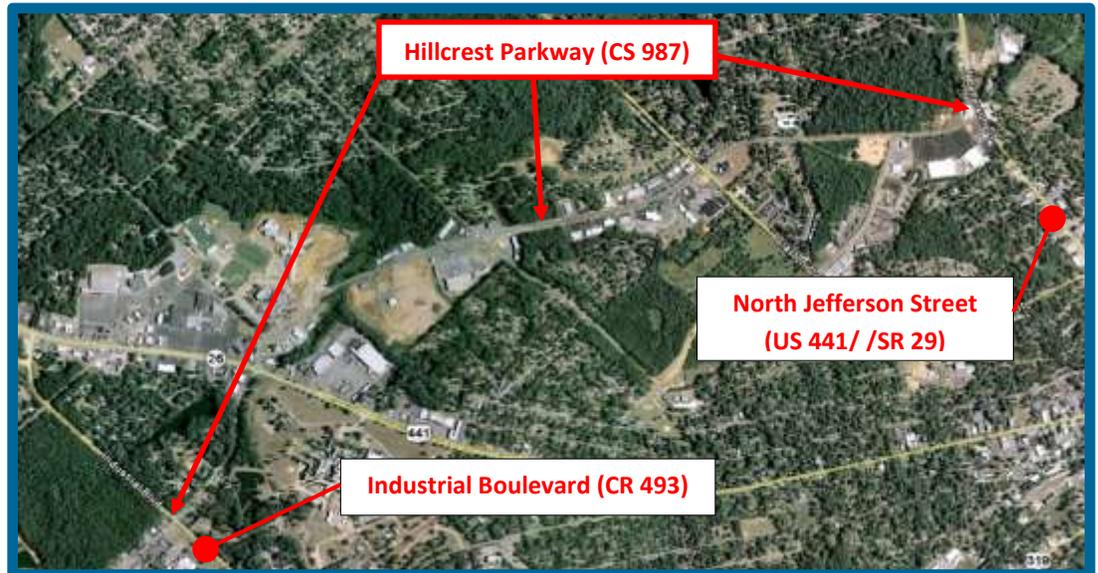


# *Final Value Engineering Study Report*



## *Widening of Hillcrest Parkway*

*CSSTP-0007-00(413), PI No. 0007413, Laurens County, Georgia*



*August 2011*

*Prepared by*

**Value Management Strategies, Inc.**



**"Value Leadership"**

**CORPORATE OFFICE:**

613 W Valley Parkway  
Suite 240  
Escondido, CA 92025-2504  
T: 760 741 5518  
F: 760 741 5617

1724 SW Clay Street  
Portland, OR 97201-2529  
T: 503 957 9642  
F: 760 741 5617

1874 Deer Park Circle S  
Grand Junction, CO 81507-9578  
T: 970 242 5531  
F: 760 741 5617

3909 208th Pl SE  
Bothell, WA 98021-6948  
T: 206 679 8029  
F: 760 741 5617

9022 West 65th Drive  
Merriam, KS 66202-3602  
T: 816 206 0067  
F: 760 741 5617

2020 X Street, Unit A  
Sacramento, CA 95818-2461  
T: 916 224 9812  
F: 760 741 5617

8532 Woodbriar Drive  
Sarasota, FL 34238-5666  
T: 941 323 5438  
F: 760 741 5617

**2670 Ravenoaks Place NE  
Marietta, GA 30062-5630  
T: 678 488 4287  
F: 760 741 5617**

321 Riverview Drive W  
Great Falls, MT 59404-1335  
T: 406 952 4473  
F: 760 741 5617

Date: August 23, 2011

To: Matthew J. Sanders, AVS  
Georgia Department of Transportation  
Engineering Services  
600 Peachtree Street, NW, 5th Floor  
Atlanta, Georgia 30308-3603

Subject: Final Study Report  
**Widening of Hillcrest Parkway**  
City of Dublin, Laurens County, Georgia  
CSSTP-0007-00(413), PI No. 0007413

Dear Mr. Sanders:

Value Management Strategies, Inc. is pleased to transmit this Final Study Report for the referenced project. This report summarizes the events of the study conducted August 8 - 11, 2011.

It was a pleasure working with you, the Georgia Department of Transportation, District 2, and Thomas & Hutton Engineering Company on this project, and I look forward to our next collaboration. If you have any questions or comments concerning this final report, please do not hesitate to contact me at 678-488-4287 or email [lmvenegas@aol.com](mailto:lmvenegas@aol.com).

Sincerely,

VALUE MANAGEMENT STRATEGIES, INC.

A handwritten signature in black ink, appearing to read "Luis M. Venegas". The signature is fluid and cursive, with a large, stylized initial "L".

Luis M. Venegas, PE, CVS-Life, LEED® AP, FSAVE  
VE Study Team Leader/Facilitator

Copy: (2 copies/1 CD/PDF) Addressee

---

<b>EXECUTIVE SUMMARY .....</b>	<b>1</b>	<b>PROJECT ANALYSIS.....</b>	<b>71</b>
Project Summary		Summary of Analysis	
Project Need and Purpose		Key Project Factors	
VE Study Timing		• Project Issues	
VE Study Objectives		• Site Visit Observations	
Key Project Issues		Cost Model	
VE Alternatives		Function Analysis	
Final VE Study Results		• Random Function Determination	
VE Team		• FAST Diagram	
<b>VALUE ENGINEERING ALTERNATIVES.....</b>	<b>6</b>	<b>IDEA EVALUATION.....</b>	<b>82</b>
VE Strategies		Performance Attributes	
VE Alternative Summary Tables		Evaluation Process	
• VE Alternatives		Idea Summary	
• VE Strategies		Idea Summary List	
VE Alternative Documentation		Detailed Idea Evaluation Summary	
<b>PROJECT INFORMATION .....</b>	<b>49</b>	<b>VALUE ENGINEERING PROCESS.....</b>	<b>88</b>
Background		Pre-Study Preparation	
Project Description		VE Study	
Information Provided to the VE Team		Post-Study Procedures	
Project Drawings		VE Study Agenda	
Project Cost Estimate		VE Study Meeting Attendees	

# EXECUTIVE SUMMARY

---

A value engineering (VE) study, sponsored by the City of Dublin in conjunction with the Georgia Department of Transportation (GDOT) and facilitated by Value Management Strategies, Inc., was conducted for Widening of Hillcrest Parkway, CSSTP-0007-00(413), PI No. 0007413 in Dublin, Georgia. The study was conducted August 8 – 11, 2011. This *Executive Summary* provides an overview of the project and key findings of the alternatives developed by the VE team.

## PROJECT SUMMARY

Hillcrest Parkway was originally constructed by GDOT circa 1973 as a dirt road paving project needed to alleviate congestion on the local collectors, as well as to provide access to U.S. Route (US) 441 and US 80. In 2002, a traffic study was performed to determine the need for intersection and roadway improvements in the Dublin area, which was centered on the Industrial Boulevard and Hillcrest Parkway areas. Hillcrest Parkway was identified in the study as a potential candidate for improvements in the Dublin roadway network. A conceptual document was developed by the City of Dublin for the Project Nomination Review Committee (PNRC) for the widening of Hillcrest Parkway. The PNRC reviewed the findings and recommended the project for inclusion in the State Construction Work Program in 2005.

Total project costs for all elements of the project are currently estimated at \$18,252,735. This figure excludes an apparent \$4,923,571 inconsistency within the cost estimating documents.

## PROJECT NEED AND PURPOSE

The need and purpose of the project is to provide connectivity between Industrial Boulevard and US 441. An additional benefit of this project will be to relieve traffic congestion along Hillcrest Parkway and parallel routes in the vicinity of the project.

## VE STUDY TIMING

The VE study was conducted at the Concept Design level of the project that has a current Let Date of *Long Range*. Long Range letting will not occur prior to 2015 and perhaps closer to 2016/2017.

## VE STUDY OBJECTIVES

The objectives of the VE study were to:

- Improve the new facility's functional aspects within the noted horizontal alignment and vertical profile constraints.
- Explore the possibility of reducing right-of-way takes within the anticipated facility's alignment.
- Explore the possibility of reducing construction duration (anticipated duration is 24 months).

- Explore the possibility of wetlands mitigation associated with VA hospital stream at US 80.
- Reduce overall costs associated with the new facility (City of Dublin and GDOT).

## KEY PROJECT ISSUES

The items listed below are the key drivers, constraints, or issues being addressed by the project and considered during this VE study to identify possible improvements.

### Environmental:

- Mitigation of the 0.448 acre of wetlands will be necessary; however, only a Nationwide permit will be required.
- The National Environmental Policy Act (NEPA) documentation is not approved at this time; however, work has been done to reduce the impacts on the Carl Vinson VA Center.

### Miscellaneous:

- Potential for a retaining wall between Station 30+00 to +/- Station 37+00.
- Drainage design has not been developed.
- Right-of-way has not been purchased due to early stage of design.
- New high school entrance has shifted from approximately Station 58+50 to Station 60+00.
- Desire to keep current alignment creates vertical and horizontal profile issues.
- Design exemption for superelevation on Hillcrest Parkway between Station 50+00 and Station 55+00.

### Utilities:

- Utilities present include: electricity - Georgia Power (distribution only); gas, fiber optic, water, and sewer - City of Dublin; cable - Charter Communications; and telephone - Bell South.

## VE ALTERNATIVES

The VE team developed 10 alternatives for improvement of the project. The following are the alternatives identified, along with their associated potential initial cost savings. Please note that because the cost data depicted below represent *savings*, a number in parentheses represents a *cost increase*.

<b>Alternative No. &amp; Description</b>	<b>Initial Cost Savings</b>
<b>1.0</b> Eliminate proposed curb cut for Sundry Properties, Inc. parcel on Hillcrest Parkway	(\$2,000)
<b>2.0</b> Close King Edward Drive onto Hillcrest Parkway	\$3,000
<b>3.0</b> Maintain existing Shamrock Drive and convert to right-in/right-out	\$111,000
<b>4.0</b> Interconnect and synchronize all signals	(\$90,000)
<b>5.0</b> Eliminate center turn lane between Industrial Boulevard and US 80	\$280,000
<b>6.0</b> Use 11-foot travel lanes	\$425,000
<b>7.0</b> Use 12-foot center two-way turn lane	\$212,000
<b>8.0</b> Use 11-foot travel lanes and 12-foot center, two-way turn Lane	\$648,000
<b>9.0</b> Improve alignment of the US 80/Hillcrest Parkway Intersection	(\$10,000)
<b>10.0</b> Eliminate right turn lane at the Hillcrest Parkway/Industrial Boulevard Intersection	\$18,000

## **FINAL VE STUDY RESULTS**

Acknowledging the rationale for the need and purpose of widening of Hillcrest Parkway, the VE study was able to maximize the facility’s functional requirements to provide connectivity between Industrial Boulevard and US 441. The following VE study highlights are provided, indicating some of the more salient points of the study.

Since the widened facility is classified as an urban collector street (US 80 to US 441) and an urban local road [County Road (CR) 493 to US 80], the use of 11-foot travel lanes and a 12-foot two-way center turn are appropriate reductions in overall cross section. Furthermore, the relative low posted speed limit of 35 mph and the low truck volume at less than 2% of the overall vehicular volume substantiates this reduction. This is clearly noted in Alternative 8.0.

In an effort to improve the flow of traffic along the Hillcrest Parkway Corridor, the following alternatives were developed to assist this effort: 2.0 – close King Edward Drive onto Hillcrest Parkway, 3.0 – convert Shamrock Drive to a right-in/right-out only intersection, and 4.0 – interconnect and synchronize all traffic signals in the corridor.

Knowing there are two design exemptions in the baseline concept, Alternative 9.0 enhances the baseline concept by increasing the westbound approach curve from a 600-foot radius to a 900-foot radius, therefore increasing the line of sight along Hillcrest Parkway in the vicinity of Shamrock Drive, the Dublin High School entrance to the north of Hillcrest Parkway, and four commercial entrance driveways along the south side of Hillcrest Parkway. In addition, the 300-foot radius that is located at the intersection of Hillcrest Parkway and US 80 has been increased to a 1,200-foot radius, which provides a flatter transition across the intersection and improves line of sight and driver expectancy in the overall intersection operations. In so doing, the horizontal alignment design exception would not be required; however, although the superelevation rate exemption is not eliminated, it is ameliorated.

Finally, as noted on Alternative 10.0, the dedicated right turn lane at Hillcrest Parkway/Industrial Boulevard is not needed as there are two through eastbound lanes on Hillcrest Parkway at the intersection where one can serve as the right turn lane and the other through lane feeds into Fairview Park Drive. It is noted the eastbound traffic on Hillcrest Parkway can only access Fairview Park Drive (the continuation of Hillcrest Parkway just east of the intersection) via one through lane.

## VE TEAM

Name	Organization	Title
Luis M. Venegas, PE, CVS-Life, LEED AP, FSAVE	Value Management Strategies, Inc.	Team Leader
Dominic F. Saulino	HNTB Corporation	Associated Vice President/ Director of Transportation
Lenor M. Bromberg, PE, AVS, LEED AP BD+C	Kennedy Engineering & Associates Group, LLC	Associate Vice President - Environmental and Design

## Key Project Contacts

Name	Organization	Title
Matt Sanders, AVS	GDOT	Value Engineering Specialist
Lisa L. Myers, AVS	GDOT	Assistant State Project Review Engineer and VE Coordinator
Ron E. Wishon	GDOT	State Project Review Engineer
Ken Werho	GDOT	Traffic Operations Design/ Concept Review Manager
Melissa Harper, PE	GDOT	Assistant State Construction Engineer
Renee Decker	GDOT	District 2 Design Squad Leader
George Brewer, PE	GDOT	Preconstruction Engineer
Jay Simone, PE	Thomas & Hutton Engineering Co.	Project Manager

<b>Name</b>	<b>Organization</b>	<b>Title</b>
Glenn Durrence, PE	Thomas & Hutton Engineering Co.	Transportation Director
Doyle Kelley, PE	Thomas & Hutton Engineering Co.	Assistant Department Head

# **VE ALTERNATIVES**

---

The results of this study are presented as individual alternatives to the baseline concept. Each alternative consists of a summary of the baseline concept, a description of the suggested change, a listing of its advantages and disadvantages, a cost comparison, discussion of schedule and risk impacts (if applicable), and a brief narrative comparing the baseline design with the alternative. Sketches and calculations are also presented where applicable.

The cost comparisons reflect a comparable level of detail as in the baseline estimate. A life-cycle benefit-cost analysis for major alternatives is included where appropriate.

## VE STRATEGIES

VE studies result in the development of a number of alternatives. While it is possible for all alternatives to be implemented, typically there are combinations of some alternatives that may provide the best solution for the project. This is due to the fact that some alternatives may be competing ideas or different ways to address the same issue. Some alternatives are developed to answer a question raised by a decision maker or to resolve an open issue and found not to be beneficial to the ultimate project.

As a result of these factors, the VE team develops a VE strategy(s) that represents their opinion of the best combination of alternatives for the project to assist the decision makers in their evaluation of the VE alternatives. The VE strategy(s) is based on factors that include improved performance, likelihood of implementation, least community impact or cost savings. This information is a guide and is not intended to reject the other alternatives from project stakeholder consideration. The rationale for not including some alternatives in the recommended VE strategy is discussed in the *Executive Summary*.

## VE ALTERNATIVE SUMMARY TABLES

### Summary of VE Alternatives

Alternative No. & Description	Initial Cost Savings
<b>1.0</b> Eliminate proposed curb cut for Sundry Properties, Inc. parcel on Hillcrest Parkway	(\$2,000)
<b>2.0</b> Close King Edward Drive onto Hillcrest Parkway	\$3,000
<b>3.0</b> Maintain existing Shamrock Drive and convert to right-in/right-out	\$111,000
<b>4.0</b> Interconnect and synchronize all signals	(\$90,000)
<b>5.0</b> Eliminate center turn lane between Industrial Boulevard and US 80	\$280,000
<b>6.0</b> Use 11-foot travel lanes	\$425,000

Alternative No. & Description	Initial Cost Savings
7.0 Use 12-foot center two-way turn lane	\$212,000
8.0 Use 11-foot travel lanes and 12-foot center, two-way turn Lane	\$648,000
9.0 Improve alignment of the US 80/Hillcrest Parkway Intersection	(\$10,000)
10.0 Eliminate right turn lane at the Hillcrest Parkway/Industrial Boulevard Intersection	\$18,000

*Note: Because the data depicted above represent cost and time savings, a negative number represents an increase.*

### Summary of VE Strategies

Strategy Description	Initial Cost Savings
Strategy 1 - Minimize ingresses/egresses onto Hillcrest Parkway; synchronize all signals in the corridor; reduce 86% of the center turn lane approaching Industrial Boulevard; use 11-foot travel lanes and 11-foot two-way center turn lane; improve US 80 Interchange; eliminate dedicated right turn lane onto Industrial Boulevard 1.0, 2.0, 3.0, 4.0, 5.0*, 8.0, 9.0, 10.0	\$918,800
Strategy 2 - Minimize ingresses/egresses onto Hillcrest Parkway; synchronize all signals in the corridor; eliminate the center turn lane approaching Industrial Boulevard; use 11-foot travel lanes and retain 14-foot two-way center turn lane; improve US 80 Interchange; eliminate dedicated right turn lane onto Industrial Boulevard 1.0, 2.0, 3.0, 4.0, 5.0, 6.0, 9.0, 10.0	\$735,000
Strategy 3 - Minimize ingresses/egresses onto Hillcrest Parkway; synchronize all signals in the corridor; reduce 14% of the center turn lane approaching Industrial Boulevard; use 11-foot travel lanes and 12-foot two-way center turn lane; improve the US 80 Interchange; eliminate dedicated right turn lane onto Industrial Boulevard 1.0, 2.0, 3.0, 4.0, 5.0**, 7.0, 9.0, 10.0	\$281,200

\* To maximize the cost savings for Strategy 1, only 86% of the value and work associated of Alternative 5.0 can be utilized.

\*\* To maximize the cost savings for Strategy 3, only 14% of the value and work associated of Alternative 5.0 can be utilized.

*Note: Because the data depicted above represent cost savings, a negative number represents an increase.*

## VE ALTERNATIVE 1.0

### Eliminate proposed curb cut for Sundry Properties, Inc. parcel on Hillcrest Parkway

---

<b>Cost Savings:</b>	(\$2,000)
<b>LCC Savings:</b>	\$0

**Description of Baseline Concept:** The baseline concept indicates a new curb cut and driveway for the Sundry Properties, Inc. land parcel on Hillcrest Parkway approximately 200 feet from the Hillcrest Parkway/US 441 Intersection. This curb cut/driveway is at the beginning of the eastbound right-only queue lane on Hillcrest Parkway to US 441. Access to this property is maintained from southbound US 441.

**Description of Alternative Concept:** Eliminate the proposed curb cut and new driveway from Hillcrest Parkway onto the Sundry Properties, Inc. land parcel.

#### Advantages:

- Improves operations of the right-only queue lane on Hillcrest Parkway
- Precludes potential congestion at the Hillcrest Parkway/US 441 Intersection
- Maintains access to property from US 441
- Access to Hillcrest Parkway is available from the adjacent parking lot to the west
- Eliminates left-turning traffic in close proximity to a major intersection

#### Disadvantages:

- Loss of direct access from property to Hillcrest Parkway
- May be more difficult to access property from northbound US 441
- Access from parking lot to the west could be closed by adjacent property owners
- More difficult to attract new commerce/business opportunity at this location

**Discussion:** Operationally, a driveway in close proximity to a major intersection such as the one at Hillcrest Parkway/US 411 is not prudent. Since the 2035 morning peak hour traffic count is 455 vehicles per hour, the right-only queue lane (eastbound Hillcrest Parkway to southbound US 441) will be heavily used. As such, the proposed driveway could create a bottleneck, congestion, and delays.

Accessibility to this property is still available from US 441 and from the adjacent parking lot directly to the west of the Sundry Properties, Inc. parcel. It appears the latter access point has been in use for some time and is a well defined access point.

**Technical Review Comments:** N/A

**Project Management Considerations:** The VE team does not know if previous arrangements have been made with the Sundry Properties, Inc. land owners for access improvement to the land parcel from Hillcrest Parkway. If so, then renegotiations will be necessary if the driveway is closed to accommodate the owner's loss of direct access to Hillcrest Parkway.

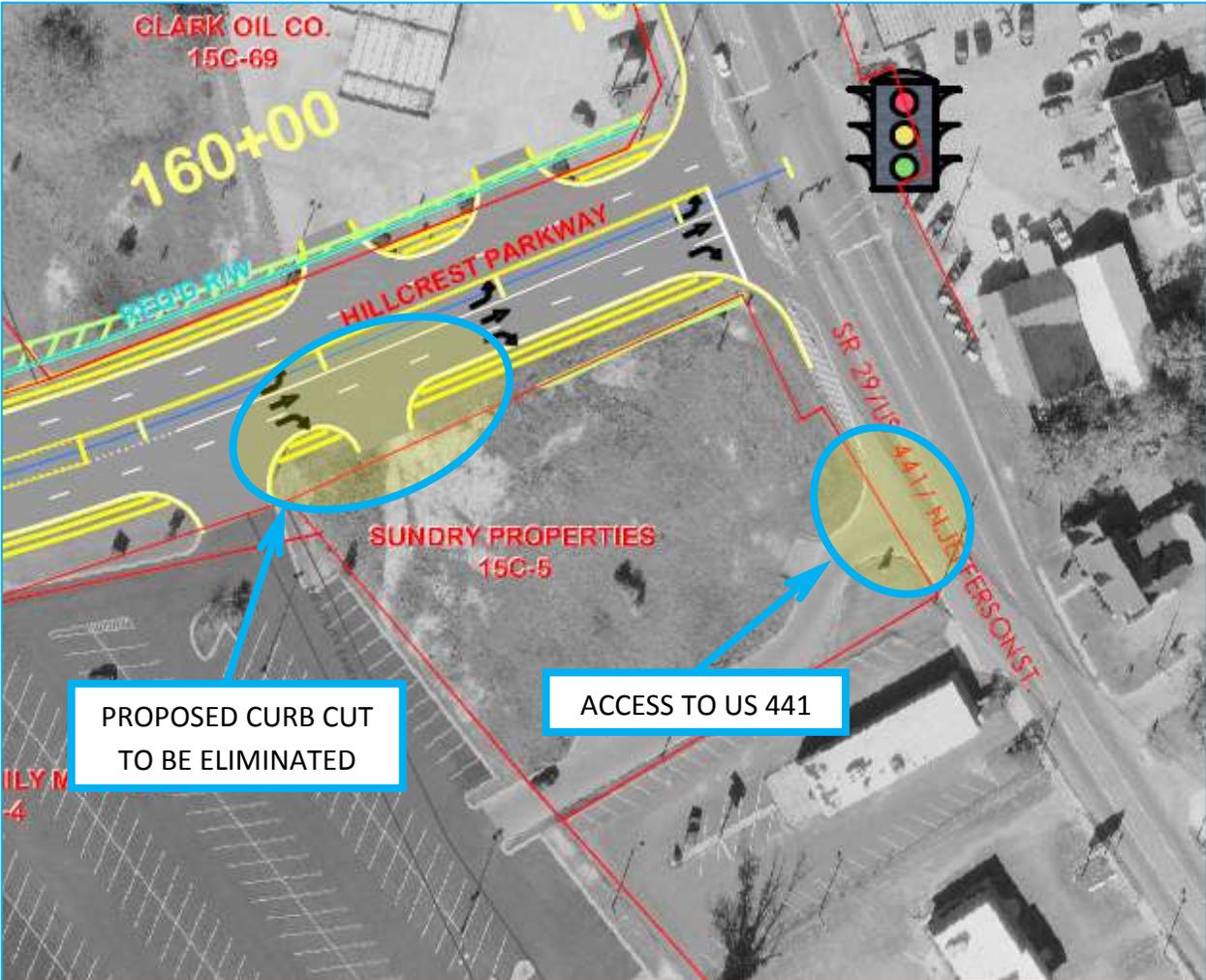
**Discussion of Schedule Impacts:** No significant change from the baseline concept.

