

**DEPARTMENT OF TRANSPORTATION  
STATE OF GEORGIA**

**INTERDEPARTMENT CORRESPONDENCE**

**FILE:** NHS-0007-00(386) & NHS-0000-00(762) Lowndes **OFFICE:** Engineering Services  
P. 1, Nos.: 0007386 & 0000762  
I-75 Interchange Improvements

**DATE:** February 1, 2008

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

**TO:** Babs Abubakari, P.E. State Consultant Design and Program Delivery Engineer

**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
A-2(1)	Reduce the CR 274 Bridge width by removing one left-turn lane and changing the 10' rural shoulder design to an urban shoulder design	\$496,000	No	Taking out one lane and not having independent left turn lanes would not provide adequate storage length due to the large amount of trucks at this interchange.
A-2(4)	Reduce the S.R. 31 Bridge width by removing one left-turn lane from the bridge typical section	\$455,000	No	Taking out one lane and not having independent left turn lanes would not provide adequate storage length due to the large amount of trucks at this interchange.
A-2(5)	Reduce the S.R. 133 Bridge width by removing one left-turn lane and one eastbound through lane from the bridge typical section	\$1,086,000	No	Taking out one lane and not having independent left turn lanes would not provide adequate storage length due to the large amount of trucks at this interchange.

ALT No.	Description	Savings PW & LCC	Implement	Comments
A-2, B-2	Reduce S.R. 122 from a proposed four/five lane roadway section to a three lane section and reduce the S.R. 122 Bridge width by the same amount.	\$1,535,000	No	The results of the Capacity Analysis show a Level of Service (LOS) of E for a three lane section.
A-4	Reduce the overall lengths of the CR 274, S.R. 376, Loch Laurel Road, S.R. 31 and S.R. 133 bridges by changing them from four span structures with 2:1 end slopes to two span structures using MSE Walls with Pile End Bents	(proposed) \$1,873,000  (actual) 1,017,360	Yes	The S.R. 133 Bridge will use MSE Walls and Pile End Bents. All other bridges are located in more rural areas and will remain as proposed.
A-4(b)	Reduce the overall length of the S.R. 7 Bridge by changing it from a four span structure with 2:1 end slopes to a two span structure using MSE Walls with Pile End Bents	(proposed) \$1,282,000  (actual) \$1,058,000	Yes	A variation of the VE Alternative will be used. A MSE Wall will be used in conjunction with a two span bridge that would accommodate the future I-75 off-ramp.
B-2	Reduce the shoulder width on Relocated Morven Road and Union Road from ten feet to six feet	(proposed) \$196,000  (actual) \$120,600	Yes	The shoulder width will be reduced to 6' but the paved part will be 4' instead of the 2' as recommended by the VE Team.
B-5	Eliminate the Interchange Entrance and Exit Ramp Tie-ins for the proposed future fourth lane on I-75 at CR 274, S.R. 376, S.R. 31, and S.R. 133	(proposed) \$1,095,000  (actual) \$306,400	Yes	This will be modified to include 6 other ramps. The ramps will tie to the existing six-lane section as soon as possible to eliminate wide gore areas.
A-5	Identify/Define the ultimate typical section for I-75 throughout the corridor	Design Suggestion	Yes	This should be done.

ALT No.	Description	Savings PW & LCC	Implement	Comments
A-11	Consider using a Single Point Urban Interchange at S.R. 376	Design Suggestion	No	The Design Consultant considered a SPUI and determined that the bridge would cost approximately \$1.9 million more due to the large bridge that would be required.
A-13	Consider strategies to reduce the bridge depth at S.R. 133	Design Suggestion	Yes	This should be considered during plan development.
A-15	Offset (to the North) the location of the new Bridge to simplify construction under traffic at S.R. 376 & S.R. 31	Design Suggestion	Yes	This should be done.
B-2	Eliminate the reconstruction of a section of Jewell Futch Road at the Georgia Winnebago Property at S.R. 376	Design Suggestion	Yes	This should be done.
C-2	Specify Jacking Bridges as necessary to maintain uniform roadway elevations during bridge reconstruction	Design Suggestion	Yes	This should be done.
C-3	Investigate possible detour routes that would allow the closing of local roads during construction at S.R. 376 and Loch Laurel Road	Design Suggestion	No	Traffic will be maintained by staging traffic during the construction areas; however, consideration could be given to closing one site while the other site is being built and vice versa.
C-4	Use contra-flow traffic lanes on I-75 to aid construction	Design Suggestion	No	The existing median is 40' wide through this corridor which should allow normal staging to occur without contra-flow being required.
G-1	Accommodate additional access on the cross road at S.R. 31	Design Suggestion	Yes	This should be done.

ALT No.	Description	Savings PW & LCC	Implement	Comments
L-1	Hold the east side ramps at their proposed location while shifting the west side ramps inward (maintain a 660' separation) at CR 274	Design Suggestion	No	Would cause the proposed ramps to be constructed over the existing ramps which would make staging more difficult since there is a significant grade change.
L-4	Investigate whether signals could be installed at the realigned truck stop entrances at CR 274 and S.R. 31	Design Suggestion	Yes	This should be done.

A meeting was held on January 11, 2008 to discuss the above recommendations. Jeff VanDyke with Jacobs Carter Burgess, Ralph C. Ramsdell with Moreland Altobelli, Al Bowman with the LPA Group, Stanley Hill and Vinesha Pegram with Consultant Design, and Brian Summers, Ron Wishon, and Lisa Myers with Engineering Services were in attendance.

Additional information was provided by the Design Consultant on January 24, 2008 and February 1, 2008.

