

VALUE ENGINEERING REPORT

SR 1 / US 27 Veterans Parkway
from
Old Moon Road to Turnberry Lane
Project No.: STP00-0011-01(053)
Muscogee County
PI No.: 332820
February 25, 2009

OWNER:



Georgia Department of Transportation
600 West Peachtree Street
Atlanta, GA 30308

VALUE ENGINEERING CONSULTANT:



MACTEC Engineering and Consulting, Inc.
3200 Town Point Drive NW, Suite 100
Kennesaw, GA 30144

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EXECUTIVE SUMMARY

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Introduction

This report summarizes the results of a value engineering (VE) study conducted on the reconstruction and widening of SR 1 / US 27 Veterans Highway. The estimated project cost including an estimated 10% factor for E&C, 0% for inflation but including right of way and utilities is \$26,834,000. The project is classified as an urban minor arterial and has a projected ADT (2026) of 35,800.



The project is located north of the City of Columbus in Muscogee County approximately 100 miles southwest of Atlanta. The project consists of widening and reconstructing of SR 1 to

provide a northern extension of a four lane divided highway. The improvements will provide the traffic capacity needed in a rapidly growing area, improve the operational safety and enhance pedestrian access. The project begins just south of the intersection of SR 1 / US 27 Veterans Parkway with Old Moon Road (mile log 15.18) and ends north of Turnberry Lane (mile log 16.74) at Hancock Road for a total length of 1.56 miles.

This effort included a four day study with a three person VE team on the 60% level design for the roadway portions of this project. The study was conducted February 10-13, 2009 at the GDOT offices in Atlanta. The design team included in-house GDOT personnel and the consultant, Jordan Jones and Goulding of Norcross, GA.



This report presents the Team's recommendations and all back-up information, for consideration by the decision-makers. This **Executive Summary** includes a brief description of each recommendation. The **Study Identification** section contains information about the project and the team. The **Recommendations** section presents a more detailed description and support

information about each recommendation. Lastly, the **Appendix** includes a complete record of the Team's activities and findings as well as the meeting attendees sign in sheet. The reader is encouraged to review all sections of the report in order to obtain a complete understanding of the VE process.

Considerations

During the presentation by the design team on the project overview, the VE Team was alerted to the stakeholder's constraints on this project which include:

- ◆ The length of the project is fixed; the termini of the project cannot be changed.
- ◆ Alignments are set at each end of the project.
- ◆ The 20 year level of service based on local requirements is a C. This will require an expansion to six lanes.

Results Obtained

The VE Team generated 13 ideas and presented 10 recommendations for consideration by GDOT. The recommendations involve: realigning the mainline to the east to avoid property takes; reducing median, shoulder and lane widths; eliminating sidewalk on one side of the road; using asphalt sidewalks; and evaluating pavement design for side roads.

Neglecting the overlapping nature of the recommendations as much as possible, the net total of all the recommendations have the potential to reduce project costs by as much as \$3.9 million capital cost savings while continuing to provide the required functionality. This is shown in the last column of the Summary Table that follows the summary description below.

A brief presentation of these recommendations was conducted on February 13th, with the following in attendance: Lisa Myers and Douglas Fadool from GDOT Engineering Services, GDOT Project Manager Clay Bastian and the VE Team: Dave Wohlscheid, Alex Wiley and Dan Cogan.

Recommendation Highlights

A-1 Realign SR 1 / US 27 to the south/east at the Turnberry Lane Intersection Area

Realigning the mainline to the south/east in this vicinity will eliminate a number of ROW takes involving residences. This results in substantial savings in acquisition costs in the subdivision along Galena Road.

Potential savings if implemented is \$694,000

A-2 Reduce median width

Reduce the median width by eight feet from Old Moon Road to Turnberry Lane. This allows for a 24 foot median with all future roads completed. Substantial savings result from ROW, earthwork and paving at crossovers.

Potential savings is \$493,600

A-3 Reduce urban shoulder width from 16 feet to 12 feet

Unless there is a special need in utilities the VE team was not aware of, a 12 foot shoulder provides adequate room for a 2.5 foot curb and gutter, a 5 foot wide sidewalk, a 2 foot grassed buffer between curb and sidewalk, and a 2.5 foot wide shoulder from the sidewalk to shoulder break.

Savings Potential is \$674,000

B-1 Reduce lane widths from 12 feet to 11 feet

For this project given the urban setting, the 45 mph design speed and numerous controlled intersections, the VE team feels a reduction in pavement width is appropriate. Substantial savings occur in ROW, pavement, earthwork, drainage, etc.

Savings Potential is \$1,083,000

B-3 Evaluate pavement design on Williams and Moon Road

Because of the reduced projected traffic on this cross road and the length of work associated with these roads, a revised design appears warranted.

Potential savings is \$72,900

C-1 Use depressed median

Using a depressed median in lieu of a raised median results in some grading savings and a major savings in curb and gutter. These are partially offset by increased storm drainage costs but a net savings appears to be present.

Potential for this option is \$70,600.

E-1 Eliminate a five foot wide sidewalk from one side of the project

Because of the wide roadway that would be crossed it appears foot traffic will be constrained to one side of the roadway. As most of the development on the south (or east) side has entrances off SR 80 or some other main arterial. Any reduction in sidewalk would result in savings in ROW, sidewalk and grading.

Potential savings is \$627,400

E-3 Use asphalt sidewalks

Asphalts sidewalks and trails are commonly used in other states. The advantage is speed of construction compared to the concrete variety. A five foot wide sidewalk can readily be made by contractors at substantial cost savings.

Savings potential is \$243,300

E-5 Delete left turn lane at Lullwater Apartments in the northbound direction

The left turn lane is a U turn lane as there is no access on the west side of SR 1 / US 27 at this location. This is located 730 feet north of the signalized intersection at Cooper Creek Road which already has left turn lanes and therefore a U turn lane. This one does not appear to be warranted.

Potential Savings is \$50,000

E-6 Eliminate the 5 inch thermoplastic edge line stripe along the curb and gutter sections

Although a small item, the elimination of the white striping on black asphalt next to bleached white concrete curb and gutter does not diminish safety concerns. Even with age concrete remains substantially lighter than the asphalt.

Potential savings are \$4,600

SR1 / US 27 Veterans Parkway
Project No.: STP00-0011-01(053)
SUMMARY OF POTENTIAL COST SAVINGS

ITEM No.	CREATIVE IDEA DESCRIPTION	ORIGINAL INITIAL COST	PROPOSED INITIAL COST	INITIAL COST SAVINGS	FUTURE SAVINGS	TOTAL PRESENT WORTH SAVINGS	Maximum Savings in Combination with other VE proposals
A	Right of Way						
A-1	Realign SR1 / US 27 to the south / east at the Galena Rd. intersection	694,000	-0-	694,000	-0-	694,000	694,000
A-2	Reduce median width	493,600	-0-	493,600	-0-	493,600	493,600
A-3	Reduce shoulder width from 16 feet to 12 feet	674,000	-0-	674,000	-0-	674,000	674,000
B	AC Paving						
B-1	Reduce lane widths from 12 to 11 feet	1,083,000	-0-	1,083,000	-0-	1,083,000	1,083,000
B-3	Evaluate asphalt paving design depth on Williams and Moon Roads	72,900	-0-	72,900	-0-	72,900	72,900

**SR1 / US 27 Veterans Parkway
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C	Grading / Backfill						
C-1	Use depressed median	231,000	160,400	70,600	-0-	70,600	70,600
E	Other						
E-1	Eliminate 5 foot wide sidewalk from one side of corridor	627,400	-0-	627,400	-0-	627,400	627,400
E-3	Use asphalt sidewalks	356,000	112,700	243,300	-0-	243,300	210,000
E-5	Delete left turn at Lullwater in northbound direction	50,000	-0-	50,000	-0-	50,000	50,000
E-6	Eliminate the 5 inch thermoplastic edge line stripe along the curb and gutter sections	4,600	-0-	4,600	-0-	4,600	4,600
	TOTAL POTENTIAL SAVINGS						3,890,000

STUDY IDENTIFICATION

STUDY IDENTIFICATION

SR 1 / US 27 Veterans Parkway	Dates: February 10-13, 2009
Location: GDOT HQ - Atlanta	

VE Team Members

Name:	Discipline:	Organization:	Telephone:
David Wohlscheid	VE Team Leader	MACTEC	703-471-8383
Alex Wiley	Highway Design	MACTEC	770-421-3481
Dan Cogan	Highway Construction	KEA Group	404-290-6424

Project Description

This report summarizes the results of a value engineering (VE) study conducted on the reconstruction and widening of SR 1 / US 27 Veterans Highway. The estimated project cost including an estimated 10% factor for E&C, 0% for inflation but including right of way and utilities is \$26,834,000. The project is classified as an urban minor arterial and has a projected ADT (2026) of 35,800.



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growing area, improve the operational safety and enhance pedestrian access. The project begins just south of the intersection of SR 1 / US 27 Veterans Parkway with Old Moon Road (mile log 15.18) and ends north of Turnberry Lane (mile log 16.74) at Hancock Road for a total length of 1.56 miles.

Between Old Moon Road and Moon / Williams Roads, the existing five lane rural roadway will be widened to accommodate a four lane urban section with raised median and turn lanes. Between Moon / Williams Roads and Turnberry Lane, the existing two lane road will be reconstructed to include a four lane urban section with raised median and turn lanes. The project will include major intersection improvements at SR 1 / US 27 and Moon / Williams Roads. Included with the intersection improvements will be the widening of approximately 630 feet of Williams Road and 780 feet of Moon Road to accommodate a four lane urban

section with raised median and dual left turn lanes and to transition from the proposed four lane to the existing two lane roadways. The project will also include the addition of sidewalks along both sides of the SR 1 to improve pedestrian access throughout the corridor.

Please refer to the Cost Distribution Model contained in the Appendix for a breakdown of the estimate for this project.

The VE study was conducted February 10-13, 2009 at the DOT offices in Atlanta using a three person VE team. The design team included in-house GDOT personnel and Jordan, Jones and Goulding of Norcross, GA.



