each recommendation is contained in the respective section of this report. A summary of the recommendations and design suggestions follows.

## **Recommendation Highlights**

### **Idea A-3: Adjust the Ridgewalk Parkway typical section for the roadway area between the new Interchange ramp intersections.**

The designed roadway typical section matches the typical section for the proposed combined new / old bridge. The proposed combination bridge typical section provides dual 10-foot sidewalks, dual 6-foot shoulders, two 12-foot travel lanes, and an 18-foot median.

It is recommended that the roadway typical section (between the Interchange ramp intersections) be change to a four-lane roadway to match the VE recommended new bridge typical section. Under the VE proposal, the new bridge typical section will be two 5 1/2 –foot sidewalks, two 2-foot shoulders on both sides of the longitudinal joint, a 4-foot raised median, and four 12-foot travel lanes. The approach roadway typical section must match the typical bridge section. Under all bridge scenarios, there is adequate room for a four-lane roadway.

**The total potential increase if accepted is \$37,000.**

### **Idea A-4: Evaluate / modify the relocated Old Rope Mill Road typical section.**

The proposed relocated Old Rope Mill Road roadway cross section includes two 12-foot travel lanes, a 14-foot center turn lane, and curb and gutter with 14-foot shoulders (including 5 foot sidewalks) on each side.

It is recommended that the center left turn lane be provided only at the Ridgewalk Parkway intersection and that it be deleted from the remainder of the side road's length. Existing Old Rope Mill Road is a two lane paved dead end road providing access to a small local park at the Little River. The existing road includes curb and gutter on one side and does not have any sidewalks. Deleting the center turn lane is warranted since the road will never be lengthened and there will be limited opportunity for opposing traffic to block left turn movements.

**The total potential savings if accepted is \$607,000.**

### **Idea A-4A: Reduce the urban shoulder width from 14 feet to 12 feet on relocated Old Rope Mill Road.**

The proposed relocated Old Rope Mill Road roadway cross section includes two 12-foot travel lanes, a 14-foot center turn lane, and curb and gutter with 14-foot shoulders (including 5 foot sidewalks) on each side.

It is recommended that the 14-foot shoulder width be reduced to 12 feet. Reducing the shoulder width from 14 feet to 12 feet would reduce the amount of R/W requires to construct the project. A 12-foot wide shoulder would provide sufficient space for a sidewalk and open area between the sidewalk and curb and gutter section.

**The total potential savings if accepted is \$139,000.**

### **Idea B-3: Eliminate the MSE wall(s) on relocated Old Rope Mill Road.**

The original design provides for a narrow roadway embankment just north of its intersection with Ridgewalk Parkway by constructing MSE walls to reduce taking additional R/W.

It is recommended that the MSE walls be eliminated and that additional R/W be acquired to provide room to widen the embankment and construct standard cut/fill slopes. The relocation of Old Rope Mill Road will be constructed in an entirely new location. The purchase of the small amount of additional R/W and extra embankment would cost less than the cost of the MSE retaining walls.

**The total potential savings if accepted is \$160,000.**

### **Idea D-3A: Change the bridge type for the new parallel structure and reduce the bridge span lengths by building MSE Wrap Around Walls.**

The original design concept is to widen the existing 35.25-foot by 328-foot post-tensioned concrete box bridge by building a 39.58-foot by 328-foot post-tensioned concrete box bridge adjacent to it and tying them together. The total 74.42-foot width would carry two 10-foot sidewalks, two 6-foot shoulders, two 12-foot lanes, a 16-foot median, and two 1.08-foot parapet walls.

It is recommended that a new 38.08-foot by 239-foot PSC Beam Bridge with wrap around MSE walls be built adjacent to existing bridge. The new bridge would be separated by a 1-inch longitudinal joint to control differential movement of the superstructures. This concept would accommodate two 5.5-foot sidewalks, two 2-foot shoulders on both sides of longitudinal joint, a 4-foot raised median, four 12-foot travel lanes, and two 1.08-foot parapet walls. It eliminates extensive falsework and vertical height restrictions that would be required to construct the concrete box bridge. It would reduce the bridge length, result in a shallower section, and provide additional vertical clearance allowing for future Interstate widened to the outside. It would also be easier and quicker to construct, and result in significant cost savings to the project.

Note: The \$114.09 / SF unit price estimate for the 328-foot long post tensioned concrete box bridge appears extremely low. Using a \$140.00 / SF unit price (similar to a plate girder bridge) would increase the cost of the concrete box bridge by \$365,000 resulting in even more savings for the VE concept.

**The total potential savings if accepted is \$499,000.**

### **Idea D-5: Install standard pedestrian fencing in-lieu-of standard bridge rail across the bridge.**

The existing bridge crossing I-575 does not have any bridge rail or fencing. The current design proposes to install a standard aluminum bridge rail across both the new and existing bridges.

It is recommended that a standard 6-foot 9-inch pedestrian fence be installed across the bridge in-lieu-of the proposed aluminum bridge rail. The bridges are being designed with sidewalks on

both sides of the ultimate structure. Installing pedestrian fencing on these bridges will improve safety over that provided by standard bridge rail. The fencing will protect pedestrians walking on the bridge and the traveling public using the Interstate roadway below.

**The total potential savings if accepted is \$25,000.**

**Idea E-2: Reduce the lane widths from 12 feet to 11 feet on relocated Old Rope Mill Road.**

The current design provides for 12-foot lanes throughout the length of Old Rope Mill Road.

It is recommended that the travel lane widths on relocated Old Rope Mill Road be reduced from 12 feet to 11 feet. Since the road is only three-quarters mile long and cannot be extended, traffic volumes and speeds will always be low and 11-foot lanes would be sufficient.

**The total potential savings if accepted is \$103,000.**

**Idea F-2: Use full depth asphalt shoulders in-lieu-of concrete shoulders on the ramps.**

The original plans propose to use concrete shoulders on the Interchange ramps. The outside shoulder would be 10-foot wide and the inside shoulder would be 4-foot wide.

It is recommended that full depth asphalt shoulders be used in-lieu-of concrete shoulders on the ramps. It is further recommended that the width of the paved shoulders be 6 ½ feet on the outside and 4 feet on the inside. The use of full depth asphalt shoulders would be consistent with the existing section of Interstate through this area. Projected truck traffic on the Interstate is 10 percent and only 3 percent on the proposed Interchange ramps. This concept would be consistent with the standard dimensions for paved shoulders on other ramps in the area. It would reduce cost and simplify construction.

**The total potential savings if accepted is \$693,000.**

**Idea B-6: Eliminate the 8-Foot Outward Shift of the Southbound Interchange On and Off Ramp Gore Areas.**

The current design shifts the ramp gores away from the main travel lane 8 feet to provide room for a future HOV lane concept in the median.

It is suggested that consideration be given to bringing the ramp gores in 8 feet toward the existing Interstate outside lane on the west of the Interstate. This concept would shift the west side ramps 8 feet closer to the edge of the mainline pavement and reduce / eliminate several MSE walls south of the Interchange bridge. It would also reduce some of the R/W required at the ball field and reduce the height of MSE wall.

**The total potential savings if accepted is \$1,735,000.**

**Idea D-3B: ALTERNATIVE to D-3A Change the bridge type for the new parallel structure but maintain the same span length as the existing bridge.**

The original design concept is to widen the existing 35.25-foot by 328-foot post-tensioned concrete box bridge by building a 39.58-foot by 328-foot post-tensioned concrete box adjacent to it and tying them together. The total 74.42-foot width would carry two 10-foot sidewalks, two 6-foot shoulders, two 12-foot lanes, a 16-foot median, and two 1.08-foot parapet walls.

It is recommended that a 38.08-foot by 328-foot plate girder bridge be built adjacent to existing concrete box bridge. Utilizing plate girders allows the new bridge to have the same span lengths as the existing concrete box bridge. The new bridge would be separated by a 1-inch longitudinal joint to control differential movement. The dual bridges would accommodate two 5.5-foot sidewalks, two 2-foot shoulders on both sides of longitudinal joint, a 4-foot raised median, four 12-foot travel lanes, and two 1.08-foot parapet walls. This concept eliminates extensive falsework and vertical height restrictions that would be required to construct the concrete box bridge. It maintains the same horizontal opening as the existing box bridge. The plate girder bridge would be easier and quicker to construct, and result in cost savings to the project.

Note: The \$114.09 / SF unit price estimate for the 328-foot long post tensioned concrete box bridge appears extremely low. Using a \$140.00 / SF unit price (similar to a plate girder bridge) would increase the cost of the concrete box bridge by \$365,000 resulting in a net savings for the VE concept.

**The total potential increase if accepted is \$256,000.**

**Idea F-1: ALTERNATIVE to F-1 Change the outside 10-foot concrete shoulders to 6 ½-foot concrete shoulders.**

The original plans propose to use concrete shoulders on the Interchange ramps. The outside shoulder would be 10-foot wide and the inside shoulder would be 4-foot wide.

It is recommended that the outside 10-foot wide concrete shoulder be reduced to 6 and ½ feet. The standard outside paved shoulder width is 6 and ½ feet. This concept would reduce cost and simplify construction.

**The total potential savings if accepted is \$243,000.**

## **Design Suggestions**

The VE team also developed a Design Suggestion for further consideration during the design of the project. The Design Suggestion is:

- It is suggested that the existing truck climbing lane on I-575 SB be eliminated as part of this project. The truck lane north of the Interchange should be transitioned into the southbound off ramp. South of the Interchange, the truck lane should be transitioned into the new auxiliary lane with the southbound on ramp attaching to the new auxiliary lane from the outside. The truck lane should be stripped out through the Interchange proper to avoid drive confusion.

**I-575 @ Ridgewalk Parkway**  
**SUMMARY OF POTENTIAL COST SAVINGS**

ITEM No.	CREATIVE IDEA DESCRIPTION	ORIGINAL INITIAL COST	PROPOSED INITIAL COST	INITIAL COST SAVINGS	FUTURE SAVINGS	TOTAL LIFE CYCLE SAVINGS	SAVINGS POTENTIAL* (%)
<b>RECOMMENDATIONS</b>							
A-3	Adjust the Relocated Ridgewalk Parkway typical section between the ramp intersections (Widen as necessary to provide median match with dual bridges).	\$0	\$37,000	(\$37,000)	N/A	(\$37,000)	Yes
A-4	Eliminate the center turn lane on relocated Old Rope Mill Road typical section	\$607,000	\$0	\$607,000	N/A	\$607,000	Yes
A-4A	Reduce the urban shoulder width from 14 feet to 12 feet on relocated Old Rope Mill Road.	\$139,000	\$0	\$139,000	N/A	\$139,000	Yes
B-3	Evaluate the MSE wall cost on relocated Old Rope Mill Road to the cost of additional R/W if the slopes are extended out.	\$367,000	\$207,000	\$160,000	N/A	\$160,000	Yes
D-3A	Change bridge type for the new parallel structure and reduce the bridge length by constructing wrap around MSE walls (Allows for a changed typical section).	\$1,969,000	\$1,470,000	\$499,000	N/A	\$499,000	Yes
D-5	Install standard bridge fencing on the bridge in-lieu-of the proposed bridge rail.	\$48,000	\$23,000	\$25,000	N/A	\$25,000	Yes

