

**DEPARTMENT OF TRANSPORTATION
STATE OF GEORGIA**

**OFFICE OF DESIGN POLICY & SUPPORT
INTERDEPARTMENTAL CORRESPONDENCE**

FILE P.I. # 232310-
BRST0-0076-01(036)
Columbia/Lincoln Counties
GDOT District 2 - Tennille
SR 47 @ Little River 10.5 MI SE of
Lincolnton

OFFICE Design Policy & Support

DATE 6/10/2013

FROM  for Brent Story, State Design Policy Engineer

TO SEE DISTRIBUTION

SUBJECT APPROVED REVISED CONCEPT REPORT

Attached is the approved Revised Concept Report for the above subject project.

Attachment

DISTRIBUTION:

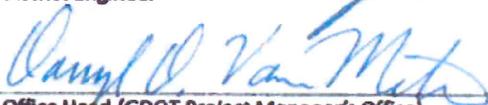
Bobby Hilliard, Program Control Administrator
Genetha Rice-Singleton, State Program Delivery Engineer
Glenn Bowman, State Environmental Administrator
Cindy VanDyke, State Transportation Planning Administrator
Ben Rabun, State Bridge Engineer
Kathy Zahul, State Traffic Engineer
Angela Robinson, Financial Management Administrator
Lisa Myers, State Project Review Engineer
Charles "Chuck" Hasty, State Materials Engineer
Mike Bolden, State Utilities Engineer
Ken Thompson, Statewide Location Bureau Chief
Andy Casey, State Roadway Design Engineer
Attn: Jamie Lindsey, District Design Engineer
Jimmy Smith, District Engineer
Neal O'Brien, District Preconstruction Engineer
Lynn Bean, District Utilities Engineer
Marlo Clowers, Project Manager
BOARD MEMBER - 10th Congressional District
FHWA – attn: Rodney Barry, Georgia Division Administrator

**DEPARTMENT OF TRANSPORTATION
STATE OF GEORGIA
REVISED PROJECT CONCEPT REPORT**

Project Type: <u>Bridge Replacement</u>	P.I. Number: <u>232310</u>
GDOT District: <u>2</u>	County: <u>Columbia/Lincoln</u>
Federal Route Number: <u>N/A</u>	State Route Number: <u>47</u>
Project Number: <u>BRSTO-0076-01(036)</u>	

The existing bridge over Little River will be replaced with a 3600-ft. x 40-ft. bridge.

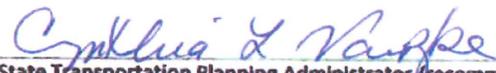
Submitted for approval:

<u></u>	<u>3-8-13</u>
District Engineer	DATE
<u></u>	<u>3/11/13</u>
Office Head (GDOT Project Manager's Office)	DATE
<u></u>	<u>3/8/13</u>
GDOT Project Manager	DATE

Recommendation for approval:

<u>GLENN BOUXIAK *TJ</u>	<u>3/24/2013</u>
State Environmental Administrator (recommendation required)	DATE
<u>BEN RABUN *TJ</u>	<u>4/24/2013</u>
State Bridge Design Engineer	DATE

The concept as presented herein and submitted for approval is consistent with that which is included in the Regional Transportation Plan (RTP) and/or the State Transportation Improvement Program (STIP).

<u></u>	<u>3-18-13</u>
State Transportation Planning Administrator (recommendation required)	DATE

* RECOMMENDATION ON FILE

PLANNING, APPROVED CONCEPT, & BACKGROUND DATA

Project Justification Statement: This bridge (Structure ID 181-0017-0; SR 47 over Little River) was built in 1952. The bridge consists of drive through truss on a concrete cap and 2 columns with spread footings. The bridge has a Sufficiency Rating of 47.90. This bridge is a fracture critical structure and has been struck numerous times due to a low overhead clearance (minimum clearance is 14'-6"). There is current damage on bridge due to vehicle impacts. The most significant damage is a torn connection plate at vertical 2; only one bolt is holding it in place. All spans in the deck exhibit minor pattern cracking. Minor pack rust is beginning to form at the connection plates with the floor beams. Heavy scaling is reported at bents 2, 3, and 4 at the water line. Due to the structural integrity and the low minimum vertical clearance replacement of this bridge is recommended.

Description of the approved concept: The project will relocate State Route 47 approximately 31-ft. to 35-ft. east of its existing location. The project begins at MP 16.25(Lincoln County) to MP 0.85 (Columbia County) extending a total of 1.34 miles. The typical section consists of one 12-ft. travel lane in each direction with 6-ft. rural shoulders. The existing bridge over Little River will be replaced with an 800-ft. x 40-ft. bridge, consisting of 8-ft. shoulders. The minimum vertical clearance for boat traffic passing under the bridge will be 330msl plus 29-ft. which would bring the elevation to 359msl. Traffic will be maintained on the existing alignment during construction

PDP Classification: Major Minor
Federal Oversight: Full Oversight Exempt State Funded Other

Projected Traffic as shown in the approved Concept Report: ADT
 Open Year (2014): 5,850 Design Year (2034): 9,000

Updated Traffic: ADT
 Open Year (2014): 5,850 Design Year (2034): 9,000

Functional Classification (Mainline): Rural Minor Arterial

VE Study anticipated: No Yes Completed – Date: 9/29/2010

PROPOSED REVISIONS

Approved Features:	Proposed Features:
The proposed bridge of 800-ft. x 40-ft.	The proposed bridge is now 3600-ft. x 40-ft.
Reason(s) for change. Due to the structural integrity and the low minimum vertical clearance replacement of this bridge is recommended.	

Change in structure length is due to increased vertical clearance requirement and required staged construction to eliminate off-site detour. JRP

ENVIRONMENTAL

Project Air Quality:

Is the project located in a PM 2.5 Non-attainment area? No Yes
 Is the project located in an Ozone Non-attainment area? No Yes
 Is a Carbon Monoxide hotspot analysis required? No Yes

Potential environmental impacts of proposed revision: Environmental impacts have been reduced as a result of this revision. They have been submitted for revised special studies.

Have proposed revisions been reviewed by environmental staff? No Yes

Environmental responsibilities (Studies/Documents/Permits): Jacobs as well as GDOT will be responsible for performing the additional work.

Environmental impacts by section:

NEPA: The environmental document will need to be re-evaluated as a result of the project change.

Ecology: Revised jurisdictional waters impacts are anticipated due to changes in the proposed project design. No additional field surveys are required as the proposed changes are within the area that was previously surveyed. No additional impacts to protected species are anticipated, and no additional coordination under the Fish and Wildlife Coordination Act (FWCA) would be required. In addition to a Stream Buffer Variance, the proposed impacts would require a USACE Section 404 permit.

Archeology: Any archaeological survey in this area is subject to the Archaeological Resources Protection Act (ARPA) since it includes federal land.

History: A history survey update will be required if ROW is not authorized by October 2013.

Air & Noise: No additional modeling will be required.

Public Involvement: No additional public involvement will be required.

PROJECT COST & ADDITIONAL INFORMATION

Updated Cost Estimate		Date of Estimate
Base Construction Cost:	\$21,117,687.27	2/12/2013
Engineering and Inspection:	\$1,055,884.36	2/12/2013
Liquid AC Adjustment:	\$51,082.58	2/12/2013
<u>Total Construction Cost:</u>	<u>\$22,224,654.21</u>	
Right-of-Way:	\$72,000.00	3/1/2013

Utilities (reimbursable costs):	\$0.00	3/7/2012
Environmental Mitigation:	\$123,900.00	5/11/2012
TOTAL PROJECT COST:	\$22,420,554.21	

Recommendation: Recommend that the proposed revision to the concept be approved for implementation.

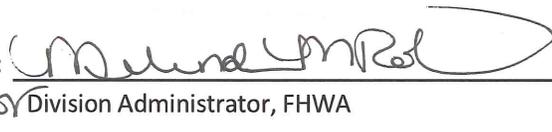
Comments:

Attachments:

1. Sketch map
2. Cost Estimate(s)
 - a. Construction Cost Estimate
 - b. Right of Way Cost Estimate
 - c. Utility Cost Estimate
 - d. Environmental Mitigation Cost
3. Value Engineering Implementation Letter
4. Roadway Typical Section
5. Bridge Typical Section
6. Roadway User Cost
7. Justification Statement
8. Bridge Inventory Data Listing

