

**DEPARTMENT OF TRANSPORTATION  
STATE OF GEORGIA**

**INTERDEPARTMENTAL CORRESPONDENCE**

**FILE:** 621350-, Bartow County  
STP00-0012-01(071)  
SR 20 Widening and Relocation from  
US 411/SR 61 to I-75

**OFFICE** Office of Program  
Delivery  
**DATE** April 25, 2013

**FROM:** Genetha Rice-Singleton  
State Program Delivery Engineer

**TO:** Lisa Myers, State Project Review Engineer  
Attn: Matt Sanders

**SUBJECT:** Request for VE Reversal

Reference is made to the VE Implementation letter dated January 29, 2008 for the reference project. Attached is a request to reverse full implementation of Alternative RD-20.

Alternative RD-20 recommended the reuse of the existing pavement and base as part of the new roadway. Implementation of Alternative RD-20 was based on the assumption that the existing pavement and base material could be reused and that an overlay pavement design could be used for the project.

Since the VE Study was completed, changes in the design have been incorporated to accommodate culvert extensions for environmental constraints, eliminating the ability to overlay the existing pavement in one section of the project where it was identified to implement this Alternative. Also, based on information obtained on the existing pavement structure, areas of the existing pavement and base do not appear to provide sufficient structural capacity to accommodate an overlay of the existing pavement based on the recently updated traffic volume and truck traffic projections prepared for the project.

However, partial implementation of Alternative RD-20 has been incorporated into the design. Pavement from Sta. 126+00 to Sta. 133+50 appears to be able to accommodate a milling and overlay design. A milling and overlay pavement design section for this area of the project has been submitted and approved for implementation on this project.

Modifications to the design profile to accommodate utilizing more of the existing pavement is not recommended due to project constraints, including schedule, constructability issues, right-of-way constraints, and schedule.

This Office concurs with this request.

If you have any questions, please contact Kevin bailey at (678) 580-8820.

PI No. 621350  
SR 20 from US 411/SR 61 to I-75  
Bartow County  
Request for VE Reversal

Approve: *Lisa L Myers*  
State Project Review Engineer

4/25/13  
Date

Approve: *R. Joel Casper*  
Director of Engineering

4/25/13  
Date

Approve: *Bill R. M. M.*  
Chief Engineer

4-30-13  
Date



Jacobs Engineering Group Inc.  
6801 Governors Lake Parkway  
Norcross, Georgia 30071 USA 770.455.8555

April 15, 2013

Ms. Genetha Rice-Singleton, P.E., State Program Delivery Engineer  
Georgia Department of Transportation  
Office of Program Delivery – 25<sup>th</sup> Floor  
600 West Peachtree Street, NW  
Atlanta, GA 30308  
Attn: Mr. Kevin Bailey

**Reference: SR 20 Widening and Relocation from SR 61/US 411 to I-75  
Project No. STP00-0012-01(071); PI No. 621350  
Bartow County**

Dear Ms. Rice-Singleton:

Jacobs Engineering Group (JEG) on behalf of Bartow County requests a Value Engineering (VE) Study Implementation Revision for PI No. 621350. The VE Implementation letter was issued by your office on January 29, 2008 for this project.

JEG requests to revise the implementation of Alternative RD-20. This alternative recommended that the existing pavement and base be recycled and reused for the new pavement and base for the widening portion of the project from Sta. 59+00 to Sta. 133+83 for an estimated saving of \$2,284,288.

As stated in the January 29, 2008 Value Engineering Study Responses, the existing pavement would be recycled and reused where feasible. The profile was designed to accommodate an overlay of the existing pavement once an existing pavement evaluation confirmed that the existing pavement structure was suitable for overlay.

JEG requests reversing full implementation of Alternative RD-20. Based on the changes in the design since the VE Study was held, and information obtained on the existing pavement structure, full implementation of Alternative RD-20 is not suitable for the project. Several areas of the project required a profile design modification to accommodate the extension of existing culverts, which do not allow for the reuse of existing pavements due to the increase of the profile over 2-feet above the existing pavement. Other areas of the project show that the existing pavement and base do not appear to provide sufficient structural capacity to accommodate an overlay of the existing pavement due to the existing pavement structure, revised traffic projections and truck traffic percentages.