**I-575 @ Ridgewalk Parkway**  
**SUMMARY OF POTENTIAL COST SAVINGS**

ITEM No.	CREATIVE IDEA DESCRIPTION	ORIGINAL INITIAL COST	PROPOSED INITIAL COST	INITIAL COST SAVINGS	FUTURE SAVINGS	TOTAL LIFE CYCLE SAVINGS	SAVINGS POTENTIAL* (%)
E-2	Reduce the lane width on relocated Old Rope Mill Road from 12 feet to 11 feet.	\$103,000	\$0	\$103,000	N/A	\$103,000	Yes
F-2	Use asphalt shoulders in-lieu-of concrete shoulders on the ramps.	\$979,000	\$286,000	\$693,000	N/A	\$693,000	Yes
B-6	Eliminate 8-foot outward shift of the southbound on & off ramp gore areas.	\$1,735,000	\$0	\$1,735,000	N/A	\$1,735,000	Yes
		<b>Net Total Potential Savings</b>				<b>\$3,924,000</b>	
	<b>ALTERNATIVES</b>						
D-3B	<b><u>ALTERNATIVE to D-3A</u></b> Change the bridge type for the new parallel structure while maintaining the current bridge length.	\$1,969,000	\$2,225,000	(\$256,000)	N/A	(\$256,000)	N/A
F-1	<b>ALTERNATIVE to F-2</b> Check / Reduce the width of the 10-foot concrete shoulder on the ramps.	\$697,000	\$454,000	\$243,000	N/A	\$243,000	N/A
	<b>DESIGN SUGGESTION</b>						
A-9	Eliminate the southbound I-575 truck climbing lane.	N/A	N/A	N/A	N/A	N/A	N/A

## **STUDY IDENTIFICATION**

## Study Identification

<b>Project: I-575 @ Ridgewalk Parkway</b>	<b>Date: October 27-30, 2008</b>
<b>Location: Cherokee County, Georgia</b>	

## VE Team Members

<b>Name:</b>	<b>Title:</b>	<b>Organization:</b>	<b>Telephone:</b>
Keith Borkenhagen	VE Team Facilitator	MACTEC	623-556-1875
Alex Wiley	Design	MACTEC	770-421-3481
Alan Hunley	Construction	Parsons	678-969-2304
Jared Ogonor	Structures	Parsons	678-969-2337
Carolyn Penry	Engineer Trainee	FHWA	404-562-3617

### Project Description

This project consists of constructing a new I-575 / Ridgewalk Parkway Interchange near the City of Woodstock, Georgia. It consists of constructing a parallel post tensioned concrete box bridge across I-575, tying it to the existing post tensioned concrete box bridge (carrying Ridgewalk Parkway over I-575), and constructing on and off ramps to complete a new Diamond Interchange. This project will also add a southbound auxiliary lane to I-575 between the new Ridgewalk Parkway Interchange and the Town Lake Parkway Interchange. The new Interchange will provide additional Interstate access to the City of Woodstock and relieve congestion at the existing I-575 / Town Lake Parkway Interchange located approximately one-mile to the south.

The new Interchange will provide additional connectivity to I-575 to meet overall regional travel needs. Major contract work items include bridge construction, roadway embankment, drainage, pavement, retaining walls, traffic signals, noise walls, curb and gutter, sidewalk, and utility relocation. The total estimated project cost including right-of-way (R/W) is \$20.8 million. The design is currently in the concept stage.

### Project Constraints

The VE team was given the following constraints for this project:

- The Interchange type was to be a simple diamond,
- to minimize potential R/W needed to construct the project, and
- to maintain crossroad grades (the existing post tensioned concrete box bridge was to be incorporated into the Interchange).

## **Project Briefing**

Prior to beginning work, the VE team was briefed on the design status of the project. The following items were discussed:

- This project will construct a new Interchange at Ridgewalk Parkway and I-575. It will incorporate the existing post tensioned concrete box bridge carrying Ridgewalk Parkway over I-575 into the design.
- The Interchange will serve the City of Woodstock and the developing area between Woodstock and I-575.
- The Environmental Assessment has been signed. The FONSI Statement is expected to be signed soon. Public hearings have been held on the project. The preferred option is the construction of a diamond interchange.
- The current design considers the construction of a second parallel post tensioned concrete box bridge that will be tied to the existing bridge to make a single structure.
- The State is considering constructing this Interchange as a Design / Build contract. It is anticipated to go to construction in 2010.
- Included in the construction of the new Interchange is the construction of an auxiliary lane on southbound I-575 and the transitioning of the existing truck climbing lane on southbound I-575.
- I-575 is scheduled for future upgrading through the construction of a HOV lane in the median. Consideration is being given to making the HOV lane wider than normal by constructing a barrier between the HOV lanes and the mainline so the HOV lane would have the possibility of being tolled.
- The future HOV lane possibility resulted in the design of the proposed Interchange being shifted out 8 feet at the ramp gores to accommodate Interstate widening for the HOV lanes. Widening the Interchange required additional and higher MSE walls on the west side of the Interstate.
- Funding for the project will come from Federal, State, and local sources. The City of Woodstock is funding the preliminary design concept and R/W. The State is funding the PE and construction phases (the City will also participate in the construction cost).
- The relocation of Old Rope Mill Road will serve a business on the north side of Ridgewalk Parkway and as access to a small local park at Little River.

# Project Sketch Map



# RECOMMENDATIONS

## DEVELOPMENT AND RECOMMENDATION PHASE

### Project: I-575 @ Ridgewalk Parkway

<b>IDEA No.:</b> A-3	<b>Sheet No.:</b> 1 of 4	<b>CREATIVE IDEA:</b> Adjust the Ridgewalk Parkway typical section between the Interchange Ramp intersections (match dual bridges).
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Comp By: A.E.H. Date: 10/29/08 Checked By: K.B. Date: 11/11/08

**Original Concept:**

The current roadway typical section matches the proposed typical section for the combined new / old bridge typical section. The proposed bridge typical section provides dual 10-foot sidewalks, dual 6-foot shoulders, two 12-foot travel lanes, and an 18-foot median. The roadway section changes as it approaches the ramp intersections where left-turn lanes are provided in the median.

**Proposed Change:**

It is recommended that the roadway typical section (between the Interchange ramp intersections) be change to a four-lane roadway to match the VE recommended new bridge typical section. Under the VE proposal, the new bridge typical section will be two 5 1/2 –foot sidewalks, two 2-foot shoulders on both sides of the longitudinal joint, a 4-foot raised median, and four 12-foot travel lanes.

**Justification:**

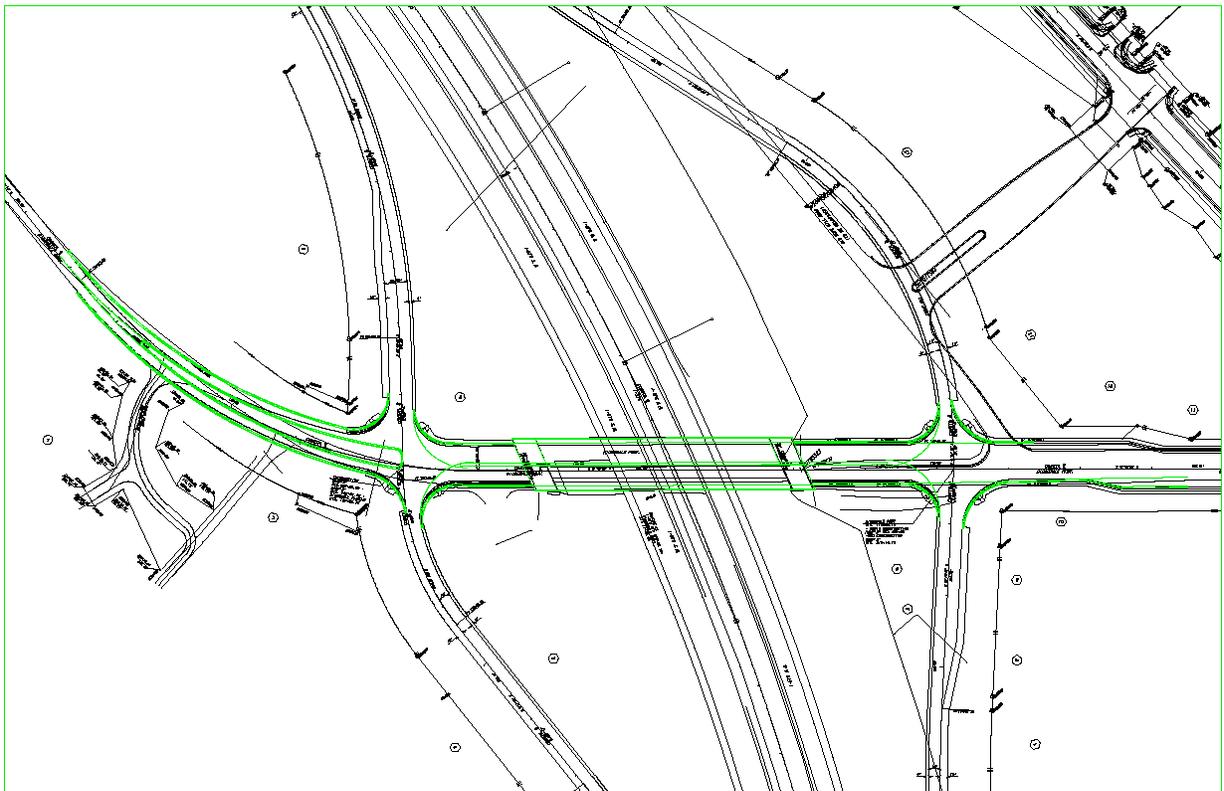
The roadway typical section must be adjusted to match the typical section on the new combined bridge. Under all bridge scenarios, there appears to be adequate room for a four-lane roadway.

LIFE CYCLE COST SUMMARY	CAPITAL COST	FUTURE COST	TOTAL COST
<b>INITIAL COST - Original</b>	\$0		
<b>- Proposed</b>	\$37,000		
<b>- Savings</b>	(\$37,000)		(\$37,000)
<b>FUTURE COST – Savings</b>			
<b>TOTAL PRESENT WORTH SAVINGS</b>			<b>(\$37,000)</b>

# SKETCH

**Project: I-575 @ Ridgewalk Parkway**

ITEM No.: A-3  
CLIENT: GDOT  
Sheet 2 of 4





## CALCULATIONS

**Project: I-575 @ Ridgewalk Parkway**

ITEM No.: A-3  
CLIENT: GDOT  
Sheet 4 of 4

The pavement between the traffic signals must be widened by 8 feet to match the location of the lanes on the new bridges. The widening of Ashland Parkway will taper from 8 feet to zero within the length of the curve.

Additional Pavement area:

$$(8 \text{ ft} \times 450 \text{ ft}) + \frac{1}{2} \times 8 \text{ ft} \times 650 \text{ ft} = 3,600 + 2,600 = 6,200 \text{ SF}$$

Additional Pavement Required:

402-3113 Asphaltic Concrete 12.5 mm Superpave, 165 lb / SY

$$6,200 \text{ SF} / 9 \times 165 \text{ lb} / 2,000 \text{ lb} = 57 \text{ Tons}$$

402-3190 Asphaltic Concrete 19 mm Superpave, 330 lb / SY

$$6,200 \text{ SF} / 9 \times 330 \text{ lb} / 2,000 \text{ lb} = 114 \text{ Tons}$$

402-3121 Asphaltic Concrete 25 mm Superpave, 440 lb / SY

$$6,200 \text{ SF} / 9 \times 440 \text{ lb} / 2,000 \text{ lb} = 152 \text{ Tons}$$

310-1101 Graded Aggregate Base 12"

$$6,200 \text{ SF} \times 1 \text{ ft} \times 1 \text{ CY} / 27 \text{ CF} \times 2.07 \text{ T} / \text{CY} = 475 \text{ Tons}$$

**DEVELOPMENT AND RECOMMENDATION PHASE**

**Project: I-575 @ Ridgewalk Parkway**

<b>IDEA No.:</b> A-4	<b>Sheet No.:</b> 1 of 4	<b>CREATIVE IDEA:</b> Evaluate the relocated Old Rope Mill Road typical section.
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Comp By: A.E.H. Date: 10/29/08 Checked By: K.B. Date: 11/11/08

**Original Concept:**

The existing concept relocates Old Rope Mill Road to begin north of the existing Ridgewalk Parkway / Woodstock Parkway intersection and extend 2,950 feet to tie in to the existing old roadway just south of the existing park. The proposed roadway cross section includes two 12-foot travel lanes, a 14-foot center turn lane, and curb and gutter with 14-foot shoulders (including 5 foot sidewalks) on each side.