APPROVALS

Concur:  4/30/2013
Director of Engineering

Approve: 
for Division Administrator, FHWA

5/28/13
Date

Approve: 
Chief Engineer

6/7/13
Date

DETAILED COST ESTIMATE



Job: 232310ALT4_FCG

JOB NUMBER 232310ALT4_FCG

FED/STATE PROJECT NUMBER

SPEC YEAR: 01

DESCRIPTION: BRIDGE REPLACEMENT ON STATE ROUTE 47 OVER LITTLE RIVER

ITEMS FOR JOB 232310ALT4_FCG

10 - ROADWAY

Line Number	ITEM	QUANTITY	UNITS	PRICE	DESCRIPTION	AMOUNT
0005	150-1000	1.000	LS	\$25,295.00000	TRAFFIC CONTROL - BRST0-0076-01(036)	\$25,295.00
0010	201-1500	1.000	LS	\$360,615.00000	CLEARING & GRUBBING - BRST0-0076-01(036)	\$360,615.00
0015	207-0203	23400.000	CY	\$31.39591	FOUND BK FILL MATL, TP II	\$734,664.29
0020	208-0100	17790.000	CY	\$5.84469	IN PLACE EMBANKMENT	\$103,977.04
0025	208-0500	10858.000	TN	\$30.70000	ROCK EMBANKMENT	\$333,340.60
0030	310-1101	3000.000	TN	\$19.90116	GR AGGR BASE CRS, INCL MATL	\$59,703.48
0035	318-3000	250.000	TN	\$19.13860	AGGR SURF CRS	\$4,784.65
0040	402-1812	300.000	TN	\$80.37135	RECYL AC LEVELING, INC BM&HL	\$24,111.41
0045	402-3103	1545.000	TN	\$75.49565	REC AC 9.5 MM SP, TPII, GP2, INCL BM & H L	\$116,640.78
0050	402-3121	800.000	TN	\$73.31028	RECYL AC 25MM SP, GP1/2, BM&HL	\$58,648.22
0055	402-3190	300.000	TN	\$86.08794	RECYL AC 19 MM SP, GP 1 OR 2 , INC BM&HL	\$25,826.38
0060	413-1000	800.000	GL	\$3.57735	BITUM TACK COAT	\$2,861.88
0065	433-1100	294.000	SY	\$200.06413	REF CONC APPR SL/INCL CURB	\$58,818.85
0070	436-1000	4258.000	LF	\$6.08893	ASPH CONC CURB - 6 IN	\$25,926.66
0075	441-0303	4.000	EA	\$2,070.19063	CONC SPILLWAY, TP 3	\$8,280.76
0080	446-1100	400.000	LF	\$8.30645	PVMT REF FAB STRIPS, TP2, 18 INCH WIDTH	\$3,322.58
0085	456-2015	3.000	GLM	\$1,887.83363	INDENT. RUMB. STRIPS - GRND-IN-PL (SKIP)	\$5,663.50
0090	500-3101	106.000	CY	\$538.32665	CLASS A CONCRETE	\$57,062.62
0095	511-1000	616.000	LB	\$1.03722	BAR REINF STEEL	\$638.93
0100	550-2180	72.000	LF	\$33.15480	SIDE DR PIPE 18", H 1-10	\$2,387.15
0105	550-3418	2.000	EA	\$494.17352	SAFETY END SECTION 18", SD, 4:1	\$988.35
0110	603-2024	4500.000	SY	\$43.13016	STN DUMPED RIP RAP, TP 1, 24"	\$194,085.72
0115	603-7000	4500.000	SY	\$3.92788	PLASTIC FILTER FABRIC	\$17,675.46
0120	634-1200	16.000	EA	\$95.17030	RIGHT OF WAY MARKERS	\$1,522.72
0125	641-1100	84.000	LF	\$57.67107	GUARDRAIL, TP T	\$4,844.37
0130	641-1200	9858.000	LF	\$13.47300	GUARDRAIL, TP W	\$132,816.83
0135	641-5001	1.000	EA	\$658.99334	GUARDRAIL ANCHORAGE, TP 1	\$658.99
0140	641-5012	1.000	EA	\$1,820.62547	GUARDRAIL ANCHORAGE, TP 12	\$1,820.63
SUBTOTAL FOR ROADWAY:						\$2,366,982.85

20 - EROSION CONTROL

Line Number	ITEM	QUANTITY	UNITS	PRICE	DESCRIPTION	AMOUNT
0145	700-6910	12.000	AC	\$814.86454	PERMANENT GRASSING	\$9,778.37
0150	700-7000	38.000	TN	\$54.65263	AGRICULTURAL LIME	\$2,076.80
0155	700-8000	21.000	TN	\$507.01972	FERTILIZER MIXED GRADE	\$10,647.41
0160	700-8100	625.000	LB	\$2.66813	FERTILIZER NITROGEN CONTENT	\$1,667.58
SUBTOTAL FOR EROSION CONTROL:						\$24,170.16

DETAILED COST ESTIMATE



Job: 232310ALT4_FCG

30 - TEMPORARY EROSION CONTROL

Line Number	ITEM	QUANTITY	UNITS	PRICE	DESCRIPTION	AMOUNT
0165	163-0232	38.000	AC	\$407.31034	TEMPORARY GRASSING	\$15,477.79
0170	163-0240	225.000	TN	\$212.14085	MULCH	\$47,731.69
0175	163-0300	2.000	EA	\$1,810.79833	CONSTRUCTION EXIT	\$3,621.60
0180	163-0520	500.000	LF	\$14.97095	CONSTR AND REMOVE TEMP PIPE SLOPE DRAIN	\$7,485.48
0185	163-0528	3500.000	LF	\$2.75439	CONSTR AND REM FAB CK DAM -TP C SLT FN	\$9,640.37
0190	165-0010	1250.000	LF	\$0.67239	MAINT OF TEMP SILT FENCE, TP A	\$840.49
0195	165-0030	1250.000	LF	\$0.79856	MAINT OF TEMP SILT FENCE, TP C	\$998.20
0200	165-0041	3500.000	LF	\$0.86727	MAINT OF CHECK DAMS - ALL TYPES	\$3,035.45
0205	165-0050	2650.000	LF	\$1.78714	MAINT OF SILT RETENTION BARRIER	\$4,735.92
0210	165-0101	2.000	EA	\$849.29333	MAINT OF CONST EXIT	\$1,698.59
0215	167-1000	2.000	EA	\$396.05556	WATER QUALITY MONITORING AND SAMPLING	\$792.11
0220	167-1500	24.000	MO	\$542.33176	WATER QUALITY INSPECTIONS	\$13,015.96
0225	170-1000	5300.000	LF	\$12.44318	FLOAT SILT RETENTION BARRIER	\$65,948.85
0230	171-0010	2500.000	LF	\$2.13737	TEMPORARY SILT FENCE, TYPE A	\$5,343.43
0235	171-0030	2500.000	LF	\$3.23729	TEMPORARY SILT FENCE, TYPE C	\$8,093.23
SUBTOTAL FOR TEMPORARY EROSION CONTROL:						\$188,459.16

40 - SIGNING AND MARKING

Line Number	ITEM	QUANTITY	UNITS	PRICE	DESCRIPTION	AMOUNT
0240	636-1020	54.000	SF	\$13.94863	HWY SGN,TP1MAT,REFL SH TP3	\$753.23
0245	636-1033	54.000	SF	\$21.09215	HWY SIGNS, TP1MAT,REFL SH TP 9	\$1,138.98
0250	636-2080	84.000	LF	\$8.72474	GALV STEEL POSTS, TP 8	\$732.88
0255	653-1501	12800.000	LF	\$0.33952	THERMO SOLID TRAF ST 5 IN, WHI	\$4,345.86
0260	653-1502	7800.000	LF	\$0.29020	THERMO SOLID TRAF ST, 5 IN YEL	\$2,263.56
0265	654-1001	250.000	EA	\$3.45863	RAISED PVMT MARKERS TP 1	\$864.66
0270	657-1085	7200.000	LF	\$4.33524	PRF PL SD PVT MKG,8",B/W,TP PB	\$31,213.73
0275	657-6085	7200.000	LF	\$3.99475	PRF PL SD PVMT MKG,8",B/Y,TPPB	\$28,762.20
SUBTOTAL FOR SIGNING AND MARKING:						\$70,075.10

50 - BRIDGE

Line Number	ITEM	QUANTITY	UNITS	PRICE	DESCRIPTION	AMOUNT
0280	540-1102	1.000	LS	\$1,188,000.00000	REM OF EX BR, BR NO - (720X30X\$55)	\$1,188,000.00
0285	543-9000	1.000	LS	\$17,280,000.00000	CONSTR OF BRIDGE COMPLETE - (3600 X 40 X \$120)	\$17,280,000.00
SUBTOTAL FOR BRIDGE:						\$18,468,000.00

TOTALS FOR JOB 232310ALT4_FCG

ITEMS COST:	\$21,117,687.27
COST GROUP COST:	\$0.00
ESTIMATED COST:	\$21,117,687.27
CONTINGENCY PERCENT:	0.00
ENGINEERING AND INSPECTION:	0.00
ESTIMATED COST WITH CONTINGENCY AND E&I:	\$21,117,687.27

PROJ. NO. BRST0-0076-01(036)
 P.I. NO. 232310
 DATE 2/12/2013

CALL NO.

INDEX (TYPE)	DATE	INDEX
REG. UNLEADED	Feb-13	\$ 3.463
DIESEL		\$ 3.981
LIQUID AC		\$ 565.00

Link to Fuel and AC Index:
<http://www.dot.ga.gov/doingbusiness/Materials/Pages/asphaltcementindex.aspx>

LIQUID AC ADJUSTMENTS

PA=[((APM-APL)/APL)]xTMTxAPL

Asphalt

Price Adjustment (PA)					49917.75	\$	49,917.75
Monthly Asphalt Cement Price month placed (APM)	Max. Cap	60%	\$	904.00			
Monthly Asphalt Cement Price month project let (APL)			\$	565.00			
Total Monthly Tonnage of asphalt cement (TMT)				147.25			

ASPHALT	Tons	%AC	AC ton
Leveling	300	5.0%	15
12.5 OGFC		5.0%	0
12.5 mm		5.0%	0
9.5 mm SP	1545	5.0%	77.25
25 mm SP	800	5.0%	40
19 mm SP	300	5.0%	15
	2945		147.25

BITUMINOUS TACK COAT

Price Adjustment (PA)					\$	1,164.83	\$	1,164.83
Monthly Asphalt Cement Price month placed (APM)	Max. Cap	60%	\$	904.00				
Monthly Asphalt Cement Price month project let (APL)			\$	565.00				
Total Monthly Tonnage of asphalt cement (TMT)				3.436080738				

Bitum Tack

Gals	gals/ton	tons
800	232.8234	3.43608074

BITUMINOUS TACK COAT (surface treatment)

Price Adjustment (PA)					\$	0	\$	-
Monthly Asphalt Cement Price month placed (APM)	Max. Cap	60%	\$	904.00				
Monthly Asphalt Cement Price month project let (APL)			\$	565.00				
Total Monthly Tonnage of asphalt cement (TMT)				0				

Bitum Tack	SY	Gals/SY	Gals	gals/ton	tons
Single Surf. Trmt.		0.20	0	232.8234	0
Double Surf.Trmt.		0.44	0	232.8234	0
Triple Surf. Trmt		0.71	0	232.8234	0
					0

TOTAL LIQUID AC ADJUSTMENT \$ **51,082.58**

GEORGIA DEPARTMENT OF TRANSPORTATION
PRELIMINARY ROW COST ESTIMATE SUMMARY

Date: 3/1/2013 Project: BRST-076-1(36)
 Revised: County: Lincoln
 PI: 232310

Description: Bridge Replacement on SR 47 over Little River on Clark Hill
 Project Termini: Bridge Replacement on SR 47 over Little River on Clark Hill

Existing ROW: Varies
 Required ROW: Varies
 Parcels: 1

Land and Improvements _____ \$16,320.00

Proximity Damage	\$0.00
Consequential Damage	\$0.00
Cost to Cures	\$0.00
Trade Fixtures	\$0.00
Improvements	\$3,000.00

Valuation Services _____ \$1,000.00

Legal Services _____ \$38,175.00

Relocation _____ \$2,000.00

Demolition _____ \$0.00

Administrative _____ \$14,500.00

TOTAL ESTIMATED COSTS _____ \$71,995.00

TOTAL ESTIMATED COSTS (ROUNDED) _____ \$72,000.00

Preparation Credits	Hours	Signature

Prepared By: Dathome Alexander CG#: 286999 03/01/2013 (DATE)
 Approved By: Dathome Alexander CG#: 286999 03/01/2013 (DATE)

NOTE: No Market Appreciation is included in this Preliminary Cost Estimate

**DEPARTMENT OF TRANSPORTATION
STATE OF GEORGIA**

INTERDEPARTMENT CORRESPONDENCE

FILE BRSTO-0076-01(036) Lincoln/Columbia Co.
 P.I. No. 232310
 Bridge Replacement on SR 47 @ Little River

OFFICE Tennille

DATE March 07, 2013

FROM Lynn Bean
 District Utilities Engineer

TO Marlo Clowers, Project Manager

SUBJECT PRELIMINARY UTILITY COST (ESTIMATE)

As requested by your office, we are furnishing you with a Preliminary Utility Cost estimate for the subject project.

