VALUE ENGINEERING REPORT

Northwest Eastman Bypass – S.R. 841
Project No. STP00-0066-01(029)
PI No.: 221975
Dodge County

September 8, 2009

OWNER:

Georgia Department of Transportation
600 West Peachtree Street
Atlanta, GA 30308
(404.631.1770)

VALUE ENGINEERING CONSULTANT:

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Kennesaw, GA 30144
(770.421.3346)

TABLE OF CONTENTS

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EXECUTIVE SUMMARY

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Introduction

This report presents the results of a value engineering (VE) study conducted on August 18-21, 2009 at GDOT offices in Atlanta, GA, by a three person VE Team for this new bypass around the northwest side of Eastman, GA. This rural principal arterial project is located approximately 140 miles southeast of Atlanta. The design team included design personnel from GDOT and GDOT project management. The study was performed at the preliminary design stage following the Preliminary Field Plan Review (PFPR).

US 23 / SR 87 is a Surface Transportation Assistance Act Truck Route serving as the main truck access between the cities of McRae and Cochran. It was upgraded in1992 to allow single and twin trailer trucks. Current Projects MLP-87(43)(45) are proposed widening and improvements to 11 miles of US 23 /SR 87 through Beckley and Dodge Counties. This Northwest Eastman Bypass project will extend the Eastman Bypass from US 341 / SR 27 northerly approximately two miles and tie into the southern edge of this proposed widening.

The total estimated project cost is $10,740,000 including $720,000 in right of way, $68,000 in reimbursable utilities, $1,559,000 in fuel and AC price adjustments and $8,393,000 in construction costs including 10% E&C markup. This markup will appear on the cost sheets of the VE items that are developed into recommendations

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 and, 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 environmental considerations included wetlands and stream crossings at several locations throughout the project.
- There was a potential for one historic property however it was determined it is no longer an issue. There is an historic house but it is located well east of the proposed project.

Results Obtained

The VE Team generated 13 ideas in the creative session and presented 8 of these as recommendations for consideration by GDOT. The major recommendations involve: Constructing only a 3-lane section, reducing the lane width, paved shoulder and design speed, modifying the Ramp A alignment, reducing the project limit and using a grass median.

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 $$2,536,200 capital cost savings in programmed dollars while continuing to provide the required functionality. This is shown in the last column of the Summary Tables that follows the summary description below.

A brief presentation of these recommendations was conducted on August 21st with the following in attendance: Lisa Myers and Ron Wishon from GDOT Engineering Services; Tim Matthews PM GDOT, Christopher Rudd as design manager from GDOT, Brad Ehrman, and Courtney Lovelace from GDOT Road Design and the VE Team: Dave Wohlscheid, Samuel Moka, and Dan Cogan and George Obaranec as MACTEC PM.

Recommendation Highlights

Idea A-1 – Use a three lane section

This concept includes building the flush median and two travel lanes only at this time. Right of way will be purchased for the total 5 lanes that may be needed for the ultimate expansion. Grading will not be performed for the future potential expansion at this time.

Potential programmed savings if accepted is $1,676,000

Idea A-3 – Reduce travel lane from 12 to 11 feet in width

This proposal reduces pavement, grading and some right of way. With a proposed speed limit of 45 mph, this alternative will accommodate traffic projections.

Potential programmed savings could be $372,600

Idea A-3.1 – Reduce travel lane from 12 to 11 feet on side roads

This applies the same changes as above to the side roads as well. The existing width appears to be 11 feet , so this will match the current conditions.

Potential savings is $14,700.

Idea A-4 – Reduce design speed to 45 mph

This road is 2.1 miles long. It has 9 locations where landowners have access to their properties. In addition there are two intersecting roads which should result in a reduced speed posting. Reducing to 45 mph will lower operating speeds resulting in improved safety conditions at a minimal inconvenience to the user.

No potential savings (see detailed write-up)

Idea A-5 – Reduce mainline paved shoulder width from 6.5 feet to 4 feet

Reducing the paved shoulder width by 2.5 feet would result in savings to asphalt pavement and GAB. At 45 mph, this would still allow room to get off the travel way in an emergency and still retain pavement under one set of wheels.

Savings potential is $265,000

Idea A-6 – Modify Ramp "A" design to eliminate the free flowing ramp right movement

This idea replaces the free flowing ramp with a right turn with a raised island to separate traffic flow. The turn would be at a reduced speed from the current design.

Savings potential is $148,000

Idea A-7 – Reduce project limit for Fire Tower Road by 200 feet

Reducing the limit on Fire Tower Road does not appear to have a negative impact on vertical nor horizontal alignment and should still provide adequate queuing space at the intersection.

Proposed savings is $45,000

Idea E-3 – Use a 14 foot raised grass median instead of a 14 foot flush median

This idea is an attempt to eliminate the full pavement at the median. Using a raised grass median should allow for sheet drainage into the existing roadway or minimal new drainage as opposed to a depressed grass median which requires extensive drainage.

Proposed savings is $211,200

Project No. STP00-0066-01(029)

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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	**Asphalt Concrete Pavement**						
A-1	Use three lane typical section	1,676,000	-0-	1,676,000	-0-	1,676,000	1,676,000
A-3	Reduce travel lane width from 12 to 11 feet	372,600	-0-	372,600	-0-	372,600	186,300
A-3.1	Reduce travel lane widths on side roads from 12 to 11 feet	14,700	-0-	14,700	-0-	14,700	14,700
A-4	Reduce design speed to 45 mph	-0-	-0-	TBD	-0-	TBD	TBD
A-5	Reduce mainline paved shoulder widths to 4 feet	265,000	-0-	265,000	-0-	353,300	265,000
A-6	Modify Ramp A design	6,739,000	6,591,000	148,000	-0-	148,000	143,000
A-7	Reduce project limit for Fire Tower Road from Sta 13+00 to Sta 15+00	6,694,000	6,649,000	45,000	-0-	45,000	40,000

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PI No. 221975
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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
E	**Other**						
E-3	Use a 14 foot raised grass median instead of a 14 foot full depth flush median	466,400	255,200	211,200	-0-	211,200	211,200
	TOTAL POTENTIAL SAVINGS						**$2,536,200**

STUDY IDENTIFICATION

STUDY IDENTIFICATION

Northwest Eastman Bypass (Dodge County)	Dates: August 18-21, 2009
Location: GDOT HQ - Atlanta	

VE Team Members

Name:	Discipline:	Organization:	Telephone:
David Wohlscheid	VE Team Leader	MACTEC	703-471-8383
Samuel Moka	Highway Design	Parsons	678-969-2460
Dan Cogan	Highway Construction	KEA Group	404-290-6424

Project Description

US 23 / SR 87 is a Surface Transportation Assistance Act Truck Route serving as the main truck access between the cities of McRae and Cochran. It was upgraded in 1992 to allow single and twin trailer trucks. Current Projects MLP-87(43)(45) are proposed widening and improvements to 11 miles of US 23 /SR 87 through Beckley and Dodge Counties. This Northwest Eastman Bypass project will extend the Eastman Bypass from US 341 / SR 27 northerly approximately two miles and tie into the southern edge of this proposed widening.

The total estimated project cost is $10,740,000 including $720,000 in right of way, $68,000 in reimbursable utilities, $1,559,000 in fuel and AC price adjustments and $8,393,000 in construction costs including 10% E&C markup.

This project proposes four 12 foot lanes with a 14 foot flush median within 150 feet of right of way between US 341 / SR 27 and US 23 / SR 87. The proposed roadway would begin at US 341 / SR 27, approximately 0.4 miles east of CR 78 / Orphan Cemetery Road, and extend northward onto a new location for approximately 0.9 miles. It will then turn northeastward and intersect CR 138 / Fire Tower Road, CR 348 / Antioch Baptist Church Road and end at US 27 / SR 87 approximately 0.2 miles south of CR 137 / Old Dodge High Road. The existing AADT for this area is 1900-2900 while the design year, 2029, is 3550-5300. The design speed is 55 mph and the total project length is approximately 2.2 miles.

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:

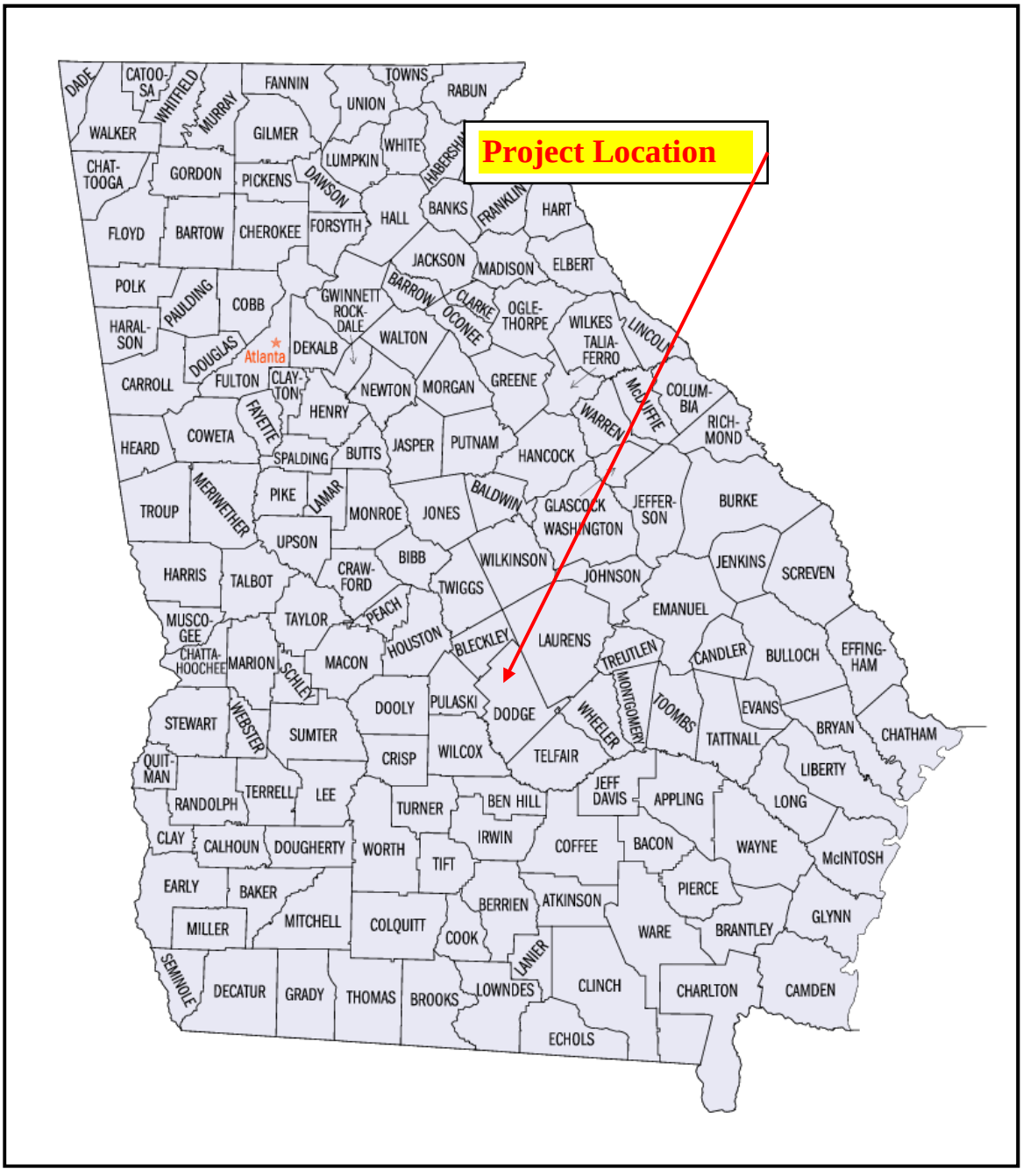
Lisa Myers	GDOT Engineering Services
Matt Sanders	GDOT Engineering Services
James Magnus	GDOT Construction
Christopher Rudd	GDOT Design Manager
Tim Matthews	GDOT OPD Project Manager
Andy Casey	GDOT Road Design
Bobby Dellar	GDOT OEL
Courtney Lovelace	GDOT Road Design
Brad Ehrman	GDOT Road Design