Kick off Meeting/Design Presentation

In addition to the VE Team, the following personnel attended this meeting which was held at the outset of the VE study:

Lisa Myers	GDOT Engineering Services
Doug Fadool	GDOT Engineering Services
Alex Stone	Jordan, Jones & Goulding Project Manager
James Magnus	GDOT Construction
Clay Bastian	GDOT Project Manager
Larry Bowman	GDOT Environmental
Nabil Raad	GDOT Traffic

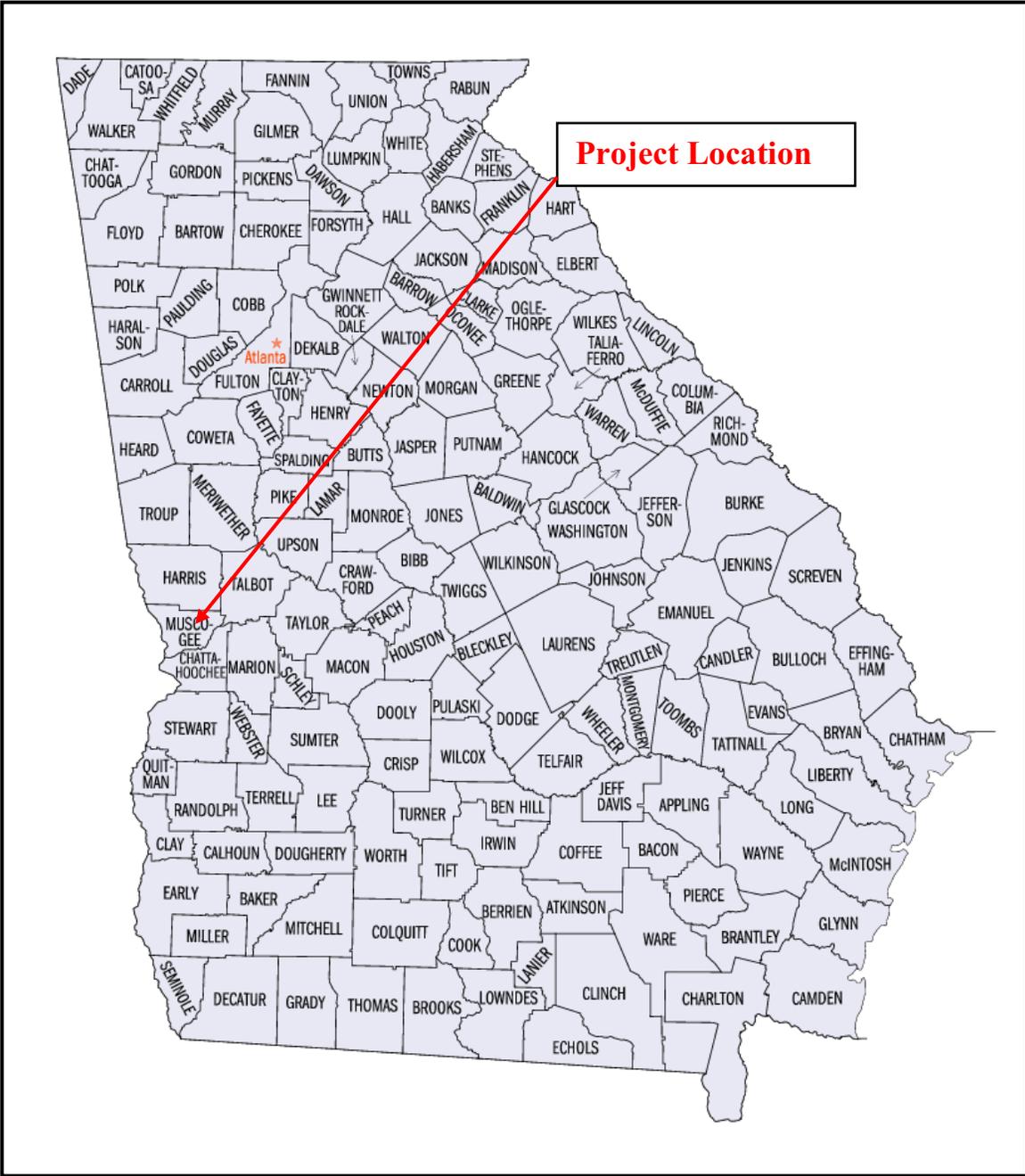
The VE Team appreciated the project overview given by Alex Stone of Jordan Jones & Goulding. Highlights included:

- The project started out as a City of Columbus project. It ties into an existing four lane road on the south end and a two lane road on the north. It is two lane throughout the rest of the County to the north.
- Three new schools have been built in the area.
- The ultimate level of service will be C per the Metropolitan Planning Organization (MPO) of Columbus standard. This necessitates an expansion to six lanes by 2026 to Turnberry Lane. The current design includes a median width of 56 feet to accommodate this ultimate expansion.
- There are four (4) existing traffic signals that will be upgraded for this project.
- 12 foot lanes are provided throughout as well as 16 foot shoulders.
- Many of the intersections involve double left turn lanes because of existing or projected traffic conditions.
- The environmental document has been sent to FHWA for review.
- The largest issue was the determination of logical project termini.
- There are three historic properties in the project vicinity, but none are impacted by the project.
- There are no wetlands within the project limits.

- There is one stream located just south of Williams Road which may need a stream buffer permit.

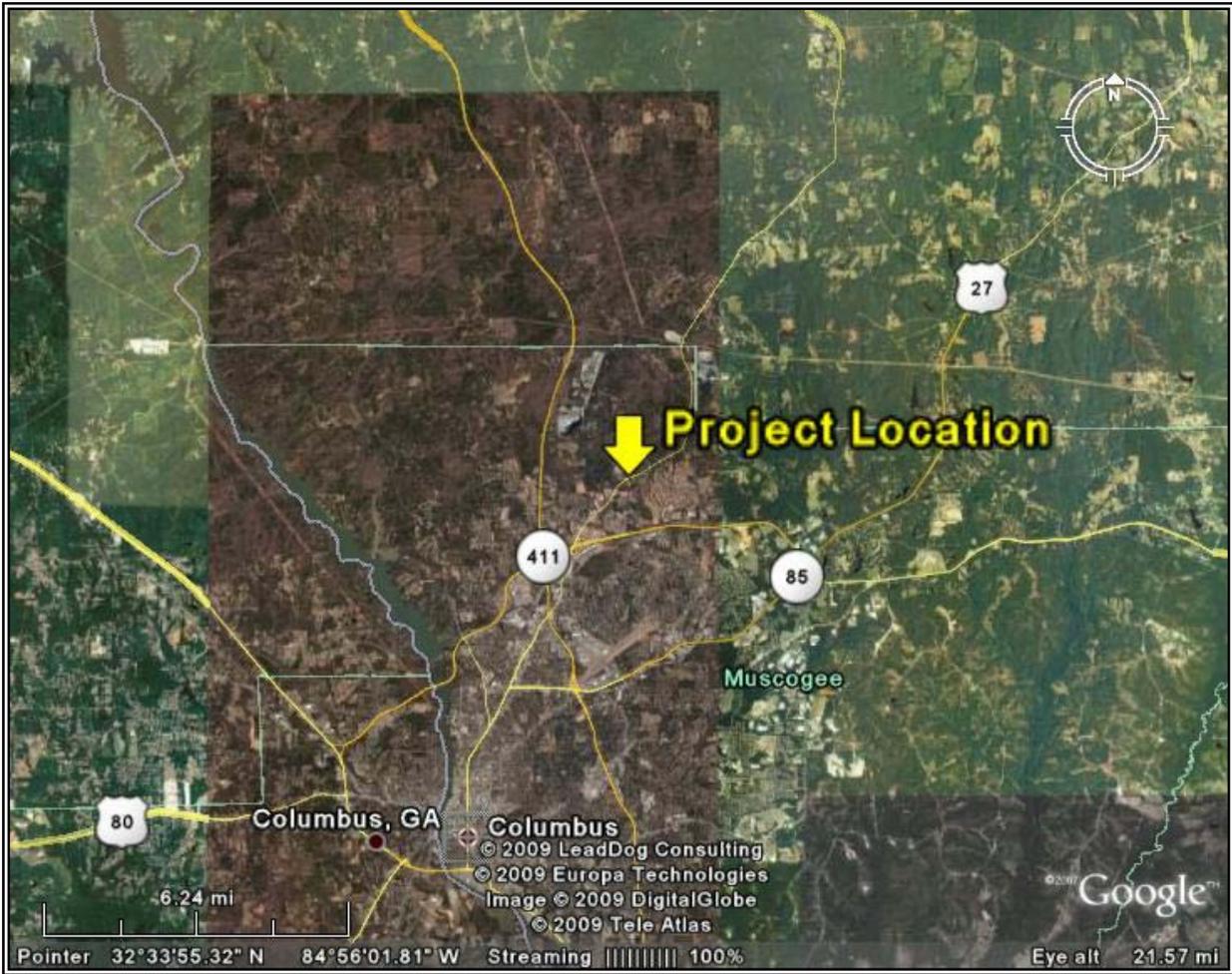
The following presents the project vicinity and location maps, plan and elevation views and project cost information used in this VE effort to present a more complete project description.