Implementation of Alternative RD-20 has been incorporated into the design from Sta. 126+00 to Sta. 133+50. Based on the limits incorporated into the design, the current pavement design structure, and current construction unit prices, the cost savings realized from Alternative RD-20 have been reduced from \$2,284,288 to \$156,606. This reduction incorporates the approved milling and overlay design that was not incorporated into the cost savings of the original Alternative RD-20 analysis. Please see the attached revised cost savings documentation for details.

If you have any questions or require any additional information please do not hesitate to call me at (678) 333-0174. We look forward to the successful completion of this project.

Sincerely,  
**JACOBS ENGINEERING GROUP**

  
Edward F. Culican, Jr., P.E.  
Project Manager

**PROJECT:** Georgia Department of Transportation **ALTERNATIVE NO.:** RD-20

SR 20 Widening and Relocation  
STP00-0012-01(071); PI No. 621350; Bartow County

**DESCRIPTION:** RECYCLE EXISTING PAVEMENT ON SR 20 **SHEET NO.:**

This documentation serves to support a VE reversal for Alternative No. RD-20 provided for the referenced project as stated in the VE Implementation letter dated January 29, 2008. The following is supporting backup for the reversal of full implementation of Alternative RD-20.

**From the VE Study Report:**

**Original Design:**

The Original design made no provisions for the possible recycling of existing roadway sections on SR 20

**Alternative:**

The alternative would be to recycle existing roadway base and paving

**Technical Discussion:**

An alternate use for the existing roadway is not addressed in the plans or the estimate. The proposed profile eliminates the possibility of reusing the existing pavement as part of the new roadway. The existing pavement and base from STA 59+00 to STA 133+83 could therefore be recycled which should result in significant savings.

Estimated Savings: \$2,284,288

**Reversal of full implementation of Alternative RD-20 Documentation:**

Since the VE Study was held, changes to the design profile have been incorporated to accommodate extensions of existing culverts for environmental constraints, which eliminates the ability to overlay the existing pavement from Sta. 59+00 to Sta. 71+00. Also, based on information obtained on the existing pavement structure, the existing pavement and base do not appear to provide sufficient structural capacity to accommodate an overlay of the existing pavement based on the existing pavement structure, revised traffic volumes and truck traffic projections.

Implementation of Alternative RD-20 has been incorporated into the design from Sta. 126+00 to Sta. 133+50. The cost savings realized in this location based on the current pavement design and construction costs is \$156,606. The estimate is based on the cost difference between a full depth pavement section and a milling and overlay section. Both pavement designs are approved pavement design sections for this project.

Note: After comparing the cost savings for partial implementation of this Alternative, it was discovered that the original cost savings estimate was over estimated. The original estimate over estimated that amount of pavement to be saved as the estimate assumed the area of pavement on both sides of the new roadway would be saved, and did not provide for milling and overlay of the existing pavement structure.

	<b>SUB-TOTAL</b>		\$ 213,850.59		\$ 71,481.53
<b>MARKUP AT</b>	10%		\$ 21,385.06		\$ 7,148.15
	<b>TOTAL</b>		\$ 235,235.65		\$ 78,629.68
<b>ESTIMATED SAVINGS:</b>					<b>\$ 156,605.97</b>



**DEPARTMENT OF TRANSPORTATION  
STATE OF GEORGIA**

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**INTERDEPARTMENT CORRESPONDENCE**

**FILE:** STP-012-1(71) & STP-0002-00(626) Bartow  
P. I. Nos.: 621350 & 0002626  
S.R. 3/U.S. 41 & S.R. 6/U.S. 411 Interchange

**OFFICE:** Engineering Services

**DATE:** January 29, 2008

**FROM:** Brian Summers, P.E., Project Review Engineer *REW*

**TO:** Kent Sager, District Engineer, Cartersville

**SUBJECT: IMPLEMENTATION OF VALUE ENGINEERING STUDY ALTERNATIVES**

Recommendations for implementation of Value Engineering Study Alternatives are indicated in the table below. Incorporate alternatives recommended for implementation to the extent reasonable in the design of the project.