The VE Team appreciated the project overview given by Tim Matthews and Christopher Rudd. Highlights included:

- The typical section has been modified from the revised concept report dated December 2008. The current concept will be to provide a five lane typical section including a continuous center turn lane (12 foot travel lanes and 14 foot turn lane or flush median).
- The design speed has been raised to 55 from the 45 stated in the revised concept report.
- The road will be known as SR 841 and will be on new alignment.
- The proposed right of way will generally be 150 feet wide but may vary depending on slopes.
- The current schedule is to have right of way plans ready in 2009, with right of way funding currently scheduled for 2012.
- Access will be limited to one driveway per parcel acquired during this process.
- Rock embankment will be used to cross the open water pond in the southern portion of the project.
- The Rozar-Goolsby Connector crosses or is in close proximity to three streams. An additional three streams are impacted in other areas.
- The historic property east of the project will be contained to the house itself and does not include the entire property.

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

Figure 1
Project County Location



County Map of Georgia

Figure 2
Project Location

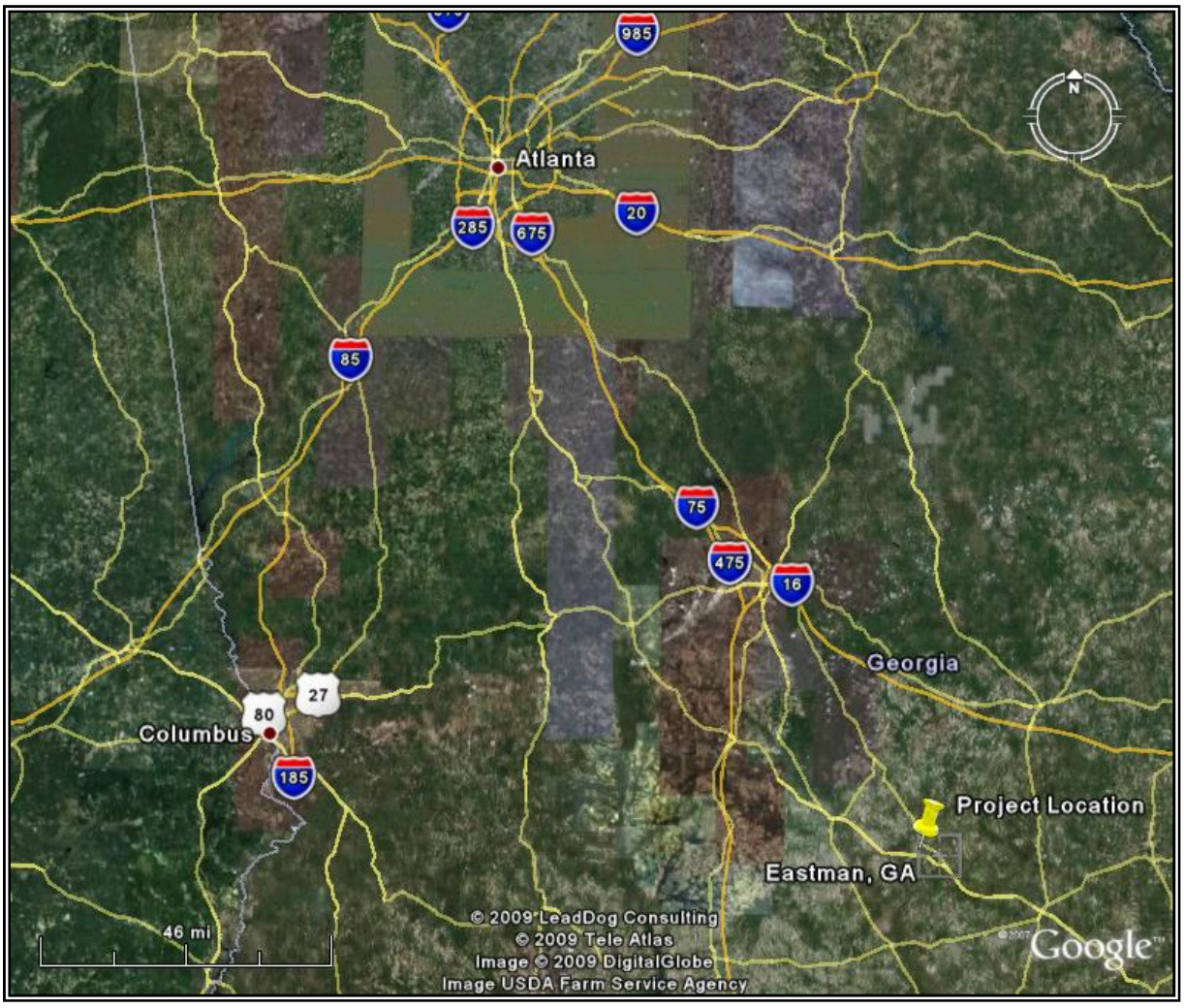


Figure 3
Project Vicinity

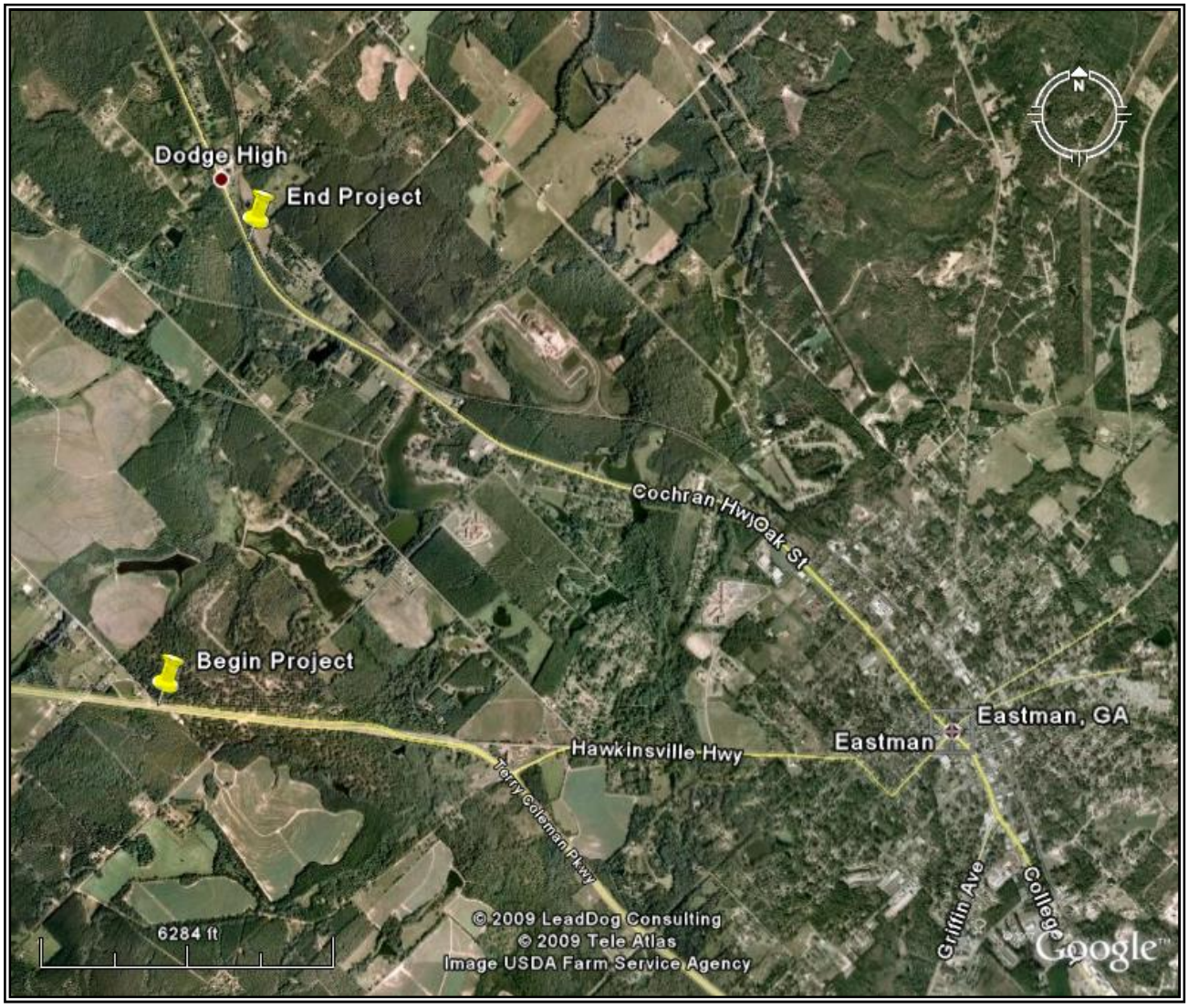


Figure 4
Project Plan

Estimate Report for file "221975 (2009)"