**Discussion of Risk Impacts:** N/A

**VE ALTERNATIVE 1.0**

**Eliminate proposed curb cut for Sundry Properties, Inc. parcel on Hillcrest Parkway**

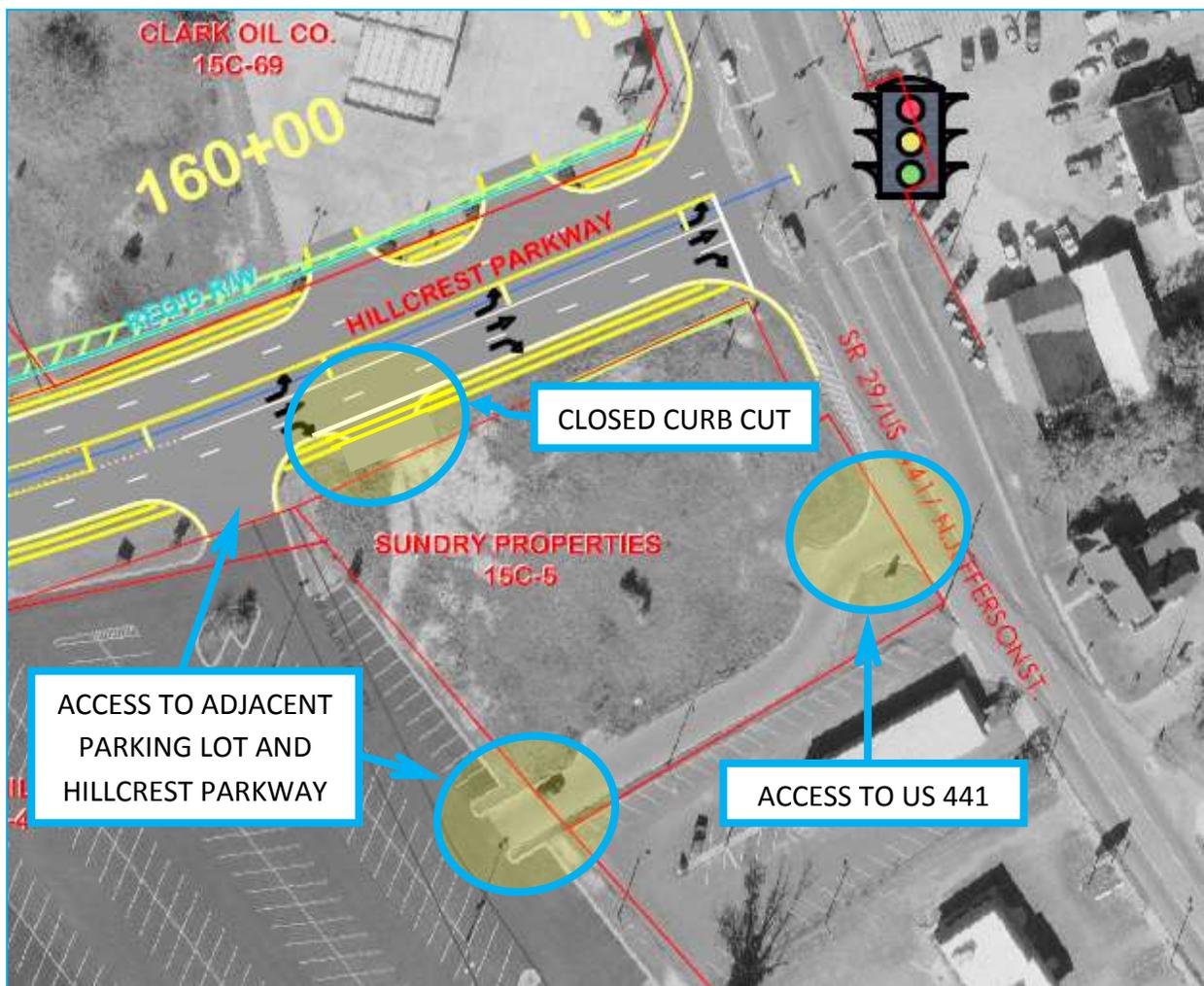
**Baseline Concept Sketch:**



## VE ALTERNATIVE 1.0

### Eliminate proposed curb cut for Sundry Properties, Inc. parcel on Hillcrest Parkway

#### VE Alternative Concept Sketch:



#### Assumptions and Calculations:

It is assumed that in closing the driveway, the curb and gutter delineating the entrances radii will be the equivalent of a straight line between the driveway opening.

Sidewalk Length: Length = 35 linear feet (LF); Width = 5 LF  $\therefore$  35 LF x 5 LF = **175** square feet (SF)

Driveway Area: 35 LF x 15 LF = 525 SF  $\therefore$  525 SF / 9 SF per square yards (SY) = 58.33 SY, say **58** SY.

Edge of Pavement Marking: **35** LF

## VE ALTERNATIVE 1.0

### Eliminate proposed curb cut for Sundry Properties, Inc. parcel on Hillcrest Parkway

#### Initial Costs:

CONSTRUCTION ELEMENT	Unit	BASELINE CONCEPT			ALTERNATIVE CONCEPT		
Description		Quantity	Cost/Unit	Total	Quantity	Cost/Unit	Total
<b>ROADWAY ITEMS</b>							
Pavement	SY	58	\$34.50	\$2,001			\$0
Sidewalk	SF			\$0	175	\$24.29	\$4,251
Thermo Traffic Striping - 5" White	LF			\$0	35	\$0.32	\$11
<b>ROADWAY SUBTOTAL</b>				<b>\$2,001</b>			<b>\$4,262</b>
<b>ROADWAY MARK-UP</b>	26.89%			<b>\$538</b>			<b>\$1,146</b>
<b>ROADWAY TOTAL</b>				<b>\$2,539</b>			<b>\$5,408</b>
<b>TOTAL</b>				<b>\$2,539</b>			<b>\$5,408</b>
<b>TOTAL (Rounded)</b>				<b>\$3,000</b>			<b>\$5,000</b>
						<b>SAVINGS</b>	<b>(\$2,000)</b>

## VE ALTERNATIVE 2.0

### Close King Edward Drive onto Hillcrest Parkway

---

<b>Cost Savings:</b>	\$3,000
<b>LCC Savings:</b>	\$0

**Description of Baseline Concept:** The baseline concept indicates an improvement to the existing King Edward Drive access on Hillcrest Parkway. This street is approximately 350 feet west from Victoria Drive. Additionally, King Edward Drive is approximately 400 feet east of the Hillcrest Parkway/Claxton Dairy Road Intersection. The property immediately to the east of King Edward Drive on Hillcrest Parkway is being taken due to the vertical profile of the terrain and road widening.

**Description of Alternative Concept:** Eliminate the existing connection between King Edward Drive and Hillcrest Parkway.

#### **Advantages:**

- Improves operation of Hillcrest Parkway
- Precludes potential congestion at the Hillcrest Parkway/Claxton Dairy Road Intersection
- Access to Hillcrest Parkway is available via Victoria Drive 350 feet east of King Edward Drive
- Improves residential security (lessens through traffic)

#### **Disadvantages:**

- Loss of direct access from King Edward Drive to Hillcrest Parkway
- Access from King Edward Drive to Hillcrest Parkway requires a long route via Victoria Drive
- Perceived loss of response time for emergency vehicles

**Discussion:** Operationally, a driveway in close proximity to a major intersection such as the one at Hillcrest Parkway/Claxton Dairy Road is not prudent. This is especially true considering that Victoria Drive is 350 feet to the east of King Edward Drive. The 2035 peak hour traffic count considers both of these streets to be “minor movements” with minimal traffic. In fact, the only viable count, 25 vehicles per hour, is southbound Victoria Drive to westbound Hillcrest Parkway. As such, any additional residential traffic from King Edward Drive onto Victoria Drive is minimal and easily achievable. This closure eliminates potential bottlenecks, merging traffic, and delays.

**Technical Review Comments:** None noted.

**Project Management Considerations:** Since the King Edward Drive access onto Hillcrest Parkway exists, a dialogue will have to be opened with the homeowners along King Edward Drive about the rationale for closing the street at Hillcrest Parkway. In addition to the loss of direct access, is the perceived fear or concern of how emergency vehicles would respond to the neighborhood in the event of a fire, police or medical emergency. It is noted the approximate additional travel distance for the home closest to Hillcrest Parkway to negotiate King Edward Drive to Victoria Drive to Hillcrest Parkway is only 1,200 feet or about ¼ mile.

**Discussion of Schedule Impacts:** No significant change from the baseline concept.

**Discussion of Risk Impacts:** N/A

**VE ALTERNATIVE 2.0**

**Close King Edward Drive onto Hillcrest Parkway**

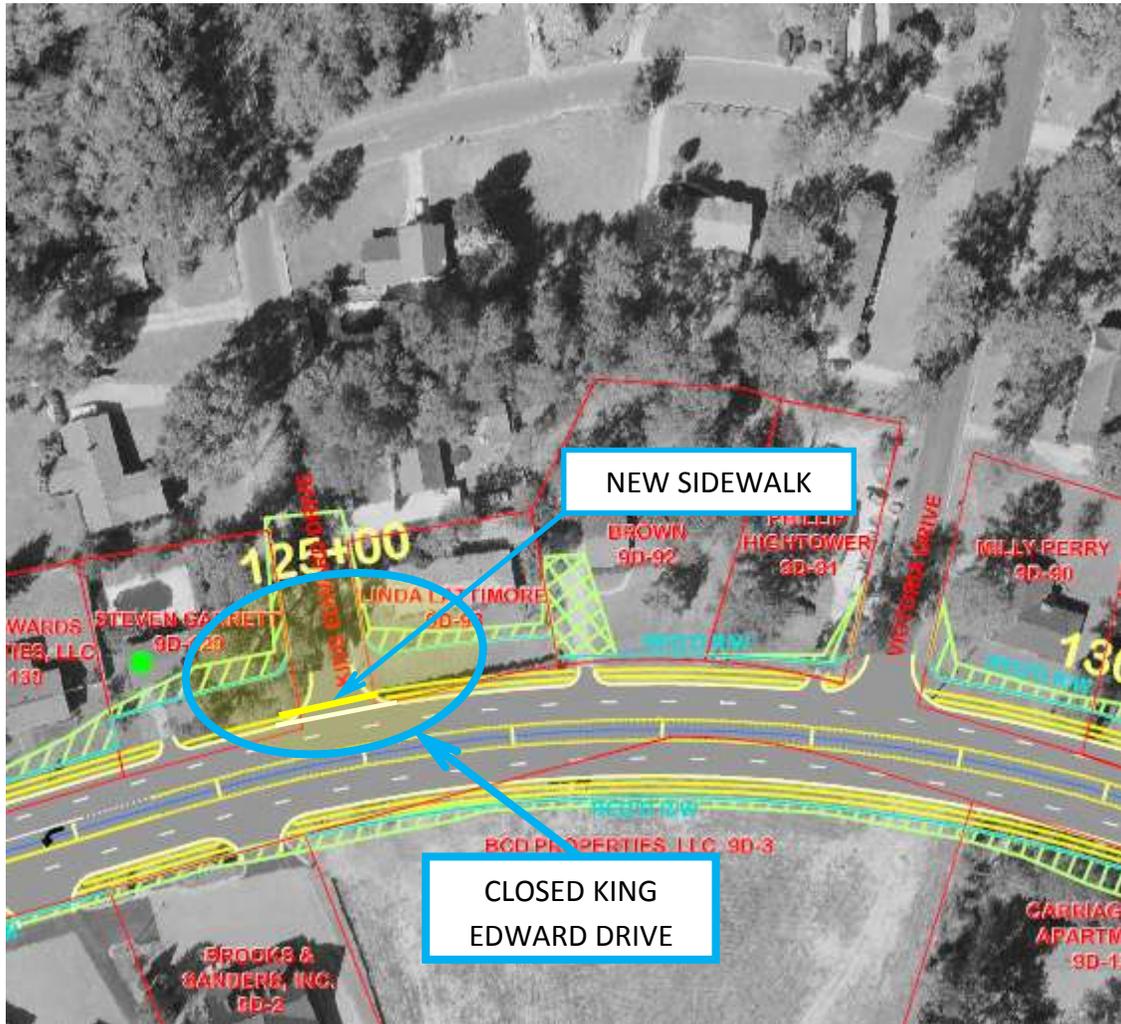
**Baseline Concept Sketch:**



## VE ALTERNATIVE 2.0

### Close King Edward Drive onto Hillcrest Parkway

#### VE Alternative Concept Sketch:



#### Assumptions and Calculations:

It is assumed that in closing the street access, the curb and gutter delineating the entrances radii will be the equivalent of a straight line between the driveway opening.

Sidewalk Length: Length = 50 LF; Width = 5 LF  $\therefore$  50 LF x 5 LF = **250 SF**

Driveway Area: 36 LF x 60 LF = 2,160 SF  $\therefore$  2,160 SF / 9 SF / SY = **240 SY**

Edge of Pavement Marking: **36 LF**

## VE ALTERNATIVE 2.0

### Close King Edward Drive onto Hillcrest Parkway

#### Initial Costs:

CONSTRUCTION ELEMENT	Unit	BASELINE CONCEPT			ALTERNATIVE CONCEPT		
Description		Quantity	Cost/Unit	Total	Quantity	Cost/Unit	Total
<b>ROADWAY ITEMS</b>							
Pavement	SY	240	\$34.50	\$8,280			\$0
Sidewalk	SF			\$0	250	\$24.29	\$6,073
Thermo Traffic Striping - 5" White	LF			\$0	36	\$0.32	\$12
<b>ROADWAY SUBTOTAL</b>				<b>\$8,280</b>			<b>\$6,084</b>
<b>ROADWAY MARK-UP</b>	26.89%			<b>\$2,226</b>			<b>\$1,636</b>
<b>ROADWAY TOTAL</b>				<b>\$10,506</b>			<b>\$7,720</b>
<b>TOTAL</b>				<b>\$10,506</b>			<b>\$7,720</b>
<b>TOTAL (Rounded)</b>				<b>\$11,000</b>			<b>\$8,000</b>
						<b>SAVINGS</b>	<b>\$3,000</b>

## VE ALTERNATIVE 3.0

### Maintain existing Shamrock Drive and convert to right-in/right-out

---

<b>Cost Savings:</b>	\$111,000
<b>LCC Savings:</b>	\$0

**Description of Baseline Concept:** The baseline concept shows a realignment/relocation of Shamrock Drive to the east to accommodate left and right turns onto Hillcrest Parkway, as well as a through movement to access businesses on the south side of Hillcrest Parkway.

**Description of Alternative Concept:** Maintain the existing alignment along Shamrock Drive and provide only right-in/right-out movements and eliminate the through movement that crosses Hillcrest Parkway.

#### Advantages:

- Eliminates an additional left turn movement between the Dublin City High School and US 80, which are two congested intersections
- Reduces potential for accidents
- Facilitates through traffic on Hillcrest Parkway
- Reduces congestions at this intersection with Hillcrest Parkway

#### Disadvantages:

- Left turn from Shamrock Drive to Hillcrest Parkway is eliminated
- Loss of an existing convenience
- Eliminates eastbound Hillcrest Parkway to northbound Shamrock Drive movement
- Requires additional distance to access eastbound Hillcrest Parkway from Shamrock Drive

**Discussion:** Left turns exiting Shamrock Drive are 23% of the total exiting traffic onto Hillcrest Parkway. This left turn lane is 500 feet east of the Hillcrest Parkway/US 80 Intersection and 150 feet west of the entrance to the Dublin City High School. Eliminating the left turn movement from southbound Shamrock Drive to eastbound Hillcrest Parkway and eastbound Hillcrest Parkway to northbound Shamrock Drive would reduce the likelihood of accidents at this intersection.

It is noted that access to eastbound Hillcrest Parkway from southbound Shamrock Drive would require longer drives; e.g., (1) departing the City of Dublin High School northbound on Shamrock Drive to eastbound Brookwood Drive to southbound Brookhaven Drive to Hillcrest Parkway – a distance of about 1.75 miles; or (2) departing the City of Dublin High School northbound on Shamrock Drive to eastbound Mall Road to southbound US 80 to Hillcrest Parkway - a distance of about 0.85 mile. See aerial on the following page.

## VE ALTERNATIVE 3.0

Maintain existing Shamrock Drive and convert to right-in/right-out

---



**Technical Review Comments:** None noted.

**Project Management Considerations:** None noted.

**Discussion of Schedule Impacts:** No significant change from the baseline concept.

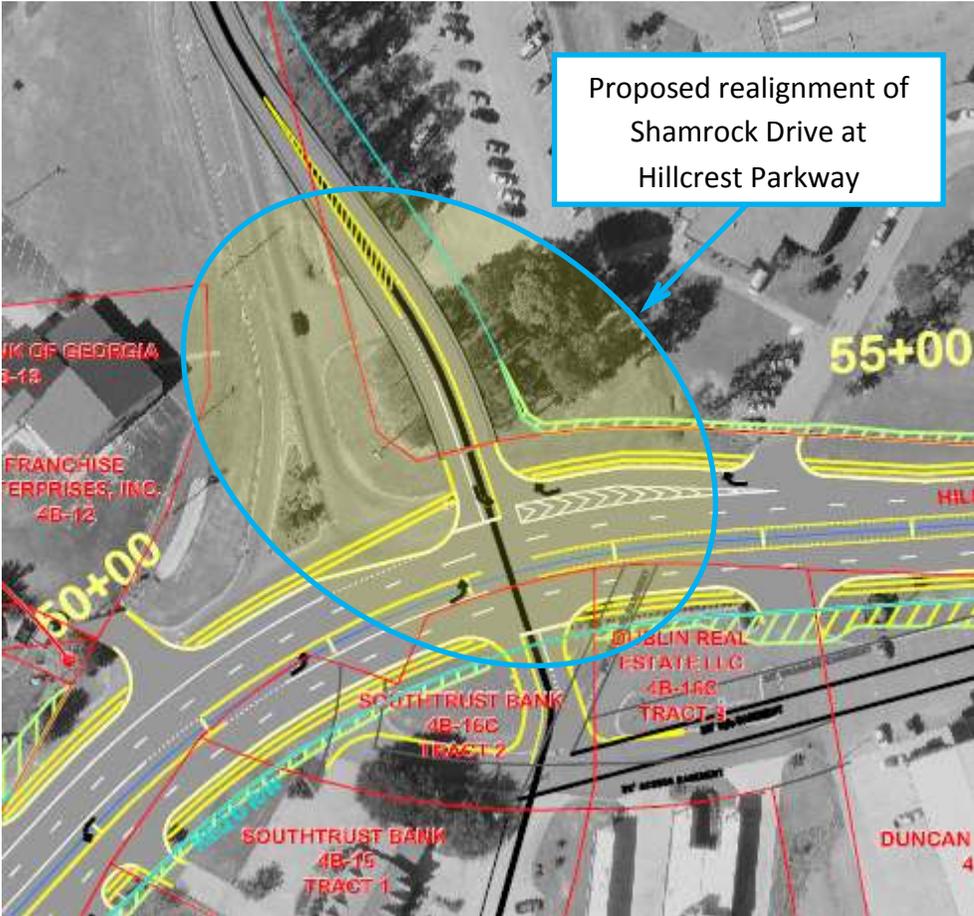
**Discussion of Risk Impacts:** N/A

**VE ALTERNATIVE 3.0**

**Maintain existing Shamrock Drive and convert to right-in/right-out**

---

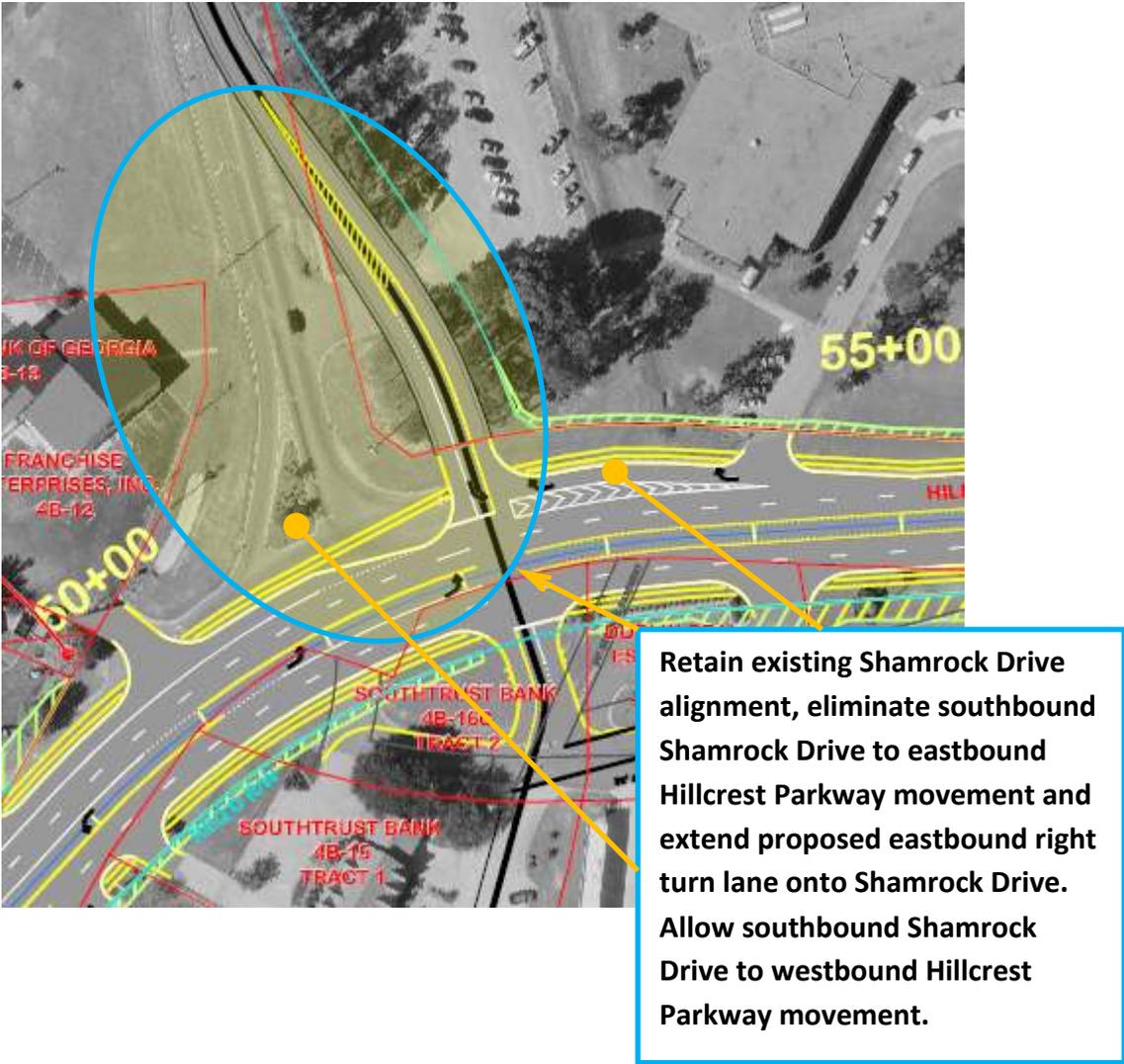
**Baseline Concept Sketch:**



**VE ALTERNATIVE 3.0**

**Maintain existing Shamrock Drive and convert to right-in/right-out**

**VE Alternative Concept Sketch:**



## VE ALTERNATIVE 3.0

### Maintain existing Shamrock Drive and convert to right-in/right-out

#### Assumptions and Calculations:

Pavement –  $480 \text{ LF} \times [(24 + 36)/2] / 9 \text{ SF} / \text{SY} = 1,600 \text{ SY}$

Solid Traffic Stripe White 5" –  $480 \text{ LF} \times 2 = 960 \text{ LF}$

Solid Traffic Stripe Yellow 5" –  $480 \text{ LF} \times 2 = 960 \text{ LF}$

Solid Traffic Stripe Yellow 8" –  $100 \text{ LF}$

Right-of-Way – Permanent slope easement –  $480 \text{ LF} \times [(0 \text{ LF} + 80 \text{ LF})/2] = 19,200 \text{ SF}$

#### Initial Costs:

CONSTRUCTION ELEMENT Description	Unit	BASELINE CONCEPT			ALTERNATIVE CONCEPT		
		Quantity	Cost/Unit	Total	Quantity	Cost/Unit	Total
<b>ROADWAY ITEMS</b>							
Pavement	SY	1,600	\$35	\$55,200			\$0
Solid Traffic Stripe White 5"	LF	960	\$0.32	\$307			\$0
Solid Traffic Stripe Yellow 5"	LF	960	\$0.36	\$346			\$0
Solid Traffic Stripe Yellow 8"	LF	100	\$1.67	\$167			\$0
<b>ROADWAY SUBTOTAL</b>				\$56,020			\$0
<b>ROADWAY MARK-UP</b>	26.89%			\$15,064			\$0
<b>ROADWAY TOTAL</b>				\$71,084			\$0
<b>RIGHT-OF-WAY ITEMS</b>							
Light Commercial	SF	19,200	\$1.38	\$26,496			\$0
<b>RIGHT-OF-WAY SUBTOTAL</b>				\$26,496			\$0
<b>RIGHT-OF-WAY MARK-UP</b>	150.56%			\$39,892			\$0
<b>RIGHT-OF-WAY TOTAL</b>				\$39,892			\$0
<b>TOTAL</b>				\$110,976			\$0
<b>TOTAL (Rounded)</b>				\$111,000			\$0
						<b>SAVINGS</b>	<b>\$111,000</b>

## VE ALTERNATIVE 4.0

### Interconnect and synchronize all signals

---

<b>Cost Savings:</b>	(\$90,000)
<b>LCC Savings:</b>	\$0

**Description of Baseline Concept:** The baseline concept as shown does not provide for interconnectivity between all signals along the corridor.

**Description of Alternative Concept:** This alternative suggests providing interconnection between all the signals along Hillcrest Parkway and synchronizes the signals' timing.

#### **Advantages:**

- Traffic will move faster and easier though the facility
- Facility will accommodate more traffic
- Facilitates overall movement along the roadway corridor
- Reduces potential "road rage" syndrome

#### **Disadvantages:**

- Additional cost not presently in the estimate
- Will require work within the exemption area (Hillcrest Parkway/Brookhaven Drive Intersection area)

**Discussion:** The start/stop traffic flow surges can be ameliorated by interconnecting all the signals along the corridor, providing faster movement thus reducing travel time. As a result, the implementation of this alternative could also allow the facility to handle more traffic. The additional required cost is acknowledged but the added value/offset of time savings may be worth the added costs. The placement of the conduit will be easily accommodated.