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

Approved: Gerald M. Ross Date: 2/4/08  
 Gerald M. Ross, P. E., Chief Engineer

Approved: Rodney Barry Date: 4/22/2008  
 for Rodney Barry, P.E., FHWA Division Administrator

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P.I. Nos. 0007386 & 0000762

VE Study Implementation

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Attachments

c: Gus Shanine  
Todd Long  
Paul Liles  
Bill Duvall  
James Magnus  
Joe Cowan  
Jerry Hughes  
Scott Chambers  
Stanley Hill  
Vinesha Pegram  
Steve Adewale  
Paul Alomia  
Ken Werho  
Nabil Raad  
Lisa Myers

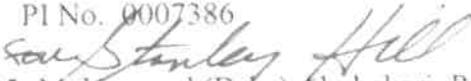
# DEPARTMENT OF TRANSPORTATION STATE OF GEORGIA

## INTERDEPARTMENTAL CORRESPONDENCE

**FILE:** NHS-0007-00(386) Lowndes County  
I-75 at 7 locations from the Florida State Line to SR 122  
PI No. 0007386

**OFFICE:** Consultant Design

**DATE:** December 20, 2007

  
**FROM:** Mohammed (Babs) Abubakari, P.E., Consultant Design Program Delivery Engineer

**TO:** Brian Summers, P.E., Project Review Engineer  
Attn: Lisa Myers

### **Subject: Responses to Value Engineering Study**

Reference is made to the recommendations that were contained in the Value Engineering Report dated August 31, 2007 for the above referenced project. Our responses and recommendations are as follows.

#### **Value Engineering Recommendation No. A-2(1)**

*The proposed CR 274 Bridge design shows a typical bridge section that carries two through lanes, two left turn lanes, and two 10-foot shoulders across the new bridge. It is recommended that one 12-foot left turn lane be removed from the bridge and that the rural 10-foot shoulder concept is changed to an urban section concept with 6-foot sidewalks, 2-foot curb and gutters, and side parapets.*

#### **Response:**

The Functional Classification of CR 274/Bellville Road is a Rural Major Collector. The existing facility does not have curb / gutter or sidewalks. The urban bridge shoulder does not seem appropriate at this location due to the tie in with a rural facility. In addition, the rural bridge shoulder would aid the operations of the interchange due to the large number of tractor trailer vehicles (20%).

Back to back turn lanes were considered during project development to reduce the bridge width. After discussions with the District and local officials, the full length turn lanes were shown to aid truck operations and future unforeseen volume increases. There are several large developments that are planned near this interchange.

The design team recommends retaining the rural bridge shoulders and the bridge lanes as shown. *Approval of VE Recommendation No. A-2(1) is not recommended.*

#### **Value Engineering Recommendation No. A-2 (4)**

*The proposed SR 31 Bridge design shows a typical bridge section that carries 4 through lanes and 3 left turn lanes across the new bridge. It is recommended that one of the dual I-75 southbound 12-foot left turn lanes be removed from the bridge cross-section.*

#### **Response:**

The projected year 2032 left turn volumes are 400 vph in the AM and 600 vph in the PM peak hours. The projected year 2032 queue length on the dual left-turn lane onto I-75 southbound on-ramp is 100 feet in the AM and 130 feet in the PM peak hours. With one left-turn lane, the queue lengths are 170 feet in the AM and 310 feet in the PM peak hours. The 310 feet queue length is approximately half of the available length between ramps. However, the design team felt this distance was not adequate due to two tractor trailer stops on the eastern side of the interchange and overall large truck percentage (20%). In addition, a dual left turn will improve signal operation by reducing left turn green time. Dual left turns are recommended to reduce the queuing on the bridge and improve operations. *Approval of VE Recommendation No. A-2(4) is not recommended.*

#### **Value Engineering Recommendation No. A-2 (5)**

*The proposed SR 133 Bridge design shows a typical bridge section that carries five through lanes and three left turn lanes across the new bridge. It is recommended that one of the dual I-75 southbound 12-foot left turn lanes and one of the eastbound through lanes be removed from the bridge typical section*

#### **Response:**

The projected year 2032 left turn volumes onto I-75 are 420 vph in the AM and 740 vph in the PM peak hours. The projected year 2032 queue lengths with dual left-turn lane onto I-75 southbound on-ramp are 180 feet in the AM and 250 feet in the PM peak hours. With a single left-turn lane, the queue lengths increase to 440 feet in the AM and 750 feet in the PM peak hours. The 750 feet PM queue length would spill back across the bridge and block the northbound ramps. (There is approximately 700 feet between the ramps.) This would create an unacceptable operational condition. Dual lefts will allow the interchange to operate more effectively by reducing the queuing on the bridge and reducing signal cycle times.

The projected year 2032 eastbound through volumes are 1,900 vph in the AM and 1,110 vph in the PM peak hours. The projected year 2032 queue length on the three eastbound through lanes is 200 feet in the AM and minimal in the PM peak hours. With the two eastbound through lanes, the queue lengths are 800 feet in the AM and 90 feet in PM peak hours. The 800 feet AM queue would spill back across the bridge and block the southbound ramps. (There is approximately 700 feet between ramps.) This would create an unacceptable operational condition. Three eastbound through lanes will allow the interchange to operate more effectively by reducing queuing on the bridge and reducing signal cycle time.

The design team recommends retaining the dual westbound left turns onto southbound I-75 and the three eastbound through lanes as shown. *Approval of VE Recommendation No. A-2(5) is not recommended.*

**Value Engineering Recommendation No. A-4**

*The proposed design for the 5 Interchange cross road bridges (CR 274, SR 376, Loch Laurel Road, SR 31 and SR 133) crossing I-75 show four-span structures with short end spans and 2:1 end slopes. It is recommended that the end spans of the bridges be removed and replaced with vertical abutments comprised of MSE retaining walls with pile end bents.*

**Response:**

After additional cost analysis, the MSE alternative walls are effective in urban style interchanges due to the bridge encroaching on the ramp intersections. This is especially true of the SR 133 bridge. The additional analysis also shows that short end spans are less expensive on more rural interchanges. The other bridges on this project (CR 274, SR 376, Loch Laurel Road, and SR 31) are more economical as shown. The design team recommends that the SR 133 bridge be changed to a vertical abutment and the other interchanges remain as shown. Contributing factors are the increased cost to build the MSE walls (approximately 25%) and increased construction time to build the bridges with MSE (approximately one month). *Approval of VE Recommendation No. A-4 is recommended for the SR 133 interchange only.*