Section ROADWAY

Item Number	Quantity	Units	Unit Price	Item Description	Cost
150-1000	Lump	LS	500000.00	TRAFFIC CONTROL -	500000.00
150-5010	2	EA	8965.72	TRAFFIC CONTROL, PORTABLE IMPACT ATTENUATOR	17931.44
153-1300	1	EA	73914.48	FIELD ENGINEERS OFFICE TP 3	73914.48
201-1500	Lump	LS	1587729.74	CLEARING & GRUBBING -	1587729.74
205-0001	53893	CY	2.47	UNCLASS EXCAV	133115.71
206-0002	8400	CY	2.98	BORROW EXCAV, INCL MATL	25032.00
208-0200	7790	CY	34.19	ROCK EMBANKMENT	266340.10
310-1101	55204	TN	17.04	GR AGGR BASE CRS, INCL MATL	940676.16
402-3113	8440	TN	74.31	RECYCLED ASPH CONC 12.5 MM SUPERPAVE, GP 1 OR 2, INCL BITUM MATL & H LIME	627176.40
402-3121	23195	TN	59.47	RECYCLED ASPH CONC 25 MM SUPERPAVE, GP 1 OR 2, INCL BITUM MATL & H LIME	1379406.65
402-3190	11254	TN	67.77	RECYCLED ASPH CONC 19 MM SUPERPAVE, GP 1 OR 2,INCL BITUM MATL & H LIME	762683.58
413-1000	9585	GL	2.00	BITUM TACK COAT	19170.00
436-1000	1400	LF	9.88	ASPHALTIC CONCRETE CURB -	13832.00
456-2015	5	GLM	887.70	INDENTATION RUMBLE STRIPS - GROUND-IN-PLACE (SKIP)	4438.50
500-3101	630	CY	238.02	CLASS A CONCRETE	149952.60
511-1000	60300	LB	0.89	BAR REINF STEEL	53667.00
550-1180	340	LF	36.27	STORM DRAIN PIPE, 18 IN, H 1-10	12331.80
550-1240	951	LF	41.79	STORM DRAIN PIPE, 24 IN, H 1-10	39742.29
550-1300	370	LF	53.29	STORM DRAIN PIPE, 30 IN, H 1-10	19717.30
550-2180	72	LF	33.24	SIDE DRAIN PIPE, 18 IN, H 1-10	2393.28
550-3418	6	EA	562.15	SAFETY END SECTION 18 IN, SIDE DRAIN, 4:1 SLOPE	3372.90
550-4218	6	EA	551.07	FLARED END SECTION 18 IN, STORM DRAIN	3306.42
550-4224	12	EA	643.26	FLARED END SECTION 24 IN, STORM DRAIN	7719.12
550-4230	4	EA	761.29	FLARED END SECTION 30 IN, STORM DRAIN	3045.16
603-2180	84	SY	39.99	STN DUMPED RIP RAP, TP 3, 12 IN	3359.16
603-2182	199	SY	44.17	STN DUMPED RIP RAP, TP 3, 24 IN	8789.83
603-7000	283	SY	3.80	PLASTIC FILTER FABRIC	1075.40
620-0200	2000	LF	54.48	TEMPORARY BARRIER, METHOD NO. 2	108960.00
634-1200	80	EA	93.93	RIGHT OF WAY MARKERS	7514.40
641-1200	1400	LF	17.89	GUARDRAIL, TP W	25046.00
641-5001	4	EA	673.15	GUARDRAIL ANCHORAGE, TP 1	2692.60
641-5012	4	EA	1762.58	GUARDRAIL ANCHORAGE, TP 12	7050.32
				Section Sub Total:	**$6,811,182.34**

Section SIGNING & MARKING

Item Number	Quantity	Units	Unit Price	Item Description	Cost
653-0000	1	Lump Sum	400000.00	Signing and Marking - Lump Sum	400000.00
				Section Sub Total:	**$400,000.00**

Section EROSION CONTROL - PERMANENT

Item Number	Quantity	Units	Unit Price	Item Description	Cost
163-0240	436	TN	129.90	MULCH	56636.40
700-6910	24	AC	674.07	PERMANENT GRASSING	16177.68
700-7000	158	TN	60.51	AGRICULTURAL LIME	9560.58
700-7010	132	GL	20.53	LIQUID LIME	2709.96
700-8000	53	TN	409.57	FERTILIZER MIXED GRADE	21707.21
700-8100	2640	LB	2.30	FERTILIZER NITROGEN CONTENT	6072.00
716-2000	31532	SY	0.95	EROSION CONTROL MATS, SLOPES	29955.40
				Section Sub Total:	**$142,819.23**

Section EROSION CONTROL - TEMPORARY

Item Number	Quantity	Units	Unit Price	Item Description	Cost
163-0232	41	AC	283.37	TEMPORARY GRASSING	11618.17

163-0300	10	EA	1148.70	CONSTRUCTION EXIT	11487.00
163-0503	8	EA	442.20	CONSTRUCT AND REMOVE SILT CONTROL GATE, TP 3	3537.60
163-0520	2180	LF	12.55	CONSTRUCT AND REMOVE TEMPORARY PIPE SLOPE DRAIN	27359.00
163-0527	53	EA	78.59	CONSTRUCT AND REMOVE RIP RAP CHECK DAMS, STONE PLAIN RIP RAP/SAND BAGS	4165.27
163-0528	4224	LF	3.74	CONSTRUCT AND REMOVE FABRIC CHECK DAM - TYPE C SILT FENCE	15797.76
163-0529	800	LF	3.37	CONSTRUCT AND REMOVE TEMPORARY SEDIMENT BARRIER OR BALED STRAW CHECK DAM	2696.00
163-0531	1	EA	7381.63	CONSTRUCT AND REMOVE SEDIMENT BASIN, TP 1, STA NO - 46+00 LT	7381.63
165-0010	3630	LF	0.53	MAINTENANCE OF TEMPORARY SILT FENCE, TP A	1923.90
165-0030	14520	LF	0.66	MAINTENANCE OF TEMPORARY SILT FENCE, TP C	9583.20
165-0041	7582	LF	1.87	MAINTENANCE OF CHECK DAMS - ALL TYPES	14178.34
165-0060	1	EA	1698.39	MAINTENANCE OF TEMPORARY SEDIMENT BASIN, STA NO - 46+00 LT	1698.39
165-0085	5	EA	339.92	MAINTENANCE OF SILT CONTROL GATE, TP 1	1699.60
165-0087	29	EA	113.48	MAINTENANCE OF SILT CONTROL GATE, TP 3	3290.92
165-0101	10	EA	481.34	MAINTENANCE OF CONSTRUCTION EXIT	4813.40
166-0650	1	EA	15000.80	RESTORATION OF LAKE, STA - 40+00	15000.80
167-1000	2	EA	460.30	WATER QUALITY MONITORING AND SAMPLING	920.60
167-1500	48	MO	685.80	WATER QUALITY INSPECTIONS	32918.40
170-1000	800	LF	15.09	FLOATING SILT RETENTION BARRIER	12072.00
171-0010	7260	LF	1.84	TEMPORARY SILT FENCE, TYPE A	13358.40
171-0030	29040	LF	2.95	TEMPORARY SILT FENCE, TYPE C	85668.00
				Section Sub Total:	**$281,168.38**

Total Estimated Cost: $7,635,169.95

Subtotal Construction Cost	**$7,635,169.95**
E&C Rate 10.0 %	$763,517.00
Inflation Rate 0.0 % @ 0 Years	$0.00
Total Construction Cost	**$8,398,686.94**
Right Of Way	$785,630.00
ReImb. Utilities	$0.00
Grand Total Project Cost	**$9,184,316.94**

Date 7/30/2009

P.I. Number 221975 County Dodge

Project Number STP-066-1(29)

Special Provision, Section 109-Measurement and Payment

FUEL PRICE ADJUSTMENT (*ENGLISH 125% MAX*)

ENTER FPL DIESEL	2.509
ENTER FPM DIESEL	5.645

ENTER FPL UNLEADED	2.457
ENTER FPM UNLEADED	5.52825

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

INCREASE ADJUSTMENT
125.00%

INCREASE ADJUSTMENT
125.00%

ROADWAY ITEMS	QUANTITY	DIESEL FACTOR	GALLONS DIESEL	UNLEADED FACTOR	GALLONS UNLEADED	REMARKS
Excavations paid as specified by Sections 205 **(CUBIC YARD)**	53893.000	0.29	15628.97	0.15	8083.95	15% 10.4%
Excavations paid as specified by Sections 206 **(CUBIC YARD)**	8406.000	0.29	2437.74	0.15	1260.90	2% 2.15%
GAB paid as specified by the ton under Section 310 **(TON)**	55204.000	0.29	16009.16	0.24	13248.96	25% 10%
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)**	42889.000	2.90	124378.10	0.71	30451.19	57% 78%
PCC Pavement paid as specified by the square yard under Section 430 **(SY)**		0.25		0.20		UNLEADED DIESEL

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		

BRIDGE ITEMS	Quantity	Unit Price	QF/1000	Diesel Factor	Gallons Diesel	Unleaded Factor	Gallons Unleaded	REMARKS
Stru Steel Plan Quantity (LB) Section 501				8.00		1.50		
Stru Steel Plan Quantity (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 Plan Quantity(LB) Section 511				8.00		1.50		
Stru Reinf Plan Quantity(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		

SUM QF DIESEL=	158453.97	SUM QF UNLEADED=	53045.00

DIESEL PRICE ADJUSTMENT($)	$457,195.16
UNLEADED PRICE ADJUSTMENT($)	$149,881.30

ASPHALT CEMENT PRICE ADJUSTMENT
(BITUMINOUS TACK COAT 125% MAX)

APPLICABLE TO CONTRACTS/PROJECTS CONTAINING THE 413 SPECIFICATION, SECTION 413.5.01 ADJUSTMENTS ASPHALT PRICE ADJUSTMENT FOR BITUMINOUS TACK COAT