ALT No.	Description	Savings PW & LCC	Implement	Comments
<b>S.R. 20 ROADWAY (RD)</b>				
RD-1	Use 24' Raised Median and use 16' shoulders	\$1,287,200	No	With the anticipated development, this corridor will require a six lane section which would be accommodated with the proposed typical section (44' depressed grassed median).
RD-4	Use Type A Median Opening	\$193,433	No	The Type B Median Opening shown provides additional sight distance than does the Type A Median Opening.
RD-6	Use an Urban Section from Sta. 100+00 to Sta. 133+00	\$198,408	No	The proposed typical section would accommodate the future widening.
RD-8	Relocate one sidewalk to the other side of the road and combine with the other creating a Multi-Use Trail	\$1,211,894	No	Sidewalks were added at the request of FHWA during their review of the Environmental Assessment for this project.
RD-10	Bifurcate up to 1.5' differential	\$255,320	No	The profile grade was set to allow for future widening.

ALT No.	Description	Savings PW & LCC	Implement	Comments
RD-13	Extend existing S.R. 20 directly west and tie in to U.S. 41 using a fly-over	-\$4,170,840 (cost increase)	No	Results in a substantial cost increase.
RD-16	Extend S.R. 20 westerly from U.S. 411 and tie-in to U.S. 41 avoiding downtown	Design Suggestion	No	The Environmental Process would need to be re-opened and would cause delays to the project's schedule.
RD-19	Delete outside Curb and Gutters	\$680,682	No	Would require modification of the front slope and ditch to meet Clear Zone which could end up requiring that more Right of Way be acquired. This would nullify any savings.
RD-20	Use existing pavement	\$2,284,288	Yes	This should be done.
<b>U.S. 41/411 INTERCHANGE BRIDGE (BR-ITX)</b>				
BR-ITX-1	Build one new 33' structure in between the two existing bridges, route traffic onto new bridge; construct new bridges north and south	\$22,328	No	After a more detailed investigation, there is not enough room between the two existing bridges to build a 33' structure.
BR-ITX-3	Use an 8' and 2' shoulders	\$206,712	No	The 2' inside shoulder does not meet the AASHTO minimum width for the inside shoulder within the median across the bridge.
BR-ITX-4	Use 6'-6" and 2' shoulders	\$284,229	No	The 2' inside shoulder and the 6'-6" outside shoulder does not meet the AASHTO minimum width for the inside and outside shoulders.
<b>U.S. 41 RAILROAD BRIDGE (BRRR)</b>				
BRRR-1	Use an 8' and 2' shoulder	\$178,200	No	The 2' inside shoulder does not meet the AASHTO minimum width for the inside shoulder within the median across the bridge.

ALT No.	Description	Savings PW & LCC	Implement	Comments
<b>U.S. 41 RAILROAD BRIDGE (BRRR) - continued</b>				
BRRR -2	Reduce length by eliminating end spans	\$2,584,734	No	Based on a more detailed cost estimate and additional supporting information provided by the Design Consultant, it will actually be more expensive in this case to use the MSE Wall Abutments.
BRRR -3	Use 6'-6" and 2' shoulders	\$245,025	No	The 2' inside shoulder and the 6'-6" outside shoulder does not meet the AASHTO minimum width for the inside and outside shoulders.
BRRR -4	Build one new 21' structure in between the two existing bridges, route traffic onto new bridge; construct new bridges north and south	\$112,303	No	After a more detailed investigation, there is not enough room between the two existing bridges to build a 21' structure.
<b>U.S. 41 CREEK BRIDGE (BRCR)</b>				
BRCR -1	Use an 8' and 2' shoulder	\$122,760	No	The 2' inside shoulder does not meet the AASHTO minimum width for the inside shoulder within the median across the bridge.
BRCR -2	Build one new 33' structure in between the two existing bridges, route traffic onto new bridge; construct new bridges north and south	\$63,246	No	After a more detailed investigation, there is not enough room between the two existing bridges to build a 33' structure.
BRCR -3	Use 6'-6" and 2' shoulders	\$168,795	No	The 2' inside shoulder and the 6'-6" outside shoulder does not meet the AASHTO minimum width for the inside and outside shoulders.
<b>U.S. 41 ROADWAY (RD)</b>				
RD-2	Recycle existing pavement on U.S. 41/S.R. 3	\$906,007	Yes	This should be done.