**Proposed Change:**

It is recommended that the center left turn lane be provided only at the Ridgewalk Parkway intersection and that it be deleted from the remainder of the side road's length.

**Justification:**

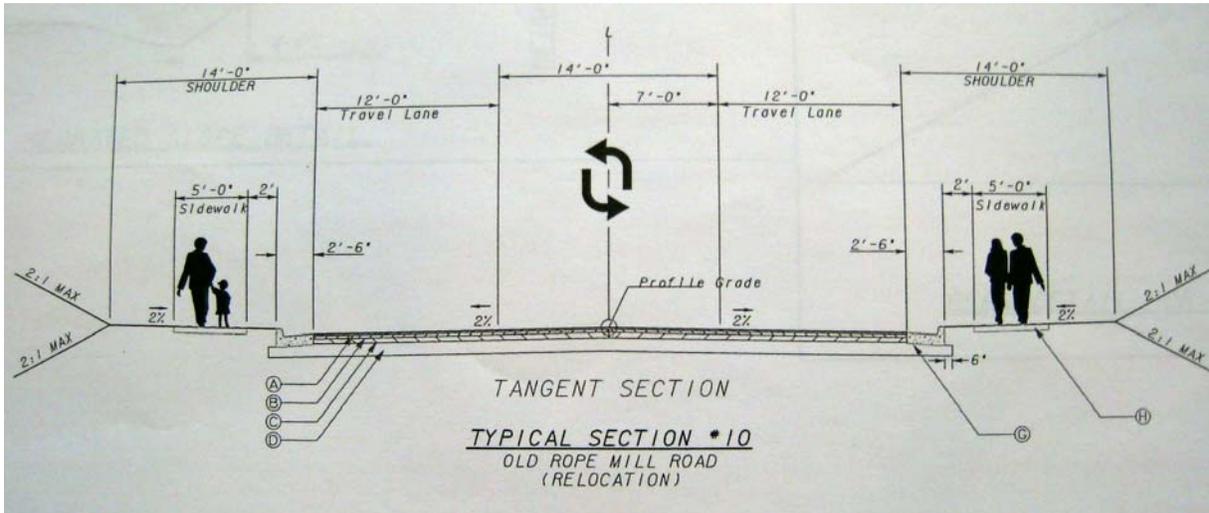
Existing Old Rope Mill Road is a two lane paved roadway providing access to the small local park at the Little River. The road is a dead end road. Facilities at the park include a parking area and small pavilion. The road also provides access to a commercial building. The existing road includes curb and gutter on one side, with no sidewalks. The commercial building has an access road in front of it with curb and gutter and sidewalks on both sides of the road. Since the road will never be lengthened and there will be limited opportunity for opposing traffic to block left turn movements, we recommend deleting the center turn lane.

<b>LIFE CYCLE COST SUMMARY</b>	<b>CAPITAL COST</b>	<b>FUTURE COST</b>	<b>TOTAL COST</b>
<b>INITIAL COST – Original</b>	\$607,000		
<b>- Proposed</b>	\$0		
<b>- Savings</b>	\$607,000		\$607,000
<b>FUTURE COST – Savings</b>			
<b>TOTAL PRESENT WORTH SAVINGS</b>			<b>\$607,000</b>

# SKETCH

Project: I-575 @ Ridgewalk Parkway

ITEM No.: A-4  
CLIENT: GDOT  
Sheet 2 of 4



## Current Design



## CALCULATIONS

**Project: I-575 @ Ridgewalk Parkway**

ITEM No.: A-4  
 CLIENT: GDOT  
 Sheet 3 of 4

Provide left turn lane at signalized intersection. Delete center turn lane for balance of project length.

- Eliminate median taper at end of project:  
 Station 22243.81 to 22933.69 = 689.88 feet  
 Area = 0.5 x 14 feet x 689.88 feet = 4829 SF
- Eliminate median station 20200 to 22243.81 = 2043.81 feet  
 Area = 14 feet x 2043.81 feet = 28,613 SF  
 Total reduction in pavement = 4829 SF + 28,613 SF = 33,442 SF

Items affected by elimination of median:

**Right of Way:** 33,442 SF x \$10/SF = \$334,420

**Pavement reduction**

- |   |         |
|---|---------|
| A. 402-3113 Asphaltic Concrete 12.5 mm Superpave, 165 lb/SY |         |
| 33442 SF x 1 SY/9 SF x 165 lb/SY x 1 T/2000 lb =            | 307 T   |
| B. 402-3190 Asphaltic Concrete 19 mm Superpave, 330 lb/SY   |         |
| 33442 SF x 1 SY/9 SF x 330 lb/SY x 1 T/2000 lb =            | 613 T   |
| C. 402-3121 Asphaltic Concrete 25 mm Superpave, 440 lb/SY   |         |
| 33442 SF x 1 SY/9SF x 440 lb/SY x 1 T/2000 lb =             | 817 T   |
| D. 310-1101 Graded Aggregate Base 12"                       |         |
| 33442 SF x 1 ft. x 1 CY/27 CF x 2.07 T/CY =                 | 2,564 T |

**Earthwork reduction.**

Earthwork at this time is listed as "Grading Complete", a lump sum item. However, there would be reduction in overall earthwork as a result of the reduced roadway typical section.

**DEVELOPMENT AND RECOMMENDATION PHASE**

**Project: I-575 @ Ridgewalk Parkway**

<b>IDEA No.:</b> A-4A	<b>Sheet No.:</b> 1 of 4	<b>CREATIVE IDEA:</b> Reduce the urban shoulder width from 14 feet to 12 feet on relocated Old Rope Mill Road.
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Comp By: A.E.H. Date: 10/29/08 Checked By: K.B. Date: 11/11/08

**Original Concept:**

The existing concept relocates Old Rope Mill Road to begin north of the existing Ridgewalk Parkway / Woodstock Parkway intersection and extend 2,950 feet to tie in to the existing old roadway just south of the existing park. The proposed roadway cross section includes two 12-foot travel lanes, a 14-foot center turn lane, and curb and gutter with 14-foot shoulders (including 5 foot sidewalks) on each side.

**Proposed Change:**

It is recommended that the 14-foot shoulder width be reduced to 12 feet.

**Justification:**

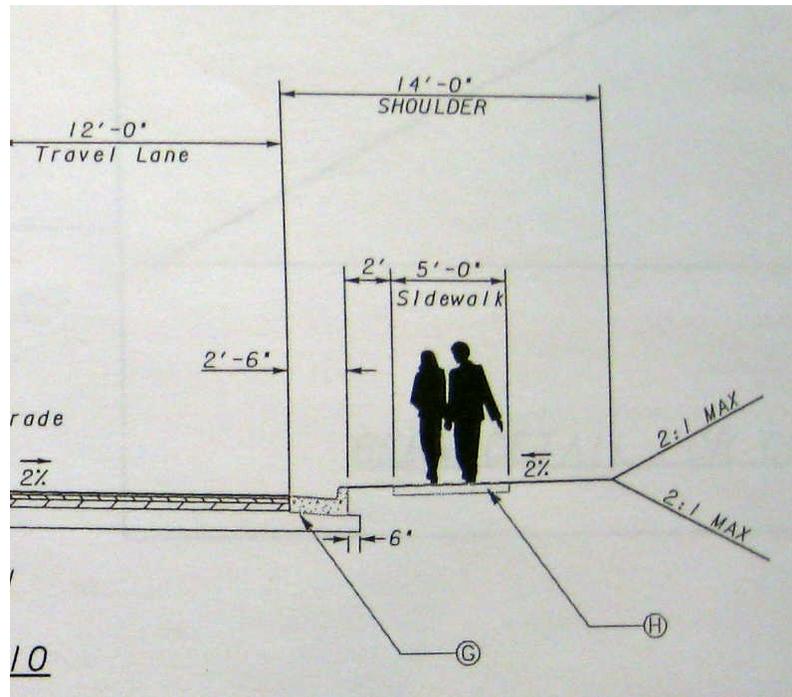
Reducing the shoulder width from 14 feet to 12 feet would reduce the amount of R/W required to construct the project. A 12-foot wide shoulder would provide sufficient space for a sidewalk and open area between the sidewalk and curb and gutter section.

<b>LIFE CYCLE COST SUMMARY</b>	<b>CAPITAL COST</b>	<b>FUTURE COST</b>	<b>TOTAL COST</b>
<b>INITIAL COST – Original</b>	\$139,000		
<b>- Proposed</b>	\$0		
<b>- Savings</b>	\$139,000		\$139,000
<b>FUTURE COST – Savings</b>			
<b>TOTAL PRESENT WORTH SAVINGS</b>			<b>\$139,000</b>

# SKETCH

**Project: I-575 @ Ridgewalk Parkway**

ITEM No.: A-4A  
CLIENT: GDOT  
Sheet 2 of 4



**Current Design**



## CALCULATIONS

**Project: I-575 @ Ridgewalk Parkway**

ITEM No.: A-4A  
CLIENT: GDOT  
Sheet 4 of 4

**Provide 12 foot shoulders**

Items affected by reduction of shoulder width.

Total reduction, 2 feet each side = 4 feet. Length:  $22933.69 - 20100 = 2833.69$

Reduced area = 4 feet x 2833.68 feet = 11,334.72 SF

Right of Way: 11,335 SF x \$10/ SF = \$113,350

**Earthwork reduction.**

Earthwork at this time is listed as "Grading Complete", a lump sum item. However, there would be reduction in overall earthwork as a result of the reduced roadway typical section.

Provide 12 foot shoulders

## DEVELOPMENT AND RECOMMENDATION PHASE

### Project: I-575 @ Ridgewalk Parkway

<b>IDEA No.:</b> B-3	<b>Sheet No.:</b> 1 of 4	<b>CREATIVE IDEA:</b> Eliminate the MSE wall(s) on relocated Old Rope Mill Road.
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Comp By: A.E.H. Date: 10/29/08 Checked By: K.B. Date: 11/11/08

**Original Concept:**

The original design provides for a narrow roadway embankment by constructing MSE walls on Relocated Old Rope Mill Road just north of Ridgewalk Parkway.

**Proposed Change:**

It is recommended that the MSE walls be eliminated and that additional R/W be acquired to provide sufficient room to widen the embankment and construct standard cut/fill slopes.

**Justification:**

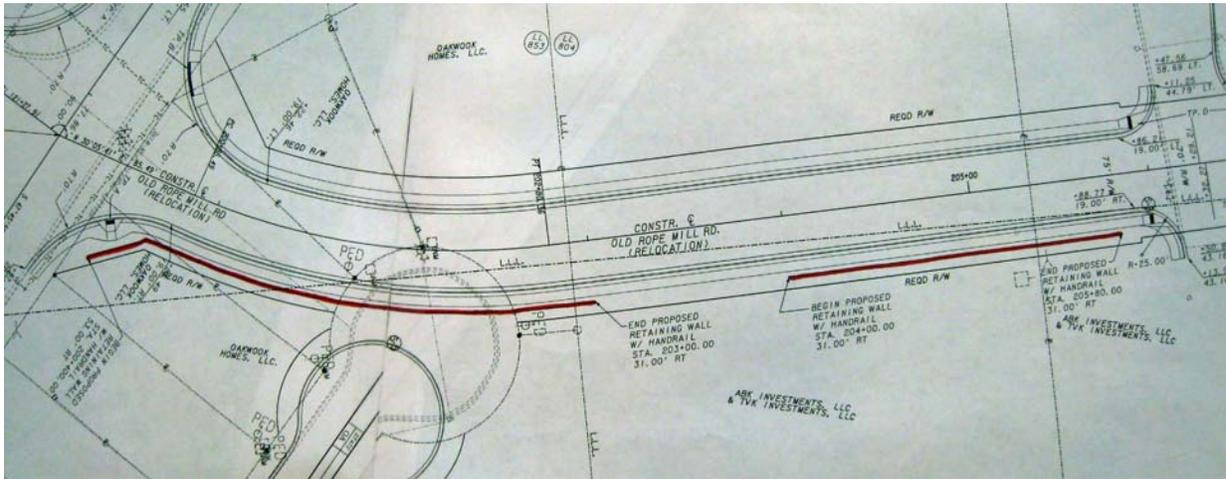
The relocation of Old Rope Mill Road will be constructed in an entirely new location and R/W will have to be acquired. The purchase of the small amount of additional R/W and extra embankment would cost less than the cost of the MSE retaining walls.