**Technical Review Comments:** None noted.

**Project Management Considerations:** This work will require additional work not currently contemplated within the exempted area in and about the Hillcrest Parkway/Brookhaven Drive Intersection. This will require new dialogue with the City of Dublin for concurrence if approved for implementation into the project.

**Discussion of Schedule Impacts:** This work will not impact the schedule since this work can be done during construction of the widening of the outside lanes. However, this work will require additional work not currently contemplated within the exempted area in about the Hillcrest Parkway/Brookhaven Drive Intersection.

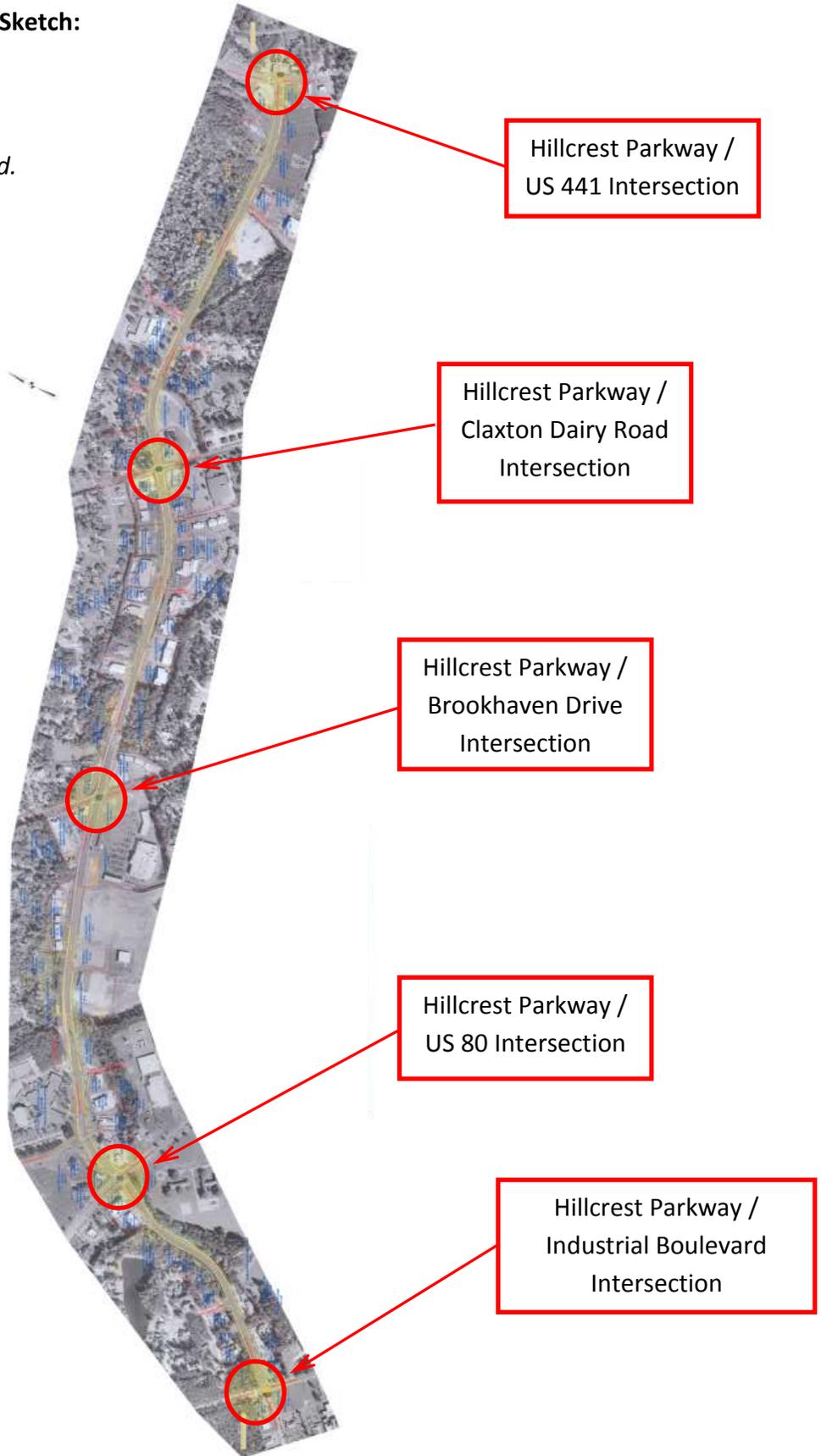
**Discussion of Risk Impacts:** N/A

# VE ALTERNATIVE 4.0

## Interconnect and synchronize all signals

### Baseline / Alternative Concept Sketch:

*Signalized intersections to be interconnected and synchronized.*



## VE ALTERNATIVE 4.0

### Interconnect and synchronize all signals

#### Assumptions and Calculations:

Interconnection costs:

Rigid Conduit – **14,784 LF**

Cable – **14,784 LF**

Interconnection Hardware – **5 EA**

#### Initial Costs:

CONSTRUCTION ELEMENT	Unit	BASELINE CONCEPT			ALTERNATIVE CONCEPT		
Description		Quantity	Cost/Unit	Total	Quantity	Cost/Unit	Total
<b>ROADWAY ITEMS</b>							
Rigid Conduit	LF			\$0	14,784	\$2.16	\$31,933
Cable	LF			\$0	14,784	\$0.92	\$13,601
Interconnection Hardware	EA			\$0	5	\$5,000	\$25,000
<b>ROADWAY SUBTOTAL</b>				\$0			\$70,535
<b>ROADWAY MARK-UP</b>	26.89%			\$0			\$18,967
<b>ROADWAY TOTAL</b>				\$0			\$89,502
<b>TOTAL</b>				\$0			\$89,502
<b>TOTAL (Rounded)</b>				\$0			\$90,000
						<b>SAVINGS</b>	<b>(\$90,000)</b>

## VE ALTERNATIVE 5.0

### Eliminate center turn lane between Industrial Boulevard and US 80

---

<b>Cost Savings:</b>	\$280,000
<b>LCC Savings:</b>	\$0

**Description of Baseline Concept:** The proposed baseline concept provides for a 14-foot center two-way turn lane along Hillcrest Parkway between Industrial Boulevard and US 80.

**Description of Alternative Concept:** Eliminate the 14-foot center two-way turn lane along Hillcrest Parkway between Industrial Boulevard and US 80.

#### **Advantages:**

- Reduction in required right-of-way
- Reduction in pavement quantities
- Maintains capacity in the travel lanes
- Traffic count does not appear to justify the center two-way turn lane in this section of the project
- Due to low truck traffic volumes (<than 2%), a 12-foot, two-way turn lane is of sufficient width to negotiate left turn movements in concert with 11-foot travel lanes

#### **Disadvantages:**

- Traffic on inside lane must stop for vehicles making a left turn movement
- Loss of a desired movement along the corridor

**Discussion:** The section of Hillcrest Parkway between Industrial Boulevard and US 80 has a 27% reduction in design year traffic from the section east of US 80. Also, only Canterbury Street and three commercial driveways are located within this 2,600-foot section of the corridor. Canterbury Street accommodates only 200 cars/day and the commercial businesses each contain small parking lots. A 14-foot center two-way turn lane does not appear to be warranted in the section of Hillcrest Parkway Corridor.

**Technical Review Comments:** None noted.

**Project Management Considerations:** None noted.

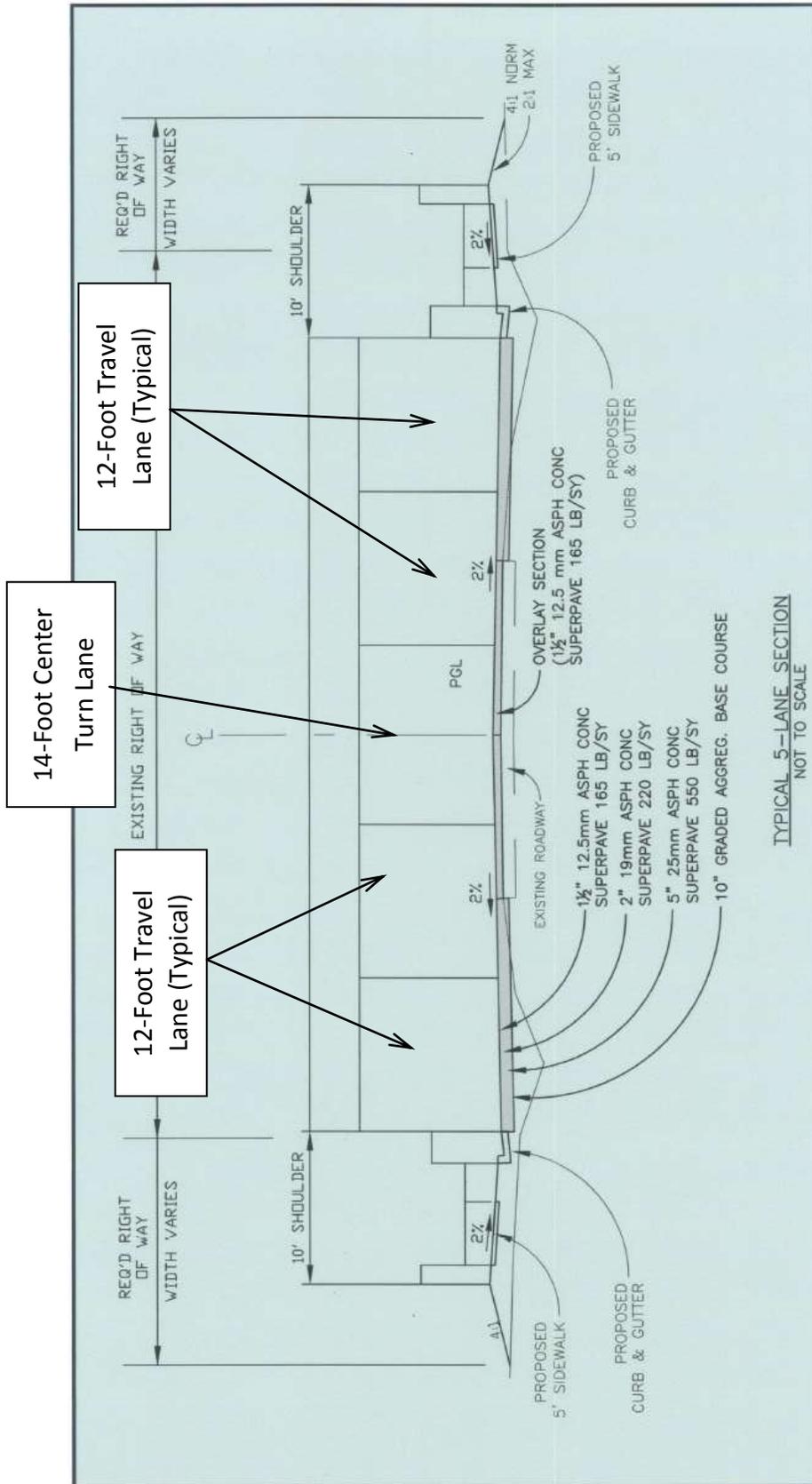
**Discussion of Schedule Impacts:** No significant change from the baseline concept.

**Discussion of Risk Impacts:** N/A

# VE ALTERNATIVE 5.0

## Eliminate center turn lane between Industrial Boulevard and US 80

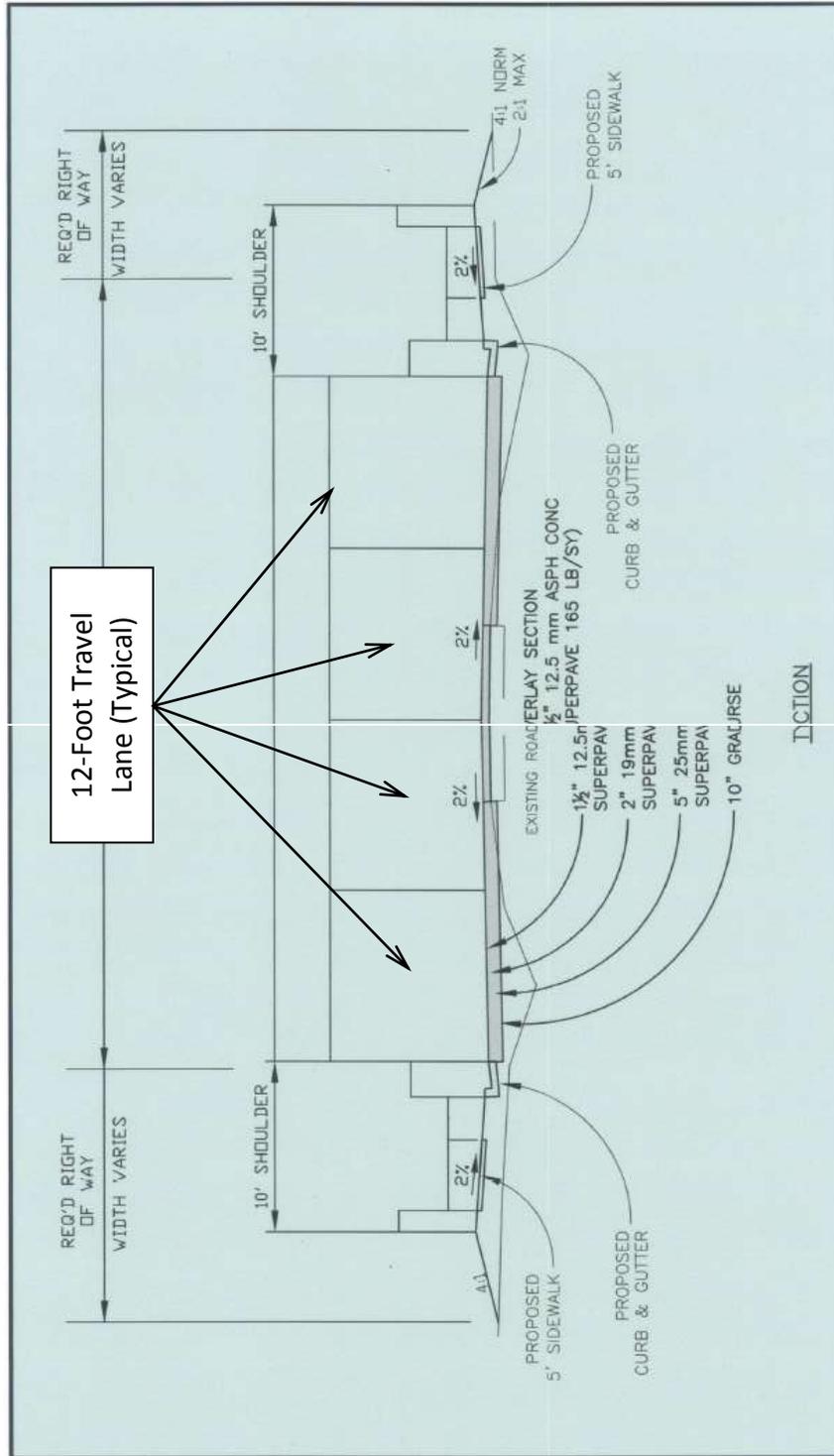
### Baseline Concept Sketch:



# VE ALTERNATIVE 5.0

## Eliminate center turn lane between Industrial Boulevard and US 80

### Value Alternative Concept Sketch:



## VE ALTERNATIVE 5.0

### Eliminate center turn lane between Industrial Boulevard and US 80

#### Assumptions and Calculations:

Pavement – 2,600 LF x 14 LF / 9 SF / SY = **4,044 SY**

Thermo Solid Traffic Stripe Yellow – **2,600 LF**

Thermo Pavement Mark, Arrow – **6 EA**

Right-of-Way – Permanent Slope Easement – 14 LF x 2,600 LF = **26,400 SF**

∴ Light Commercial – **23,660 SF**

Small Residential – **12,740 SF**

#### Initial Costs:

CONSTRUCTION ELEMENT	Unit	BASELINE CONCEPT			ALTERNATIVE CONCEPT		
Description		Quantity	Cost/Unit	Total	Quantity	Cost/Unit	Total
<b>ROADWAY ITEMS</b>							
Pavement	SY	4,044	\$34.60	\$139,922			\$0
Thermo Solid Traffic Strip Yellow	LF	2,600	\$0.36	\$936			\$0
Thermo Pavement mark, Arrow	EA	6	\$69.96	\$420			\$0
<b>ROADWAY SUBTOTAL</b>				<b>\$141,278</b>			<b>\$0</b>
<b>ROADWAY MARK-UP</b>	26.89%			<b>\$37,990</b>			<b>\$0</b>
<b>ROADWAY TOTAL</b>				<b>\$179,268</b>			<b>\$0</b>
<b>RIGHT-OF-WAY ITEMS</b>							
Light Commercial Slope Easement	SF	23,660	\$1.38	\$32,651			\$0
Small Residential Slope Easement	SF	12,740	\$0.58	\$7,389			\$0
<b>RIGHT-OF-WAY SUBTOTAL</b>				<b>\$40,040</b>			<b>\$0</b>
<b>RIGHT-OF-WAY MARK-UP</b>	150.56%			<b>\$60,284</b>			<b>\$0</b>
<b>RIGHT-OF-WAY TOTAL</b>				<b>\$100,324</b>			<b>\$0</b>
<b>TOTAL</b>				<b>\$279,592</b>			<b>\$0</b>
<b>TOTAL (Rounded)</b>				<b>\$280,000</b>			<b>\$0</b>
						<b>SAVINGS</b>	<b>\$280,000</b>

## VE ALTERNATIVE 6.0

### Use 11-foot travel lanes

---

<b>Cost Savings:</b>	\$425,000
<b>LCC Savings:</b>	\$0

**Description of Baseline Concept:** The baseline concept delineates the use of 12-foot travel lanes throughout the corridor length.

**Description of Alternative Concept:** This alternative suggests using 11-foot travel lanes in lieu of proposed 12-foot lanes throughout the corridor length.

#### **Advantages:**

- Maintains capacity
- 11-foot travel lanes are more in-keeping with a local street cross section – especially taking into account a design speed of 40 mph with a signed/posted speed limit of 35 mph
- Due to low truck traffic volumes (<than 2%), a 12-foot, two-way turn lane is of sufficient width to negotiate left turn movements in concert with 11-foot travel lanes
- Reduces asphalt cost
- Reduces right-of-way costs

#### **Disadvantages:**

- Obvious 1-foot reduction per travel lane width; total of 4-foot reduction
- May not meet drive expectation; especially coming from US 441 or Industrial Boulevard
- Perceived loss by drivers of “elbow room”

**Discussion:** Reducing the width of travel lanes from 12 feet to 11 feet will not impact traffic flow. The corridor has a very small percentage of truck traffic at less than 2% and the 11-foot travel lanes are widely used in urban freeways and rural areas. The reduction of 4 feet will reduce pavement and right-of-way costs while not impacting the need and purpose.

**Technical Review Comments:** None noted.

**Project Management Considerations:** None noted.

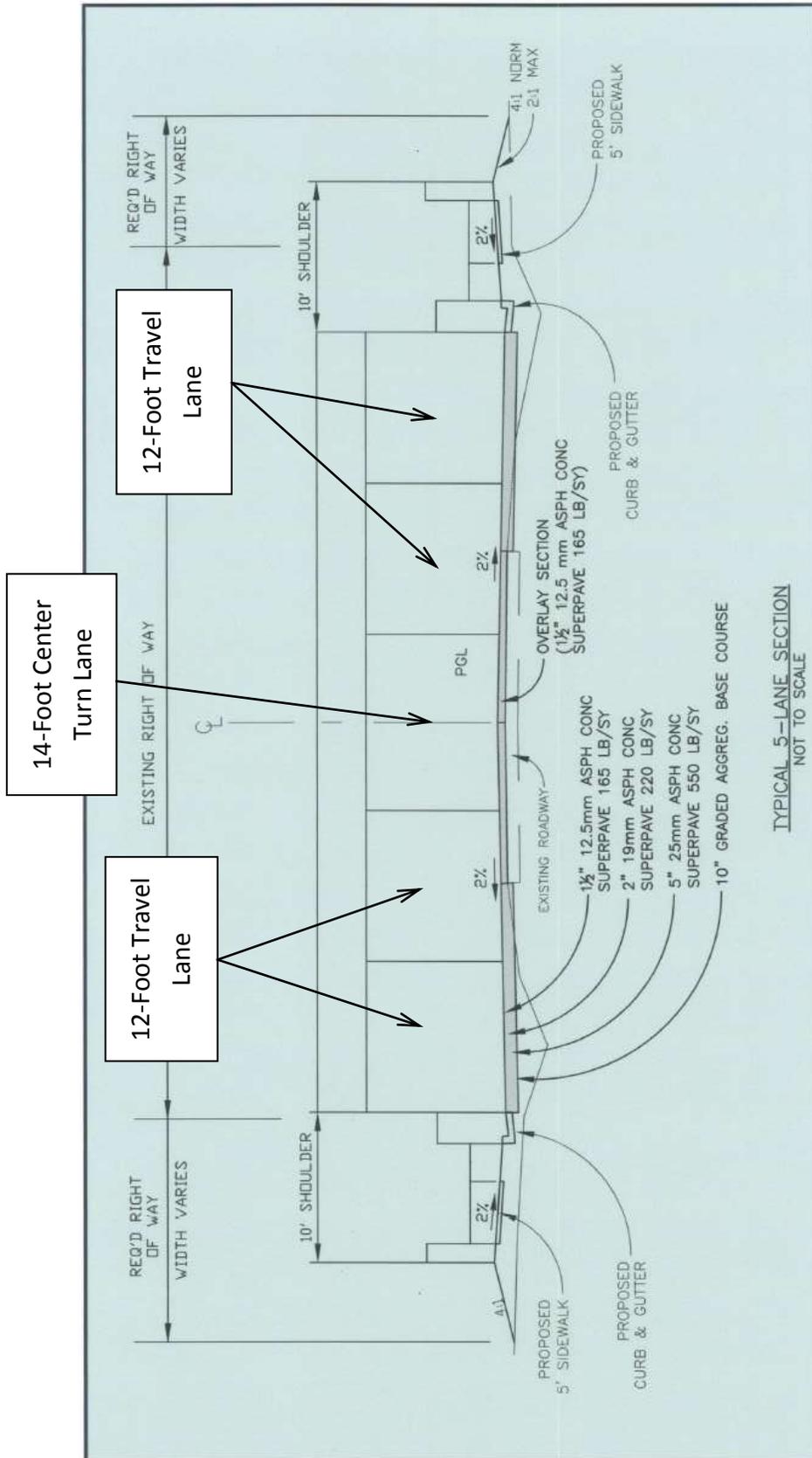
**Discussion of Schedule Impacts:** No significant change from the baseline concept.

**Discussion of Risk Impacts:** N/A

# VE ALTERNATIVE 6.0

## Use 11-foot travel lanes

### Baseline Concept Sketch:





## VE ALTERNATIVE 6.0

### Use 11-foot travel lanes

#### Assumptions and Calculations:

Pavement – 13,524 LF x 4 LF / 9 SF / SY = **6,011 SY**

Right-of-Way – Permanent Slope Easement – 4 LF x 13,524 LF = **54,096 SF**

∴ Heavy Commercial – **17,311 SF**

Light Commercial – **28,130 SF**

Outparcel/Prime Lot Commercial – **2,705 SF**

Small Residential – **5,951 SF**

#### Initial Costs:

CONSTRUCTION ELEMENT	Unit	BASELINE CONCEPT			ALTERNATIVE CONCEPT		
Description		Quantity	Cost/Unit	Total	Quantity	Cost/Unit	Total
<b>ROADWAY ITEMS</b>							
Pavement	SY	6,011	\$34.50	\$207,380			\$0
<b>ROADWAY SUBTOTAL</b>				<b>\$207,380</b>			<b>\$0</b>
<b>ROADWAY MARK-UP</b>	26.89%			<b>\$55,764</b>			<b>\$0</b>
<b>ROADWAY TOTAL</b>				<b>\$263,144</b>			<b>\$0</b>
<b>RIGHT-OF-WAY ITEMS</b>							
Heavy Commercial	SF	17,311	\$2.87	\$49,683			\$0
Light Commercial	SF	28,130	\$1.38	\$38,819			\$0
Outparcel/Prime Lot Commercial	SF	2,705	\$5.74	\$15,527			\$0
Small Residential	SF	5,951	\$0.58	\$3,452			\$0
<b>RIGHT-OF-WAY SUBTOTAL</b>				<b>\$107,480</b>			<b>\$0</b>
<b>RIGHT-OF-WAY MARK-UP</b>	150.56%			<b>\$161,822</b>			<b>\$0</b>
<b>RIGHT-OF-WAY TOTAL</b>				<b>\$161,822</b>			<b>\$0</b>
<b>TOTAL</b>				<b>\$424,966</b>			<b>\$0</b>
<b>TOTAL (Rounded)</b>				<b>\$425,000</b>			<b>\$0</b>
						<b>SAVINGS</b>	<b>\$425,000</b>

## VE ALTERNATIVE 7.0

### Use 12-foot center two-way turn lane

---

<b>Cost Savings:</b>	\$212,000
<b>LCC Savings:</b>	\$0

**Description of Baseline Concept:** The baseline concept uses a 14-foot center, two-way turn lane throughout the length of the corridor.

**Description of Alternative Concept:** This alternative suggests using a 12-foot center, two-way turn lane in lieu of 14-foot lane throughout the length of the project.