Figure 1
Project Vicinity Map



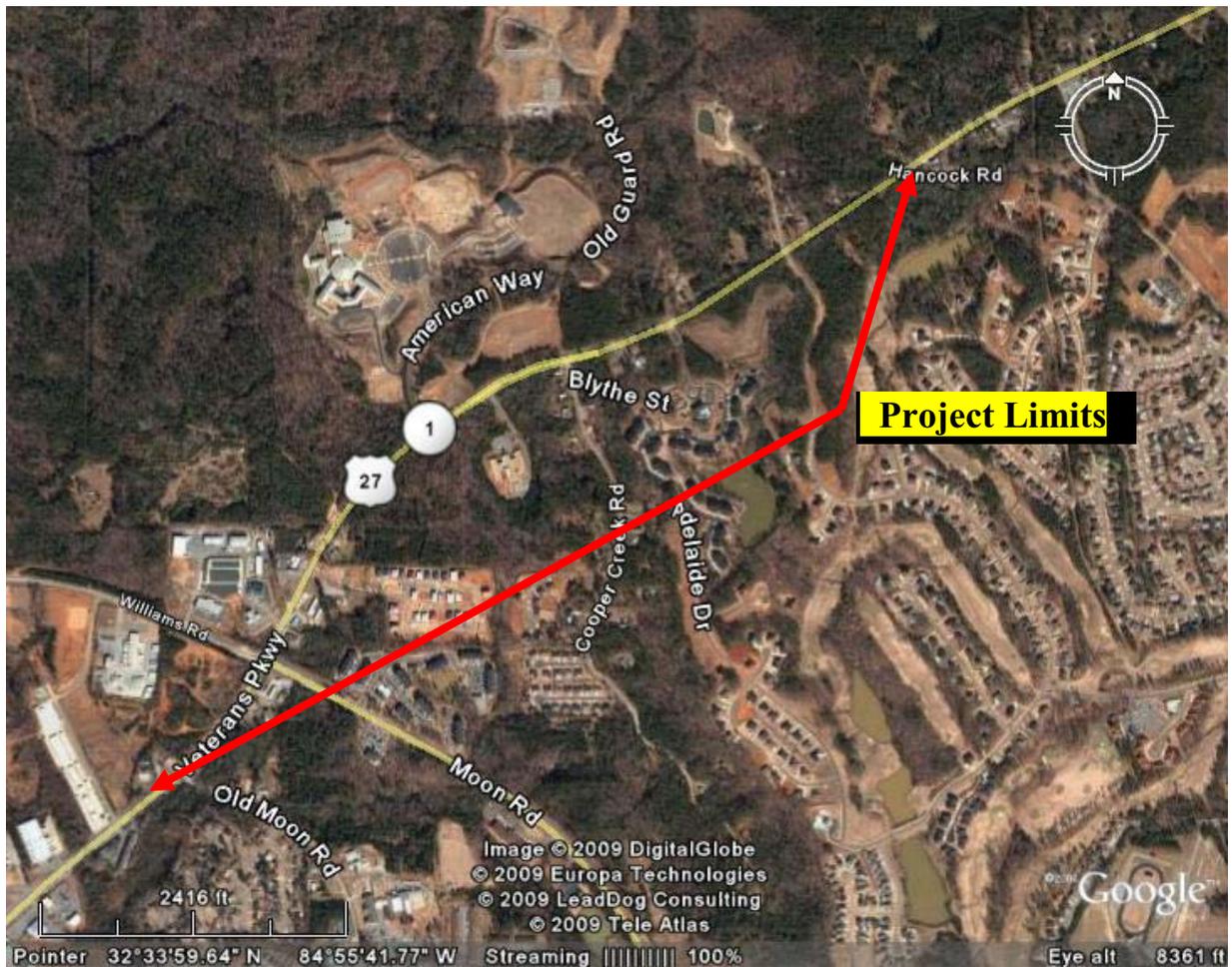
County Map of Georgia

Figure 2
Project Location Map

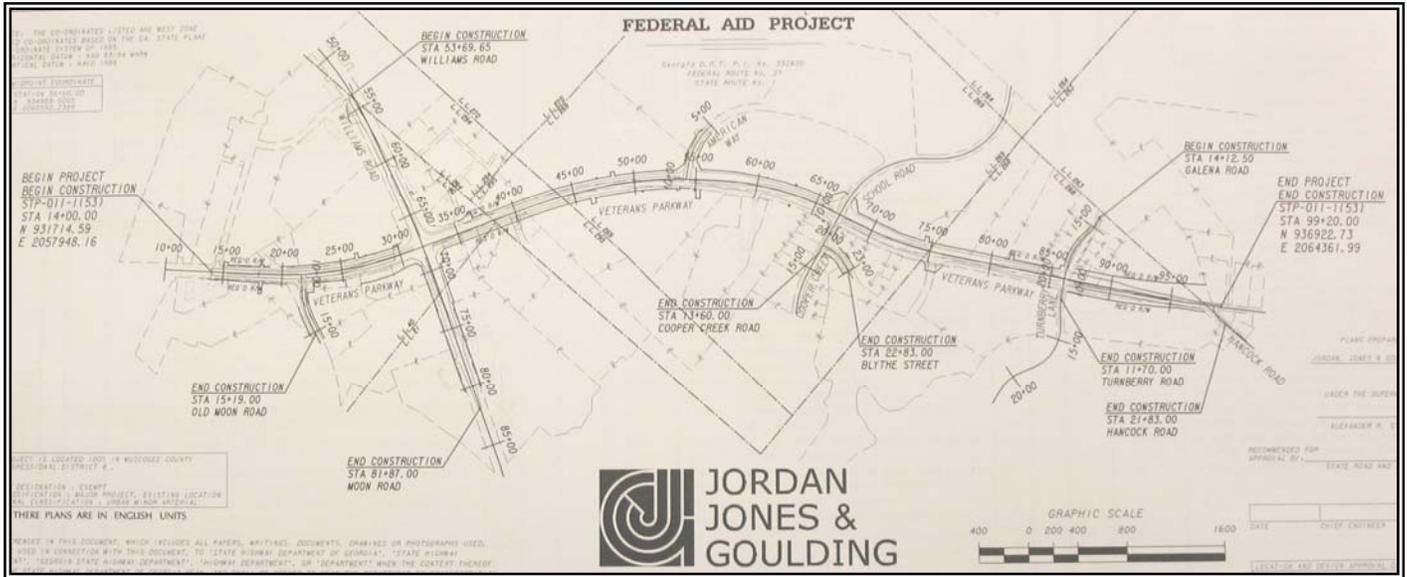


**Figure 3
Project Limits**

SR 1 / US 27 Veterans Highway



**Figure 4
Project Plan**



Estimate Report for file "Veterans Parkway - Combined"

Section ROADWAY					
Item Number	Quantity	Units	Unit Price	Item Description	Cost
150-1000	1	LS	1000000.00	TRAFFIC CONTROL -	1000000.00
207-0203	200	CY	37.61	FOUND BKFILL MATL, TP II	7522.00
210-0100	1	LS	1600000.00	GRADING COMPLETE -	1600000.00
310-1101	73000	TN	15.66	GR AGGR BASE CRS, INCL MATL	1143180.00
318-3000	400	TN	17.83	AGGR SURF CRS	7132.00
402-1812	4000	TN	75.00	RECYCLED ASPH CONC LEVELING, INCL BITUM MATL & H LIME	300000.00
402-3121	28000	TN	75.00	RECYCLED ASPH CONC 25 MM SUPERPAVE, GP 1 OR 2, INCL BITUM MATL & H LIME	2100000.00
402-3130	11000	TN	75.00	RECYCLED ASPH CONC 12.5 MM SUPERPAVE, GP 2 ONLY, INCL BITUM MATL & H LIME	825000.00
402-3190	11100	TN	75.00	RECYCLED ASPH CONC 19 MM SUPERPAVE, GP 1 OR 2, INCL BITUM MATL & H LIME	832500.00
413-1000	17000	GL	2.00	BITUM TACK COAT	34000.00
441-0016	100	SY	30.74	DRIVEWAY CONCRETE, 6 IN TK	3074.00
441-0018	760	SY	37.77	DRIVEWAY CONCRETE, 8 IN TK	28705.20
441-0104	12000	SY	26.97	CONC SIDEWALK, 4 IN	323640.00
441-0740	700	SY	28.51	CONCRETE MEDIAN, 4 IN	19957.00
441-0748	600	SY	29.67	CONCRETE MEDIAN, 6 IN	17802.00
441-4020	440	SY	32.56	CONC VALLEY GUTTER, 6 IN	14326.40
441-4030	1160	SY	43.38	CONC VALLEY GUTTER, 8 IN	50320.80
441-5002	2000	LF	22.04	CONCRETE HEADER CURB, 6 IN, TP 2	44080.00
441-6222	20600	LF	13.63	CONC CURB & GUTTER, 8 IN X 30 IN, TP 2	280778.00
441-6740	15400	LF	12.35	CONC CURB & GUTTER, 8 IN X 30 IN, TP 7	190190.00
444-1000	160	LF	2.41	SAWED JOINTS IN EXIST PAVEMENTS - PCC	385.60
446-1002	8500	LF	2.63	PVMT REINF FABRIC STRIPS, TP 2, INCL BITUM BINDER	22355.00
500-3101	436	CY	476.99	CLASS A CONCRETE	207967.64
500-3200	40	CY	445.62	CLASS B CONCRETE	17824.80
511-1000	46709	LB	0.75	BAR REINF STEEL	35031.75
550-1180	11000	LF	33.93	STORM DRAIN PIPE, 18 IN, H 1-10	373230.00
550-1240	2000	LF	41.08	STORM DRAIN PIPE, 24 IN, H 1-10	82160.00
550-1300	70	LF	51.67	STORM DRAIN PIPE, 30 IN, H 1-10	3616.90
550-1360	425	LF	62.99	STORM DRAIN PIPE, 36 IN, H 1-10	26770.75
550-1420	420	LF	78.19	STORM DRAIN PIPE, 42 IN, H 1-10	32839.80
550-2180	242	LF	24.97	SIDE DRAIN PIPE, 18 IN, H 1-10	6042.74
550-2240	50	LF	30.78	SIDE DRAIN PIPE, 24 IN, H 1-10	1539.00
550-4118	11	EA	288.53	FLARED END SECTION 18 IN, SIDE DRAIN	3173.83
550-4124	2	EA	374.50	FLARED END SECTION 24 IN, SIDE DRAIN	749.00
550-4218	6	EA	504.51	FLARED END SECTION 18 IN, STORM DRAIN	3027.06
550-4224	4	EA	567.85	FLARED END SECTION 24 IN, STORM DRAIN	2271.40
550-4230	3	EA	691.78	FLARED END SECTION 30 IN, STORM DRAIN	2075.34
550-4236	3	EA	931.27	FLARED END SECTION 36 IN, STORM DRAIN	2793.81
550-4242	2	EA	1170.50	FLARED END SECTION 42 IN, STORM DRAIN	2341.00
603-2024	222	SY	46.03	STN DUMPED RIP RAP, TP 1, 24 IN	10218.66
634-1200	170	EA	91.75	RIGHT OF WAY MARKERS	15597.50
641-1200	2200	LF	14.47	GUARDRAIL, TP W	31834.00
641-5001	5	EA	501.14	GUARDRAIL ANCHORAGE, TP 1	2505.70
641-5012	5	EA	1596.05	GUARDRAIL ANCHORAGE, TP 12	7980.25
668-1100	98	EA	1835.21	CATCH BASIN, GP 1	179850.58
668-1110	50	LF	204.16	CATCH BASIN, GP 1, ADDL DEPTH	10208.00
668-2100	14	EA	2710.62	DROP INLET, GP 1	37948.68
668-2110	5	LF	251.69	DROP INLET, GP 1, ADDL DEPTH	1258.45
668-4300	12	EA	1834.61	STORM SEWER MANHOLE, TP 1	22015.32
668-4311	5	LF	238.30	STORM SEWER MANHOLE, TP 1, ADDL DEPTH, CL 1	1191.50
668-7018	2	EA	1366.67	DRAIN INLET, 18 IN	2733.34
Section Sub Total:					\$9,971,744.80