**Value Engineering Recommendation No. B-5**

*The current design proposes to extend exit and entrance ramp tapers to accommodate possible future widening of I-75 from 6 to 8 lanes for the Interchange ramps at CR 274, SR 376, SR 31 and SR 133. Additional asphalt pavement is provided to tie into a future 4<sup>th</sup> lane in each direction. Additional striping is added to align the current ramp tapers to tie into the existing outside travel lane. It is recommended that the entrance and exit ramp tapers be redesigned to tie into the existing 6-lane section and eliminate additional pavement for possible future widening of the interchange ramps at CR 274, SR 376, SR 31 and SR 133. The ramp alignments will need to be adjusted to account for the shift in the ramp tapers.*

**Response:**

Traditional ramp lengths were considered during concept development. However, accommodating a future I-75 widening is one of the purposes for this project and a major consideration for design. Therefore, the design team reviewed existing design and construction interchange practices for accommodating major future widening projects. An acceptable practice is to lengthen the ramps so that the ramp will have the proper length and breakaway angle after the future widening project is complete. The current project will incur some additional cost and the future widening project will incur some cost savings as a result of the proposed longer ramps. In addition, the future project will be able to retain more pavement, minimize ramp rework, and minimize ramp traffic disruption. The design team recommends retaining the ramp lengths as shown. *Approval of VE Recommendation No. B-5 is not recommended.*

#### **Value Engineering Design Suggestions No. A-5**

*The current design consultants are using various configurations for the ultimate build-out roadway typical section for I-75. These configurations have varying median widths, median shoulder widths, number of traffic lanes, and widths of outside clear areas. It is suggested that a single ultimate typical roadway section be developed for I-75 and that this typical section be provided to all design consultants to ensure designs are based on the same criteria. The ultimate typical roadway section should include all desirable features / conditions, such as, future 4<sup>th</sup> lane location, potential "managed lane" location, bridge pier offsets, clear zone dimensions, inside shoulder width, uniform median width, and vertical / horizontal clearances.*

Response:

The design team concurs with this assessment and has received a typical section for I-75 from GDOT. The interchanges have been adjusted to meet the new standardized span requirements. *Approval of VE Design Suggestion No. A-5 is recommended.*

#### **Value Engineering Design Suggestion No. A-11**

*The proposed design includes reconstructing the existing Diamond Interchange at I-75 and SR 376 with a new, wider Diamond Interchange. Widening out the Interchange ramps will require significant new ROW. It is suggested that consideration be given to constructing a Single Point Interchange at this location in order to reduce the amount of new ROW required for the facility.*

Response:

A single point interchange layout was prepared by the design team for analysis. After study, the single point interchange still required a significant amount of ROW due to purchasing additional access rights to meet the GDOT design manual policy 1000' minimum. A design variance will be required for anything less than 1000'. In addition, the construction cost would increase due to the larger bridge. Bridge cost is increased by approximately \$ 1.9 million. The design team does not recommend replacing the diamond interchange with a single point interchange. *Approval of VE Design Suggestion No. A-11 is not recommended.*

#### **Value Engineering Design Suggestion No. A-13**

*The main spans for the proposed bridge at SR 133 are approximately 168 feet long in order to clear the required width of I-75 at an approximate skew of 40 degrees. The proposed design uses an eight-lane typical section for I-75 which may need to be widened to a ten-lane section to meet the desired I-75 ultimate section. It is suggested that consideration be given to various options that could be used to reduce the beam depth for the SR-133 (St Augustine Road) structure.*

Response:

The design team has reviewed this bridge location and determined that a two span steel continuous beam (10' deep) with a MSE wall at each end is the preferred option for this span length and skew. *Approval of VE Design Suggestion No. A-13 is recommended.*

**Value Engineering Design Suggestion No. A-15**

*The proposed design at SR 376 and SR 31 essentially maintains the centerline of existing cross roads for the centerline of the new up-graded Interchange cross roads. Holding the centerlines the same places the new bridge in the same location as the old bridge. It is suggested that the proposed horizontal alignments for the cross roads at SR 376 and SR 31 be shifted slightly to the north to move part / all of the new bridges away from the existing bridges in order to improve the constructability of the new bridges.*

Response:

The design team has reviewed the staging of these interchange and agrees that some modification will be required. The concept is being revised to offset the new bridge. *Approval of VE Design Suggestion No. A-15 is recommended.*

**Value Engineering Design Suggestion No. B-2**

*The SR-376 Interchange shows side road reconstruction at Jewell Futch Rd. at the Georgia Winnebago property and the East Coast Properties in the southwest quadrant. Eliminate this side road reconstruction.*

Response:

The design team has reviewed the area. The side road reconstruction is primarily due to ramp relocation slope requirements. This area will be revisited during preliminary plans to minimize the side road reconstruction. *Approval of VE Design Suggestion No. B-2 is recommended.*

**Value Engineering Design Suggestion No. C-2**

*The proposed design essentially maintains the centerline of existing cross roads for the centerline of the new up-graded Interchange cross roads. Holding the same crossroad centerlines requires the new bridges to be reconstructed on the same location as the existing bridges. This work will require the demolition of a portion of the old bridge and the construction a portion of the new bridge while maintaining traffic over the other portion of the old bridge that is left in place. The roadway on the new bridge will be higher than the roadway on the old bridge and due to their close proximity could cause constructability and construction shoring challenges. It is suggested that consideration be given to jacking the existing bridges during reconstruction to minimize the difference in roadway elevations to improve constructability and shoring issues.*

Response:

The initial analysis of jacking as a staging technique indicates that it will be more expensive than an intermediate ramp location. However, the design team will review this technique again during preliminary plans phase. *Approval of VE Design Suggestion No. C-2 is recommended.*