#### **Advantages:**

- Maintains capacity
- Due to low truck traffic volumes (<than 2%), a 12-foot, two-way turn lane is of sufficient width to negotiate left turn movements in concert with 12-foot travel lanes
- Reduces asphalt cost
- Reduces right-of-way costs
- Slightly simplifies construction as all lanes would be the same width

#### **Disadvantages:**

- Obvious 2-foot reduction of two-way turn lane
- Perceived loss by drivers of “elbow room”

**Discussion:** Reducing the width of the center turn lane from 14 feet to 12 feet will not impact traffic flow. The corridor has a very small percentage of truck traffic at less than 2% and a 12-foot center, two-way lane will easily accommodate left-turning movements. The width of the travel lanes do not change at 12 feet. The reduction of 2 feet will reduce pavement and right-of-way costs while not impacting the need and purpose.

**Technical Review Comments:** None noted.

**Project Management Considerations:** None noted.

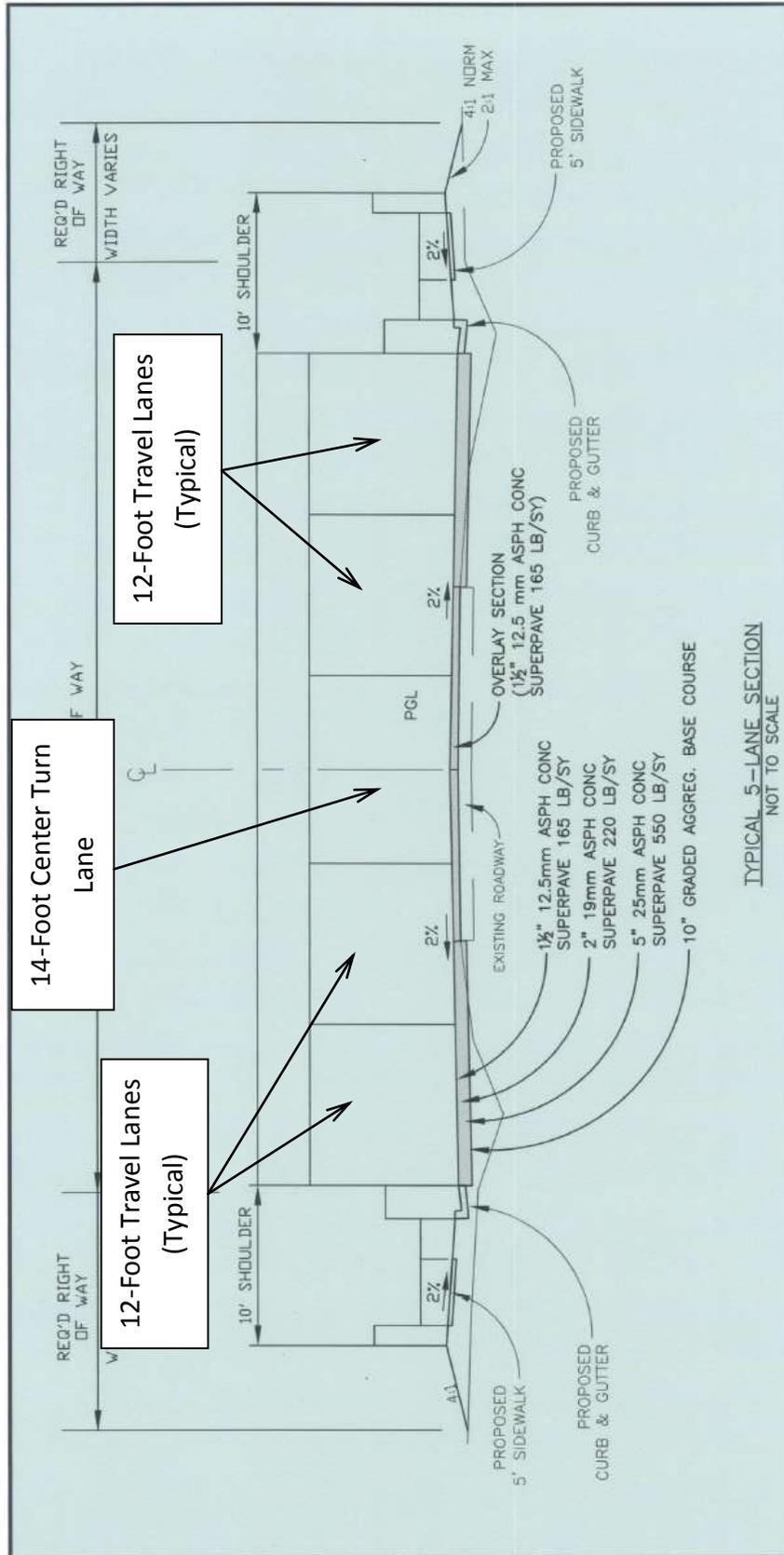
**Discussion of Schedule Impacts:** Although reducing the typical cross section by 2 feet, the construction schedule should not be impacted, as the overall construction disturbance will remain approximately the same.

**Discussion of Risk Impacts:** N/A

# VE ALTERNATIVE 7.0

## Use 12-foot center two-way turn lane

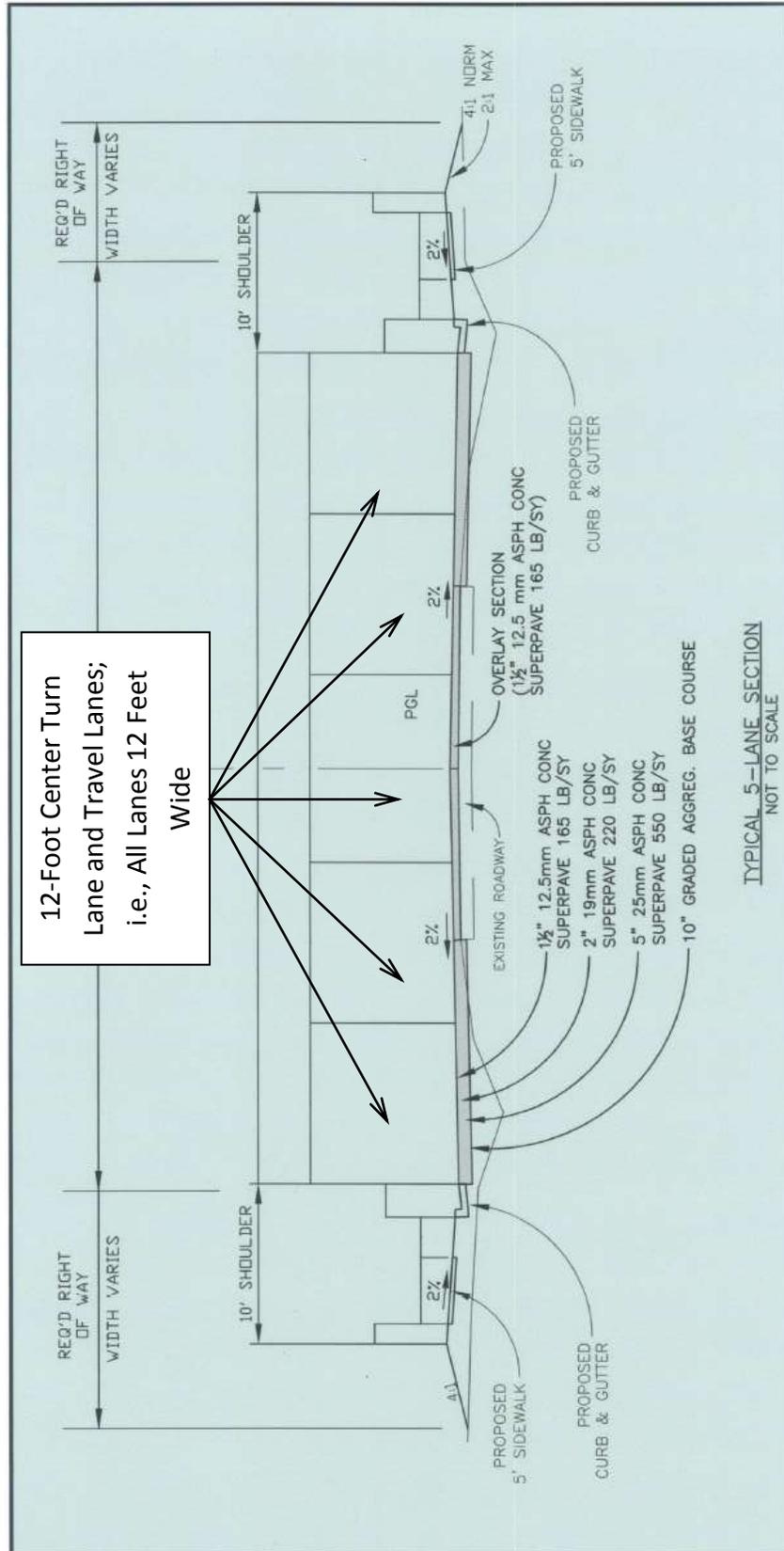
### Baseline Concept Sketch:



# VE ALTERNATIVE 7.0

## Use 12-foot center two-way turn lane

### VE Alternative Concept Sketch:



## VE ALTERNATIVE 7.0

### Use 12-foot center two-way turn lane

#### Assumptions and Calculations:

Pavement – 13,524 LF x 2 LF / 9 SF / SY = **3,005 SY**

Right-of-Way – Permanent Slope Easement – 2 LF x 13,524 LF = **27,048 SF**

∴ Heavy Commercial - **8,636 SF**

Light Commercial – **14,065 SF**

Outparcel/Prime Lot Commercial – **1,353 SF**

Small Residential – **2,975 SF**

#### Initial Costs:

CONSTRUCTION ELEMENT	Unit	BASELINE CONCEPT			ALTERNATIVE CONCEPT		
Description		Quantity	Cost/Unit	Total	Quantity	Cost/Unit	Total
<b>ROADWAY ITEMS</b>							
Pavement	SY	3,005	\$34.50	\$103,673			\$0
<b>ROADWAY SUBTOTAL</b>				<b>\$103,673</b>			<b>\$0</b>
<b>ROADWAY MARK-UP</b>	26.89%			<b>\$27,878</b>			<b>\$0</b>
<b>ROADWAY TOTAL</b>				<b>\$131,550</b>			<b>\$0</b>
<b>RIGHT-OF-WAY ITEMS</b>							
Heavy Commercial	SF	8,636	\$2.87	\$24,785			\$0
Light Commercial	SF	14,065	\$1.38	\$19,410			\$0
Outparcel/Prime Lot Commercial	SF	1,353	\$5.74	\$7,766			\$0
Small Residential	SF	2,975	\$0.58	\$1,726			\$0
<b>RIGHT-OF-WAY SUBTOTAL</b>				<b>\$53,687</b>			<b>\$0</b>
<b>RIGHT-OF-WAY MARK-UP</b>	150.56%			<b>\$80,831</b>			<b>\$0</b>
<b>RIGHT-OF-WAY TOTAL</b>				<b>\$80,831</b>			<b>\$0</b>
<b>TOTAL</b>				<b>\$212,381</b>			<b>\$0</b>
<b>TOTAL (Rounded)</b>				<b>\$212,000</b>			<b>\$0</b>
						<b>SAVINGS</b>	<b>\$212,000</b>

## VE ALTERNATIVE 8.0

### Use 11-foot travel lanes and 12-foot center, two-way turn Lane

---

<b>Cost Savings:</b>	\$648,000
<b>LCC Savings:</b>	\$0

**Description of Baseline Concept:** The baseline concept incorporates the use of 12-foot travel lanes and a 14-foot, two-way center turn lane.

**Description of Alternative Concept:** This alternative proposes to provide 11-foot travel lanes with a 12-foot, two-way center turn lane.

#### **Advantages:**

- Maintains capacity
- 11-foot travel lanes are more in-keeping with a local street cross section – especially taking into account a design speed of 40 mph with a signed/posted speed limit of 35 mph
- Due to low truck traffic volumes (<than 2%), a 12-foot, two-way turn lane is of sufficient width to negotiate left turn movements in concert with 11-foot travel lanes
- Reduces asphalt cost
- Reduces right-of-way costs

#### **Disadvantages:**

- Obvious 1-foot reduction per travel lane width; total of 4-foot reduction
- Obvious 2-foot reduction of two-way turn lane
- May not meet driver expectations; especially coming from US 441 or Industrial Boulevard
- Perceived loss by drivers of “elbow room”

**Discussion:** Reducing the width of the travel lanes from 12 feet to 11 feet, and the center, two-way turn lane from 14 feet to 12 feet will not impact traffic flow. The corridor has a very small percentage of truck traffic at less than 2% and the proposed lane widths will easily accommodate through traffic. This configuration is widely used in many urban areas and for local streets. In addition, a 12-foot center two-way turn lane will easily accommodate left-turning vehicles with an anticipated posted speed limit of 35 mph (design speed is 40 mph). The reduction of 6 feet will significantly reduce pavement and right-of-way costs while not impacting the need and purpose.

**Technical Review Comments:** None noted.

**Project Management Considerations:** None noted.

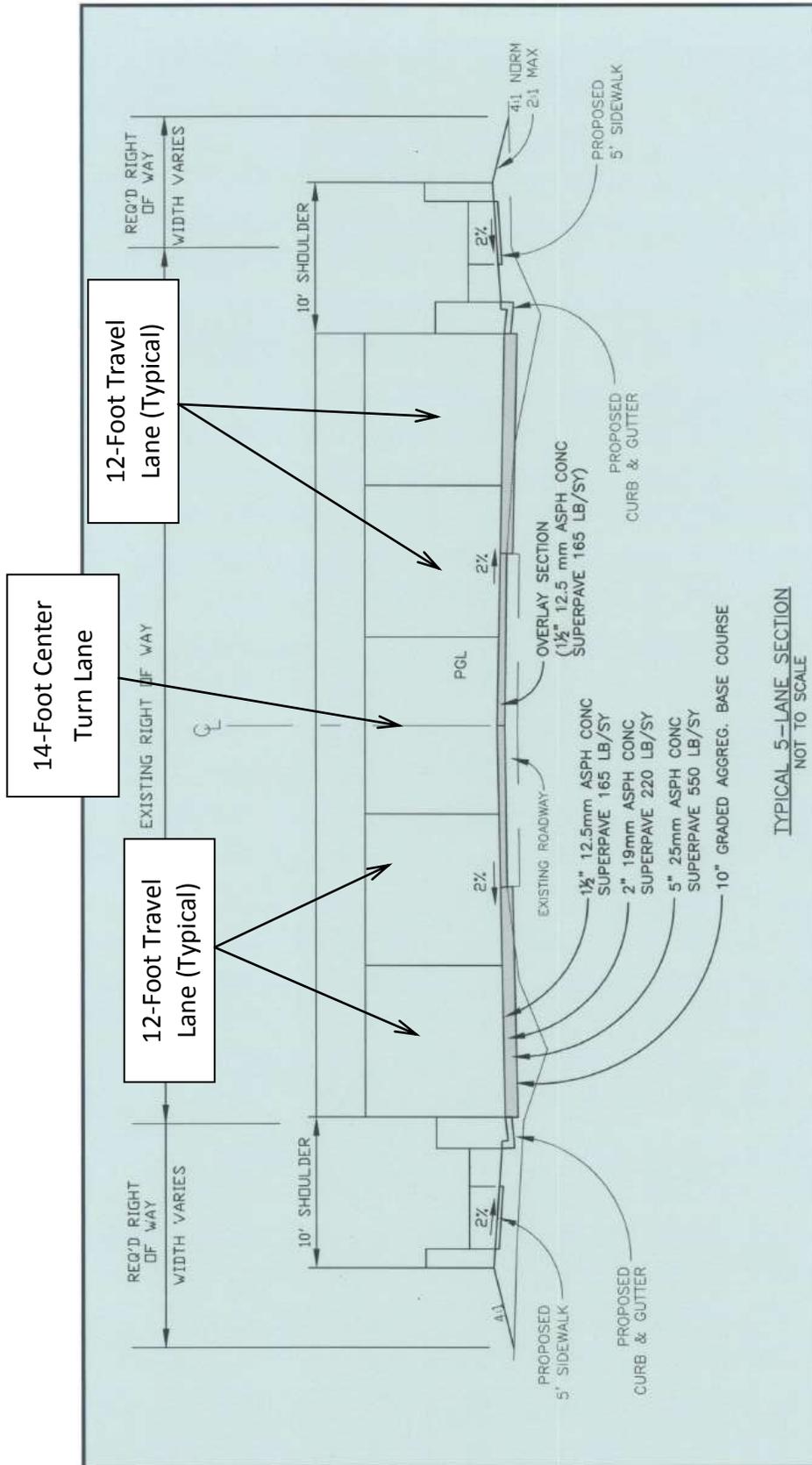
**Discussion of Schedule Impacts:** Although reducing the typical cross section by 6 feet, the construction schedule should not be impacted, as the overall construction disturbance will remain approximately the same.

**Discussion of Risk Impacts:** N/A

# VE ALTERNATIVE 8.0

Use 11-foot travel lanes and 12-foot center, two-way turn Lane

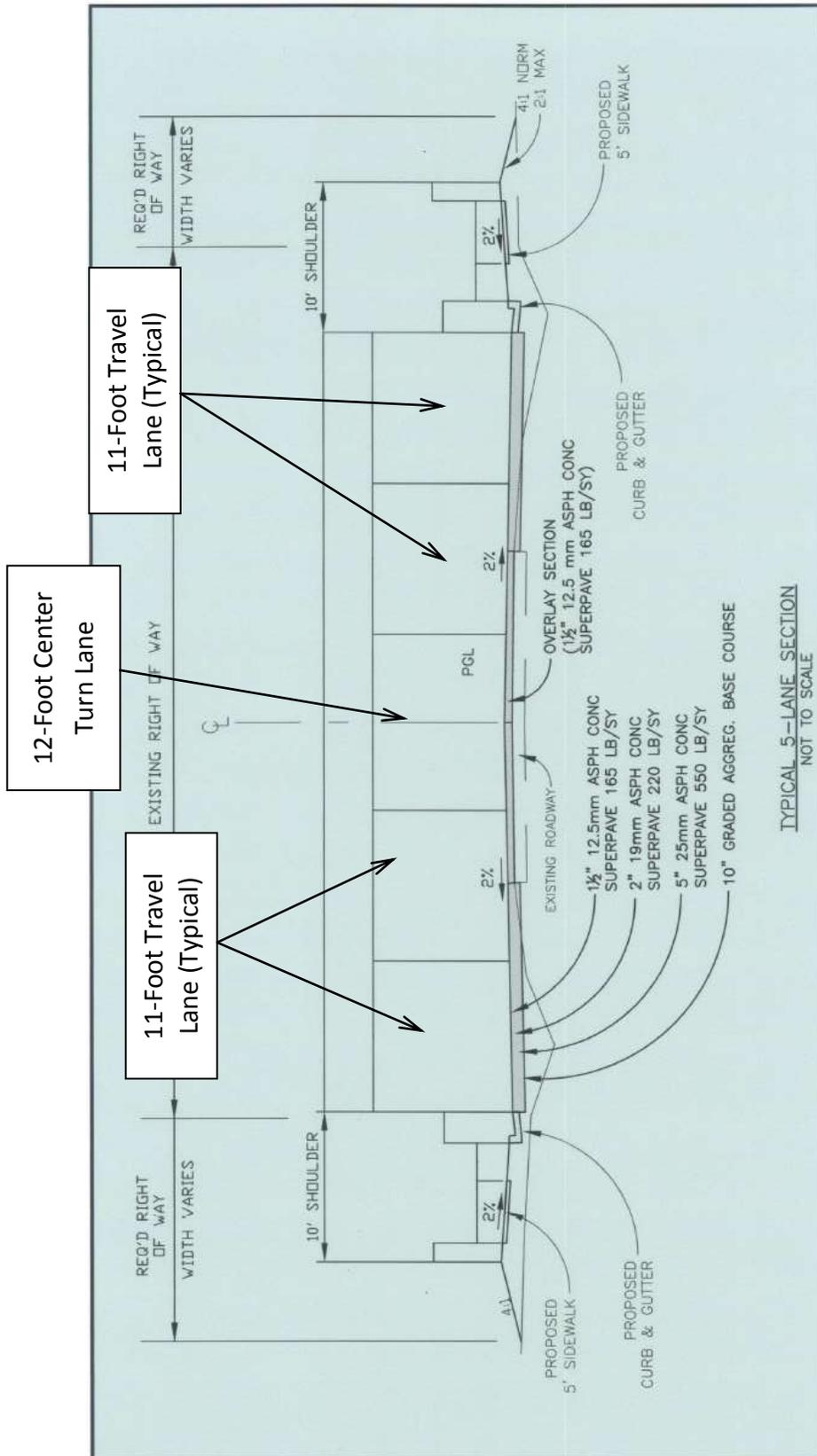
Baseline Concept Sketch:



# VE ALTERNATIVE 8.0

Use 11-foot travel lanes and 12-foot center, two-way turn Lane

VE Alternative Concept Sketch:



## VE ALTERNATIVE 8.0

### Use 11-foot travel lanes and 12-foot center, two-way turn Lane

#### Assumptions and Calculations:

Pavement – 13,524 LF x 6 LF / 9 SF / SY = **9,016 SY**

Right-of-Way – Permanent Slope Easement – 6 LF x 13,524 LF = **81,144 SF**

- ∴ Heavy Commercial - **27,095 SF**  
 Light Commercial – **44,030 SF**  
 Outparcel/Prime Lot Commercial – **4,233 SF**  
 Small Residential – **9,309 SF**

#### Initial Costs:

CONSTRUCTION ELEMENT Description	Unit	BASELINE CONCEPT			ALTERNATIVE CONCEPT		
		Quantity	Cost/Unit	Total	Quantity	Cost/Unit	Total
<b>ROADWAY ITEMS</b>							
Pavement	SY	9,016	\$35	\$311,052			\$0
<b>ROADWAY SUBTOTAL</b>				<b>\$311,052</b>			<b>\$0</b>
<b>ROADWAY MARK-UP</b>	26.89%			<b>\$83,642</b>			<b>\$0</b>
<b>ROADWAY TOTAL</b>				<b>\$394,694</b>			<b>\$0</b>
<b>RIGHT-OF-WAY ITEMS</b>							
Heavy Commercial	SF	27,095	\$2.87	\$77,763			\$0
Light Commercial	SF	44,030	\$1.38	\$60,761			\$0
Outparcel/Prime Lot Commercial	SF	4,233	\$5.74	\$24,297			\$0
Small Residential	SF	9,309	\$0.58	\$5,399			\$0
<b>RIGHT-OF-WAY SUBTOTAL</b>				<b>\$168,221</b>			<b>\$0</b>
<b>RIGHT-OF-WAY MARK-UP</b>	150.56%			<b>\$253,273</b>			<b>\$0</b>
<b>RIGHT-OF-WAY TOTAL</b>				<b>\$253,273</b>			<b>\$0</b>
<b>TOTAL</b>				<b>\$647,967</b>			<b>\$0</b>
<b>TOTAL (Rounded)</b>				<b>\$648,000</b>			<b>\$0</b>
						<b>SAVINGS</b>	<b>\$648,000</b>

## VE ALTERNATIVE 9.0

### Improve alignment of the US 80/Hillcrest Parkway Intersection

---

Cost Savings:	(\$10,000)
LCC Savings:	\$0

**Description of Baseline Concept:** The proposed intersection of Hillcrest Parkway at US 80 utilizes a 300-foot radius along Hillcrest Parkway across US 80 and a 600-foot radius along Hillcrest Parkway just east of the US 80 Intersection. The use of the 300-foot radius through the intersection currently warrants a Design Exception for Horizontal Alignment (300-foot radius) and for Superelevation Rate (elimination of superelevation through the intersection in order to match the cross profile grade of US 80 and not force significant reconstruction of the major US 80 route).

**Description of Alternative Concept:** The alternative concept proposes to increase the 300-foot radius along Hillcrest Parkway across US 80 to a 1,200-foot radius and to increase the 600-foot radius along Hillcrest Parkway just east of US 80 to a 900-foot radius.

#### Advantages:

- Eliminates need for Design Exception for Horizontal Alignment
- Improves line of sight approaching intersection from the east
- Improves lane alignment across the US 80 Intersection
- Minor reduction in right-of-way and temporary easement required from Carl Vinson Veterans Administration (VA) Hospital (Historic 4(f) property). Note: The *No Adverse Effect on the Carl Vinson VA Hospital* would not be changed.

#### Disadvantages:

- Minor increase in right-of-way requirement
- Does not eliminate need for Design Exception for Superelevation

**Discussion:** The existing Hillcrest Parkway alignment with US 80 requires the driver to negotiate a reverse curve section comprised of a 440-foot and 470-foot radius immediately east of the intersection. This alignment generates a skewed leg to the east of the intersection, which shortens the line of sight distance along Hillcrest Parkway departing and approaching the US 80 Intersection. In addition, there may be operational deficiencies with driver expectations for vehicles approaching US 80 from the east and west.

The baseline concept improves the intersection by increasing the westbound approach curve from a 470-foot radius to a 600-foot radius. The 440-foot radius is shifted west and decreased to a 300-foot radius. This 300-foot radius would require a design exception for failing to meet horizontal alignment design criteria of a minimum allowed 600-foot radius.