FACILITY OWNER	NON-REIMBURSABLE	REIMBURSABLE
Columbia County Broadband	\$6,000.00	\$0.00
Georgia Power Transmission	\$ 0.00	\$0.00
TOTALS	\$6,000.00	\$0.00

Total reimbursable cost for the above project is \$0.00

If you have any questions, please contact Lynn Bean at 478-552-4646.

LB

C: Mike Bolden, State Utilities Engineer (email only)
Angie Robinson, Office of Financial Management (email only)
Rodney Way, Area Engineer (email only)
File

Alternative Summary Table

	PAR Alternatives			
	Alternative 1	Alternative 2	Alternative 3	Alternative 4 (Best Fit)
Length				
Typical Section & Design Speed	2-12' lanes with 6' rural shoulders 55MPH	2-12' lanes with 6' rural shoulders 55MPH	2-12' lanes with 6' rural shoulders 55MPH	2-12' lanes with 6' rural shoulders 55MPH
Displacements				
Residential	0	0	0	0
Business	0	0	0	0
Cultural Resources				
Historic	1	1	1	1
Archeological	0	0	0	0
Streams				
# of Impacts	0	0	0	0
Total LF Impacted	0	0	0	0
Total Stream Area Impacted	0	0	0	0
Estimated Credits	0	0	0	0
Open Water				
# of Impacts	1	1	1	1
Total Open Water Area Impacted	9.66	7.36	9.15	2.95
Total Area of Stream/Open Water Impacts	<u>9.66</u>	<u>7.36</u>	<u>9.15</u>	<u>2.95</u>
Estimated Credits	54.10	41.22	51.24	16.52
State Waters				
# of Non-exempt Buffer Impacts	0	0	0	0
Total Square Feet Impacted	0	0	0	0
Cost Estimates				
*Estimated Mitigation Costs	\$405,750.00	\$309,150.00	\$384,300.00	\$123,900.00
Right-of-Way Estimate	\$58,000.00	\$12,000.00	\$58,000.00	\$35,000.00
Construction Cost Estimate	\$23,044,212.62	\$11,733,404.62	\$14,263,258.25	\$22,230,169.33
Total:	\$23,507,962.62	\$12,054,554.62	\$14,705,558.25	\$22,389,069.33

**DEPARTMENT OF TRANSPORTATION
STATE OF GEORGIA**

INTERDEPARTMENT CORRESPONDENCE

FILE: BRSTO-0076-01(036) Lincoln
P.I. No.: 232310
SR 47 @ Little River

OFFICE: Engineering Services

DATE: September 29, 2010

FROM: Ronald E. Wishon, State Project Review Engineer *REW*

TO: Foster Grimes, District Design Squad Leader, Tennille

SUBJECT: IMPLEMENTATION OF VALUE ENGINEERING STUDY ALTERNATIVES

The VE Study for the above project was held August 9-12, 2010. Responses were received on September 29, 2010. Recommendations for implementation of Value Engineering Study Alternatives are indicated in the table below. The Project Manager shall incorporate the VE alternatives recommended for implementation to the extent reasonable in the design of the project.

ALT #	Description	Potential Savings/LCC	Implement	Comments
A-9B	Reduce the width of the shoulders on the bridge from 8 feet to 4 feet	\$922,000	No	Upon completion of construction, this bridge will function as a two-lane facility. Based on traffic and percentage of trucks utilizing this roadway, the 8-foot shoulders are appropriate. These shoulders will provide reasonable refuge for stranded motorists and allow for emergency vehicle access.
A-9R	Reduce the width of the shoulders on the roadway approaches to the bridge from 10 feet to 4 feet	Proposed = \$1,217,000 Actual = \$945,968	Yes, partially	The width of the shoulders on the roadway approaches to the bridge will be reduced from 10 feet to 8 feet. This width will provide refuge for a disabled vehicle.
A-10	Detour traffic away from the bridge and construct the project on existing alignment	\$2,885,000	No	This was proposed as an alternate in the original concept and it was determined that the economic cost to commuters would be substantially higher than the cost savings for the Department. The detour would add 25 to 30 additional miles for the 2,925 daily commuters who use this route to and from work. Emergency vehicles traveling from Lincoln County to Richmond County would also be delayed. These concerns would diminish local support of the project.

A-13	Construct the bridge with a shallower depth 90 foot center span using Type III PSC beams and use steel plate girders for the remaining structure	\$124,000	No	The proposed project provides two alternates for the construction of the bridge using a PSC Bulb-T alternate and a steel plate girder alternate. Type III PSC beams may be unstable at a 90 foot span; generally this length of span would require a Type IV or a 54" Bulb-T. In addition, mixing structure types would not meet the required aesthetics.
D-2	Eliminate the Foundation Backfill Material on top of the Rock Embankment	\$42,000	No	Type II backfill material must be placed along the top of the rock embankment bench area in order for silt fence to be properly installed.
F-3	Use sheet piling to stabilize the inside of the new embankment and shift the new alignment 20 feet closer to the existing roadway	\$1,220,000	Yes, with modifications	The proposed alignment can be shifted closer to the existing roadway; however, this will be accomplished using a temporary retaining wall in lieu of a sheet pile wall. The actual wall type will be determined by the Contractor in order to obtain the best price.
F-5	Construct an MSE wall along the edge of the existing/new rock embankment to hold the new roadway embankment	\$1,969,000	No	Constructing an MSE wall at this site is not recommended. The proposed wall would be constructed ovetop of portions of the existing fill, rock embankment and proposed embankment. An MSE wall constructed in this manner would be susceptible to stability failures as well as differential settlement.

The Office of Engineering Services concurs with the Project Manager's responses.

Approved:  Date: 9/30/10
 Gerald M. Ross, PE, Chief Engineer

REW/LLM
 Attachments

- c: Ben Buchan
 George Brewer/Alan Smith/Foster Grimes/Robin Tanner
 Paul Liles/Bill Duvall/Bill Ingalsbe/Cindy Pollard
 Jim Kitchings
 Russell Merritt/Lynn Bean
 Ken Werho
 Lisa Myers
 Matt Sanders

**DEPARTMENT OF TRANSPORTATION
STATE OF GEORGIA**

INTERDEPARTMENT CORRESPONDENCE

DATE September 29, 2010

FROM *FLG* Foster Grimes, District Design Squad Leader
TO Ron Wishon, Project Review Engineer
Attn: Lisa Myers

SUBJECT BRST0-0076-01(036) - Lincoln County
P.I. No.: 232310
Value Engineering Study: Response to Recommendations

These are the responses to the Value Engineering Alternatives recommended by the Value Engineering Team:

Item No.	Recommendations	Potential Savings	Implement	Comments
A-9B	Reduce the width of the shoulders on the bridge from 8 feet to 4 feet.	\$ 710,000	No	Upon completion of the construction, this bridge will function as a two-lane facility. Based on the traffic and percentage of trucks utilizing this roadway, the 8-foot shoulders are appropriate. These shoulder widths provide reasonable safety for stranded motorists and emergency vehicle access.
A-9R	Reduce the width of the shoulders on the roadway approaches to the bridge from 10 feet to 4 feet. (15 ½ to 7 ½)	\$ 1,275,000	Yes/ Partially \$945,968	Reduce the width of the shoulders on the roadway approaches to the bridge from 10 feet to 8 feet of useable shoulder. (15 ½ to 11 ½) This will allow for a vehicle with mechanical problems to safely pull out of the

Project No: BRST0-0076-01(036) Lincoln County
P.I. No: 232310
Value Engineering Study Response

				travel lane and not impede traffic. A Concept Revision and Design Variance would be required.
A-10	Detour traffic away from the bridge and construct the project on the existing alignment.	\$ 2,504,000	No	This was listed as alternate "B" in the original concept and was found that the economic cost to commuters would be substantially higher than the cost savings the Department would incur. To place a 25 to 30 mile detour on this route would cause adverse time delays for the 2,925 daily commuters that take this route to and from work which would diminish local support of this project. Emergency Vehicles traveling from Lincoln County to Richmond County would also be delayed.
A-13	Construct the bridge with a shallower depth 90-foot center span using Type 3 PSC beams and use steel plate girders for the remaining spans.	\$ 124,000	No	The proposed project provides two alternates for the construction of the bridge including a PSC Bulb-T alternate and a steel plate girder alternate. Type III PSC beams may be unstable at a 90 feet span; generally this length of a span would require a Type IV or a 54 inch Bulb-T. Also, the approach of mixing structure types would not meet the required aesthetics.
D-2	Eliminate the Type II backfill material from the top of the rock embankment bench area.	\$ 42,000	No	During the construction of this project the Type II backfill material is placed along the top of the rock embankment bench area in order for Silt Fence to be installed

Project No: BRST0-0076-01(036) Lincoln County

P.I. No: 232310

Value Engineering Study Response

				along the edge of this berm prior to in place embankment being installed. This is necessary so that the silt fence can be staked in.
F-3	Use sheet piling to stabilize the inside of the new roadway embankment and shift the new elevated alignment 20 feet closer to the existing roadway.	\$ 1,220,000	Yes – with modifications	The proposed roadway alignment can be shifted closer to the existing roadway; however, this will be accomplished using a temporary retaining wall in lieu of specifying a “sheet pile wall”. The temporary retaining wall may be constructed utilizing sheet piling but the actual wall type will be determined by a contractor design in order to obtain the best price.
F-5	Construct an MSE wall along the edge of the new roadway and construct the new embankment between the MSE wall and the existing roadway.	\$ 1,969,000	No	Constructing an MSE wall at this site is not recommended. The proposed wall would be constructed overtop of portions of the existing fill, rock embankment and proposed embankment. An MSE wall constructed in this manner would be susceptible to stability failures as well as differential settlement.
Total Savings			\$945,968	

If any further assistance is needed, please contact Foster C. Grimes at (478) 552-4643.