Section PERMANENT EROSION CONTROL					
Item Number	Quantity	Units	Unit Price	Item Description	Cost
603-2182	290	SY	42.93	STN DUMPED RIP RAP, TP 3, 24 IN	12449.70
603-7000	512	SY	4.06	PLASTIC FILTER FABRIC	2078.72

700-6910	21	AC	798.39	PERMANENT GRASSING	16766.19
700-7000	92	TN	59.02	AGRICULTURAL LIME	5429.84
700-7010	77	GL	18.84	LIQUID LIME	1450.68
700-8000	14	TN	270.73	FERTILIZER MIXED GRADE	3790.22
700-8100	2050	LB	1.60	FERTILIZER NITROGEN CONTENT	3280.00
Section Sub Total:					\$45,245.35

Section TEMPORARY EROSION CONTROL					
Item Number	Quantity	Units	Unit Price	Item Description	Cost
163-0232	14	AC	476.99	TEMPORARY GRASSING	6677.86
163-0240	996	TN	196.76	MULCH	195972.96
163-0300	20	EA	1763.95	CONSTRUCTION EXIT	35279.00
163-0503	30	EA	496.57	CONSTRUCT AND REMOVE SILT CONTROL GATE, TP 3	14897.10
163-0504	24	EA	137.91	CONSTRUCT AND REMOVE SILT CONTROL GATE, TP 4	3309.84
163-0550	188	EA	261.89	CONSTRUCT AND REMOVE INLET SEDIMENT TRAP	49235.32
165-0010	7784	LF	1.05	MAINTENANCE OF TEMPORARY SILT FENCE, TP A	8173.20
165-0030	2186	LF	1.22	MAINTENANCE OF TEMPORARY SILT FENCE, TP C	2666.92
165-0087	30	EA	179.46	MAINTENANCE OF SILT CONTROL GATE, TP 3	5383.80
165-0088	24	EA	50.21	MAINTENANCE OF SILT CONTROL GATE, TP 4	1205.04
165-0101	20	EA	444.09	MAINTENANCE OF CONSTRUCTION EXIT	8881.80
165-0105	188	EA	95.00	MAINTENANCE OF INLET SEDIMENT TRAP	17860.00
167-1000	4	EA	1709.42	WATER QUALITY MONITORING AND SAMPLING	6837.68
167-1500	4	MO	877.59	WATER QUALITY INSPECTIONS	3510.36
171-0010	15446	LF	1.88	TEMPORARY SILT FENCE, TYPE A	29038.48
171-0030	4372	LF	3.23	TEMPORARY SILT FENCE, TYPE C	14121.56
710-9000	780	SY	4.42	PERMANENT SOIL REINFORCING MAT	3447.60
715-2200	667	SY	2.00	BITUMINOUS TREATED ROVING, WATERWAYS	1334.00
716-2000	14044	SY	1.07	EROSION CONTROL MATS, SLOPES	15027.08
Section Sub Total:					\$422,859.60

Section SIGNING AND MARKING					
Item Number	Quantity	Units	Unit Price	Item Description	Cost
636-1020	150	SF	13.82	HIGHWAY SIGNS, TP 1 MATL, REFL SHEETING, TP 3	2073.00
636-1029	175	SF	20.17	HIGHWAY SIGNS, TP 2 MATL, REFL SHEETING, TP 3	3529.75
636-1031	900	SF	20.85	HIGHWAY SIGNS, TP 1 MATL, REFL SHEETING TP 6	18765.00
636-2070	1300	LF	7.09	GALV STEEL POSTS, TP 7	9217.00
636-2080	600	LF	9.04	GALV STEEL POSTS, TP 8	5424.00
636-2090	400	LF	6.91	GALV STEEL POSTS, TP 9	2764.00
636-3010	25	EA	373.74	GROUND-MOUNTED BREAKAWAY SIGN SUPPORT	9343.50
639-2002	1500	LF	2.97	STEEL WIRE STRAND CABLE, 3/8 IN	4455.00
639-4003	10	EA	4534.76	STRAIN POLE, TP III	45347.60
653-0120	150	EA	61.28	THERMOPLASTIC PVMT MARKING, ARROW, TP 2	9192.00
653-0170	20	EA	78.03	THERMOPLASTIC PVMT MARKING, ARROW, TP 7	1560.60
653-0210	50	EA	96.03	THERMOPLASTIC PVMT MARKING, WORD, TP 1	4801.50
653-1501	15000	LF	0.28	THERMOPLASTIC SOLID TRAF STRIPE, 5 IN, WHITE	4200.00
653-1704	750	LF	3.48	THERMOPLASTIC SOLID TRAF STRIPE, 24 IN, WHITE	2610.00
653-1804	11000	LF	1.70	THERMOPLASTIC SOLID TRAF STRIPE, 8 IN, WHITE	18700.00
653-3501	6500	GLF	0.17	THERMOPLASTIC SKIP TRAF STRIPE, 5 IN, WHITE	1105.00
653-3502	420	GLF	0.21	THERMOPLASTIC SKIP TRAF STRIPE, 5 IN, YELLOW	88.20
653-6004	200	SY	2.57	THERMOPLASTIC TRAF STRIPING, WHITE	514.00
653-6006	200	SY	2.75	THERMOPLASTIC TRAF STRIPING, YELLOW	550.00

654-1001	275	EA	3.53	RAISED PVMT MARKERS TP 1	970.75
654-1003	850	EA	3.77	RAISED PVMT MARKERS TP 3	3204.50
Section Sub Total:					\$148,415.40

Section SIGNALIZATION

Item Number	Quantity	Units	Unit Price	Item Description	Cost
636-1032	160	SF	27.83	HIGHWAY SIGNS, TP 2 MATL, REFL SHEETING TP 6	4452.80
639-3004	13	EA	9085.16	STEEL STRAIN POLE, TP IV	118107.08
647-1000	4	LS	43601.41	TRAFFIC SIGNAL INSTALLATION NO -	174405.64
647-2140	6	EA	1233.96	PULL BOX, PB-4	7403.76
647-2150	6	EA	1699.55	PULL BOX, PB-5	10197.30
647-5230	2	EA	4956.06	SIGNAL ASSEMBLY, FLASHING SCHOOL, COMPLETE	9912.12
682-6120	80	LF	9.01	CONDUIT, RIGID, 2 IN	720.80
682-6222	600	LF	8.14	CONDUIT, NONMETL, TP 2, 2 IN	4884.00
682-6233	7000	LF	4.66	CONDUIT, NONMETL, TP 3, 2 IN	32620.00
935-1113	8200	LF	1.80	OUTSIDE PLANT FIBER OPTIC CABLE, LOOSE TUBE, SINGLE MODE, 24 FIBER	14760.00
935-1511	1000	LF	4.36	OUTSIDE PLANT FIBER OPTIC CABLE, DROP, SINGLE MODE, 6 FIBER	4360.00
935-3103	6	EA	687.65	FIBER OPTIC CLOSURE, UNDERGROUND, 24 FIBER	4125.90
935-3203	2	EA	621.57	FIBER OPTIC CLOSURE, AERIAL (SEALED), 24 FIBER	1243.14
935-4010	8	EA	36.61	FIBER OPTIC SPLICE, FUSION	292.88
935-5060	2	EA	119.33	FIBER OPTIC SNOWSHOE	238.66
935-8000	3	LS	3286.26	TESTING	9858.78
Section Sub Total:					\$397,582.86

Total Estimated Cost: \$10,985,848.01

Subtotal Construction Cost	\$10,985,848.01
E&C Rate 10.0 %	\$1,098,584.80
Inflation Rate 0.0 % @ 0 Years	\$0.00
<hr/>	
Total Construction Cost	\$12,084,432.81
Right Of Way	\$14,000,000.00
ReImb. Utilities	\$750,000.00
<hr/>	
Grand Total Project Cost	\$26,834,432.81

Preliminary Right of Way Cost Estimate

Date: August 24, 2006
 Project:STP-011-1(53)
 Existing/Required R/W:
 Project Termini:
 Project Description:

P.I. Number: 332820
 No. Parcels: 70

Land:

6.96 acres at \$ 250,000 per acre (Commercial)
 14.11 acres at \$ 40,000 per acre (Residential)

\$ 2,304,400

Improvements:

0

\$ 1,120,000

Relocation:

0 Commercial @ \$25,000/parcel = \$0
 8 - Residential @ \$40,000/parcel = \$320,000

TOTAL

\$320,000

Damages:

Proximity - \$ 65,000
 Consequential - \$ 200,000
 Cost to Cure - \$ 10,000

TOTAL

\$275,000

SUB-TOTAL:

\$4,019,400

Net Cost		\$ 4,019,400
Scheduling Contingency	55 %	\$ 6,230,070
Adm/Court Cost	60 %	\$ 9,968,112
Market Appreciation	40 %	<u>\$ 13,995,357</u>