LIFE CYCLE COST SUMMARY	CAPITAL COST	FUTURE COST	TOTAL COST
<b>INITIAL COST - Original</b>	\$367,000		
<b>- Proposed</b>	\$207,000		
<b>- Savings</b>	\$160,000		\$160,000
<b>FUTURE COST – Savings</b>			
<b>TOTAL PRESENT WORTH SAVINGS</b>			<b>\$160,000</b>

# SKETCH

**Project: I-575 @ Ridgewalk Parkway**

ITEM No.: B-3  
CLIENT: GDOT  
Sheet 2 of 4





## CALCULATIONS

**Project: I-575 @ Ridgewalk Parkway**

ITEM No.: B-3  
 CLIENT: GDOT  
 Sheet 4 of 4

**Savings**

Delete MSE wall.

627-1,010 MSE wall

Wall 1 Station 20040 to 20300

Wall 2 Station 20400 to 20580

Wall 1: 260 LF at average height of 15 = 3,900 SF

Wall 2: 180 LF at average height of 15 = 2,700 SF

Total 2,700 + 3,900 = 6,600 SF x \$45.30 = \$298,980

**Additional Cost**

Right of Way Original proposed R/W is 36 feet from centerline.

Wall 1: Proposed right of way line resulting from replacing MSE with earthwork requires additional right of way width that varies from 25 feet to 44 feet. Use average of 35 feet additional right of way width.

Area = 260 LF x 35 feet = 9,100 SF x \$10/SF = \$91,000

Wall 2: Proposed right of way line resulting from replacing MSE with earthwork requires additional right of way width that varies from 30 feet to 40 feet. Use average of 35 feet additional right of way width.

Area = 180 LF x 35 feet = 6,300 SF x \$10/SF = \$63,000

**Earthwork**

Assume additional earthwork end area average 0.5 x 15 feet x 30 feet = 225 SF

Assume Length of cut is 180 feet (wall 2 is in cut)

Earthwork (cut) volume = 180 LF x 225 SF x 1 CY/27 CF = 1,500 CY

Cost average for unclassified excavation = \$5.28/CY

205-0001 earthwork cost = 1,500 CY x \$5.28/CY = \$7,920

Additional guardrail at Wall 1:

641-1200 260 LF x \$16.34/LF = \$4,248

641-5001 Guardrail Anchorage, TP-1, 1 ea @ \$643 = \$643

641-5012 Guardrail Anchorage TP 12, 1 ea @ \$1,816 = \$1,816

Total additional cost = \$91,000 + \$63,000 + \$7,920 + \$4,248 + \$643 + \$1,816 = \$168,627

Net savings by eliminating MSE walls = \$298,980 - \$168,627 = \$130,353

## DEVELOPMENT AND RECOMMENDATION PHASE

### Project: I-575 @ Ridgewalk Parkway

<b>IDEA No.:</b> D-3A	<b>Sheet No.:</b> 1 of 6	<b>CREATIVE IDEA:</b> Change the bridge type for the new parallel structure and reduce the bridge span lengths by building MSE Wrap Around Walls.
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Comp By: J.O. Date: 10-29-08 Checked By: K.B. Date: 11/11/08

**Original Concept:** The original design concept is to widen the existing 35.25-foot wide by 328-foot long post-tensioned concrete box bridge by building a 39.58-foot wide by 328-foot long post-tensioned concrete box bridge adjacent to the existing bridge and tying them together. To achieve the proposed Ridgewalk Parkway cross-slope, the existing bridge deck will require a concrete overlay. The original design also includes an 11.208-foot sidewalk / parapet combination on both sides of the ultimate full-width bridge. The total width after widening is 74.42 feet. This proposed bridge section will accommodate two 10-foot sidewalks, two 6-foot shoulders, two 12-foot travel lanes, a 16-foot median turning lane, and two 1.08-foot parapet walls.

**Proposed Change:** It is recommended that a new 38.08-foot wide by 239 feet long PSC Beam Bridge with wrap around MSE walls be built adjacent to existing bridge. The new bridge should be separated from the old bridge by a 1-inch longitudinal joint to control differential movement of the two superstructures.

The new / old bridges would have a combined width to accommodate two 5.5-foot sidewalks, two 2-foot shoulders on both sides of longitudinal joint, a 4-foot raised median, four 12-foot travel lanes, and two 1.08-foot parapet walls.

**Justification:** Constructing the originally designed 328-foot long post tensioned concrete box bridge over an active Interstate highway would be extremely difficult, expensive, and raise possible safety concerns. The extensive falsework required to build the post tensioned concrete box bridge would impose severe vertical height restrictions on the Interstate highway. The construction of a post tensioned concrete box bridge would also require a significant amount of time.

LIFE CYCLE COST SUMMARY	CAPITAL COST	FUTURE COST	TOTAL COST
<b>INITIAL COST - Original</b>	\$1,969,000		
<b>- Proposed</b>	\$1,470,000		
<b>- Savings</b>	\$499,000		\$499,000
<b>FUTURE COST – Savings</b>			
<b>TOTAL PRESENT WORTH SAVINGS</b>			<b>\$499,000</b>

## CONTINUATION

**Project: I-575 @ Ridgewalk Parkway**

ITEM No.: D-3A  
CLIENT: GDOT  
Sheet 2 of 6

Constructing the VE recommended PSC Beam Bridge with wrap-around MSE wall abutments would eliminate the need for the extensive falsework required for the concrete box bridge. The elimination of the false work would eliminate vertical height restrictions on the Interstate.

Constructing the new bridge with wrap-around MSE wall abutments would significantly reduce the length of the bridge while still maintaining adequate horizontal clear distance along the Interstate. Using shorter spans with PSC Beams would result in a shallower bridge section and provide additional vertical clearance over the Interstate which might be needed if the Interstate is widened to the outside sometime in the future. The shorter PSC Beam Bridge would be easier to construct, quicker to construct, and result in significant cost savings to the project.

### **COST ESTIMATE NOTE:**

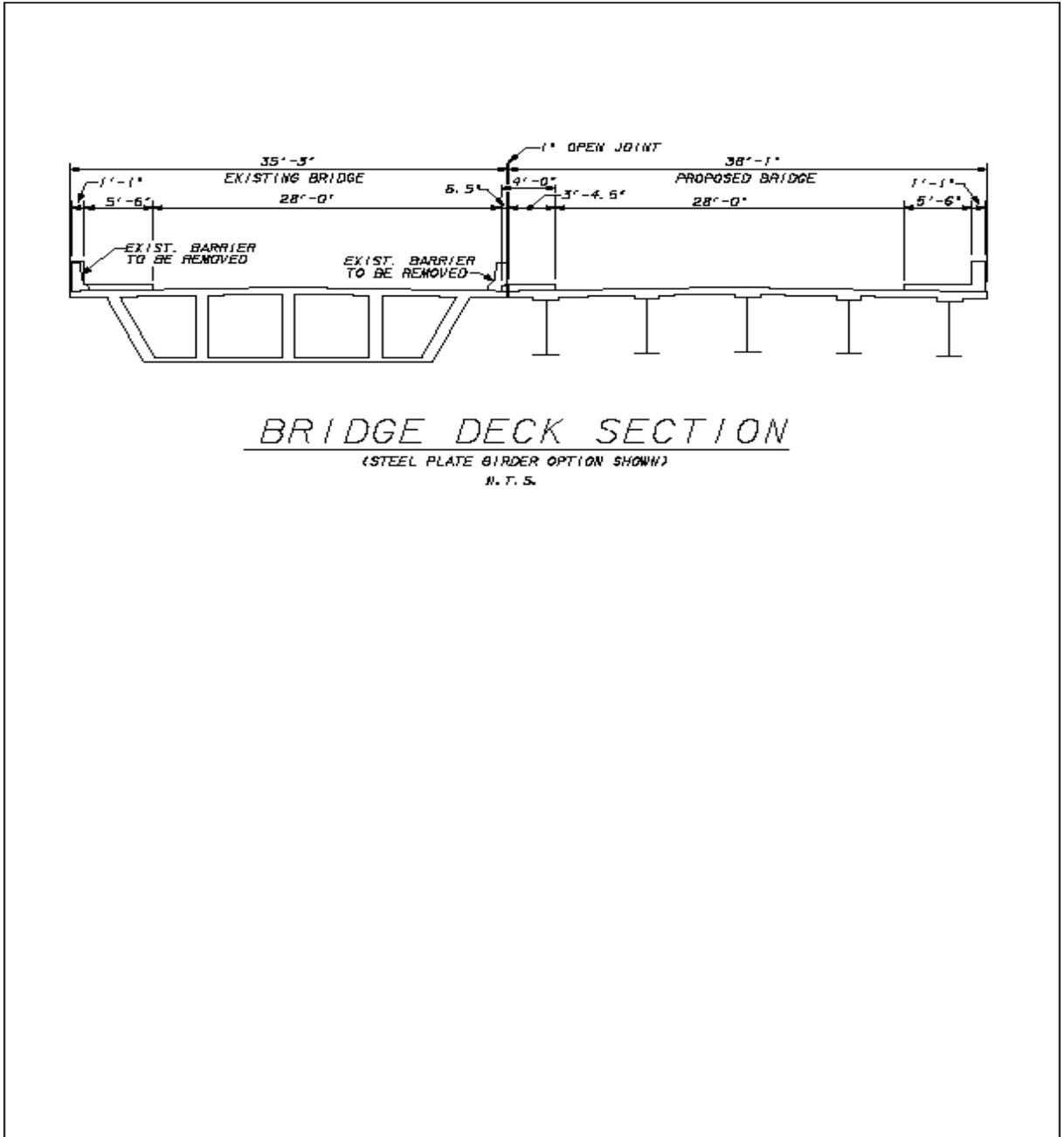
The VE team believes the estimated \$114.09 / SF unit price to construct the proposed 328-foot post tensioned concrete box bridge over an active Interstate is extremely low. There will be significant constructability concerns with this type of structure. The DOT bridge design office could not provide the team with any recent unit prices for similar structures. Due to the extensive false work needed to construct the concrete box bridge and the extra time needed for its construction, a more reasonable unit price estimate should be between \$150 and \$200 /SF.