FCG

PRECONSTRUCTION STATUS REPORT FOR PI:232310-

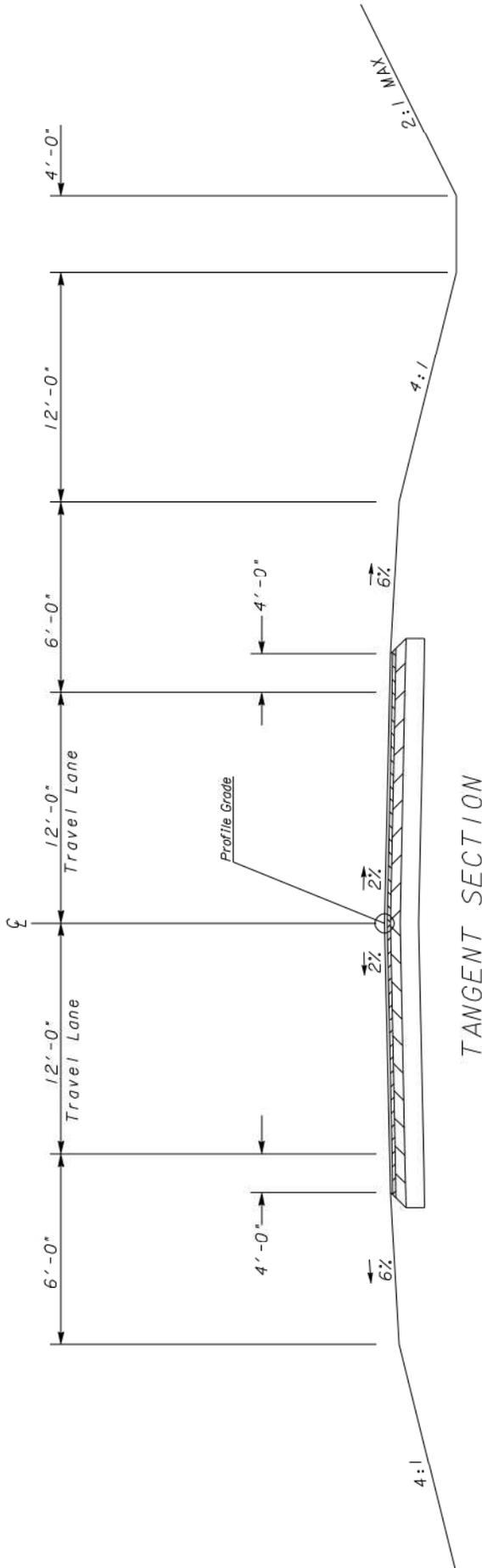
PROJ ID : 232310-
 COUNTY : Columbia, Lincoln
 LENGTH (MI) : 0.40
 PROJ NO. : BRST0-0076-01(036)
 PROJ MGR : Gimes, Foster
 AOH Initials : GMB
 OFFICE : District 2
 CONSULTANT : No Consultant, GDOT In-House Design
 SPONSOR : GDOT
 DESIGN FIRM : GDOT D2 Design Office

SR 47 @ LITTLE RIVER 10.5 MI SE OF LINCOLN TON
 MPO : Not Urban
 TIP # :
 MODEL YR :
 TYPE WORK : Bridges
 CONCEPT : BR REPL
 PROG TYPE : Replacement
 Prov. for ITS : N
 BOND PROJ. :

PRIORITY CODE :
 DOT DIST : 2
 CONG. DIST : 10
 BIKE : N
 MEASURE : E
 NEEDS SCORE : 5
 BRIDGE SUFF : 48 70

MGMT LET DATE : 07/22/2011
 MGMT ROW DATE : 07/16/2010
 BASELINE LET DATE : 07/05/2011
 SCHED LET DATE : 2/14/2012
 WHO LETS? : GDOT Let
 LET WITH :

BASE		LATE		LATE		TASKS		ACTUAL		ACTUAL		PROGRAMMED FUNDS		STIP AMOUNTS									
START	FINISH	START	FINISH	START	FINISH	START	FINISH	START	FINISH	%	ACTUAL	ACTUAL	Activity	Approved	Proposed	Cost	Status	Date Auth	Activity	Cost	Fund		
7/2/2010				8/18/2006	9/4/2006	Concept Development		8/18/2006	9/4/2006	100			PE	2000	2000	910,627.13	Q10	AUTHORIZED	10/25/1999	PE		Q10	
5/14/2010				8/9/2006	8/9/2006	Concept Meeting		8/9/2006	8/9/2006	100			ROW	2011	2011	166,400.00	L1C0	PRECAST		ROW	83,561.26	L1C0	
5/17/2010				8/17/2006	8/24/2006	PM Submit Concept Report		8/17/2006	8/24/2006	100			CST	2014	2013	12,903,313.82	L1C0	PRECAST		CST	0.00	L1C0	
5/31/2010				8/24/2006	9/4/2006	Concept Report Review and Comments		8/24/2006	9/4/2006	100													
7/16/2010				5/20/2010		Management Concept Approval Complete		5/20/2010		83													
9/29/2010				11/19/2009		Value Engineering Study		11/19/2009		100													
3/8/2010				2/1/2008		Public Information Open House Held		2/1/2008		100													
6/21/2010				1/1/2007		Environmental Approval		1/1/2007		40													
8/12/2010				1/15/2008		Field Surveys/SDE		1/15/2008		50													
2/3/2011				4/7/2008		Preliminary Plans		4/7/2008		100													
2/17/2011				2/8/2008		Preliminary Bridge Design		2/8/2008		100													
						Underground Storage Tanks																	
						404 Permit Obtainment																	
						PFPR Inspection																	
						R/W Plans Preparation																	
						R/W Plans Final Approval																	
						L & D Approval																	
						R/W Authorization																	
						Stake R/W																	
						Soil Survey																	
						Bridge Foundation Investigation																	
						Final Design																	
						Final Bridge Plans Preparation																	
						PFPR Inspection																	
						Submit FPR Responses (OES)																	



TANGENT SECTION

2 : 1 MAX

4 : 1

4 : 1

4' - 0"

12' - 0"

6' - 0"

12' - 0"

12' - 0"

6' - 0"

4' - 0"

4' - 0"