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

ENTER APL: 355 ENTER APM: 798.75

125.00%	INCREASE ADJUSTMENT

L.I.N.	TYPE	TACK (GALLONS)	TACK (TONS)	REMARKS
413-1000	PG 58-22	9585	41.1685	

TMT = 41.1685

PRICE ADJUSTMENT($)	$17,537.80

400 / 402 ASPHALT CEMENT PRICE ADJUSTMENT 125% MAX

ENTER APL: 363 ENTER APM: 816.75

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

125.00%	INCREASE ADJUSTMENT

L.I.N. / Spec Number	MIX TYPE	HMA	JMF AC%	AC	REMARKS
402-3113	12.5 mm SP	8440	5.00	422.00	
402-3121	25 mm SP	23195	5.00	1159.75	
402-3190	19 mm SP	11254	5.00	562.70	
			5.00		
			5.00		
			5.00		
			5.00		
			5.00		
			5.00		
			5.00		
			5.00		
			5.00		
			5.00		
			5.00		
			5.00		
			TMT =	2144.45	

PRICE ADJUSTMENT($)	$934,122.42

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: 363

ENTER APM: 816.75

125.00%	INCREASE ADJUSTMENT

Use this side for Asphalt Emulsion Only

L.I.N.	TYPE	ASPHALT EMULSION (GALLONS)

TMT =

REMARKS:

Use this side for Asphalt Cement Only

L.I.N.	TYPE	TACK (GALLONS)

TMT =

REMARKS:

MONTHLY PRICE ADJUSTMENT($)	

ADJUSTMENT SUMMARY

FUEL PRICE ADJUSTMENT (*ENGLISH 125% MAX)*

DIESEL PRICE ADJUSTMENT($)	$457,195.16
UNLEADED PRICE ADJUSTMENT($)	$149,881.30
ASPHALT CEMENT PRICE ADJUSTMENT (BITUMINOUS TACK COAT 125% MAX)	$17,537.80
400 / 402 ASPHALT CEMENT PRICE ADJUSTMENT 125% MAX	$934,122.42
ASPHALT CEMENT PRICE ADJUSTMENT FOR BITUMINOUS TACK COAT(Surface Treatment 125% MAX)	

REMARKS:

TOTAL ADJUSTMENTS	$1,558,736.68

DWM 10/08

Preliminary Right of Way Cost Estimate

Phil Copeland
Right of Way Administrator
By: LaShone Alexander

Date: April 30, 2009
Project: STP-0066-1(29) Dodge UPDATED
Existing/Required R/W: Varies/Varies
Project Termini : SR 841/NW Eastman Bypass from SR 27 to SR 87t
Project Description: SR 841 Widening Project

P.I. Number: 221975
No. Parcels: 12

Land:

R/W Agricultural/Residential 44.23 acres @ $ 6,000/acre		$ 265,380
Improvements : misc. site improvements		25,000
Relocation: Commercial (0)	$	
Residential (0)		0
Damage : Proximity (0)	$	
Consequential (0)		
Cost to Cure(0)		0
Net Cost		$ 290,380

Net Cost		$ 290,380
Scheduling Contingency	55 %	159,709
Adm/Court Cost	60	270,053
		$ 720,142

Total Cost **$720,200**

Note: The Market Appreciation (40%) is not included in the updated Preliminary Cost Estimate.

UTILITY COST ESTIMATE						
PROJECT #	COUNTY		PROJECT DESCRIPTION		P.I. NUMBER	LAYOUT DATE
STP-066-1(29) Spur	Dodge		NW Eastman Bypass / S.R. 841 from U.S. 341 / S.R. 27 to U.S. 23 / S.R. 87		221975	
PRIVATE UTILITY QUANTITIES	PUBLIC UTILITY QUANTITIES	UNITS	ITEM DESCRIPTION	UNIT PRICE	PRIVATE UTILITY COST	PUBLIC UTILITY COST
			POWER			
			Ocmulgee Electric Membership Cooperative	$$$$$$$		
2		Each	Relocate Distribution Power Poles	$3,800.00	$7,600.00	
			This owner also has facilities located within the existing Right of Way throughout the project limits that should not be eligible for reimbursement. Information for this estimate was gathered during an onsite inspection.			
				SUB - TOTAL	$7,600.00	
			POWER			
			Georgia Power Company			
3		Each	Relocate Transmission Structure - Single 55' Wood Pole - Class 2	$15,000.00	$45,000.00	
			This owner also has facilities located within the existing Right of Way throughout the project limits that should not be eligible for reimbursement. Information for this estimate was gathered during an onsite inspection.			
				SUB - TOTAL	$45,000.00	
			TELEPHONE			
			AT&T GEORGIA			
			This owner has facilities located within the existing Right of Way throughout the project limits that should not be eligible for reimbursement. These facilities include a Remote Terminal at the intersection of Log Cabin Road and S.R. 87 which will be in conflict with the proposed construction and will be relocated at the owners expense. Information for this estimate was provided by Forest Bloodworth with AT&T.			
				SUB-TOTAL		
			CATV			
			KLiP Cable			
			This owner has facilities located within the existing Right of Way throughout the project limits that should not be eligible for reimbursement. Information for this estimate was gathered during an onsite inspection on February 5, 2002.			
				SUB-TOTAL		
Revised:				TOTAL PRIVATELY OWNED UTILITY RELOCATION COST		$52,600.00
Revised:				TOTAL PUBLICLY OWNED UTILITY RELOCATION COST		
Revised:				TOTAL POTENTIAL UTILITY RELOCATION COST FOR PROJECT		$52,600.00
Estimate Prepared By:	Renae Lawrence - Utilities Engineer				DATE:	14.Apr.09

Unit Costs are based on former "Force Account Agreements" and the Department of Transportation's "Mean Item Index"

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

VE RECOMMENDATIONS

DEVELOPMENT AND RECOMMENDATION PHASE

Northwest Eastman Bypass

IDEA No.:	PAGE No.:	CREATIVE IDEA:
A-1	1 of 3	Use 3-lane typical section

Comp By: DPC Date: 8/19/09 Checked By: DW Date: 8/20/09

Original Concept:

Bypass mainline has a currently designed typical section of (4) 12-foot wide travel lanes with a 14-foot wide flush median/center turn lane.

Proposed Change:

It is recommended to utilize a 3-lane typical section composed of (2) 12-foot wide travel lanes and a 14-foot wide flush median/center turn lane.

Justification:

The original design intent was a 3-lane section based on current and projected ADT traffic demands in conjunction with a design speed of 45 MPH. AASHTO recognizes the fact that in certain cases design ADT is a guidance tool to predict future traffic volumes for all types of corridors and meeting those actual volumes depend upon several factors. The free flow right turn movements heading north to south will increase level of service. The staged left turn movements heading south to north will help control traffic flow and increase level of service as well. Future signal installation at each tie-in location can increase level of service in the future. Utilizing the proposed 12-foot wide travel lanes and the 14-foot wide flush median lane would provide current capacity requirements for this rural principal arterial roadway, however, a design variance may be required. Based upon the projected ADT future demands, we recommend purchasing the currently proposed right-of-way width for future, potential widening purposes in case projected ADT demands meet expectations and increasing corridor capacity is warranted. Reduction of the two additional proposed 12-foot wide travel lanes significantly reduces pavement section, earthwork, drainage system, and clearing & grubbing costs. Additionally, this section of new road shall be limited access, thereby eliminating any future development.

LIFE CYCLE COST SUMMARY	CAPITAL COST	FUTURE COST	PRESENT WORTH
INITIAL COST - Original	1,676,000		
- Proposed	0		
- Savings	1,676,000		1,676,000
FUTURE COST - Savings			-0-
TOTAL PRESENT WORTH SAVINGS			**1,676,000**

MACTEC

COST WORKSHEET							
PROJECT: **Northwest Eastman Bypass**					ITEM No: A-1 CLIENT: GDOT Sheet 2 of 3		
CONSTRUCTION ELEMENT		**ORIGINAL ESTIMATE**			**NEW ESTIMATE**		
ITEM	Units	No. Units	Cost/ Unit	Total Cost	No. Units	Cost/ Unit	Total Cost
Right-of-Way	AC	0.00	16283				
GAB, 10" thick	TN	16,344	17.04	278,502			
25 mm recycled superpav, 550#/SY	TN	7,990	59.47	475,165			
19 mm recycled superpav, 165#/SY	TN	3,196	67.77	216,593			
12.5 mm recycled superpav, 220#/SY	TN	2,397	74.31	178,121			
CIP Box Culvert	LF	24	646.41	15,514			
Storm drain pipe, 30" H 1-10	LF	36	53.29	1,918			
Unclassified excavation, soil	CY	58,112	2.47	143,537			
Clearing and Grubbing	SF	261,504	0.82	214,433			
SUBTOTAL				1,523,783			0
Markup 10.0%				152,378			0
TOTAL				1,676,162			0
TOTAL ROUNDED				1,676,000			0

MACTEC

Bypass Mainline removing (2) 12-foot travel lanes:
STA 10+00 to STA 118+96 = 10,896 LF x 2 lanes (1 NB + 1 SB) = 21,792 LF

Total pavement width reduction = 21,792 LF x 12.0 LF = 261,504 SF/ 9 SY = 29,056 SY

GAB weight = 150#/FT^3

GAB and Asphalt SY to Ton calculations:

1. GAB-10" thick – (125 #/SF x 9 SF/SY x 29,056 SY) / 2,000 #/TN = 16,344 Tons
2. 12.5 mm mix – (165 #/SY x 29,056 SY) / 2,000 #/TN = 2,397 Tons
3. 19 mm mix – (220 #/SY x 29,056 SY) / 2,000 #/TN = 3,196 Tons
4. 25 mm mix – (550 #/SY x 29,056 SY) / 2,000 #/TN = 7,990 Tons

Right-of-Way (ROW) Cost:
Did not reduce proposed ROW width requirements.

Clearing & Grubbing:
Estimated lump sum cost has been set at $1,587,730 to clear 44.23 acres. Unit price conversation equates to $0.82 SF (check: $0.82 SF x 1,926,660 SF = $1,587,730).
Therefore: 261,504 SF (from above calculation) x $0.82 SF = $ 214,435.

Unclassified Embankment, Soil:

21,792 LF x 24 LF width x 3 LF avg. depth = 1,569,024 CF / 27 CF/CY = 58,112 CY

Drainage System:
18" Storm Drain Cross-Drain Pipes: Taken directly from plan sheets.
24" Storm Drain Cross-Drain Pipes: Taken directly from plan sheets.
30" Storm Drain Cross-Drain Pipes: Taken directly from plan sheets.

CIP Box Culvert:
GDOT prices CIP box culverts with class A concrete and bar reinforcement steel. This project has an estimated total of these two items of $203,620. There are (2) box culverts specified, one at 140 LF and the other at 175 LF for a total of 315 LF. Unit cost is assumed at $203,620 / 315 LF = $646.41 LF. We are eliminating 24 LF (2 – 12' lanes) of box culvert.