TOTAL

\$ 13,995,357

Total Cost

\$14,000,000

Prepared By: _____

Approved: _____

Howard P. Copeland
 R/W Administrator

REVISED: 6-25-08

Preliminary Right of Way Cost Estimate

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TOTAL

\$ 13,995,357

Total Cost

\$14,000,000

Prepared By: _____

Approved: _____

Howard P. Copeland
R/W Administrator

REVISED: 6-25-08

<u>Parel No.</u>	<u>R/W Required Acres</u>	<u>Permanent Easement Required</u>	<u>Estimated Zoning</u>	<u>Description of Improvements</u>	<u>Damages</u>	<u>Calculated \$ per acre</u>	<u>R/W Cost</u>	<u>Total Cost</u>
1	0.019	0.015	Commercial			\$250,000.00	\$6,625	\$6,625
2	0.033	0.122	Commercial			\$250,000.00	\$23,500	\$23,500
3	0.069	0.229	Commercial			\$250,000.00	\$45,875	\$45,875
4	0.061	0.182	Commercial		\$25,000	\$250,000.00	\$38,000	\$63,000
5	0.131	0.328	Commercial		\$75,000	\$250,000.00	\$73,750	\$148,750
6	0.000	0.000	Commercial			\$250,000.00	\$0	\$0
7	0.041	0.168	Commercial			\$250,000.00	\$31,250	\$31,250
8	0.217	0.753	Commercial			\$250,000.00	\$148,375	\$148,375
9	0.298	0.267	Commercial			\$250,000.00	\$107,875	\$107,875
10	0.542	0.211	Commercial			\$250,000.00	\$161,875	\$161,875
11	0.550	0.000	Commercial		\$100,000	\$250,000.00	\$137,500	\$237,500
12	0.397	0.050	Commercial			\$250,000.00	\$105,500	\$105,500
13	0.429	0.116	Commercial			\$250,000.00	\$121,750	\$121,750
14	0.000	0.046	Commercial			\$250,000.00	\$5,750	\$5,750
15	0.217	0.027	Commercial			\$250,000.00	\$57,625	\$57,625
16	0.134	0.035	Commercial			\$250,000.00	\$37,875	\$37,875
17	0.202	0.016	Commercial			\$250,000.00	\$52,500	\$52,500
18	0.247	0.119	Commercial			\$250,000.00	\$76,625	\$76,625
19	0.244	0.018	Commercial			\$250,000.00	\$63,250	\$63,250
20	0.208	0.033	Commercial			\$250,000.00	\$56,125	\$56,125
21	0.122	0.059	Commercial			\$250,000.00	\$37,875	\$37,875
22	0.555	0.173	Residential	House	\$160,000	\$40,000.00	\$25,660	\$185,660
23	0.173	0.058	Residential		\$75,000	\$40,000.00	\$8,080	\$83,080
24	1.496	0.506	Residential			\$40,000.00	\$69,960	\$69,960
25	1.052	0.417	Residential			\$40,000.00	\$50,420	\$50,420
26	3.637	0.388	Commercial			\$250,000.00	\$957,750	\$957,750
27	0.002	0.147	Commercial			\$250,000.00	\$18,875	\$18,875
28	0.000	0.000	Commercial			\$250,000.00	\$0	\$0
29	0.026	0.131	Commercial			\$250,000.00	\$22,875	\$22,875
30	0.020	0.000	Commercial			\$250,000.00	\$5,000	\$5,000
31	1.768	0.450	Commercial			\$250,000.00	\$498,250	\$498,250
32	0.017	0.022	Commercial			\$250,000.00	\$7,000	\$7,000
33	0.036	0.012	Commercial			\$250,000.00	\$10,500	\$10,500

34	0.013	0.000	Commercial				\$250,000.00	\$3,250	\$3,250
35	0.000	0.008	Residential	House		\$0	\$40,000.00	\$160	\$160
36	0.041	0.000	Commercial				\$250,000.00	\$10,250	\$10,250
37	1.175	0.182	Commercial				\$250,000.00	\$316,500	\$316,500
38	0.095	0.000	Commercial				\$250,000.00	\$23,750	\$23,750
39	0.053	0.122	Commercial				\$250,000.00	\$28,500	\$28,500
40	0.679	0.112	Commercial				\$250,000.00	\$183,750	\$183,750
41	0.675	0.178	Residential				\$40,000.00	\$30,560	\$30,560
42	0.258	0.102	Commercial				\$300,000.00	\$92,700	\$92,700
43	0.299	0.068	Residential	House		\$160,000	\$40,000.00	\$13,320	\$173,320
44	0.663	0.104	Commercial				\$250,000.00	\$178,750	\$178,750
45	0.348	0.050	Residential	House		\$160,000	\$40,000.00	\$14,920	\$174,920
46	0.319	0.051	Residential	House		\$160,000	\$40,000.00	\$13,780	\$173,780
47	2.150	0.102	Residential	House		\$160,000	\$40,000.00	\$88,040	\$248,040
48	0.450	0.000	Residential				\$40,000.00	\$18,000	\$18,000
49	0.000	0.050	Residential				\$40,000.00	\$1,000	\$1,000
50	0.025	0.000	Commercial				\$250,000.00	\$6,250	\$6,250
51	0.016	0.000	Commercial				\$250,000.00	\$4,000	\$4,000
52	0.000	0.000	Commercial				\$250,000.00	\$0	\$0
53	0.100	0.036	Commercial				\$250,000.00	\$29,500	\$29,500
54	0.000	0.000	Commercial				\$250,000.00	\$0	\$0
55	0.136	0.078	Commercial				\$250,000.00	\$43,750	\$43,750
56	0.174	0.085	Commercial				\$250,000.00	\$54,125	\$54,125
57	0.082	0.055	Commercial				\$250,000.00	\$27,375	\$27,375
58	0.035	0.067	Commercial				\$250,000.00	\$17,125	\$17,125
59	0.000	0.000	Commercial				\$250,000.00	\$0	\$0
60	0.000	0.000	Commercial				\$250,000.00	\$0	\$0
61	0.127	0.000	Residential				\$40,000.00	\$5,080	\$5,080
62	0.027	0.000	Residential				\$40,000.00	\$1,080	\$1,080
63	0.038	0.000	Residential				\$40,000.00	\$1,520	\$1,520
64	0.015	0.000	Residential				\$40,000.00	\$600	\$600
65	0.003	0.000	Residential				\$40,000.00	\$120	\$120
66	0.060	0.060	Residential				\$40,000.00	\$3,600	\$3,600
67	0.000	0.000	Residential				\$40,000.00	\$0	\$0
68	0.108	0.040	Residential	House		\$160,000	\$40,000.00	\$5,120	\$165,120
69	0.000	0.000	Residential				\$40,000.00	\$0	\$0
70	0.115	0.029	Residential	House		\$160,000	\$40,000.00	\$5,180	\$165,180

Residential R/W Acres Required	14.11		Residential R/W & Improvement value	\$1,117,220			<u>Total Damages</u>		\$275,000
Commercial / Industrial R/W Acres Required	6.96		Commercial / Industrial R/W & Improvement Value	\$4,062,895			<u>Total Improvement Cost</u>		\$1,120,000
Total Sq Ft R/W	924,430						<u>Total R/W Cost</u>		\$4,285,525
Acres R/W	21.222						<u>Total Project Cost</u>		\$5,680,525

VE RECOMMENDATIONS

DEVELOPMENT AND RECOMMENDATION PHASE

SR 1 / US 27 Veterans Parkway

IDEA No.:	PAGE No.:	CREATIVE IDEA:
A-1	1 of 4	Realign SR 1/US 27 to the south/east at the Galena Rd./Turnberry Lane. intersection
Comp By: AW	Date: 02/12/09	Checked By: DCW Date: 02/2/09

Original Concept:

The original concept calls for shifting the proposed SR 1/US 27 alignment north or west at the Galena Rd./Turnberry Ln. intersection. This will minimize impacts to the vacant property on the right side of SR 1 at Turnberry Ln.

Proposed Change:

Shift the proposed widening of SR 1/US 27 to the south or east at Turnberry Ln.

Justification:

This will reduce the required right-of-way from the existing subdivision along Galena Rd. and put most of the impacts on vacant land instead of through homes along Galena Rd..

LIFE CYCLE COST SUMMARY	CAPITAL COST	FUTURE COST	PRESENT WORTH
INITIAL COST - Original	694,000		
- Proposed	0		
- Savings	694,000		694,000
FUTURE COST - Savings			-0-
TOTAL PRESENT WORTH SAVINGS			694,000

SR 1 / US 27 Veterans Parkway

ITEM N^o: A-1
CLIENT: GDOT
Sheet 2 of 4



CALCULATIONS

SR 1 / US 27 Veterans Parkway

ITEM N^o: A-1
CLIENT: GDOT
Sheet 4 of 4

Earthwork and paving should be similar in size. There might be a slight increase in the amount of fill needed. However, there should be a similar decrease in excavation.

The only significant difference should be in the right-of-way. The required right-of-way area should be similar in size with the original design and the proposed design requiring a similar amount of land. The difference would be in the number of displacements.

Original Design – Parcel Nos. 37, 43, 45, 46, 68, and 70
6 residential units

Proposed Design - Parcel Nos. 37 possible
1 residential unit

Relocations at \$40,000/Parcel
6-1 = 5 Parcels

DEVELOPMENT AND RECOMMENDATION PHASE

SR 1 / US 27 Veterans Parkway

IDEA No.:

PAGE No.:

CREATIVE IDEA:

A-2

1 of 4

Reduce the Median Width

Comp By: AW

Date: 02/11/09

Checked By: DCW

Date: 02/11/09

Original Concept:

The original concept calls for a 56' raised median from the beginning of the project to the Galena Rd./Turnberry Ln. intersection. This wide median allows room for a future lane in each direction. With the future lanes added the median width is 32'.

Proposed Change:

Use a 48' wide median in lieu of the 56' wide median. The median width will be reduced to 24' for future lane additions.