6%

6%

2%

2%

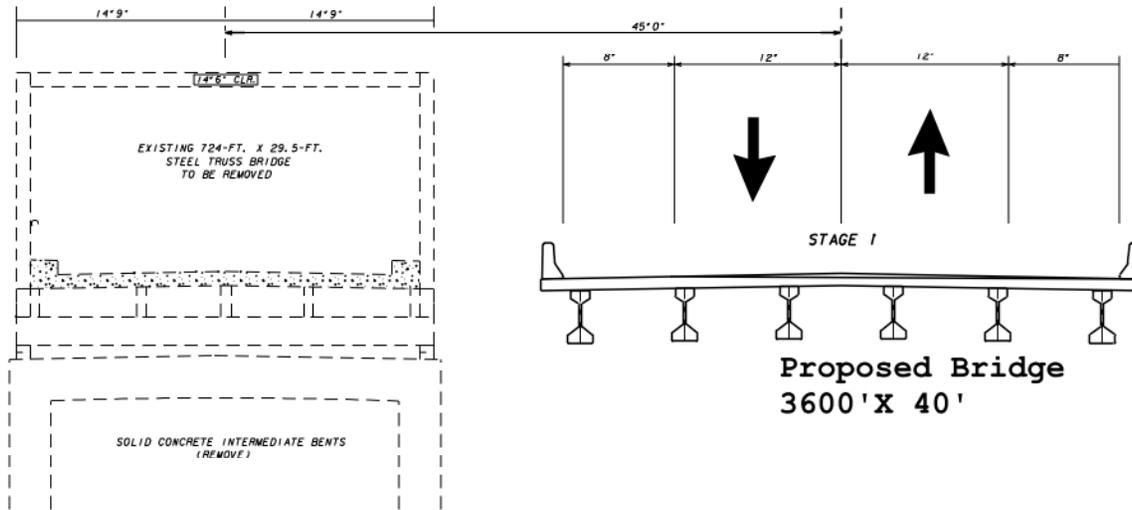
Profile Grade

ℓ

Travel Lane

Travel Lane

Travel Lane



BRIDGE
 TYPICAL SECTION
 BRSTO-0076-01(036)
 LINCOLN COUNTY
 PI # 232310

**DEPARTMENT OF TRANSPORTATION
STATE OF GEORGIA
OFFICE OF DESIGN – DISTRICT TWO**

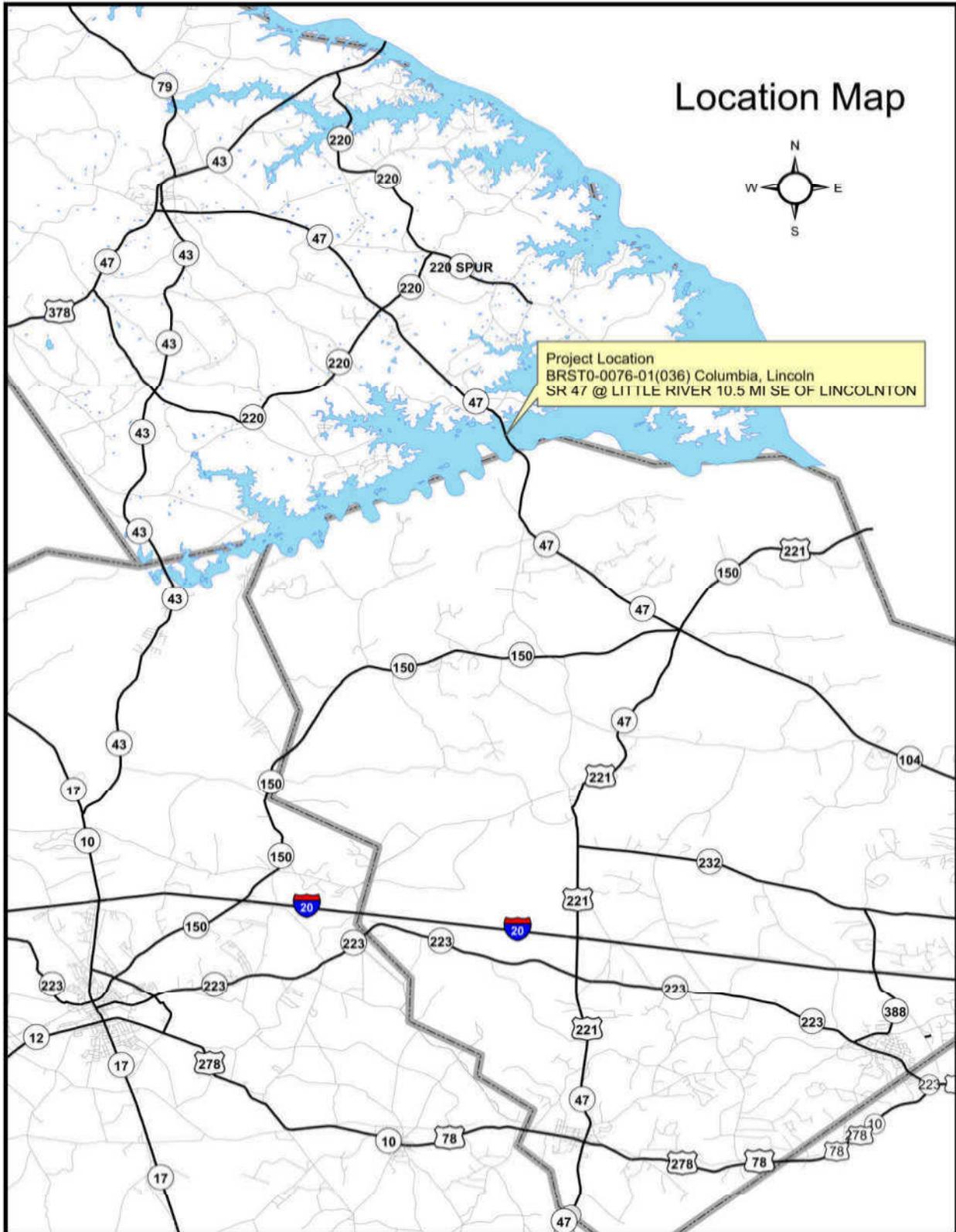
Roadway User Cost for PAR Alternate 2

Bridge Replacement on State Route 47 over Little River

**BRST0-0076-01(036) Columbia/Lincoln County
PI #232310**

September 13, 2012

Bridge Replacement on State Route 47 over Little River
Figure 1



Location and Proposed Project Schedule:

The proposal consists of the replacement of the structurally deficient bridge on State Route 47 over Littler River, just south of Lincolnton Georgia. The proposed right-of-way is scheduled to be authorized in FY 2012 and the scheduled construction let date is FY 2014.

General Project Description:

This project proposes to relocate State Route 47 approximately 44-ft. east of its existing location. The project begins at MP 16.25 (Lincoln County) and ends at MP 0.85 (Columbia County) for a total length of 1.34 miles. The proposed roadway typically consists of one 12-ft. travel lane in each direction with 6-ft. rural shoulders. The horizontal and vertical alignments will be designed to meet a 55 MPH speed design. The existing 724-ft. x 29.5-ft. bridge will be replaced with an 3600-ft. x 40-ft. bridge. The proposed bridge will be approximately 19-ft. higher than the existing structure to provide approximately 30-ft. vertical clearance. The additional height of the bridge was requested by the United States Corp of Engineers and the local government.

Need and Purpose:

The existing 724-ft x 29.5-ft. bridge at this location was built in 1952 and has a sufficiency rating of 48.70. As per GDOT policy, once a bridge has a sufficiency rating of less than 50.00 it is to be evaluated for replacement. The bridge consists of drive through truss on a concrete cap and two columns with spread footings. This bridge is a fracture critical structure and has been struck numerous times due to a low overhead clearance (minimum clearance is 14-ft-6-in). There is current damage on the bridge due to vehicle impacts. The most significant damage is a torn connection plate at vertical 2; only one bolt is holding it in place. All spans in the deck exhibit minor pattern cracking. Minor pack rust is beginning to form at the connection plates with the floor beams. Heavy scaling is reported at bents 2, 3 and 4 at the water line. Due to the structural integrity and the low minimum vertical clearance, replacement of this bridge is recommended.

State Route 47 is a 2-lane highway that connects the Cities of Lincolnton and Evans. It is a medium to heavy state route with a Functional Classification of Rural Arterial. This particular portion of State Route 47 is located on Lake Strom Thurmond and the bridge is located over Little River on the Lincoln / Columbia County line. The traffic is comprised of a mixture of light vehicles and trucks with school buses, tractor-trailers and emergency vehicles. State Route 47 serves as a commuter route for local traffic as well as recreational users of Lake Thurmond during the summer months. State Route 47 has 100-ft of existing right-of-way (50-ft. each side).

Since this portion of State Route 47 is located within the water boundaries of Lake Thurmond, the project terminus was established using engineering principles as to what roadway improvements are necessary to relocate State Route 47 and meet all AASHTO Green Book criteria. Also, context sensitive design was considered by designing the new alignment of State Route 47 to flow as similar to the existing alignment in order for the route to appear the same as it currently does. This will maintain the visual impacts that the bridge has to this area.

The need currently exists to replace the structurally deficient bridge and provide a wider bridge at this location. The purpose of this project is to replace this bridge and improve operations for vehicles in this area for all users.

**PI 232310 Lincoln County
Bridge Replacement on SR 47 over Little River**

Summary of calculated Road User Costs (RUC)

Roadway Closure	Duration	% Traffic that detours	Vehicles affected	Added Time	Adjusted RUC (50% of calculated)	Notes
	hr	%	ea	hr	\$	
Bridge	12 Months	75%	4,380	0.23	\$8.0M	

RUC for PAR Alternate 2
Bridge Replacement on SR 47 over Little River

Table 1: Summary of laneage and relative traffic volumes by roadway segment.

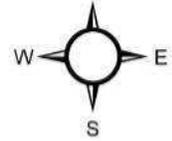
Segment	Segment Description				Laneage	Traffic Volumes - RCDATA Sept 2010			
	County	Mile Post at Beginning of Segment	Segment length	Location at Beginning of Segment	No. of Lanes	Traffic ADT (two way) date?	Posted Speed	Traffic ADT/lane	Travel Time
		mi.	mi		ea	vpd	MPH	vpd/lane	Hr
NORMAL ROUTE	Lincoln	2.96	5.1	SR 47 @ SR 220 to County Line	2	5850	55	2925	0.09
	Columbia	0	6.8	From County Line to SR 220	2	5850	55	2925	0.12
	Travel Length without Detour (mile)		11.90	Travel Time without Detour				0.22	
EQUIVALENT DETOUR ROUTE	Lincoln	10.81		Begin Detour SR 47 @ SR 220					
		5.85	5.9	SR 43	2	1,580	55	395	0.11
	McDuffie	7.37		County Line					
		0.00	7.4	SR 43	2	2,100	55	1,050	0.13
		8.33	2.7	SR 17	2	4,240	55	2,120	0.05
		5.84	5.9	I-20	4	30,740	70	7,685	0.08
	Columbia	0.00		County Line					
		5.07	5.1	I-20	4	33,480	70	8,370	0.07
				End of Detour US221/SR 47					
Travel Length with Detour (mile)		26.88	Travel Time with Detour				0.45		
Added Travel Length (mile)		14.98	Added Travel Time				0.23		

Note:

Assume that Detour route segments will not exceed capacity when added traffic volume is in place during time of construction.