**Value Engineering Design Suggestion No. C-3**

*The proposed project anticipates constructing the new Interchange bridges at SR 376 and Loch Laurel Road by staging local traffic through the construction area. This work will require the demolition of a portion of the old bridge and the construction a portion of the new bridge while maintaining traffic over the other portion of the old bridge that is left in place. The process would then be reversed to construct the second half of the bridge. It is suggested that consideration be given to alternately closing the crossroads at SR 376 and Loch Laurel Road and detouring local traffic around the site during construction.*

**Response:**

The design team has discussed closing these interchange / overpass with the District and local officials. The distance between I-75 crossings is not desirable for emergency vehicles. In addition, the Department can not route trucks from a state route to a county route without improving the county route. The design team recommends traffic be maintained during construction as proposed. *Approval of VE Design Suggestion No. C-3 is not recommended.*

**Value Engineering Design Suggestion No. C-4**

*It is assumed that conventional lane reductions / shifts will be used on both directions of I-75 to provide for the new bridge construction at these 7 locations. It is suggested that contra-flow lane (2 lanes in each direction) alignments be considered to accommodate traffic on I-75 during construction in this corridor.*

**Response:**

The existing median on I-75 in this corridor is 40 feet, which can accommodate cranes during construction. The design team anticipates that the new bridges can be constructed without shifting traffic on I-75. Therefore, contra-flow staging should not be required. *Approval of VE Design Suggestion No. C-4 is not recommended.*

**Value Engineering Design Suggestion No. G-1**

*In the proposed layout for SR 31, the Hinton Oil property is shown as a ROW take in the northwest quadrant because of new access control limits. The existing access drive to the Cowart & Sons property in the southwest quadrant is proposed to be relocated to the west. It is suggested that a new access drive / road be created across from the new access drive at the Cowart & Sons property shown on the original concept.*

**Response:**

The design team agrees with the VE study design suggestion. The concept will be modified to show a new access drive located at the proposed median opening and an access break to allow access to the abandoned gas station located in the NW corner of the interchange. *Approval of VE Design Suggestion No. G-1 is recommended.*

**Value Engineering Design Suggestion No. L-1**

*The proposed design shows a signal spacing of 770 feet between the new ramp intersections at CR 274. The proposed design also includes a 480-foot limited access control line in the northwest and southwest quadrants. This new access control line eliminates the existing car access entrance (in the southwest quadrant) to the CFJ Properties and also eliminates 14 parking spaces in their parking lot. Existing access to the Wallace/Hurst property and the Land Osun Management property in the northwest quadrant is also eliminated. The elimination of access to these properties is mitigated by shifting the car access entrance to the existing truck access entrance to the CFJ Properties (500 feet south of the new ramp location). New access is also created via a new access drive / road in the northwest quadrant (across from the CFJ truck entrance) which combines access to the Wallace/Hurst property, the Land Osun Management property, and the Country Hospitality property. It is suggested that the ramp location on the west side of I-75 be shifted 110 feet to the east to reduce the spacing between the ramp intersections from 770 feet to 660 feet. It is further suggested that the length of the limited access control line in the northwest and southwest quadrants to be reduced from 480 feet to 320 feet.*

**Response:**

After review, the new span requirements discussed in Recommendation A-5 have pushed the ramps out approximately an additional 20 feet. Moving the ramps 110 feet to the east, as suggested above, places the proposed ramps over the existing ramps. It does not appear feasible to construct the new ramps / bridge and maintain traffic on the existing ramps due to changes in elevation. Leaving the proposed ramps as shown will increase ramp spacing and improve constructability.

The GDOT design policy requires 1000' of limited access. The proposed 480' will require a design variance. The proposed limits of access are a balance of anticipated property value and maximizing design considerations. Reducing the limits of access is not recommended at the time. *Approval of VE Design Suggestion No. L-1 is not recommended.*

**Value Engineering Design Suggestion No. L-4**

*The proposed design includes new traffic signals at the ramp intersections at CR 274 and SR 31. The design also includes the reconstruction of cross street intersections at the relocated truck stop entrances on the east side of I-75. These cross streets will experience heavy truck turning movements since they serve primarily as access points for several large truck stops. It is suggested that these new cross street intersections be reviewed to see if they meet warrants for the installation of traffic signals.*

**Response:**

Initial reviews have shown that this intersections / driveways will not meet signal warrants. The design team will reinvestigate if any new volume data becomes available. *Approval of VE Design Suggestion No. L-4 is recommended.*

DEPARTMENT OF TRANSPORTATION  
STATE OF GEORGIA



INTERDEPARTMENTAL CORRESPONDENCE

FILE: NHS-0000-00 (762), Lowndes County  
P.I. No. 0000762  
I-75 Improvements from north of SR 133  
to Cook County Line, Phase II  
OFFICE: Consultant Design  
DATE: November 27, 2007

FROM: *M. Babs Abubakari*  
Mohammed (Babs) Abubakari, P.E.  
State Consultant Design and Program Delivery Engineer

TO: Brian Summers, P.E., State Project Review Engineer  
Attn: Lisa Myers

SUBJECT: **Value Engineering Study-Responses**

Reference is made to the recommendations that were contained in the Value Engineering Study- Final Report dated August 31, 2007 for the above referenced project. Our responses and recommendations are as follows:

1. **Value Engineering Recommendation No A-2 and B-2** – Reduce SR 122 from the proposed four/five lane roadway section to a three lane section and to reduce the SR 122 Bridge width by the same amount.