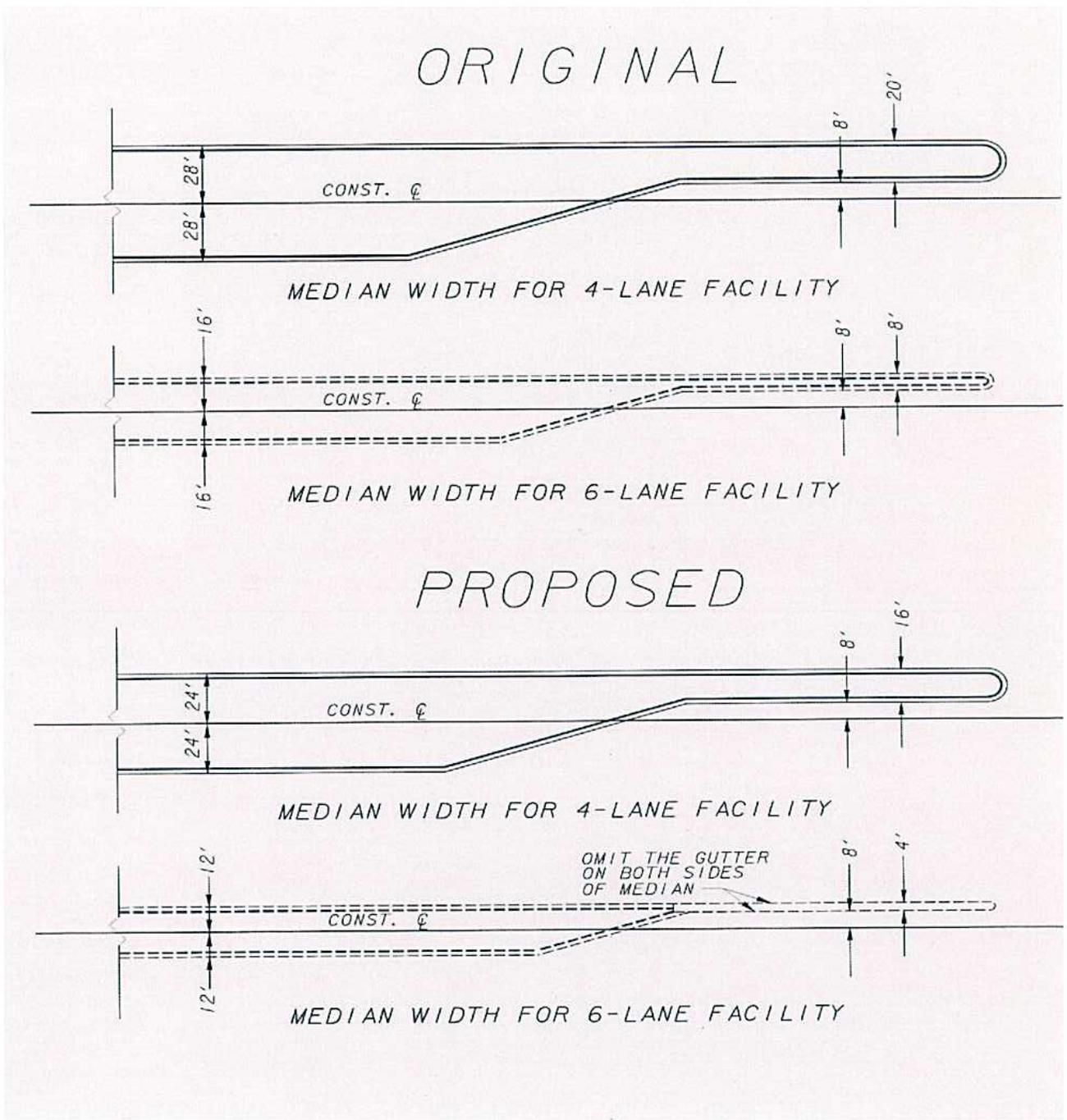
Justification:

This will reduce the width of the roadway footprint by 8'. It will reduce the width of required right-of-way by approximately 8', reduce the amount paving at the crossovers, and reduce the amount of earthwork.

LIFE CYCLE COST SUMMARY	CAPITAL COST	FUTURE COST	PRESENT WORTH
INITIAL COST - Original	493,600		
- Proposed	0		
- Savings	493,600		493,600
FUTURE COST - Savings			
TOTAL PRESENT WORTH SAVINGS			493,600

SR 1 / US 27 Veterans Parkway

ITEM N^o: A-2
CLIENT: GDOT
Sheet 2 of 4



CALCULATIONS**SR 1 / US 27 Veterans Parkway**ITEM N^o: A-2
CLIENT: GDOT
Sheet 4 of 4

Assume width begins at Old Moon Rd. and proceeds to Galena Rd./Turnberry Ln.:

Right-of-Way:

Right:

$$22+50 \text{ to } 31+20 = 870 \text{ LF}$$

$$33+00 \text{ to } 66+70 = 3370$$

$$67+50 \text{ to } 85+80 = \underline{1830}$$

$$6070 \text{ LF}$$

Left:

$$21+65 \text{ to } 30+50 = 885 \text{ LF}$$

$$33+80 \text{ to } 53+50 = 1970$$

$$55+20 \text{ to } 65+50 = 1030$$

$$68+30 \text{ to } 85+90 = \underline{1760}$$

$$5645 \text{ LF}$$
Average length: $(6070 + 5645) / 2 = 5857.50 \text{ LF}$ Use 5860 LF $5860 \times 8 = 46,880 \text{ SF} / 43,560 \text{ SF/ Acre} = 1.076 \text{ Acres}$

Earthwork Volume:

Assume 5' height of cut or fill

 $21+63 \text{ to } 86+14 = 6451 \text{ LF} \times 8' = 51,608 \text{ SF}$ $(51,608 \times 5') / 27 \text{ CF/CY} = 9,557 \text{ CY}$ Use 9,600 CY

Paving:

$$31+15 \text{ to } 32+79 = 164 \text{ LF}$$

$$53+69 \text{ to } 55+12 = 143$$

$$66+42 \text{ to } 67+58 = 116$$

$$74+79 \text{ to } 75+97 = \underline{118}$$

$$541 \text{ LF}$$
 $541 \times 8 = 4328 \text{ SF} / 9 \text{ SF/SY} = 481 \text{ SY}$ Use 500 SY12.5 mm Superpave: $500 \times 165 / 2000\text{LB/Ton} = 41.25 \text{ Tons}$ Use 45 Tons19 mm Superpave: $500 \times 220 / 2000\text{LB/Ton} = 55.00 \text{ Tons}$ Use 60 Tons25 mm Superpave: $500 \times 550 / 2000\text{LB/Ton} = 137.50 \text{ Tons}$ Use 140 Tons12" Graded Aggregate Base = $500 \text{ SY} \times 1\text{FT}/3 \text{ FT/YD} = 167 \text{ CY} \times 2.07 \text{ TONS} /$
 $\text{CY} = 346 \text{ Tons}$ Use 350 Tons

Storm Drain Pipe:

 $18'' = 8+8+4+8+8+8+8+8+8+8 = 76 \text{ LF}$ $24'' = 8+4 = 12 \text{ LF}$ $30'' = 8 \text{ LF}$

DEVELOPMENT AND RECOMMENDATION PHASE

SR 1 / US 27 Veterans Parkway

IDEA No.:

PAGE No.:

CREATIVE IDEA:

A-3

1 of 4

Reduce urban shoulder width from 16' to 12'

Comp By: AW

Date: 02/10/09

Checked By:

Date:02/10/09

Original Concept:

The original concept calls for 16' urban shoulders from the beginning of the project to the Galena Rd./Turnberry Ln. intersection. Additionally, several of the side roads call for 16' wide urban shoulders.

Proposed Change:

Use 12' wide urban shoulders in lieu of 16' wide. This will accommodate the 2 ½' wide curb and gutter, the 5' sidewalk, provide a 2' grassed buffer between the curb and the sidewalk, and a 2 ½' shoulder from the sidewalk to shoulder break.

Justification:

This will reduce the width of the shoulders by 4' on each side of the street. This will reduce the width of the required right-of-way by approximately 8' and reduce the amount of earthwork.

LIFE CYCLE COST SUMMARY	CAPITAL COST	FUTURE COST	PRESENT WORTH
INITIAL COST - Original	674,000		
- Proposed	-0-		
- Savings	674,000		674,000
FUTURE COST - Savings			-0-
TOTAL PRESENT WORTH SAVINGS			674,000

CALCULATIONS**SR 1 / US 27 Veterans Parkway**ITEM N^o: A-3
CLIENT: GDOT
Sheet 4 of 4

SR 1/US 27 Both sides of the street:

Left:

$$14+60 \text{ to } 31+40 = 1680 \text{ LF}$$

$$32+50 \text{ to } 54+10 = 2160$$

$$54+70 \text{ to } 66+75 = 1205$$

$$67+50 \text{ to } 86+70 = \underline{1920}$$

$$6965 \text{ LF}$$

Right:

$$14+35 \text{ to } 31+40 = 1705$$

$$32+70 \text{ to } 66+90 = 3420$$

$$67+30 \text{ to } 86+60 = \underline{1930}$$

$$7055 \text{ LF}$$

Williams Rd./Moon Rd. Both sides of the street:

Left:

$$61+00 \text{ to } 67+00 = 600 \text{ LF}$$

$$68+70 \text{ to } 76+70 = \underline{800}$$

$$1400 \text{ LF}$$

Right:

$$61+20 \text{ to } 67+00 = 580 \text{ LF}$$

$$68+70 \text{ to } 77+65 = \underline{895}$$

$$1475 \text{ LF}$$

American Way Right side only:

$$5+70 \text{ to } 9+20 = 350 \text{ LF}$$

Total Area:

$$(6965+7055+1400+1475+350) \times 4' = 68,980 \text{ SF}$$

Earthwork Volume:

Assume 5' height of cut or fill

$$(68,980 \times 5') / 27 \text{ CF/CY} = 12,774 \text{ CY Use } 12,800 \text{ CY}$$

Right-of-Way:

$$68,980 \text{ SF} / 43,560 \text{ SF/ Acre} = 1.584 \text{ Acres}$$

DEVELOPMENT AND RECOMMENDATION PHASE

SR 1 / US 27 Veterans Parkway

IDEA No.:	PAGE No.:	CREATIVE IDEA:	
B-1	1 of 4	Reduce lane width from 12 foot to 11 foot widths.	
Comp By: DPC	Date: 2/10/09	Checked By: DCW	Date: 2/11/09

Original Concept:

There are several current roadway typical sections proposed for this project and all include 12-foot wide lanes, both in the rural as well as urban sections. There are several dual turning movements which include off-set lanes on both sides of the intersection. In certain sections there are (9) 12-foot lanes of pavement. During the development and design of this project, ROW costs have escalated significantly and are expected to continue to rise at a very high rate.

Proposed Change:

It is recommended that 11-foot lanes be used in-lieu-of 12-foot lanes on both the through travel lanes as well as the dedicated right and left turn lanes.

Justification:

Reduction of one foot of roadway section per each lane reduces pavement section, drainage system, earthwork, and right-of-way (ROW) acquisition costs.

The reduction in lane width would reduce the amount of ROW required for the project, reduce the lengths of storm drain cross pipes, reduce the amount of roadway section material, and potentially reduce /eliminate the need of any retaining walls and limited earthwork. The 11-foot lanes would accommodate the project traffic and provide adequate safety for both the urban and rural roadway with posted speeds of 50, 45, 40 MPH respectively.

This concept results in significant cost savings to the project.