DEVELOPMENT AND RECOMMENDATION PHASE

Northwest Eastman Bypass

IDEA No.:	PAGE No.:	CREATIVE IDEA:
A-3	1 of 3	Reduce travel lane widths from 12-foot to 11 foot.

Comp By: DPC Date: 8/18/09 Checked By: DW Date: 8/19/09

Original Concept:

Approximately 2.25 miles (STA 10+00 to STA 118+96 Bypass Mainline plus STA 10+00 to STA 19+91 Rozar-Goolsby Connector) of the proposed roadway typical sections for this project indicate 12-foot wide travel lanes throughout the project.

Proposed Change:

It is recommended that 11-foot travel lanes be used in-lieu-of 12-foot travel lanes from STA 10+00 to STA 118+96 (Bypass mainline) and from STA 10+00 to STA 19+91 (Rozar-Goolsby Connector)

Justification:

Reduction of 1-foot of roadway section per each travel lane reduces the pavement section, earthwork, piping, clearing & grubbing, and right-of-way (R/W) acquisition costs.

The reduction in travel lane width would reduce the amount of ROW required for the project as well as reduce the amount of roadway construction costs. The 11-foot travel lanes would accommodate the ADT traffic demands (while applying a revised design speed of 45 MPH) for this rural principal arterial roadway section. A design variance would be required.

LIFE CYCLE COST SUMMARY	CAPITAL COST	FUTURE COST	PRESENT WORTH
INITIAL COST - Original	372,600		
- Proposed	0		
- Savings	372,600		372,600
FUTURE COST - Savings			-0-
TOTAL PRESENT WORTH SAVINGS			**372,600**

COST WORKSHEET							
PROJECT: **Northwest Eastman Bypass**					ITEM No: A-3 CLIENT: GDOT Sheet 2 of 3		
CONSTRUCTION ELEMENT		**ORIGINAL ESTIMATE**			**NEW ESTIMATE**		
ITEM	Units	No. Units	Cost/ Unit	Total Cost	No. Units	Cost/ Unit	Total Cost
Right-of-Way	AC	1.05	$16,283	17,097			
GAB, 10" thick	TN	2,848	$17.04	48,530			
25 mm recycled superpav, 550#/SY	TN	1,393	$59.47	82,842			
19 mm recycled superpav, 165#/SY	TN	557	$67.77	37,748			
12.5 mm recycled superpav, 220#/SY	TN	418	$74.31	31,062			
Storm drain pipe, 24" H 1-10	LF	6	$41.79	251			
Storm drain pipe, 30" H 1-10	LF	8	$53.29	426			
Unclassified excavation, soil	CY	33,755	$2.47	83,375			
Clearing and Grubbing	SF	45,566	$0.82	37,364			
ROW SUBTOTAL				338,694			0
Markup 10.0%				33,869			0
TOTAL				372,564			0
TOTAL ROUNDED				372,600			0

MACTEC

Bypass Mainline 12-foot travel lanes:
STA 10+00 to STA 118+96 = 10,896 LF x 4 lanes (2 NB + 2 SB) = 43,584 LF

Rozar-Goolsby Connector 12-foot travel lanes:
STA 10+00 to STA 19+91 = 991 LF x 2 lanes (1 WB + 1 EB) = 1,982 LF

TOTAL distance of 12-foot lanes = 45,566 LF (8.63 miles)

Total pavement 1-foot width reduction per each lane = 45,566 LF x 1.0 LF = 45,566 SF / 9 SY = 5,063 SY.

GAB and Asphalt SY to Ton calculations:

1. GAB-10" thick – (125 #/SF x 9 SF/SY x 5,063 SY) / 2,000 # = 2,848 Tons
2. 12.5 mm mix – (165 # x 5,063 SY) / 2,000 # = 418 Tons
3. 19 mm mix – (220 # x 5,063 SY) / 2,000 # = 557 Tons
4. 25 mm mix – (550 # x 5,063 SY) / 2,000 # = 1,393 Tons

Right-of-Way (ROW) Cost:
Estimated right-of-way cost was calculated and the price per acre was established at $16,283 acre, therefore $16,283 acre x (45,566 SF/43,560 acre) = $16,283 acre x 1.05 acres = $17,097.

Clearing & Grubbing:
Estimated lump sum cost has been set at $1,587,730 to clear 44.23 acres. Unit price conversation equates to $0.82 SF (check: $0.82 SF x 1,926,660 SF = $1,587,730.) Therefore: 45,566 SF (from above calculation) x $0.82 SF = $37,364.

Unclassified Embankment, Soil:

45,566 LF x 4 LF width x 5 LF avg. depth = 911,320 CF / 27 = 33,755 CY

Drainage System:
18" Storm Drain Cross-Drain Pipes: Taken directly from plan sheets.
24" Storm Drain Cross-Drain Pipes: Taken directly from plan sheets.
30" Storm Drain Cross-Drain Pipes: Taken directly from plan sheets.

DEVELOPMENT AND RECOMMENDATION PHASE

Northwest Eastman Bypass

IDEA No.:	PAGE No.:	CREATIVE IDEA:
A-3.1	1 of 3	Reduce travel lane widths from 12-foot to 11-foot on side roads.

Comp By: DPC Date: 8/20/09 Checked By: DW Date: 8/20/09

Original Concept:

Both local side roads (Fire Tower Rd. and Antioch Baptist Church Rd.) indicate proposed roadway typical sections of 12-foot wide travel lanes.

Proposed Change:

It is recommended that 11-foot wide travel lanes be used in-lieu-of the proposed 12-foot wide travel lanes.

Justification:

Per scale drawings the existing side roads are currently 10 to 11-foot wide. Maintaining the current typical section would allow for ease of construction transition and match existing cross-sections. Reduction of 1-foot of roadway section per each travel lane reduces pavement section, earthwork, clearing & grubbing, and right-of-way (ROW) costs.

LIFE CYCLE COST SUMMARY	CAPITAL COST	FUTURE COST	PRESENT WORTH
INITIAL COST - Original	14,700		
- Proposed	0		
- Savings	14,700		14,700
FUTURE COST - Savings			-0-
TOTAL PRESENT WORTH SAVINGS			**14,700**

COST WORKSHEET							
PROJECT: **Northwest Eastman Bypass Construction**					ITEM No: A-3.1 CLIENT: GDOT Sheet 2 of 3		
CONSTRUCTION ELEMENT		**ORIGINAL ESTIMATE**			**NEW ESTIMATE**		
ITEM	Units	No. Units	Cost/ Unit	Total Cost	No. Units	Cost/ Unit	Total Cost
Right-of-Way	AC	0.05	$16,283	814			
GAB, 10" thick	TN	139	$17.04	2,369			
25 mm recycled superpav, 550#/SY	TN	68	$59.47	4,044			
19 mm recycled superpav, 165#/SY	TN	28	$67.77	1,898			
12.5 mm recycled superpav, 220#/SY	TN	21	$74.31	1,561			
Storm drain pipe, 24" H 1-10	LF	2	$41.79	84			
Storm drain pipe, 18" H 1-10	LF	2	$36.27	73			
Unclassified excavation, soil	CY	328	$2.47	810			
Clearing and Grubbing	SF	2,212	$0.82	1,814			
SUBTOTAL				12,651			0
Markup 10.0%				1,265			0
Right-of-way (ROW)				814			
TOTAL				14,730			0
TOTAL ROUNDED				14,700			0

MACTEC

Fire Tower Road current 12-foot travel lanes:
STA 13+00 to STA 17+43 = 443 LF x 2 lanes = 886 LF
STA 17+95 to STA 21+00 = 305 LF x 2 lanes = 610 LF

Antioch Baptist Church Road current 12-foot travel lanes:
STA 15+00 to STA 17+14 = 214 LF x 2 lanes = 428 LF
STA 19+00 to STA 17+56 = 144 LF x 2 lanes = 288 LF

TOTAL distance of existing 12-foot lanes = 2,212 LF (0.42 miles)

Total pavement 1-foot width reduction per each lane = 2,212 LF x 1.0 LF = 2,212 SF / 9 SY = 246 SY.

GAB and Asphalt SY to Ton calculations:

1. GAB-10" thick – (125#/SF x 9 SF/SY x 246 SY) / 2,000 #/TN = 139 Tons
2. 12.5 mm mix – (165 # x 246 SY) / 2,000 # = 21 Tons
3. 19 mm mix – (220 # x 246 SY) / 2,000 # = 28 Tons
4. 25 mm mix – (550 # x 246 SY) / 2,000 # = 68 Tons

Right-of-Way (ROW) Cost:
Estimated right-of-way cost was calculated and the price per acre was established at $16,283 acre, therefore $16,283 acre x (2,212 SF/43,560 acre) = $16,283 acre x 0.05 acres = $827.

Clearing & Grubbing:
Estimated lump sum cost has been set at $1,587,730 to clear 44.23 acres. Unit price conversation equates to $0.82 SF (check: $0.82 SF x 1,926,660 SF = $1,587,730. Therefore: 2,212 SF (from above calculation) x $0.82 SF = $1,815.

Unclassified Embankment, Soil:

2,212' long x 2' wide x 2' avg. depth = 8,848 CF / 27 CF/CY = 328 CY

Drainage System:
18" Storm Drain Cross-Drain Pipes: Taken directly from plan sheets.
24" Storm Drain Cross-Drain Pipes: Taken directly from plan sheets.
30" Storm Drain Cross-Drain Pipes: Taken directly from plan sheets.

DEVELOPMENT AND RECOMMENDATION PHASE

Northwest Eastman Bypass

IDEA No.:	PAGE No.:	CREATIVE IDEA:
A-4	1 of 1	Reduce design speed to 45 mph

Comp By: DCW Date: 8/19/09 Checked By: DC Date: 8/20/09

Original Concept:

The Revised Concept Report dated December 2008 was revised to raise the design speed from 45 mph to 55 mph.

Proposed Change:

Revise the design speed to 45 mph.

Justification:

The mainline for this project is 2.1 miles in length crossing relatively flat terrain. Traveling from north to south, starting from either a left turn or a continuous flow entrance ramp from US 23 / SR 87, the first ½ mile crosses two road intersections which should be signed for reduced travel speed; the next mile would be unobstructed except for the entrances onto and exits from the land parcels presumably by the farmers accessing their fields; and the last ½ mile would be signed reduced speed in anticipation of the ending of the road in a "T" at US 341 / SR 27 (right movement would be a yield situation but at a low speed). If the 45 mph is reinstated, safety would be enhanced and there would be minimum delay to the traveling public.