Using the same \$140.00 / SF unit price for a similar length plate girder bridge would raise the cost of the concrete box bridge by \$365,000. **This \$365,000 additional cost would be additive to the net savings found on the first page of this recommendation resulting in a potential savings of \$864,000.**

# SKETCH

Project: I-575 @ Ridgewalk Parkway

ITEM No.: D-3A  
CLIENT: GDOT  
Sheet 3 of 6





## CALCULATIONS

**Project: I-575 @ Ridgewalk Parkway**

ITEM No.: D-3A  
 CLIENT: GDOT  
 Sheet 5 of 6

### VE Short Bridge with MSE Wrap Around Walls

Angle to Bent (A)	=	66.686	Degrees
<b>Out To Out Bridge Width (W)</b>	=	<b>38.083</b>	<b>Feet</b>
Side Slope (2H : 1V)	=	2.00	
Approx. MSE wall height under Bridge (H)	=	19.00	Feet
Gutterline Elevation at End MSE (E)		1,010.50	
I-575 Elevation at Face of MSE (Eo)	=	980.00	
Original Bridge Length (Lo)		328.00	Feet
<b>New Bridge Length (Ln)</b>		<b>239.00</b>	<b>Feet</b>

#### MSE Wall Calculations

Length Under Bridge, L1 = W / SinA	=	41.47	Feet
Length Along Side 1 L2 = [ 2(E-Eo) ] / SinA	=	66.42	Feet
Average Height along of Side 1, H1	=	24.75	Feet
Average Length Along Side 2 L3 = (Lo-Ln)/2	=	45.00	Feet
Average Height along of Side 2, H2	=	19.00	Feet

#### SQ. FT. OF MSE WALL:

Under Bridge	H x L1	=	787.91	SF
Side 1	0.80(H1xL2)	=	1,315.18	SF
Side 1	(H2xL3)	=	855.00	SF

**Total per MSE Wall** = **2,958.10 SF**

TOTAL FOR 2 MSE WALLS = 5,916.00 SF

Unit Cost for MSE Wall = \$45.30

**TOTAL MSE WALLS = \$267,995**

## CALCULATIONS

**Project: I-575 @ Ridgewalk Parkway**

ITEM No.: D-3A  
 CLIENT: GDOT  
 Sheet 6 of 6

### VE Short Bridge with MSE Wrap Around Walls

<b>Short Bridge Cost (SF)</b>			
<b>Out To Out Bridge Width (Bw)</b>	=	<b>38.083</b>	<b>Feet</b>
Offset to Face of MSE	=	103.50	Feet
Offset from MSE Face to BFPR (B)	=	6.00	Feet
Total	=	109.50	Feet
Length of Bridge = $B/\sin A$ (Lb)	=	119.24	Feet
	Use	119.50	Feet
<b>Total Length of Bridge</b>	<b>=</b>	<b>239.00</b>	<b>Feet</b>
SF of Bridge (Bw x Lb)	=	9,102	SF
Unit Cost for PSC Beam Bridge	=	\$95.00	
Total Bridge Cost		\$864,690	
<b>Build Sidewalk on existing Bridge:</b>			
Width of Sidewalk	=	5.50	Feet
Length of Sidewalk	=	328.00	Feet
CY Class AA Concrete Sidewalk	=	17.71	CY
Unit Cost (Class AA-1)	=	\$295.81	
<b>Total Cost of Sidewalk</b>	<b>=</b>	<b>\$5,238</b>	
<b>Modify Concrete Parapet on existing Bridge:</b>			
Total Length of Parapet		328.00	Feet
Unit Cost	=	\$185.71	
<b>Total Cost of Parapet</b>	<b>=</b>	<b>\$60,913</b>	
<b>VE Short Bridge Costs</b>	<b>=</b>	<b>\$864,690</b>	
<b>MSW Wall Costs</b>	<b>=</b>	<b>\$267,995</b>	
<b>Sidewalk Costs</b>	<b>=</b>	<b>\$5,238</b>	
<b>Parapet Work Cost</b>	<b>=</b>	<b>\$60,913</b>	
<b>Short Bridge Total</b>	<b>=</b>	<b>\$1,198,836</b>	

### Cost Estimate of Concrete Box Bridge

SF of Concrete Box Bridge (Cost Estimate)		14,080	SF
Unit Cost of Concrete Box Bridge		\$114.09	
Total Cost Estimate of Concrete Box Bridge		<b>\$1,606,387</b>	

**DEVELOPMENT AND RECOMMENDATION PHASE**

**Project: I-575 @ Ridgewalk Parkway**

<b>IDEA No.:</b> D-5	<b>Sheet No.:</b> 1 of 2	<b>CREATIVE IDEA:</b> Install standard pedestrian fencing in-lieu-of standard bridge rail across the bridge.
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Comp By: C.S. Date: 10-29-08 Checked By: K.B. Date: 11/11/08

**Original Concept:**

The existing bridge crossing I-575 does not have any bridge rail or fencing. The current design proposes to install standard aluminum bridge rail across both the new and existing bridges.

**Proposed Change:**

It is recommended that a standard 6-foot 9-inch pedestrian fence be installed across the bridge in-lieu-of the proposed aluminum bridge rail.

**Justification:**

The bridges are being designed with sidewalks on them. The installation of pedestrian fencing on these bridges will improve safety over that provided by standard bridge rail. The fencing will protect pedestrians walking on the bridge and the traveling public using the Interstate roadway below.

<b>LIFE CYCLE COST SUMMARY</b>	<b>CAPITAL COST</b>	<b>FUTURE COST</b>	<b>TOTAL COST</b>
<b>INITIAL COST - Original</b>	\$48,000		
<b>- Proposed</b>	\$23,000		
<b>- Savings</b>	\$25,000		\$25,000
<b>FUTURE COST – Savings</b>			
<b>TOTAL PRESENT WORTH SAVINGS</b>			<b>\$25,000</b>



## DEVELOPMENT AND RECOMMENDATION PHASE

### Project: I-575 @ Ridgewalk Parkway

<b>IDEA No.:</b> E-2	<b>Sheet No.:</b> 1 of 3	<b>CREATIVE IDEA:</b> Reduce the lane widths from 12 feet to 11 feet on relocated Old Rope Mill Road.
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Comp By: A.E.H. Date: 10/29/08 Checked By: K.B. Date: 11/11/08

**Original Concept:**

The current design provides for 12-foot lanes throughout the length of Old Rope Mill Road.

**Proposed Change:**

It is recommended that the travel lane widths on relocated Old Rope Mill Road be reduced from 12 feet to 11 feet.

**Justification:**

Since the road is only three-quarters mile long and cannot be extended, traffic volumes and speeds will always be low and 11-foot lanes would be sufficient.

LIFE CYCLE COST SUMMARY	CAPITAL COST	FUTURE COST	TOTAL COST
<b>INITIAL COST - Original</b>	\$103,000		
<b>- Proposed</b>	\$0		
<b>- Savings</b>	\$103,000		\$103,000
<b>FUTURE COST – Savings</b>			
<b>TOTAL PRESENT WORTH SAVINGS</b>			<b>\$103,000</b>



## CALCULATIONS

**Project: I-575 @ Ridgewalk Parkway**

ITEM No.: E-2  
 CLIENT: GDOT  
 Sheet 3 of 3

Total area of reduction of pavement width:

$$2 \text{ feet} \times (22933.69 - 20100) = 5667 \text{ SF}$$

Items affected by reduction of lane widths:

Right of Way: 5667 SF x \$10/SF =	\$56,670
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Pavement reduction

A. 402-3113 Asphaltic Concrete 12.5 mm Superpave, 165 lb/SY 5667 SF x 1 SY/9 SF x 165 lb/SY x 1 T/2000 lb =	52 T
B. 402-3190 Asphaltic Concrete 19 mm Superpave, 330 lb/SY 5667 SF x 1 SY/9 SF x 330 lb/SY x 1 T/2000 lb =	104 T
C. 402-3121 Asphaltic Concrete 25 mm Superpave, 440 lb/SY 5667 SF x 1 SY/9SF x 440 lb/SY x 1 T/2000 lb =	139 T
D. 310-1101 Graded Aggregate Base 12" 5667 SF x 1 ft. x 1 CY/27 CF x 2.07 T/CY =	434 T

Earthwork reduction.

Earthwork at this time is listed as "Grading Complete", a lump sum item. However, there would be reduction in overall earthwork as a result of the reduced roadway typical section.

## DEVELOPMENT AND RECOMMENDATION PHASE

### Project: I-575 @ Ridgewalk Parkway

<b>IDEA No.:</b> F-2	<b>Sheet No.:</b> 1 of 2	<b>CREATIVE IDEA:</b> Use full depth asphalt shoulders in-lieu-of concrete shoulders on the ramps.
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Comp By: C.P. Date: 11-29-80 Checked By: K.B. Date: 11/11/08

**Original Concept:**

The original plans propose to use concrete shoulders on the Interchange ramps. The outside shoulder would be 10-foot wide and the inside shoulder would be 4-foot wide.

**Proposed Change:**

It is recommended that full depth asphalt shoulders be used in-lieu-of concrete shoulders on the ramps. It is further recommended that the width of the paved shoulders be 6 ½ feet on the outside and 4 feet on the inside.

**Justification:**

The use of full depth asphalt shoulders would be consistent with the existing section of Interstate through this area. Truck traffic on the Interstate is 10% and only 3% on the proposed Interchange ramps. They would also be consistent with the standard dimensions for paved shoulders on other ramps in the area. This concept would reduce cost and simplify construction.

LIFE CYCLE COST SUMMARY	CAPITAL COST	FUTURE COST	TOTAL COST
<b>INITIAL COST - Original</b>	\$979,000		
<b>- Proposed</b>	\$286,000		
<b>- Savings</b>	\$693,000		\$693,000
<b>FUTURE COST – Savings</b>			
<b>TOTAL PRESENT WORTH SAVINGS</b>			<b>\$693,000</b>

## COST WORKSHEET

Project: I-575 @ Ridgewalk Parkway					IDEA No.: F-2 CLIENT: GDOT Sheet 2 of 2		
CONSTRUCTION ELEMENT		ORIGINAL ESTIMATE			NEW ESTIMATE		
Item	Unit	No. Units	Cost/Unit	Total Cost	No. Units	Cost/Unit	Total Cost
<b>12" Concrete Shoulders:</b>							
Ramp A	1,050feet	SY	1,634	\$99.50	\$162,583	0	\$0
Ramp B	1,200 feet	SY	1,866	\$99.50	\$185,667	0	\$0
Ramp C	800 feet	SY	1,245	\$99.50	\$123,877	0	\$0
Ramp D	1,240 feet	SY	1,929	\$99.50	\$191,935	0	\$0
<b>12" Aggregate Base:</b>							
Ramp A	1,050feet	SY	1,634	\$12.92	\$21,111	1,225	\$15,827
Ramp B	1,200 feet	SY	1,866	\$12.92	\$24,109	1,400	\$18,088
Ramp C	800 feet	SY	1,245	\$12.92	\$16,085	934	\$12,068
Ramp D	1,240 feet	SY	1,929	\$12.92	\$24,923	1,447	\$18,695
<b>19mm Asphalt Inner-layer</b>							
Ramp A	1,050feet	SY	1,634	\$7.20	\$11,765	1,225	\$8,820
Ramp B	1,200 feet	SY	1,866	\$7.20	\$13,435	1,400	\$10,080
Ramp C	800 feet	SY	1,245	\$7.20	\$8,964	934	\$6,725
Ramp D	1,240 feet	SY	1,929	\$7.20	\$13,889	1,447	\$10,418
<b>12.5mm Asphalt Surface:</b>							
Ramp A	1,050feet	SY	0		\$0	1,225	\$7,289
Ramp B	1,200 feet	SY	0		\$0	1,400	\$8,330
Ramp C	800 feet	SY	0		\$0	934	\$5,557
Ramp D	1,240 feet	SY	0		\$0	1,447	\$8,610
<b>25mm Asphalt Base:</b>							
Ramp A	1,050feet	SY	0		\$0	1,225	\$25,088
Ramp B	1,200 feet	SY	0		\$0	1,400	\$28,672
Ramp C	800 feet	SY	0		\$0	934	\$19,128
Ramp D	1,240 feet	SY	0		\$0	1,447	\$29,634
<b>SUBTOTAL</b>							
					\$798,343		\$233,039
<b>MARK-UP (22.6%)</b>							
					\$180,425		\$52,667
<b>TOTAL</b>							
					\$978,768		\$285,706
<b>TOTAL ROUNDED</b>							
					<b>\$979,000</b>		<b>\$286,000</b>

## DEVELOPMENT AND RECOMMENDATION PHASE

### Project: I-575 @ Ridgewalk Parkway

<b>IDEA No.:</b> B-6	<b>Sheet No.:</b> 1 of 2	<b>CREATIVE IDEA:</b> Eliminate the 8-Foot Outward Shift of the Southbound On & Off Ramp Gore Areas.
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Comp By: CROY Engineering Date: 10-29-08 Checked By: K.B. Date: 11/11/08

**Original Concept:**

The current design shifts the ramp gores away from the main travel lane 8 feet to provide room for a future HOV lane concept in the median. One HOV concept being considered would construct a barrier wall between the HOV lane and the mainline allowing the possibility to toll the HOV lane. This concept would require shifting the Interstate out 8 feet. The current Interchange design would accommodate the 8-foot shift without reconstructing the ramps.