The alternative enhances the baseline concept by increasing the westbound approach curve from a 600-foot radius to a 900-foot radius and further increasing the line of sight along Hillcrest Parkway in the vicinity of Shamrock Drive and the Dublin High School entrance to the north of Hillcrest Parkway, and four commercial entrance driveways along the south side of Hillcrest Parkway. In addition, the 300-foot radius that is located at the intersection of Hillcrest Parkway and US 80 has been increased to a 1,200-foot radius, which provides a flatter transition across the intersection and improves line of

## VE ALTERNATIVE 9.0

### Improve alignment of the US 80/Hillcrest Parkway Intersection

---

sight and driver expectancy in the overall intersection operations. A design exception would not be required for the horizontal alignment.

**Technical Review Comments:** None noted.

**Project Management Considerations:** None noted.

**Discussion of Schedule Impacts:** No significant change from the baseline concept.

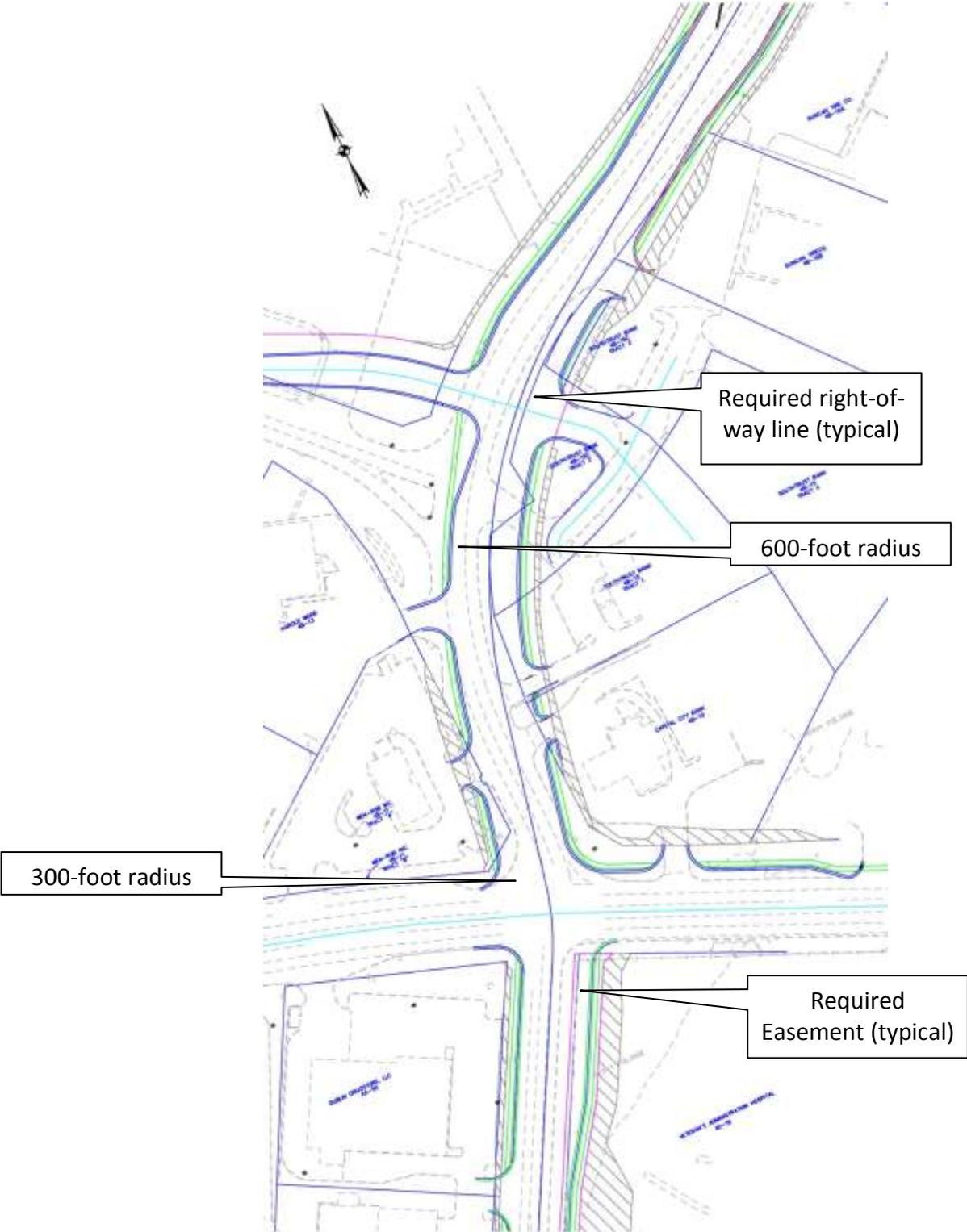
**Discussion of Risk Impacts:** N/A

**VE ALTERNATIVE 9.0**

**Improve alignment of the US 80/Hillcrest Parkway Intersection**

---

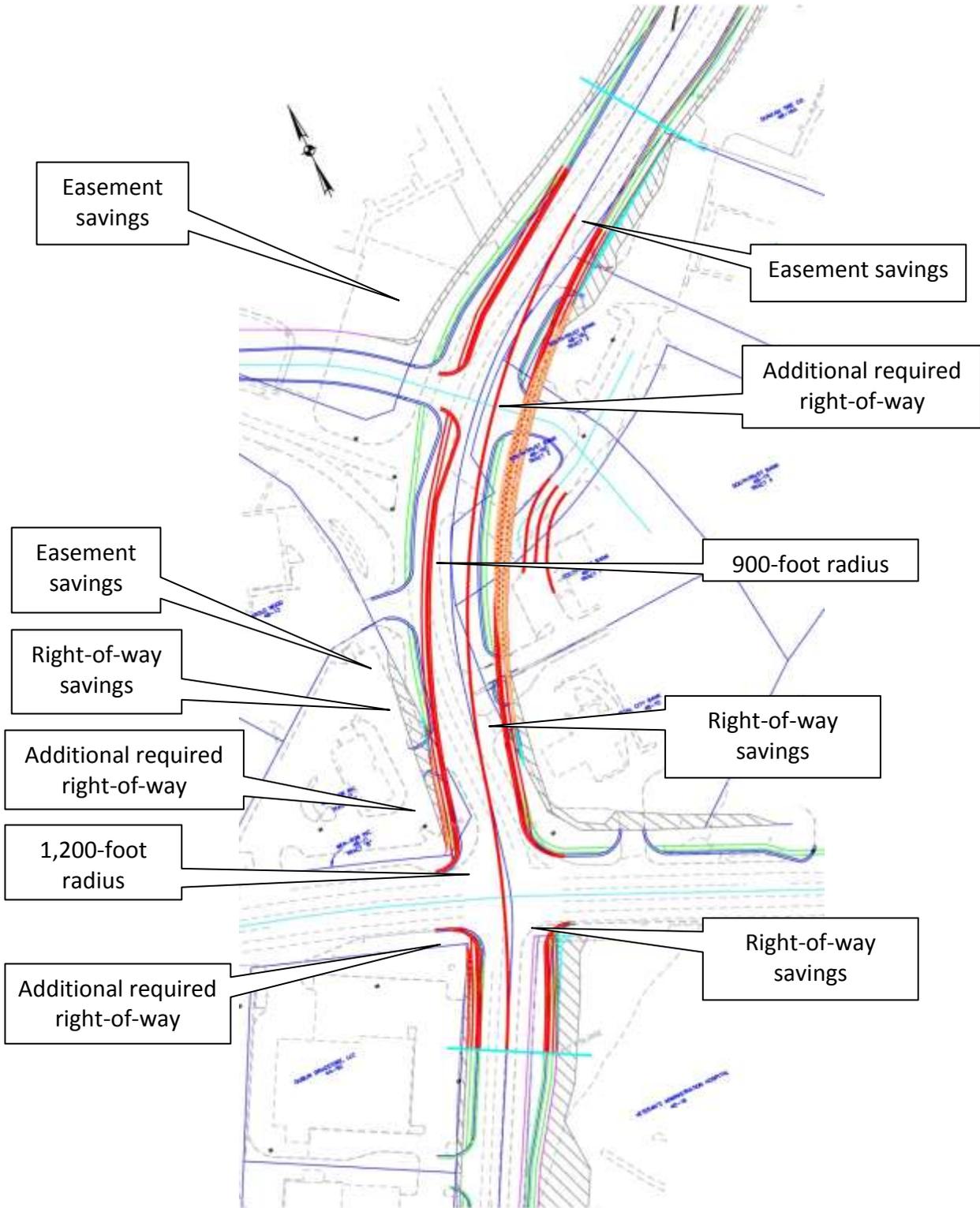
**Baseline Concept Sketch:**



# VE ALTERNATIVE 9.0

## Improve alignment of the US 80/Hillcrest Parkway Intersection

### VE Alternative Concept Sketch:



## VE ALTERNATIVE 9.0

### Improve alignment of the US 80/Hillcrest Parkway Intersection

#### Assumptions and Calculations:

The alternative alignment would revise the baseline concept centerline from approximately Station 44+75 to Station 56+00. All areas of right-of-way and easements required from Station 44+75 to Station 56+00 are measured from the 007413main.dgn file provided by the design consultant.

#### Baseline concept:

Right-of-Way (measured) = **30,050 SF**

Easement (measured) = **20,260 SF**

#### Alternative:

Right-of-Way (measured) = Baseline 30,050 SF

Savings 1,100 SF

Additional 5,880 SF

Net area **34,830 SF**

Easement (measured) = Baseline 20,260 SF

Savings 6,770 SF

Additional 0 SF

Net area **13,490 SF**

#### Initial Costs:

CONSTRUCTION ELEMENT Description	Unit	BASELINE CONCEPT			ALTERNATIVE CONCEPT		
		Quantity	Cost/Unit	Total	Quantity	Cost/Unit	Total
<b>RIGHT-OF-WAY ITEMS</b>							
Land (Fee Simple) - Light Commercial	SF	30,050	\$2.75	\$82,638	34,830	\$2.75	\$95,783
Permanent Slope Easement - Light Commercial	SF	20,260	\$1.38	\$27,959	13,490	\$1.38	\$18,616
<b>RIGHT-OF-WAY SUBTOTAL</b>				<b>\$110,596</b>			<b>\$114,399</b>
<b>RIGHT-OF-WAY MARK-UP</b>	150.56%			<b>\$166,514</b>			<b>\$172,239</b>
<b>RIGHT-OF-WAY TOTAL</b>				<b>\$277,110</b>			<b>\$286,637</b>
<b>TOTAL</b>				<b>\$277,110</b>			<b>\$286,637</b>
<b>TOTAL (Rounded)</b>				<b>\$277,000</b>			<b>\$287,000</b>
						<b>SAVINGS</b>	<b>(\$10,000)</b>

## VE ALTERNATIVE 10.0

### Eliminate right turn lane at the Hillcrest Parkway/Industrial Boulevard Intersection

---

**Cost Savings:** \$18,000

**LCC Savings:** \$0

**Description of Baseline Concept:** The baseline concept provides for a right turn lane at the Hillcrest Parkway/Industrial Boulevard Intersection.

**Description of Alternative Concept:** Eliminate the dedicated right turn on Hillcrest Parkway; i.e., the northern-most eastbound lane on Hillcrest Parkway to northbound Industrial Boulevard.

**Advantages:**

- The outside (north) lane on Hillcrest Parkway can be used as the right-turn-only lane
- Reduces required right-of-way
- Reduces cost

**Disadvantages:**

- None apparent

**Discussion:** Elimination of the dedicated right turn lane at the Hillcrest Parkway/Industrial Boulevard Interchange is not required as there are two through eastbound lanes on Hillcrest Parkway at the intersection (one can serve as the right turn lane) and one through lane on Fairview Park Drive. It is noted that eastbound traffic on Hillcrest Parkway can only access Fairview Park Drive (the continuation of Hillcrest Parkway just east of the intersection) via one through lane.

**Technical Review Comments:** None noted.

**Project Management Considerations:** None noted.

**Discussion of Schedule Impacts:** No significant change from the baseline concept.

**Discussion of Risk Impacts:** N/A

**VE ALTERNATIVE 10.0**

**Eliminate right turn lane at the Hillcrest Parkway/Industrial Boulevard Intersection**

**Baseline Concept Sketch:**



**VE ALTERNATIVE 10.0**

**Eliminate right turn lane at the Hillcrest Parkway/Industrial Boulevard Intersection**

VE Alternative Concept Sketch:



## VE ALTERNATIVE 10.0

### Eliminate right turn lane at the Hillcrest Parkway/Industrial Boulevard Intersection

#### Assumptions and Calculations:

Pavement – 220 LF x 12 LF / 9 SF / SY = **293 SY**

Solid Traffic Stripe – **220 LF**

Right-of-way:

Permanent Slope Easement for Light Commercial - 12 LF x 220 LF = **2,640 SF**

#### Initial Costs:

CONSTRUCTION ELEMENT	Unit	BASELINE CONCEPT			ALTERNATIVE CONCEPT		
Description		Quantity	Cost/Unit	Total	Quantity	Cost/Unit	Total
<b>ROADWAY ITEMS</b>							
Pavement	SY	293	\$34.50	\$10,109			\$0
Solid Traffic Stripe	LF	220	\$0.18	\$40			\$0
<b>ROADWAY SUBTOTAL</b>				<b>\$10,148</b>			<b>\$0</b>
<b>ROADWAY MARK-UP</b>	26.89%			<b>\$2,729</b>			<b>\$0</b>
<b>ROADWAY TOTAL</b>				<b>\$12,877</b>			<b>\$0</b>
<b>RIGHT-OF-WAY ITEMS</b>							
Permanent Slope Easement	SY	2,640	\$1.38	\$3,643			\$0
<b>RIGHT-OF-WAY SUBTOTAL</b>				<b>\$3,643</b>			<b>\$0</b>
<b>RIGHT-OF-WAY MARK-UP</b>	150.56%			<b>\$5,485</b>			<b>\$0</b>
<b>RIGHT-OF-WAY TOTAL</b>				<b>\$5,485</b>			<b>\$0</b>
<b>TOTAL</b>				<b>\$18,362</b>			<b>\$0</b>
<b>TOTAL (Rounded)</b>				<b>\$18,000</b>			<b>\$0</b>
						<b>SAVINGS</b>	<b>\$18,000</b>

# PROJECT INFORMATION

---

# PROJECT INFORMATION

---

## BACKGROUND

Hillcrest Parkway was originally constructed by GDOT circa 1973 as a dirt road paving project needed to alleviate congestion on the local collectors, as well as to provide access to US 441 and US 80. In 2002, a traffic study was performed to determine the need for intersection and roadway improvements in the Dublin area, which was centered on the Industrial Boulevard and Hillcrest Parkway areas. Hillcrest parkway was identified in the study as a potential candidate for improvements in the Dublin roadway network. A conceptual document was developed by the City of Dublin for the PNRC for the widening of Hillcrest Parkway. The PNRC reviewed the findings and recommended the project for inclusion in the State Construction Work Program in 2005.

## PROJECT DESCRIPTION

Project CSSTP-0007-00(413) is the proposed widening of Hillcrest Parkway [City Street (CS) 987] from Industrial Boulevard (CR 493) to US 441/State Route (SR) 29 in the City of Dublin, Laurens County, Georgia. The project will accommodate anticipated residential and commercial growth, providing greater mobility between schools and hospitals. The proposed length is approximately 2.5 miles. A 1,260-foot area surrounding the Brookhaven Drive/Hillcrest Parkway Intersection has been excluded from the project due to prior reconstruction. The proposed typical section for the project includes four 12-foot travel lanes with a 14-foot flush median to serve as a two-way turn lane and 10-foot shoulders (composed of 2.5-foot curb and gutter, 2-foot grassed area, 5-foot sidewalks, and 0.5-foot outside grassed area).

## INFORMATION PROVIDED TO THE VE TEAM

The following project documents were provided to the VE team for their use during the study:

- VE Study Constraints and Commitments Checklist
- Project Concept Report (PCR), CSSTP-0007-00(413), PI No. 0007413, Laurens County
- Need and Purpose Statement as Attachment 1 to PCR
- Cost Estimates: Construction including Engineering and Inspection; Fuel and Asphalt Adjustment Forms; Right-of-Way; Utilities; and Environmental Mitigation as Attachment 2 to PCR
- Typical Sections as Attachment 3 to PCR
- Accident Summaries as Attachment 4 to PCR
- Updated Traffic Diagrams as Attachment 5 to PCR
- Preliminary Pavement Design as Attachment 7 to PCR
- Kickoff Meeting and Concept Team Meeting Minutes as Attachments 8 and 9 to PCR
- Concept Relocation Study as Attachment 10 to PCR

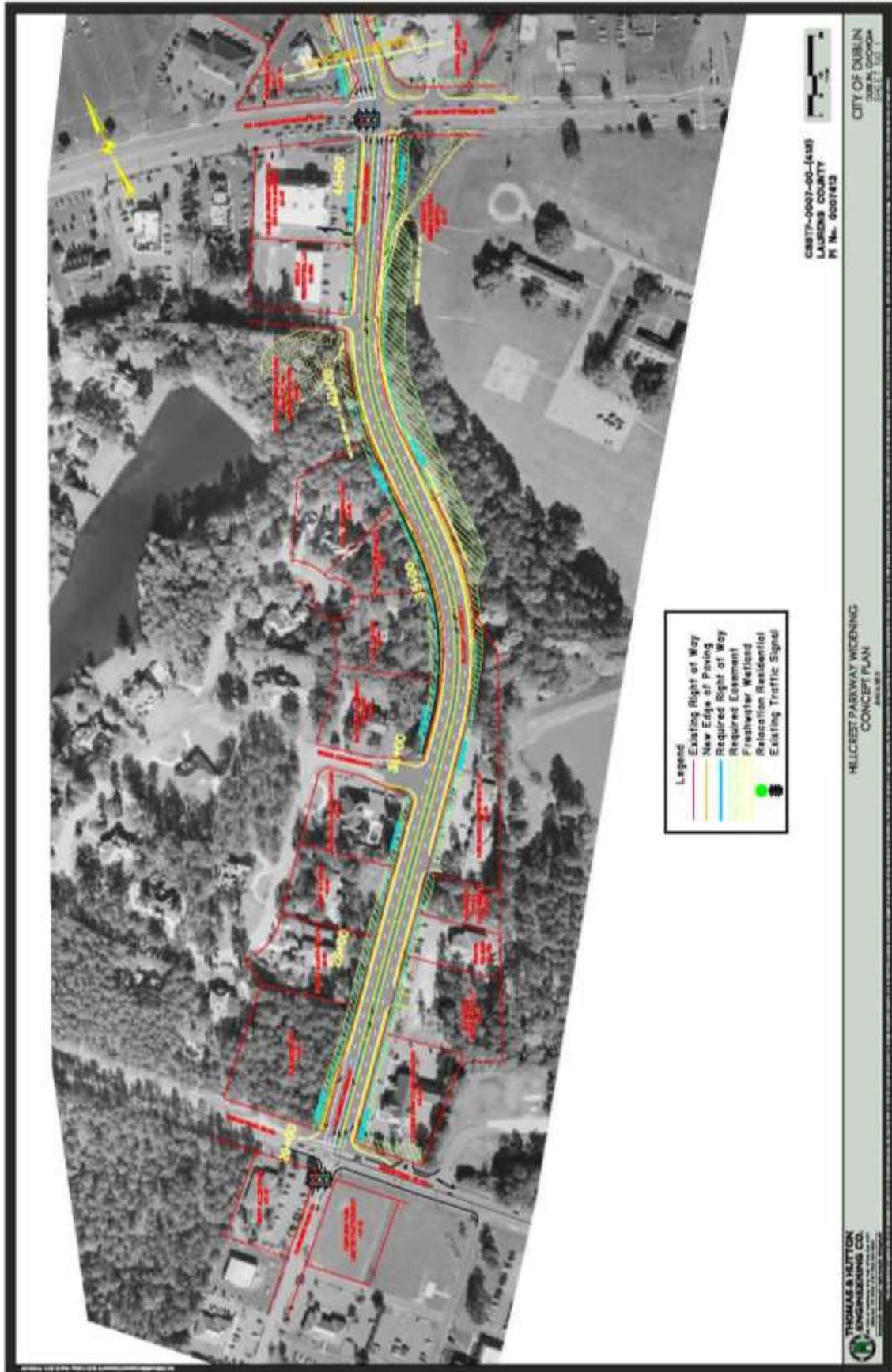
- Public Information Open House Documentation as Attachment 11 to PCR
- Benefit Cost Analysis as Attachment 12 to PCR
- Concept Plans/Schematics; Attachment 13 to PCR
- Soil Survey Summary Report dated October 21, 2008
- Report of Additional Investigation for Hazardous Waste & USTs [Underground Storage Tanks] dated March 6, 2008
- Draft Environmental Assessment undated
- Noise Assessment Report undated
- Report of Air Quality Assessment dated November 6, 2007
- Assessment of Effects (Findings of No Adverse and No Effects) dated September 28, 2010
- Assessment of Ecological Resources Report dated March 23, 2011
- Traffic Study dated May 2007

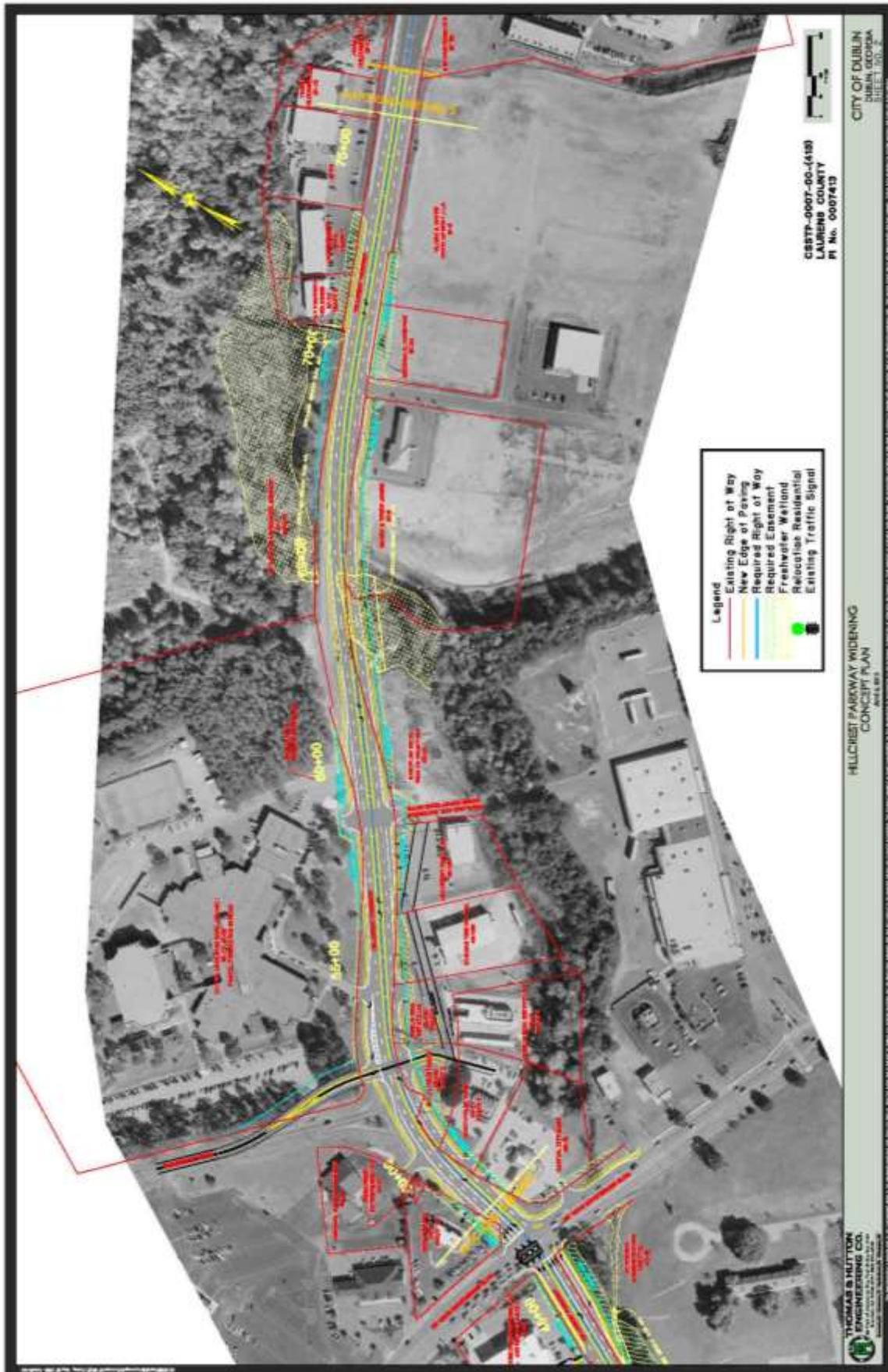
## **PROJECT DRAWINGS**

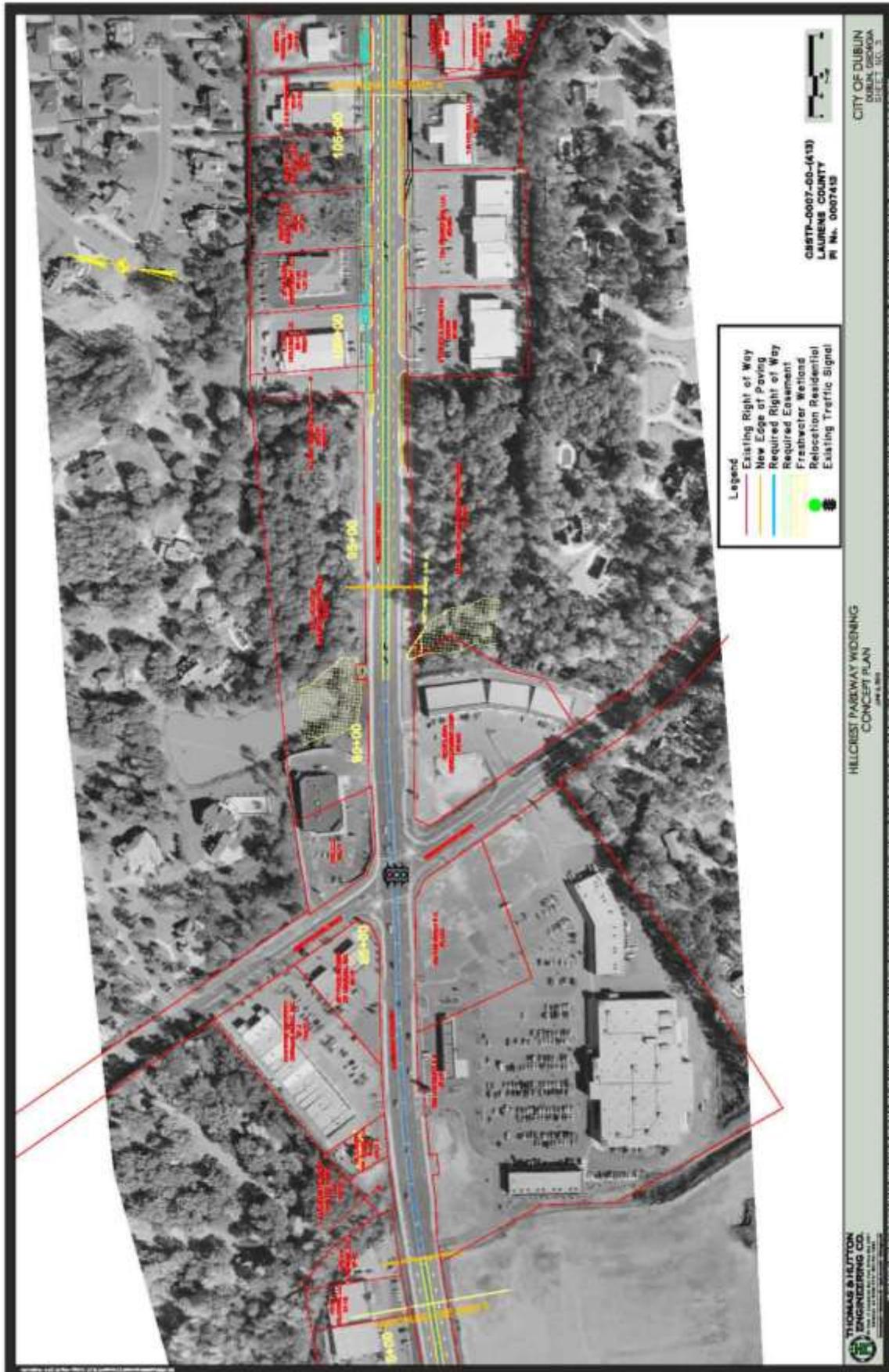
Selected sheets from the project drawings are included on the following pages.