While this idea on its own has no cost implications or savings, allowing the 45 mph design speed would enhance the acceptability of other VE recommendations including reduced lane and shoulder widths. In addition, it is our understanding that both termini roads have a design speed of 45 mph.

LIFE CYCLE COST SUMMARY	CAPITAL COST	FUTURE COST	PRESENT WORTH
INITIAL COST - Original			
- Proposed			
- Savings			
FUTURE COST - Savings			
TOTAL PRESENT WORTH SAVINGS			N/A

DEVELOPMENT AND RECOMMENDATION PHASE

Northwest Eastman Bypass

IDEA No.:	PAGE No.:	CREATIVE IDEA:
A-5	1 of 3	Reduce mainline paved shoulder widths to 4 foot

Comp By: DPC Date: 8/20/09 Checked By: DW Date: 8/20/09

Original Concept:

Bypass mainline is currently designed with both paved shoulder widths set at 6-foot, 6-inches.

Proposed Change:

Reduce both paved shoulder widths to 4-foot (2.5' reduction).

Justification:

ASSHTO Policy (Chapter 4) defines the general characteristics of a shoulder as follows: A shoulder is the portion of the roadway contiguous with the traveled way that accommodates stopped vehicles, emergency use, and lateral support of subbase, base, and surface courses. ASSHTO prefers (they use the term "desirable") full-width (12') paved shoulders for a variety of reasons, regardless of design speed, percent trucks or daily volumes. ASSHTO also recommends a minimum shoulder width of two feet for any roadway in order to at least provide lateral support of the subbase, base, and surface courses. Current ADT volumes, along with a revised design speed of 45 MPH, typically call for an 8' wide paved shoulder, but certain exceptions are allowed to reduce this width. These exceptions include alignment conditions, past safety records, and low traffic volumes. The VE Team identified this corridor as fulfilling each of these characteristics and therefore recommends utilizing 4-foot wide paved shoulders. A design variance would be required.

Reduction of both shoulders will reduce the pavement cost. The unpaved, graded shoulder and typical section shall remain as currently designed.

LIFE CYCLE COST SUMMARY	CAPITAL COST	FUTURE COST	PRESENT WORTH
INITIAL COST - Original	353,300		
- Proposed	-0-		
- Savings	353,300		353,300
FUTURE COST - Savings			-0-
TOTAL PRESENT WORTH SAVINGS			**353,300**

COST WORKSHEET							
PROJECT: **Northwest Eastman Bypass**					ITEM No: A-5		
					CLIENT: GDOT		
					Sheet 2 of 3		
CONSTRUCTION ELEMENT		**ORIGINAL ESTIMATE**			**NEW ESTIMATE**		
ITEM	Units	No. Units	Cost/ Unit	Total Cost	No. Units	Cost/ Unit	Total Cost
GAB, 10" thick	TN	3,405	$17.04	58,021			
25 mm recycled superpav, 550#/SY	TN	1,665	$59.47	99,018			
19 mm recycled superpav, 165#/SY	TN	667	$67.77	45,203			
12.5 mm recycled superpav, 220#/SY	TN	500	$74.31	37,155			
SUBTOTAL (w/o ROW cost)				239,397			0
Markup 10.0%				23,940			0
TOTAL				263,337			0
TOTAL ROUNDED				265,000			0

Northwest Eastman Bypass	ITEM N^{O} : A-5 CLIENT: GDOT Sheet 3 of 3

Bypass mainline reduction of both shoulders by 2.5 feet:

STA 10+00 to STA 118+96 = 10,896 LF x 2 shoulders (1 NB + 1 SB) = 21,792 LF

Total pavement width reduction = 21,792 LF x 2.5 LF = 54,480 SF/ 9 SY = 6,053 SY

GAB Weight = 150#/FT^3

GAB and Asphalt SY to Ton calculations:

1. GAB-10" thick – (125 #/SF x 9 SF/SY x 6,053 SY) / 2,000 #/TN = 3,405 Tons
2. 12.5 mm mix – (165 #/SY x 6,053 SY) / 2,000 #/TN = 500 Tons
3. 19 mm mix – (220 #/SY x 6,053 SY) / 2,000 #/TN = 667 Tons
4. 25 mm mix – (550 #/SY x 6,053 SY) / 2,000 #/TN = 1,665 Tons

DEVELOPMENT AND RECOMMENDATION PHASE

Northwest Eastman Bypass

IDEA No.:	PAGE No.:	CREATIVE IDEA:
A-6	1 of 5	Modify Ramp A Design

Comp By: SMM Date: 8/18/09 Checked By: DCW Date: 8/19/09

Original Concept:

The baseline concept proposes a ramp design from US 23 / SR 87 to SR 841 / Eastman Bypass.

Proposed Change:

The revised concept proposes a right turn lane with a raised island at the intersection of SR 841 / Eastman Bypass. See attached sketch Page 2 of 5. The free flow right turn is eliminated.

Justification:

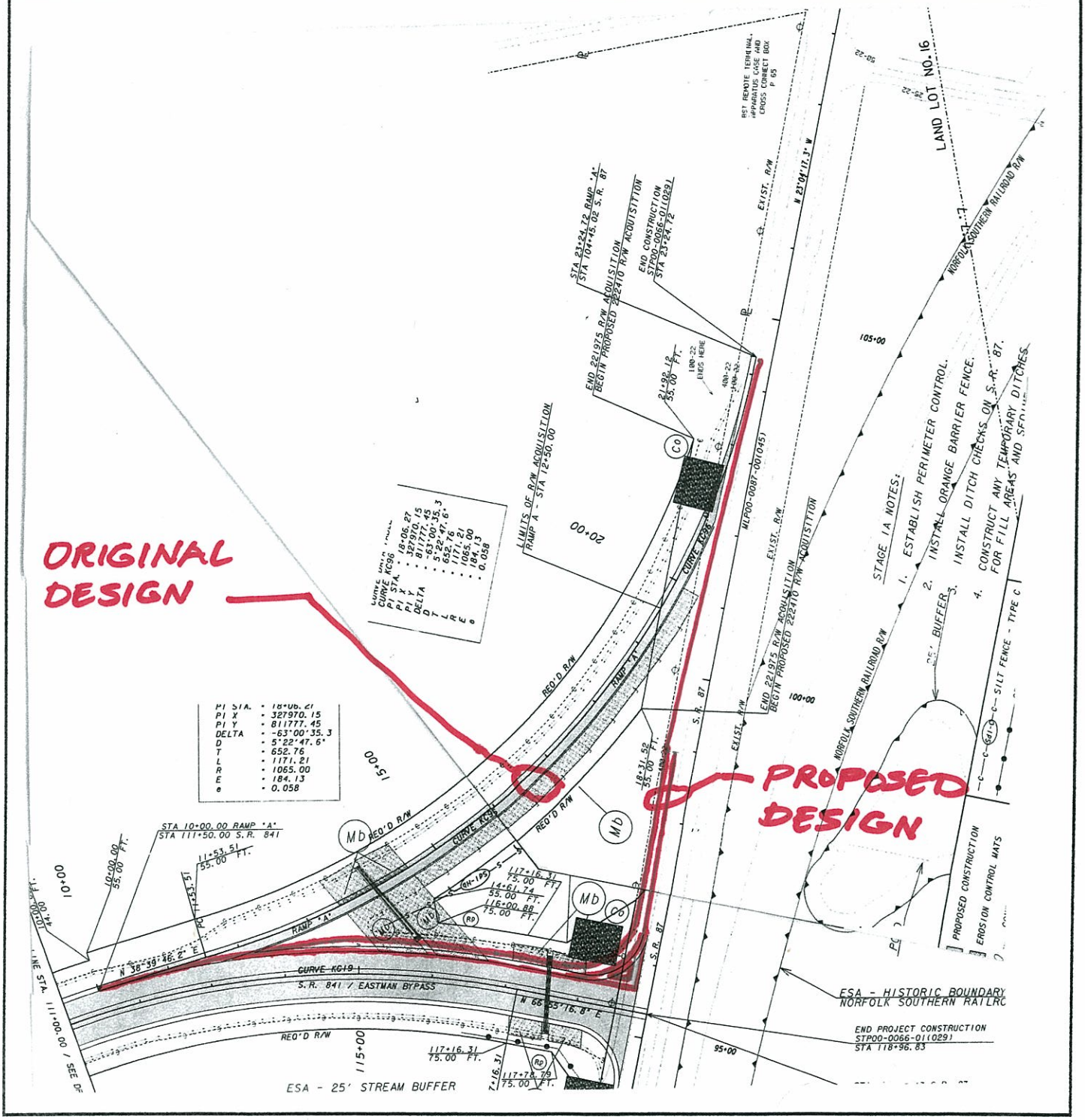
The need and purpose of the project can be accomplished with the right turn lane and raised island to channelize the right turn movement. The proposed change would result in cost savings for pavement, right-of-way, unclassified excavation and storm drainage.