STP-012-1(71) & STP-0002-00(626) Bartow  
P.I. Nos. 621350 & 0002626  
VE Study Implementation  
Page 4.

A meeting was held on January 23, 2008 to discuss the above recommendations. Ed Culican with JJ & G. DeWayne Comer and Joseph Ciavarro with District 6 Preconstruction and Brian Summers, Ron Wishon and Lisa Myers with Engineering Services were in attendance.

The results above reflect the consensus of those in attendance and those who provided input.

Approved: *Gerald M. Ross* Date: 2/13/08  
Gerald M. Ross, P. E., Chief Engineer

BKS:REW

Attachments

c: Gus Shanine  
Todd Long  
Paul Liles  
James Magnus  
Kenny Beckworth  
Stephen Lively  
Steve Gaston  
DeWayne Comer  
David Moore  
Joseph Ciavarro  
Ken Werho  
Nabil M. Raad  
Lisa Myers

# Value Analysis Design Alternative



<b>PROJECT:</b>	Georgia Department of Transportation STP-012-1(71) – P.L. No. 621350 SR 20 Widening & Relocation – Bartow County	<b>ALTERNATIVE NO.:</b>  <b>RD-20</b>
<b>DESCRIPTION:</b>	<b>RECYCLE EXISTING PAVEMENT ON SR 20</b>	<b>SHEET NO.:</b> 1 of 4

**Original Design:**

The original design made no provisions for the possible recycling of existing roadway sections on SR 20

**Alternative:**

The alternative would be to recycle existing roadway base and paving.

**Opportunities:**

- May serve to reduce pavement costs
- Reduces the amount of material to be hauled

**Risks:**

- May require additional site testing and design changes

**Technical Discussion:**

An alternate use for the existing roadway is not addressed in the plans or the estimate. The proposed new profile eliminates the possibility of reusing the existing pavement as part of the new roadway. The existing pavement and base from STA 59+00 to STA 133+83 could therefore be recycled which should result in significant savings.

COST SUMMARY	INITIAL COST	PRESENT WORTH RECURRING COSTS	PRESENT WORTH LIFE-CYCLE COST
ORIGINAL DESIGN	\$ 0	\$	\$ 0
ALTERNATIVE	\$ 2,284,288	\$	\$ 2,284,288
SAVINGS	\$ 2,284,288	\$	\$ 2,284,288

# Illustrations

**PBSJ**

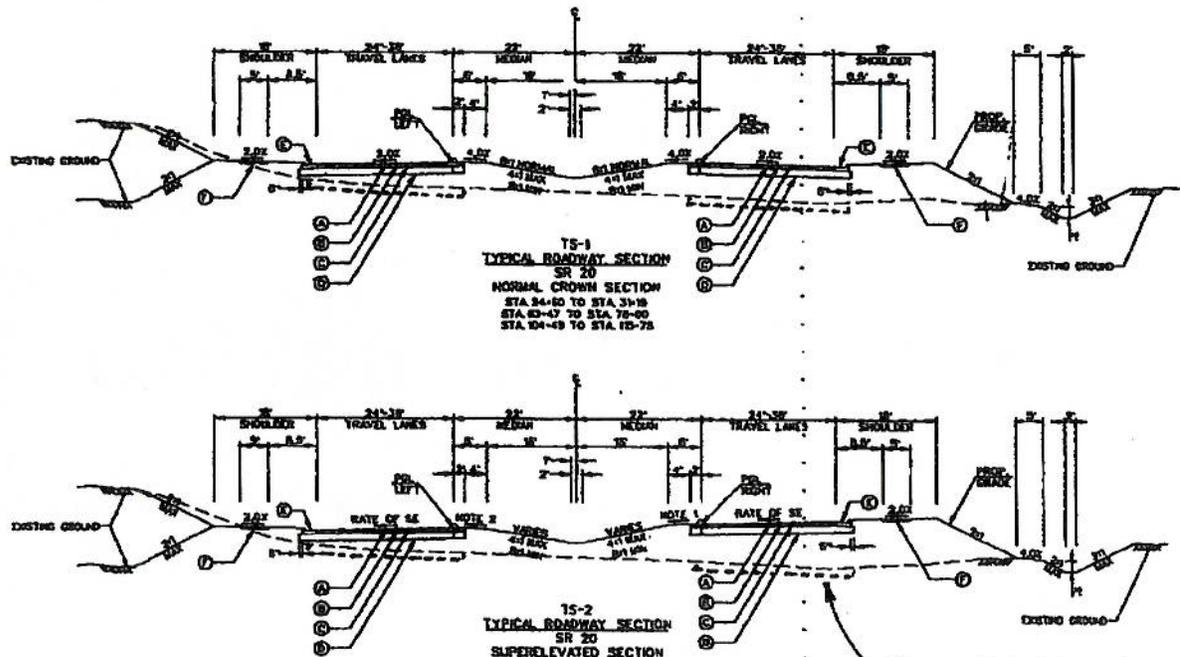
PROJECT: Georgia Department of Transportation  
 STP-012-1(71) - P.L. No. 621350  
 SR 20 Widening & Relocation - Bartow County