## **PROJECT COST ESTIMATE**

The project cost estimate that was used as the baseline for the VE study is included at the end of this section.







- Legend**
- Existing Right of Way
  - New Edge of Paving
  - Required Right of Way
  - Required Easement
  - Fracturer Wetland
  - Relocation Residential
  - Existing Traffic Signal

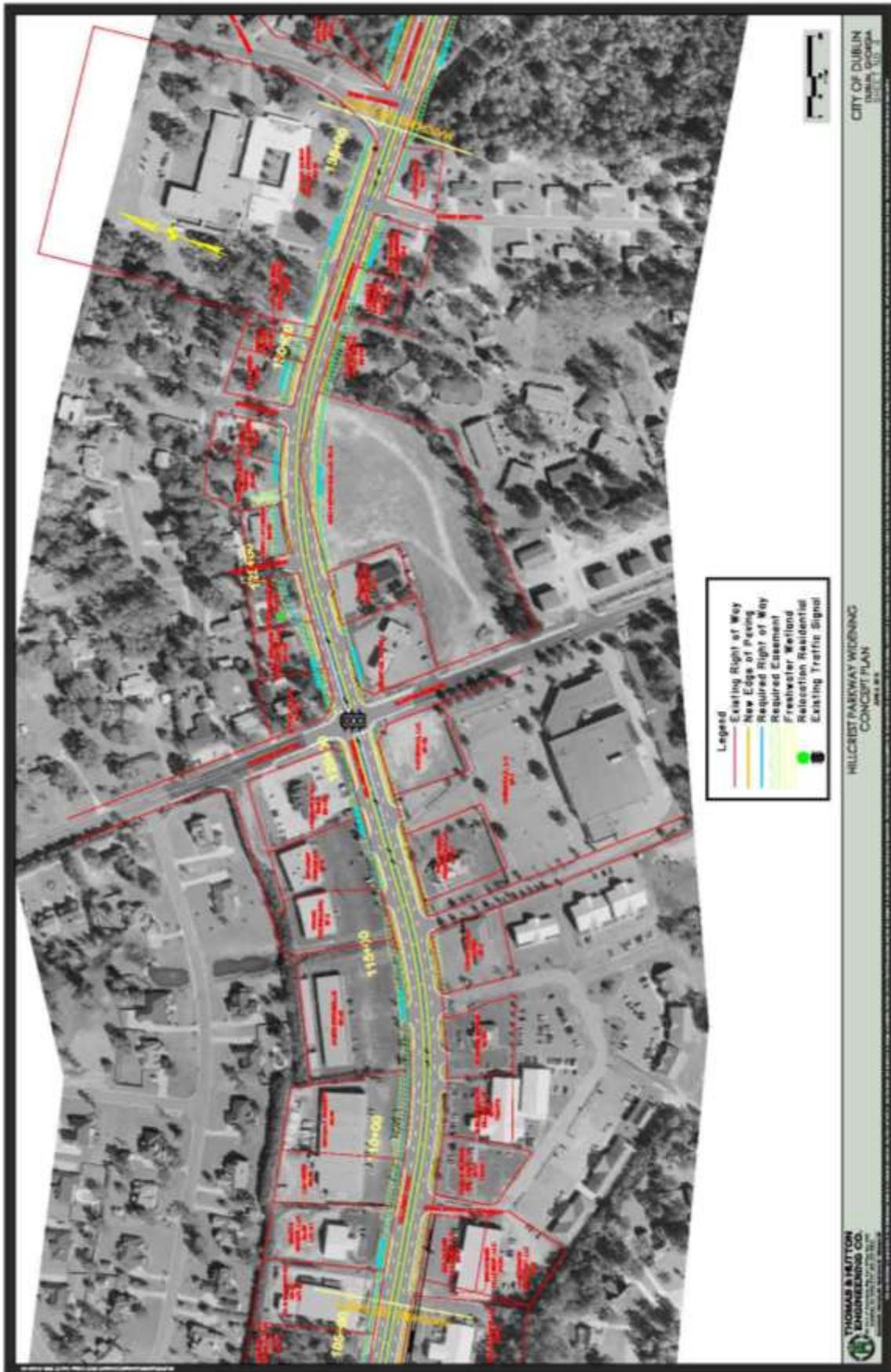
CS87P-0007-00-(413)  
 LAURENS COUNTY  
 PI No. 0007413

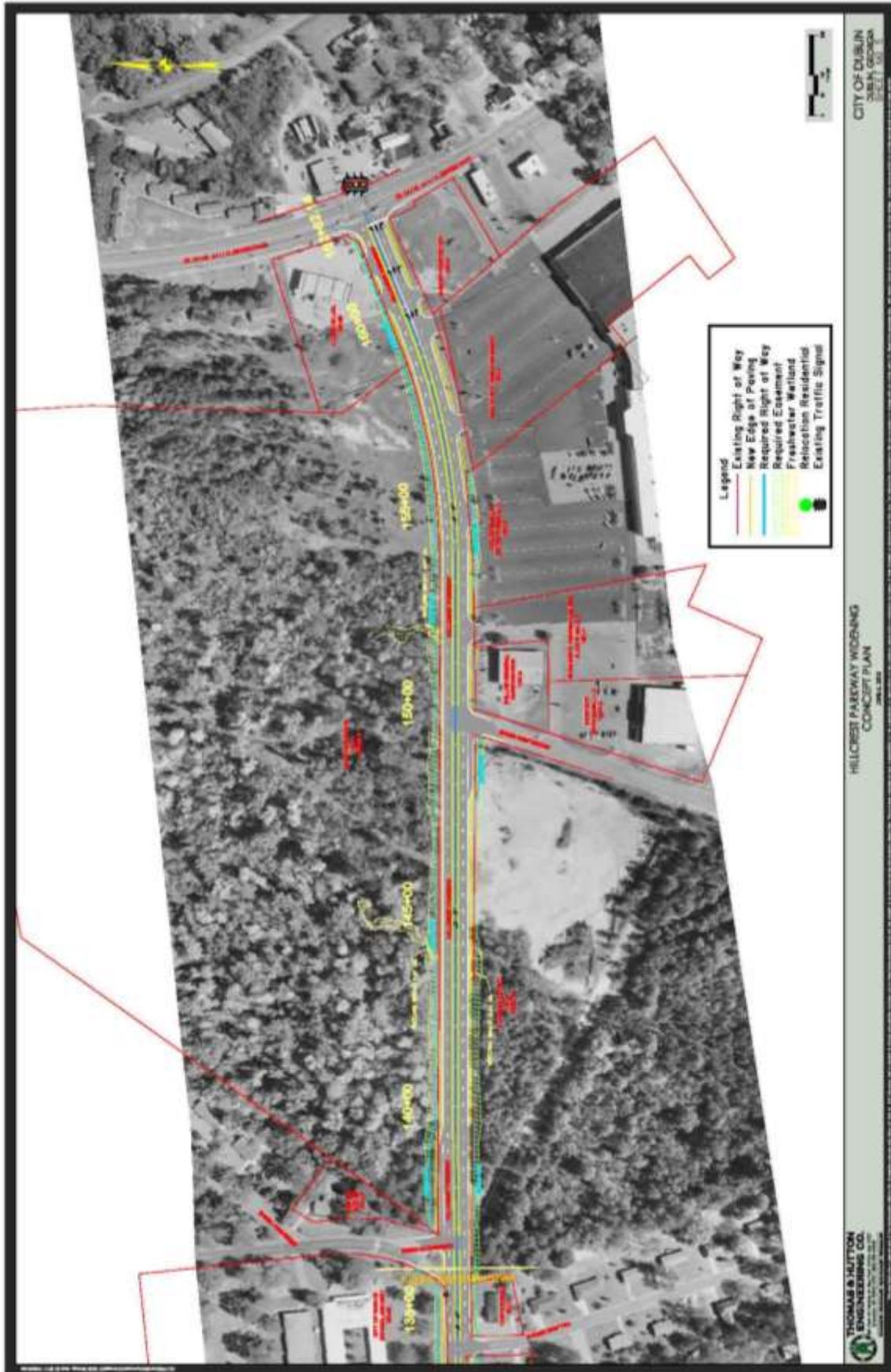


CITY OF DUBLIN  
 DUBLIN, GEORGIA  
 SHEET 3

HILLCREST PARKWAY WIDENING  
 CONCEPT PLAN









## DEPARTMENT OF TRANSPORTATION STATE OF GEORGIA

-----  
INTERDEPARTMENT CORRESPONDENCE

**FILE PROJECT No.**  ,  **OFFICE**

**DATE**

**P.I. No.**

**FROM**

**TO** Ronald E. Wishon, Project Review Engineer

**SUBJECT REVISIONS TO PROGRAMMED COSTS**

**PROJECT MANAGER**

**MNGT LET DATE**

**MNGT R/W DATE**

**PROGRAMMED COST (TPro W/OUT INFLATION)**

**LAST ESTIMATE UPDATE**

CONSTRUCTION \$

DATE

RIGHT OF WAY \$

DATE

UTILITIES \$

DATE

**REVISED COST ESTIMATES**

CONSTRUCTION\* \$

RIGHT OF WAY \$

UTILITIES \$

\* Costs contain  % Engineering and Inspection

**REASON FOR COST INCREASE**

Update of quantities and unit prices.

Revised: September 27, 2010

**CONTINGENCY SUMMARY**

Construction Cost Estimate:	\$ <input type="text" value="6,383,007.49"/>	(Base Estimate)
Engineering and Inspection:	\$ <input type="text" value="319,150.37"/>	(Base Estimate x <input type="text" value="5"/> %)
Total Fuel Adjustment	\$ <input type="text" value="397,862.42"/>	(From attached worksheet)
Total Liquid AC Adjustment	\$ <input type="text" value="743,927.10"/>	(From attached worksheet)
<b>Construction Total:</b>	<b>\$ <input type="text" value="7,843,947.38"/></b>	

**REIMBURSABLE UTILITY COST**

Utility Owner	Reimbursable Cost
<input type="text" value="None"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>

Attachments

STATE HIGHWAY AGENCY

DATE : 06/20/2011  
PAGE : 1

JOB DETAIL ESTIMATE

JOB NUMBER : 0007413 RHD  
SPEC YEAR: 01  
DESCRIPTION: WIDENING OF HILLCREST PARKWAY/ CS 987 FROM CR 493/  
INDUSTRIAL BLVD TO US 441/SR 31

ITEMS FOR JOB 0007413\_RHD

LINE ITEM	ALT	UNITS	DESCRIPTION	QUANTITY	PRICE	AMOUNT
0005		LS	TRAFFIC CONTROL - CSSTP-0007-00(413)	1.000	350000.00	350000.00
0010		CY	FOUND EXFILL MATL, TP II	300.000	45.63	13691.22
0015		LS	GRADING COMPLETE - CSSTP-0007-00(413)	1.000	750000.00	750000.00
0020		TN	GR AGGR BASE CRS, INCL MATL	35000.000	16.94	593104.40
0025		TN	RECYL AC LEVELING, INC BM&HL	5365.000	65.67	352333.45
0030		TN	RECYL AC 25MM SP, GP1/2, BM&HL	5981.000	64.42	385333.04
0039		TN	RECYL AC 12.5MM SP, GP2, BM&HL	3590.000	72.52	260371.50
0040		TN	RECYL AC 19 MM SP, GP 1 OR 2 , INC BM&HL	4785.000	69.15	330918.02
0045		GL	BITUM TACK COAT	5500.000	2.09	11538.78
0050		SY	MILL ASPH CONC PVMT, VARB DEPTH	65000.000	1.22	79669.85
0055		SY	CONC SIDEWALK, 4 IN	15000.000	24.29	364483.20
0060		SY	CONC MEDIAN, 6 IN	125.000	45.46	5683.60
0065		LF	CONC CURB & GUTTER/ 8*X24*TP2	1500.000	10.84	16269.32
0070		LF	CONC CURB & GUTTER/ 8*X30*TP2	27000.000	13.32	359825.76
0075		LF	PVMT REF FAB STRIPS, TP2, 18 INCH WIDTH	20000.000	1.82	36592.40
0080		LF	CONCRETE BARRIER	300.000	44.98	13494.30
0084		CY	CLASS A CONCRETE	500.000	369.70	184850.83
0085		CY	CL B CONC, RET WALL	600.000	524.93	314960.80
0090		CY	CL A CONC, INCL REINF STEEL	500.000	947.16	473583.34
0095		LB	BAR REINF STEEL	7500.000	0.78	5908.80
0100		LF	STM DR PIPE 15", H 1-10	4200.000	23.71	99586.07
0110		LF	STM DR PIPE 18", H 1-10	4350.000	27.84	121113.92
0115		LF	STM DR PIPE 24", H 1-10	2500.000	34.37	85937.15
0120		LF	STM DR PIPE 30", H 1-10	1000.000	42.40	42401.28
0124		LF	STM DR PIPE 36", H 1-10	150.000	59.40	8911.22
0125		LF	STM DR PIPE 42", H 1-10	500.000	57.86	28933.72
0130		EA	SAFETY END SECTION 24", STD, 4:1	6.000	866.05	5196.32
0135		EA	SAFETY END SECTION 30", STD, 4:1	4.000	1550.85	6203.43
0140		EA	FLARED END SECT 15 IN, ST DR	15.000	430.47	6457.17
0145		EA	FLARED END SECT 18 IN, ST DR	15.000	475.84	7137.73
0146		EA	FLARED END SECT 24 IN, ST DR	4.000	556.31	2225.27
0147		EA	FLARED END SECT 30 IN, ST DR	2.000	668.81	1337.62
0148		EA	FLARED END SECT 36 IN, ST DR	2.000	893.08	1786.16
0149		EA	FLARED END SECT 42 IN, ST DR	2.000	1364.57	2729.15
0150		SY	STM DUMPED RIP RAP, TP 3, 12"	1500.000	32.49	48748.79
0155		SY	PLASTIC FILTER FABRIC	1500.000	3.58	5378.31

0160	634-1200	EA	RIGHT OF WAY MARKERS	210.000	85.05	17860.65
0165	641-1200	LF	GUARDRAIL, TP W	1000.000	16.50	16503.50
0170	641-5001	EA	GUARDRAIL ANCHORAGE, TP 1	8.000	621.71	4973.74
0174	641-5012	EA	GUARDRAIL ANCHORAGE, TP 12	8.000	1832.64	14661.15
0179	668-1100	EA	CATCH BASIN, GP 1	65.000	2280.49	148232.43
0180	668-2100	EA	DROP INLET, GP 1	65.000	1670.66	108593.16
0185	668-4300	EA	STORM SEW MANHOLE, TP 1	20.000	1758.60	35172.09
0190	163-0232	AC	TEMPORARY GRASSING	3.000	50.02	150.08



0400	647-2140	EA	CSSTP-0007-00(413)	4.000	1181.86	4727.46
0405	647-2150	EA	PULL BOX, PB-4	3.000	1479.76	4439.30
0410	935-3101	EA	PULL BOX, PB-5	2.000	477.77	955.56
0415	935-3401	EA	FIBER OPTIC CLOSURE, UNDRGRD, 6 FIBER	1.000	380.00	380.00
			FBR OPTIC CLOSURE, FDC(RACK MTD), 6 FBR			
0420	935-4010	EA	FIBER OPTIC SPLICE, FUSION	4.000	69.93	279.73
0425	935-5050	EA	FIBER OPTIC PATCH CORD, SM	2.000	110.48	220.96

STATE HIGHWAY AGENCY

DATE : 06/20/2011  
PAGE : 3

JOB DETAIL ESTIMATE

ITEM	EA	LS	EXT TRNSCVR, DRP&RPT, 1300MM, (SIGNAL JOBS)	2.000	1361.00	2722.00
0430 935-6561						
0435 935-8000			TESTING	1.000	2000.00	2000.00
ITEM TOTAL						6383007.49
INFLATED ITEM TOTAL						6383007.49

TOTALS FOR JOB 0007413\_RHD

ESTIMATED COST: 6382518.85  
 CONTINGENCY PERCENT ( 0.0 ) : 0.00  
 ESTIMATED TOTAL: 6382518.85

NOTE: The item totals include all alternate items. The estimated totals include only the low cost alternate items.

**COST ESTIMATE ADJUSTMENTS**  
**0007413**

Construction Cost Estimate:	<b>\$6,383,007.49</b>		(Base Estimate)
Engineering and Inspection:	<b>\$319,150.37</b>	5%	(Base Estimate x 5 %)
Construction Contingency:	<b>\$255,320.30</b>	4%	(Base Estimate x 4 %)
Fuel Adjustment			
Diesel	\$303,572.78		(From attached worksheet)
Unleaded	\$94,289.64		(From attached worksheet)
Total Fuel Adjustment	<b>\$397,862.42</b>		
Liquid AC Adjustment (Tack)	\$17,405.46		(From attached worksheet)
Liquid AC Adjustment (Asphalt)	\$726,521.64		(From attached worksheet)
Total Liquid AC Adjustment (Asphalt)	<b>\$743,927.10</b>		(From attached worksheet)
<b>Construction Total:</b>	<b>\$8,099,267.68</b>		
Utility Cost Estimate:	\$964,205.00	Locals	
Utility Contingency:	\$289,261.50	30%	Locals
<b>Utility Total:</b>	<b>\$1,253,466.50</b>		

<b>CONSTRUCTION*</b>	<b>\$8,099,267.68</b>
<b>RIGHT OF WAY</b>	<b>\$8,900,000.00</b>
<b>UTILITIES**</b>	<b>\$1,253,466.50</b>

Locals

Locals

\* Costs contain 5% Engineering and Inspection and 4% Construction Contingencies and Fuel and Liquid AC Adjustments.

\*\* Costs contain 30% contingency.

P.I. Number 0007413  
 Project Number CSSTP-0007-00(413)

County Laurens

Date 6/21/2011

**Special Provision, Section 109-Measurement and Payment  
 FUEL PRICE ADJUSTMENT (ENGLISH 125% MAX)**

ENTER FPL DIESEL	3.92
ENTER FPM DIESEL	8.820

ENTER FPL UNLEADED	3.66
ENTER FPM UNLEADED	8.235

<http://www.dot.ga.gov/doingbusiness/Materials/Pages/asphaltcementindex.aspx>

<b>INCREASE ADJUSTMENT</b>
125.00%

<b>INCREASE ADJUSTMENT</b>
125.00%

ROADWAY ITEMS	QUANTITY	DIESEL FACTOR	GALLONS DIESEL	UNLEADED FACTOR	GALLONS UNLEADED	REMARKS
Excavations paid as specified by Sections 205 (CUBIC YARD)		0.29		0.15		
Excavations paid as specified by Sections 206 (CUBIC YARD)		0.29		0.15		
GAB paid as specified by the ton under Section 310 (TON)	35000.000	0.29	10150.00	0.24	8400.00	
Hot Mix Asphalt paid as specified by the ton under Sections 400 (TON)		2.90		0.71		
Hot Mix Asphalt paid as specified by the ton under Sections 402 (TON)	19721.000	2.90	57190.90	0.71	14001.91	
PCC Pavement paid as specified by the square yard under Section 430 (SY)		0.25		0.20		

BRIDGE ITEMS	Quantity	Unit Price	QF/1000	Diesel Factor	Gallons Diesel	Unleaded Factor	Gallons Unleaded	REMARKS
Bridge Excavation (CY) Section 211				8.00		1.50		
Class __ Concrete (CY) Section 500				8.00		1.50		
Class __ Concrete (CY) Section 500				8.00		1.50		
Class __ Concrete (CY) Section 500				8.00		1.50		
Superstru Con Class __ (CY) Section 500				8.00		1.50		
Superstru Con Class __ (CY) Section 500				8.00		1.50		
Superstru Con Class __ (CY) Section 500				8.00		1.50		
Concrete Handrail (LF) Section 500				8.00		1.50		
Concrete Barrier (LF) Section 500				8.00		1.50		

Page 1 of 4

BRIDGE ITEMS	Quantity	Unit Price	QF/1000	Diesel Factor	Gallons Diesel	Unleaded Factor	Gallons Unleaded	REMARKS
--------------	----------	------------	---------	---------------	----------------	-----------------	------------------	---------

Stru Steel <u>Plan Quantity</u> (LB) Section 501				8.00		1.50	
Stru Steel <u>Plan Quantity</u> (LB) Section 501				8.00		1.50	
PSC Beams____ (LF) Section 507				8.00		1.50	
PSC Beams____ (LF) Section 507				8.00		1.50	
PSC Beams____ (LF) Section 507				8.00		1.50	
Stru Reinf <u>Plan Quantity</u> (LB) Section 511				8.00		1.50	
Stru Reinf <u>Plan Quantity</u> (LB) Section 511				8.00		1.50	
Bar Reinf Steel (LB) Section 511				8.00		1.50	
Piling____inch (LF) Section 520				8.00		1.50	
Piling____inch (LF) Section 520				8.00		1.50	
Piling____inch (LF) Section 520				8.00		1.50	
Piling____inch (LF) Section 520				8.00		1.50	
Piling____inch (LF) Section 520				8.00		1.50	
Piling____inch (LF) Section 520				8.00		1.50	
Drilled Caisson____ (LF) Section 524				8.00		1.50	
Drilled Caisson____ (LF) Section 524				8.00		1.50	
Drilled Caisson____ (LF) Section 524				8.00		1.50	
Pile Encasement____(LF) Section 547				8.00		1.50	
Pile Encasement____(LF) Section 547				8.00		1.50	
<b>SUM QF DIESEL=</b>				<b>67340.90</b>	<b>SUM QF UNLEADED=</b>		<b>22401.91</b>
<b>DIESEL PRICE ADJUSTMENT(\$)</b>				<b>\$303,572.78</b>			
<b>UNLEADED PRICE ADJUSTMENT(\$)</b>				<b>\$94,289.64</b>			



**ASPHALT CEMENT PRICE ADJUSTMENT FOR  
BITUMINOUS TACK COAT(Surface Treatment 125% MAX)**

APPLICABLE TO CONTRACTS CONTAINING THE 413 SPEC. SECTION 413.5.01 ADJUSTMENTS ASPHALT PRICE ADJUSTMENT FOR BITUMINOUS TACK COAT

<http://www.dot.ga.gov/doingbusiness/Materials/Pages/asphaltcementindex.aspx>

ENTER APL

ENTER APM

INCREASE ADJUSTMENT

Use this side for Asphalt Emulsion Only

L.I.N.	TYPE	ASPHALT EMULSION (GALLONS)
TMT = <input type="text"/>		
REMARKS:		

Use this side for Asphalt Cement Only

L.I.N.	TYPE	TACK (GALLONS)
TMT = <input type="text"/>		
REMARKS:		

**ADJUSTMENT SUMMARY**

FUEL PRICE ADJUSTMENT (ENGLISH 125% MAX)	
DIESEL PRICE ADJUSTMENT(\$)	<u>\$303,572.78</u>
UNLEADED PRICE ADJUSTMENT(\$)	<u>\$94,289.64</u>
ASPHALT CEMENT PRICE ADJUSTMENT (BITUMINOUS TACK COAT 125% MAX)	<u>\$17,405.46</u>
400 / 402 ASPHALT CEMENT PRICE ADJUSTMENT 125% MAX	<u>\$726,521.64</u>
ASPHALT CEMENT PRICE ADJUSTMENT FOR BITUMINOUS TACK COAT(Surface Treatment 125% MAX)	

REMARKS:

**TOTAL ADJUSTMENTS** **\$1,141,789.52**

DJAM.1008

# Preliminary Right of Way Cost Estimate

**Phil Copeland**  
Right-of-Way Administrator

**Date:** March 19, 2009  
**Project:** CSSTP-0007-00-(143)  
**Existing/Required R/W:** Varies/Varies  
**Project Termini:** S.R. 29/U.S. 441 to Industrial Boulevard  
**Project Description:** Hillcrest Parkway Widening and Road Improvements

**P.I. Number** 0007413  
**No. Parcels** 74

**Fee Simple:**

Heavy Commercial	64,061 sf @ \$	5.74 /sf = \$	367,710	
Light Commercial	120,607 sf @ \$	2.75 /sf = \$	331,669	
Outparcel/Prime Lot Commercial	20,060 sf @ \$	11.48 /sf = \$	230,289	
Small Residential	29,984 sf @ \$	1.15 /sf = \$	<u>34,482</u>	
				964,150

**Permanent Slope Easement:**

Heavy Commercial	81,190 sf @ \$	2.87 /sf = \$	233,015	
Light Commercial	135,054 sf @ \$	1.38 /sf = \$	186,375	
Outparcel/Prime Lot Commercial	12,312 sf @ \$	5.74 /sf = \$	70,671	
Small Residential	29,185 sf @ \$	0.58 /sf = \$	<u>16,927</u>	
				506,988

**Improvements:**

26 Commercial	= \$	223,000	
1 Residential	= \$	<u>104,000</u>	
			327,000

**Relocation:**

0 Commercial	= \$	0	
1 Residential	= \$	<u>20,000</u>	
			20,000

**Damages:**

Proximity - 5 Parcels	\$	90,000	
Consequential - 15 Parcels	\$	1,637,350	
Cost to Cure - 1 Parcel	\$	<u>6,500</u>	
			1,733,850

<b>Net Cost</b>	\$	3,551,988
<b>Scheduling Contingency</b> 55%	\$	1,953,593
<b>Adm/Court Cost</b> 60%	\$	3,303,349
	\$	<u>8,808,930</u>

## Total Cost

Prepared By: J. G. Simshauser **\$ 8,900,000**

Approved: John B. Alexander  
GDOT R/W

John G. Simshauser, Cert. No. 2772  
Moreland Altobelli Associates, Inc.