**Recommendation**

*Approval of the VE Recommendation No A-2 and B-2 is not recommended.*

- *The results of the capacity analysis for a design year of 2029 show a Level of Service (LOS) of E for a three-lane section and a Level of Service of A for a four-lane divided section. FHWA has approved this configuration. In discussions and coordinations with FHWA, for constructability purposes, this lane configuration is more desirable to design this bridge as shown.*
2. **Value Engineering Recommendation No A-4 (6)**- Use MSE walls versus 2:1 end rolls at the SR 7 bridge over I-75. Construct interim MSE wall behind pier adjacent to I-75 southbound outside shoulder and eliminate bridge span

### **Recommendation**

*Approval of a variation of the VE recommendation No A-4 (6) is recommended with modifications as shown below.*

- *A variation of the VE Recommendation proposed to implement use of MSE walls in combination with a two (2) span bridge that would accommodate the future I-75 southbound off-ramp. Bridge span one (1) and two (2) would be approximately 141 feet and 128 feet long respectively. Both spans would provide for a future barrier separated collector distributor lane while span one would also provide for the I-75 southbound off-ramp adjacent to the collector distributor lane.*
- *The use of an interim MSE is not recommended. The use of an interim MSE wall behind proposed bent 2 (pier) and removing the pier when the additional bridge span is required to accommodate the relocated southbound off-ramp will disrupt any future construction activities. The impacts are, but not limited to, milling and overlaying for restriping as well as removal and reconstruction of the concrete median and approach slabs required for stage construction of the future span. The Engineering, Mobilization, Traffic Control, Demolition and Construction costs associated with adding the "short" span in the future would exceed the present day estimated savings.*

3. **Value Engineering Recommendation No B-2-** Reduce Relocated Morven and Union Road shoulder width from 10-foot (6'-6" paved) to 6-foot (2' paved).

### **Recommendation**

*Approval of the VE Recommendation No B-2 is recommended with modifications:*

- *Relocated Union Road and Morven Road will be redesigned to show a 6-foot (4' paved) shoulder.*
4. **Value Engineering Recommendation No B-5-** Eliminate additional paving provisions for the fourth lane and revise ramps to tie to the existing six-lane I-75. (A cost savings for this recommendation was not provided for SR 122 and SR 22, but does apply to this project)

### **Recommendation**

*Approval of the VE Recommendation No B-5 is recommended.*

- *The current design allows for the accommodation of the future fourth lane at the ramp nosepoints. The required pavement width will accommodate the future fourth lane and then the pavement will taper back to the existing pavement for the three-lane section which will be a shorter taper*

References are made to the design suggestions that were contained in the Value Engineering Study- Final Report dated August 31, 2007 for the above referenced project. Our responses are as follows:

1. **Value Engineering Design Suggestion No. A-5** – Identify/define the ultimate typical section for I-75 throughout the corridor.

- *Management has approved the typical section for I-75. FHWA has concurred with this design. The typical section has been established from these coordinations. The current typical section is the typical section approved for the I-75 corridor.*

2. **Value Engineering Design Suggestion No. C-2** – Specify jacking bridges as necessary to maintain uniform roadway elevations during bridge reconstruction for staging and constructability.

- *The suggestion does not apply. These bridges have been shifted off the current alignment. The proposed bridge centerlines are offset approximately 10-feet to the south of the existing bridge. Construction staging would maintain two-way traffic on the existing bridge and construct the south half of the proposed bridge. Then the two-way traffic would be shifted onto the new bridge, the existing bridge would be removed, and the remaining half of the proposed bridge would be constructed. Maintaining ramp access would be accomplished by using leveling and/or temporary pavement as required.*

MBA:SH:VCP

cc: Todd Long, Director of Preconstruction

## Ralph Ramsdell

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**From:** Ralph Ramsdell [rramsdell@maai.net]  
**Sent:** Wednesday, November 14, 2007 10:43 AM  
**To:** VineshaC.Pegram@dot.state.ga.us  
**Cc:** sdeeb@maai.net; bhale@maai.net  
**Subject:** NHS 0000-00(762) PI 0000762



SR 7 MSE  
Alternate.pdf

Attached, as requested in our morning phone conversation, is the cost analysis for the four span with 2:1 end rolls versus a two span with MSE walls for the SR 7 (N Valdosta Road) bridge over I-75.

Ralph C. Ramsdell  
Senior Design Engineer  
Moreland Altobelli Associates, Inc.  
Tel: 770-263-5945 x141  
Fax: 770-263-0166  
E-Mail: rramsdel@maai.net

I-75 Improvements from north of SR 133 to Cook County Line,

**Cost Estimate**  
 Bridge #2  
 2 Span  
 BT 74/BT 63--MSE

Project: Phase II  
 Project Number: NHS 0000-00(762) PI 0000762  
 Made By: HHD Date: 01-Nov-07  
 Checked By: - Date: -

Tag	Pay Item	Description	Quantity	Unit	Unit Cost	Cost
60	211-0200	BRIDGE EXCAVATION, GRADE SEPARATION	64	CY	\$80.17	\$5,122
201	500-0100	GROOVED CONCRETE	3144	SY	\$4.17	\$13,110
202	500-1006	SUPERSTR CONCRETE, CL AA, BR NO -	654	LS	\$1,122.40	\$733,719
203	500-2100	CONCRETE BARRIER	538	LF	\$55.44	\$30,365
205	500-3002	CLASS AA CONCRETE	303	CY	\$692.53	\$210,023
230	507-9031	PSC BEAMS, AASHTO, BULB TEE, 63 IN, BR NO -	1919	LF	\$190.04	\$364,639
231	507-9032	PSC BEAMS, AASHTO, BULB TEE, 72 IN, BR NO -	2115	LF	\$227.53	\$481,226
235	511-1000	BAR REINF STEEL	44581	LB	\$0.98	\$42,797
236	511-3000	SUPERSTR REINF STEEL, BR NO -	177908	LS	\$0.95	\$168,917
252	520-1147	PILING IN PLACE, STEEL H, HP 14 X 73	2370	LF	\$56.18	\$137,867
285	522-1000	SHORING	1	LS	\$121,892.50	\$121,893
307	540-1101	REMOVAL OF EXISTING BR, STA NO -	1	LS	\$125,542.28	\$125,542
552	627-1020	MSE WALL FACE, 20 - 30 FT HT, WALL NO -	6000	SF	\$53.77	\$322,520
Bridge Sub Total =						\$2,757,860
Deck Area Per Side (sq ft) = BL (BW) =						24546
Unit Cost (\$ / sq ft) =						\$112
5% Mobilization						\$137,893
5% MOT						\$137,893
2% Contingency						\$55,157
Total Bridge Cost =						\$3,088,803