LIFE CYCLE COST SUMMARY	CAPITAL COST	FUTURE COST	PRESENT WORTH
INITIAL COST - Original	1,083,000		
- Proposed	-0-		
- Savings	1,083,000		1,083,000
FUTURE COST - Savings			-0-
TOTAL PRESENT WORTH SAVINGS			1,083,000

CALCULATIONS**SR 1 / US 27 Veterans Parkway**ITEM N^o: B-1
CLIENT: GDOT
Sheet 2 of 4**SR 1 / US 27 Section:**

Project limits are from STA 14+00 to STA 99+20 = 8,520 LF

There are approximately 20 areas where the number of lanes vary from (2) 12-foot lanes to (9) 12-foot lanes, including dual left lanes, single right lanes and (4) through lanes. The average number of lanes in this 8,520 LF corridor calculates to 7-feet. Therefore, the total lane reduction was calculated using $7 \text{ LF} \times 8,520 \text{ LF} = 59,640 \text{ SF} = 6,627 \text{ SY}$.

Williams Road Section:

Project limits are from STA 53+70 to STA 67+50 = 1,380 LF

There are approximately 5 areas where the number of lanes vary from (2) 12-foot lanes to (8) 12-foot lanes, including dual left lanes, single right lanes and (4) through lanes. The average number of lanes in this 1,380 LF corridor calculates to 5-feet. Therefore, the total lane reduction was calculated using $5 \text{ LF} \times 1,380 \text{ LF} = 6,900 \text{ SF} = 767 \text{ SY}$.

Moon Road Section:

Project limits are from STA 68+50 to STA 81+87 = 1,337 LF

There are approximately 6 areas where the number of lanes vary from (2) 12-foot lanes to (8) 12-foot lanes, including dual left lanes, single right lanes and (4) through lanes. The average number of lanes in this 1,337 LF corridor calculates to 5-feet. Therefore, the total lane reduction was calculated using $5 \text{ LF} \times 1,337 \text{ LF} = 6,685 \text{ SF} = 743 \text{ SY}$.

Grand total pavement section reduction = 73,225 SF = 8,136 SY**GAB and Asphalt SY to Ton calculations:**

1. GAB – 135# x 8,136 SY / 2,000# = 550 Tons
2. 12.5 mm mix – 165 # x 8,136 SY / 2,000 # = 672 Tons
3. 19 mm mix – 220 # x 8,136 SY / 2,000 # = 895 Tons
4. 25 mm mix – 550 # x 8,136 SY / 2,000 # = 2,238 Tons

Old Moon Road and Cooper Creek Road were not reduced from 12' to 11' due to their relatively small tie-in section lengths.

Right-of-Way (ROW) Cost:

Using only commercial and residential land costs per acre and eliminating improvement, relocation, and damage costs is how the average ROW costs will be calculated on a SF basis.

21 acres required to widen corridor at a total raw cost of \$2,304,400. Adding GDOT contingency, court, administrative and market adjustments, this ROW cost increases to \$ 8,000,878.

21 acres at one acre = 43,560 SF = 914,760 SF.

Cost per square foot = \$ 8.75 cost basis.

73,225 SF total pavement section reduction x \$ 8.75 SF = \$ 640,720

Drainage pipe reduction was pulled directly from plan sheets.

SR 1 / US 27 Veterans Parkway

ITEM N^o: B-1
 CLIENT: GDOT
 Sheet 3 of 4

Embankment Estimates:

Current estimate provides only a LS Grading Complete item at \$ 1.6 million. Current roadway cross-sections for Williams Road are at-grade. Conditions on Moon Road are minor but there appears to be more embankment than excavation. Conditions on SR 1 / US 27 appear more intent and balanced, but grading operations will be minimized due to section reductions.

For recommendation estimating purposes the VE team will assume a 1% reduction in embankment for each linear foot reduction in roadway section width, therefore a 6-Foot reduction would produce an approximate \$96,000 savings cost.

4'x6' Double Box Culvert:

Drainage profiles indicate a total length of 447 LF laid on a skew through the intersection of SR 1 and Moon Road and Williams Road. Total estimated lane reduction across SR 1 is 9 LF, Williams Road is 3 LF and Moon Road is 3 LF for a total of approximately 15 LF of barrel reduction in length. Barrel concrete and steel estimate totals approximately \$250,000, therefore, $15 \text{ LF} / 447 \text{ LF} = 3.5\%$ of concrete and steel quantities minimized = $3.5\% \times \$250,000$.

DEVELOPMENT AND RECOMMENDATION PHASE

SR 1 / US 27 Veterans Parkway

IDEA No.: B-3	PAGE No.: 1 of 4	CREATIVE IDEA: Evaluate asphalt pavement design depth on Williams Road and Moon Road.
-------------------------	----------------------------	-------------------------------------------------------------------------------------------------

Comp By: DPC Date: 02/12/09 Checked By: DCW Date: 02/12/09

Original Concept:

Current typical section for both Williams Road and Moon Road specify the identical pavement section design as recommended for SR 1 / US 27 consisting of a 12" of Graded Aggregate Base, 550 LB/SY / 25 MM asphaltic concrete base, 220 LB/SY 19 MM asphaltic intermediate layer, and a 165 LB/SY 12.5 MM top layer (1.5" / 2.0" / 5.0" / 12.0" section).

Proposed Change:

Reduce proposed pavement section to the following: 6" of Graded Aggregate Base, 440 LB/SY / 25 MM asphaltic concrete base, 220 LB/SY / 19 MM asphaltic intermediate layer, and a 165 LB/SY / 12.5 MM top layer (1.5" / 2.0" / 4.0" / 6.0" section). A total pavement section reduction of 7.0 inches.

Justification:

Evaluation of the pavement design calculation with the proposed 1.5" / 2.0" / 4.0" / 6.0" section supports an overdesign by 54.3% (see attached REVISED Pavement Design). AADT for 2008 is 5,360 and for 2028 is 10,645, much lower than the SR 1 /US 27 AADT. The length of roadway from Williams Road begin STA 53+70 to Moon Road end STA 81+87 provides substantial area (7,514 SY) to reduce unneeded pavement section providing a cost savings without diminishing project value.

LIFE CYCLE COST SUMMARY	CAPITAL COST	FUTURE COST	PRESENT WORTH
INITIAL COST - Original	72,900		
- Proposed			
- Savings	72,900		72,900
FUTURE COST - Savings			-0-
TOTAL PRESENT WORTH SAVINGS			72,900

CALCULATIONS

**SR 3 / US19 and CR73 Intersection Improvement, New
Bridge Over Potato Creek**

ITEM N^o: B-3
CLIENT: GDOT
Sheet 3 of 4

Williams Road:

STA 54+00 to 56+00: 10 LF wide x 200 LF / 9 = 222 SY
STA 56+00 to 57+00: 20 LF wide x 100 LF / 9 = 222 SY
STA 57+00 to 61+00: 20 LF wide x 400 LF / 9 = 890 SY
STA 61+00 to 67+25: 40 LF wide x 625 LF / 9 = 2,780 SY
Total = 4,114 SY

Moon Road:

STA 68+50 to 73+50: 40 LF wide x 500 LF / 9 = 2,223 SY
STA 73+50 to 77+60: 25 LF wide x 410 LF / 9 = 1,140 SY
STA 77+60 to 81+00: 15 LF wide x 340 LF / 9 = 38 SY
Total = 3,400 SY

Grand Total = 7,514 SY

Pavement Section Reduction:

GAB: 12" thick reduced to 6" thick = 600#/SY x 7,514 SY x 2,000 TN = 2,255 TN
25 MM: 5" thick reduced to 4" thick = 110#/SY x 7,514 x 2,000 TN = 413 TN

DEVELOPMENT AND RECOMMENDATION PHASE

SR 1 / US 27 Veterans Parkway

IDEA No.:	PAGE No.:	CREATIVE IDEA:
C-1	1 of 3	Use depressed median

Comp By: DPC Date: 2/10/09 Checked By: DCW Date: 12/12/09

Original Concept:

There are several current roadway typical sections proposed for this project including both rural and urban sections. The typical median area, when not paved, is designated as either a grass surface (at-grade with curb and gutter) or a depressed grass surface with 4:1 slopes and a 2-foot paved shoulder (no curb & gutter).

Proposed Change:

It is recommended that the designer redesign all grassed medians to become standard GDOT depressed grass medians and eliminate all at-grade grass medians. This change eliminates the curb & gutter and embankment material activities without compromising project functionality.

Justification:

By converting all at-grade grassed medians to depressed grass medians we can reduce earthwork activities and eliminate curb and gutter costs yet retain intended value, function, and safety features. The amount of embankment brought onto the site will off-set the additional drainage system requirements in the median area and the additional 2-foot paved inside shoulder will off-set the curb and gutter expense.

LIFE CYCLE COST SUMMARY	CAPITAL COST	FUTURE COST	PRESENT WORTH
INITIAL COST - Original	231,000		
- Proposed	160,400		
- Savings	70,600		70,600
FUTURE COST - Savings			-0-
TOTAL PRESENT WORTH SAVINGS			70,600

CALCULATIONS

SR 1 / US 27 Veterans Parkway

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Typical Section # 4 – STA 22+00 to STA 31+00: 900 LF (20' average width)

- a. 20' wide median with 2.0' of embankment for a length of 900' hauled to site to construct flush grass median = 36,000 CF = 1,333 CY
- b. Curb & gutter eliminated $900' \times 2 + 30' = 1,830$ LF
- c. Full depth asphalt 2-foot wide paved inside shoulder has been calculated to cost approximately \$8.91 per linear foot at 2' wide, use 1,830 LF.

Typical Section # 5 – STA 32+80 to STA 53+60 : 2,080 LF (35' average width)

- a. 35' wide median with 0.6' of embankment for a length of 2,080' hauled to site to construct flush grass median = 43,680 CF = 1,620 CY
- b. Curb & gutter eliminated $2,080' \times 2 + 30' = 4,190$ LF
- c. Full depth asphalt 2-foot wide paved inside shoulder has been calculated to cost approximately \$8.91 per linear foot at 2' wide, use 4,190 LF.

Typical Section # 5 – STA 55+00 to STA 66+40: 1,140 LF (20' average width)

- d. 20' wide median with 0.6' of embankment for a length of 1,140' hauled to site to construct flush grass median = 13,680 CF = 507 CY
- e. Curb & gutter eliminated $1,140' \times 2 + 30' = 2,310$ LF
- f. Full depth asphalt 2-foot wide paved inside shoulder has been calculated to cost approximately \$8.91 per linear foot at 2' wide, use 2,310 LF.