ALTERNATIVE NO.:

**RD20**

DESCRIPTION: RECYCLE EXISTING PAVEMENT ON SR 20

SHEET NO.: 2 of 4



- PAVEMENT DESIGN**
- Ⓐ 185 #/SY ASPHALTIC CONCRETE, 12.5 mm SUPERPAVE, DESIGN LEVEL B
  - Ⓑ 220 #/SY ASPHALTIC CONCRETE, 18 mm SUPERPAVE, DESIGN LEVEL B
  - Ⓒ 440 #/SY ASPHALTIC CONCRETE BASE, 25 mm SUPERPAVE, DESIGN LEVEL A
  - Ⓓ 1" GRADED AGGREGATE BASE
  - Ⓔ 6" X 30" TYPE 2 CONCRETE CURB & GUTTER
  - Ⓕ 4" CONCRETE SIDEWALK

TS-2  
 TYPICAL ROADWAY SECTION  
 SR 20  
 SUPERELEVATED SECTION  
 STA 20-00 TO STA 24-60  
 STA 31-18 TO STA 63-47  
 STA 76-00 TO STA 104-19  
 STA 115-75 TO STA 133-53

**EXISTING ROADWAY**

- NOTES**
- 1. SHOULDER TO SLOPE AT NORMAL RATE OR SUPERELEVATION RATE, WHICHEVER IS GREATER.
  - 2. SHOULDER TO SLOPE AT NORMAL RATE, HOWEVER, THE ALGEBRAIC DIFFERENCE IN PAVING SLOPE AND SHOULDER SLOPE SHALL NOT EXCEED 7.0%. MINIMUM SHOULDER SLOPE TO BE 2.0%.

# Calculations

**PBSJ**

PROJECT:	Georgia Department of Transportation STP-012-1(71) - P.L. No. 621350 SR 20 Widening & Relocation - Bartow County	ALTERNATIVE NO.:	RD20
DESCRIPTION:	RECYCLE EXISTING PAVEMENT ON SR 20	SHEET NO.:	3 of 4

STA 59+00 to STA 133+83 = 7,483 LF

TRAVEL LANES VARY 24'-36' ... ASSUME 30' WIDTH IN EACH DIRECTION

12.5 MM  $2 (7,483 \text{ LF} \times 30' \text{ WIDTH}) = 49,887 \text{ SY}$   
 @ 165#/sy = 4,116 tons  
 @ \$66.19/ton = \$272,438.

19.0 MM  $2 (7,483 \text{ LF} \times 30' \text{ WIDTH}) = 49,887 \text{ SY}$   
 @ 220#/sy = 5,487 tons  
 @ \$65.62/ton = \$360,057.

25.0 MM  $2 (7,483 \text{ LF} \times 30' \text{ WIDTH}) = 49,887 \text{ SY}$   
 @ 440#/sy = 10,975 tons  
 @ \$65.32/ton = \$716,887.

GAB  $2 (7,483 \text{ LF} \times 31' \text{ WIDTH}) = 51,550 \text{ SY}$   
 @ 135#/cf  $51,550 \text{ SY} \times 1616 \text{ \#/sy} = 41,652 \text{ tons}$   
 @ \$17.46/ton = \$727,244.

\$2,076,626