Alternate 2

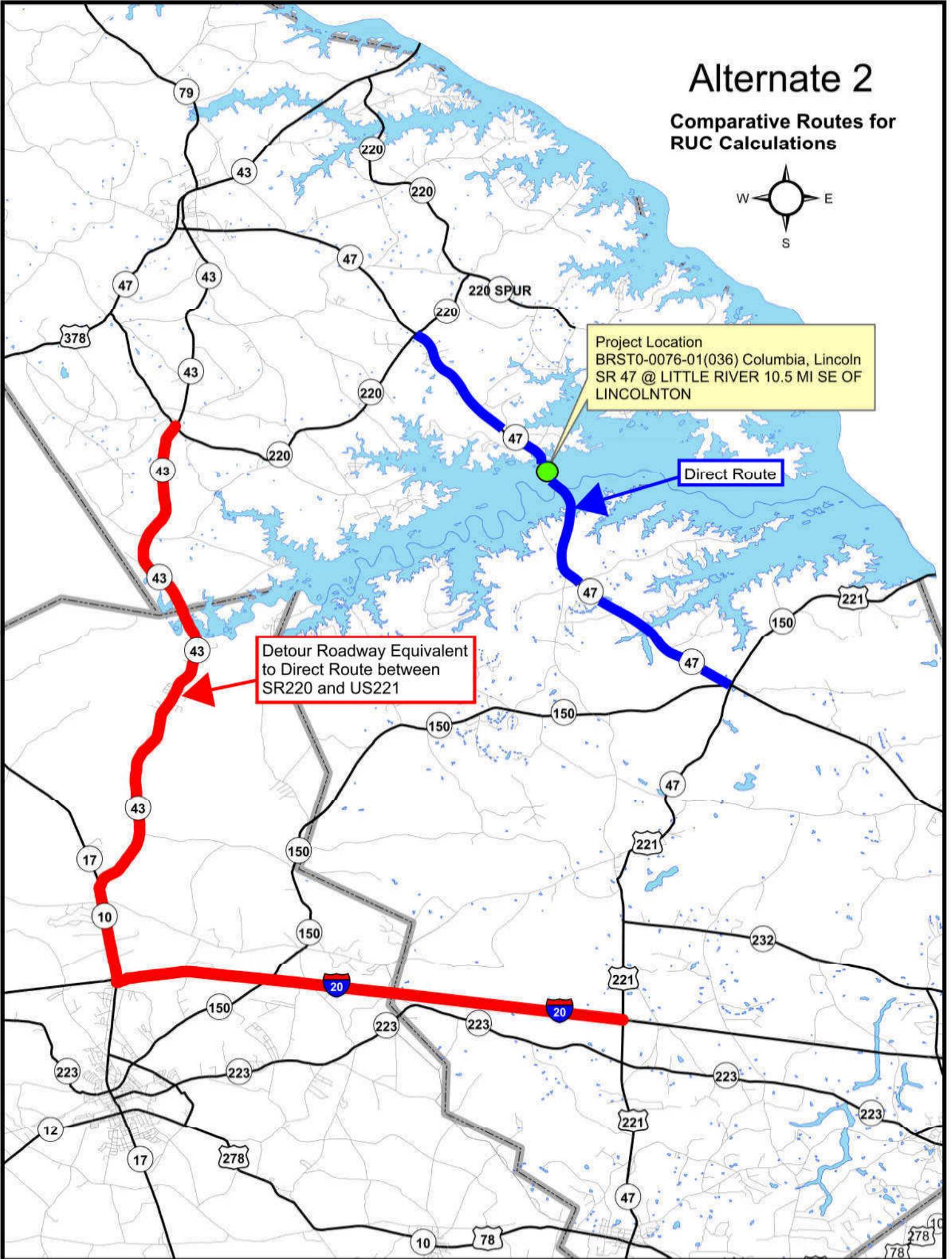
Comparative Routes for RUC Calculations

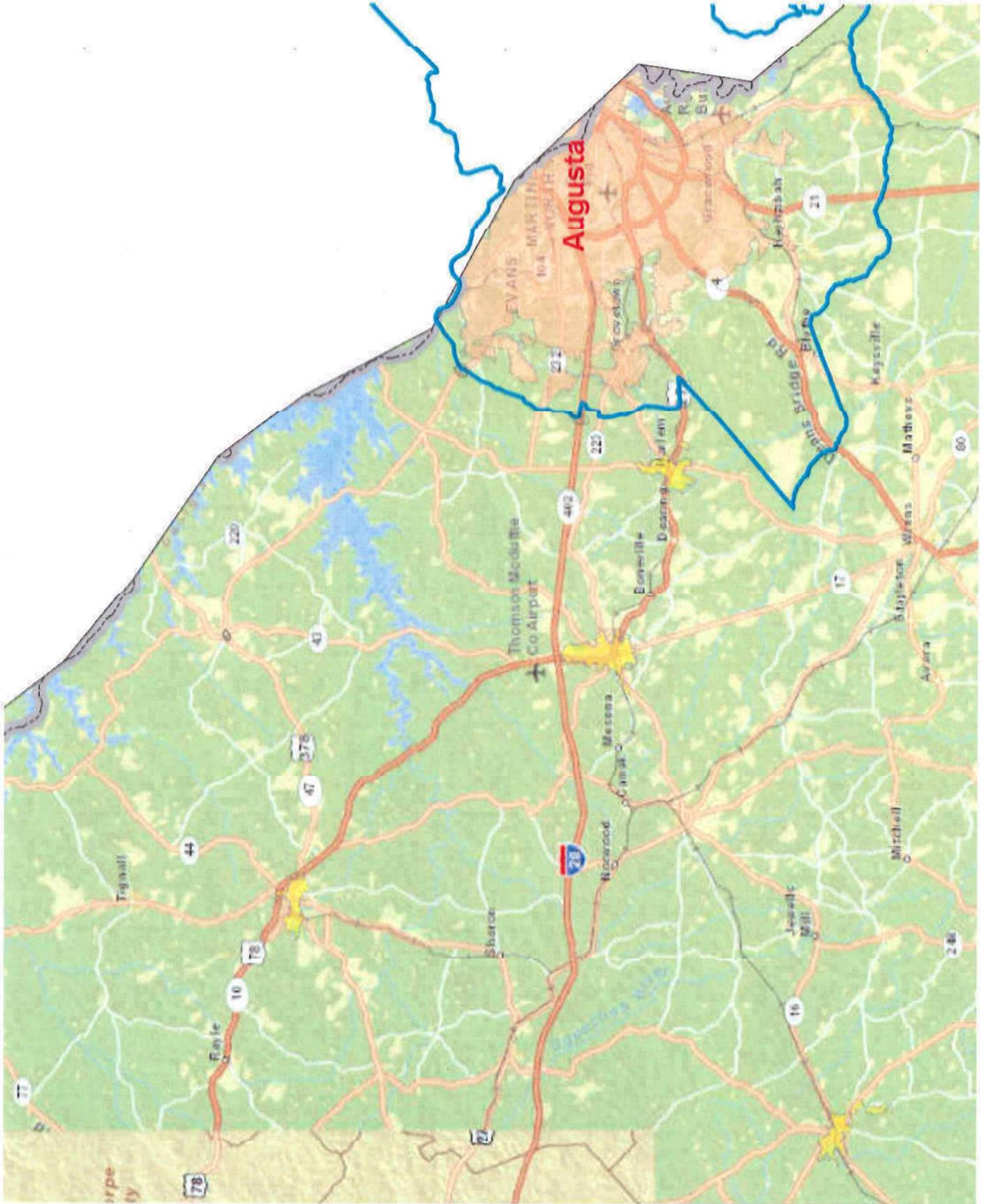


Project Location
BRST0-0076-01(036) Columbia, Lincoln
SR 47 @ LITTLE RIVER 10.5 MI SE OF
LINCOLNTON

Direct Route

Detour Roadway Equivalent to Direct Route between SR220 and US221





RUC for PAR Alternate 2

Bridge Replacement on SR 47 over Little River

Reference from another cell or sheet Black Input Red
 Calculated Blue

Table 3a: Circuity (Detour) Delay

Travel Length without Detour (mile)	Travel Length with Detour (mile)	Added Travel Length (mile)	Travel Time without Detour (hr/veh)	Travel Time with Detour (hr/veh)	Added Time to Travel Detour (hr/veh)
11.90	26.88	14.98	0.22	0.45	0.23

Table 4: Escalation factors

Cost Factors	1970 CPI-U ²	Current CPI-U ¹	Escalation Factor
Idling & VOC (transportation)	37.5	215	5.73
Time Value (all components)	38.8	229	5.90

¹From Bureau of Labor Statistics for July 2012 "transportation" and "all components" categories.

²As reported in NJ DOT Road User Cost Manual for 1970.

Table 5: Cost Rates

Vehicle Class	1970			Current		
	Time Value Cost Rate ¹	Idling Cost Rate ²	VOC Cost Rate ²	Time Value Cost Rate	Idling Cost Rate	VOC Cost Rate
	\$/Veh-hr	\$/Veh-hr	\$/mile	\$/Veh-hr	\$/Veh-hr	\$/mile
Car	3.00	0.1819	0.06	17.71	1.04	0.34
Truck	5.00	0.2092	0.12	29.51	1.20	0.69

¹From NCHRP Report 133 as indicated in NJ manual

²Average of SU and combination truck values from NCHRP as stated in the NJ manual.

Table 3. Consumer Price Index for all Urban Consumers (CPI-U): U.S. city average, detailed expenditure categories

(1982-84=100, unless otherwise noted)