**Proposed Change:**

It is suggested that consideration be given to bringing the ramp gores in 8 feet toward the existing Interstate outside lane on the west of the Interstate.

**Justification:**

This suggestion would shift the west side ramps 8 feet closer to the edge of the mainline pavement and reduce / eliminate several MSE walls on the west side of the Interstate south of the Interchange Bridge. It would also reduce some of the R/W required at the ball field and reduce the height of MSE wall.

The design firm estimates this concept would result in approximately \$1,735,000 in savings.

LIFE CYCLE COST SUMMARY	CAPITAL COST	FUTURE COST	TOTAL COST
<b>INITIAL COST – Original</b>	\$1,735,000		
<b>- Proposed</b>	\$0		
<b>- Savings</b>	\$1,735,000		\$1,735,000
<b>FUTURE COST – Savings</b>			
<b>TOTAL PRESENT WORTH SAVINGS</b>			<b>\$1,735,000</b>

## CALCULATIONS

**Project: I-575 @ Ridgewalk Parkway**

ITEM No.: B-6  
 CLIENT: GDOT  
 Sheet 2 of 2

### Ridgewalk Parkway Interchange Project Summary of Additional Cost

Additional Work Items:

- Align Ramps with Ultimate HOV Configuration.
- Stripe out Additional Paving for Future Use.
- Construct Walls and Barriers for Future HOV Configuration, along with corresponding Earthwork.

Item Description	Quantity	Units	Unit Price	Cost
<b>EARTHWORK</b>				
Embankment In Place	1,1000	CY	\$11.00	\$121,000.00
<b>PAVING</b>				
Graded Aggregate Base.....	5,760.....	TN .....	\$19.78.....	\$113,932.80
Asph Conc 12.5 mm SMA .....	675.....	TN .....	\$100.59.....	\$67,898.25
Asph Conc 12.5 mm PEM.....	555.....	TN .....	\$101.79.....	\$56,493.45
Recycled Asph Conc 25 mm Superpave .....	3,585.....	TN .....	\$ 63.60.....	\$228,006.00
Recycled Asph Conc 19 mm Superpave .....	2,685.....	TN .....	\$65.77.....	\$176,592.45
Bituminous Tack Coat.....	870.....	GL .....	\$2.00.....	\$1,740.00
<b>\$644,662.95</b>				
<b>WALLS/BARRIERS</b>				
MSE Wall, 0-10 ft Ht.....	5,150.....	SF .....	\$50.00.....	\$257,500.00
MSE Wall, 10-20 ft Ht.....	10,825.....	SF .....	\$55.00.....	\$595,375.00
Knee Wall 0 10 ft Ht (Under Bridge) .....	0.....	SF .....	\$50.00.....	\$0.00
Concrete Barrier	835	LF	\$100.00	\$83,500.00
<b>\$936,375.00</b>				
<b>STRIPING</b>				
Thermoplastic Traffic Striping, White.....	12,000.....	SY .....	\$2.72.....	\$32,640.00
<b>TOTAL COST .....</b>				<b>...\$1,734,677.95</b>

## DEVELOPMENT AND RECOMMENDATION PHASE

### Project: I-575 @ Ridgewalk Parkway

<b>IDEA No.:</b> D-3B	<b>Sheet No.:</b> 1 of 5	<b>CREATIVE IDEA: <u>ALTERNATIVE to D-3A</u></b> Change the bridge type for the new parallel structure but maintain the same span length as the existing bridge.
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Comp By: J.O. Date: 10-29-08 Checked By: K.B. Date: 11/11/08

**Original Concept:** The original design concept is to widen the existing 35.25-foot wide by 328-foot long post-tensioned concrete box bridge by building a 39.58-foot wide by 328-foot long post-tensioned concrete box bridge adjacent to the existing bridge and tying them together. To achieve the proposed Ridgewalk Parkway cross-slope, the existing bridge deck will require concrete overlay. The original design also includes an 11.208-foot sidewalk / parapet combination on both sides of the ultimate full-width bridge. The total width after widening is 74.42 feet. This proposed bridge section will accommodate two 10-foot sidewalks, two 6-foot shoulders, two 12-foot travel lanes, a 16-foot median turning lane, and two 1.08-foot parapet walls.

**Proposed Change:** It is recommended that a 38.08-foot wide by 328-foot long plate girder bridge be built adjacent to existing concrete box bridge. Utilizing plate girders would allow the new bridge to have the same span lengths as the existing concrete box bridge. The new bridge should be separated from the old bridge by a 1-inch longitudinal joint to control differential movement of the two superstructures.

The new / old bridges would have a combined width to accommodate two 5.5-foot sidewalks, two 2-foot shoulders on both sides of longitudinal joint, a 4-foot raised median, four 12-foot travel lanes, and two 1.08-foot parapet walls.

**Justification:** Constructing the originally designed 328-foot long post tensioned concrete box bridge over an active Interstate highway would be extremely difficult, expensive, and raise possible safety concerns. The extensive falsework required to build the post tensioned concrete box bridge would impose severe vertical height restrictions on the Interstate highway. The construction of a post tensioned concrete box bridge would also require a significant amount of time.

LIFE CYCLE COST SUMMARY	CAPITAL COST	FUTURE COST	TOTAL COST
<b>INITIAL COST - Original</b>	\$1,969,000		
<b>- Proposed</b>	\$2,225,000		
<b>- Savings</b>	(\$256,000)		(\$256,000)
<b>FUTURE COST – Savings</b>			
<b>TOTAL PRESENT WORTH SAVINGS</b>			<b>(\$256,000)</b>

## CONTINUATION

**Project: I-575 @ Ridgewalk Parkway**

ITEM No.: D-3B  
CLIENT: GDOT  
Sheet 2 of 5

Constructing the VE recommended 328-foot plate girder would eliminate the need for the extensive falsework required for the post tensioned concrete box bridge. The elimination of the falsework would eliminate vertical height restrictions on the Interstate during construction.

Constructing a new bridge 328-foot long plate girder bridge would maintain the same horizontal opening as the existing concrete box bridge. Using plate girders would result in a shallower bridge section and provide additional vertical clearance over the Interstate which might be needed if the Interstate is widened to the outside sometime in the future. The plate girder bridge would be easier and quicker to construct, and result in cost savings to the project.

### **COST ESTIMATE NOTE:**

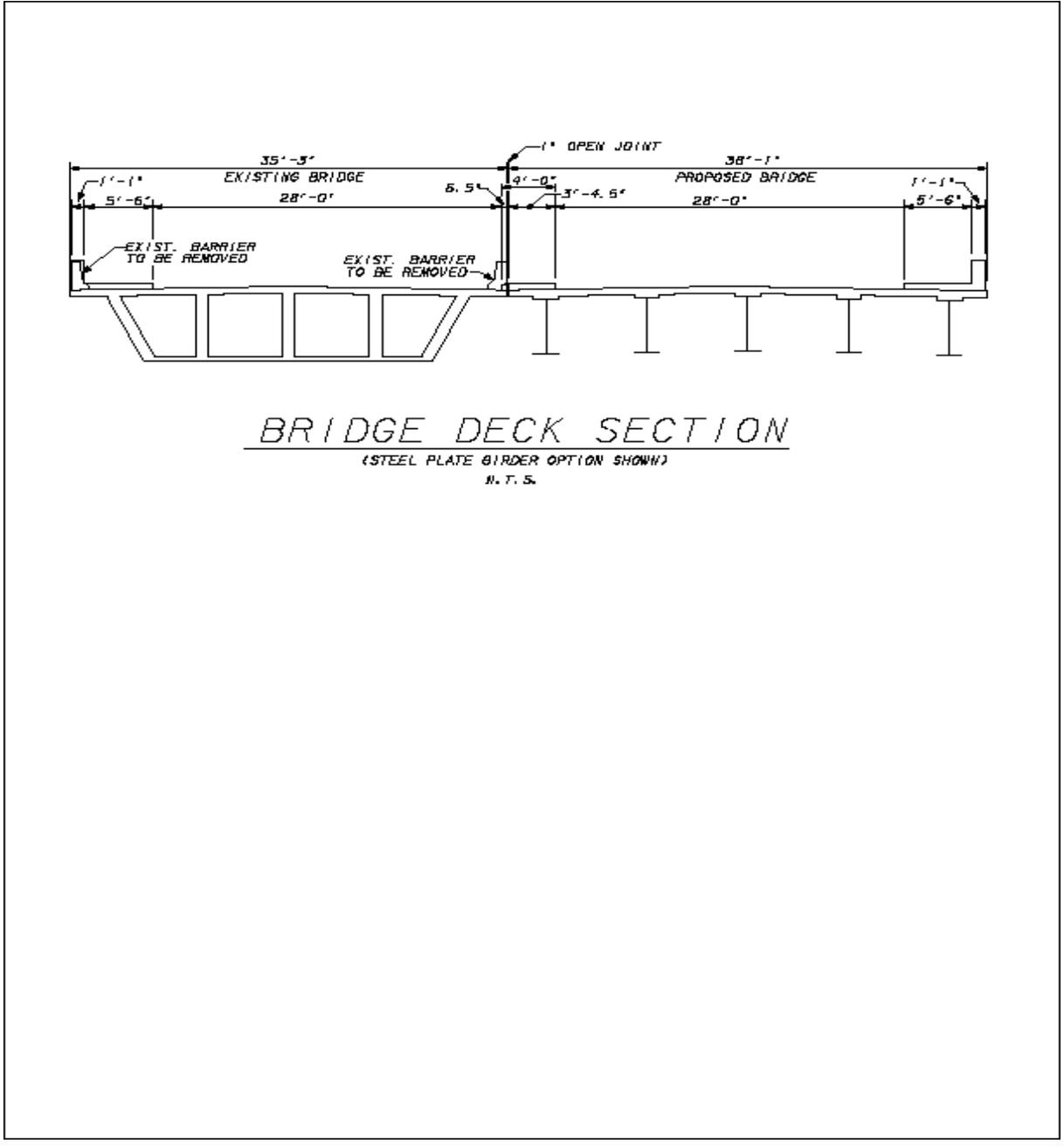
The VE team believes the estimated \$114.09 / SF unit price to construct the proposed 328-foot post tensioned concrete box bridge over an active Interstate is extremely low. There will be significant constructability concerns with this type of structure. The State bridge section could not provide the team with any recent unit prices for similar structures. Due to the extensive false work needed to construct the concrete box bridge and the extra time needed for its construction, a more reasonable unit price estimate should be between \$150 and \$200 /SF.

Using the same \$140.00 / SF unit price for a similar length plate girder bridge would raise the cost of the concrete box bridge by \$365,000. **This \$365,000 additional cost would be additive to the net savings found on the first page of this recommendation resulting in a potential savings of \$109,000.**

# SKETCH

**Project: I-575 @ Ridgewalk Parkway**

ITEM No.: D-3B  
CLIENT: GDOT  
Sheet 3 of 5





## CALCULATIONS

**Project: I-575 @ Ridgewalk Parkway**

ITEM No.: D-3B  
 CLIENT: GDOT  
 Sheet 5 of 5

### VE Long Plate Girder Bridge

Out To Out Bridge Width (Bw)	=	38.083	Feet
Total Length of Bridge (Lb)	=	328.00	Feet
S.F. of Bridge (Bw x Lb)	=	12,491	SF
Unit Cost for Steel Bridge	=	\$140.00	
<b>VE Long Bridge Cost</b>	<b>=</b>	<b>\$1,748,740</b>	
<b>Sidewalk Costs (Existing Bridge)</b>	<b>=</b>	<b>\$5,238</b>	
<b>Parapet Work Cost (Existing Bridge)</b>	<b>=</b>	<b>\$60,913</b>	
<b>TOTAL</b>	<b>=</b>	<b>\$1,814,891</b>	

### Cost Estimate of Concrete Box Bridge

SF of Concrete Box Bridge (Cost Estimate)		14,080	SF
Unit Cost of Concrete Box Bridge		\$114.09	
Total Cost Estimate of Concrete Box Bridge		<b>\$1,606,387</b>	

DEVELOPMENT AND RECOMMENDATION PHASE

Project: I-575 @ Ridgewalk Parkway

<b>IDEA No.:</b> F-1	<b>Sheet No.:</b> 1 of 2	<b>CREATIVE IDEA: <u>ALTERNATIVE to F-1</u></b> Change the outside 10-foot concrete shoulders to 6 ½-foot concrete shoulders.
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Comp By: C.P. Date: 10-29-80 Checked By: K.B. Date: 11/11/08

**Original Concept:**

The original plans propose to use concrete shoulders on the Interchange ramps. The Outside shoulder would be 10-foot wide and the inside shoulder would be 4-foot wide.