\* Note that there are 5 parcels owned by either The City of Dublin or The City of Dublin School District.



Project Name Hillcrest Parkway Phase One  
 Client Name City of Dublin  
 Thomas & Hutton Engineering Co  
 Utility Cost Estimate

Job J-19220 620  
 Date 8/27/09  
 Revised  
 By KMS/SCY

UTILITY COST ESTIMATE						
PROJECT #	COUNTY	PROJECT DESCRIPTION			P.I. NUMBER	LAYOUT DATE
CSSTP-0007-00 (413)	LAURENS	RECONSTRUCT & WIDEN HILLCREST PARKWAY FROM INDUSTRIAL BLVD TO US 441 IN THE CITY OF DUBLIN, GEORGIA - APPROX 2.26 MI			0007413	1-Mar-09
PRIVATE UTILITY QUANTITIES	PUBLIC UTILITY QUANTITIES	UNITS	ITEM DESCRIPTION	UNIT PRICE	PRIVATE UTILITY COST	PUBLIC UTILITY COST
			<b>POWER</b>			
			<i>Georgia Power - Craig Cooper (478) 271-5202</i>			
37		Each	Relocate Power Pole	\$17,000.00	\$629,000.00	\$0.00
SUB - TOTAL					\$629,000.00	\$0.00
			<b>TELEPHONE</b>			
			<i>AT&amp;T - Buddy Bloodworth (478) 275-0493</i>			
6,500		Lin Ft	Relocate Overhead Lines		\$0.00	
23		Each	Pedestals		\$2,500.00	
SUB-TOTAL					\$2,500.00	\$0.00
			<b>GAS</b>			
			<i>City of Dublin - Michael L. Clay (478) 277-5048</i>			
	350	Lin Ft	Relocate 4" Underground Gas Main	\$15.00		\$5,250.00
	4	Each	Relocate Gas Main Valves	\$1,000.00		\$4,000.00
SUB-TOTAL					\$0.00	\$9,250.00
			<b>CATV/FIBER OPTIC</b>			
			<i>City of Dublin - Guy Mullis (478) 296-1008</i>			
6,500		LF	Relocate Charter Cable Overhead Line	\$15.00	\$97,500.00	\$0.00
23		Each	Relocate Charter Cable Pedestals	\$2,500.00	\$57,500.00	\$0.00
	1	Each	Relocate Fiber Optic Drop Down	\$5,000.00		\$5,000.00
	600	Lin Ft	Relocate Fiber Optic Line	\$20.00		\$12,000.00
SUB-TOTAL					\$155,000.00	\$17,000.00
			<b>WATER</b>			
			<i>City of Dublin - Michael L. Clay (478) 277-5048</i>			
	300	Lin Ft	Water Main - 2" PVC	\$30.00		\$9,000.00
	105	Lin Ft	Relocate Water Main - 8" PVC	\$50.00		\$5,250.00
	4	Each	Relocate Water Meter	\$550.00		\$2,200.00
	11	Each	Relocate Water Valve	\$125.00		\$1,375.00
	5	Each	Relocate Hydrant	\$4,000.00		\$20,000.00
	31	Each	Adjust Water Meter to Grade	\$1,000.00		\$31,000.00
	4	Each	Adjust Fire Hydrant to Grade	\$1,800.00		\$6,400.00
	60	Each	Adjust Water Valve to Grade	\$750.00		\$45,000.00
		Lump	Service, Tie-ins, etc.			\$4,000.00
SUB - TOTAL						\$124,225.00
			<b>SEWER</b>			
			<i>City of Dublin - Michael L. Clay (478) 277-5048</i>			
	90	Lin Ft	Relocate Sewer Main - 6" PVC	\$30.00		\$2,700.00
	17	Each	Adjust Sewer Manhole Top	\$1,100.00		\$18,700.00
	1	Each	SS Manhole	\$3,750.00		\$3,750.00
	1	Each	Remove SS Manhole	\$600.00		\$600.00
	74	Lin Ft	Remove and Dispose 6" Sewer	\$20.00		\$1,480.00
SUB - TOTAL						\$27,230.00
Revised:	TOTAL PRIVATELY OWNED UTILITY RELOCATION COST				\$786,600.00	
Revised:	TOTAL PUBLICLY OWNED UTILITY RELOCATION COST				\$177,705.00	
Revised:	TOTAL REIMBURSABLE UTILITY RELOCATION COST				\$0.00	
Revised:	TOTAL POTENTIAL UTILITY RELOCATION COST FOR PROJECT				\$964,305.00	

Est. Prepared under the Direction of: Kevin Smith, P.E. DATE: 27-Aug-09

Power Poles located in the slope easement were not counted for relocation. Adjustments for height may be necessary.

The information above is an estimate and is subject to change as project plans are developed and prior rights research has been performed.

Telephone indicated lines would be relocated at no cost per Larry Powell 7/30/09.

Subsurface Utility Engineering not completed for this project.

Quantities for gas and underground fiber optics were quantified using dwf files from the City of Dublin's website.

# PROJECT ANALYSIS

---

# PROJECT ANALYSIS

---

## SUMMARY OF ANALYSIS

The following analysis tools were used to study the project:

- Key Project Factors
- Cost Model
- Function Analysis

## KEY PROJECT FACTORS

The first day of the VE study included meetings with the project stakeholders. The following summarizes key project issues.

### Project Issues

The following are some of the issues and concerns associated with the project.

#### Environmental:

- Mitigation of the 0.448 acre of wetlands will be necessary; however, only a Nationwide permit will be required.
- The NEPA documentation is not approved at this time; however, work has been done to reduce the impacts on the Carl Vinson VA Center.

#### Miscellaneous:

- Potential for a retaining wall between Station 30+00 to +/- Station 37+00.
- Drainage design has not been developed.
- Right-of-way has not been purchased due to early stage of design.
- New high school entrance has shifted from approximately Station 58+50 to Station 60+00.
- Desire to keep current alignment creates vertical and horizontal profile issues.
- Design exemption for superelevation on Hillcrest Parkway between Station 50+00 and Station 55+00.

#### Utilities:

- Utilities present include: electricity - Georgia Power (distribution only); gas, fiber optic, water, and sewer - City of Dublin; cable - Charter Communications; and telephone - Bell South.

## Site Visit Observations

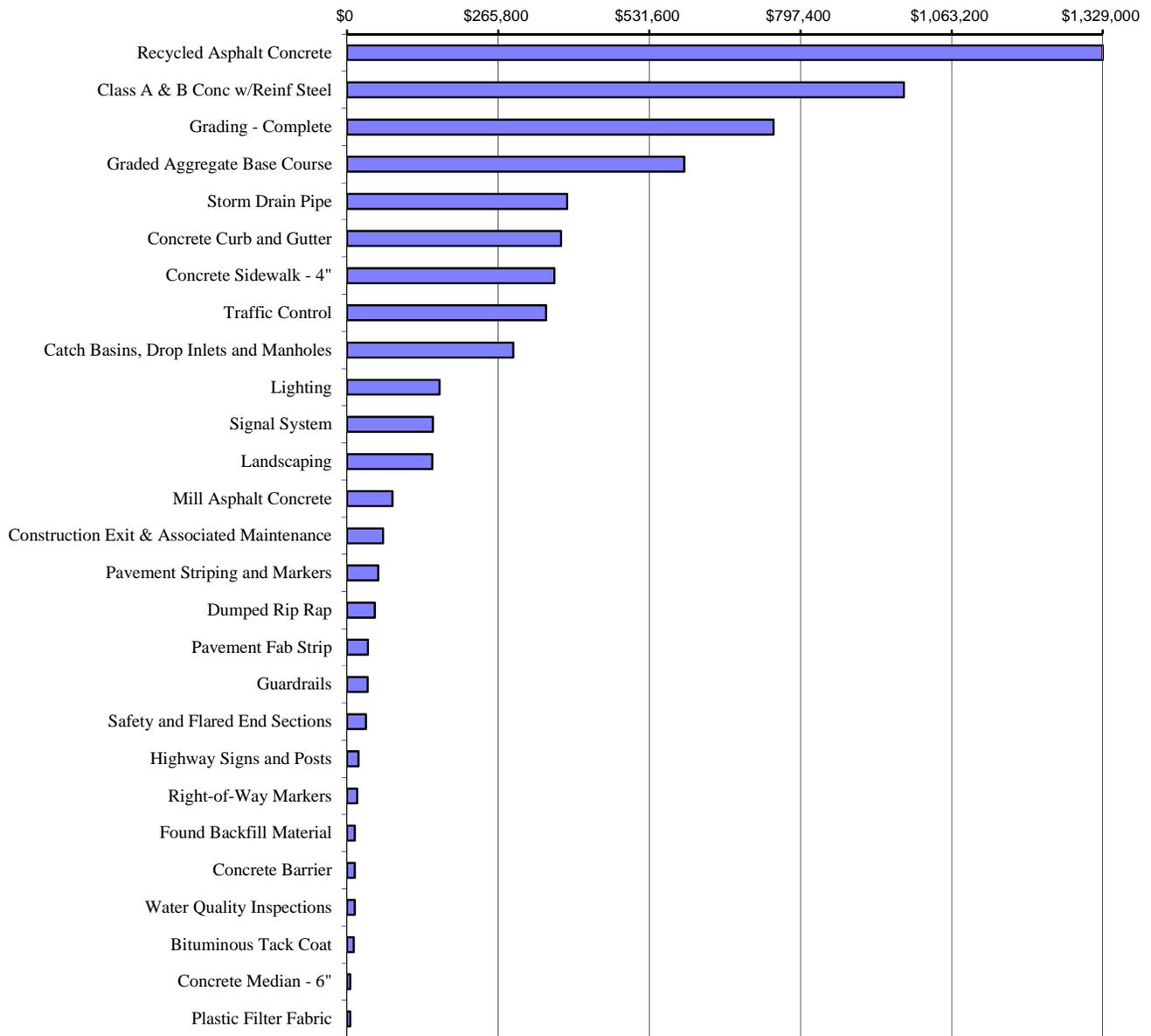
A site visit was not conducted due to the remoteness of the facility (GDOT District 2) from where the VE study was conducted (GDOT General Office).

## COST MODEL

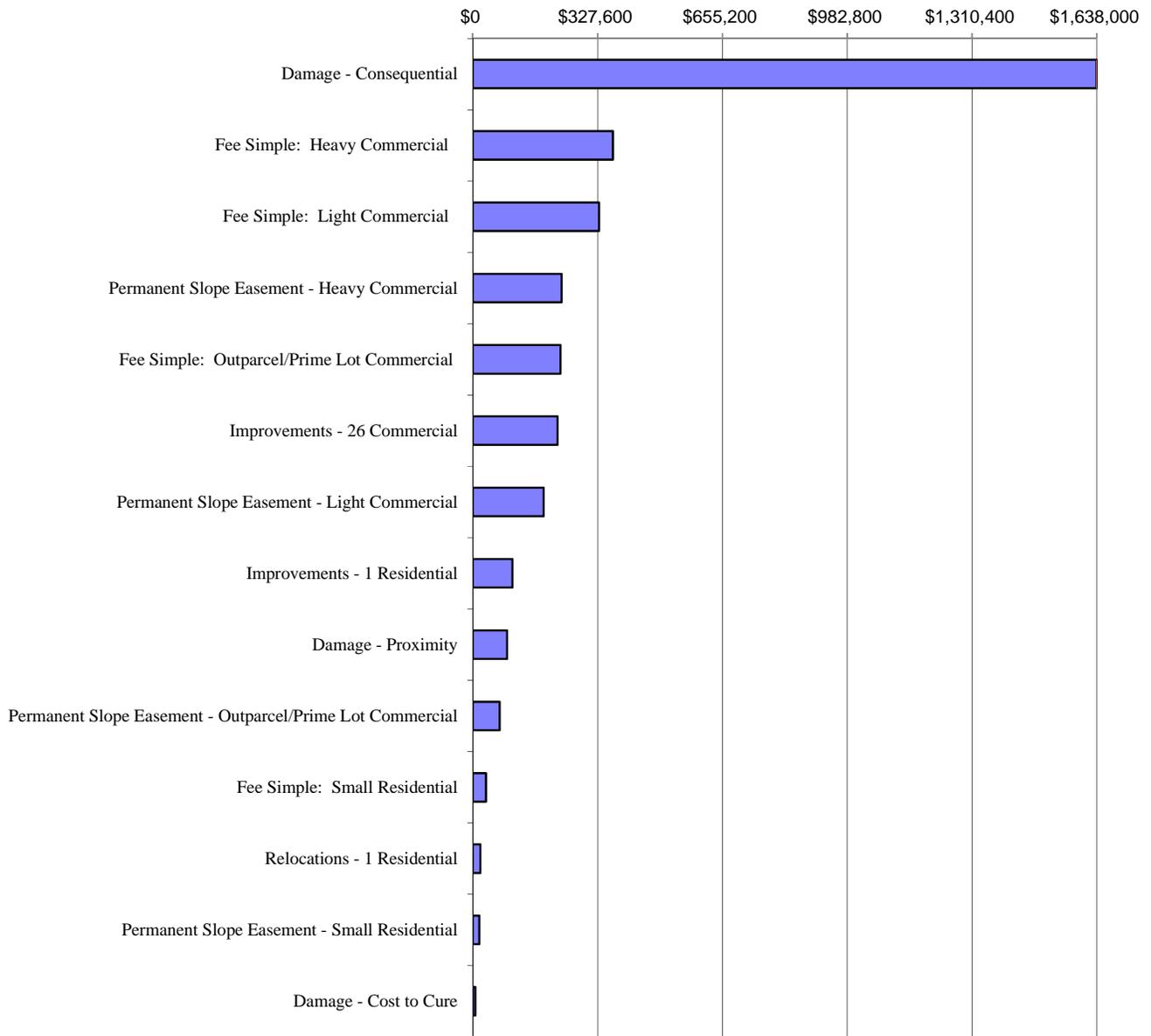
The VE team leader prepared three cost models from the cost estimates presented in the *Project Information* section of this report. The models are organized to identify major construction elements or trade categories, the original estimated costs, and the percent of total project cost for the significant cost items. These cost models clearly showed the cost drivers for the project and were used to guide the VE team during the VE study.

## Cost Models

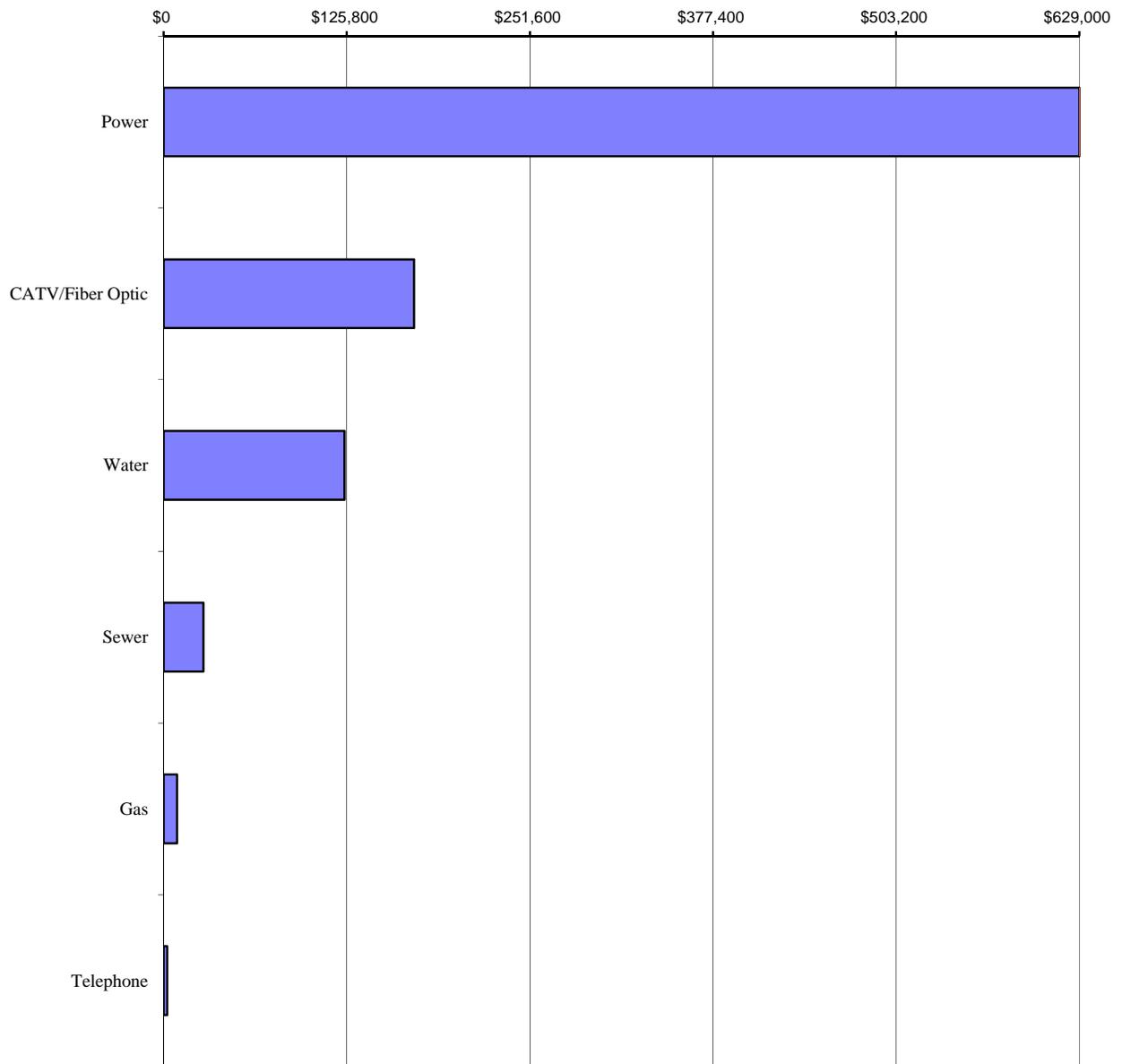
PRELIMINARY CONSTRUCTION COST ESTIMATE		COST	PERCENT	CUM. PERCENT
Recycled Asphalt Concrete		1,328,956	20.82%	20.82%
Class A & B Conc w/Reinf Steel		979,304	15.34%	36.16%
Grading - Complete		750,000	11.75%	47.91%
Graded Aggregate Base Course		593,104	9.29%	57.20%
Storm Drain Pipe		386,883	6.06%	63.27%
Concrete Curb and Gutter		376,095	5.89%	69.16%
Concrete Sidewalk - 4"		364,483	5.71%	74.87%
Traffic Control		350,000	5.48%	80.35%
Catch Basins, Drop Inlets and Manholes		291,997	4.57%	84.93%
Lighting		162,429	2.54%	87.47%
Signal System		150,725	2.36%	89.83%
Landscaping		149,626	2.34%	92.18%
Mill Asphalt Concrete		79,670	1.25%	93.42%
Construction Exit & Associated Maintenance		63,559	1.00%	94.42%
Pavement Striping and Markers		54,874	0.86%	95.28%
Dumped Rip Rap		48,749	0.76%	96.04%
Pavement Fab Strip		36,592	0.57%	96.62%
Guardrails		36,139	0.57%	97.18%
Safety and Flared End Sections		33,072	0.52%	97.70%
Highway Signs and Posts		20,197	0.32%	98.02%
Right-of-Way Markers		17,861	0.28%	98.30%
Found Backfill Material		13,691	0.21%	98.51%
Concrete Barrier		13,494	0.21%	98.72%
Water Quality Inspections		13,408	0.21%	98.93%
Bituminous Tack Coat		11,539	0.18%	99.11%
Concrete Median - 6"		5,684	0.09%	99.20%
Plastic Filter Fabric		5,378	0.08%	99.29%
<b>Base Construction Cost</b>		<b>6,383,007</b>	<b>100.00%</b>	
Engineering & Inspections	5.00%	319,150		
Construction Contingency	4.00%	255,320		
Fuel Adjustment - Diesel		303,573		
Fuel Adjustment - Unleaded Fuel		94,290		
Liquid AC Adjustment - Tack		17,405	Composite	
Liquid AC Adjustment - Asphalt		726,522	Construction	
<b>Total Construction Only</b>		<b>8,099,268</b>	<b>Markup</b>	<b>26.89%</b>



<b>PRELIMINARY RIGHT-OF-WAY COST ESTIMATE</b>		<b>COST</b>	<b>PERCENT</b>	<b>CUM. PERCENT</b>
Damage - Consequential		1,637,350	46.10%	46.10%
Fee Simple: Heavy Commercial		367,710	10.35%	56.45%
Fee Simple: Light Commercial		331,669	9.34%	65.79%
Permanent Slope Easement - Heavy Commercial		233,015	6.56%	72.35%
Fee Simple: Outparcel/Prime Lot Commercial		230,289	6.48%	78.83%
Improvements - 26 Commercial		223,000	6.28%	85.11%
Permanent Slope Easement - Light Commercial		186,375	5.25%	90.36%
Improvements - 1 Residential		104,000	2.93%	93.28%
Damage - Proximity		90,000	2.53%	95.82%
Permanent Slope Easement - Outparcel/Prime Lot Commercial		70,671	1.99%	97.81%
Fee Simple: Small Residential		34,482	0.97%	98.78%
Relocations - 1 Residential		20,000	0.56%	99.34%
Permanent Slope Easement - Small Residential		16,927	0.48%	99.82%
Damage - Cost to Cure		6,500	0.18%	100.00%
<b>Right-of-Way Costs</b>		<b>3,551,988</b>	<b>100.00%</b>	
Scheduling Contingency	55.00%	1,953,593	ROW	
Administration/Court Cost	60.00%	3,303,349	Composite	
<b>Total Right-of-Way Costs*</b>		<b>8,808,930</b>	<b>Markup</b>	<b>148.00%</b>
<b>Total Right-of-Way Costs (rounded)</b>		<b>8,900,000</b>		<b>150.56%</b>