Item and Group	Relative importance, December 2011	Unadjusted indexes		Unadjusted percent change to July 2012 from—		Seasonally adjusted percent change from—		
		June 2012	July 2012	July 2011	June 2012	Apr. to May	May to June	June to July
Expenditure category								
All items	100.000	229.478	229.104	1.4	-0.2	-0.3	0.0	0.0
All items (1967=100)	-	687.415	686.294	-	-	-	-	-
Food and beverages	15.256	233.509	233.557	2.3	.0	.0	.2	.1
Food	14.308	233.563	233.630	2.3	.0	.0	.2	.1
Food at home	8.638	231.515	231.306	1.9	-1	-1	.1	.0
Cereals and bakery products	1.242	267.321	268.449	2.9	.4	-1	-4	.3
Cereals and cereal products .....	.482	234.121	234.369	3.2	.1	.0	-1	-5
Flour and prepared flour mixes .....	.051	258.194	258.081	5.0	.0	-8	1.5	-9
Breakfast cereal ¹ .....	.297	229.232	228.805	2.7	-2	.6	-5	-2
Rice, pasta, cornmeal ¹ .....	.134	239.215	241.183	3.4	.8	.4	-1.0	.8
Rice ^{1 2 3}	-	166.946	166.615	2.6	-2	-8	-1	-2
Bakery products .....	.760	285.029	286.801	2.8	.6	-3	-5	.8
Bread ² .....	.225	172.319	174.960	3.2	1.5	-2	-7	1.3
White bread ^{1 3}	-	311.548	318.602	2.0	2.3	.1	-9	2.3
Bread other than white ^{1 3}	-	333.671	337.607	4.2	1.2	.3	.6	1.2
Fresh biscuits, rolls, muffins ² .....	.114	166.105	166.955	1.8	.5	.5	.4	-1
Cakes, cupcakes, and cookies .....	.186	263.686	265.764	5.3	.8	-9	-6	1.0
Cookies ³	-	255.173	257.938	5.7	1.1	-2	-7	.6
Fresh cakes and cupcakes ^{1 3}	-	273.185	274.704	5.3	.6	-2.2	.2	.6
Other bakery products .....	.235	260.547	259.777	.8	-3	-6	.0	-4
Fresh sweetrolls, coffeecakes, doughnuts ^{1 3}	-	274.984	272.111	2.9	-1.0	1.3	1.0	-1.0
Crackers, bread, and cracker products ³	-	302.651	305.250	1.4	.9	-7	-1.7	.8
Frozen and refrigerated bakery products, pies, tarts, turnovers ³	-	267.563	265.627	-6	-7	-1.3	-3	-8
Meats, poultry, fish, and eggs	1.960	230.464	231.309	3.1	.4	-5	.2	.3
Meats, poultry, and fish	1.846	232.004	232.936	3.2	.4	-6	.2	.3
Meats	1.201	231.938	232.462	2.8	.2	-3	.0	.0
Beef and veal ¹ .....	.548	264.346	265.908	6.6	.6	.6	.6	.6
Uncooked ground beef ¹ .....	.212	245.851	245.052	5.8	-3	1.4	1.1	-3
Uncooked beef roasts ^{1 2} .....	.081	189.602	192.476	4.7	1.5	.1	.5	1.5
Uncooked beef steaks ^{1 2} .....	.204	177.613	179.706	8.9	1.2	.1	.3	1.2
Uncooked other beef and veal ^{1 2} .....	.052	183.759	185.083	5.4	.7	.6	.0	.7
Pork .....	.379	205.617	206.446	-1.0	.4	-2.4	-8	-1
Bacon, breakfast sausage, and related products ² .....	.143	146.134	146.532	-1.9	.3	-1.6	-1.4	.1
Bacon and related products ³	-	258.077	262.421	-2.6	1.7	-3.4	-1.5	1.6
Breakfast sausage and related products ^{1 2 3}	-	141.573	139.167	1.9	-1.7	2.8	-4	-1.7
Ham .....	.080	205.767	204.247	1.1	-7	-1.3	.6	-1.8
Ham, excluding canned ³	-	231.450	229.941	.6	-7	-1.3	.6	-2.1
Pork chops .....	.063	189.153	190.722	1.4	.8	-1.9	-4	.1
Other pork including roasts and picnics ² .....	.094	127.041	128.762	-3.5	1.4	-4.2	-5	.3
Other meats .....	.273	209.989	208.312	.4	-8	.6	-3	-9
Frankfurters ³	-	202.821	201.958	.6	-4	1.8	-2.7	.5
Lunchmeats ^{1 2 3}	-	135.678	135.117	.4	-4	-3	.0	-4
Lamb and organ meats ^{1 3}	-	318.771	315.917	-2.4	-9	-2.1	.3	-9
Lamb and mutton ^{1 2 3}	-	202.239	187.926	-9.8	-7.1	-6.0	.5	-7.1
Poultry .....	.336	220.921	223.575	6.1	1.2	-1.3	1.0	1.3
Chicken ² .....	.263	140.037	141.872	5.5	1.3	-1.9	1.3	1.4
Fresh whole chicken ^{1 3}	-	224.056	231.535	3.5	3.3	-4.8	.7	3.3
Fresh and frozen chicken parts ^{1 3}	-	213.613	214.360	6.5	.3	-8	2.6	.3
Other poultry including turkey ² .....	.073	151.906	153.156	8.2	.8	.8	.1	.5
Fish and seafood .....	.308	268.247	268.780	1.6	.2	-1.2	.1	.4
Fresh fish and seafood ^{1 2} .....	.139	158.369	158.373	-3	.0	-2	-2	.0
Processed fish and seafood ² .....	.149	141.590	142.182	3.7	.4	-1.4	1.0	.0
Shelf stable fish and seafood ^{1 3}	-	193.431	196.634	6.3	1.7	-1.3	.8	1.7
Frozen fish and seafood ^{1 3}	-	301.892	299.051	1.8	-9	.1	1.2	-9
Eggs .....	.114	205.608	205.063	2.4	-3	1.2	.9	.0
Dairy and related products ¹ .....	.916	215.485	214.434	-2	-5	-4	-3	-5
Milk ^{1 2} .....	.299	145.158	145.621	-1.9	.3	.0	-6	.3
Fresh whole milk ^{1 3}	-	207.176	206.884	-3.1	-1	.1	-1.2	-1
Fresh milk other than whole ^{1 2 3}	-	149.171	149.957	-1.1	.5	.0	-3	.5
Cheese and related products .....	.291	220.402	218.037	-1.3	-1.1	-7	1.0	-1.6
Ice cream and related products .....	.139	212.416	211.375	2.5	-5	.6	-1.9	.3
Other dairy and related products ² .....	.187	145.913	144.684	2.6	-8	-6	.9	-8

See footnotes at end of table.

Table 3. Consumer Price Index for all Urban Consumers (CPI-U): U.S. city average, detailed expenditure categories -Continued

(1982-84=100, unless otherwise noted)

Item and Group	Relative importance, December 2011	Unadjusted indexes		Unadjusted percent change to July 2012 from—		Seasonally adjusted percent change from—		
		June 2012	July 2012	July 2011	June 2012	Apr. to May	May to June	June to July
Expenditure category								
Moving, storage, freight expense ^{1 2} .....	.089	129.768	129.525	4.6	-0.2	0.4	0.6	-0.2
Repair of household items ^{1 2} .....	.077	199.862	200.628	-	.4	.5	.9	.4
Apparel	3.562	125.241	122.300	3.0	-2.3	.4	.5	.2
Men's and boys' apparel .....	.855	118.829	118.691	4.2	-1	.1	.6	2.1
Men's apparel .....	.679	123.622	123.644	3.6	.0	.5	.5	1.9
Men's suits, sport coats, and outerwear .....	.124	116.302	115.205	-1	-9	.5	1.0	-3
Men's furnishings .....	.179	152.035	151.446	5.3	-4	3.5	-1.0	.9
Men's shirts and sweaters ² .....	.219	80.716	81.149	5.1	.5	-2.7	2.2	3.9
Men's pants and shorts .....	.150	119.895	120.547	3.7	.5	1.7	-1.9	2.5
Boys' apparel .....	.176	100.826	100.192	6.4	-6	-2.6	-1.3	1.8
Women's and girls' apparel	1.507	111.471	106.499	3.0	-4.5	.5	-1	-4
Women's apparel	1.246	114.026	108.870	2.7	-4.5	.7	-5	-3
Women's outerwear .....	.096	78.753	77.577	-3.8	-1.5	-4.5	-3.5	.8
Women's dresses .....	.157	122.143	110.664	.6	-9.4	-2.0	-2.1	-3.1
Women's suits and separates ² .....	.676	87.034	82.246	3.6	6.6	2.3	.7	.2
Women's underwear, nightwear, sportswear and accessories ² .....	.402	101.926	100.434	1.9	-1.5	-7	.8	-2
Girls' apparel .....	.261	99.195	95.088	4.9	-4.1	-3	1.9	-8
Footwear .....	.678	131.954	129.847	3.0	-1.6	.8	1.1	-1
Men's footwear ¹ .....	.209	133.486	132.103	2.0	-1.0	.6	-2	-1.0
Boys' and girls' footwear .....	.152	136.448	135.789	2.6	-5	.5	.9	1.1
Women's footwear .....	.316	127.876	124.719	3.9	-2.5	.8	1.9	-3
Infants' and toddlers' apparel .....	.201	118.260	117.920	5.7	-3	1.6	.7	.9
Jewelry and watches ⁸ .....	.323	166.335	163.995	-2.1	-1.4	-1.3	1.8	-2.2
Watches ^{1 8} .....	.088	117.890	117.025	-9	-7	-1.4	1.3	-7
Jewelry ⁸ .....	.235	176.983	174.036	-2.9	-1.7	-1.5	1.9	-2.5
Transportation	16.875	216.369	214.294	-9	-1.0	-2.1	-7	-1
Private transportation	15.694	211.423	209.458	-9	-9	-2.3	-6	.1
New and used motor vehicles ²	5.651	101.832	101.811	.4	.0	.3	.1	-3
New vehicles	3.195	144.367	143.953	.8	-3	.2	.2	-1
New cars and trucks ^{2 3}	-	100.058	99.764	.8	-3	.2	.2	-1
New cars ³	-	144.365	143.924	.2	-3	.1	.0	-1
New trucks ^{3 9}	-	149.406	149.014	1.5	-3	.2	.4	.1
Used cars and trucks	1.913	155.306	155.815	1.1	.3	1.0	.0	-5
Leased cars and trucks ¹¹ .....	.403	89.953	89.069	-6.6	-1.0	-1.2	.0	-1.3
Car and truck rental ² .....	.071	123.598	133.174	1.5	7.7	-2.4	.9	.2
Motor fuel	5.463	304.697	296.502	-5.4	-2.7	-6.6	-2.0	.2
Gasoline (all types)	5.273	303.747	295.498	-5.5	-2.7	-6.8	-2.0	.3
Gasoline, unleaded regular ³	-	303.316	295.007	-5.7	-2.7	-6.9	-2.1	.3
Gasoline, unleaded midgrade ^{3 12}	-	311.230	303.357	-4.9	-2.5	-6.6	-1.7	.4
Gasoline, unleaded premium ³	-	292.970	284.990	-4.8	-2.7	-5.8	-1.9	.0
Other motor fuels ² .....	.189	275.104	269.923	-5.2	-1.9	-5.4	-7.0	-1.1
Motor vehicle parts and equipment ¹ .....	.438	148.542	149.048	2.8	.3	.1	.0	.3
Tires ¹ .....	.298	135.200	135.447	2.8	.2	.0	.0	.2
Vehicle accessories other than tires ^{1 2} .....	.140	158.869	159.945	2.9	.7	.5	.0	.7
Vehicle parts and equipment other than tires ^{1 3}	-	148.794	150.072	2.3	.9	.7	.0	.9
Motor oil, coolant, and fluids ^{1 3}	-	362.507	360.690	5.4	-5	.1	.3	-5
Motor vehicle maintenance and repair ¹	1.155	257.629	257.423	1.8	-1	.3	.1	-1
Motor vehicle body work ¹ .....	.057	265.018	265.271	2.2	.1	.2	.3	.1
Motor vehicle maintenance and servicing ¹ .....	.461	233.052	232.863	2.3	-1	.2	.0	-1
Motor vehicle repair ^{1 2} .....	.001	159.254	159.101	1.5	-1	.4	.1	-1
Motor vehicle insurance	2.426	399.729	400.709	3.4	.2	.4	.4	.4
Motor vehicle fees ^{1 2} .....	.561	171.666	172.213	3.4	.3	.1	.1	.3
State motor vehicle registration and license fees ^{1 2 6} .....	.333	166.500	166.528	1.1	.0	.0	.0	.0
Parking and other fees ^{1 2} .....	.206	180.520	181.875	7.1	.8	.2	.2	.8
Parking fees and tolls ^{1 2 3}	-	196.837	198.767	8.7	1.0	.2	.1	1.0
Automobile service clubs ^{1 2 3}	-	125.301	125.381	3.3	.1	.6	.4	.1
Public transportation	1.181	276.784	273.033	.1	-1.4	.8	-1.8	-1.5
Airline fare .....	.768	313.920	305.689	-7	-2.6	1.0	-2.5	-2.7
Other intercity transportation .....	.152	154.945	156.221	-1.3	.8	.3	.4	-1.5

See footnotes at end of table.