**Proposed Change:**

It is recommended that the outside 10-foot wide concrete shoulder be reduced to 6 ½ feet.

**Justification:**

The standard outside paved shoulder width is 6 ½ feet. This concept would reduce cost and simplify construction.

LIFE CYCLE COST SUMMARY	CAPITAL COST	FUTURE COST	TOTAL COST
<b>INITIAL COST - Original</b>	\$697,000		
<b>- Proposed</b>	\$454,000		
<b>- Savings</b>	\$243,000		\$243,000
<b>FUTURE COST – Savings</b>			
<b>TOTAL PRESENT WORTH SAVINGS</b>			<b>\$243,000</b>

## COST WORKSHEET

Project: I-575 @ Ridgewalk Parkway					IDEA No.: F-1 CLIENT: GDOT Sheet 2 of 2		
CONSTRUCTION ELEMENT		ORIGINAL ESTIMATE			NEW ESTIMATE		
Item	Unit	No. Units	Cost/Unit	Total Cost	No. Units	Cost/Unit	Total Cost
<b>Concrete Pavement:</b>							
Ramp A 1,050 feet	SY	1,167	\$99.50	\$116,117	758	\$99.50	\$75,421
Ramp B 1,200 feet	SY	1,333	\$99.50	\$132,634	867	\$99.50	\$86,267
Ramp C 800 feet	SY	889	\$99.50	\$88,456	578	\$99.50	\$57,511
Ramp D 1,240 feet	SY	1,378	\$99.50	\$137,111	896	\$99.50	\$89,152
<b>Aggregate Base:</b>							
Ramp A 1,050 feet	SY	1,167	\$12.92	\$15,078	758	\$12.92	\$9,793
Ramp B 1,200 feet	SY	1,333	\$12.92	\$17,222	867	\$12.92	\$11,202
Ramp C 800 feet	SY	889	\$12.92	\$11,485	578	\$12.92	\$7,468
Ramp D 1,240 feet	SY	1,378	\$12.92	\$17,804	896	\$12.92	\$11,576
<b>Asphalt Interlayer:</b>							
Ramp A 1,050 feet	SY	1,167	\$7.20	\$8,402	758	\$7.20	\$5,458
Ramp B 1,200 feet	SY	1,333	\$7.20	\$9,598	867	\$7.20	\$6,242
Ramp C 800 feet	SY	889	\$7.20	\$6,401	578	\$7.20	\$4,162
Ramp D 1,240 feet	SY	1,378	\$7.20	\$9,922	896	\$7.20	\$6,451
				\$570,230			\$370,703
<b>SUBTOTAL</b>				\$570,230			\$370,703
<b>MARK-UP (22.6%)</b>				\$126,672			\$83,779
<b>TOTAL</b>				\$696,902			\$454,482
<b>TOTAL ROUNDED</b>				<b>\$697,000</b>			<b>\$454,000</b>

**DEVELOPMENT AND RECOMMENDATION PHASE**

**Project: I-575 @ Ridgewalk Parkway**

<b>IDEA No.:</b> A-9	<b>Sheet No.:</b> 1 of 1	<b>CREATIVE IDEA: Design Suggestion</b> To Modify / Eliminate the Short Truck Climbing Lane on Southbound I-575
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Comp By: A.W. Date: 10-29-08 Checked By: K.B. Date: 11/11/08

**Original Concept:**

There is a short truck climbing lane on the southbound I-575 lanes through the area where the new Ridgewalk Parkway Interchange will be built. The lane starts shortly before the new southbound off ramp begins and ends shortly after the new southbound on ramp enters the Interstate.

**Proposed Change:**

We recommend that the existing truck climbing lane on I-575 SB be eliminated as part of this project. The truck lane north of the Interchange should be transitioned into the southbound off ramp and south of the Interchange the truck lane should be transitioned into the new auxiliary lane with the southbound on ramp attaching to the new auxiliary lane from the outside. The truck lane should be striped out through the Interchange proper to avoid drive confusion.

**Justification:**

This concept eliminates the need to end the existing truck climbing lane in the middle of the Interstate roadway between the existing outside through lane and the new auxiliary lane. This concept will provide a safer lane configuration.

<b>LIFE CYCLE COST SUMMARY</b>	<b>CAPITAL COST</b>	<b>FUTURE COST</b>	<b>TOTAL COST</b>
<b>INITIAL COST – Original</b>	<b>Design Suggestion</b>		
<b>- Proposed</b>			
<b>- Savings</b>			
<b>FUTURE COST – Savings</b>			
<b>TOTAL PRESENT WORTH SAVINGS</b>			<b>Design Suggestion</b>

# APPENDIX

## Sources

### Key Positions

<b>Name:</b>	<b>Position:</b>	<b>Telephone:</b>
Lisa Myers	GDOT – Engineering Services, Value Engineering Coordinator	404-631-1770
Ron Wishon	GDOT – Engineering Services, Assistant Project Review Engineer	404-631-1753

### Personal Contacts

<b>Name:</b>	<b>Telephone:</b>	<b>Notes:</b>
Hisham Deeb	770-263-5945	Moreland Altobelli Assoc. – Sub Bridge Designer General Bridge Information, Possible Alternatives
Pang Zhang	707-421-5073	MACTEC – Traffic Analysis, Intersection Alignment
James Hughes	404-877-8783	MACTEC – Concrete Box Bridge Removal Issues (Discuss with Melisa Harper GDOT Const)
Ted Cashin		GDOT – Bridge, Unit Cost for Concrete Box Bridge
Greg Shafer		GDOT – Bridge, Concrete Box Bridge Removal Issues

### Documents/Abstracts

<b>Reference:</b>	<b>Reference:</b>
Preliminary Roadway Plans	Project Preliminary Cross Sections
Preliminary R/W Plans	Project Preliminary Profile
Draft Environmental Assessment	Existing Bridge Plans
Preliminary Design Report	Project Sketch – 200 Scale
Interchange Access Report	Project Sketch – 100 Scale

# I-575 @ Ridgewalk Parkway

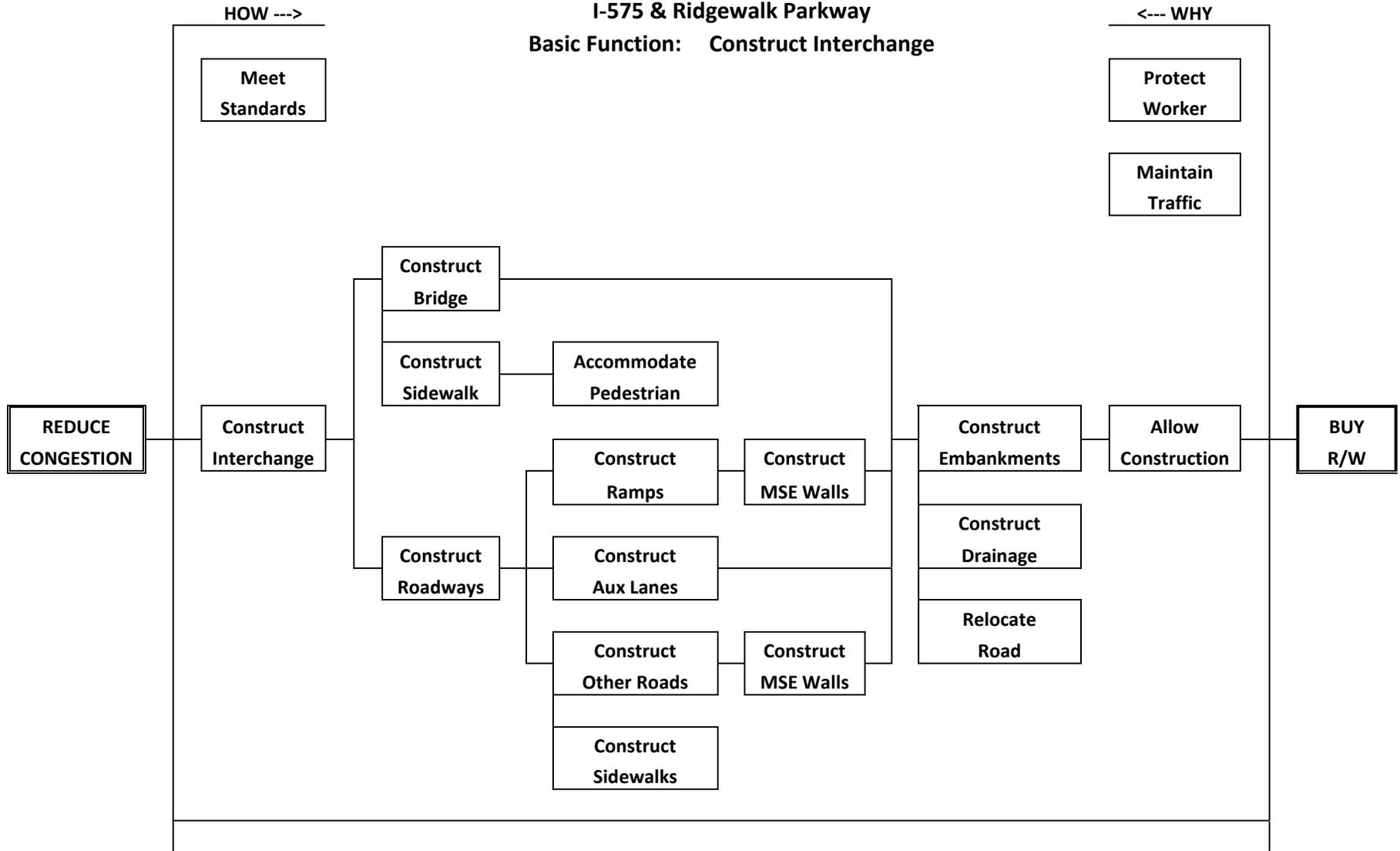
## Cost Model / Distribution

Item	Description	\$ Amount	% of Total Project
A	Grading	\$5,050,000	31.4%
B	MSE Walls	\$1,812,000	11.3%
C	Sound Walls	\$1,663,000	10.3%
D	Bridge	\$1,606,000	10.0%
E	Asphalt – Superpave	\$1,495,000	9.3%
F	Concrete Pavement	\$1,386,000	8.6%
80% Cost Line			
G	Aggregate Base	\$707,000	4.4%
H	Miscellaneous	\$603,000	3.8%
I	Asphalt Concrete	\$363,000	2.2%
J	Traffic Signals	\$247,000	1.5%
K	Drainage	\$227,000	1.4%
L	Guardrail	\$188,000	1.2%
M	Concrete Sidewalk	\$144,000	0.9%
N	Concrete Curb & Gutter	\$127,000	0.8%
O	Temporary Silt Fence	\$114,000	0.7%
P	Demolition	\$99,000	0.6%
Q	Permanent Soil Reinforcement Mat	\$95,000	0.6%
U	Fencing	\$72,000	0.4%
S	Concrete Approach Slab	\$57,000	0.4%
T	Concrete Driveway	\$43,000	0.2%
<b>Construction Subtotal</b>		\$16,098,000	100.0%
	E&C Rate 10%	\$1,610,000	
	R/W	\$3,100,000	
<b>Project Total</b>		\$20,808,000	