I-75 Improvements from north  
of SR 133 to Cook County Line,

Project: Phase II

Project Number: NHS 0000-00(762) PI 0000762

Made By: HHD Date: 01-Nov-07

Checked By: Date:

**Cost Estimate**

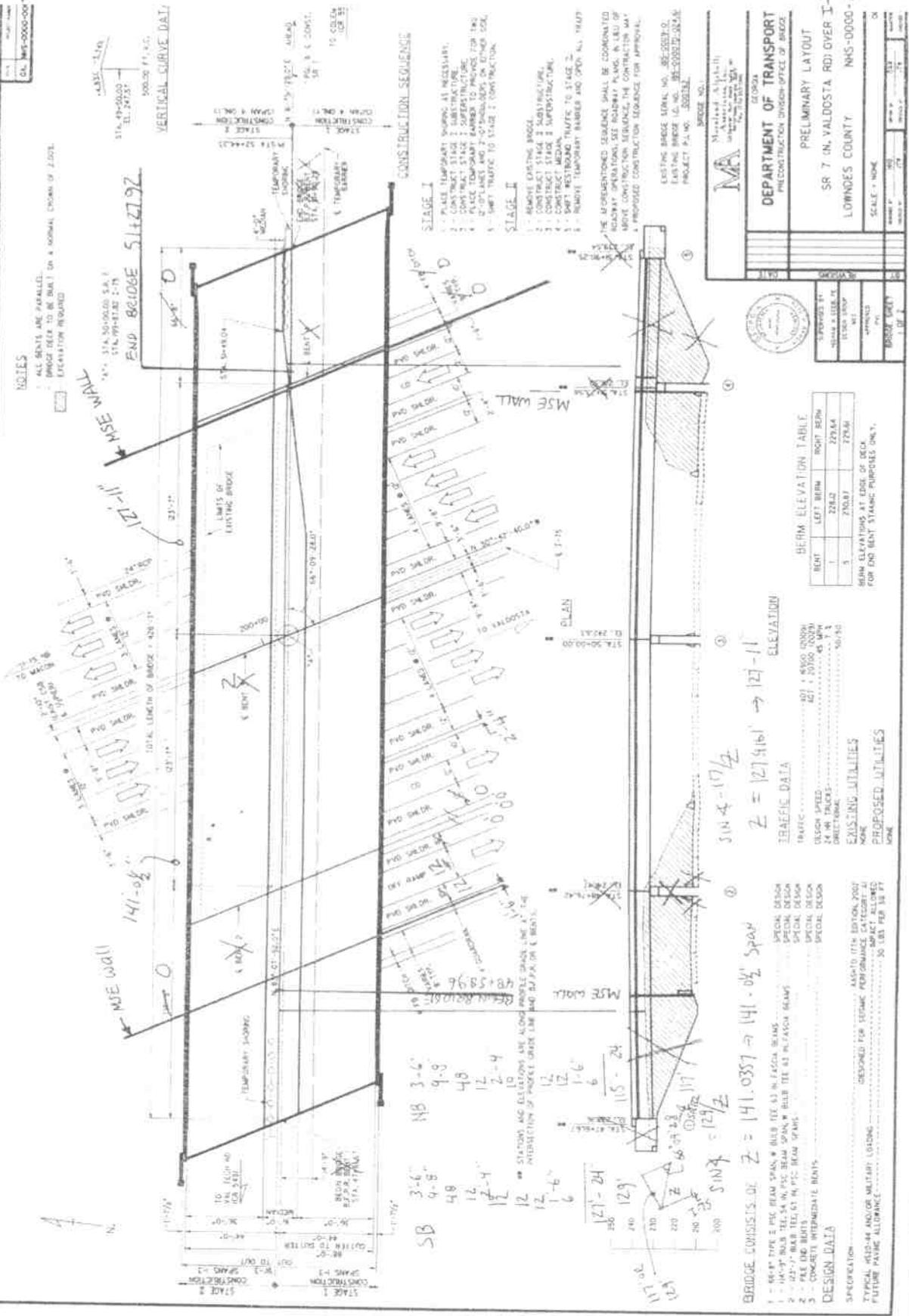
Bridge #2

4 Span

BT 63/PSC II---Endroll

Tag	Pay Item	Description	Quantity	Unit	Unit Cost	Cost
60	211-0200	BRIDGE EXCAVATION, GRADE SEPARATION	192	CY	\$80.17	\$15,356
148	441-0004	CONC SLOPE PAV, 4 IN	5941	SY	\$52.70	\$313,093
201	500-0100	GROOVED CONCRETE	4669	SY	\$4.17	\$19,468
202	500-1006	SUPERSTR CONCRETE, CL AA, BR NO -	1042	LS	\$1,122.40	\$1,169,007
203	500-2100	CONCRETE BARRIER	857	LF	\$56.44	\$48,378
205	500-3002	CLASS AA CONCRETE	820	CY	\$692.53	\$567,547
230	507-9031	PSC BEAMS, AASHTO, BULB TEE, 63 IN, BR NO -	5417	LF	\$190.04	\$1,029,542
227	507-9002	PSC BEAMS, AASHTO TYPE II, BR NO -	1000	LF	\$126.13	\$126,130
235	511-1000	BAR REINF STEEL	120492	LB	\$0.95	\$115,672
236	511-3000	SUPERSTR REINF STEEL, BR NO -	283295	LS	\$0.95	\$259,130
252	520-1147	PILING IN PLACE, STEEL H, HP 14 X 73	5070	LF	\$58.18	\$294,973
285	522-1000	SHORING	1	LS	\$121,892.50	\$121,893
307	540-1101	REMOVAL OF EXISTING BR, STA NO -	1	LS	\$125,542.28	\$125,542
Bridge Sub Total =						\$4,215,847
Deck Area For Side (sq ft) = 3L (BW) =						39108
Unit Cost (\$ / sq ft) =						\$108
5% Mobilization						\$210,792
5% MOT						\$210,792
2% Contingency						\$84,317
Total Bridge Cost =						\$4,721,748