LIFE CYCLE COST SUMMARY	CAPITAL COST	FUTURE COST	PRESENT WORTH
INITIAL COST - Original	6,739,000		
- Proposed	6,591,000		
- Savings	148,000		148,000
FUTURE COST - Savings			-0-
TOTAL PRESENT WORTH SAVINGS			**148,000**

SKETCH

Northwest Eastman Bypass

ITEM N^{O} : A-6
CLIENT: GDOT
Sheet 2 of 5



COST WORKSHEET							
PROJECT: **Northwest Eastman Bypass** **Dodge County**					ITEM No: A-6 CLIENT: GDOT Sheet 3 of 5		
CONSTRUCTION ELEMENT		**ORIGINAL ESTIMATE**			**NEW ESTIMATE**		
ITEM	Units	No. Units	Cost/ Unit	Total Cost	No. Units	Cost/ Unit	Total Cost
Clearing and Grubbing	LS	1	1,587,730	1,587,730	1	1,508,433	1,508,433
12.5 mm Superpave	Tons	8440	74.31	627,176	8419	74.31	625,616
19 mm Superpave	Tons	11254	67.77	762,684	11226	67.77	760,786
25 mm Superpave	Tons	23195	59.47	1,379,407	23103	59.47	1,373,935
GAB	Tons	55204	17.04	940,676	55226	17.04	941,051
Unclassified Excavation	CY	53893	2.47	133,116	53627	2.47	132,459
Borrow Excavation	CY	8400	2.98	25,032	6389	2.98	19,039
Storm Drain Pipe, 18 in	LF	340.0	36.27	12,332	166	36.27	6,021
Flared End Section 18 in, Storm Drain	Ea	6	551.07	3,306	4	551.07	2,204
SUBTOTAL				5,471,459			5,369,544
Markup 10.00%				547,146			536,954
Right of Way	Acres	44.23	16,283.06	720,200	42.01	16,283.06	684,051
TOTAL				6,738,804			6,590,550
TOTAL ROUNDED				6,739,000			6,591,000

MACTEC

Baseline Concept

R/W

Total land area = 44.23 Acres
Total Cost = $720,000 (April 30, 2009)
Assume composite RW unit cost of $16,283.06/acre

Pavement

12.5 mm (165 lbs/sy = 0.0092 tons/sf) = 8440 Tons @ $74.31/Ton = $627,176.40
19 mm (220 lbs/sy = 0.0122 tons/sf) = 11254 Tons @ $67.77/Ton = $762683.58
25 mm (550 lbs/sy = 0.0305 tons/sf) = 23195 Tons @ $59.47/Ton = $1,379,406.65
6 in & 8 in GAB = 55,204 Tons @ $17.04/Ton = $940,676.16

Earthwork

Unclassified Excavation
Total Volume = 53,893 CY
Unit Cost = $2.47/CY

Storm Drain Pipe

18 in = 2 x 87 lf = 174 lf, Unit Cost = $36.27/lf
Flared End Sections = 4 Ea @ $562.15/Ea

Revised Concept

RW – Assumed reduction area = 96,475 sf / (43560 sf/acre) = 2.22 Ac
2.22 Ac (5% reduction) = 2.22 Ac x $16,283.06 = $36,148.39

Pavement - Assumed reduction area = 21,900 sf = 2,433.33 sy
12.5 mm (0.0092 tons/sf) (21,900 sf) = 201.48 Tons @ $74.31/Ton = $14,971.98
19 mm (0.0122 tons/sf) (21,900 sf) = 267.18 Tons @ $67.77/Ton = $18,108.78
25 mm (0.0305 tons/sf) (21,900 sf) = 689.85 Tons @ $59.47/Ton = $41,025.38
6 in & 8 in GAB (0.075 tons/cf) (21,900 sf) (7/12 ft) = 958.12 Tons @ $17.04/Ton = $16326.36

Pavement - Added area = 19610 sf = 2179 sy
12.5 mm (0.0092 tons/sf) (19610 sf) = 180.41 @ $74.31/Ton = $13,406.41
19 mm (0.0122 tons/sf) (19610 sf) = 239.24 Tons @ $67.77/Ton = $16,213.43
25 mm (0.0305 tons/sf) (19610 sf) = 598.10 Tons @ $59.47/Ton = $35,569.30
6 in & 10 in GAB (0.075 tons/cf x 19610 sf x 8/12 ft) = 980.50 Tons @ $17.04/Ton = $16,707.72

Earthwork

Reduction = Total Length = 1,200 lf (Sta. 10+00 to Sta. 22+00)

Assumed 100 sf of embankment per cross section
Volume = 1,200 lf x 100 sf /27 = 4,444.44 cy
Unit Cost = $2.98/CY
Total Cost = 4,444.44 cy x $2.98/cy = $13,244.43

Assumed 60 sf of excavation per cross section
Volume = 1,200 lf x 60 sf /27 = 2,666.67 cy
Unit Cost = $2.47/CY
Total Cost = 2,666.67 cy x $2.47/cy = $6,586.67

Addition = Total Length = 1,460 lf

Assumed 45 sf of embankment per cross section
Volume = 1,460 lf x 45 sf /27 = 2,433.33 cy
Unit Cost = $2.98/CY
Total Cost = 2,433.33 cy x $2.98/cy = $7,251.32

Storm Drain Pipe

Reduction: 18 in = 2 x 87 lf = 174 lf
Unit Cost = $36.27/lf
Total Cost = $6, 310.98

Flared End Sections = 4 Ea
Unit Cost = $562.15/Ea
Total Cost = $2,248.60

Clearing and Grubbing

Original Cost = $1,587,729.74
Total Area = 44.23 Acres
Unit Cost = $1,587,729.74 / 44.23 Acres / (43,560 sf/Acre) = $0.82/sf

Reduction = 2.22 Acres x (43560 sf/acre) x $0.82 = $79,296.62

DEVELOPMENT AND RECOMMENDATION PHASE

Northwest Eastman Bypass

IDEA No.:	**PAGE No.:**	**CREATIVE IDEA:**
A-7	1 of 4	Reduce Project Limit for Fire Tower Road from Sta. 13+00 to Sta. 15+00

Comp By: SMM Date: 8/18/09 Checked By: DCW Date: 8/19/09

Original Concept:

The baseline concept indicates "Begin Construction" at Fire Tower Road at Sta. 13+00.

Proposed Change:

The revised concept proposes "Begin Construction" to be moved to Sta. 15+00. See attached sketch on Page 2 of 4.

Justification:

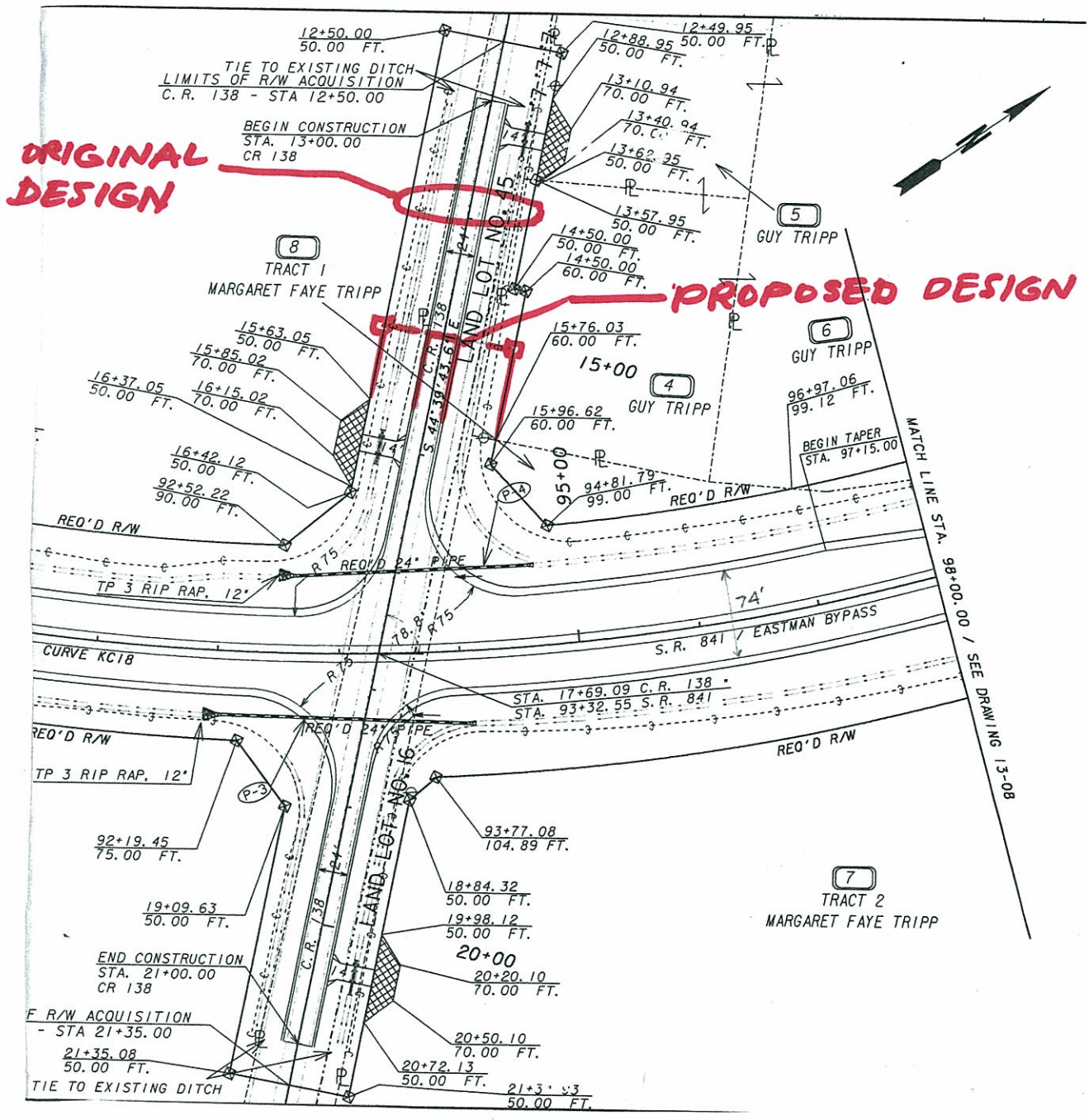
The need and purpose of the project can be accomplished by shortening the profile. The proposed change would result in cost savings for pavement, right-of-way, unclassified excavation and storm drainage.

LIFE CYCLE COST SUMMARY	**CAPITAL COST**	**FUTURE COST**	**PRESENT WORTH**
INITIAL COST - Original	6,694,000		
- Proposed	6,649,000		
- Savings	45,000		45,000
FUTURE COST - Savings			-0-
TOTAL PRESENT WORTH SAVINGS			**45,000**

SKETCH

Northwest Eastman Bypass

ITEM Nº: A-7
CLIENT: GDOT
Sheet 2 of 4



COST WORKSHEET							
PROJECT: **Northwest Eastman Bypass** **Dodge County**					ITEM No: A-7 CLIENT: GDOT Sheet 3 of 4		
CONSTRUCTION ELEMENT		**ORIGINAL ESTIMATE**			**NEW ESTIMATE**		
ITEM	Units	No. Units	Cost/ Unit	Total Cost	No. Units	Cost/ Unit	Total Cost
Clearing and Grubbing	LS	1	1,587,730	1,587,730	1	1,577,371	1,577,371
12.5 mm Superpave	Tons	8440	74.31	627,176	8388	74.31	623,312
19 mm Superpave	Tons	11254	67.77	762,684	11186	67.77	758,075
25 mm Superpave	Tons	23195	59.47	1,379,407	23024	59.47	1,369,237
GAB	Tons	55204	17.04	940,676	54854	17.04	934,712
Unclassified Excavation	CY	53893	2.47	133,116	53226	2.47	131,468
SUBTOTAL				5,430,788			5,394,176
Markup				543,079			539,418
Right of Way	Acres	44.23	16,283.06	720,200	43.94	16,283.06	715,478
TOTAL				6,694,067			6,649,072
TOTAL ROUNDED				6,694,000			6,649,000

MACTEC

Revised Concept
Total Roadway Length = 748 ft.