# FAST DIAGRAM

I-575 & Ridgewalk Parkway

Basic Function: Construct Interchange



## INFORMATION PHASE – FUNCTION ANALYSIS

**Project:** I-575 @ Ridgewalk Parkway

**Function:** Construct Interchange

ITEM No.	DESCRIPTION	FUNCTION		INITIAL DOLLARS		
		Verb	Noun	Cost	% of Total	Worth/Save
<b>A</b>	<b>Grading (Embankment / Excavation)</b>	Achieve	Grade	\$5,050,000	31.4%	Yes
		Support	Roadway			
		Accommodate	Typical			
		Contain	MSE Walls			
		Contain	Side Road			
		Contain	Aux Lane			
<b>B</b>	<b>MSE Walls</b>	Save	R/W	\$1,812,000	11.3%	Yes
		Contain	Embankment			
		Construct	Ramps			
<b>C</b>	<b>Sound Walls</b>	Reduce	Noise	\$1,663,000	10.3%	Yes
		Allow	Construction			
<b>D</b>	<b>Bridge</b>	Cross	Roadway	\$1,606,000	10.0%	Yes
		Accommodate	Pedestrians			
		Accommodate	Typical			
		Match	Existing			

## INFORMATION PHASE – FUNCTION ANALYSIS

**Project:** I-575 @ Ridgewalk Parkway

**Function:** Construct Interchange

ITEM No.	DESCRIPTION	FUNCTION		INITIAL DOLLARS		
		Verb	Noun	Cost	% of Total	Worth/Save
<b>E</b>	<b>Asphalt - Superpave</b>	Construct	Aux Lane	\$1,495,000	9.3%	Yes
		Construct	Cross Road			
		Construct	Side Road			
		Support	Pavement			
		Construct	Shoulders			
<b>F</b>	<b>Concrete Pavement</b>	Construct	Ramps	\$1,386,000	8.6%	Yes
		Construct	Shoulders			
<b>G</b>	<b>Aggregate Base Course</b>	Support	Pavement	\$707,000	4.4%	Yes
		Support	Shoulders			
<b>H</b>	<b>Miscellaneous</b>	Allow	Construction	\$603,000	3.8%	No
<b>I</b>	<b>Asphalt Concrete</b>	Reduce	Hydroplaning	\$363,000	2.2%	Yes
		Reduce	Noise			

## INFORMATION PHASE – FUNCTION ANALYSIS

**Project:** I-575 @ Ridgewalk Parkway

**Function:** Construct Interchange

ITEM No.	DESCRIPTION	FUNCTION		INITIAL DOLLARS		
		Verb	Noun	Cost	% of Total	Worth/Save
<b>J</b>	<b>Signals</b>	Improve	Safety	\$247,000	1.5%	Yes
		Control	Traffic			
		Meet	LOS			
		Meet	Capacity			
<b>K</b>	<b>Drainage</b>	Carry	Water	\$227,000	1.4%	Yes
		Extend	Existing			
<b>L</b>	<b>Guardrail</b>	Prevent	Rollover	\$188,000	1.2%	Yes
		Protect	Pier			
		Protect	Bridge			
<b>M</b>	<b>Concrete Sidewalk</b>	Accommodate	Pedestrians	\$144,000	0.9%	Yes
		Provide	Access			
		Access	Park			
<b>N</b>	<b>Concrete Curb &amp; Gutter</b>	Control	Drainage	\$127,000	0.8%	Yes
		Reduce	Typical			

## INFORMATION PHASE – FUNCTION ANALYSIS

**Project:** I-575 @ Ridgewalk Parkway

**Function:** Construct Interchange

ITEM No.	DESCRIPTION	FUNCTION		INITIAL DOLLARS		
		Verb	Noun	Cost	% of Total	Worth/Save
<b>O</b>	<b>Temporary Silt Fence</b>	Control	Erosion	\$114,000	0.7%	No
<b>P</b>	<b>Demolition</b>	Remove	Items	\$99,000	0.6%	No
<b>Q</b>	<b>Permanent Soil Reinforcement Mat</b>	Control	Erosion	\$95,000	0.6%	No
<b>R</b>	<b>Fencing</b>	Identify	R/W	\$72,000	0.4%	No
		Control	Access			
		Protect	Pedestrians			
<b>S</b>	<b>Concrete Approach Slab</b>	Prevent	Settlement	\$57,000	0.4%	No
<b>T</b>	<b>Concrete Driveway</b>	Replace	Driveway	\$43,000	0.2%	No

<b>CREATIVE PHASE Creative Idea Listing</b>		<b>JUDGMENT PHASE Idea Evaluation</b>	
<b>No.</b>	<b>CREATIVE IDEA</b>	<b>COMMENTS</b>	<b>IDEA RATING</b>
<b>A</b>	<b>Grading Complete (Embankment / Excavation)</b>		
A-1	Review / Check Embankment Side Slopes	Possible Cost Savings, Accelerate Construction	X
A-2	Reduce / Eliminate MSE Walls	Cost Savings, Simplify Construction	X
A-3	Evaluate Crossroad / Ramp Typical Sections	Cost Savings, Minimize Construction	✓
A-4	Evaluate Side Road Typical Section / Alignment	Cost Savings, Minimize Construction	✓
A-5	Evaluate Need for Sidewalks	See M-2	X
A-6	Construct Side Road First	None Issue – Construction Staging	X
A-7	Evaluate Driveway Tie-in on Crossroad West Side	Design Adequate	X
A-8	Check Continuity of Sidewalk on West Side	See M-4	X
A-9	Location of Aux Lane with Truck Climbing Lane	Improve Safety, Capacity	DS
<b>B</b>	<b>MSE Walls</b>		
B-1	Identify / Check Location of MSE Walls	Reduce Cost, Simplify Construction	X
B-2	Eliminate if on Inside of Interchange Ramps	None Located Inside Ramps	X
B-3	Compare MSE Wall Cost to R/W Cost on Side Road	Possible Cost reduction	✓
✓ = Will be considered further; X = will be dropped; DS = Design suggestion –written for consideration by design team			

<b>CREATIVE PHASE Creative Idea Listing</b>		<b>JUDGMENT PHASE Idea Evaluation</b>	
<b>No.</b>	<b>CREATIVE IDEA</b>	<b>COMMENTS</b>	<b>IDEA RATING</b>
B-4	Consider Using Alternative Types of Walls	Not Practical – Walls too High	X
B-5	Are Noise Walls Offset from MSE Walls	Non-Issue	X
B-6	To Eliminate /Reduce West Side Walls by Not Shifting The Ramp Gore Areas 8 Feet for Future HOV Lane	Reduce Cost, Requires change in HOV Design	DS
<b>C</b>	<b>Sound Walls</b>		
C-1	Evaluate Location and Heights	Design Information Lacking – Design / Build	X
<b>D</b>	<b>Bridge</b>		
D-1	To Evaluate the Bridge Width	See D-6	X
D-2	Check Need to Replace vs. Widen Existing	Cannot Widen Box Structure	X
D-3	To Check Bridge Type for New Structure	Reduce Cost, Improve Constructability	✓
D-4	To Evaluate the Sidewalks on the Bridge	See D-6	X
D-5	To Check the Need for Fencing on the Bridge in-lieu-of Bridge Rail	Improve Safety	✓
D-6	To Evaluate the Bridge Typical Section	Improve Safety, Reduce Cost, Improve Design	✓
✓ = Will be considered further; X = will be dropped; DS = Design suggestion –written for consideration by design team			

<b>CREATIVE PHASE Creative Idea Listing</b>		<b>JUDGMENT PHASE Idea Evaluation</b>	
<b>No.</b>	<b>CREATIVE IDEA</b>	<b>COMMENTS</b>	<b>IDEA RATING</b>
D-7	To Evaluate 2-Lane Bridge vs. 4-Lane Bridge	See D-6	X
D-8	To Evaluate the Width of the Median	See D-6	X
D-9	To Check the Width of the Shoulders on the Bridge	See D-6	X
D-10	To Address Constructability Issues	Simplify Construction, Reduce Cost,	✓
D-11	Will Vertical Clearance Meet Future I-575 Build-Out	Clearance Meets Requirements for Section	X
D-12	To Consider a New Bridge on New Alignment	Possible Adverse Impacts on Cross Road	X
D-13	To Consider a New Shorter Bridge on MSE Abutment	Reduce Cost, Simplify Construction	✓
D-14	To Widen New Box Bridge to Provide 4Traffic Lanes	Proposed Section Will Accommodate 4-Lanes	X
D-15	To Use Only Existing Bridge & Separate Ped. Bridge	Reduce Cost, Accelerate Construction	✓
<b>E</b>	<b>Asphalt – Superpave</b>		
E-1	To Check How Aux Lane Works With Truck Lane	Possible Safety Issues See A-9	X
E-2	To Check Lane Widths on Cross / Side Roads	Reduce Costs	✓
E-3	To Check Shoulder Widths	Reduce Costs	✓
E-4	To Check Pavement Section Under Concrete Pav't	Reduce Cost	✓
✓ = Will be considered further; X = will be dropped; DS = Design suggestion –written for consideration by design team			

<b>CREATIVE PHASE Creative Idea Listing</b>		<b>JUDGMENT PHASE Idea Evaluation</b>	
<b>No.</b>	<b>CREATIVE IDEA</b>	<b>COMMENTS</b>	<b>IDEA RATING</b>
E-5	To Check Number of Lanes on Cross / Side Roads	See E-5	X
E-6	To Review Roadway Typical Sections	Reduce Cost, Accelerate Construction	✓
<b>F</b>	<b>Concrete Pavement</b>		
F-1	Check Ramp Shoulder Width (Why 10 Feet)	Reduce Cost	✓
F-2	Why Concrete Shoulders on Ramps	Impact on Possible Future Lanes	✓
<b>G</b>	<b>Aggregate Base Course</b>		
G-1	Check for Possible Typical Section Changes	See F-2, E-6	X
<b>J</b>	<b>Traffic Signals</b>		
J-1	Check Number of Signalized Intersections	Possible Cost Increase	✓
J-2	Check LOS at Intersections	Accommodate Traffic	✓
J-3	Check Number of Left Turn Lanes	Accommodate Traffic	✓
J-4	Check Need for Ramp Metering	Improve On-Ramp Traffic	✓
✓ = Will be considered further; X = will be dropped; DS = Design suggestion –written for consideration by design team			

<b>CREATIVE PHASE Creative Idea Listing</b>		<b>JUDGMENT PHASE Idea Evaluation</b>	
<b>No.</b>	<b>CREATIVE IDEA</b>	<b>COMMENTS</b>	<b>IDEA RATING</b>
<b>M</b>	<b>Concrete Sidewalk</b>		
M-1	Reduce 10-Foot Shoulders on Bridge	See D-4	X
M-2	Need for Sidewalks on Side Road	Reduce Cost, Serve Commercial Buildings	✓
M-3	Need to Tie Sidewalk into Local Park	Meet ADA Requirements, Increase Cost	✓
M-4	Need to Tie Sidewalk to Existing on West Side	Project Continuity	✓
M-5	Eliminate on Side Road and Use Rural Shoulders	Cost Savings, Simplify Construction	✓
<b>N</b>	<b>Curb &amp; Gutter</b>		
N-1	Eliminate on Side Road	See M-5	X
N-2	Continue C & G on West Side of Interchange	Tie to Existing Sidewalk	✓
<b>S</b>	<b>Approach Slab Pavement</b>		
S-1	Adjust as needed for selected Bridge Section	Tie in Guardrail / Barrier	✓
✓ = Will be considered further; X = will be dropped; DS = Design suggestion –written for consideration by design team			