**NOTES**  
 1. ALL BENTS ARE PARALLEL.  
 2. BRIDGE DECK TO BE BUILT ON A NORMAL CROWN OF 2.00%.  
 3. EXCAVATION REQUIRED



- CONSTRUCTION SEQUENCE**
- STAGE I**
1. PLACE TEMPORARY SHORING AT NECESSARY.
  2. CONSTRUCT STAGE 1 SUBSTRUCTURE.
  3. CONSTRUCT STAGE 2 SUBSTRUCTURE.
  4. PLACE TEMPORARY PARAPETS FOR TRAFFIC.
  5. 2-OT LANE AND 2-OT SHOULDER ON OTHER SIDE.
  6. SHIFT TRAFFIC TO STAGE 2 CONSTRUCTION.
- STAGE II**
1. REMOVE EXISTING BRIDGE.
  2. CONSTRUCT STAGE 2 SUBSTRUCTURE.
  3. CONSTRUCT STAGE 1 SUBSTRUCTURE.
  4. PLACE TEMPORARY PARAPETS FOR TRAFFIC.
  5. REMOVE TEMPORARY PARAPETS AND OPEN ALL TRAFFIC.
- THE APPROVED SEQUENCE SHALL BE COORDINATED WITH HIGHWAY OPERATIONS. SEE ROADWAY PLANS. A LEAD OF ABOVE CONSTRUCTION SEQUENCE, THE CONTRACTOR MAY ADVISE CONSTRUCTION SEQUENCE FOR APPROVAL.

**BRIDGE CONSISTS OF:**  $Z = 141.0357 \rightarrow 141.042$  SPAN

DESIGN DATA

- 1 - 86" TYPE 3 P.C. BEAM SPAN, 8 BEER TEE 63 IN. LEGAL BEAMS
- 2 - 14'-9" BALD TEE 24 IN. P.C. BEAM SPAN, 8 BEER TEE 63 IN. LEGAL BEAMS
- 3 - 22'-7" BALD TEE 61 IN. P.C. BEAM SPAN
- 4 - P.C. END BENTS
- 5 - CONCRETE INTERMEDIATE BENTS

**DESIGN DATA**

- SPECIAL DESIGN
- SPECIAL DESIGN
- SPECIAL DESIGN
- SPECIAL DESIGN

**PROPOSED UTILITIES**

- ASHTO ITEM EDITION 2002
- DESIGNED FOR STATIC PERFORMANCE CATEGORY II
- TYPICAL ROADWAY AND/OR UTILITY CROSS SECTION SHALL BE AS SHOWN
- FUTURE PAVING ALLOWANCE

**BERM ELEVATION TABLE**

BENT	LEFT BERM	RIGHT BERM
1	228.42	228.44
2	228.87	228.84
3	229.81	229.84

BERM ELEVATIONS AT EDGE OF DECK FOR END BENT STAIRS PURPOSES ONLY.

**TRAFFIC DATA**

- DESIGN SPEED: 45 MPH
- 24 IN. TRUCKS
- DIRECTION: 45 MPH

**EXISTING UTILITIES**

- NONE

**PROPOSED UTILITIES**

- NONE

MA  
 MICHIGAN  
 DEPARTMENT OF TRANSPORTATION  
 PRECONSTRUCTION DIVISION OFFICE OF BRIDGE

PRELIMINARY LAYOUT

SR 7 IN VALDOSTA RD OVER I-75  
 LOWNDOS COUNTY NMS-0000-00(762)

SCALE: NONE

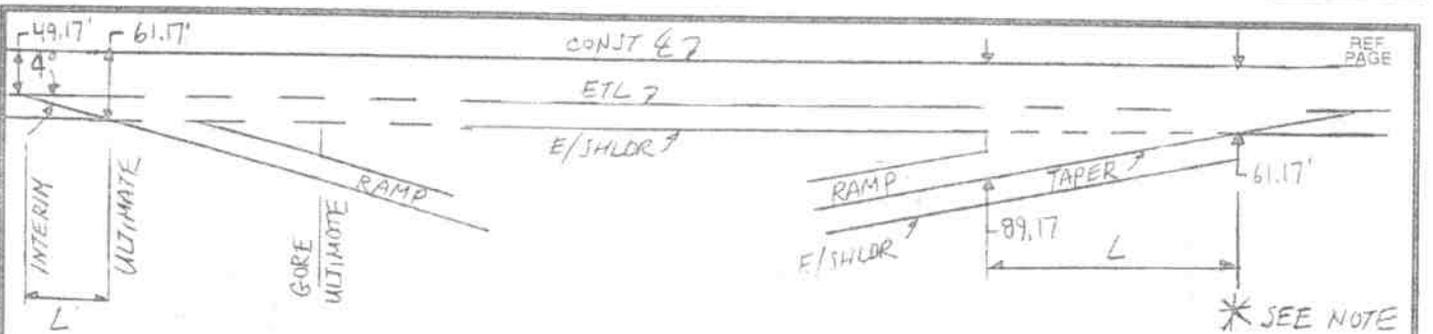
DATE: 11/1/02

PROJECT NO. 000000000000

BRIDGE NO. 141-0357

PROJECT NHS 0000-00 (762) LOWNOES CO.