Width of Pavement = (2+12+12+2) ft = 28 ft
Reduced Pavement = 200 ft (Sta. 13+00 to Sta. 15+00)

Reduced Pavement Area = (200 ft) (28 ft) = 5600 sf = 622.22 sy (5600 sf / (9 sf per sy))

Pavement Reduction
12.5 mm (0.0092 tons/sf) (5600 sf) = 51.52 Tons @ $74.31/Ton = $3,828.45
19 mm (0.0122 tons/sf) (5600 sf) = 68.32 Tons @ $67.77/Ton = $4,630.05
25 mm (0.0305 tons/sf) (5600 sf) = 170.80 Tons @ $59.47/Ton = $10,157.48
6 in & 8 in GAB (0.075 tons/cf) (5600 sf) (10/12 ft) = 350.00 Tons @ $17.04/Ton = $5,594

Earthwork
Reduction = Total Length = 200 lf (Sta. 13+00 to Sta.15+00)

Assumed 90 sf of excavation per cross section
Volume = 200 lf x 90 sf /27 = 666.67 cy
Unit Cost = $2.47/CY
Total Cost = 666.67 cy x $2.47/cy = $1,646.67

Clearing and Grubbing
Original Cost = $1,587,729.74
Total Area = 44.23 Acres
Unit Cost = $1,587,729.74 / 44.23 Acres / (43,560 sf/Acre) = $0.82/sf

Reduction = 0.29 Acres x (43560 sf/acre) x $0.82 = $10,358.57

RW – Assumed reduction area
= (250 ft) (35 ft) + (250 ft) (15 ft) = 12,500 sf / (43560 sf/acre) = 0.29 Ac

= 0.29 Ac x $16,283.06 = $4,722.09

DEVELOPMENT AND RECOMMENDATION PHASE

Northwest Eastman Bypass

IDEA No.:	PAGE No.:	CREATIVE IDEA:
E-3	1 of 3	Use a 14-foot wide raised grass median section instead of 14-foot full depth flush median.

Comp By: DPC Date: 8/19/09 Checked By: DW Date: 8/19/09

Original Concept:

The Bypass mainline from STA 10+00 to STA 118+96 is designed as a 5-lane section consisting of (4) 12-foot travel lanes and (1) 14-foot paved flush median.

Proposed Change:

It is recommended that the full width 14-foot flush median section be reduced and placed only in the left turn areas while the remaining median area of the corridor remain as a raised grass surface contained by 6″ header curb.

Justification:

Reduction of a portion of the paved flush median reduces the cost of the full depth pavement section in areas where no left turns will be permitted due to the limited access designation of this corridor. Allow the median to become full-depth and 14 feet in width at all required left turn areas: Rozar-Goolsby Connector; Fire Tower Road, Antioch Baptist Church Road, US 23/SR 87 and US 341/SR 27 intersections. Property access will not be restricted as driveway access will still be provided for each parcel.

LIFE CYCLE COST SUMMARY	CAPITAL COST	FUTURE COST	PRESENT WORTH
INITIAL COST - Original	466,400		
- Proposed	255,200		
- Savings	211,200		211,200
FUTURE COST - Savings			-0-
TOTAL PRESENT WORTH SAVINGS			**211,200**

MACTEC

COST WORKSHEET							
PROJECT: **Northwest Eastman Bypass**					ITEM No: E-3 CLIENT: GDOT Sheet 2 of 3		
CONSTRUCTION ELEMENT		**ORIGINAL ESTIMATE**			**NEW ESTIMATE**		
ITEM	Units	No. Units	Cost/ Unit	Total Cost	No. Units	Cost/ Unit	Total Cost
Right-of-Way	AC	0.00	6,000		0		0
GAB, 10" thick	TN	6,036	17.04	102,853	0		0
25 mm recycled superpav, 550#/SY	TN	2,950	59.47	175,437	0		0
19 mm recycled superpav, 165#/SY	TN	1,180	67.77	79,969	0		0
12.5 mm recycled superpav, 220#/SY	TN	885	74.31	65,764	0		0
Storm drain pipe, 24" H 1-10	LF	0	41.79		0		0
Storm drain pipe, 30" H 1-10	LF	0	53.29		0		0
Unclassified excavation, soil	CY	0	2.47		0		0
Clearing and Grubbing	SF	0	0.82		0		0
Borrow material for grass median	CY				1,970	2.98	5,871
Header Curb, 6"	LF				13,876	16.19	224,652
Permanent Grassing	AC				2.25	674.07	1,517
ROW SUBTOTAL				424,023			232,040
Markup 10.0%				42,402			23,204
TOTAL				466,425			255,244
TOTAL ROUNDED				466,400			255,200

MACTEC

Bypass Mainline 14-foot median, Eliminate except at all four intersection locations:
Total length from STA 10+00 to STA 118+96 = 10,896.
Subtract all left turn lane areas using 500' lane lengths approaching from each direction. US 341/SR27 – 500'; Rozar-Goolsby Conn. – 1,000'; Fire Tower Road – 1,000'; Antioch Baptist Church Rd. – 1,000'; and US 23/SR 87 – 500'
Total length of all left turn lanes = 4,000'
Adjusted length of 14' paved flush median elimination becomes 10,896' – 4,000' = 6,896'

GAB and Asphalt SY to Ton calculations:
(6,896 LF x 14 LF) / 9 SY = 10,730 SY

1. GAB -10" thick – (125 #/SF x 9 SF/SY x 10,730 SY) / 2,000 # = 6,036 Tons
2. 12.5 mm mix – (165 # x 10,730 SY) / 2,000 # = 885 Tons
3. 19 mm mix – (220 # x 10,730 SY) / 2,000 # = 1,180 Tons
4. 25 mm mix – (550 # x 10,730 SY) / 2,000 # = 2,950 Tons

6" Header Curb Installation:
6,896'x 2 (both sides) + (6) 14' end points = 13,792' + 84' = 13,876 LF

Borrow Material behind 6" header curb placement:
(6,896' long x 14' wide x .5' depth) / 27 = 1,790 CY x 1.10% compaction factor = 1,970 CY

Permanent Grassing:
6,896' long x 14' wide = 96,544 SF / 43,560 AC = 2.25 Acres

Right-of-Way (ROW) Cost:
Does not change.

Clearing & Grubbing:
Does not change.

Unclassified Embankment, Soil:

Does not change.

Drainage System:
Does not change due to raised condition.

APPENDIX

COST MODEL

VALUE ENGINEERING

COST MODEL / DISTRIBUTION

By

Decreasing Item

Project No. STP00-0066-01(029)

Northwest Eastman Bypass

PI No. 221975

Dodge County

September 8, 2009

Element ID.	Item Description	Cost x $1,000	%
A	Asphalt Concrete Pavement	4,415	41
B	Clearing, Grubbing	1,747	16
C	Graded Aggregate Base	1,165	11
D	Right of Way	720	7
E	Traffic Control and Field Office	651	6
F	Erosion Control	466	4
85% Cost Line			
G	Signing and Marking	440	4
H	Rock Embankment	293	3
I	Unclassified Excavation	270	3
J	Class A Concrete and reinforcing	224	2
K	Temporary Barrier	120	1
L	Storm Drainage	101	1
M	Reimbursable Utilities	68	1
N	Guardrail	46	< 1
O	Rip Rap	14	< 1
	TOTAL	**$10,740**	**100%**

INFORMATION PHASE ------- FUNCTION ANALYSIS

Northwest Eastman Bypass

System: **Bypass Eastman**
Function: **Reduce Congestion**

ITEM No.	DESCRIPTION	FUNCTION			INITIAL DOLLARS (x 1,000)		
		Verb	Noun	Kind*	Cost	% of Total	Worth
A	Asphalt Concrete Pavement	Support	Traffic	B	4,415	41	2,600
B	Clearing and Grubbing	Clear	Site	B	1,747	16	1,300
		Prepare	Site				
C	Graded Aggregate Base	Support	Pavement	B	1,165	11	600
		Allows	Drainage				
D	Right of Way	Store	Project	S	720	7	720
E	Traffic Control and Field Office	Maintain	Traffic	S	651	6	651
		Furnish	Safety				
F	Erosion Control	Protect	Environment	S	466	4	466
G	Signing and Markings	Guide	Traffic	S	440	4	440
		Display	Information				
H	Rock Excavation	Stabilize	Foundation	S	293	3	293
I	Unclassified Excavation	Maintain	Grade	S	270	3	270
TOTALS					**10,167**	**95**	**7,340**

* B = Basic, S = Secondary

CREATIVE PHASE Creative Idea Listing		JUDGMENT PHASE Idea Evaluation	
Northwest Eastman Bypass			
NO.	**CREATIVE IDEA**	**COMMENTS**	**IDEA RATING ****
A	**Asphalt Concrete Pavement**		
A-1.0	Use a three lane section		√
A-1.1	Use a four lane section		√
A-2	Verify pavement design	Valid as Designed	√
A-3.0	Use 11 foot lanes on the mainline		√
A-3.1	Use 11 foot lanes on the side roads		√
A-4	Reduce design speed to 45 mph		√
A-5	Reduce shoulder width to 4 feet on the mainline		√
A-6	Modify Ramp A at US 23/SR 87 Intersection		√
A-7	Minimize side road work		√
B	**Clearing and Grubbing**		
	See appropriate items under A		√
C	**GAB**		
	See appropriate items under A		√

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

NO.	CREATIVE IDEA	COMMENTS	IDEA RATING **
D	**Right of Way**		
D-1	Adjust right of way width to actual needs	Appears to be incorporated in latest drawings	**DC**
E	**Other**		
E-1	Increase height of culvert, reduce rock embankment	Not hydraulically desirable	**X**
E-2	Minimize double sided culverts	Minimal cost savings	**DC**
E-3	Evaluate using a grass/concrete raised median		√

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

VE STUDY SIGN-IN SHEET

Project No.: STP00-0066-01(029) County: Dodge Co. PI No.: 221975- Date: Aug. 18-21, 2009

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Bobby Dollar		OEL	4/699-6883	rdollar@dot.ga.gov
Tim Matthews		OPD	4/631-1568	tmatthews@dot.ga.gov
13 ATTENDED TUES. (OVERVIEW)				
10 ATTENDED FRI. (PRESENTATION)				