UTILITY COSTS		COST	PERCENT	CUM. PERCENT
Power		629,000	65.24%	65.24%
CATV/Fiber Optic		172,000	17.84%	83.07%
Water		124,225	12.88%	95.96%
Sewer		27,230	2.82%	98.78%
Gas		9,250	0.96%	99.74%
Telephone		2,500	0.26%	100.00%
	<b>Utility Costs</b>	<b>964,205</b>	<b>100.00%</b>	
	Utilities Contingency 30.00%	289,262	ROW	
	<b>Total Utility Costs</b>	<b>1,253,467</b>	Markup	30.00%

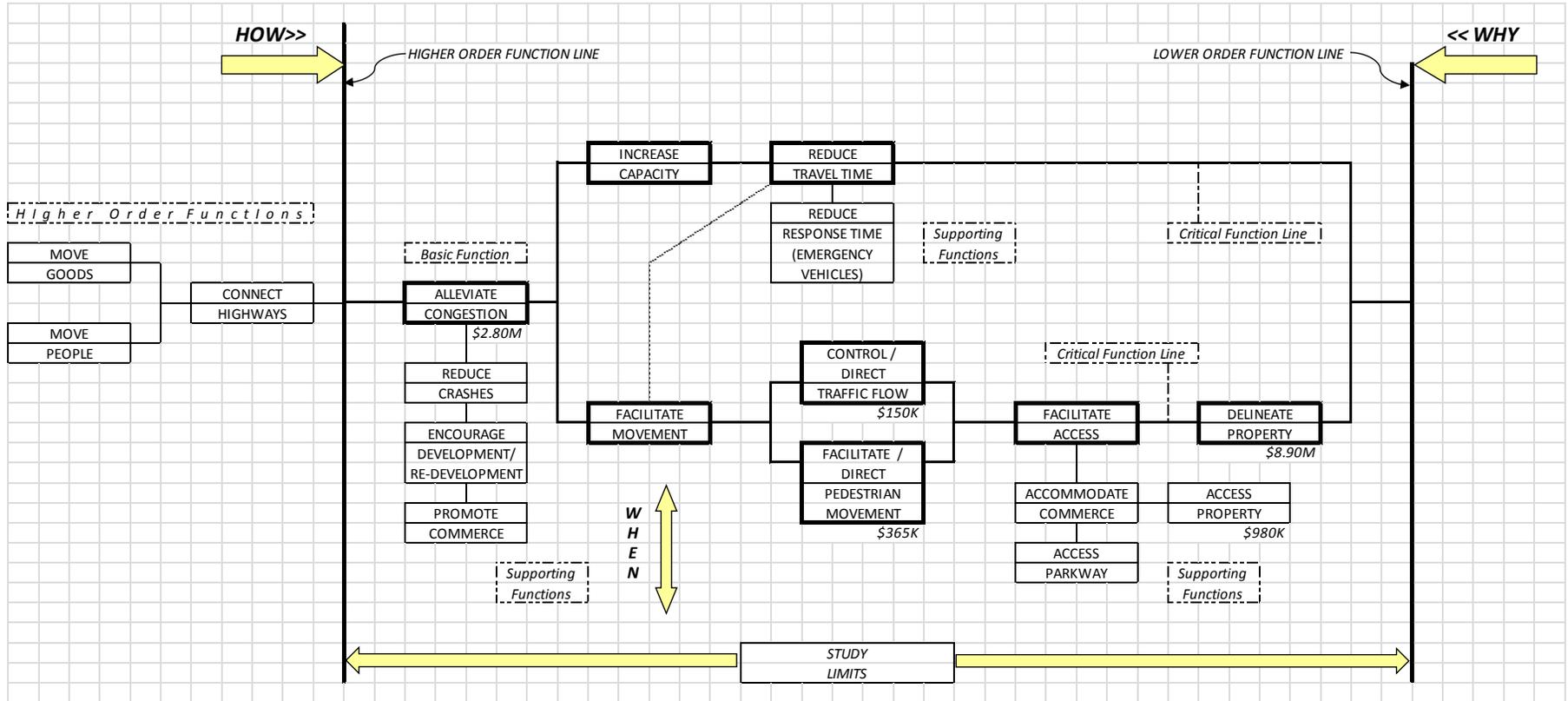


## FUNCTION ANALYSIS

Function analysis was performed and a Function Analysis System Technique (FAST) Diagram was produced, which revealed the key functional relationships for the project. This analysis provided a greater understanding of the total project and how the project's performance, cost, time, and risk characteristics are related to the various functions identified.

The FAST diagram arranges the functions in logical order so that when read from left to right, the functions answer the question, "How?" If the diagram is read from right to left, the functions answer the question, "Why?" Functions connected with a vertical line are those that happen at the same time as, or are caused by, the function at the top of the column (a "When?" relationship).

# FAST Diagram



## Performance Requirements

Performance requirements represent essential, non-discretionary aspects of project performance. Any concept that fails to meet the project’s performance requirements, regardless of whether it was developed during the project’s design process or during the course of the VE study, cannot be considered as a viable solution. Concepts that do not meet a performance requirement cannot be considered further unless such shortcomings are addressed through the VE study process in the form of VE alternatives. It should be noted that in some cases, a performance requirement may also represent the minimum acceptable level of a performance attribute. The following performance requirements were selected for this project.

Performance Requirement	Definition
Design Standards	Meet design standards – if design exemptions are encountered, they must be approved by GDOT’s Chief Engineer. Two design exemptions: Horizontal Alignment and Superelevation Rates. The horizontal curvature and superelevation at US 80 and Hillcrest Parkway Intersection, two curves (one S curve) prior to intersection and one curve immediately after the intersection.
Environmental Issues	Meet NEPA guidelines. 0.448 acres of wetlands must be mitigated; however, only a Nationwide permit is required. Finding of No Adverse Effect to the Carl Vinson VA Medical Center and Finding of No Effect to Hobbs House and Brer Rabbit Motor Court.
Right-of-Way Issues	Minimize the amount of “takes” along the corridor. Although right-of-way has not been purchased, current estimate include Fee Simple, Permanent Slope Easement, Improvements, Relocations, and Damages to commercial and residential properties. Only one residential property taken.

# IDEA EVALUATION

---

# IDEA EVALUATION

---

The ideas generated by the VE team were carefully evaluated, and project-specific attributes were applied to each idea to assure an objective evaluation.

## PERFORMANCE ATTRIBUTES

The following is the key performance attribute identified for this project and used to assist the VE team in evaluating the ideas: *Local Operations*.

## EVALUATION PROCESS

The VE team generated and evaluated ideas on how to perform the various project functions using other approaches. The idea list was grouped by function or major project element. Each idea was evaluated with respect to the functional requirements of the project. Performance, cost, time, and risk may also have been considered during this evaluation.

Once each idea was fully evaluated, it was given a rating. This is based on the following:

- DEV = Idea to be developed
- DIS = Idea to be dismissed
- ABD = Already being done

Ideas noted as “DEV” were developed further and those that were found to have the greatest potential for value improvement are documented in the *Value Engineering Alternatives* section of this report.

## IDEA SUMMARY

All of the ideas that were generated during the Speculation Phase using brainstorming techniques were recorded on the following pages. Ideas received an idea code based on the function statement under which it was brainstormed. The following table indicates the functions related to each idea code.

Idea Code	Related Function
A-1	Facilitate Access
CA-1	Increase Capacity
M-1	Facilitate Movement
PR-1	Delineate Property

A detailed idea evaluation summary is also included. This summary includes additional information related to how each idea improves or degrades the elements of performance, cost, time (schedule), and risk. Only those elements where the idea differs from the baseline concept are included in this summary.

## IDEA SUMMARY LIST

Idea Code and Description	Rating
A-1: Cul-de-sac Shamrock Drive	DIS
A-2: Relocate high school entrance to Station 60+00	ABD
A-3: Close one of two Corporate Square Drive curb cuts	DIS
A-4: Eliminate skew at Woodlawn Drive	DIS
A-5: Eliminate proposed curb cut for the Sundry Properties, Inc. parcel on Hillcrest Parkway	DEV
A-6: Eliminate eastern-most curb cut to Southern Family Markets	DIS
A-7: Close King Edward Drive onto Hillcrest Parkway	DEV
A-8: Maintain existing Shamrock Drive and convert to a right-in/right-out	DEV
CA-1: Widen Hillcrest Parkway to a three-lane facility - two travel lanes and a center turn lane	DIS
CA-2: Only improve intersections like the excluded area at the Brookhaven Drive Intersection	DIS
CA-3: Only improve intersections like the excluded area and provide turn lanes at all intersections	DIS
M-1: Interconnect and synchronize all signals	DEV
M-2: Eliminate center turn lane	DIS
M-3: Eliminate center turn lane between Industrial Boulevard and US 80	DEV
M-4: Use 11-foot travel lanes	DEV
M-5: Use 12-foot center turn lane	DEV
M-6: Use 11-foot travel lanes and 12-foot center turn lane	DEV
M-7: Improve alignment of the US 80/Hillcrest Parkway Intersection	DEV
M-8: Eliminate center turn lane between Claxton Dairy Road and US 441	DIS
M-9: Provide right turn lane from southbound US 80 to westbound Hillcrest Parkway	DEV
M-10: Eliminate right turn lane at the Hillcrest Parkway/Industrial Boulevard Intersection	DEV
PR-1: Use retaining walls in lieu of right-of-way takes	DEV
PR-2: Widen to the south side only to minimize right-of-way takes	DIS
PR-3: Selectively reduce profile	DEV

## DETAILED IDEA EVALUATION SUMMARY

### A-1: Cul-de-sac Shamrock Drive

Overall Rating:  
**DIS**

---

*General comments:* Too much traffic to/from the Dublin City High School and the Dublin Mall to warrant closure.

---

### A-2: Relocate high school entrance to Station 60+00

Overall Rating:  
**ABD**

---

*General comments:* Although not currently shown on the concept drawings, the entrance is in the process of being relocated.

---

### A-3: Close one of two Corporate Square Drive curb cuts

Overall Rating:  
**DIS**

---

*General comments:* Creates unnecessary ingress/egress movements to businesses on Corporate Square Drive.

---

### A-4: Eliminate skew at Woodlawn Drive

Overall Rating:  
**DIS**

---

*General comments:* A skew having an angle of approximately 10 degrees to 15 degrees does not warrant the cost associated with reconstructing the intersection.

---

### A-5: Eliminate proposed curb cut for the Sundry Properties, Inc. parcel on Hillcrest Parkway

Overall Rating:  
**DEV**

---

*General comments:* Improves operations on Hillcrest Parkway at the terminus of the project with US 441 and facilitates the eastbound Hillcrest Parkway to southbound movement onto US 441.

---

### A-6: Eliminate eastern-most curb cut to Southern Family Markets

Overall Rating:  
**DIS**

---

*General comments:* The existing parking lot may be too large to only have one curb cut onto Hillcrest Parkway. Would make it more difficult to redevelop or attract new business in this area.

---

### A-7: Close King Edward Drive onto Hillcrest Parkway

Overall Rating:  
**DEV**

---

*General comments:* Eliminates one intersection in close proximity to the Claxton Dairy Road/Hillcrest Parkway Intersection.

---

---

**A-8: Maintain existing Shamrock Drive and convert to a right-in/right-out**

Overall Rating:  
**DEV**

---

*General comments:* Alleviates congestion and a potential bottleneck at this intersection that is extremely close to the major Hillcrest Parkway/US 80 Intersection.

---

---

**CA-1: Widen Hillcrest Parkway to a three-lane facility - two travel lanes and a center turn lane**

Overall Rating:  
**DIS**

---

*General comments:* This alternative would not meet the need and purpose of the project.

---

---

**CA-2: Only improve intersections like the excluded area at the Brookhaven Drive Intersection**

Overall Rating:  
**DIS**

---

*General comments:* In addition to not meeting the need and purpose of the project, the interrupted construction sequencing would be more disruptive to the community and might even take longer to construct.

---

---

**CA-3: Only improve intersections like the excluded area and provide turn lanes at all intersections**

Overall Rating:  
**DIS**

---

*General comments:* The interrupted construction sequencing would be more disruptive to the community and might even take longer to construct.

---

---

**M-1: Interconnect and synchronize all signals**

Overall Rating:  
**DEV**

---

*General comments:* This would reduce travel time within the corridor and could potentially increase traffic volumes.

---

---

**M-2: Eliminate center turn lane**

Overall Rating:  
**DIS**

---

*General comments:* Although the basic need and purpose would be met, the slow-up associated with having to stop behind a vehicle making a left turn to cross two lanes of oncoming traffic is not warranted.

---

---

**M-3: Eliminate center turn lane between Industrial Boulevard and US 80**

Overall Rating:  
**DEV**

---

*General comments:* Traffic volumes and minimal curb cuts on the existing parkway appear to warrant removal of the two-way center turn lane in this section of the project.

---

---

**M-4: Use 11-foot travel lanes**Overall Rating:  
**DEV**

---

*General comments:* The nature of the facility, low posted speed limit, and low truck volumes warrants the reduction in travel lane width.

---

---

**M-5: Use 12-foot center turn lane**Overall Rating:  
**DEV**

---

*General comments:* The nature of the facility, low posted speed limit, and low truck volumes warrants the reduction in the center turn lane width.

---

---

**M-6: Use 11-foot travel lanes and 12-foot center turn lane**Overall Rating:  
**DEV**

---

*General comments:* The nature of the facility, low posted speed limit, and low truck volumes warrants the reduction in the center turn lane width.

---

---

**M-7: Improve alignment of the US 80/Hillcrest Parkway Intersection**Overall Rating:  
**DEV**

---

*General comments:* The design exemptions associated with the current design can either be eliminated or ameliorated.

---

---

**M-8: Eliminate center turn lane between Claxton Dairy Road and US 441**Overall Rating:  
**DIS**

---

*General comments:* Although the eastern-most portion of the project is the least developed, reducing the facility's capacity within this area would make it difficult to attract new businesses.

---

---

**M-9: Provide right turn lane from southbound US 80 to westbound Hillcrest Parkway**Overall Rating:  
**DEV**

---

*General comments:* Although initially considered to be a good idea, the cost associated with low turning movements does not warrant this ideas development.

---

---

**M-10: Eliminate right turn lane at the Hillcrest Parkway/Industrial Boulevard Intersection**Overall Rating:  
**DEV**

---

*General comments:* Low traffic volumes making this movement and having more than sufficient travel lanes to accommodate this turn warrants elimination of the right-only lane at this intersection.

---

**PR-1: Use retaining walls in lieu of right-of-way takes**

Overall Rating:  
**DEV**

---

*General comments:* Upon further investigation, the added cost associated with retaining walls vs. the relatively low cost of land does not warrant implementation.

---

**PR-2: Widen to the south side only to minimize right-of-way takes**

Overall Rating:  
**DIS**

---

*General comments:* Widening either to the south or north side only would incur additional right-of-way costs.

---

**PR-3: Selectively reduce profile**

Overall Rating:  
**DEV**

---

*General comments:* Initially considered being a good idea, it became too complex at several locations, especially at US 80.

---

# VE PROCESS

---

# VALUE ENGINEERING PROCESS

---

A systematic approach is used in the VE study. The key procedures followed were organized into three distinct parts: (1) Pre-Study Preparation and (2) VE Study.

## PRE-STUDY PREPARATION

In preparation for the VE study, the team leader reviews critical aspects of the project and areas for improvement. In the week prior to the start of the VE study, the VE team reviews the documents provided by the designer to become better prepared for the study. In addition, performance attributes and requirements are initially identified that are relevant to the project.

## VE STUDY

The Value Methodology (VM) Job Plan is followed to guide the teams in the consideration of project functionality and performance, potential schedule issues, high cost areas, and risk factors in the design. These considerations are taken into account in developing alternative solutions for the optimization of project value. The Job Plan phases are:

- Information Phase
- Function Phase
- Speculation Phase
- Evaluation Phase
- Development Phase
- Presentation Phase

### Information Phase

At the beginning of the VE study, the design team presents a more detailed review of the design and the various systems. This includes an overview of the project and its various requirements, which further enhances the VE team's knowledge and understanding of the project. The project team also responds to questions posed by the VE team.

The project's performance requirements and attributes are discussed, and the performance of the baseline concept is evaluated.

### Function Phase

Key to the VM process is the function analysis techniques used during the Function Phase. Analyzing the functional requirements of a project is essential to assuring an owner that the project has been designed to meet the stated criteria and its need and purpose. The analysis of these functions in terms cost, performance, time and risk is a primary element in a VE study, and is used to develop alternatives. This procedure is beneficial to the VE team, as it forces the participants to think in terms

of functions and their relative value in meeting the project's need and purpose. This facilitates a deeper understanding of the project.

### **Speculation Phase**

The Speculation Phase involves identifying and listing creative ideas. During this phase, the VE team participates in a brainstorming session to identify as many means as possible to provide the necessary project functions. Judgment of the ideas is not permitted in order to generate a broad range of ideas.

The idea list includes all of the ideas suggested during the study. These ideas should be reviewed further by the project team, since they may contain ideas that are worthy of further evaluation and may be used as the design develops. These ideas could also help stimulate additional ideas by others.

### **Evaluation Phase**

The purpose of the Evaluation Phase is to systematically assess the potential impacts of ideas generated during the Speculation Phase relative to their potential for value improvement. Each idea is evaluated in terms of its potential impact to performance, cost, time and risk.

the VE team opted to use a simpler system due to time constraints and the minimal number of ideas. This simplified system consisted of the following notations: **DEV** = Idea to be developed; **DIS** = Idea to be dismissed; **ABD** = Already being done.

### **Development Phase**

During the Development Phase, the highly rated ideas are expanded and developed into VE alternatives. The development process considers the impact to performance, cost, time, and risk of the alternative concepts relative to the baseline concept. This analysis is prepared as appropriate for each alternative, and the information may include a performance assessment, initial cost, and life-cycle cost comparisons, schedule analysis, and an assessment of risk. Each alternative describes the baseline concept and proposed changes and includes a technical discussion. Sketches and calculations are also prepared for each alternative as appropriate.

### **Presentation Phase**

The VE study concludes with a preliminary presentation of the VE team's assessment of the project and VE alternatives. The presentation provides an opportunity for the owner, project team, and stakeholders to preview the alternatives and develop an understanding of the rationale behind them.

## **VE STUDY AGENDA**

### **Monday, 08 August**

8:00AM – 0845AM	<b>Assembly of the GDOT Stakeholders, Interested Parties and VE Team</b>
8:45AM – 9:00AM	<b>Video Conferencing Set-up</b>
9:00AM – 11:00AM	<b>General Introductions of All Parties, Review of the VE Process Owner's / Designer's Presentation and Information Phase</b>

The GDOT design team and stakeholders are expected to present information concerning the project including, but not necessarily limited to: rationale for design, criteria for specific areas of study, project constraints, and the reasons for design decisions.

9:30AM – 11:00AM	<b>Commence Function Analysis Phase</b>
------------------	---

The VE team will continue their familiarization with the cost models and project data for each area of study. The cost model(s) will be refined, as necessary; define the function of each project element or system in the cost model, select the primary or basic functions, and determine the worth, or least cost, to provide the function. In addition, the VE team will continue defining the function of each element/system to gain a thorough understanding of the project's needs and requirements and refine the Function Analysis System Technique (FAST) diagram(s).

11:00AM – 12:00 Noon	<b>Conclude the Function Analysis Phase and Commence the Creative Phase</b>
----------------------	---

The VE team will conduct a brainstorming session and list as many ideas as possible for consideration. The aim is to obtain a large quantity of ideas through free association by eliminating roadblocks to creativity and deferring judgment.

12:00 Noon – 1:00PM	<b>Lunch</b>
---------------------	--------------

1:00PM – 5:00PM	<b>Conclude Creative Phase and Complete Evaluation/Analytical Phase</b>
-----------------	---

The VE team will finalize the brainstorming session and analyze the ideas listed in the creative phase and select the best ideas for further development.

### **Tuesday, 09 August**

8:00AM – 12:00 Noon	<b>Development Phase</b>
---------------------	--------------------------

The VE team will develop creative ideas into alternate design solutions. Initial and life cycle cost estimates comparing original and proposed alternatives will be prepared. Selected alternatives for change will be developed and supported with sketches, calculations, and written substantiation.

12:00 Noon – 1:00PM	<b>Lunch</b>
---------------------	--------------

1:00PM – 5:00PM	<b>Continue Development Phase</b>
-----------------	-----------------------------------

**Wednesday, 10 August**

8:00AM – 12:00 Noon           **Continue Development Phase**

12:00 Noon – 1:00PM           **Lunch**

1:00PM – 5:00PM               **Continue Development Phase**

**Thursday, 11 August**

8:00AM – 9:00AM               **Conclude Development Phase and Prepare Summary Worksheets for Informal Oral Presentation Continue Development Phase**

The VE team prepares a summary of the value engineering alternatives with descriptions and initial and life cycle costs for an informal oral presentation to representatives of the owner and design team. Draft copies of the *Summary of Potential Cost Saving* worksheets are prepared for distribution to VE presentation attendees.

9:00AM – 11:00AM               **Conduct Informal Presentation**

The VE team presents its alternatives to the owner and design team representatives and is available to clarify any points.

11:00 AM                         **Adjourn**

## VE STUDY MEETING ATTENDEES

8/8	8/9	8/10	8/11	Name	Position/Role	Organization	Telephone	E-mail
X	X	X	X	Luis M. Venegas, PE, CVS-Life, LEED AP, FSAVE	Team Leader	Value Management Strategies, Inc.	678-488-4287	lmvenegas@aol.com
X	X	X	X	Matt Sanders	Value Engineering Specialist	GDOT	404-631-1752	msanders@dot.ga.gov
X	X	X	X	Dominic F. Saulino	Associated Vice President/Director of Transportation	HNTB Corporation	404-946-5700	dsaulino@hntb.com
X	X	X	X	Lenor M. Bromberg, PE, AVS, LEED AP BD+C	Associate Vice President - Environmental and Design	Kennedy Engineering & Associates Group, LLC	678-904-8591 ext 27	lbromberg@keagroup.com
X	X	X	X	Lisa L. Myers, AVS	Assistant State Project Review Engineer and VE Coordinator	GDOT	404-631-1770	lmyers@dot.ga.gov
X				Ron E. Wishon	State Project Review Engineer	GDOT	404-631-1753	rwishon@dot.ga.gov
X				Ken Werho	Traffic Operations Design / Concept Review Manager	GDOT	404-635-8144	kwerho@dot.ga.gov
X				Melissa Harper, PE	Assistant State Construction Engineer	GDOT	404-631-1971	mharper@dot.ga.gov
X			X	Renee Decker	Design Squad Leader	GDOT, District 2	478-552-4659	ddecker@dot.ga.gov
X			X	George Brewer, PE	Preconstruction Engineer	GDOT, District 2	478-552-4629	gbrewer@dot.ga.gov
X			X	Jay Simone, PE	Project Manager	Thomas & Hutton Engineering Co. (T&HE)	912-721-4023	simone.j@thomasandhutton.com
X				Glenn Durrence, PE	Transportation Director	T&HE	912-721-4066	durrence.g@thomasandhutton.com
X				Doyle Kelley	Assistant Department Head	T&HE	912-721-4160	kelley.d@thomasandhutton.com



**Value Management Strategies, Inc.**

---

Offices in Escondido and Sacramento, California; Grand Junction, Colorado; Sarasota, Florida; Marietta, Georgia; Portland, Oregon; Seattle, Washington; Merriam, Kansas; and Great Falls, Montana

Value Management Strategies, Inc.	<p><b>Final Value Engineering Study Report</b>  <b>Widening of Hillcrest Parkway</b>  <b>CSSTP-0007-00(413), LAURENS PL No. 0007413</b>  <b>GEORGIA DEPARTMENT OF TRANSPORTATION</b></p>		August 2011
Value Management Strategies, Inc.	<p><b>Final Value Engineering Study Report</b>  <b>Widening of Hillcrest Parkway</b>  <b>CSSTP-0007-00(413), LAURENS PL No. 0007413</b>  <b>GEORGIA DEPARTMENT OF TRANSPORTATION</b></p>		August 2011
Value Management Strategies, Inc.	<p><b>Final Value Engineering Study Report</b>  <b>Widening of Hillcrest Parkway</b>  <b>CSSTP-0007-00(413), LAURENS PL No. 0007413</b>  <b>GEORGIA DEPARTMENT OF TRANSPORTATION</b></p>		August 2011
Value Management Strategies, Inc.	<p><b>Final Value Engineering Study Report</b>  <b>Widening of Hillcrest Parkway</b>  <b>CSSTP-0007-00(413), LAURENS PL No. 0007413</b>  <b>GEORGIA DEPARTMENT OF TRANSPORTATION</b></p>		August 2011
Value Management Strategies, Inc.	<p><b>Final Value Engineering Study Report</b>  <b>Widening of Hillcrest Parkway</b>  <b>CSSTP-0007-00(413), LAURENS PL No. 0007413</b>  <b>GEORGIA DEPARTMENT OF TRANSPORTATION</b></p>		August 2011
Value Management Strategies, Inc.	<p><b>Final Value Engineering Study Report</b>  <b>Widening of Hillcrest Parkway</b>  <b>CSSTP-0007-00(413), LAURENS PL No. 0007413</b>  <b>GEORGIA DEPARTMENT OF TRANSPORTATION</b></p>		August 2011