SUBJECT RAMP TAPERS



EXIT RAMP  
 (FOR INFO ONLY - NOT INCLUDED IN ANALYSIS)

ENTRANCE RAMP  
 (3 EACH)

TAPER	RAMP	AREA (SQ)	SHDR	AREA (SQ)	TOTAL SHDR AREA (SQ)
ULTIMATE 70:1	$L=1960', W=\frac{28+0}{2}$	3049	$L=1960', W=12$	2613	2613
INTERIM 50:1	$L=1400', W=\frac{28+0}{2}$	2178	$L=1400', W=12$	1867	
AREA REDUCTION		<u>871</u> sq	$L=600', W=\frac{12+0}{2}$	400	<u>2267</u>
PEM OVERLAP	$18" \times \frac{(1960-1400) + (600)}{9}$			= 193 sq	<u>346</u> sq

\* NOTE  
 50:1 RAMP TAPER REQUIRES  $(\frac{12+0}{2}) \times 50:1 \approx 600'$  SHDR RUNOUT  
 70:1 RAMP TAPER UTILIZES 50:1 STRIPING TAPER NO SHDR RUNOUT REQUIRED

PROJECT NHS 0000-00 (762) LOWNOES CO

SHEET NO. 2 OF 2

SUBJECT RAMP TAPERS

JOB NO. 05511

MADE BY RCR DATE 1/16/08

CHKD BY \_\_\_\_\_ DATE \_\_\_\_\_

	AREA (SY)	PEM (135 lbs/sy) (TN)	12.5mm SMA (165 lbs/sy) (TN)	12.5mm superpave (165 lbs/sy) (TN)	19mm superpave (220 lbs/sy) (TN)	25mm superpave (1100 lbs/sy) (TN)	16" GAB (150 lbs/cf) (TN)	BIT TACK (0.035 gal/sy/cft) (GAL)	REF PAGE
RAMP	871	59	72	-	96	479	784	152 (5)	
SHLDR	193	13	-	29	38	190	311	7 (1)	
	346	-	-					48 (4)	
PVMT REDUCTION		72	72	29	134	669	1095	207	
\$/UNIT		87.81	97.28	65.79	63.21	63.99	19.98	2.00	
\$		6322	7004	1908	8470	42809	21878	414	
								estimated savings/RAMP	\$ 88,805
								RAMPS	X 3
								\$ 266,415	
								(10% ETC + 5% INFLATION) ±	39,963
								TOTAL ESTIMATED SAVINGS (ROUNDED)	\$ 306,400

## Wishon, Ron

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**From:** Adewale, Steve (Adesoji)  
**Sent:** Friday, February 01, 2008 7:38 AM  
**To:** Wishon, Ron  
**Cc:** Hill, Stanley  
**Subject:** FW: NHS-0007-00(386) Lowndes

Please find below the information needed to support our submission on the VE Study responses, as requested by your office.

### A-2(1) Need capacity analysis with LOS on taking one lane out.

LOS is run at the signalized intersections. The geometry at the intersection remains the same under either situation. Therefore, the LOS is the same for either situation. From the traffic study, 2032 LOS at the SB Ramps & NB Ramps = A in AM and B in the PM. The QUE distances are not long: 25 feet (1 car) at the SB ramp and 75 feet (3 cars) at the NB Ramp. However, there are other considerations at this interchange.

The QUE distance output only considers cars. This site has 25% trucks (ADT) and 19% trucks (Peak Hour). The site has two truck stops and a warehouse at the interchange. There are additional warehouses within a few miles of the interchange. A WB-65 is around 75' long, front to back. In order to accommodate three trucks instead of three cars, the QUE distance should be increased (with some gaps between trucks) to around 250 feet. When you include tapers, you will use approximately half the available storage distance between the ramps for the NB QUE. The traffic engineering staff recommends the full length turn lanes to eliminate potential spill back into the through lanes and other operational issues due to the large number of trucks at this site.

### A-2(4) Need Capacity Analysis with LOS and queue lengths

This site has a clear need for the dual left turn lane, based on the 600 PM vehicles. The expected LOS and queue lengths for the worst case (PM) are

	Intersection LOS	Left Turn Queue (rounded)	
Two Left Turn Lanes	B	150	
One Left Turn Lane	B	450* (methodology was exceeded)	

Note: The QUE length in the original VE Study Response are different than this table due to rounding and a more conservative approach to the signal timing. The discussion in the VE Study Response is still valid. The 450 feet is more than half of the available storage between the ramps and would be inadequate with the 20% (ADT) and 19% (peak hour) trucks.

### A-2(5) Need Capacity Analysis with LOS and queue lengths

This site also has a clear need for the dual left turn lane, based on the 720 PM vehicles turning left onto I-75 SB. The bridge section was reduced by one through lane and one left turn lane.

Intersection	Scenario	Time Period	Intersection LOS	WB Left Turn Queue (rounded)	EB Through Queue (rounded)
SR 133 at SB Off Ramp	Recommended	AM	C	200 (exceeds methodology)	300 (exceeds methodology)
SR 133 at SB Off Ramp	Reduced (VE)	AM	E	425 (exceeds methodology)	575 (exceeds methodology)
SR 133 at SB Off Ramp	Recommended	PM	B	300	100
SR 133 at SB Off Ramp	Reduced (VE)	PM	D	825 (exceeds methodology)	450 (exceeds methodology)
SR 133 at NB Off Ramp	Recommended	AM	B	WB QUE does not impact the bridge width	200 (exceeds methodology)
SR 133 at NB Off Ramp	Reduced (VE)	AM	D	WB QUE does not impact the bridge width	625 (exceeds v/c)
SR 133 at NB Off Ramp	Recommended	PM	A	WB QUE does not impact the bridge width	0
SR 133 at NB Off Ramp	Reduced (VE)	PM	A	WB QUE does not impact the bridge width	25

Note: The QUE length in the original VE Study Response are different than this table due to rounding and a more conservative approach to the signal timing. The discussion in the VE Study Response is still valid. The 825 foot left turn lane QUE would spill across the bridge and block the intersection / through lanes. The 625 foot through lane QUE would nearly spill across the bridge and block the intersection. The high truck percentage should also be a consideration for additional storage.

Please let us know if you need any further clarifications.

THANKS,  
Steve

**From:** Adewale, Steve (Adesoji)  
**Sent:** Wednesday, January 30, 2008 9:07 AM  
**To:** 'VanDyke, Jeff J.'  
**Subject:** FW: NHS-0007-00(386) Lowndes

Please take care of the request mentioned below with dispatch. I will expect these documents as "time is of the essence" on this.