Typical Section # 6 – STA 67+60 to STA 74+70: 710 LF (20' average width)

- a. 20' wide median with 0.6' of embankment for a length of 710' hauled to site to construct flush grass median = 8,520 CF = 316 CY
- b. Curb & gutter eliminated $710' \times 2 + 30' = 1,450$ LF
- c. Full depth asphalt 2-foot wide paved inside shoulder has been calculated to cost approximately \$8.91 per linear foot at 2' wide, use 1,450 LF.

Typical Section # 7 – STA 76+00 to STA 85+60: 960 LF (20' average width)

- a. 20' wide median with 0.6' of embankment for a length of 960' hauled to site to construct flush grass median = 11,520 CF = 427 CY
- b. Curb & gutter eliminated $960' \times 2 + 30' = 1,950$ LF
- c. Full depth asphalt 2-foot wide paved inside shoulder has been calculated to cost approximately \$8.91 per linear foot at 2' wide, use 1,950 LF.

Typical Section # 8 & 9 – STA 87+00 to STA 94+80: 780 LF (20' average width)

- a. 20' wide median with 0.6' of embankment for a length of 780' hauled to site to construct flush grass median = 9,360 CF = 350 CY
- b. Curb & gutter eliminated $780' \times 2 + 30' = 1,590$ LF
- c. Full depth asphalt 2-foot wide paved inside shoulder has been calculated to cost approximately \$8.91 per linear foot at 2' wide, use 1,590 LF.

DEVELOPMENT AND RECOMMENDATION PHASE

SR 1 / US 27 Veteran's Parkway

IDEA No.:	PAGE No.:	CREATIVE IDEA:
E-1	1 of 2	Eliminate 5-foot wide sidewalk from one side of corridor.

Comp By: DPC Date: 02/12/09 Checked By: DCW Date: 02/12/09

Original Concept:

The proposed design features the use of 4" thick, 5-foot wide concrete sidewalks located on both sides of the SR 1 / US 27 corridor.

Proposed Change:

The VE Team recommends that the Design Team consider eliminating the sidewalk from the south side of the corridor.

Justification:

All three schools are located on the north side of this corridor and most of the development on the south side of SR 1 / US 27 has their entrance from SR 80 or another main arterial. Bus ridership is the main transportation alternative in the area while the commercial properties are mostly industrial type versus retail. Current crosswalks from the north side to the south side of SR 1 / US 27 average 110 LF crossing in front of 9 lanes of traffic at some locations. This corridor is slated to receive and additional 2 more lanes (one in each direction) in the near future. That will increase the pedestrian walk to nearly 135 feet crossing 3 through lanes, dual left turn lanes, and two right turn lanes at each intersection. Pedestrian traffic in this corridor will most likely be constrained to longitudinal movements due to comfort and safety concerns crossing such a large highway.

LIFE CYCLE COST SUMMARY	CAPITAL COST	FUTURE COST	PRESENT WORTH
INITIAL COST - Original	627,400		
- Proposed	-0-		
- Savings	627,400		627,400
FUTURE COST - Savings			-0-
TOTAL PRESENT WORTH SAVINGS			627,400

DEVELOPMENT AND RECOMMENDATION PHASE

SR 1 / US 27 Veteran's Parkway

IDEA No.:	PAGE No.:	CREATIVE IDEA:
E-3	1 of 2	Use 2-inch thick (19 mm), 5-foot wide recycled asphaltic concrete sidewalks in lieu of 4" thick concrete, 5-foot wide sidewalks.

Comp By: DPC Date: 2/11/09 Checked By: DCW Date: 2/11/09

Original Concept:

The proposed design features the use of 4" thick, 5-foot wide concrete sidewalks located on both sides of the SR 1 / US 27 corridor and various side streets.

Proposed Change:

The VE Team recommends that the Design Team consider utilizing a 2-inch thick (19 mm asphalt mix), 5-foot wide recycled asphaltic concrete placed on top of a 3-inch GAB base.

Justification:

Concrete materials have typically been specified on most Department projects to date. The recent use of 8 to 12 foot wide multi-purpose trails throughout Georgia communities constructed with recycled asphaltic concrete material has grown rapidly due to its flexibility, ease of construction, schedule reducing, and durability characteristics. Contractor equipment is readily available and asphalt concrete construction production rates are much greater than the time consuming form / pour / finish / break down activities associated with typical concrete flatwork construction.

LIFE CYCLE COST SUMMARY	CAPITAL COST	FUTURE COST	PRESENT WORTH
INITIAL COST - Original	356,000		
- Proposed	112,700		
- Savings	243,300		243,300
FUTURE COST - Savings			-0-
TOTAL PRESENT WORTH SAVINGS			243,300

DEVELOPMENT AND RECOMMENDATION PHASE

SR 1 / US 27 Veterans Parkway

IDEA No.: E-5	PAGE No.: 1 of 3	CREATIVE IDEA: Delete EB (or NB) SR1 / US 27 left turn lane at Lullwater Apartments
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Comp By: DPC Date: 02/13/09 Checked By: DCW Date: 02/13/09

Original Concept:

A U-turn movement is provided at Lullwater and SR / US 27 in the eastbound (or northbound) direction. No left turn access point is currently available so the only use would be a U-turn.

Proposed Change:

Eliminate this dedicated U-turn lane.

Justification:

The U-turn movement is 730 feet east of the signalized intersection at Cooper Creek Rd. which already provides dual left turn lanes onto Road A.

LIFE CYCLE COST SUMMARY	CAPITAL COST	FUTURE COST	PRESENT WORTH
INITIAL COST - Original	50,000		
- Proposed	-0-		
- Savings	50,000		50,000
FUTURE COST - Savings			-0-
TOTAL PRESENT WORTH SAVINGS			50,000

CALCULATIONS

SR 1 / US 27 Veterans Parkway

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STA 70 + 00 to 74 + 80 = 480 feet



Lane = 12 feet X 180 feet / 9 SF/SY = 640 SY

Hatch offset = 16 feet X 190 feet / 9 SF/SY = 338 SY

160 feet X 16 feet X 0.5 = 143 SY

Total 1,121 SY

Quantities

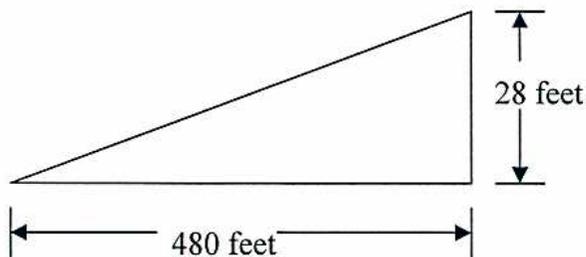
GAB: 1,121 SY X 135# / SY X TN/2000 # = 76 tons, Say 80 tons

25mm: 1,121 SY X 550 # / SY X TN / 2000 # = 310 tn

19mm : 1,121 SY X 220 # / SY X TN / 2000 # = 125 tn

12.5mm: 1,121 SY X 165 # / SY X TN / 2000 # = 95 tn

Fill Material



$V = \frac{28 \text{ ft} \times 480 \text{ ft} \times 0.5 \times 0.6 \text{ ft}}{27 \text{ CF/CY}} = 150 \text{ CY} - \text{ Say, } 170 \text{ CY}$

Thermo Stripe: Length = 480ft + 490 ft + 160 ft + 100 ft + 20 ft + 35 ft = 1,285 feet

DEVELOPMENT AND RECOMMENDATION PHASE

SR 1 / US 27 Veterans Parkway

IDEA No.: E-6	PAGE No.: 1 of 2	CREATIVE IDEA: Eliminate the 5 inch white thermoplastic edge line stripe along curb and gutter sections.
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Comp By: DCW Date: 11/2/09 Checked By: DPC Date: 12/12/09

Original Concept:

Current typical sign and marking plan calls for the placement of 5" wide, white thermoplastic edge line striping to be placed on roadway where curb and gutter section is designated.

Proposed Change:

Eliminate all 5" wide white edge line thermoplastic striping next to curb and gutter sections.

Justification:

The elimination of white striping on black asphalt next to bleached white concrete curb and gutter does not diminish directional or safety concerns. This recommendation reverts back to a past GDOT policy where edge line striping was not specified in typical curb and gutter roadway sections.

LIFE CYCLE COST SUMMARY	CAPITAL COST	FUTURE COST	PRESENT WORTH
INITIAL COST - Original	4,600		
- Proposed	-0-		
- Savings	4,600		4,600
FUTURE COST - Savings			-0-
TOTAL PRESENT WORTH SAVINGS			4,600

APPENDIX

INFORMATION PHASE		FUNCTION ANALYSIS					
SR 1 / US 27 Veterans Parkway							
System: Widen Roadway							
Function: Increase Capacity							
ITEM No.	DESCRIPTION	FUNCTION			INITIAL DOLLARS (x 1,000)		
		Verb	Noun	Kind*	Cost	% of Total	Worth
A	Right of Way	Store	Project	S	14,000	52	12,000
B	Asphalt Concrete Paving	Support	Loads	B	4,508	17	4,000
		Protect	Base				
C	Grading / Backfill	Support	Road	B	1,768	7	1,500
		Achieve	Grade				
		Achieve	Alignment				
D	Aggregate Base Course	Support	Pavement	B	1,258	5	1,100
E	Traffic Control	Maintain	Traffic	S	1,100	4	1,100
F	Storm Drainage	Transfer	Fluids	S	888	3	800
G	Reimbursable Utilities	Supply	Service	S	750	3	750
TOTALS					24,272	90	21,250

CREATIVE PHASE Creative Idea Listing		JUDGMENT PHASE Idea Evaluation	
SR 1 / US 27 Veterans Parkway			
NO.	CREATIVE IDEA	COMMENTS	IDEA RATING **
A	Right of Way		
A-1	Revise layout of mainline in the Galena intersection area		√
A-2	Reduce median width		√
A-3	Reduce shoulder width		√
B	AC Paving		
B-1	Reduce lane width to 11 feet		√
B-2	Evaluate pavement design		See B-3
B-3	Revise pavement section on Williams Road		√
C	Grading and Backfill		
C-1	Use depressed median		√
D	Aggregate Base Course		
	No ideas generated		

** √ = Idea will be evaluated; X= idea will be dropped; DC = Design Consideration – presented for consideration by the design team