**Bridge Replacement on SR 47 over Little River
RUC for PAR Alternate 2**

Analysis Case - Off-Site Detour

Foster Grimes, 13 September 2012

Table 6: Road Users Cost Summary Reference from another cell or sheet Black Input Calculated Red Blue

Cost Component	Vehicle Class	Percent Class	Total Vehicles	Added Travel Length	Added Travel Time	Cost Rate	Road User Cost	Total Road User Cost
	mph	%	#	mi/veh	hr/veh	\$/Veh-hr, \$/mi	\$/user	\$/day
Queue Delay (Added time)	Car	93	0		0.00	17.71	0	0
	Truck	7.5	0		0.00	29.51	0	0
Queue Idling VOC (Added cost)	Car	93	0		0.00	1.04	0	0
	Truck	7.5	0		0.00	1.20	0	0
Work Zone Delay (Added Time)	Car	93	0		0.00	17.71	0	0
	Truck	7.5	0		0.00	29.51	0	0
Circuity Delay (Added Time)	Car	93	4,380		0.23	17.71	4.1	16,467
	Truck	7.5	4,380		0.23	29.51	6.8	2,225
Circuity VOC (Added cost)	Car	93	4,380	14.98		0.34	5.2	20,878
	Truck	7.5	4,380	14.98		0.69	10.3	3,386
Total vehicles that travel queue			0	Road User Cost				\$43,000
Total vehicles that travel work zone				Adjusted Road User Cost³				\$22,000
Total vehicles that travel detour			4,380	Number of Work Zone Days				365
Percent passenger cars			93	Total Road User Cost				\$8,030,000
Percent Trucks			7.5	³ Adjusted down 50% from Road User Cost				

Trucks, % ¹	7.5
Cars, %	93
75% Traveling Detour ADT, vpd ²	4,380

Notes:

¹ Corresponds to 24 hour truck percentage in project Traffic Assignments.

² Traffic ADT from report provided by State Planning and Programming Engineer, Traffic Assignments Dated 2-5-2010. Assumed that 25% of Traffic would use alternate route other than detour.

PI 232310

Clayton Bennett

February 19, 2013

This bridge (Structure ID 181-0017-0; SR 47 over Little River) was built in 1952. The bridge consists of drive through truss on a concrete cap and 2 columns with spread footings. This bridge is a fracture critical structure and has been struck numerous times due to a low overhead clearance (minimum clearance is 14'-6"). There is current damage on bridge due to vehicle impacts. The most significant damage is a torn connection plate at vertical 2; only one bolt is holding it in place. All spans in the deck exhibit minor pattern cracking. Minor pack rust is beginning to form at the connection plates with the floor beams. Heavy scaling is reported at bents 2, 3, and 4 at the water line. Due to the structural integrity and the low minimum vertical clearance replacement of this bridge is recommended.

Bridge Inventory Data Listing



Parameters: Bridge Serial Num

Structure ID:181-0017-0

Lincoln

SUFF. RATING: 47.90

Location & Geography

Structure ID: 181-0017-0
 200 Bridge Information: 06
 *6A Feature Int: LITTLE RIVER
 *6B Critical Bridge: 0
 *7A Route No Carried: SR00047
 *7B Facility Carried: SR 47
 9 Location: 10.5 MI SE OF LINCOLNTON
 2 Dot District: 2
 207 Year Photo: 2012
 *91 Inspection Frequency: 24 Date: 12/19/2012
 92A Fract Crit Insp Freq: 2 Date: 09/07/2012
 92B Underwater Insp Freq: 2 Date: 11/19/2010
 92C Other Spc. Insp Freq: 0 Date: 02/01/1901
 * 4 Place Code: 00000
 *5 Inventory Route(O/U): 1
 Type: 3
 Designation: 1
 Number: 00047
 Direction: 0
 *16 Latitude: 33 41.5703 HMMS Prefix:SR
 *17 Longitude: 82 -20.3026 HMMS Suffix:00 MP:16.50
 98 Border Bridge: 000%Shared:00
 99 ID Number: 0000000000000000
 *100 STRAHNET: 0
 12 Base Highway Network: 1
 13A LRS Inventory Route: 1811004700
 13B Sub Inventory Route: 0
 101 parallel Structure: N
 *102 Direction of Traffic: 2
 *264 Road Inventory Mile Post: 016.50
 *208 Inspection Area: 2 Initials: EFP
 Engineer's Initials: bcn
 * Location ID No: 181-00047D-016.50E

*104 Highway System: 0
 *26 Functional Classification: 06
 *204 Federal Route Type: F No: 00761
 105 Federal Lands Highway: 0
 *110 Truck Route: 0
 2006 School Bus Route: 0
 217 Benchmark Elevation: 0000.00
 218 Datum: 0
 *19 Bypass Length: 23
 *20 Toll: 3
 *21 Maintenance: 01
 *22 Owner: 01
 *31 Design Load: 2
 37 Historical Significance: 5
 205 Congressional District: 10
 27 Year Constructed: 1952
 106 Year Reconstructed: 0000
 33 Bridge Medium: 0
 34 Skew: 00
 35 Structure Flared: 0
 38 Navigation Control: 0
 213 Special Steel Design: 9
 267 Type of Paint: 5
 *42 Type of Service On: 1
 Type of Service Under: 5
 214 Movable Bridge: 0
 203 Type Bridge: A
 259 Pile Encasement 3
 *43 Structure Type Main: 4 10
 45 No. Spans Main: 004
 44 Structure Type Appr: 0 00
 46 No Spans Appr: 0000
 226 Bridge Curve Horz 0 Vert: 1
 111 pier Protection 0
 107 Deck Structure Type: 1
 108 Wearing Structure Type: 1
 Membrane Type: 8
 Deck Protection: 8

Signs & Attachments

225 Expansion Joint Type: 01
 242 Deck Drains: 1
 243 Parapet Location: 0
 Height: 0
 Width: 0
 238 Curb Height: 1
 Curb Material: 1
 239 Handrail 2 2
 *240 Medium Barrier Rail: 0
 241 Bridge Median Height: 0
 * Bridge Median Width: 0
 230 Guardrail Loc. Dir. Rear: 3
 Fwr: 3
 Oppo. Dir. Rear: 0
 Oppo. Fwr: 0
 244 Approach Slab 3
 224 Retaining Wall: 0
 233 Posted Speed Limit: 55
 236 Warning Sign: 1.00
 234 Delineator: 1.00
 235 Hazzard Boards: 1
 237 Utilities Gas: 00
 Water: 00
 Electric: 00
 Telephone: 00
 Sewer: 00
 247 Lighting Street: 0
 Navigation: 0
 Aerial: 0
 *248 County Continuity No.: 00

Bridge Inventory Data Listing



Parameters: Bridge Serial Num

Structure ID: 181-0017-0

Programming Data		Measurements:				
201 Project No:	SAP 961 (3)	*29ADT	004570	Year:2011	65 Inventory Rating Method:	2
202 Plans Available:	4	109%Trucks:	0		63 Operating Rating Method:	2
249 Prop Proj No:	BRST-076-1 (36)	* 28 Lanes On:	02	Under:00	66 Inventory Type:	2 Rating: 24
250 Approval Status:	0000	210 No. Tracks On:	00	Under:00	64 Operating Type:	2 Rating: 24
251 PI Number:	232310-	* 48 Max. Span Length	0200		231Calculated Loads:	
252 Contract Date:	02/01/1901	* 49 Structure Length:	724		H-Modified:	20 0
260 Seismic No:	00000	51 Br. Rwdy. Width	24.00		HS-Modified:	25 0
75 Type Work:	31 1	52 Deck Width:	29.50		Type 3:	26 0
94 Bridge Imp. Cost:	\$2,829	* 47 Tot. Horiz. Cl:	24		Type 3s2:	40 0
95 Roadway Imp. Cost:	283	50 Curb / Sidewalk Width	2.00 / 2.00		Timber:	35 0
96 Total Imp Cost:	4243	32 Approach Rdwy. Width	028		Piggyback:	40 0
76 Imp Length:	002044	*229 Shoulder Width:			261 H Inventory Rating:	15
97 Imp Year:	2013	Rear Lt:	2.50	Type:2 Rt:1.50	262 H Operating Rating	22
114Future ADT:	006855	Fwd. Lt:	2.50	Type:2 Rt:2.50	67 Structural Evaluation:	5
		Permanent Width:			58 Deck Condition:	6
		Rear:	23.50	Type:2	59 Superstructure Condition:	6
			23.30	Type:2	* 227 Collision Damage:	0
		Intersaction Rear:	0	Fwd: 0	60A Substructure Condition:	6
		36Safety Features Br. Rail:	2		60B Scour Condition:	8
		Transition:	2		60C Underwater Condition	6
		App. G. Rail:	2		71 Waterway Adequacy:	8
		App. Rail End:	2		61 Channel Protection Cond.:	8
		53 Minimum Cl. Over:	15' 00 "		68 Deck Geometry:	2
		Under:			69 UnderClr. Horz/Vert:	N
		*228 Minimum Vertical Cl			72 Appr. Alignment:	7
		Act. Odm Dir.:	15' 00"		62 Culvert:	N
		Oppo. Dir:	99' 99"		Posting Data	
		Posted Odm. Dir:	14' 06"		70 Bridge Posting Required	5
		Oppo. Dir:	00' 00"		41 Struct Open, Posted, CL:	A
* Width:	0.00	Height:0.00			* 103 Temporary Structure:	0
* Length:	0	Apron:0			232 Posted Loads	
265 U/W Insp. Area	2	Diver:WSR			H-Modified:	00
Location ID No:	181-00047D-016.50E				HS-Modified:	00
		55 Lateral Undercl. Rt:	N 0 0		Type 3:	00
		56 Lateral Undercl. Lt:	0.00		Type 3s2:	00
		*10 Max Min Vert Cl:	14' 11" Dir:3		Timber:	00
		39 Nav Vert Cl:	000 Horiz:0000		Piggyback	00
		116 Nav Vert Cl Closed:	000		253 Notification Date:	02/01/1901
		245 Deck Thickness Main	7.00		258 Fed Notify Date:	2/1/1901 12:00:00AM
		Deck Thick Approach:	0.00			
		246 Overlay Thickness:	0.00			
		212 Year Last Painted:	Sup:1999Sub:0000			